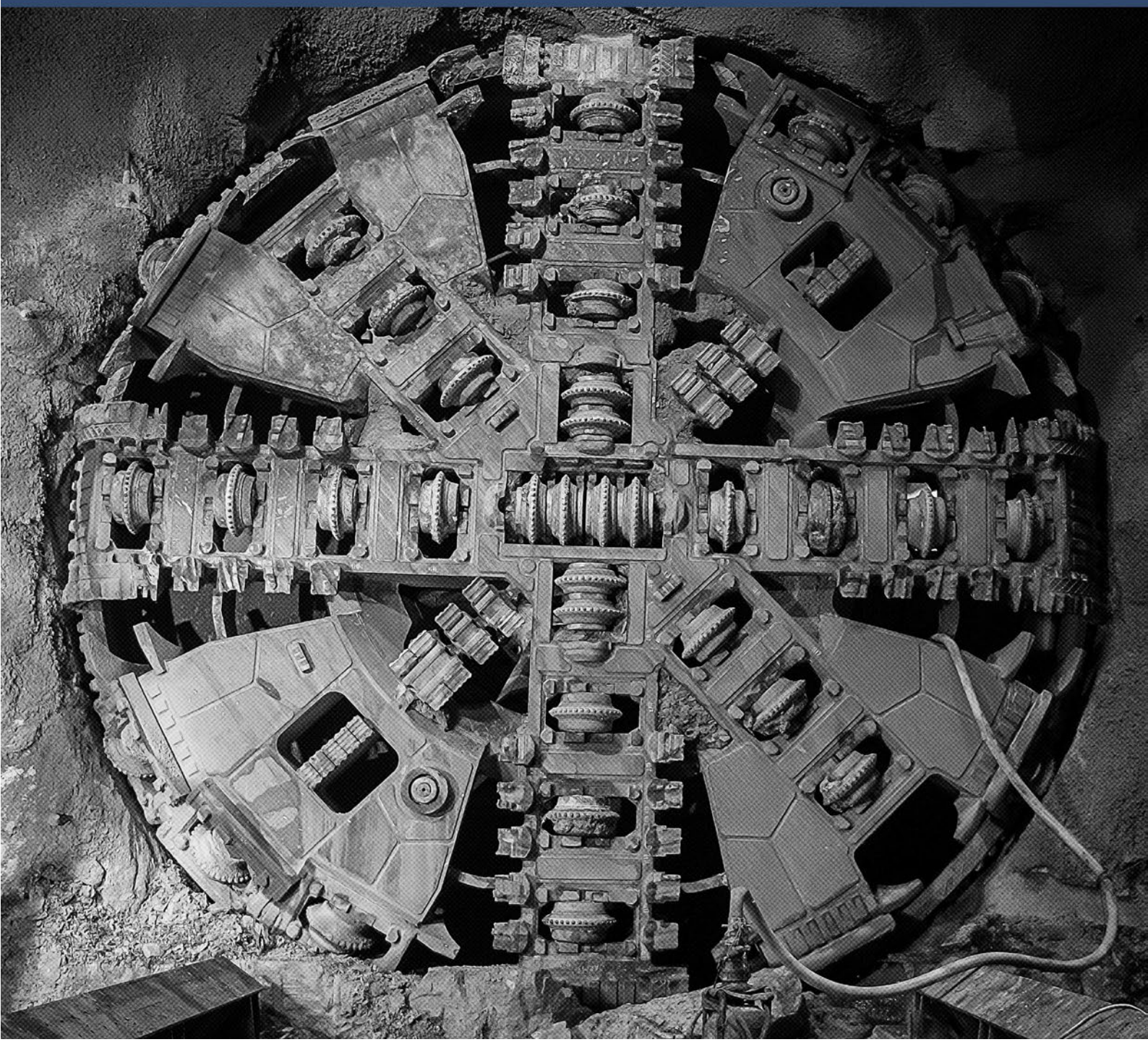
EASTERN TUNNELLING PACKAGE
John Holland CPB Contractors Ghella JV

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HERITAGE MANAGEMENT

SUB-PLAN



Heritage Management Sub-Plan

Sydney Metro West: Eastern Tunnelling Package

Prepared by AMBS Ecology & Heritage
for John Holland CPB Ghella JV

March 2023

AMBS Reference: 22043

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HERITAGE MANAGEMENT SUB-PLAN

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Document approval

Rev	Date	Prepared by	Reviewed by	Comments	Approved by
A	25/11/2022	[redacted] (AMBS)	[redacted]	Draft for consultation; Sydney Metro & ER review	[redacted]
B	14/02/2023	[redacted]	[redacted]	Revised in response to Sydney Metro, ER and stakeholder comments	[redacted]
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Signature:					[redacted]

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-EM-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.

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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 27
	(b) the mitigation measures identified in the documents listed in Condition A1 will be implemented;	Section 7 Section 8 Table 26
	(c) the relevant conditions of this approval will be complied with; and	Table 25
	(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 19 (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 19
	(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 19
	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).

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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
SHR	State Heritage Register
SLEP	Sydney Local Environmental Plan 2012
SM	Sydney Metro

Acronym	Definition
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)
- Environment Protection Licence (EPL) (details to be added on receipt of the EPL)
- 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
- 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.

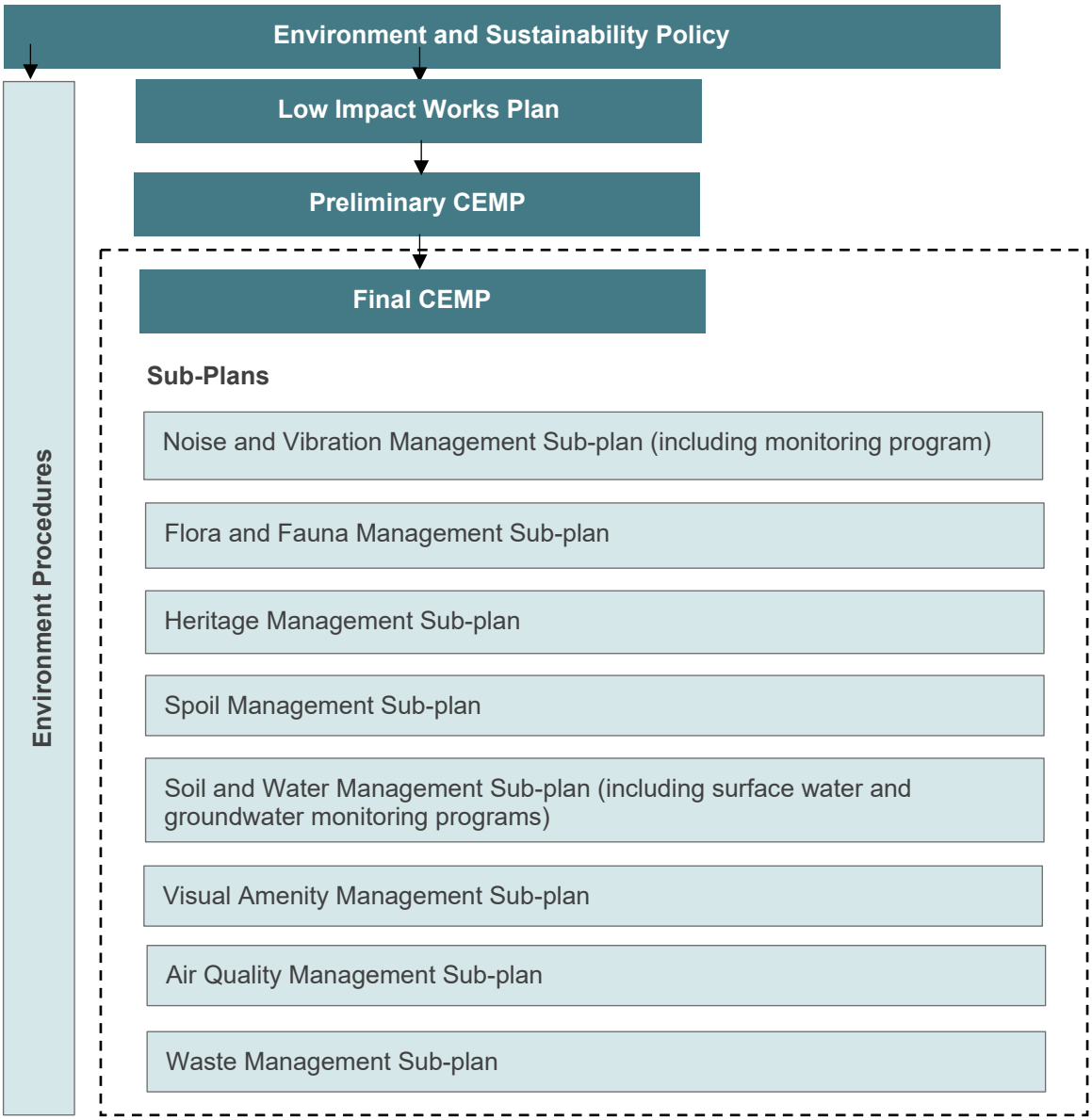


Figure 1: CEMP Framework

1.4. Consultation and approval

Reflecting the requirements of Conditions A6 and C5, this Sub-plan will be 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, will be provided in Appendix E.

In accordance with the Phasing Report, this Sub-plan will be endorsed by the ER and then submitted to the Planning Secretary for approval 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 will not commence until the CEMPs, Sub-plans and monitoring programs have 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 – Consultation Report ▪ Appendix F – 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.

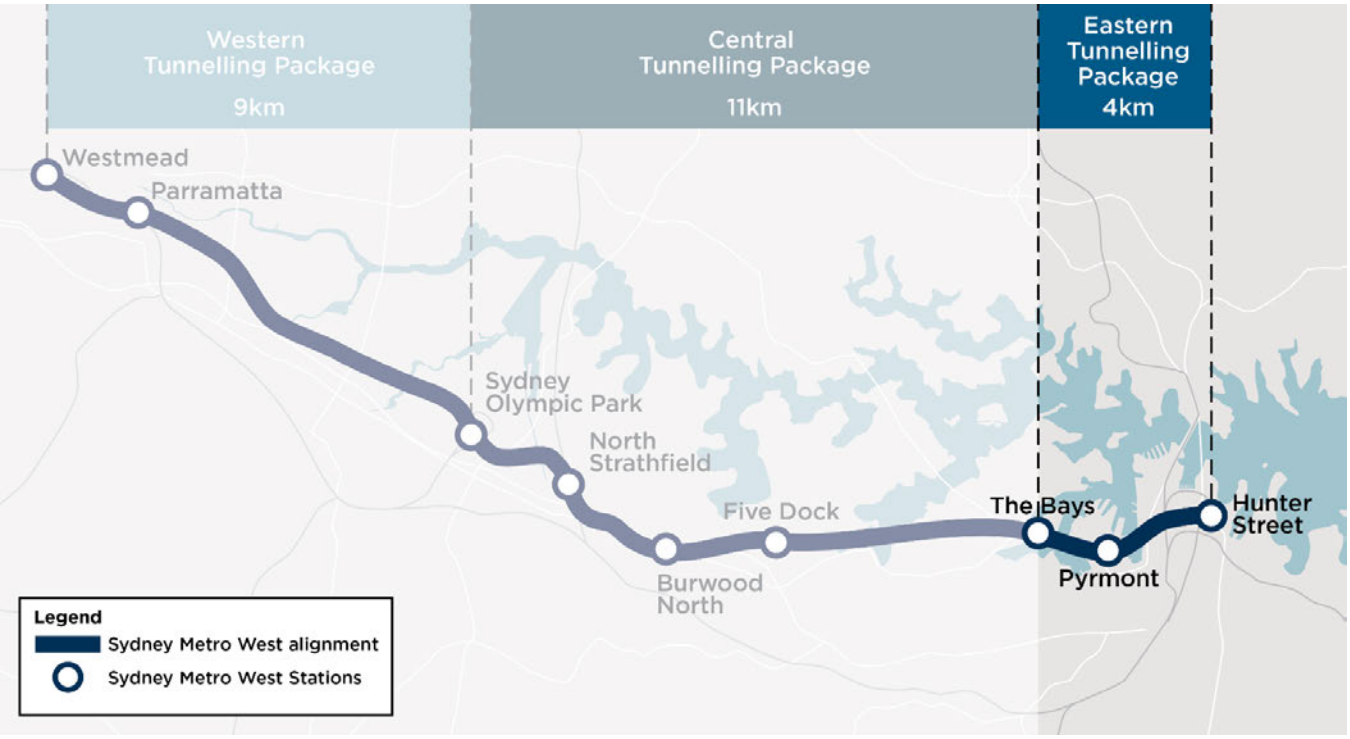


Figure 2: Overview of the Sydney Metro West alignment

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 7 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	Project award 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) ▪ Nozzle enlargements and TBM launch stub tunnels ▪ 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
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 – Establishment of site security and hoardings – Establishment of truck access – Demolition work (soft strip only)	▪ Utility adjustment works, including: – Appropriately 20m of trenching in the northern footpath of Pyrmont Bridge Road (day shift) – Approximately 50m of trenching in Paternoster Row (day shift)	▪ Archaeological salvage excavations (if triggered) ▪ Establish site including new construction access driveways, site hoardings, instrumentation and monitoring ▪ Utility works, including establishment of temporary construction services,

Worksite	Site condition at handover to JCG	Low Impact Works	Preliminary Works	Final CEMP
		▪ Five archaeological test trenches ▪ Prepare archival recordings (subject to access)	– Removal of overhead cabling from the northern footpath of Pyrmont Bridge Road (one OOHW shift) ▪ Adjustment of property utility connections	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 ▪ Street tree removal	▪ 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, investigation and protection of existing assets, and decommissioning of redundant assets (including trenching)

Worksite	Site condition at handover to JCG	Low Impact Works	Preliminary Works	Final CEMP
				▪ 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) – 314-318 George St, Sydney (nine stories, including one basement level)	▪ 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 ▪ Prepare archival recordings (subject to access)	▪ 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 ▪ Establish site including new construction access driveways, site hoardings, instrumentation and monitoring ▪ Demolition of existing buildings

Worksite	Site condition at handover to JCG	Low Impact Works	Preliminary Works	Final CEMP
	– Heritage building at 296 George St directly (adjacent to Hunter Street West site)			▪ 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 – Establishment of truck access – Demolition work (soft strip only) ▪ Street tree trimming/removal	▪ 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 ▪ TBM disassembly and retrieval

Worksite	Site condition at handover to JCG	Low Impact Works	Preliminary Works	Final CEMP
		▪ Prepare archival recordings (subject to access)		
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)
- 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 and ARDb
- 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 and ARDb – 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 and ARDb – 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

Role	Consultant	Responsibility for heritage management
Noise and Vibration Consultant	Renzo Tonin and Associates	▪ Preparing Detailed Noise and Vibration Impact Statements (DNVISs) 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 – A RAP 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. It is noted that The Bays Station construction site was established under the Sydney Metro West Concept SSI 10038 Planning Approval. Minimal ground disturbance is required at The Bays as part of the ETP Works and no additional heritage items are known to occur at The Bays Station tunnel launch and support site (Artefact 2022).

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.

5.2. 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	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)	▪ **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 interiors** (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) ▪ **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	▪ Former New York Hotel (SLEP 2012 Item no.	▪ **Tank Stream** (SHR item no. 00636, Sydney Water s170 item no.	▪ **NSW Club House Building** (SHR Item no.	▪ **Railway cutting** (SHR item no. 01225, Sydney Trains s170 register, SLEP 2012 item no. 1203)

Register	Pyrmont Station West	Pyrmont Station East	Hunter Street Station West	Hunter Street Station East	Tunnel Alignment
	(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.)	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)	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 Menswear' (SLEP 2012 item no. I1765) ▪ Grand Hotel (SLEP 2012 item no. I1809)	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, 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 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) ▪ 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)

Register	Pyrmont Station West	Pyrmont Station East	Hunter Street Station West	Hunter Street Station East	Tunnel Alignment
					▪ **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)
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) ▪ **Public Trust Office** (SHR item no. 01019,	▪ 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 (no item number retrievable))

Register	Pyrmont Station West	Pyrmont Station East	Hunter Street Station West	Hunter Street Station East	Tunnel Alignment
			▪ Bennelong Stormwater Channel No 29A (Sydney Water s170 Item no. 4570854)	Department of Justice and Attorney General S170 Register, SLEP 2012 item no. I1904)	▪ **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)	-	▪ Pangas House (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. 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 and ARDb:

- 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 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,	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)

Potential Impact	Site	Heritage Items
resulting in a negligible heritage impact		▪ 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) ▪ Pangas House (unlisted) ▪ **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	Pyrmont Station	▪ **Railway cutting** (SHR item no. 01225, Sydney Trains s170 register, SLEP 2012 item no. 1203)

Potential Impact	Site	Heritage Items
would be subject to further detailed assessment during design development and construction planning	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)

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

Item	Impact	Level of Impact
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 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.	Minor
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

Item	Impact	Level of Impact
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 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.	Negligible
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 (unlisted)	***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 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.

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 15 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 15: 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.	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, 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	Salvage excavation will take place where intact natural soils or Aboriginal objects or features are identified during monitoring or historic archaeological investigations

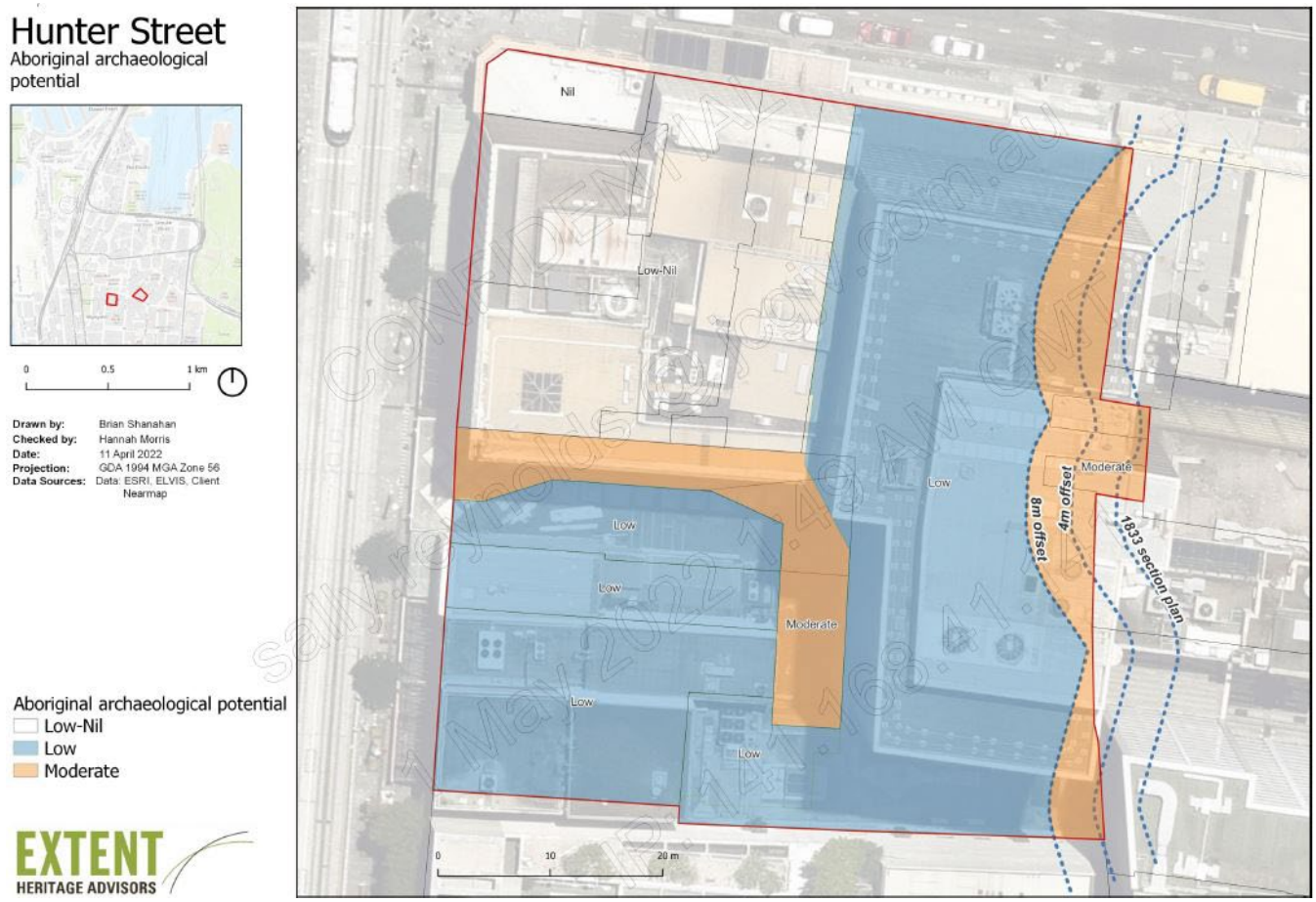


Figure 3: Areas of Aboriginal archaeological potential within the Hunter Street Station west site (Extent 2022, p. 119)

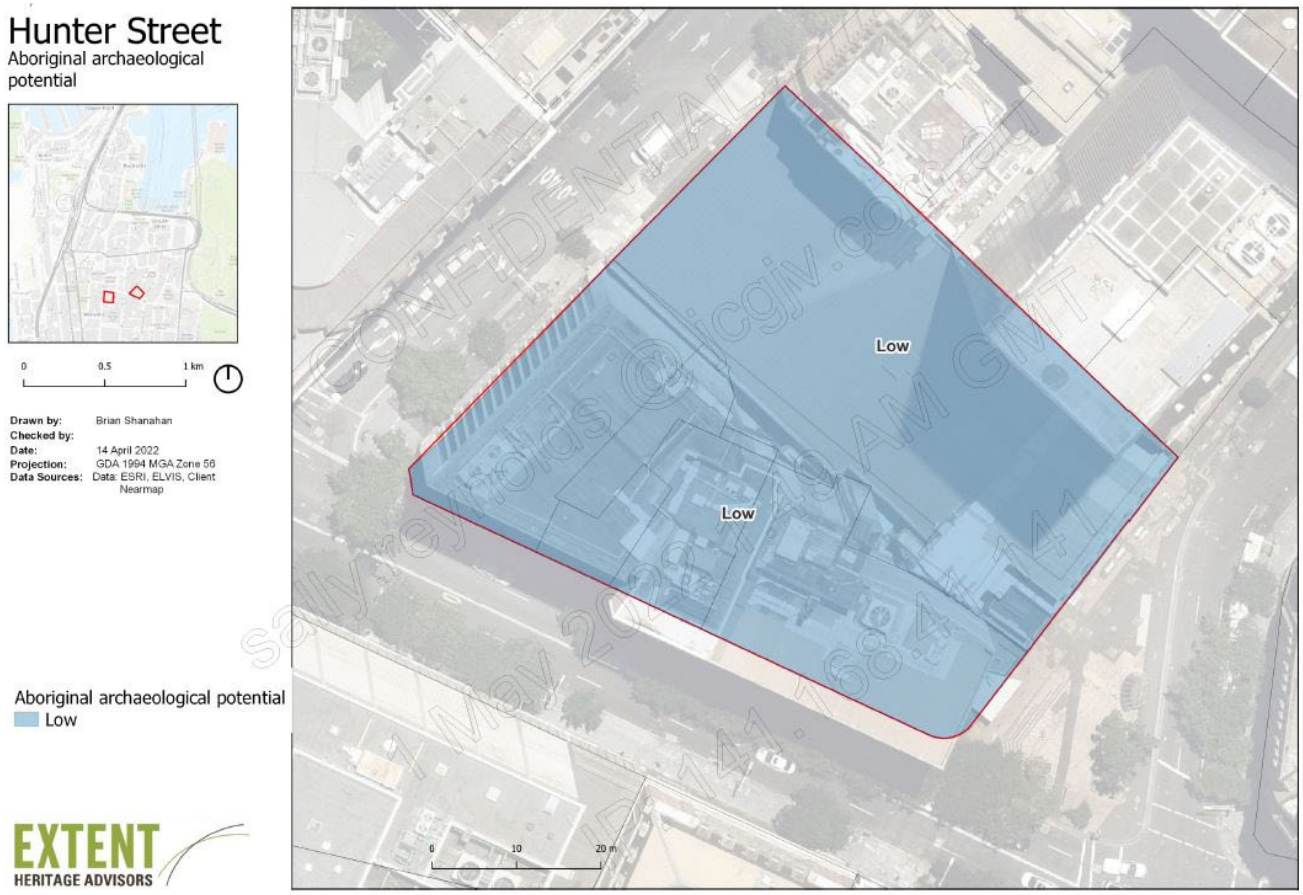


Figure 4: Areas of Aboriginal archaeological potential within the Hunter Street Station east site (Extent 2022, p. 121)

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.

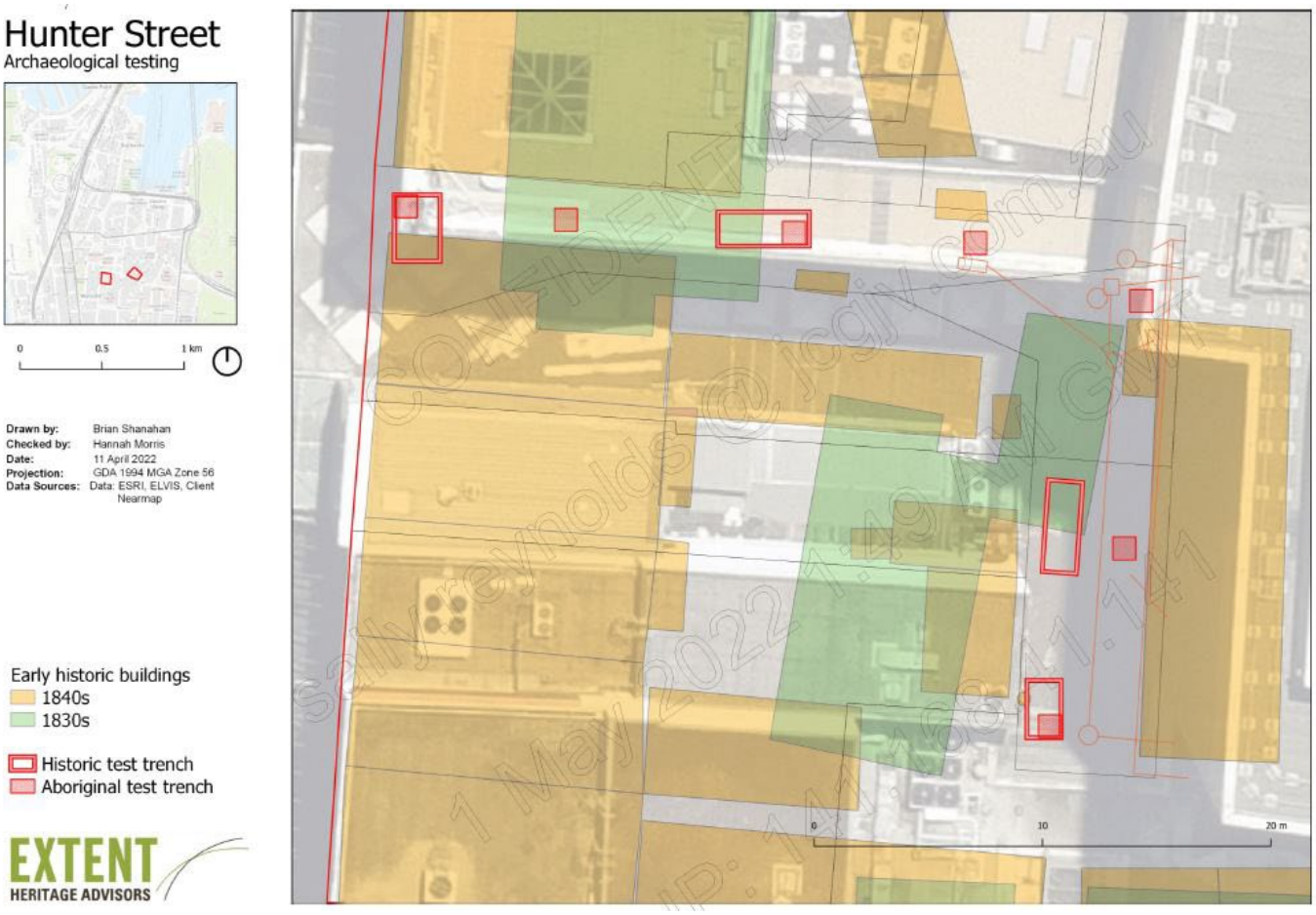


Figure 5: Proposed location of Aboriginal archaeological test trenches at De Mestre Place (Extent 2022 p. 161).

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).

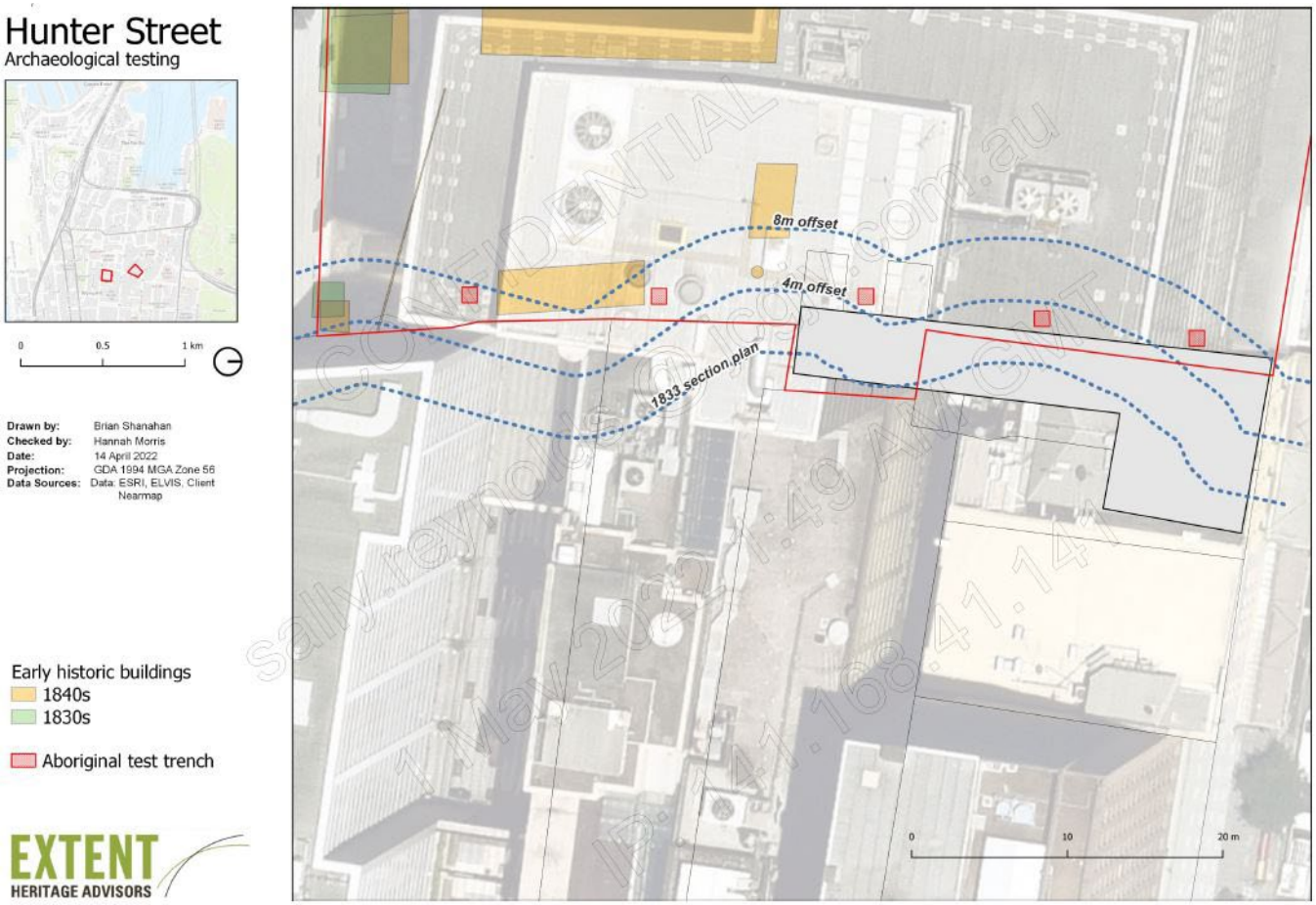


Figure 6: Proposed location of Aboriginal archaeological test trenches along the Tank Stream (Extent 2022 p. 167).

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 16 and Table 19. 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, a cosmetic damage criterion of 2.5 mm/s peak component particle velocity (from 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 16: 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	▪ Unlisted	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
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

Item	Address	Statutory Listings	Significance	Potential Impacts	Mitigation Measures
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	-
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	-

Item	Address	Statutory Listings	Significance	Potential Impacts	Mitigation Measures
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	-
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	-

Item	Address	Statutory Listings	Significance	Potential Impacts	Mitigation Measures
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	-
Terrace house ‘Horbury House’	171-173 Macquarie Street, Sydney	▪ SLEP 2012 Item no. I1877	Local	▪ Neutral (Vibration) ▪ Negligible (Settlement) Overall impact: Negligible	-

Item	Address	Statutory Listings	Significance	Potential Impacts	Mitigation Measures
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	-

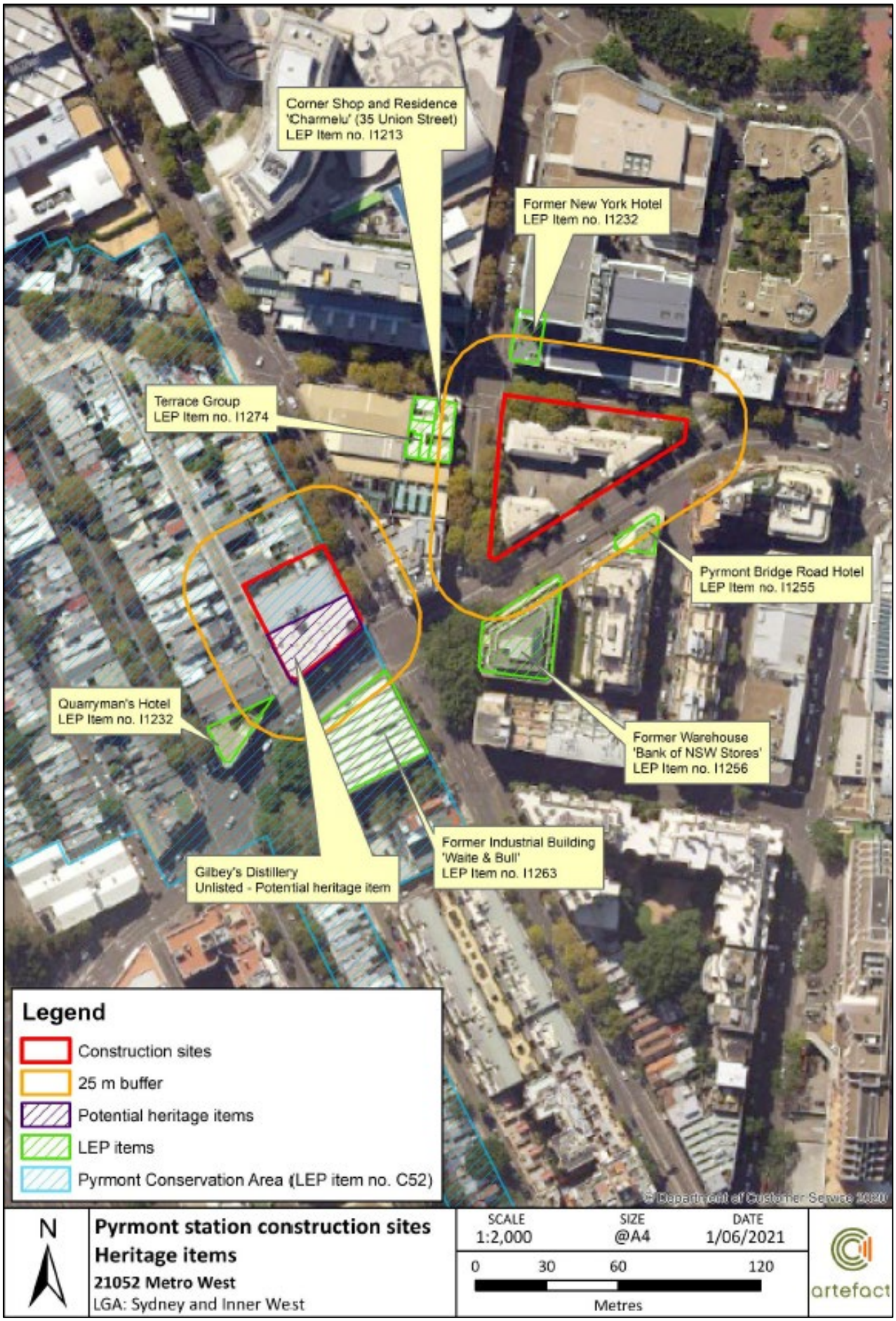


Figure 7: Heritage items in the vicinity of the Pyrmont Station construction sites (Artefact 2021, p. 127)

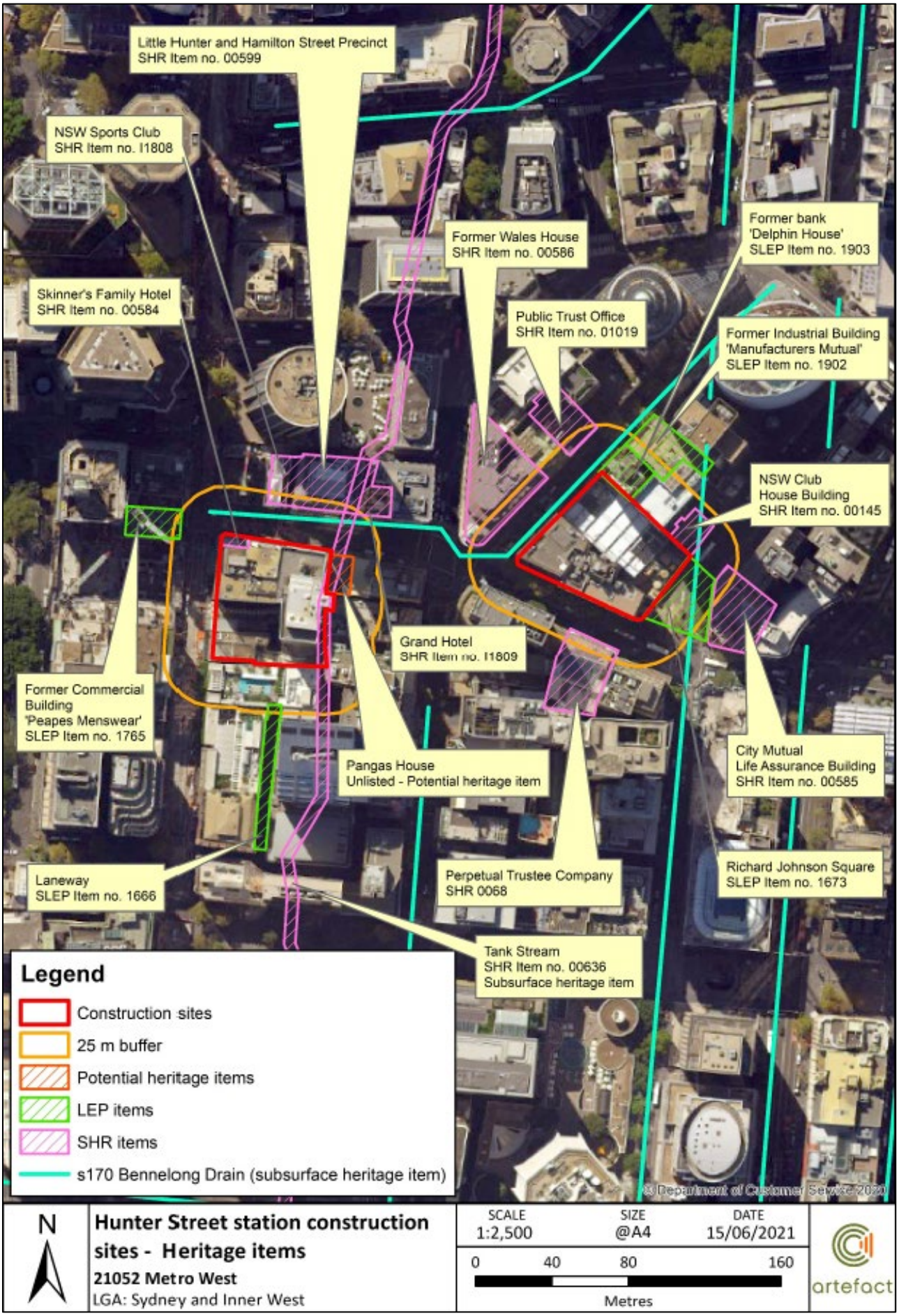


Figure 8: Heritage items in the vicinity of the Hunter Street Station construction sites (Artefact 2021, p. 157)

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
- Mike Hincks, Senior Historic Heritage Consultant, AMBS.

Ms Ramage and Mr Hincks 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.

A separate application for the approval of the Excavation Director under Condition D16 will be submitted to the Planning Secretary prior to the commencement of archaeological excavations. This application will outline the experience of the excavation directors in relation to the appropriate criteria.

Ms Ramage and Mr Hincks will be supported by AMBS' nominated Site Director James Cole, Historic Heritage Consultant, 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 17. Areas of archaeological potential as identified in the ARDs are shown in Figure 9, Figure 10 and Figure 11.

Table 17: 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 if archaeological potential that will be impacted by construction, including areas of potential identified during monitoring	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.

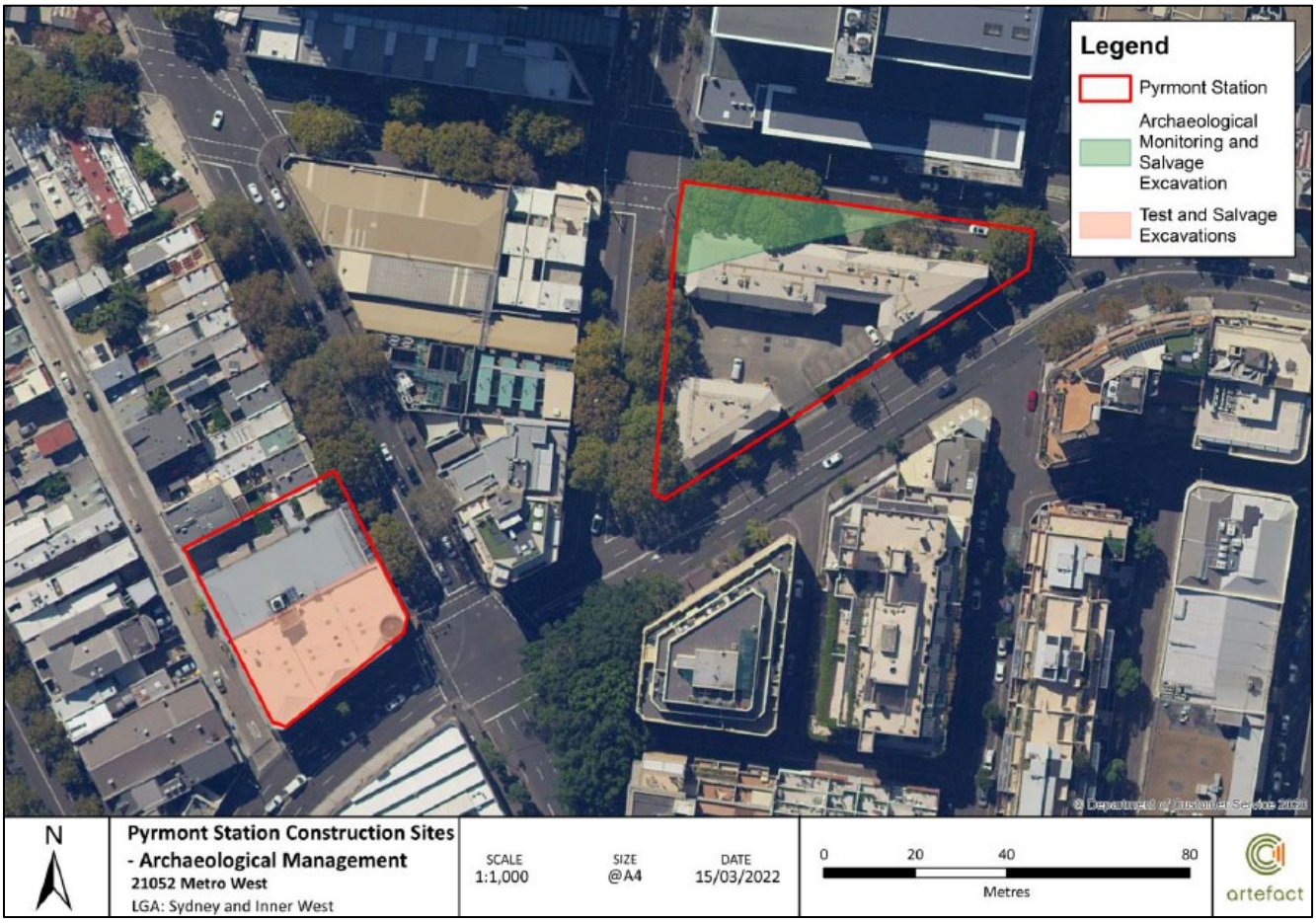


Figure 9: Areas of historical archaeological potential within the Pyrmont Station construction sites (Artefact 2022, p. 149)

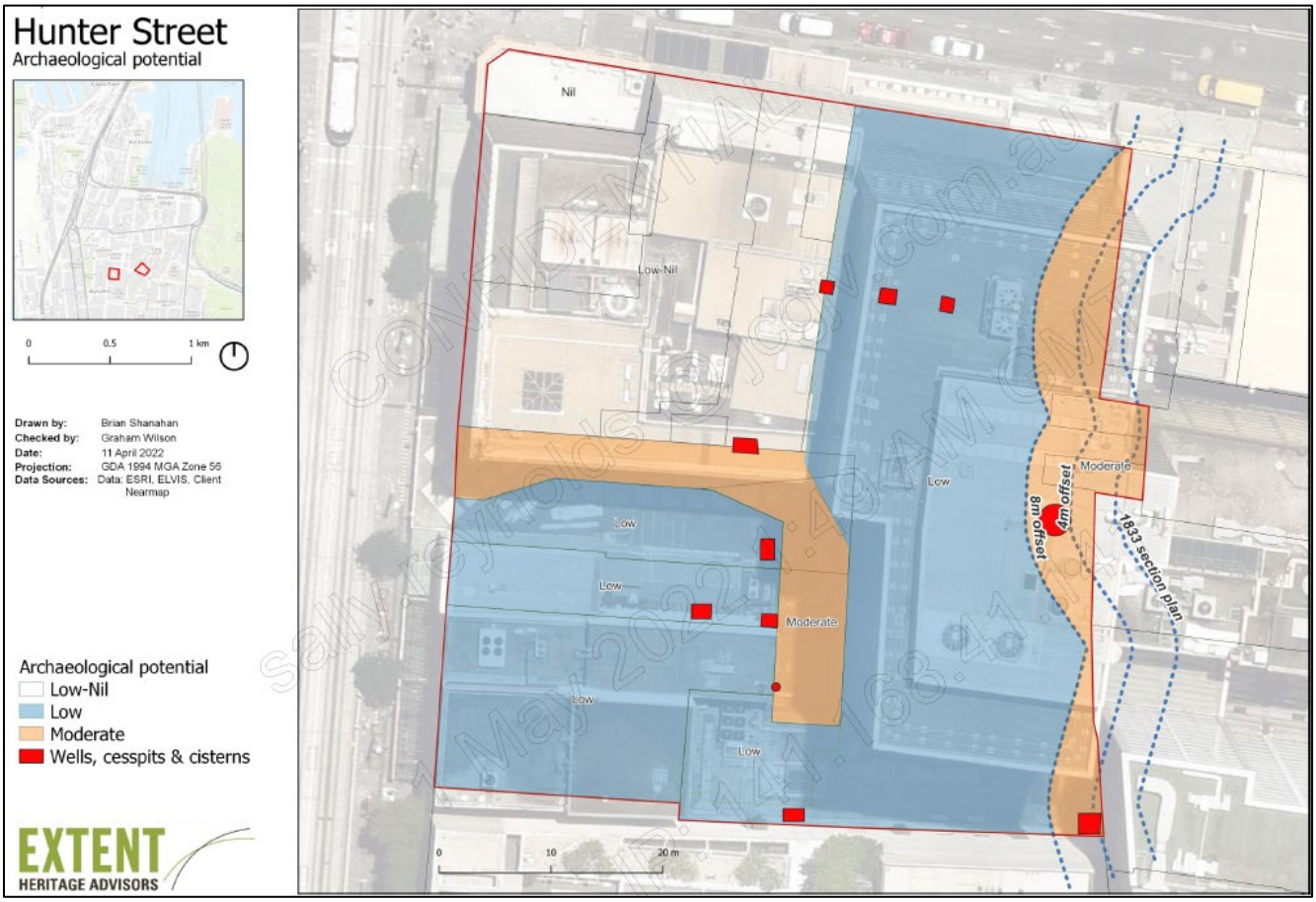


Figure 10: Areas of historical archaeological potential within the Hunter Street Station West Site (Extent 2022, p. 130)

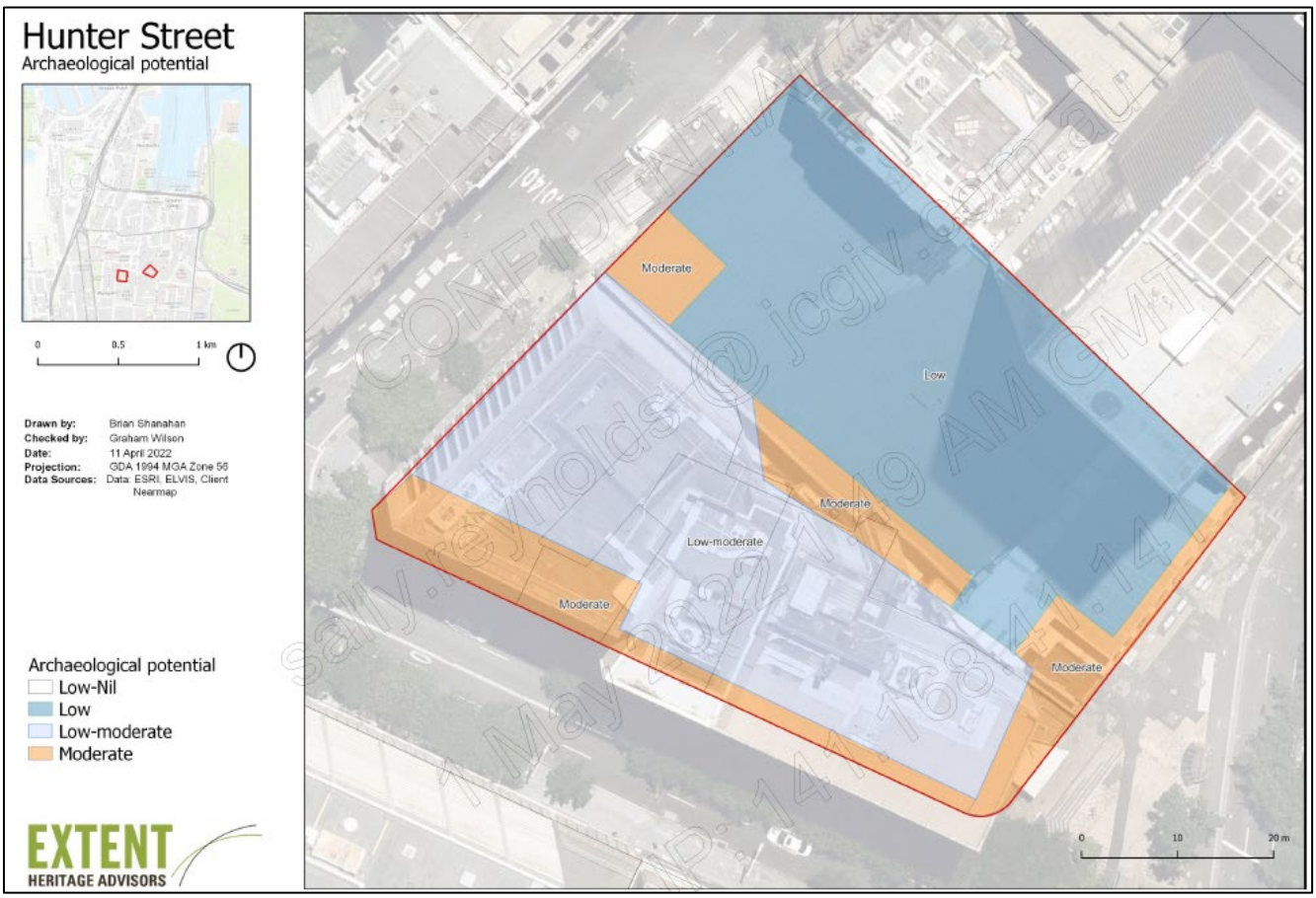


Figure 11: Areas of historical archaeological potential within the Hunter Street Station East Site (Extent 2022, p. 136)

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 18.

Table 18: 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		
Preliminary Report	▪ Integrated report with findings of both Aboriginal and historical test excavations	To be prepared following the completion of excavation and artefact recording activities, and provided to RAPs and Sydney Metro
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 ▪ 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 ▪ 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

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 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 19: 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 20 are recognised as hold points and will not proceed without objective review and approval by the nominated authority.

Table 20: 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 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 21.

Table 21: 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 22: 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 23: 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 24: 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 25: 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 19	**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 19	**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 19.	**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 19.	**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 19.	**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.	Refer to Section 7.1, Section 8.4 and Table 19.	**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 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 implemented throughout the entire archaeological excavation programs.	Refer to Section 8.4 and Table 19.	**Environmental Advisor** Excavation Director	Final excavation reports	Construction
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	Refer to Section 8.4 and Table 19.	Excavation Director	Excavation Director application	Pre-construction

ID	Requirements (Conditions)	JCG Response	Responsibility	Deliverables	Timing
	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. 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.			DPE approval	
D17	Following completion of all work described in the documents listed in Condition A1 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 18	**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 18.	**Environment, Approvals and Sustainability Director**	Final excavation reports	Construction
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 19 and Appendix A	**Site Supervisor** Environmental Advisor Aboriginal Heritage Excavation Director Excavation Director Heritage Consultant	Heritage advice	Pre-construction Construction

ID	Requirements (Conditions)	JCG Response	Responsibility	Deliverables	Timing
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 19 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 19 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 19.	**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 mm/s peak component particle velocity (from DIN 4150) must be applied.	Refer to Section 8.1 and Table 19.	**Environment, Approvals and Sustainability Director** Heritage consultant Noise and Vibration consultant	Vibration testing results	Construction
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	Refer to Section 8.1	**Project Manager**	Settlement monitoring results	Construction

ID	Requirements (Conditions)	JCG Response	Responsibility	Deliverables	Timing
	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.				

Revised Environmental Mitigation Measures

Table 26: 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 19.	**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 19.	**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 19.	**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 19.	**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 19.	**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 19.	**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 19.	**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 19.	**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 19.	**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 19.	**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 27: 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 19.

Construction Environmental Management Framework

Table 28: 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 25, Table 26 and Table 28)
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 23
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)

Unexpected Heritage Finds Procedure

SM-20-00099497

Metro Body of Knowledge (MBoK)

Applicable to:	Sydney Metro
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1. Introduction

1.1. Purpose

This Procedure has been prepared to provide a consistent approach to the management of unexpected Aboriginal and non-Aboriginal heritage uncovered during Sydney Metro activities. It applies to all Sydney Metro activities, both the pre-construction (prior to the Construction Heritage Management Plan approval) and construction phase (post Construction Heritage Management Plan approval) and pre or post-approval activities that are subject to the NSW *Heritage Act (1977)* (Heritage Act) and the *National Parks and Wildlife Act 1974* (NPW Act).

In NSW, there are strict laws to protect and manage both Aboriginal and non-Aboriginal heritage. As a result, appropriate management measures need to be implemented to avoid or minimise impacts, ensure compliance with statutory requirements, and to minimise the risk of penalties to individuals, Sydney Metro and its contractors. This Procedure includes Sydney Metro's heritage notification obligations under the Heritage Act, NPW Act and the *Coroner's Act 2009* and the requirements of the conditions of approval (CoA) issued by NSW Department of Planning, Industry and Environment.

Note that a Contractor must not amend this Procedure or use a different procedure without the prior approval of Sydney Metro.

This Procedure must be read in conjunction with the relevant approval conditions, contract documents and other plans and procedures including SM-20-00099495 Exhumation Management Procedure, in addition to any other relevant documents as developed by the contractor for the delivery of Sydney Metro activities.

1.2. Scope

This Procedure applies to the discovery of any unexpected heritage item, where the find is not anticipated in an approved Archaeological Research Design (ARD) or Archaeological Method Statement (AMS) or other project specific document related to heritage. It applies to all Sydney Metro activities.

This Procedure must be followed by all Sydney Metro staff, contractors, subcontractors or any person undertaking work for Sydney Metro. It includes references to some of the relevant legislative and regulatory requirements, but is not intended to replace them.

This Procedure *does not apply* to the discovery and disturbance of a heritage items:

- As a result of investigations being undertaken in accordance with the *Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW4376 2010*; an Aboriginal Heritage Impact Permit (AHIP) issued under the NPW Act; or a permit approval issued under the Heritage Act; or
- As a result of construction related activities, where the disturbance is permissible in accordance with an AHIP or an approval issued under the Heritage Act or State Significant Infrastructure (SSI)/State Significant Development (SSD) planning approval; or
- Of local significance, where the find is identified and anticipated to occur in an AMS or ARD.

Construction Environment Management Plans (CEMP) should reference or include this Procedure. Where there is an approved CEMP, it must be followed in the first instance. Where there is a difference between approved CEMPs and this Procedure, the approved CEMP must be followed. Where an approved CEMP does not provide sufficient detail on particular issues, this Procedure should be used as a reference.

1.3. Definitions and abbreviations

1.3.1. What is an unexpected heritage find?

An 'unexpected heritage find' can be defined as a:

- Unanticipated discovery of an Aboriginal object or archaeological work or relic, which Sydney Metro does not have approval to disturb and/or is not covered under an existing management process or plan
- Find that has not been identified or assessed in a project assessment or document related to heritage
- Find that is not referenced in an archaeological research design (ARD) or archaeological method statement (AMS)
- Find that is not covered by an existing approval under the NPW Act or Heritage Act.

1.3.2. Abbreviations

All terminology in this Procedure is taken to mean the generally accepted or dictionary definition. Acronyms and terms specific to this document are listed below.

Other terms and jargon are defined within the SM-17-00000203 Sydney Metro Glossary.

Table 1: Terms/acronyms and definitions

	Definitions
Aboriginal object	An Aboriginal object is any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains. An Aboriginal object may include a shell midden, stone tools, bones, rock art, Aboriginal-built fences and stockyards, scarred trees and the remains of fringe camps.
AHIP	Aboriginal Heritage Impact Permit.
AMS	Archaeological Method Statement.
ARD	Archaeological Research Design.
CEMP	Construction Environmental Management Plan.
CoA	Conditions of Approval.
CSSI	Critical State Significant Infrastructure.
Disturbance	Disturbance is considered to be any physical interference to an item that results in it being destroyed, defaced, damaged, harmed, impacted or altered in any way (this includes archaeological investigation activities).
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*.

	Definitions
Excavation Director	A person that has been determined by the Heritage Council of NSW or delegate to meet the Criteria for Assessment of Excavation Directors (4 September 2019 and as updated) and can therefore competently archaeologically investigate a site of either local and/or state significance.
Heritage Act	NSW *Heritage Act 1977*.
Heritage NSW	Formerly Office of Environment and Heritage (OEH). Now Heritage NSW as part of the Department of Premier and Cabinet NSW.
NPW Act	NSW *National Parks and Wildlife Act 1974*.
Relic (non-Aboriginal heritage)	A relic means any deposit, artefact, object or material evidence that: a) Relates to the settlement of the area that comprises NSW, not being Aboriginal settlement; and b) Is of State or local significance.
SSD	State Significant Development.
SSI	State Significant Infrastructure.
Work (non-Aboriginal heritage)	Archaeological features such as historic utilities or buried infrastructure that provide evidence of prior occupations such as former rail or tram track, timber sleepers, kerbing, road pavement, fences, culverts, historic pavement, buried retaining walls, cisterns, conduits, sheds or building foundations, but are also subject to assessment by the Excavation Director to determine its classification.

1.4. Accountabilities

The Director, Environment, Sustainability & Planning is accountable for this Procedure including approving the document, monitoring its effectiveness and performing a formal document review.

Direct Reports to the Chief Executive are accountable for ensuring the requirements of this Procedure are implemented within their area of responsibility.

Direct Reports to the Chief Executive who are accountable for specific projects/programs are accountable for ensuring associated contractors comply with the requirements of this Procedure.

2. Types of unexpected heritage finds and their statutory protections

Project, field and environmental personnel (including construction contractors) are critical to the early identification and protection of unexpected heritage finds.

Appendix A: Examples of unexpected heritage finds illustrates the wide range of heritage items uncovered to date during Transport for NSW projects and provides an understanding of what unexpected finds may look like.

Unexpected heritage finds are categorised as either:

(a) Aboriginal objects;

(b) Historic (non-Aboriginal) heritage items; or

(c) Human skeletal remains.

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

2.1. Aboriginal objects

The NPW Act provides the basis for the care, protection and management of Aboriginal objects and places in NSW.

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

An 'Aboriginal place' is an area declared by the Minister administering the Act to be of special significance with respect to Aboriginal culture. An Aboriginal place does not have to contain physical evidence of occupation (such as Aboriginal objects).

Under section 87 of the Act, it is an offence to harm or desecrate an Aboriginal object or place. There are strict liability offences. An offence cannot be upheld where the harm or desecration was authorised by an AHIP and the permit's conditions were not contravened. Defences and exemptions to the offence of harming an Aboriginal object or Aboriginal place are provided in section 87, 87A and 87B of the Act. A person must notify Heritage NSW if a person is aware of the location of an Aboriginal object.

Penalties for some of the offences can include two years imprisonment and/or up to $550,000 (for individuals), and a maximum penalty of $1.1 million (for corporations).

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

IMPORTANT!

All Aboriginal objects, regardless of significance, are protected under law.

If any impact is expected to an Aboriginal object, an AHIP is usually required from Heritage NSW. When a person becomes aware of an Aboriginal object they must notify the Director-General of Heritage NSW about its location. Assistance on how to do this is provided in section 4 (Step 5).

2.2. Historic (non-Aboriginal) heritage items

The Heritage Act provides for the care, protection and management of heritage items in NSW. Historic (non-Aboriginal) heritage items include:

- Archaeological 'relics' as defined under the Heritage Act; and
- Other items such as works, buildings or movable objects, which are not considered 'relics' under the Act.

2.2.1. Archaeological relics

Under section 139, it is an offence to disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed, unless the disturbance or

excavation is carried out in accordance with an excavation permit issued by Heritage NSW under the Act.

A relic is defined as: *'any deposit, artefact, object or material evidence that: (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and (b) is of State or local heritage significance.'*

A person must notify Heritage NSW, if a person is aware or believes that they have discovered or located a relic (section 146). Penalties for offences under the Heritage Act can include six months imprisonment and/or a fine of up to $1.1million.

IMPORTANT!

All relics are subject to statutory controls and protection.

If a relic is likely to be disturbed, an approval is usually required from the Heritage Council of NSW. When a person discovers a relic, they must notify the Heritage Council of NSW of its location.

2.2.2. Other items

Some historic heritage items are not considered to be 'relics', but are instead referred to as works, buildings, structures or movable objects. Examples of these items that may be encountered include culverts, historic pavements, retaining walls, tramlines, rail tracks, turn tables, timber sleepers, cisterns, fences, sheds, buildings and conduits.

Usually archaeological relics are uncovered via a process of excavation or soil removal. When an unexpected find is uncovered, an archaeological excavation permit under section 140 or section 60 of the Heritage Act may be required to further investigate or remove it if investigation is not covered by an existing approval. In contrast, 'other historic items' either exist above the ground surface (for example a shed), or they are designed to operate and exist beneath the ground surface (for example a culvert).They may also need a permit to alter, disturb or remove them if there is not an approval already in place.

2.3. Human skeletal remains

SM-20-00099495 Exhumation Management Procedure provides a more detailed explanation of the approval processes related to human skeletal remains.

Human skeletal remains can be classified as:

- Reportable deaths;
- Aboriginal objects; or
- Relics

Where it is suspected that less than 100 years has elapsed since death, human skeletal remains come under the jurisdiction of the State Coroner and the *Coroners Act 2009* (NSW). Under s35(2) of the Act, a person must report a death to a police officer, a coroner or an assistant coroner as soon as possible. This applies to all human remains less than 100 years old regardless of ancestry. Public health controls may also apply.

Where the remains are suspected of being more than 100 years old, they are considered to be either Aboriginal objects or non-Aboriginal relics, depending on the ancestry of the

individual. Aboriginal human remains are protected under the NPW Act, while non-Aboriginal heritage remains are protected under the Heritage Act.

The discovery of Aboriginal human remains also triggers notification requirements to the Commonwealth Minister for the Environment under s20 (1) of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984.*

IMPORTANT!

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

All bones must be treated as potential human skeletal remains and work around them must stop while they are appropriately protected and investigated, the relevant authorities notified and approvals received.

3. Unexpected heritage finds procedure

In the event that an unexpected find is encountered on a Sydney Metro project, the steps summarised in Figure 1 and detailed in Table 2 must be followed. There are seven steps in the procedure.

IMPORTANT!

Sydney Metro may have approval to impact certain heritage items during construction. If you think that you may have discovered a heritage item and you are unsure whether an approval is in place or not, **STOP** work and follow this Procedure.

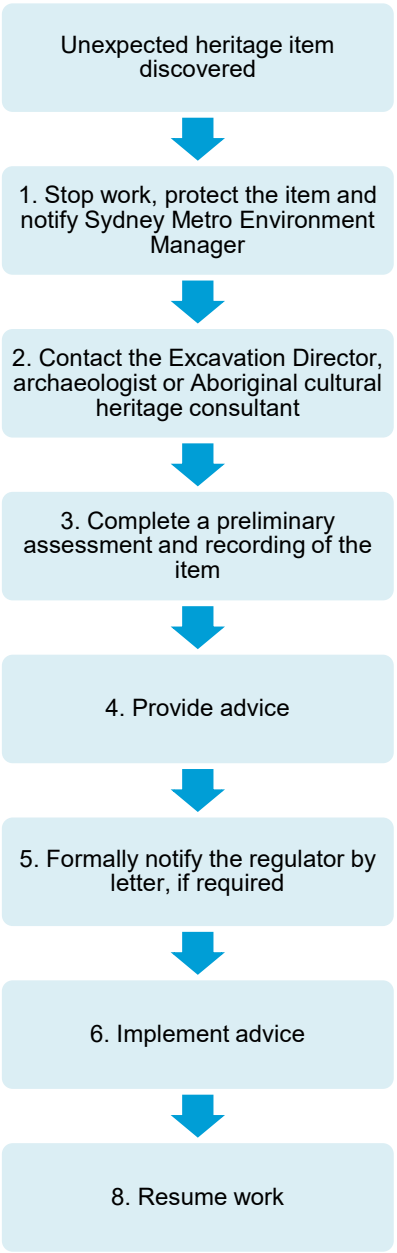


Figure 1: Summary of steps to be taken on the discovery of an unexpected heritage item

Table 2: Specific tasks to be implemented following the discovery of an unexpected heritage item

Step	Task	Responsibility	Guidance and tools
1	**Stop work and protect the item**		
1.1	Stop all work in the immediate area of the item and notify the Project Manager	Contractor/ Supervisor	Appendix A: Examples of unexpected heritage finds
1.2	Establish a 'no-go zone' around the item. Use high visibility fencing, where practical. No ground disturbing work is to be undertaken within this zone until further archaeological investigations are completed, and if required, appropriate approvals are obtained. Inform all on-site personnel about the no-go zone.	Contractor's Project Manager or Supervisor	
2	**Engage an archaeologist**		
2.1	Contact the nominated Excavation Director, archaeologist or Aboriginal cultural heritage consultant to discuss the location and nature of the item and arrange an inspection. The project CEMP should contain the contact details of the archaeologist. Provide as much information as possible to the Excavation Director, archaeologist or Aboriginal cultural heritage consultant, including photographs of the item. Inform the Sydney Metro Environment Manager, and keep them involved in the process. The Environment Manager will inform the Sydney Metro Senior Heritage Advisor.	Contractor's Project Manager	
2.2	Where there is no project Excavation Director, archaeologist or Aboriginal cultural heritage consultant engaged for the work, engage a suitably qualified consultant to assess the find. If the find is likely to be an Aboriginal object, engage a suitably qualified and experienced Aboriginal cultural heritage consultant. If the find is a non-Aboriginal heritage item, engage a suitably qualified and experienced historical archaeological consultant.	Contactor's Project Manager	
3	**Preliminary assessment and recording**		
3.1	Occasionally, the Excavation Director, archaeologist or Aboriginal cultural heritage consultant may determine from the photographs provided at Step 2.1 that it is not necessary to inspect the item because no heritage constraint exists for the project (for example the item is not an Aboriginal object or archaeological relic). This advice should be provided in writing (for example via email or letter with the consultant's name and company clearly identifiable) to the Sydney Metro Project Manager, Environment Manager and Senior Heritage Advisor.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant	Proceed to Step 7
3.2	Arrange access for the Excavation Director, archaeologist or Aboriginal cultural heritage consultant to inspect the item as soon as practicable. In most cases, a site inspection is required to conduct a preliminary assessment.	Contactor's Project Manager/ Excavation Director	

Step	Task	Responsibility	Guidance and tools
3.3	Subject to the Excavation Director, archaeologist or Aboriginal cultural heritage consultant's assessment, work may recommence at a set distance from the item. This is to protect any other archaeological evidence that may exist in the vicinity, which may have not yet been uncovered. The 'no-go zone' established in Step 1.2 may need to be adjusted to reflect the area of archaeological potential, as determined by the Excavation Director, archaeologist or Aboriginal cultural heritage consultant.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant/ Contractor's Project Manager	
3.4	Has the item been damaged or harmed? If yes, record the incident in the Incident Management System. Implement any additional reporting requirements related to the planning approval and CEMP where relevant	Contractor's Project Manager/ Excavation Director, archaeologist or Aboriginal cultural heritage consultant	
3.5	Can the work avoid further impact to the item? Project Manager to confirm with Sydney Metro Environment Manager.	Contractor's Project Manager	
3.6	Record the item and complete the Unexpected Heritage Item Recording Form.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant	Appendix B: Unexpected heritage find recording form Appendix C: Photographing unexpected heritage items
3.7	Is the item likely to be bone? If yes, follow the steps in Appendix D 'Uncovering bones'. Where it is obvious that the bones are human remains, you must notify the local police by telephone immediately. They may take command of all or part of the site. Also refer to SM-20-00099495 Exhumation Management Procedure. If no, proceed to the next step.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant	
3.8	The Excavation Director, archaeologist or Aboriginal cultural heritage consultant may provide advice after the inspection and preliminary assessment that no heritage constraint exists for the project (for example the item is not an Aboriginal object or relic). This advice should be provided in writing (for example via email or letter with the consultant's name and company clearly identifiable) to the Sydney Metro Project Manager, Environment Manager and Senior Heritage Advisor.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant	Proceed to Step 7
3.9	Where required, seek additional specialist technical advice (such as a forensic or physical anthropologist to identify skeletal remains). The Excavation Director, archaeologist or Aboriginal cultural heritage consultant can provide contacts for such specialist consultants.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant	

Step	Task	Responsibility	Guidance and tools
4	**Provide advice**		
4.1	The Excavation Director, archaeologist or Aboriginal cultural heritage consultant should provide written advice with input from Registered Aboriginal Parties where appropriate. The plan should include as a minimum a) a description of the item, b) an assessment of the significance of the item, c) approval or statutory notification requirements, d) reporting requirements, e) consultation requirements, and f) relevance to other project approvals or management plans.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant	Appendix D: Archaeological/heritage advice checklist **Other references** DECCW 2010, Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 DECCW 2010, Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW Heritage Branch 2009, Assessing Significance for Historical Archaeological Sites and 'Relics'
4.2	In preparing the advice, the Excavation Director, archaeologist or Aboriginal cultural heritage consultant must review the CEMP, heritage sub-plans, conditions of project approval and associated heritage assessment documentation (for example an Environmental Impact Statement Technical Paper). The Excavation Director, archaeologist or Aboriginal cultural heritage consultant must determine if the item is consistent with previous heritage or project approvals or management plans. The Project Manager must provide all relevant documents to the Excavation Director to assist with this.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant/ Contractor's Project Manager	
4.3	The Excavation Director, archaeologist or Aboriginal cultural heritage consultant must submit this advice as a report, letter or email to the Project Manager as soon as practicable.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant	
4.4	The Project Manager, Sydney Metro Environment Manager and Sydney Metro Senior Heritage Advisor should review the advice to ensure that all requirements are addressed and can be reasonably implemented.	Consultant's Project Manager/ Sydney Metro Environment Manager/ Sydney Metro Senior Heritage Advisor	
5	**Notify the regulator, if required**		
5.1	Based on the advice and any statutory requirements, is notification to Heritage NSW and the Secretary required? If no, proceed directly to Step 6. If yes, proceed to next step.	Sydney Metro Environment Manager/ Sydney Metro Senior Heritage Advisor	

Step	Task	Responsibility	Guidance and tools
5.2	If notification is required, complete the template notification letter and forward with supporting documentation (including advice obtained at Step 4) to the Sydney Metro Environment Manager. The Environment Manager will seek the approval of the Sydney Metro Senior Heritage Advisor and the signature of the Director Project Environment, Sustainability & Planning or Director Environment, Sustainability & Planning	Sydney Metro Environment Manager	Appendix E: Template notification letter
5.3	Forward the signed notification letter to Heritage NSW once approved and cc Sydney Metro. Informal notification (via a phone call or email) to Heritage NSW prior to sending the letter is appropriate. The advice and completed Unexpected Heritage Item Recording Form (Appendix B) must be submitted with the notification letter (for both Aboriginal objects and non-Aboriginal relics). If the item is an archaeological relic as defined under the Act, a section 146 notification form must also be completed and sent to Heritage NSW as part of the notification.	Sydney Metro Environment Manager	Appendix B: Unexpected heritage find recording form Appendix E: Template notification letter
5.4	A copy of the final signed notification letter, archaeological or heritage management plan and the Unexpected Heritage Item Recording Form is to be kept on file and a copy sent to the Sydney Metro Project Manager	Sydney Metro Environment Manager/ Contractor's Project Manager	
6	**Implement advice**		
6.1	The advice should be modified to take into account any additional advice resulting from notification and discussions with the regulator if required.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant/ Contractor's Project Manager	
6.2	Implement advice. Where impact cannot be avoided, this could include a formal assessment of heritage significance and impact assessment, preparation of excavation or recording methodologies, consultation with Registered Aboriginal Parties and obtaining heritage approvals if required.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant/ Contractor's Project Manager	DECCW 2010, Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 DECCW 2010, Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW
6.3	Where heritage approvals are required, contact the Sydney Metro Environment Manager for further advice and support. Please note there are time constraints associated with heritage approval preparation and processing.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant/ Contractor's Project Manager	

Step	Task	Responsibility	Guidance and tools
6.4	For SSI or SSD projects, or projects approved under Part 5 of the EP&A Act, assess whether the heritage impact is consistent with the project approval or if project approval modification is required from the Department of Planning, Industry and Environment or the relevant consent authority.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant/ Contractor's Project Manager	
6.5	Where statutory approvals (or project modifications) are required, impact upon Aboriginal objects or relics must not occur until heritage and planning approvals have been issued by the appropriate regulator.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant/ Contractor's Project Manager	
6.6	Where statutory approval is not required but where recording is recommended by the Excavation Director, archaeologist or Aboriginal cultural heritage consultant, sufficient time and resources must be allowed for this to occur.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant/ Contractor's Project Manager	
6.7	Ensure short term and permanent storage locations are identified for archaeological material or other heritage material recovered from site, where required. Interested third parties (for example local Aboriginal land councils, local councils or museums) should be consulted on this issue. Contact the Excavation Director, archaeologist or Aboriginal cultural heritage consultant for advice on this issue.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant/ Contractor's Project Manager	
7	**Resume work**		
7.1	Seek written clearance to resume project work from the Excavation Director, archaeologist or Aboriginal cultural heritage consultant. Clearance would only be given once all archaeological excavation or heritage recommendations and approvals (where required) are complete. Resumption of project work must be in accordance with all the relevant project and heritage approvals/determinations.	Contractor's Project Manager	
7.2	If required, ensure archaeological excavation/heritage reporting and other heritage approval conditions are completed in the required timeframes. This includes artefact retention repositories, conservation and/or disposal strategies.	Excavation Director, archaeologist or Aboriginal cultural heritage consultant/ Contractor's Project Manager	
7.3	If additional unexpected heritage items are discovered, this procedure must begin again from Step 1.	All	

4. Responsibilities

Table 3: Roles and responsibilities

Role	Responsibility
Contractor/Supervisor	• Stop work immediately when an unexpected heritage item is encountered. Cordon off area until Contractor Environmental Manager/Excavation Director, archaeologist or Aboriginal cultural heritage consultant advises that work can recommence. • Manage the process of the identification, protection and mitigation of impacts on the heritage item. • Liaise with the Sydney Metro Project Manager, Environment Manager and Senior Heritage Advisor. • Assist the Excavation Director, archaeologist or Aboriginal cultural heritage consultant with mitigation and statutory requirements. • Complete Incident Report and review CEMP for any changes that may be required. Proposed amendments to the CEMP if any changes are required.
Contractor's Project Manager	Ensure all aspects of this Procedure are implemented. Advise the Contractor/Supervisor to recommence work if all applicable requirements have been satisfied and the Contractor Environmental Manager/ Excavation Director, archaeologist or aboriginal cultural heritage consultant has approved recommencement of work.
Contractor's Excavation Director/ archaeologist or Aboriginal cultural heritage consultant	Provide expert advice to the Contractor and Sydney Metro Environment Manager on find identification, significance, mitigation, legislative procedures and requirements.
Environmental Representative	Ensure compliance with relevant approvals (new and existing) and the Construction Environment Management Plan.
Sydney Metro Environment Manager	Notify the Director Project Environment, Sustainability & Planning of find and help support Contractor with managing Incident Reporting.
Sydney Metro Senior Heritage Advisor	Provide expert advice to Sydney Metro Environment Manager and project as required.

5. Seeking advice

Advice on this Procedure should be sought from the Sydney Metro Environment Manager in the first instance. Contractors and delivery partners should ensure their own project environment managers are aware of and understand this Procedure.

Technical archaeological or heritage advice regarding an unexpected heritage item should be sought from a suitably qualified and experienced archaeologist/Aboriginal heritage consultant.

6. Related documents and references

Related documents and references
• SM-20-00099495 Exhumation Management Procedure • SM-17-00000096 Environmental Incident Classification and Reporting Procedure • SM-21-00280658 Unexpected Heritage Find Recording Form • SM-21-00280680 Archaeological Heritage Advice Checklist • SM-21-00280708 Unexpected Heritage Discovery Notification Letter Template • 3TP-SD-015/7.0 Transport for NSW Guide to Environmental Control Map • Roads and Maritime Services, November 2015, Unexpected Heritage Items Heritage Procedure 02 • SM-17-00000203 Sydney Metro Glossary • Department of Environment, Climate Change and Water 2010, Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 • Department of Environment, Climate Change and Water 2010, Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW • Heritage Branch Department of Planning 2009, Assessing Significance for Historical Archaeological Sites and 'Relics'

7. Superseded documents

Superseded documents
There are no documents superseded as a result of this document.

8. Document history

Version	Date of approval	Notes
1.1	June 2017	Incorporates Environmental Representative comments
1.2	-	Amends p13 step 8 reference to s146
1.3	-	Incorporates Planning Mods 1-4 including amended CoA E20
1.4	March 2018	Incorporates Environmental Representative comments
2.0	-	Removes SSI 15-7400 COA reference
3.0	-	Revises definitions
3.1	-	Revises procedure
3.2	-	Revises roles and responsibilities
3.3	-	Minor edits and corrections
4.0	16 August 2021	Revises definitions and procedure; references the Sydney Metro Exhumation Management Procedure v5 with amendments throughout for consistency with that document. Updates to related documents and references.

Appendix A: Examples of unexpected heritage finds



Figure 2: Aboriginal stone artefacts found at the Wickham Transport Interchange, 2015



Figure 3: Aboriginal artefacts (shell material) found at the Wickham Transport Interchange, 2015



Figure 4: 1840s seawall and 1880s retaining wall uncovered at Balmain East, 2016



Figure 5: Sandstone pavers uncovered at Balmain East, 2016



Figure 6: Platform at Hamilton Station classified as a 'work' by the project archaeologist, Wickham Transport Interchange project, 2015



Figure 7: Sandstone flagging and cesspit, Wynyard Walk project, 2014



Figure 8: Chinese Ming Dynasty pottery and English porcelain/pottery dating back to the early nineteenth century, Wynyard Walk project, 2014



Figure 9: Pottery made by convict potter Thomas Ball during the early settlement period, Wynyard Walk project, 2014



Figure 10: Top left hand picture continuing clockwise: Stock camp remnants (Hume Highway Bypass at Tarcutta); linear archaeological feature with post holes (Hume Highway Duplication), animal bones (Hume Highway Bypass at Woomargama); cut wooden stake; glass jars, bottles, spoon and fork recovered from refuse pit associated with a Newcastle Hotel (Pacific Highway, Adamstown Heights, Newcastle area)



Figure 11: Culturally modified stone discovered on Main Road 92, about two kilometres west of Sassafras. The remaining images shown a selection of stone artefacts retrieved from test and salvage archaeological excavations during the Hume Highway Duplication and Bypass projects from 2006-2010

Appendix B: Unexpected heritage find recording form

Refer to SM-21-00280658 Unexpected Heritage Find Recording Form.

Appendix C: Photographing unexpected heritage items

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

C1: Context and detailed photographs

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

Removal of the item from its context (e.g. excavating from the ground) for photographic purposes is not permitted.

C2: Photographing distinguishing features

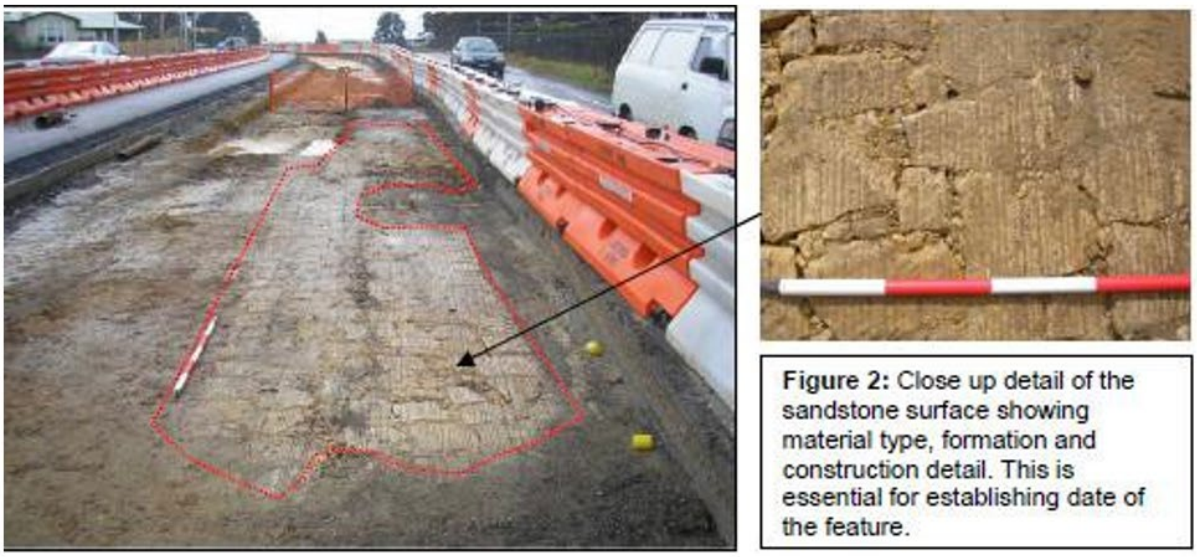


Figure 2: Close up detail of the sandstone surface showing material type, formation and construction detail. This is essential for establishing date of the feature.

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



Figure 3: Ceramic bottle artefact with stamp.



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

C3: Photographing bones

The majority of bones found on site will be animal bones often requiring no further assessment (unless they are in archaeological context). However, if bones are human, the police must be contacted immediately (see Appendix E for detailed guidance). Taking quality photographs of the bones can often resolve this issue quickly. The project archaeologist can confirm if bones are human or non-human if provided with appropriate photographs.

Ensure that photographs of bones are not concealed by foliage (example below left, labelled Figure 5) as this makes it difficult to identify. Minor hand removal of foliage can be undertaken as long as disturbance of the bone does not occur. Excavation of the ground to remove bone(s) should not occur, nor should they be pulled out of the ground if partially exposed.

Where sediment (adhering to a bone found on the ground surface) conceals portions of a bone (example below right, labelled Figure 6) ensure the photograph is taken of the bone (if any) that is not concealed by sediment.



Figure 5: Bone concealed by foliage.



Figure 6: Bone covered in sediment

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



Figure 7: Photograph showing complete bone.



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

Appendix D: Archaeological/heritage advice checklist

Refer to SM-21-00280680 Archaeological Heritage Advice Checklist.

Appendix E: Template notification letter

Refer to SM-21-00280708 Unexpected Heritage Discovery Notification Letter Template.

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

Exhumation Management Procedure

SM-20-00099495 (formerly SM ES-PW-315)

Metro Body of Knowledge (MBoK)

Applicable to:	Sydney Metro
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System Owner:	Director, Environment, Sustainability & Planning
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1. Introduction

Sydney Metro has developed this Exhumation Management Procedure (ExMP) to provide guidance for managing the discovery of human skeletal remains during the course of works. The procedure is applicable to both unexpected skeletal finds and controlled archaeological investigations where human remains are anticipated to be uncovered. The procedure is applicable to any and all stages of any Sydney Metro project and to all staff and contractors.

Sydney Metro is Australia's biggest public transport project. In 2024, Sydney will have 31 metro stations and more than 66 km of new metro rail, revolutionising the way Australia's biggest city travels. When Sydney Metro is extended into the central business district (CBD) and beyond in 2024, metro will run from Sydney's booming North West region under Sydney Harbour, through new underground stations in the CBD and beyond to the south west (refer to Figure 1).

The purpose of this ExMP is to provide a clear and concise process to follow in the event of the discovery of potential human remains during Sydney Metro activities.

This ExMP will be reviewed as required and prior to any future Sydney Metro project that has potential to impact on known burials, graves, cemeteries or burial grounds. A review may require amending the ExMP to tailor additional controls or management procedures that are specific to the impacted cemetery or burial ground. In addition, the requirements of the relevant Planning Approval will be assessed during the review of this ExMP prior to its implementation.

This ExMP should be read in conjunction with SM-20-00099497 Unexpected Heritage Finds Procedure.

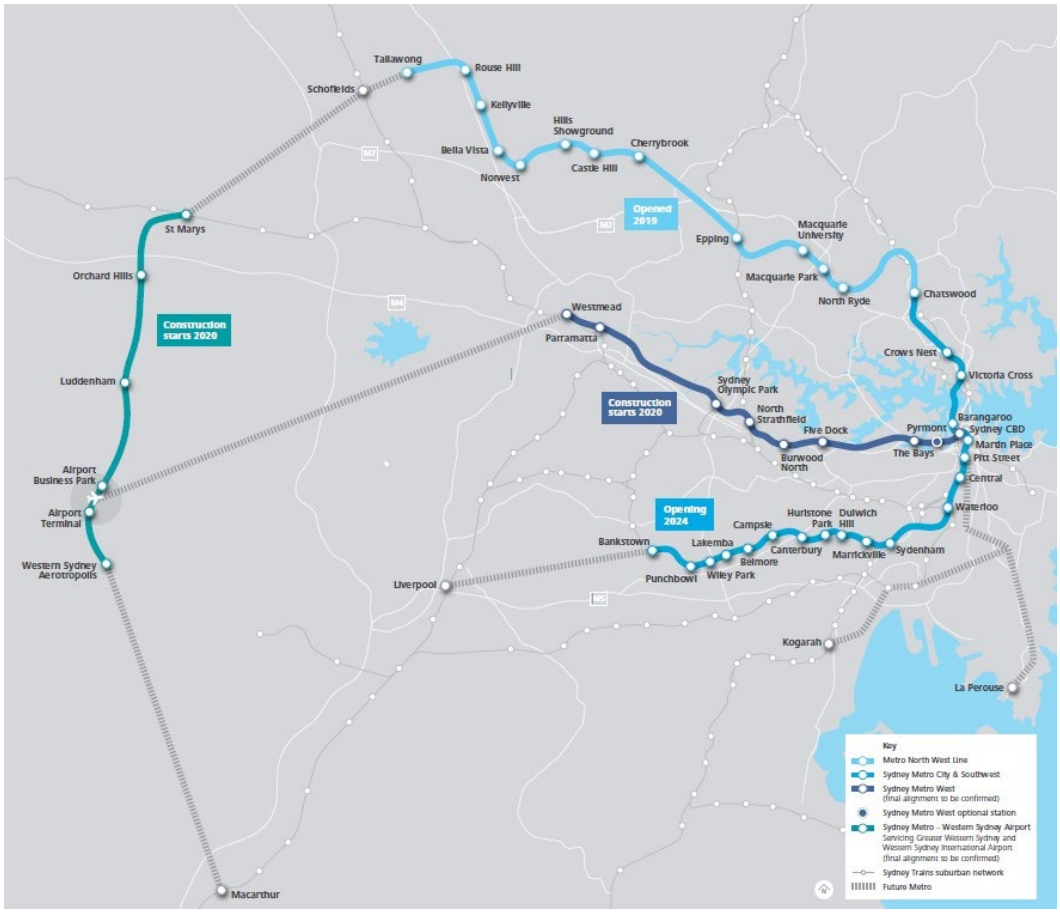


Figure 1: Sydney Metro overview and station locations

1.1. Purpose and scope

This ExMP outlines the procedure for the management of the discovery of human remains within the Sydney Metro program. It includes:

- Overview of legislative requirements for dealing with human remains (e.g. *Coroners Act* 2009, *Heritage Act* 1977, *Guidelines for the Management of Human Skeletal Remains* 1988, and the *Public Health Regulations* 2012).
- A flow chart process to be followed when human remains are uncovered
- An archaeological methodology for the excavation of remains including processes for appropriately handling remains in accordance with the relevant guidelines (see section 2.3 and 2.4 below).
- Post-exhumation management processes including relocation, processing and long-term arrangements.
- Process for nomination of a physical anthropologist and temporary storage location.
- Process for additional analysis including DNA testing, isotope analysis and environmental sampling, and discussion on requirements for public involvement.

2. Overview of legislative requirements for dealing with human remains

The following section provides an overview of the legislation that would apply to the discovery, management and relocation of human remains. A discovery of suspected human remains may be subject to different Acts and requirements, thereby triggering different notification pathways based on the specific circumstances involved.

The first step will always be to notify the NSW Police. Confirmation of the age (antiquity) and nature of the skeletal remains as well as the reasons for the disturbance will dictate which Act and provisions will be applicable.

2.1. Discovery of human remains and forensic cases: *NSW Coroners Act 2009*

For a discovery of suspected human remains less than 100 years old, the remains would come under the jurisdiction of the State Coroner and the NSW *Coroners Act* 2009. Such a case would be considered a 'reportable death' and, under legal notification obligations set out in s35 (2); a person must report the death to a police officer, a coroner or an assistant coroner as soon as possible. This applies to all human remains less than 100 years old, regardless of ancestry (i.e. both Aboriginal and non-Aboriginal remains).

> *35 Obligation to report death or suspected death*
>
> *(1) This section applies to any person who has reasonable grounds to believe that a death or suspected death of another person:*
>
> *(a) is a reportable death or occurred in circumstances that would be examinable under Division 2 of Part 3.2, and*
>
> *(b) has not been reported in accordance with subsection (2).*

(2) A person to whom this section applies must report the death or suspected death concerned to a police officer, a coroner or an assistant coroner as soon as possible after becoming aware of the grounds referred to in subsection (1).

Maximum penalty (subsection (2)): 10 penalty units.

(3) A police officer to whom a death or suspected death is reported under this section is required to report the death or suspected death to a coroner or assistant coroner as soon as possible after the report is made.

(4) An assistant coroner to whom a death or suspected death is reported under this section is required to report the death or suspected death to a coroner as soon as possible after the report is made.

(5) A coroner to whom a death or suspected death is reported under this section is required to inform the State Coroner of the report as soon as practicable after the report is made.

2.2. Historic human remains: *Heritage Act 1977* and *Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977*

The *Heritage Act* 1977 (Heritage Act) and *Guidelines for the Management of Human Skeletal Remains under the Heritage Act* 1977[1] (the Guidelines) apply to historic burials in New South Wales. It should be noted that the Guidelines are outdated in terms of the current statutory framework.

A relic is defined as an archaeological deposit or artefact that has heritage significance at a local or State level. The guidelines, *Assessing Significance for Historical Archaeological Sites and `Relics*'[2], have been endorsed by the Heritage Council of NSW and should be used to assess the level of heritage or archaeological significance of the remains. With reference to burial grounds, objects such as headstones, grave enclosures and grave goods, as well as buried human remains, may be 'relics' under the Heritage Act.

Approval under the Heritage Act and the *National Parks and Wildlife Act 1974* (NPW Act), is not required if human remains are uncovered during a Critical State Significant Infrastructure (CSSI) project. However, notification to the Heritage Council under s146 of the Heritage Act, and notification of an Aboriginal object under the NPW Act is required if human remains are uncovered during archaeological or other project related investigations.

2.3. Aboriginal human remains: *National Parks and Wildlife Act 1974*

The NPW Act, administered by Heritage NSW, provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) under Section 90 of the Act, and for 'Aboriginal Places' (areas of cultural significance to the Aboriginal community) under Section 84.

[1] NSW Heritage Office, 1998.
[2] Heritage Branch of the Department of Planning, 2009.

Discovery of Aboriginal burials and/or human remains would be addressed in the projects Aboriginal Cultural Heritage Assessment Report (ACHAR). ACHARs would be prepared in accordance with the following Heritage NSW guidelines:

- *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation*[3];
- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*[4];
- *Aboriginal cultural heritage consultation requirements for proponents 2010*[5],
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*[6].

If suspected human skeletal remains are uncovered at any time during the archaeological management program, the process outlined in this ExMP and detailed in the flow chart is to be followed. Management of the remains would be guided by consultation with the nominated Registered Aboriginal Parties (RAPs) for the project, in adherence to the ACHAR.

2.4. Exhumation of human remains: *Public Health Regulation 2012 (NSW)*

Public Health Regulation 2012 and the NSW Health Policy Statement – Exhumation of human remains of the Public Health Regulation 2012 provides specific regulation for the exhumation of human remains in NSW.

Under Clause 70 of the Regulation, an application for approval to exhume the remains of a dead person may be made to the Director-General via an approved form to the Director of the Local Public Health Unit that acts on behalf of the Director-General of NSW Health. Exhumation is not to take place unless an authorised officer or a NSW Health member of staff is present at the exhumation (the grave may be excavated to the lid of the coffin but nothing must be disturbed until the arrival of the authorised officer) (Clause 72). An authorised officer must be present at the exhumation to ensure the correct interment procedure is followed and that all of the remains are exhumed, and to enforce the protection of public health should this be necessary.

2.5. NSW Ministry of Health Policy Statement – Exhumation of human remains (2013)

The NSW Ministry of Health *Policy Statement on the exhumation of human remains* provides the policy to be observed by Public Health Units located in Local Health Districts on receipt of an application to seek permission for approval of the exhumation of human remains under the *Public Health Regulation* 2012. Public Health Units (PHUs) of Local Health Districts (LHDs) in NSW facilitate the approval for an exhumation.

[3] NSW Department of Environment and Conservation, 2005.
[4] Office of Environment and Heritage, 2011.
[5] Department of Environment, Climate Change and Water, 2010.
[6] Office of Environment and Heritage, 2010.

Under Clause 69 a person must not exhume a body unless the exhumation of the remains has been approved by the Director-General. An application for permission to exhume the remains of a deceased person is to be made to the Public Health Unit on the approved form which is available at the NSW Health website and included in Appendix B.

Note that the title of Director General of Health was replaced with the Secretary of Health when the Public Health Act and Public Health Regulation were amended. However, the Policy Directive PD2013-046 has not been amended to reflect this change.

2.6. *Work Health and Safety Act 2011*

The *Work Health and Safety Act* 2011 provisions apply to protect personnel involved in the exhumation procedure by creating and maintaining safe and healthy work practices and are enforced by WorkCover NSW. Graves, crypts and vaults could be considered to be confined spaces in some circumstances under health and safety legislation. More information on safe work practices is available at or by contacting SafeWork NSW via their website or directly.

Health and safety aspects of working with human remains should be considered. Generally, working with archaeological human skeletal remains requires no extra precautions to be taken beyond normal health and safety regulations. Once any necessary site health and safety precautions have been taken, the exhumation of human remains can proceed.

3. Procedure for the discovery and management of human remains

This procedure provides project managers, principal contractors and the Project Excavation Director with advice on the steps to follow when suspected human remains are uncovered. Information on the potential for burials and human remains where known would be included in the general project induction for all personnel. The general project induction would also include the procedure to manage human remains set out in this ExMP.

3.1. Initial discovery of bones: What do we do?

To avoid doubt, all suspected bone items must be treated as potential human skeletal remains, and work in the immediate vicinity must stop while they are protected and investigated as a matter of urgency.

3.1.1. Stop Work and preliminary notification

If bone is uncovered, all work in the vicinity of the find must stop to allow for a positive identification as either human or non-human bone.

The Project Excavation Director must be notified.

Preliminary notification must be made to the NSW Police in compliance with Section 35 of the *Coroners Act 2009* (also refer to special conditions for Central Station noted in section 4).

What?	When bones are uncovered at a site, all work in the area of the find must **stop immediately** and the site must be secured.
Who?	The discoverer will **immediately** notify machinery operators so that no further disturbance of the remains will occur, as well as notifying the foreman/site supervisor, principal contractor, project archaeologist/Excavation Director and Sydney Metro Environmental Manager. Preliminary notification to the NSW Police will be undertaken by the Excavation Director. Notification should provide verbal description of the remains and inform the police that consultation with technical specialists is being undertaken to confirm that the remains are human, as well as the burial context (archaeological or less than 100 years old, refer Step 2).
How?	Inform all site personnel of restricted access to the area of the discovery until further notice. Area must be fenced off (flagging or temporary exclusion fencing).
Actions	Notify site supervisor, principal contractor, Project Archaeologist/Excavation Director and Sydney Metro Environmental Manger of the find and protect the suspected remains until an initial assessment can be undertaken by a technical specialist. Preliminary notification to NSW Police by Sydney Metro Environmental Manager.

3.1.2. Confirm the remains are human

Skeletal remains could either be articulated and in a recognisable form of burial such as a coffin or common burial position of the body (e.g. supine, prone or flexed), or they could be disarticulated or fragmented remains. Within the boundaries of a known historic burial ground, there is a high probability of the remains being human. In a suspected forensic case (less than 100 years old), the remains may have clothing and/or human tissue. Disarticulated or fragmented bones are often uncovered and these may require specialist assessment to determine legal jurisdiction.

If suspected human remains are identified during the course of project works, preliminary notification must be made to the NSW Police in compliance with Section 35 of the *Coroners Act 1999* (refer Step 1). NSW Police would be contacted immediately upon receipt of confirmation of human provenance.

What?	Confirmation that the remains are human, their burial context - whether they are forensic (less than 100 years) or archaeological (older than 100 years) and suspected ancestry (Aboriginal or non-Aboriginal).
Who?	Excavation Director and or Forensic or physical anthropologist, or archaeologist with specialist skills such as an osteoarchaeologist. Notification to the NSW Police will be undertaken by the Sydney Metro Environmental Manager.
How?	Consultation could be undertaken as either an on-site inspection or via good quality photos sent to the nominated technical specialist of 1) the remains; and 2) the site general site location of the discovery.
Actions	Contact nominated technical specialists to confirm that the remains are: a) human, b) burial context (archaeological or forensic), and c) suspected ancestry (Aboriginal or non-Aboriginal). For the duration of the Sydney Metro project, the nominated technical specialists are: • Forensic Anthropologist – TBC by contractor for project area. • Nominated Excavation Director – TBC by contractor for project area. • Sydney Metro Environmental Manager to conduct and or oversee liaison with NSW Police. The archaeologist may be able to identify the nature of remains without input from the Forensic Anthropologist. The Forensic Anthropologist should be contacted as required.

3.1.3. Notification based on jurisdiction (forensic or archaeological)

Once confirmation is received from the technical specialist that the remains are of human origin, there are three possible statutory pathways to follow based on the assessment.

What?	Forensic case: remains are less than 100 years old
Who?	If it is determined by specialist assessment (Step 2) that the remains are forensic, the remains come under the jurisdiction of the State Coroner and the Coroners Act 2009.
How?	The NSW Police would likely secure the site and will advise on the procedure to be followed.
Actions	Environmental Manager to liaise with NSW Police

What?	Archaeological – non-Aboriginal human remains – more than 100 years old.
Who?	Follow the Archaeology Exhumation Methodology as set out in Step 4 below
How?	Follow the Archaeology Exhumation Methodology as set out in Step 4 below
Actions	Follow the Archaeology Exhumation Methodology as set out in Step 4 below

What?	Archaeological – suspected Aboriginal human remains – more than 100 years old.
Who?	Recording of Aboriginal ancestral remains must be undertaken by, or conducted under the direct supervision of a specialist with registered Aboriginal parties (RAPs) present.
How?	The RAPs must be present where it is reasonably suspected that Aboriginal burials or human remains have been encountered.
Actions	Notify RAPs and Heritage NSW and follow the Aboriginal cultural heritage assessment report (ACHAR). Follow the Archaeology Exhumation Methodology as set out in Step 4.

3.2. Archaeological exhumation methodology

The following section provides a broadly accepted archaeological methodology for exhumation and the appropriate handling of human remains.

3.2.1. Securing the site

The strategy for the excavation and removal of human remains must be sensitive to public opinion and ethics and exhumation activities should not be visible to the general public. The site may need to be screened off from public areas, not only with hoarding but also in some cases with a roof to screen the site off from overlooking buildings. At all times, human remains should be treated respectfully. The perimeter of the excavation site should be demarcated by plastic tape or flagging, with only technical staff allowed within this area for the duration of exhumation activities.

The site should be protected from the elements including flooding, contamination with dust or debris, and other disturbance. These measures would be formulated by the Excavation Director in consultation with the contractor and Sydney Metro where required and may differ from site to site.

3.2.2. Excavation Director

Archaeological investigations are to be managed by a suitably qualified Excavation Director with experience in the excavation and management of human remains. For sites with potential for locally significant remains, the Excavation Director should meet the NSW Heritage Council criteria for experience with locally significant archaeological sites. For sites with potential for State significant archaeology the Excavation Director should meet the Heritage Council of NSW criteria for experience with State significant archaeological sites.

3.2.3. Excavation and recording

Exhumation and recording is to be undertaken in accordance with best practice forensic and Heritage Council of NSW guidelines. Prior to removal, the remains should be fully recorded in situ to understand their surrounding archaeological context. This will include recording any disturbances to the burial and the identification of bones present. In some cases, the deposit of bones may be a mixture of articulated and disarticulated remains. Care should be taken to distinguish articulated remains and to assess if they represent commingled individuals or disturbed remains belonging to one individual, and to record them accordingly.

3.2.4. Recording

- A standard context recording system is to be employed.
- Detailed survey and/or measured drawings are to be prepared and include location of remains within the overall site (position of the body, the direction of the burial, noting any stratigraphic relationships with other archaeological features).
- Any associated artefacts (potential grave goods, burial furniture) are to be recorded and collected by context for later analysis.
- Photographic record of all phases of work in accordance with ‘Photographic Recording of Heritage Items Using Film and Digital Capture’. Photographs are to be in RAW format, using photographic scales and photo boards where appropriate.
- Registers of contexts, photos, samples and drawings are to be kept.

3.2.5. Excavation

- Detection of the extent of the grave/remains (if disarticulated).
- Surface soils removed in excavation units of 100mm (site dependent) using small hand tools.
- Expose remains with soft paint brushes and pedestal the remains.
- Record position and depth of remains.
- Soil removed is to be sieved through 3mm mesh to examine for teeth and bone fragments.
- Soil samples may be taken from the abdominal and/or chest areas of the body (articulated remains) to retrieve further evidence.

- Exhumation must be under the control of the Excavation Director, with the assistance of a Forensic Anthropologist if required. Exhumation permit/s, provided by NSW Ministry of Health may also require the presence of an authorised officer or a member of staff of the Ministry of Health.
- Further excavation of the bottom of the pit (grave) following removal to confirm the absence of further remains.

3.2.6. Relocation of bones

Removal and collection of skeletal remains is to follow the standard forensic practice of labelling as follows:

- Remove remains from the ground systematically and place in plastic bags according to anatomical areas of the body.
- Bags should not be air-tight and should have ventilation holes to prevent deterioration of fragile skeletal material. Each bag should contain labels and the separate bags should then be placed in a large plastic bag, crate or box, labelled with the context information.
- The remains should be placed in a sturdy, large cardboard box (approximately 600 x 300 x 200 mm) for relocation to off-site processing location.

3.3. Resume work

Construction work may only recommence upon receipt of clearance certificate from the Excavation Director and may require additional NSW Ministry of Health approval. If a forensic case, written authorisation from the NSW Police is required.

3.4. Reporting

A report would be prepared following the completion of the program of exhumation works, separate to the archaeological excavation report for the project. This report would include skeletal analysis catalogue, comprehensively describe the process of exhumation, detail the recording of the remains and synthesise the results of any further laboratory testing. An assessment of significance for the remains would be provided and interpreted within the context of the archaeological research design (response to research questions).

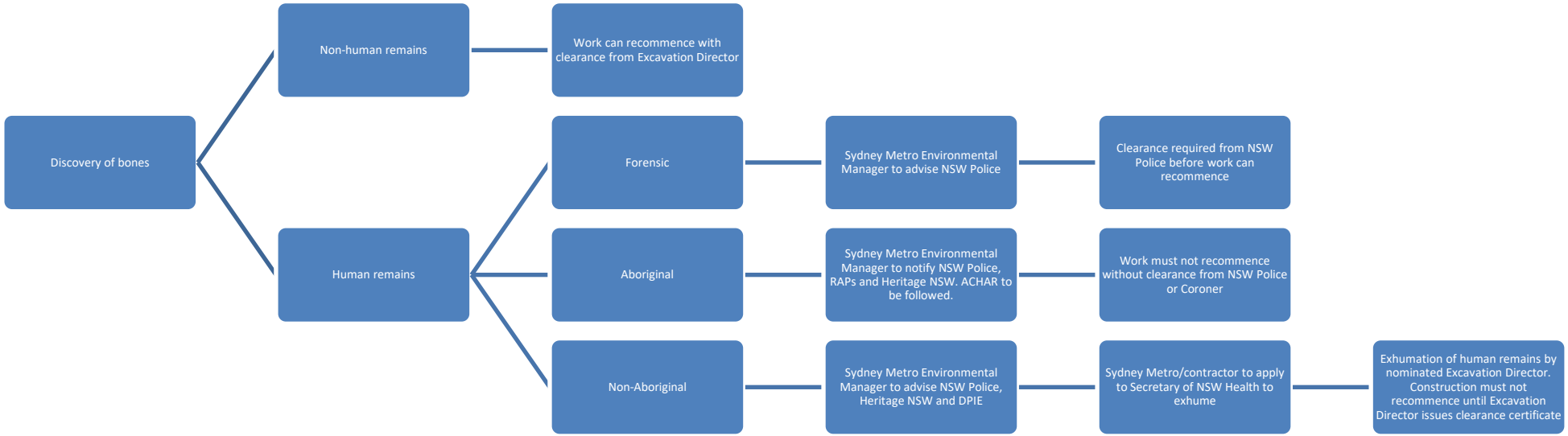


Figure 2: Exhumation procedure flow chart

4. Excavation and post-excavation tasks

All on-site management should be in accordance with the archaeological research design (ARD) and relevant archaeological method statement (AMS), and be overseen by the Excavation Director. The Excavation Director would nominate a Forensic Anthropologist where required.

4.1. Research questions

Research questions should be specific to the site and the site history. The research questions in the archaeological research design can be revised as new information emerges and new research questions can be investigated.

The following general research questions can be used to guide exhumations, should intact burials, disarticulated remain, burial cuttings or associated material culture be uncovered during work.

4.1.1. Social history and burial practices

- Does the location of the burial/burial cutting correspond with historic plans/descriptions?
- Is there evidence of exhumation?
- Do graves cut into older ones? What can this tell us about nineteenth century burial practices, and how does this compare to other excavated cemetery sites in the region?
- What is the distance between burials (if multiple burials uncovered)? Does this conform to known nineteenth century burial practices?
- What type of fill was used within grave cuttings? What can this tell us about the surrounding environment and burial practices at the time?
- What materials/tree species were used in the coffin manufacture? Can coffin manufacturing techniques or fastening methods (use of mortar, screws, nails, tacks) be identified? Does this match known burial practices of the time? If alternative methods are identified, what can this tell us about the manufacturer or economic/social landscape?
- Can the class or rank of the individual be identified via coffin materials, grave goods or clothing/shrouds?
- Which direction is the burial orientated? How does this correspond with the known/hypothesised location of denomination areas?
- If the burial is associated with more than one individual, can a familial relationship be assessed through DNA or other genetic markers identifiable within the skeletal remains?

4.1.2. Environmental factors and scientific analysis

- What is the condition of the bones? How does their condition compare to known or nearby burials of the same age? What environmental or human factors may have influenced the decomposition process?
- Can the health, nutrition, sex, race, stature or age be identified through the skeletal remains? Is there evidence of trauma on the bones? Is there evidence of pathology on the bones (e.g. syphilis, tuberculosis, tumours)?
- Can stable isotope analysis address any questions regarding diet, country of origin and nutrition?
- Can DNA testing address any questions not answerable by the skeletal remains themselves, such as sex, familial relationships (if buried with another individual/s) or race?
- Is there potential for DNA to be tested against any individuals who may come forward as a descendant of the deceased?

4.2. Process for DNA testing, isotope analysis and environmental sampling

4.2.1. Pre-excavation

The Excavation Director, in consultation with the Forensic Anthropologist, will nominate a suitable laboratory prior to works commencing. Requirements for DNA testing, isotope analysis and environmental sampling will be identified in the archaeological research design and archaeological method statement.

4.2.2. Excavation

In order to prevent cross-contamination, the following sample collection and excavation process should be followed:

- The location, quantity and material (bone, teeth, hair, soil, wood) of samples will be determined by the Excavation Director or Forensic Anthropologist prior to its collection.
- Samples would be stored in a safe, secure and climate controlled location while excavations are in progress. This would be chosen by the Excavation Director or Forensic Anthropologist on site.
- Each collected sample would be given a unique catalogue number and a sample register would be recorded throughout the excavation.

- ‘Clean excavation’ procedures would be followed during the excavation of burials and during the sample collection process[7]. This would include:
    - Latex gloves would be worn by individuals excavating and/or handling bone or soil samples. Gloves would be changed for each bone and/or individual to prevent cross-contamination;
    - Excavation tools/brushes would be cleaned prior to and after the collection of each sample to prevent cross-contamination;
    - In some cases, a face mask would be worn when samples for DNA analysis are being collected;
    - Bone samples for DNA testing would be collected with surrounding in situ soil and should not be cleaned prior to bagging;
    - It may be necessary for individuals involved in sample collection to submit DNA for comparison in the event of cross-contamination; and
    - All bags containing samples for analysis would be bagged and labelled appropriately to prevent cross contamination and ensure they are handled and stored correctly.

4.2.3. Post-Excavation

On completion of excavations, samples will be transported to nominated laboratories for analysis. A record of their location will be kept.

4.3. Reporting

The results of the investigation of human remains and the exhumation will be included in the archaeological reporting for the project in accordance with the project ARD.

Once finalised, and where it is appropriate to do so as determined in consultation with RAPs and/or as may be required by the relevant Planning Approval obligations, archaeological and associated specialist reports should be submitted to:

- The relevant local Council and Library;
- Heritage NSW Library;
- The State Library of NSW; and
- Made available online for public access and educational purposes.

Further, if significant remains are identified during excavations, the results and findings would be published in academic journals and conference papers where feasible.

[7] Guidelines for ‘clean excavation’ are based on procedures outlined in: Yang, D. Y. & Watt, K. 2005. Contamination controls when preparing archaeological remains for ancient DNA analysis. *Journal of Archaeological Science*, vol. 32, pp. 331–336 and *Society for Historical Archaeology*, 2015-2017. Research and Analysis of Artefacts. Accessed online at: https://sha.org/conservation- facts/faq/analysis/#C on 25/5/2017.

4.4. Public involvement

Archaeological excavations may uncover remains directly associated with early settlement and burial practices. Such remains are likely to generate public interest.

Public involvement may include:

- Media releases;
- Public Open Days;
- Preparation of brochures detailing the archaeological excavations;
- Interpretive signage and online blog posts or site diaries while excavations are taking place; and
- The preparation of a Heritage Interpretation Plan designed to provide interpretation of the site within the new development upon the completion of works.

Due to sensitive nature of human skeletal remains, these recommendations would be adapted and modified as appropriate under the direction of Sydney Metro and the Excavation Director.

Such recommendations would also be considered and require approval from relevant stakeholder groups such as known or potential descendants of the deceased, Heritage NSW/Heritage Council of NSW, local Council and interest groups.

4.5. Temporary storage and permanent repository or resting place for remains

4.5.1. Temporary storage

Upon the completion of archaeological excavations, skeletal remains should be boxed separately and temporarily stored within a safe, secure controlled environment to allow for further analysis of the remains. This location would be chosen by the Excavation Director and the Forensic Anthropologist and comply with NSW legislative requirements.

4.5.2. Permanent repository or resting place for remains

A permanent repository or resting place for remains is dependent on the nature and volume of skeletal remains. Final arrangements would be dictated by Sydney Metro, the Excavation Director, Forensic Anthropologist, identified descendants of the deceased, RAPs (if applicable) and/or other stakeholders upon the completion of excavations and subsequent analysis.

5. Definitions

All terminology in this Procedure is taken to mean the generally accepted or dictionary definition. Acronyms and terms specific to this document are listed below.

Other terms and jargon are defined within the SM-17-00000203 Sydney Metro Glossary.

	Definitions
IMS	Integrated Management System (IMS)
TfNSW	Transport for New South Wales
RAP	Registered Aboriginal party
ACHAR	Aboriginal cultural heritage assessment report
ARD	Archaeological research design
AMS	Archaeological method statement
OEH	Office of Environment and Heritage (now Heritage NSW)
PHU	Public Health Unit
ExMP	Exhumation Management Procedure (this Procedure)
ER	Environmental Representative (independent)

6. Accountabilities

The Director, Environment, Sustainability & Planning is accountable for this Procedure including approving the document, monitoring its effectiveness and performing a formal document review.

Direct Reports to the Chief Executive are accountable for ensuring the requirements of this Procedure are implemented within their area of responsibility.

Direct Reports to the Chief Executive who are accountable for specific projects/programs are accountable for ensuring associated contractors comply with the requirements of this Procedure.

7. Related documents and references

Related documents and references
• SM-20-00099497 Unexpected Heritage Finds Procedure • NSW Health Policy Directive for Exhumation of Human Remains • NSW Health Application to Exhume Remains • Department of Environment, Climate Change and Water 2010, Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 • Department of Environment, Climate Change and Water 2010, Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW

8. Superseded documents

Superseded documents
There are no documents superseded as a result of this document.

9. Document history

Version	Date of approval	Notes
1.1	May 2017	New IMS document.
2.0	July 2017	Incorporates Stage 2 (section 3)
2.1	February 2019	Extended for Metro Program wide application, includes changes specific Central Station management, and incorporates comments received from the State Coroner's Office, NSW Police, NSW Health, and Sydney Metro Environmental, Environmental Representatives engaged on the Central site and the Office of Environment and Heritage (OEH).
2.2	February 2019	Incorporates comments received from Artefact Heritage and Dr Denise Donlon issued to Health and OEH Heritage Division for consultation.
3.0	May 2019	Incorporates Health, Coroner and OEH comments.
4.0	April 2020	Updates to remove specific references to City and South West and Central Station. Change of title to "Procedure". Update to references.
5.0	16 August 2021	Updates to related documents and references.

Appendix A: Conditions of approval for exhumation from grave

Refer to Appendix 1, Schedule A from NSW Health Policy Directive for Exhumation of Human Remains.

CONDITIONS OF APPROVAL FOR EXHUMATION FROM GRAVE

1. The exhumation is to be carried out in the presence of a Public Health Unit's authorised officer or other authorised officer of the NSW Ministry of Health or Local Council authorised Officer and person appointed by Cemetery Authority.
2. At least 48 hours notice of the exhumation arrangements shall be given to the Public Health Unit.
3. Day and time of the exhumation shall be arranged by the participating parties and agreed to by the Public Health Unit.
4. The approval granted is valid for a period of three months and shall lapse on ___ /____/_____, unless a further approval is granted.
5. The presence of any relative of the deceased at the exhumation is strictly prohibited.
6. No animals are to be permitted within the exhumation site.
7. The cemetery authority and funeral director shall be responsible for the work health and safety of all persons involved in the exhumation and shall ensure that all NSW WorkCover requirements are complied with.
8. If, during the course of the exhumation, it is determined necessary to stop the exhumation by either the exhumation supervisor / cemetery manager or authorised Officer, for any valid reason e.g. work health and / or public health risk, then the exhumation must cease.
9. The remains of the deceased shall be enclosed in a body bag and placed into a new coffin with a name plate attached inscribed with the name of the deceased.
10. The remains of the original coffin are to be placed in the new coffin where possible. Where there is an excess of remains of the original coffin, these remains should be disposed in a sanitary and agreed manner.
11. Excavated soil should be back filled. The soil that was removed from immediately above and around the coffin should be replaced first.
12. If the exhumed remains are to be transferred to another cemetery, a funeral director shall be contracted to transfer the remains from the cemetery grounds or carry out preparatory work for the safe reinterment of the remains.
13. The exhumation will not proceed during or following a period of heavy rainfall within the preceding 24 hours of the appointed time of exhumation. The cemetery manager is to confirm that satisfactory conditions exist for the exhumation to proceed two hours prior to the commencement of the exhumation.
14. Used disposable protective equipment and materials are to be placed in a sealed plastic bag and disposed of in a sanitary manner.

Refer to Appendix 2, Schedule B from NSW Health Policy Directive for Exhumation of Human Remains.

CONDITIONS OF APPROVAL FOR EXHUMATION FROM ABOVE GROUND STRUCTURE

1. The exhumation is to be carried out in presence of a Public Health Unit authorised officer or other authorised officer of the NSW Ministry of Health or Local Council authorised Officer and person appointed by Cemetery Authority.
2. At least 48 hours notice of the exhumation arrangements shall be given to the Public Health Unit.
3. Date and time of the exhumation shall be arranged by the participating parties and agreed to by the Public Health Unit.
4. An approval granted is valid for a period of three months and shall lapse on ___/____/_____, unless a further approval is granted.
5. The cemetery authority and funeral director shall be responsible for the work health and safety of all persons involved in the exhumation and shall ensure that all NSW WorkCover requirements are complied with.
6. If, during the course of the exhumation, it is determined necessary to stop the exhumation by either the exhumation supervisor / Cemetery Manager or authorised officer, if for any valid reason e.g. worker health and/or public health risks, then the exhumation must cease.
7. Used disposable protective equipment and materials are to be placed in a sealed plastic bag and disposed in a sanitary manner.

Appendix B: NSW Health Permit Application

Refer to NSW Health Application to Exhume Remains.



NSW GOVERNMENT Health

APPLICATION TO EXHUME REMAINS

PUBLIC HEALTH REGULATION, 2012 Clause 70(2)

In accordance with the requirements of Clause 70 (2) of the Public Health Regulation 2012, I .....
(Full name of applicant)

..... of ..... hereby
(Address)

apply for permission to exhume the remains of the late .....
(Name of deceased)

from Grave No:....., Section: ....., being a single

interment within the .....Cemetery, for the purpose of .....

.....

I seek permission to exhume for the following reason/s:

.....

The deceased: *(cross out which is not applicable)*

- was not known to be infected with a prescribed infectious disease as defined in clause 53 of the Public Health Regulation 2012; or
- was known to be infected with a prescribed infectious disease as defined in clause 53 of the Public Health Regulation 2012

I am entitled to make this application, because I am: *(tick one)*

1. [ ] The executor of the estate of the deceased; or
2. [ ] The nearest surviving relative of the deceased; or
3. [ ] If there is no such executor or relative available to make the application, another the proper person to make the application for the reasons set out below:

.....
(Full reasons for proper person to make application)

Attached is:

1. A certified copy of the death certificate of the deceased.
2. A statutory declaration as to:
   - My relationship to the deceased; and
   - the wishes of the deceased regarding the disposal of the body (if known);
   - the reasons why the Director-General may consider me the proper person in all the circumstances to make the application (if applicable)
3. The application fee of $.....

The exhumation is to be supervised in strict accordance with the attached Plan of Management

by .....

employed with .....(Funeral Director/Cemetery)

in the capacity of .....

Signature: ..... Date: .....
(Applicant)

Form C70

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

Sydney Metro West

Archaeological Research Design

Hunter Street Station

May 2022

NSW GOVERNMENT

sydney METRO

EXTENT
PEOPLE-CENTRED HERITAGE

Sydney Metro West—
Hunter Street Station (Sydney CBD)

Aboriginal and Historical Archaeological Research Design

Prepared for Sydney Metro

May 2022—Final 02

ECAAS ISO 9001 CERTIFIED QUALITY MANAGEMENT
ECAAS ISO 14001 CERTIFIED ENVIRONMENTAL MANAGEMENT
ECAAS ISO 45001 CERTIFIED SAFETY MANAGEMENT

Sydney
Melbourne
Brisbane
Perth
Hobart

Executive summary

Project overview

Sydney Metro is Australia's biggest public transport program. Sydney Metro West (the project) is a new 24-kilometre metro line that will connect Greater Parramatta with the Sydney CBD. Confirmed stations include Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street (Sydney CBD). This infrastructure investment will double the rail capacity of the Greater Parramatta to Sydney CBD corridor with a travel time target between the two centres of about 20 minutes.

Sydney Metro West was assessed as a staged infrastructure application under section 5.20 of the Environmental *Planning & Assessment Act 1979* (EP&A Act).

The Concept and major civil construction work for Sydney Metro West between Westmead and The Bays (Stage 1 of the planning approval process, application number SSI-10038), was approved by the Minister for Planning and Public Places on 11 March 2021.

Stage 2 of the planning approval process includes all major civil construction work including station excavation and tunnelling between The Bays and Sydney CBD.

The Non-Aboriginal Heritage Technical Paper prepared by Artefact Heritage (Artefact 2021a) concluded that the Hunter Street Station construction sites have the potential to contain locally significant non-Aboriginal (historical) archaeological resources. Consequently, it was recommended that an Archaeological Research Design (ARD) be prepared to guide excavation works and provide strategies to mitigate impact to potential archaeological resources.

This document provides the ARD for the Hunter Street Station construction sites (hereafter the 'study area'). The station comprises two sites: Metro Hunter Street East (bounded by O'Connell Street, Hunter Street, and Bligh Street), and Metro Hunter Street West (located on the corner of George Street and Hunter Street).

This ARD includes additional research to aid the reassessment of the study area's Aboriginal and historical archaeological resources and their significance. It provides a detailed archaeological research framework and an excavation methodology intended to guide the management of archaeological resources over the life of the project.

Key findings

This ARD concludes that the Sydney Metro Hunter Street study area has generally low-to-moderate potential to contain evidence of both Aboriginal and non-Aboriginal (historical) phases of occupation, including a section of the state heritage-listed Tank Stream (SHR #0063).

With respect to historical archaeology, any intact archaeological resource surviving from the period before 1800 would be regarded as state significant. Depending on the condition and extent of the resource from this period, it may have high research potential.

At the Metro Hunter Street West site any substantially intact archaeological remains related to John Riley and Prosper de Mestre would have high research potential, and may be able to address questions of class and commercial activity. Intact archaeological resources dating to this phase at Hunter Street West would also be considered to be of state significance.

At the Metro Hunter Street East site, the developmental history of the block is not well understood for the period before 1830. The site was occupied by eight leases before 1820, and any archaeological material associated with this period may assist in determining the nature of occupation with greater accuracy. These remain would have high research potential and would also be of state significance.

Physical evidence of management and modification of the Tank Stream prior to the major works undertaken in the 1870s would have high research potential, as would any techniques employed in building construction within the immediate vicinity of the stream. As such, remains may be of local or state significance depending upon date and nature of the remains.

The Aboriginal community consultation undertaken as part of the existing Aboriginal Cultural Heritage Assessment Report (ACHAR) for the Metro Hunter Street study areas (Artefact 2021b) has determined that there are some important cultural values for the study area as a whole. The importance of traditional cultural knowledge, passed down by oral traditions through the generations has also been noted (Artefact 2021, 70), as well as continued connection to Country and knowledge. There is low-to-moderate potential for encountering Aboriginal archaeological remains in both sites within the study area. In particular, it is likely that Aboriginal sites pertaining to occupation and resource gathering would be identified in the vicinity of the Tank Stream if intact natural soil profiles are preserved.

Recommendations

The ARD makes the following recommendations:

- Based on the study area's varying degrees of archaeological potential (low, moderate, and extant), and the potential significance of the resource, and the nature of the construction program, a strategic approach to the mitigation of development impacts has been devised. This strategic approach includes a combination of test excavation, monitoring, and open-area salvage excavation prior to bulk excavation or other ground disturbance

- Given the study area's potential for both Aboriginal and historical archaeological evidence, physical investigations will be conducted in a synchronised manner, where historical archaeological works would precede Aboriginal investigation.

- The initial phase of test excavations will focus along De Mestre Place to provide an understanding of the soil profiles, disturbance, and potential historical and Aboriginal archaeology in the Metro Hunter Street West site.

- A number of interpretative initiatives and public archaeology programs are recommended given the potential significance of the remains.

- The project is currently being assessed under section 5.20 of the EP&A Act as Critical State Significant Infrastructure (CSSI). Projects assessed to be CSSI do not fall within the ambit of the current NSW heritage legislation designed to protect historical and Aboriginal cultural heritage and archaeology, i.e., the *Heritage Act 1977* (NSW) and *National Parks and Wildlife Act 1974.* The management of Aboriginal and historical cultural values and archaeology would therefore be undertaken in accordance with the relevant Conditions of Approval and this ARD, once approved.

- The archaeological program should be staged and developed in consultation with the Eastern Tunnelling Package contractor.

- In the event of unexpected finds and/or human remains being uncovered, the Sydney Metro Unexpected Heritage Finds Procedure and Sydney Metro Exhumation Management Procedure should be followed.

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1. Project initiation

1.1 Project overview

Sydney is expanding and the NSW Government is working hard to deliver an integrated transport system that meets the needs of customers now and in the future.

Sydney Metro is Australia's biggest public transport program. Sydney Metro West (the project) is a new 24-kilometre metro line that will connect Greater Parramatta with the Sydney CBD. Confirmed stations include Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street (Sydney CBD). This infrastructure investment will double the rail capacity of the Greater Parramatta to Sydney CBD corridor with a travel time target between the two centres of about 20 minutes.

The delivery of Sydney Metro West is critical to keeping Sydney moving and is identified in a number of key strategic planning documents including the Greater Sydney Region Plan: A Metropolis of Three Cities – connecting people (Greater Sydney Commission, 2018a), Building Momentum: State Infrastructure Strategy 2018-2038 (Infrastructure NSW, 2018) and Future Transport Strategy 2056 (Transport for NSW, 2018).

Sydney Metro West was assessed as a staged infrastructure application under section 5.20 of the Environmental *Planning & Assessment Act 1979* (EP&A Act).

The Concept and major civil construction work for Sydney Metro West between Westmead and The Bays (Stage 1 of the planning approval process, application number SSI-10038), was approved by the Minister for Planning and Public Places on 11 March 2021.

Stage 2 of the planning approval process (this proposal) includes all major civil construction work including station excavation at the Pyrmont Station and Hunter Street Station (Sydney CBD) construction sites, and tunneling between The Bays and Sydney CBD.

The proposed major civil construction work between The Bays and Sydney CBD would include:

- Enabling work such as demolition, utility supply to construction sites, utility adjustments, and modifications to the existing transport network
- Tunnel excavation including tunnel support activities between The Bays and Sydney CBD
- Station excavation for new metro stations at Pyrmont and at Hunter Street (Sydney CBD).

This proposal would be located largely underground in twin tunnels. Indicative locations of which are shown in Figure 1.



Figure 1. Overview of Sydney Metro West between The Bays and Sydney CBD

As part of the Stage 2 planning application process Artefact Heritage prepared the Non-Aboriginal Heritage Technical Paper (Artefact 2021a) which concluded that the Hunter Street Station construction sites have the potential to contain locally significant non-Aboriginal (historical) archaeological resources. Consequently, it was recommended that an Archaeological Research Design (ARD) be prepared to guide excavation works and provide strategies to mitigate impact to potential archaeological resources.

This document provides the ARD for the Hunter Street Station construction sites (hereafter the 'study area'). The station comprises two sites: Metro Hunter Street East (bounded by O'Connell Street, Hunter Street, and Bligh Street), and Metro Hunter Street West (located on the corner of George Street and Hunter Street).

This ARD includes additional research to aid the reassessment of the study area's Aboriginal and historical archaeological resources and their significance. It provides a detailed archaeological research framework and an excavation methodology intended to guide the management of archaeological resources over the life of the project.

1.2 Site location and identification

The study area is located in the Sydney Central Business District (CBD), within the City of Sydney Local Government Area (Figure 2). It comprises two separate sites: the Hunter Street West site consists of Lot 1 DP 211120, Lot 1 DP 438188, Lot 13 DP 622968, Lot 2 DP 850895, Lot 1 DP 1003818, SP 596, SP 50276, SP 65054 and SP 71068; and the Hunter Street East

site consists of Lot 1 DP 59871, Lots 1 and 2 DP 217112, Lot 1 DP 536538, Lot 1 DP 626651, Lot 1 DP 1107981 and SP 58859 (Figure 3).

1.3 Heritage listings

1.3.1 Heritage items

The western site includes two heritage listed items as follows:

Table 1. Summary of heritage items and their status located within the western site boundary.

Register/listing	Item name and number	
	Tank Stream	**Skinners Family Hotel**
State Heritage Register (SHR)	00636	00584
Sydney Water s170	4573709	n/a
Sydney Local Environmental Plan (SLEP) 2012	I1656	I1766
Register of National Estate (RNE)	ID 14311	ID 2395
Register of National Trust (NT)(NSW)	6455	6218

1.4 Archaeology

The Central Sydney Archaeological Zoning Plan (AZP) 1992 is a non-statutory document that identifies areas of archaeological potential within the Sydney CBD area and provides recommendations for their management. The site of Skinners Family Hotel on 296 George Street (within the western site) is categorised as an AAP—Area of Archaeological Potential. Farrow House on 21 Bligh Street (abutting the north east end of the Hunter Street East site) is categorised as an Area of Archaeological Potential Partly Disturbed (AAP-PD).

1.5 Development description

Stage 2 of Sydney Metro West planning approval process includes all major civil construction work between The Bays and Hunter Street. This phase of works at Hunter Street Station will involve tunnel and shaft excavation, demolition of existing structures, and station excavation.

1.6 Methodology

The approach to management of archaeological resources within the study area is guided by the conservation principles set out in *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013* (the *Burra Charter*) (Australia ICOMOS 2013a). The *Burra Charter* is a charter adopted by Australian ICOMOS that establishes the nationally-accepted standard for the conservation of places of heritage significance. It is not a legal requirement to

adopt the *Burra Charter* guidelines, but they are considered the best practice approach to heritage conservation policy. A supplementary 'Practice Note' in the *Burra Charter* recognises that 'Archaeological sites require management planning just like all types of heritage places' (Australia ICOMOS 2013b, 8).

In addition to the principles and guidelines of the *Burra Charter*, this report has been prepared with regard to the following heritage guidelines:

- *NSW Heritage Manual* (Heritage Office 1996);
- *Guidelines for the Preparation of Archaeological Management Plans* (Heritage Branch, Department of Planning 2009).
- *Assessing Significance for Historical Archaeological Sites and 'Relics' (*Heritage Branch 2009);
- *Historical Archaeology Code of Practice* (Heritage Office and Department of Planning 2006);
- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011);
- *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010); and
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010).
- *Statement of Heritage Impact* (Heritage Office 1996 [revised 2002])

The preparation of the ARD involved the following:

- review of existing heritage and environmental documentation and primary and secondary historical resources;
- site inspection to observe the current site setting and conditions;
- assessment and mapping of historical disturbances;
- predictive modelling and assessment of features to indicate areas of archaeological potential;
- reassessment of the existing significance of both historical and Aboriginal archaeological resources; and
- fieldwork investigation methodologies and mitigation measures.

A compilation of desk-based evidence relating to the modern built environment of the site and a site visit to publicly accessible areas was undertaken to better understand site formation processes. Data consulted includes:

- Spatial data such as Digital Elevation Model data and classified LiDAR pointcloud data. This data was used to generate a digital surface model of the buildings, structures, and open spaces. (Copyright Department of Customer Service Spatial Services).
- '7–13 Hunter Street Sydney SMWSDDS-RPS_HST-SR_DWG-000520-A-7-13 Hunter St RPS 14-03-2022.' This survey data has been provided by the client covering the Hunter Connection basement level.
- Office Building 304–308 George Street; 1–5 Hunter Street, Fowell, Mansfield Jarvis & Maclurgan drawn 1971, approved 2 July 1973. Data provided by client.
- Archive plans and sections relating to number 312 George Street. Fomberteaux Rice Hanley 312 George Street Basement Extension 5-01-1973. Approved 27 March 1973 (City of Sydney Archives).
- 312–318 George Street DA11-01 Basement Plan 2017 Candelpas Associates (City of Sydney Archives).
- Tank Stream Cross Sections 2-12-2021 RPS for Sydney Metro.

1.7 Relevant previous reports and site investigations

There are no records indicating that the site has been subject to any previous physical investigations. A program of service location for the project and associated archaeological monitoring for the purpose of gathering information about any potential archaeological evidence, as described in CRM 2022 below is yet to take place. This report therefore mainly draws on the following written works:

- 'Major Civil Construction between The Bays and Sydney CBD. Environmental Impact Statement' (Sydney Metro 2021).
- 'Sydney Metro West—Major civil construction works between The Bays and Sydney CBD. Technical Paper 3: Non-Aboriginal Heritage' (Artefact Heritage 2021a).
- 'Sydney Metro West—Major civil construction works between The Bays and Sydney CBD. Technical Paper 4: Aboriginal Cultural Heritage Assessment Report. Inner West and Sydney Local Area' (Artefact Heritage 2021b).
- 'Preliminary Advice: Sydney Metro West Construction Sites Hunter Street: Archaeology' (CRM 2021).
- 'Sydney Metro West—Utility Investigations at De Mestre Place, Sydney (CBD 4 and 5)' (CRM 2022).

1.8 Aboriginal Community Consultation

Aboriginal Community Consultation was undertaken by Artefact Heritage (2021) as part of the ACHAR process, in accordance with the Aboriginal Cultural Heritage Consultation

Requirements for Proponents 2010. The consultation summary (Section 5) and log (Appendix 1) have been included within the Sydney Metro Stage 2 Environmental Impact Statement (EIS). The consultation continued with Registered Aboriginal Parties from Stage 1 of the planning approval process.

As part of the consultation process, Artefact Heritage identified a total of 59 stakeholders who registered their interest the Sydney Metro West project. The RAPs were provided an opportunity to review the Stage 2 ACHAR assessment methodology on 17 June 2021 and the draft ACHAR was provided to RAPs for review on 30 July 2021 (Artefact 2021). Both review periods were 28 calendar days. Responses from RAPs showed support for the documents.

This ARD includes a reassessment of areas of Aboriginal archaeological potential within the study area, as well as the generation of a more detailed excavation methodology. As a result, this ARD has been distributed to RAPs for comment over a 28-day review period. Stakeholder comments and feedback have been received and incorporated into this report in Section 5.

1.9 Author identification

This ARD was prepared by Anita Yousif (associate director, national technical lead, historical archaeology), Brian Shanahan (team leader, geospatial and digital heritage), Clare Fitzpatrick (research assistant), Graham Wilson (principal heritage advisor), Hannah Morris (senior heritage advisor, Aboriginal heritage), Ian Ostericher (heritage advisor, geoarchaeologist) and Miranda Gronow (heritage advisor). Andrew Sneddon (director) provided input in and review of Aboriginal heritage. The report was reviewed by Dr MacLaren North (NSW director).

All images used in the report were sourced of generated by Extent Heritage, unless labelled otherwise.

1.10 Acknowledgments

Extent Heritage acknowledges assistance of the Sydney Metro and Jacobs/Arcadis project teams.



Figure 2. Study area in context of the Sydney CBD and harbour.



Figure 3. Location plan of the study area.

2. Environmental and historical context

2.1 Introduction

In order to understand the site's archaeological resource and significance, it is important to first understand both the environmental and the historical context of the site and its surrounds. This part of the report provides an overview of environmental and historical context and forms the research basis of the ARD.

2.2 Environmental context

2.2.1 Geology, geomorphology, and soils

The study area is located within the Gymea soil landscape, an erosional horizon often associated with skeletal soil profiles. The Gymea landscape is associated with a landscape of undulating to rolling rises and low hills. The local relief falls within 20–80 m, with slopes of 10–25 per cent (Figure 4).

It should be noted that nineteenth and twentieth century developments in the Sydney CBD have drastically shifted the original landform overall. The site formation process has been outlined in more detail in Part 3 of this report (page80). Prior to this, the area would have consisted of broad convex crests, moderately includes side slopes with wide benches, and localised rock outcrops (<25 per cent) on low broken scarps. Despite this, the broad extent of the Tank Stream Valley may still be visible in the present landscape. Figure 5shows the topography around the study areas at a more macro level. The dip along Hunter Street aligns with the known location of the Tank Stream.

The Gymea soils (DPIE n.d.) are shallow-to-moderately-deep yellow earths and earthy sands (30–100 cm) found on crests and inside of benches, shallow (<20 cm) siliceous sands on leading edges of benches, shallow to moderately deep (<100 cm) siliceous sands and leached sands along drainage lines, and localised podzolic soils. As the soil profile is localised on steep slopes, high soil erosion is prevalent.

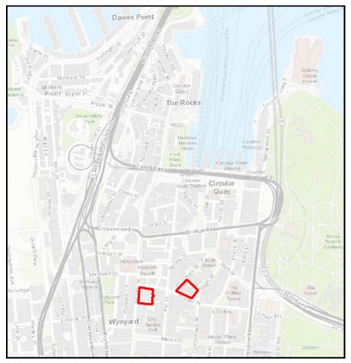
The dominant soil profiles are a loose, coarse sandy loam (gy1) (A1), above an earthy clayey sand, commonly with an apedal massive structure and porous earthy fabric (gy2) (A2). Sandstone, ironstone, and charcoal fragments are common in this horizon. Sandy clayey loam (gy3) or clay (gy4) usually occur as subsoil (B or C horizon). The soil profiles sit on the Hawkesbury Sandstone, a medium-to-course-grained quartz sandstone with minor shale and laminate lenses.

The base of the Tank Stream Valley will also include alluvial and colluvial sand sheets and gravel deposits. This has been noted in geotechnical and archaeological investigations along the Tank Stream—for example, 200 George Street (GML and CRM 2014), 320–328 George Street (Macphail 2015), 19–21 Hunter Street (JK Geotechnics 2018), and the KENS site (DSCA 2003). In some cases, these deposits have been deep and stratified. This was especially noted

at the GPO site (Casey & Lowe 1998), where layered charcoal deposits at the base of the Tank Stream Valley were found to be up to 220 cm thick. Alluvial clay deposits were also recorded at the base of the Tank Stream Valley. Moreover, these clay layers up to 80 cm thick were formed relatively recently, after Aboriginal occupation of the area, capping evidence of the earlier landscape (for example, see Casey & Lowe 1998).

Hunter Street

Tank Stream drain and valley



0 0.5 1 km

Drawn by: Brian Shanahan
Checked by: Madeline Shanahan
Date: 9 May 2022
Projection: GDA 1994 MGA Zone 56
Data Sources: Data: ESRI, ELVIS, Client Nearmap

Elevation 2020 1m

29
-8

Construction sites

Tank Stream Valley profile (Coffey 1995)

Tank Stream based on Trig Survey 1860s

Note: Levels & depths are indicative
Refer to original plans to confirm

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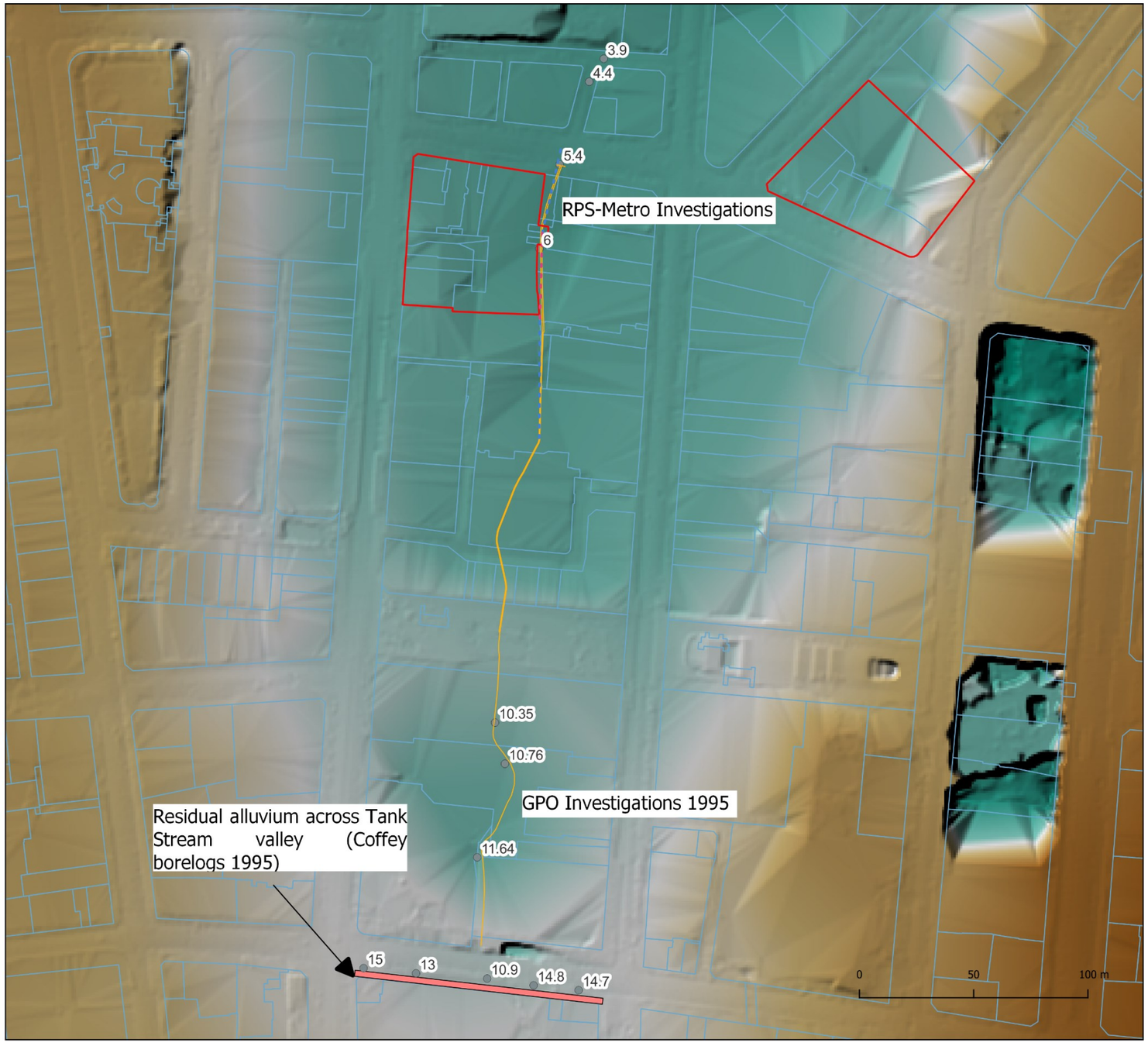
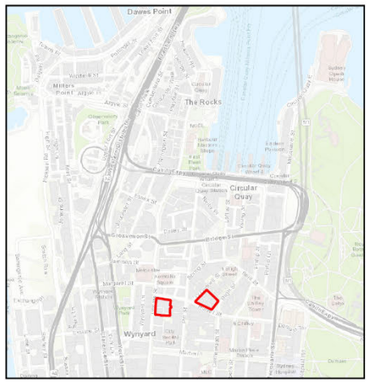


Figure 4. Current landscape and contours. *Source*: Extent Heritage 2022.

Hunter Street

Tank Stream and drain in relation to unbuilt topography



0 0.5 1 km

Drawn by: Brian Shanahan
Checked by: Graham Wilson
Date: 9 May 2022
Projection: GDA 1994 MGA Zone 56
Data Sources: Data: ESRI, ELVIS, Client Nearmap

- Construction Sites
- Possible edge of stream based on 1833 section map (with offsets for projected west bank)
- Tank Stream drain (Trig Survey)
- Stone chamber (19th century engineering plans)

Digital Surface Model of laneway surfaces generated from LiDAR: DCS Spatial Services
Data Capture Start Date: 2020-06-14

Spatial Accuracy Horizontal: +/-0.80 @95% Confidence Interval
Spatial Accuracy Vertical: +/-0.30 @95% Confidence Interval

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Figure 5. Possible original landscape prior to twentieth century. *Source*: Extent Heritage 2022.

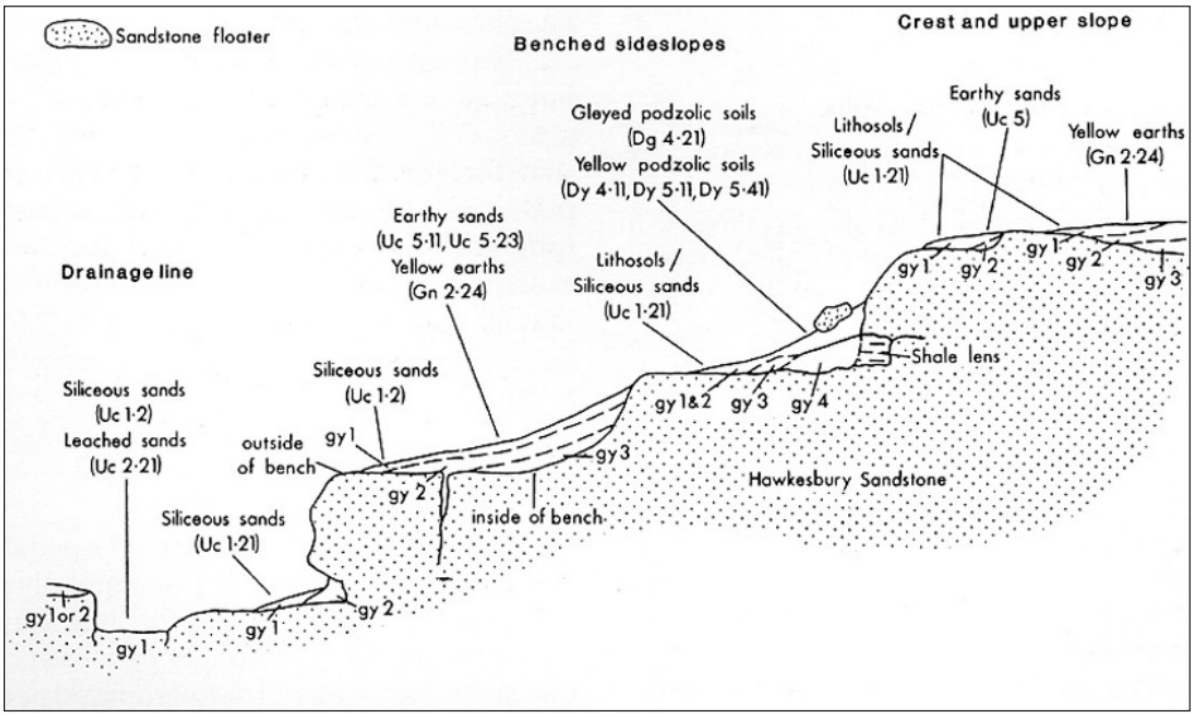


Figure 6. Schematic cross-section of Gymea soil landscape illustrating the occurrence and relationship of dominant soil materials. *Source*: DPIE n.d.

2.2.2 Hydrology

The Metro Hunter Street west and east sites are located in the vicinity of the Tank Stream valley. The Tank Stream, a freshwater tributary, extends from King Street (between Pitt Street and George Street) to Circular Quay. In 1876, the Tank Stream was converted to a closed drainage channel. The current iteration of the Tank Stream drain cuts the eastern arm of the Metro Hunter Street West study area. See Part 2.4.4 of this report (page 27) for further information.

The original Tank Stream Valley has been assessed as being approximately 20 m wide at the Metro Hunter Street West study area. As a result, a small section of the site extends over the former stream bed (Figure 4Figure 5and). Moreover, the location of the Metro Hunter Street East study area would have been 80 m from the bank of the stream.

The study areas are currently located approximately 500 m south of the current Circular Quay wharves. However, prior to nineteenth century reclamation, the shoreline would have been only 250 m from the study areas. It is important to note that multiple phases of sea level change after the end of the Pleistocene would also have had an impact on the proximity of the study area to the shore.

2.2.3 Past vegetation

Several analyses of the natural Tank Stream soil profile have been undertaken in the vicinity of the study area. Spores and pollen recovered from fill and associated sand deposits at the site of 320–328 George Street were analysed by Mike Macphail (2015). Utilising additional data from Angel Place, Macphail was able to reconstruct the Tank Stream vegetation in 1788. This

challenged earlier reconstructions that claimed mesophytic trees and shrubs, including the cabbage-tree palm (*Livistona Australia*), were growing in sheltered areas upstream of Sydney Cove. Instead, the results indicated that vegetation growing on the sides of the Tank Stream Valley comprised dry sclerophyll forest or woodland with a grassy understory. Local flora also included banksia (Banksia), broom-heath (Monotoca), drumsticks (Isoprogon), geebung (Persoonia), guinea flowers (Hibbertia), grevillea (Grevillea), native hops (Dodonaea), rice flowers (Pimelea), and wattles (Acacia) (Macphail 2003, 106).

During the early colonial period, vegetation in the vicinity of the study area changed to include exotic pollens (Macphail 1998; Macphail 2015). An analysis of five samples by Macphail (2015, 67) from the 320–328 George Street site revealed 'surprisingly large amounts of humified plant detritus but comparatively few but still statistically significant fossil pollen and spores (microfloras)'. These microfloras appear to have dated to c.1816–1817, during the early colonial period, when the modified environment had been invaded by exotic weeds. The inferred conditions, according to Macphail (2015, 67), corresponded well with historical descriptions of the area and the likelihood that grazing was occurring at that date.

Trace amounts of pine (*Pinus*), dock (*Rumex*), and a clover (*Trifolium*), as well as significant amounts of cereal pollen, were identified in fills associated with the 1860s oviform Tank Stream at the GPO site (Macphail 1998, 4). The amount of cereal in the deposits implied the date for the sample was younger than c.1840–1860, when horses were the major transport system in Sydney. In addition, the palynoflora was dominated by native grass pollen, eucalypts, and casuarina. The dominance of native grass pollen is considered typical of the Middle Colonial period.

Lithological and palynological data from Angel Place (located directly south of the study area) indicate that the lower reaches of the Tank Stream became a minor 'dust bowl' during the years immediately following European settlement as local vegetation was removed (GML 1998, 45). Evidence of severe drought conditions in Port Jackson during this early colonial period and the impact of timber felling for building materials and firewood are also well-documented (GML 1998, 45; Gregis, Garden, and Ferby 2010)

2.3 Aboriginal history

The following Part outlines information we have relating to Aboriginal occupation, resource use and cultural practices over many millennia. This information is based on multiple strands of evidence including archaeological material, oral and community histories, and documentary sources left from the colonial period on.

2.3.1 Regional archaeological context

Aboriginal occupation of NSW spans at least 40,000 years (Stockton and Holland 1974; Nanson et al. 1987), although dates of more than 40,000 years have been claimed for artefacts and human remains found in barrier sands of Lake Mungo, in the Willandra Lakes Region in far western NSW (Shawcross 1998; Bowler et al. 2003).

The dates of the earlier sites fall before and at the beginning of the Last Glacial Maximum, a period from about 30,000 to 18,000 years before present (BP), when temperatures were between 6°C and 10°C cooler than they are today, and rainfall was less frequent. At the height of the Last Glacial Period, about 21,000 BP, areas of rainforest and tall open forest contracted, and areas of woodland became more extensive than in the periods before 44,000 BP and after 11,000 BP (Attenbrow 2010, 37).

Aboriginal occupation in the Sydney region dates back well into the Pleistocene period, in the later stages of the Last Glacial Maximum and soon after. This evidence comes from radiocarbon dating of charcoal retrieved from excavated sites in the broader Sydney region: at Burrill Lake (c.20,000 CP), Bass Point (c.17,000 BP), and Loggers Shelter in Mangrove Creek (c.11,000 BP) (Bowdler 1970; Lampert 1971; Attenbrow 1981, 2004).

Archaeological sites dating to the Holocene period, and particularly the late Holocene (the last 5,000 years), are more frequently identified in the Sydney region. This is thought to reflect an intensification of the occupation of the area in this period, but also greater survivability of these sites (McDonald 1994). There appears to have been a preference for the occupation of the coastal zone in this period, possibly due to a greater reliance on marine resources through increasing populations, territoriality, and greater climatic variability. Excavation of sites at Sheas Creek (Haworth et al. 2004), Quibray Bay (Roy and Crawford 1981), Kurnell (McDonald 2008 and Dallas 2005), and the Botany Cone Swamp 5 site (Smith et al. 1990) identified shell, bone, and organic materials with dates of up to c.4 ka (thousand years ago) (Attenbrow 2010, 18–19).

Studies of the Sydney region have revealed that Aboriginal sites are distributed across the whole range of physiographic units and environmental zones, although certain types of sites may be more frequently associated with certain parts of the landscape (for example, shelter sites are particularly common in areas of Hawkesbury Sandstone). The archaeology also indicates that different parts of the landscape were exploited by Aboriginal people differently, depending on differing resources that could be seasonally available or highly localised (AMBS 2010, 15; Koettig 1996). Therefore, the archaeological record associated with the Port Jackson catchment (in which the study area is located) is different from that of the Cumberland Plain of Sydney (west of the study area), partly due to resource availability (Attenbrow 1990, 30).

A study of the regional archaeology of the Port Jackson catchment was undertaken by Val Attenbrow in 1989 and 1990. The project involved documentary research on previous archaeological work in the catchment, detailed recording and verification of registered sites, and targeted field survey in areas where no sites had previously been identified. A total of 369 sites were identified, comprising 126 open middens, 203 middens in rockshelters, 6 open middens associated with small rockshelters, 27 deposits in rockshelters, and 7 open deposits (Attenbrow 1990, 42). Surface evidence from middens indicated that the range and predominance of shellfish species varied according to distance from the harbour mouth, with rock platform and ocean species dominating midden assemblages near the mouth of Sydney Harbour. Middens further up the estuary contained fewer species and no ocean species (Attenbrow 1990, 49). The evidence from some excavated sites suggested that Aboriginal people have been occupying the harbour foreshores and collecting shellfish there for at least 4,500 years, and indicated a change in the predominance of particular shellfish species as part of the diet over time (Attenbrow 1990, 61). She also found that most middens were located within 10 m of the high-

water level, and burials were placed in open middens as well as within deposits within rockshelters.

Attenbrow noted a range of factors that may have affected site distribution patterns. These include greater visibility of shell in estuarine zones (compared to stone artefacts), greater visibility of rockshelters and rock platforms on Hawkesbury sandstone compared to artefact bearing sediment on Wianamatta shales, and recording bias in estuarine and sandstone areas compared to the western half of the Port Jackson catchment where development has been concentrated, including the southern side of Sydney Harbour and the Parramatta River (Attenbrow 1990, 43–45).

More recent archaeological investigations have continued to confirm and supplement Attenbrow's assessments.

2.3.2 Gadigal Country

For thousands of years prior to colonisation, the Sydney coastal region was occupied and used by Aboriginal people. At the time of the British invasion over thirty Aboriginal groups appear to have occupied the Sydney region, with each sub-group being distinguished by their own Country, practices, diets, dress, and dialects (Heiss and Gibson 2013). The coastline, rivers, creeks, sandy dune fields, floodplains, swamps, and open forests provided Aboriginal people with rich and varied resource zones and occupation areas. Aboriginal sites across the Sydney region provide tangible evidence of this continued land use and occupation.

The study area is located in Gadigal Country (sometimes spelled Cadigal or Caddigal). The Gadigal here spoke a coastal variant of the Darug language, and were considered part of the coastal 'saltwater' Aboriginal people. As Judge-Advocate David Collins recorded (1798), the names of clans themselves were derived from the combination of a particular geographic location and the suffix 'gal'. Thus, the territory of the Gadigal was 'Cadi'. Their traditional land encompassed southern Sydney, extending from the entrance of the Port Jackson Harbour to Cockle Bay, down south to South Head, and as far inland as Redfern (Phillip 1790 [1792], 309; King in Hunter 1793 [1968], 411).

Notwithstanding the known territorial boundaries of Gadigal Country, movement into and away from the local area was not restricted. In fact, many of Sydney's earliest roads followed well-known Aboriginal trackways. In May 1788, Governor Arthur Phillip led a party to investigate the murders of two convict men on the Cockle Bay foreshore, following an Aboriginal track from today's Haymarket area all the way to Botany Bay (Bradley 1788 [1969]). This track, often referred to in primary sources, roughly followed the route of today's Botany Bay Road and was an important corridor for trade and movement for Aboriginal people in early Sydney (Tench 1793; Hunter 1793). Many of the main thoroughfares such as George Street, Oxford Street, and King Street appear to have been Aboriginal trading routes and tracks to grasslands or bountiful fishing areas (Heiss 2002, 8).

Warrang (Sydney Cove) was located at the intersection of both estuarine and riverine resources, and it shaped key elements of Gadigal life, culture, and economy. Fishing was essential to the lives of the Gadigal, and many sophisticated technologies were developed to further exploit the sea and its resources (Collins 1798; Irish 2017, 13-19). Gadigal and other Darug women used

tied-bark canoes called *nawi* as 'mobile kitchens', fishing with 'burra' or shell fish hooks and sometimes cooking on small fires on the floor of the vessel (Collins 1798; Hunter 1793, Chapter 3; Irish 2017, 35) (Figure 7). Gadigal men used fishing spears called *garrara* to fish from canoes or the rocky outcrops flanking the bay (Phillip 1790, 160; Irish 2017, 35) (Figure 8). The centrality of fishing in Gadigal cultural practices is demonstrated by the ceremonial practice of *malgun*, in which young Aboriginal women had the top two joints of their little finger removed (Hunter 1793, Chapter 3; Irish 2017, 16). Mahroot, a Kameygal man, told a government inquiry 1845 that this was done to aid facility with the fishing line, because 'this here [the finger] is in the way and it troubles them' (*The Select Committee on the Aborigines 1845*, 5).

Important terrestrial resources included local plant foods, insects, birds, and mammals. The 'mogo', a ground-stone hatchet, was used to cut notches in trees that enabled the Gadigal to chase possums and gather honey (Irish 2017, 15). The 'mogo' also allowed the Gadigal people to gather bark that was used to construct shelters (Collins 1798, Appendix 3; Tench 1789, Chapter 11). Typical dwellings were two-sided bark tents (known as 'gunyahs' throughout NSW) (Figure 9), while sandstone rock shelters were used in harsh weather if they were available (NPWS 2003, 189). Collins (1798) described how shelters were made of pieces of bark laid together over a framework of timber to form a low-lying, hut-like shelter that was large enough to hold eight people. According to Tench each hut was:

> nothing more than a large piece of bark, bent in the middle and open at both ends, exactly resembling two cards set up to form an acute angle. (1793, 27–29)

Natural rockshelters and overhangs were also important sources of shelter for the Gadigal and other Aboriginal people in the region (Hunter 1793, Chapter 3). At Yurong Point [Mrs Macquarie's Chair] in the Sydney CBD (*Vocabulary* 1790–1792, 52–53), an Aboriginal midden is associated with a rockshelter large enough for one person to lie down in (AHIMS ID 45-6-2934; 45-6-2935). The midden at Yurong point contained shell species such as Sydney cockles, Sydney Rock Oysters, hairy mussels, periwinkles, and limpets.

The area in and around Warrang was documented in colonial sources to have been an important ceremonial location. In 1795, Judge-Advocate David Collins witnessed a male initiation ceremony attended by a range of groups from across the Sydney region at Woccanmagully, or 'Farm Cove' (Collins 1798, Appendix 6). Collins recorded the proceedings of the initiation ceremony in detail (Collins 1798, Appendix 6). Collins also recorded that 'Colebe's relation' the Gadigal man 'Nan-bar-ray', participated in the initiation ceremony, demonstrating the Gadigal's ceremonial connection with Woccanmagully (Collins 1798, Appendix 6).

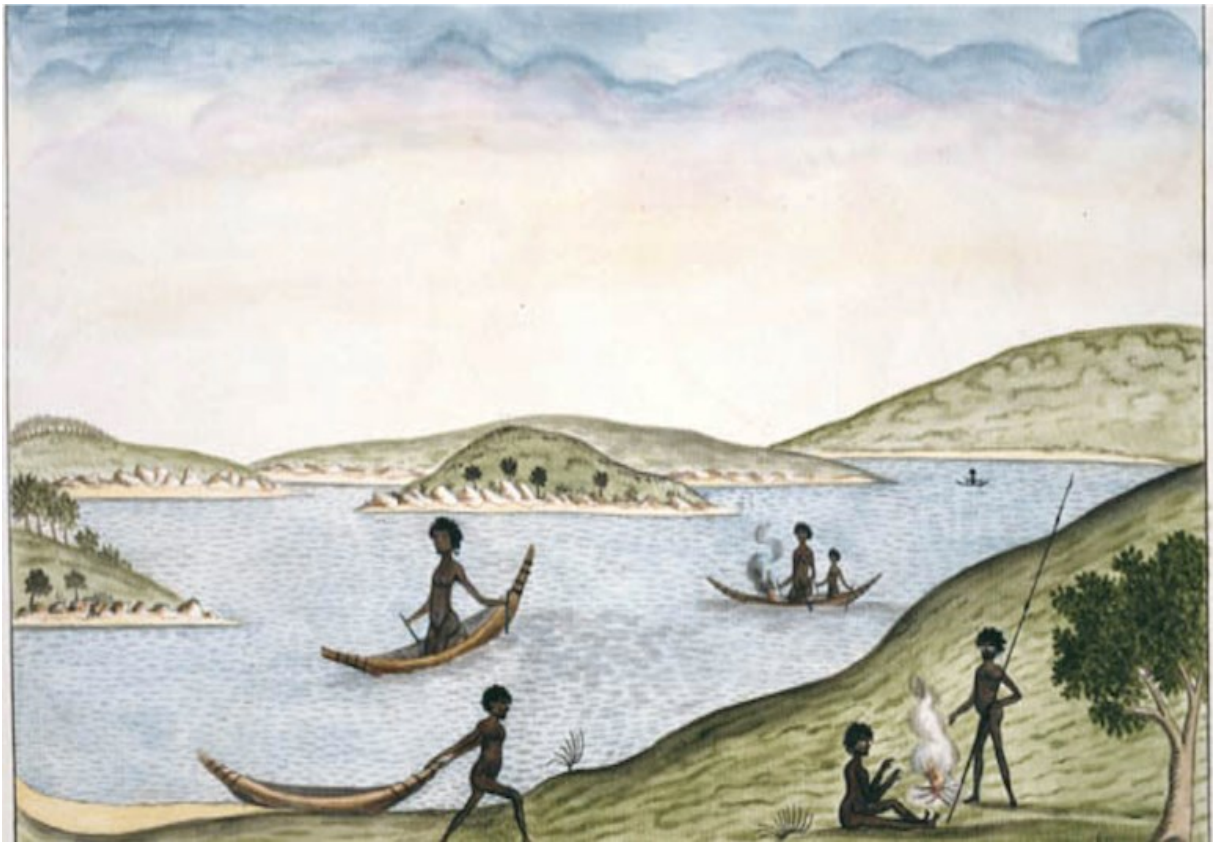


Figure 7. 1790 painting of Aboriginal people fishing. *Source:* Pyrmont History Group n.d.



Figure 8. 1817 painting of Aboriginal people spearing fish by Joseph Lycett. *Source:* Pyrmont History Group n.d.



Figure 9. 'A native camp near Cockle Bay, New South Wales with a view of Parramatta River, taken from Dawes's Point', J. Eyre; engraved by P. Slager, published 1812. NLA PIC Drawer 2238 #S1951.

2.3.3 Tank Stream valley

Both the Metro Hunter Street west and east sites are within or in close proximity to what was historically a natural waterway, which came to be known as the Tank Stream after British colonisation. Prior to significant colonial modification, the Tank Stream valley contained a narrow waterway that widened into a tidal embayment before emptying into Warrang (Sydney Cove). The waterway, and the source swamp to the south, was a critical source of both fresh water and food for people here. As a result, it was a suitable location for Aboriginal occupation. Archaeological studies along preserved sections of the Tank Stream valley have shown that it was used repeatedly as a camping spot (GML 1998a; 1998b; 1998c). The value of the Tank Stream was also recognised by the British, in that it shaped the layout and form of the colonial camp, and later, Sydney Town.

The Tank Stream was, however, just one of several springs and tributaries in the area. Evidence for Aboriginal occupation in association with other fresh water sources identified within the city centre include:

- the KENS site (AHIMS ID 45-6-2647), located on a natural soak or spring and around 1,000 artefacts were discovered (DSAC 2006, 103);

- excavations at 60–70 William Street in Woolloomooloo, where more than 1,000 artefacts were found within 5–10 m of the original alignment of Woolloomooloo Creek (Baker referenced in DSCA 2006, 36);
- excavations associated with Yurong Creek and a spring undertaken at Junction Lane, Woolloomooloo (Irish and Goward 2013) that identified twelve artefacts (AHIMS ID 45-6-2580); and
- excavations associated with Yurong Creek at William Street, Woolloomooloo (ERM 2004) that recovered around 400 artefacts (AHIMS ID 45-6-2651).

An Aboriginal stone object (E.22266) held in the Australian Museum Archaeological Store, described as 'a 'chopping block' was also found adjacent to the Tank Stream near Hunter Street during a development in 1913 (Attenbrow 2002, 25). The only known major development work being undertaken in Hunter Street in 1913 was the construction of the Mutual Assurance Building at 33–39 Hunter Street (opposite the East Construction Site). A newspaper report from December 1913 indicated that excavation of the basements for the Mutual Assurance Building had been completed by that date (*Sydney Morning Herald*, 23 December 1913, 5).

2.3.4 Cultural burning practices

Aboriginal people across Australia are known to have engaged in cultural burning practices that have played a role in moulding Australia's biota (Jones 2012, 4). These practices are still used today in some places (Firesticks n.d.; Bird, Bird, Codding, and Jones 2008). Firestick or landscape burning was undertaken to create habitat mosaics, regenerate plant food, clear undergrowth, manage animal habitats, and for fun (Jones 2021, 7) (Figure 10). Major Sir Thomas Mitchell (1848) noted of the parkland in eastern New South Wales:

> Fire, grass, kangaroos, and human inhabitants seem all dependant on each other for existence in Australia… Fire is necessary to burn the grass and form those open forests, in which we find the large forest kangaroo; the native applied that fire to the grass at certain seasons, in order that a young green crop may subsequently spring up and so attract and enable him to kill or take the kangaroo with nets. In summer, the burning of the long grass also discloses vermin, birds' nests, etc., on which the females and the children who chiefly burn the grass, feed. But for this simple process, the Australian woods had probably contained as thick a jungle as those of New Zealand or America instead of open forests.

Potential evidence for cultural burning has been identified in the vicinity of the study area. At 320–328 George Street, the presence of dry sclerophyll forest with grassy understory was revealed in the pollen and spore analysis. This vegetation was interpreted by Macphail as the type of ecosystem that likely resulted from fires deliberately lit by Aboriginals (Macphail 2015, 67).

Clear evidence of burning was also identified at the GPO site (Casey & Lowe 1998), located at 1 Martin Place. An undisturbed C horizon comprising several distinct layers with charcoal was identified at a depth between 90 and 310 cm below the ground surface. Dating of these samples indicated the organic sediments ranged between 17–24,000 years old (Macphail 1998, 2). Lawrie interpreted these C horizon layers as evidence of a frequent fire regime in the catchment

of the stream, possibly associated with Aboriginal practices (Lawrie 1997, 11). Peter Mitchell (1998, 1–2), interpreted the same data as evidence of bushfires. He also concluded that the deposits were probably within the period of Aboriginal occupation but that the potential for finding artefacts in the vicinity would be very low, although provided no further explanation for this conclusion.

Similar A and C horizons (with the B horizon being absent) were also identified at the KENS site, bounded by Kent, Erskine, Napoleon, and Sussex Streets (DSCA 2003). A 'buried' soil profile was located during the removal of the basement floor level there (DSCA 2003, 4). The investigations identified a considerable concentration of Aboriginal objects (AHIMS 45-6-2647) dating to the Middle and Late Bondian period (c.2,800 BP to 1788) (DSCA 2003, 102). The remnant profile had been truncated and rapidly buried after colonisation, indicated by sharp contexts and an absence of historical artefacts within the truncated in situ soil profile. Overlying this historical event, colluvial deposits were found to contain both historical and Aboriginal artefacts (DSCA 2003, 52). Many of these artefacts were fragmented, chipped, and damaged by heat, suggesting extensive trampling and burning occurred in the area soon after colonisation (DCSA 2003, 59, 67–94). It is unclear whether the burning was natural or cultural, but may indicate continued cultural burning practices during the early colonial period.



Figure 10. Watercolour by Joseph Lycett of a group of Aboriginal men hunting kangaroos, c.1817. *Source*: National Library of Australia, PIC MSR 12/1/4 #R5689, Object ID 138501179, http://nla.gov.au/nla.obj-138501179/view.

2.4 British colonisation

On 26 January 1788, life in Gadigal Country changed forever when a fleet of ships carrying British convicts, marines, officials, and their families, sailed into Warrang with the intention of founding a penal colony. Gadigal Country was not their first choice; the British originally landed in Kamay (Botany Bay), but a lack of fresh water motivated them to look elsewhere. Upon arriving in Port Jackson, now commonly referred to as Sydney Harbour, the British officers were greeted by what Captain Watkin Tench later described as 'a port superior, in extent and excellency, to all we had seen before' (Tench 1789, Chapter 9). The British were drawn to this cove by the safety it afforded their ships, but, most importantly, the freshwater stream running into the harbour (Collins 1798, Chapter 1; Tench 1789, Chapter 9).

2.4.1 Early colonial contact

The First Fleet's arrival heralded change on an unprecedented scale for the Gadigal, and ultimately for all of Australia's Indigenous people. While relations were at first cordial, it soon became apparent that the British intended to stay. This first chapter of colonisation was characterised by some fascinating politics and instances of cross-cultural relationship building (Clendinnen 2005; Karskens 2009), many of which took places around the early British encampment.

However, the impacts and harsh reality of colonisation, were soon seen and experienced by Aboriginal people throughout the region. As traditional laws were consistently violated by the British, and access to Country and resources were increasingly restricted, violence and deprivation became a reality. The theft and occupation of traditional hunting lands deprived Aboriginal groups of sources of food and access to camping and ceremonial sites. However, in areas where settlement was sparse, at least initially, traditional Aboriginal subsistence practices could continue. The diaries of early colonial settlers reveal that at least some traditional practices, such as fishing, continued along the Cooks River and its tributaries into the early nineteenth century (Backhouse 1843, 288).

The British also brought devastating diseases with them, such as smallpox. These had a catastrophic impact on the Aboriginal population, cultures, and economies. Early documentary evidence indicates that the Gadigal clan was reduced from approximately fifty people in 1788 to just three in 1791 (Bennelong in Collins 1798, 497). The survivors were named Colebee (Sea Eagle), Nanbree (Nanbary), and Garuey (Gurrooee) (Bennelong in Collins 1798, 497). The spread of smallpox was soon followed by influenza, measles, tuberculosis, and other diseases.

Eventually, the spread of British settlement, combined with devastation from diseases, forced some Aboriginal inhabitants to either relocate into the potentially hostile lands of neighbouring Aboriginal groups (Bennelong in Collins 1798, 495), to partially integrate into colonial society as fringe dwellers, or to resist. This resistance took multiple forms. In March and April 1788, several beatings and spearings of convicts by local Aboriginal people took place outside the British encampment in Sydney Cove. The attacks continued with the death of convicts William Okey and Samuel David in May (White c,1757–1832, n.p.). Governor Arthur Phillip and others suggested these attacks must have been provoked by the convicts (Gapps 2018). This belief was confirmed when an inquiry was made. The account of Judge-Advocate David Collins states the inquiry found that the convicts had stolen a *nawi*, and that the warriors had acted in their

own defence (Collins 1798, n.p.). In most other cases, resistance by Aboriginal groups was met with retaliatory action by white settlers and the colonial administration.

Despite continued disenfranchisement, Aboriginal people did not disappear from Sydney, but remained present and actively involved in the life of the town (Irish 2017). As the British settlement grew, the Gadigal retained a connection to Country by camping and fishing in areas left untouched by the expansion of Sydney Town, or in locations where they had built relationships with sympathetic landholders. These areas seem to have functioned as 'gaps in the grid' that gave the Gadigal access to their land (Byrne 2003, Irish 2017, 47–50). Paul Irish has argued that open areas in the vicinity of Sydney Town were also used by Aboriginal people as 'staging posts' for trips into Sydney, allowing Aboriginal people to engage with the town whilst retaining a 'strategic distance' from it (Irish 2017, 47–50). Several key areas in the vicinity of Sydney Town continued to be used by Aboriginal people in the early decades of the nineteenth century (Figure 9 and Figure 11), but by the mid-nineteenth century, many Aboriginal people had moved to places such as La Perouse on Botany Bay. Despite this forced displacement, some Aboriginal communities continued to maintain strong cultural ties with the area.

2.4.2 The town around the Tank Stream

The early colonial history of the area that is now Hunter Street was defined by its proximity to the 'Tank Stream'; the primary fresh water source for the fledgling colony. The layout and form of the early camp at Sydney Town, was essentially determined by the footprint of the Tank Stream, which formed a natural demarcation between the civil and administrative zone on the eastern side of the stream, and the military zone on the west side (North 2011). As can be seen in Figure 11, each of these zones were surrounded by tents of male and female convicts. These tents were eventually replaced by the wattle and daub huts that defined the early built form of Sydney. The location of these convict tents eventually formed the basis for Sydney's first residential districts: the Women's Convict Tents, for example, were replaced by more permanent structures that eventually became the residential district 'The Rocks' (Karskens 2009, 74).

The line of Hunter Street was one of two crossing points of the Tank Stream. The track on the eastern side of the stream formed the southern boundary of three rows of convict huts that separated the stream from Phillip's Government House in what is now Bridge Street. The three rows of convict huts survive in the existing lines of Spring, O'Connell, and Bligh Streets. The line of Hunter Street on the western side of the stream formed an intersection with the settlement's main street (High Street, later George Street) opposite the Marine barracks. Despite the formal policy that New South Wales was to be an agrarian penal colony, the commercial interests of British officers and merchants coupled with the ingrained consumer culture of the convicts soon gave rise to a well-developed mercantile culture in Sydney Town (Karskens 2009, 169–177). These factors, combined with the town's geographic setting on a well-connected potential port, fuelled the early growth of Sydney Town, strictly contrary to the official wishes of the British Government (Karskens 2009, 182—185).

A map produced nearly twenty years after colonisation provides some insight into the way in which 'Sydney Town' developed in its first two decades (Figure 12). The military and administrative centres of the town remained on the western and eastern sides of the Tank stream respectively, but they were increasingly surrounded by straggling, non-orthogonal

streets. Most of these streets were dirt tracks and the early urban environment was decidedly pre-industrial, resembling a medieval town more than a planned Georgian city (Karskens 2009, 182).

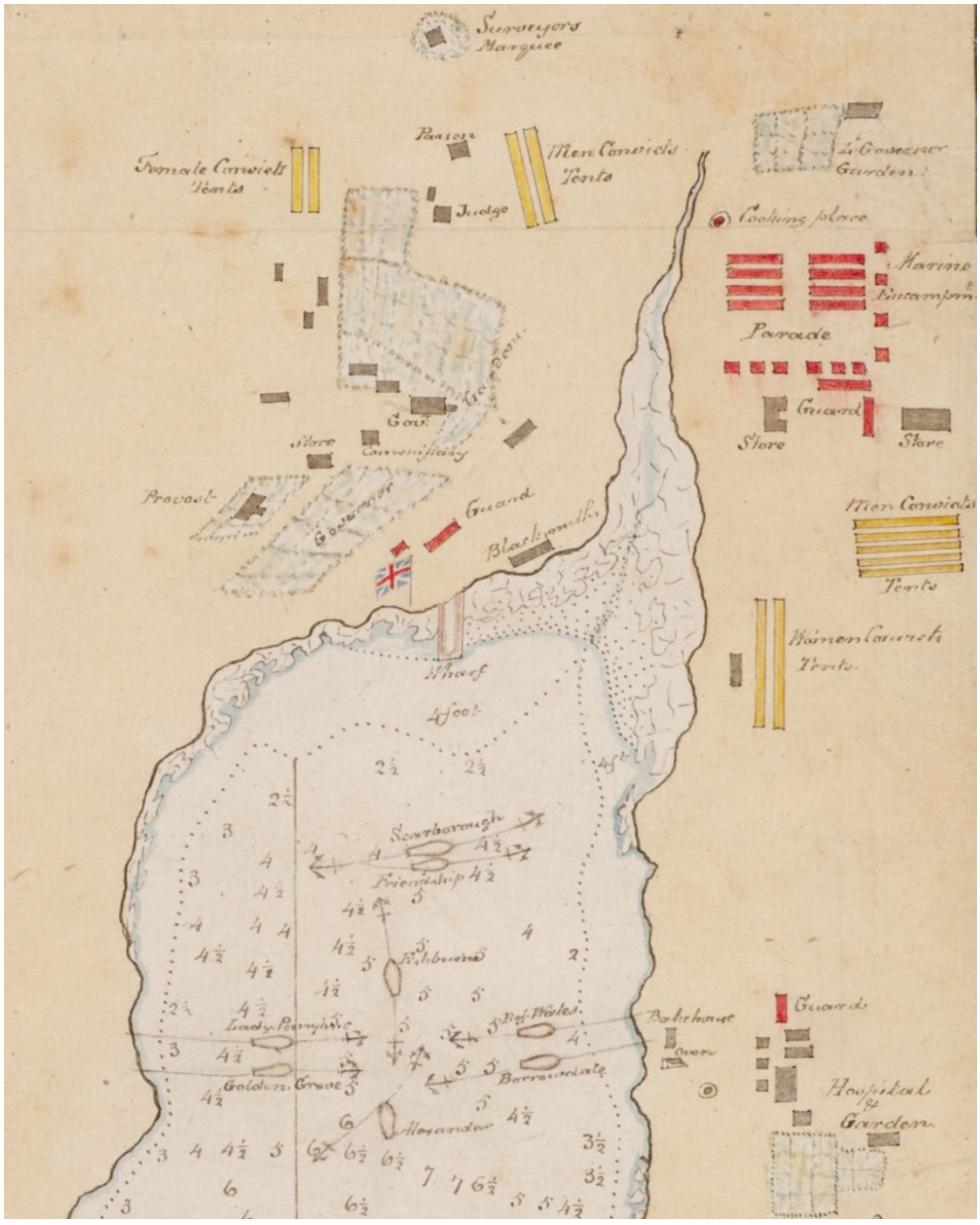


Figure 11. Detail of 'Sydney Cove, Port Jackson: The Position of the encampment of buildings are as they stood 1 March 1788', William Bradley. *Source:* Bradley 1802, SLNSW, Safe 1/14, 7.

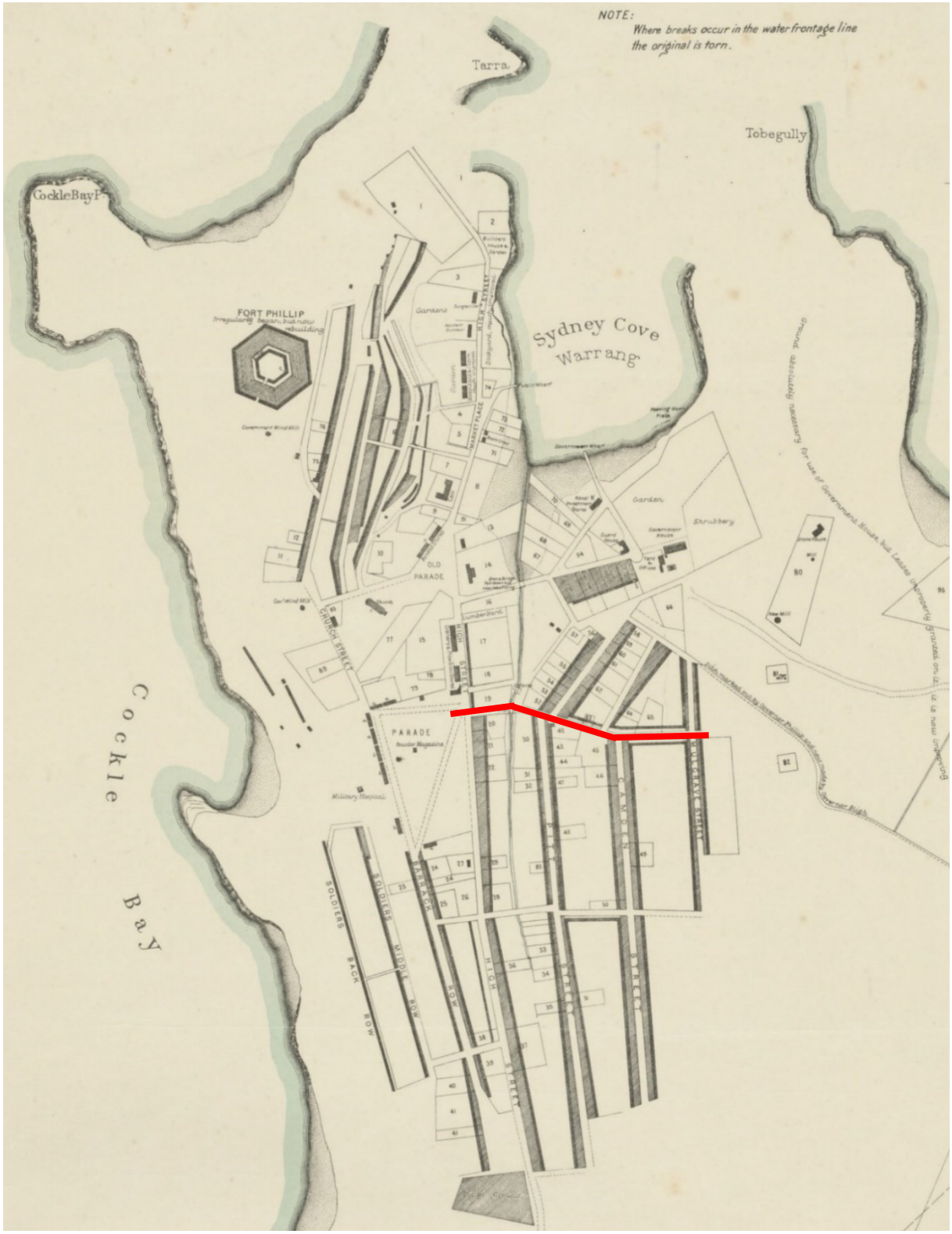


Figure 12. Lithograph reproduction of 'Plan of the Town of Sydney in New South Wales', Jas Meehan, 1807, showing the location of 'Bell Street', now Hunter Street. *Source:* NLA MAP F 105B.

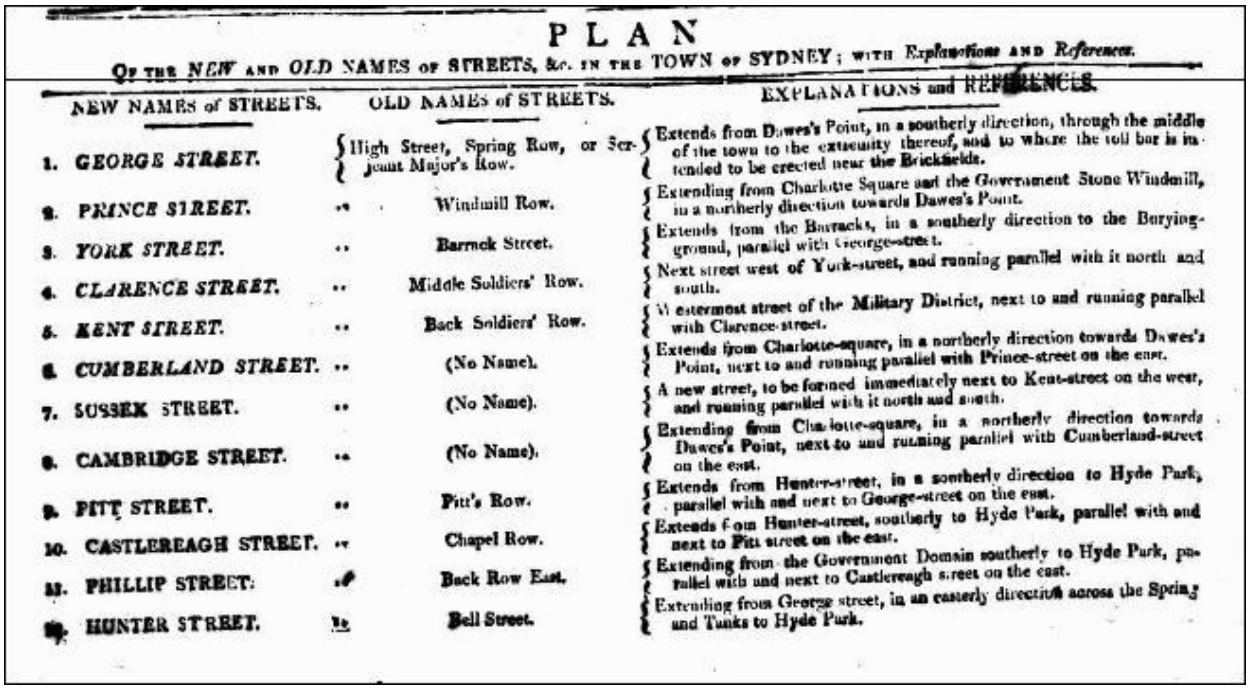
None of the structures in early Sydney Town were purely residential—even the grandest houses of the early colony were spaces where work and home were mixed (Karskens 2009, 180). Yards in the early colony were used as slaughterhouses, blacksmiths, and premises for stonemasons,

or housed new business such as hotels (Karskens 2009, 180). Most of the occupants of these houses did not hold any kind of formal land title, but instead occupied the land by way of 'permissive occupancy' (Karskens 2012). In the plan of the 1807 town shown above Figure 12(), this is nowhere more evident than in the 'leases improperly granted' in the area on the east side of Warrang. This land, originally intended to be Crown Land for use of the Governor, is of course 'The Domain' of modern Sydney.

Within this growing and largely unregulated town, 'Bell Street', now Hunter Street, lay on the very edge of the town's civil and administrative district. The diagonal streets running north of Bell Street can be seen to radiate out from this district, which contained Government House. To the east of Bell Street was a 'ditch', marked out by Governor Phillip and again by Governor Bligh, that sought to assert the inviolability of Crown Land. A number of leases had already been granted along Bell Street, and the prized land directly adjacent to the Tank Stream was almost fully occupied. Arterial roads directed walkers to various early landmarks: to the south, the Brickfields and the Burial Ground, to the west, a small bridge straddling the Tank Stream would take a walker to the military buildings in the west of the town, or further north to the lumber yard, marketplace, or the docks. 'Bell Street', was, then, an important thoroughfare, connecting different parts of the town as it changed and grew.

2.4.3 Macquarie's Sydney

When Governor Lachlan Macquarie arrived in New South Wales in 1810, he quickly began reshaping the built form and urban environment of Sydney Town. Lengthy Government notices in the *Sydney Gazette* informed the town's inhabitants that the Governor was engaged in improving 'the Ornament and Regularity of the Town of Sydney' (*Sydney Gazette,* 6 October 1810, 1). Much has been written about Elizabeth and Lachlan Macquarie's vision for Sydney, and the various ways in which they sought to impose their own ideas of neo-classical order on the straggling pre-industrial town (e.g., Karskens 2009, 189–232). The impact of this vision in the vicinity of Hunter Street was chiefly related to the rationalisation and formalisation of the street system. Macquarie thought it important 'to give regular and permanent names to all the streets and ways leading through the town, and to order posts and finger-boards, with the names of the streets painted on them, to be erected in conspicuous parts of the different streets…' (*Sydney Gazette,* 6 October 1810, 1). Streets previously known by several names were standardised: High Street became George Street, and the streets south of Government House were named after previous Governors. Hunter Street, formerly Bell Street, was named for Governor Hunter (Figure 13).



PLAN

OF THE NEW AND OLD NAMES OF STREETS, &c. IN THE TOWN OF SYDNEY; WITH Explanations AND References.

NEW NAMES of STREETS.	OLD NAMES of STREETS.	EXPLANATIONS and REFERENCES.
1. GEORGE STREET.	High Street, Spring Row, or Serjeant Major's Row.	Extends from Dawes's Point, in a southerly direction, through the middle of the town to the extremity thereof, and to where the toll bar is intended to be erected near the Brickfields.
2. PRINCE STREET.	Windmill Row.	Extending from Charlotte Square and the Government Stone Windmill, in a northerly direction towards Dawes's Point.
3. YORK STREET.	Barrack Street.	Extends from the Barracks, in a southerly direction to the Burying-ground, parallel with George-street.
4. CLARENCE STREET.	Middle Soldiers' Row.	Next street west of York-street, and running parallel with it north and south.
5. KENT STREET.	Back Soldiers' Row.	Westermost street of the Military District, next to and running parallel with Clarence-street.
6. CUMBERLAND STREET.	(No Name).	Extends from Charlotte-square, in a northerly direction towards Dawes's Point, next to and running parallel with Prince-street on the east.
7. SUSSEX STREET.	(No Name).	A new street, to be formed immediately next to Kent-street on the west, and running parallel with it north and south.
8. CAMBRIDGE STREET.	(No Name).	Extending from Charlotte-square, in a northerly direction towards Dawes's Point, next to and running parallel with Cumberland-street on the east.
9. PITT STREET.	Pitt's Row.	Extends from Hunter-street, in a southerly direction to Hyde Park, parallel with and next to George-street on the east.
10. CASTLEREAGH STREET.	Chapel Row.	Extends from Hunter-street, southerly to Hyde Park, parallel with and next to Pitt street on the east.
11. PHILLIP STREET.	Back Row East.	Extending from the Government Domain southerly to Hyde Park, parallel with and next to Castlereagh street on the east.
12. HUNTER STREET.	Bell Street.	Extending from George street, in an easterly direction across the Spring and Tanks to Hyde Park.

Figure 13. Macquarie's directions for the new names of Sydney Streets, published in the *Sydney Gazette* in 1810. Source: *Sydney Gazette,* 6 October 1810, 1.

Macquarie's impact on Sydney Town also involved more physical changes and additions to its built form. Macquarie set about straightening and widening the streets of Sydney, and ordered the demolition of any buildings that did not fit within his vision of an orthogonal urban environment (*Sydney Gazette,* 6 October 1810, 1). Macquarie also began an extensive programme of public works and was responsible for the construction of a number of important new buildings near Hunter Street, such as Hyde Park Barracks, St James' Church and the 'Rum' Hospital on Macquarie Street. Macquarie also began the relocation of Government House, formalised the boundaries of the Domain by way of a stone wall, landscaped the area inside the Domain, and established a government garden (Bigge 1822, Addendum B, Enclosure A). Macquarie's legacy in Sydney is complex and largely beyond the scope of this research, but his impacts in the vicinity of Hunter Street essentially comprised an urban planning exercise; the cumulative result of Macquarie's landscaping efforts was a visually more orderly town that now boasted various examples of monumental Georgian architecture.

2.4.4 The Tank Stream

2.4.4.1 Natural stream and early modifications

As discussed above, the location of the Tank Stream shaped the early form of Sydney Town and defined its early military and administrative zones. Figure 14gives a sense of the Tank Stream Valley's visibility and importance in the topography of early Sydney Town.



Figure 14. ‘View of Sydney Cove.’ T Watling, c. 1794–1796. *Source:* SLNSW V1/1794+/1.

Soon after the establishment of the colony, it became clear that the flow of the stream was not as regular as had first been thought. In 1788, William Bradley wrote in his diary that ‘having had a great deal of dry, Hot weather it was observed that several of the Streams of fresh water had stoped [sic] and others run very slow’ (Bradley 1802, 85). At the end of 1791, Captain Watkin Tench observed that

> The extreme dryness of the preceding summer has been noticed. It had operated so far in the beginning of June that we dreaded a want of water for common consumption most of the little reservoirs in the neighbourhood of Sydney being dried up. The small stream near the town was so nearly exhausted (being only the drain of a morass) that a ship could not have watered at it, and the 'Supply' was preparing to sink casks in a swamp when rain fell and banished our apprehensions (Tench 1793, Chapter 15)

By 1790, work had begun on cutting the eponymous Tank Stream tanks into sandstone just north of the street that became Hunter Street, partially diverting its flow and ensuring a more reliable source of water (North 2011; Karskens 2009, 248–249). Work was also carried out to smooth the rock bed of the stream in an effort to encourage its flow (North 2011). By 1807 the stream had been bridged at Hunter Street, that formed the northern termination of Pitt Street (Figure 16).



Figure 15. Detail from 'Plan of the town of Sydney in New South Wales.' J Meehan, 1807. *Source:* NLA Map F 105B.



Figure 16. The bridged Tank Stream in Lancashire, John William, *View of Sydney Port Jackson, New South Wales, taken from the Rocks on the western side of the Cove*, ca. 1803. *Source:* SLNSW DG SV1/60.

Early Governors also made attempts to protect the cleanliness of the water in the stream by issuing government orders. Governor Philip forbade felling trees in the vicinity of the stream

(Karskens 2009, 249–250), and Governor Hunter attempted to stop the encroachment of residential buildings and animal husbandry into the Tank Stream, issuing an order in 1795 that 'any person found using a path from the house to the [Tank S]tream, or keeping hogs in the neighbourhood thereof … will be removed, and the house pulled down.' (Hunter 1795, *HRNSW* 2, 326; North 2011). Similarly, a general order issued in 1802 promised prosecution to 'any person whatever … detected throwing any Filth into the Stream of Fresh Water, cleaning Fish, Washing, erecting Pig-styles near it, or taking Water up at the Tanks' (*Sydney Gazette and New South Wales Advertiser,* 18 December 1803, 1, reproducing an order from 14 October 1802).

These orders to preserve the purity of the stream were largely disregarded by the burgeoning populace of Sydney Town, and only decades after the arrival of the British, the stream was becoming increasingly polluted. An 1803 editorial in the *Sydney Gazette* commented that

> It may be justly wondered that the Tank or Bason at the foot of the Spring, should be so totally neglected, at the same time that it is so essentially serviceable. A quantity of sand and rubbish has accumulated within the bason [sic], which cannot … contribute to the purity of the stream (*Sydney Gazette,* 7 August 1803, 2).

By the 1820s, the pollution of the Tank Stream was a serious problem, and the inhabitants of Sydney Town complained about

> the polluted state of the Tanks, and stream of water on which the inhabitants at present chiefly depend for a supply of this indispensable necessary [sic] of life. On the banks of the stream are a soap manufactory and beer breweries, which they consider a public nuisance, inasmuch as their dregs and lees running into the stream form a mixture of so deleterious a quality, they understand to endanger animal life (*The Australian,* 9 June 1825, 2).

This situation was never materially remedied, as, for example, the presence of slaughterhouses on the banks of the stream were not banned until 1850 (*Sydney Morning Herald,* 18 March 1850, 3). The increasingly polluted state of the Tank Stream is clearly illustrated in a c.1842 watercolour, which shows residential and commercial structures flanking the freshwater stream, and also gives a sense of the extent to which sand and silt had accumulated on its banks, slowing its flow (Figure 17). Vegetation clearance also accelerated the rates of sedimentation in both the Tank Stream and the other bays in the vicinity of the town (Birch et al. 2009; McLoughlin 2010).



Figure 17. 'The Tank Stream', JS Prout, c. 1842, watercolour. Source: Art Gallery NSW, accession no. 1034.

2.4.4.2 Channelisation

The formalisation and channelisation of the course of the Tank Stream began in the early decades of the nineteenth century. An order made by Governor Macquarie in 1810 ordered households with frontage along the stream to construct a retaining wall to protect the town's water supply:

> For the more completely preserving the Cleanliness and Purity of the [Tank Stream], His Excellency strongly recommends to all the Proprietors of Ground lying on the Banks, to build along-side therof a substantial Wall of Masonry four feet high, for the entire extent of their premises, whereby they will contribute most effectually to the preserving that purity to the Water which a sense of decency alone should dictate, and which is absolutely necessary to the preserving [of] it for the use of Man. (*The Sydney Gazette and New South Wales Advertiser,* 22 September 1810,1).

Progressive alterations such as these were made to the stream in the first half of the nineteenth century, and the stream was gradually covered with stone and brick before it was ultimately enclosed by an oviform drain in the 1860s (North 2011). As Grace Karskens writes, the Tank Stream was ultimately a casualty of the growth of Sydney:

> the foundational urban stream, which had drawn and succoured the first settlement, was a virtual sewer. It was covered over and buried in the 1860s. Today it runs silently through arched stone culverts under the city streets. (Karskens 2009, 250).

By 1833 the section of the stream south of the study area and north of King Street had been channelised. The northern portion of the stream immediately south of Hunter Steet remained an open valley. In c.1837 the eastern section of the southern side of Hunter Street (west of Pitt Street) was built over to form Regent Terrace (Figure 18). Regent Terrace was a row of three-storey shops first mentioned in 1837 for businesses using Regent Terrace, Hunter Street as an address. The Currency Lass Hotel was the most easterly of the terrace buildings and was located on the corner of Pitt an\d Hunter Streets. The construction of the terrace also required the Tank Stream to be converted into a culvert[1].

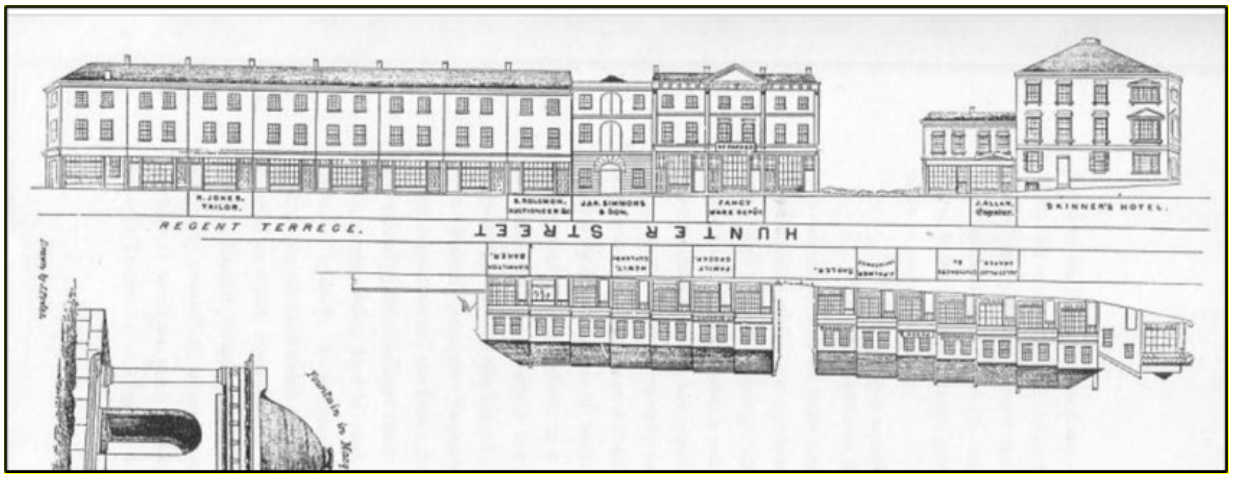


Figure 18. The southern Hunter Street streetscape between Pitt Street (left) and George Street (right) (Joseph Fowles, Sydney in 1848).

The culvert connected with the Hunter Street Bridge abutment in the south and then discharged into an open channel (Figure 19). The unenclosed portion of the Tank Stream is shown a photograph dating to 1854 taken from the bridge at Bridge Street looking south down the newly formed Pitt Street extension (Figure 20). The photograph shows filling of the Tank Stream valley prior to enclosure.

[1] It should be noted that this phase on enclosing the Tank Stream between 1833 and 1837 is not referred to in the existing histories of the development of the Tank Stream SWC



Figure 19. Pitt St, Sydney, 1851, JB Henderson showing open channel on the northern side of Hunter Street (at left) with Pitt Street at right, Bridge Street in distance. *Source:* SLNSW SSV1/St/Pitt/1.



Figure 20. Pitt and Bridge Streets, 1854. Bridge Street in foreground, Pitt Street at left with Regent Terrace (Hunter Street) visible on extreme right, Tank Stream at lower right. *Source:* Sydney Water.

By 1854, the section of the Tank Stream from the southern side of Regent Terrace had been converted to a culvert as far south as the southern boundary of the present 115 Pitt Street. All of this work predated enclosure of the Tank Stream by the Corporation. Later plans (OCP 289) suggest that in enclosing the Tank Stream in this location an L-shaped chamber beneath Regent Terrace was constructed in c.1837 (Figure 21). The workmanship may have been of variable quality and it is stated on OCP 289 that the two houses located above the large chamber 'could easily fall in'.

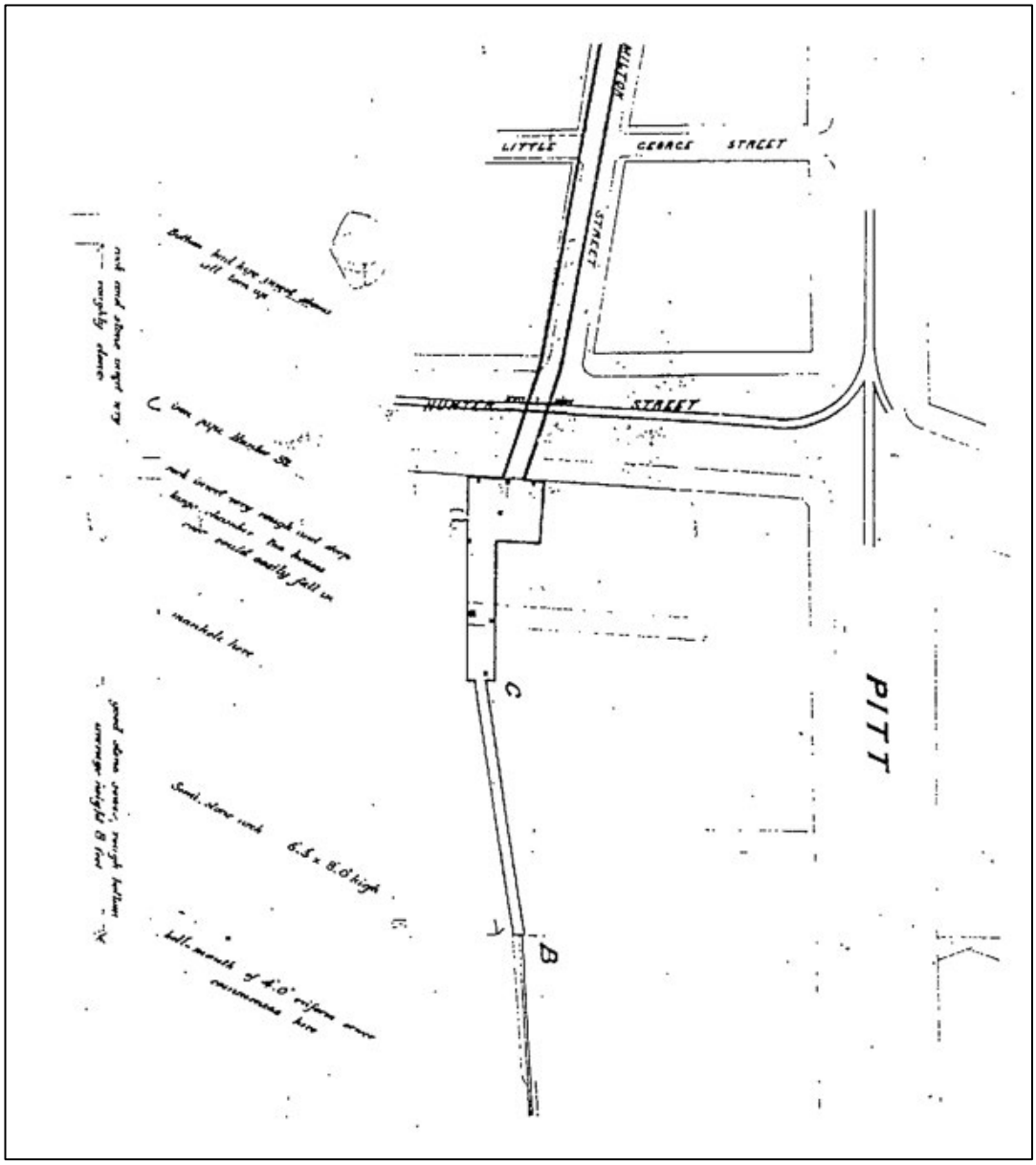


Figure 21. OCP 289 showing chamber and existing drain in 1879. *Source:* Sydney Water.

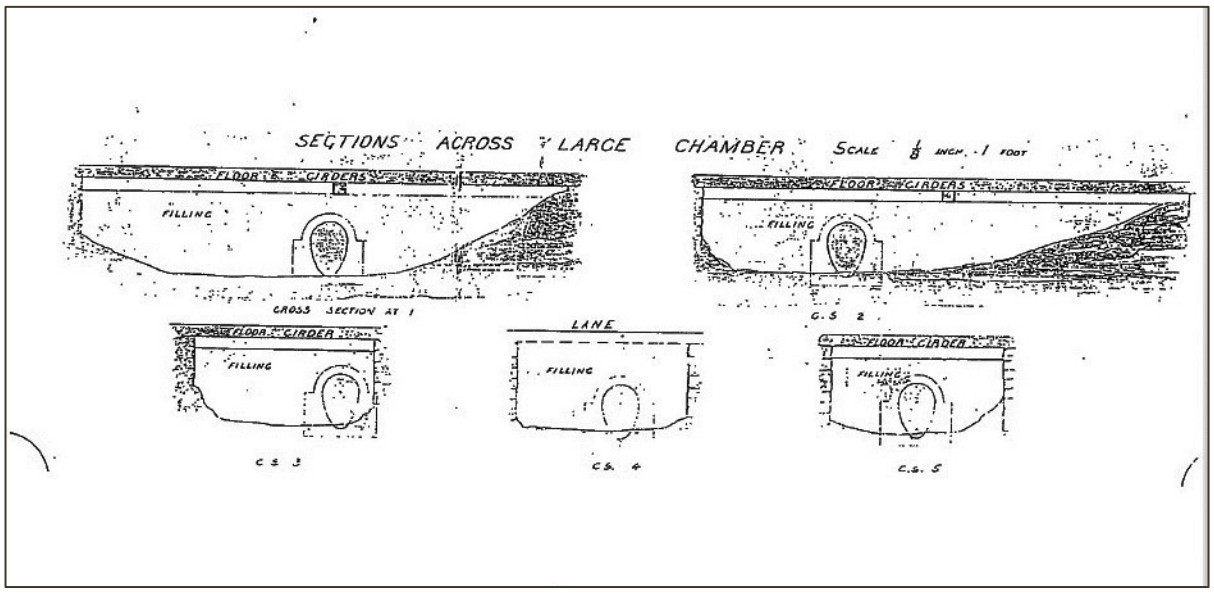


Figure 22. OCP 289 west-east sections through large chamber in 1879. *Source:* Sydney Water.

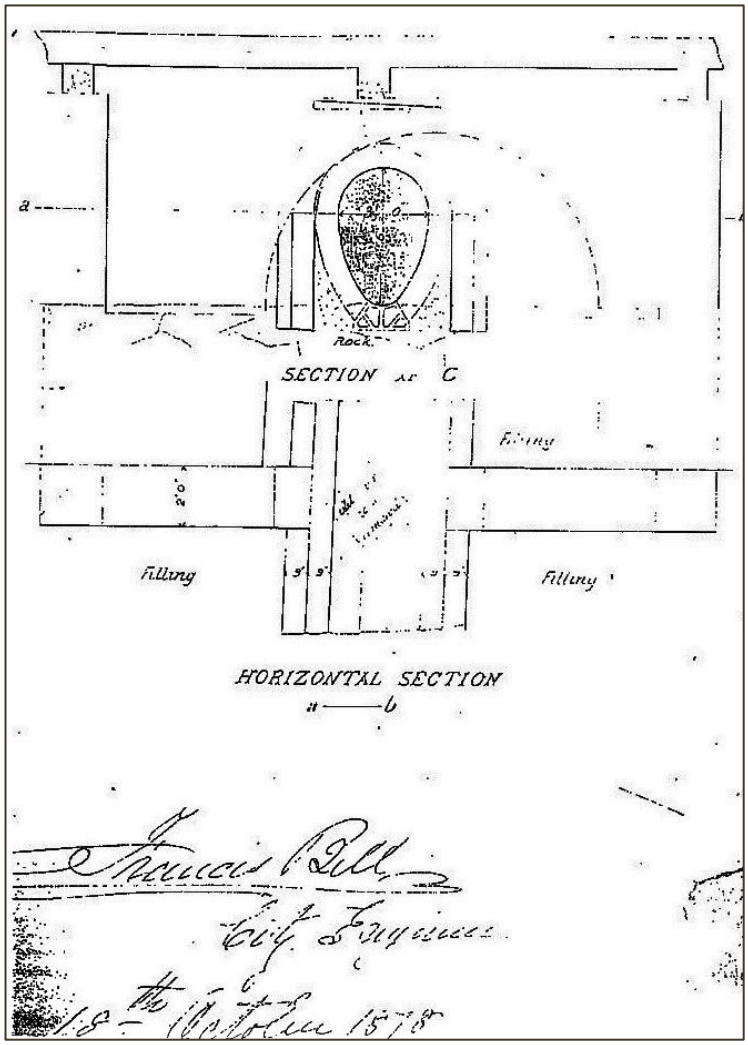


Figure 23. OCP 289 Section/elevation at southern end of large chamber in 1879. *Source:* Sydney Water.

In 1879, a contract for the replacement of the existing portions of the drain and chamber south of Hunter Street was prepared by city council. This consisted of the replacement of the existing system by a brick oviform. The completed line was provided with a series of access chambers (AC), the relevant portals being AC 18 on the southern side of Hunter Street to AC 22 located adjacent to the southeast corner of the study area (Figure 24). It is noted in the Tank Stream CMP that access chambers AC 21, AC 20, and AC 19 are now blocked. It is also noted that the brick oviform south of the southern boundary of 15–17 Hunter Street to AC 22 consists of two segments: a sector created in 1962 of concrete pipes, and a shorter sector of steel pipes laid in 1958 and 1978. Both sections are 1350 mm in diameter, and both circular profiles feature a formed cement invert in the bottom part of the pipes (CMP 2005, 37) (Figure 25). A portion of the site forming part of 7–13 Hunter Street extends across this later replacement section of the Tank Stream SWC. It should be noted that the modern replacement sections with a 1350 mm diameter are significantly larger than the brick oviform they replaced (710 mm wide by 1070 mm high internal dimensions).

A recent CCTV survey and laser scanning of the Tank Stream (SAS TTI JV. 2021) was were discussed and interpreted by CRM (Figure 26, see also Figure 98). The plan indicates that the section of the Tank Stream located within the eastern arm of Hunter Street West still comprises the brick oviform drain.

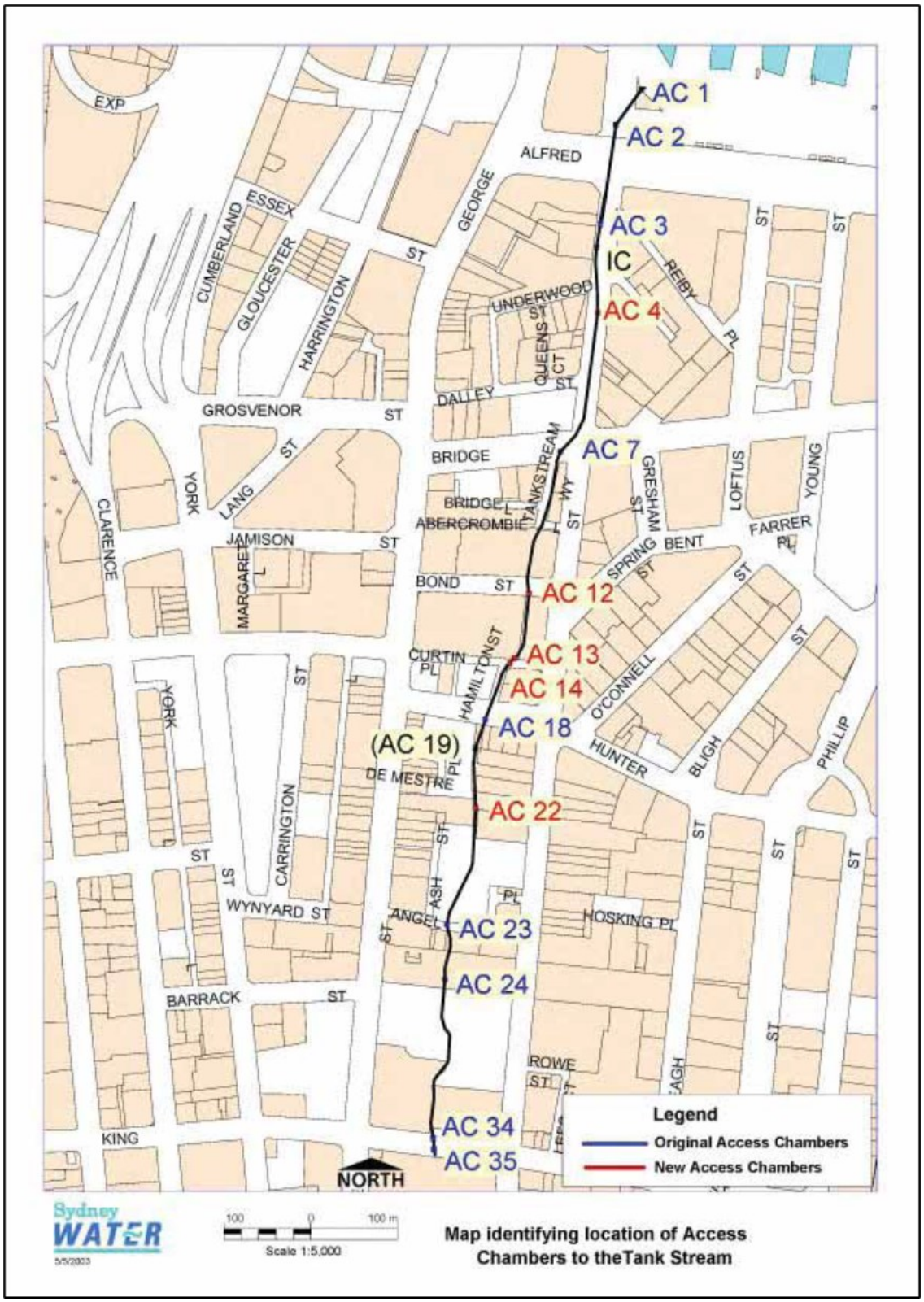


Figure 24. Historic and New Access Chambers. *Source:* Sydney Water 2005 (Figure 3-3).

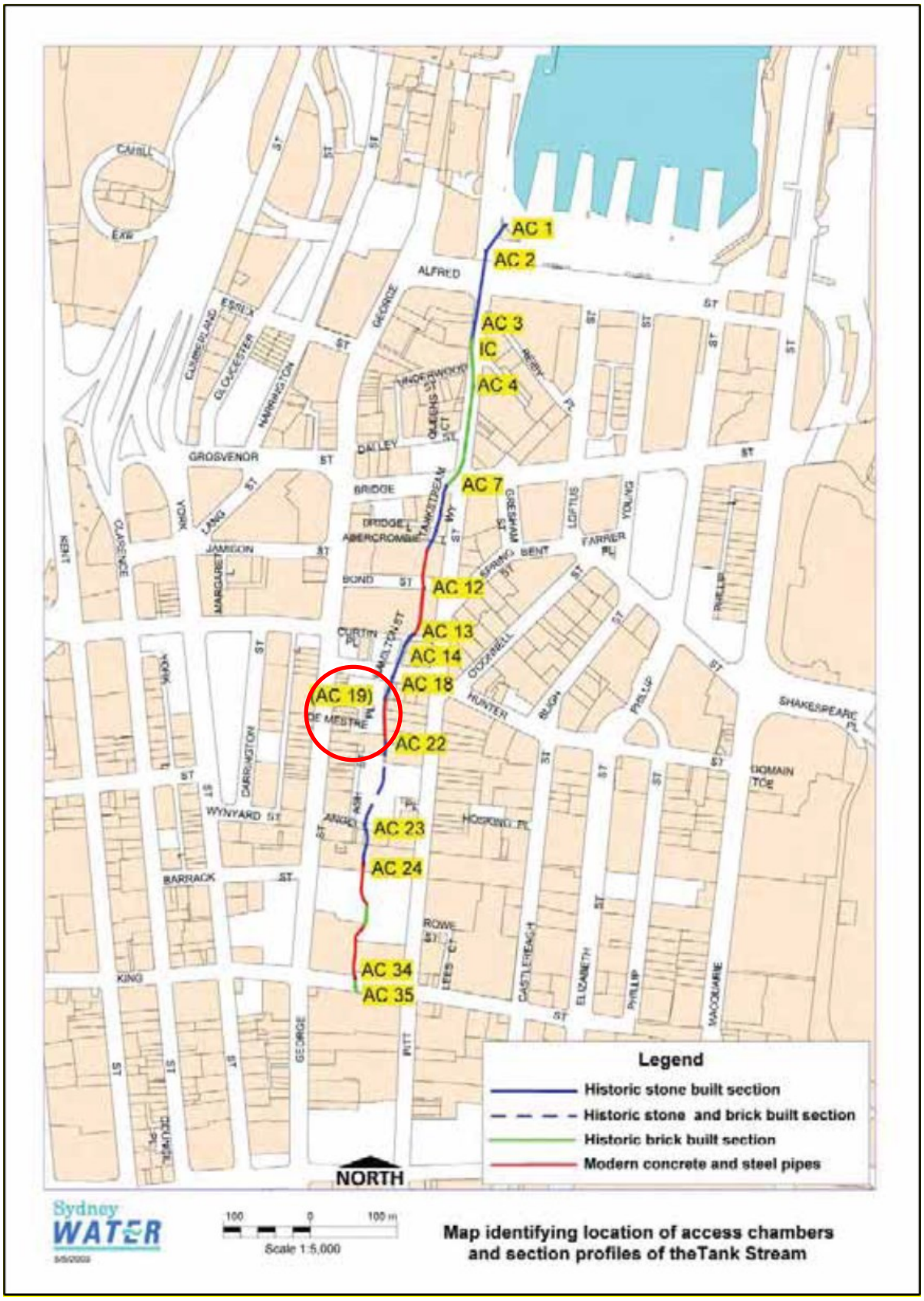


Figure 25. Historic and new profiles of the Tank Stream. The original fabric of the Tank Stream drain has been replaced with modern fabric. *Source:* Sydney Water 2005 (Figure 3-2).

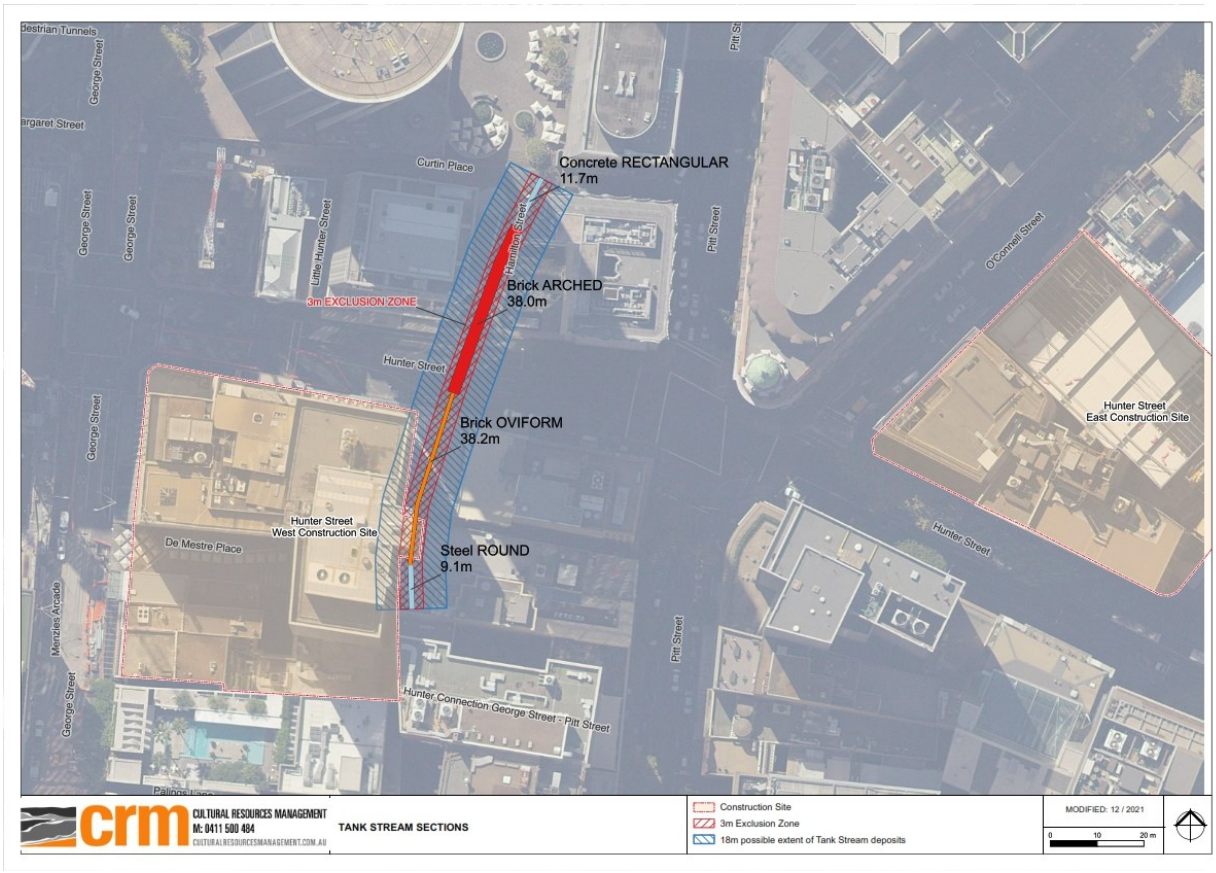


Figure 26. Tank Stream sections. *Source*: CRM / RPS 2021

2.5 Site specific historical development

2.5.1 Western construction site

2.5.1.1 Early leases and structures

The early development of the western construction site was defined by its close proximity to the Tank Stream. As discussed above, the colonial government sought to discourage the encroachment of household activities and structures into the town's water supply in the first decades after colonisation. A detail from the Watling watercolour shows the Tank Stream Valley at the end of the eighteenth century (Figure 27Figure 27). A row of houses can be seen set back from the stream at the crest of the slope, and fence lines can be seen leading down to the stream. Clearly, houses were erected relatively close to the Tank Stream in Sydney's early decades, despite official attempts to limit development in the vicinity of the stream.



Figure 27. Detail from 'View of Sydney Cove.' T Watling, c. 1794–1796. *Source:* SLNSW V1/1794+/1.

The first leases within the western construction site were granted in the late eighteenth century (CRM 2022, 8-9). Figure 29shows the western and eastern construction sites in Meehan's 1807 plan of Sydney. Two leaseholders are shown within the western construction site: the northern half of the area is leased to Robert Turnbull, and the southern part is shown as being leased to John Black. In his recollections of early Sydney Town, Obed West stated that the block on the corner of George and Hunter Streets (lot 20 on the Meehan Plan) was vacant, and that the adjacent property was 'a house occupied by Mr Black' (West 1882, 12).

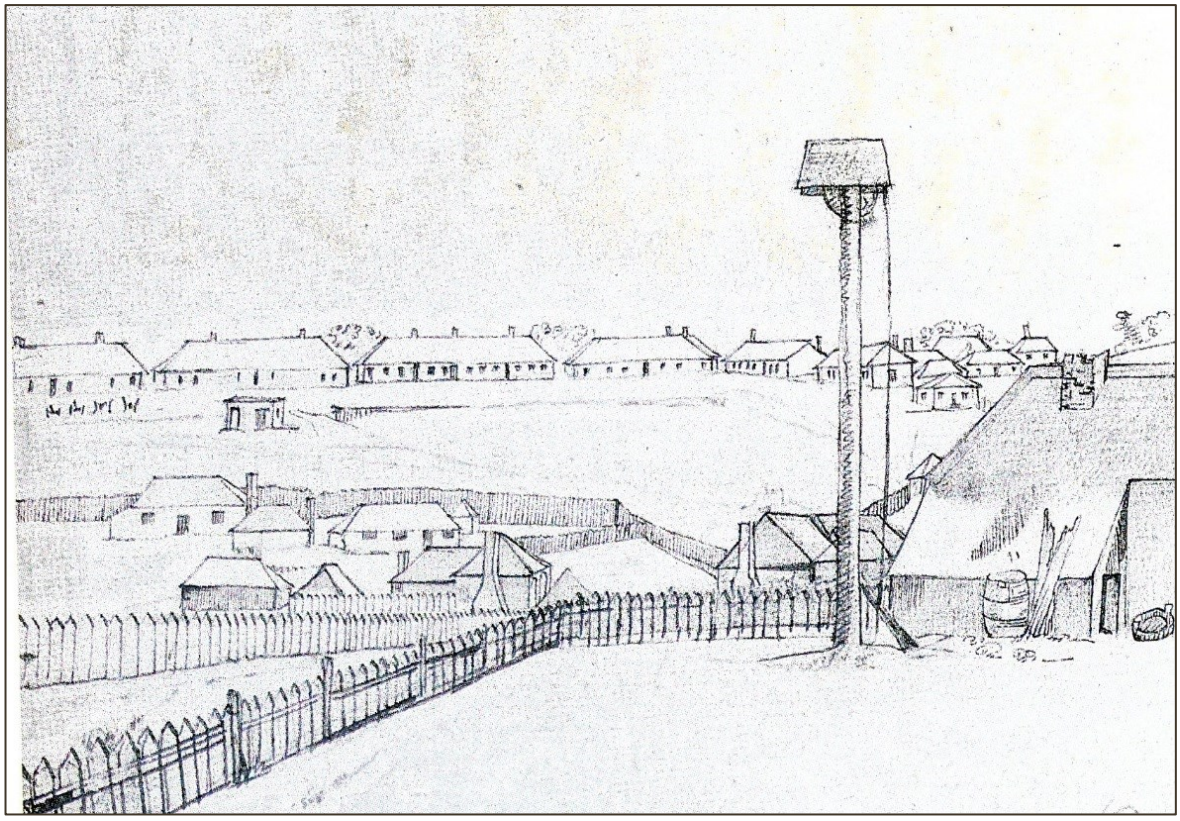


Figure 28. 1802, view westward from the first church site represented by the bell-post (now the corner of Hunter and Castlereagh Streets) showing buildings occupying the George Street and Hunter Street properties at centre left. *Source:* Lesueur, Charles-Alexandre, Vue d'un quartier de Port Jackson. Museum d'Histoire Naturelle du Havre, Collection Lesueur du Havre 16068.

John Black arrived in Sydney in 1798 (Black 1798, *HRNSW* 3, 729), and died at sea in 1803 (*The Sydney Gazette and New South Wales Advertiser,* 5 March 1803, 2). The land on George Street (then High Street) continued to be leased for the benefit of his children until 1821, when John Black's daughter married the merchant Prosper de Mestre, who took over his former lease on George Street (CRM 2022, 10; *The Sydney Gazette and New South Wales Advertiser,* 3 March 1821). Stuart and Harper's 1822–23 town plan shows the arrangement of structures on Black's land (Figure 30).

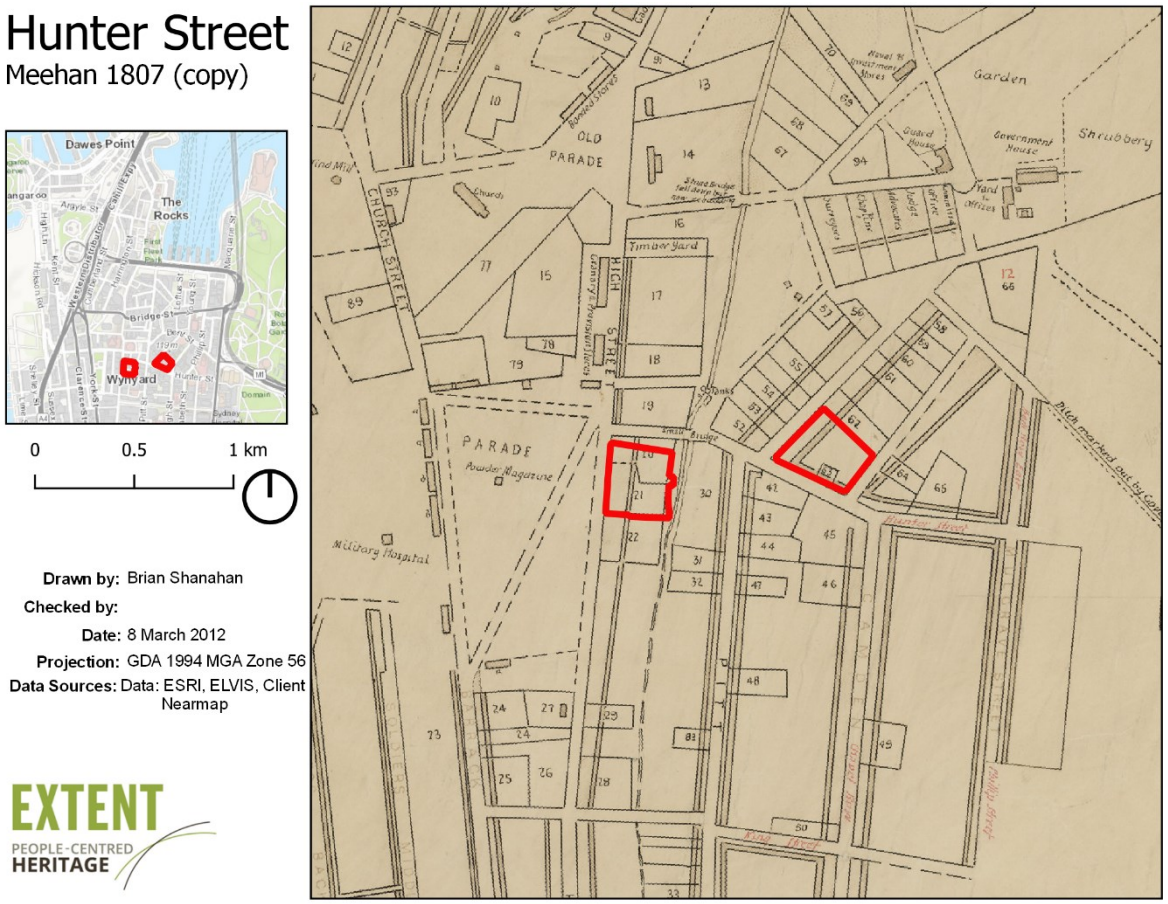


Figure 29. Detail from 'Plan of the Town of Sydney in New South Wales', Jas Meehan, 1807, showing the western and eastern construction sites for Hunter Street Station. The study area is outlined in red. *Source:* NLA MAP F 105B.

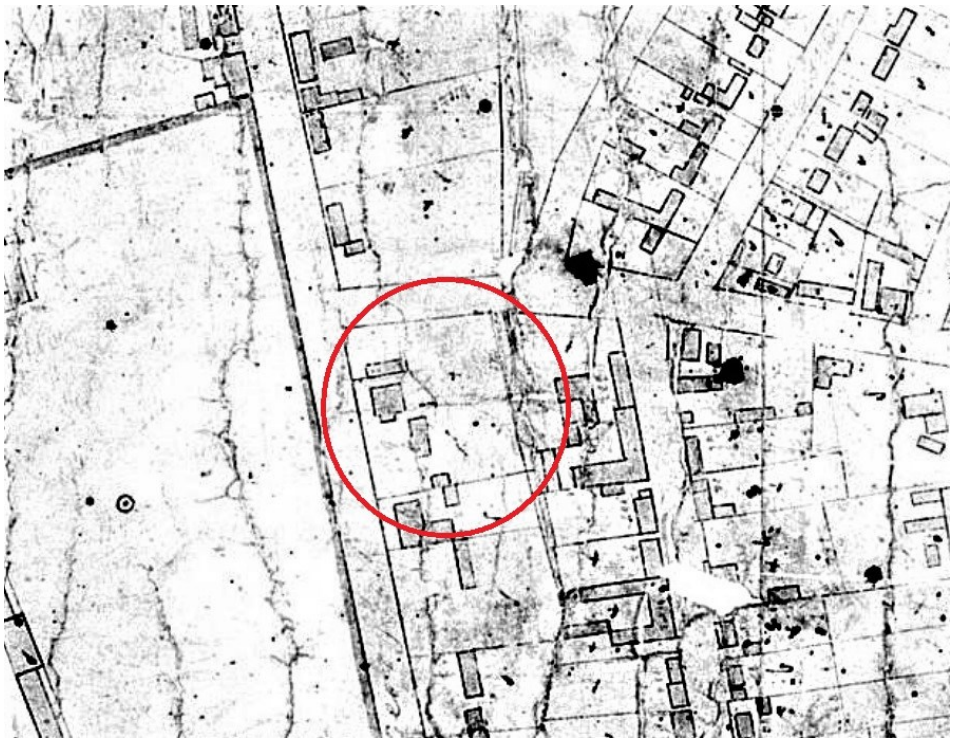


Figure 30. Western construction site as shown in 'Harper's Plan of the Town of Sydney'. *Source:* Stewart & Harper 1822–23, CP S.268 SANSW

2.5.1.2 Edward Riley and Prosper de Mestre

The first detailed plan of the western construction site is an 1833 survey plan of the area (Figure 31). This plan shows that in the 1830s, Prosper de Mestre still owned the southern block in the western construction site, and that the northern block (number 20 in Meehan's plan) was part of the estate of Edward Riley, who also had also had holdings in what is now Woolloomooloo and Darlinghurst before his death in 1825 (*The Sydney Gazette and New South Wales Advertiser,* 24 February 1825, 3). The plan also gives a detailed insight into the kinds of changes that had been made to the western construction site in the early decades of the nineteenth century. One substantial structure can be seen within the Edward Riley estate, and a range of structures, including a possible cesspit in the southeast corner, can be seen within the land owned by Prosper de Mestre. Structures on De Mestre's property also include two large buildings with verandahs, and one with an attached outbuilding. This arrangement of structures mirrors another plan of the site in 1836 (Figure 32).

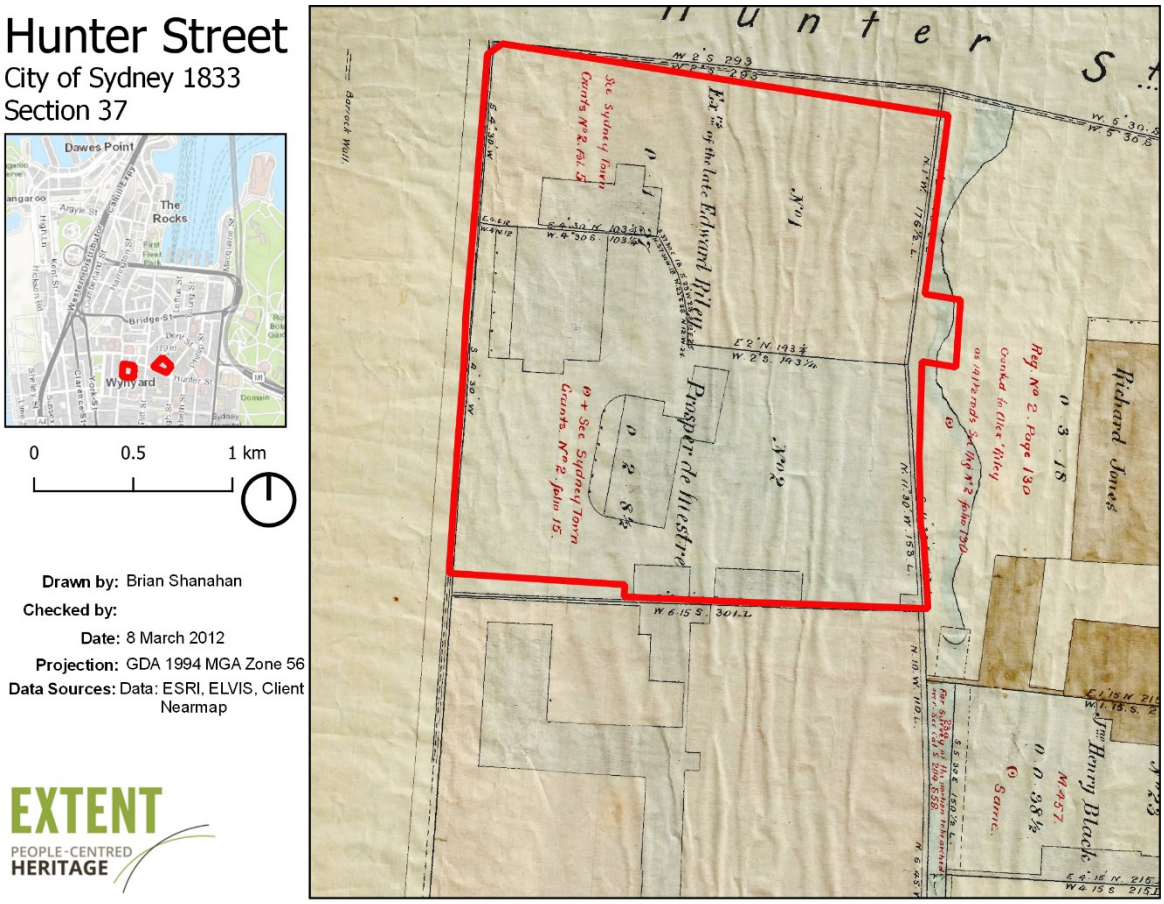


Figure 31. Detail from City of Sydney Survey Plans, 1833, Section 37, showing the name of land owners in Edward Riley and Prosper de Mestre in western construction site (outlined in red). *Source:* City of Sydney ID A-00880287.

Wendy Thorp has argued that the arrangement of these buildings suggests that De Mestre and his family were living on the site and using one of the structures as a store (CRM 2022, 11–12). This is attested by birth notices of new children in the family that make reference to 'George-street, Sydney' (*The Sydney Gazette and New South Wales Advertiser,* 18 September 1823), and advertisements that refer to de Mestre as a 'Merchant' and 'Agent for Shipping' on George Street Sydney (*The Sydney Gazette and New South Wales Advertiser,* 25 November 1826, 3).

The most significant feature shown in this plan is that the edge of the Tank Stream, at the eastern end of both properties, seems to have been formalised by the 1830s. The plan seems to show a wall that formalises the western edge of the stream. The construction of this wall would have possibly involved some degree of reclamation and infilling of the bank of the Tank Stream itself. The construction of the wall could be related to Macquarie's 1810 order that householders construct 'a substantial Wall of Masonry four feet high, for the entire extent of their premises' to separate their land from the Tank Stream (*The Sydney Gazette and New South Wales Advertiser,* 22 September 1810, 1).

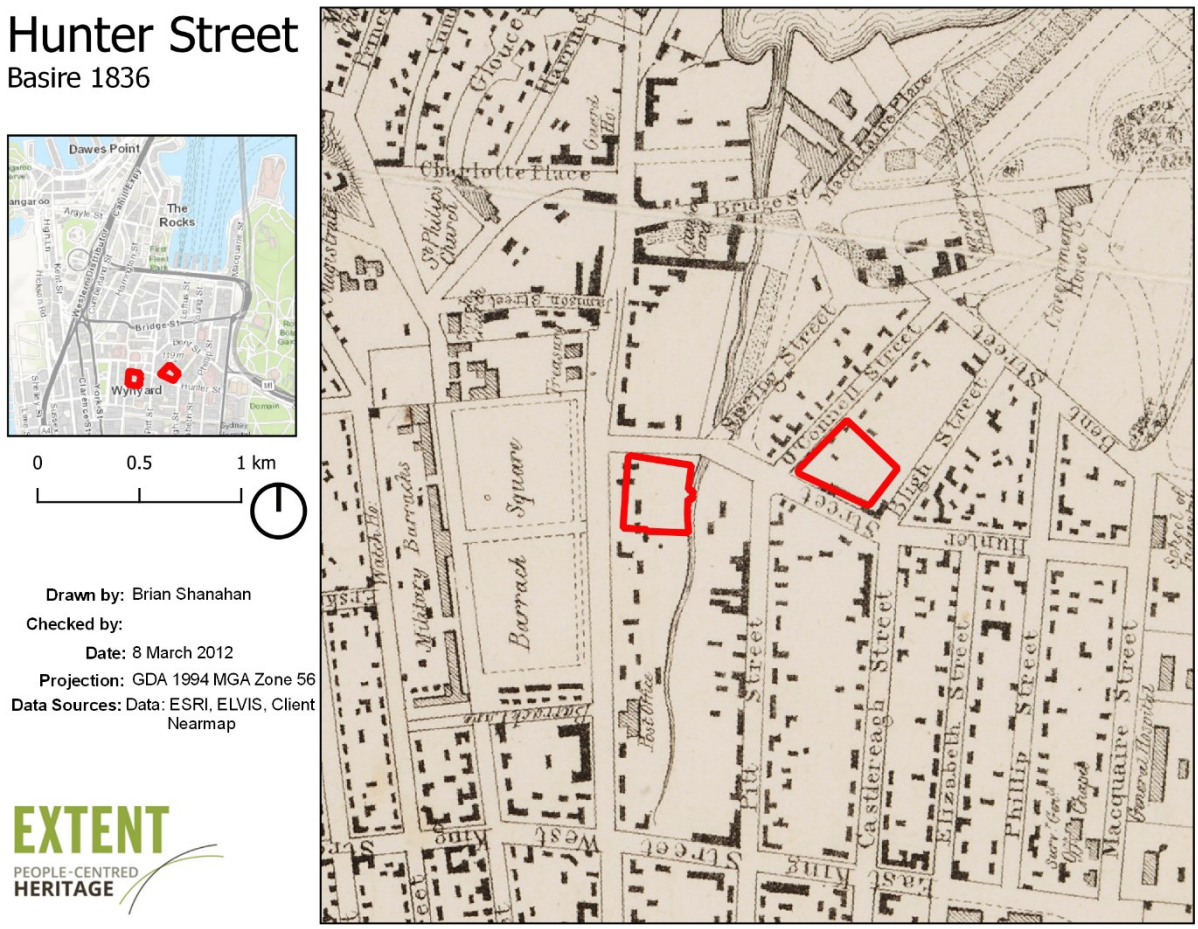


Figure 32. Detail from 'Plan of Sydney with Pyrmont, New South Wales.', J Basire, 1836, showing the western and eastern construction sites for Hunter Street Station (outlined in red). *Source:* NLA Map T 1551.

Prosper de Mestre seems to have made several alterations and changes to his property during the 1830s (CRM 2022, 12). The completion of a new row of 'houses' on de Mestre's property was announced in 1836 in the *Sydney Times:*

> Mr. De Mestre's houses which are now completed, form a great improvement to the central part of George-street. The windows of Mr. Tegg, who is the first occupant, are very attractive, and quite remind one of his father's shop in Cheapside, London, by the concourse of gazers perpetually assembled, yet in perpetual change, attracted by the handsome prints and funny caricatures exhibited in the windows … The house adjoining Mr. Tegg's is about to be occupied by Mr. Ellard, the musician, and is the first we believe in the Colony to be decorated with the Royal Arms in sculpture (*The Sydney Times,* 22 October 1836, 2)

The results of de Mestre's changes to the property appear in 1840s records of the site, discussed below. His essential changes to the area, however, appear to have been the construction of five terraces in the south part of his property, and the demolition of the building fronting George Street (Figure 32) and its replacement with a two-storey building.

2.5.1.3 Subdivision of the Riley and De Mestre estates

Over the course of the 1840s, the estates of both Edward Riley and Prosper de Mestre were subdivided and sold. Edward Riley's estate was subdivided in 1844 after nearly twenty years of legal disputes, but the property on the corner of George and Hunter Street is not included in the 1844 plan showing the distribution of his estate (City of Sydney, A-00880183) but it is mentioned in cases associated with the legal dispute over his will (Riley v. Riley [1841] NSWSupC 64). A plan of the area the year before the Riley Estate was subdivided (Figure 33), shows two structures on the Riley Estate land, the structure to the east being an addition to what is shown in the 1833 City of Sydney survey plan (Figure 31).



Figure 33. Detail from 'Map of the City of Sydney', WH Wells, 1843, showing the western construction site for Hunter Street Station (outlined in red). *Source:* SLNSW M2 811.17/1843/2.

Prosper De Mestre died in 1844 and his will was executed over the course of that year (*The Sydney Morning Herald,* 2 May 1844, 2). A plan of his land when it was sold in 1844 shows the five terraces and two-storey building that he constructed on the site, as well as a range of outbuildings, a well, and possible cesspits at the rear of the property (Figure 34). The Tank Stream is shown at the eastern edge of the property, likely still divided from it by a wall.



Figure 34. Detail from the sale plan of de Mestre's property, c. 1844, showing the western construction site for Hunter Street Station (outlined in red). *Source:* ML Maps 0461.

Joseph Fowles' guide to Sydney in 1848 provides a detailed view of the occupants and built form of the western construction site at the end of the 1840s (Fowles 1882). Fowles describes Hunter Street as a mercantile district containing 'many excellent shops' (Fowles 1882, 21). Fowles described the George Street frontage of the western construction site as containing 'a block of buildings with some architectural pretensions, substantially constructed of brick with stone dressings--the angle occupied by Mr. Skinner's commodious Tavern.' (Fowles 1882, 23). The facades of buildings on the northern and western edges of the eastern construction site are shown in Figure 35and Figure 36respectively. On the northern face of the site, we can see Skinner's Hotel occupying the corner of George and Hunter Streets. This three-storey building is still present on the site. To the east of the hotel, an engraver, a vacant lot, and another row of terraces can be seen. On the north side of the street, a vacant area may denote the course of the Tank Stream; the corresponding land is not vacant on the south side of the street, perhaps suggesting that the Tank Stream was covered on the north edge of the western construction site at this point.

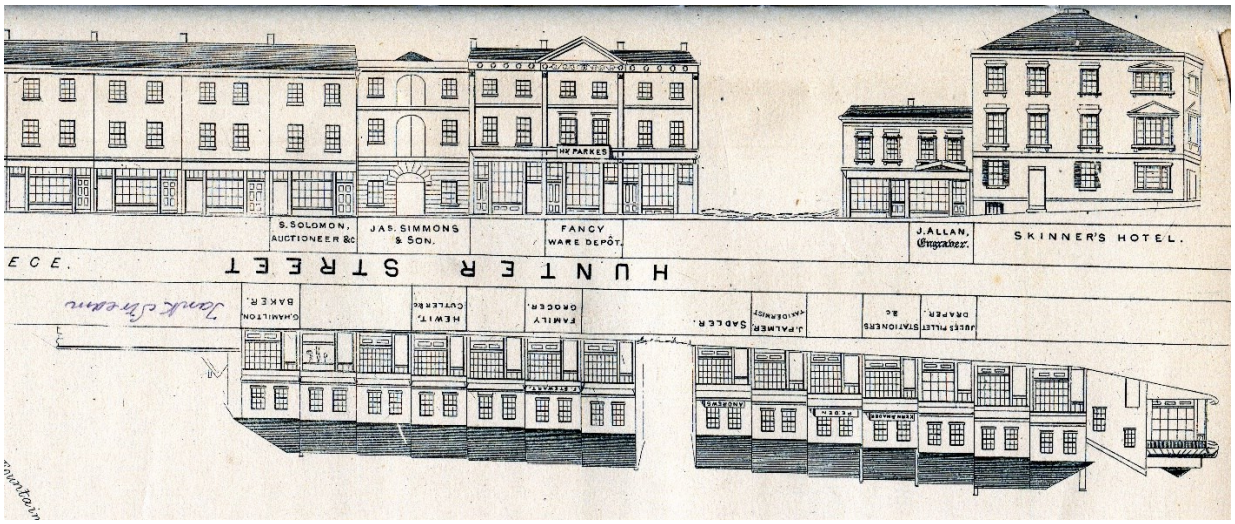


Figure 35. Facades of the Hunter Street face of the western construction site in 1848, facing south. *Source:* Fowles 1882, Plate 20A.

The view of the western edge of the western construction site shows Skinner's Hotel flanked by three terraces on the former Edward Riley Estate. South of these terraces, the two-storey building and the terraces constructed by De Mestre in 1836 can be seen. At this point, the two-storey building is being used as an 'Auction Mart' and the terraces are occupied by various businesses such as a Stationer and a Bookseller.

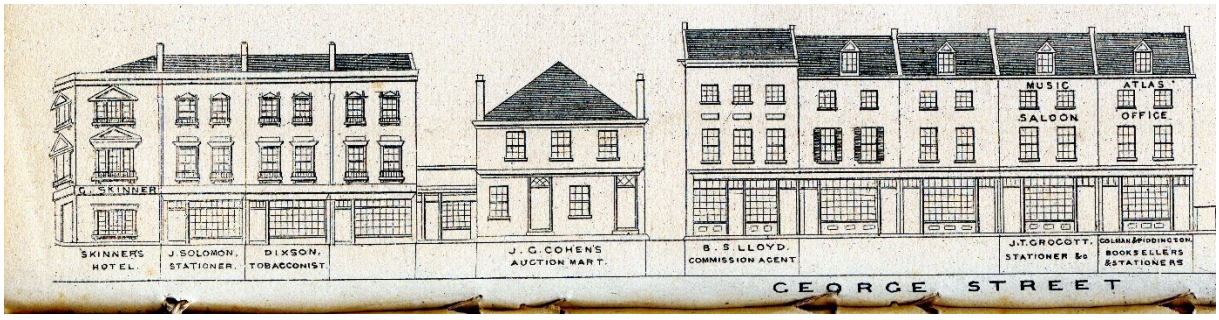


Figure 36. Facades of the George Street face of the western construction site in 1848, facing east. Source: Fowles 1882, Plate 22A.

Andrew Torning's 1849 watercolour of the corner of Hunter and George Streets (Figure 37) gives a detailed view of the streetscape in the vicinity of the western construction site in the late 1840s. Skinner's Family Hotel is at the front of view, shown flanked by the various shops and businesses discussed above. It can also be seen that George Street had gas lighting in this period, and that the footpath was paved. Perhaps the most important feature of this watercolour is the gentle slope that it shows in the left of the image, that is, the slope of Hunter Street leading down into the Tank Stream valley. De Mestre's two-storey building can be seen to the left of the image, flanked by three-storey terraces to its south.



Figure 37. 'Corner of George and Hunter Streets', ca. 1849, Andrew Torning. *Source:* SLNSW FL3141593.

2.5.1.4 The Western Construction Site from the second half of the nineteenth century

The broad arrangement of structures on the western construction site seems to have continued, albeit with alterations and additions, into the middle of the twentieth century. The 1854 Woolcott & Clarke's plan of the area (Figure 38) shows an arrangement of terraces and other structures similar to those shown in Fowles' prints of the George and Hunter Street Facades in 1848 (Figure 35and Figure 36). Entries in the Sands Directory in 1858 showed that the western construction site retained its commercial character throughout the 1850s: occupants for the Hunter Street frontage of the site included tailors, hosiers, solicitors, and drapers (Sands 1858, 59), whilst the George Street frontage was occupied by jewellers, watchmakers, milliners, and merchants (Sands 1858, 50).

Whilst this plan shows the flow of the Tank Stream directly north and south of the western construction site, the flow of the stream is not shown within the western construction site study area itself, again suggesting that the Tank Stream had been covered in this area by the late 1840s, as shown in the Fowles engraving above (Figure 35).



Figure 38. Detail from Woolcott & Clarke's map of the City of Sydney, 1854. The study area is outlined in red. *Source:* NLA MAP NK 3963.

The Tank Stream is also depicted as a covered drain in the 1865 Trigonometric Survey plan of the western construction site (Figure 39). This plan describes the course of the Tank Stream as a 'stone culvert' and shows it running under buildings and then under Hunter Street. The culvert may have been visible in an open area at the eastern edge of the western construction site, that is not covered by any structures in this plan.

This plan also shows the arrangement of brick terraces and other structures along the George and Hunter Street frontages of the western construction site that survived well into the twentieth century. Each of these buildings had a variety of outbuildings that would have been used by the businesses operating out of the shop fronts on George and Hunter Street. The appearance of this streetscape is shown in an 1869 or 1870 photograph of the corner of George and Hunter Streets (Figure 40).

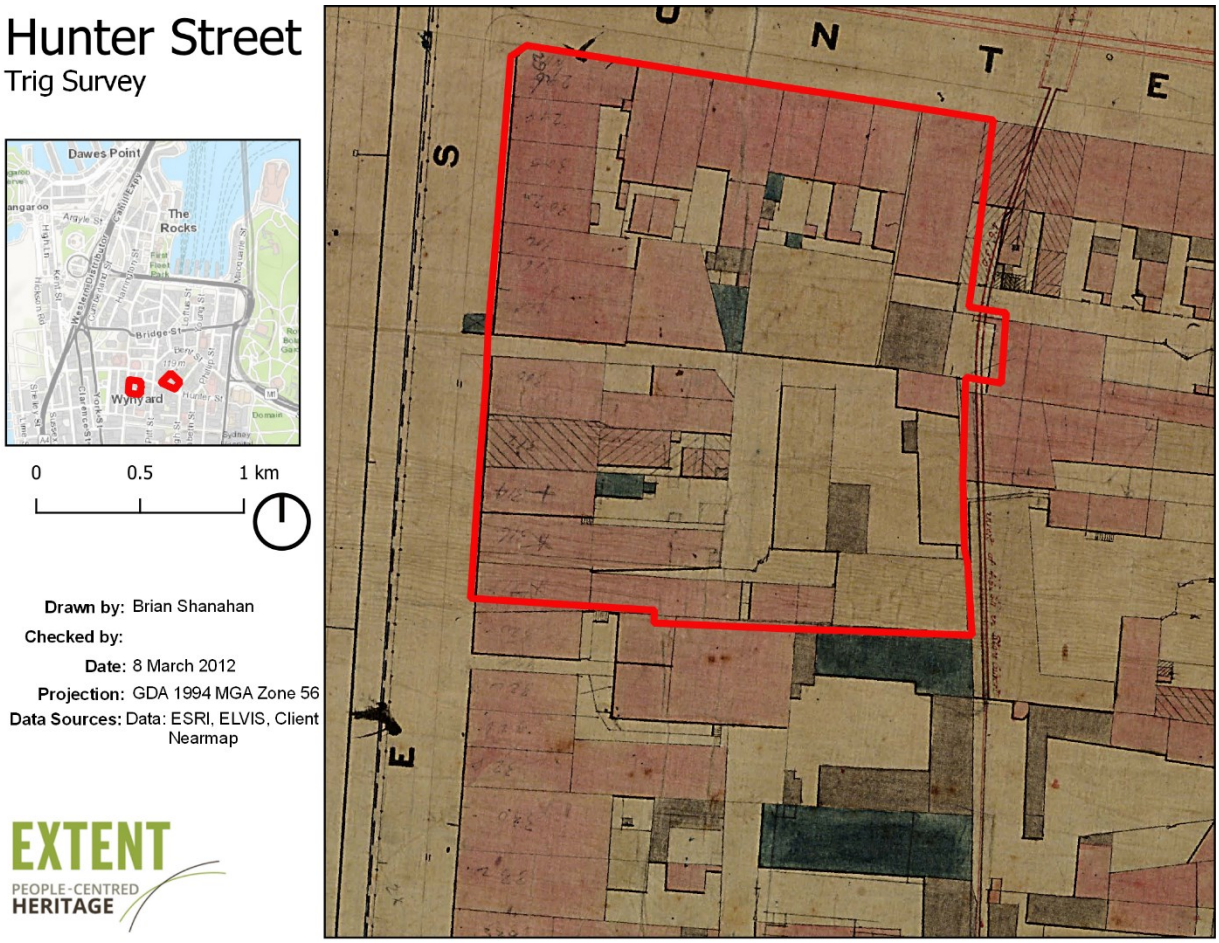


Figure 39. Detail from the City of Sydney Trigonometrical Survey, Block D2, 1865 (the Hunter Street West site is outlined in red). *Source:* City of Sydney A-00880381.



Figure 40. George & Hunter Street, ca. 1869-1870. *Source:* SNLSW SPF/551.

By the 1880s, George Street was an important mercantile and retail area within Sydney. The 1880 Dove Plan of the western construction site shows a range of businesses present, including several chemists, an outfitter, jewellers, a hatter, and a stationer (Figure 41). At the rear of these businesses, a range of outbuildings and storehouses can be seen. These buildings were accessed by a 'right of way' that later became Demestre Place. Notably, Skinner's Hotel was operating as a chemist by this point. The Dove plan shows that in 1880, most of the structures within the western construction site were two or three storeys.

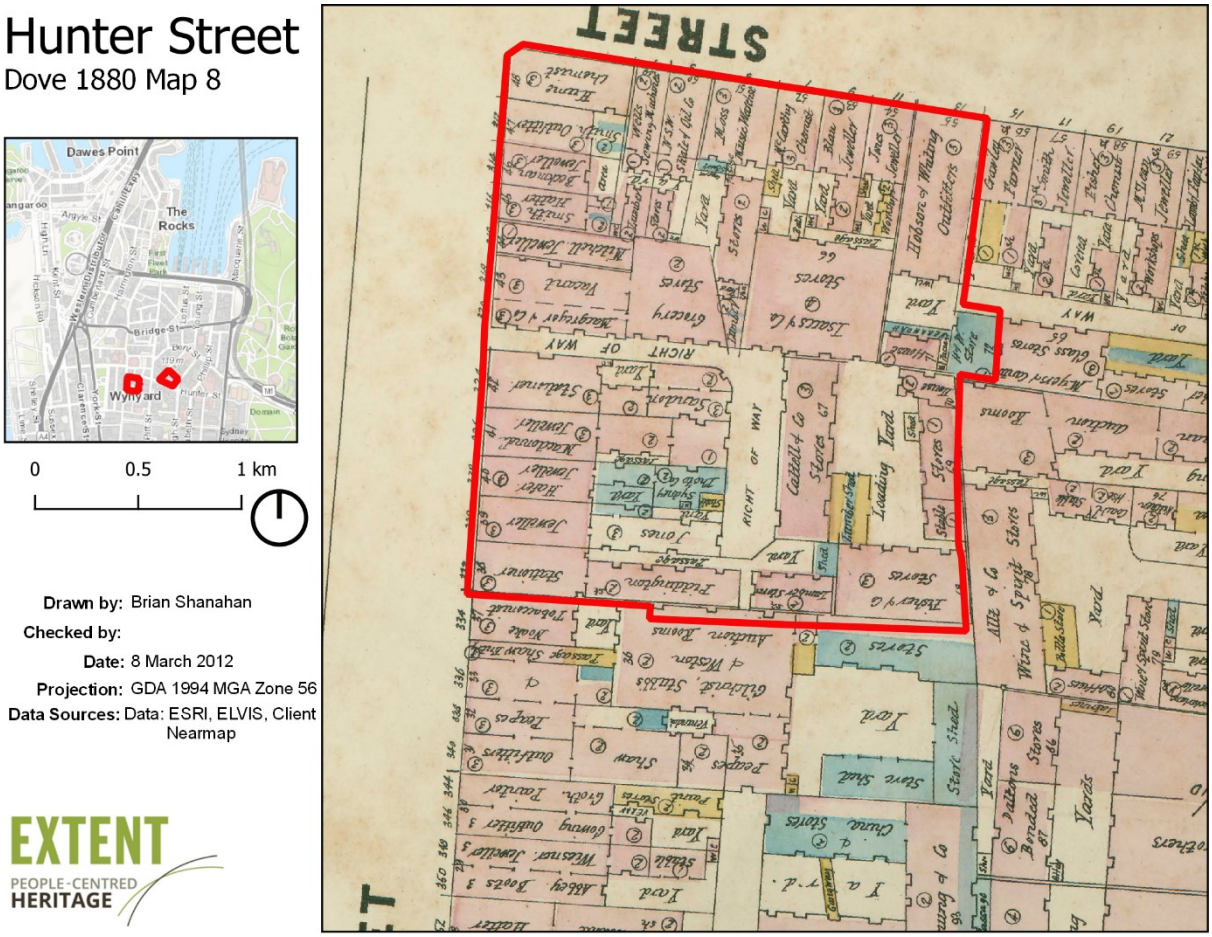


Figure 41. Detail from Dove's 'Plans of Sydney', 1880, Map 8. (The Hunter Street West site is outlined in red) *Source:* City of Sydney A-00880151.

The 1917–1939 Fire-Underwriters Association plan of the site (Figure 42) shows a similar arrangement of structures housing commercial and retail businesses. The main changes to the site seem to have taken place in its south-east corner, where a storehouse has been partially demolished, and several structures replaced or altered. This change provided access to the Hunter Street property occupied by 'Sanitarium Health and Food Co.' from De Mestre Place, that was extended to the east. This broad arrangement of structures is also mirrored in the 1938-1950 Civic Survey plan of the area (Figure 43). In both the Fire Plan and the Civic Survey plan, most of the structures on the site are two or three storeys. Some of the buildings on George Street, however, are listed as having four storeys, and the Sanitarium premises is listed as having five storeys and two basements, possibly suggesting that this building was replaced in the early twentieth century.

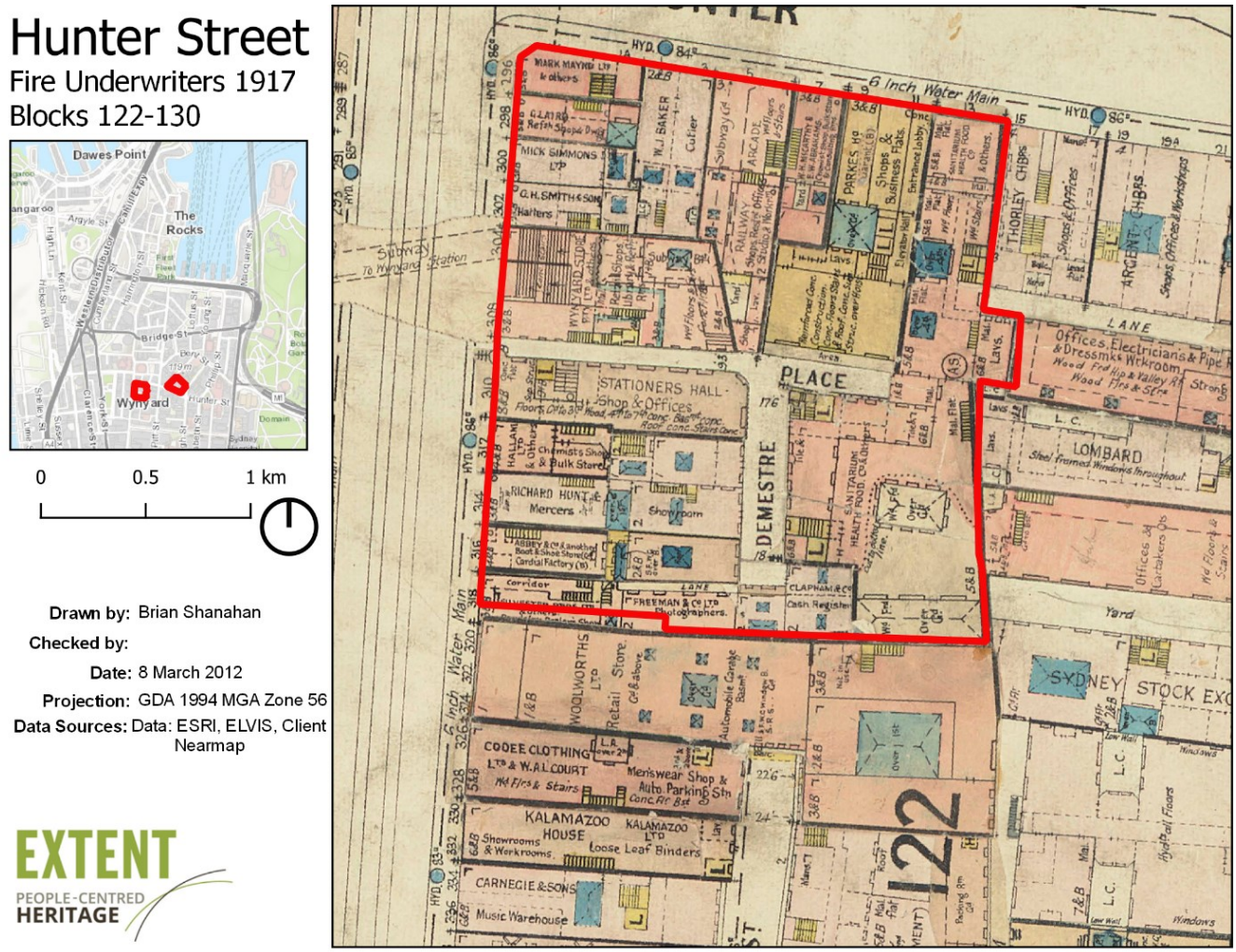


Figure 42. Detail from Fire-Underwriters Association of NSW Detail Survey Map, 1917-1939 (the Hunter Street West site is outlined in red). Block 122 and 130, 1917-1939. *Source:* City of Sydney A-00880236.



Figure 43. Detail from City of Sydney Civic Survey, 1938-1950, Map 7A (the Hunter Street West site is outlined in red). Source: City of Sydney A-008880367.

Another important detail from the 1917 to 1939 fire plan (Figure 42, above) is the presence of an underground tunnel to Wynyard Station, west of the western construction site. This tunnel was constructed in 1930 involved extensive cutting into the sandstone beneath George Street (Figure 44).



Figure 44. Excavation for the 'Hunter Connection', an underground tunnel connecting the western construction site with Wynyard Station, De Mestre Place at far right, 1930. *Source*: Phippen 2018.

Twentieth century historical aerials show that many of the early nineteenth-century structures within the western construction site survived well into the twentieth century. Historical aerial images from 1949 and 1961 (Figure 45andFigure 46) show the survival of the same broad arrangement of terraces and structures shown in the early twentieth century Fire-Underwriters Association's plan (Figure 42) and the City of Civic Survey's plan (Figure 43). Throughout the 1970s and 1980s much of the site was redeveloped and several multi-storey buildings are visible in the 1986 historical aerial image (Figure 47).



Figure 45. 1949 historical aerial showing the western and eastern construction sites (outlined in red). *Source:* City of Sydney A-00879961.

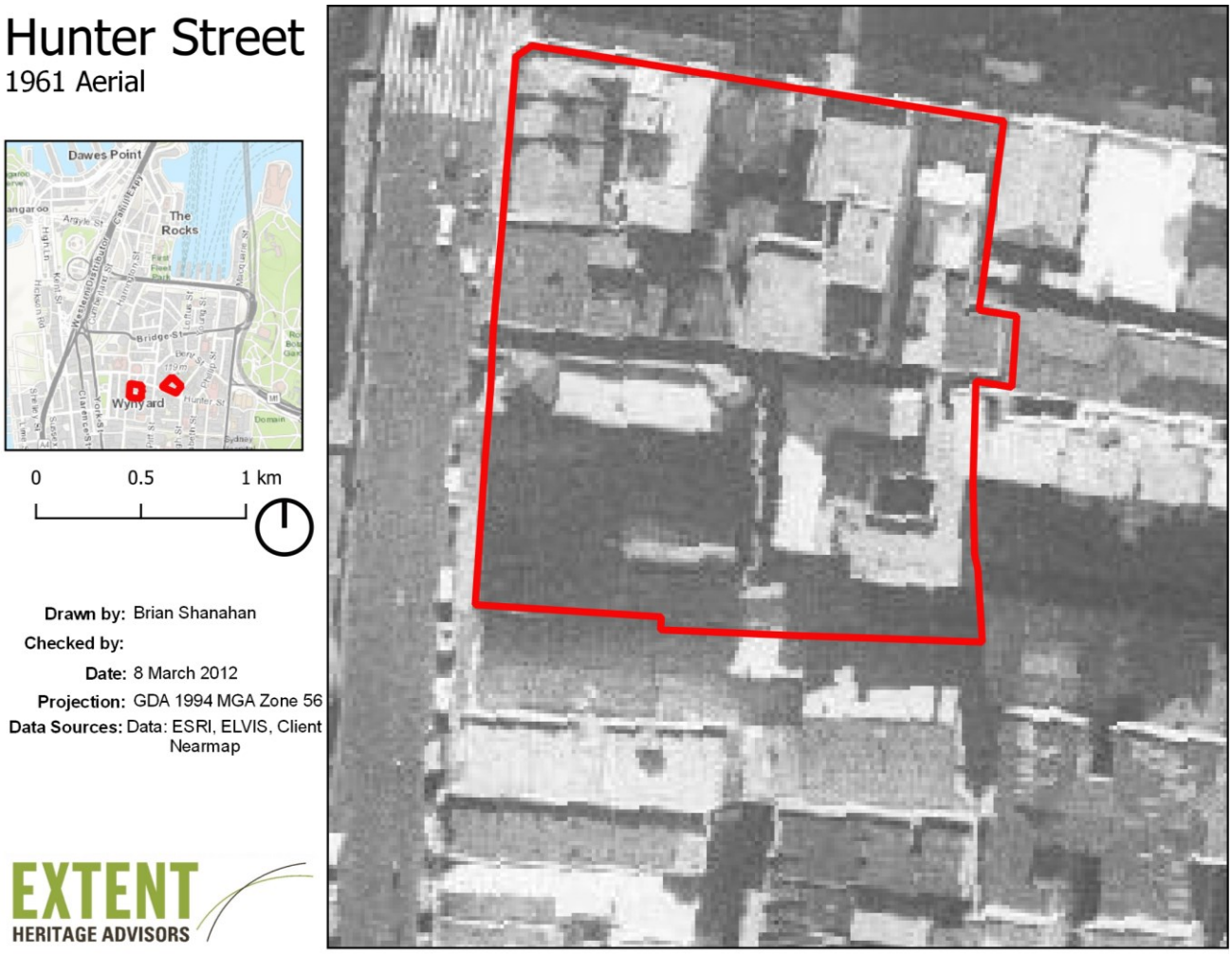


Figure 46. 1961 historical aerial, showing the western construction site (outlined in red). *Source:* Spatial NSW.



Figure 47. 1986 historical aerial, showing the western construction site (outlined in red). *Source:* Spatial NSW.

2.5.2 Eastern construction site

2.5.2.1 Early leases and structures

The 1807 Meehan plan shows a small early lease granted in the eastern construction site to James Petty (Lot 63) (Figure 48). A James Petty is described as the 'Overseer of Carpenters at Sydney' in an 1804 edition of the *Sydney Gazette* (*The Sydney Gazette and new South Wales Advertiser,* 17 June 1804, 4). It is not known what, if any, structures James Petty built on the site.

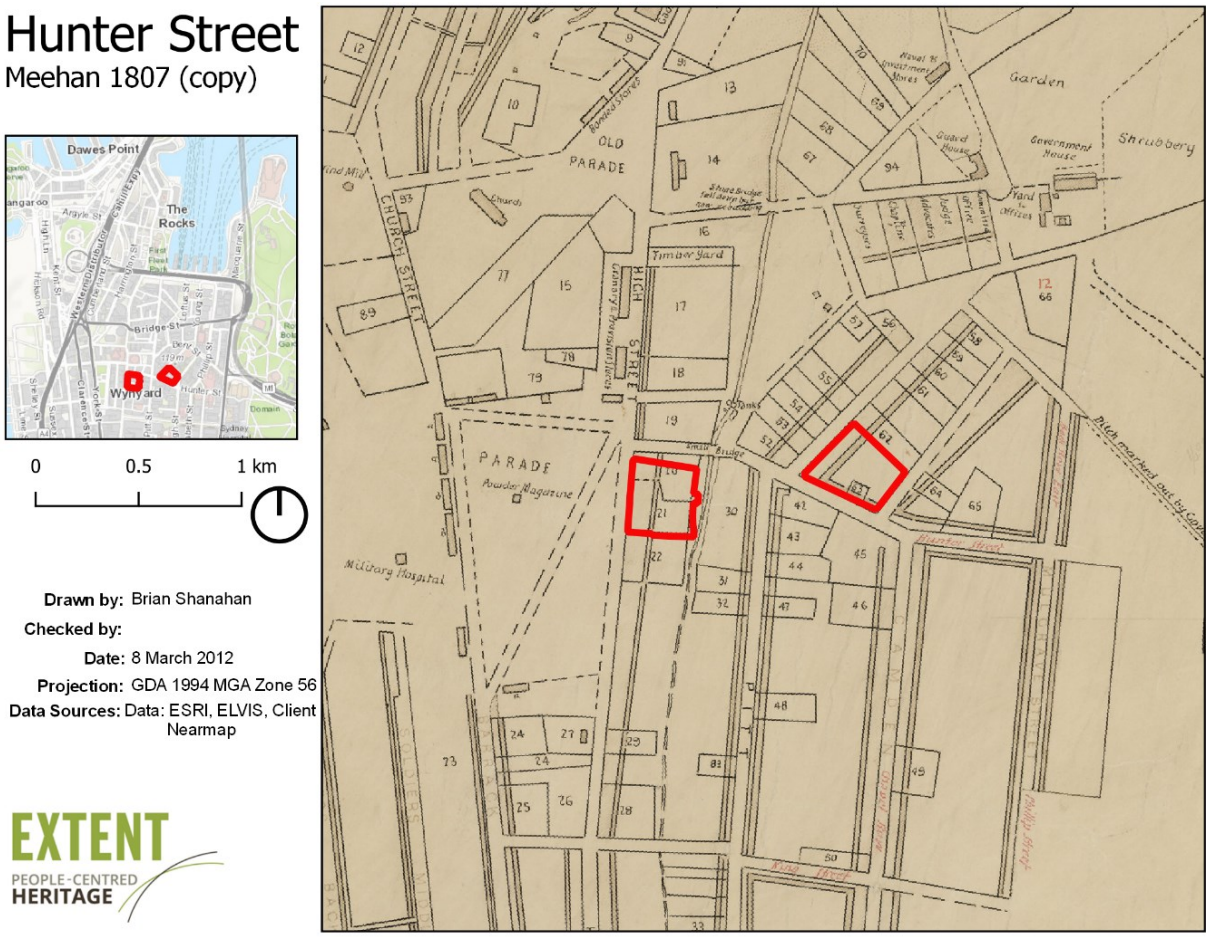


Figure 48. Detail from 'Plan of the Town of Sydney in New South Wales', Jas Meehan, 1807, showing the western and eastern construction sites for Hunter Street Station (outlined in red). *Source:* NLA MAP F 105B.

By 1822-23 the site saw more extensive development as shown in Harper's 1822-23 town plan (Figure 49).



Figure 49. Eastern construction site (outlined in red) as shown in 'Harper's Plan of the Town of Sydney', Stewart & Harper 1822-23. *Source:* CP S.268 SANSW

The more detailed plan of features and structures on the site is an 1833 City of Sydney's survey plan of the block (Figure 50). This plan shows that the eastern construction site had by this point been subdivided into seven separate lots, and that each of these lots contained a number of structures and associated outbuildings. This plan also lists the owners of each lot, whilst also noting that other persons had been previously granted deeds on the block by Governor Macquarie. It also shows the presence of several walls between lots, including a wall between the land owned by John Wood and land belonging to the heirs of the late Mrs Reynolds.

A detail of the 1836 plan of the area (Figure 51) similarly shows several substantial buildings within the block, aligned along its frontage with Hunter, Bligh, and O'Connell Streets.

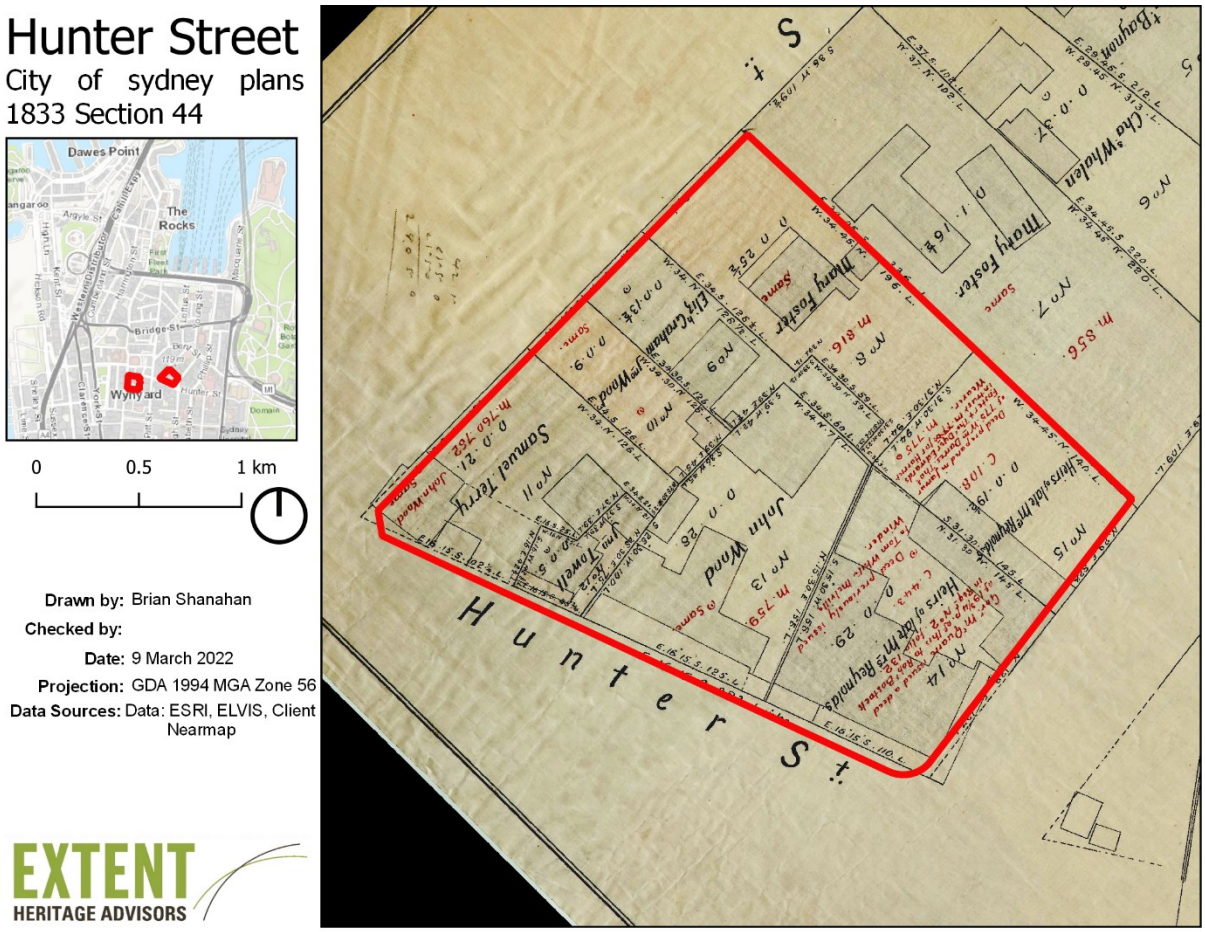


Figure 50. Detail from City of Sydney Survey Plans, 1833, Section 44, showing the eastern construction site (outlined in red). *Source:* City of Sydney A-00880294.

Properties within the eastern construction site in the 1830s would have had dual residential and commercial functions, with many businesses operating out of people's homes and properties (Karskens 2009, 180). A letter to the *Sydney Gazette* in 1836 gives a sense of the extent to which small scale agricultural activities were still taking place on O'Connell Street:

> It is singular that such a thing as a watchman or constable, has never yet been heard to call the hour in O'Connell street; you may hear one bawl out 10 o'clock (only sometimes) in Bligh-street, down Bent and Spring streets; then ever after silent. I often think he has a fellow-feeling for the cow keepers, who nightly suffer their cows to stray for the last fortnight a brindled cow and her calf, have made dreadful havock in a garden of vegetables between the hours of 8 at night and six in the morning, which the constables could not avoid seeing if on duty in O'Connell-street; he must have seen the parties driving them out of the garden. I think the name of the street should be Grazing Lane, for in it goats and cattle are daily seen.
>
> Tell a constable this (as in a dozen instances) he states, but promises most faithfully to inform the O'Connell-street constable, a man without name or address. I am however, in hopes, this will meet the eye of those who appoint such men … and that some better attention will be paid to the pounding of cows, calves, and goals, illegally prowling about in the night.
>
> Yours truly, A HOUSEHOLDER. (*The Sydney Gazette,* 17 March 1836, 3)



Figure 51. Detail from 'Plan of Sydney with Pyrmont, New South Wales.', J Basire, 1836, showing the western and eastern construction sites for Hunter Street Station (outlined in red). *Source:* NLA Map T 1551.

2.5.2.2 The eastern construction site from the 1840s

WH Wells' 1843 plan of Sydney shows a number of substantial structures on the eastern construction site running along its Hunter Street, Bligh Street, and O'Connell Street frontages (Figure 52). The facades of these structures are illustrated in detail in Fowles' guide to Sydney in 1848 (Fowles 1882). Figure 53shows the facades of buildings on Hunter Street between O'Connell and Bligh Streets in 1848. Whilst none of these buildings have descriptions in the lithograph, Fowles does describe the building on the corner of Hunter and Bligh Streets in his text as 'the residence of Mr. T. E. Jones, whose Stables form the Depot for the Hon. East India Company's horses, purchased in the Colony for shipment.' (Fowles 1882, 45). Mr TE Jones' property is clearly a large double storey house with a verandah, and it seems to correspond with the land belonging to the estate of Mrs Reynolds shown in Figure 50.

Other buildings shown in this image include a double-storey shopfront on the corner of Hunter and O'Connell Streets and a range of smaller single and double-storey shopfronts and houses. It is likely that many of the buildings in this period retained their dual commercial and residential function. The outlines of several of these structures can also be seen in Woolcott & Clarke's 1854 plan of the site (Figure 54).



Figure 52. Detail from 'Map of the City of Sydney', WH Wells, 1843, showing the eastern construction site for Hunter Street Station (outlined in red). *Source:* SLNSW M2 811.17/1843/2.

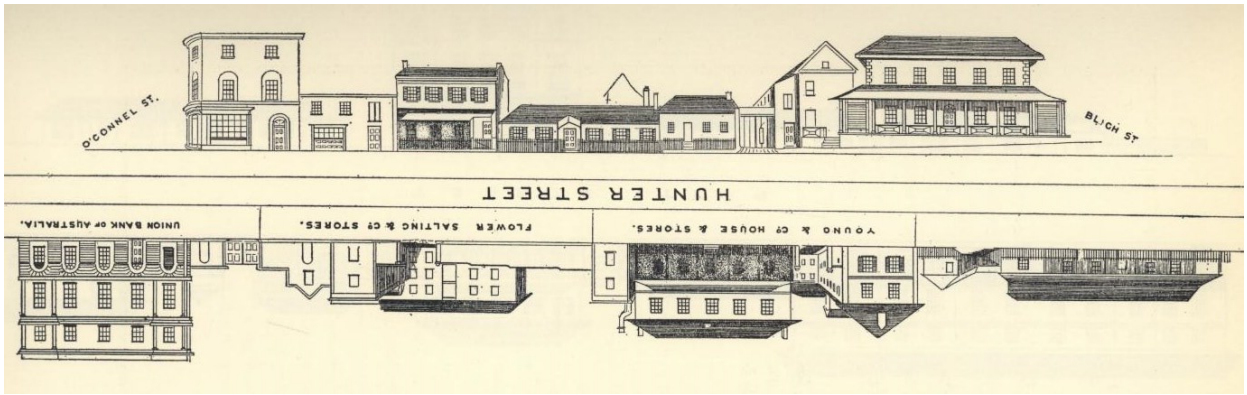


Figure 53. Facades of Hunter Street between O'Connell Street and Bligh Street in 1848. *Source:* Fowles 1882, Plate 40A.



Figure 54. Detail from Woolcott & Clarke's map of the City of Sydney, 1854 (the study area is outlined in red). *Source:* NLA MAP NK 3963.

An 1856 lithograph of the new *Sydney Morning Herald* building on the corner of Pitt and Hunter Streets provides a three-dimensional view of the shopfront on the corner of Hunter and O'Connell Streets (Figure 55). In this period, this building was occupied by John T Solomon, as the 'Horse and Jockey' Hotel (Sands 1858, 59). The buildings along the north side of Hunter Street were occupied by businesses including a butcher, a tailor, an upholsterer, and an importer, showing the increasingly commercial and retail character of the area (Sands 1858, 59) (Figure 56). The property on the corner of Bligh and Hunter Streets is occupied by Buchan Thomson, a horse dealer, who operated a livery stable out of TE Jones' former property.



Figure 55. 'New offices of the *Sydney Morning Herald*', Walter Mason, c. 1856. *Source:* NLA NK 1119/5. The building at the corner of Hunter and O'Connell Streets, the 'Horse and Jockey' Hotel is arrowed.



Figure 56. *Hunter Street & Herald Office, June 25, 1859* Volume 1: Sketches of N. S. [New South] Wales, 1857-1888 / by H Grant Lloyd.*Source:* SLNSW DL PX 42/DL PX 43.

Note: The building at the corner of Hunter and O'Connell Streets, the 'Horse and Jockey' Hotel is arrowed.

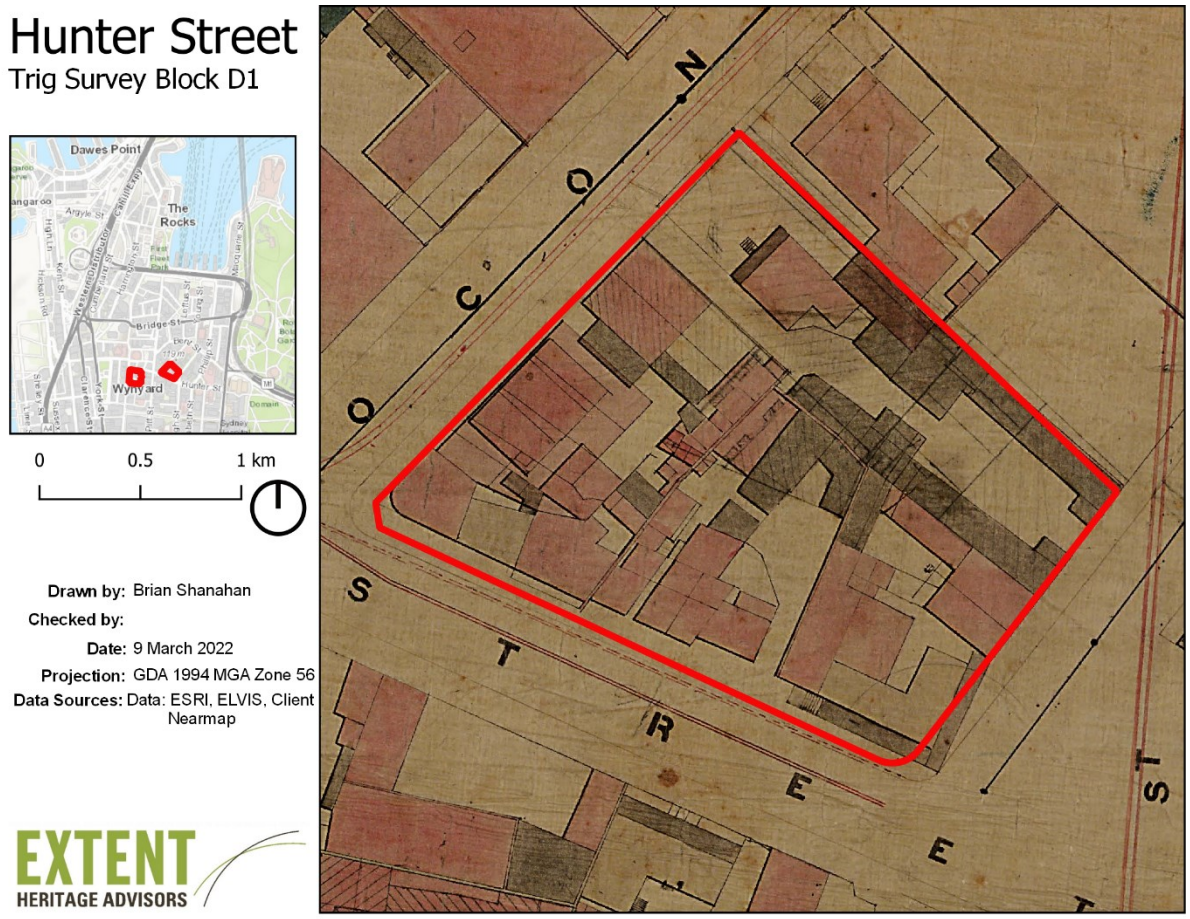


Figure 57. Detail from the City of Sydney Trigonometrical Survey, Block D2, 1865(the Hunter Street East site is outlined in red). *Source:* City of Sydney A-00880381.

The 1865 Trigonometric Survey Plan (Figure 57) of the eastern construction site provides a range of detailed information about the arrangement of structures and lots on the site in the middle of the twentieth century. This plan shows a line of brick buildings on lots subdivided from the lots present on the site in the 1830s (Figure 50); this process of subdivision accounts for the diagonal lines and divisions of some of the lots.

Whilst many of the buildings on this block are constructed in brick, there seem to be a number of wooden buildings and sheds still present. The building on the corner of Hunter and Bligh Streets is clearly shown with a verandah and seems to be the same building that was the residence of TE Jones in the 1840s. The stables associated with this property (and the horse dealership present on the site in the late 1850s) are likely the wooden structures shown in the northeast corner of the site.

A more detailed view of these properties is provided by the 1880 Dove plan of the area (Figure 58). The Dove plan shows that whilst the stables at the rear of TE Jones' former property were still in use in the 1880s, TE Jones' residence was by this point being used as a Solicitor's Office. Other buildings on the site are occupied by various businesses such as a cabinet maker, a restaurant, a loan officers, and several solicitors. The proliferation of triple-storey buildings on the site shows that many of the early nineteenth-century buildings on the site had been demolished and replaced by the 1880s. Several buildings from the 1848 Fowles lithograph,

however, seem to still be present: these include the TE Jones' house on the corner of Hunter and Bligh Streets and its associated stables, the 'Loan Office' shown at 42 Hunter Street, and the three-storey shopfront on the corner of Hunter and O'Connell Streets that it at this point being occupied by a stock agent.

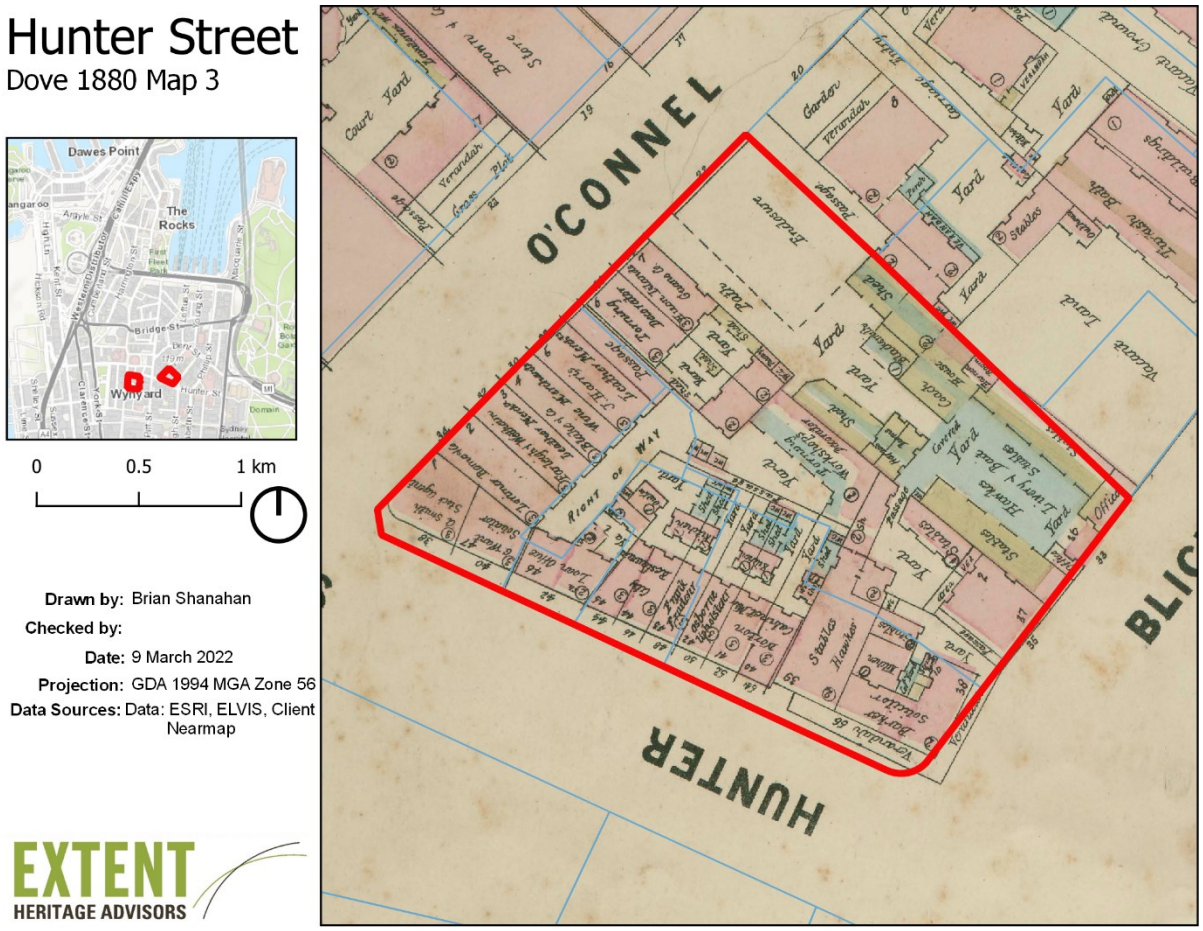


Figure 58. Detail from Percy Dove's 'Plans of Sydney', 1880, Map 3 (the Hunter Street East site is outlined in red). *Source:* City of Sydney A-00880130.

The survival of the 1840s former Horse and Jockey Hotel on the corner of Hunter and O'Connell is further attested by an 1889 image that appears to show the same 1840s shopfront with embellishments and additions to its upper storey (Figure 59). This image also gives a view of the terraces and buildings running east along Hunter Street. A major addition in the 1880s was clearly the 'Norwich Chambers' a multi-storey building shown at the eastern end of the site.



Figure 59. 'View looking east along Hunter Street from Pitt St cnr', c.1889. *Source:* City of Sydney Archives, A-00023143.

2.5.2.3 The eastern construction site in the twentieth century

By the turn of the century, the eastern construction site was a densely occupied block in an important commercial sector of the city. (Figure 60shows the area in 1919; the former Horse and Jockey Hotel had been converted into offices and was demolished in early 1919 (*Sydney Morning Herald*, 8 March 1919: 7). North of these buildings was a five-storey building that has been built on land previously occupied by terraces (Figure 60).

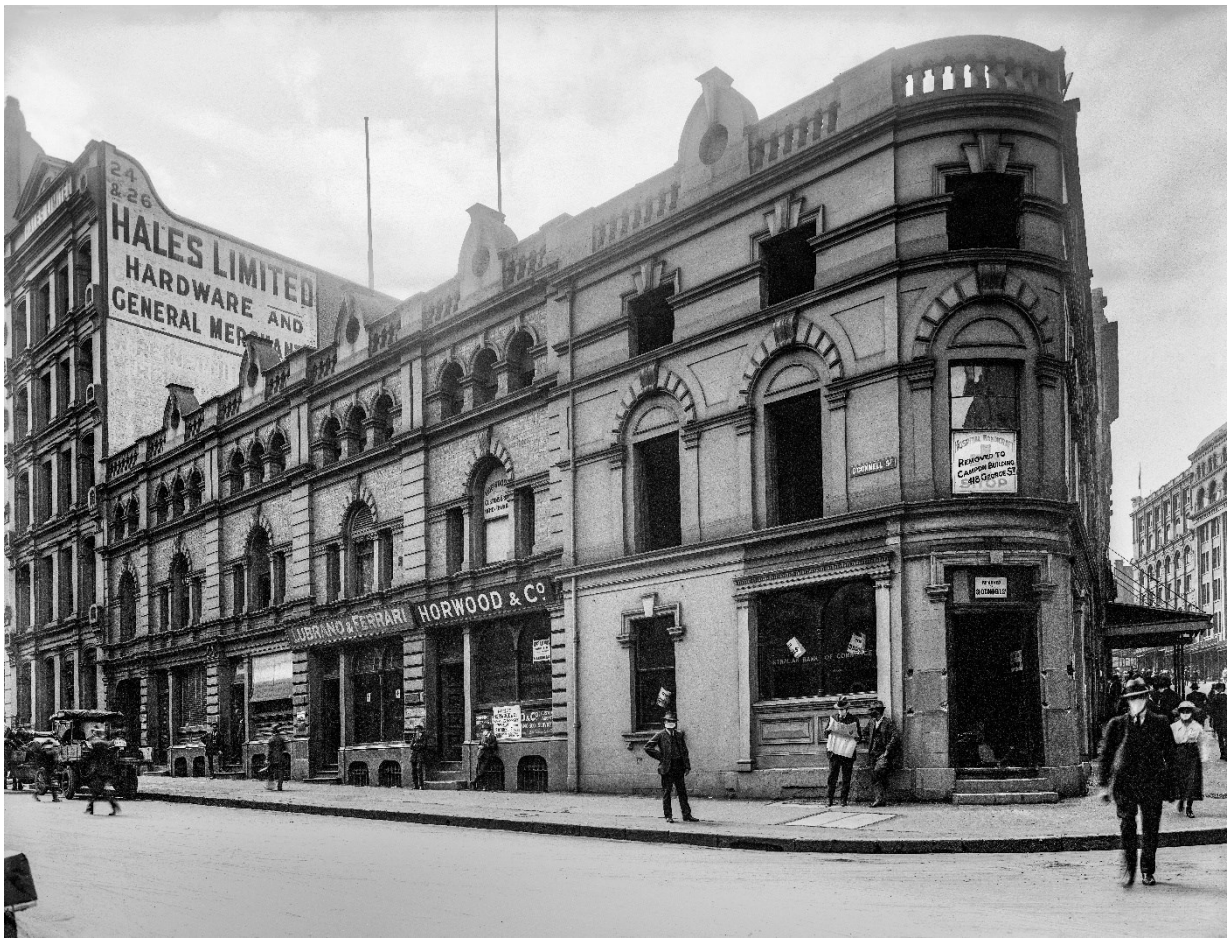


Figure 60. Hunter and O'Connell Streets Sydney, 1919. *Source:* City of Sydney A-01000471. Series of Demolition Books, glass negative

In the early 1920s the site of the former Horse and Jockey Hotel was replaced with a seven-storey building (with a basement) that housed the South British Insurance Company (Figure 61). This building joined a number of large-multistorey buildings on the site such as the Norwich Chambers, that by the 1920s were occupied by the Australian Metropolitan Life Assurance Company.

The cumulative changes to the eastern construction site in the late nineteenth and twentieth century can be seen in the 1917 to 1939 Fire Underwriter Association's plan of the area (Figure 62). This plan shows a number of large multi-storey buildings within the eastern construction site; the South British Building is described as a seven-storey building with a mezzanine and basement, and the Australian Metropolitan Life Assurance Company occupied the former Norwich Chambers, that are described as an eleven-storey building with a basement. The early nineteenth century stables and outbuildings at the north end of the site are now occupied by a range of large six and five-storey buildings. By the middle of the twentieth century, these buildings were all in use by Elliot Brothers Ltd (Figure 63).



Figure 61. The South British Insurance Company building on the corner of Hunter and O'Connell Streets, from the tower of the Union Bank of Australia, c. 1925. *Source:* NLA PIC p860/68.

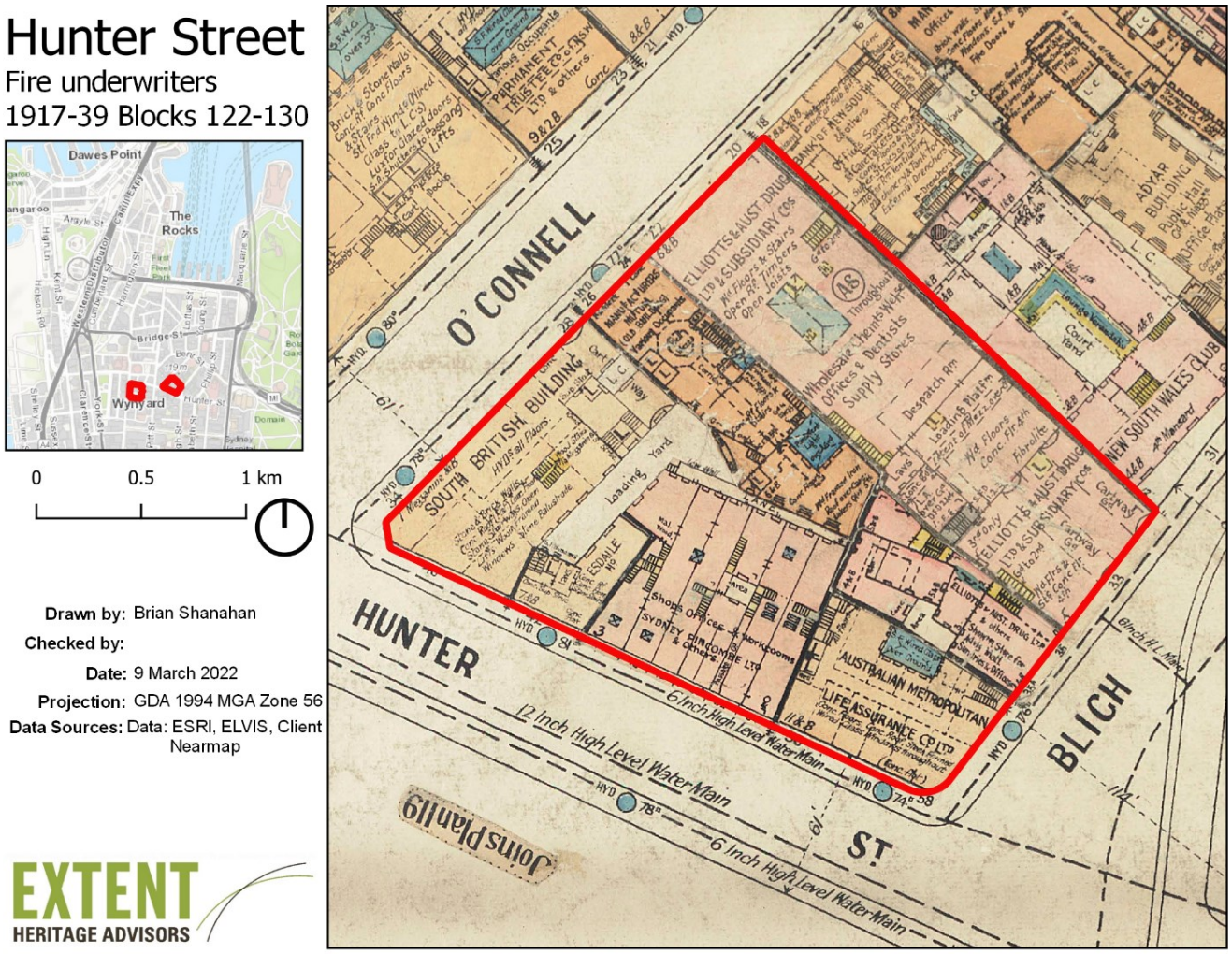


Figure 62. Detail from Fire-Underwriters Association of NSW Detail Survey Map (the Hunter Street East site is outlined in red). Block 115 and 118, 1917-1939. Source: City of Sydney A-00880234.



Figure 63. Detail from City of Sydney Civic Survey, 1938-1950, Map 7A (the Hunter Street East site is outlined in red). Source: City of Sydney A-008880367.

During the second half of the twentieth century, the early twentieth-century buildings on the site were progressively demolished and replaced by large multi-storey buildings. Whilst some of the early twentieth-century buildings remained until the 1960s (Figure 65and Figure 66), all of the buildings at the eastern construction site were demolished and replaced with large multi-storey concrete buildings by the 1980s. This process mirrored the progressive demolition of late nineteenth and early twentieth century buildings of Sydney during this period (Burgmann and Burgmann 2011).



Figure 64. 1949 historical aerial showing the study area (outlined in red). *Source:* City of Sydney A-00879961.

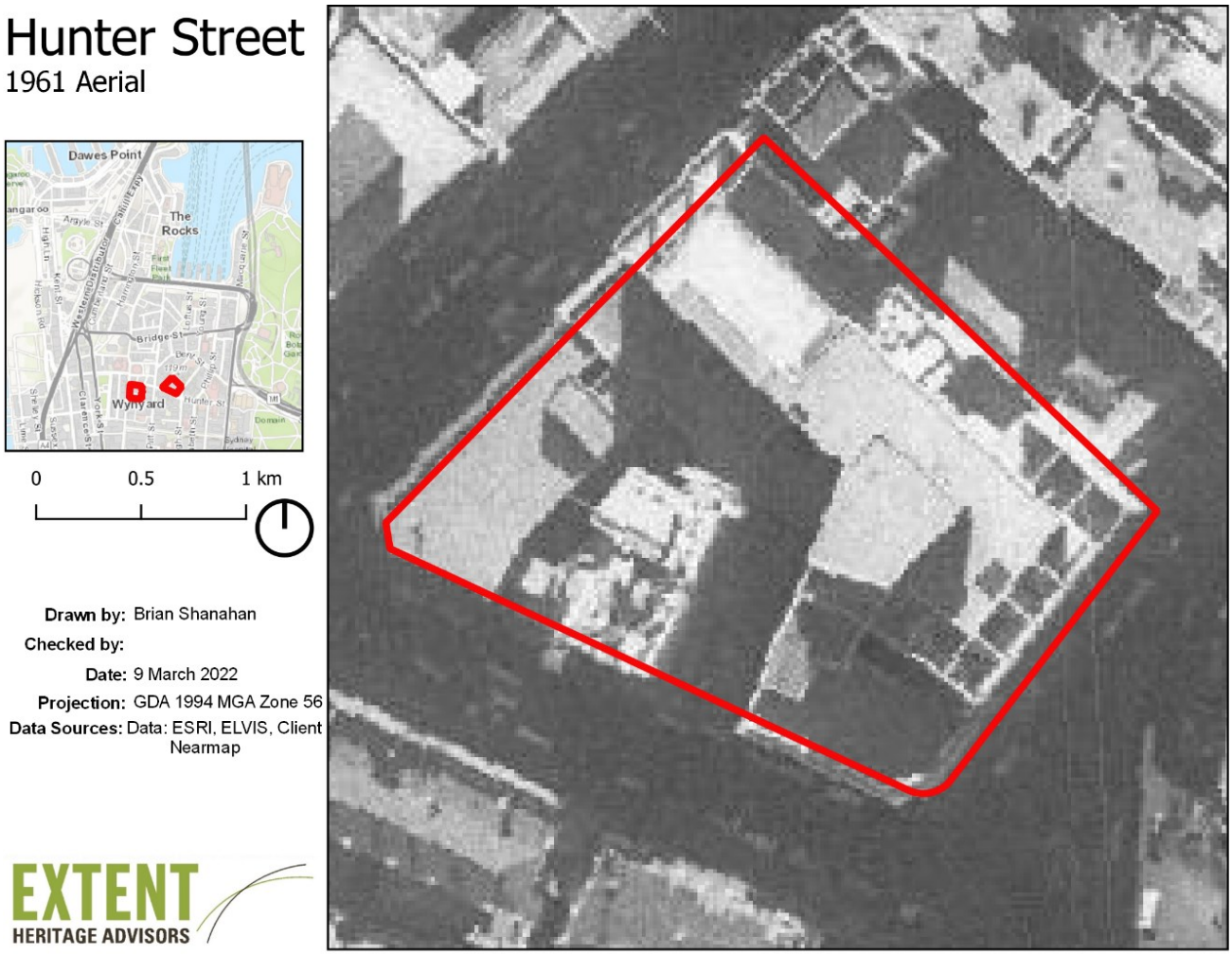


Figure 65. 1961 historical aerial, showing the eastern construction site (outlined in red). *Source:* Spatial NSW.

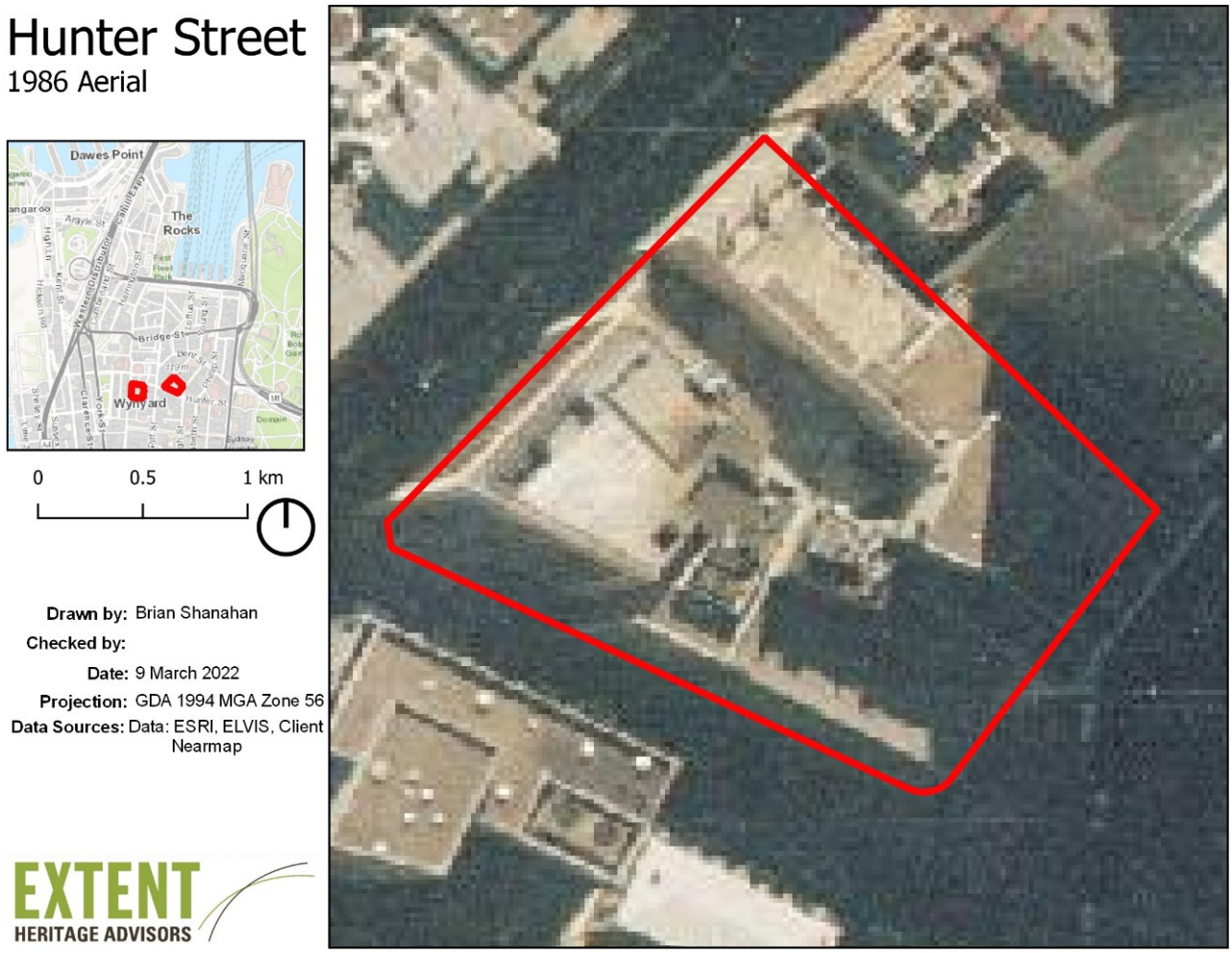


Figure 66. 1986 historical aerial, showing the eastern construction site (outlined in red). *Source:* Spatial NSW

2.6 Phases of historical development

2.6.1 Hunter Street West construction site

2.6.1.1 Phase 1 (pre-1788): Aboriginal occupation and land use

Occupation of Warrang (Sydney Cove) and the watercourse now known as the Tank Stream by the Gadigal people. The surrounding land, waters and resources were used and cared for by generations by Aboriginal people.

2.6.1.2 Phase 2 (1788–1800): The colonisation of Warrang

Warrang (Sydney Cove) and Gadigal Country were colonised by the British in January 1788. A penal camp was established in the vicinity of the Tank Stream. It is not clear if any structures were constructed within the study area in this period, although contemporary images (seeFigure 27) show properties on the crest of the hill either side of the stream and fence lines running down to the water. This suggests that structures were built in the vicinity of the Tank Stream in this period, despite the efforts of the Colonial Government to maintain the purity of the colony's sole water source.

2.6.1.3 Phase 3 (1801–1820): Early leases and structures

An 1807 plan of the area shows leases granted to John Black and Robert Turnbull within the western construction site (see 2.5.1.1, above). Obed West attests that there was a house in the area 'occupied by Mr Black' in the early nineteenth century (West 1882, 12). This structure appears to be the building located on the left-hand side of Lesueur's drawing of 1802. A plan of the site in the early 1820s shows several structures on Black's land (Figure 30), although by this point the lease had been taken over by his son in law, Prosper de Mestre.

2.6.1.4 Phase 4 (1821–1843): Edward Riley and Prosper de Mestre Estate and channelised Tank Stream

The merchant Prosper de Mestre married John Black's daughter in 1821 and took over his lease within the western construction site. An 1833 survey plan of the area (Figure 31) shows two lots associated with Prosper de Mestre and the estate of the late Edward Riley. One building can be seen on Edward Riley's property and Prosper de Mestre's property has two buildings with verandahs and a range of associated outbuildings. It is likely that both of these lots served dual commercial and residential functions.

Crucially, this plan shows that the eastern end of both properties is divided from the Tank Stream by a wall. The eastern side of the Stream has not been formalised.

In 1836, de Mestre appears to have demolished the structures on his property (likely associated with Black's occupation of the site) and replaced them with a row of terraces and a two-storey building. These terraces were occupied by tenants.

2.6.1.5 Phase 5 (1844–1890): Subdivision and commercial development

Edward Riley's estate was subdivided and sold in 1844 after two decades of legal disputes. Prosper de Mestre died in 1844 and his will was executed over the course of that year. A sale plan of his property (Figure 34) shows the land subdivided into seven lots, including five terraces, a two-storey building, and a storehouse and outbuildings adjacent to the Tank Stream. By the late 1840s, the terraces and other buildings within the western construction site were occupied by a range of commercial and retail businesses such as stationers, booksellers, an 'Auction Mart', and Skinner's Hotel. By the 1860s (Figure 39) all of the street frontage within the western construction site was occupied by terraces and other buildings. Plans of the site in the 1880s (Figure 41) show that most of the buildings were two or three storeys, and that they were occupied by various businesses such as chemists, jewellers, hatters, and stationers.

2.6.1.6 Phase 6 (1891–1970) Commercial and retail expansion

The site retained its commercial and retail character into the twentieth century. One major change was that several of the buildings on the site had four or five storeys by the early twentieth century (see Figure 42andFigure 43), suggesting that older nineteenth-century buildings had been demolished and replaced by this point. Another change in the early twentieth century was the excavation of the Hunter Connection tunnel roughly in line with De Mestre Place; this tunnel cut into the sandstone below the site and provided connection to Wynyard Station with commercial arcades (Figure 43).

2.6.1.7 Phase 7 (1971–present): Modern high-rise redevelopment

Whilst several nineteenth-century buildings remained on the site by the middle of the twentieth century (Figure 45), by the 1980s most of the site had been redeveloped and all nineteenth-century buildings except Skinner's Hotel had been demolished and replaced with large multi-storey buildings (Figure 47).

2.6.2 Hunter Street Eastern construction site

2.6.2.1 Phase 1 (pre-1788): Aboriginal occupation and land use

Occupation of Warrang (Sydney Cove) and the watercourse now known as the Tank Stream by the Gadigal people. The surrounding land, waters and resources were used and cared for by generations by Aboriginal people.

2.6.2.2 Phase 2 (1788–c.1800): The colonisation of Warrang

Warrang and Gadigal Country were colonised by the British in January 1788. Establishment of a penal camp at Warrang (Sydney Cove) in the vicinity of the Tank Stream.

2.6.2.3 Phase 3 (c.1800–1820): Early leases and structures

An 1807 plan of the site shows a small lease granted to James Petty along what later became Hunter Street (Figure 48).

2.6.2.4 Phase 4 (1821–1850): Residential and commercial development

By the 1820s, several structures were present on the site (Figure 49). A detailed plan of the site in 1844 shows the site divided into seven separate lots, each of which contained a number of substantial structures. It is likely that each of these lots had dual commercial and residential

functions. A view of Hunter Street in 1848 shows that the site continued to contain a number of residential (and likely also commercial) buildings, including the 'Horse and Jockey' Hotel on the corner of Hunter and O'Connell Streets (see Part 2.5.2.2, on page 65 of this report).

2.6.2.5 Phase 5 (1851–1900): Growth of commercial and retail character

By the 1860s, the eastern construction site was almost fully occupied by structures, with the exception of its northwest corner (Figure 66). The 1865 Trigonometric Survey Plan shows a number of wooden buildings and sheds in addition to brick terraces, suggesting that several buildings on the site were still being used as stables (a fact that is also attested by contemporary Sands Directory entries for the area).

From the 1880s, larger and taller multi-storey buildings began to be built on the site (see Figure 58) and many of its early nineteenth-century buildings were demolished with the exception of the shopfront on the corner of O'Connell and Hunter Streets (see Figure 59).

2.6.2.6 Phase 6 (1901–1960): Early twentieth-century redevelopment

By the turn of the twentieth century, the eastern construction site was a densely occupied block in an important commercial sector of the city. In the early decades of the twentieth century, many of the nineteenth-century buildings on the site were demolished and replaced with multi-storey buildings; the shop front on the corner of Hunter and O'Connell Streets, for example, was replaced by the seven-storey South British Insurance Company building (Figure 61).

2.6.2.7 Phase 6 (1961–present): Late twentieth-century redevelopment

During the second half of the twentieth century, the early twentieth century buildings on the site were progressively demolished and replaced by larger multi-storey buildings (Figure 66). In 2016 the buildings located at 33 Bligh Street and 18-20 O'Connell Street were demolished as part of the Sydney Metro CDD and Southwest works.

Table 2, below, provides a summary of the phases of historical development for both the construction sites.

Table 2. Phases of historical development for the Hunter Street station sites.

Phase	Hunter Street West	Phase	Hunter Street East
1 (pre-1788)	Aboriginal occupation and land use		
2 (1788–1800)	The colonisation of Warrang		
3 (1801–1820)	Early leases and structure	3 (c.1800–c.1820)	Early leases and structure
4 (1821–1843)	Edward Riley and Prosper de Mestre and Sydney Tank Stream formalisation	4 (1821–1850)	Residential and commercial development
5 (1844–1890	Subdivision and commercial development	5 (1851–1900)	Growth of commercial and retail character
6 (1891–1970)	Commercial and retail expansion with underground connections	6 (1901–1960)	Early twentieth-century redevelopment
7 (1971–present)	Modern high-rise redevelopment	7 (1961–present)	Late twentieth-century redevelopment

3. Site formation processes

3.1 Site inspections

The study area comprises two sites: Hunter Street East (the 'eastern site'; bounded by O'Connell Street, Hunter Street and Bligh Street); and Hunter Street West (the 'western site'; located on the corner of George Street and Hunter Street).

Site inspections were undertaken by Extent Heritage on 10 March and 16 March 2022 to assess the study area's current configuration and general environment. Access to the basements of the buildings was not facilitated.

Hunter Street West site

The western site is located on the corner of George and Hunter Streets (). It is a densely developed urban space with the two-storey heritage Skinners Family Hotel located at the street corner towered over by multi-storey office/retail buildings. The George Street frontage is flush with the street level and includes commercial shops and businesses (Figure 68). The Hunter Connection provides vehicular and pedestrian access to the premises on the first floor of the Hunter Street and Pitt Street through De Mestre Place. This connection is reduced to sub-street levels here due to the sloping ground that descends eastward (Figure 69). There is a significant cut for the basement of the commercial building (Figure 70). The northern boundary of the western site is delineated by the Hunter Street frontage (Figure 71). There is a significant drop in street level from the corner of George Street toward east (Figure 72). Just like the George Street frontage, the Hunter Street one is characterised by commercial shops and office buildings. It includes access to three levels of Hunter Connection including the basement (Figure 73). The basement also provides entrance to Wynyard Train Station (Figure 74). The information panel located at the entry of Hunter Connection provides a layout of all three levels of the mall (Figure 75). The next-door office building in 503–504 Hunter Street is also furnished with stairs that provide access to the underground connection to Wynyard Train Station (Figure 76).

The eastern boundary of the western site is bounded by buildings and was inaccessible, with the exception of narrow Empire Lane, that extends from Pitt Street to the back of the easternmost building of the site (Figure 77). The lane descends at the very end near the roller shutter door in the side wall of the adjoining building.

The western site extends from the mid-slope of the George Street ridge to the bed of the former Tank Stream. During the early nineteenth century, site formation processes consisted primarily of infilling the valley immediately adjacent to the Tank Stream in order to form level areas for yards and buildings. Filling depths were between 2 and 3 m along the western side of the stream. There is no documented description of the fill used but based on sites examined elsewhere along the course of the stream the fills may include rock, soil, demolition rubble, and refuse.

During the second half of the nineteenth century and the first decades of the twentieth century the principal site formation processes were associated with the construction of multi-storey

commercial buildings. These structures had substantial foundations and all major buildings had basements. The basements were generally at least 3 m in depth.

Subsequent building works during the second half of the nineteenth century saw the excavation of a second phase of basements and sub-basements resulting in removal of deposits to a depth of up to 7 m below pavement levels. The only portion of the site that was not subject to basement excavation was De Mestre Place. As the only long-term open space within the complex of buildings De Mestre Place has been a corridor for a number of services that may have compromised any archaeological remains pre-dating the creation of the roadway.

Hunter Street East site

The eastern site comprises city high-rises along the Hunter Street frontage (Figure 78), the current Metro construction site occupying part of O'Connell Street and the Metro site compound occupying part of Bligh Street. The Metro construction site has been fully excavated for the purpose of the project (Figure 79). The excavated area extends east, comprising the entire northern portion of the site's footprint. The site compound sheds are mounted above the tunnelled area (Figure 81). The building at the corner of Hunter and O'Connell Streets has an underground parking. The adjacent building fronting Hunter Street has a basement that is occupied by a bar (Figure 80).



Figure 67. Hunter Street West site; view looking east showing Skinner's Family Hotel in forefront.



Figure 68. Hunter Street West site; buildings along George Street frontage.



Figure 69. Hunter Street West site; Hunter Connection (De Mestre Place) on George Street provides vehicular and pedestrian access to premises on the first and second floors of the commercial mall area.

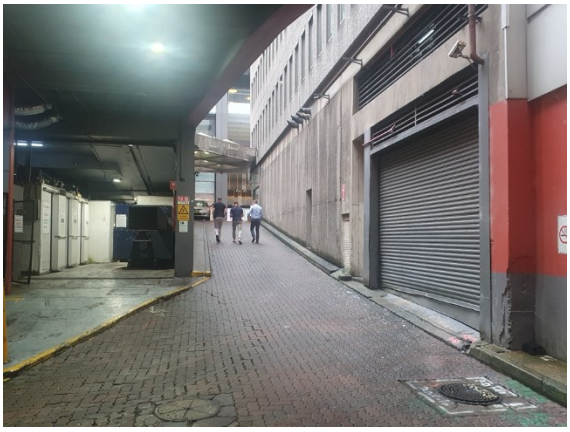


Figure 70. View looking west showing basement in Hunter Connection/De Mestre Place. Note the service area cut beneath the lane level which is under the Hunter Connection access ramp and indications of drains or services within the laneway.



Figure 71. Hunter Street West site; significant drop in street level along Hunter Street frontage; view looking south-west.



Figure 72. Noticeable road decline in front of Skinner's Family Hotel on Hunter Street.

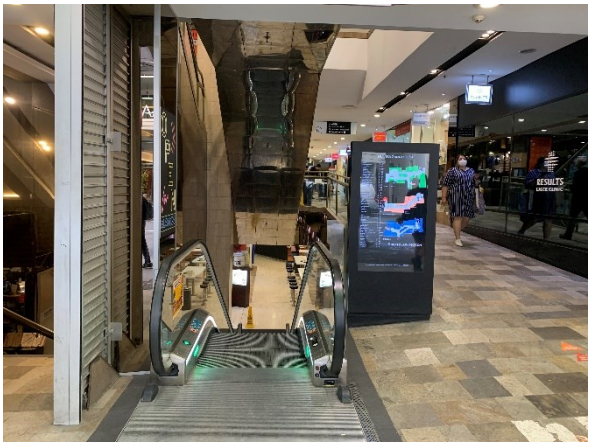


Figure 73. Escalator leading to basement level of Hunter Connection on Hunter Street.

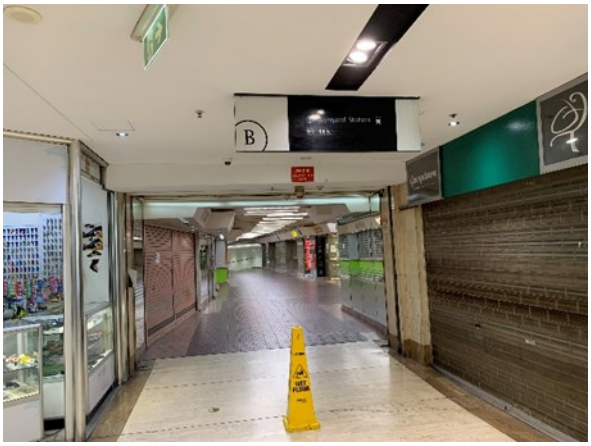


Figure 74. Hunter Street West site; Wynyard Station Connnection from the basement of Hunter Connection.

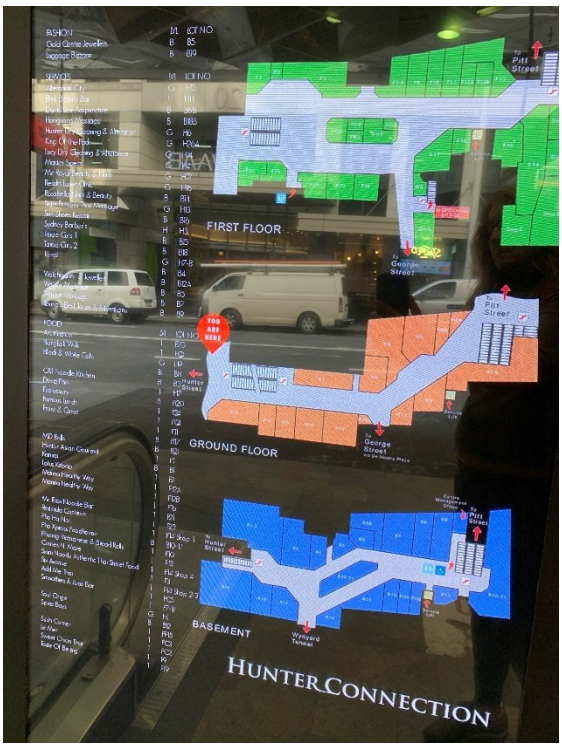


Figure 75. Hunter Connection directory panel.



Figure 76. Office building at 503–504 Hunter Street includes stairs to underground Wynyard Station Connection.



Figure 77. Empire Lane extends from Pitt Street to the back of the building that forms the eastern boundary of the Hunter Street west site; looking west.



Figure 78. Hunter Street East site; looking north-east.



Figure 79. Sydney Metro Hunter Street East construction site on O'Connell Street. Looking east.



Figure 80. Hunter Street East site; Frankie's Bar on Hunters Street is located in the basement of a building.



Figure 81. Hunter Street East site compound; looking west from Bligh Street.

3.2 Archaeology of the neighbourhood

3.2.1 Aboriginal archaeology

Angel Place Project (Godden Mackay *1997–1998)*

Archaeological investigations undertaken between 1997 and 1998 at Angel Place in the vicinity of the Tank Stream oviform identified a small section of remnant 'charcoal-rich topsoil and alluvial sand' that formed part of the remnant Tank Stream topography (GML 1998a, 35; 43–44). Much of the rest of the study area had been cut down to C-horizon natural clay during nineteenth-century developments on the site (GML 1998a, 35). Excavations of this remnant deposit produced an assemblage of fifty-four flaked stone artefacts (AHIMS ID 45-6-2581) comprising flakes, cores, and flake fragments (debitage) (GML 1998c, 4). The majority of these artefacts came from an intact pre-European, mid to late-Holocene, alluvial sand body, with seven identified in what appears to be redeposited topsoil (GML 1998a, 81). A small number of artefacts were recovered from a redeposited, charcoal-rich topsoil adjacent to the Tank Stream alignment that was interpreted as part of early nineteenth-century attempts by Europeans to infill and level the sloping topography leading to the waterway (GML 1998c, 43). The artefacts represented a variety of raw materials including silicified tuff, indurated mudstone, silcrete, and quartz (GML 1998c, 4).

Many of the artefacts identified were waste material (debitage) from the production of stone tools. The small size of the artefacts suggested that quality raw materials may have been in short supply in the vicinity of Sydney Cove, that in turn motivated people to flake small-to-medium sized river pebbles (GML 1998c, 5). Some artefacts showed evidence of the use of fire to crack open river pebbles (GML 1998c, 5).

The Angel Place assemblage reflects short-term camping and intermittent occupation along the Tank Stream (GML 1998a, iii). The collection of artefacts in the small area of remnant soil further suggests that there would have been a relatively even distribution of artefacts along other parts of the original stream alignment (GML 1998c, 4). Finally, the excavations at Angel Place showed that remnant A-horizon topsoil, and Aboriginal archaeology, can be preserved in areas that have been heavily truncated by historical land use activities.

KENS (DSCA 2003)

In 2003, a buried soil horizon was identified while removing a basement floor level at the KENS site, bounded by Kent, Erskine, Napoleon, and Sussex Street (DSCA 2006, 4). The remnant profile, comprising an A and C horizon (with the B horizon being absent), had been truncated and rapidly buried shortly after colonisation. This was indicated, in part, by sharp contexts and an absence of historical artefacts within the natural soil profile (DSCA 2003, 108). Overlying this historical event, colluvial deposits were found to contain both historical and Aboriginal artefacts (DSCA 2003, 52). Many of these artefacts were fragmented, chipped, and damaged by heat, suggesting that extensive trampling and burning (either natural or cultural) occurred in the area soon after contact (DCSA 2003, 59, 67-94). Evidence of early contact period archaeology was also identified in three glass artefacts were found retouched by Aboriginal people.

The investigations identified around 1,000 Aboriginal objects (AHIMS 45-6-2647) dating to the Middle and Late Bondian period (c.2,800 BP to 1788) (DSCA 2003, 102). The assemblage was

dominated by silcrete, followed by tuff and quartz. The types of artefacts produced and discarded were considered limited in nature (DSCA 2003, 110), with the most common tool type being microliths represented by Bondi Points. These microliths were retouched using both bipolar and direct flaking.

320–328 George Street (Dominic Steal Consulting A 2008)

The site at 320–328 George Street comprised the lot directly south of the Metro Hunter Street West study area. At the time of the excavations, the study area was occupied by the Lowes Building. The rear of the building was not presently built upon but had been previously occupied by nineteenth century properties. The eastern boundary of the site also straddled the eastern boundary of the former Tank Stream alignment (AMAC 2015).

The historical archaeological excavations found the ground was heavily disturbed, but that natural soil profiles remained, likely in part due to the lack of basement developments. The site has been registered as a Potential Aboriginal Deposit (PAD) (AHIMS ID 45-6-2796) but no Aboriginal archaeological testing was undertaken. The location of this PAD has been incorrectly registered on the AHIMS database, and should be within Lot 2 DP1250819. When the site was registered on AHIMS (George St PAD), the location was incorrectly recorded (section 4.1, AHIMS).

Wynyard Walk (GML 2013)

A two-stage Aboriginal archaeological testing and salvage program was undertaken by GML at the site of Wynyard Walk. The site was marked as a PAD (AHIMS ID 45-6-3116) and investigated due to its position near the KENS site and location as part of the tidal flat landform. The site was also marked in the AHIMS site card as being approximately 100 m from the Tank Stream, however, this number actually ranged between to 230–330 m.

Across the site, only one area with intact natural Gymea soil profiles were encountered. However, these were heavily disturbed, including by historical developments such as cuts and fills. Only three Aboriginal lithic artefacts were recovered from the test pits located with remnant topsoil. The remainder of the site included fills and redeposited natural about the Hawkesbury sandstone sheet.

Junction Lane (Brayshaw and Haglund 1997)

In 1997, twelve Aboriginal stone artefacts were found during historical archaeological excavations in advance of the construction of the Eastern Distributor Tunnel (Brayshaw and Haglund 1997). These artefacts (AHIMS 45-6-2580), several of which were heat treated, were manufactured from silcrete, chert, quartz, quartzite, and chalcedonic silica. One core fragment was also discovered. The artefacts were recovered from former estuary deposits, located in the vicinity of a spring and Yurong Creek. The artefacts were found in ‘disturbed topsoil’ overlain by historical fill.

The discovery of artefacts at Junction Lane shows that Aboriginal objects can be present even in disturbed A-horizon topsoil, especially if it is then sealed with historical fill. This confirms that sites can have Aboriginal archaeological potential even if urban development has modified the site.

First Government House (Gorman 1992)

The site of First Government House has been recognised as a highly significant Aboriginal archaeological site (AHIMS ID 45-6-2299). In 1983, historical archaeological excavations on the site of the First Government House identified the foundations of the original 1788 residence of Governor Phillip. This was demolished in 1845 and replaced with the current Government House in the Botanic Gardens (Proudfoot, Bickford, Egloff, and Stocks 1991). The site was excavated several more times as it was developed further in 1984, 1987, and again between 1990 and 1991 (Crook, Ellmoos and Murray 2003, 19-20).

The cumulative assemblage resulting from these excavations comprised three lithic and ten glass artefacts, identified as having been worked by Aboriginal people (Gorman 1992, 1–2). All these artefacts were identified in post-contact contexts and, as such, may provide evidence for the presence of Aboriginal people in and around the grounds of First Government House after colonisation.

The Aboriginal site associated with the First Government house also includes Aboriginal ceremony and dreaming, and the potential for burials (Irish and Goward 2013b). The intangible value of ceremony and dreaming refers to the cultural significance of the earliest formal interactions between Europeans and Aboriginal people. The site is associated with several Aboriginal people including Arabanoo, Colebee, Bennelong, and Barangaroo.

200 George Street (GML 2012; GML 2013; GML and CRM 2014)

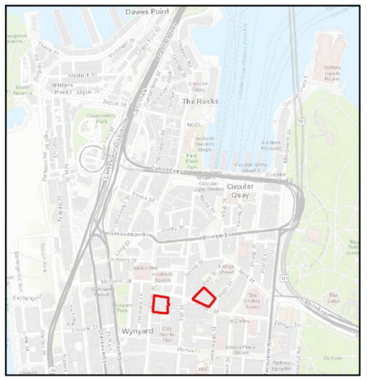
In 2012, GML undertook a project of historical and Aboriginal archaeological test excavations of the site known as '200 George Street', Sydney. The site included three addresses, 200 George Street, 190 George Street, and 4 Dalley Street. At the time of the assessment, the project area comprised three buildings that included basements.

A due diligence assessment concluded there was a moderate potential for Aboriginal archaeological evidence (200 George Street PAD / AHIMS ID 45-6-3081) (GML 2012; GML 2013, 24). As a result, eight test pits were excavated in a relatively undisturbed soil profile. The test pits were restricted to Area 8, a small portion of the site along George Street. No Aboriginal artefacts or evidence of Aboriginal occupation were recovered.

The historical excavations revealed more extensive evidence of the pre-1788 landscape and environment associated with the Tank Stream, one of its tributaries (later known as Hospital Creek), and ponds (GML and CRM 2014, 1). The original landscape comprised sandstone outcrops and benches close to George Street that dropped down to steep sandstone slopes. The sandstone beside the Tank Stream estuary levelled out to rock platforms and were capped with white sand and gravel. Algal mats developed on the sands, trapping pollen that provided evidence of casuarina trees. Water-loving plants including raspwort and selaginella were identified close to the waterway. The area around the ponds, where water pooled from Hospital Creek, was covered with ferns, native lilly, and ground covers. In contrast, the vegetation identified on the dry ridge top included forest of eucalyptus with an understory of shrubs including banksias, drumsticks, wattles, and several types of grasses.

Hunter Street

Previous investigations

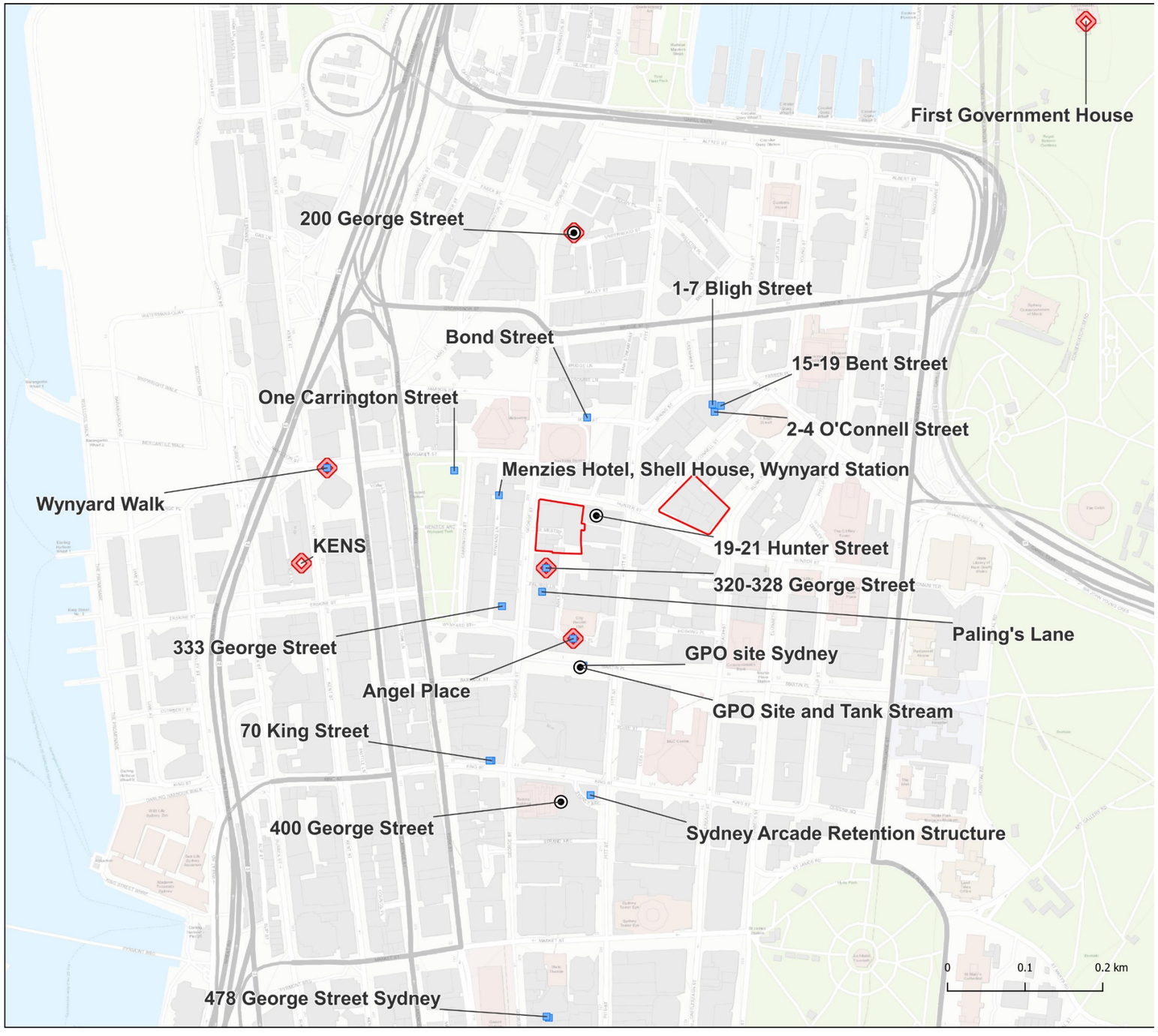


0 0.5 1 km

Construction sites

Previous investigations

- Aboriginal
- Geotechnical
- Historical



Drawn by:	Brian Shanahan
Checked by:	Hannah Morris
Date:	9 May 2022
Projection:	GDA 1994 MGA Zone 56
Data Sources:	Data: ESRI, ELVIS, Client Nearmap, OSM

Figure 82. Map of previous investigations undertaken in the vicinity of the study area (outlined in red).

3.2.2 Historical archaeology

Artefact Heritage identified and summarised previous archaeological excavations that have been undertaken in the vicinity of the study area and those that may be at other locations of the Sydney CBD, but feature findings similar to those that potentially survive within the study area (Artefact Heritage 202a, 228–235). The table below includes these sites, as well as other relevant sites that have been identified in this assessment. Some of the sites overlap with those already included in the subsection above, since they provided evidence of both archaeologies.

Table 3. List of relevant historical archaeological investigations in the vicinity of the study area.

Year	Archaeological Investigations	Description
2019	Bond Street, Sydney: monitoring for installation of electricity ductlines	Extent Heritage undertook monitoring during the installation of electricity ductlines in Bond Street, Sydney. During removal of the road surface a portion of the front wall of the former Cape's Chambers was exposed. The brick footings formed part of the north wall of the Cape's Chambers basement constructed in 1881 and demolished in 1964 for the construction of Australia Square. The basement walls had been demolished below the former pavement level. Levelling fill created in 1964 covered the trimmed surface of B-horizon clay developed on the underlying Hawkesbury Sandstone. The exposure was approximately 55 m west of the line of the Tank Stream at an elevation of approximately 11 m AHD. No A-horizon soils or alluvium were observed.
2017–2021	One Carrington Street: Menzies Hotel, Shell House, Beneficial House, 301 George Street and Wynyard Lane (no report sighted; personal discussion between Extent Heritage and GML)	GML Heritage undertook heritage and archaeological impact assessment and a program of intermittent archaeological monitoring of the study area over several years as part of the Wynyard Station upgrade. The works did not find any archaeological evidence due to significant truncation by the twentieth century development with building basements cut to bedrock. Monitoring of service trenching in the middle of Wynyard Lane also identified modern fill over bedrock.
2016	333 George Street Sydney: Archaeological Investigations for redevelopment of the site	In 2016 Casey & Lowe carried out a program of salvage excavation associated with the redevelopment of the site located on west side of George Street. The works resulted in the discovery of archaeological material evidence of the early use of the site as military barracks (c17900 and

Year	Archaeological Investigations	Description
		subsequent mid-nineteenth century residential development. Material evidence included wall footings, rock cut well, services, and artefacts. The archaeological investigations also demonstrated modifications to the natural topography required for the nineteenth century residential development.
2012-2014	200 George Street, Sydney CBD	In 2012 GML Heritage carried out a program of salvage archaeological excavations in advance of the redevelopment of the site into a commercial office tower. Archaeological investigations were concurrent with demolition and resulted in the discovery of ample historical archaeological and environmental evidence. The excavation revealed the pre-settlement topography of the area including the sandstone slopes and natural flora species. Evidence of historical occupation included various features cut into the bedrock and structural and artefactual remains of the nineteenth and early twentieth century occupation. The bedrock modifications were evidence. The discovery most relevant for the study area is the survival of features (postholes, scored lines and a well cut into bedrock) in the basement of the modern high-rise. Although the construction of the basement removed almost all upper soil horizons, the deeper features such as the well, postholes, cut sin the bedrock survived.
2013–2016	Wynyard Walk Archaeological Excavation (GML 2017)	In addition to the evidence of Aboriginal occupation, the staged program of archaeological investigations undertaken by GML also identified well preserved historical archaeological remains across several areas of excavation. The material evidence spanned from the early nineteenth to the twentieth century timespan and included wall footings of the structure within the former Military barracks compound, residences from the earliest land grants to late nineteenth century boarding houses, mills, warehouses, pubs, etc. The investigations also revealed a change in the landscape caused by urbanisation. Some archaeological remains at former Margaret Place were located beneath thick fills, at levels below 2.5 m of the current ground surfaces.
2012–2013	478 George Street Sydney archaeological excavation (AHMS 2015)	AHMS undertook a program of test and salvage excavation in advance of the site redevelopment for a new commercial and retail premises including the enhancement of the existing facilities of the adjacent State Theatre. The excavations at this site that is located approximately 600 m south of the study area. The site was occupied by hotels and commercial retail outlets since it was first developed in c.1812 until its redevelopment for the Mick Simmons sports store in 1981. Although relatively small in size, i.e. 10 m wide and about 50 m long, the site provided copious material evidence on the nineteenth century development and commercial activities in the Sydney CBD. Information on the

Year	Archaeological Investigations	Description
		construction methodologies of the buildings, their density and the lives of the occupants, as well as the species of cultivars was obtained. Palynological analysis provided significant results demonstrating the ecologically disparate assemblage where the native species typical for dry sandy soils and those typical for swamps and damp creek banks were found in the same sediment contexts
2011	70 King Street: rock cut feature: results of archaeological investigations	Godden Mackay Logan undertook investigations of an unexpected find—a rock cut feature identified in the basement of the heritage building during upgrade works of the former ANZ bank site located at the corner of George and King Streets. The feature, a water well, was located beneath a support beam. It was only excavated to a depth of approximately 1 m due to the thick layer of consolidated screed fill that leaked through bedrock cracks from an adjacent site.
2008	2–4 O'Connell, 15–19 Bent, 1–7 Bligh and 9–13 Bligh Streets, Sydney Archaeological Monitoring (GML 2008)	Archaeological monitoring of the ground disturbance in two distinctive areas of the site A and B), undertaken by GML over a period of five days, resulted in the discovery of significantly truncated site. Area A was divided by a sandstone terrace that consisted of an upper and lower tier, which were a product of the foundation excavation for the various structures that existed on the Bligh and O'Connell Streets' frontages. Archaeological features identified included structural remains of the 1928 building located in the upper tier and evidence of the Bennelong Stormwater Channel in the lower tier of Area A. No archaeological investigation was made of the overlying fills or the cut for the drain due to a safety hazard associated with the depth of excavation.
2006–2007	320–-328 George Street, Sydney (AMAC 2015)	AMAC Aegis undertook archaeological investigations of the former Lowes building. Due to significant disturbance of the site by the post-1870 and 1960s development, patchy archaeological information was retrieved including evidence of destruction by the 1871 fire and fills that may be associated with the Tank Stream tunnel.
2006	330–346 George Street and Paling's Lane, Sydney (Artefact 2021a)	In 2006 Austral Archaeology conducted archaeological excavations associated with the redevelopment of the site that resulted in the discovery of rather limited archaeological evidence of Paling's Lane. However, the excavations identified remains of the late nineteenth and early twentieth commercial buildings, and an earlier sandstone well. Furthermore, part of the Tank Stream was found in the sloping end of the eastern portion of the site. It was found under "a natural deposit of sterile plastic clay sitting atop bedrock (Artefact 2021a, 229)

Year	Archaeological Investigations	Description
1997–1998	Angel Place Project, Sydney (Godden Mackay Heritage Consultant 1997)	Godden Mackay (GML Heritage) undertook archaeological monitoring and investigations on the Angel Place site during construction of an office tower, a recital hall and retail outlets. Majority of early nineteenth century evidence was associated with Chisolm Family and deposits used to infill and level the sloping Tank Stream topography. The artefact assemblage was limited in size, but provided insight into dietary tastes of nineteenth century Sydney.
1997	GPO site Sydney (Casey & Lowe 1998)	Casey & Lowe Associated caried out a program of archaeological testing and recording in conjunction with redevelopment of the GPO Building in Martin Place. The project required bulk excavation of the entire area to the south of the building. The works exposed an early drain that demonstrated the Stream's change in function from the town's first source of drinking water to a drain and sewer. Charcoal rich strata that represent earlier stream beds and accumulated sediments was also found with the top half of the deposit providing a carbon date of 24,330BP.
1996	Sydney Arcade Retention Structure (Austral Archaeology 1996)	Austral Archaeology undertook archaeological monitoring and recording the site of the former Coles building. The works resulted in the discovery of intact portions of the late nineteenth century fabric of the Tank Stream drain and associated drainage pits, feeder systems, cuts and fills. The palynological analysis provided evidence that a form of eucalypt dry sclerophyll forest or dry woodland occupied the Tank Stream Valle prior to European settlement.

3.3 Geotechnical and environmental investigations

The results of geotechnical and environmental investigations of the study area were not available during the preparation of this report. Information on the area's likely geological characteristics was obtained from similar investigations of the surrounding sites.

400 George Street—Coffey (1995)

The site of 400 George Street, Sydney, is located 315 m south of the Hunter Street Metro West study area. At the time, the site was occupied by a commercial building with a single basement that covered most of the site. The basement extended the length and width of the main floor level (approximately RL13.7m) with several localised lower areas (approximately RL12.8m) for a loading dock, plant room, etc. The alignment of the former Tank Stream ran across the central portion of the site. Preliminary enquiries to the Water Board at the time indicated that between King Street and Martin Place, the Tank Stream was carried in a 750 mm diameter pipe with an invert level of approximately RL11m at Martin Place.

Ten boreholes were drilled to depths ranging between 16 m and 23 m (Figure 83). Two boreholes were drilled from the base of the basement, while the others were drilled outside the study area. All the boreholes encountered varying depth of fill. However, only four boreholes (BH1, BH2, BH5, and BH6) encountered fill that extended to a level below that of the adjacent, existing basement.

Residual soils and extremely weathered sandstone were identified. It was determined that some of the upper clays were probably of alluvial origin. The following boreholes identified residual soils: BH2 (between 60-260 cm below surface), BH3 (between 40-3200 cm), BH7 (between 1200-3800mm), BH8 (Between 1800-3800 cm), BH9 (between 1200-3100 cm), BH11 (between 1800-3100 cm) (Figure 84). The valley of the Tank Stream was interpreted as being encountered in two boreholes (BH3 and BH5).

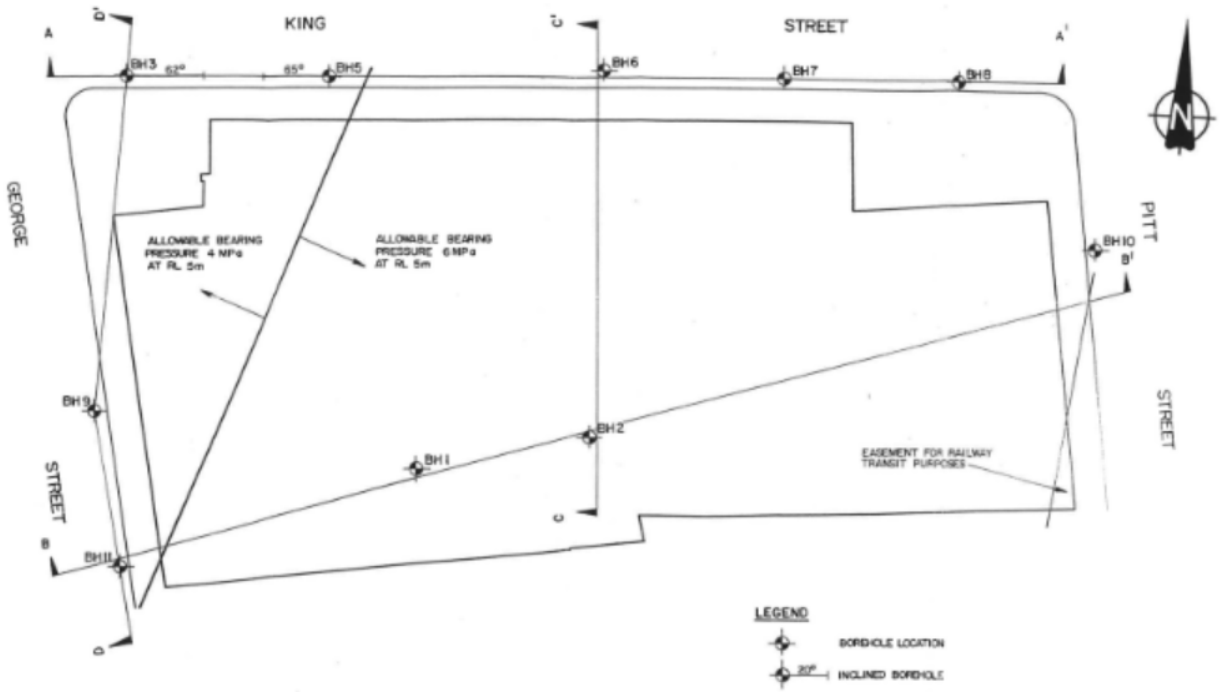


Figure 83. Location of boreholes drilled at 400 George Street. *Source*: Coffey 1995, drawing no. SIO376/1-1.

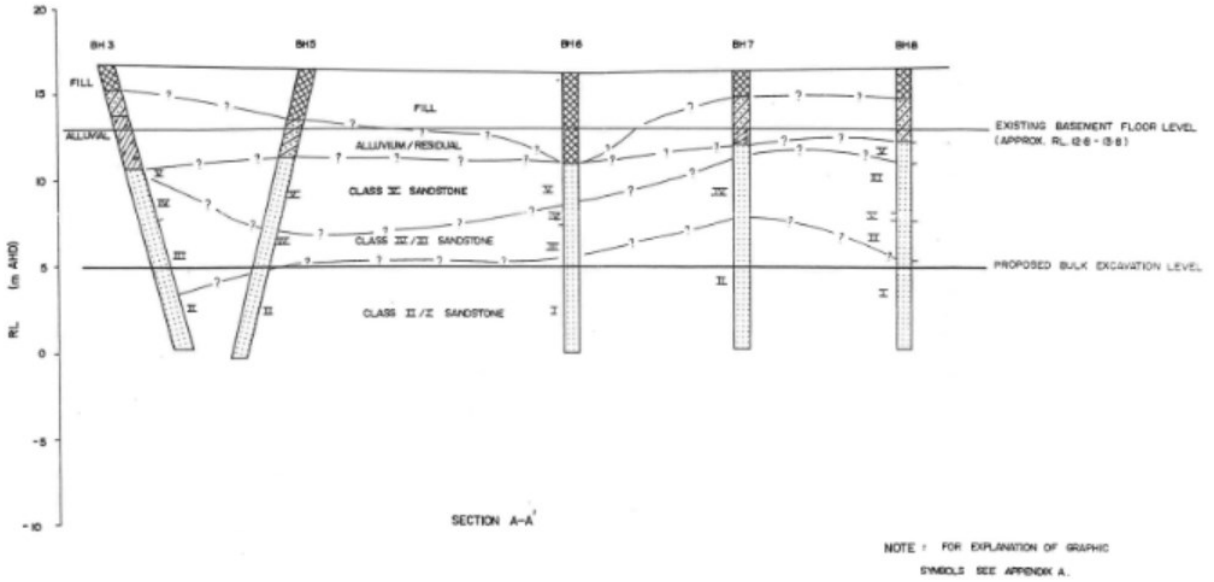


Figure 84. Results of boreholes drilled at 400 George Street. *Source*: Coffey 1995, drawing no. SIO376/1-2.

200 George Street—Coffey 2012; GML (2013)

Geotechnical work was undertaken at the site at 200 George Street, Sydney, located 350 m north of the Metro Hunter Street West study area. The results indicated that there was between 0.3 and 1.5 m of fill between the basement of 190 George Street and the bedrock (Coffey Geotechnics 2012b; GML 2013, 11). The soil profile was shallowest along the George Street frontage, and dropped away gradually to the east. As such, the results suggested that this portion of the site had been cut and levelled, to some degree (GML 2014, 3).

Within the of portion of the site comprising 200 George Street and 4 Dalley Street, deeper deposits of fill were identified. In some borehole locations (BH 6, 8, and 9), there were 2–3 m of fill between the ground surface and bedrock. The results of the geotechnical investigation indicated that deep fill deposits may have been created during the historical development of the site, and there was some potential for natural soil profiles to be present (GML 2013, 9). These would be especially found as pockets and fissures within the undulating sandstone (GML 2014, 61). The presence of natural soil profiles was confirmed during the Aboriginal and historical archaeological test excavations (GML 2013; GML 2014) (Figure 85).

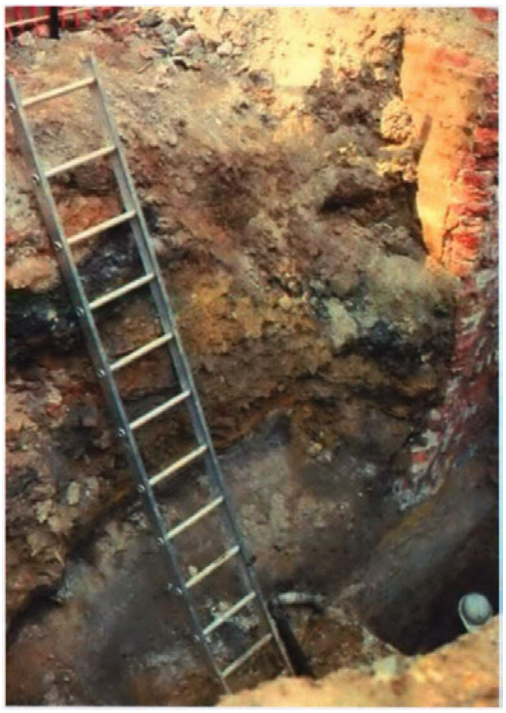


Figure 85. ‘A section through reclamation fills and building levels down into the natural estuarine soils of the Tank Stream Valley on the Dalley Street telephone exchange site in 1986.’. *Source*: GML 2014, fig. 4.27.

19–21 Hunter Street—JK Geotechnics (2018)

The site of 19-21 Hunter Street, Sydney, is located directly adjacent to the east boundary of the Metro Hunter Street West study area. A geological assessment was undertaken by JK Geotechnics and, as part of the reporting, a review of nearby projects was completed. These sites including the corner of Bligh and Hunter Streets, 24 Hunter Street, 320 George Street, and 252 George Street. According to the report, the Tank Stream was probably about RL0m and RL1m (JK Geotechnics 2018, 3). At the site location, it was therefore anticipated that the invert was around RL1m and the crown at around RL3m, that translated to approximately 5 m below ground level. Based on evidence from nearby assessments, sandstone bedrock typically occurs at 2 m to 5 m in depth, being deeper near the Tank Stream. At the time of the geotechnical report, the site was occupied by a building with no basement. The report concluded that excavations for the proposed basement would expect to hit pavement, fill, possible alluvial and/or residual soils, and perhaps extend into sandstone bedrock (JK Geotechnics 2018, 3).

It should be noted that no geotechnical data was collected from the site itself and the estimated RL of the Tank Stream in this location is higher than the estimate of stream bed depth of 1 m AHD. This does not coincide with the known invert levels of the oviform. Estimated fill thicknesses of up to 5 m in the centre of the stream are likely to be an overestimate.

GPO Site and Tank Stream—Casey & Lowe (1998)

The redevelopment of the GPO site required bulk excavation of the entire area to the south of the Martin Place GPO building. As part of the works, the Tank Stream was removed and reinstated. The nature of the GPO landform (where driveways off George and Pitt Streets sloped down to the basement area) seemed to reflect the original Tank Stream valley formation.

According to the report, the valley can still be observed in the slopes of Martin place from Macquarie Street and on the eastern side and in Barrack Lane from Clarence Street on the western side, although the lower point of the valley is between George and Pitt Street is now levelled or built out (Casey & Lowe 1998, 1).

Several soil profiles identified in between 1995 and 1997 across the site were analysed. The original soil profile found close to the Tank Stream was a dark brown sand, probably up to 30 cm thick. Underneath was a very thick clayey subsoil (Lawrie 1997, 2). The depth to the sandstone bedrock ranged up to 6.5 m. Within the grey clay subsoil, several bands of rounded gravel and charcoal fragments were identified. At one part of the site, laminated wavy bands of dark organic carbon-rich sediments occurred. Weathered sandstone was reached at a depth of around 2.5–3 m.

In 1997, six core samples were taken and found evidence of a buried humic layer, presumably connected with an early bed of the Tank Stream (Figure 86). The charcoal rich strata, representing earlier stream beds and accumulated sediments, produced a carbon date of 24,330 BP (retrieved from the top half of this profile). Similar bands of charcoal were seen in a pit excavated at the site in 1997 by Casey & Lowe that produced a date of 16,900+/-70 years BP (Lawrie 1997, 8).

The soil profile of the 'Large Pit, East of George Street', as part of the GPO Archaeological Site Stage II, demonstrated the same results identified in the core samples (Figure 86 and Figure 87) (Lawrie 1997, 6–7). The layer comprised a disturbed former A horizon (with modern material) (0–10 cm), largely undisturbed former B horizon (10–90 cm) produced from fine suspended sediments transported from the headwaters of the Tank Stream and probably derived from the clay subsoils developed on shale, undisturbed C horizon with slight amount of charcoal (90–190 cm), and then evidence of the former tank bedding (190–-310 cm) comprising several distinct layers (Figure 87).

Lawrie interpreted these C horizon layers as frequent fire regime in the catchment of the stream, possibly associated with Aboriginal practices (Lawrie 1997, 11). Peter Mitchell (1998, 1–2), interpreted the same data as evidence of bushfires. He also concluded that the deposits were probably within the period of Aboriginal occupation but that evidence of finding artefacts in the vicinity would be very low.



Figure 86. Soil samples and tank bed at Location 3. *Source*: Casey & Lowe 1995, photo 13.



Figure 87. Detail of Tank Stream bedding. Scale in 1cm gradations. *Source*: Casey & Lowe 1995, photo 15.

3.4 Evaluation of disturbance

Disturbance, for the purpose of this assessment, relates to modern construction and excavation activities deemed likely to have led to disturbance of archaeological structures and deposits. The following section provides detailed discussion of disturbance, and is central to the assessing and determining archaeological potential.

3.4.1 Hunter Street West construction site

The western site has been broken into a number of zones that are broadly characterised by building and estimated depth of disturbance.



Figure 88. Digital Surface Model generated from LiDAR pointcloud illustrating current topography and building heights (the study area is outlined in red). *Source:* DCS Spatial Services.

Skinner's Hotel building

The north-western corner of the site is occupied by Skinner's Hotel building. This heritage listed building will remain in situ. Inspection of the building façade that there is a historic basement level. Comparison with the building as depicted by Fowles in 1848 indicates that the façade has been altered, although the general street or pavement level appears not to have changed significantly (Figure 72andFigure 89).

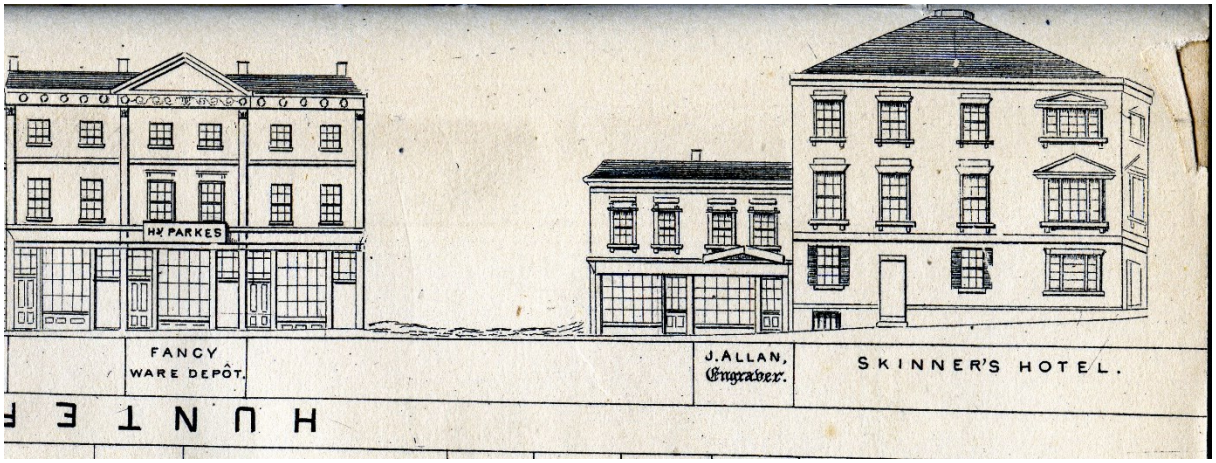


Figure 89. Skinners Hotel and Hunter Street as depicted by Joseph Fowles, 1848. *Source:* Fowles 1882, Plate 20A City of Sydney Archives.

304–308 George Street

This is a multistorey building that was constructed in the 1970s. The roof levels range between 56 and63 m RL indicating that the building is over 50 m high. Building plans and sections drawn up for the construction of the building in the 1970s provide an overview of the basement levels of the building.

Selected section lines were transposed on the modern building plan (Figure 90). These sections indicate that the basement ground level was at RL 22 feet (6.7 m RL). A basement plan room was situated at the eastern end of the building was even deeper with a base of RL10.33 feet (3.15 m RL). For reference the RL of the George Street frontage was a little under 44 feet RL (13.4 m RL). Based on these levels the basements of this building are between 6.7 m and 10.25 m below the current George Street surface suggesting that there is a low probability of the preservation of substantial archaeological structures or deposits within the building footprint. The Wynyard arcade also passes through this block.



Figure 90. North-west quadrant showing locations of selected sections transposed from 1970s architects' plans. The Hunter Street West site is outlined in red.

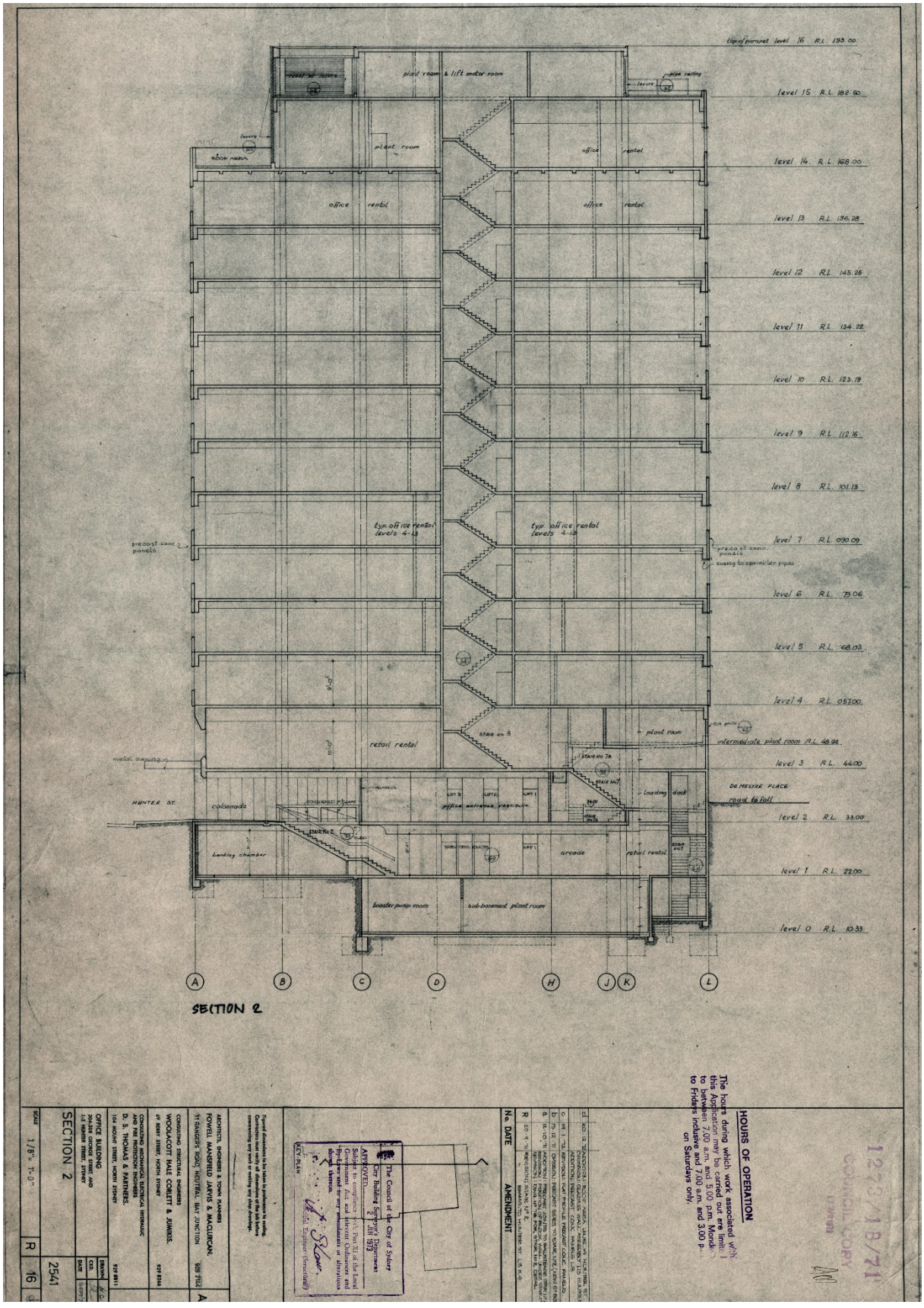


Figure 91. Section 2.

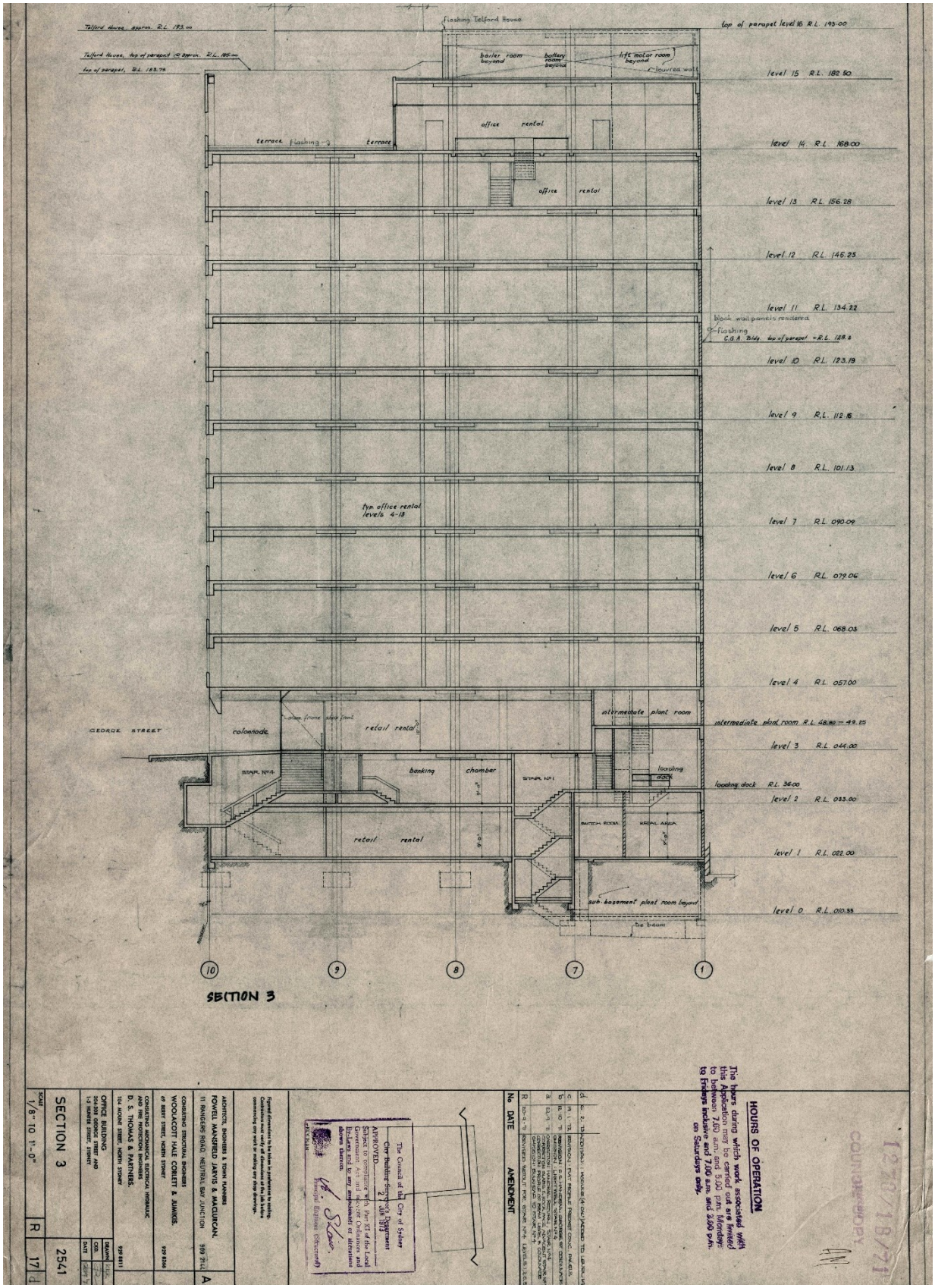


Figure 92. Section 3.

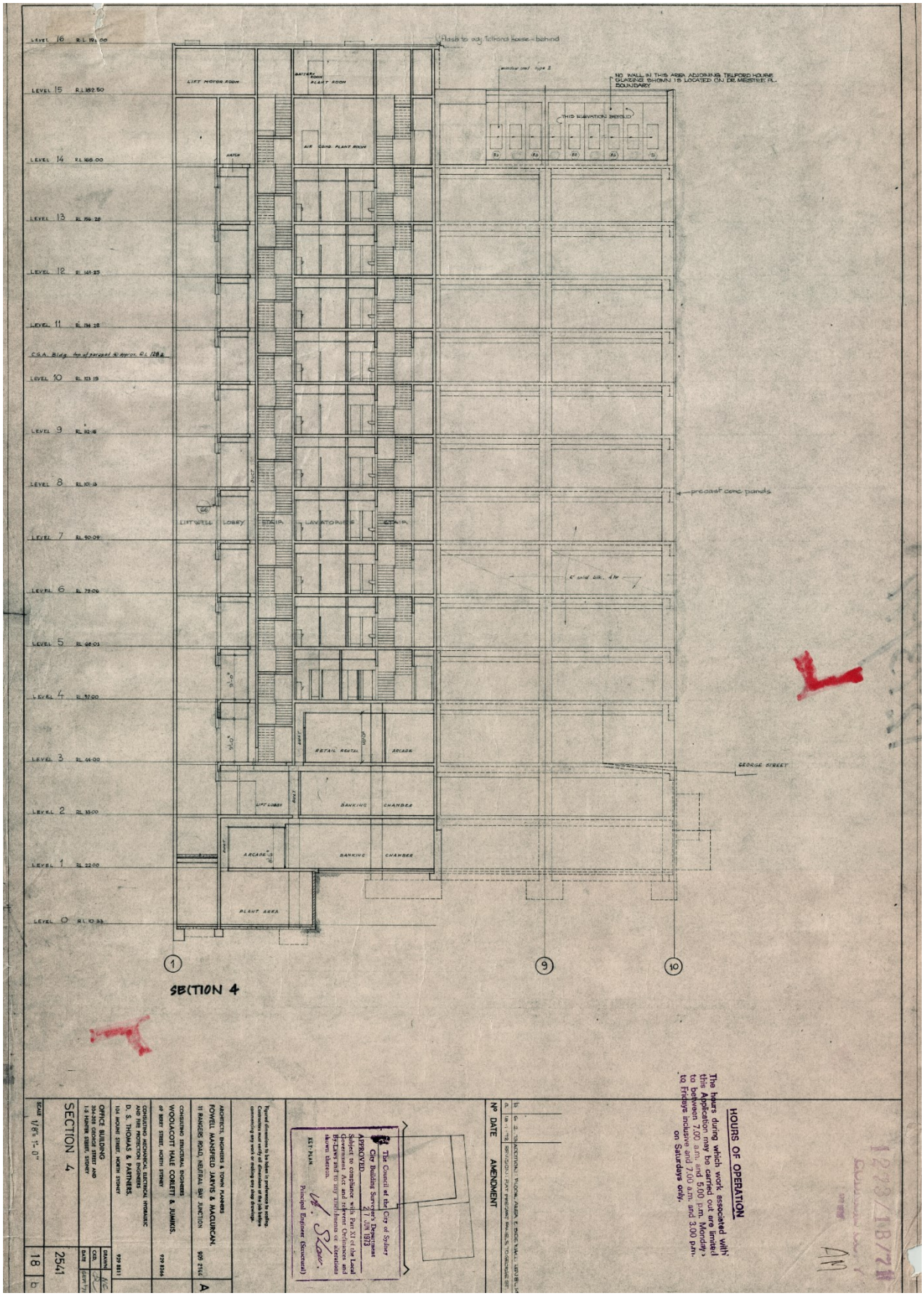


Figure 93. Section 4.

De Mestre Place

De Mestre Place is a paved laneway. It was established as a carriageway associated with the development of the early de Mestre estate between the 1830s and 1840s. It is the only unbuilt ground within the study area, although there is evidence for localised disturbance from the installation of drains and service trenches. It remains to be determined if the modern paved surface is cut into potential earlier archaeological deposits or if it has been built above them. The general slope of the laneway towards the site of the Tank Stream appears to reflect the early Tank Stream valley landform. A similar drop in ground level can be observed on Hunter Street immediately to the north of the site. The north-south aligned section of the laneway drops in a southerly direction towards an undercover parking bay and turning circle (Figure 94). It is possible that this stretch of laneway has been cut down slightly.

A pedestrian bridge leads from George Street and crosses over the laneway into the first-floor food court. An open service area beneath the bridge is lower than the adjacent laneway surface, suggesting that it was cut into earlier fill or deposits (Figure 70and Figure 95). It is uncertain if this level reflects an earlier historic basement or more recent excavation.

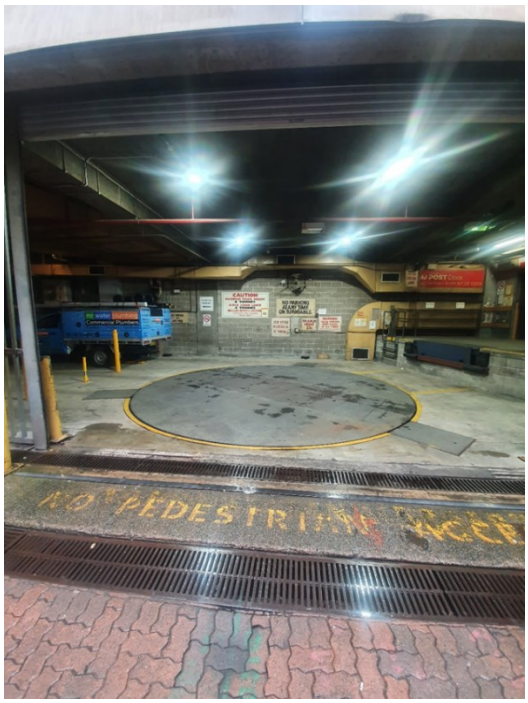


Figure 94. View of turning circle and loading bay at the end of De Mestre Place looking west.



Figure 95. View of the pedestrian bridge leading to the food court, looking east.

310 George Street

This is a brick building with a more recent façade. Architectural drawings drafted for a planning application in 1973 indicate that the basement level extended along the full length of the building and that a rear basement door exited onto De Mestre Place (Figure 96). This suggests that there has been a substantial impact on the early landform at the George Street end of the building. However, the fact that the basement rear door exits directly to the laneway suggests that the rear of the building may not have been cut deeply into earlier deposits. Also, although the basement is likely to have removed earlier soil profiles towards George Street, it is unclear

if evidence relating to earlier historic basements or associated occupation survive beneath the current basement floor.



Figure 96. Note the doors exiting from the basement levels directly onto de Mestre Place.

312-18 George Street

A basement survey plan sourced through the planning portal indicates that the northern part of the building has a floor level of 10.72 m RL whereas the southern half of the building has basement floor levels of 9.6 m RL. Again, these rear basement rooms exit directly onto De Mestre Place. This raises the possibility that impact from the construction of the basements was greatest at the George Street frontage and that there could be less impact towards De Mestre Place. The basement level across the southern two thirds of the site is one metre deeper that should correlate to a greater impact.

The Hunter Connection Arcade

A survey plan provided by the client indicates that the Hunter Connection Arcade that occupies the eastern side of the site closest to the Tank Stream has a basement floor level of 6.46 m RL (Figure 74). Visual inspection during a site visit confirmed that the shop units beside the mall appeared to be of a similar floor level. Tank Stream Cross Sections 2-12-2021 RPS for Sydney Metro indicates that the Tank Stream drain invert level in the immediate vicinity of the site is 6 m RL (Figure 97 and Figure 98. This suggests, that depending on the depth of basement level foundations, there is some potential for truncated early soil horizons or creek deposits to survive, particularly towards the eastern end of the arcade.

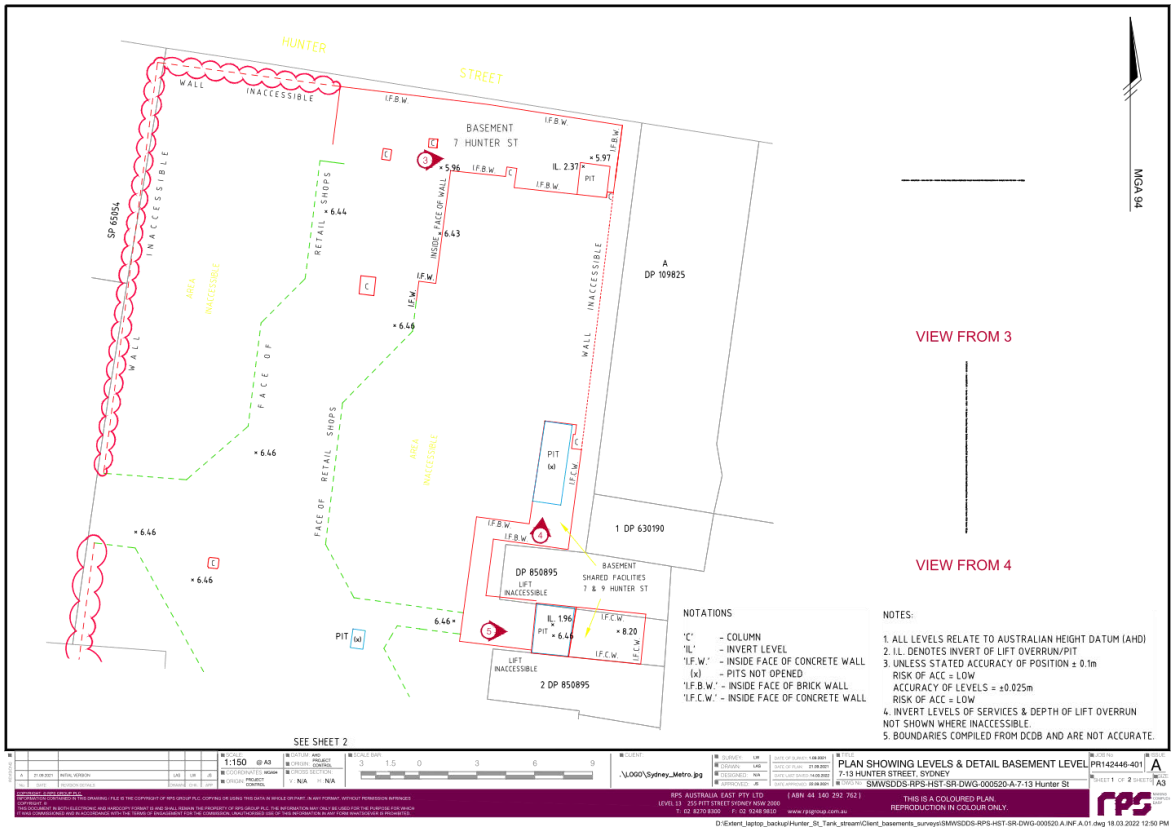


Figure 97. Extract from survey of basement levels across eastern half of the site. *Source:* RPS.

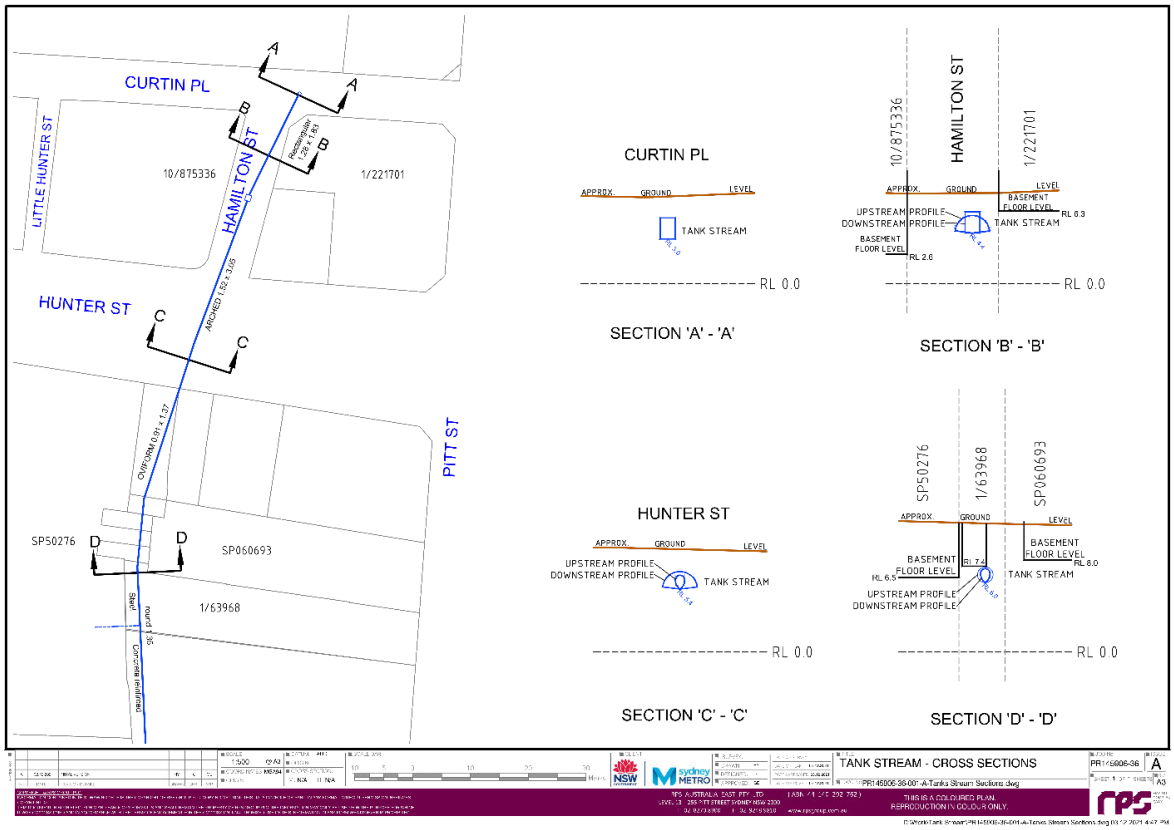


Figure 98. Tank Stream cross section. *Source:* RPS.

General overview of disturbance (Figure 100) on the western site is as follows:

- De Mestre Place is the only part of the proposed development site that is not currently occupied by buildings. The general downward sloping aspect suggests that it may partly reflect the earlier landform sloping downwards towards the site of the Tank Stream. The current laneway is wider than in the past and incorporates the sites of buildings dating between the 1830s to 1880s. These buildings and associated surfaces are likely to have had an impact on earlier soil horizons. Modern service trenches are also cut into the laneway and they are likely to have disturbed early soil horizons and later historic buildings, fills and surfaces. It remains to be determined if the current lane surface has disturbed or sealed earlier occupation surfaces or horizons.

- The south-western quadrant of the site bordered by De Mestre Place is occupied by buildings that contain basement levels. These basements have created a significant impact on potential archaeological deposits at the George Street frontage. However, the rear ends of the basements exit directly onto the laneway. This suggests that there is relatively less disturbance of earlier landforms to the rear.

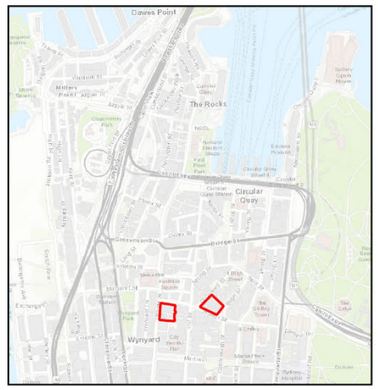
- The eastern half of the site is occupied by the basement level of the Hunter Connection. Although there appears to have been significant deep impacts (2.5-3 m) this also corresponds to the lowest part of the Tank Stream valley within the site and that some early soils, creek deposits and structures associated with the creek and drains could survive in truncated form.

- The north-western corner of the site has been subject to deep excavation such that archaeological deposits are unlikely to survive.

EXTENT
PEOPLE-CENTRED HERITAGE

Hunter Street

Estimated impact depths



0 0.5 1 km

- Construction sites

Potential disturbance areas

- St. George Bank
- Historic basement
- Wynyard Connection
- Hunter Connection shops
- De Mestre Place
- Vehicle turntable
- 312-14 George St

Drawn by: Brian Shanahan
Checked by: Madeline Shanahan
Date: 9 May 2022
Projection: GDA 1994 MGA Zone 56
Data Sources: Data: ESRI, ELVIS, Client Nearmap

Note: Levels & depths are indicative
Refer to original plans to confirm

EXTENT HERITAGE ADVISORS

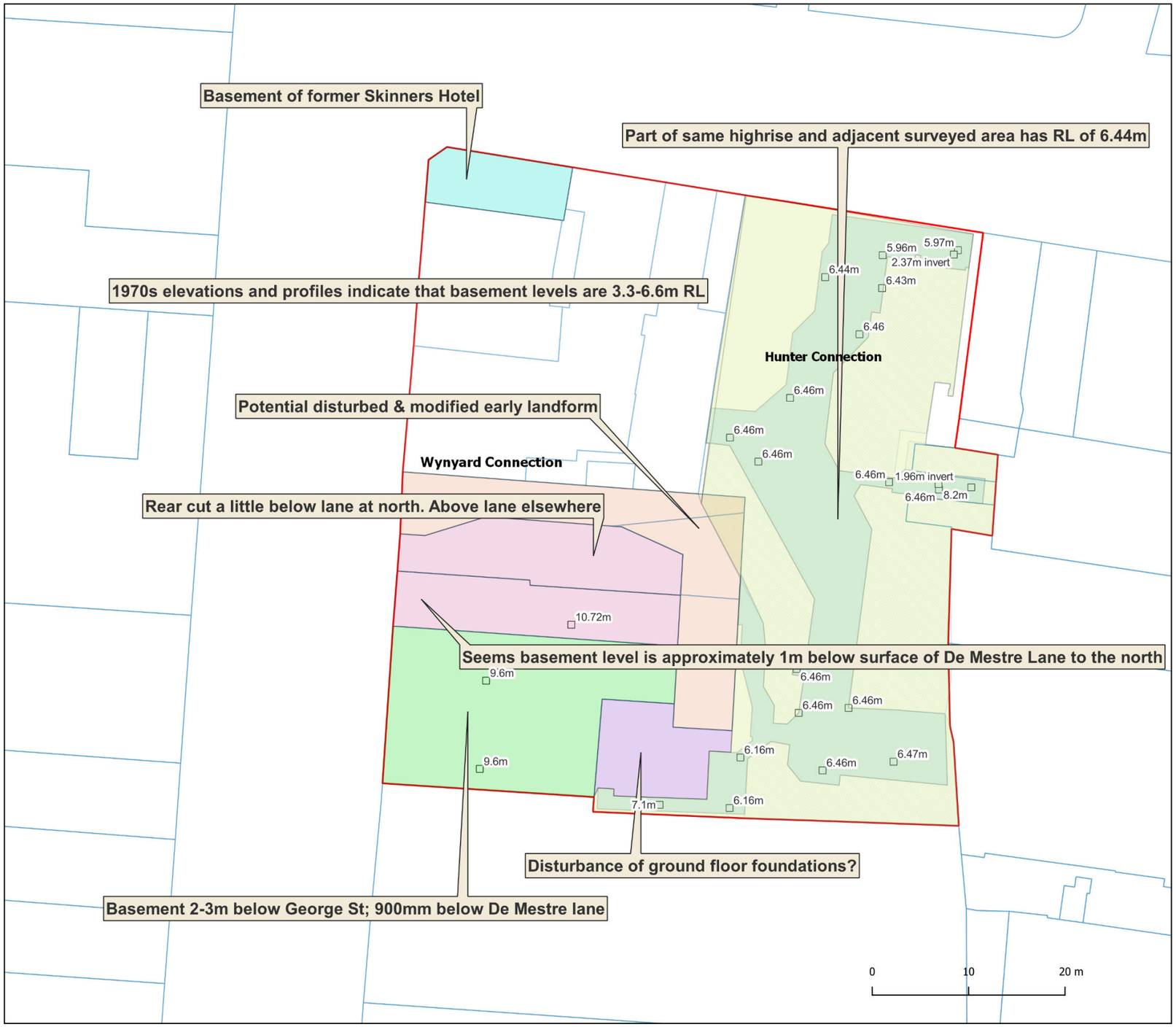
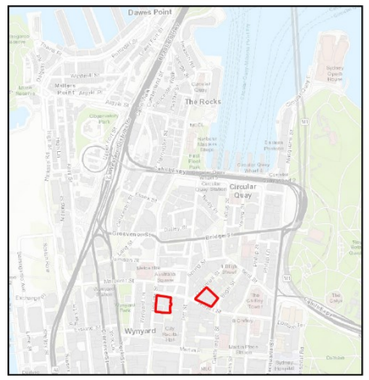


Figure 99. Current basement levels derived from modern surveys.

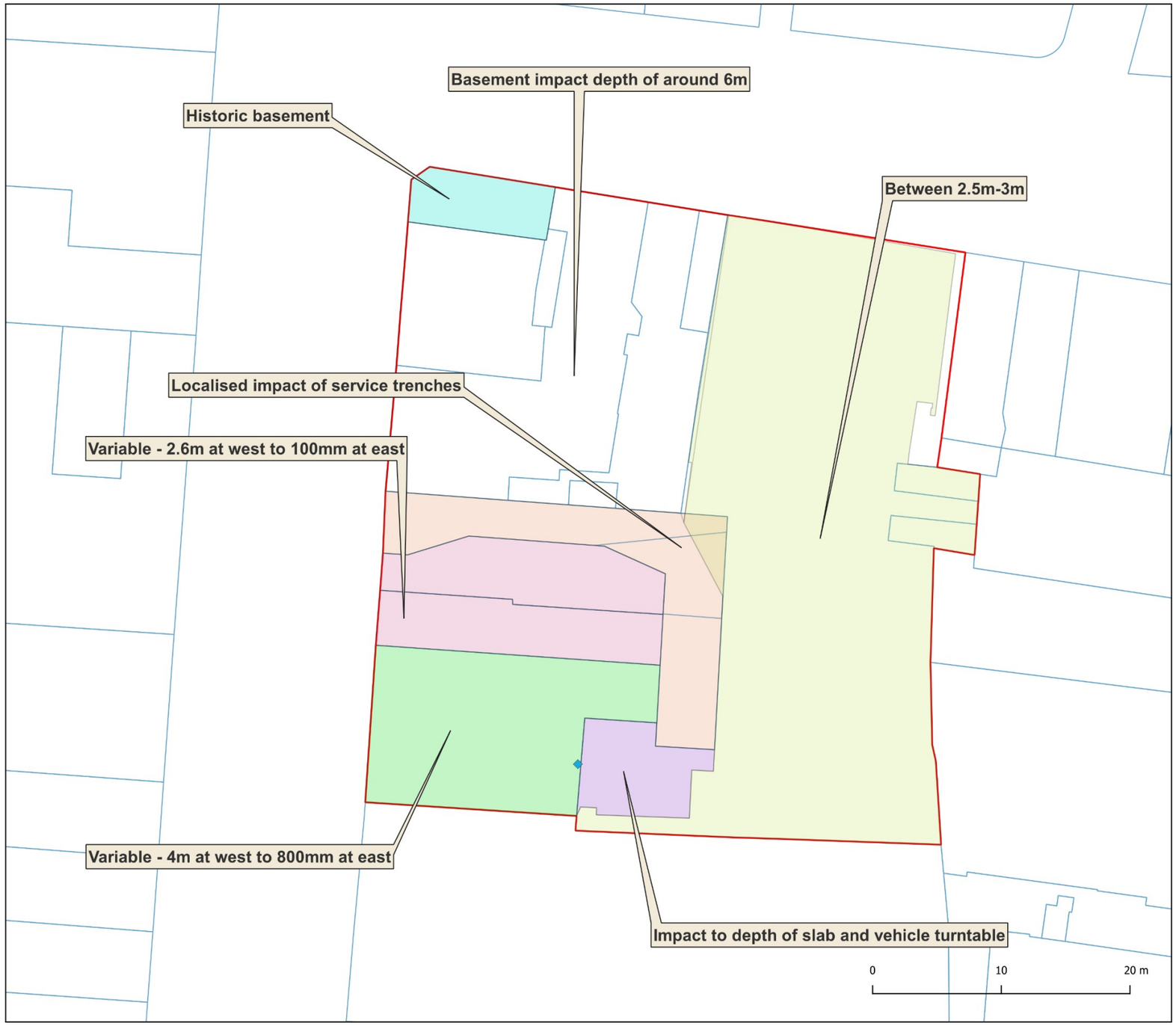
EXTENT
PEOPLE-CENTRED HERITAGE

Hunter Street

Estimated impact depths



0 0.5 1 km



Construction sites

Potential disturbance areas

- St. George Bank
- Historic basement
- Wynyard Connection
- Hunter Connection shops
- De Mestre Place
- Vehicle turntable
- 312-14 George St

Drawn by: Brian Shanahan
Checked by: Graham Wilson
Date: 9 May 2022
Projection: GDA 1994 MGA Zone 56
Data Sources: Data: ESRI, ELVIS, Client Nearmap

EXTENT HERITAGE ADVISORS

Figure 100. Generalised summary of disturbance depths across the Hunter Street West site (outlined in red).

Disturbance on the site of the Tank Stream and the Tank Stream Drain

The Tank Stream drain generally runs alongside the eastern boundary of the Hunter Street West site although a small section runs through a projecting section of the site (Figure 26 and Figure 103). The earlier creek line, any associated landforms and any potential fencelines, reclamation fill, or stone revetment structures could also be partly located within the eastern boundary of the site. The Hunter Arcade basement level is approximately 450 mm above the Tank Stream Drain invert, suggesting that some deposits associated with the creek and the drain could survive. A 1997 survey (CMP 2003) indicated that at that time the southern half of the Tank Stream drain abutting the eastern site boundary consisted of variable stone fabric whereas the northern half consisted of oviform brick. However, the most recent CCTV survey and laser scanning of the Tank Stream (SAS TTI JV. 2021 and CRM/RPS 2021) (Figure 26) demonstrate that the section of the Tank Stream located within the eastern arm of the Hunter Street West site comprises the brick oviform drain. This suggests that the rectangular chamber shown in Figure 102 is likely to be located further north. The 2021 survey suggests that the original drain fabric was later replaced with reinforced concrete to the north and a round steel pipe to the south of this section. Such construction work is likely to have removed significant elements of the earlier fabric and possibly surrounding creek deposits and landforms, although it would be prudent to assume that some evidence may have survived.

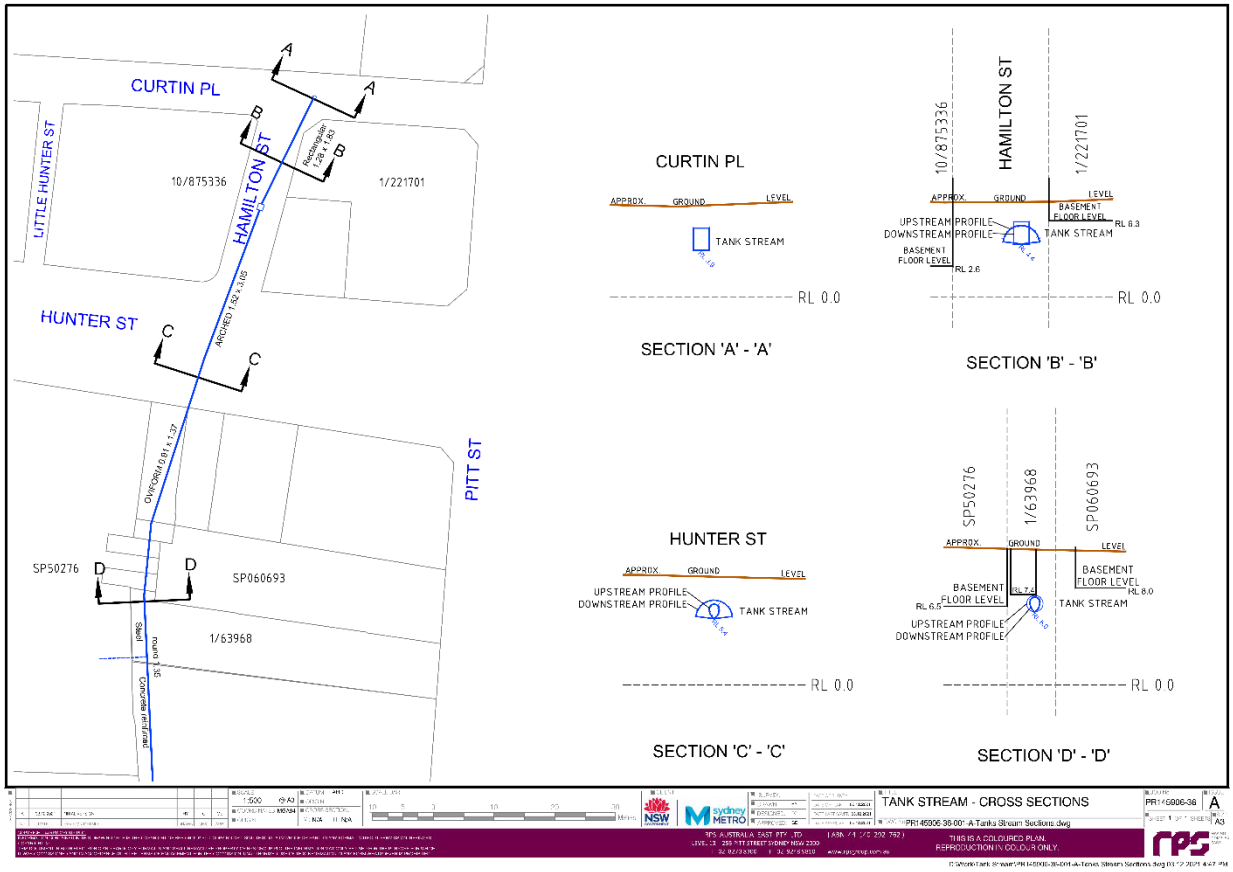


Figure 101. Tank Stream Cross Sections 2-12-2021 RPS for Sydney Metro.

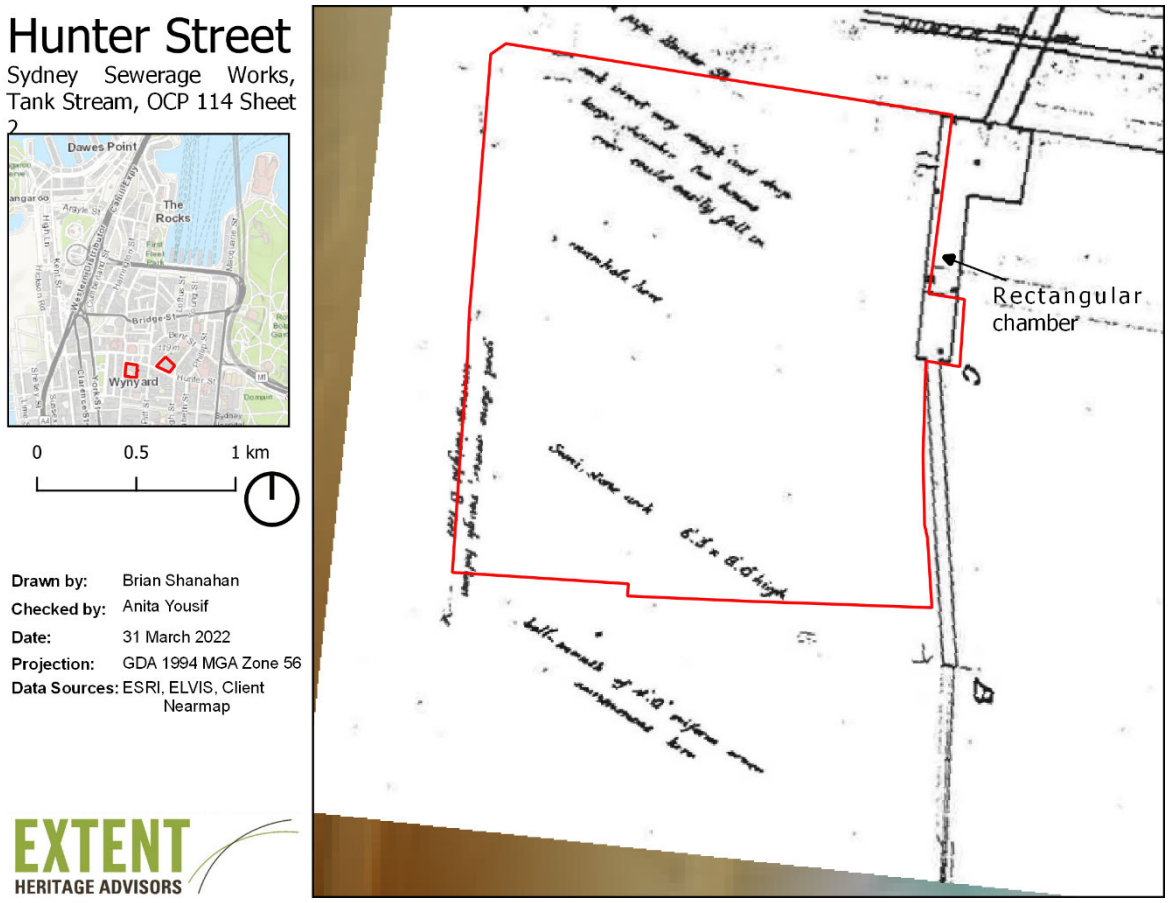
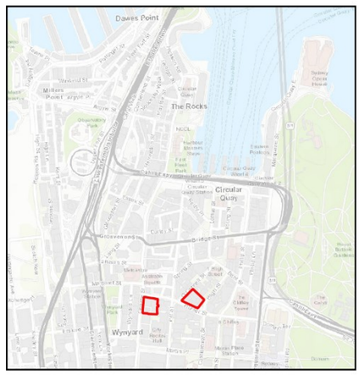


Figure 102. Proposed works on the Tank Stream drain showing rectangular chamber.

Hunter Street

Tank Stream drain and valley



0 0.5 1 km

Drawn by: Brian Shanahan
Checked by: Madeline Shanahan
Date: 9 May 2022
Projection: GDA 1994 MGA Zone 56
Data Sources: Data: ESRI, ELVIS, Client Nearmap

Elevation 2020 1m

29
-8

Construction sites

Tank Stream Valley profile (Coffey 1995)

Tank Stream based on Trig Survey 1860s

Note: Levels & depths are indicative
Refer to original plans to confirm

EXTENT HERITAGE ADVISORS

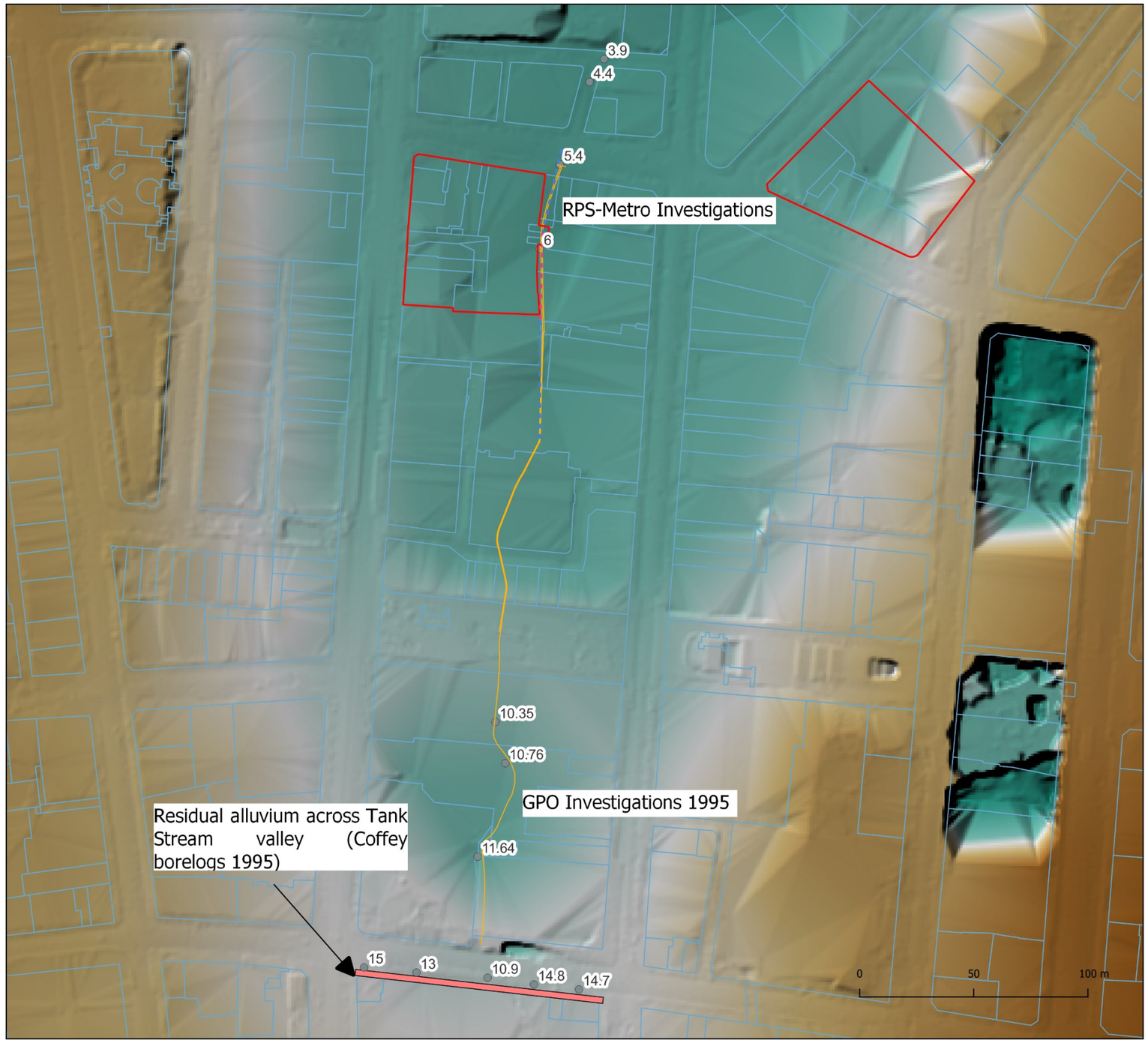


Figure 103. Location of Tank Stream showing potential invert levels and borelog RLs across the site of the Tank Stream Valley on King Street. *Source:* Coffey & others.

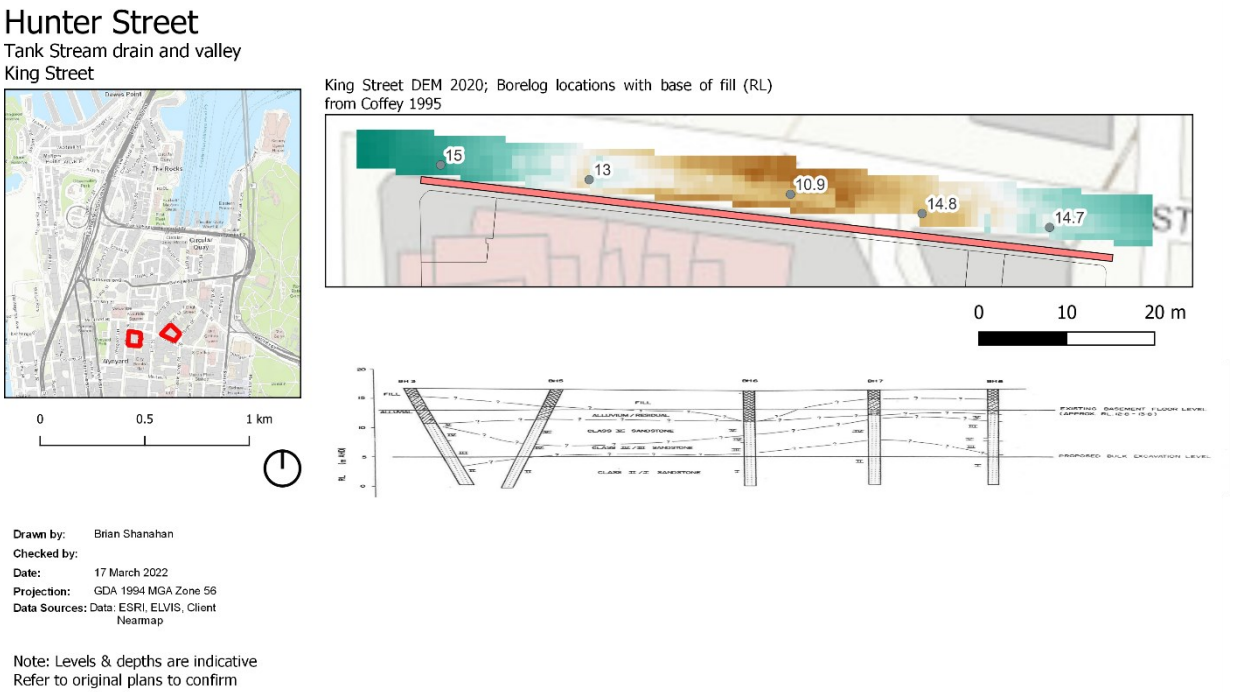


Figure 104. Location of Tank Stream Valley on King Street based on Digital Elevation Model of the current road surface and aligned with borelogs showing interface of fill and residual alluvium. *Source:* Coffey.

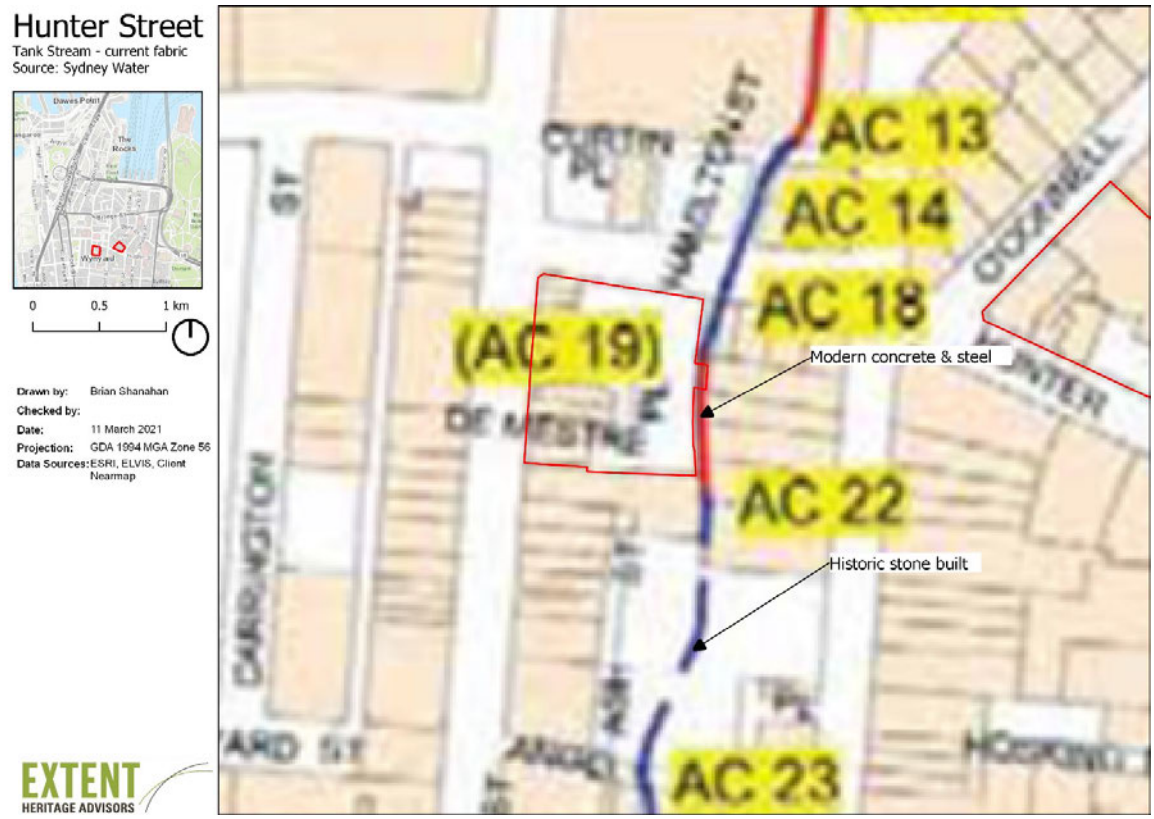
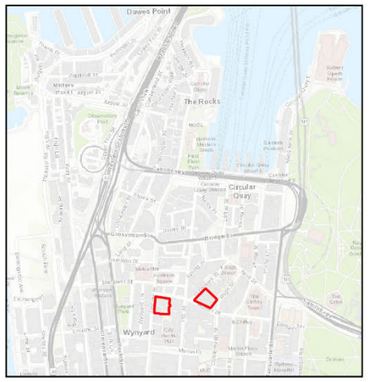


Figure 105. Location of modern Tank Stream fabric relative to Hunter Street West site. *Source*: Sydney Water CMP.

EXTENT
PEOPLE-CENTRED HERITAGE

Hunter Street

Tank Stream and drain in relation to unbuilt topography



0 0.5 1 km

Drawn by: Brian Shanahan
Checked by: Graham Wilson
Date: 9 May 2022
Projection: GDA 1994 MGA Zone 56
Data Sources: Data: ESRI, ELVIS, Client Nearmap

- Construction Sites
- Possible edge of stream based on 1833 section map (with offsets for projected west bank)
- Tank Stream drain (Trig Survey)
- Stone chamber (19th century engineering plans)

Digital Surface Model of laneway surfaces generated from LiDAR: DCS Spatial Services
Data Capture Start Date: 2020-06-14

Spatial Accuracy Horizontal: +/-0.80 @95% Confidence Interval
Spatial Accuracy Vertical: +/-0.30 @95% Confidence Interval

EXTENT HERITAGE ADVISORS



Figure 106. Digital Surface Model illustrating how the topography of roads and laneways reflects the underlying landforms. The potential meandering course of the early Tank Stream Creek is based on the 1833 Section Plan.

3.4.2 Hunter Street East construction site

The northern half of the eastern site is currently occupied as the Sydney Metro City and Southwest tunnelling support site, and includes an acoustic shed and other site facilities (Figure 79). The southern half of the site is occupied by three high rise buildings (Figure 78). Based on an examination of the Digital Surface Model they have a height ranging between approximately 48–56 m. In the absence of basement plans or building schematics, it is assumed that construction of those buildings has led to significant impacts on any potential archaeological deposits. However, these impacts could be variable, depending on the nature and extent of any basements or foundation piles.

Inspection of aerial photographs and the digital surface model reveal that there is open/undeveloped area between the high-rise buildings and the adjacent acoustic sheds. Landscaped, paved and stepped areas on the road frontages are deemed to have moderate archaeological potential based on the assumption that there have been fewer deep impacts, excepting service trenches and landscaping footings.

4. Aboriginal archaeological resources

4.1 AHIMS

The Aboriginal Heritage Information Management System (AHIMS) database is presently managed by Heritage NSW and includes spatial and compositional information of Aboriginal sites (i.e., objects, places and declared Aboriginal Places) previously recorded through academic and compliance-based cultural resource management projects associated with modern various developments.

An extensive AHIMS search was undertaken on 23 February 2022. The land surrounding the study area was included within the search parameters to gain information on the regional archaeological context and inform predictive statements regarding the archaeological potential of the study area. AHIMS search area incorporated datum GDA, zone 56, latitude, longitude -33.8835, 151.1635 to latitude, longitude -338587, 151.2253 with a 0 m buffer.

The AHIMS search results identified forty-one registered sites. There are twenty standard AHIMS site features and a site can include more than one feature. The frequency of AHIMS site features is included in Table 4 below.

Table 4. Summary of AHIMS features.

Site feature	Number	Percentage
Artefact(s)	5	12
Artefact(s) and Art	1	2.5
Artefact(s) and PAD	2	5
Artefact(s) and Shell	1	2.5
Artefact(s), PAD, and Shell	1	2.5
Artefact(s), Shell, and Ceremony and Dreaming	1	2.5
Art	1	2.5
PAD	26	63
Shell	1	2.5
Shell and Burial	1	2.5
Ceremony and Dreaming and Burial	1	2.5
Total	**41**	**100.00%**

The majority of AHIMS sites identified around the study area are PADs. A PAD, generally, has yet to be investigated or shown to contain Aboriginal archaeological remains. An area of PAD may be determined because a site has limited subsurface disturbance, due to evidence of

remnant natural soil profiles identified during geotechnical results, because predictive modelling suggests a site is associated with important resources, or because the landscape is associated with specific features such as rock shelters. However, in some cases, PADs express that additional Aboriginal archaeology is expected to be identified in the area.

In several cases, the designation of an area as a PAD is not updated following the conclusion of test or salvage investigations. Of particular interest are the PAD sites in the vicinity of the study area that have been confirmed as sites containing Aboriginal archaeology. While the George Street PAD (AHIMS ID 45-6-2796) was not fully investigated, one artefact was identified indicating archaeology is present. The KENS site (AHIMS ID 456-3705) is marked on AHIMS as a PAD, but produced a considerable number of Aboriginal objects within an intact natural soil profile during test excavations. Finally, Wynyard Walk (AHIMS ID 45-6-3116) is listed on AHIMS as the original project site whereas testing and salvage excavations only identified a small area of intact topsoil and three artefacts (see Part 3.2.1 of this report, page 85). Due to time constraints, not all sites marked as PADs were verified, however it is possible additional sites have been investigated and artefacts identified.

Of the other registered AHIMS site types within the vicinity of the study area, there appears to be no distinct patterning within the Sydney CBD proper. This is likely a result of heavy development that has either removed Aboriginal archaeological remains or prevented subsurface investigations from being undertaken.

One registered site, 'George St PAD' / AHIMS ID 45-6-2796, has been registered within the boundary of the study area. The AHIMS site is registered to DP185597, Lots 1, 2, and 3 which has since been consolidated into DP1250819, Lot 2 as part of the 'George Street Hotel/Retail Building – Ivy' project (Cordell n.d.). As a result, the site (AHIMS ID 45-6-2796) is not located within the study area but located in the lot directly adjacent to the southern edge of the Metro Hunter Street West study area. No Aboriginal archaeological investigations were undertaken, as ground disturbance works ceased at the level of topsoil, but intact natural soil profiles and one Aboriginal artefact were identified.

4.1.1 Predictive modelling

Predictive modelling of Aboriginal archaeological sites within the study area is based on an analysis of archaeological sites registered in the region, a review of previous archaeological studies, and the environmental context. Isolated artefacts, artefact scatters, and occupation deposits are expected to be the most likely evidence of Aboriginal occupation identified within the study areas. Evidence of hearths are relatively rare but would comprise further of evidence of Aboriginal occupation within the study area.

Proximity to water and a range of natural resources is an important factor in site patterning in the area. Both the Metro Hunter Street West and East sites are close to or on the Tank Stream bank. Due to their easy access to the water and food resources provided by the waterway, both study areas would be suitable locations for one off or repeat occupation camp sites. The site of Angel Place (AHIMS ID 45-6-2581), located south of the Hunter Street West site, provides supporting evidence that Aboriginal artefacts can be identified in a similar location along the Tank Stream.

An understanding of spatial patterning of Aboriginal sites across Sydney and the Cumberland Plains suggests it is highly unlikely that evidence of Aboriginal occupation or knapping sites would be identified at the base of the Tank Stream Valley. To avoid flooding, occupation sites along major waterways were often positioned on terraces overlooking them. Despite this, discrete evidence of Aboriginal use of the waterway, such as for resource gathering, may be identified in isolated artefacts or artefact scatters.

Evidence of freshwater shell middens may be identified along the Tank Stream bank, especially within the Hunter Street West site. Middens created from saltwater crustations are expected to be focused on the coastline and mouth rather than the head of the Tank Stream.

Archaeological studies along the Tank Stream have identified layers of charcoal in the C horizon. The cause of these events has been interpreted as either natural bush fires or cultural burning (Part 2.3.4 of this report). Evidence of this practice is not often found in the Sydney archaeological record. While it does not manifest in the form of 'objects', evidence of cultural burning practices can demonstrate Aboriginal peoples' complex and substantial management of landscape that is often overlooked.

There are several site types that are not expected to be identified within the study areas. The underlying geology around the study areas is not conducive to the formation of rock shelters that would be a suitable location for occupation, stone quarries, and art sites. As trees have been entirely removed from the study area, culturally modified trees will not be identified. There is also a nil-to-low potential for Aboriginal burials they tend to be placed in coastal locations, in sand dunes, rock shelters, and middens in this area.

4.2 Summary of Aboriginal archaeological potential

An assessment of Aboriginal archaeological potential within the study area was undertaken in the existing ACHAR (Artefact 2021b). The report concluded that basement excavation will have removed almost all remnant natural soil profiles across the study areas, with the exception of the area of Skinners Hotel, De Mestre Place, and the eastern projection of the Metro Hunter Street West study area (Artefact 2021, figures 38–39). These three areas were anticipated to have low potential for truncated soil profiles, and therefore Aboriginal archaeological remains.

As part of this test excavation methodology report, the original ground level and impact on historical and modern construction across the study areas have been reassessed (Section 3). The reassessment of Aboriginal archaeological potential across the two study areas broadly correlates with the original determination made by Artefact (2021b, section 8.3.1.4). However, this report suggests the potential for Aboriginal archaeology and remnant soil profiles is higher overall.

4.2.1 Hunter Street West

Figure 107 outlines the Aboriginal archaeological potential at the western site. The area of De Mestre place has been interpreted as having moderate potential as the ground level appears to follow, and not truncate, the original natural landscape. Moreover, there is limited subsurface disturbance caused by the construction of large, modern buildings within the study area. It

should be noted, however, that discrete disturbances are likely to have been created by the construction of a small number of buildings identified on plans from 1833 and by the installation of services in the laneway (Figure 108).

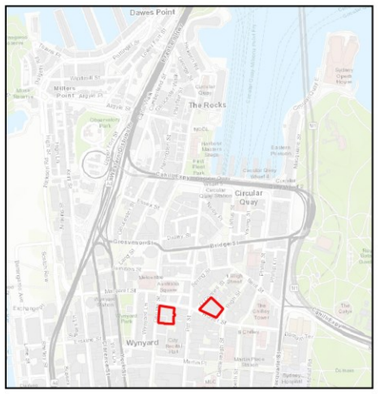
The area of the Tank Stream, along the eastern boundary of the study area, has also been determined to have a moderate potential for Aboriginal archaeology. A buffer of up to 8 m was given to the original location of the Tank Stream marked on the 1833 section plan to account for the extent of the original Tank Stream Valley. The archaeology expected to be identified within the Tank Stream Valley comprises isolated artefacts or discrete artefact scatters, and evidence of cultural burning.

The archaeological potential across most of the remainder of the study area has been determined as low to moderate. The impact of basement constructions has not been verified by geotechnical or archaeological investigations. If Aboriginal archaeology is identified, it may show evidence of one-off or repeat occupation open camp sites along the Tank Stream bank. Isolated artefacts and discrete artefact scatters would also be expected in this location. If soil profiles have not been heavily truncated, archaeological remains may be stratified.

The north-western corner of the study area has substantial subsurface basements that are likely to have removed all remnant soil profiles and therefore have been assessed as having nil archaeological significance. One small section in the southern portion of the study area has unknown archaeological significance as no ground plans were available and this section of the site was accessible for a site visit. Evidence of Aboriginal artefacts may also be identified in redeposited natural soils or historical archaeological contexts.

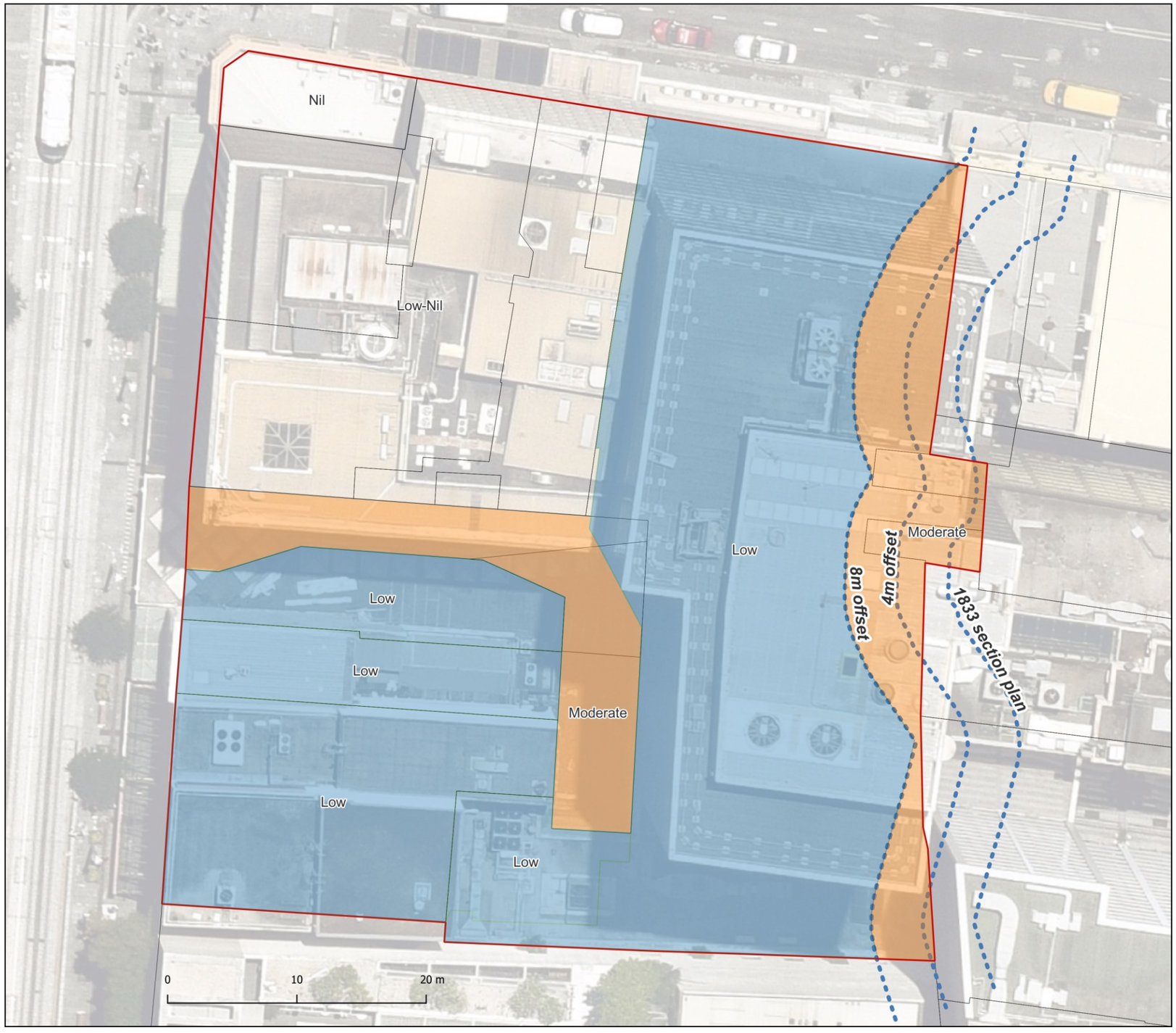
Hunter Street

Aboriginal archaeological potential



0 0.5 1 km

Drawn by:	Brian Shanahan
Checked by:	Hannah Morris
Date:	11 April 2022
Projection:	GDA 1994 MGA Zone 56
Data Sources:	Data: ESRI, ELVIS, Client Nearmap



Aboriginal archaeological potential
- Low-Nil
- Low
- Moderate

Figure 107. Aboriginal archaeological potential at the Hunter Street West site. *Source*: Extent Heritage 2022.



Figure 108. Historical constructions and services at the Hunter Street West site (outlined in red) extending into De Mestre Place. *Source*: Extent Heritage 2022.

4.2.2 Hunter Street East

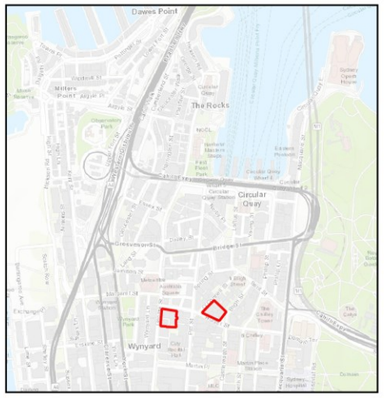
Figure 109 outlines the Aboriginal archaeological potential at the eastern site. The northern portion of the study area has been partly disturbed by current construction projects.

The southern portion of the site appears to have undergone less disturbance. However, this has not been verified by geotechnical or archaeological investigation. The Hunter Street East site is located only 100 m from the edge of the original Tank Stream bank, suggesting it would be a suitable location for Aboriginal occupation sites. If natural soil profiles are identified, associated archaeological remains may comprise isolated artefacts, artefact scatters, or dense occupation deposits relating to one-off or repeat occupation open camp sites. If soil profiles have not been heavily truncated, archaeological remains may also be stratified.

Evidence of Aboriginal artefacts may also be identified in redeposited natural soils or historical contexts.

Hunter Street

Aboriginal archaeological potential



0 0.5 1 km

Drawn by: Brian Shanahan
Checked by:
Date: 9 May 2022
Projection: GDA 1994 MGA Zone 56
Data Sources: Data: ESRI, ELVIS, Client Nearmap

Construction sites

Aboriginal archaeological potential

Low

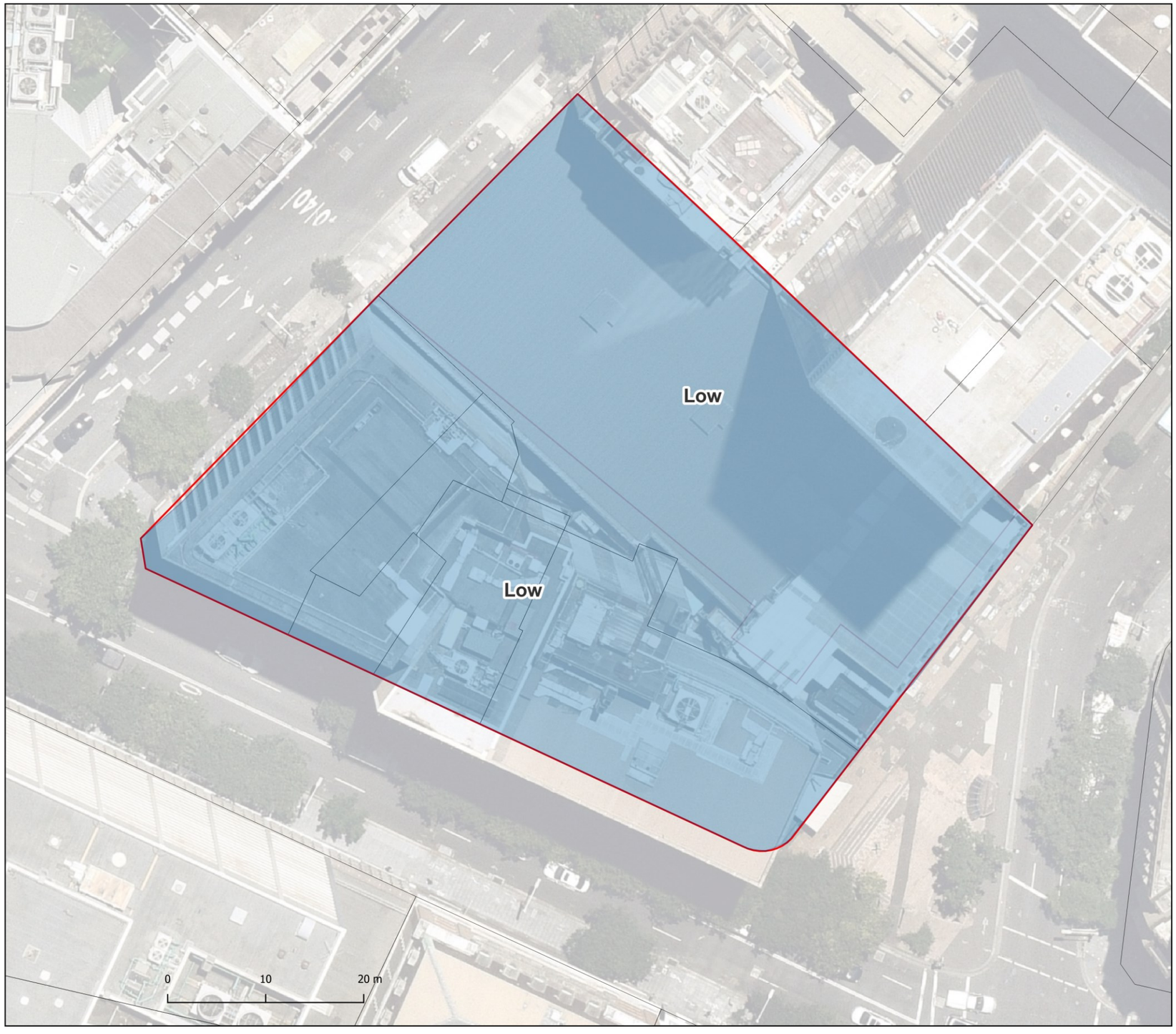


Figure 109. Aboriginal archaeological potential at Metro Hunter Street East. *Source*: Extent Heritage 2022.

4.3 Summary statement of Aboriginal archaeological significance

While all Aboriginal objects in NSW are protected under NSW legislation, the *National Parks and Wildlife Act 1974* (NPW Act) recognises that the destruction of sites may be necessary to allow other activities or developments to proceed. In order for Heritage NSW to make informed decisions on such matters, a consideration of the significance of cultural heritage places and objects is an important element of the assessment process.

An assessment of the cultural heritage significance of an item or place is required in order to form the basis of its management. *The Guide* (OEH 2011, 10) provides guidelines, in accordance with the *Burra Charter* (Australia ICOMOS 2013) for significance assessment with assessments being required to consider the following criteria:

- **Social values:** In Aboriginal heritage, this criterion concerns the relationship and importance of sites to the contemporary Aboriginal community. Aspects of social and spiritual significance include people's traditional and contemporary links with a place or object as well as an overall concern by Aboriginal people for sites and their continued protection.
- **Historic values:** A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase, or activity. It may also have historic value as the site of an important event.
- **Aesthetic values:** This criterion refers to aspects of sensory perception and the ability of the site to elicit emotional responses referred to as sensory or sensory-emotional values.
- **Scientific values:** Scientific value is associated with the research potential of a site.

The Aboriginal community consultation undertaken as part of the existing ACHAR for the Metro Hunter Street study areas (Artefact 2021b) has determined some important cultural values for the study areas. A cultural officer from the Metropolitan Local Aboriginal Land Council discussed the significance of the cultural landscape and Aboriginal cultural heritage values with a member of Artefact (Artefact 2021b, 70). Artefact also noted the importance of traditional cultural knowledge, passed down by oral traditions through the generations (Artefact 2021b, 70). The continued connection to Country and knowledge, despite disenfranchisement, is highly significant to many Aboriginal people.

Artefact (2021b, 71) noted that three Aboriginal stakeholders expressed their strong cultural connection to the study area:

> Particular emphasis was placed on the proximity to Sydney Harbour, as both the location of ceremonial activities and as a resource gathering place. Initiation ceremonial sites and cockle shell deposits were associated with the Sydney Harbour foreshore. Scared women's sites were noted to often be associated with freshwater sources.

> One aboriginal stakeholder noted that landscapes and landforms hold specific cultural connection to Aboriginal people due to the values of respect and belonging to the land (Country). It was noted that Aboriginal sites are connected through the landscape, and that aboriginal people would move through areas following signs in the landscape. Another stakeholder noted that the waterways which run near the study area tell stories and are meant to be cared for. The sandstone nature of the study area was noted for its connection to aboriginal lore and its potential to hold engravings depicting lore stories.
>
> Several Aboriginal stakeholders noted that, with the rapid urbanisation of Sydney, many sites and significant landform features are being lost and, with that, the original sites which were associated with these stories.

The historical significance of the study areas was also discussed as part of the community consultation process. The landscape associated with the study areas is connected to early interactions between Aboriginal people and Europeans as the natural resources were highly important to both groups. The stakeholders noted that the freshwater resources along Elizabeth Street (within the wider Tank Stream catchment) was important both before and immediate after contact. The Harbour foreshore was also identified by a stakeholder as a place of continued resource gathering for Aboriginal people post 1788, due to its importance as a ceremonial site (Artefact 2021b, 71).

No aesthetic values have been identified as being associated with the study areas due to the heavy modification of the urban landscape that now bears little resemblance to the original landform.

No Aboriginal archaeology has been identified within the eastern or western sites. As such, any scientific value that the archaeological record may hold cannot be determined until further investigations have been undertaken. However, it is expected that isolated artefacts or discrete artefact scatters may hold only low scientific significance as they often have little educational value or research potential. Evidence of Aboriginal occupation or cultural practices associated with the Tank Stream, however, may hold high scientific significance. This evidence is considered rare in the context of the Sydney CBD and may provide further evidence of the use of the landscape and Tank Stream. Evidence of the early natural landscape in the area would also be considered significant and valuable for future research.

Additional input from Aboriginal stakeholders must be collected through the life of the project.

Table 5. Summary of Aboriginal archaeological potential and its significance. *Source:* Sydney Water 2003, table 3-2.

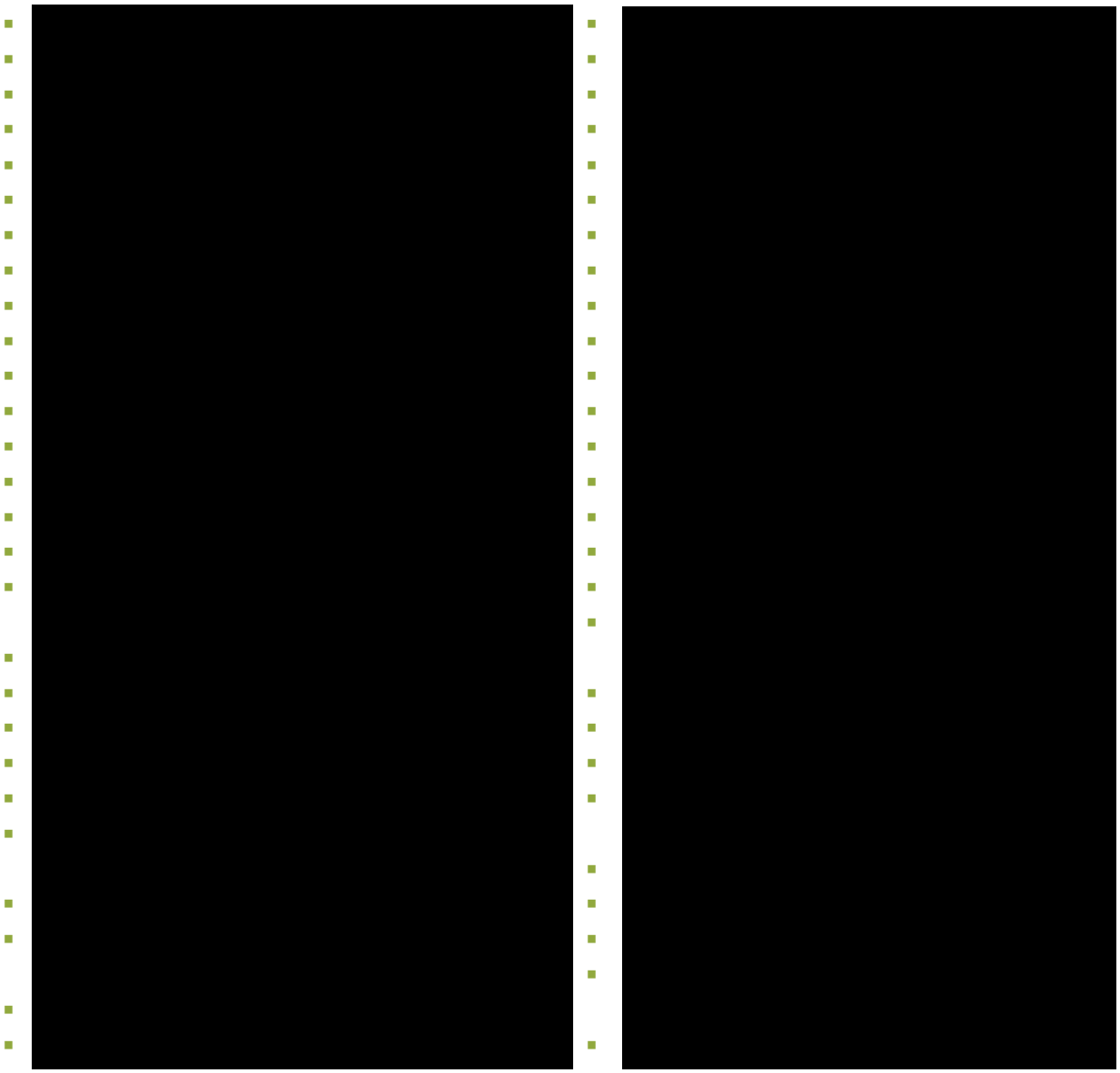
Potential archaeological evidence	Ability to provide information	Likelihood of survival	Archaeological significance
Open camp sites Stone artefacts Shell middens	May demonstrate subsistence activities. Would add to a small corpus of known surviving sites and artefacts in Sydney CBD. Survival in urban context is extremely rare. Archaeological evidence can test validity of contact period historical record.	As demonstrated by archaeological monitoring, where site development has been shallow, there is potential for campsites and archaeological objects to survive.	High local significance
Tank Stream creek—undisturbed	Would provide valuable environmental data on Sydney prior to European arrival. Probability to survive is likely to be very low.	Generally, appears to have been disturbed first by channelling and then encapsulation of stream. There may be small localised pockets of surviving stream bed deposits that survive where pipe alignments have 'straightened' the route.	State significance

5. Aboriginal Community Consultation

As part of the consultation process, Artefact Heritage identified a total of 59 stakeholders who registered their interest the Sydney Metro West project. The RAPs were provided an opportunity to review the Stage 2 ACHAR assessment methodology on 17 June 2021 and the draft ACHAR was provided to RAPs for review on 30 July 2021 (Artefact 2021). Both review periods were 28 calendar days. Responses from RAPs showed support for the documents.

This ARD includes a reassessment of areas of Aboriginal archaeological potential within the study area, as well as the generation of a more detailed excavation methodology. As a result, this ARD has been distributed to RAPs on 22 April 2022 for comment over a 28-day review period. Extent asked that the feedback be returned by 20 May 2022.

The following list of stakeholders were supplied with the ARD:



- [redacted]
- [redacted]

Five groups responded with questions or comments. In summary, the respondents agreed with the proposed methodology. No objections or suggestions were made. The table below summarises the comments and feedback regarding the ARD which were provided by the stakeholders.

Table 6 Aboriginal stakeholder responses to draft the ARD.

Group	Contact	Date	Comment
[redacted]	[redacted]	20 May 2022	[redacted] agree and support the recommendations outlined in the ARD. [redacted] wants to further acknowledge that they 'hold 50 years of cultural knowledge of the area. We hold a deep connection to Mother Earth, the sky, and our water ways. Aboriginal people have a spiritual connection to the land, it holds stories, history. It is for this reason we must not destroy the land or pollute it as it will become sick and so will we. Mother Earth gives to us and in return we care for her. KYWG aim to protect and conserve our sacred sites especially our burial sites and the tangible and intangible. The study area is highly significant to us Aboriginal people. The shelter itself has importance to us. the intangible aspects like being connected to land is of importance as we hold a spiritual connection to the land. The site is close to water ways that are utilised by Aboriginal people. The flora and fauna would have been thriving and Aboriginal people utilised their environment to its full potential. Aboriginal people carried out their daily activities in this area, hence why it's so important to us. Aboriginal people have walked this land for tens of thousands of years and continue to do so today. They strategically look after the land, plant flora in a way that coexisted with the environment around them. Ways in which this can be archived is through design, art, digital displays, apps, native gardens/ landscaping. It is important to incorporate interpretation into your project as it educates the wider community and our next generations about the traditional owners of the land. The Parramatta area is a significant area for interpretation as it is rich with heritage and development we should start to join and tell the story of the Aboriginal people of Parramatta linking sites as a whole, a keeping place should also be sorted to keep artefacts on country.'

Group	Contact	Date	Comment
[redacted]	[redacted]	9 May 2022	[redacted] ave read the project information and methodology and agree with the recommendations made.
[redacted]		29 April 2022	[redacted] sks to provide information regarding the number of pits that will be excavated or the area in size of where the pits will be placed Extent responded to the request outlining that there would be 7 test pits within a total area of 289m^2. Extent outlined that this is above the 0.5% limit of test excavations outlined in the *Code of Practice* but that, due to the site being a state significant development, the project was exempt from an AHIP. As a result, the methodology proposed was able to be more flexible. No further correspondence was received.
[redacted]	[redacted]	28 April 2022	[redacted] contacted Extent via telephone and confirmed he agreed with the methodology outlined in the ARD.
[redacted]	[redacted]	25 April 2022	[redacted] agree with the methodology.

6. Historical archaeological resources

6.1 Assessment of historical archaeological potential

Historical archaeological potential refers to the likelihood that a property or part of a property contains physical remains resulting from one or more previous phases of occupation, activities or modifications to that area. Assessment of potential is based on consideration of historic land use, current ground conditions, analysis of site formation processes and the degree to which actions subsequent to construction, deposition or disposal may have modified this evidence.

Archaeological potential has been graded as follows:

Grading	Justification
Nil	No evidence of historical development or use, or where previous activities such as deep excavation are likely to have removed all archaeological potential.
Low	The area has been subject to limited activities in the past that are likely to leave physical evidence, or where there have been substantial impacts or disturbance resulting in the survival of only deep subsurface features (privies, cisterns or wells).
Moderate	Historical development of the site is likely to leave physical evidence but have been subject to disturbance or partial removal, or documentation for the site is

	equivocal and no precise assessment of either previous activities or site formation processes can be made.
High	Evidence of several phases of historical development may survive with a high degree of integrity, or archaeological evidence has been previously recognised on the site.

6.2 Summary of archaeological potential

6.2.1 Hunter Street West Site development summary

The following is a summary of documented developments on the site that have the potential to leave physical evidence.

- Early land grants on the site consisted of part of the Riley estate fronting Hunter Street and the de Mestre estate occupying the southern half of the site.
- The 1833 City of Sydney Section 37 plan indicates that at that time the Riley plot was occupied by one substantial building (15 x 5.8 m) and the de Mestre estate was occupied by two substantial cottages/houses with verandas. One of these also had an attached rear block, possibly a kitchen. Two buildings along the southern side of the property likely functioned as outbuildings and a smaller square structure in the southeastern corner of the site adjacent to the Tank Stream was likely a privy (Figure 110).
- The entire site was enclosed. A pair of parallel lines on the plan may represent substantial stone walls whereas the internal boundary between de Mestre and Riley is a single line – probably a fence.
- Wells map of Sydney (1843) indicates that the Riley estate portion was also occupied by buildings.
- An 1844 map for the sale of the de Mestre estate provides detailed insights into the configuration of the early estate as well as the more recently subdivided terrace (Figure 111):
    - The map confirms that the small structure in the SE corner of the site was a double privy.
    - A coach house, stables and yard abutting the southern site boundary were likely the same building as marked on the 1833 section plan.
    - A large stone store and two sheds, one possibly constructed of timber posts were not indicated on the 1833 plan but they likely relate to the early de Mestre house.
    - A well was indicated in the north-east corner of the de Mestre property and was probably intended to provide the early de Mestre household with drinking water. It was close to the Tank Stream and was possibly rock cut.

- The map provides a detailed overview of the terrace buildings fronting onto George Street. These building were also indicated on the Trigonometrical Survey plan that shows further development and infill across the site. The process of modification was also evident on Dove's plan and on the Fire Insurance Plans which also provides information on the presence of basements. The general picture remained the same into the 1940s–50s, as evident from the Civic Survey plans.

Historical archaeological potential across the site is likely to be variable. The terrace buildings and subsequent additions are likely to have impacted on earlier archaeological deposits and soil profiles, particularly closer to the street fronts where modern basements likely incorporate or occupy the sites of earlier basements. Examination of the 1844 map reveals many steps or stairs to the rear of the terraces and further to the back. Their presence likely indicates that the site was terraced down towards the former Tank Stream. This terracing is likely to have incorporated earlier landforms in places and built up or cut through it in other places. It is quite possible that any basements associated with the early terraces may have been cut into the ground abutting George Street but may have been defined at the rear by walls built from the ground up, on the downward slope.

Deep excavated historical structures and deposits will have the greatest chance of preservation. They will include cesspits, wells cisterns and refuse pits. These features have been digitized and identified where visible on historic maps and plans as follows.



Figure 110. Hunter Street West site (outlined in red); features documented in the 1830s. *Source*: Extent Heritage 2022.



Figure 111. Hunter Street West site (outlined in red); features documented in 1844. *Source*: Extent Heritage 2022.



Figure 112. Hunter Street West site (outlined in red); features documented in 1865. *Source*: Extent Heritage 2022.

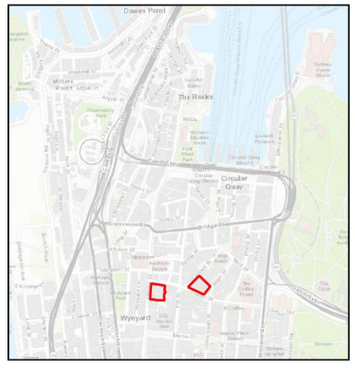


Figure 113. Hunter Street West site (outlined in red); combined phases of historical development. *Source*: Extent Heritage 2022.

EXTENT
PEOPLE-CENTRED HERITAGE

Hunter Street

Plot development
Western site

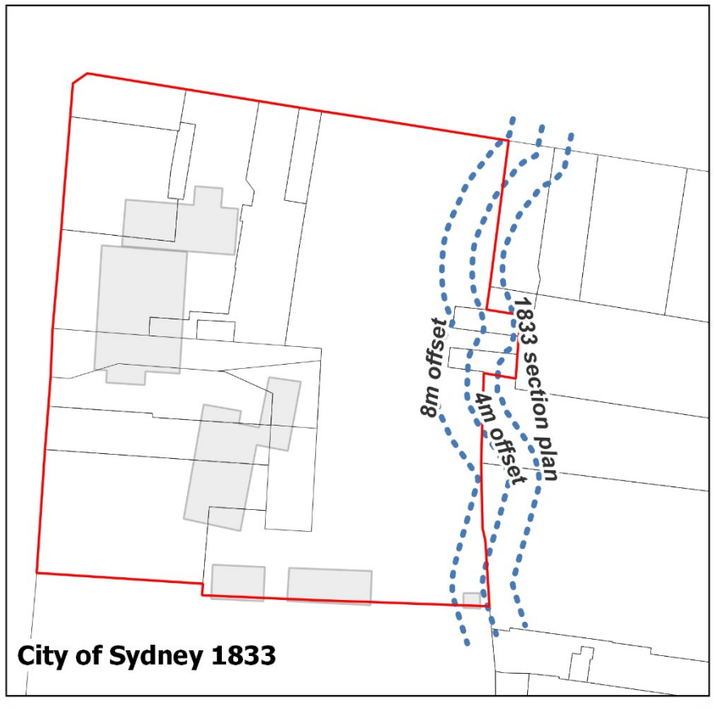


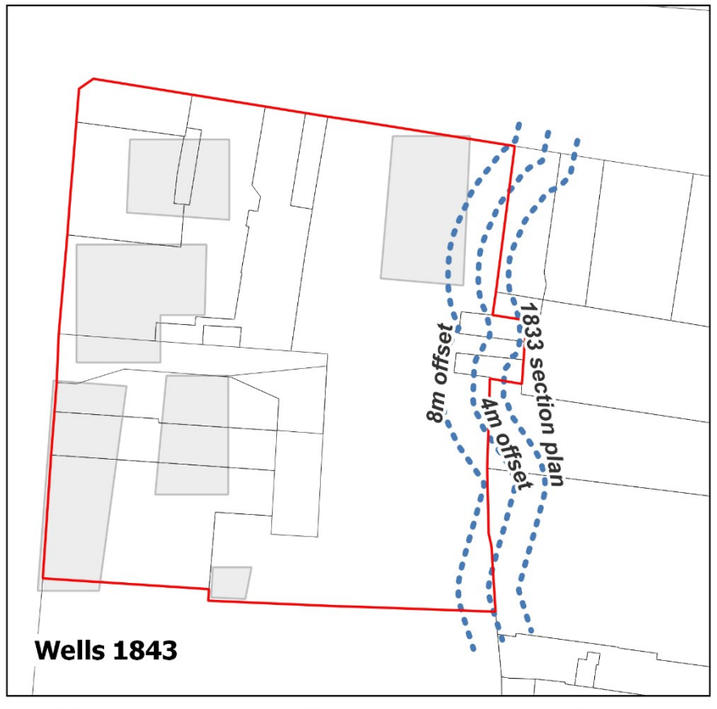
Construction sites
Lot boundary

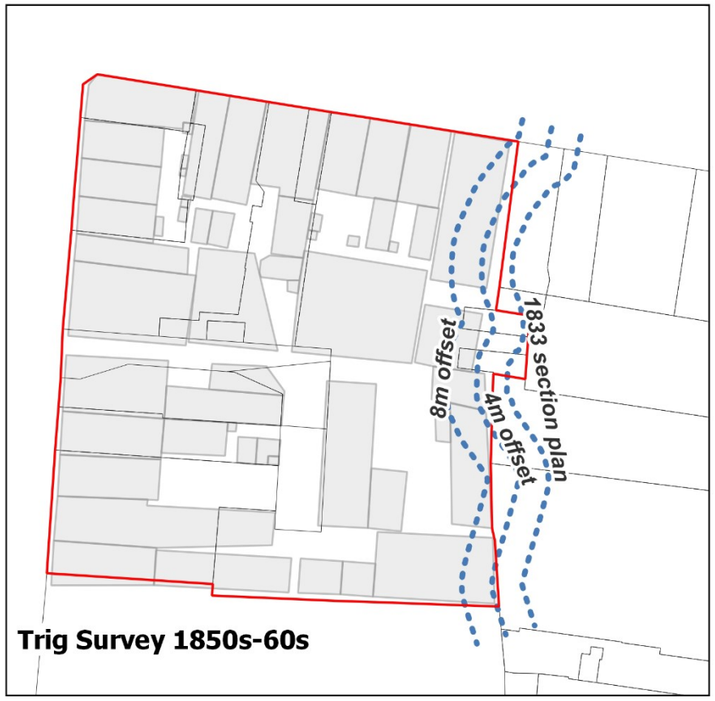
Historic building
Possible bank of Tank stream based on1833 section map

Drawn by:	Brian Shanahan
Checked by:	Madeline Shanahan
Date:	9 May 2022
Projection:	GDA 1994 MGA Zone 56
Data Sources:	Data: ESRI, ELVIS, Client Nearmap

EXTENT
HERITAGE ADVISORS







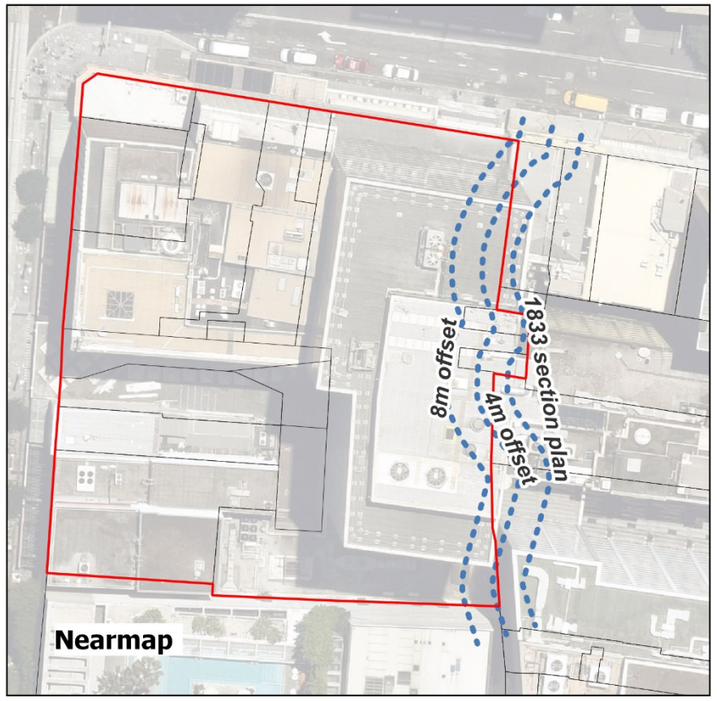
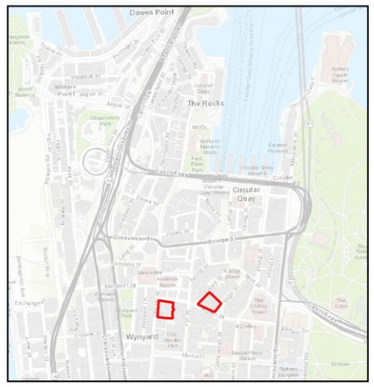


Figure 114. Sequence of development at the Hunter Street West site. *Source*: Extent Heritage 2022.

Hunter Street

Archaeological potential

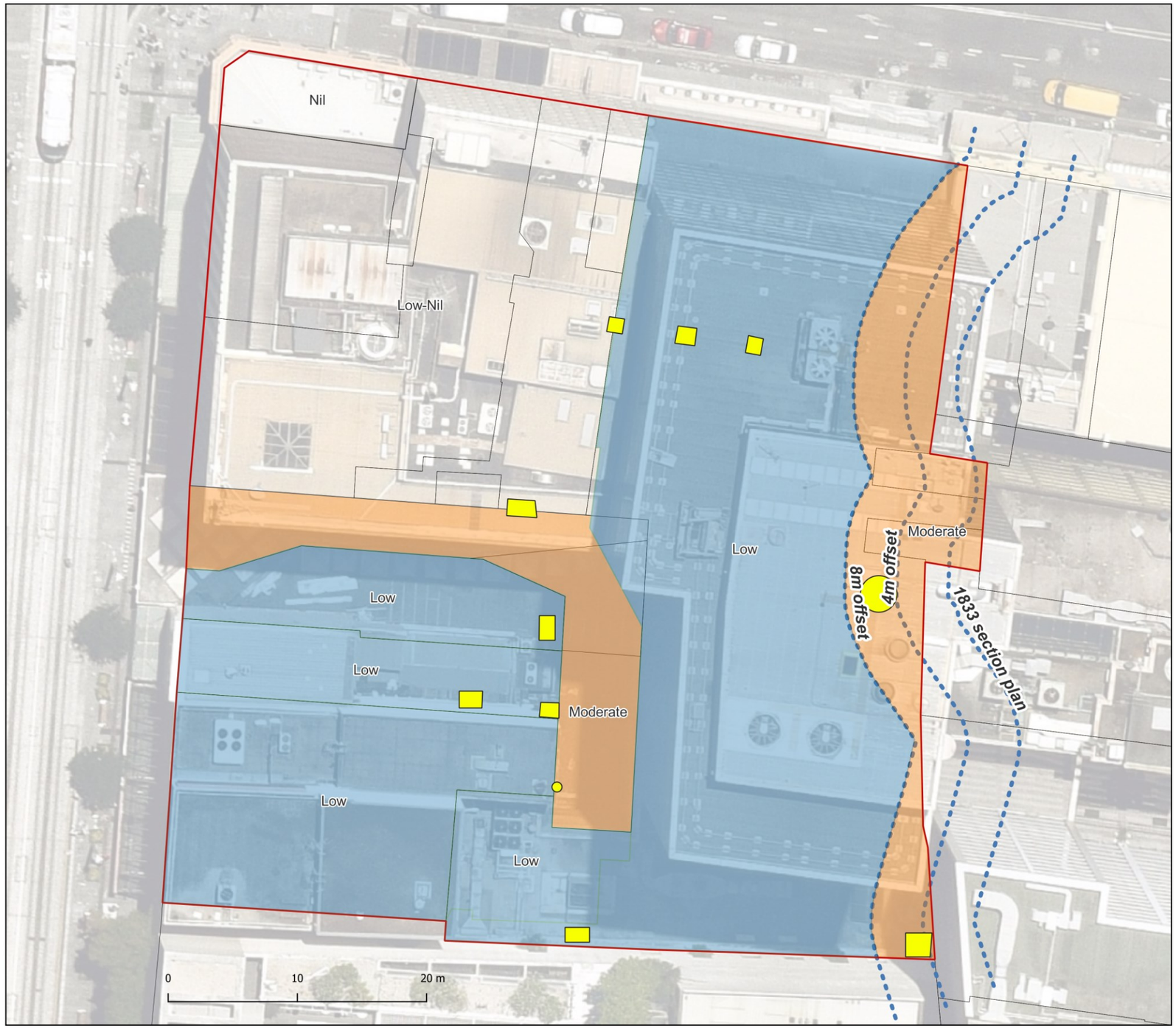


0 0.5 1 km

Construction sites

Archaeological potential

- Low-Nil
- Low
- Moderate
- Wells, cesspits & cisterns



Drawn by: Brian Shanahan
Checked by: Graham Wilson
Date: 11 April 2022
Projection: GDA 1994 MGA Zone 56
Data Sources: Data: ESRI, ELVIS, Client Nearmap

EXTENT HERITAGE ADVISORS

Figure 115. Historical archaeological potential at the Hunter Street western site. *Source*: Extent Heritage 2022.

Table 7. Summary of historical archaeological potential at the Hunter Street West site

Phase	Potential evidence	Level of disturbance	Archaeological Potential
1 (pre-1788)	(see Part 4. Aboriginal archaeology)	(see Part 4)	(see Part 4)
2 (1788–1800)	Land clearance Fence lines Hut sites Rubbish pits Modified soil profiles	High	Low
3 (1800–1820)	Building footings Internal occupation deposits External yard deposits Courtyard and road surfaces Rubbish pits Wells and cisterns Privies Modified soil profiles	High	Low to moderate
4 (1821–1843)	Building footings Internal occupation deposits External yard deposits Courtyard and road surfaces Rubbish pits Levelling fills in valley Wells and cisterns Privies Structures associated with channelisation of the Tank Stream	High	Low to moderate
5 (1844–1890)	Building footings Internal occupation deposits External yard deposits Courtyard and road surfaces Rubbish pits Levelling fills Wells and cisterns	High	Low to moderate

	Privies Evidence of oviform drain construction program		
6 (1891–1970)	Building footings Utilities Basements External yard deposits Courtyard and road surfaces Levelling fills	High	Moderate
7 (1971–present)	Road surfaces Roadways Footings Utilities Basements	Low	High

6.2.2 Hunter Street East Site development summary

The following is a summary of documented developments on the western site that have the potential to leave physical evidence:

- Hut sites occupied by convicts during the first decade of British settlement.
- By 1822 the site had been divided into eight leases seven of which were occupied by at least one structure.
- During the late 1820s and early 1830s many of the early cottages had been replaced by a mix of commercial structures and substantial residences.
- In the period between 1880 and 1930 the site became increasingly occupied by substantial commercial structures. Most of these structures were provided with basements but a small area within the center of the site survived as cartways and yards. From the mid-1960s to the late-1970s all existing buildings on site were removed and replaced. A number of the new structures were supplied with basements.
- In 2016 the buildings at 33 Bligh Street and 18–20 O'Connell Street were demolished to slab level. This area was subsequently excavated in part, for construction of an acoustic shed and site offices fronting Bligh Street, as well as heavy vehicle access from O'Connell Street as part of the Sydney Metro City and Southwest tunnelling support works.



Figure 116. Hunter Street East site (outlined in red); features documented in 1833. *Source*: Extent Heritage 2022.

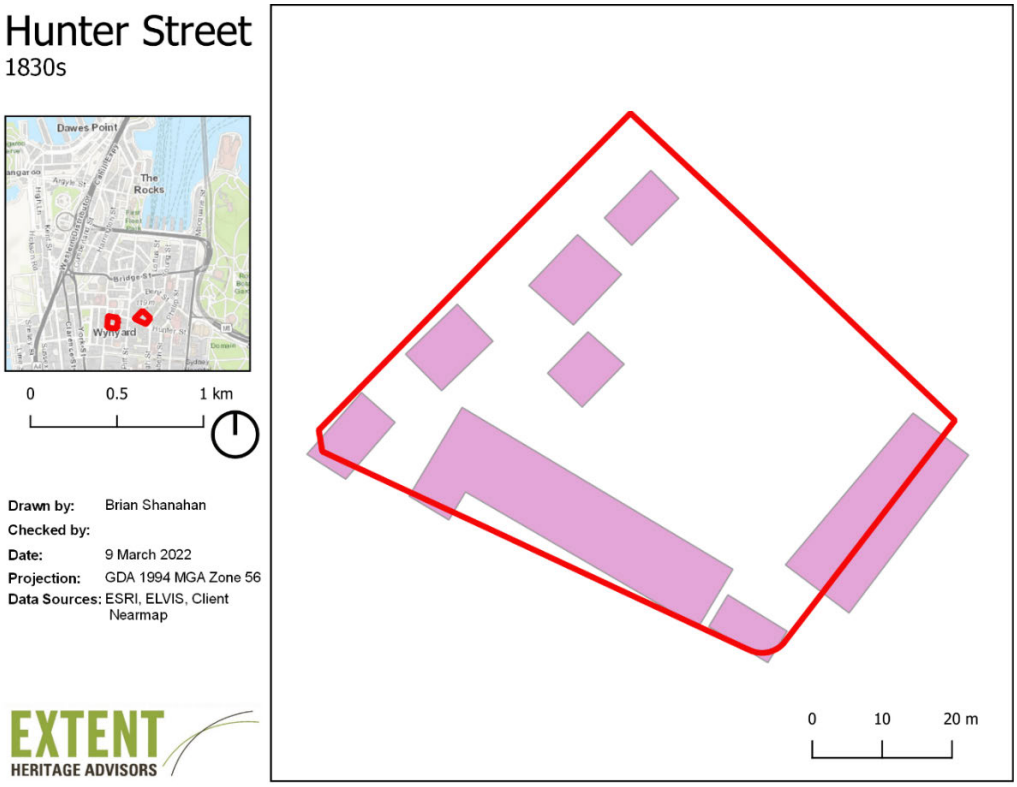


Figure 117. Hunter Street East site (outlined in red); features documented in the later 1830s. *Source*: Extent Heritage 2022.

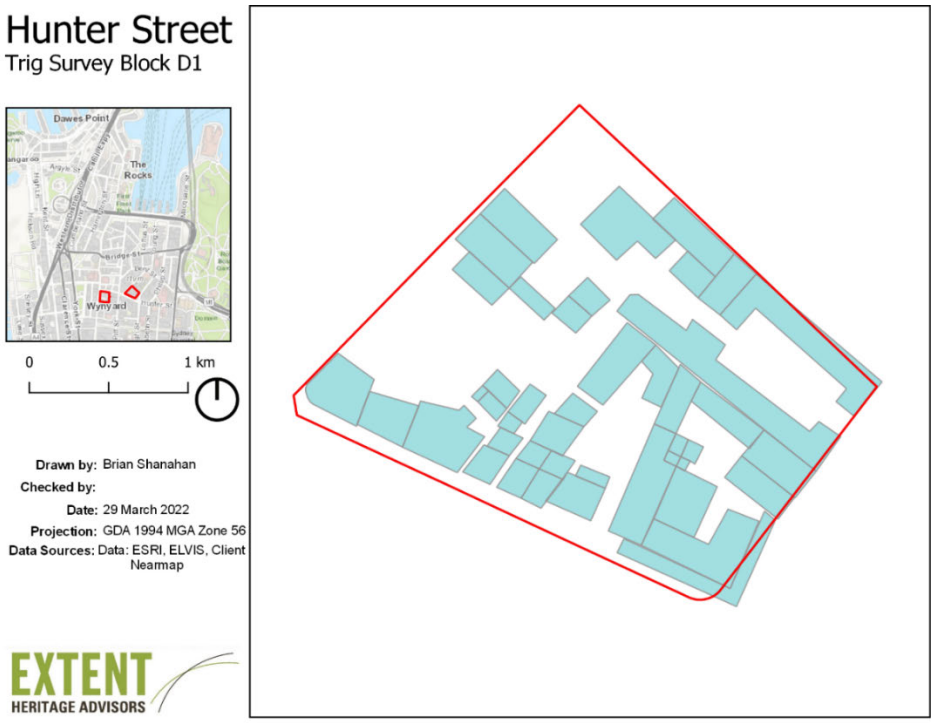
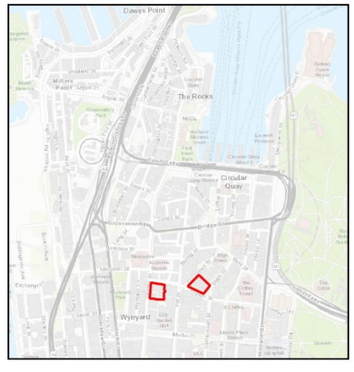


Figure 118. Hunter Street East site (outlined in red); features documented in 1865. *Source*: Extent Heritage 2022.

Hunter Street

Plot development

Eastern site



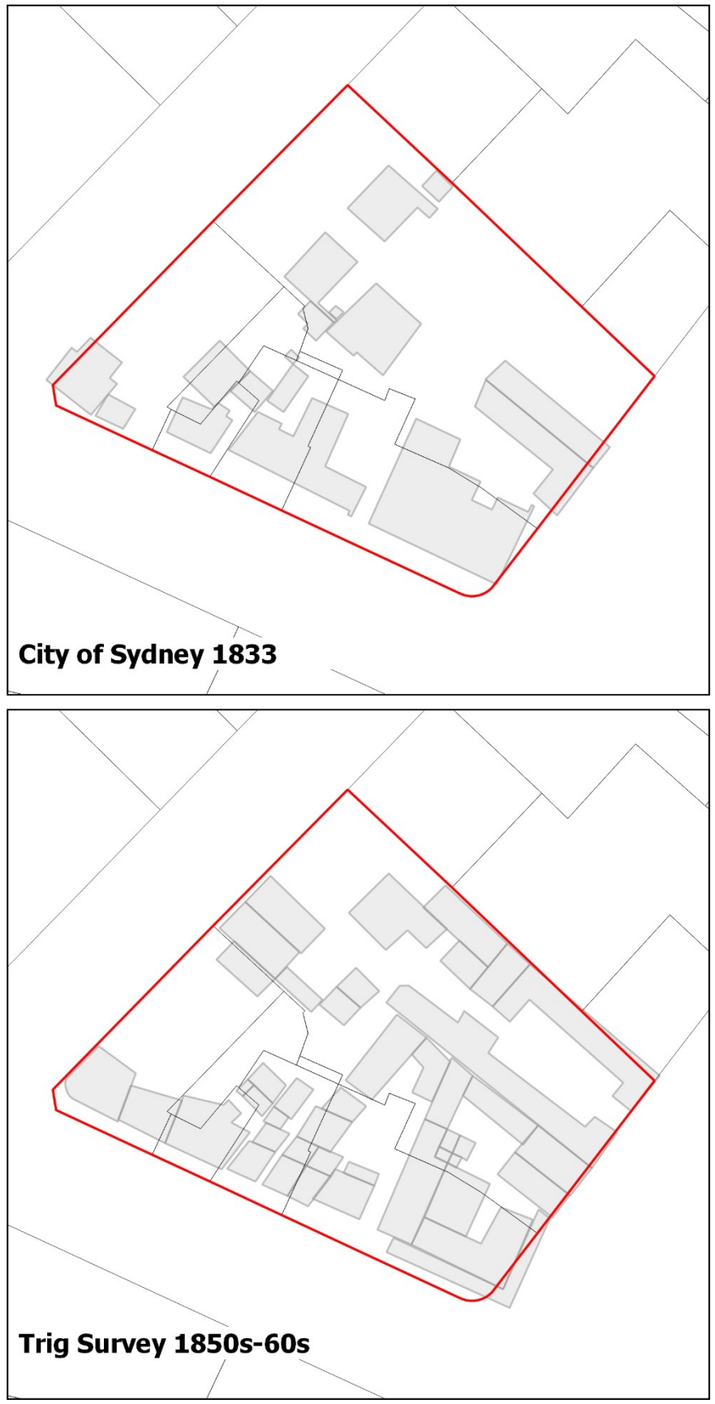
Construction sites

Lot boundary

Historic building

Drawn by: Brian Shanahan
Checked by: Madeline Shanahan
Date: 9 May 2022
Projection: GDA 1994 MGA Zone 56
Data Sources: Data: ESRI, ELVIS, Client Nearmap

EXTENT HERITAGE ADVISORS



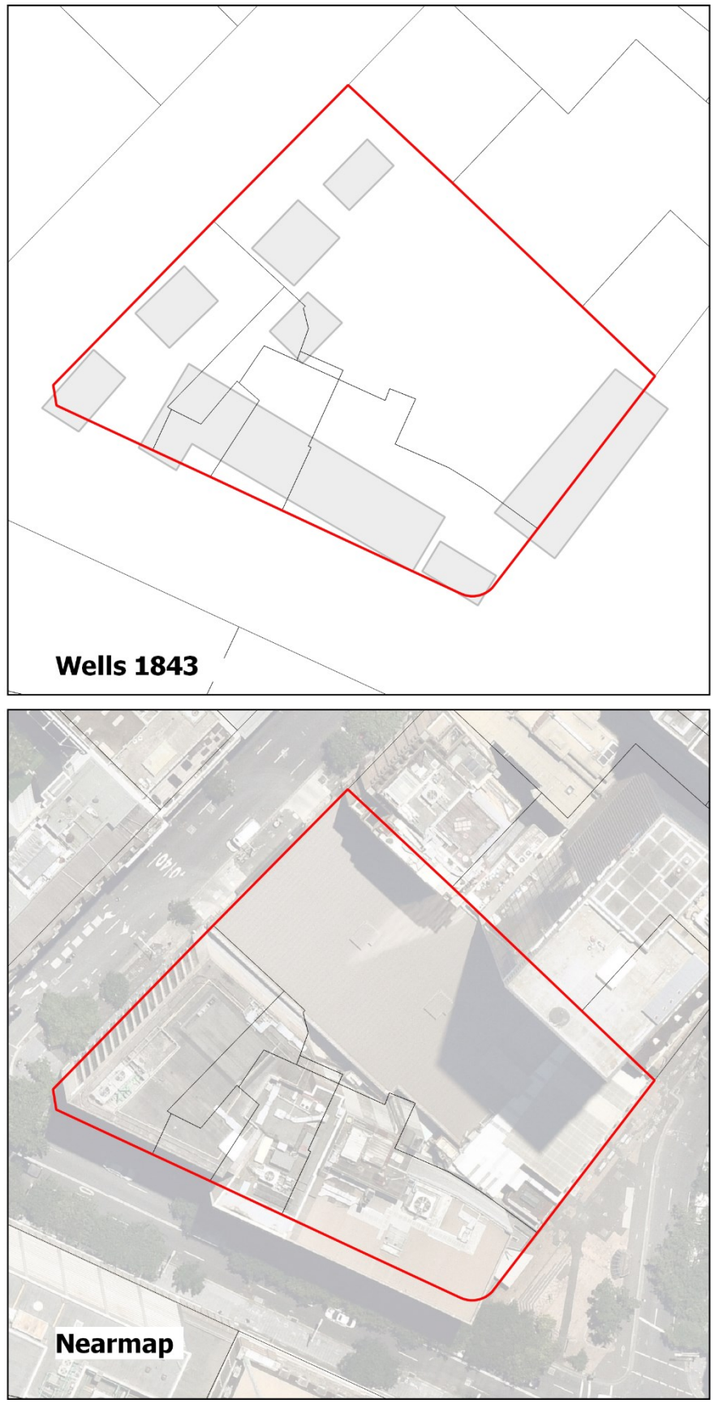
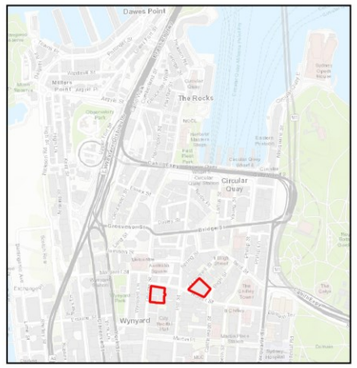


Figure 119. Sequence of historical development for the Hunter Street East site.

Hunter Street
Archaeological potential



0 0.5 1 km

Construction sites

Archaeological potential
- Low
- Low-moderate
- Moderate



Drawn by: Brian Shanahan
Checked by: Graham Wilson
Date: 9 May 2022
Projection: GDA 1994 MGA Zone 56
Data Sources: Data: ESRI, ELVIS, Client Nearmap

EXTENT HERITAGE ADVISORS

Figure 120. Map of historical archaeological potential for the Hunter Street East site.

Table 8. Summary of historical archaeological potential at the Hunter Street East site.

Phase	Potential evidence	Level of disturbance	Archaeological Potential
1 (pre-1788)	(see Part 4. Aboriginal archaeology)	(see Part 4)	(see Part 4)
2 (1788–1800)	▪ Land clearance ▪ Fence lines ▪ Hut sites ▪ Rubbish pits ▪ Modified soil profiles	High	Low
3 (1801–1820)	▪ Building footings ▪ Internal occupation deposits ▪ External yard deposits ▪ Courtyard and road surfaces ▪ Rubbish pits ▪ Wells and cisterns ▪ Privies ▪ Modified soil profiles	High	Low
4 (1821–1850)	▪ Building footings ▪ Internal occupation deposits ▪ External yard deposits ▪ Courtyard and road surfaces ▪ Rubbish pits ▪ Levelling fills ▪ Wells and cisterns ▪ Privies	High	Low
5 (1851–1900)	▪ Building footings ▪ Internal occupation deposits ▪ External yard deposits ▪ Courtyard and road surfaces ▪ Rubbish pits ▪ Levelling fills ▪ Wells and cisterns ▪ Privies	High	Low
6 (1901–1960	▪ Building footings ▪ Utilities ▪ Basements	High	Moderate
7 (1961–present)	▪ Building footings ▪ Utilities ▪ Basements	High	Moderate

6.3 Historical Archaeological Significance

The following section assess the significance of potential historical archaeological resources located within the study area. It includes an outline of the guiding documents and frameworks for assessing archaeological significance in NSW.

6.3.1 Existing statement of significance

The existing statement of significance outlined in the CMP addresses the Tank Stream only (CMP 2003, 71). The statement of significance is not specific to this site, but has informed Extent Heritage's assessment of the significance of the potential resource of the study area:

> The Tank Stream is significant because it was the reason the First Fleet settlement was established in Sydney Cove, and therefore influenced in future shape of Sydney over two centuries. It is linked I the public mind with the period of first European settlement and retains value as an iconic representation of that period and is interpreted as a metaphor of the period of contact and early urban settlement in Australia.
>
> The Tank Stream itself has retained an identity through the functional changes from being a fresh water supply, through subsequent use as combined sewer and stormwater drain to its current function as stormwater drain. It is an important survivor of the first period of organised and integrated water management in an Australian city. The stone-cut water tanks, which may survive archaeologically, are important symbols of the reliance upon water in the colony, both in absolute terms and as an indication of the fragility of the European presence in Australia.
>
> The surviving fabric documents mid-nineteenth century sanitation design and construction, and subsequent changes in methods and also the theory of urban wastewater management. This evidence is preserved in the drain enclosing the Tank Stream, in physical evidence of change, and may also be present archaeologically in buried parts of the Tank Stream line.
>
> The archaeological evidence of the Tank Stream has the potential to contain deposits that can contain information about pre-human and pre-urban environments in Sydney, Aboriginal occupation and early non-indigenous occupation of Sydney. The fabric enclosing the watercourse demonstrates one of the most comprehensive collections of hydrological technology in Australia.
>
> The sections of the former Tank Stream south of King Street which survive have potential for retaining evidence of the earliest periods of its human use, although this is likely to have been severely compromised by development. The swampy source of the stream may provide evidence of past environmental conditions.

6.3.2 Assessment of historical archaeological significance

Basis for assessment

Archaeological significance refers to the heritage significance of known or potential archaeological remains. While they remain an integral component of the overall significance of a place, it is necessary to assess the archaeological resources of a site independently from above ground and other heritage elements. Assessment of archaeological significance can be more challenging as the extent and nature of the archaeological features is often unknown and judgment is usually formulated on the basis of expected or potential attributes.

The following significance assessment of the study area's historical archaeological resource is carried out by applying criteria expressed in the publication 'Assessing Significance for Historical Archaeological Sites and 'Relics', prepared by the Heritage Branch, formerly Department of Planning (NSW) (now Heritage NSW-DPC) in December 2009.

Levels of significance

Two levels of significance exist in the NSW heritage management system: Local and State

'State heritage significance', in relation to a place, building, work, relic, moveable object or precinct, means significance to the State. in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item.

'local heritage significance', in relation to a place, building, work, relic, moveable object or precinct, means significance to an area in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item.

NSW heritage criteria for assessing significance related to archaeological sites and relics

Assessment of archaeological significance is undertaken by reference to seven NSW Heritage Criteria for Assessing Significance related to Archaeological Sites and Relics. The criteria are as follows:

- Criterion (A): an item is important in the course, or pattern, of NSW's cultural or natural history (or the local area);
- Criterion (B): an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the local area);
- Criterion (C): an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);
- Criterion (D): an item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons (or the local area);
- Criterion (E): an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the local area);
- Criterion (F): an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the local area); and
- Criterion (G): an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or cultural or natural environments (or the local area).

For the purposes of assessing archaeological significance, the NSW Heritage Council grouped and ordered the seven criteria in the 2009 publication as following:

Table 9. Archaeological significance criteria and how they are applied

Criteria	Application
Archaeological research potential (criterion E)	Archaeological research potential assesses the ability of archaeological evidence, through analysis and interpretation, to provide substantive information regarding past activities on a site that cannot be derived from other sources.
Associations with individuals, events or groups of historical importance (criteria A, B & D)	Archaeological remains may have particular associations with individuals, groups and events that are of importance at a local to international level. For such an association to be considered significant the link must be direct.
Aesthetic or technical significance (criterion C)	Technical value of archaeological material is usually considered part of a site's 'research potential'. Aesthetic values are rarely considered to be relevant to archaeological sites.
Ability to demonstrate the past through archaeological remains (criteria A, C, F & G)	Archaeological remains may have the ability to demonstrate how a site was occupied and modified and what processes occurred over time. Such remains may demonstrate the principal characteristics of a place or process.

Archaeological research potential (NSW Heritage Criterion E)

Hunter Street West site

Any remains associated with the occupation of the George Street frontage by huts dating to the period before 1800 would have a high research value and would be regarded as State significant.

Artefacts or structural remains related to the development of commercial premises during the period between 1820 and 1840, such as of de Mestre's counting house may provide evidence of the operation of this early commercial precinct as well as de Mestre's domestic arrangements. Archaeological remains related to management of the Tank Stream, such as channelisation, diversion or filling in the period before 1840 would be of State significance.

Hunter Street East site

Any remains associated with the occupation of the Bligh Street and O'Connell Street frontages by huts dating to the period before 1800 would have a high research value and would be regarded as State significant.

Any archaeological remains associated with the leases that occupied the site in the period before 1820 may provide evidence of the type of occupation that took place. It is current unclear if this was purely domestic occupancy or if there were industrial or commercial activities

associated with these leases. Surviving remains from the pre-1840 that retain a high degree of integrity would be assessed as State significant.

Artefact and structural remains related to the development of the Hunter Street frontage in the period after 1830 as both a mixed residential and commercial zone may provide information of the precise nature of these developments including the operation of commercial stables and the Reynolds/Jones property on the corner of Hunter and Bligh Streets. Such remains would be of local significance.

Associations with individuals, events or groups of historical importance (Criteria A, B & D)

Hunter Street West site

Archaeological remains related to the operation of the Riley and de Mestre properties, if substantially intact, have direct associations with individuals who had considerable commercial standing in early Sydney. Remains that are substantially intact and with stratigraphic integrity would be a rare resource. Such remains, if they predate 1840, would be of State significance.

Hunter Street East site

No significant associations identified.

Aesthetic or technical significance (Criterion C)

Hunter Street West site

Evidence of construction techniques employed to deal with the physical challenges presented by construction of buildings in the valley of the Tank Stream in the period after 1850 would have technical value. Such remains would be of local significance.

Hunter Street East site

No documented activities that would result in the survival of material satisfying these criteria have been identified.

Ability to demonstrate the past through archaeological remains (Criteria A, C, F & G)

Hunter Street West site

Archaeological remains related to the pre-1820 occupation of the George Street frontage prior to the formal alienation of the land would be of State significance.

Archaeological remains associated with the mid-to late-nineteenth century commercial occupation of both George Street and Hunter Street may provide evidence of the use of particular lots, or spaces within the block. Such remains would be of local significance.

Hunter Street East site

Archaeological remains related to the pre-1820 occupation of the site prior to the formal alienation of the land would be of State significance.

Evidence for the use of the eight leases that had been formed prior to 1820 may have the ability to demonstrate the precise nature of occupancy. Such remains would be of State significance.

6.3.3 Summary statement of significance

Both the East and West sites were occupied, cleared and modified within the first ten years of British settlement. As such any physical remains surviving from the period before 1800 would have significant research potential and would be regarded as State significant.

On the West site any substantially intact archaeological remains related to the Riley and de Mestre would have high research value with the potential to address questions of class and commercial activity. Archaeological remains related to this phase of the site's development would be State significant. Physical evidence of management and modification of the Tank Stream prior to the major works undertaken in the 1870s would have high research value as would any techniques employed in building construction within the immediate vicinity of the stream. Such remains may be of local or State significance depending upon date and nature of the remains.

On the East site the developmental history of the block is not well understood for the period before 1830. The site was occupied by eight leases before 1820 and any archaeological material associated with this period may assist in determining the nature of occupation with greater accuracy. These remain would have high research value and would be of State significance. A summary of the two sites' historical archaeological potential and significance are shown in Tables 9 and 10.

Table 9. Summary of historical archaeological potential and significance for the Hunter Street West site.

Phase	Description	Archaeological Potential	Significance
1 (pre-1788)	(see Part 4- Aboriginal archaeology)	(see Part 4)	(see Part 4)
2 (1788–1800)	Features associated with early land grants, clearance and habitation, as well as early colonial occupation and modification of the Tank Stream.	Low	State
3 (1800–1820)	Features associated with the occupation of the De Mestre grant and adjacent properties. As well as reclamation and modification of the Tank Stream.	Low to moderate	State
4 (1821–1843)	Features associated with the occupation of the De Mestre grant and adjacent properties. As well as reclamation and modification of the Tank Stream.	Low to moderate	State
5 (1844–1890)	Demolition of early building and construction of commercial	Low to moderate	Local

	buildings on George and Hunter Street.		
	Canalisation and construction of oviform? feeder drains associated with the Tank Stream drain.	Low-Moderate	State
6 (1891–1970)	Gradual replacement of the earlier commercial buildings by multi-storey office blocks.	Moderate	Local
7 (1971–present)	Occupation of office buildings.	High	Does not meet the threshold for significance

Table 10. Summary of historical archaeological potential and significance for the Hunter Street East site.

Phase	Description	Archaeological Potential	Significance
1 (pre-1788)	(see Part 4- Aboriginal archaeology)	(see Part 4)	(see Part 4)
2 (1788–1800)	Features associated with early colonisation, clearance and occupation by convicts	Low	State
3 (1801–1820)	Features associated with early leases and construction.	Low	State
4 (1821–1850)	Features associated with cottages and commercial infill reflecting increasing building density, development, urbanisation and improvement including commercial and residential occupation.	Low	State (1820s) Local
5 (1851–1900)	Features associated with the replacement of residential structures by commercial structures.	Low	Local
6 (1901–1960)	Features associated with the development of increasingly substantial commercial structures including stages of demolition and renewal	Moderate	Local
7 (1961–present)	N/a	Moderate	Does not meet the threshold for significance

7. Assessment of Impacts

7.1 Description of construction works

In general, the civil construction works would include enabling works (such as demolition, utility supply to construction sites, utility adjustment and modification to the existing transport network), tunnelling (including tunnel support activities) (Figure 117) and station excavation (EIS, Chapter 5, p5-1) (Figure 122 and Figure 123). The main activities for the Hunter Street Station construction sites are as follows:

Table 10. Summary of construction activities at the Hunter Street Station sites.

	Hunter Street Station West	Hunter Street Station East
Construction activities		Tunnel boring retrieval
	Roadheader work and support	
	Spoil removal	
	Station excavation	
	Construction site facilities	

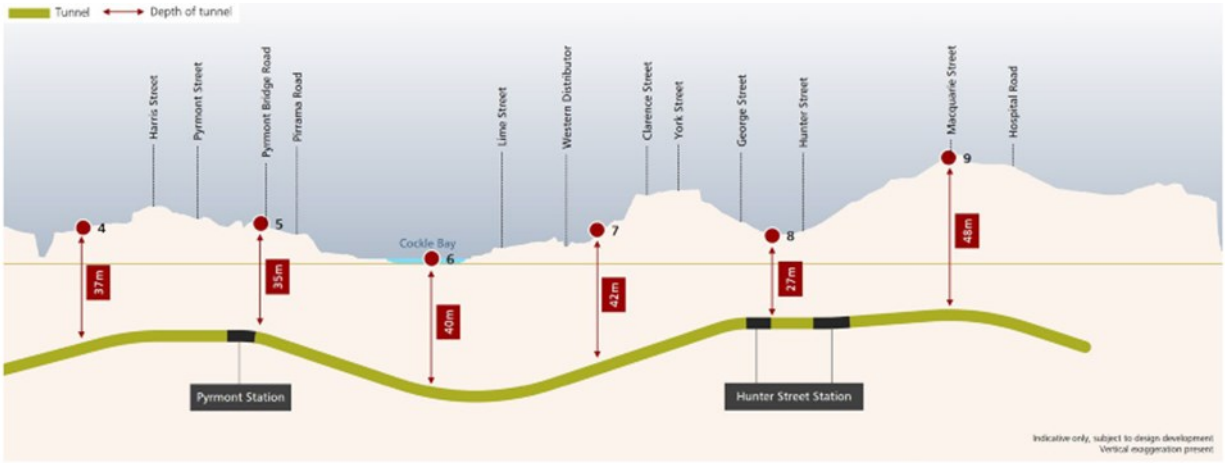


Figure 121. Indicative tunnelling alignment plan and depths in section.

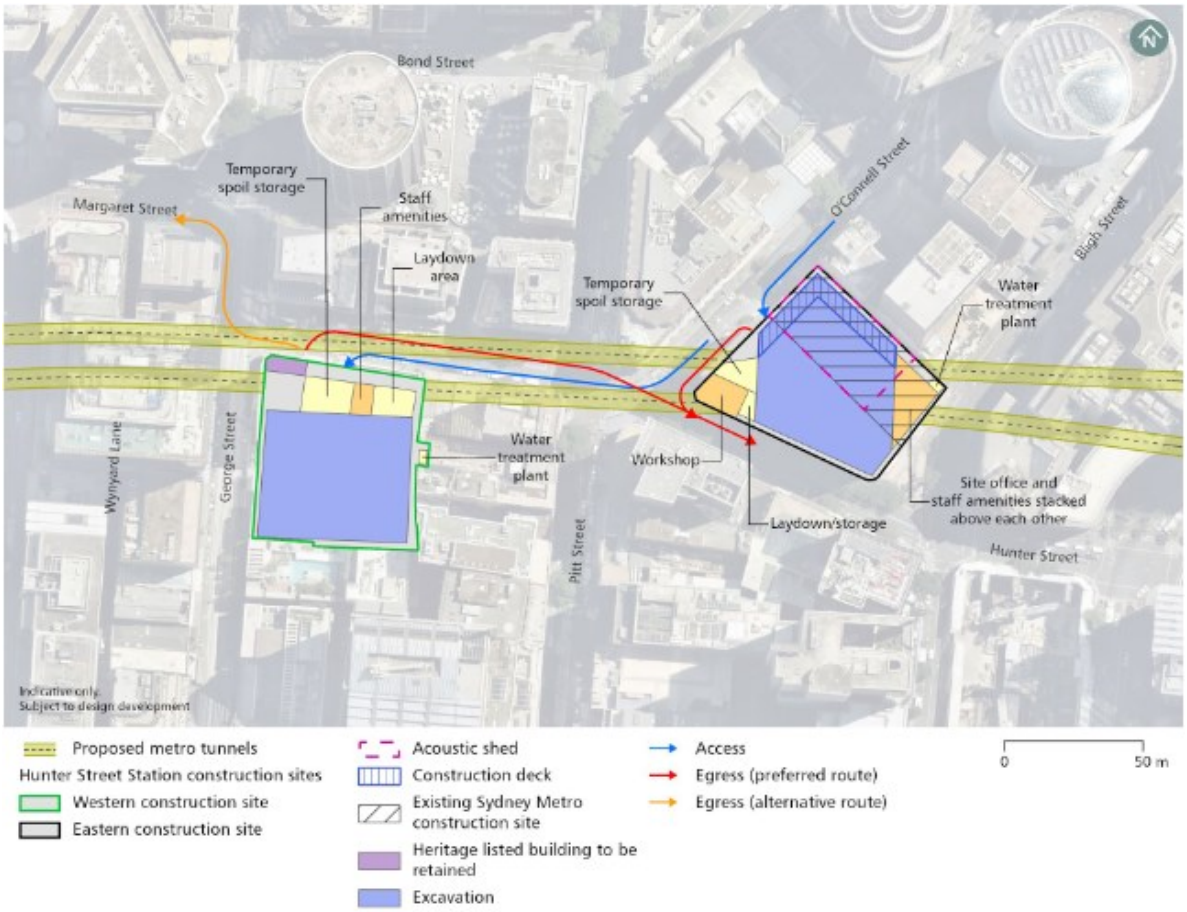


Figure 122. Indicative layout of the Hunter Street Station sites and associated activities. *Source:* EIS, 2020, Chapter 5, 5-14).

It is anticipated that all buildings would be demolished within the Hunter Street sites, apart from Skinner's Hotel at 296 George Street, during the enabling works stage. Demolition would be staged and undertaken in a top-down manner. Tunnelling of the twin underground tunnels would involve excavation by tunnel boring machines using roadheaders approximately 27 m below the Hunter Street Station sites (Figure 121).

It is anticipated that station excavation is likely to involve mined station cavern excavation and access shaft excavation. The entire areas shaded in blue in Figure 122 above will be excavated to the full depth. The areas shaded yellow, orange, and grey will also be excavated, but to a lesser depth, as indicated in Figure 123.

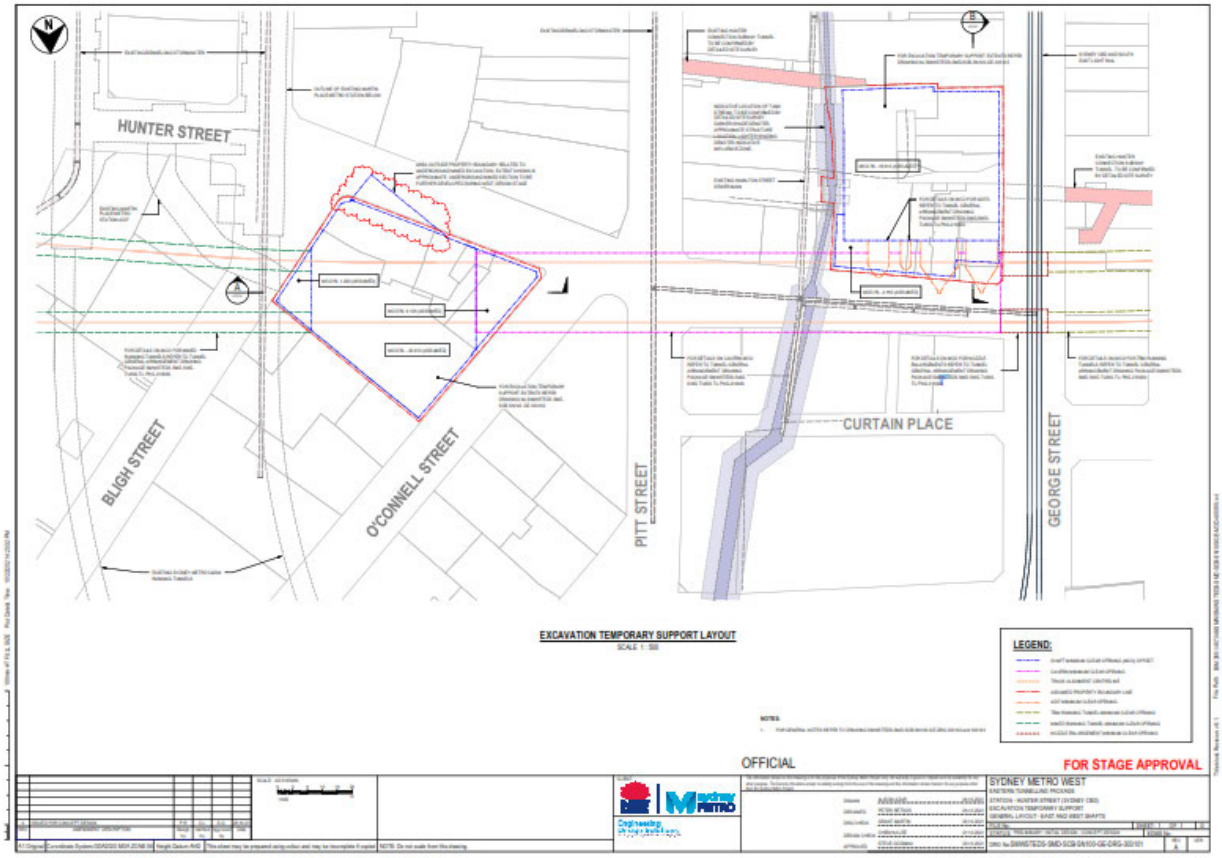


Figure 123. Indicative plan of excavation areas and depths for both construction site. *Source:* Sydney Metro

7.2 Construction impacts

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 31 m. Most of the active Tank Stream drain is located outside of the western construction site (along the eastern edge of the site), with the exception of the brick oviform section located within the eastern arm of Hunter Street West (Figure 26).

The nature of the works will require the total removal of any archaeological remains within the deep excavation zones.

7.3 Recommended mitigation

To mitigate development impacts on the archaeological resource, the Stage 2 works would be undertaken in conjunction with detailed archaeological investigations and recording until the locations of archaeological potential were excavated to the sterile soil or bedrock. This would ensure that significant archaeological remans are appropriately managed, i.e., in accordance with their assessed significance, and the research potential of the site is fully realised.

Given that retention in situ of significant structural remains is not feasible, their heritage value would be preserved through interpretation.

8. Archaeological research design

8.1 Introduction

This section of the report provides a theoretical framework and investigation strategy and methodology that are specifically developed to set goals and guide procedures of archaeological investigations associated with the project.

The main aim of the archaeological investigations is to realise the site's research potential. This research potential should be should be considered in both a broad and site-specific context. What can the archaeological evidence tell us about this particular site? Importantly though, what can it contribute to our understanding of the wider social, regional and historical context?

The research framework is also designed to ensure that the physical evidence of archaeological investigations is utilised in a meaningful way. The analysis of the systematically gathered data from the site would be carried out with a focus on questions that can provide answers about the site's occupation, use and development from Deep time, to the present.

Finally, the following research framework provides a methodology to guide the excavation of the targeted areas that may be impacted by the site preparation earthworks and subsequent redevelopment works. Extent Heritage have aimed to design an approach that is both rigorous, and flexible enough to accommodate construction schedules that are not yet finalised.

8.2 Research themes

The Heritage Council of New South Wales has published a list of historical themes, to provide direction and guidance for heritage assessment and management. The historical themes relevant to the documented occupation of the study area are listed on Table 7 below. Details of the potential evidence associated with each theme are also included.

Table 11. Historical themes relevant to the study area.

Australian theme	NSW theme	Local themes	Potential evidence
1 Tracing the natural environment	Environment—naturally evolved	1. Features occurring naturally in the physical environment that have significance independent of human intervention 2. Features occurring naturally in the physical environment that have shaped or influenced human life and cultures	Original Tank Streat basin with alluvial and colluvial sediments, original flora; natural geological rock formation
2 Peopling Australia	Aboriginal cultures and	Activities associated with maintaining, developing, experiencing and	Evidence of Aboriginal objects (stone tools, shell middens, seeds, etc) and

Australian theme	NSW theme	Local themes	Potential evidence
	interactions with other cultures	remembering Aboriginal cultural identities and practices, past and present; with demonstrating distinctive ways of life; and with interactions demonstrating race relations.	contact archaeology manifested through worked materials other than local stone/mineral types
	Convict	Activities relating to incarceration, transport, reform, accommodation and working during the convict period in NSW (1788—1850).	Evidence of convict labour, such as modification of natural Tank Stream outcrop (drilling and chiselling marks, cuttings), construction of stone walls and Tank tram chambers and other structures (cottages, wells, etc)
3 Developing local, regional and national economies	Commerce	Activities relating to buying, selling and exchanging goods and services	Evidence of nineteenth century commercial and retail enterprises: structural remains of shops, counter house, hotels and associated cellars, stables, storage areas, artefacts
	Environment—cultural landscape	Activities associated with the interactions between humans, human societies and the shaping of their physical surroundings	Backfilling and channelisation of Tank Stream; evidence of land clearing by burning and rock cutting
	Health	Activities associated with preparing and providing medical assistance and/or promoting or maintaining the well-being of humans	Evidence of several chemists that existed within the western construction site (artefacts such aa pharmaceutical bottles and instruments, etc)
4 Building settlements, towns and cities	Towns, suburbs and villages	Activities associated with creating, planning and managing urban functions, landscapes and lifestyles in towns, suburbs and villages	Process of urbanisation demonstrated by development of densely populated city blocks with subway arcades; formalisation of Demestre Lane
	Land tenure	Activities and processes for identifying forms of ownership and occupancy of land and water, both	Subdivision fences, survey marks,

Australian theme	NSW theme	Local themes	Potential evidence
		Aboriginal and non-Aboriginal	
	Utilities	Activities associated with the provision of services, especially on a community basis	Tank Stream oviform Drain (original and modified fabric); wells and cess pits; various service lines (water, gas, drainage, sewer)
	Accommodation	Activities associated with provision of accommodation, and particular types of accommodation.	Evidence of wall footings or posthole of former cottages, terraces and buildings
8 Developing Australia's cultural life	Domestic life	Activities associated with creating, maintaining, living in and working around houses and institutions.	Domestic artefacts, tools, furniture, clothing, interior layut, pet grave, outbuildings
9 Marking the phasis of life	Persons	Activities of, and associations with, identifiable individuals, families and communal groups	Information on John Black, Prosper de Mestre

8.3 Research questions

The following research questions are grouped thematically. They consider the themes set out in Table 11, above, but are designed with this specific site in mind. They aim to maximise the understanding the site and wider cultural landscape, and how it changed over time. Importantly, the thematic structure to the research questions combines Aboriginal and historical archaeology inquiry. This approach aims to ensure that the site is considered in a cohesive way, with a view to understand change here over a very long period of time.

8.3.1 Landscape, water, and environment

The following questions relate to understanding the landscape of the site and its environs, encompassing geomorphology, hydrology and vegetation. They address change over time and influences that had an impact on the environment here. These include climatic change and forces (such as the end of the Pleistocene), as well as changes shaped by people over many millennia.

- If intact buried soils are discovered, what is the type of soil and what can be interpreted about the local environment through soil micromorphology?
- Are there any areas of nascent soil formation that indicate stabilisation of sedimentation and therefore ancient land surfaces?

- If present, do nascent soils or buried soil profiles contain any information relating to the paleoenvironment?
- What was the vegetation mosaic of the Tank Stream catchment and how did it change through time?
- What information can be determined about the hydrological system of the Tank Stream catchment through time? Have the intensity and frequency of flooding events changed throughout the sedimentary sequence?
- What is the depositional energy/mechanism of the Tank Stream deposits through time?
- Are there specific periods of aeolian deposition which may relate to a hiatus of alluvial contribution to the site?
- Are there changes in the intensity and frequency of flood events through time?
- What are the sedimentary relationships throughout the vertical profile of the Tanks Stream bank sediments and how does this contribute to our understanding of its formation processes?
- Is there evidence for pollution and environmental degradation in the area following landscape modification in the colonial period?

8.3.2 Aboriginal resource use and culture

The following questions relate more directly to Aboriginal life, culture and resource use here over many millennia. These questions address landscape, water and environmental issues outlined in the previous section, but look more closely at the way in which Aboriginal people used resources here, and how they had an impact on the cultural landscape over time.

- Can we identify what Aboriginal people were processing and hunting in the study area over time? Does this change from the Pleistocene to the Holocene, and from the Holocene to the contact period?
- Can evidence of pre-European fire regimes be identified from microcharcoal in Tank Stream associated sediments? If so, are these fire signatures consistent with those interpreted from nearby Tank Stream sites?
- Are micro artefacts (e.g., debitage, charcoal and bone) present in the deposits and what does this tell us about ancient use of the site?
- Can we apply the method of 'refitting' artefacts back together to the assemblage to understand the reduction strategies used by Aboriginal people in the Sydney CBD area?
- Do aeolian lenses, if present, correspond to levels of artefact deposition?

8.3.3 Early colonial settlement and land grants

Research questions under this theme aim to understand development in the first few decades after British colonisation. Although there is limited potential for archaeology relating to this phase, if remains are found, they have the potential to contribute to our understanding of this important period, prior to urbanisation and the growth of the city.

- Is there any physical evidence that can be reliably attributed to the poorly documented huts present on both the east and west sites? If so, what does this evidence indicate regarding clearance and early colonial settlement here?
- If there is any evidence from the early colonial period and first phase of British colonisation, what does it tell us about the Tank Stream in this period, and the way in which it shaped development here?
- What can material evidence tell us about the Edward Riley and Prosper de Mestre land grants and developments? Is there any evidence for the landscape associated with the De Mestre residence? What does the evidence tell us about British settlement in this part of the colony?

8.3.4 Urbanisation and Improvement

The following series of research questions relates to the urbanisation, growth, development and investment in the city. 'Improvement' was an important ideology underpinning urban design throughout the British Empire in the later eighteenth century and nineteenth centuries, and these questions address how investment and development shaped the site and its wider context.

- What can material evidence from the Edward Riley and Prosper de Mestre properties tell us about the early roots of urbanisation here? What does the evidence tell us about investment, improvement and plans for the future?
- How formalised was De Mestre Place in its early nineteenth century form? Was it sealed and drained? How was it used and what role did it play in the life of the incipient city?
- Do any nineteenth century basements survive beneath the existing late twentieth century basements?
- Is there any evidence relating to channelisation and enclosure? What does this tell us about planning, conditions, sanitation and amenities in this part of the early city?
- Do former land surfaces survive that may provide evidence for drainage patterns that may have influenced the health of the site occupants particularly in regard to the spatial relationship between cesspits and water sources?

8.3.5 Family and community

Archaeological evidence may be able to contribute to understandings of life for residents and families here prior to the development of it as a primarily business and finance precinct. The following questions could be answered if domestic deposits and features are encountered.

- What can material evidence tell us about Edward Riley and Prosper de Mestre and their respective families?

- How does evidence from this site compare with that obtained from the sites in the neighbourhood? What does it contribute to our understanding of development, community and life in this part of Sydney?

8.3.6 Commercialisation

Over the later nineteenth and twentieth centuries, occupation of the site and general area was increasingly characterised by commercial development. The following questions address this phase and theme directly, from the earliest businesses, to later phases.

- Is there any evidence to indicate that the substantial commercial buildings constructed in the second half of the nineteenth and early twentieth centuries employed particular methods for dealing with the physical challenges presented by construction in a creek valley with potentially waterlogged substrates?

- Can archaeological evidence contribute to our understanding of the development of business and commerce here? This may include evidence of the de Mestre enterprises, to later workshops and businesses.

8.4 Excavation strategy

Based on the site's varying degrees of archaeological potential (low, moderate, and extant), its significance and the levels of construction impact, a strategic approach to the mitigation of construction impacts has been devised. This strategic approach includes a combination of test excavation, monitoring, and open-area salvage excavation prior to construction.

Given the site's potential for both Aboriginal and historical archaeological evidence, physical investigations will be conducted in an integrated manner.

The test excavation would be conducted as soon as practicable, to test for the presence or absence of archaeological remains in De Mestre Place.

All archaeological investigation works would be carried out under the supervision of a suitably qualified and experienced Excavation Director that meets the Heritage NSW criteria to direct excavations of sites of both state and local significance, and in consultation with the Excavation Director leading the Aboriginal program who would also need to be suitably qualified and experienced.

The following section identifies the specifics of the archaeological program and methodologies in more detail. To begin, the table below outlines the intended objectives of each of the methodologies of archaeological investigation:

Table 12. Methods and objective for archaeological investigations.

Methodology	Objective
Test excavations (De Mestre Place)	To investigate the nature and integrity of any subsurface natural soil profiles, and type and distribution of any identified Aboriginal objects and/or historical 'relics'.
Archaeological monitoring of areas assessed to hold archaeological potential	To ensure archaeological remains and/or associated soil profiles are identified in areas of low and moderate archaeological potential during Pre-Construction and Construction works. The identification of features or objects will trigger additional investigations.
Historical open area salvage and Aboriginal investigations	To ensure that all archaeological features are fully investigated and recorded prior to their removal. Salvage would involve excavation of a larger area to identify spatial relationships between features or deposits, and to maximise the information that may be recovered from a site. Excavation would be undertaken with consideration to both vertical and horizontal stratigraphy of a unit.
Conservation in situ	To ensure that the original Tank Stream oviform fabric and its 3 m - buffer zone is protected from disturbance including provision of adequate protection for long term preservation and interpretation.
Unexpected finds procedure	To provide for the identification, assessment and management of unexpected archaeological remains that may be unexpectedly encountered.

The final archaeological program would be decided in consultation with the Eastern Tunnelling Package Contractor. The staged program of archaeological works would be as follows:

Table 3. Types of archaeological excavation methods for Stage 2 of the project.

Excavation method	Stage	Area	Objectives
Test excavation	Prior to any ground disturbance works associated with Construction	Hunter Street West site: De Mestre Lane	To investigate the nature and integrity of any subsurface natural soil profiles, and type and distribution of any identified Aboriginal objects and/or historical 'relics'.
Monitoring and recording	Pre-Construction or during Construction	Hunter Street West and East sites: Primarily areas assessed to be of archaeological potential	To ensure archaeological remains and/or associated soil profiles are identified in areas of low and moderate archaeological potential during Pre-Construction and Construction works. The identification of features or objects will trigger additional investigations.
Open area (salvage) excavation	Pre-Construction and/or during Construction	Areas assessed as having archaeological potential that will be impacted by Construction Areas of archaeological potential identified during monitoring	To ensure that all of archaeological features are fully investigated and recorded prior to their removal. Salvage would involve excavation of a larger area to identify spatial relationships between features or deposits, and to maximise the information that may be recovered from a site. Salvage excavation would be undertaken with consideration to both vertical and horizontal stratigraphy of a unit.

Excavation method	Stage	Area	Objectives
Conservation in situ	Enabling work and site excavation: Throughout all phases of works	Hunter Street West – Tank Stream	To ensure that the original Tank Stream oviform fabric and its 3 m - buffer zone is protected from disturbance including provision of adequate protection for long term preservation and interpretation.
Sydney Metro Unexpected Heritage Finds Procedure (UFP)	All stages	Hunter Street West and East	To provide for the identification, assessment and management of unexpected archaeological remains that may be unexpectedly encountered.

8.5 Construction program

The construction program across a majority of Metro Hunter Street West and East will involve ground disturbance which has the potential to impact both historical and Aboriginal archaeological remains. The investigative methods are more fully outlined in Part 7.6. The following table outlines the archaeological investigations required during each stage of works.

Table 14. Archaeological investigations and methodologies for site work in different stages of the construction program.

Stage	Action	Area	Investigation method
Pre-Construction	Works prior to demolition phase	Hunter Street West: De Mestre Place	Historical test excavations Aboriginal test excavations
	Geotechnical and contamination testing, including boreholes and test pits Service investigations (eg identification of services using vacuum truck or similar method)	Hunter Street West and East: Areas assessed to hold archaeological potential	Archaeological monitoring Supply data for archaeological analysis
		Hunter Street West and East: Areas assessed to hold nil archaeological potential, or within existing service trenches	Proceed with caution Unexpected finds procedure
Demolition	Demolition of extant structures: Works cease at ground slab/current ground level in areas assessed to hold archaeological potential.	Hunter Street West and East: All areas	Proceed with caution Unexpected finds procedure
	Demolition to slab/current ground surface	Hunter Street West and East: Areas assessed to hold archaeological potential	Archaeological monitoring Historical archaeological open-area salvage, if triggered Aboriginal archaeological investigations, if triggered
		Hunter Street West and East: Areas assessed to hold nil archaeological potential	Proceed with caution Unexpected finds procedure
	Removal of slab/ground surface/inground structures/footings/services	Hunter Street West and East sites: Areas assessed to hold archaeological potential	Archaeological monitoring Historical archaeological open-area salvage, if triggered

Stage	Action	Area	Investigation method
			Aboriginal archaeological investigation, if triggered
Construction	Excavation below ground surface, including: Soil removal, Piling and associated works, Installation of site facilities and structures, Installation of temporary services, Sediment ponds, wheel wash areas, drainage etc. and Remediation or contamination removal Stockpiling	Hunter Street West and East sites: Areas assessed to hold archaeological potential	Archaeological monitoring Historical archaeological open-area salvage, if triggered Aboriginal archaeological investigation, if triggered
		Hunter Street West and East: Areas assessed to hold nil archaeological potential	Proceed with caution Unexpected finds procedure
	Excavation below ground surface for all other construction activities	Hunter Street West and East sites: Areas assessed to hold archaeological potential not otherwise exposed during demolition and early stage construction process	Archaeological monitoring
	All other above ground building and construction works across development	Hunter Street West: Tank Stream	Conservation in situ
		Hunter Street West and East: Areas determined to hold no potential at cessation of historical salvage and Aboriginal investigative works	Proceed with caution Unexpected finds procedure

8.6 Test excavations—De Mestre Place

8.6.1 Historical archaeology test excavations

The laneway at De Mestre Place is the least developed part of the site and is considered to have moderate archaeological potential. Although disturbance of archaeological deposits is to

be expected, the nature and extent of this is currently unknown. Disturbance could be the result of laneway drainage works, regrading or resurfacing. The insertion of service trenches has likely also cause disturbance. Nonetheless, the laneway appears to partly reflect the unmodified early topography of the site leading to an assessment of moderate archaeological potential. Relative accessibility and potentially limited impacts across the laneway provide an opportunity, at an early stage, to determine a baseline for archaeological potential across the site.

A combined program of Aboriginal and historical archaeological investigations is proposed. This will ensure maximum return of information about the preservation of early soil horizons, historic soils, and potential building footings.

8.6.1.1 Sampling and coverage

Historical archaeological test trenches will focus on the predicted locations of documented historic buildings and areas of low historical impact. These will target the following areas:

- Locations of two early buildings associated with the de Mestre estate – a house/business and possibly a rear kitchen.
- One building on the terrace that once fronted onto George Street and was constructed in the 1840s will also be targeted.
- Areas of low impact will also be covered in order to determine if early historic soils horizons survive. This will assist in determining suitable locations for the Aboriginal test trenches.

It is proposed that four historical archaeological test trenches be excavated as per a diagram shown in Figure 124. The test trenches would approximately be 1.5 m wide and 2-4 m long. The actual dimensions of the test trenches would be determined by the configuration of the De Mestre testing area.

8.6.1.2 Test excavation methodology

The following approach will be taken to excavating the test trenches:

- Proposed test trench locations will be refined to avoid known areas of disturbance, services and utilities. This will be done with reference to Dial Before You Dig and any additional on-site service location.
- A machine excavator, with the assistance of a saw cutter where necessary, will be used to remove the modern ground surface in the location of the seven test pits. Modern fills capping the natural soil profile may then be removed as a single layer by machine excavator. The machine must be fitted with a flat bucket, unless compacted modern fills or hard surfaces are encountered. A toothed bucket would be used to break up hard surfaces or loosen compacted modern fills.
- Any historical laneway surfaces will be cleaned and recorded before removal.
- Any demolition rubble layers will be dealt with in a similar manner.

- Any deposit or structure deemed to be of archaeological significance will be cleaned back using hand tools and recorded. Depending on the nature and extent of any overlying demolition or fill layers, smaller sondages or test trenches could be excavated by hand in order to expose any in situ occupation layers or potential underfloor deposits.

- Archaeological deposits (including those identified in the deeper subsurface features such as cistern or well features) would generally be retained *in situ* during the testing phase, although limited excavation could be required to determine the nature or depth of the archaeological resource, or to facilitate excavation of Aboriginal test trenches through intact early soil horizons.

- All archaeological features will be recording through measured planning and photogrammetry. Spot heights recorded to reduced levels (RLs) will be taken to establish the levels of archaeological remains with reference to the surrounding basement areas.

- Where a break in the test excavation program, or between the test and salvage excavation program, is required, geofabric will be laid on top of the exposed archaeological surfaces, if they survive. After geofabric has been laid, trenches may be backfilled for further protection, if necessary.

8.6.2 Aboriginal test excavation—De Mestre Place

Due to the existing buildings across the entire study areas, most areas of interest are inaccessible for Aboriginal investigation during the enabling works. As a result, the initial phase of test excavations will focus along De Mestre Place to provide an understanding of the soil profiles, disturbance, and potential historical and Aboriginal archaeology within the Hunter Street West site.

Controlled excavation in accordance with the *Code of Practice* (Department of Environment, Climate Change & Water [DECCW] 2010a) will provide the opportunity to investigate the context of any retrieved Aboriginal objects, including whether there is evidence of stratification.

The key aims of test excavation are to:

- characterise the sub-surface soil profile and identify any evidence of stratification so as to provide an understanding of the level of disturbance, or survival of historical and Aboriginal archaeology withinin the Hunter Street West site;

- identify and determine the content, composition, and distribution of the potential sub-surface artefact assemblage;

- collect data that may provide information on past ways of life of the Aboriginal people who created and occupied the landscape, including diet, functional use of spaces and landforms, resource exploitation, and chronology; and

- compare the study area to relevant available archaeological and ethnographic data, in order to contribute to a greater understanding of the Aboriginal history of the local area.

8.6.2.1 Sampling and coverage

An Aboriginal test excavation program along De Mestre Place would be completed pre-Construction, and will provide crucial information about the integrity of natural soil profiles and archaeology.

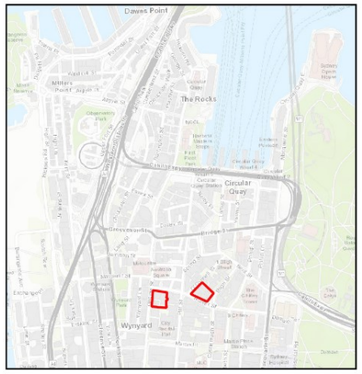
The proposed locations and number of test pits are shown in Figure 124. There are seven test pits, at intervals of 10 m, strategically placed within the lane to avoid anticipated services and historical disturbances. Test pits would be 1 x 1 m (four 50 x 50 cm test pits combined), permitted by the *Code of Practice*, in order to best visualise and understand the site characteristics which are not well understood. The adoption of 1 m^2 test pits would also allow seamless integration with the salvage excavation methodology undertaken during the Pre-Construction and Construction phase.

The test pit locations may be subject to change depending on the actual location of services and results of the historical archaeological investigations. Any relocation or abandonment of test pits would be discussed with Aboriginal representatives on site and historical archaeology Excavation Director.

EXTENT
PEOPLE-CENTRED HERITAGE

Hunter Street

Archaeological testing



0 0.5 1 km

Early historic buildings
- 1840s
- 1830s

Historic test trench
Aboriginal test trench

Drawn by: Brian Shanahan
Checked by: Hannah Morris
Date: 9 May 2022
Projection: GDA 1994 MGA Zone 56
Data Sources: Data: ESRI, ELVIS, Client Nearmap

EXTENT HERITAGE ADVISORS

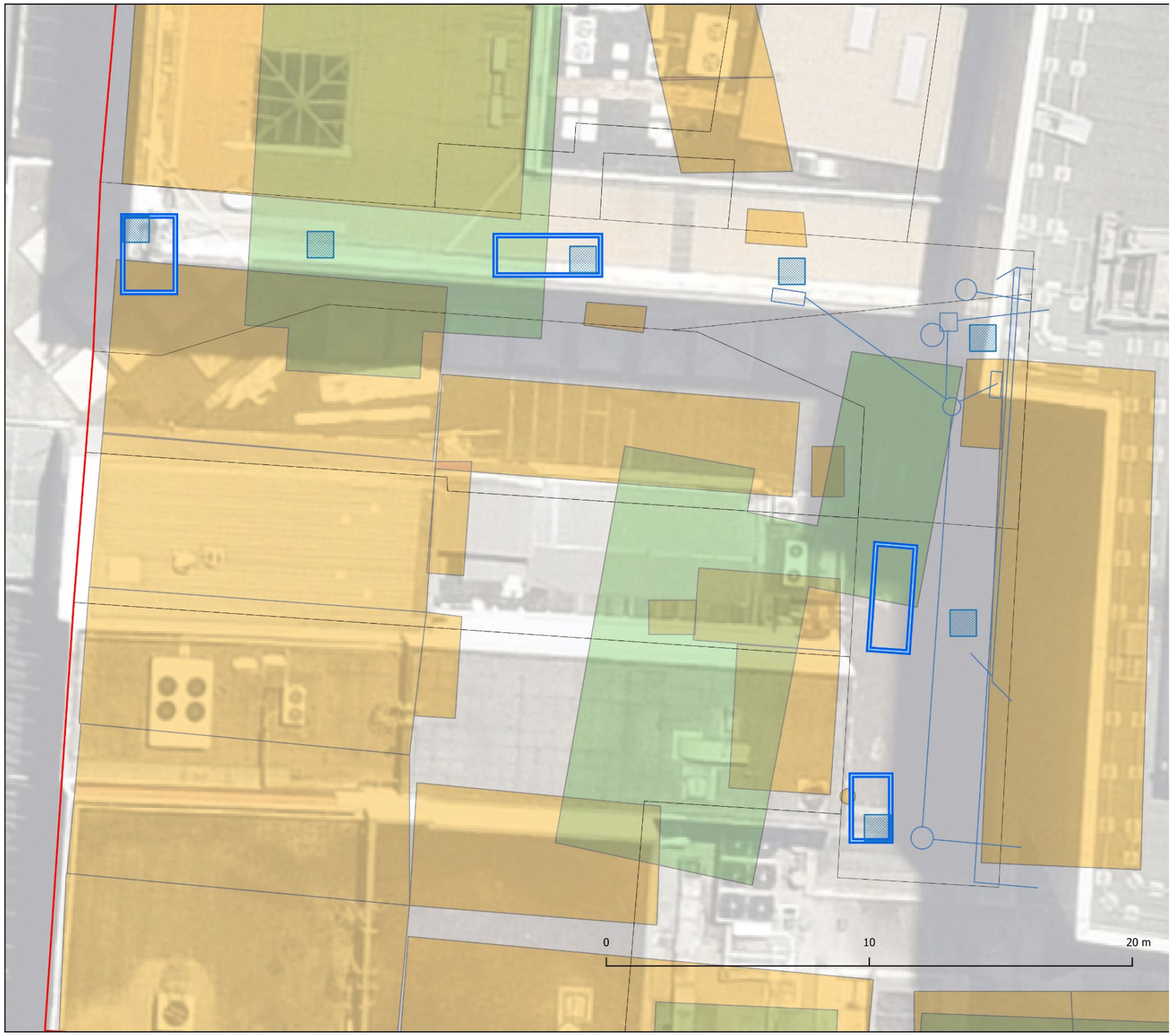


Figure 124. Proposed location of test trenches at De Mestre Place. The Hunters Street West site boundary is outlined in red. *Source*: Extent Heritage 2022.

8.6.2.2 Test excavation methodology

The following methodology would apply to the test excavations at De Mestre Place, undertaken as part of the enabling works at Metro Hunter Street West:

- Archaeological test excavations will be supervised and undertaken by suitably qualified and experienced Aboriginal archaeologists and RAP representatives.
- An RTK will be used to identify the exact location of Aboriginal archaeologist test pits within De Mestre Place. Seven test pits, each measuring 1 x 1 m in size, have been proposed in this area.
- A machine excavator, with the assistance of a saw cutter where necessary, will be used to remove the modern ground surface in the location of the seven test pits. Modern fills capping the natural soil profile may then be removed as a single layer by machine excavator. The machine must be fitted with a flat bucket, unless compacted modern fills or hard surfaces are encountered. A toothed bucket would be used to break up hard surfaces or loosen compacted modern fills.
- Machine excavation will cease when historical archaeological remains or fills, intact natural soil profiles, or B horizon clays or bedrock are identified. These works will be supervised by the Excavation Director.
- A test trench will be strung up where intact natural soil profiles have been identified. Any historical archaeological remains identified in an Aboriginal test trench location will be investigated and managed according to the historical test excavation methodology. Where the features can be effectively investigated and removed to exposed intact natural soil profiles, Aboriginal test excavations will proceed. Where the historical archaeological features require further, more extensive investigations as part of the salvage program, the location of the Aboriginal test trench may be moved or abandoned. Management and/or removal of historical archaeology within an Aboriginal test trench location must be signed off by an Excavation Director.
- All excavations of natural soil profiles will be completed manually with hand tools. All trenches will be excavated in quadrants to enable more accurate geolocation of any artefacts recovered.
- Excavation of the first test pit in an area will occur in 50 mm spits to understand the soil profile. The excavation of subsequent test pits will occur in 100 mm spits or according to stratigraphy, if it is identified.
- All excavated material will be wet sieved through a 3 mm sieve. Any identified Aboriginal objects will be appropriately bagged and labelled with their corresponding trench and spit number, and managed according to the Artefact Management policy outlined in Section 7.11.2.
- If a hearth is identified in situ, the feature will be excavated in a half section, drawn and photographed. A charcoal sample will be taken, where possible, for radiocarbon dating.

- Excavations in each test pits will cease when culturally sterile B horizon clay or bedrock is reached, or when a depth of 1.2 m has been reached for safety.
- If a trench requires excavation to a depth great than 1.2 m, in order to fully excavate the natural soil profile, the following approaches may be adopted:
    - Shoring,
    - Expansion of the Aboriginal test trench or surrounding historical trench to create stepped benching,
    - Temporary abandonment until open area salvage is possible,
    - Abandonment if unsafe, or
    - Abandonment if a significant or representative amount of archaeological and/or micromorphological sampling has been taken.
- Each trench will be recorded with scale drawings, photographs, and written descriptions of the trench locations and soil profiles.
- Expansion of a test trench will be undertaken where a total of 15 or more Aboriginal artefacts are identified in a 1 x 1 m trench. A total of 15 artefacts would be clearly reflective of an occupation deposit that would require further investigation and understanding. Additional justifications for expansion, for example the identification of archaeologically significant artefacts, would be at the discretion of the Excavation Director and RAPs present on site. Expansion will be undertaken as part of the salvage program.
- If large services or significant disturbance are identified within the proposed location of the test trench, the trench may be relocated nearby or to another area identified as containing intact natural soil profiles. If relocation is not possible, the trench may be abandoned. All relocation or abandonment of Aboriginal test trenches will be discussed with the Aboriginal representatives on site and historical Excavation Director.
- If historical archaeological remains are identified in any test trench, works will cease and the Excavation Director will be notified. The feature will then be cleaned up by hand and recorded. The archaeologist will endeavour to expose and identify all significant historic features and deposits.

8.6.3 Outcomes

The purpose of archaeological testing will be to determine if the remains of major significant historic structures relating to the de Mestre occupancy and the later terrace are present within the laneway area. The depth below current ground level to RL could have a bearing for refining the likelihood of archaeology surviving in the areas adjacent to the lane. For example, the main De Mestre house was located just to the west of the laneway where basements appear to be not so deep. Comparison of RL values to the top of any surviving archaeology in the laneway

could be compared with RL values for the basements to determine if they have been cut below the level of adjacent deposits.

8.7 Archaeological monitoring

The integrity of soil profiles and historical archaeological remains within the Metro Hunter Street West and East study areas is presently unknown. As a result, a program of archaeological monitoring will be undertaken during enabling works, demolition, excavation, and construction. Archaeological monitoring will be undertaken by the Primary Excavation Director and/or a qualified archaeologist across all areas marked as having historical and/or Aboriginal archaeological potential across both the Hunter Street West and East construction sites. Areas marked as hold nil archaeological potential can proceed with caution and are subject to the unexpected finds procedure (Appendix A).

- Controlled demolition of existing buildings will ensure potentially intact archaeology is not disturbed by the demolition process. Removal of base slabs and foundations should be done under archaeological supervision. It may be necessary to leave some deeper elements in situ until archaeological investigations or salvage excavation is complete.

- Archaeological monitoring of basement and slab removal should be followed by careful machine removal of any overburden under the direction of the excavation director in order to identify any intact archaeology or early soil horizons. Potential archaeology will be investigated to determine its nature and relationship to the major phases identified in the assessment and ARD.

- Removal of basement slabs may determine if those basements incorporate earlier basement structural elements associated with the 1840s terraces in the southwestern quadrant of the western construction site.

- Although deep impacts associated with basements and subsurface works exist across most of the western site, it is possible that there will be localised preservation of lower building foundations, historic basement fabric associated with the 1840s terraces, in parts of the site.

- Depending on the level of truncation and the underlying drop in landform from west to east on the western site postholes, pits and levelling deposits could be encountered.

- Archaeological monitoring will ensure that machine bulk excavation will take place in a systematic way and to the top of archaeological horizons. Areas that are demonstrated to have been generally cut down to natural subsoil levels may still have the potential to retain deeper historic structures such as wells and cesspits.

The following methodology will be followed during archaeological monitoring works:

- The Excavation Director/s must be contacted prior to when archaeological monitoring is required (Table 14).

- Prior to onsite works commencing, all project staff are to participate in a heritage induction prepared by the Excavation Director/s approved to direct the works. A heritage induction

would inform all of the project team about their obligations with respect to the heritage values of the site and conditions of the Instrument of Approval issued for the works.

- Relevant Health Safety and Environment measures, including work during demolition, electrical/optical cables, moving mechanical equipment, contaminants, and social distancing, should be in place prior to onsite work commencing.
- Mechanical excavation of fill material in the areas containing potential archaeological will be undertaken by a site supervisor or experienced archaeologist under the direction of the Excavation Director. Mechanical excavators would be fitted with a flat bucket unless compacted modern fills or hard surfaces are encountered. A toothed bucket would be used to break up hard surfaces or loosen compacted modern fills.
- Machine excavation will cease at the discovery of historical archaeological remains, relic/s, or deposits, intact natural soil profiles, and/or an Aboriginal object.
- If historical archaeological remains, relic/s, or deposits are encountered, the procedures in 8.9.1 will be followed.
- If Aboriginal object/s or intact natural soil profiles are encountered, the procedures in 8.9.2 will be followed.
- Monitoring of machine excavations will cease when culturally sterile B horizon clays or bedrock are identified. In the location of the Tank Stream, B horizon clays may not reflect the base of archaeologically relevant natural soil profiles. Where the Tank Stream Valley is identified, excavations will cease at the identification of bedrock.
- The extent of any areas containing intact archaeological deposits will be surveyed. Localised test trenches could be excavated to determine the nature, depth and stratigraphic complexity of any in situ deposits. The results of these initial investigations would guide the strategy for salvage excavation.

8.8 Salvage excavations

Open area (salvage) excavations will be undertaken prior to construction and/or during the construction phase. Areas of archaeological potential identified during the monitoring will trigger further investigations. Salvage of historical archaeological remains will involve excavation of larger areas to identify spatial relationships between features and deposits, and to maximise information that may be recovered from the site. Salvage for Aboriginal archaeology will involve additional investigations of intact soil profiles to identify any Aboriginal objects, and expansion of any identified sites to understand their full extent and significance.

8.8.1 Sampling and coverage

8.8.1.1 Metro Hunter Street West: moderate archaeological potential—Tank Stream Valley

Historical investigations

The Tank Stream needs to be treated as a distinct landform. The creek environs are located along the eastern boundary of the western construction site. This was once the topographically lowest part of the site so although basements occupy this area it remains a possibility that intact creek deposits or associated historic occupation, infill or drain structures survive.

Depending on the level of later impacts there remains a possibility that the early creek landform could survive to some degree. Investigation would initially focus on exposing the remains (disturbed or otherwise) of the later drain phases, any stone revetments or retaining walls and any undocumented structural elements or fencing associated with bounding or retaining the creek.

Historic fill or levelling deposits would be excavated and removed to reveal the earlier landform. Timber or stone revetments would be exposed and documented, should the exist. The sequence of creek deposits would be investigated for both Aboriginal and historical archaeological potential. Depending on the extent and depth of any creek landform, fills and structures exploratory test trenches could be inserted to characterise the remains and to provide information to refine more extensive excavation, geomorphological and palynological investigations. Given the possibly complex nature of the creek and landform this would be managed and integrated with the Aboriginal investigations.

Largescale exposure, excavation and recording of historical structures, fills and deposits would be undertaken in order to expose any intact early landforms. This would facilitate subsequent Aboriginal test excavations.

Aboriginal investigations

The Tank Stream Valley along the eastern boundary of the study area has been determined to hold moderate archaeological and environmental potential. Predictive modelling suggests that the Aboriginal archaeological record will comprise isolated artefacts and discrete artefact scatters rather than evidence of occupation or knapping sites. Intact soil profiles, however, should be investigated to prove this theory.

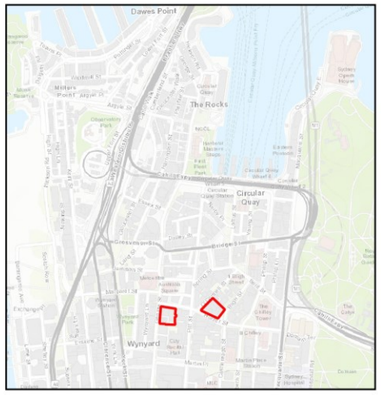
Identification of intact natural soil profiles (most likely C horizon) will trigger further Aboriginal archaeological investigations. If natural soils are identified along the entire, or a substantial length, of the Tank Stream then test trenches should be placed at intervals of 10 m along the length of the Valley. This would allow for approximately 5 test trenches to be placed, north to south, along the eastern boundary of the study area. A suggested location of test trenches can be found in Figure 125.

If discrete pockets of natural soil profiles are identified, a test trench should be placed in each area. A density of approximately one test trench every 10 m should be followed. The exact locations of each trench will be subject to the extent of the soil profiles and must be discussed with Aboriginal representatives on site and the Excavation Director.

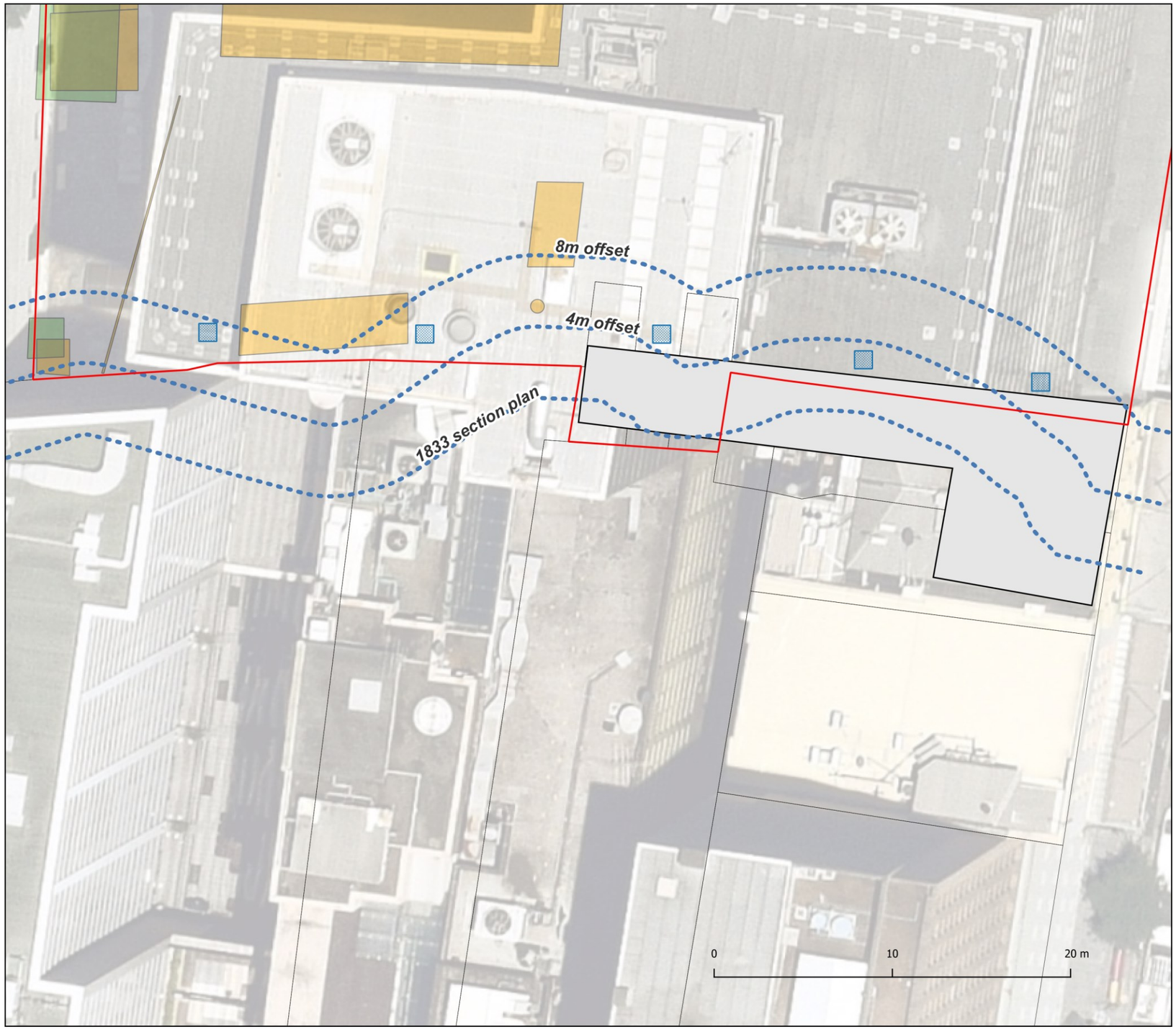
EXTENT
PEOPLE-CENTRED HERITAGE

Hunter Street

Archaeological testing



0 0.5 1 km



Construction sites
Tank Stream with offsets based on 1830s section plan

Early historic buildings
1840s
1830s

Aboriginal test trench

Drawn by: Brian Shanahan
Checked by: Hannah Morris
Date: 9 May 2022
Projection: GDA 1994 MGA Zone 56
Data Sources: Data: ESRI, ELVIS, Client
Nearmap

EXTENT HERITAGE ADVISORS

Figure 125. Potential location of test trenches if substantial soil profiles associated with the Tank Stream Valley are identified. *Source*: Extent Heritage 2022.

8.8.1.2 Metro Hunter Street West and East: low to moderate archaeological potential

Historical investigations

Historical archaeological remains identified during monitoring will be salvaged in accordance with the procedures outlined in Part 7.9.

Aboriginal investigations

Identification of natural soil profiles (most likely A horizon) will trigger further Aboriginal archaeological investigations. If substantial areas of natural soils are identified test trenches should be placed on a grid at intervals of 10 m. This density is highly likely to capture any evidence of Aboriginal occupation or knapping sites located along the Tank Stream banks and, as a result, will produce an in depth and conclusive investigation of Aboriginal archaeological in the area. Moreover, this density has been proposed as it is anticipated that several test trench locations will have to be abandoned due to historical and modern disturbances.

If discrete pockets of natural soil profiles are identified, a test trench should be placed in each area. A density of approximately one test trench every 10 m should still be followed. The exact locations of each trench will be subject to the extent of the soil profiles and must be discussed with Aboriginal representatives on site and Excavation Director.

Works can proceed with caution in areas assessed as having nil Aboriginal archaeological potential. However, the identification of natural soil profiles in the area marked as having unknown potential will also adhere to this methodology.

8.9 Salvage excavation methodology

The following standard archaeological procedures would be followed throughout all stages of archaeological works:

8.9.1 Historical archaeology

- The nature and extent of any open area salvage excavations would be determined by the results of archaeological testing and by investigations following monitoring of basement and foundation slab removal.
- Areas of potential archaeological structures and deposits would be fully exposed in extent and recorded.
- The nature, date and significance of the archaeology would be determined through excavation.
- Features and structures would be recording using a single context system and artefacts would be recorded per context to facilitate post excavation analysis.
- Archaeological features would be recorded through measured drawing and planning, and by photogrammetry where necessary.

- In the event that intact soil deposits associated with the state significant archaeology (e.g. underfloor or yard deposits and deposits accumulated over hard surfaces, etc.), are identified, they will be gridded and sieved. The nature and extent of a deposit would dictate the size of the grid squares; for example, 1 m x1 m grid squares would be used for the yard areas, and 0.5 m x 0.5 m grid squares would be used for underfloor deposits and occupation deposits accumulated over hard surfaces.

- Where possible, excavations of deposits and fills in cisterns and/or well features will be undertaken stratigraphically. However, if no clear stratigraphy can be identified, arbitrary spits may be adopted to ensure that material is kept in its depositional sequence. Material should be sieved through a 3 or 5 mm sieve.

- Soil samples of historical garden beds, significant yard areas and/or intact refuse debris are to be collected for description, sedimentological, paleoenvironmental and chronological analysis.

Salvage excavation would focus on the following major phases:

Terraces 1840s onwards

- Expose and removal any associated demolition debris

- Reveal wall footings or postholes relating to main terraces, outbuildings, steps and stairwells, or other structures.

- Establish if underfloor deposits are present in any building or structure

- If so, they would be recorded by property, building, room and grid square if appropriate.

- Locate areas of exterior activities such as rubbish pits, garden features, pathways or landscaping.

- Identify cesspits associated with privies. Given the predicted levels of disturbance across most of the site, deeper cesspits are likely to provide the greatest opportunity to recover sealed sequences of artefactual, faunal and environmental data relating to specific properties or households.

De Mestre estate and early properties

- There is a reasonable likelihood that archaeological remains relating to the De Mestre estate will survive.

- Significant elements of two early buildings were located within what is now the laneway. Earlier archaeological testing will have determined the nature and extent of these archaeological remains.

- The deeper basement foundations are likely to have created deeper impacts elsewhere so particular attention will be required to extract precise spatial, stratigraphic and artefactual data from potentially fragmented and dislocated archaeological evidence so as to facilitate post excavation analysis of occupation phases.

- Stratified and well-preserved remains would facilitate comparative analysis of the De Mestre buildings and their chronology and sequence of construction
- Recovery of underfloor deposits, or sealed deposits from pits, wells and cesspits would facilitate more fine-grained analysis and comparison of the early households.
- Truncated postholes, wall foundations, or foundation trenches and drains will be recorded in detail and mapped precisely to create detailed overlays that may facilitate determination of early use of space across the site. Identifying and precisely recording these features will facilitate post-excavation analysis and particularly for identifying occupation elements or structures that are not documented on historic maps and plans.
- Establish if there are traces of gardens, landscaping and fencing.
- A well and a double privy are associated with the early De Mestre household. If they survive, even in truncated form they will offer the opportunity to recover sealed artefactual assemblages relating to the pre 1840s households.
- Investigations should determine if there is evidence for one or more phase of early land reclamation between the houses and the Tank Stream

Early historic occupation

- Early occupation of the land grants could include evidence for land clearance such as tree boles or fencing.
- There remains a possibility for undocumented cottages or buildings.
- Traces of early occupation is likely to be ephemeral and to interface with early soil horizons that could retain evidence for Aboriginal occupation.
- Identification of early soil profiles will facilitate Aboriginal test excavation.

8.9.2 Aboriginal archaeology

The following methodology will be utilised where the identification of intact natural soil profiles has triggered additional Aboriginal archaeological investigations:

- Aboriginal pits and/or trenches will be placed in intact natural soil profiles at a density of approximately one trench per 10 m.
- An RTK will be used to mark out the location of identified Aboriginal trenches (at intervals of 10 m). Each trench will measure 1 x 1 m in size.
- All excavations of natural soil profiles will be completed manually with hand tools. All trenches will be excavated in quadrants to enable more accurate geolocation of any artefacts recovered.

- Excavation of the first test pit in an area will occur in 50 mm spits to understand the soil profile. The excavation of subsequent test pits will occur in 100 mm spits or according to stratigraphy, if it is identified.

- All excavated material will be wet sieved through a 3 mm sieve. Any identified Aboriginal objects will be appropriately bagged and labelled with their corresponding trench and spit number, and managed according to the artefact management policy outlined below.

- If a hearth is identified in situ, the feature will be excavated in a half section, drawn and photographed. A charcoal sample will be taken, where possible, for radiocarbon dating.

- Excavations in each test trenches will cease when culturally sterile B horizon clay or bedrock is reached, or when a depth of 1.2 m has been reached for safety. In the location of the Tank Stream, B horizon clay may not represent the base of archaeologically relevant natural soil profiles. Where the Tank Stream Valley is identified, excavations will cease at the identification of bedrock.

- Expansion of a test pits/trench will be undertaken where a total of 15 artefacts or greater are identified in a 1 x 1 m trench. Expansion will comprise excavating additional 1 x 1 m trenches abutting the edges of the initial trench in order to understand the full extent of an artefact scatter. The expansion of a trench will continue until the extent of the site has been reached (a maximum of 3 artefacts per m^2 is identified) or a representative sample of the feature has been recorded.

- Expansion may also be undertaken if other features such as hearths or shell middens are identified. Expansion will cease when the extent of the features or site have been reached, or when a representative sample of the feature type has been recorded.

- Additional trenches may be placed in areas where significant Aboriginal objects have been identified. This will be discussed with the Aboriginal representatives on site and the Excavation Director.

- Each trench will be recorded with scale drawings, photographs, and written descriptions of the trench locations and soil profiles.

- The location of Aboriginal trenches will avoid historically significant archaeological remains, until they have been appropriately managed, and services.

8.10 General excavation methodology

- Prior to onsite works commencing all project staff are to participate in a heritage induction prepared by the Excavation Director/s approved to direct the works. Heritage induction would inform the project team about their obligations with respect to the heritage values of the site and conditions of the Instrument of Approval to be issued for the works.

- Relevant Health Safety and Environment measures including work during demolition, electrical/optical cables, moving mechanical equipment, contaminants and social distancing should be in place prior to onsite work commencing.

- Based on the study area's potential to contain evidence of both historical and Aboriginal occupation, a holistic approach would be adopted by the Excavation Director who would ensure the archaeological personnel involved in the projects is experienced in the management and identification of both Aboriginal and historical archaeological resources.
- This is particularly relevant to the any surviving deposits bearing evidence of the contact period and the upper portions of the eighteenth-century landscape that have the potential to contain physical evidence of concurrent Aboriginal and non-Aboriginal occupation of the site. In this instance the material would be managed as both a historical and Aboriginal resource until it becomes clear that the deposits pre-date 1788 at which point the material is managed as a purely Aboriginal resource.
- The Excavation Director/s will oversee all phases of works including protection, monitoring, further investigation and salvage of significant archaeological remains. Excavation works would be undertaken under archaeological supervision until a location has been identified as archaeologically sterile.
- The Excavation Director is responsible for overseeing compliance with the ARD by all parties, including the archaeological team, excavation and civil construction contractors, and in consultation with Sydney Metro. Excavation Director/s must be a qualified and experienced historical archaeologist who meets the Excavation Director criteria outlined by Heritage NSW for excavation and management of State heritage listed sites and places.
- Physical protection measures will be developed for the areas with significant extant heritage items (Skinner's Hotel and Tank Stream) are located.
- Historical Excavation Director/s should be responsible for all phases of archaeological management, to ensure a seamless and holistic management.
- Mechanical excavation of fill material in the areas containing archaeology will be directed by the Excavation Director/s. Mechanical excavators would be fitted with a flat bucket unless compacted modern fills or hard surfaces are encountered. A toothed bucket would be used to break up hard surfaces or loosen compacted modern fills.
- Specialists such as a geo archaeologist, geomorphologist and/or palynologist would be engaged during the project depending on the integrity of exposed soil profiles.
- Once archaeological remains have been identified, further excavation would be undertaken manually, using shovels, mattocks and trowels, etc, by the archaeologists.
- Aboriginal objects will be managed in accordance with methodology outlined in this ARD.
- Adequate time should be allowed for archaeological recording of all stages of ground disturbance work, and any archaeological remains that may be exposed.
- Significant archaeological remains would be recorded in detail prior to their removal (see section below).

- In the unlikely event that human remains are discovered in the course of the works, the *Coroners Act 2009* requires that all works should cease, and the NSW Police and the NSW Coroner's Office should be contacted. If the remains do not fall within the terms of the Coroner's Act (2009) an Archaeological Management Plan will need to be formulated in order to determine the nature of approvals required for managing the remains, both in the short-term (site works) and long-term. Should the remains prove to be Aboriginal in origin, notification of Heritage NSW, Department of Cabinet and Premier and the Local Aboriginal Land Council would be required. Notification should also be made to the Commonwealth Minister for the Environment, under the provisions of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984.*

8.10.1 Isolated Aboriginal artefacts

Where isolated Aboriginal object/s are identified during monitoring works, historical investigations, and in the case of unexpected finds, the following methodology will be utilised:

- The qualified Aboriginal archaeologist and any Aboriginal representatives on site must be notified of the discovery.
- The location of the artefact must be recorded using an RTK or similar survey equipment.
- The artefact will be managed and bagged in accordance with the artefact management procedure outlined in Part 7.10.2 (page 177).
- If the object is identified in a disturbed fill unit or sealed historical unit such as in a well or cistern, no further Aboriginal excavation would be undertaken and works may proceed with caution.
- If a natural soil profile is identified within the vicinity of the object, the salvage may be triggered (Part 7.8.1, page 170).

8.10.2 Environmental archaeology methodology

Identification of either intact natural soil profiles or undisturbed sedimentary deposition sequences will trigger a programme of environmental sampling including soil micromorphology, palynology, particle size analysis, phytolith, plant macrofossil and microcharcoal sampling. Additionally, radiocarbon and optically stimulated luminescence dating will be employed where suitable material occurs. Samples should be collected from one representative sequence or soil profile if multiples of the same profile are encountered throughout the test excavation.

If hearths are discovered during test excavation, bulk sediment samples will be collected for charcoal identification and for flotation for seeds and plant macrofossil recovery. Charcoal from within the hearth will be collected for AMS radiocarbon dating.

Soil micromorphology will be employed to gain insight into both the microstratigraphic sequences of the sediment, as well as the paleoenvironmental context through descriptions of soil morphology and environmentally-driven features.

The combination of palynology with phytolith and plant macrofossil analyses will be used to better understand the regional vegetation environment of the Tank Stream catchment. Previous palynological studies reported poor pollen recovery, therefore supplementing this analysis with phytolith/plant macrofossil analysis will increase the likelihood of meaningful data. All pollen samples should be interpreted as reflective of the broader regional environment due to the large distances pollen travels prior to deposition. Phytolith and plant macrofossil samples obtained from buried soil horizons may be used to interpret the local vegetation mosaic, however where alluvial sediment contributions are demonstrable, these should be reflective of the Tank Stream catchment environment.

Microcharcoal analyses will be employed to develop a picture of past fire regimes in the region, contributing to a growing body of evidence for Aboriginal land management systems and environmental change.

Particle size analysis will be used to understand the hydrological regime of the Tank Stream. Variations in particle size reflect differences in depositional energy and can be used to interpret flow dynamics, flood intensity and frequency.

Sampling

Soil micromorphology sampling will occur where intact soil deposits are identified, as well as where undisturbed sedimentary sequences are identified. Micromorphology sampling will consist of collecting intact sediment blocks (roughly 10 x 15 cm) taken contiguously throughout the vertical section. Blocks should be excavated out of the vertical section and collected in semi-rigid foil sampling containers, wrapped in cling film and taped to preserve the structural integrity of the sample. The orientation of blocks will be clearly marked on the outside of the containers and all provenance details clearly labelled.

Palynological, phytolith/plant macrofossil and microcharcoal samples will be collected as single bulk sediment samples of approximately 250g at 10cm increments throughout preserved soil profiles and undisturbed sedimentary sequences. Samples will be collected from the vertical sections (adjacent to soil micromorphology samples) and stored in unused clip-lock bags. These samples will be sub-sampled for individual analyses depending on sample preparation procedures required.

Particle size analysis samples will be collected as bulk sediment samples at 2cm increments throughout the entirety of the exposed profile where undisturbed sedimentary sequences are identified. Samples should be clearly labelled with their respective depths and stored in clip-lock bags.

Where humic or charcoal rich discrete sediment lenses occur, samples will be taken in clean foil for radiocarbon AMS dating. Large pieces of charcoal will be collected separately and dated directly, while humic and charcoal rich sediments may be taken as bulk samples for later processing.

Optically stimulated luminescence samples will be taken throughout the vertical profile of identified undisturbed sedimentary sequences. Samples will be taken in opaque grey PVC tubing with both ends sealed and stored in light tight bags.

Laboratory Analyses and Research Outputs

Laser Particle Size Analysis

Laser Particle Size Analysis (LPSA) will be prepared and analysed by Stephen Gale (geomorphologist, Geosciences) using a laser diffraction method with a Malvern Mastersizer 2000. Sediment particle sizes and statistical distribution will be calculated for each sample and will be interpreted by Ian Ostericher (Extent Heritage) specifically for determining changes in depositional energy and mechanism (Vandenberghe, 2013). These findings will be reported in conjunction with the soil micromorphological study.

Soil Micromorphology

Soil micromorphology will be employed to examine the microstratigraphic sequence of the deposits. Samples will be oven dried at 105 degrees C for 24 hours and impregnated with a polymer resin before being manufactured into 30 µm-thick thin-sections. Thin-sections will be visually analysed using a light microscope and described according to academic standard convention (Bullock et al. 1985; Stoops et al. 2003) by a suitably qualified micromorphologist.

Palynology

Bulk sediment samples will be processed to isolate pollen grains for identification and counting by a suitably qualified palynologist. Laboratory methods may be chosen for the specific samples by the palynologist at their discretion. Pollen and spore samples will be identified and counted using an optical microscope or high resolution histological slide scanner, the results of which will be interpreted in tandem with the plant macrofossil and microcharcoal datasets.

Phytolith Analysis

Subsamples of 20g of sediment will be removed from the bulk sediment samples. Subsamples will be processed to remove calcium carbonates using a dilute acid wash, and organics by using a hydrogen peroxide wash. Residual sediment of greater than 500 µm (medium sand particles and larger) and that less than 2 µm (the clay fraction) will be removed by filtration (Rosen, 2008). The remaining silt and fine sand mineral fraction will be floated in heavy density liquid to separate the phytoliths. Phytolith residue will then be washed and mounted on a microscope slide for identification and counting by a suitably qualified phytolith analyst.

Plant Macrofossil Analysis

Bulk sediment samples will be subsampled by removing 25 cm^3 for macrofossil analysis following Birks, 2017. Precise sample volume will be calculated by water displacement, unless samples are dry in which case dry weight will be used. Samples will be treated with sodium pyrophosphate to disaggregate samples with high clay content. Carbonates will be removed with a dilute acid wash prior to sieving out fine mineral fraction. Remnant materials will be analysed under an optical microscope for identification and counting by a suitably qualified macrofossil specialist.

Microcharcoal Analysis

A subsample of 0.2 g of sediment from the collected bulk sediment samples will be processed using a series of hydrogen peroxide digestions and filtration to isolate charcoal fragments

following Rhodes, 1998. Residual charcoal will be counted and measured using a light microscope with total charcoal counts serving as a proxy for regional fire presence in that stratum. Analysis will be conducted by a suitably qualified microcharcoal analyst.

8.10.3 Unexpected heritage finds procedure

Sydney Metro developed an unexpected heritage finds (UHFP) procedure in consultation with Heritage NSW. The UHFP details the actions to be taken when a previously unidentified and/or potential Aboriginal and/or historical heritage item/object/site is found during construction activities.

This procedure is applicable to all activities conducted by project personnel that have the potential to uncover an Aboriginal and/or historical heritage artefact/item/object/site. It is attached as Appendix A.

In consultation with Heritage NSW, Sydney Metro developed an exhumation management plan (Appendix B). The procedure provides guidance for the management of discoveries of human skeletal remains in both unexpected and controlled investigations.

As with the UHFP, the exhumation management procedure is applicable to all stages of the Sydney Metro project. The exhumation management procedure should be read in conjunction with the unexpected heritage finds procedure.

The procedure is attached as Appendix B.

8.10.4 Procedure for the discovery of human remains

If any suspected human remains are identified during the completion of the excavation program, the following actions will be followed:

- Cease all excavation activity.
- Notify NSW Police.
- Notify Heritage NSW via the Environment Line on 131 555 to provide details of the remains and their location.
- Excavation activity will not recommence unless authorised in writing by Heritage NSW.

Aboriginal burials which occur outside of designated cemeteries are protected under the *National Parks and Wildlife Act 1974*, and should not be disturbed. Non-Aboriginal human remains with heritage value are considered a relic under the Heritage Act 1977 (NSW) and must be managed in accordance with this legislation.

8.11 Recording

8.11.1 Site recording

Once exposed, archaeological remains would be recorded in accordance with archaeological best practice as follows:

- All archaeological features and deposits will be allocated their unique context number and recorded in detail on pro-forma context sheets. The site documentation should include a context register, context sheets, photo and site plan logs.
- Where any archaeological remains are exposed, measured drawings—including relative levels and GPS location—would be provided. A site datum, keyed to Australian Height Datum (AHD) would be established to record the levels of extant deposits and features. These would be keyed into the measured site plan.
- Photographic recording of all archaeological features and phases of onsite works would be undertaken, using a scale bar and north arrow.
- Digital recording techniques will also be used to complement traditional methods where appropriate. This approach could include topographic survey with DGPS or total station and photogrammetric recording of archaeological features and early landforms. The resulting 3D digital data would enhance the site archive and provide the basis for further spatial analysis, visualization and interpretation.
- Significant soil deposits will be recorded with reference to the Munsell soil chart.
- For human skeletal remains the level of recording, as a minimum, must comply with standards set out in *Skeletal Remains; Guidelines for Management of Human Skeletal Remains*, NSW Heritage Office (1998).

8.11.2 Artefact management

- Any artefacts retrieved during the on-site works will be collected, cleaned, and catalogued in accordance with the investigation methodology recommended in this report and best archaeological practice. Bulky types, such as building materials, may be sampled.
- If significant amounts of historical artefacts are encountered during the investigations, the Excavation Director/s may determine that only samples are to be collected. This would especially relate to artefacts that are considered non-diagnostic, artefacts that date to periods of local archaeological significance, and bulky types such as building materials. The remaining artefacts may be discarded. However, the general types and amounts should be accurately recorded in the site paperwork. This procedure does not apply to relics of State significance and Aboriginal artefacts.
- Any artefacts retrieved would be provenanced according to their contexts.

- Aboriginal objects that are identified in historical horizons will be fully recorded in the historical archaeological field documentation including their location, depth, matrix, etc. Once recorded, they will be handed over to the Aboriginal excavation team for further processing and analysis by a lithic specialist.

- Artefacts will be bagged in suitable polyethylene bags, tagged with labels and put in an agreed temporary secure storage location.

- All artefacts will be retained for analysis during the post excavation phase of archaeological works in order to fully answer the research questions that guide the archaeological investigation. This analysis would take place off site and would be conducted by various qualified specialists. The results of the analysis would be included as part of a final report.

- Analysis of Aboriginal lithic artefacts will include recording of key attributes of material, artefact type, platform type, and dimensions, as well as photographic records of representative artefacts. All recorded information would be entered into a Microsoft Excel spreadsheet with detail linked to the provenance of each artefact. Once entered into the Excel spreadsheet, the data can be readily supplied with the test excavation report to Heritage NSW and registered Aboriginal stakeholders in both electronic and hard-copy form.

- Once test excavation has been completed, all recovered Aboriginal objects and historical artefacts recovered will be securely stored.

- Options for long-term management of retrieved Aboriginal objects will be discussed with registered Aboriginal parties.

- At the conclusion of the archaeological post excavation analysis, the historical artefacts will be handed over to the client for permanent curation.

8.11.3 Post-excavation reporting

A preliminary report detailing the results of the archaeological test excavation and salvage program would be prepared once excavation and artefact recording activities of a completed stage are conducted. It is anticipated that several preliminary report for different areas of the site and phases of archaeological works will be prepared. Preliminary report(s) should be prepared within three months of completion of a stage of works.

The results of the preliminary reports will be consolidated in a final excavation report that will be prepared at the completion of the entire archaeological program.

The preliminary report should include a summary of the archaeological results, preliminary phasing and artefact research priorities, recommendations for the scope of the post excavation analysis and specialist inputs required to respond to research questions in this ARD and comply with any relevant Conditions of Approval.

Two final excavation reports, one discussing Aboriginal and the other discussing non-Aboriginal archaeology on completion of the archaeological program. The report formats will follow Heritage NSW legislation and recommendations. Any additional monitoring works or salvage works undertaken after the production of these reports can be included as addendums.

The excavation reports would provide details on the extent, significance, and interpretation of any objects and features, recommendations for the detailed design stage of the project and the necessity of any conservation measures, and identify areas of clearance where construction can proceed (while following the UHFP).

The final excavation reports would at a minimum include:

- a Plain English summary
- a description of the results of the investigation, including a discussion of the nature of the archaeological remains recorded;
- a response to the research questions raised in this report;
- the results of any post-excavation analysis undertaken, including artefact or sample analysis. Description of any Aboriginal objects retrieved from historical contexts, their location, concentration and provenance will be included and discussed in both the Aboriginal and non-Aboriginal excavation reports;
- site records, including artefact catalogues, measured drawings and photographs, where appropriate;
- conclusions relating to the nature and extent of surviving archaeological remains;
- identification of the repository for material recovered from the site;
- recommendations for future management of the site; and
- identification of opportunities for interpretation of archaeological finds.
- The final archive of archaeological material should consist of all site records produced throughout the physical investigation, that may include context sheets, artefact sheets, photographs, drawings and artefacts (inventoried, boxed, labelled and catalogued).
- The final historical and Aboriginal excavation reports should be prepared within 12 months of the completion of onsite archaeological program. The historical archaeological report should include information on any Aboriginal objects that may be found within the historical horizons.
- Copies of the final report would be lodged with Sydney Metro, Heritage NSW, and the City of Sydney.

8.11.4 Site recording form

Following the completion of the archaeological excavation program, artefact analysis, and reporting, an update to the AHIMS database will be lodged where necessary.

8.11.5 Consultation

Consultation with the registered Aboriginal stakeholders would continue throughout the life of the project, as necessary. Ongoing consultation with registered Aboriginal stakeholders will take place throughout all facets of the project, including reburial of retrieved artefacts and in the event of any unexpected Aboriginal objects being identified during works. representatives of the RAPs will participate in the fieldwork investigations.

8.11.6 Team

All archaeological investigation works would be directed by experienced Excavation Director/s, who would be assisted by senior site supervisor, and a team of assistant archaeologists and a site planner, who would be equipped with a knowledge of both historical and Aboriginal archaeologies.

8.12 Heritage Interpretation

The significance of the site and potential archaeological resource, as well as the high-profile nature of the key transport node being constructed here, creates an important opportunity for heritage interpretation.

The *Sydney Metro West Line-Wide Heritage Interpretation Strategy* (Extent Heritage 2021) provides an overarching direction for interpretation along the line as a whole, as well as key recommendations for individual stations and precincts. The strategy identified the line wide theme of 'Salt water to fresh water', and an additional three sub-themes to be adopted at each station ('Country', 'People and Community' and 'Working Lives'). Key stories under each of these themes were identified for individual stations. The stories identified for the Hunter Street sites, and the potential for archaeological resource to contribute to them through the interpretative outcomes are presented in the following table.

Table 15. Themes, stories and potential devices for heritage interpretation connecting to the potential archaeological resource.

Theme	Key story	Interpretative potential
Salt water to fresh water	Flooding the ancient river valley: environmental change and cultural adaptation.	Archaeological evidence from the site has the potential to contribute to this storyline by enhancing understandings of environmental and landscape change over time.

Country	Warrang: how the harbour has shaped life and culture here from Deep Time to the present.	Archaeological evidence from this site is unlikely to contribute substantially to this storyline, which is based on the broader context and history of the place, rather than surviving relics.
	The Tank Stream: stories of its use by Aboriginal communities and colonial development around the Hunter St precinct specifically.	Archaeological evidence from the site has the potential to contribute to this storyline by enhancing understandings of environmental and landscape change over time. Any evidence of people's use of the Tank Stream could be incorporated into interpretation.
	The Bennelong Drain: early infrastructure, environmental change and modification.	Archaeological evidence from this site is unlikely to contribute substantially to this storyline. The Bennelong Drain is not located on the site, but is relevant for interpretation due to close proximity.
	Urban futures: high rise development, the demolition of heritage structures and the 'Green Bans.'	Archaeological evidence from this site is unlikely to contribute substantially to this storyline, which is based on the broader context and history of the place, rather than surviving relics.
People and Community	Gadigal County: stories celebrating culture and language from deep time to the present.	Archaeological evidence from the site has the potential to contribute to this storyline. Any Aboriginal archaeological evidence would create a tangible connection to the story, demonstrate lifeways and culture here over many millennia.
	Hearth and home to business hub: the transformation of the area and the role it has played for people in the city.	Evidence relating to residences, workshops and businesses from nineteenth century phases on the site could contribute to stories and interpretation, highlighting change in the community and economy of the local area over time.
Working Lives	Local businesses and a changing city: Skinner's Hotel, and early stories of small business in the neighbourhood.	As above, evidence relating to residences, workshops and businesses from nineteenth century phases on the site could contribute to stories and interpretation, highlighting change in the community and economy of the local area over time.
	Business and banking: the development of the financial	Any evidence relating to the De Metre estate and counting house, and early

	precinct and the changing economy.	banking in the area could contribute to this storyline.
	Meet the press: the story of the *Sydney Morning Herald* and its role in the city.	Archaeological evidence from this site will be unlikely to contribute to this storyline, which is located nearby, but not in the area to be impacted.

8.12.1 Public archaeology and interpretation opportunities

The *Sydney Metro West Line-Wide Heritage Interpretation Strategy* (Extent Heritage 2021) also identifies potential devices for the Hunter Street CBD station. While archaeological evidence may contribute to storytelling across a range of devices (such as public art, timelines, design and so on), devices with particular relevance to archaeology are as follows:

Table 16. Potential interpretive devices, programming and opportunities for archaeology at the site.

Device	Potential use and considerations
Signage	Signage could be used to convey more detailed information relating to the archaeological evidence and excavations on site. Technical reporting can be used as the research basis for engaging and publicly accessible content. If important finds are made during excavations consideration should be given to site photography that could be used in signage if relevant and engaging.
Digital media	Digital content could be used for animations of landscape change over time on screens in stations, or on a website. Consideration could be given to digital recording techniques (such as photogrammetry), that would allow site reconstructions to be incorporated into future interpretive content.
Artefact and open displays	Aboriginal and historical artefacts found at the site could be used in artefact displays if engaging, relevant and culturally appropriate.
Events and programming	Open days and site tours create an important opportunity for members of the public, school groups and stakeholders to engage with the archaeological process. If substantial remains are found and safe access can be facilitated, open days and site tours could be a priority and important interpretative outcome. Talks and other events at public or industry forums could also be considered if substantial evidence is found on the site.
Publications	Depending on the results of the excavations, publications of the findings should be considered. These could be professional and industry relevant publications, academic papers, or more publicly accessible and engaging to a wider audience as appropriate.

9. Conclusions and recommendations

- This Archaeological Research Design report has been prepared to close the research gaps identified in the previous archaeological reports on Aboriginal and historical archaeological resources that may still survive within the Sydney Metro Hunter Street Station study area, and to provide reassessment of archaeological potential and its significance for identification of appropriate mitigation measures to minimise development impacts. The report also provides a detailed archaeological research framework and excavation methodology to guide the management of archaeological resources pre or during bulk excavation works on site.

- Construction of the Sydney Metro Hunter Street Station involves significant excavation of the greater part of the site's footprint, in some area up to 31m deep.

- The nature of the construction works will require the total removal of any archaeological remains within the deep excavation zones with the exception of two State heritage listed sites: the Skinner's Family Hotel (SHR # 00584) and the Tank Stream (SHR #0063) located along the eastern edge of the western construction site.

- The Sydney Metro Hunter Street Station study area has generally low to moderate potential to contain evidence of both Aboriginal and non-Aboriginal (historical) phases of occupation.

- The Aboriginal community consultation undertaken as part of the existing ACHAR for the Metro Hunter Street study areas (Artefact 2021b) has determined some important cultural values for the study areas. The importance of traditional cultural knowledge, passed down by oral traditions through the generations has also been noted (Artefact 2021b, 70), as well as continued connection to Country and knowledge.

- With respect to historical archaeology any physical remains surviving from the period before 1800 would have significant research potential and would be regarded as State significant.

- On the Hunter Street West site any substantially intact archaeological remains related to John Riley and Prosper de Mestre would have high research value with the potential to address questions of class and commercial activity and as such would be State significant.

- Physical evidence of management and modification of the Tank Stream prior to the major works undertaken in the 1870s would have high research value as would any techniques employed in building construction within the immediate vicinity of the stream; such remains may be of local or State significance depending upon date and nature of the remains.

- On the Hunter Street East site the developmental history of the block is not well understood for the period before 1830. The site was occupied by eight leases before 1820 and any archaeological material associated with this period may assist in determining the nature of occupation with greater accuracy. These remain would have high research value and would be of State significance.

- In the event of unexpected finds and/or human remains are uncovered, the Sydney Metro unexpected heritage finds procedure (UHFP) and Sydney Metro exhumation management procedure should be followed.
- There is an important opportunity for the archaeological investigations and potential resource to connect to the heritage interpretation proposed for the project, and to achieve best practice public archaeology outcomes.

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Appendix A. Unexpected heritage finds procedure

Sydney Metro Unexpected Heritage Finds Procedure

[SM-18-00105232]

Sydney Metro Integrated Management System (IMS)

Applicable to:	Sydney Metro
Document Owner:	Author/Document owner
System Owner:	IMS element owner (generally a member of the Executive)
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1. Purpose

This procedure is applicable to the Sydney Metro program of works including major projects delivered under Critical State Significant Infrastructure Planning Approvals (CSSI), early CSSI minor and enabling works and works that are subject to the NSW Heritage Act (1977) including s57/139 and s60/140 exemptions and permit approvals.

This procedure has been prepared for Sydney Metro programs to provide a method for managing unexpected heritage items (both Aboriginal and non-Aboriginal) that are discovered during preconstruction (pre-Construction Heritage Manage Plan approval), construction phases (post Construction Heritage Manage Plan approval) and for works subject to the NSW Heritage Act (1977).

An 'unexpected heritage find' can be defined as any unanticipated archaeological discovery, that has not been previously assessed or is not covered by an existing approval under the Heritage Act 1977 (Heritage Act) or National Parks and Wildlife Act 1974 (NPW Act).

In NSW, there are strict laws to protect and manage heritage objects and relics. As a result, appropriate heritage management measures need to be implemented to minimise impacts on heritage values; ensure compliance with relevant heritage notification and other obligations; and to minimise the risk of penalties to individuals, Sydney Metro and its contractors. This procedure includes Sydney Metro's heritage notification obligations under the Heritage Act, NPW Act and the Coroner's Act 2009 and the requirements of the conditions of approval(CoA) issued by NSW Department of Planning and Environment.
Note that a Contractor must not amend the Sydney Metro Unexpected Finds Procedure without the prior approval of Sydney Metro.

It should be noted that this procedure must be read in conjunction with the relevant CCSI conditionals of approval (if applicable), the contract documents and other plans including the Sydney Metro Exhumation Management Plan and procedures developed by the contractor during the delivery of the Sydney Metro works.

1.1. Legislation that does not apply

The following authorisations are not required for Sydney Metro approved Critical State Significant Infrastructure (and accordingly the provisions of any Act that prohibits an activity without such an authority do not apply):

- Division 8 of Part 6 of the Heritage Act 1977 does not apply to prevent or interfere with the carrying out of approved State significant infrastructure.
- An approval under Part 4, or an excavation permit under section 139, of the Heritage Act 1977,
- An Aboriginal heritage impact permit under section 90 of the National Parks and Wildlife Act 1974,

This document provides relevant background information in Section 4, followed by the technical procedure in Sections 6 and 7. Associated guidance referred to in the procedure can be found in Appendices 1-6.

2. Scope

Despite earlier investigation, unexpected heritage items may still be discovered during works on a Sydney Metro site. When this happens, this procedure must be followed. This procedure provides direction on when to stop work, where to seek technical advice and how to notify the regulator, if required.
This procedure **applies to**:

- the discovery of any unexpected heritage item, relic or object, where the find is not anticipated in an approved Archaeological Assessment Design Report (AARD) or Archaeological Method Statements (AMS) that are prepared as part of the planning approval for that project.

This procedure must be followed by all Sydney Metro staff, contractors, subcontractors or any person undertaking works for Sydney Metro. It includes references to some of the relevant legislative and regulatory requirements, but is not intended to replace them.
This procedure **does not apply** to:

- The discovery and disturbance of heritage items as a result of investigations being undertaken in accordance with the Office of Environment and Heritage's (OEH) *Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW 2010*[1]; an Aboriginal Heritage Impact Permit (AHIP) issued under the NPW Act; or a permit approval issued under the Heritage Act.
- the discovery and disturbance of heritage items as a result of construction related activities, where the disturbance is permissible in accordance with an AHIP; or an approval issued under the Heritage Act or CSSI /CSSD planning approval;

3. Definitions

All terminology in this procedure is taken to mean the generally accepted or dictionary definition with the exception of the following terms which have a specifically defined meaning:

	Definitions
AHIP	Aboriginal Heritage Impact Permit
Aboriginal object	An Aboriginal object is any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains. An Aboriginal object may include a shell midden, stone tools, bones, rock art, Aboriginal-built fences and stockyards, scarred trees and the remains of fringe camps.
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
CSSD	Critical State Significant Development
CSSI	Critical State Significant Infrastructure
EP&A Act	**NSW *Environmental Planning and Assessment Act 1979***
Excavation	A person that complies with the Heritage Council of NSW's Criteria for Assessment of

[1] An act carried out in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* as published by the Department in the Gazette on 24 September 2010 is excluded from the definition of ***harm*** an object or place in section 5 (1) of the NPW Act.

Director	Excavation Directors (July 2011) to oversee and advise on matters associated with historic archaeology. Note this applies to a specific project/program and requires consultation and/or approval by OEH.
Heritage Act	NSW *Heritage Act 1977*
NPW Act	NSW *National Parks and Wildlife Act 1974*
OEH	Office of Environment and Heritage
SM	Sydney Metro
Relic (non-Aboriginal heritage)	A relic means any deposit, artefact, object or material evidence that: a) relates to the settlement of the area that comprises NSW, not being Aboriginal settlement, and b) is of State or local significance. A relic may include items such as bottles, utensils, remnants of clothing, crockery, personal effects, tools, machinery and domestic or industrial refuse.
TfNSW	Transport for New South Wales
Work (non-Aboriginal heritage)	Archaeological features such as historic utilities or buried infrastructure that provide evidence of prior occupations such as former rail or tram tracks, timber sleepers, kerbing, historic road pavement, fences, culverts, historic pavement, buried retaining walls, cisterns, conduits, sheds or building foundations, but are also subject to assessment by the Excavation Director to determine its classification

4. Types of unexpected heritage items and corresponding statutory protections

The roles of project, field and environmental personnel (including construction contractors) are critical to the early identification and protection of unexpected heritage items.

Appendix 1 illustrates the wide range of heritage discoveries found on Sydney Metro projects and provides a useful photographic guide. Subsequent to confirmation of a heritage discovery it must then be identified and assessed by Excavation Director. An 'unexpected heritage item' means any unanticipated discovery of an actual or potential heritage item, for which Sydney Metro does not have approval to disturb[2] and/or have an existing management process in place.

These discoveries are categorised as either:

(a) Aboriginal objects

(b) Historic (non-Aboriginal) heritage items

(c) Human skeletal remains.

The relevant legislation that applies to each of these categories is described below and is also addressed in the Sydney Metro Exhumation Management Plan).

4.1. Aboriginal objects

The NPW Act protects Aboriginal objects which are defined as:

[2] Disturbance is considered to be any physical interference with the item that results in it being destroyed, defaced, damaged, harmed, impacted or altered in any way (this includes archaeological investigation activities).

"any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains"[3].

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

IMPORTANT!

All Aboriginal objects, regardless of significance, are protected under law.

If any impact is expected to an Aboriginal object, an AHIP is usually required from OEH Also, when a person becomes aware of an Aboriginal object they must notify the Director-General of OEH about its location[4]. Assistance on how to do this is provided in Section 7 (Step 5).

4.2. Historic heritage items

Historic (non-Aboriginal) heritage items may include:

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

4.2.1. Archaeological relics

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

"*any deposit, artefact, object or material evidence that relates to the settlement of the area that comprises NSW, not being Aboriginal settlement; and is of State or local heritage significance*"[5].

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

IMPORTANT!

All relics are subject to statutory controls and protections.

If a relic is likely to be disturbed, a heritage approval is usually required from the NSW Heritage Council[6]. Also, when a person discovers a relic they must notify the NSW Heritage Council of its location[7].

4.2.2. Other historic items

Some historic heritage items are not considered to be 'relics', but are instead referred to as works*, buildings, structures or movable objects. Examples of these items that may be encountered include culverts, historic pavements, retaining walls, tramlines, rail tracks, timber sleepers, cisterns*, fences, sheds, buildings and conduits. Although an approval under the Heritage Act may not be required to disturb these items, their discovery must be managed in accordance with this procedure.

[3] Section 5(1) NPW Act.
[4] This is required under section 89(A) of the NPW Act and applies to all Sydney Metro projects.
[5] Section 4(1) Heritage Act.

[7] This is required under section 146 of the Heritage Act and applies to all Sydney Metro projects.

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

4.3. Human skeletal remains

Also refer to Sydney Metro Exhumation Management Plan for a more detailed explanation of the approval processes.

Human skeletal remains can be identified as either an Aboriginal object or non-Aboriginal relic depending on ancestry of the individual (Aboriginal or non-Aboriginal) and burial context (archaeological or non-archaeological). Remains are considered to be archaeological when the time elapsed since death is suspected of being 100 years or more. Depending on ancestry and context, different legislation applies.

As a simple example, a pre-European settlement archaeological Aboriginal burial would be protected under the NPW Act, while a historic (non-Aboriginal) archaeological burial within a cemetery would be protected under the Heritage Act. For a non-Aboriginal archaeological burial, the relevant heritage approval and notification requirement described in Section 3.1 would apply. In addition to the NPW Act, finding Aboriginal human remains also triggers notification requirements to the Commonwealth Minister for the Environment under section 20(1) of the Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Commonwealth).

IMPORTANT!

<u>All</u> human skeletal remains are subject to statutory controls and protections.

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

However, where it is suspected that less than 100 years has elapsed since death, the human skeletal remains come under the jurisdiction of the State Coroner and the Coroners Act 2009 (NSW). Such a case would be considered a 'reportable death' and under legal notification obligations set out in section 35(2); a person must report the death to a police officer, a coroner or an assistant coroner as soon as possible. This applies to all human remains less than 100 years old8 regardless of ancestry (i.e. both Aboriginal and non-Aboriginal remains). Public health controls may also apply.

Guidance on what to do when suspected human remains are found is provided in Appendix 5.

5. Legislative Requirements

Table 1 identifies some of the relevant legislation/regulations for the protection of heritage and the management of unexpected heritage finds in NSW. It should be noted that significant

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

penalties exist for breaches of the listed legislation as a result of actions that relate to unauthorised impacts on heritage items. Further, it is noted that heritage that has been assessed and is being managed in accordance with relevant statutory approvals(s) is exempt from these offences.

To avoid breaches of legislation, it is important that Sydney Metro and its contractors are aware of their statutory obligations under relevant legislation and that appropriate control measures are in place to ensure that unexpected heritage items are appropriately managed during construction. Contractors/Alliances will need to ensure that they undertake their own due diligence to identify any other legislative requirements that may apply for a given project.

Table 1 Legislation and guidelines for management of unexpected heritage finds

Relevant Requirement	Objectives and offences
Environmental Planning and Assessment Act 1979 (EP&A Act)	Section 115ZB Giving of approval by Minister to carry out a project.
Environmental Planning and Assessment Act 1979 (EP&A Act)	Requires heritage to be considered within the environmental impact assessment of projects. This guideline is based on the premise that an appropriate level of Aboriginal and non-Aboriginal cultural heritage assessment and investigations and mitigation have already been undertaken under the relevant legislation, including the EP&A Act, during the assessment and determination process. It also assumes that appropriate mitigation measures have been included in the conditions of any approval.
Heritage Act 1977 **(Heritage Act)**	The Heritage Act provides for the care, protection and management of heritage items in NSW. Under section 139, it is an offence to disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed, unless the disturbance or excavation is carried out in accordance with an excavation permit issued by the Heritage Division of the OEH. Under the Act, a relic is defined as: *'any deposit, artefact, object or material evidence that: (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and (b) is of State or local heritage significance.'* A person must notify the Heritage Division of OEH, if a person is aware or believes that they have discovered or located a relic (section 146). Penalties for offences under the Heritage Act can include six months imprisonment and/or a fine of up to $1.1million.

Relevant Requirement	Objectives and offences
National Parks and Wildlife Act 1974 **(NPW Act)**	The NPW Act provides the basis for the care, protection and management of Aboriginal objects and places in NSW. An Aboriginal object is defined as: *'any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains'*. An 'Aboriginal place' is an area declared by the Minister administering the Act to be of special significance with respect to Aboriginal culture. An Aboriginal place does not have to contain physical evidence of occupation (such as Aboriginal objects). Under section 87 of the Act, it is an offence to harm or desecrate an Aboriginal object or place. There are strict liability offences. An offence cannot be upheld where the harm or desecration was authorised by an AHIP and the permit's conditions were not contravened. Defences and exemptions to the offence of harming an Aboriginal object or Aboriginal place are provided in section 87, 87A and 87B of the Act. A person must notify OEH if a person is aware of the location of an Aboriginal object. Penalties for some of the offences can include two years imprisonment and/or up to $550,000 (for individuals), and a maximum penalty of $1.1 million (for corporations).

6. Unexpected heritage finds protocol

6.1. What is an unexpected heritage find?

An 'unexpected heritage find' can be defined as any unanticipated archaeological discovery that has not been identified during a previous assessment or is not covered by an existing permit under the Heritage Act. The find may have potential cultural heritage value, which may require some type of statutory cultural heritage permit or notification if any interference of the heritage item is proposed or anticipated.

The range of potential archaeological discoveries can include but are not limited to:

- remains of rail infrastructure including buildings, footings, stations, signal boxes, rail lines, bridges and culverts
- remains of other infrastructure including sandstone or brick buildings, wells, cisterns, drainage services, conduits, old kerbing and pavement, former road surfaces, timber and stone culverts, bridge footings and retaining walls
- artefact scatters including clustering of broken and complete bottles, glass, ceramics, animal bones and clay pipes
- Archaeological human skeletal remains.

6.2. Managing unexpected heritage finds

In the event that an unexpected heritage find (the find) is encountered on a Sydney Metro site, the flowchart in Figure 1 must be followed. There are eight steps in the procedure. These steps are summarised in Figure 1 and explained in detail in Table 2.

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

IMPORTANT!

Sydney Metro may have approval to impact on certain heritage items during construction. If you think that you may have discovered a heritage item and you are unsure whether an approval is in place or not, **STOP** works and follow this procedure.

Table 2 Specific tasks to be implemented following the discovery of an unexpected heritage item

Step	Task	Responsibility	Guidance and tools
1	**Stop work, protect item and inform the Excavation Director**		
1.1	Stop all work in the immediate area of the item and notify the Project Manager	Contractor/ Supervisor	**Appendix 1** (Identifying Unexpected Heritage items)
1.2	Establish a 'no-go zone' around the item. Use high visibility fencing, where practical. No work is to be undertaken within this zone until further investigations are completed and, if required, appropriate approvals are obtained. Inform all site personnel about the no-go zone.	Project Manager/ Contractor/ Supervisor	
1.3	Inspect, document and photograph the item.	Archaeologist and or Excavation Director	**Appendix 2** (Unexpected Heritage Item Recording Form) **Appendix 3** (Photographing Unexpected Heritage items)
1.4	Is the item likely to be bone? If **yes**, follow the steps in Appendix 4 – 'Uncovering bones'. Where it is obvious that the bones are human remains, you must notify the local police by telephone immediately. They may take command of all or part of the site. Also refer to the Sydney Metro Exhumation Management Plan If **no**, proceed to next step.	Excavation Director	**Appendix 4** (Uncovering Bones)

Step	Task	Responsibility	Guidance and tools
1.5	Inform the Excavation Director of the item and provide as much information as possible, including photos and completed form (**Appendix 2**). Where the project has a Sydney Metro Environmental Manager, the Environmental Manager should be involved in the tasks/process.	Contractors Project Manager	
1.6	Can the works avoid further disturbance to the item? Project Manager to confirm with Sydney Metros Environment Manager. Complete the remaining tasks in Step 1.	Contractors Project Manager	
1.7	Excavation Director and Sydney Metro Environmental Manager to advise the Project Manager whether Sydney Metro has approval to impact on the 'item'. Does Sydney Metro have an approval or permit to impact on the item? If **yes**, work may recommence in accordance with that approval or permit. There is no further requirement to follow this procedure. If **no**, continue to next step.	Contractors Project Manager	
1.8	Has the 'find' been damaged or harmed? If **yes**, record the incident in the Incident Management System Implement any additional reporting requirements related to the planning approval and CEMP, where relevant.	Contractors Project Manager, Excavation Director	
2	**Contact and engage an archaeologist and/or an Aboriginal heritage consultant**		
2.1	If an archaeologist and/or Aboriginal heritage consultant has been previously appointed for the project, contact them to discuss the location and extent of the item and arrange a site inspection, if required. The project CEMP may contain contact details of the archaeologist/Aboriginal heritage consultant. Where there is no project archaeologist engaged for the works engage a suitably qualified consultant to assess the find: if the find is a non-Aboriginal deposit, engage a suitably qualified and experienced archaeological consultant if the find is likely to be an Aboriginal object, engage an Aboriginal heritage consultant to assess the find.	Contractors Project Manager, Excavation Director	
2.2	If requested, provide photographs of the item taken during Step 1.3 to the archaeologist or Aboriginal heritage consultant.	Contractors Project Manager, Excavation Director	**Appendix 3** (Photographing Unexpected Heritage items)

Step	Task	Responsibility	Guidance and tools
3	**Preliminary assessment and recording of the find**		
3.1	In a minority of cases, the archaeologist/Aboriginal heritage consultant may determine from the photographs that no site inspection is required because no heritage constraint exists for the project (*e.g. the item is not a 'relic', a 'heritage item' or an 'Aboriginal object*'). Any such advice should be provided in writing (e.g. via email or letter with the consultant's name and company details clearly identifiable) to the Sydney Metro Project Manager.	Archaeologist/ Aboriginal heritage consultant/ , Excavation Director	Proceed to Step 8
3.2	Arrange site access for the archaeologist/Aboriginal heritage consultant to inspect the item as soon as practicable. In the majority of cases a site inspection is required to conduct a preliminary assessment.	Contractors Project Manager, Excavation Director	
3.3	Subject to the archaeologist/Aboriginal heritage consultant's assessment, work may recommence at a set distance from the item. This is to protect any other archaeological material that may exist in the vicinity, which may have not yet been uncovered. Existing protective fencing established in Step 1.2 may need to be adjusted to reflect the extent of the newly assessed protective area. No works are to take place within this area once established.	Archaeologist/ Aboriginal heritage consultant Contractors Project Manager, Excavation Director	
3.4	The archaeologist/Aboriginal heritage consultant may provide advice after the site inspection and preliminary assessment that no heritage constraint exists for the project (e.g. the item is not a '*relic*' or a '*heritage item'* or an '*aboriginal item'*. Any such advice should be provided in writing (e.g. via email or letter with the consultant's name and company details clearly identifiable) to the Metro Project Manager. Note that : a relic is evidence of past human activity which has local or State heritage significance. It may include items such as bottles, utensils, remnants of clothing, crockery, personal effects, tools, machinery and domestic or industrial refuse an Aboriginal object may include a shell midden, stone tools, bones, rock art or a scarred tree a "work", building or standing structure may include tram or train tracks, kerbing, historic road pavement, fences, sheds or building foundations.	Archaeologist/ Aboriginal heritage consultant/ Contractors Project Manager, Excavation Director	Proceed to Step 8 Refer to **Appendix 1** (Identifying heritage items)

Step	Task	Responsibility	Guidance and tools
3.5	Where required, seek additional specialist technical advice (such as a forensic or physical anthropologist to identify skeletal remains). The archaeologist/Aboriginal heritage consultant can provide contacts for such specialist consultants.	Excavation Director Archaeologist	
3.6	Where the item has been identified as a 'relic' or 'heritage item' or an 'Aboriginal object' the archaeologist should formally record the item.	Archaeologist/ Aboriginal heritage consultant	
3.7	OEH (Heritage Division for non-Aboriginal relics and Planning and Aboriginal Heritage Section for Aboriginal objects) can be notified informally by telephone at this stage by the Sydney Metro Environmental Manager Any verbal conversations with regulators must be noted on the project file for future reference.	Contractors Project Manager, Excavation Director	
4	**Section 4 not used**		
5	**Notify the regulator, if required.**		
5.1	Based on the findings of the archaeological or heritage management plan and corresponding legislative requirements, is the find required to be notified to OEH and the Secretary? If **no**, proceed directly to Step 6 If **yes**, proceed to next step.	Sydney Metro Environmental Manager Excavation Director	
5.2	If notification is required, complete the template notification letter, including the archaeological/heritage management plan and other relevant supporting information and forward to the Sydney Metro Principal Manager Sustainability Environment and Planning (Program) for signature.	Sydney Metro Environmental Manager Excavation Director	**Appendix 6** (Template Notification Letter)
5.3	Forward the signed notification letter to OEH and the Secretary. Informal notification (via a phone call or email) to OEH prior to sending the letter is appropriate. The archaeological or heritage management plan and the completed site recording form (Appendix 2) must be submitted with the notification letter (for both Aboriginal objects and non-Aboriginal relics). For Part 5.1 projects, the Department of Planning and Environment must also be notified.		

Step	Task	Responsibility	Guidance and tools
5.4	A copy of the final signed notification letter, archaeological or heritage management plan and the site recording form is to be kept on file and a copy sent to the Sydney Metro Project Manager.	Contractors Project Manager, Excavation Director	
6	**Implement archaeological or heritage management plan**		
6.1	Modify the archaeological or heritage management plan to take into account any additional advice resulting from notification and discussions with OEH.	Contractors Project Manager, Excavation Director	
6.2	Implement the archaeological or heritage management plan. Where impact is expected, this may include a formal assessment of significance and heritage impact assessment, preparation of excavation or recording methodologies, consultation with Registered Aboriginal Parties, obtaining heritage approvals etc., if required.	Contractors Project Manager, Excavation Director	
6.3	Where heritage approval is required contact the Sydney Metro Environment Manager for further advice and support material. Please note there are time constraints associated with heritage approval preparation and processing.	Contractors Project Manager, Excavation Director	
6.4	Assess whether heritage impact is consistent with the project approval or if project approval modification is required from the Department of Planning and Environment.	, Excavation Director/Sydney Metro Environmental Manager	
6.5	Where statutory approvals (or project approval modification) are required, impact upon relics and/or Aboriginal objects must not occur until heritage approvals are issued by the appropriate regulator.	Contractors Project Manager, Excavation Director	
6.6	Where statutory approval is not required but where recording is recommended by the archaeologist/Aboriginal heritage consultant, sufficient time must be allowed for this to occur.	Contractors Project Manager, Excavation Director	
6.7	Ensure short term and permanent storage locations are identified for archaeological material or other heritage material removed from site, where required. Interested third parties (e.g. museums, local Aboriginal land councils, or local councils) should be consulted on this issue. Contact the archaeologist or Aboriginal heritage consultant for advice on this matter, if required.	Contractors Project Manager, Excavation Director	
7	**Section 7 Not Used**		

Step	Task	Responsibility	Guidance and tools
8	**Resume work**		
8.1	Seek written clearance to resume project work from the project Excavation Director/Archaeologist/Aboriginal heritage consultant. Clearance would only be given once all archaeological excavation and/or heritage recommendations and approvals (where required) are complete. Resumption of project work must be in accordance with the all relevant project/heritage approvals/determinations.	Contractors Project Manager, Excavation Director	
8.2	If required, ensure archaeological excavation/heritage reporting and other heritage approval conditions are completed in the required timeframes. This includes artefact retention repositories, conservation and/or disposal strategies.	Contractors Project Manager, Excavation Director	
8.3	Deleted		
8.4	If additional unexpected items are discovered this procedure must begin again from Step 1.	All	

7. Responsibilities

Table 3 Roles and Responsibilities

Role	Responsibility or role under this guideline
Contractor / Supervisor	Stop work immediately when an unexpected heritage find is encountered. Cordon off area until Environmental Manager /Excavation Director advises that work can recommence.
Contractor or Environment Manager	Manage the process of identifying, protecting and mitigating impacts on the 'find'. Liaise with Sydney Metro Project Manager and Environment Manager and assist the archaeologist/Aboriginal heritage consultant with mitigation and regulatory requirements. Complete Incident Report and review CEMP for any changes required. Propose amendments to the CEMP if any changes are required.
Contractor's or Project Heritage Advisor or Consultant	Provide expert advice to the Sydney Metro Environment Manager on 'find' identification, significance, mitigation, legislative procedures and regulatory requirements.
Environmental Representative	Independent environmental advisor engaged by Sydney Metro Ensures compliance with relevant approvals (new and existing).
Heritage Division of OEH	Regulate the care, protection and management of relics (non-Aboriginal heritage). Delegated authority for Heritage Council Issue excavation permits.

Role	Responsibility or role under this guideline
Registered Aboriginal Parties (RAPs)	Aboriginal people who have registered with Sydney Metro to be consulted about a proposed project or activity in accordance with the OEH *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.
Sydney Metro Environment Manager	Notify the Sydney Metro Principal Manager, Environmental Management of 'find' and manage Incident Reporting once completed by Environmental Manager.
Contractors Project Manager	Ensures all aspects of this procedure are implemented. Advise Contractor / Supervisor to recommence work if all applicable requirements have been satisfied and the Excavation Director /Project Archaeologist has approved recommend of work.

8. Seeking Advice

Advice on this procedure should be sought from the Sydney Metro Environment a Manager in the first instance. Contractors and alliance partners should ensure their own project environment managers are aware of and understand this procedure.
Technical archaeological or heritage advice regarding an unexpected heritage item should be sought from a suitably qualified and experienced archaeologist/Aboriginal heritage consultant.

9. Related documents and references

- Environmental Incident Classification and Reporting – 9TP-PR-105
- Guide to Environmental Control Map – 3TP-SD-015
- NSW Heritage Office (1998), *Skeletal remains: guidelines for the management of human skeletal remains.*
- Roads and Maritime Services (2015), *Standard Management Procedure Unexpected Heritage Items.*
- Department of Environment and Conservation NSW (2006), *Manual for the identification of Aboriginal remains.*
- Sydney Metro Exhumation Management Plan

10. List of appendices

The following appendices are included to support this procedure:

Appendix 1: Examples of finds encountered during construction works
Appendix 2: Unexpected Heritage Item Recording Form
Appendix 3: Photographing Unexpected Heritage Items
Appendix 4: Uncovering Bones
Appendix 5: Archaeological Advice Checklist
Appendix 6: Template Notification Letter

11. Document history

Version	Date of approval	Notes
1.1		Incorporates ER comments 21/06/17
1.2		Amends p13 step 8 reference to s146 added
1.3		Incorporates Planning Mods 1-4 including amended CoA E20
1.4		Incorporates ER comments 21/03/18
2.0		Removes SSI 15-7400 COA reference

Appendix 1: Examples of finds encountered during construction works



Photo 1 - Aboriginal artefacts found at the Wickham Transport Interchange, 2015



Photo 2 – Aboriginal artefacts (shell material) found at the Wickham Transport Interchange, 2015



Photo 3 1840s seawall and 1880s retaining wall uncovered at Balmain East, 2016



Photo 4 Sandstone pavers uncovered at Balmain East, 2016



Photo 5 - Platform structure at Hamilton Railway Station classified as a 'work' by the project archaeologist - Wickham Transport Interchange project, 2015

Photo 6 - Platform structure at Hamilton Railway Station classified as a 'work' by the project archaeologist - Wickham Transport Interchange project, 2015



Photo 7 - Sandstone flagging and cesspit - Wynyard Walk project, 2014



Photo 8 - Chinese Ming Dynasty pottery and English porcelain/pottery dating back to early 19th century - Wynyard Walk project, 2014



Photo 9 - Pottery made by convict potter Thomas Ball during the early settlement - Wynyard Walk project, 2014

The following images, obtained from the Roads and Maritime Services' *Standard Management Procedure for Unexpected Heritage items 2015,* can be used to assist in the preliminary identification of potential unexpected items during construction and maintenance works.



Photo 10 - Top left hand picture continuing clockwise: Stock camp remnants (Hume Highway Bypass at Tarcutta); Linear archaeological feature with post holes (Hume Highway Duplication), Animal bones (Hume Highway Bypass at Woomargama); Cut wooden stake; Glass jars, bottles, spoon and fork recovered from refuse pit associated with a Newcastle Hotel (Pacific Highway, Adamstown Heights, Newcastle area) (RMS, 2015).



Photo 11 - Top left hand picture continuing clockwise: Stock camp remnants (Hume Highway Bypass at Tarcutta); Linear archaeological feature with post holes (Hume Highway Duplication), Animal bones (Hume Highway Bypass at Woomargama); Cut wooden stake; Glass jars, bottles, spoon and fork recovered from refuse pit associated with a Newcastle Hotel (Pacific Highway, Adamstown Heights, Newcastle area) (RMS, 2015).

Appendix 2 - Unexpected heritage item recording form

Example of unexpected heritage item recording form:

This form is to be completed Excavation Director on the discovery of an archaeological heritage item during construction or maintenance works			
Date:		**Recorded by:** (include name and position)	
Project name:			
Description of works being undertaken:			
Description of exact location of item			
Description of item found *(What type of item is it likely to be? Tick the relevant boxes).*			
A. A relic	☐	A 'relic' is evidence of a past human activity relating to the settlement of NSW with local or state heritage significance. A relic might include bottle, utensils, plates, cups, household items, tools, implements, and similar items	
B. A 'work', building or structure'	☐	A 'work' can generally be defined as a form infrastructure such as track or rail tracks, timber sleepers, a culvert, road base, a bridge pier, kerbing, and similar items	
C. An Aboriginal object	☐	An 'Aboriginal object' may include stone tools, stone flakes, shell middens, rock art, scarred trees and human bones	
D. Bone	☐	Bones can either be human or animal remains. **Remember that you must contact the local police immediately by telephone if you are certain that the bone(s) are human remains.**	
E. Other	☐		
Provide a short description of the item *(E.g. metal rail tracks running parallel to the rail corridor. Good condition. Tracks set in concrete, approximately 10 cm below the current ground surface).*			

Sketch *(Provide a sketch of the item's general location in relation to other road features so its approximate location can be mapped without having to re-excavate it. In addition, please include details of the location and direction of any photographs of the item taken)*			
Action taken (Tick either A *or* B)			
A. Unexpected item **would not** be further impacts on by the works	☐	**Describe how works would avoid impact on the item.** *(E.g. the rail tracks would be left in situ and recovered with paving).*	
B. Unexpected item would be further impacted by the works	☐	**Describe how works would impact on the item**. *(E.g. milling is required to be continued to a depth of 200 mm depth to ensure the pavement requirements are met. Rail tracks would need to be removed.)*	
Excavation Director		Signature	
		Signature	

Important

It is a statutory offence to disturb Aboriginal objects and historic relics (including human remains) without an approval. All works affecting objects and relics must cease until an approval is sought.

Approvals may also be required to impact on certain works.

Appendix 3 - Photographing unexpected heritage items

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

Context and detailed photographs

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

Removal of the item from its context (e.g. excavating from the ground) for photographic purposes is not permitted.





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

Figure 1: Telford road uncovered on the Great Western Highway (Leura) in 2008 (RMS, 2015).

Photographing distinguishing features

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



Figure 3: Ceramic bottle artefact with stamp.



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

Photographing bones

The majority of bones found on site will those of be recently deceased animal bones often requiring no further assessment (unless they are in archaeological context). However, if bones are human, the police must be contacted immediately (see Appendix 6 for detailed guidance). Taking quality photographs of the bones can often resolve this issue quickly. The project archaeologist can confirm if bones are human or non-human if provided with appropriate photographs.

Ensure that photographs of bones are not concealed by foliage (Figure 5) as this makes it difficult to identify. Minor hand removal of foliage can be undertaken as long as disturbance of the bone does not occur. Excavation of the ground to remove bone(s) should not occur, nor should they be pulled out of the ground if partially exposed.

Where sediment (adhering to a bone found on the ground surface) conceals portions of a bone (Figure 6) ensure the photograph is taken of the bone (if any) that is not concealed by sediment.



Figure 5: Bone concealed by foliage.



Figure 6: Bone covered in sediment

Ensure that all close up photographs include the whole bone and then specific details of the bone (especially the ends of long bones, the *epiphysis*, which is critical for species identification). Figures 7 and 8 are examples of good photographs of bones that can easily

be identified from the photograph alone. They show sufficient detail of the complete bone and the epiphysis.



Figure 7: Photograph showing complete bone.



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

Appendix 4 - Uncovering bones

This appendix provides advice regarding:

- what to do on first discovering bones
- the range of human skeletal notification pathways
- additional considerations and requirements when managing the discovery of human remains.

1. First uncovering bones

Refer to the Sydney Metro Exhumation Management Plan

Stop all work in the vicinity of the find. All bones uncovered during project works should be **treated with care and urgency** as they have the potential to be human remains. The bones must be identified as either human or non-human as soon as possible by a qualified forensic or physical anthropologist.

On the very rare occasion where it is immediately obvious from the remains that they are human, the Project Manager (or a delegate) should **inform the police by telephone** prior to seeking specialist advice. It will be obvious that it is human skeletal remains where there is no doubt, as demonstrated by the example in Figure 1[9]. Often skeletal elements in isolation (such as a skull) can also clearly be identified as human. Note it may also be obvious that human remains have been uncovered when soft tissue and/or clothing are present.

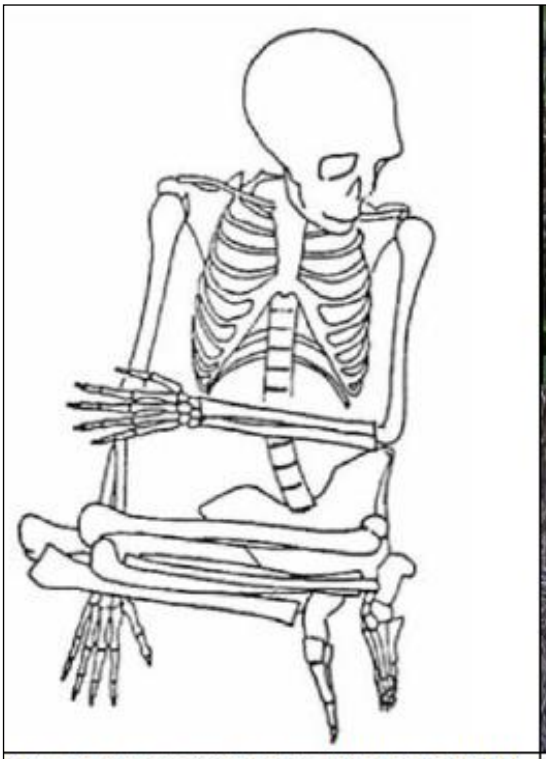


Figure 1: Schematic of a complete skeleton that is 'obviously' human [12].



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

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

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

Where it is not immediately obvious that the bones are human (in the majority of cases, illustrated by Figure 2), specialist assessment is required to establish the species of the bones. Photographs of the bones can assist this assessment if they are clear and taken in accordance with guidance provided in Appendix 3. Good photographs often result in the bones being identified by a specialist without requiring a site visit; noting they are nearly always non-human. In these cases, non-human skeletal remains must be treated like any other unexpected archaeological find.

If the bones are identified as human (either by photographs or an on-site inspection) a technical specialist must determine the likely ancestry (Aboriginal or non-Aboriginal) and burial context (archaeological or forensic). This assessment is required to identify the legal regulator of the human remains so **urgent notification** (as below) can occur.

Preliminary telephone or verbal notification by the archaeologist to the Sydney Metro Principal Manager Sustainability Environment and Planning (Program) is appropriate. This must be followed up later by a formal letter notification to the relevant regulator when a management plan has been developed and agreed to by the relevant parties.

2. Range of human skeletal notification pathways

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

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

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

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

Action
The OEH (Planning and Aboriginal Heritage Section) must be notified immediately. The Aboriginal Cultural Heritage Advisor must contact and inform the relevant Aboriginal community stakeholders who may request to be present on site.

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

Action
The OEH (Heritage Division) must be notified immediately

Figure 3 summarises the notification pathways on finding bones.

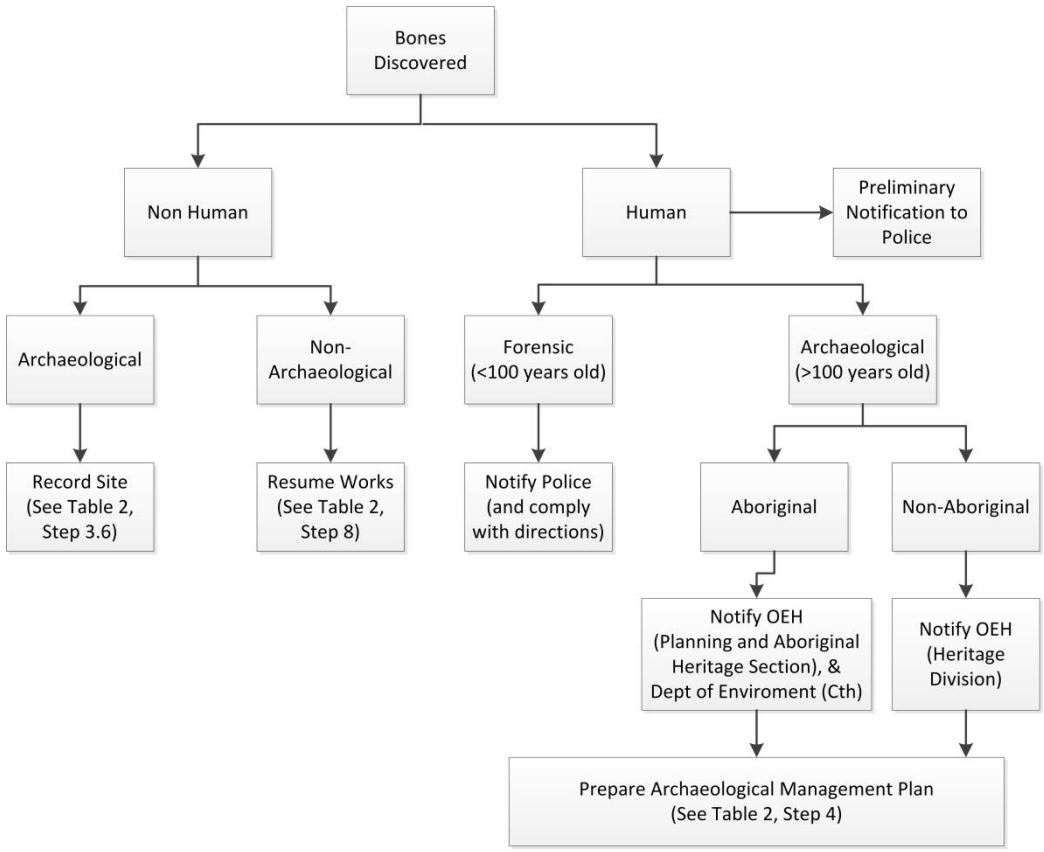


Figure 3 Overview of steps to be undertaken on the discovery of bones

After the appropriate verbal notifications (as described in 2B and 2C above), the Project Manager must proceed through the *Unexpected Heritage Items Exhumation Management Plan* (Step 4). It is noted that no *Exhumation Management Plan* is required for forensic cases (2A), as all future management is a police matter. Non-human skeletal remains must be treated like any other unexpected archaeological find and so must proceed to record the find as per Step 3.6.

3. Additional considerations and requirements

Uncovering archaeological human remains must be managed intensively and needs to consider a number of additional specific issues. These issues might include facilitating culturally appropriate processes when dealing with Aboriginal remains (such as repatriation and cultural ceremonies). Project Managers may need to consider overnight site security of any exposed remains and may need to manage the onsite attendance of a number of different external stakeholders during assessment and/or investigation of remains.

Project Managers may also be advised to liaise with local church/religious groups and the media to manage community issues arising from the find. Additional investigations may be required to identify living descendants, particularly if the remains are to be removed and relocated.

If exhumation of the remains (from a formal burial or a vault) is required, Project Managers should also be aware of additional approval requirements under the *Public Health Act 1991* (NSW). Specifically, Sydney Metro may be required to apply to the Director General of NSW

Department of Health for approval to exhume human remains as per Clause 26 of the *Public Health (Disposal of Bodies) Regulation 2002* (NSW)[10].

Further, the exhumation of such remains needs to consider health risks such as infectious disease control, exhumation procedures and reburial approval and registration. Further guidance on this matter can be found at the NSW Department of Health website.

In addition, due to the potential significant statutory and common law controls and prohibitions associated with interfering with a public cemetery, project teams are advised, when works uncover human remains adjacent to cemeteries, to confirm the cemetery's exact boundaries.

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

Appendix 5 - Archaeological/heritage advice checklist

The archaeologist/Aboriginal heritage consultant must advise the Sydney Metro Principal Manager Sustainability Environment and Planning (Program) of an appropriate archaeological or heritage management plan as soon as possible after an inspection of the site has been completed (see Step 4). An archaeological or heritage management plan can include a range of activities and processes, which differ depending on the find and its significance.

In discussions with the archaeologist/Aboriginal heritage consultant the following checklist can be used as a prompt to ensure all relevant heritage issues are considered when developing this plan. This will allow the project team to receive clear and full advice to move forward quickly. Archaeological and/or heritage advice on how to proceed can be received in a letter or email outlining all relevant archaeological and/or heritage issues.

	Required	Outcome/notes
Assessment and investigation		
• Assessment of significance	Yes/No	
• Assessment of heritage impact	Yes/No	
• Archaeological excavation	Yes/No	
• Archival photographic recording	Yes/No	
Heritage approvals and notifications		
• AHIP, section 140, section 139 exceptions etc.	Yes/No	
• Regulator relics/objects notification	Yes/No	
• Notification to Sydney Trains for s170 heritage conservation register	Yes/No	
• Compliance with CEMP or other project heritage approvals	Yes/No	
Stakeholder consultation		
• Aboriginal stakeholder consultation	Yes/No	
Artefact/heritage item management		
• Retention or conservation strategy (e.g. items may be subject to long conservation and interpretation)	Yes/No	
• Disposal strategy	Yes/No	
• Short term and permanent storage locations (interested third parties should be consulted on this issue).	Yes/No	
• Control Agreement for Aboriginal objects	Yes/No	

Appendix 6 - Template notification letter

Insert on TfNSW letterhead
Select and type date]
[Select and type reference number]

XXX
Manager, Conservation
Heritage Division, Office of Environment and Heritage
Locked Bag 5020
Parramatta NSW 2124

[Select and type salutation and name],

Re: Unexpected heritage item discovered during Sydney Metro activities.

I write to inform you of an unexpected [select: relic, heritage item or Aboriginal object] found during Sydney Infrastructure and Services construction works at [insert location] on [insert date] in accordance with the notification requirement under select: section 146 of the *Heritage Act 1977* (NSW). [Where the regulator has been informally notified at an earlier date by telephone, this should be referred to here].

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

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

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

Based on the preliminary findings, Sydney Metro *[or contractor]* is proposing [provide a summary of the proposed archaeological/heritage approach (e.g. develop archaeological research design (where relevant), seek heritage approvals, undertake archaeological investigation or conservation/interpretation strategy). Also include preliminary justification of such heritage impact with regard to project design constraints and delivery program].

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

Should you have any feedback on the proposed approach, or if you require any further information, please do not hesitate to contact [Environment and Planning Project Manager] on (02) XXXX XXXX.

Yours sincerely

[Sender name]

Sydney Metro Principal Manager Sustainability Environment and Planning (Program) [Attach the archaeological/heritage management plan and site recording form]

Appendix B. Exhumation management procedure

Exhumation Management Procedure

SM ES-PW-315/5.0

Metro Body of Knowledge (MBoK)

Applicable to:	Sydney Metro
Document Owner:	Senior Heritage Advisor
System Owner:	Environment, Sustainability & Planning
Status:	Final
Version:	5.1
Date of issue:	May 2021
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1. Introduction

Sydney Metro has developed this Exhumation Management Procedure (ExMP) to provide guidance for managing the discovery of human skeletal remains during the course of works. The procedure is applicable to both unexpected skeletal finds and controlled archaeological investigations where human remains are anticipated to be uncovered. The procedure is applicable to any and all stages of any Sydney Metro project and to all staff and contractors.

Sydney Metro is Australia's biggest public transport project. In 2024, Sydney will have 31 metro stations and more than 66 km of new metro rail, revolutionising the way Australia's biggest city travels. When Sydney Metro is extended into the central business district (CBD) and beyond in 2024, metro will run from Sydney's booming North West region under Sydney Harbour, through new underground stations in the CBD and beyond to the south west (refer to Figure 1).

The purpose of this ExMP is to provide a clear and concise process to follow in the event of the discovery of potential human remains during Sydney Metro activities.

This ExMP will be reviewed as required and prior to any future Sydney Metro project that has potential to impact on known burials, graves, cemeteries or burial grounds. A review may require amending the ExMP to tailor additional controls or management procedures that are specific to the impacted cemetery or burial ground. In addition, the requirements of the relevant Planning Approval will be assessed during the review of this ExMP prior to its implementation.

This ExMP should be read in conjunction with the Sydney Metro Unexpected Finds Procedure.

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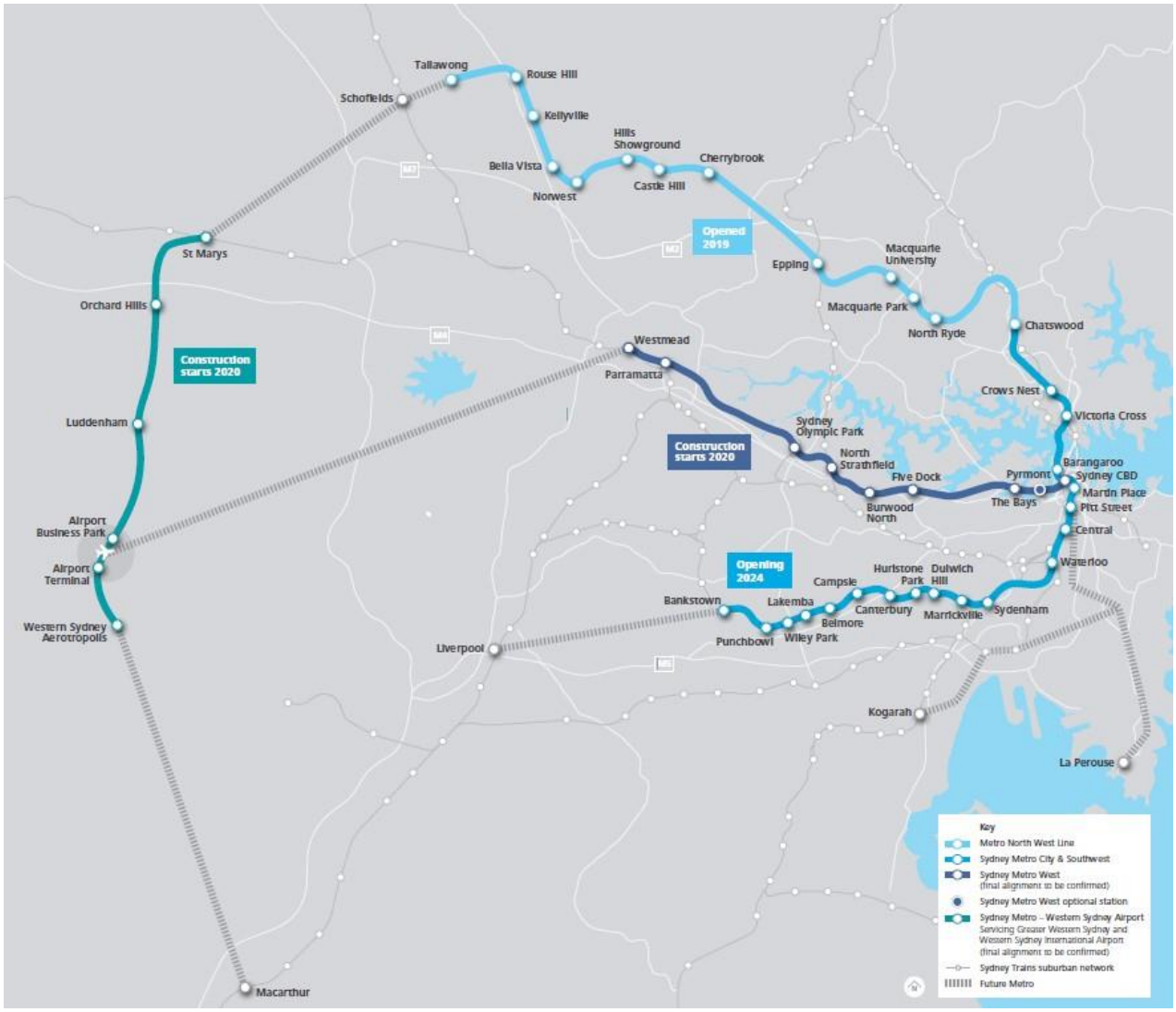


Figure 1 Sydney Metro project overview and station locations

1.1. Purpose and scope

This ExMP outlines the procedure for the management of the discovery of human remains within the Sydney Metro program. It includes:

- Overview of legislative requirements for dealing with human remains (e.g. *Coroners Act* 2009, *Heritage Act* 1977, *Guidelines for the Management of Human Skeletal Remains* 1988, and the *Public Health Regulations* 2012).
- A flow chart process to be followed when human remains are uncovered
- An archaeological methodology for the excavation of remains including processes for appropriately handling remains in accordance with the relevant guidelines (see section 2.3 and 2.4 below).
- Post-exhumation management processes including relocation, processing and long-term arrangements.

- Process for nomination of a physical anthropologist and temporary storage location.
- Process for additional analysis including DNA testing, isotope analysis and environmental sampling, and discussion on requirements for public involvement.

2. Overview of legislative requirements for dealing with human remains

The following section provides an overview of the legislation that would apply to the discovery, management and relocation of human remains. A discovery of suspected human remains may be subject to different Acts and requirements, thereby triggering different notification pathways based on the specific circumstances involved.

The first step will always be to notify the NSW Police. Confirmation of the age (antiquity) and nature of the skeletal remains as well as the reasons for the disturbance will dictate which Act and provisions will be applicable.

2.1. Discovery of human remains and forensic cases: *NSW Coroners Act 2009*

For a discovery of suspected human remains less than 100 years old, the remains would come under the jurisdiction of the State Coroner and the NSW *Coroners Act* 2009. Such a case would be considered a 'reportable death' and, under legal notification obligations set out in s35 (2); a person must report the death to a police officer, a coroner or an assistant coroner as soon as possible. This applies to all human remains less than 100 years old, regardless of ancestry (i.e. both Aboriginal and non-Aboriginal remains).

> *35 Obligation to report death or suspected death*
>
> *(1) This section applies to any person who has reasonable grounds to believe that a death or suspected death of another person:*
> *(a) is a reportable death or occurred in circumstances that would be examinable under Division 2 of Part 3.2, and*
> *(b) has not been reported in accordance with subsection (2).*
> *(2) A person to whom this section applies must report the death or suspected death concerned to a police officer, a coroner or an assistant coroner as soon as possible after becoming aware of the grounds referred to in subsection (1).*
>
> *Maximum penalty (subsection (2)): 10 penalty units.*
> *(3) A police officer to whom a death or suspected death is reported under this section is required to report the death or suspected death to a coroner or assistant coroner as soon as possible after the report is made.*
> *(4) An assistant coroner to whom a death or suspected death is reported under this section is required to report the death or suspected death to a coroner as soon as possible after the report is made.*
> *(5) A coroner to whom a death or suspected death is reported under this section is required to inform the State Coroner of the report as soon as practicable after the report is made.*

2.2. Historic human remains: *Heritage Act 1977* and *Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977*

The *Heritage Act* 1977 (Heritage Act) and *Guidelines for the Management of Human Skeletal Remains under the Heritage Act* 1977[1] (the Guidelines) apply to historic burials in New South Wales. It should be noted that the Guidelines are outdated in terms of the current statutory framework.

A relic is defined as an archaeological deposit or artefact that has heritage significance at a local or State level. The guidelines, *Assessing Significance for Historical Archaeological Sites and `Relics'*[2], have been endorsed by the Heritage Council of NSW and should be used to assess the level of heritage or archaeological significance of the remains. With reference to burial grounds, objects such as headstones, grave enclosures and grave goods, as well as buried human remains, may be 'relics' under the Heritage Act.

Approval under the Heritage Act and the *National Parks and Wildlife Act 1974* (NPW Act), is not required if human remains are uncovered during a Critical State Significant Infrastructure (CSSI) project. However, notification to the Heritage Council under s146 of the Heritage Act, and notification of an Aboriginal object under the NPW Act is required if human remains are uncovered during archaeological or other project related investigations.

2.3. Aboriginal human remains: *National Parks and Wildlife Act 1974*

The NPW Act, administered by Heritage NSW, provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) under Section 90 of the Act, and for 'Aboriginal Places' (areas of cultural significance to the Aboriginal community) under Section 84.

Discovery of Aboriginal burials and/or human remains would be addressed in the projects Aboriginal Cultural Heritage Assessment Report (ACHAR). ACHARs would be prepared in accordance with the following Heritage NSW guidelines:

- *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation*[3],
- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*[4],
- *Aboriginal cultural heritage consultation requirements for proponents* 2010[5],
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*[6].

[1] NSW Heritage Office, 1998
[2] Heritage Branch of the Department of Planning, 2009
[3] NSW Department of Environment and Conservation, 2005
[4] Office of Environment and Heritage, 2011
[5] Department of Environment, Climate Change and Water, 2010
[6] Office of Environment and Heritage, 2010

If suspected human skeletal remains are uncovered at any time during the archaeological management program, the process outlined in this ExMP and detailed in the flow chart is to be followed. Management of the remains would be guided by consultation with the nominated Registered Aboriginal Parties (RAPs) for the project, in adherence to the ACHAR.

2.4. Exhumation of human remains: *Public Health Regulation 2012 (NSW)*

Public Health Regulation 2012 and the *NSW Health Policy Statement – Exhumation of human remains of the Public Health Regulation 2012* provides specific regulation for the exhumation of human remains in NSW.

Under Clause 70 of the Regulation, an application for approval to exhume the remains of a dead person may be made to the Director-General via an approved form to the Director of the Local Public Health Unit that acts on behalf of the Director-General of NSW Health. Exhumation is not to take place unless an authorised officer or a NSW Health member of staff is present at the exhumation (the grave may be excavated to the lid of the coffin but nothing must be disturbed until the arrival of the authorised officer) (Clause 72). An authorised officer must be present at the exhumation to ensure the correct interment procedure is followed and that all of the remains are exhumed, and to enforce the protection of public health should this be necessary.

2.5. NSW Ministry of Health Policy Statement – Exhumation of human remains (2013)

The NSW Ministry of Health *Policy Statement on the exhumation of human remains* provides the policy to be observed by Public Health Units located in Local Health Districts on receipt of an application to seek permission for approval of the exhumation of human remains under the *Public Health Regulation* 2012. Public Health Units (PHUs) of Local Health Districts (LHDs) in NSW facilitate the approval for an exhumation.

Under Clause 69 a person must not exhume a body unless the exhumation of the remains has been approved by the Director-General. An application for permission to exhume the remains of a deceased person is to be made to the Public Health Unit on the approved form which is available at the NSW Health website and included in Appendix 2.

Note that the title of Director General of Health was replaced with the Secretary of Health when the Public Health Act and Public Health Regulation were amended. However, the Policy Directive PD2013-046 has not been amended to reflect this change.

2.6. Work Health and Safety Act 2011

The *Work Health and Safety Act* 2011 provisions apply to protect personnel involved in the exhumation procedure by creating and maintaining safe and healthy work practices and are enforced by WorkCover NSW. Graves, crypts and vaults could be considered to be confined spaces in some circumstances under health and safety legislation. More information on safe work practices is available at or by contacting SafeWork NSW via their website or directly.

Health and safety aspects of working with human remains should be considered. Generally, working with archaeological human skeletal remains requires no extra precautions to be taken beyond normal health and safety regulations. Once any necessary site health and safety precautions have been taken, the exhumation of human remains can proceed.

3. Sydney Metro procedure for the discovery and management of human remains

This procedure provides project managers, principal contractors and the Project Excavation Director with advice on the steps to follow when suspected human remains are uncovered. Information on the potential for burials and human remains where known would be included in the general project induction for all personnel. The general project induction would also include the procedure to manage human remains set out in this ExMP.

3.1. Initial discovery of bones: What do we do?

To avoid doubt, all suspected bone items must be treated as potential human skeletal remains, and work in the immediate vicinity must stop while they are protected and investigated as a matter of urgency.

Stop Work and preliminary notification
If bone is uncovered, all work in the vicinity of the find must stop to allow for a positive identification as either human or non-human bone.

The Project Excavation Director must be notified.

Preliminary notification must be made to the NSW Police in compliance with Section 35 of the *Coroners Act 2009* (also refer to special conditions for Central Station noted in section 4).

What?	When bones are uncovered at a site, all work in the area of the find must **stop immediately** and the site must be secured.
Who?	The discoverer will **immediately** notify machinery operators so that no further disturbance of the remains will occur, as well as notifying the foreman/site supervisor, principal contractor, project archaeologist/Excavation Director and Sydney Metro Environmental Manager. Preliminary notification to the NSW Police will be undertaken by the Excavation Director. Notification should provide verbal description of the remains and inform the police that consultation with technical specialists is being undertaken to confirm that the remains are human, as well as the burial context (archaeological or less than 100 years old, refer Step 2).
How?	Inform all site personnel of restricted access to the area of the discovery until further notice. Area must be fenced off (flagging or temporary exclusion fencing).
Actions	Notify site supervisor, principal contractor, Project Archaeologist / Excavation Director and Sydney Metro Environmental Manger of the find and protect the suspected remains until an initial assessment can be undertaken by a technical specialist. Preliminary notification to NSW Police by Sydney Metro Environmental Manager.

Confirm the remains are human

Skeletal remains could either be articulated and in a recognisable form of burial such as a coffin or common burial position of the body (e.g. supine, prone or flexed), or they could be disarticulated or fragmented remains. Within the boundaries of a known historic burial ground, there is a high probability of the remains being human. In a suspected forensic case (less than 100 years old), the remains may have clothing and/or human tissue. Disarticulated or fragmented bones are often uncovered and these may require specialist assessment to determine legal jurisdiction.

If suspected human remains are identified during the course of project works, preliminary notification must be made to the NSW Police in compliance with Section 35 of the *Coroners Act 1999* (refer Step 1). NSW Police would be contacted immediately upon receipt of confirmation of human provenance.

What?	Confirmation that the remains are human, their burial context - whether they are forensic (less than 100 years) or archaeological (older than 100 years) and suspected ancestry (Aboriginal or non-Aboriginal).
Who?	Excavation Director and or Forensic or physical anthropologist, or archaeologist with specialist skills such as an osteoarchaeologist. Notification to the NSW Police will be undertaken by the Sydney Metro Environmental Manager.
How?	Consultation could be undertaken as either an on-site inspection or via good quality photos sent to the nominated technical specialist of 1) the remains; and 2) the site general site location of the discovery.
Actions	Contact nominated technical specialists to confirm that the remains are: a) human, b) burial context (archaeological or forensic), and c) suspected ancestry (Aboriginal or non-Aboriginal). For the duration of the Sydney Metro project, the nominated technical specialists are: • Forensic Anthropologist – TBC by contractor for project area. • Nominated Excavation Director – TBC by contractor for project area. • Sydney Metro Environmental Manager to conduct and or oversee liaison with NSW Police. The archaeologist may be able to identify the nature of remains without input from the Forensic Anthropologist. The Forensic Anthropologist should be contacted as required.

Notification based on jurisdiction (forensic or archaeological)

Once confirmation is received from the technical specialist that the remains are of human origin, there are three possible statutory pathways to follow based on the assessment.

What?	*Forensic case*: remains are less than 100 years old
Who?	If it is determined by specialist assessment (Step 2) that the remains are forensic, the remains come under the jurisdiction of the State Coroner and the Coroners Act 2009.
How?	The NSW Police would likely secure the site and will advise on the procedure to be followed.
Actions	Environmental Manager to liaise with NSW Police

What?	*Archaeological – non-Aboriginal human remains* – more than 100 years old.
Who?	Follow the Archaeology Exhumation Methodology as set out in Step 4 below

How?	Follow the Archaeology Exhumation Methodology as set out in Step 4 below
Actions	Follow the Archaeology Exhumation Methodology as set out in Step 4 below

What?	*Archaeological – suspected Aboriginal human remains – more than 100 years old.*
Who?	Recording of Aboriginal ancestral remains must be undertaken by, or conducted under the direct supervision of a specialist with registered Aboriginal parties (RAPs) present.
How?	The RAPs must be present where it is reasonably suspected that Aboriginal burials or human remains have been encountered.
Actions	Notify RAPs and Heritage NSW and follow the Aboriginal cultural heritage assessment report (ACHAR). Follow the Archaeology Exhumation Methodology as set out in Step 4.

3.2. Archaeological exhumation methodology

The following section provides a broadly accepted archaeological methodology for exhumation and the appropriate handling of human remains.

Securing the site
The strategy for the excavation and removal of human remains must be sensitive to public opinion and ethics and exhumation activities should not be visible to the general public. The site may need to be screened off from public areas, not only with hoarding but also in some cases with a roof to screen the site off from overlooking buildings. At all times, human remains should be treated respectfully. The perimeter of the excavation site should be demarcated by plastic tape or flagging, with only technical staff allowed within this area for the duration of exhumation activities.

The site should be protected from the elements including flooding, contamination with dust or debris, and other disturbance. These measures would be formulated by the Excavation Director in consultation with the contractor and Sydney Metro where required and may differ from site to site.

Excavation Director
Archaeological investigations are to be managed by a suitably qualified Excavation Director with experience in the excavation and management of human remains. For sites with potential for locally significant remains, the Excavation Director should meet the NSW Heritage Council criteria for experience with locally significant archaeological sites. For sites with potential for State significant archaeology the Excavation Director should meet the Heritage Council of NSW criteria for experience with State significant archaeological sites.

Excavation and recording
Exhumation and recording is to be undertaken in accordance with best practice forensic and Heritage Council of NSW guidelines. Prior to removal, the remains should be fully recorded in situ to understand their surrounding archaeological context. This will include recording any disturbances to the burial and the identification of bones present. In some cases, the deposit

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of bones may be a mixture of articulated and disarticulated remains. Care should be taken to distinguish articulated remains and to assess if they represent commingled individuals or disturbed remains belonging to one individual, and to record them accordingly.

Recording

- A standard context recording system is to be employed.
- Detailed survey and/or measured drawings are to be prepared and include location of remains within the overall site (position of the body, the direction of the burial, noting any stratigraphic relationships with other archaeological features).
- Any associated artefacts (potential grave goods, burial furniture) are to be recorded and collected by context for later analysis.
- Photographic record of all phases of work in accordance with 'Photographic Recording of Heritage Items Using Film and Digital Capture'. Photographs are to be in RAW format, using photographic scales and photo boards where appropriate.
- Registers of contexts, photos, samples and drawings are to be kept.

Excavation

- Detection of the extent of the grave/remains (if disarticulated).
- Surface soils removed in excavation units of 100mm (site dependent) using small hand tools.
- Expose remains with soft paint brushes and pedestal the remains.
- Record position and depth of remains.
- Soil removed is to be sieved through 3mm mesh to examine for teeth and bone fragments.
- Soil samples may be taken from the abdominal and/or chest areas of the body (articulated remains) to retrieve further evidence.
- Exhumation must be under the control of the Excavation Director, with the assistance of a Forensic Anthropologist if required. Exhumation permit/s, provided by NSW Ministry of Health may also require the presence of an authorised officer or a member of staff of the Ministry of Health.
- Further excavation of the bottom of the pit (grave) following removal to confirm the absence of further remains.

Relocation of bones

- Removal and collection of skeletal remains is to follow the standard forensic practice of labelling as follows:
    - Remove remains from the ground systematically and place in plastic bags according to anatomical areas of the body.
    - Bags should not be air-tight and should have ventilation holes to prevent deterioration of fragile skeletal material. Each bag should contain labels and the separate bags should then be placed in a large plastic bag, crate or box, labelled with the context information.
    - The remains should be placed in a sturdy, large cardboard box (approximately 600 x 300 x 200 mm) for relocation to off-site processing location.

3.3. Resume work

Construction work may only recommence upon receipt of clearance certificate from the Excavation Director and may require additional NSW Ministry of Health approval. If a forensic case, written authorisation from the NSW Police is required.

3.4. Reporting

A report would be prepared following the completion of the program of exhumation works, separate to the archaeological excavation report for the project. This report would include skeletal analysis catalogue, comprehensively describe the process of exhumation, detail the recording of the remains and synthesise the results of any further laboratory testing. An assessment of significance for the remains would be provided and interpreted within the context of the archaeological research design (response to research questions).

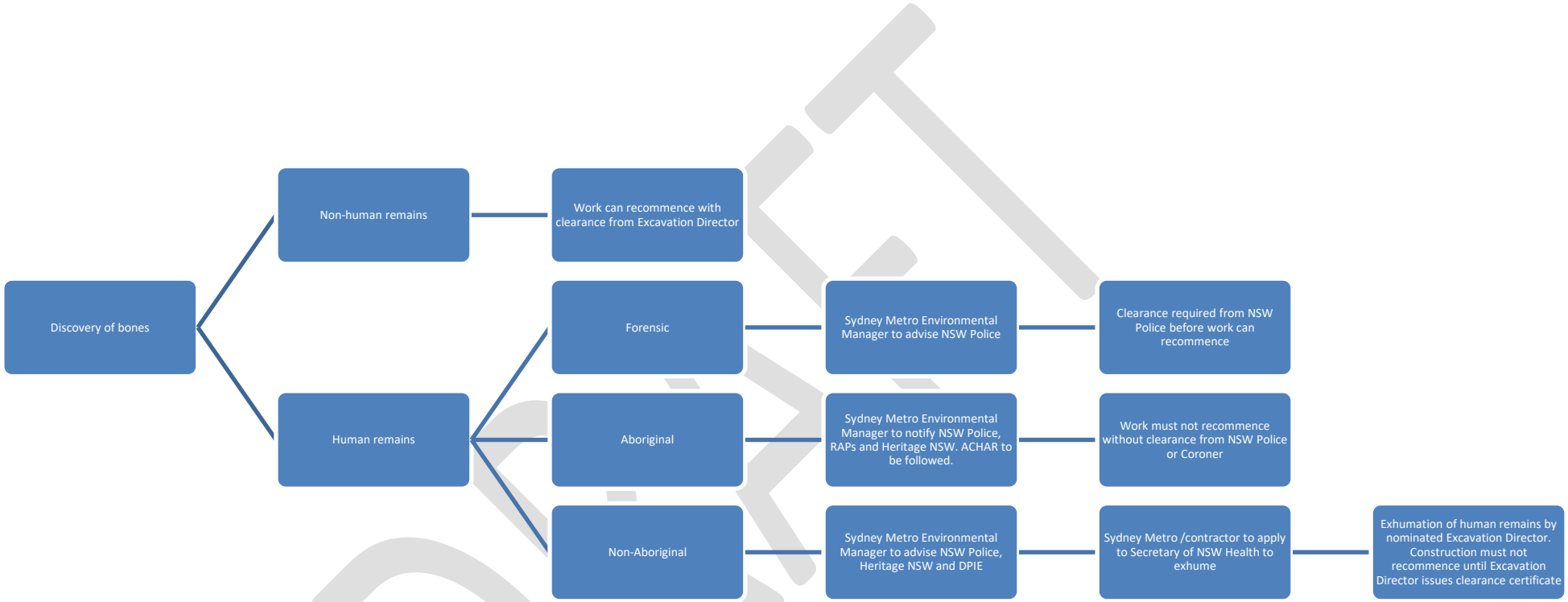


Figure 2 Exhumation procedure flow chart

4. Excavation and post-excavation tasks

All on-site management should be in accordance with the archaeological research design (ARD) and relevant archaeological method statement (AMS), and be overseen by the Excavation Director. The Excavation Director would nominate a Forensic Anthropologist where required.

4.1. Research questions

Research questions should be specific to the site and the site history. The research questions in the archaeological research design can be revised as new information emerges and new research questions can be investigated.

The following general research questions can be used to guide exhumations, should intact burials, disarticulated remain, burial cuttings or associated material culture be uncovered during work.

Social history and burial practices

- Does the location of the burial/burial cutting correspond with historic plans/descriptions?
- Is there evidence of exhumation?
- Do graves cut into older ones? What can this tell us about nineteenth century burial practices, and how does this compare to other excavated cemetery sites in the region?
- What is the distance between burials (if multiple burials uncovered)? Does this conform to known nineteenth century burial practices?
- What type of fill was used within grave cuttings? What can this tell us about the surrounding environment and burial practices at the time?
- What materials/tree species were used in the coffin manufacture? Can coffin manufacturing techniques or fastening methods (use of mortar, screws, nails, tacks) be identified? Does this match known burial practices of the time? If alternative methods are identified, what can this tell us about the manufacturer or economic/social landscape?
- Can the class or rank of the individual be identified via coffin materials, grave goods or clothing/shrouds?
- Which direction is the burial orientated? How does this correspond with the known/hypothesised location of denomination areas?
- If the burial is associated with more than one individual, can a familial relationship be assessed through DNA or other genetic markers identifiable within the skeletal remains?

Environmental factors and scientific analysis

- What is the condition of the bones? How does their condition compare to known or nearby burials of the same age? What environmental or human factors may have influenced the decomposition process?
- Can the health, nutrition, sex, race, stature or age be identified through the skeletal remains? Is there evidence of trauma on the bones? Is there evidence of pathology on the bones (e.g. syphilis, tuberculosis, tumours)?
- Can stable isotope analysis address any questions regarding diet, country of origin and nutrition?
- Can DNA testing address any questions not answerable by the skeletal remains themselves, such as sex, familial relationships (if buried with another individual/s) or

race?

- Is there potential for DNA to be tested against any individuals who may come forward as a descendant of the deceased?

4.2. Process for DNA testing, isotope analysis and environmental sampling

Pre-excavation

The Excavation Director, in consultation with the Forensic Anthropologist, will nominate a suitable laboratory prior to works commencing. Requirements for DNA testing, isotope analysis and environmental sampling will be identified in the archaeological research design and archaeological method statement.

Excavation

In order to prevent cross-contamination, the following sample collection and excavation process should be followed:

- The location, quantity and material (bone, teeth, hair, soil, wood) of samples will be determined by the Excavation Director or Forensic Anthropologist prior to its collection.
- Samples would be stored in a safe, secure and climate controlled location while excavations are in progress. This would be chosen by the Excavation Director or Forensic Anthropologist on site.
- Each collected sample would be given a unique catalogue number and a sample register would be recorded throughout the excavation;
- 'Clean excavation' procedures would be followed during the excavation of burials and during the sample collection process[7]. This would include:
    - Latex gloves would be worn by individuals excavating and/or handling bone or soil samples. Gloves would be changed for each bone and/or individual to prevent cross-contamination;
    - Excavation tools/brushes would be cleaned prior to and after the collection of each sample to prevent cross-contamination;
    - In some cases, a face mask would be worn when samples for DNA analysis are being collected;
    - Bone samples for DNA testing would be collected with surrounding in situ soil and should not be cleaned prior to bagging;
    - It may be necessary for individuals involved in sample collection to submit DNA for comparison in the event of cross-contamination; and
    - All bags containing samples for analysis would be bagged and labelled appropriately to prevent cross contamination and ensure they are handled and stored correctly.

Post-Excavation

[7] Guidelines for 'clean excavation' are based on procedures outlined in: Yang, D. Y. & Watt, K. 2005. Contamination controls when preparing archaeological remains for ancient DNA analysis. *Journal of Archaeological Science*, vol. 32, pp. 331–336 and *Society for Historical Archaeology*, 2015-2017. Research and Analysis of Artefacts. Accessed online at: https://sha.org/conservation-facts/faq/analysis/#C on 25/5/2017.

On completion of excavations, samples will be transported to nominated laboratories for analysis. A record of their location will be kept.

4.3. Reporting

The results of the investigation of human remains and the exhumation will be included in the archaeological reporting for the project in accordance with the project ARD.

Once finalised, and where it is appropriate to do so as determined in consultation with RAPs and/or as may be required by the relevant Planning Approval obligations, archaeological and associated specialist reports should be submitted to:

- The relevant local Council and Library;
- Heritage NSW Library;
- The State Library of NSW; and
- Made available online for public access and educational purposes.

Further, if significant remains are identified during excavations, the results and findings would be published in academic journals and conference papers where feasible.

4.4. Public involvement

Archaeological excavations may uncover remains directly associated with early settlement and burial practices. Such remains are likely to generate public interest.

Public involvement may include:

- Media releases;
- Public Open Days;
- Preparation of brochures detailing the archaeological excavations;
- Interpretive signage and online blog posts or site diaries while excavations are taking place; and
- The preparation of a Heritage Interpretation Plan designed to provide interpretation of the site within the new development upon the completion of works.

Due to sensitive nature of human skeletal remains, these recommendations would be adapted and modified as appropriate under the direction of Sydney Metro and the Excavation Director.

Such recommendations would also be considered and require approval from relevant stakeholder groups such as known or potential descendants of the deceased, Heritage NSW/Heritage Council of NSW, local Council and interest groups.

4.5. Temporary storage and permanent repository or resting place for remains

Temporary storage
Upon the completion of archaeological excavations, skeletal remains should be boxed separately and temporarily stored within a safe, secure controlled environment to allow for further analysis of the remains. This location would be chosen by the Excavation Director and the Forensic Anthropologist and comply with NSW legislative requirements.

Permanent repository or resting place for remains
A permanent repository or resting place for remains is dependent on the nature and volume of skeletal remains. Final arrangements would be dictated by Sydney Metro, the Excavation Director, Forensic Anthropologist, identified descendants of the deceased, RAPs (if applicable) and/or other stakeholders upon the completion of excavations and subsequent analysis.

5. Definitions

All terminology in this document is taken to mean the generally accepted or dictionary definition. Other terms and jargon specific to this document are defined within the SM-17-00000203 Sydney Metro glossary. Acronyms specific to this document are listed below.

	Definitions
IMS	Integrated Management System (IMS)
TfNSW	Transport for New South Wales
RAP	Registered Aboriginal party
ACHAR	Aboriginal cultural heritage assessment report
ARD	Archaeological research design
AMS	Archaeological method statement
OEH	Office of Environment and Heritage (now Heritage NSW)
PHU	Public Health Unit
ExMP	Exhumation Management Procedure (this Procedure)
ER	Environmental Representative (independent)

6. Accountabilities

The Director Environment, Sustainability and Planning is accountable for this document including approving the document, monitoring its effectiveness and performing a formal document review.

Direct Reports to the Chief Executive are accountable for ensuring the requirements of this document are implemented within their area of responsibility.

Direct Reports to the Chief Executive who are accountable for specific projects/programs are accountable for ensuring associated contractors comply with the requirements of this document.

7. Related documents and references

Related documents and references
• SM-18-00105232 Sydney Metro Unexpected Heritage Finds Procedure • Department of Environment, Climate Change and Water 2010, Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 • Department of Environment, Climate Change and Water 2010, Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW

8. Superseded documents

Superseded documents
Exhumation Management Plan Version 1.1 Exhumation Management Plan Version 2.0 Exhumation Management Plan Version 2.1 Exhumation Management Plan Version 2.2 Exhumation Management Plan Version 3.0 Exhumation Management Plan Version 4.0

9. Document history

Version	Date of approval	Notes
1.1	May 2017	New IMS document.
2.0	July 2017	Incorporates Stage 2 (section 3)
2.1	February 2019	Extended for Metro Program wide application, includes changes specific Central Station management, and incorporates comments received from the State Coroner's Office, NSW Police, NSW Health, and Sydney Metro Environmental, Environmental Representatives engaged on the Central site and the Office of Environment and Heritage (OEH).
2.2	February 2019	Incorporates comments received from Artefact Heritage and Dr Denise Donlon issued to Health and OEH Heritage Division for consultation.
3.0	May 2019	Incorporates Health, Coroner and OEH comments.
4.0	April 2020	Updates to remove specific references to City and South West and Central Station. Change of title to "Procedure". Update to references.
5.0	March 2021	Minor edits.
5.1	April 2021	Updates to related documents and references.

Appendix 1

NSW Health Policy Directive for Exhumation of Human Remains

CONDITIONS OF APPROVAL FOR EXHUMATION FROM GRAVE

1. The exhumation is to be carried out in the presence of a Public Health Unit's authorised officer or other authorised officer of the NSW Ministry of Health or Local Council authorised Officer and person appointed by Cemetery Authority.

2. At least 48 hours notice of the exhumation arrangements shall be given to the Public Health Unit.

3. Day and time of the exhumation shall be arranged by the participating parties and agreed to by the Public Health Unit.

4. The approval granted is valid for a period of three months and shall lapse on ___ /____/_____, unless a further approval is granted.

5. The presence of any relative of the deceased at the exhumation is strictly prohibited.

6. No animals are to be permitted within the exhumation site.

7. The cemetery authority and funeral director shall be responsible for the work health and safety of all persons involved in the exhumation and shall ensure that all NSW WorkCover requirements are complied with.

8. If, during the course of the exhumation, it is determined necessary to stop the exhumation by either the exhumation supervisor / cemetery manager or authorised Officer, for any valid reason e.g. work health and / or public health risk, then the exhumation must cease.

9. The remains of the deceased shall be enclosed in a body bag and placed into a new coffin with a name plate attached inscribed with the name of the deceased.

10. The remains of the original coffin are to be placed in the new coffin where possible. Where there is an excess of remains of the original coffin, these remains should be disposed in a sanitary and agreed manner.

11. Excavated soil should be back filled. The soil that was removed from immediately above and around the coffin should be replaced first.

12. If the exhumed remains are to be transferred to another cemetery, a funeral director shall be contracted to transfer the remains from the cemetery grounds or carry out preparatory work for the safe reinterment of the remains.

13. The exhumation will not proceed during or following a period of heavy rainfall within the preceding 24 hours of the appointed time of exhumation. The cemetery manager is to confirm that satisfactory conditions exist for the exhumation to proceed two hours prior to the commencement of the exhumation.

14. Used disposable protective equipment and materials are to be placed in a sealed plastic bag and disposed of in a sanitary manner.

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CONDITIONS OF APPROVAL FOR EXHUMATION FROM ABOVE GROUND STRUCTURE

1. The exhumation is to be carried out in presence of a Public Health Unit authorised officer or other authorised officer of the NSW Ministry of Health or Local Council authorised Officer and person appointed by Cemetery Authority.

2. At least 48 hours notice of the exhumation arrangements shall be given to the Public Health Unit.

3. Date and time of the exhumation shall be arranged by the participating parties and agreed to by the Public Health Unit.

4. An approval granted is valid for a period of three months and shall lapse on ___ /____/_____, unless a further approval is granted.

5. The cemetery authority and funeral director shall be responsible for the work health and safety of all persons involved in the exhumation and shall ensure that all NSW WorkCover requirements are complied with.

6. If, during the course of the exhumation, it is determined necessary to stop the exhumation by either the exhumation supervisor / Cemetery Manager or authorised officer, if for any valid reason e.g. worker health and/or public health risks, then the exhumation must cease.

7. Used disposable protective equipment and materials are to be placed in a sealed plastic bag and disposed in a sanitary manner.

Appendix 2

NSW Health Permit Application

APPLICATION TO EXHUME REMAINS

PUBLIC HEALTH REGULATION, 2012 Clause 70(2)

In accordance with the requirements of Clause 70 (2) of the Public Health Regulation 2012, I …….
(Full name of applicant)

…… of …… hereby
(Address)

apply for permission to exhume the remains of the late ……..
(Name of deceased)

from Grave No:……., Section: ……, being a single

interment within the ……..……Cemetery, for the purpose of ……

……

I seek permission to exhume for the following reason/s:

……

The deceased: *(cross out which is not applicable)*

- was not known to be infected with a prescribed infectious disease as defined in clause 53 of the Public Health Regulation 2012; or
- was known to be infected with a prescribed infectious disease as defined in clause 53 of the Public Health Regulation 2012

I am entitled to make this application, because I am: *(tick one)*

1. [ ] The executor of the estate of the deceased; or
2. [ ] The nearest surviving relative of the deceased; or
3. [ ] If there is no such executor or relative available to make the application, another the proper person to make the application for the reasons set out below:

……
(Full reasons for proper person to make application)

Attached is:

1. A certified copy of the death certificate of the deceased.
2. A statutory declaration as to:
   - My relationship to the deceased; and
   - the wishes of the deceased regarding the disposal of the body (if known);
   - the reasons why the Director-General may consider me the proper person in all the circumstances to make the application (if applicable)
3. The application fee of $……

The exhumation is to be supervised in strict accordance with the attached Plan of Management

by ……

employed with ……..(Funeral Director/Cemetery)

in the capacity of ……

Signature: …… Date: ……..
(Applicant)

Form C70

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Appendix C. Aboriginal Community Consultation

Appendix C1. Community Consultation Log

Consultation Log

Stage 3 Excavation Methodology

Organisation	Contact	Date	Description	Extent Contact
Stage 3.1 Methodology Sent				
[redacted]		22 April 2022	Excavation methodology sent	Hannah Morris

Organisation	Contact	Date	Description	Extent Contact
[redacted]				

Organisation	Contact	Date	Description	Extent Contact
[redacted]				

Organisation	Contact	Date	Description	Extent Contact
[redacted]				

Organisation	Contact	Date	Description	Contact
Stage 3.2 Methodology Received				
[redacted]	[redacted]	20 May 2022	[redacted] agree and support the recommendations outlined in the ARD. [redacted] wants to further acknowledge that they 'hold 50 years of cultural knowledge of the area. We hold a deep connection to Mother Earth, the sky, and our water ways. Aboriginal people have a spiritual connection to the land, it holds stories, history. It is for this reason we must not destroy the land or pollute it as it will become sick and so will we. Mother Earth gives to us and in return we care for her. [redacted] aim to protect and conserve our sacred sites especially our burial sites and the tangible and intangible. The study area is highly significant to us Aboriginal people. The shelter itself has importance to us. the intangible aspects like being connected to land is of importance as we hold a spiritual connection to the land. The site is close to water ways that are utilised by Aboriginal people. The flora and fauna would have been thriving and Aboriginal people utilised their environment to its full potential. Aboriginal people carried out their daily activities in this area, hence why it's so important to us. Aboriginal people have walked this land for tens of thousands of years and continue to do so today. They strategically look after the land, plant flora in a way that coexisted with the environment around them. Ways in which this can be archived is through design, art, digital displays, apps, native gardens/ landscaping. It is important to incorporate interpretation into your project as it educates the wider community and our next generations about the traditional owners of the land. The Parramatta area is a significant area for interpretation as it is rich with heritage and development we should start to join and tell the story of the Aboriginal people of Parramatta linking sites as a whole, a keeping place should also be sorted to keep artefacts on country.'	Hannah Morris

Organisation	Contact	Date	Description	Contact
[redacted]	[redacted]	9 May 2022	[redacted] have read the project information and methodology and agree with the recommendations made.	Hannah Morris
		29 April 2022	[redacted] asks to provide information regarding the number of pits that will be excavated or the area in size of where the pits will be placed	Hannah Morris
[redacted]		29 April 2022	Extent responded to the request outlining that there would be 7 test pits within a total area of 289m^2. Extent outlined that this is above the 0.5% limit of test excavations outlined in the *Code of Practice* but that, due to the site being a state significant development, the project was exempt from an AHIP. As a result, the methodology proposed was able to be more flexible.	Hannah Morris
[redacted]	[redacted]	28 April 2022	[redacted] contacted Extent via telephone and confirmed he agreed with the methodology outlined in the ARD.	Hannah Morris
[redacted]	[redacted]	25 April 2022	[redacted] grees with the methodology.	Hannah Morris

Appendix C2. Sent

Hannah Morris

From: Hannah Morris
Sent: Friday, 22 April 2022 5:01 PM
Subject: Sydney Metro West: Hunter Street West - Archaeological Research Design

Dear Stakeholders, I hope you're all well,

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The document can be accessed via WeTransfer:

https://we.tl/t-zYp4k0MZiQ

Please provide comments by **COB 20 May 2022**. Don't hesitate to contact me if you have any questions, comments, or concerns regarding the updated methodology or process.

Kind regards,
Hannah Morris
Appendix A.

Hannah Morris
Senior Heritage Advisor

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hmorris@extent.com.au
extent.com.au
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EXTENT
HERITAGE ADVISORS
TO AUSTRALIA AND
THE ASIA PACIFIC

22 April 2022

[redacted]

Dear [redacted]

Metro Hunter Street East and West—Excavation methodology

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Sections including environmental context (Section 2.2), Aboriginal history (Section 2.3), 'archaeology in the neighbourhood' (Section 3.2), AHIMS mapping (Section 4.1), and archaeological significance (Section 4.3) provide similar information to that previously included in the ACHAR. Please understand that Extent has undertaken a full reassessment of the site, and sections which are similar are not the same.

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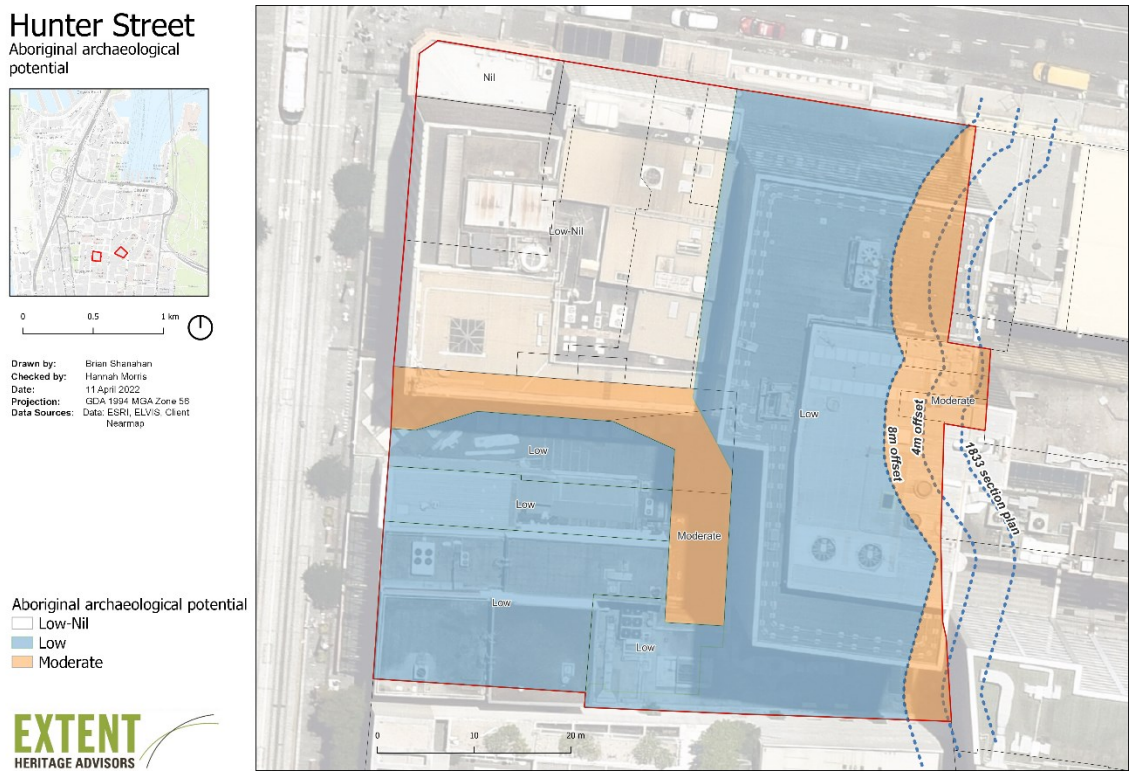
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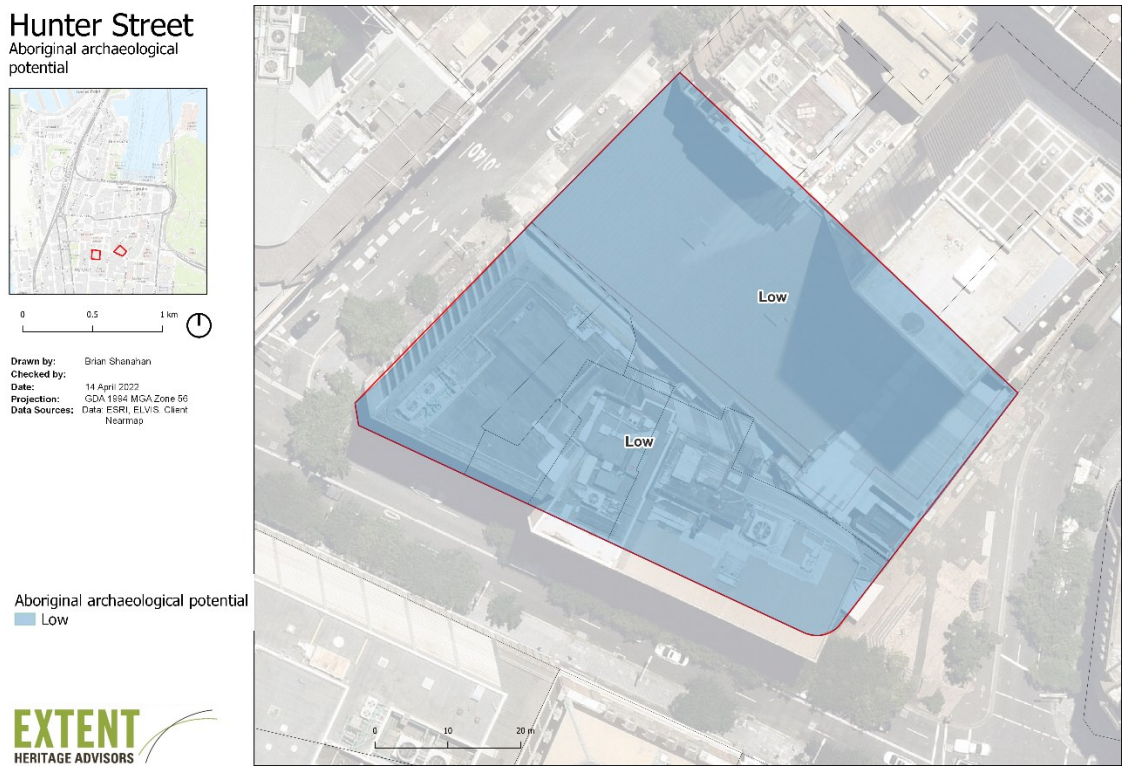
Please provide comments by **COB 20 May 2022**. Don’t hesitate to contact me if you have any questions, comments, or concerns regarding the updated methodology or process.

Kind regards,
Hannah Morris
Senior Heritage Advisor | Extent Heritage

The graphics below outline the updated assessment of Aboriginal archaeological potential generated by Extent in the ARD supplied:



Aboriginal archaeological potential: Hunter Street West (Extent Heritage 2021)



Aboriginal archaeological potential: Hunter Street East (Extent Heritage 2022)

Appendix C3. Received

Hannah Morris

Sent: Friday, 20 May 2022 11:56 AM
To: Hannah Morris
Subject: RE: Sydney Metro West: Hunter Street West - Archaeological Research Design

Categories: Address

Dear Hannah,

Thank you for you draft ACHA and ARD for Sydney Metro West project Pyrmont and Hunter Street. Here at [redacted] we hold 50 years of cultural knowledge of the area. We hold a deep connection to Mother Earth, the sky, and our water ways. Aboriginal people have a spiritual connection to the land, it holds stories, history. It is for this reason we must not destroy the land or pollute it as it will become sick and so will we. Mother Earth gives to us and in return we care for her. [redacted] aim to protect and conserve our sacred sites especially our burial sites and the tangible and intangible.

The study area is highly significant to us Aboriginal people. The shelter itself has importance to us. the intangible aspects like being connected to land is of importance as we hold a spiritual connection to the land. The site is close to water ways that are utilised by Aboriginal people.

The flora and fauna would have been thriving and Aboriginal people utilised their environment to its full potential. Aboriginal people carried out their daily activities in this area, hence why it's so important to us. Aboriginal people have walked this land for tens of thousands of years and continue to do so today. They strategically look after the land, plant flora in a way that coexisted with the environment around them.

Ways in which this can be archived is through design, art, digital displays, apps, native gardens/ landscaping. It is important to incorporate interpretation into your project as it educates the wider community and our next generations about the traditional owners of the land. The Parramatta area is a significant area for interpretation as it is rich with heritage and development we should start to join and tell the story of the Aboriginal people of Parramatta linking sites as a whole, a keeping place should also be sorted to keep artefacts on country.

We agree and support your recommendations and we look forward to working with you on the project.

Kind Regards

[redacted]

From: Hannah Morris
Sent: Friday, 22 April 2022 5:01 PM
Subject: Sydney Metro West: Hunter Street West - Archaeological Research Design

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Hannah Morris

From: [redacted]
Sent: Monday, 9 May 2022 9:02 PM
To: Hannah Morris
Subject: Re: Sydney Metro West: Hunter Street West - Archaeological Research Design

Categories: Address

Appendix A. Hi Hannah

Appendix B. I have read the project information and methodology for the above project, I agree with the recommendations made.
Thanks

Appendix C. [redacted]

Appendix D.

Appendix E.

> Appendix F. On 22 Apr 2022, at 5:01 pm, Hannah Morris <hmorris@extent.com.au> wrote:
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Hannah Morris

From: [redacted]
Sent: Friday, 29 April 2022 1:03 PM
To: Hannah Morris
Subject: Re: Sydney Metro West: Hunter Street West - Archaeological Research Design

Categories: Address

Good afternoon Hannah, is there any idea of how many pits there will be in the excavation.

Or if possible could you advise us of the area in size of sqm where the test pits will be placed please.

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Appendix A.

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Hannah Morris

From: Hannah Morris
Sent: Friday, 29 April 2022 2:03 PM
To: [redacted]
Subject: RE: Sydney Metro West: Hunter Street West - Archaeological Research Design

Good afternoon,
There will be 7 test pits in the first phase at De Mestre Place (an area with a total of 289m^2). I understand this is above the 0.5% outlined in the code of practice. Because the site is a state significant development, it is exempt from obtaining an AHIP. As a result, we have the opportunity to present a different and more effective methodology and approach to the archaeology. Normally, we would require an AHIP to undertake a test excavation methodology that does not fully adhere to the Code of Practice or to undertake salvage excavations. I advise it is best to think of the 'test excavation phase' as an initial phase of investigation rather than the type of testing phase that would normally be undertaken. The second phase, the 'salvage excavation phase' is also a similar methodology of placing 'test pits' across the site. These will be expanded when archaeology is encountered, similar to a usual salvage.

The use of 1m trenches allow us to dig more and miss less, they allow us to excavate wider test trenches in De Mestre Place where depth may be an issue and shoring would not be possible in 50cm test pits, and also they allow us to more easily and effectively see the soil profiles that we encounter (especially in the important Tank Stream valley). Moreover, excavating 1m test trenches in De Mestre Place allows us to keep a consistent methodology across the entire site.

I hope this provides some clarity. Please let me know if you have any further questions,
Hannah

Hannah Morris
Senior Heritage Advisor

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hmorris@extent.com.au
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hmorris@extent.com.au
extent.com.au

Hannah Morris

From: [redacted]
Sent: Monday, 25 April 2022 9:28 AM
To: Hannah Morris
Subject: Re: Sydney Metro West: Hunter Street West - Archaeological Research Design

Categories: Address

Thanks Hannah, all good from our end

Sent from Yahoo Mail for iPhone

On Friday, April 22, 2022, 5:01 pm, Hannah Morris <hmorris@extent.com.au> wrote:

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

Sydney Metro West

Archaeological Research Design and Excavation Methodology

Pyrmont Station

April 2022

NSW GOVERNMENT

sydney METRO



Sydney Metro West – Pyrmont Station Construction Sites

Archaeological Research Design and Excavation Methodology

Report to Sydney Metro

April 2022

artefact

Artefact Heritage
ABN 73 144 973 526
Suite 56, Jones Bay Wharf
26-32 Pirrama Road
Pyrmont NSW 2009
Australia

+61 2 9518 8411
office@artefact.net.au

EXECUTIVE SUMMARY

Project overview

Sydney Metro is Australia's biggest public transport program. Sydney Metro West (the project) is a new 24-kilometre metro line that will connect Greater Parramatta with the Sydney CBD. Confirmed stations include Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street (Sydney CBD). This infrastructure investment will double the rail capacity of the Greater Parramatta to Sydney CBD corridor with a travel time target between the two centres of about 20 minutes.

Sydney Metro West was assessed as a staged infrastructure application under section 5.20 of the Environmental *Planning & Assessment Act 1979* (EP&A Act).

The Concept and major civil construction work for Sydney Metro West between Westmead and The Bays (Stage 1 of the planning approval process, application number SSI-10038), was approved by the Minister for Planning and Public Places on 11 March 2021.

Stage 2 of the planning approval process includes all major civil construction work including station excavation and tunnelling between The Bays and Sydney CBD.

The Non-Aboriginal Heritage Technical Paper prepared by Artefact Heritage (Artefact) in 2021[1] concluded that the Pyrmont Station construction sites have the potential to contain locally significant non-Aboriginal archaeological resources. Consequently, it was recommended that an Archaeological Research Design (ARD) be prepared to guide excavation works and provide strategies to mitigate impact to potential archaeological resources.

This document provides the ARD and Excavation Methodology (ARDEM) for the Pyrmont Station construction sites.

Archaeological assessment

Historical and archival research to prepare a detailed site-specific history of the Pyrmont Station construction sites has identified the following potential non-Aboriginal archaeological items in the study area.

Site	Phase	Predicted remains	Potential	Significance
Pyrmont Station western construction site	**Phase 2 (1879-1914)**	Archaeological remains related to this phase may include brick and stone footings, hearths, yard and workshop surfaces, rubbish scatters and isolated rubbish pits/bottle dumps.	Moderate	Local
		Dependant on the extent of former basement excavation impacts in the northernmost portion of the site, the study area has some potential to contain deeper subsurface structures such as wells, privies and cisterns. These structures may contain artefact bearing deposits.	Low	Local

[1] Artefact Heritage, October 2021, Sydney Metro West – Major civil construction work between The Bays and Sydney CBD, report to Sydney Metro Authority

Site	Phase	Predicted remains	Potential	Significance
		The site has limited potential to contain underfloor deposits (discarded ceramic, pins, buttons and glass).		
Pyrmont Station eastern construction site	**Phase 2 (1883-1930)**	Archaeological remains related to this phase may include brick and stone footings and hearths.	Moderate	Local
		The site has limited potential to contain underfloor deposits (discarded ceramic, pins, buttons and glass), artefacts deposited within decommissioned deeper subsurface structures such as wells, cisterns or privies. Yard and workshop surfaces and isolated rubbish deposits	Low	Local

Archaeological management recommendations

Portions of the Pyrmont Station construction sites have been assessed as having moderate potential to contain locally significant archaeological remains in the form of structural evidence and artefacts associated with the late 19th century residential and commercial development of Pyrmont. If high-yield artefact-bearing deposits, such as those often found in backfilled cisterns or rubbish dumps, survive intact, they may reach the local significance threshold through their ability to provide information regarding the life-ways of the previous occupants of the site.

It is proposed that management of the potential archaeological resource include the following processes. These have been defined in Table 22 and illustrated in Figure 115:

- Heritage induction (completed prior to demolition; see Section 5.2)
- Unexpected Finds Procedure during demolition of extant structures and excavation within areas previously impacted by basements as illustrated on Figure 114 (see Section 5.5)
- Eastern construction site - Monitoring and salvage (if required) of excavation work within the area of moderate archaeological potential (see Figure 115)
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1.0 INTRODUCTION

1.1 Sydney Metro West

Sydney is expanding and the NSW Government is working hard to deliver an integrated transport system that meets the needs of customers now and in the future.

Sydney Metro is Australia's biggest public transport program. Sydney Metro West (the project) is a new 24-kilometre metro line that will connect Greater Parramatta with the Sydney CBD. Confirmed stations include Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street (Sydney CBD). This infrastructure investment will double the rail capacity of the Greater Parramatta to Sydney CBD corridor with a travel time target between the two centres of about 20 minutes.

The delivery of Sydney Metro West is critical to keeping Sydney moving and is identified in a number of key strategic planning documents including the Greater Sydney Region Plan: A Metropolis of Three Cities – connecting people (Greater Sydney Commission, 2018a), Building Momentum: State Infrastructure Strategy 2018-2038 (Infrastructure NSW, 2018) and Future Transport Strategy 2056 (Transport for NSW, 2018).

Sydney Metro West was assessed as a staged infrastructure application under section 5.20 of the Environmental *Planning & Assessment Act 1979* (EP&A Act).

The Concept and major civil construction work for Sydney Metro West between Westmead and The Bays (Stage 1 of the planning approval process, application number SSI-10038), was approved by the Minister for Planning and Public Places on 11 March 2021.

Stage 2 of the planning approval process (this proposal) includes all major civil construction work including station excavation at the Pyrmont Station and Hunter Street Station (Sydney CBD) construction sites, and tunneling between The Bays and Sydney CBD.

The proposed major civil construction work between The Bays and Sydney CBD would include:

- Enabling work such as demolition, utility supply to construction sites, utility adjustments, and modifications to the existing transport network
- Tunnel excavation including tunnel support activities between The Bays and Sydney CBD
- Station excavation for new metro stations at Pyrmont and at Hunter Street (Sydney CBD)

This proposal would be located largely underground in twin tunnels. Indicative locations of the proposed alignment and stations are shown in Figure 1.

The Non-Aboriginal Heritage Technical Paper prepared by Artefact Heritage (Artefact) in 2021[2] concluded that the Pyrmont Station construction sites have the potential to contain locally significant non-Aboriginal archaeological resources. Consequently, it was recommended that an Archaeological Research Design (ARD) be prepared to guide excavation works and provide strategies to mitigate impact to potential archaeological resources (Recommendations NAH6).

This document provides the ARD and Excavation Methodology (ARDEM) for the Pyrmont Station construction sites.

[2] Artefact Heritage, October 2021, Sydney Metro West – Major civil construction work between The Bays and Sydney CBD, report to Sydney Metro Authority



Figure 1: Overview of Sydney Metro West between The Bays and Sydney CBD

1.2 Pyrmont Station construction sites

1.2.1 Site location

The location of the Pyrmont Station construction sites is shown in Figure 2. The eastern site would be located in the block bound by Pyrmont Bridge Road, Union Street and Edward Street. The western site would be located in the block bound by Pyrmont Bridge Road, Paternoster Row and Pyrmont Street.



Figure 2: Pyrmont Station construction sites

1.2.2 Heritage listings

For the purposes of undertaking a search of statutory registers, the Pyrmont Station construction sites study area consists of the two proposed construction sites and a 25 metre buffer zone. Listed and potential heritage items located within the Pyrmont Station construction sites or buffer are provided in Table 1 and Table 2 respectively, and curtilages are illustrated in Figure 3.

Table 1: Heritage items within 25 metres of Pyrmont Station western construction site

Item	Address	Listing	Significance	Proximity
Pyrmont Heritage Conservation Area	Pyrmont	• SLEP 2012 Item no. C52	Local	Within western construction footprint
Quarryman's Hotel	214-216 Harris Street	• SLEP 2012 Item no. I1232 • SREP 2005 (City West) Item no. 56 • RNE Place ID 100706	Local	15 metres south-west
Former Industrial Building 'Waite and Bull' Also known as 'John Taylor Wool Stores'	137 Pyrmont Street, Pyrmont	• SLEP 2012 Item no. I1263 • SREP 2005 (City West) Item no. 54. • RNE Place ID2036 • NTR no. 10858	Local	25 metres south

Item	Address	Listing	Significance	Proximity
Gilbey's Distillery	26-32 Pyrmont Bridge Road, Pyrmont	• Unlisted	Potential local heritage item	Within western construction footprint

Table 2: Heritage items within 25 metres of Pyrmont Station eastern construction site

Item	Address	Listing	Significance	Proximity
Former New York Hotel	50 Union Street, Pyrmont	• SLEP 2012 Item no. I1275 • SREP 2005 (City West) Item no. 67 • RNE Place ID 100709	Local	15 metres north
Former Warehouse 'Bank of NSW Stores'	17-21 Pyrmont Bridge Road	• SLEP 2012 Item no. I1256 • SREP 2005 (City West) Item no. 53 • RNE Place ID 100704	Local	20 metres south
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	20 metres west
Terrace Group	31-33 Union Street, Pyrmont	• SLEP 2012 Item no. I1274 • SREP 2005 (City West) Item no. 122	Local	20 metres west
Pyrmont Bridge Road Hotel	11 Pyrmont Bridge Road, Pyrmont	• SLEP 2012 Item no. I1255 • SREP 2005 (City West) Item no. 52 • RNE Place ID100703	Local	20 metres south

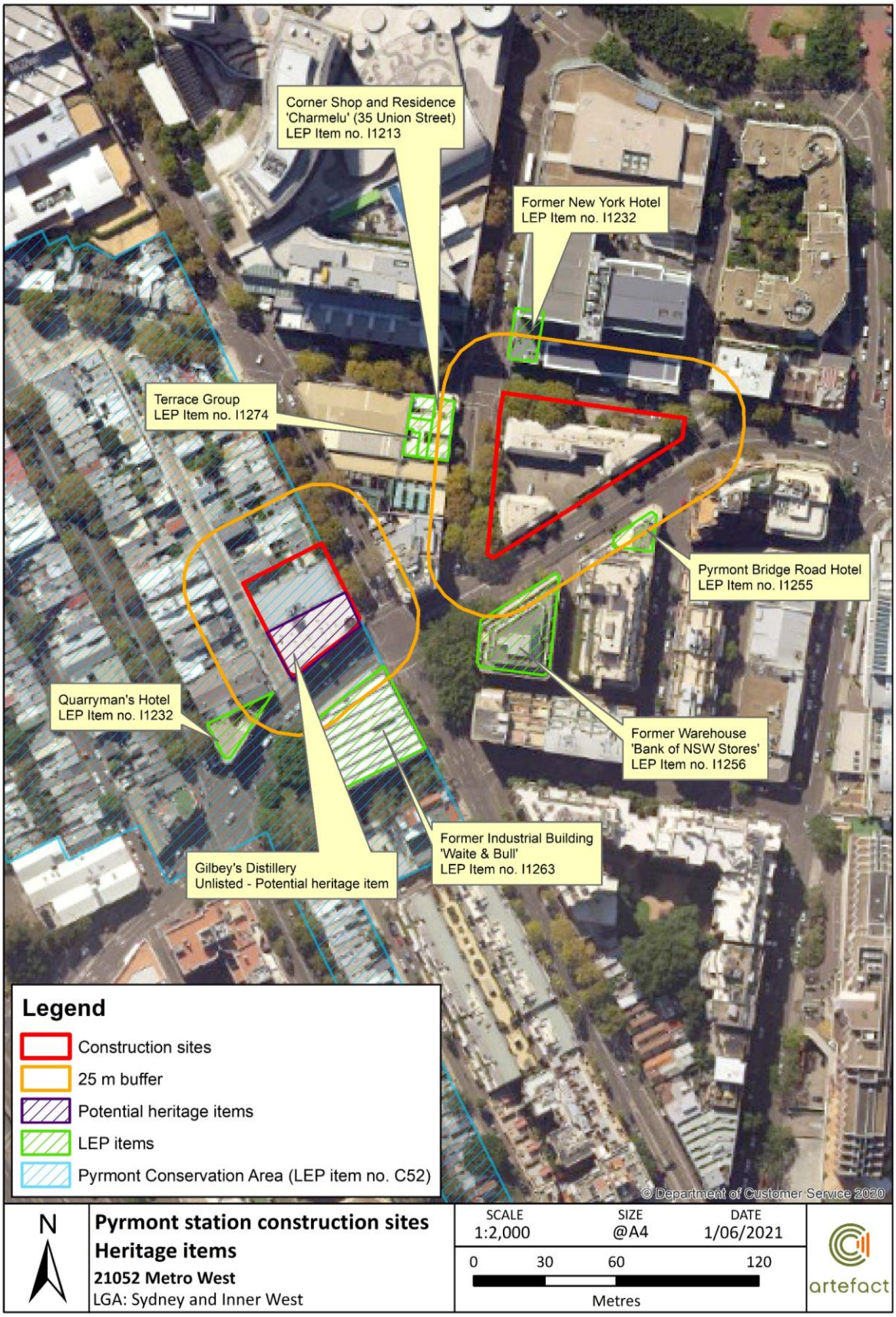


Figure 3: Location of heritage items within the study area for the Pyrmont Station construction sites

1.3 ARDEM methodology

This ARDEM has been developed utilising additional historical archival research into the Pyrmont Station construction sites in addition to the historical background prepared for the 2021 Technical Paper, as presented in Section 2.0. An updated assessment of archaeological potential and significance is presented in this document.

The archaeological management strategies recommended in this ARDEM are based on this revised assessment.

1.4 Report limitations

This Archaeological Methodology and Research Design has been prepared to provide an assessment of Non-Aboriginal (Historical) archaeological heritage values only.

1.5 Authorship and acknowledgements

This archaeological research design and excavation methodology report was prepared by Sammuel Sammut (Heritage Consultant) and Jenny Winnett (Principal). A detailed historical summary of the Pyrmont Metro station was prepared by Dr. Martina Muller. Management input and review was provided by Dr Sandra Wallace (Managing Director).

2.0 HISTORICAL CONTEXT

2.1 Introduction

This section presents a history of the study area. The aim of the research in the broadest sense is to determine the sequence of historical events that occurred on the site and their context. The emphasis in this history is on events that would create, modify, and remove archaeological evidence.

In order to better understand the course or pattern of the study area's history; the historical evidence has been organised into discrete periods or phases of time. This site history is then considered in the light of the Australian and NSW State historical themes in order to place the site history into broader contexts of the course or pattern of Australian or NSW's history.[3]

A detailed discussion of historic themes relevant for this assessment is provided in Section 4.1.

The following discussion of land-use has been divided into the western and eastern construction sites.

2.2 Aboriginal Country

The following summary has largely been copied verbatim from Section 7.1 in 'Technical Paper 4: Aboriginal Cultural Heritage Assessment Report', prepared by Artefact Heritage in October 2021:[4]

The Aboriginal people who lived in the Sydney region were part of the Eora Nation. The word Eora, meaning 'here' or 'of this place', is not a term traditionally used by Aboriginal communities pre-contact but arose during the first encounters with non-Aboriginal settlers.[5] It is now accepted as an appropriate term for the coastal Aboriginal peoples in the broader Sydney area.

Phillip Gidley King recorded in 1793 that:

> *The tribe of Cadi inhabit the south side, extending from the south head to Long-Cove; at which place the district of Wanne, and the tribe of Wangal, commences, extending as far as Par-ra-mata, or Rose-Hill.*[6]

Modern streets of Sydney, including George Street, are thought to have originated as Aboriginal tracks connecting areas of plentiful food or fishing opportunities.[7] These tracks were worn into the landscape through years of use and managed with cultural burning.[8]

The Pyrmont Peninsula appears to form part of the boundary between the Gadigal (also known as Cadigal) and the Wangal tribes. Early recordings by Governor Phillip describe the Wangal lands as:

[3] C.f. New South Wales Heritage Office. Assessing Historical Importance a Guide to State Heritage Register : Criterion A. Heritage Office (Parramatta, N.S.W.: 2006)
[4] With minor changes and updated references, for the original version see Artefact Heritage, 'Sydney Metro West - Major Civil Construction Work between The Bays and Sydney CBD. Technical Paper 4: Aboriginal Cultural Heritage Assessment Report. Report to Sydney Metro', October 2012, 35–38.
[5] Anita Heiss and Melodie-Jane Gibson, 'Aboriginal People and Place | Barani. Sydney's Aboriginal History | City of Sydney', 2013, https://www.sydneybarani.com.au/sites/aboriginal-people-and-place/.
[6] Quoted in Dominic Steele Consulting Archaeology, 'Application for a S87 Preliminary Research Permit Aboriginal Archaeological Assessment, Research Design, and Excavation Methodology – 320-328 George Street PAD, George Street, Sydney NSW. Report to Caverstock Group', 2005, 35.
[7] *Ibid.*
[8] 'Redfern Oral History: Gadigal People', accessed 10 February 2022, http://redfernoralhistory.org/Timeline/Gadigalpeople/tabid/240/Default.aspx/.

> *The south of the harbour, from the above-mentioned cove (present day Darling Harbour) to Rose Hill, which the natives call Paramatta.*[9]

Phillip continues to describe the district as Wann, and the clan as Wangal. The Darug (alternatively Darruk) language would have been spoken by both Gadigal and Wangal clans, as it was spoken across the Sydney region, from the Hawkesbury River in the north to Appin in the south, west of the George's River to the Blue Mountains, as well as along the coast between Port Jackson and Botany Bay.[10] It is likely that dialects would have differed between the coast and inland areas, although documentary evidence of this is thin.

Ethnohistorical sources suggest that, despite differences in dialect and customs, the Wangal, Gadigal, and other Darug clans of the Eora Nation would have interacted for ceremonies, intermarriage, dispute resolution, trade, and access to resources. Early accounts report large gatherings of clans for social or religious events, or to share access to abundant resources. For example, Tench records that in September 1790 at least 200 Aboriginal people came together to harvest a whale beached in Manly Cove.[11] He notes that the gathering included members from the Wangal, Gadigal, and Broken Bay clans.

Archaeological and historical records indicate that marine and estuarine resources formed an important part of the Port Jackson area. Aboriginal communities consumed large amounts of marine animals, evidenced by the large number of shell middens in the Sydney area, where the shellfish were processed onsite for the meat to be consumed or used as fishing bait.[12] Watkin Tench noted that "fishing, indeed, seems to engross nearly the whole of their time, probably forming the chief part of their subsistence".[13] Tench recorded observing fish, including "bass, mullets...and sharks of an enormous size",[14] populating the waters of Port Jackson, indicating the wide variety of marine animals available for consumption. Shellfish not only formed an important subsistence resource, but also were utilised as tools. Shell tools included fishhooks, shell hafted onto spears in various forms, as a tool to repair spears, and as a cutting edge.[15] Other locally available raw materials, including quartz, were also favoured for cutting edges, and in some areas bordering readily abundant shellfish in inner Sydney, quartz may have actually been favoured as a cutting edge.[16]

The Aboriginal people of Cockle Bay utilised the wide range of animals native to the region for food and tool making. Mammals such as kangaroo and wallabies, as well as arboreal mammals such as possums were in plentiful supply, with cultural burning used to facilitate hunting. Ethnographic observations by early non-Aboriginal colonists noted that Aboriginal people used a variety of tools and non-utilitarian functions. Plant products like gums and sap were used for binding and hafting stone hatchets and plant fibres were woven into baskets, nets, ropes, and hammocks. Locally sourced

[9] A. Phillip, 'Letter from Governor Phillip to Lord Sydney, Government House, Sydney Cove, February 12th, 1790', *Historical Records of NSW* 1, no. 2 (1892): 309.
[10] Val Attenbrow, 'Pre-Colonial Aboriginal Land and Resource Use in Centennial, Moore, and Queens Parks – Assessment of Historical and Archaeological Evidence for Centennial Parklands Conservation Management Plan. Report for Incorporation into Overall Conservation Management Plan Prepared by Beyond Consulting for Conybeare Morrison and Partners', 2002, 34.
[11] W. Tench, *Complete Account of the Settlement of Port Jackson* (London: G. Nicol and J. Sewell, 1793).
[12] Attenbrow, Val, 'Archaeological Evidence of Aboriginal Life in Sydney | The Dictionary of Sydney', 2012, https://dictionaryofsydney.org/entry/archaeological_evidence_of_aboriginal_life_in_sydney.
[13] Cited in Kelleher Nightingale Consulting, 'Pyrmont Peninsula Place Strategy: Indigenous Cultural Heritage Report. Report to DPIE', 2020.
[14] Watkin Tench, *1788, Edited and Introduced by Tim Flannery* (Melbourne: Text Publishing, 2009).
[15] Attenbrow, Val, 'Archaeological Evidence of Aboriginal Life in Sydney | The Dictionary of Sydney'.
[16] N Baker, 'Archaeological Salvage of an Aboriginal Site at Williams Street, East Sydney. Report to Zonie Construction and Design Pty Ltd', 2004, 31.

plants were also used in the manufacture of shelters, shields, and coolamons used to carry food and water.

2.3 Summary History of the Pyrmont area

The following summary has largely been copied verbatim from Section 5.3.1 in 'Technical Paper 3: Non-Aboriginal Heritage', prepared by Artefact Heritage in October 2021:[17]

Following the establishment of the colony at Port Jackson, Governor Arthur Phillip declared the boundaries of the township of Sydney in 1792.[18] At this time, despite its close proximity to the settlement at Port Jackson, Pyrmont had been excluded from the township due to the lack of European land grants, subdivision and settlement. During the early days of European settlement, Pyrmont was depicted as an isolated place, remaining largely undeveloped until into the c1840s. Early accounts recall a distinct Aboriginal presence into the c1830s, particularly centring around 'Tinker's Well', a natural spring located on the south-western side of Pyrmont Hill facing Glebe Island.[19] A 1912 *Evening News* article details mussel shells and shellfish remains within vicinity of this natural spring.[20]

The first land grants in the area occurred from 1794 and were granted to soldiers of the New South Wales Corps - John Malone, William Mitchell and Thomas Jones, who received 24, 18 and 55 acres each respectively (Figure 5).[21] Another significant landowner in the area was John Harris, who acquired four land grants from 1803-1818.[22] Harris, the Corps Surgeon, was the owner of the Ultimo Estate upon which his grand residence 'Ultimo House' was built.[23]

Access into Pyrmont during these early years of settlement was likely carried out by boat. Captain John Macarthur made an excursion to the area in December 1806, picnicking near Tinkers Well.[24] The area comprised gentle hills covered in grass, a result of Aboriginal fire-stick farming. These green hills, coupled with the natural spring reminded Macarthur and his excursion party of a German spa town named 'Bad Pyrmont', subsequently providing the suburb its present name.[25] By 1818 Macarthur had acquired Jones' grant while the grants made to Mitchell and Malone had been transferred to Harris. Macquarie's property was in 1839-40 sold as the Pyrmont Estate (Figure 4).[26]

Substantial development did not occur in the area until the 1840s, which saw the establishment of Pyrmont as an industrial community. The main improvements carried out by Macarthur were the construction of a windmill for the processing of grain, which operated for a few years before closing to the competition of larger mills closer to the heart of the new settlement.[27] Interestingly, the lack of development – and the view of Pyrmont in the minds of the settlement as a peripheral, isolated

[17] With minor changes to text and figures, for the original version see Artefact Heritage, 'Sydney Metro West - Major Civil Construction Work between The Bays and Sydney CBD. Technical Paper 3: Non-Aboriginal Heritage. Report to Sydney Metro Authority', October 2021, 35–42.
[18] Weir Phillips Architects and Heritage Consultants, 'Heritage Impact Statement: 212 Harris Street, Pyrmont', March 2012, 3.
[19] Shirley Fitzgerald, 'Pyrmont | The Dictionary of Sydney', 2008, https://dictionaryofsydney.org/entry/pyrmont.
[20] 'Tinker's Well', *Evening News*, 12 December 1912, 11, http://nla.gov.au/nla.news-article113775147.
[21] Heritage 21, 'Statement of Heritage Impact for Proposed Development at Chambers Cellars, 1/17-21 Pyrmont Bridge Road, Pyrmont', May 2013, 8.
[22] Weir Phillips Architects and Heritage Consultants, 'Heritage Impact Statement: 212 Harris Street, Pyrmont', 4.
[23] Weir Phillips Architects and Heritage Consultants, 5.
[24] Fitzgerald, 'Pyrmont | The Dictionary of Sydney'.
[25] Sydney Harbour Foreshore Authority, 'Heritage and Conservation Register - Old Pyrmont Cottages', New South Wales (NSW), accessed 10 February 2022, http://www.shfa.nsw.gov.au/sydney-About_us-Heritage_role-Heritage_and_Conservation_Register.htm&objectid=150.
[26] Shirley Fitzgerald and Hillary Golder, *Pyrmont & Ultimo: Under Siege* (Sydney: Hale & Iremonger, 1994), 24–25.
[27] Fitzgerald, 'Pyrmont | The Dictionary of Sydney'.

location – meant that the Aboriginal population of Pyrmont were able to remain in the area until around the 1930s, when accounts of their presence diminish.[28]

In the 1840s, nearby Darling Island was built up and incorporated into the mainland of Pyrmont, becoming the home of the Australian Steam Navigation Company.[29] Shipbuilding thus became a key land use in the Darling Island Area of Pyrmont, with the company approved to repair ships up to 2,000 tons in 1855.[30] Alongside this, quarrying emerged as a key industry within the Ultimo Estate from the 1840s onwards. The rich Pyrmont Sandstone resources of the area were hewn until the turn of the century.[31] The legacy of this quarry is seen throughout the city in the rich locally sourced sandstone used to construct key government and civic buildings. In addition, abattoirs were established on Glebe Island in 1860, representing another key source of employment in the area.[32]

Pyrmont village grew out of the introduction of industry in the area and increased its desirability for living due to its proximity to places of work.[33] In 1844, Pyrmont was officially incorporated into the City of Sydney area as a permanent population grew.[34] Many stone workers cottages were constructed at the time. Pyrmont emerged and matured as a shared space between residents and industry.[35] Maps show the village of Pyrmont had been subdivided and partly developed by 1854 (Figure 6), though little development had occurred in the proposal area on the south side of Union Street at this time. Alongside industry and the movement of people to Pyrmont, key civic buildings began to emerge to cater to the growing population, including the first church, a Scottish Presbyterian Church, erected in 1842.[36] The first school was established in 1850, a Catholic Church in the 1860s, and Methodist and Congregational churches in the 1870s.

The accessibility and desirability of the Pyrmont area further increased when the Pyrmont Bridge opened in 1858 allowing industrial workers direct access from the city. Subdivision of the area increased with the death of Harris and the subdivision of Ultimo Estate, and the further growth within the Pyrmont Estate and village.[37] In line with this growth, nearby streets such as Pyrmont Street, Harris Street and Union Street were officially formed and ballasted, with kerb and guttering constructed around 1862 on these major streets.[38] Some streets like Harris and John Streets were also partially metalled according to Council Improvement Books.

In the following decades, the emerging Pyrmont appeared as a mixed-use precinct combining industrial, commercial and residential developments. Industry continued to move into the area, with the CSR sugar refining factory established as a key landmark to the north from 1875.[39] Other

[28] Fitzgerald.
[29] Heritage 21, 'Statement of Heritage Impact for Proposed Development at Chambers Cellars, 1/17-21 Pyrmont Bridge Road, Pyrmont', 8.
[30] Fitzgerald, 'Pyrmont | The Dictionary of Sydney'.
[31] Weir Phillips Architects and Heritage Consultants, 'Heritage Impact Statement: 212 Harris Street, Pyrmont', 5.
[32] Fitzgerald, 'Pyrmont | The Dictionary of Sydney'.
[33] Weir Phillips Architects and Heritage Consultants, 'Heritage Impact Statement: 212 Harris Street, Pyrmont', 4.
[34] 'Samuel Hordern Fountain Including Base and Setting | Heritage NSW', accessed 10 February 2022, https://apps.environment.nsw.gov.au/dpcheritageapp/ViewHeritageItemDetails.aspx?ID=2424682.
[35] Fitzgerald, 'Pyrmont | The Dictionary of Sydney'.
[36] Heritage 21, 'Statement of Heritage Impact for Proposed Development at Chambers Cellars, 1/17-21 Pyrmont Bridge Road, Pyrmont', 9.
[37] Weir Phillips Architects and Heritage Consultants, 'Heritage Impact Statement: 212 Harris Street, Pyrmont', 6.
[38] 1862 reports of city improvements, held by City of Sydney Archives, see 'Reports - Improvement Committee, Vol. 1, 1862', City of Sydney Archives, accessed 10 February 2022, https://archives.cityofsydney.nsw.gov.au/nodes/view/952162; 'Reports - Improvement Committee, Vol. 2, 1862', City of Sydney Archives, accessed 10 February 2022, https://archives.cityofsydney.nsw.gov.au/nodes/view/952164.
[39] Weir Phillips Architects and Heritage Consultants, 'Heritage Impact Statement: 212 Harris Street, Pyrmont', 7; Heritage 21, 'Statement of Heritage Impact for Proposed Development at Chambers Cellars, 1/17-21 Pyrmont Bridge Road, Pyrmont', 8.

factories and workshops were built in the area, including the significant John Taylor Wool Stores in Pyrmont Street.[40]

By the 1890s, Pyrmont had a population of over 19,000 people with just under 4,000 dwellings, representing a densely populated township. At this time, with the booming population and growing industry, much of the early housing stock was rebuilt and replaced with brick terraces to make more efficient use of space.[41] Competition also ensued between industry and extant residents in some locations over increasingly desirable and scarce land, with industry ultimately winning out and more and more land consumed by industrial activities like the Pyrmont Power Station.[42]

Into the twentieth century, the growing pressure on land in proximity to the city led to the post-war shift of industry out of the area. Pyrmont took on an increasingly residential character from this point forward.[43] This loss of industry led to decreases in population as workers moved to follow employment. Subsequently, the area became less affordable, and schools and other services also left the area.[44] The later decades of the twentieth century saw the retention and adaptive reuse of warehouses to new residential and commercial purposes, but also the demolition and replacement of older development with larger scale development including new office buildings, apartment blocks, and the major Star Casino to the east of the subject site. Pyrmont retains evidence of its original undulating land form and key evidence of its working class and industrial past, while the Pyrmont Conservation Area partially encompassing the site serves to retain the built remains of this former history.



Figure 4: c1839 – Detail from 'Plan of Pyrmont Estate (...)', showing the subdivision of the Pyrmont Estate (Source: State Library of NSW Z/M2 811.173/1839/1, https://collection.sl.nsw.gov.au/record/74VvM6VbD4Pd/AVRya4rQa6kQk)

[40] Heritage 21, 'Statement of Heritage Impact for Proposed Development at Chambers Cellars, 1/17-21 Pyrmont Bridge Road, Pyrmont', 8; Heritage 21, 'Statement of Heritage Impact for Proposed Development at 214-216 Harris Street, Pyrmont, Quarryman's Hotel', December 2017, 8.
[41] Heritage 21, 'Statement of Heritage Impact for Proposed Development at Chambers Cellars, 1/17-21 Pyrmont Bridge Road, Pyrmont', 8.
[42] Fitzgerald, 'Pyrmont | The Dictionary of Sydney'.
[43] Fitzgerald; Heritage 21, 'Statement of Heritage Impact for Proposed Development at 214-216 Harris Street, Pyrmont, Quarryman's Hotel', 8.
[44] Fitzgerald, 'Pyrmont | The Dictionary of Sydney'.

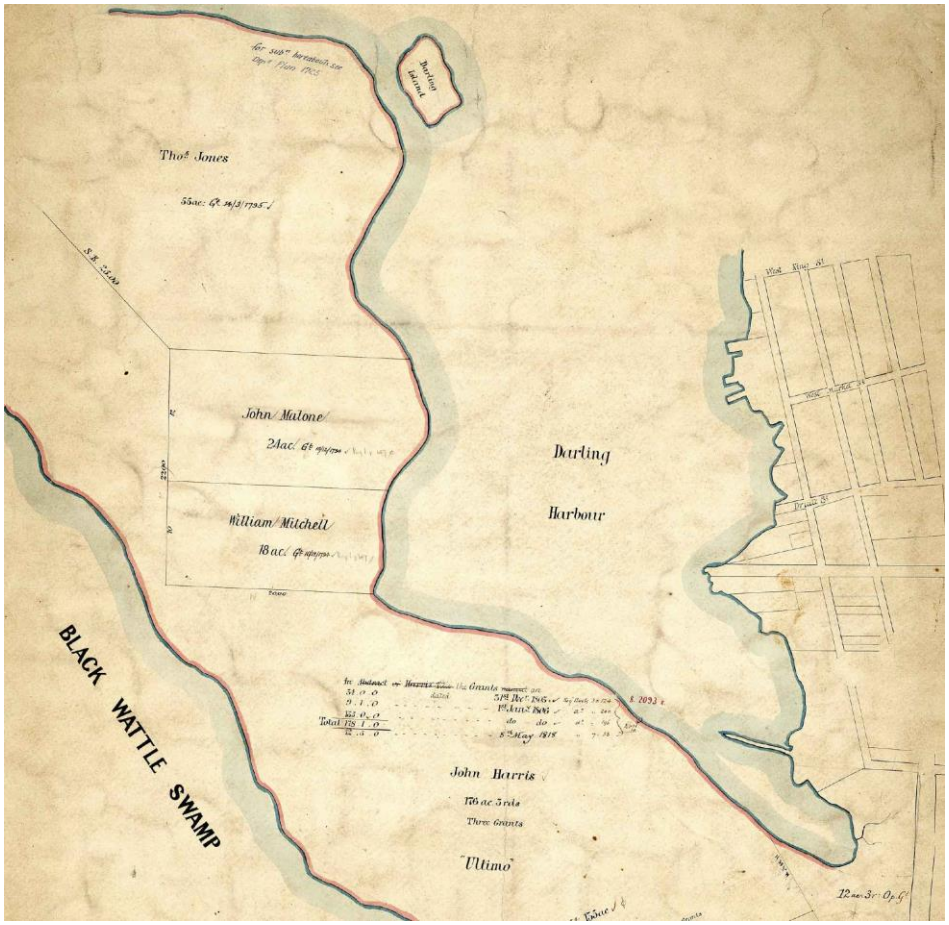


Figure 5: c1839 – Detail from Map of the Parish of St Andrew, County of Cumberland, showing the early land grants made in the Pyrmont and Ultimo areas (Source: State Library of NSW Z/M2 811.173/1839/1, https://collection.sl.nsw.gov.au/record/74VvM6VbD4Pd/AVRya4rQa6kQk)

2.4 Early Ownership and Development of the study Area

Both study areas are located on land that was part of a Crown Grant made to John Malone on 10 October 1794 (Figure 5).[45] Malone's property was one of three grants made in the same locality by Lieutenant-Governor Grose, the others being William Mitchell's 18-acre grant of December 1794 and Thomas Jones' 55-acre grant of March 1795. Although Grose made the grants under the condition that the grantees would have to reside on their properties, and improve and cultivate the land, Malone "speedily parted with his interest in the property."[46] Several transfers were noted on the original deed of grant, some of which were illegible, but one of which was from Sergeant Sherwin to John Fitzpatrick Jefferie on 30 September 1800.[47]

On 1 January 1806, Malone's property was purchased by Surgeon John Harris, together with Mitchell's grant to the south.[48] Harris, who had been granted the nucleus of the 'Ultimo' estate (34 acres) in 1803 and who received another 135 adjacent acres in 1806, now owned the majority of the Ultimo and Pyrmont peninsula. His residence, 'Ultimo House' (built in 1804), was for a long time the

[45] NSW LRS, Certificate of Title (CT) Vol 3670 fol 90.
[46] Sydney Morning Herald and Edward Hordern & Sons, 'XVIII. - Pyrmont and Ultimo', *Old and New Sydney*, no. 6 (1882): 4, http://nla.gov.au/nla.obj-754630143.
[47] Sydney Morning Herald and Edward Hordern & Sons, 4.
[48] NSW LRS, Primary Application (PA) 9768, cf. Michaela Ann Cameron and Alexander Cameron-Smith, 'A "Raw, Ignorant Boy": John Harris, Esquire', *St. John's* (blog), 29 April 2020, https://stjohnsonline.org/bio/john-harris/.

only house on the Ultimo Estate, and Harris used the property largely for grazing, extending his landholding to 233 acres by 1818.[49]

In the late 1820s, John Harris gifted a parcel of land on the western side of Cockle Bay, on the eastern side of the peninsula, to Anna-Maria Bunn, née Murray.[50] Harris was a friend of Anna-Maria Bunn's father, Captain Terence Murray, and the property was a wedding present to her. She had married George Bunn in 1828, and together with her husband, she took up residence on the property, with George building a wharf in 1832 and constructing a sandstone residence in 1833. George Bunn died in 1834, and until 1841, Anna-Maria and her two young sons continued to live at "Mrs Bunn's Cottage", also known as 'Newstead House'. In 1838, her novel *The Guardian: a Tale*, written at Newstead House, was published. It was the first novel published in mainland Australia, and the first by a woman. The house, which was still the only major building in that area by the 1870s, is shown on early maps (Figure 4 and Figure 6) and an 1873 photograph (Figure 10).

Meanwhile, Thomas Jones' 55-acre grant at the tip of the Pyrmont peninsula had been transferred to Captain John Macarthur, and after Macarthur's death in 1834, his son Edward offered the Pyrmont Estate for subdivision in 1839 and 1840.[51] This first subdivision sale in 1839, which was very successful, was for the land north of Union Street and to the east of the northern portion of Harris Street, laid out in 1836 (Figure 4).

After John Harris' death in 1838, one year after the death of his wife Eliza, the Ultimo estate was transferred to his brothers, William and George, who arrived from Ireland in about 1841.[52] In his will, John Harris' noted that in the event of his brothers' death, the estate was to pass on to their respective sons, both named John, and subsequently to any other heirs named John Harris. After the death of George in 1843, that of George's son John in 1846, and of William in 1856, the estate was subdivided in 1859 and distributed among John Harris, the son of William Harris who lived at Shane's Park (today known as Harris Park) at the time, and the wife and children of John Harris, the son of George Harris.[53]

As part of the partition, Block 57, on which the Western Construction Site is located, was transferred to John Harris of Shane's Park, while Block 59b, containing the Eastern Construction Site, was transferred to the family of John Harris, son of George Harris.[54] The eventual allocation of parcels saw Block 59b initially allocated to Mary Ann and Matthew Harris, as shown on the plan in Figure 8, which was a tracing of the original plan of partition made in 1859. However, in 1867 the northern portion (including the Pyrmont Station eastern construction site) was also transferred to John Harris of Shane's Park, who now owned both study areas.[55]

John Harris was primarily occupied with his sheep station at Murrumburrah and his cattle station at Callangoon, as well as with other pastoral land holdings, and was in 1891 described as not being "very intimate with any of his relatives" who owned the other half of the Ultimo Estate. John Harris died at Harris Park Station in December 1891, aged 81, when he was accidentally hit by a train.[56]

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[49] Sydney Morning Herald and Edward Hordern & Sons, 'XVIII. - Pyrmont and Ultimo', 4; Mark Dunn, 'Ultimo House | The Dictionary of Sydney', 2010, https://dictionaryofsydney.org/entry/ultimo_house.
[50] 'Bunn, Anna Maria', Pyrmont History Group, accessed 16 January 2022, https://pyrmonthistory.net.au/anna-maria-bunn; Colin Fowler, 'Bunn's Cottage' (n.d.).
[51] Fitzgerald and Golder, *Pyrmont & Ultimo: Under Siege*, 24–25.
[52] C. H. Bertie, 'Pioneer Families of Australia. No. 42 - The Harris Family', *The Home: An Australian Quarterly*, 1 June 1933, 58, 42. 58, http://nla.gov.au/nla.obj-371998287.
[53] The partition is noted in the Indenture, Bk 62 no. 705, which was a deed of partition between James Fullerton (trustee of the will of John Harris), John Harris of Shane's Park at South Creek, and Henry Burton Bradley, solicitor, likely acting on behalf of the heirs of John Harris, son of George Harris.
[54] NSW LRS, Indenture Bk 62 No 705.
[55] The original plan of partition is included in Indenture Bk 62 No 705. See NSW LRS, Primary Application (PA) 12759 and PA 56103 for further details.
[56] 'Death of Mr. John Harris.', *Bathurst Free Press and Mining Journal*, 23 December 1891, 2, http://nla.gov.au/nla.news-article64224614; Bertie, 'Pioneer Families of Australia. No. 42 - The Harris Family', 58.

After his death, Block 57 was sold to new owners outside the Harris family, while block 59b remained in the ownership of the Harris family until well into the 20th Century. Both blocks remained undeveloped until the late 1870s and early 1880s, although they appear to have been cleared and may have been used for grazing, potentially containing small sheds and associated structures that have not been documented.

By the time the plan of partition had been drawn up in 1859, the Pyrmont Bridge had been constructed and Pyrmont Bridge Road formed. Pyrmont Bridge, opened on 17 March 1857, provided a much-needed connection with the city, and Pyrmont Bridge Road connected this bridge with another bridge that was planned across Blackwattle Swamp (Figure 7).[57] The alignment of the Pyrmont Bridge Road, constructed in c1858, had a major impact on Blocks 57 and 59b of the Ultimo Estate, as it cut right across both blocks (see Figure 7 and Figure 8).

While Pyrmont Bridge Road was constructed by 1859, the northern side between Union Street and Harris Street remained undeveloped, as shown on the c1865 Trigonometrical Plan of Sydney (Figure 9) and in a photograph dated 1873 (Figure 10). The *Sands Sydney Directory* did not list Pyrmont Bridge Road until 1879, when it noted four persons and vacant land to the east of Harris Street. This was also the date when John Harris leased the block of land containing the Western Construction Site to Mills & Pile Co, initiating the first major development of the land on the corner of Pyrmont Bridge Road and Pyrmont Street. Development of the Eastern Construction Site began at around the same time.



Figure 6: 1854 – Detail from 'Woolcott & Clarke's map of the City of Sydney', noting houses on the north side of Union Street and on the west side of Darling Harbour, including the 'Goods Station' (Source: State Library of NSW, Z/M2 811.15/1854/1, https://collection.sl.nsw.gov.au/record/74VMbBv5kAGA)

[57] 'Pyrmont Bridge', Pyrmont History Group, accessed 17 January 2022, https://pyrmonthistory.net.au/pyrmont-bridge; Christa Ludlow, 'Pyrmont Bridge | The Dictionary of Sydney', 2010, https://dictionaryofsydney.org/entry/pyrmont_bridge.



Figure 7: 1857 – Detail from 'A plan of part of Sydney and its environs' by Allan & Wigley, showing the development of roadways, including the proposed new Pyrmont Bridge Road, connecting the two new bridges (Source: State Library of NSW, Z/M2 811.15/1854/1, https://collection.sl.nsw.gov.au/record/74VMbBv5kAGA)

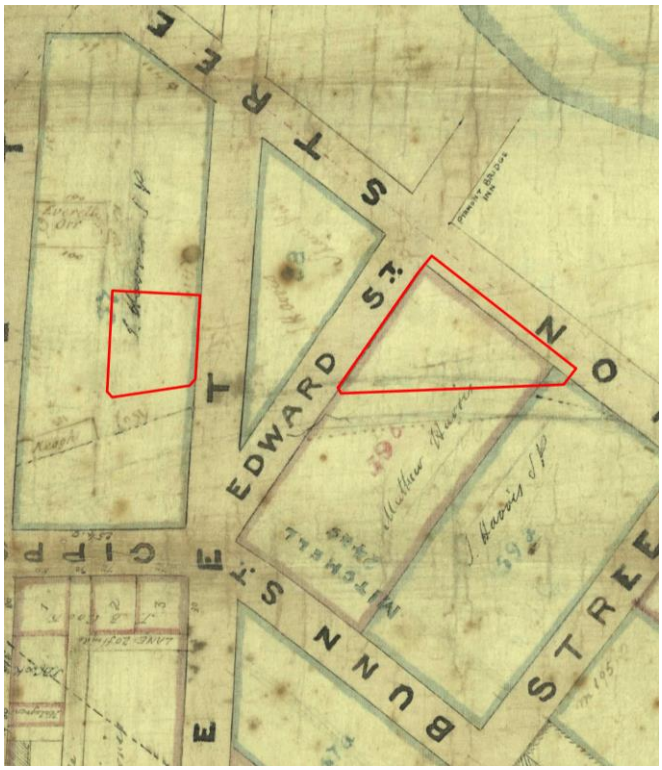


Figure 8: c1859 – Detail from tracing of plan of the 'Ultimo Estate', Pyrmont, showing the original street grid with Block 57 at the top. The outline of the future Pyrmont Bridge Road is pencilled in, cutting across Blocks 59 a & b, Block 58 and Block 57. (Source: State Library of NSW, Z/M4 811.173/1866/1, https://collection.sl.nsw.gov.au/record/74VKmpo8gpdg)

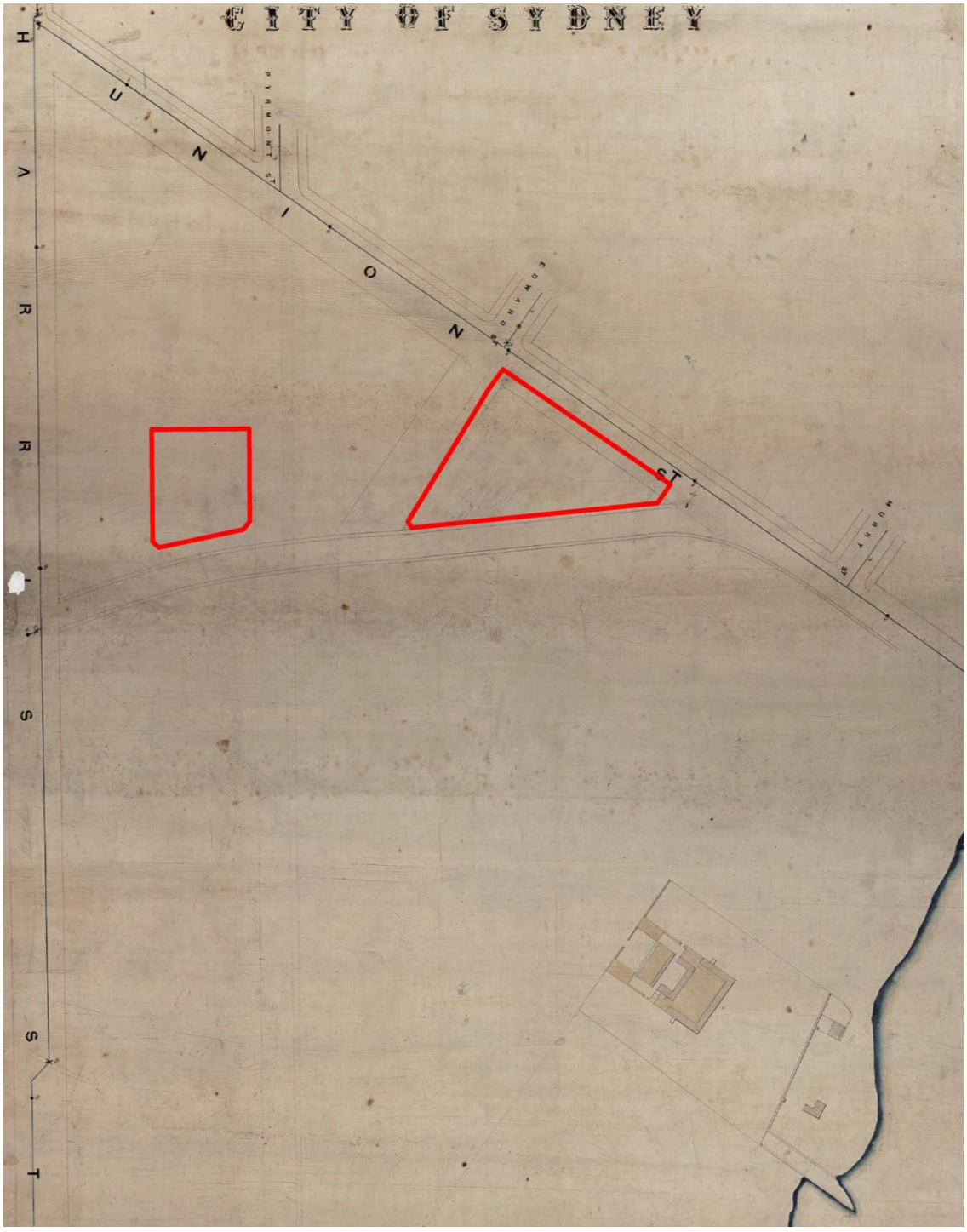


Figure 9: 1865 – Detail from the Trigonometrical Survey of Sydney, Block W1, showing the vacant land on the northern side of Pyrmont Bridge Road, between Union and Harris Streets, with Mrs Bunn's house noted at the bottom right. (Source: City of Sydney Archives, City of Sydney - Trigonometrical Survey, 1855-1865: Block W1 (01/01/1865 - 31/12/1865), [A-00880414]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1709341)

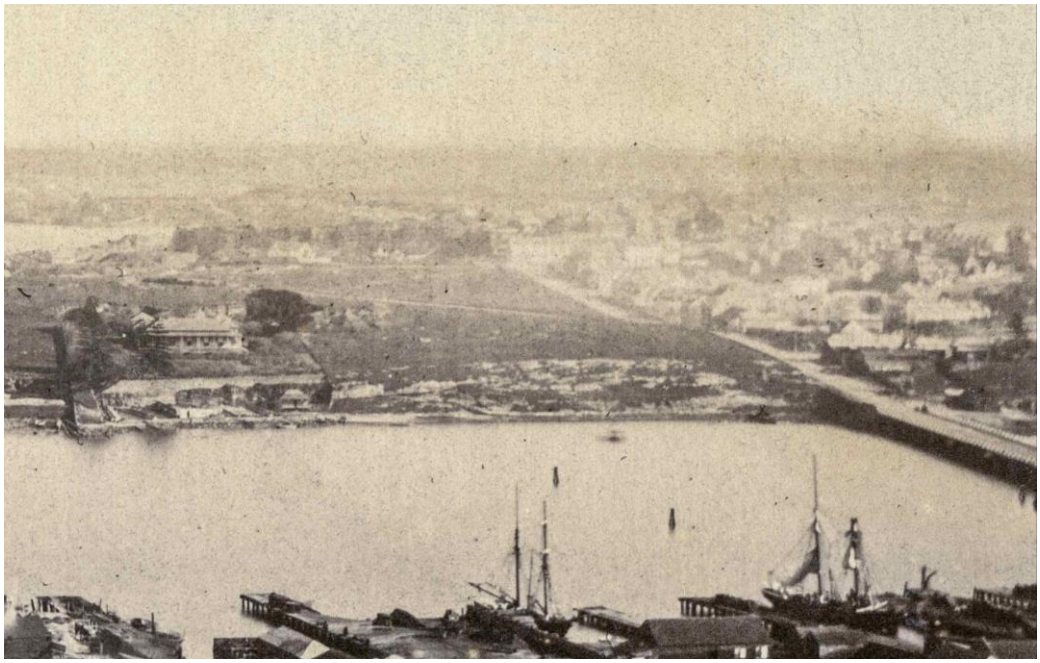


Figure 10: 1873 – Detail from 'Aerial view west from Town Hall clock tower, 1873,' showing Pyrmont in the background. Mrs. Bunn's house is visible on the left, with the newly laid out Pyrmont Bridge Road running behind it, forking off Union Street on the right. The land on the northern side of Pyrmont Bridge Road was still undeveloped (Source: City of Sydney Archives, (01/01/1873 - 31/12/1873), [A-00024418]. https://archives.cityofsydney.nsw.gov.au/nodes/view/585063)

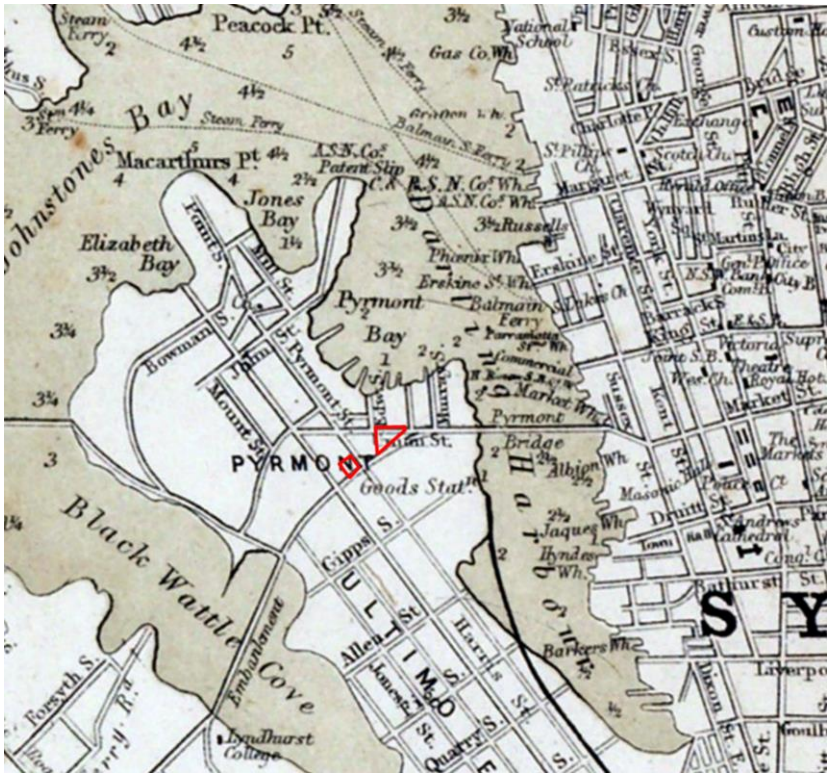


Figure 11: 1875 – Detail from 'Map of Port Jackson and city of Sydney' by S. T. Leigh & Co. (Source: State Library of NSW, Z/M2 811.12/1875/1, https://collection.sl.nsw.gov.au/record/74Vv0KjLdxZM/qwzpwm6kZkepJ)

2.5 Western construction site land-use overview

A summary of the historical use of the study area discussed in this chapter is provided in Table 3 below.

Table 3: Overview of historic land use phases of western construction site

Phase	Date	Use of site
Phase 1	1788-1879	Part of the Ultimo Estate, potentially used for livestock grazing
Phase 2	1879-1914	Residential housing and commercial properties
Phase 3	1914-1947	Resumed for road widening, potential storage area for building material or soil, residential housing and commercial properties
Phase 4	1947-present	Gilbey's Distillery and connected carpark, 'Frankel House' and connected basement carpark

2.5.1 Phase 1 (1788-1879: Early land clearance and grazing

The Western construction site at 26-31 Pyrmont Bridge Road, Pyrmont, is located on Block 57 of the Ultimo Estate subdivision and remained undeveloped until the late 1870s, potentially being used for grazing.

During the partition of the Ultimo Estate in the 1850s, Block 57 was transferred to John Harris of Shane's Park, who retained ownership until his death in 1891.[58] Development on Block 57 only began after John Harris offered it as a leasehold in the late 1870s.[59]

2.5.2 Phase 2 (1879-1914) – Subdivision and urban development of commercial and residential premises

2.5.2.1 'Heights of Pyrmont' subdivision (1879)

On 1 July 1879, John Harris transferred almost all of Block 57 of the Ultimo Estate to George Pile as a leasehold.[60] The lease was for the land bounded by Harris Street, Pyrmont Bridge Road, Pyrmont Street and Union Street. Exempt from the lease were three smaller sites, which had been leased earlier to James Orr (16 May 1874), Joseph Everett (22 July 1875) and Anthony Keogh (30 December 1875). Also exempt from the lease was the reserved road which cut Block 57 into two rectangular blocks, and which was subsequently named Paternoster Row.

Keogh's allotment was located on the Pyrmont Bridge Road frontage, on the block to the west of Paternoster Row, where the Quarryman's Arms was built by 1879 (see Figure 12). Likewise, Orr's and Everett's leases were on the subdivided block to the west of Paternoster Row, while the block to the east of the newly formed road was entirely in the possession of George Pile (see Figure 13). This contained the Western Construction Site.

George Pile was a director of Mills & Pile, also known as Mills, Pile and Gilchrist, estate agents, who took out three advertisements in the *Evening* News of 6 September 1879 for the sale of 86 leasehold

[58] NSW LRS, Indenture Bk 62 No 705.
[59] NSW LRS, Indenture Bk 62 No 705.
[60] NSW LRS, Primary Application (PA) 9768.

building sites at the 'Heights of Pyrmont'.[61] The plan for the subdivision is included in Figure 12 below. It suggests that the plan was initially to sell the eastern block, bounded by Paternoster Row, Pyrmont Bridge Road, Pyrmont Street and Union Street as 53 small allotments, with frontages to all streets, including eight allotments to Pyrmont Bridge Road, 22 allotments to Pyrmont Street and 17 allotments to Paternoster Row.

The largest advertisement noted the following:

Heights of Pyrmont

Eighty-six Leasehold Building Sites, bounded by Pyrmont Bridge Road, Pyrmont-street, Union-street, Harris-street.

Convenient to Sydney and all the Great Suburban Manufactories and Workshops.

Good Clear Air, Consequently Good Health, the Cheapest Plan for the Working Man, and the Best Subdivision so Accessible yet offered.

Mills and Pile are favoured with instructions to sell by public auction, on the Ground, Heights of Pyrmont, To-Morrow, Saturday, the 6th September, at 3 o'clock sharp,

All these Eighty-six Allotments of Land, as subdivided per plan, obtainable at the Rooms, on the Heights of Pyrmont, in the most easily accessible position in a locality offering all the advantages of pure air, consequent health, and, as a natural consequence, the greatest economy with the greatest home comforts.

To the Working Man these leaseholds, which run for a period of 50 years, supply the greatest of all wants, viz., the opportunity of securing, at a Small Rental, the necessary ground on which to erect a home, which to many who cannot afford the cost of a freehold, must prove a boon of the utmost importance. These subdivisions will be offered but once by public sale, attendance at which is specially invited by the auctioneers. The title is perfect, and the terms of payment are liberal. Intending purchasers are requested to get a plan, to visit the ground, and judge for themselves whether all the advantages stated are not incontrovertible facts.[62]

However, it appears that the leasehold sale did not go ahead as planned. Instead of selling these allotments as vacant leasehold sites, Mills & Pile subsequently developed the entire parcel with terrace rows, with frontages only to Pyrmont Bridge Road, Pyrmont Street and Union Street.

[61] 'Advertising', *Evening News*, 5 September 1879, 1, http://nla.gov.au/nla.news-article107167432; 'No. 1642, A.D. 1883.', *New South Wales Government Gazette*, 15 June 1883, 3304, http://nla.gov.au/nla.news-article225728887.
[62] 'Advertising', 5 September 1879.

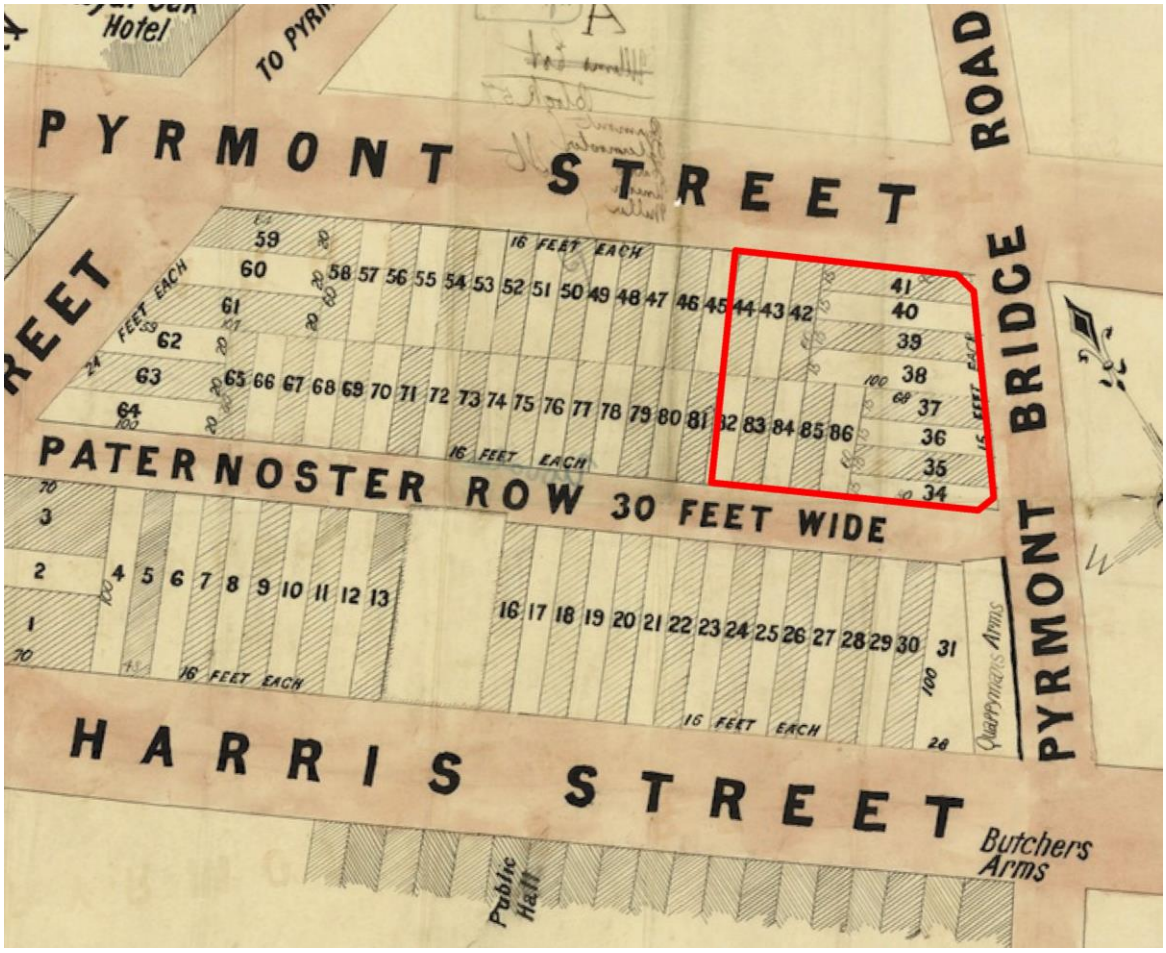


Figure 12: 1879 – Plan of the 'Subdivision of Block 57 of the Ultimo Estate, Pyrmont,' showing initial details of proposed subdivision, with allotments facing Pyrmont Bridge Road, Paternoster Row and Pyrmont Street (Source: State Library of NSW, SP/811.1737/91, https://collection.sl.nsw.gov.au/record/74VvaqQxeEeX/QLZdR3WXdvkbd#viewer)

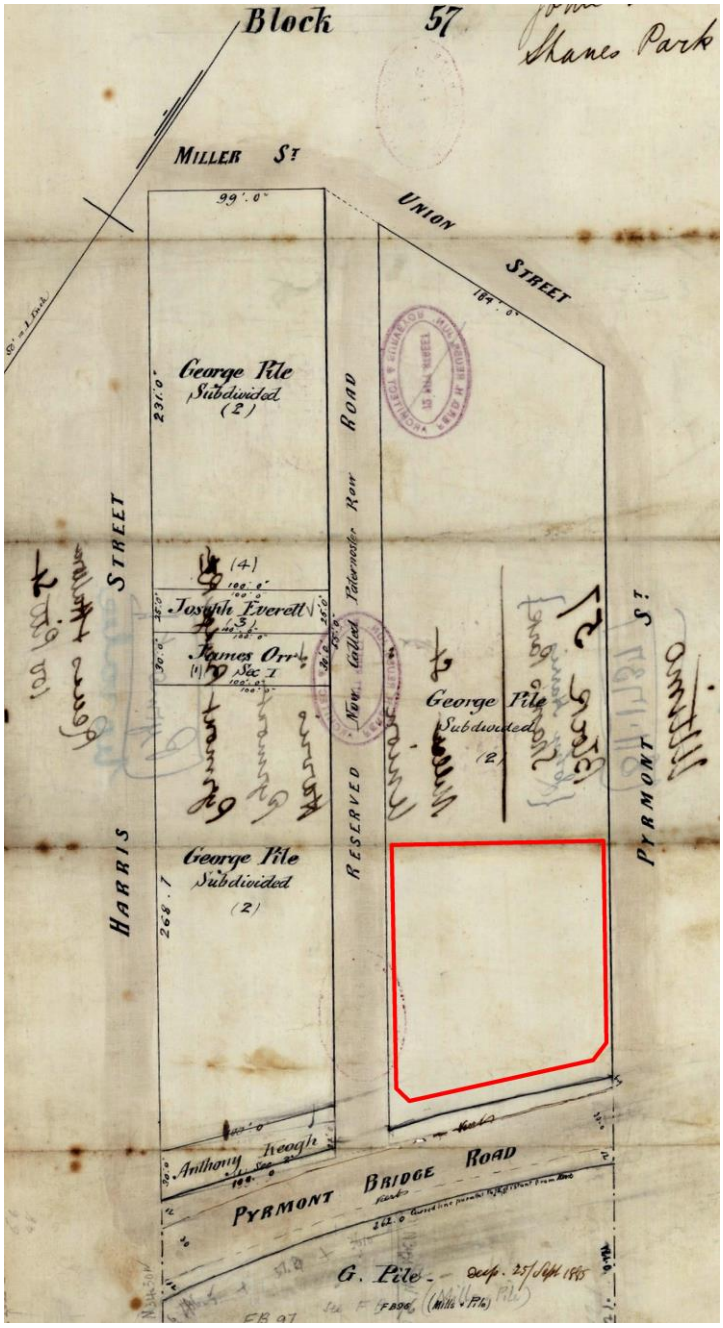


Figure 13: 1885 – Plan of Block 57 of the Ultimo Estate, Pyrmont, showing the various leases, including that to George Pile, for the block bounded by Pyrmont Bridge Road, Pyrmont Street, Union Street and Paternoster Row, which was noted as 'subdivided' (Source: State Library of NSW, SP/811.1737/94, https://collection.sl.nsw.gov.au/record/74VvaqQxeEeX/xAy2M8vXov7Ak#viewer)

2.5.2.2 Construction of Terrace Rows and Shops by Mills & Pile (1881)

On 15 October 1881, the *Freeman's Journal* noted that Mills, Pile and Gilchrist, the owners of a block of land bounded by Union Street, Pyrmont Street, Paternoster Row and Pyrmont Bridge Road, had "commenced the erection of six shops and dwellings in Union-street, eight on the Bridge-road, and seventeen other dwellings."[63] One of the buildings on Union Street was intended for use as a bank, and the laying of the foundation stone had been attended by "a large number of friends" of the firm on Monday, 10 October 1881.

[63] 'General News', *Freeman's Journal*, 15 October 1881, 9, http://nla.gov.au/nla.news-article115455022.

However, it appears that the laying of the foundation stone was for the buildings on the Union Street frontage, and those buildings on Pyrmont Bridge Road and Pyrmont Street had already been nearly completed by August 1881, as the *Illustrated Sydney News* of 6 August 1881 noted the following:

> *New Business Premises at Ultimo*
>
> *Considerable attention has become directed to the neighbourhood of Pyrmont and Ultimo in consequence of the Government having resumed a large amount of property in those localities for the purpose of enabling the railway to be brought down to the deep water at Pyrmont Bridge, the result being, not only a considerable increase in the value of surrounding property, but the introduction of improvements frequently of the most expensive character, and which are the most interesting by reason of the fact that, although so near the centre of the city, Pyrmont and Ultimo have, until quite recently, been almost unknown to the larger number of the citizens.*
>
> *It is practically a new city, and the immense number of buildings which have gone up in every direction within the last few years would astonish any who have not been there recently. Our illustration represents portion of a square fronting Union Street, Pyrmont Street, and Pyrmont Road, which has been built for the well-known Sydney auctioneers, Messrs. Mills, Pile, and Gilchrist. The Union Street portion consists of six large shops and a building suitable for banking purposes, which will probably be occupied as a branch establishment of one of the leading Sydney banks. The Pyrmont [Bridge] Road frontage consists of eight large shops, which are nearly finished, and the Pyrmont Street frontage is formed by seventeen good houses, built upon allotments each 120 feet in depth. The cost of the entire block will be over £15,000. Mr. W. Barley is the architect, and Mr. D. Jarman the contractor.*[64]

The *Illustrated Sydney News* contained a depiction of the "new business premises at Pyrmont", showing the new buildings facing Union Street (Figure 14). Like the two corner buildings on Pyrmont Bridge Road, the corner building on Union Street had the construction date of 1881 inscribed on the parapet (cf. Figure 18 and Figure 20).

The *Sands Sydney Directory* listed the buildings on the Pyrmont Bridge Road frontage for the first time in 1882, noting them as "unfinished shops".[65] Considering that the 1882 *Sands Directory* was based on the 1881 survey of streets, this confirms that the buildings were indeed under construction in 1881. By 1883, six of the shops were noted as occupied, with the following occupants listed in the *Sands*, from the corner of Paternoster Row: Alexander Robertson, baker (No. 50); Robert Hutchinson, grocer (No. 52); Mary Scarlett, fancy repository (No. 54); Horatio Clark, draper (No. 56); Daniel Murphy, greengrocer (No. 58); and Lawrence McGrath, draper (No. 60).[66]

The numbering in the *Sands* does not entirely correspond with that used in the 1882 *Assessment Books* for the Denison Ward, which noted Alexander Robinson in the double storey brick shop at No. 50 Pyrmont Bridge Road, followed by Robert Hutchinson at No. 52.[67] The three buildings at 54 to 58 Pyrmont Bridge Road were noted as 'not occupied'. Horatio Clark, (No. 60), Daniel Murphy (No. 62) and Laurence McGrath (No. 64) were all listed as the occupants of the last three houses within the

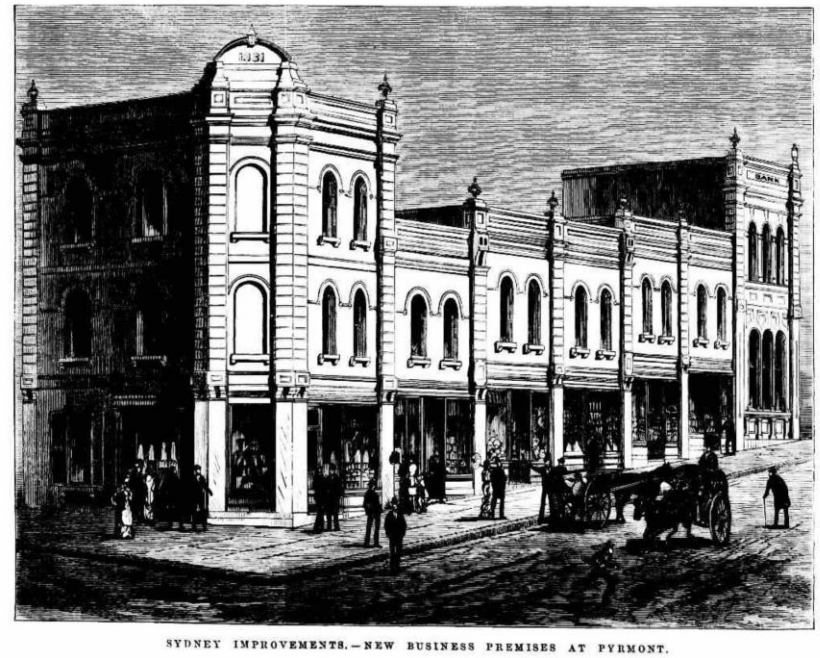
[64] 'Sydney Improvements.', *Illustrated Sydney News and New South Wales Agriculturalist and Grazier*, 6 August 1881, 3, http://nla.gov.au/nla.news-article64974493.
[65] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Pyrmont Bridge road – North side, 1882.
[66] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Pyrmont Bridge road – North side, 1883.
[67] City of Sydney Archives, *Assessment Books*, Denison Ward – Pyrmont Bridge Road, 1882.

row. All buildings were described as double storey brick shops with iron roofs and six rooms, rated at £65, except the corner shop on Paternoster Row, which had seven rooms and was rated at £109. The owners were noted as Mills & Pile. The subsequent occupants and leasehold owners of the subject shops on Pyrmont Bridge Road are detailed in Section 2.5.2.3 below.

As part of the overall development, seventeen terraces on Pyrmont Street were constructed and completed in 1881, at the same time as the Pyrmont Bridge Road shops. The 1882 *Assessment Books* noted all 17 terrace houses as occupied by individual residents, with the owners noted as Mills & Pile.[68] They were located at 101 to 131 Pyrmont Street and were all described as double storey brick houses with iron roofs and 4 rooms. The numbering shifted in c1885, after the construction of another shop (a butcher's shop) at the Union Street end of the row, which now became 101 Pyrmont Street, while the last house became 135 Pyrmont Street.

The first occupants of the four terraced houses that were located within the Western Construction Site were in 1882 noted as Thomas Allan at No. 127 (later No. 129), William Glenn at No. 129 (later No. 131), W. H. Millmot at No. 131 (later No. 133) and James Christie at No. 133 (later No. 135). Thomas Allan and William Glenn were identified as engineers in the 1883 *Sands Dire*ctory, while William H. Millman (note the slightly different name) was a master mariner, and John Chrystal (also slightly different) was a piano tuner.[69]

The following year, in 1884, the *Sands* listed the terrace row as 'Temora Terraces', with the numbering having changed and now starting at No. 1 near Union Street and ending at No. 17 near Pyrmont Bridge Road. The occupants of No. 14 (129 Pyrmont Street) to No. 17 (135 Pyrmont Street) were noted as Thomas Allan (No. 14), William Glen (No. 15), Mrs Margaret Parkins (No. 16), and Mrs. Charlotte Smith (No. 17). The subsequent occupants and leasehold owners of the subject terraced houses on Pyrmont Street are detailed in Section 2.5.2.4 below.



SYDNEY IMPROVEMENTS.—NEW BUSINESS PREMISES AT PYRMONT.

Figure 14: 1881 – Impression of the new buildings constructed by Mills & Pile, showing the Union Street frontage of the development which encompassed Pyrmont Bridge Road, Pyrmont Street and Union Street (Source: Sydney Improvements, Illustrated Sydney News, 6 August 1881, 16, https://trove.nla.gov.au/newspaper/page/5406469)

[68] City of Sydney Archives, *Assessment Books*, Denison Ward – Pyrmont Bridge Road, 1882.
[69] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Pyrmont Street – West side, 1883.

2.5.2.3 Subsequent Occupants of the Pyrmont Bridge Road Shops (1884-1914)

By 1885, the *Sands* listed all shops on Pyrmont Bridge Road as occupied, with Mary Scarlett's fancy repository occupying 54-56 Pyrmont Bridge Road, Henry Barnett, tobacconist, at No. 58, and William Kitchen, general storekeeper, at No. 60 Pyrmont Bridge Road.[70] John Nicholls, tinsmith, was listed at No. 62 and Solomon Cohen, pawnbroker, was noted for the first time at No. 64, at the corner of Pyrmont Bridge Road and Pyrmont Street. A bakery was still located on the corner of Paternoster Row and Pyrmont Bridge Road (No. 50), and Robert Hutchinson still ran a grocery store at 52 Pyrmont Bridge Road. All of these buildings were in mixed-use as commercial premises (on ground floor level) and dwellings (on first floor level).[71]

The corner properties were naturally a little more prominent than the shops in the centre of the row, and they were occupied by a bakery on the corner of Paternoster Row and a pawnbroker on the corner of Pyrmont Street from around 1882, with the bakery operating until the mid-1900s and the pawnbroker located on the corner of Pyrmont Street until the shops were demolished in the mid 1910s.

The bakery on the corner of Paternoster Row was the largest building within the row, extending all the way to the lane running alongside the rear of the shops (Figure 15). In September 1886, a fire broke out at Henry Maker's bakery on the corner of Paternoster Row, which "burned the wooden ceiling and joisting of the structure."[72] Maker was noted as a baker and confectioner in the 1887 *Sands Dire*ctory.[73] By then, Mary Scarlett's fancy repository and furniture warehouse was noted at No. 54, while William E. Cross ran a restaurant at 56 Pyrmont Bridge Road.

By 1889, the former grocery store at No. 52 was occupied by Williams Brothers, wire mattress makers, and the following year they were listed at 32 Pyrmont Bridge Road, after renumbering of the street.[74] Salomon Cohen's corner pawnbroker shop was now located at 22 Pyrmont Bridge Road, while Henry Marker's bakery was located at 36 Pyrmont Bridge Road, with the street numbering now increasing towards the west rather than the east. The 1888 Metropolitan Detail Series Map (Figure 15) shows the outline of the shops at that time, with the later plans in Figure 16 and Figure 17 showing the properties essentially unchanged.

The 1891 *Sands* listed the following persons at 22 to 36 Pyrmont Bridge Road, largely corresponding with the 1891 *Assessment Books*: G. Berger, baker (No. 36 on the corner of Paternoster Row); Joseph Struck (No. 34); Williams Brothers, mattressmakers (No. 32); Charles Bartch, boardinghouse (No. 30); William Vose, grocer (No. 28); W. C. Waller, fruiterer (No. 26); William Gaden, carpenter (No. 24); and, Solomon Cohen, pawnbroker (No. 22).

The pawnbroker on the corner of Pyrmont Street was from around the late 1890s known as the Pyrmont Mont de Piété & Loan Office (see Figure 18).[75] This was one of several Australian offices of the institution which traced its history back to Medieval Europe, where it had been established as a money lending operation for the poor, as a "charitable pawn office".[76] The first such office had been established in Perugia in 1464, where it was known as Mons Pietatis, spreading across Germany, Belgium, France and Ireland in subsequent years. First attempts to introduce Mont de Piété in Australia had been made in around 1845, and in August 1861, the first office based on the Mont de

[70] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Pyrmont Bridge road – north side, 1885.
[71] They were in 1895 sold as shops and dwellings, see 'Advertising', *Daily Telegraph*, 21 September 1895, 3, http://nla.gov.au/nla.news-article238541670.
[72] 'Fires in Sydney.', *Maitland Mercury and Hunter River General Advertiser*, 23 September 1886, 3, http://nla.gov.au/nla.news-article18900137.
[73] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Pyrmont Bridge road – north side, 1887.
[74] *Ibid.,* 1889.
[75] 'Advertising', *Evening News*, 25 April 1898, 8, http://nla.gov.au/nla.news-article109648605; 'Advertising', *Truth*, 30 September 1900, 3, http://nla.gov.au/nla.news-article200507907.
[76] 'Mont de Piete, or Charitable Pawn Office', *Morning Chronicle*, 5 July 1845, 2, http://nla.gov.au/nla.news-article31745809.

Piété principle had been established by the Victoria Equitable Loan Investment Company in Melbourne.[77] The first Mont de Piété office in Sydney had been constructed in 1883 at Castlereagh Street.[78]

Between 1895 and 1914, the occupants of the shops at 22 to 36 Pyrmont Bridge Road included the following, based on sample editions of the *Sands Directories*:[79]

Table 4: Occupants 22-36 Pyrmont Bridge Road, 1895 - 1915

No	1895	1901	1905	1911	1914
36 (ex 50)		Hinds Brothers, bakers	Riggs A., bag merchant	Riggs A., bag merchant	Riggs A., bag merchant
34 (ex 52)	Phillips S. J., commission agent	Phillips S. J., commission agent	Phillips S. J., house and estate agent		
32 (ex 54)	Watson H., hairdresser	Hendy Harry, restaurant	Hendy Harry, restaurant	Condon and Court, restaurant	
30 (ex 56)	Bolton William, grocer	Vose Mrs. William, grocer	Langton John Bricknell Frederick, saddler	Bricknell Frederick, saddler Hawks Bert.	Baker Mrs. Martina Burnham Arthur, manufacturer of patent keys
28 (ex 58)	Vose William, grocer	Vose Mrs. William, grocer	Lee Henry, newsagent Hawks Miss H. A., stationer	Lee Henry, newsagent	Lee Henry, newsagent
26 (ex 60)	Farman Frank, basketmaker	Cremen P. J.	Cremen P. J.	Anderson Mrs. Flenberg Harold, pawnbroker	Flenberg Harold, pawnbroker
24 (ex 62)	Ross William, confectionery	Sloman William, pawnbroker	Sloman William, pawnbroker	Flenberg Harold, pawnbroker	Flenberg Harold, pawnbroker
22 (ex 64)	Marks Lazar, pawnbroker	Sloman, William, pawnbroker	Sloman William, pawnbroker	Flenberg Harod, pawnbroker	Flenberg Harold, pawnbroker

This suggests that the corner bakery at 36 Pyrmont Bridge Road was later used as a bags store, while 32 Pyrmont Bridge Road became a restaurant, which was by 1911 known as 'Excelsior Dining Rooms' (Figure 19). The grocery store at 28 Pyrmont Bridge Road became a newsagency, while the pawnbrokers on the corner of Pyrmont Street slowly enlarged their business and eventually occupied the three shops at 22 to 26 Pyrmont Bridge Road. The 1914 *Sands* listing was the last one for the row of shops on Pyrmont Bridge Road, and they were demolished not long afterwards (see Section 2.5.3). Photographs taken in 1911 show the shops prior to demolition (Figure 18 - Figure 20). The pawnbroker on the corner was still in use as a Mont de Piété loan office by that time.

[77] 'Original Correspondence.', *Weekly Register of Politics, Facts and General Literature*, 18 October 1845, 184, http://nla.gov.au/nla.news-article228135542; 'Victoria Equitable Loan Investment Company', *Argus*, 23 August 1861, 5, http://nla.gov.au/nla.news-article5703385.
[78] 'The Mont de Piete.', *Evening News*, 3 February 1883, 5, http://nla.gov.au/nla.news-article107236295.
[79] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Pyrmont Bridge road – north side, 1895, 1901, 1905, 1911 and 1914.

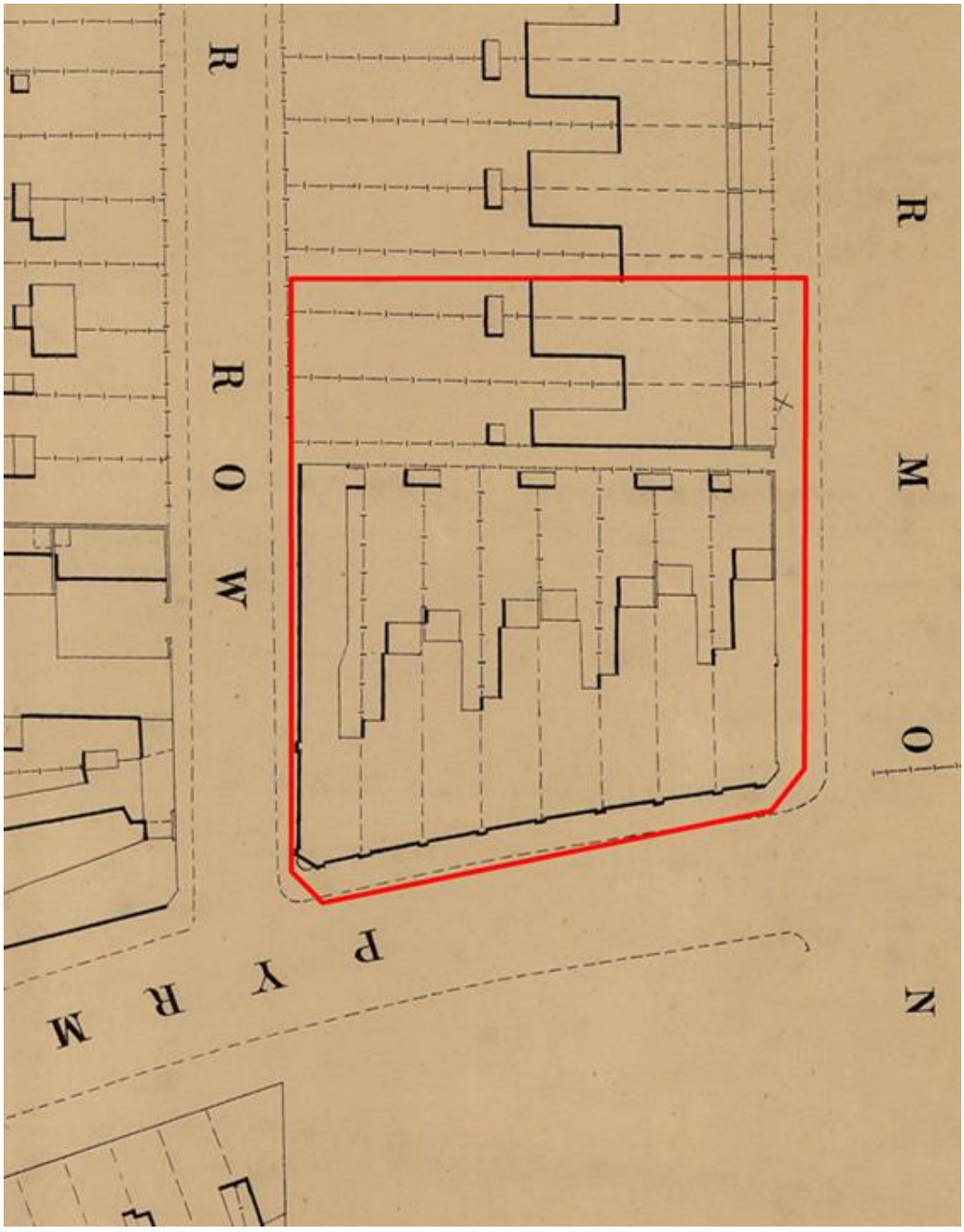


Figure 15: 1888 – Detail from City of Sydney Section (Metropolitan Detail Series), Sheet H3 (Source: State Library of NSW, Z/M Ser 4 811.17/1, https://collection.sl.nsw.gov.au/record/74VKqv5pXe4b/bO70aB3gy0DAk#viewer)

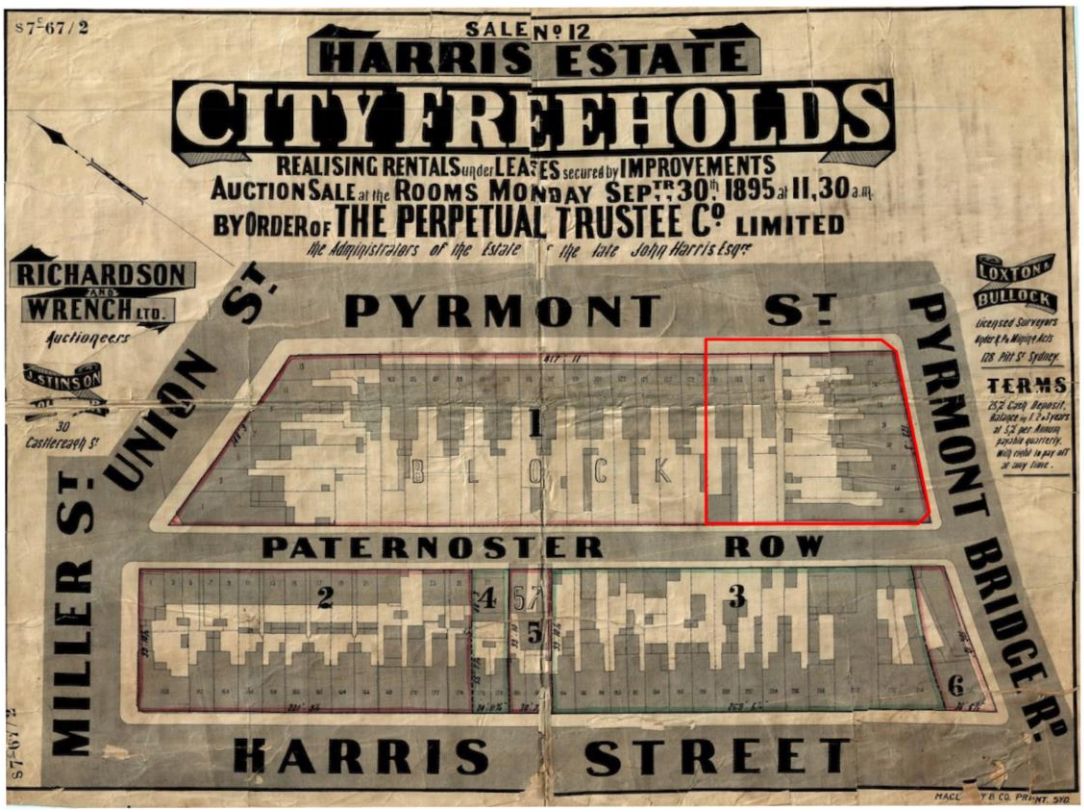


Figure 16: 1895 – Sales plan for Block 57 of the Harris Estate, sold as city freeholds, showing details of buildings (Source: City of Sydney Archives, Harris Estate sale No. 12 [area between Pyrmont, Union, Gipps, Harris, Pyrmont Bridge Road] (30/09/1895), [A-00530399]. https://archives.cityofsydney.nsw.gov.au/nodes/view/10698863709-2)

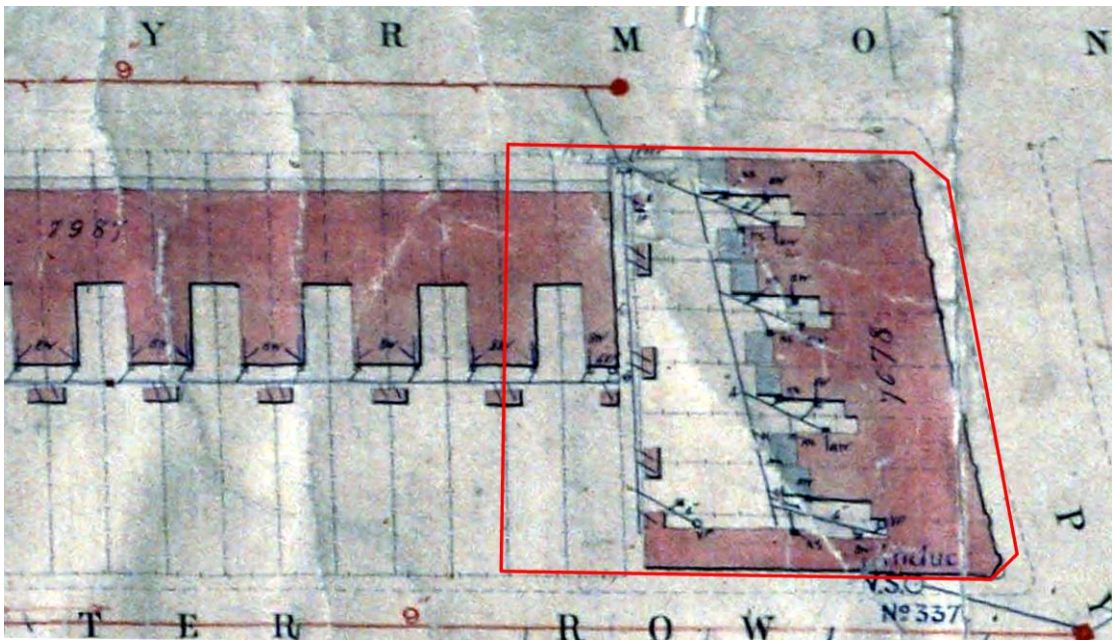


Figure 17: Detail from Blackwattle Sheets, prepared by the Board of Water Supply and Sewerage, 1908 (with later updates) (Source: Sydney Water Archives, BLKWTL 3709-2)

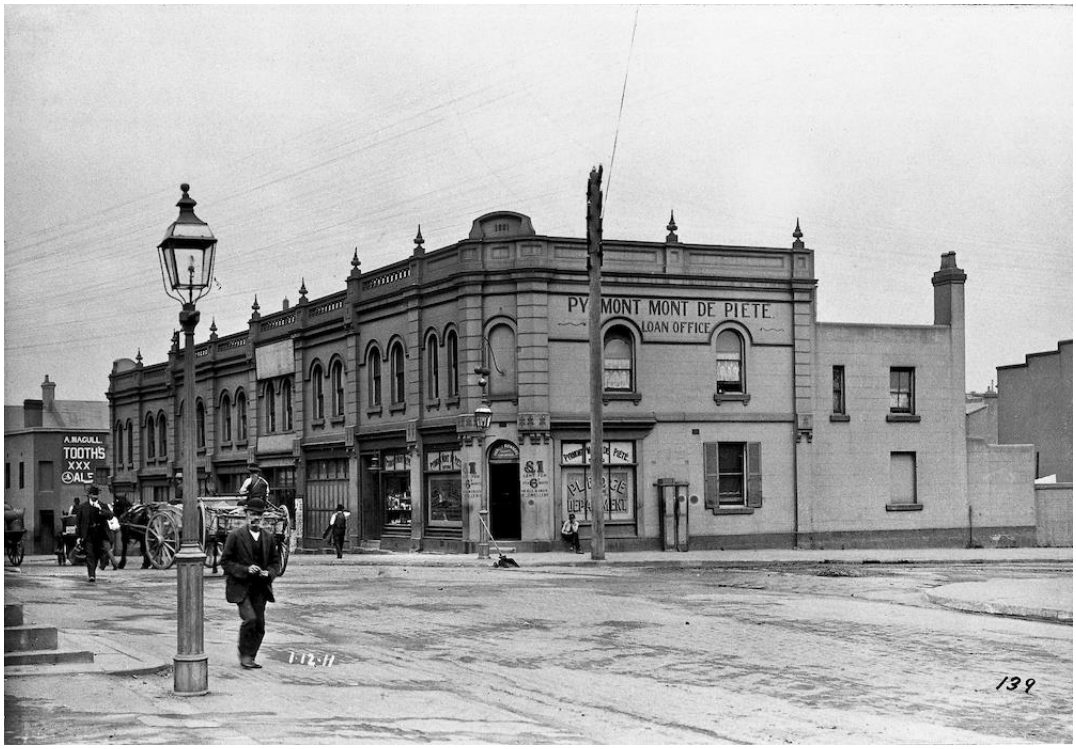


Figure 18: 1911 – Photograph of the terrace shop row on the northern side of Pyrmont Bridge Road, including the Pyrmont Mont de Piete Loan Office on the corner of Pyrmont Street. From Demolition Books. (Source: City of Sydney Archives, Pyrmont Bridge Road (01/12/1911), [A-00038946]. https://archives.cityofsydney.nsw.gov.au/nodes/view/676872)



Figure 19: 1911 – Photograph of the shops on Pyrmont Bridge Road, including Excelsior Dining Rooms (No. 32), Frederick Bricknell, saddler (No. 30), and Henry Lee, newsagent (No. 28). From Demolition Books. (Source: City of Sydney Archives, Pyrmont Bridge Road (01/12/1911), [A-00038945]. https://archives.cityofsydney.nsw.gov.au/nodes/view/676862)



Figure 20: 1911 – Photograph of the building at the corner of Paternoster Row (on left) and Pyrmont Bridge Road. Located at 36 Pyrmont Bridge Road, this was from 1881 until the early 1900s in use as a bakery. From Demolition Books. (Source: City of Sydney Archives, Pyrmont Bridge Road (01/12/1911), [A-00038944]. https://archives.cityofsydney.nsw.gov.au/nodes/view/676856)

2.5.2.4 Subsequent occupants of the Pyrmont Street Terraces (1884-1914)

The 'Temora Terraces' were occupied by various residents, usually short term, during the 1880s.[80] Occupants continued to include engineers, shipwrights and master mariners; people who were likely attracted by the proximity to their workplace around the harbour. Mrs Durrant was one of the more longer-term occupants of 17 Temora Terrace, later known as 135 Pyrmont Street, even though the *Sands Directory* variously listed her either to the north or south of Pyrmont Bridge Road.

However, the 1891 *Assessment Books* firmly place Mrs Durrant at 135 Pyrmont Street, as the last house within the block owned by Mills & Pile, just before Pyrmont Bridge Road.[81] Her next-door neighbour at that time, at No. 133, was Solomon Cohen, who ran the pawnbroker store on the corner of Pyrmont Street and Pyrmont Bridge Road. George Palmer lived at 131 Pyrmont Street, and C. Insoll was noted at 129 Pyrmont Street. All houses were described as double storey brick and stone houses with iron roofs, containing 5 rooms, except Solomon Cohen's house which had 6 rooms. The occupants of No. 131 and No. 129 Pyrmont Street were noted as George Farmer, basketmaker and Charles Messell, master mariner, respectively, in the 1891 *Sands*.[82]

Between 1895 and 1914, the occupants of the terraced houses at 129 to 135 Pyrmont Street included the following, based on sample editions of the *Sands Directories*:

[80] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Pyrmont Street – West side, 1883-1890.
[81] City of Sydney Archives, *Assessment Books*, Denison Ward – Pyrmont Street, 1891.
[82] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Pyrmont Street – West side, 1891.

Table 5: Occupants o 129-135 Pyrmont Street, 1895 - 1914

No	1895	1901	1905	1911	1914
129	Messell Charles, master mariner	Messell Charles, master mariner	Messell Charles, master mariner	Messell Charles, master mariner	Condon Henry
131	Jennings George Thomas	Jennings George Thomas	Sheriff William	Sheriff William	Brewer C.
133	Carter Henry T., sailmaker Nicholls Henry	Cleaves Edward	O'Neill Michael	Moore Edward	Hunt Mrs. Mary
135	Stewart Hugh	Allen Stephen	O'Grady Barney	O'Grady Barney	Fienberg Harold, pawnbroker

It is likely that the terraced houses were largely used as residences between 1895 and 1914, with Charles Messel being a long-term resident of 129 Pyrmont Street. However, with the resumption and subsequent demolition of the nearby shops on Pyrmont Bridge Road from 1914, this appears to have changed and the properties near Pyrmont Bridge Road became commercially used, as detailed in Section 2.5.3.2 below.

2.5.3 Phase 3 (1914-1947) – Resumption, clearance and relocation of commercial activity

2.5.3.1 Resumption and demolition of Pyrmont Bridge Road Shops (1914-15)

By 1914, the block bounded by Pyrmont Bridge Road, Pyrmont Street, Union Street and Paternoster Row had been transferred to new owners twice. Having been advertised as freehold properties in September 1895 (see Figure 16),[83] the block was transferred from the Perpetual Trustee Company Ltd to the Scottish Australian Investment Company Ltd in 1896, together with the rest of Block 57.[84] The lease to George Pile and all subleases were noted on the Certificate of Title issued to the Scottish Australian Investment Company on 19 June 1896. This ended the Harris family ownership of the site.

The second ownership transfer was registered on 9 April 1913, when the property at 22 to 36 Pyrmont Bridge Road was resumed by the Municipal Council of Sydney under the *Sydney Corporation Amendment Act 1906*, as part of the planned street widening of Pyrmont Bridge Road and Union Streets. A public notice for the resumption of properties for the widening as well as for "carrying out improvements in and remodelling that portion of the said City" had officially been gazetted on 27 September 1911.[85]

On 20 May 1914, the two-storeyed brick shops at 22, 24 and 26 Pyrmont Bridge Road, and those at 32 and 36 Pyrmont Bridge Road were offered as two separate lots, with the heading of the sales advertisement noting: "Pyrmont Resumption Scheme – Important Unreserved Auction Sale of Buildings – For Demolition and Removal."[86]

It appears that the buildings could not be sold but were demolished soon afterwards, as from 1915, the *Sands Directory* no longer listed any occupants or vacant buildings at that site, and the 1918 *Assessment Book* for the Pyrmont Ward noted the site as 'land' owned by the Municipal Council of

[83] 'Advertising', 21 September 1895.
[84] NSW LRS, CT Vol 1193 fol 248.
[85] 'Notice of Resumption', *Government Gazette of the State of New South Wales*, 27 September 1911, 5280, http://nla.gov.au/nla.news-article227592668.
[86] 'Advertising', *Daily Telegraph*, 20 May 1914, 3, http://nla.gov.au/nla.news-article238799928.

Sydney.[87] The vacant site remained in the ownership of Council which offered the site for sale once more in November 1922, when it was noted as Section 6 of the City Council Freehold (Figure 21).

The site was transferred to Richard Morris Williams on 30 October 1924, as a parcel of land containing 23 perches.[88] Morris was noted as a master butcher from Pyrmont, but he did not appear to have done anything with the site, trying to sell his property one year later, describing the site as being "suitable for factory, store, warehouse, etc."[89] The sales advertisement in the *Sydney Morning Herald* of 30 September 1925 noted that the site had about 118ft 6in frontage to Pyrmont Bridge Road, 54ft frontage to Pyrmont Street, and 76ft 2in to Paternoster Row.[90]

Williams transferred his property to Herbert John Nichols (also known as Nicholls) two years later, on 1 September 1927.[91] One year later, in 1928, a new scheme was submitted for widening of Pyrmont Bridge Road and Union Street to 84 feet.[92] Although no action was ever taken, because other solutions were found to ease the congestion of both roads, it would appear the proposal would have impacted on any plans by Nicholls to develop the site. The photographs in Figure 22 to Figure 28 show the site during the 1920s and 1930s, suggesting that it was largely vacant, without any fixed structures, but may have been used to deposit building materials or soil, particularly during the late 1920s and early 1930s, when the site did not appear to have been level.

On 6 January 1936, Nicholls submitted an application for "new building (motor show room)" at 22/36 Pyrmont Bridge Road.[93] The following day, the *Sydney Morning Herald* noted that Crane and Scott, architects, had already let a contract "to H. J. Nicholls, Camperdown, for erection of motor truck showroom in Pyrmont Bridge Road."[94] However, even though the building was swiftly approved, with Nicholls' address listed as Comet Street, Ashfield,[95] the City's *Planning Street Cards* noted that the work did not go ahead.[96] It appears that Nicholls, who was noted as a retired livery stables proprietor of Ashfield in the transfer document of 1927,[97] had gone into business as a builder, as he was noted as the contractor for several buildings, suggesting he may have used the vacant site to dump or store building materials or soil.[98]

The 1936 and 1939 *Assessment Books* for the Phillip Ward noted Herbert John Nichols as the owner of 'land' that was unoccupied and rated at £150 for both years. The City of Sydney Civic Survey plan included in Figure 29 shows the site in 1938-39, where it was noted as vacant. Likewise, the survey in Figure 30, prepared in January 1923 and updated based on a survey dated October 1940, does not show any structures at the site.

[87] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Pyrmont Bridge Road – North side, 1915; *Assessment Books*, Pyrmont Ward – Pyrmont Bridge Road, 1918.
[88] NSW LRS, CT Vol 2357 fol 186.
[89] 'Advertising', *Sydney Morning Herald*, 30 September 1925, 21, http://nla.gov.au/nla.news-article16245606.
[90] *Ibid.*
[91] NSW LRS, CT Vol 3670 fol 90.
[92] City of Sydney Archives, Town Clerk Correspondence Files – 2566/47, Agenda Paper Item No. 36, dated 16 July 1947.
[93] City of Sydney Archives, *Planning Street Cards*, Pyrmont Bridge Road, 22/36 Pyrmont Bridge Rd, Pyrmont St & Paternoster Road, No. 12/36
[94] 'Contracts Let', *Sydney Morning Herald*, 7 January 1936, 6, http://nla.gov.au/nla.news-article17207997.
[95] 'Buildings and Works Approved', *Construction and Real Estate Journal*, 15 January 1936, 4, http://nla.gov.au/nla.news-article222918001.
[96] City of Sydney Archives, *Planning Street Cards*, Pyrmont Bridge Road, 22/36 Pyrmont Bridge Rd, Pyrmont St & Paternoster Road, No. 12/36
[97] NSW LRS, CT Vol 3670 fol 90.
[98] See, for instance: 'Buildings and Works Approved', *Construction and Real Estate Journal*, 1 December 1937, 5, http://nla.gov.au/nla.news-article222924118; 'Tenders Accepted or Received', *Construction*, 20 July 1938, 16, http://nla.gov.au/nla.news-article222852320.

On 22 July 1941, Hay Publishing Co. (or Hay Publicity Ltd) submitted an application for hoarding at 22/36 Pyrmont Bridge Road.[99] After approval was granted on 24 July 1941, the hoarding was erected on all three street frontages, with the posts bolted into the rock and concreted in. The hoarding was complete on 22 September 1941. It is visible in the 1943 aerial photograph showing the site, which also shows what appears to be a building constructed alongside the Paternoster Row frontage. No evidence as to the purpose and construction of this building could be found, however, it would appear that it was a simple building of a temporary nature, potentially of timber construction and maybe erected in connection with the hoarding.

H. J. Nicholls retained ownership of the site until 21 February 1945, when the property was transferred to W. and A. Gilbey Ltd.[100]

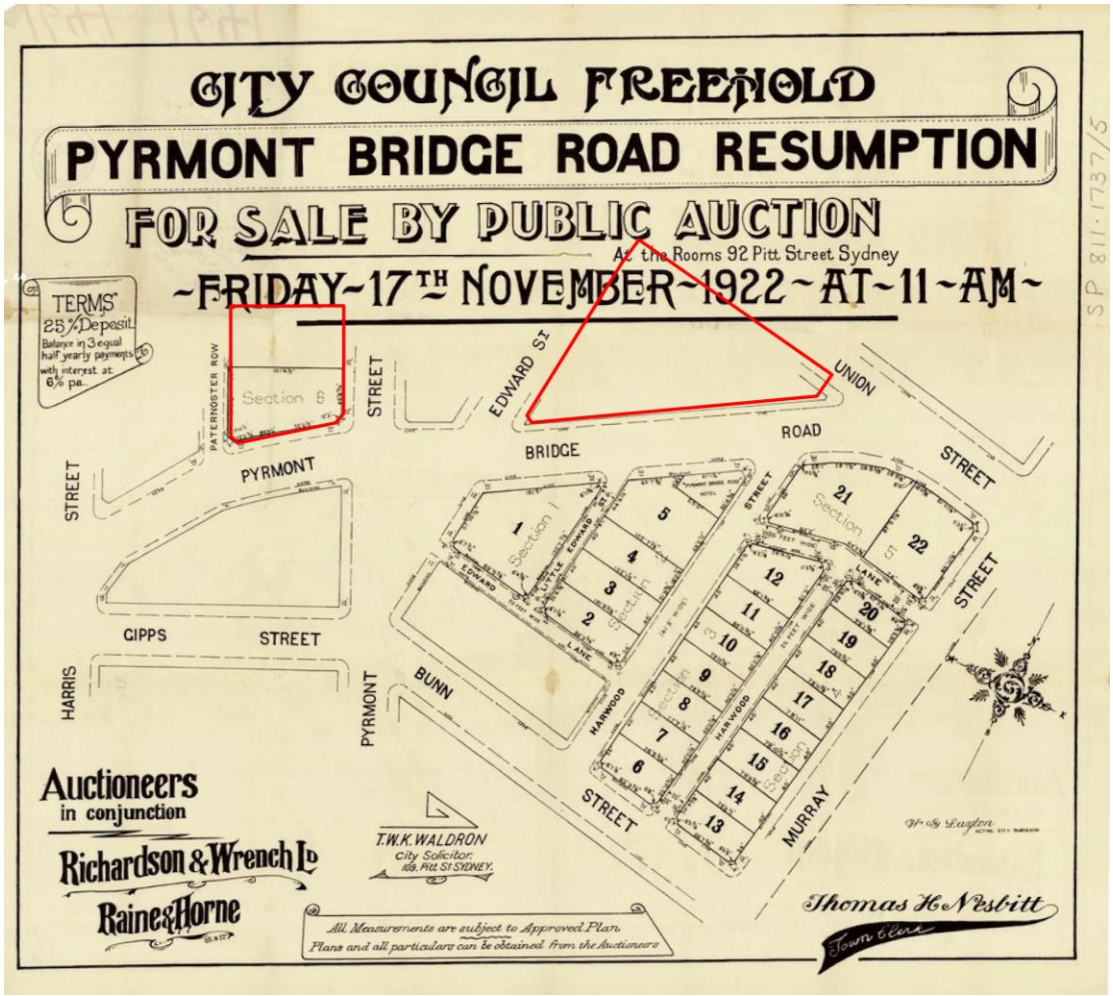


Figure 21: 1922 – City Council Freehold properties for sale, including Section 6 on the northern side of Pyrmont Bridge Road (Source: SLNSW, SP/811.1737/2, https://collection.sl.nsw.gov.au/record/74VvaqQxeEeX/lX4Xd3rAk6vGV#viewer)

[99] 'Building Inspectors Card: 22/36 Pyrmont Bridge Rd Pyrmont St & Paternoster Row. Hoardings. BA 478/41', City of Sydney Archives, accessed 31 January 2022, https://archives.cityofsydney.nsw.gov.au/nodes/view/1564438; 'Tenders Accepted or Received', *Construction*, 30 July 1941, 14, http://nla.gov.au/nla.news-article222861626.
[100] NSW LRS, CT Vol 3670 fol 90.

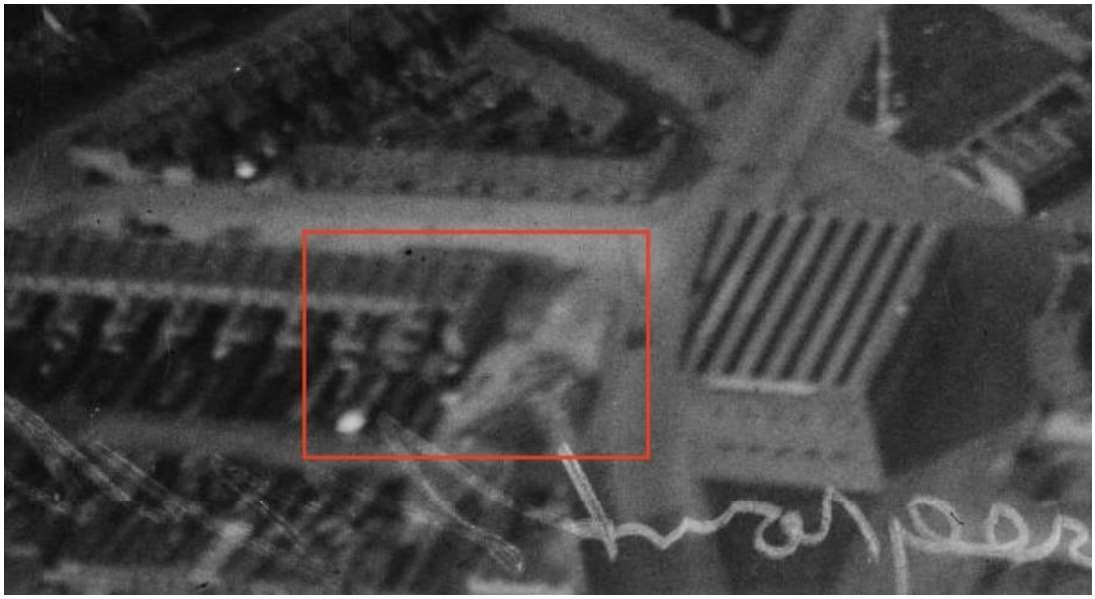


Figure 22: 1920s – 'Aerial view of Pyrmont Bridge and wharves', with the Western Construction site area outlined (Source: NLA, PIC/15611/15348, Fairfax archive, https://nla.gov.au/nla.obj-163003956)



Figure 23: c1920s – Aerial photograph by Milton Kent, said to date from 1932 but based on the context it was taken during the 1920s (all buildings at the Eastern Construction Site are still standing). Note the western portion of the site appears to contain deposits (Source: SLNSW, Milton Kent aerial views of Sydney, 1932, FL8812118, https://archival.sl.nsw.gov.au/Details/archive/110367483)



Figure 24: August 1930 – View towards the vacant site, with the Quarryman's Hotel on the left. A person appears to be standing on an elevated level, and the frontage to the street also appears to be elevated (Source: Noel Butlin Archives Centre, Tooth's Yellow Card, Quarryman's Hotel Pyrmont, Card 2 Side 2, https://openresearch-repository.anu.edu.au/handle/1885/104550)

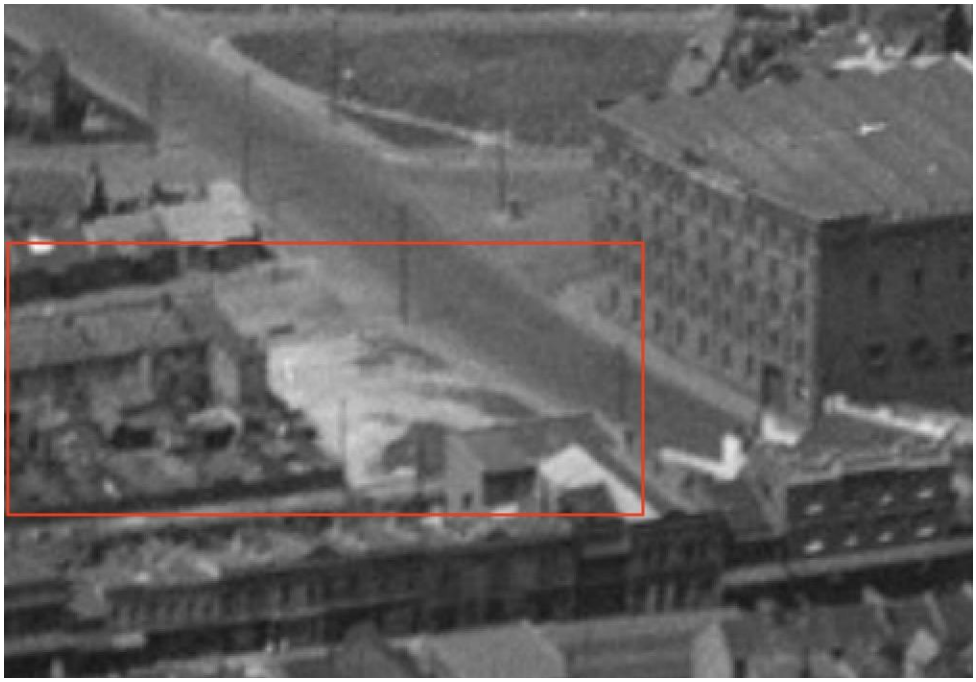


Figure 25: 1930 – Aerial view by Milton Kent, showing the vacant site as outlined (Source: SLNSW, Milton Kent aerial views of Sydney, 1932, FL8812121, https://archival.sl.nsw.gov.au/Details/archive/110367483)

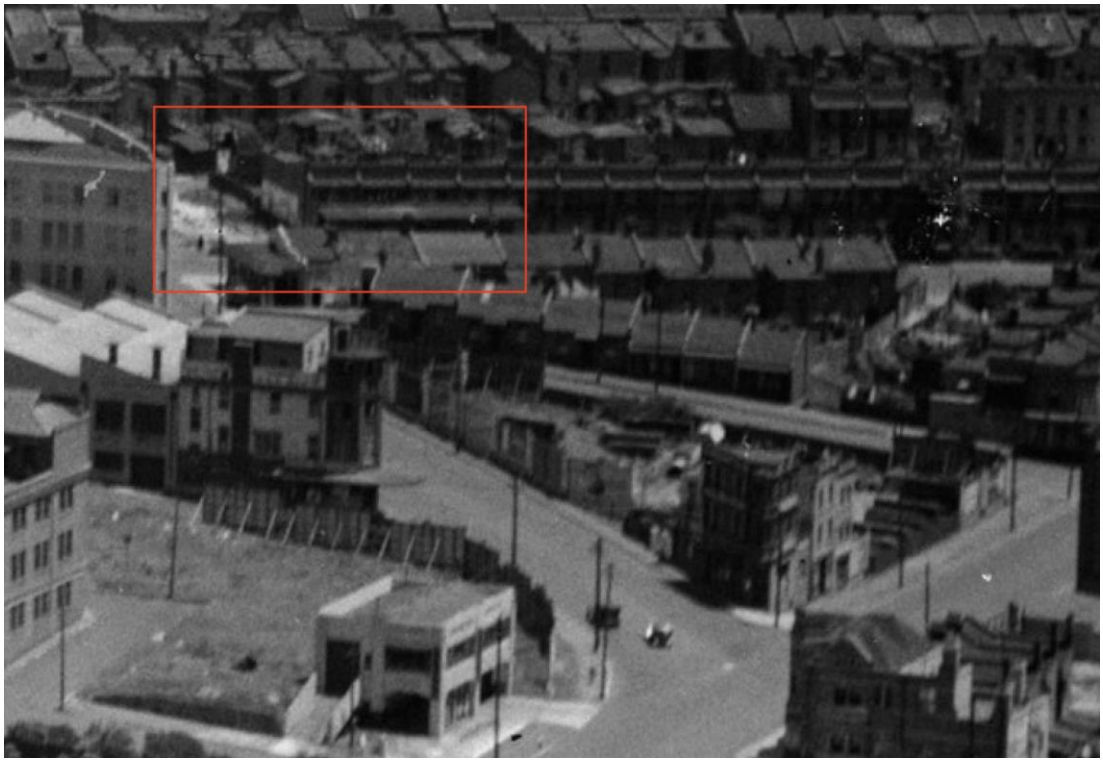


Figure 26: 1932 – Aerial view by Milton Kent, showing the vacant site and adjoining terraces as outlined (Source: SLNSW, Milton Kent aerial views of Sydney, 1932, FL8812119, https://archival.sl.nsw.gov.au/Details/archive/110367483)

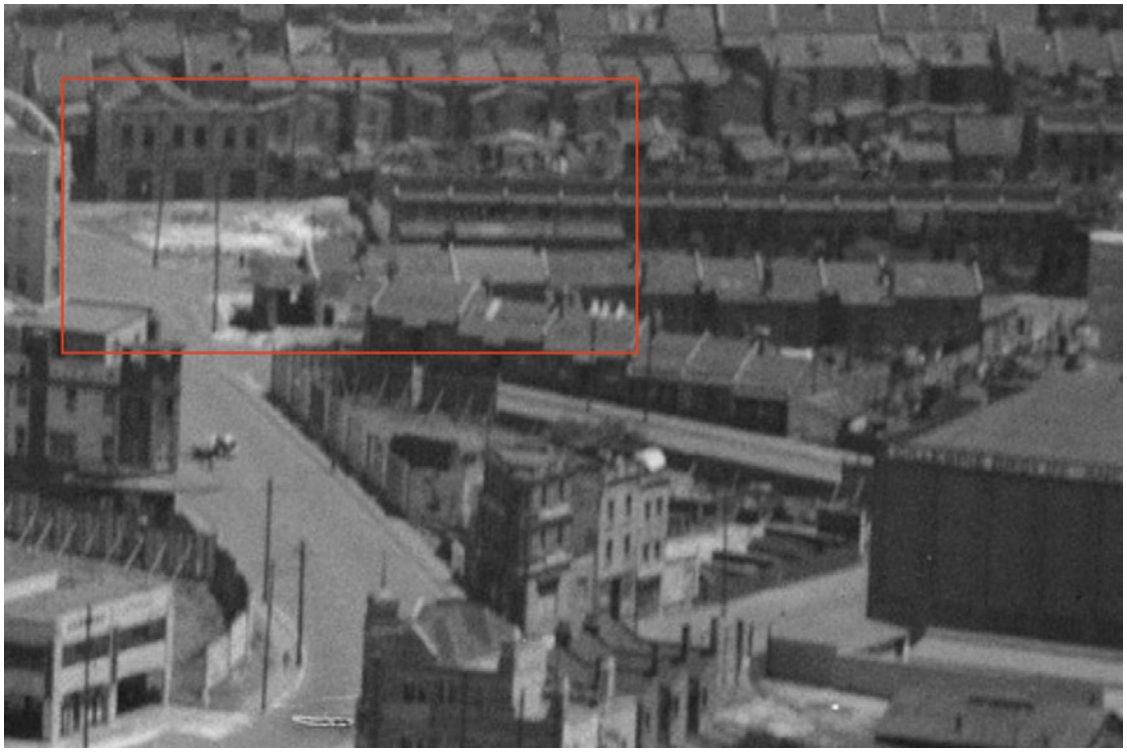


Figure 27: 1932 – Aerial view by Milton Kent, showing the vacant site and adjoining terraces as outlined (Source: SLNSW, Milton Kent aerial views of Sydney, 1932, FL8812120, https://archival.sl.nsw.gov.au/Details/archive/110367483)



Figure 28: January 1939 – View towards the vacant site, with the Quarryman's Hotel just visible on the left. The site appears to have been largely cleared, with a path likely cutting across (Source: Noel Butlin Archives Centre, Tooth's Yellow Card, Quarryman's Hotel Pyrmont, Card 2 Side 2, https://openresearch-repository.anu.edu.au/handle/1885/104550)

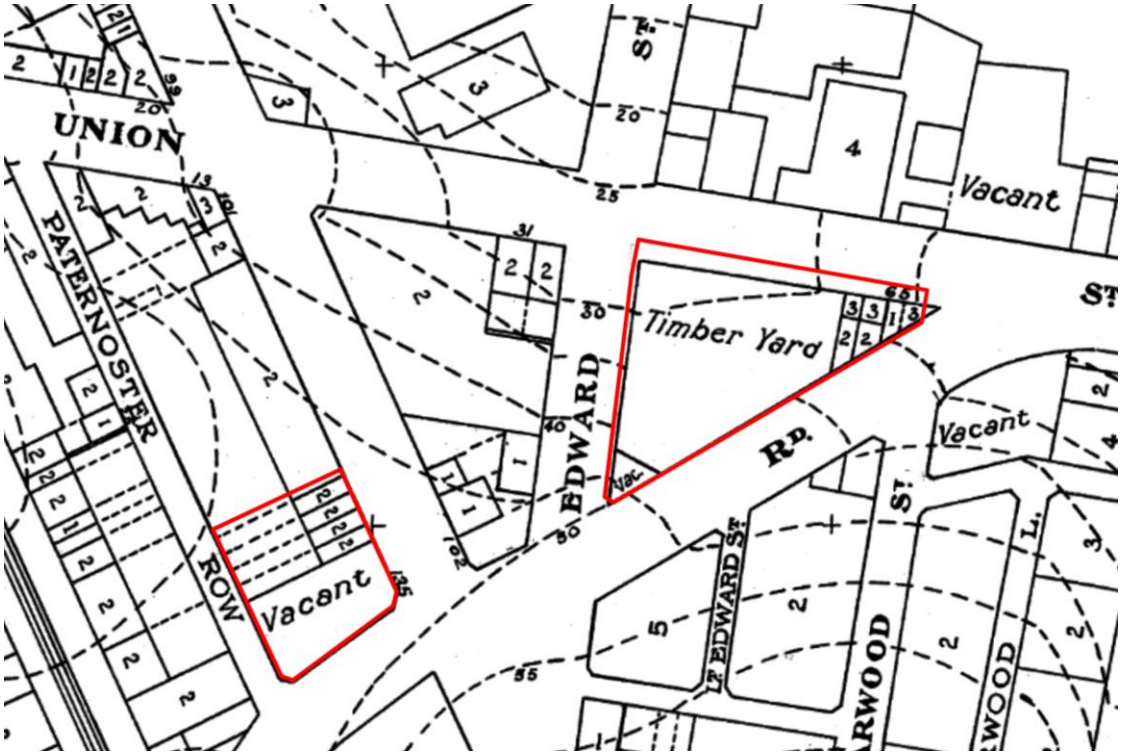


Figure 29: 1938-39 – Detail from City of Sydney Civic Survey, Map 17, showing the Pyrmont Bridge Road site as vacant (Source: City of Sydney Archives, City of Sydney - Civic Survey, 1938-1950: Map 17 – Pyrmont, [A-00880354]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1709281)

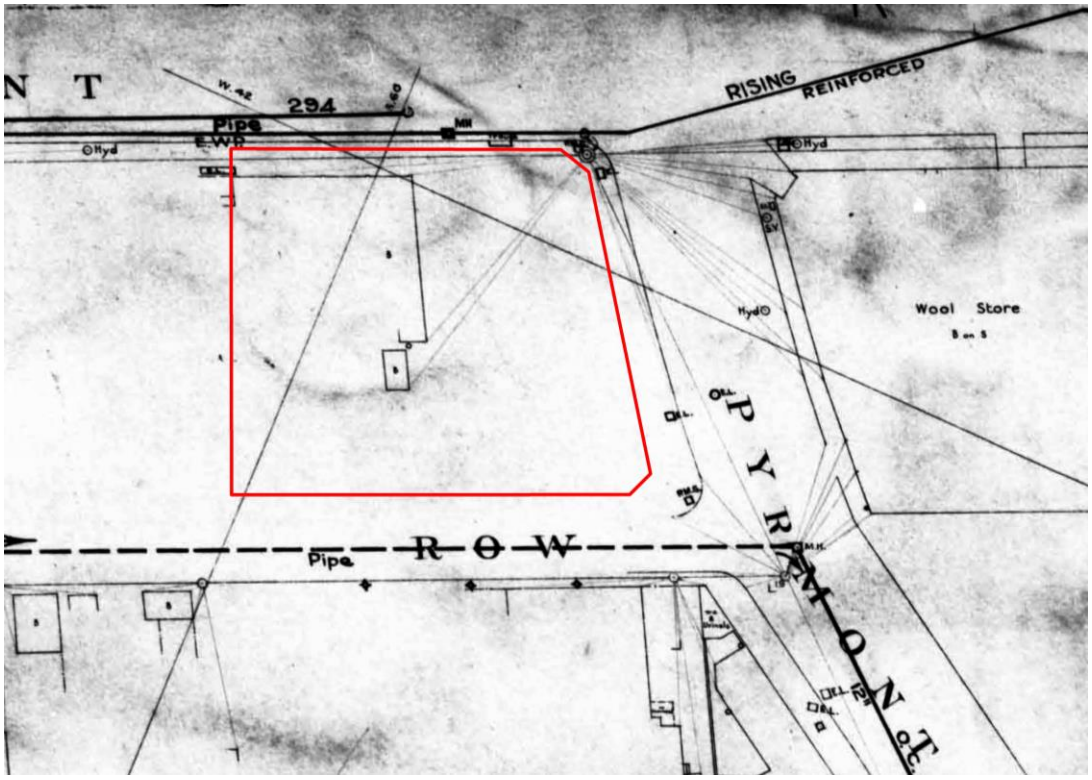


Figure 30: c1940-41 – Detail from City of Sydney Detail Survey, originally surveyed in January 1923 and updated to 1940-41, showing the Pyrmont Bridge Road site as vacant (Source: Sydney Water Archives, City of Sydney Detail Survey Sheet H3, DTS 403)

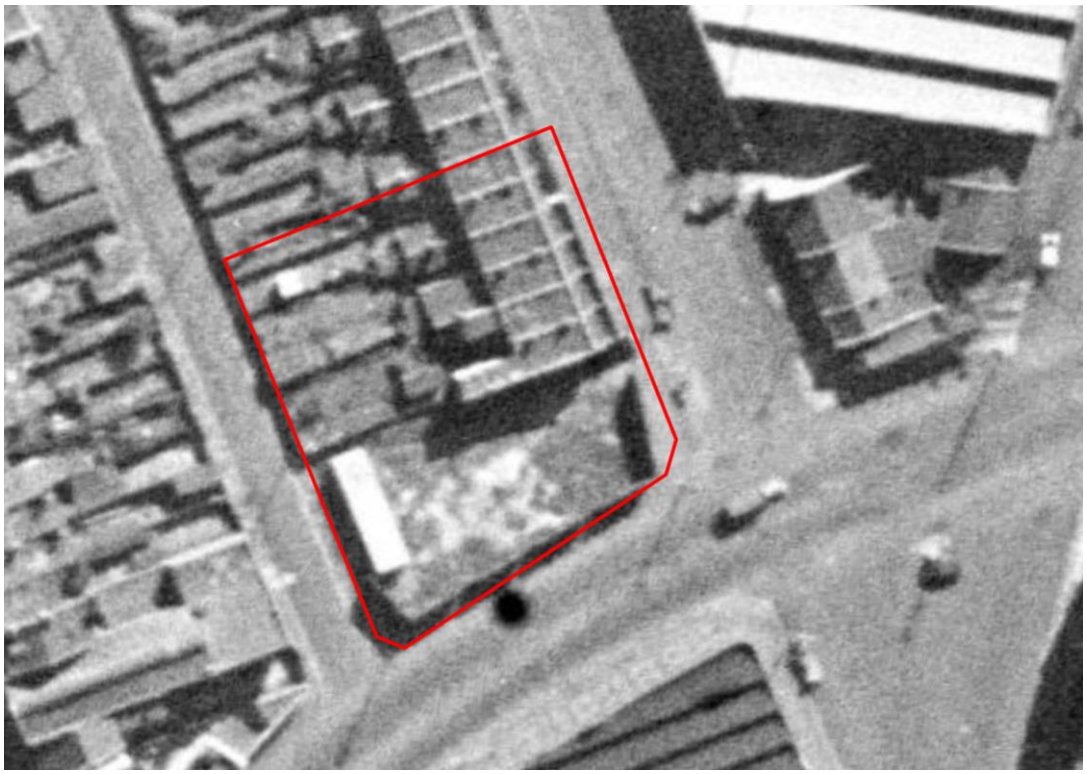


Figure 31: 1943 – Aerial photograph showing the hoarding erected in 1941, as well as a long structure along Paternoster Row, the purpose of which could not be identified (Source: NSW LRS, SIX Maps, 1943 aerial)

2.5.3.2 Relocation of commercial activity to Pyrmont Street (1914-1947)

With the resumption and sale of the shops on Pyrmont Bridge Road in 1914, and subsequent demolition of all buildings, some of the previous shop keepers on Pyrmont Bridge Road decided to relocate to the terraced houses at 129 to 135 Pyrmont Street, which were still owned by the Scottish Australian Investment Company at that time.

Harold Fienberg, for instance, who had run the Mont de Piété loan office at 22 Pyrmont Bridge Road during the 1910s, was in 1914 noted at both 22 Pyrmont Bridge Road and 135 Pyrmont Street, and in 1915, when the Pyrmont Bridge Road shops were no longer listed, Fienberg continued to run his pawnbroker business from 135 Pyrmont Street.[101] Being the terrace immediately adjacent to the vacant site, it became the new Mont de Piété loan office. This was from c1917 onwards run by M. or F. Lewis, who commissioned a large advertising sign to be painted on the south wall of his premises, for 'Lewis's Pyrmont' (see Figure 24 and Figure 28).[102]

Henry Lee moved his newsagency from 28 Pyrmont Bridge Road to 133 Pyrmont Street, where he was listed in the *Sands Directory* from 1915 onwards.[103] It appears that the buildings at 129 and 131 Pyrmont Street underwent alterations during 1914, as these buildings were not listed in the 1915 *Sands*, however, by 1916, 129 Pyrmont Street had become a hairdresser and was occupied by George Austin, and 131 Pyrmont Street had become a restaurant run by Mrs. M. Hummell.[104]

Indeed, four building applications for Pyrmont Street had been submitted to Council in 1914, three of which were for the properties at 129 to 135 Pyrmont Street.[105] E. Spackman, architect and builder, submitted two applications, one on 9 June for alterations to 133 Pyrmont Street, involving a new shop front (BA 438/14, see Figure 32),[106] and one on 6 August 1914 for 129-131 Pyrmont Street (BA 609/14). The latter was again for new shopfronts and internal alterations, with the plan submitted as part of BA 609/14 noting the wrong address (see Figure 33).

Johns & Carden, architects, submitted an application on 16 December 1914, to erect a supported awning for 129-135 Pyrmont Street, extending along the frontages of all four buildings (BA 876/14).[107] The awning is visible in Figure 23 - Figure 28. A further development application for internal alterations to 131 Pyrmont Street were submitted in 1916, again by J. Carden.[108] This involved internal reconfiguration of the rear kitchen of the restaurant.

By 1918, hairdresser George Austin was still located at No. 129, Mrs. H. Humble ran the restaurant at No. 131, Lee Henry's newsagency was still located at No. 133, and M. Lewis, pawnbroker, was noted at No. 135.[109] By 1921, No. 129 was no longer listed separately, but had become part of the restaurant which was now located at 129-131 Pyrmont Street, occupying both buildings.[110]

[101] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Pyrmont Street (Pyrmont) – West side, 1910-1915; Pyrmont Bridge Road – north side, 1910-1915.
[102] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Pyrmont Street (Pyrmont) – West side, 1918; cf. 'Advertising', *Sydney Morning Herald*, 20 September 1918, 3, http://nla.gov.au/nla.news-article15803416.
[103] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Pyrmont Street (Pyrmont) – West side, 1915.
[104] *Ibid.*, 1916.
[105] City of Sydney Archives, *Planning Street Cards*, Pyrmont Street (1907-1928), Card 3.
[106] Cf. 'City Applications', *Sun*, 15 June 1914, 12, http://nla.gov.au/nla.news-article224650138.
[107] City of Sydney Archives, *Planning Street Cards*, Pyrmont Street (1907-1928), Card 3; cf. 'City Council Applications', *Construction : Weekly Supplement to Building*, 21 December 1914, 12, http://nla.gov.au/nla.news-article234764546.
[108] City of Sydney Archives, *Planning Street Cards*, Pyrmont Street (1907-1928), Card 3.
[109] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Pyrmont Street (Pyrmont) – West side, 1918.
[110] *Sands Directory*, 1919.

Between 1921 and 1931, the occupants of the terraced houses at 129 to 135 Pyrmont Street included the following, based on sample editions of the *Sands Directories*:

Table 6: Occupants of 129-135 Pyrmont Street, 1921-1931

No	1921	1926	1929	1931
129-131	Patman H., restaurant	Patman H., restaurant	Blackwell Mrs. S., restaurant Blackwell, A.D. (No. 131)	Blackwell Mrs. S., restaurant Blackwell, A.D. (No. 131)
133	Dackett Helen Ada, newsagent	Dackett Helen Ada, newsagent	Carroll Mrs. I., newsagent	Carroll Mrs. I., newsagent
135	Lewis Fanny, pawnbroker	Lewis Fanny, pawnbroker	Sanders, Richard, carrier	Childs William

During the 1920s and 1930s, the only building and development applications that were submitted for the shops at 129 to 135 Pyrmont Street, as noted in the City's *Planning Street Cards* for Pyrmont Street, were for rear fencing at No. 135 (BA 589/29), for repairs and re-roofing of the awning of Nos. 133 and 135 (DA notice 107/31 and BA 620/31), for a dividing fence at Nos. 133 and 135 (DA notice 1612/34), and for repair or renewal of the awning gutter at Nos. 133 and 135 (DA notice 3213/36).[111] No applications were listed for the 1940s.

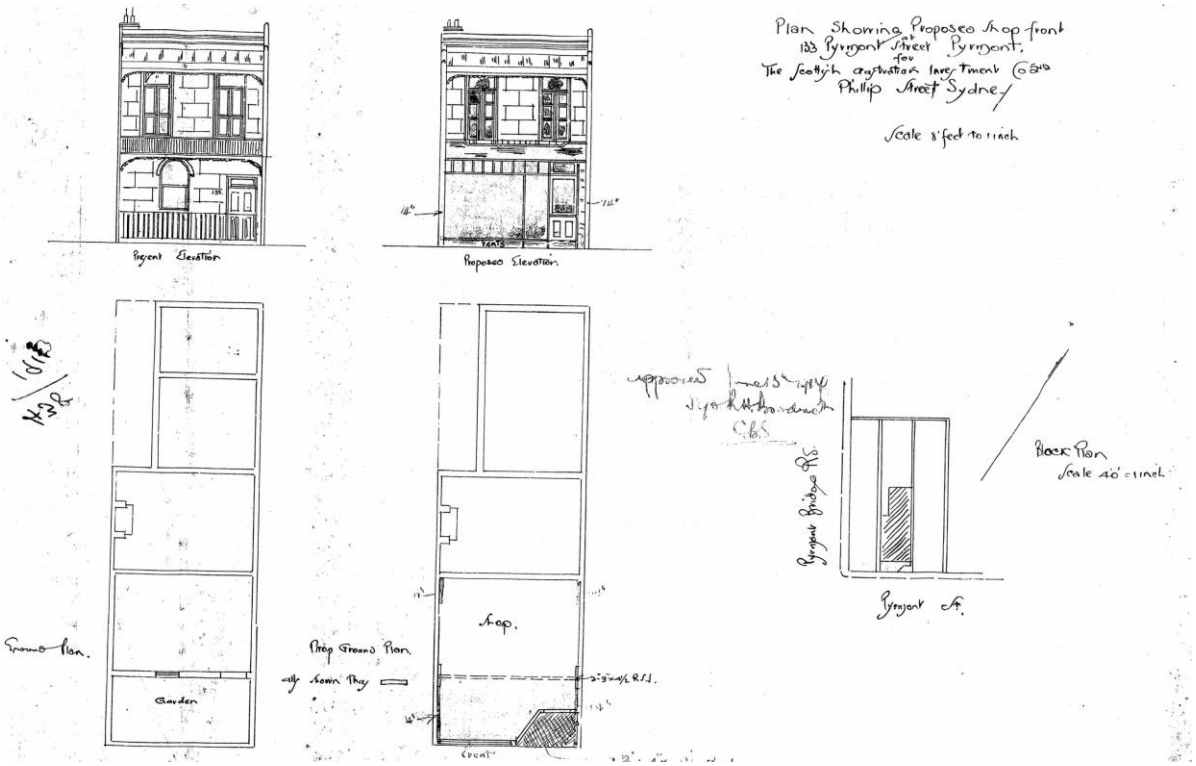


Figure 32: 1914 – Plan showing details for the proposed new shopfront for Henry Lee's newsagency at 133 Pyrmont Street, carried out by E. Spackman for the Scottish Australian Investment Co Ltd (Source: City of Sydney Archives, Pyrmont St (133) E Spackman alterations (01/01/1914 - 31/12/1914), [A-00551981]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1420016)

[111] City of Sydney Archives, *Planning Street Cards*, Pyrmont Street (1907-1928) and (1928-1994).

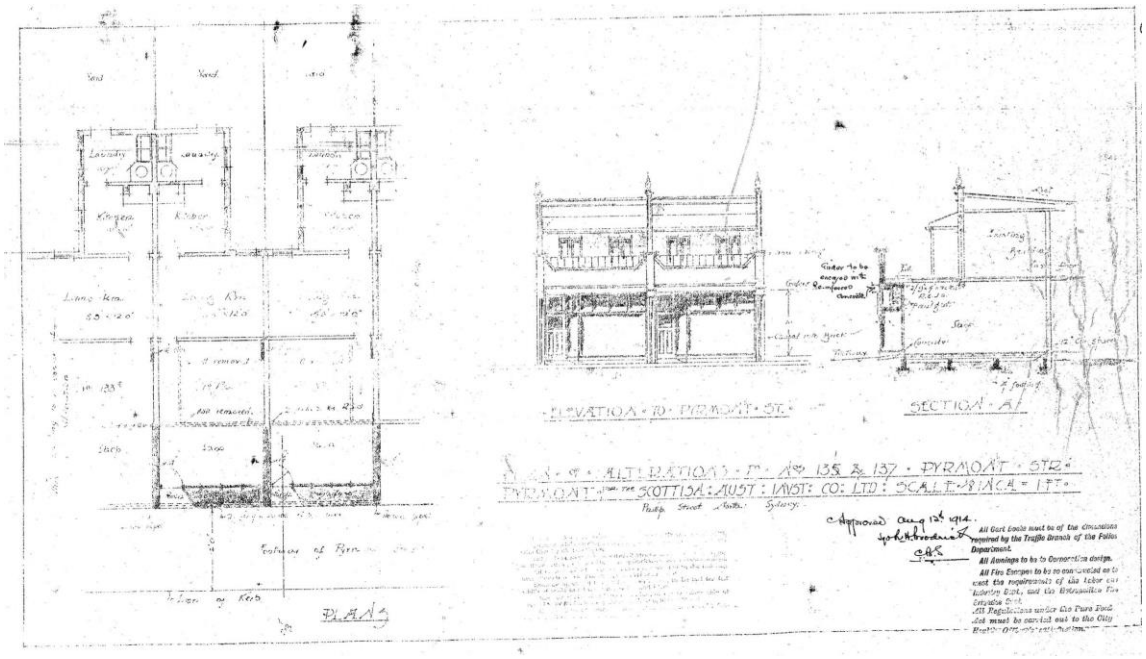


Figure 33: 1914 – Plan showing details for the proposed new shopfronts 129 and 131 Pyrmont Street, carried out by E. Spackman for the Scottish Australian Investment Co Ltd. The plan notes the wrong address but was submitted as part of BA 609/14. These buildings were occupied by a restaurant (No. 131, on left) and hairdresser (No. 129, on right) (Source: City of Sydney Archives, Pyrmont St (129-131) E Spackman alterations & additions (01/01/1914 - 31/12/1914), [A-00571870]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1436278)

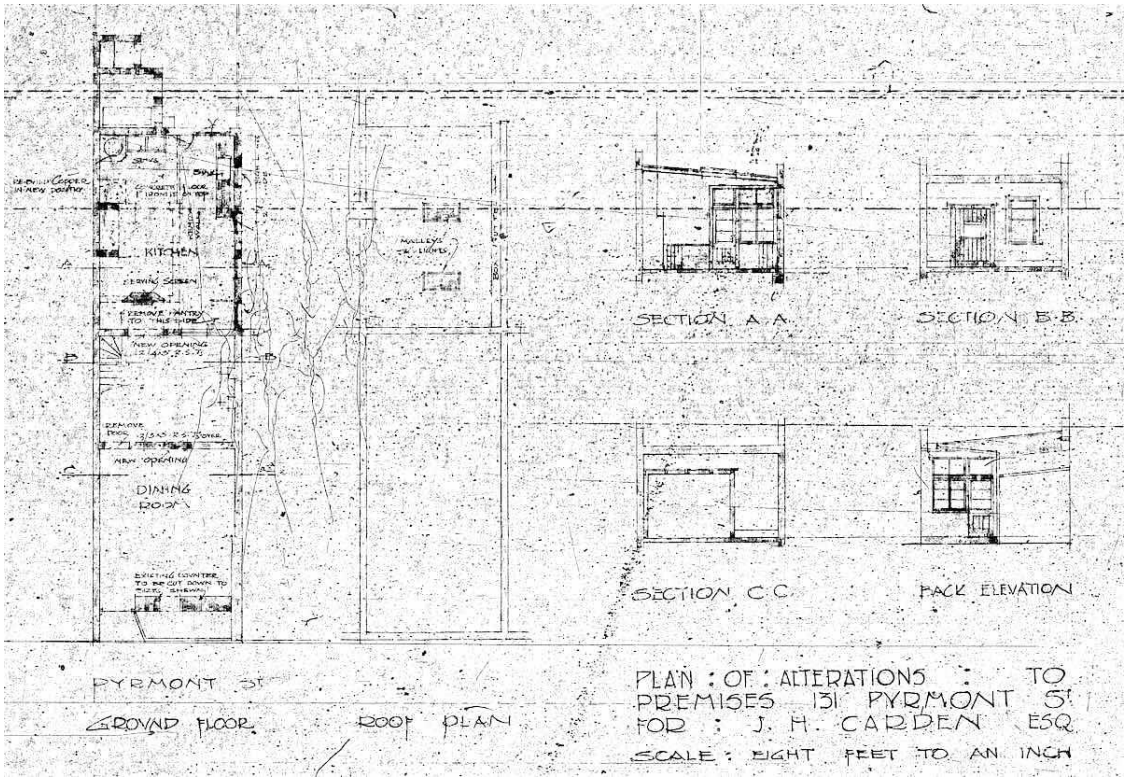


Figure 34: 1916 – Plan showing details for proposed alterations to the restaurant at 131 Pyrmont Street, by J. H. Carden. (Source: City of Sydney Archives, Pyrmont St (131) J H Carden alterations (01/01/1916 - 31/12/1916), [A-00550357]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1431879)

2.5.4 Phase 4 (1947-present) – Gilbey's Store, 'Frankel House' and redevelopment

2.5.4.1 Construction of warehouse and store for W & A Gilbey Ltd (1947-50)

Two years after acquisition of the vacant site fronting Pyrmont Bridge Road, C. J. Orme, architect, submitted a building application to Sydney Council for erection of a new building for W & A Gilbey Ltd on 11 July 1947 (BA 614/47).[112] An interim development application (IDA 83/1947) had been submitted to Council a couple of days earlier, which was granted on 11 August 1947.[113] Consulting engineers were Sydney based A. S. Nicholson & H. R. Hammond, and the builders were Howie Moffat & Co Ltd. The building was estimated to cost £25,000 and £8,600. The initial plans outlined in the interim development application were for a double-storey reinforced concrete structure consisting of a free store, and a bond and bottlings store, as well as providing the NSW offices of Gilbey's, and amenities for factory and office staff. It is possible that Nicholson and Hammond were largely responsible for the project as the Sydney based experts, while the architect responsible for the design, Charles J. Orme, was based in Melbourne.

C. J. Orme had been educated at Michael House in Durban, South Africa, and after migrating to Victoria, he had served his articles with Gibbs and Finlay, architects.[114] While working in the office of Sidney Smith, Ogg and Serpell for nine years, he also studied art at the Victorian Artists' Society. In 1934, Orme entered into partnership with Eric Hughes, however, he appears to have worked on his own again by 1947.

W. & A. Gilbey had been founded in London in 1857 by brothers Walter and Alfred Gilbey, who established a business as wine and spirits merchants, largely importing wines from the Cape of South Africa, and later producing their own gin, mainly London dry gin.[115] Expanding quickly across England and Scotland, they soon entered the Australian market, importing and exporting spirits and wine, and in c1925 established their first Australian distillery in West Melbourne.[116] From 1905, they had added grain whisky to their blend. W & A Gilbey merged with United Wine Traders Ltd in 1962, forming International Distillers and Vintners, and were later acquired by Grand Metropolitan which became part of Diageo PLC, together with Guinness PLC.[117]

As part of the approvals process for the 1947 IDA, a report was prepared by the City Architect and Building Surveyor's Department in July 1947, which noted that the site was vacant and did not contain any buildings. The question of the widening of Pyrmont Bridge Road was also addressed, and the Town Clerk noted the following:

> *"In the year 1928 a scheme was submitted to the Commissioners providing for the widening of Pyrmont Bridge Road and Union Street to Eighty four feet (84'), but no action was taken to carry out the widening of these two (2) thoroughfares.*
>
> *Since that date the proposal by the Maritime Services Board of New South Wales to remove Glebe Island Bridge and the proposal for the reconstruction of Pyrmont Bridge, involving the relocation of access to that Bridge in a more Southerly*

[112] 'Building Inspectors Card: NW Cnr Pyrmont Br Road & Pyrmont St. Gilbeys Ltd. Application to Erect New Building, BA 614/47', City of Sydney Archives, accessed 31 January 2022, https://archives.cityofsydney.nsw.gov.au/nodes/view/915644.
[113] City of Sydney Archives, IDA 83/47, 'Pyrmont St, Pyrmont Bridge Road and Paternoster Row, Pyrmont – Proposed New Factory for W & A Gilbey Ltd'.
[114] 'Descriptive Details', *Age*, 23 January 1934, 9, http://nla.gov.au/nla.news-article203375086.
[115] 'W&A Gilbey | Scotch Whisky', accessed 2 February 2022, https://scotchwhisky.com/whiskypedia/5989/w-a-gilbey/.
[116] 'Sydney.', *Darling Downs Gazette and General Advertiser*, 11 December 1880, 3, http://nla.gov.au/nla.news-article85754111; 'W. and A. Gilbey's Plans', *Newcastle Morning Herald and Miners' Advocate*, 28 December 1929, 5, http://nla.gov.au/nla.news-article137793719.
[117] 'W&A Gilbey | Scotch Whisky'.

direction than Union Street, when consummated, will have the effect of considerably relieving traffic in both Pyrmont Bridge Road and Union Street.

Further, the scheme for providing an arterial expressway from the City to the West, in the line of Goulburn Street, will, it is felt, have the effect of removing a considerable amount of through traffic which now normally uses Pyrmont Bridge Road.

In all the circumstances, it is considered that any widening of Pyrmont Bridge Road and Union Street will not be necessary, and the Officers of both Councils recommend accordingly."[118]

The building application was approved on 13 August 1947, but it was not until 23 February 1948 that works began with the erection of a builders shed and hoarding.[119] By 10 March 1948, all hoarding had been completed and preparations for excavation works began, with amended plans submitted that day. Two days later, builders hoarding was erected on Pyrmont Street excavation started. The building inspector noted on 12 March 1948: "excavation for foundation shows rock at varying depths below ground level."[120]

On 23 March, excavation for column foundation was in progress, being noted as completed two months later. On 1 June, concreting of the foundation bases began, "with Glebe Island ready mixed concrete poured for column foundations on north side."[121] The nature of the foundation was noted as 'rock' in the Building Inspector's Card, and the depth of the footings was noted as 4 feet. Progress was extremely slow, and it took nearly three years for the building to be completed.

Amended plans were submitted on 1 July 1948, when the foundation beams had all been poured and the brickwork was in progress on the ground floor. One week later, the brickwork up to ground floor beams was completed, and excavations for drainage had started. The amended plans were approved on 23 July 1948, and one week later, the site was levelled in preparation for concreting of the ground floor. By early September, the first portion of the ground floor was concreted, and reinforcements laid for the second portion.

The building inspector continued to observe the progress of the building with great care, noting in detail the various steps taken until completion of the building, halting works whenever plans had yet to be approved, and inspecting the structural details at short intervals throughout the construction process. In late September 1949, amended plans for the gin tank and tower section were submitted and approved on 6 October 1949. Although work on the parapet was nearing completion in January 1950, with the ground floor windows finally glazed in February, the project changed again on 25 January 1950, when amended plans for an additional, third storey were submitted and approved two days later. It was not until 15 September 1950 that the building was noted as having been completed to approval, with wet weather hampering the completion of the roof.

Details of plans submitted with the building application, including later and amended plans for the third floor, are included in Figure 35 - Figure 42 below.

[118] Item No. 36 on Agenda Paper, TC No. 2566/47, dated 16 July 1949, contained in the IDA 83/47 file held by the City of Sydney Archives.
[119] This and the following is based on 'Building Inspectors Card'.
[120] 'Building Inspectors Card'.
[121] 'Building Inspectors Card'.

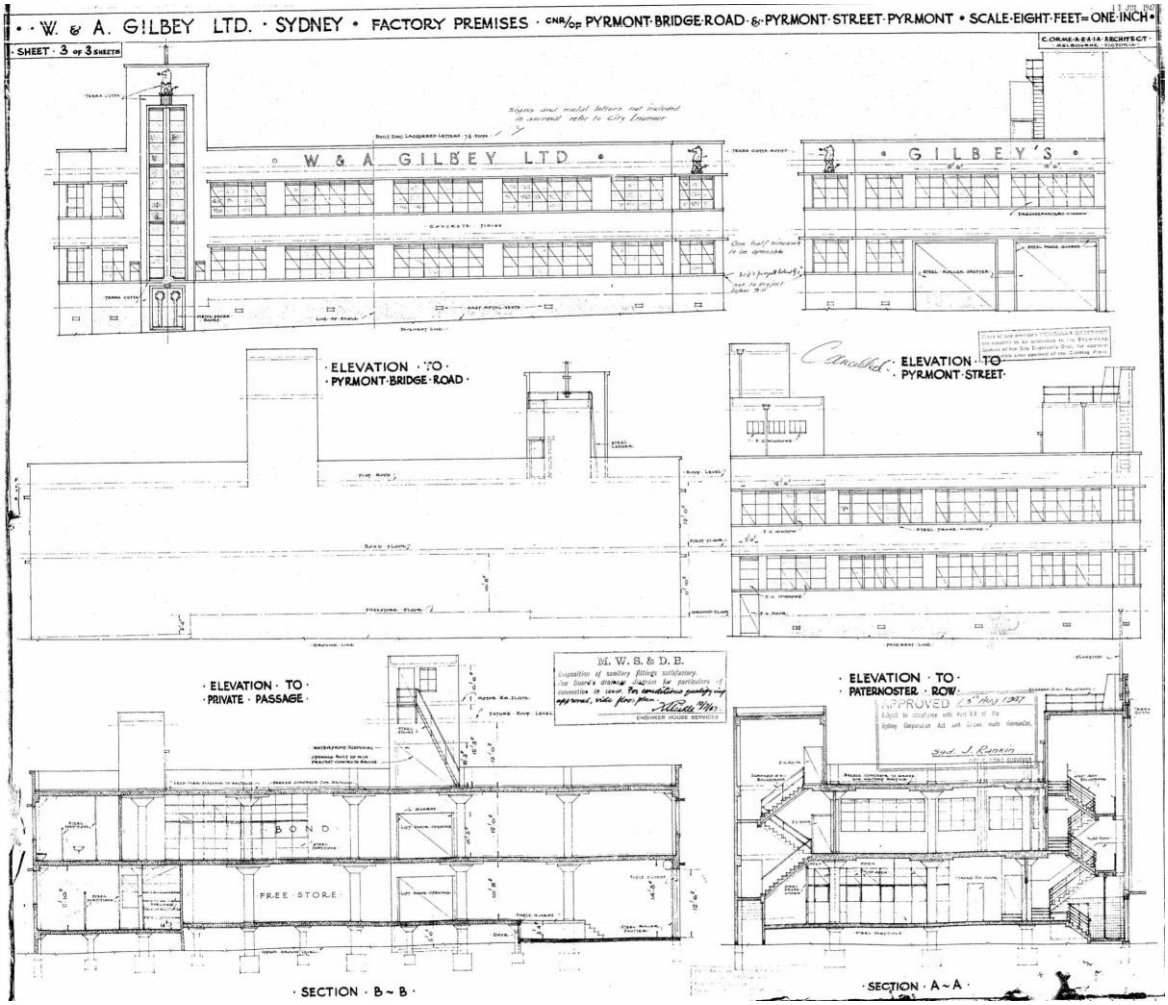


Figure 35: 1947 – Elevations and Sections for the proposed factory premises for W & A Gilbey Ltd by C. Orme, architect, Melbourne, approved 10 July 1947. These were later amended to include a third floor. The approximate ground level was noted by the bottom line in Section B-B and Section A-A (Source: City of Sydney Archives, Pyrmont Bridge Rd NW cnr & Pyrmont St (adjacent No 135), new building (01/01/1947 - 31/12/1947), [A-00572010]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1437047)

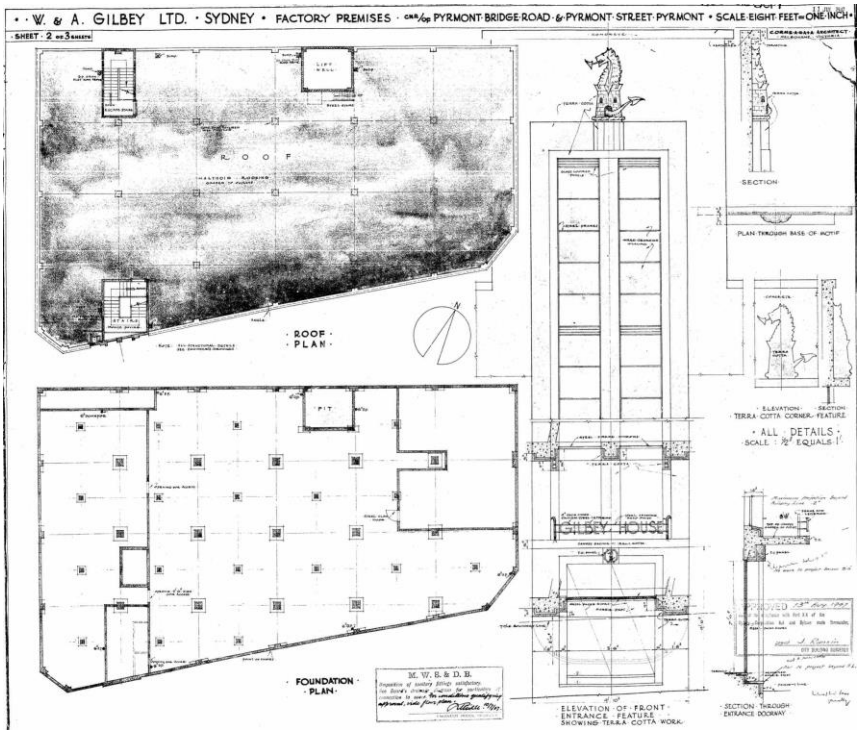


Figure 36: 1947 – Roof and foundation plans for the proposed factory premises for W & A Gilbey Ltd by C. Orme, architect, Melbourne, approved 10 July 1947 and amended in 1948 (Source: City of Sydney Archives, Pyrmont Bridge Rd NW cnr & Pyrmont St (adjacent No 135), new building (01/01/1947 - 31/12/1947), [A-00572010]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1437047)

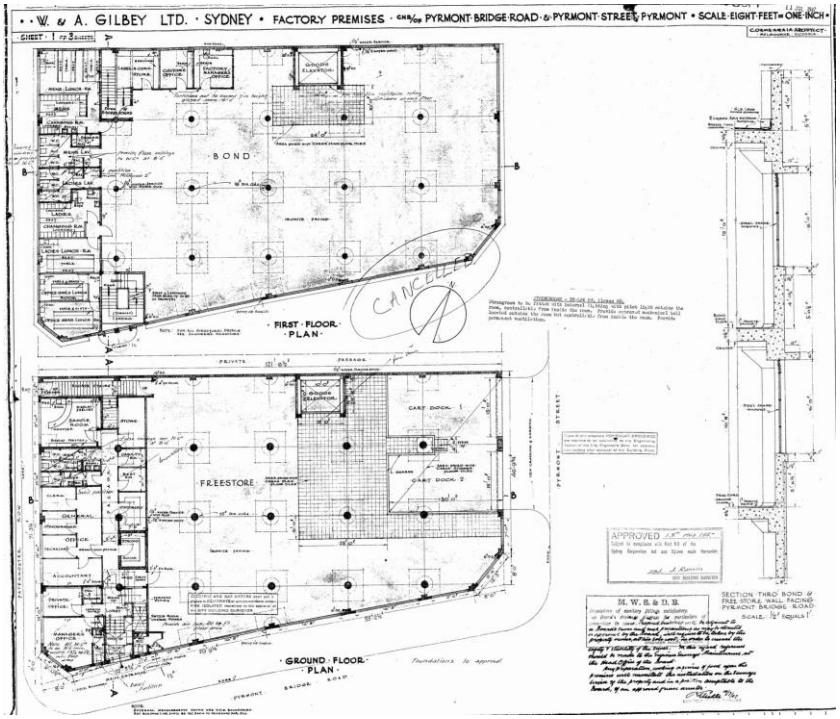


Figure 37: 1947 – Ground and first floor plans for the proposed factory premises for W & A Gilbey, by C. Orme, architect, Melbourne, approved 10 July 1947 and amended in 1948 (Source: City of Sydney Archives, Pyrmont Bridge Rd NW cnr & Pyrmont St (adjacent No 135), new building (01/01/1947 - 31/12/1947), [A-00572010]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1437047)

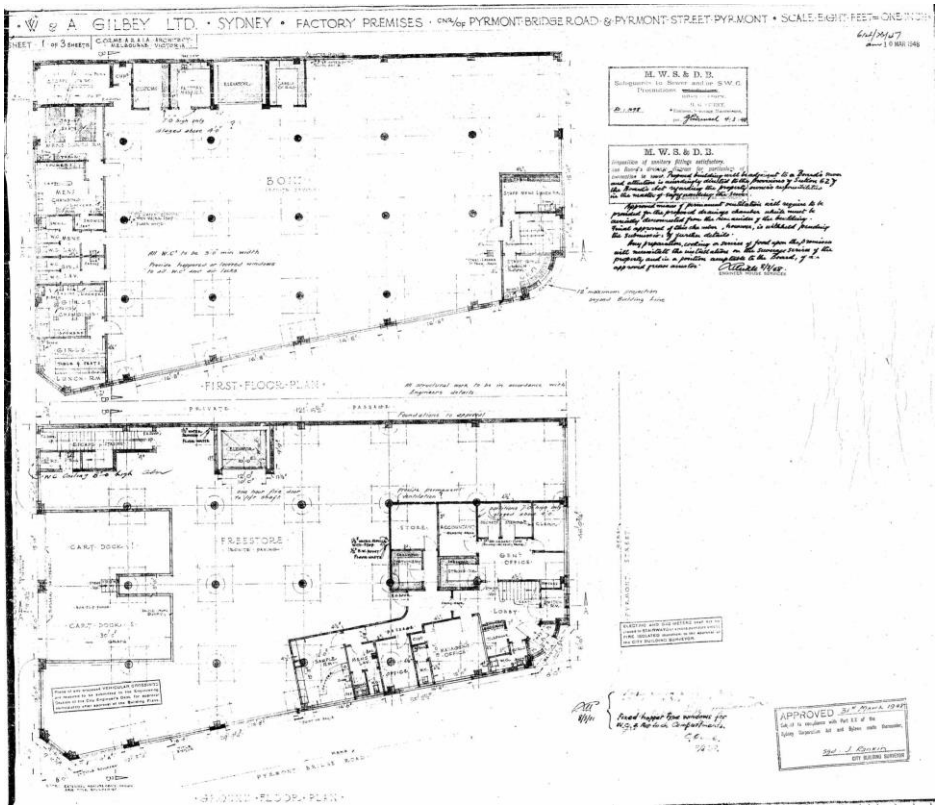


Figure 38: 1948 – Amended ground and first floor plans for the proposed factory premises for W & A Gilbey Ltd by C. Orme, architect, Melbourne, approved 31 March 1948 (Source: City of Sydney Archives, Pyrmont Bridge Rd NW cnr & Pyrmont St (adjacent No 135), new building (01/01/1947 - 31/12/1947), [A-00572010]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1437047)

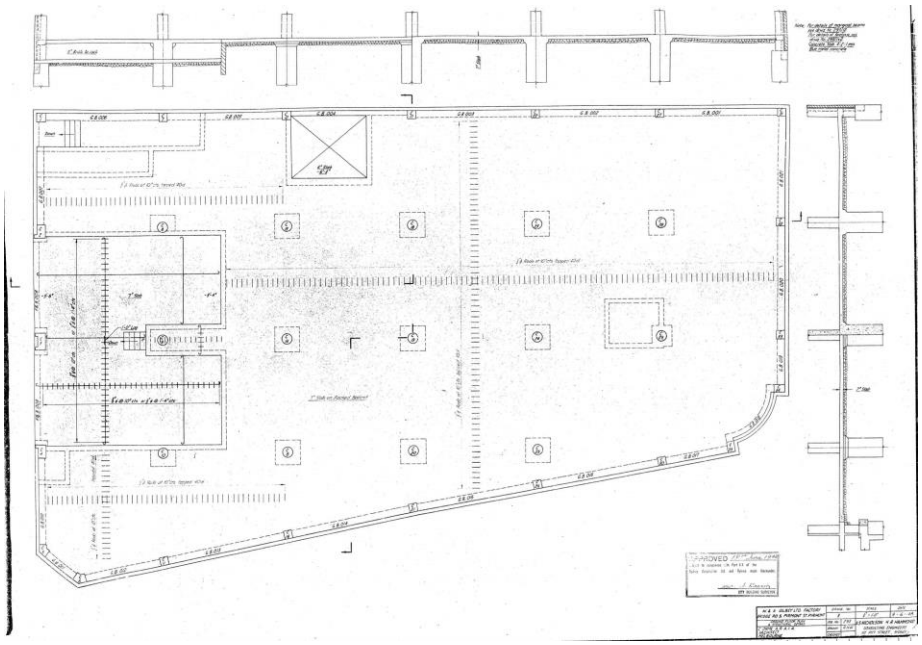


Figure 39: 1948 – Ground floor plan and structural details for W & A Gilbey Ltd Factory, by C. Orme, architect, and A. S. Nicholson & H. R. Hammond, consulting engineers, approved 18 June 1948 (Source: City of Sydney Archives, Pyrmont Bridge Rd NW cnr & Pyrmont St (adjacent No 135), new building (01/01/1947 - 31/12/1947), [A-00572010]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1437047)

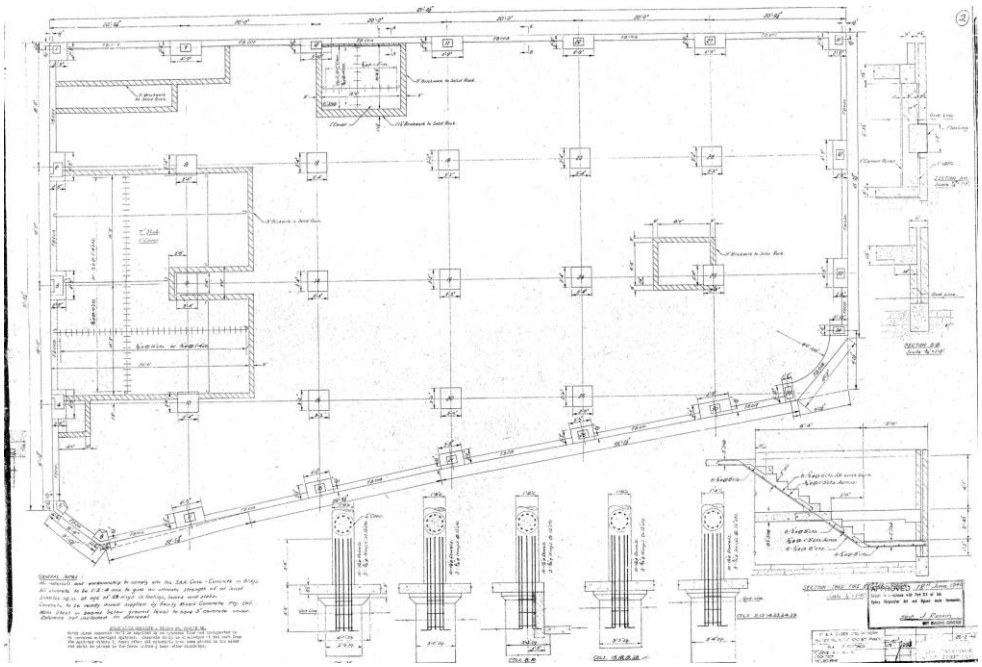


Figure 40: 1948 – Plan of footings for W & A Gilbey Ltd Factory, by C. Orme, architect, and A. S. Nicholson & H. R. Hammond, consulting engineers, approved 18 June 1948. The plan shows the locations of 'brickwork to solid rock' (Source: City of Sydney Archives, Pyrmont Bridge Rd NW cnr & Pyrmont St (adjacent No 135), new building (01/01/1947 - 31/12/1947), [A-00572010]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1437047)

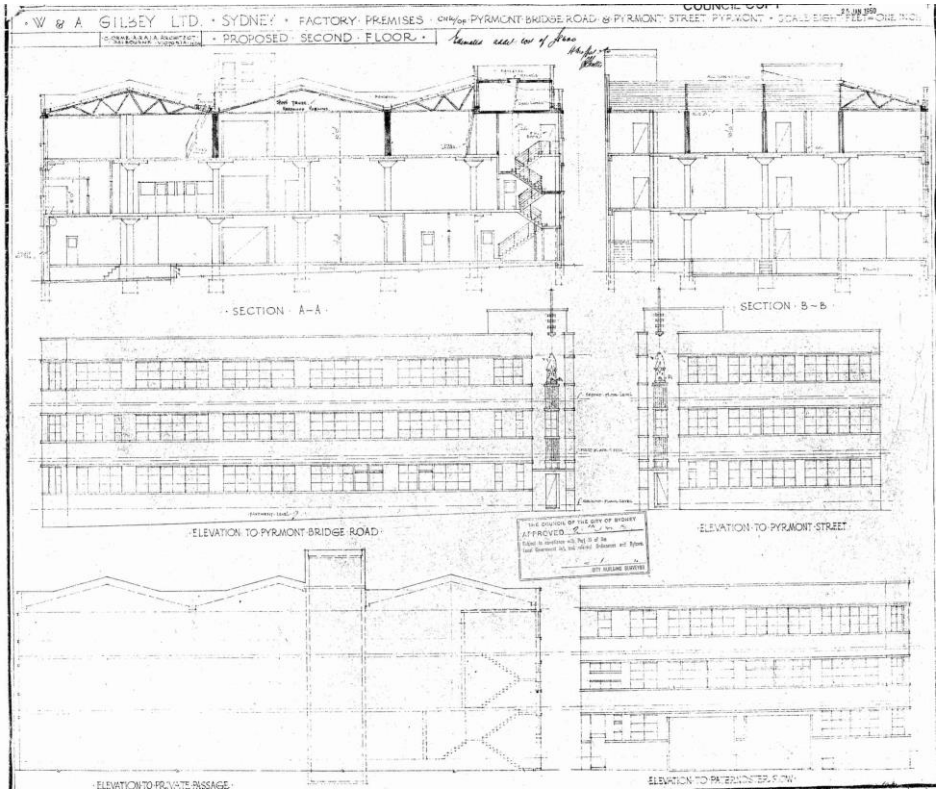


Figure 41: 1950 – Amended elevations and sections for proposed second floor (third storey) for W & A Gilbey Ltd Factory Premises, by C. Orme, architect, approved 27 January 1950 (Source: City of Sydney Archives, Pyrmont Bridge Rd NW cnr & Pyrmont St (adjacent No 135), new building (01/01/1947 - 31/12/1947), [A-00572010]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1437047)

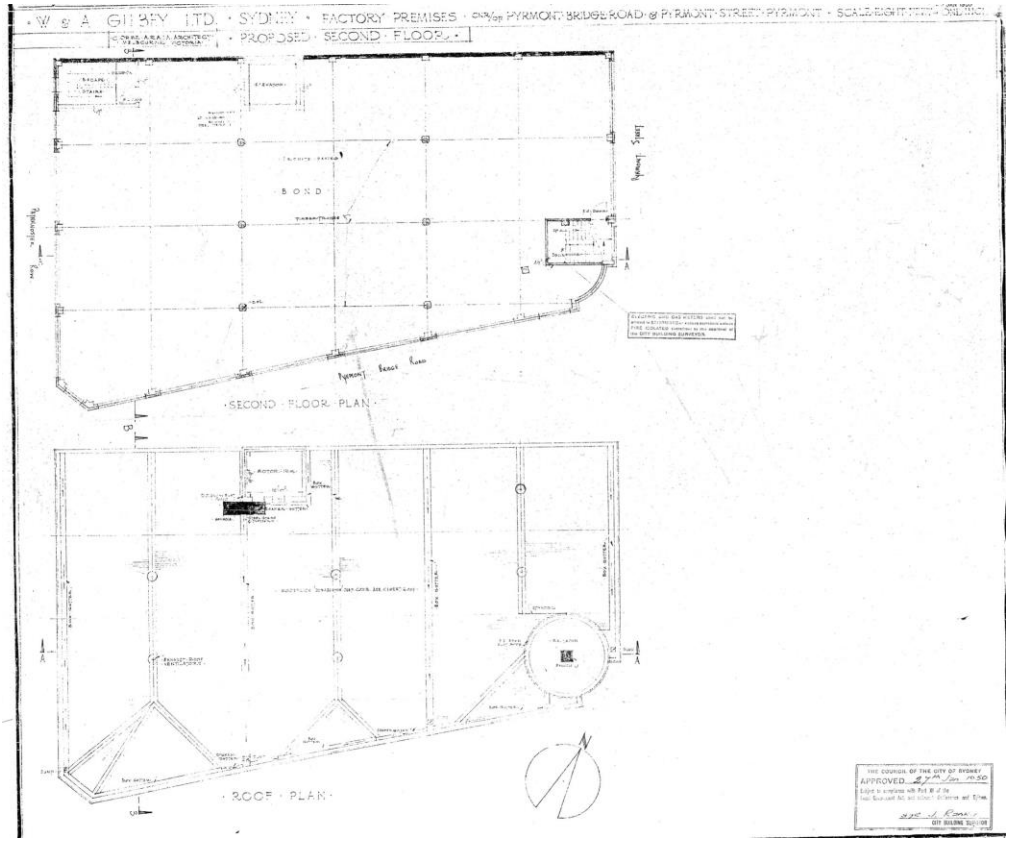


Figure 42: 1950 – Second floor plan and roof plan for proposed second floor (third storey) for W & A Gilbey Ltd Factory Premises, by C. Orme, architect, approved 27 January 1950 (Source: City of Sydney Archives, Pyrmont Bridge Rd NW cnr & Pyrmont St (adjacent No 135), new building (01/01/1947 - 31/12/1947), [A-00572010]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1437047)

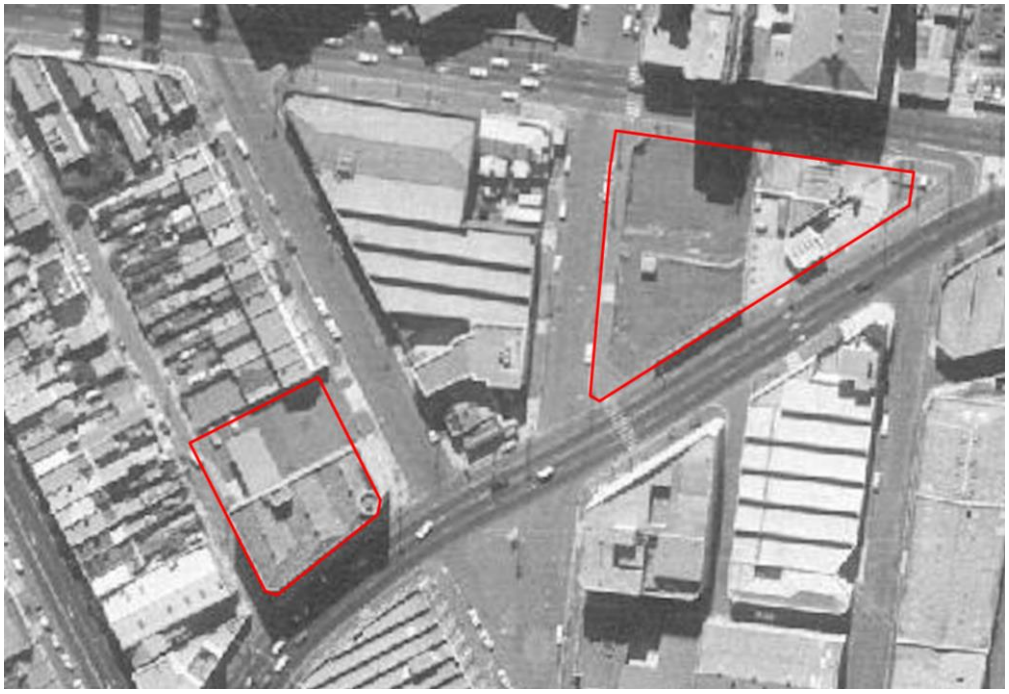


Figure 43: 15 December 1949 – Aerial photograph showing the building under construction (Source: City of Sydney Archives, A-00879983, City of Sydney Aerial Photographic Survey 1949: Image 38)

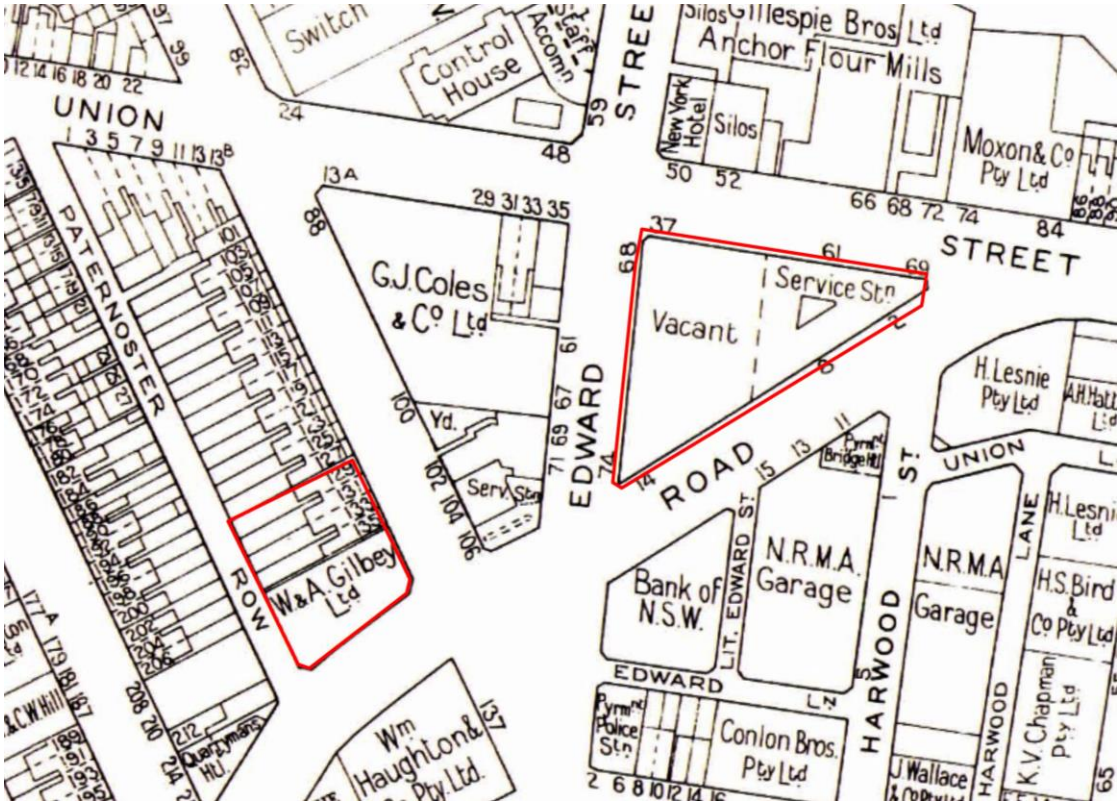


Figure 44: 1949-60s – City of Sydney Building Surveyor's Detail Sheets, showing the W. & A. Gilbey Ltd premises and adjacent terraces (Source: City of Sydney Archives, A-008880206, City of Sydney Building Surveyor's Detail Sheets, 5 - Pyrmont)

2.5.4.2 Development of 129 to 135 Pyrmont Street (1947-1966)

While no building and development applications were lodged in relation to the terraced houses at 129-135 Pyrmont Street during the 1940s, several applications were submitted during the 1950s, all for 133 and 135 Pyrmont Street. Those noted in the *Planning Street Cards* under 133-135 Pyrmont Street were:

- DA for use of premises for manufacture of electronic components by Resistor Engineering Co Pty Ltd (1268/51), dated 10 December 1951 (Permit No. 412);
- Proposal to erect a temporary canvas awning over the front verandah, by Resistor Engineering Co Pty (512/1/53), dated 25 August 1953;
- Unauthorised erection of a roof cover (444/56), dated 28 November 1956; and
- Labour and Industry Notification – Welding wire brackets, by W. A. L. Building Supplies Pty Ltd (DA 840/57?), dated January 1957.[122]

The only building application that was submitted during the 1950s was for 135 Pyrmont Street, dated 1 December 1952, for alterations to the first floor at a cost of £100, by F. P. Noonan.[123]

From September 1958, the Scottish Australian Investment Company subdivided their property, which still contained the majority of Block 57 of the Harris Estate, with the block bounded by Paternoster Row, Union Street, Pyrmont Street and Gilbey's Building on Pyrmont Bridge Road being part of a plan

[122] City of Sydney Archives, *Planning Street Cards*, Pyrmont Street (1928-1994), 133-135 Pyrmont St.
[123] City of Sydney Archives, *Planning Street Cards*, Pyrmont Street (1928-1994), 135 Pyrmont St.

deposited as 48128 (L).[124] As part of the subdivision sale, 129 to 135 Pyrmont Street were sold to individual owners as Lots 1 to 3, and were all acquired by Horwitz Corporation Pty Ltd during the early to mid-1960s, before Gilbey's Pty Ltd became the owners of all of these properties in 1968. A plan showing the outlines of the terraces on their individual allotments, as existing by 1959, is included in Figure 45 below.

133 Pyrmont Street, located on Lot 2, was acquired by Horwitz Publications Inc. Pty Ltd as part of the 1958 subdivision sale, with the transfer noted on 4 February 1959.[125] Later changing their name to Horwitz Corporation Pty Ltd, the company also became the owner of the adjacent 135 Pyrmont Street (Lot 1) on 8 February 1961.[126] This allotment had been transferred by the Scottish Australian Investment Company to Murray Hull Pty Ltd on 7 April 1959.

On 1 May 1961, Horwitz enquired with Council regarding the potential demolition of the existing terraces at 133-135 Pyrmont Street, as an alternative to remodelling and alterations (357/1/61).[127] In June 1961, the company submitted a development application for alterations and additions for printing works, offices and store (DA 379/61), suggesting that the decision had been made to retain the terraces.[128]

However, this decision was later reversed. On 22 February 1962, a building application (BA 400/62) for a new store and office building was submitted by prominent Sydney architect, Harry Seidler.[129] The plans (Figure 46 - Figure 47), which involved demolition of the existing terraces, were approved on 20 March 1962. After approval was granted, the project stalled for a year until the BA lapsed. An extension was granted on 20 March 1963, but it took almost another year until work started. Demolition of the existing terraces at 129-131 Pyrmont Street was noted as being in progress on 3 February 1964 and continued for several weeks. By June 1964, the BA had lapsed again, but a further extension was granted. With the terraces demolished, no new building work was ever carried out and the BA lapsed for good on 15 February 1965 and was marked off the Building Inspector's list.

With their property at 133-135 Pyrmont Street now effectively vacant, Horwitz Corporation Pty Ltd acquired the adjacent two terraces at 129-131 Pyrmont Street; the official transfer was noted on 20 May 1965.[130] Located on Lot 3 of the 1958 subdivision, this had been sold as an allotment containing two terraced houses instead of one, and it had been transferred from the Scottish Australian Investment Company to Pyrmont shopkeepers, Anna and Paul Kutasi, on 16 October 1958. Just prior to the 1965 sale to Horwitz, a development application (DA 187/65) had been submitted by Christine Lynch Pty Ltd on 4 March 1965, on behalf of Paul and Anna Kutasi, to use the premises for manufacturing of jewellery.[131] However, shortly later, on 28 April 1965, Sydney real estate agent Wilbur Humphrey Cowled had acquired the site, transferring it to Horwitz one month later.[132]

Although Horwitz presumably acquired the terraces at 129-131 Pyrmont Street with the intention to propose a larger scheme for the overall site, the next development application submitted to Council,

[124] NSW LRS, CT Vol 5321 fol 194.
[125] NSW LRS, CT Vol 5321 fol 194; Vol 7708 fol 141.
[126] NSW LRS, CT Vol 7858 fol 133.
[127] City of Sydney Archives, *Planning Street Cards*, Pyrmont Street (1928-1994), 135 Pyrmont St.
[128] Also see '133/135 Pyrmont St. Horwitz Publications Inc. Pty Ltd. To Use Premises for Purpose of a Printing Factory with Associated Offices & Store & to Carry out Alterations (TC 4198/61)', City of Sydney Archives, accessed 2 February 2022, https://archives.cityofsydney.nsw.gov.au/nodes/view/749473.
[129] For the following see 'Building Inspectors Card: 133/135 Pyrmont St, Pyrmont. Store & Office Building DA379/61, Approved 20/03/1962 (BA 400/62)', City of Sydney Archives, accessed 2 February 2022, https://archives.cityofsydney.nsw.gov.au/nodes/view/1587296.
[130] NSW LRS, CT Vol. 7708 fol 142.
[131] '129-131 Pyrmont Street Pyrmont. Alts to Premises and Use for the Mfg of Fashion Jewellery (DA 187/65)', City of Sydney Archives, accessed 2 February 2022, https://archives.cityofsydney.nsw.gov.au/nodes/view/790629.
[132] City of Sydney Archives, *Planning Street Cards*, Pyrmont Street (1928-1994), 129-131 Pyrmont St; NSW LRS, CT Vol 7708 fol 142

dated 3 February 1965, was for 135 Pyrmont Street (DA 82/65).[133] The applicant was Sher Power Tools who proposed the erection of offices and showroom.[134] This did not go ahead, and instead, Gilbeys Australia Pty Ltd began to develop schemes for use of the site which it subsequently acquired.

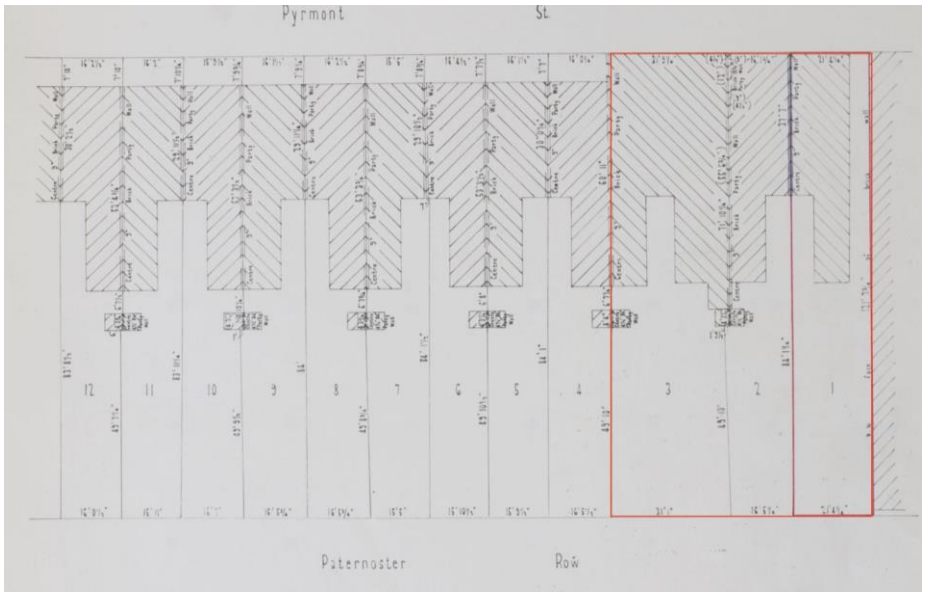


Figure 45: 1959 – Plan included in the Certificate of Title issued for Lot 1 in Plan 48128 (L), showing the subdivision and outline of buildings on Pyrmont Street, with 129 to 135 Pyrmont Street outlined. (Source: NSW LRS, CT Vol 7858 fol 133)

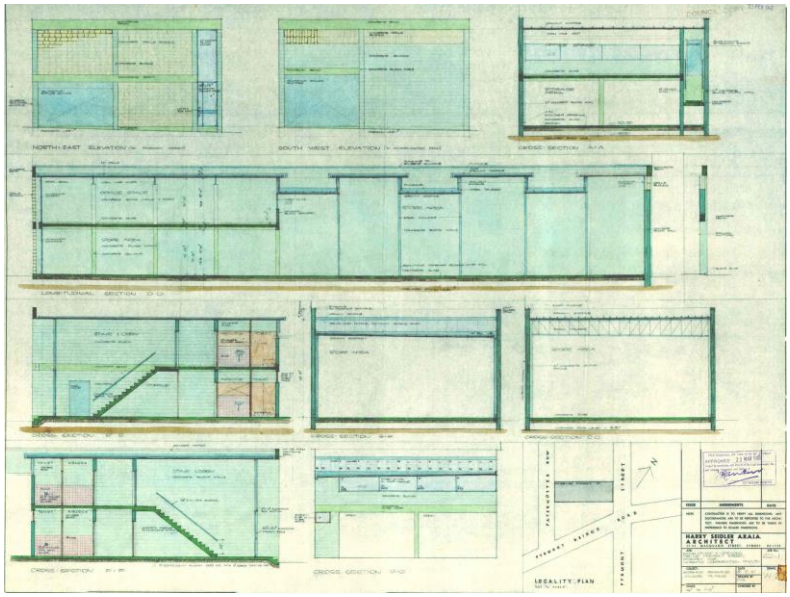


Figure 46: 1962 – Elevations and sections for proposed new bookstore and offices at 133-135, by Harry Seidler, architect, working drawing dated 8 February 1961. The BA was approved on 20 March 1962 and the existing terraces at the site were demolished in 1964, but the building was never constructed (Source: City of Sydney Archives, Pyrmont St (133-135) (01/01/1962 - 31/12/1962), [A-00547430]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1411167)

[133] City of Sydney Archives, *Planning Street Cards*, Pyrmont Street (1928-1994), 135 Pyrmont St Pyrmont.
[134] '133-135 Pyrmont St. Pyrmont. Proposed Erection of Office Warehouse. Sher Power Tools Pty Ltd. (DA 82/65)', City of Sydney Archives, accessed 2 February 2022, https://archives.cityofsydney.nsw.gov.au/nodes/view/787638.

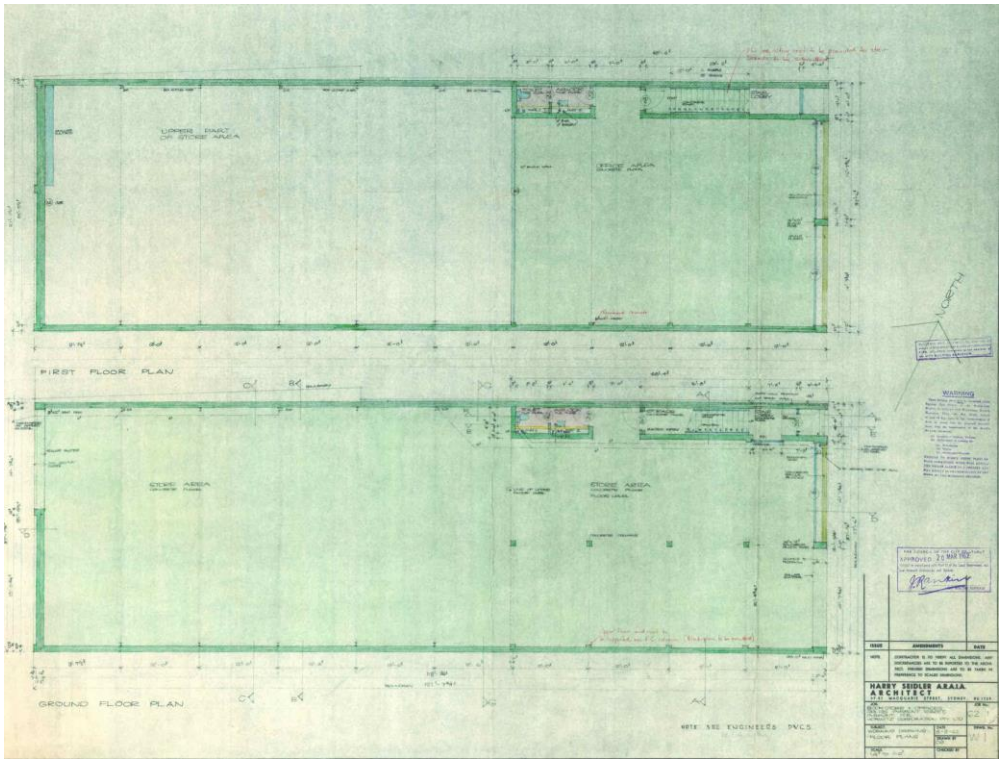


Figure 47: 1962 – Floor plans for proposed new bookstore and offices at 133-135, by Harry Seidler, architect, working drawing dated 8 February 1961 (Source: City of Sydney Archives, Pyrmont St (133-135) (01/01/1962 - 31/12/1962), [A-00547430]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1411167)

2.5.4.3 Car park for Gilbey's at 129-135 Pyrmont Street (1967)

On 20 December 1966, Gilbey's Australia Pty Ltd submitted a development application (DA 974/66), for "proposed use of premises [at 129-135 Pyrmont Street, Pyrmont,] as a car park and for unloading the company's trucks and use the remainder of land as a parking station."[135] In October 1966, Horwitz Corporation Pty Ltd, the owners of the site, had given consent to Gilbey's to make the application.[136] The development application stated that Gilbey's had the intention to purchase the site which still contained two vacant shops at 129-131 Pyrmont Street as well as vacant land at 133-135 Pyrmont Street. The plan in Figure 48 shows the site of the new car parking premises.

In relation to the proposed use of the new premises, the application form noted: "after demolition of Nos. 129-131 to temporarily use the whole of the land for the parking and unloading the Company's vehicles, parking of Company and staff cars in conjunction with the Applicants' adjoining bottling plant and warehouse and the balance as a parking station."[137] The site was to be paved and fenced, and it was proposed that the parking station would provide spaces for about ten cars.

The city building surveyor wrote in his assessment report that 129-131 Pyrmont Street had been used as a cafe and residence since before 1951, while 133-135 had been used as a printing factory and for the storage of paper prior to being demolished, suggesting that Horowitz had indeed occupied the premises as part of their business. Consent for the new car park was granted on 17 April 1967, under the condition that two separate driveway crossings were provided on Pyrmont Street, one for entry

[135] City of Sydney Archives, *Planning Street Cards*, Pyrmont Street (1928-1994), 135 Pyrmont St Pyrmont.
[136] If not otherwise noted, this and the following is based on the file held by the City of Sydney Archives, DA 974/66, '129-135 Pyrmont Street – Gilbeys Aus P/L – Proposes use of premises as a car park and for unloading the company's truck and use the remainder as a parking station.'
[137] *Ibid.*

and one for exit of vehicles. By 9 August 1967, demolition of the two remaining terraces at 129-131 Pyrmont Street was complete.

However, by December 1967, negotiations between Horwitz and Gilbey's had stalled and work on the new car parking area stopped, and as the land was not fenced off it appears that the public had started using the vacant land as a free parking area. However, not much later, on 14 February 1968, all three allotments, containing 129-135 Pyrmont Street, were officially transferred to Gilbey's Australia Pty Ltd.[138] From then on, no public parking was allowed, and no fees were collected on the land which had been paved and fenced by early March 1968.

On 20 July 1971, Gilbey's Australia Pty Ltd submitted another development application for 129-135 Pyrmont Street, for change of use.[139] The land, which had been used for staff and company car parking for around three years, was to the be used for car parking of 19 staff vehicles, and as a loading dock for Gilbey's adjoining premises, involving the construction of a new loading dock as well as erection of new fences and gates for the vacant land. Consent was granted on 29 September 1971.

A working drawing prepared in January 1972 by Anderson and Thomas, architects, shows the location of the new entrance gates to Paternoster Row and Pyrmont Street, the car parking spaces along the northern side boundary and the building line of the factory, and the new loading dock, which contained an existing fuel tank outlet that had likely been installed in 1968 (Figure 49, see Section 2.5.4.4). A new awning over the loading dock was approved as part of the same application on 31 April 1972, by which time the development had not yet commenced. The work was carried out from September 1972 and appears to have been completed in early 1973.

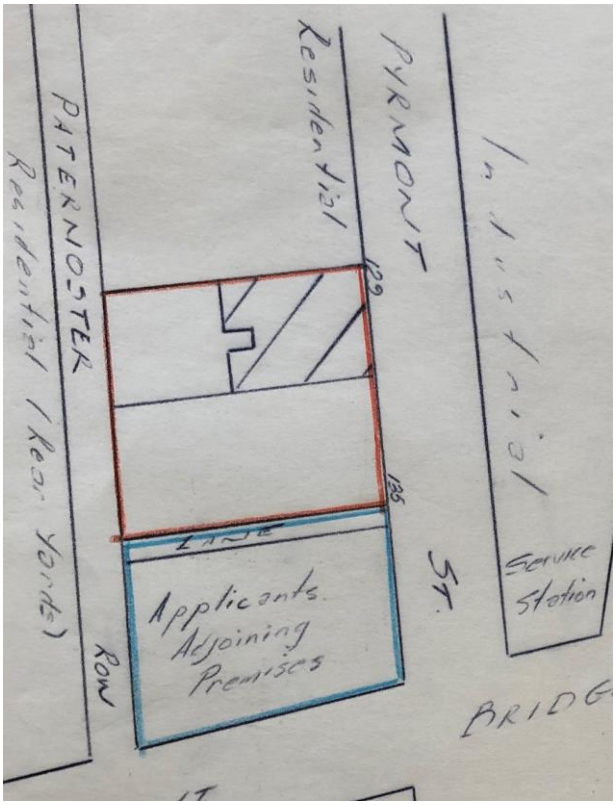


Figure 48: 1966 – Sketch plan included in DA 974/66, showing the location of the existing Gilbey's Building in blue, with the area of the proposed new car parking area outlined in red. At the time, that site still contained terraced houses at 129-131 Pyrmont Street (Source: City of Sydney Archives, DA 974/66, '129-135 Pyrmont Street – Gilbey's Aus P/L – Proposes use of premises as a car park and for unloading the company's truck and use the remainder as a parking station')

[138] NSW LRS, CT Vol 7858 fol 133; Vol 7708 fol 141 and fol 142.
[139] City of Sydney Archives, DA 465/71, '129-135 Pyrmont Street, Pyrmont – Gilbeys Australia P/L – Use premises for parking and off-street loading'.

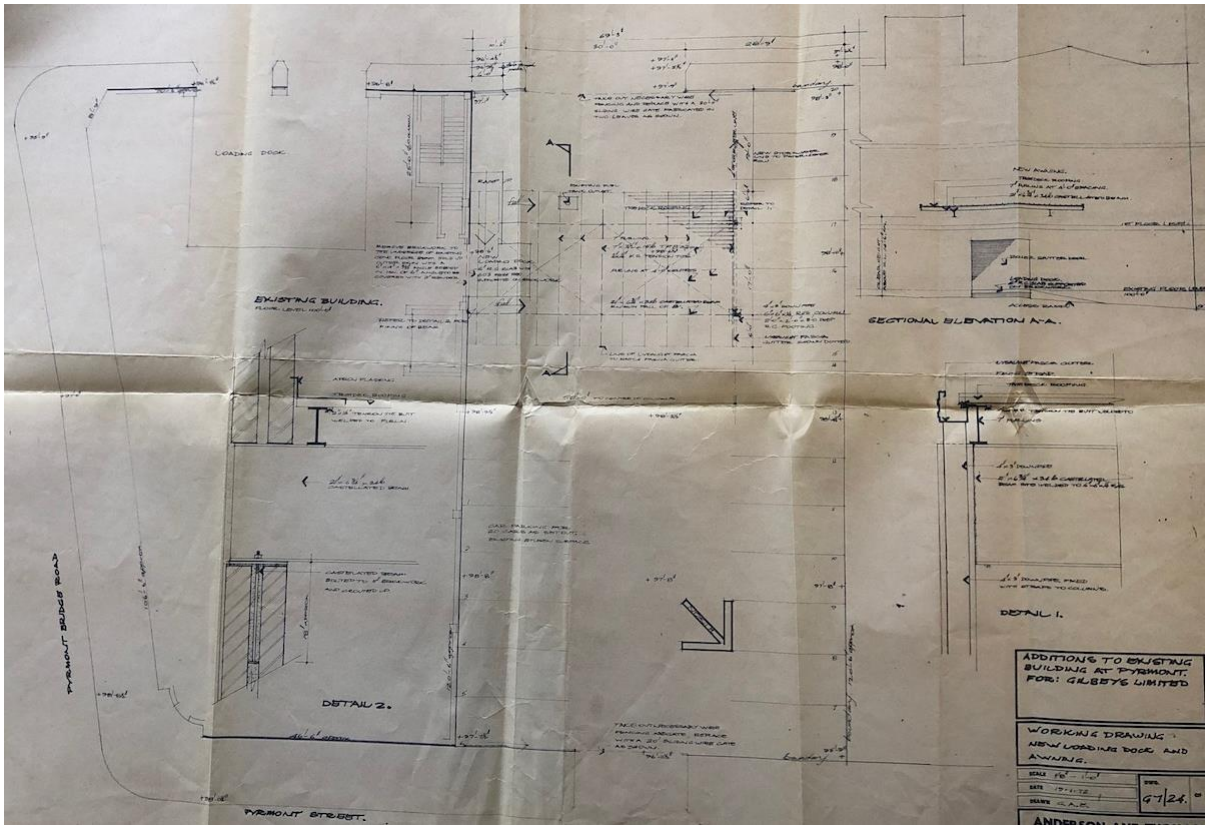


Figure 49: 1972 – Working drawing prepared by Anderson and Thomas, architects, dated 19 January 1972, as part of DA 465/71 (Source: City of Sydney Archives, DA 465/71, '129-135 Pyrmont Street, Pyrmont – Gilbeys Australia P/L – Use premises for parking and off-street loading')

2.5.4.4 Alterations to Gilbey's Building at 26-32 Pyrmont Bridge Road (1947-1999)

After its completion in September 1950, the building on the corner of Pyrmont Bridge Road, Paternoster Row and Pyrmont Street underwent numerous alterations over the years, however, these were largely of a minor nature and limited to changes to the internal fabric of the building. The following building and development applications were noted for the building in the City's *Planning Street Cards* from 1951 to 1999:[140]

Table 7: Building and development applications, 26-32 Pyrmont Bridge Road, 1951-1999

Reference	Date	Subject
73-19/51	30 Mar 1951	Labour and Industry Notification – Bottling wine and spirits, W. & A. Gilbey Ltd, ground, 1st and 2nd floors
BA 1596/55	6 Sep 1955	Demolish & re-erect toilet. Applicant: Howie & Moffat Co Pty Ltd
381-1/57	9 May 1957	Enquiry re zoning & Cumberland Planning Scheme
BA 1985/58	23 Sep 1958	Alterations and additions to sterile department, £10,000. Applicant: H. W. Thompson Bldg P/L
BA 2013/59	2 Sep 1959	Alterations and additions, £16,500. Applicant: Golding Constructions P/L
BA 1135/61	31 May 1961	Conveyor from Loading Dock to 1st floor, £11,659. Applicant: Gilbeys Ltd

[140] City of Sydney Archives, *Planning Street Cards*, Pyrmont Bridge Road (1928-1994), 22-36 Pyrmont Bridge Road (several cards).

Reference	Date	Subject
BA 1725/61	13 Aug 1961	Roof Sign Structure, £290. Applicant: Neon Signs Pty Ltd
BA 1674/64	17 Jul 1964	Alterations and additions, £10,000. Applicant: Leighton
BA 1539/67	19 Jul 1967	Partitions, £12,000. Applicant: George Ward & Co
BA 1612/67	28 Jul 1967	Mechanical ventilation, £6243. Applicant: McNeall Air Conditioning P/L
BA 2265/67	20 Oct 1967	Internal Partitions, £28,000. Applicant: George Ward & Co
BA 2398/67	6 Nov 1967	Mechanical ventilation, £7543. Applicant: McNeall Air Conditioning P/L
DA 350-1/68	20 Jul 1968	Installation of one 1000-gallon petrol storage tank (Paternoster Row). This was likely connected with the fuel tank outlet shown in the 1972 plan in Figure 49
BA 429/70	23 Mar 1970	Mechanical ventilation, £5000. Applicant: Thos Clark & Son P/L
BA 869/70	30 Jun 1970	Partitions 1st floor, £4000. Applicant: Anderson & Thomas
BA 345/71	22 Mar 1971	Partitions 1st floor, £700. Applicant: George Ward Pty Ltd
BA 97/72	2 Feb 1972	New loading dock, awning & shutter door, £2000. Applicant: George Ward Pty Ltd
BA 1521/72	29 Nov 1972	Alterations to dock, £1500. Applicant: George Ward Pty Ltd
DA 123/73	20 Feb 1973	Establish new loading dock in existing warehouse building. Applicant: George Ward P/L
BA 19/75	14 Jan 1975	Certificate of Compliance: Applicant: Perkins Stevenson & Linton
BA 406/78		Alterations, £23,000. Applicant: Anderson & Thomas
BA 832/78	11 Jul 1978	Air Conditioning 1st Floor, £11,599. Applicant: McNeall Air Conditioning P/L
DA 44/83/0312	9 May 1983	Use ground floor for parking. Applicant: Remobe P/L
DA 88/1166	25 Aug 1988	Alter window to Existing Warehouse. Applicant: Jackson Teece Chesterman
BA 45/88/1877	25 Aug 1988	Refurbish existing warehouse with alterations, £876,000. Applicant: Jackson, Teece, Chesterman, Willis
BA 45/88/2598	15 Nov 1988	Erect Awning (cost included in BA 1877/88). Applicant: Jackson, Teece, Chesterman, Willis
DA 24/89	16 Jan 1989	Use the whole of the premises as commercial. Applicant: Masterplan Consultants
BA 45/89/1032	20 Oct 1989	Partitions and alterations to services 2nd floor, £35,000. Applicant: Cemac Interiors P/L
BA 45/89/1139	15 Nov 1989	Partitions and alterations to services, £35,000. Applicant: Cemac Interiors P/L
BA 482/92	27 May 1992	Partitions ground floor, £35,000. Applicant: Firth Lee P/L
DA 344/93	25 Jun 1993	Erect 2 illuminated fw signs, 2.8 x 1.1m ‘Otis’, £6200, Pyrmont Bridge Rd & Harris St Ground. Applicant: Otis Elevator Company Pty Ltd
BA 739/93	30 Jul 1993	Erect Flush Wall Sign, £6200. Applicant: Otis Elevator

The property was on 9 March 1984 transferred to Rosenthall & Sons Pty Ltd, followed by a transfer to Darane Pty Ltd on 29 October 1986.[141] Only two years later, the ownership changed again, as the site was transferred to Bulawayo Holdings Pty Ltd on 14 July 1988. Immediately upon assuming ownership of the site, Bulawayo Holdings Pty Ltd embarked on a major refurbishment of the building, including alterations to all floor levels and to window openings which were proposed to be replaced with double glazed aluminium windows.[142] Most of the internal partitions were removed at that time, and new fire rated concrete floors appear to have been installed. New partitions were installed in 1989 and 1992, as noted in the table above. It is likely that the name of the building was changed to 'Frankel House' at that time, likely after one of the directors of the company, Oliver Frankel (see Section 2.5.4.5). The site plan in Figure 54, prepared in 1988 as part of BA 1877/88, suggests that the parking area and loading dock largely remained unchanged but were used by the builders as sheds and storage areas.

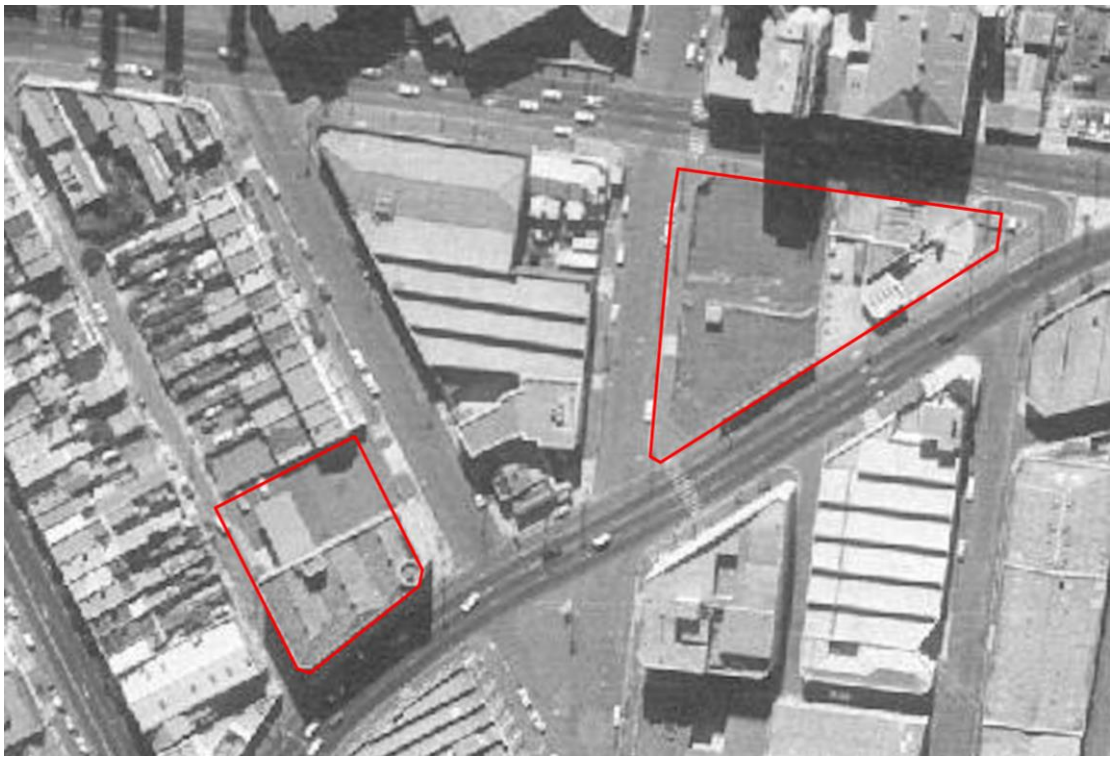


Figure 50: 1978 – Aerial photograph showing Gilbey's Building with car parking to the rear. The roof over the loading dock is also clearly visible (Source: NSW Spatial Services, aerial photograph, 6 May 1978, 2713-16-064)

[141] NSW LRS, CT Vol 7708 fol 142.
[142] 'Pyrmont Bridge Rd (26-32) Pyrmont. Gilbeys Australia. Refurbish Existing Warehouse with Alts.', City of Sydney Archives, accessed 24 December 2021, https://archives.cityofsydney.nsw.gov.au/nodes/view/1457240.

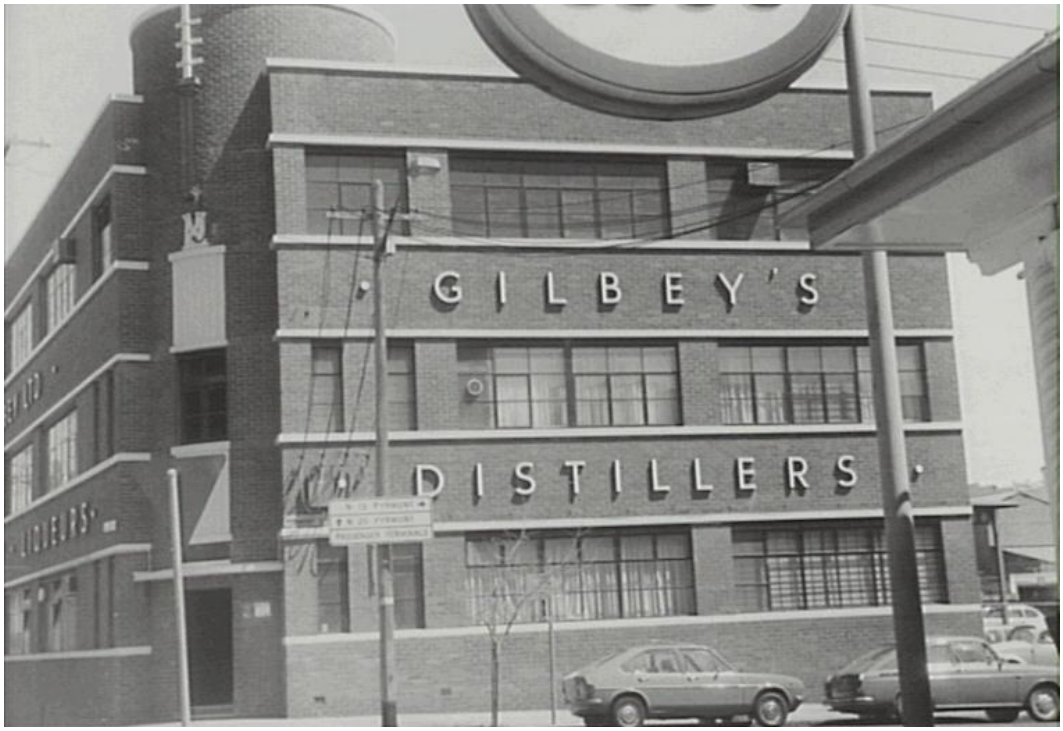


Figure 51: 1979 – The Pyrmont Street elevation of Gilbey's Distillers' factory and warehouse, with a small section of the rear car parking area and loading dock visible (Source: City of Sydney Archives, W&A Gilbey Ltd, 26-32 Pyrmont Bridge Road Pyrmont, 1979 (01/01/1979 - 31/12/1979), [A-00008101]. https://archives.cityofsydney.nsw.gov.au/nodes/view/568746)



Figure 52: 6 August 1979 – The Pyrmont Bridge Road elevation of W. & A. Gilbey Ltd's factory and store (Source: City of Sydney Archives, W&A Gilbey Ltd, Bridge Road Pyrmont, 1979 (06/08/1979), [A-00007942]. https://archives.cityofsydney.nsw.gov.au/nodes/view/568587)



Figure 53: 1986 – Aerial photograph showing the site at 26-32 Pyrmont Bridge Road largely unchanged (Source: NSW Spatial Services, aerial photograph, 3 August 1986, 3528-22-061)

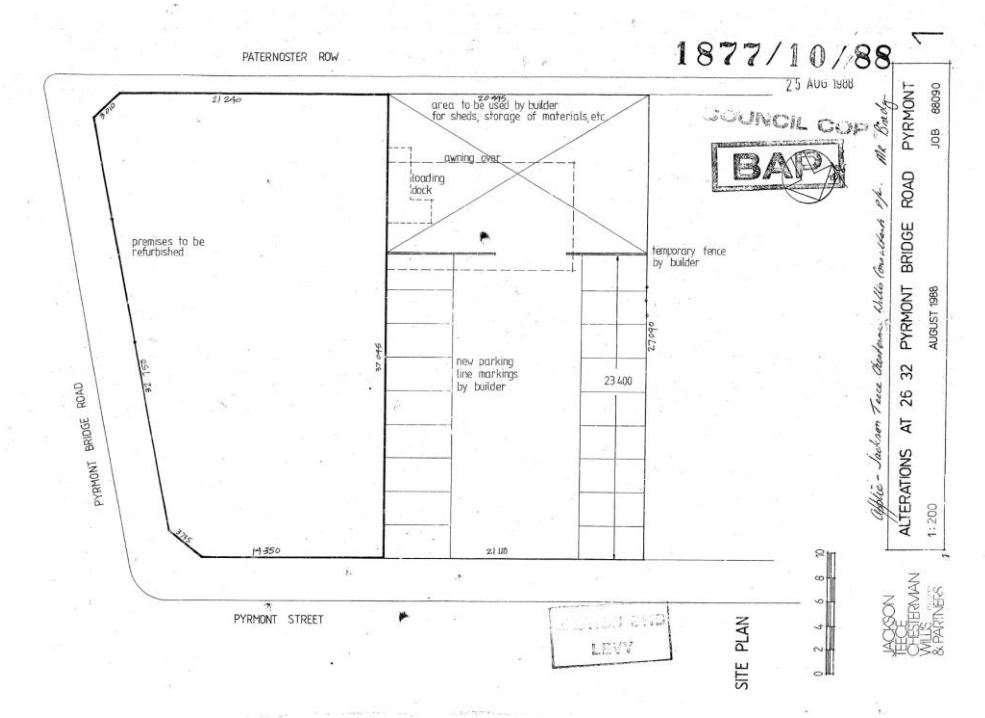


Figure 54: 1988 – Site plan prepared by Jackson Teece Chesterman Willis & Partners as part of BA 1877/88, dated August 1988 (Source: City of Sydney Archives, Pyrmont Bridge Rd (26-32) Pyrmont. Gilbeys Australia. Refurbish existing warehouse with alts. (01/01/1988 - 31/12/1988), [A-00574747]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1457240)

2.5.4.5 Commercial redevelopment 'Frankel House' site (1999)

On 14 October 1999, Bulawayo Holdings Pty Ltd submitted a development application (D99/00812) for alterations to and extension of the existing Gilbey's building at 26-32 Pyrmont Bridge Road, Pyrmont, including the provision of a new entrance to Pyrmont Street, new stairs and lift access, and construction of a new three storey building/extension on the northern side incorporating a two level basement car park for 24 cars.[143] The new extension was located on the site of the former car parking and loading dock area and involved a double storey section with rear courtyard along the northern boundary of the site. The new basement car park was accessed from Paternoster Row.

The Central Sydney Planning Committee was the consent authority for the development, as the new addition exceeded the maximum permissible height and Floor Space ratio standards. Documents included in the DA file held by the City of Sydney Archives referred to the building as 'Frankel House' and noted that there had been no other relevant development application history after the 1971 application for use of the northern portion of the site as car parking. Oliver Frankel was a director of Bulawayo Holdings which had owned the site since 1988, which may explain the name change for the building.[144]

The application was approved on 16 February 2000. As part of the conditions of consent, all land titles within the site had to be consolidated into one lot. As part of the development, an Archaeological Research Design Report was prepared by Godden Mackay Logan in May 2000, for Property Partnerships Pacific and the NSW Heritage Council.[145]

A Section 96 (2) Modification application was approved on 18 August 2000, which was for minor alterations to the original design, including alterations to the corner 'drum' element, minor repairs to the existing building and a new 'vergola' in the rear courtyard.

The redevelopment was designed by Allen Jack + Cottier, architects, who prepared plans in December 1999, details of which are included below. Also included below are photographs taken in 1999, showing the site prior to redevelopment, with signage on the building's corner naming it as 'Frankel House'.

Apart from a Section 96 (1A) amendment "to modify condition 12(c) to say 'Parking for no more than 23 cars' and add new condition 12(G) to install shower facilities and lockers adjacent to existing bicycle parking area," submitted under D/1999/812/D approved in July 2017, no further applications appear to have been made for the property.[146]

[143] The following is based on the file held by the City of Sydney Archives, D1999/00812, 'Development Applications/26-32/Pyrmont Bridge Road/Pyrmont/Alterations & Additions to Existing Building – Bulawayo Holdings Pty Ltd – 14 10 99 - $5000000.'
[144] As per written correspondence contained in the DA file for D99/00610
[145] Godden Mackay Logan, '26-31 Pyrmont Bridge Road, Pyrmont. Archaeological Research Design. Prepared for Property Partnerships Pacific and the NSW Heritage Council', May 2000.
[146] City of Sydney, Development Application Tracker, accessed 11 February 2022, https://online2.cityofsydney.nsw.gov.au/DA/IndividualApplication?tpklapappl=1301186.



Figure 55: 1999 – 'Frankel House' as seen from Pyrmont Bridge Road, looking northwest. (Source: City of Sydney Archives, D1999/00812, 'Development Applications/26-32/Pyrmont Bridge Road/Pyrmont/Alterations & Additions to Existing Building – Bulawayo Holdings Pty Ltd – 14 10 99 - $5000000')



Figure 56: 1999 – Looking southeast from Paternoster Row towards the north elevation of the former Gilbey's Building, with the awning over the loading dock visible at centre. (Source: City of Sydney Archives, D1999/00812, 'Development Applications/26-32/Pyrmont Bridge

Road/Pyrmont/Alterations & Additions to Existing Building – Bulawayo Holdings Pty Ltd – 14 10 99 - $5000000')



Figure 57: 1999 – Looking along Pyrmont Street towards the former Gilbey's Building and car parking area. (Source: City of Sydney Archives, D1999/00812, 'Development Applications/26-32/Pyrmont Bridge Road/Pyrmont/Alterations & Additions to Existing Building – Bulawayo Holdings Pty Ltd – 14 10 99 - $5000000')

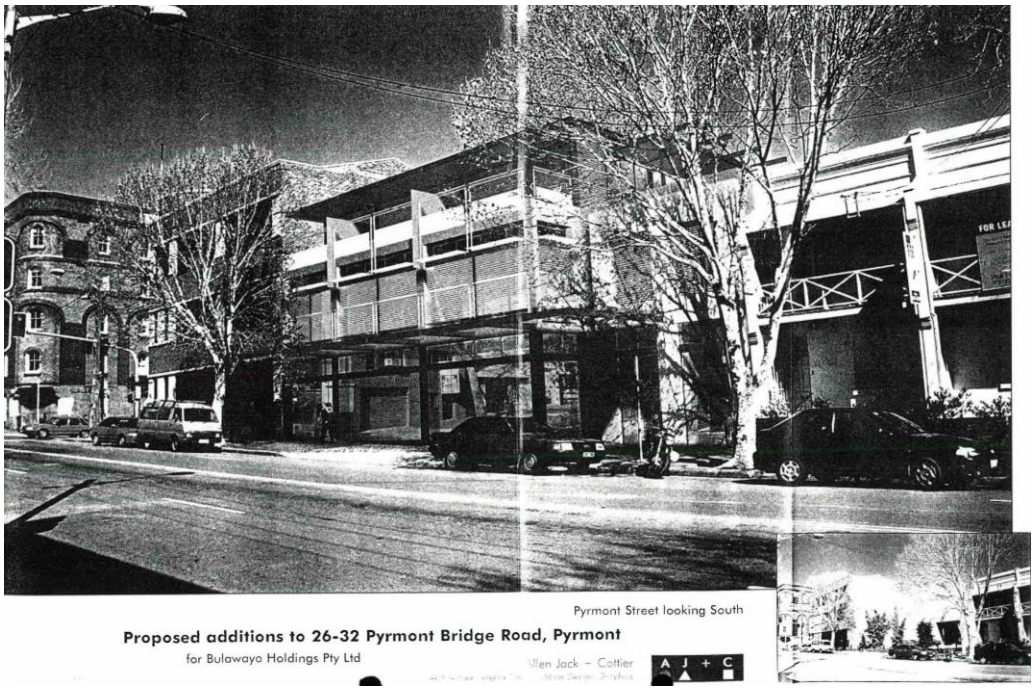


Figure 58: 1999 – Render of the proposed new development, by Allen Jack + Cottier for Bulawayo Holdings, showing the Pyrmont Street frontage (Source: City of Sydney Archives, D1999/00812, 'Development Applications/26-32/Pyrmont Bridge Road/Pyrmont/Alterations & Additions to Existing Building – Bulawayo Holdings Pty Ltd – 14 10 99 - $5000000')

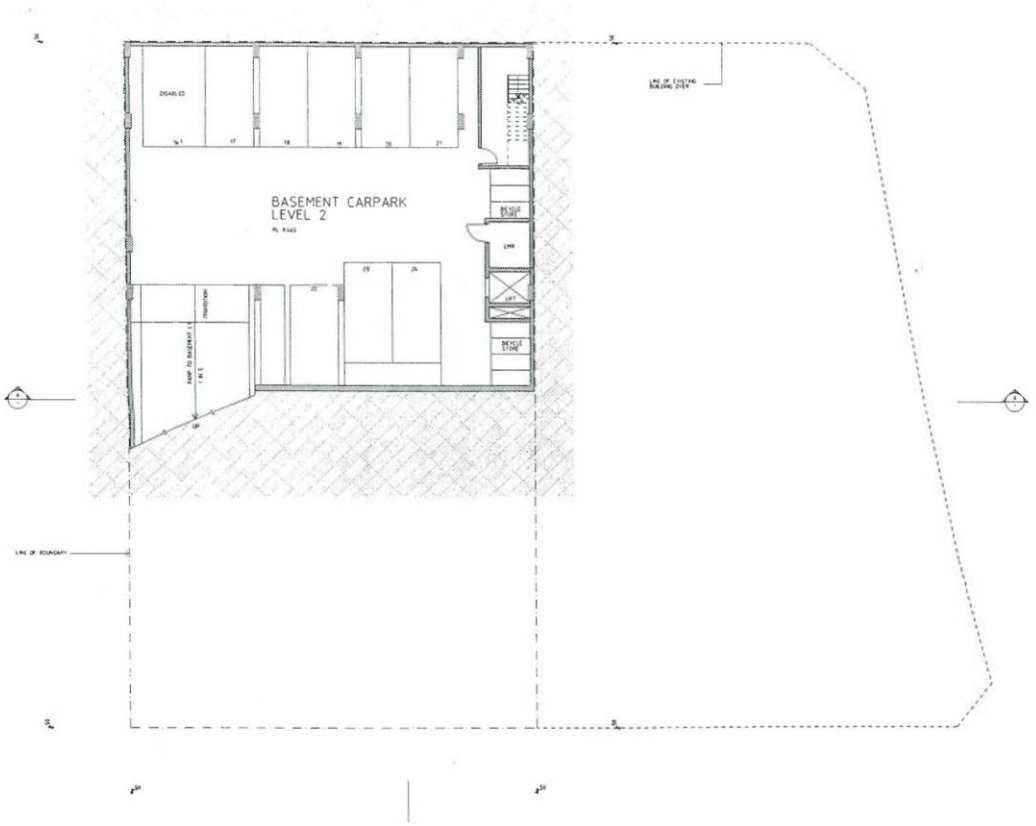


Figure 59: 1999 – Basement Level 2 plan, prepared by Allen Jack + Cottier, architects, dated 8 December 1999 (Source: City of Sydney Archives, D1999/00812, 'Development Applications/26-32/Pyrmont Bridge Road/Pyrmont/Alterations & Additions to Existing Building – Bulawayo Holdings Pty Ltd – 14 10 99 - $5000000')

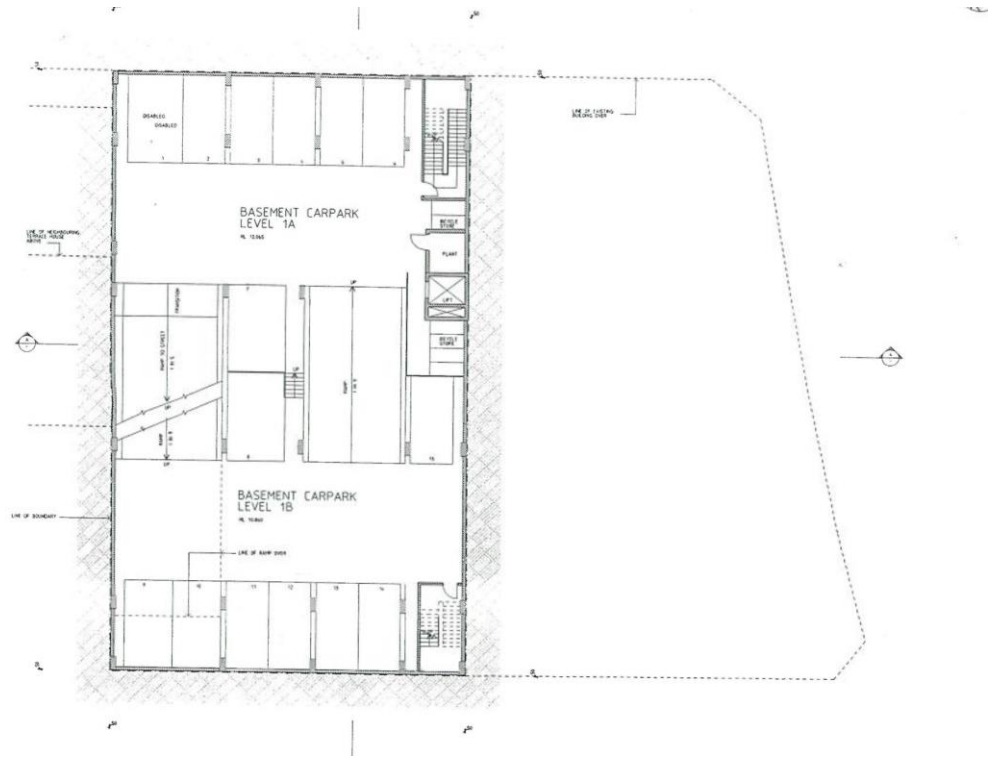


Figure 60: 1999 – Basement Level 1 plan, prepared by Allen Jack + Cottier, architects, dated 8 December 1999 (Source: City of Sydney Archives, D1999/00812, 'Development

Applications/26-32/Pyrmont Bridge Road/Pyrmont/Alterations & Additions to Existing Building – Bulawayo Holdings Pty Ltd – 14 10 99 - $5000000')

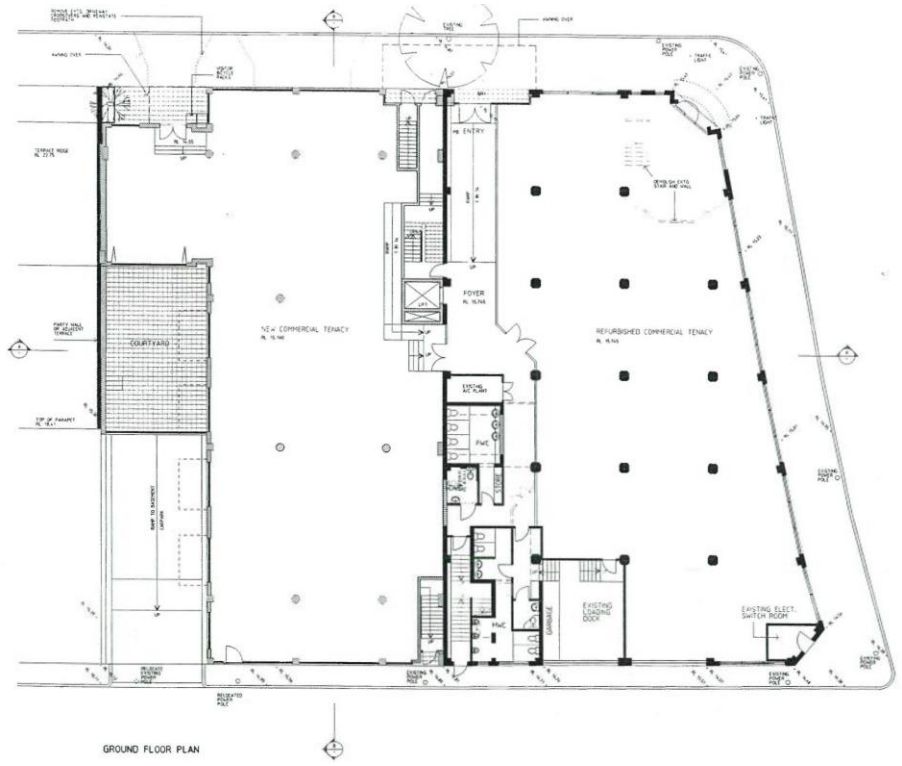


Figure 61: 1999 – Ground Floor plan, prepared by Allen Jack + Cottier, architects, dated 8 December 1999 (Source: City of Sydney Archives, D1999/00812, 'Development Applications/26-32/Pyrmont Bridge Road/Pyrmont/Alterations & Additions to Existing Building – Bulawayo Holdings Pty Ltd – 14 10 99 - $5000000')

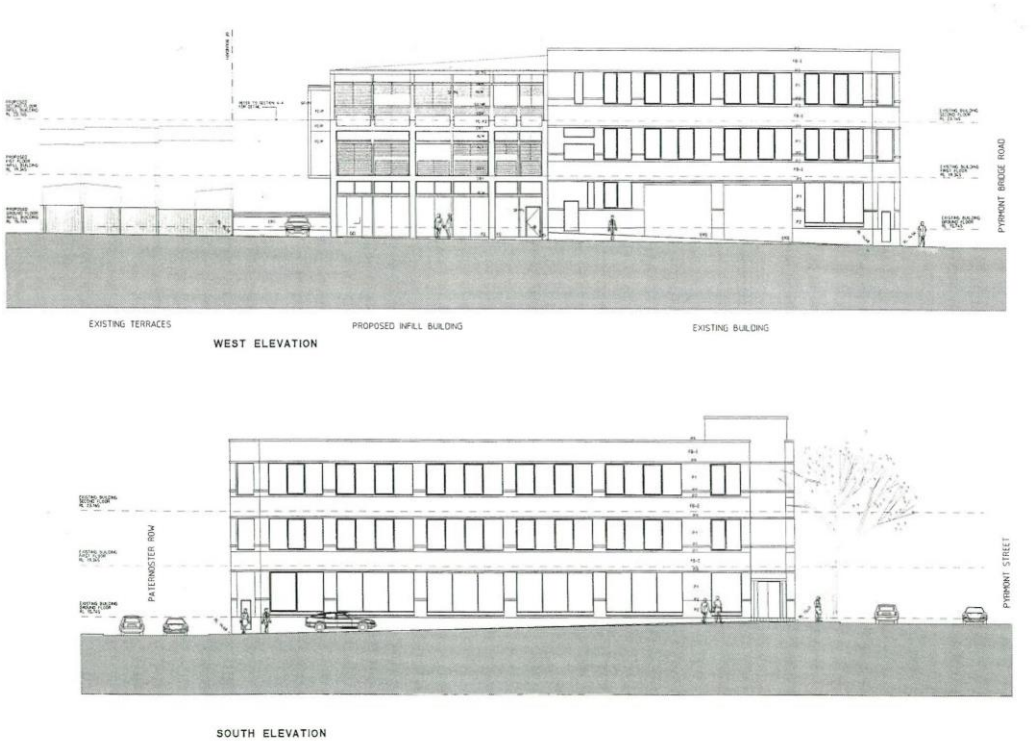


Figure 62: 1999 – West and south elevations, prepared by Allen Jack + Cottier, architects, dated 8 December 1999 (Source: City of Sydney Archives, D1999/00812, 'Development Applications/26-32/Pyrmont Bridge Road/Pyrmont/Alterations & Additions to Existing Building – Bulawayo Holdings Pty Ltd – 14 10 99 - $5000000')

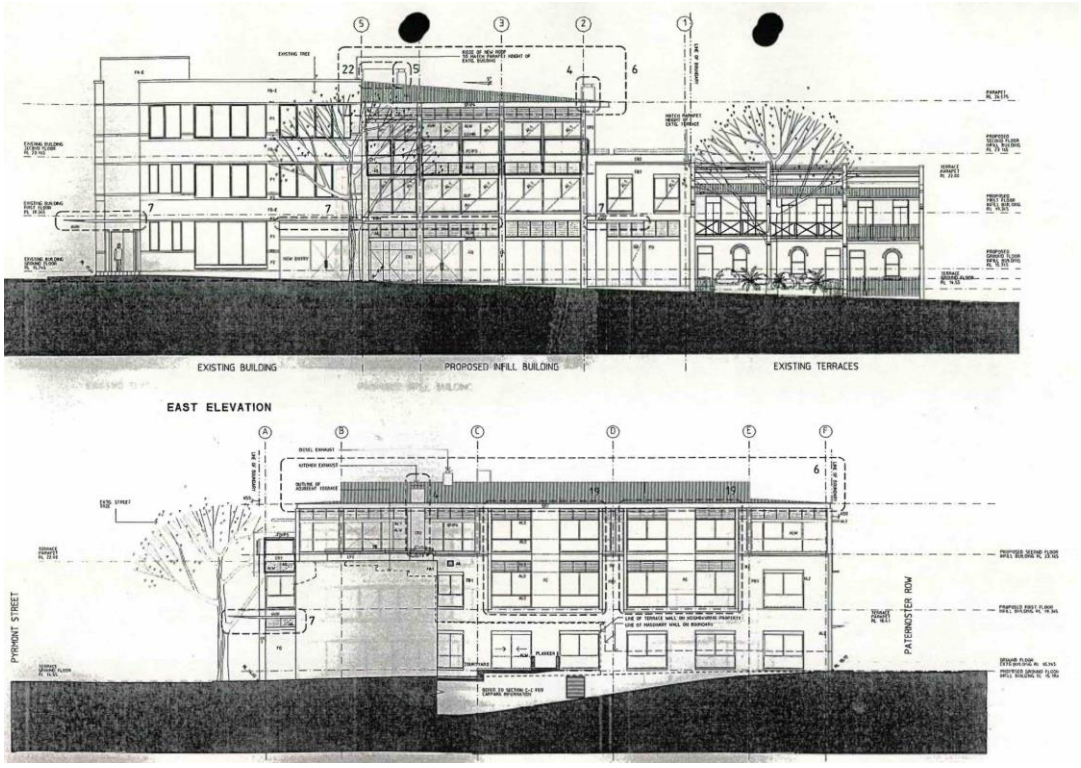


Figure 63: 2000 – East and north elevations, prepared by Allen Jack + Cottier, architects, as part of the Section 96 application, dated 7 April 2000 (Source: City of Sydney Archives, D1999/00812, 'Development Applications/26-32/Pyrmont Bridge Road/Pyrmont/Alterations & Additions to Existing Building – Bulawayo Holdings Pty Ltd – 14 10 99 - $5000000')

2.6 Eastern Construction Site land-use overview

A summary of the historical use of the study area discussed in this chapter is provided in Table 3 below.

Table 8: Overview of historic land use phases

Phase	Date	Use of site
Phase 1	1788-1878	Part of the Ultimo Estate, potentially used for livestock grazing
Phase 2	1883-1930	Residential housing, commercial properties, 'Elder's Hall'
Phase 3	1930-1986	Timber and building materials storage yard, and associated sheds and offices, fuel service station, car park
Phase 4	1986-present	Commercial properties

2.6.1 Phase 1 (1788-1878) – Early land clearance and grazing

The Eastern Construction Site at 37-69 Union Street, Pyrmont, is located on Block 59b of the Ultimo Estate subdivision and remained undeveloped until the late 1870s, being potentially used for grazing.

During the partition of the Ultimo Estate in the 1850s, Block 59b was transferred to Mary Ann Harris, the daughter of George Harris, but she died on 24 September 1857, two years before the subdivision was finalised and the property was tentatively transferred to Matthew Harris instead, as shown in Figure 8. However, the official transfer was postponed, and Matthew Harris transferred the northern portion of Block 59b to John Harris of Shane's Park on 21 May 1867, retaining the southern portion of Block 59b, to the south of Pyrmont Bridge Road.[147]

The plan in Figure 9 and the 1873 photograph in Figure 10 show the site as a vacant block of land that was bounded by Union Street, Pyrmont Bridge Road and Edward Street. The plan in Figure 64 shows the division of the original Block 59b, with details of land titles that are relevant to the northern and southern portion, divided by Pyrmont Bridge Road.

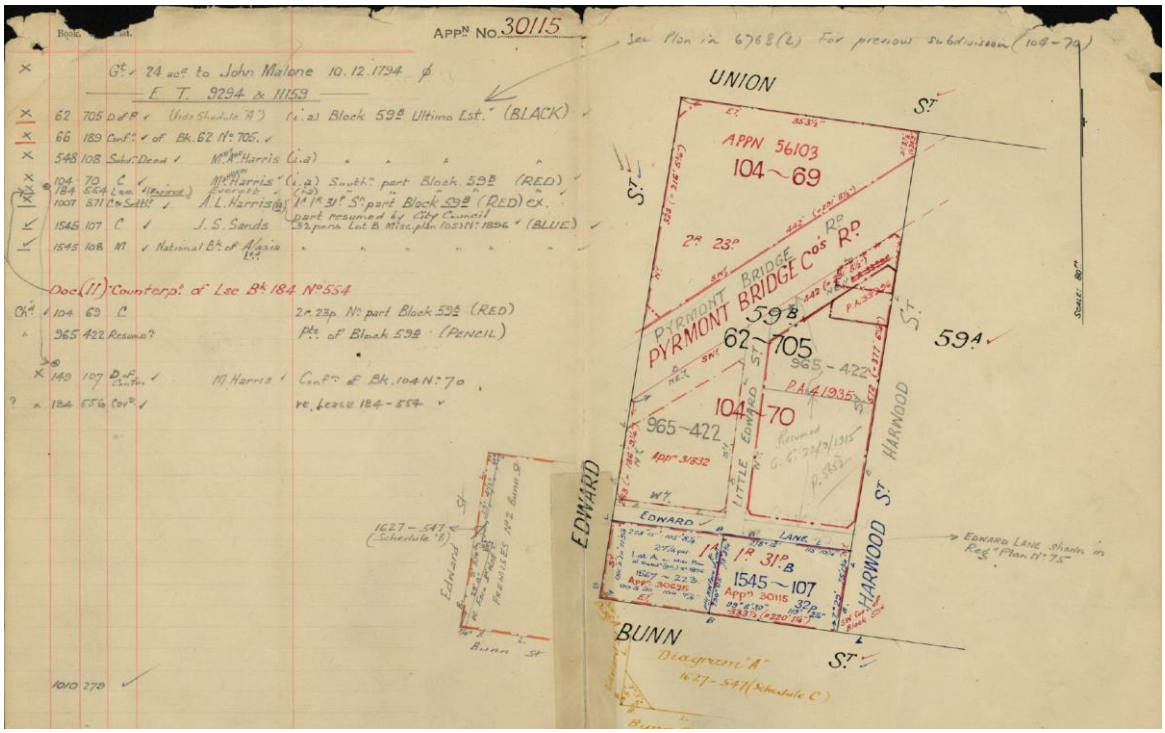


Figure 64: Plan from Primary Application Search Sketch for PA 30115, noting the land titles that relate to the study area, being the northern portion of Block 59b of the Ultimo Estate. (Source: NSW LRS, Historical Land Records Viewer, PASS 30115)

2.6.2 Phase 2 (1883-1930) – Subdivision and mixed-use development

2.6.2.1 Summary of Early Development at Eastern Construction Site (1878-1930)

Development on the block bounded by Union Street, Edward Street and Pyrmont Bridge Road began in 1878, with the *Sands Sydney Directory* edition of 1879 listing Pyrmont Bridge Road for the first time, noting at least two occupants within the study area, and noting the first occupants on the south

[147] See NSW LRS, Conveyance Bk 104 no. 69.

side of Union Street in the same year. Likewise, the first four occupants of buildings on the eastern side of Edward Street were listed in the same 1879 edition of the *Sands*.

From 1877, the land was part of the same leasehold by Mills & Pile, estate agents, who may have been responsible for some of the development on the land. However, it appears that several undocumented subleases were subsequently made, as well as various subsequent changes to the headlease, potentially leading to subdivision of the site for lease purposes over time. As these leases are mainly documented in the Old Title System, it has not been feasible to investigate all of these changes. Most of the information included below has been based on the analysis of the *Sands Sydney Directory* and the *Assessment Books*, as well as maps and photographs, and newspaper articles.

While it has not been possible to determine the exact sequence of development and nature of occupation for each individual building on the block during this first phase of development, due to inconsistent numbering and renumbering of houses, and suspected (as well as proven) demolition and rebuilding activity, the block appears to have been fully developed by the mid- to late 1880s, with further development carried out at the north-eastern corner in the late 1880s and 1890s. Maps and aerial photographs showing the block and its buildings from c1888 to 1930 are included below, to illustrate the density and configuration of development within the block, as well as the early street numbering of buildings (Figure 65 - Figure 67).

The terraced buildings on Union Street were largely of stone and brick construction and consisted of double storey shops or residences, with shops concentrated around the corners of Edward and Pyrmont Bridge Road. Most notably, the frontage contained a c1883 hall that was in heavy use during the 1880s and 1890s, until it burnt down in 1903 and was subsequently redeveloped into residential terraces. Many of the buildings, including the hall, were associated with William Elder, who was listed as the occupant of a timber blacksmith's workshop at the corner of Edward and Union Streets in the 1879 *Sands*. The workshop occupied the land directly behind the brick buildings at 37 to 45 Union Street, on the corner of Edward and Union Streets.

The c1883 hall, which was initially constructed as a Dance Academy and was later known as a skating rink and gymnasium, was generally known as 'Elder's Hall'. The name, 'W. Elder, Ironmonger', was also inscribed below the parapet of the building shown in Figure 81 (at 41 Union Street, originally known as 93 Union Street). Elder later moved to 113 Union Street (61 Union Street), where he lived until c1887, before he was declared bankrupt in c1890.

After John Harris' death in 1891, the Eastern Construction Site was transferred to the Perpetual Trustee Company Ltd which sold the north-eastern corner of the site to Josiah White, grocer, in 1896. That same year, White constructed a three-storey building with basement on the corner of Union Street and Pyrmont Bridge Road, as a prominent landmark in the area. By June 1913 at the latest, the remainder of the site had been transferred to Matthew Harris.[148]

The development on Pyrmont Bridge Road and on Edward Street was largely residential. There were four addresses on the Edward Street frontage, all noted as timber buildings and consisting of two detached houses and one semi-detached house. These buildings were double storey structures with gables facing the street. Similarly, the two pairs of semi-detached cottages on Pyrmont Bridge Road were noted as single storey timber buildings. A creek may have run across the middle of the block during the 1880s, as suggested by an irregularly shaped line in the plans in Figure 65 and Figure 66.

The below sections provide a more detailed overview of the development and nature of buildings on each street frontage during the late 19th and early 20th century, including details of occupants, until the buildings were demolished from the late 1920s.

[148] See NSW LRS, Primary Application (PA) 56103.

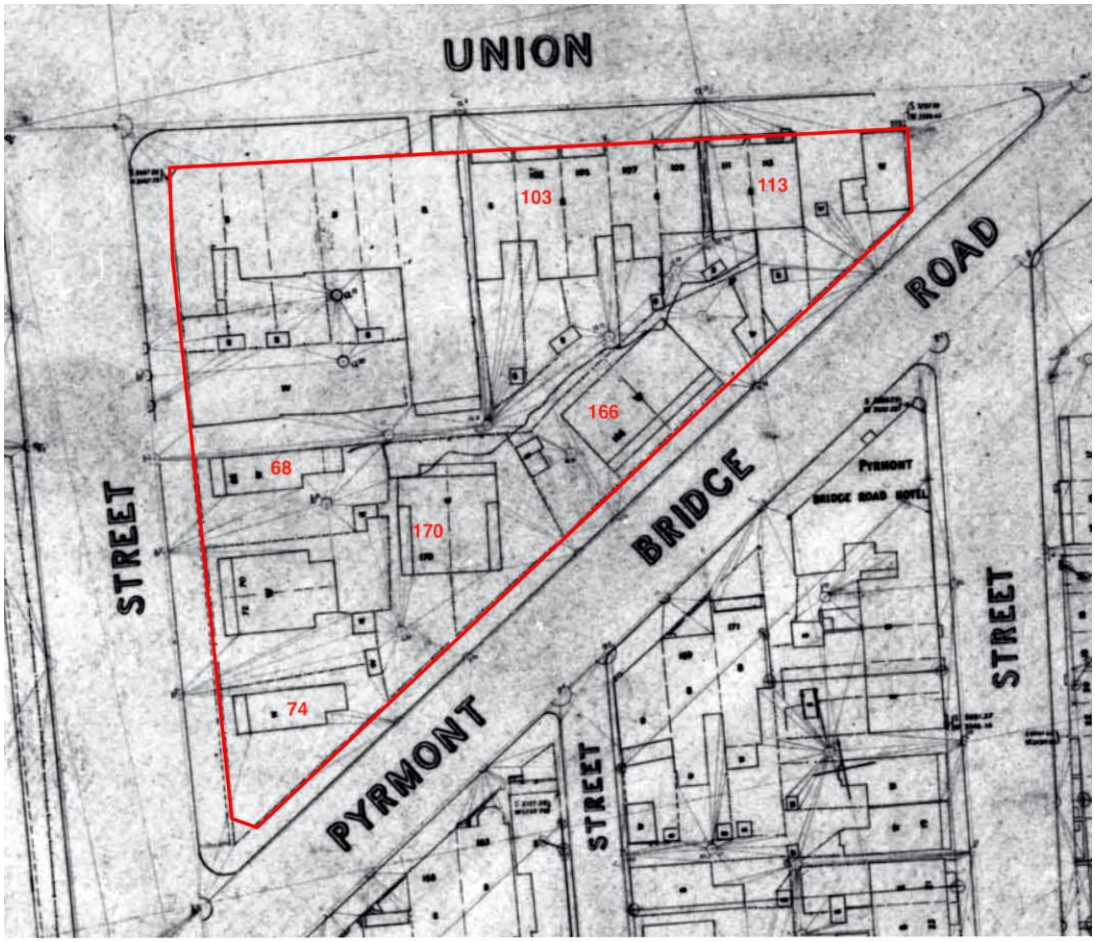


Figure 65 Detail from Public Works Department plan for Pyrmont, Sheet K3, submitted to the Surveyor General on 9 October 1886. This shows the original numbering of the buildings from 103 to 113 Union Street, 68 to 74 Edward Street, and 164 to 170 Pyrmont Bridge Road. (Source: Sydney Water Archives, PWDS1544-S235)

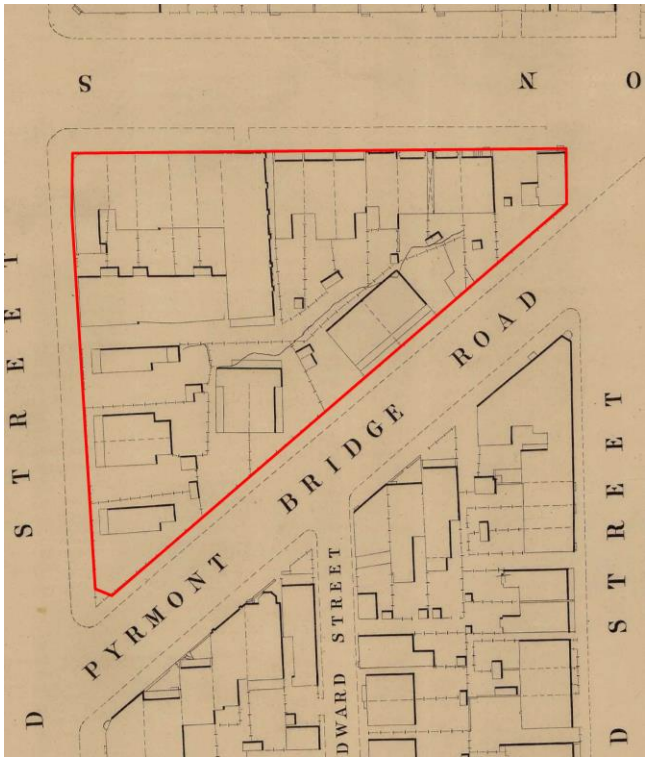


Figure 66: c1888 – Detail from City of Sydney Section (Metropolitan Detail Series), Sheet K3, showing the development of the block, with Union Street on the right. The plan was lithographed and printed in May 1888, based on an earlier survey (Source: State Library of NSW, Z/M Ser 4 811.17/1, https://collection.sl.nsw.gov.au/record/74VKqv5pXe4b/bBWNZQV5XWRll#viewer)



Figure 67: 1930 – Detail from aerial view showing the Eastern Construction Site fully developed, including the 1896 building on the corner of Union Street and Pyrmont Bridge Road, at lower right. The timber buildings to the rear of the shops at the corner of Union and Edward Streets have been demolished and the original hall replaced by residential terraces. Note the gabled buildings on Edward Street, and the single storey semi-detached cottages on Pyrmont Bridge Road, which are about to be demolished (Source: Fairfax Corporation. (1930). Aerial view of Darling Harbour showing Pyrmont Bridge closing following passage of a ship, Sydney, ca. 1930s. http://nla.gov.au/nla.obj-163204711)

2.6.2.2 Development of 37-67 Union Street (1878-1930s)

2.6.2.2.1 Construction of Shops and Dwellings (1878-1882)

Development on the south side of Union Street, between Edward Street and Pyrmont Bridge Road, began in 1878, with the construction of a blacksmith's workshop occupied by William Elder and a general store by Robert Berry. Both were noted as the first buildings on Union Street in the *Sands Sydney Directory* of 1879,[149] and they were located at either end of the block's Union Street frontage: Elder's workshop was situated on the corner of Union and Edward Streets and Berry's store on the corner of Union Street and Pyrmont Bridge Road.

The following year, in 1880, Horatio Walpole, butcher, was listed as the third occupant on the street, between Elder and Berry.[150] The *Assessment Books* for the Denison Ward of 1880 also noted all three, at No. 89 (Elder), No 91 (Walpole) and No. 117 (Berry).[151] Robert Edward Berry, who was a sawyer, was the occupant and owner of a double storey timber shop with iron roof and four rooms. William Elder was described as the occupant and owner of a single storey timber workshop with iron roof and 1 room, and Horatio Walpole was the occupant and owner of a single storey brick shop with iron roof and 2 rooms.

Elder was likely located to the rear of Walpole,[152] whose butcher shop occupied the prime location at what was from 1882 until c1886 noted as 89 Union Street (this later became 37 Union Street). Walpole was seeking "help from a boy" on 12 February 1879, noting his address as "opposite the New York Hotel, Pyrmont".[153] That building remained a butcher's shop until well into the 1920s, before it was used as dining rooms. By 1882, it was described as a double storey brick shop with shingled roof and was noted as being owned by Mills & Pile and occupied by David Barnett.[154]

The lease from John Harris to George Pile, on 1 August 1877, was officially registered on 1 October 1877, suggesting that part of the development on Union Street was potentially carried out by the estate agents who also subdivided and developed other land parcels in the area at that time, including the Western Construction Area (see Section 2.5.2).[155]

That Mills & Pile had indeed taken over the head lease for the site was confirmed by John Y. Mills, partner of Mills & Pile, estate agents, who, when he gave evidence as a witness in June 1882, noted that in June 1881 he had acquired the leasehold of a property "which had a frontage of 230 feet to Union-street, 291 feet to Pyrmont Bridge-road, and 216 feet to Edward-street. The lease had 50 years to run, and the rent was £100 a year."

The 1882 *Assessment Book* entry suggests that the corner building/butcher shop at 89 Union Street had been extended in c1880-81, to include an upper storey above the shop as well as further shops immediately adjacent to the east, forming a unified street elevation for the three shops that contained a grocer's store at 91 Union Street (later No. 39) and William Elder's official ironmongery premises at 93 Union Street (later No. 41). Only these three addresses were noted as being owned by Mills & Pile. Elder's name was inscribed below the parapet of the building at 93 Union Street (see Figure 81), even though he did not seem to occupy it for long. He was only listed there once in the *Sands Directory*, in 1882, and in November 1881 he offered the shop for lease without stock, noting it as "doing a good trade in ironmongery."[156] The building was later used as a confectioner's shop, and

[149] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Union Street (south side), 1879.
[150] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Union Street (south side), 1880.
[151] City of Sydney Archives, *Assessment Books*, Denison Ward – Union Street, 1880.
[152] 'Advertising', *Evening News*, 22 August 1885, 6, http://nla.gov.au/nla.news-article111019206.
[153] 'Advertising', *Sydney Morning Herald*, 12 February 1879, 12, http://nla.gov.au/nla.news-article13429148.
[154] Mills' leasehold ownership appears to be confirmed in this article in the *Sydney Daily Telegraph*: 'Law Intelligence', *Sydney Daily Telegraph*, 15 June 1882, 4, http://nla.gov.au/nla.news-article238469310.
[155] NSW LRS, Surrender and Confirmation Bk 175 No 686; cf. Conveyance Bk 579 No 567. 'Advertising', *Sydney Morning Herald*, 22 September 1888, 18, http://nla.gov.au/nla.news-article13697481.
[156] 'Advertising', *Evening News*, 14 November 1881, 3, http://nla.gov.au/nla.news-article107223982.

much later as a tobacconist.[157] It appears to have originally had a supported verandah structure running around the corner of the building (Figure 76).

As part of the same development, in 1880-81, two terraced residences were built immediately adjacent to the shops. They were located at 95 and 97 Union Street (later known as No. 43 and No. 45) and were by 1882 occupied by Matthias Andrews, master mariner (at 95) and Richard Thrussell (at 97), with the (leasehold) owner noted as George Snooks. Both buildings were double storey brick houses with iron roofs and 5 rooms each.[158] The houses appear to have been used as residences and shops, with a bootmaker later noted at 95 Union Street.[159]

By 1882, the *Sands* listed a further six new addresses at 103 to 113 Union Street, leaving two vacant lots between the shops and terraces in the west (89 to 97 Union Street) and these houses.[160] The occupant of this was William Elder, who shortly later erected a hall on this parcel which had a frontage of 20 feet.[161]

The street numbering in the *Sands Directory* and the Assessment Books does not correspond for 1882, and the new houses to the east of the vacant land were listed at 101 to 109 in the *Assessment Books*; Berry's timber shop was now noted as being located at No. 113, while the *Sands* still noted it at No. 117. However, it appears that there were three new double storey brick houses to the east of the vacant land, followed by a double storey brick shop, a single storey timber stable, and another double storey brick house. "5 large roomed houses, balcony, verandah" had been advertised for lease in November 1880, at 17s per week, with the address noted as 103 Union Street.[162]

The brick shop at No. 107 (corresponding numbers in the *Sand*s and the *Assessment Book*) was occupied by John Perumall, a hairdresser, while his next-door neighbour to the west was patternmaker John Walker (at 105 in the *Sands*), and joiner William Norris further to the west (at 103 in the *Sands*). Fuel merchant Edward Gray occupied the house and stables at 109 and 111 (107 and 107a in the Assessment Books), and a Peter Johnson occupied the house at 113 Union Street (111 in the *Sands*). Gray's stables were later noted as 'pulled down', as was William Norris' house at 101 (103) Union Street, suggesting further alterations to these sites after 1882. Berry's timber shop was the last house before the intersection with Pyrmont Bridge Road, at 113 Union Street (No. 117 in the *Sands*).

2.6.2.2.2 Construction and development of 'Elder's Hall' (1883-1887)

By September 1883, William Elder had constructed a hall on the vacant allotment near the western corner shops.[163] It was noted for the first time in the 1884 *Sands Directory* and was in subsequent editions listed as 'Elder's Hall' at 99 Union Street. The hall was a popular meeting place for various associations and groups and became "Pyrmont's favourite public space, favoured by Protestants and Catholics, political aspirants, boxers and people keeping fit. This two-storey building, fronted by shops and partly occupied by residents, had a gymnasium and a supper-room. It was – according to the *Australian Star* 26 October 1903 – 'the principal meeting place in Pyrmont'."[164] It underwent various alterations over time – the gymnasium appears to have been a later change – until it was destroyed by fire in 1903.

[157] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Union Street (south side), 1890ff. 1926.
[158] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Union Street (south side), 1882; *Assessment Books*, Denison Ward – Union Street, 1882.
[159] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Union Street (south side), 1886. 1890-1892.
[160] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Union Street (south side), 1882.
[161] City of Sydney Archives, *Assessment Books*, Denison Ward – Union Street, 1882.
[162] 'Advertising', *Sydney Morning Herald*, 16 November 1880, 16, http://nla.gov.au/nla.news-article13473713.
[163] 'Advertising', *Evening News*, 24 September 1883, 1, http://nla.gov.au/nla.news-article108840127.
[164] 'Elder's Hall:A Neutral Public Place', Pyrmont History Group, accessed 20 January 2022, https://pyrmonthistory.net.au/elders-hall.

In 1885, Huntley and Barnard, property auctioneers, offered the leasehold of the buildings on the Union Street frontage for sale, including the butcher shop and dwelling at the corner of Edward and Union Streets (89 Union Street).[165] The adjoining property to the rear, on Edward Street, still occupied by the blacksmith's shop, was also offered for sale, as were "all those 10 Dwellings, together with premises used as a brewery, stores, and public hall, being Nos. 91, 93, 95, 97, 99, 101, 103, 105, 107, 107a, and 113, Union-street, producing a gross rental of £974 per annum",[166] offered for sale as leaseholds of 44 years, unexpired. The sale was to proceed either as a block or in three or more lots.

In 1885 and 1886, William Elder still occupied the blacksmith's shop to the rear of 37 Union Street, as he was listed as the occupant of the first building on Edward Street in the 1886 and 1887 *Sands Directories.*[167] It is unclear whether this was still a single storey timber building, as initially noted in the *Assessment Book* of 1880, or whether it had been altered.[168] The c1886 and c1888 plans in Figure 65 and Figure 66 show this building as one single structure, extending all the way to Elder's Hall, with an open space between the workshop and the buildings on the Union Street frontage.

By 1889, the blacksmith's shop was known as Elder, Erskine and Co., and was listed after Henry Hackman at 50 Edward Street and boilermaker Archibald Ferguson at 52 Edward Street, who had been listed at the same addresses in 1888.[169] Ferguson was also noted at 97 Union Street and adjacent to Elder's Hall in 1888, suggesting that 52 Edward Street was located to the rear of 97 Union Street. However, the 1888 and 1889 entries were the only ones for these rear premises in the *Sand*s, even though the building appears to have remained standing well into the 21st century (see Figure 74).

The 1885 advertisement for the sale of the Union Street buildings, published in the *Evening News* of 22 August 1885, mentioned premises used as a brewery.[170] This was the Pyrmont Brewery Co. Ltd's wine and spirit store which potentially occupied the shop fronting the hall at 99 Union Street, or premises immediately adjacent. The *Sands Directory* listed the brewery's store only from 1885 to 1887, always together with the hall. This appears to have been the public store for the nearby Pyrmont Brewery, which had been established in 1880 on the corner of Union and Murray Streets, by J. G. H. Swain and Co..[171] Although it was said to have produced "above average" beer, it was only a short-lived enterprise, as the Pyrmont Brewery Company (Ltd) was wound up in February 1887.[172]

The Brewery must have moved out in c1886, because William Elder extended the hall in 1886 and altered the premises for 'Elder's Pyrmont Academy of Music', which opened on 24 December 1887. At the time of the opening, the "building was not quite completed."[173] It was to contain "a large hall for meetings, &c., in addition to the academy" and was expected to "present a rather attractive appearance."[174] The opening entertainment "was entirely of the negro minstrel and variety order, and comprised ballads, comic songs, songs and dances, horizontal bar performance, and a farce, entitled 'The Rival Waiters'."[175]

The 1886 Public Works Department Plan (Figure 68) and the 1888 Metropolitan Detail Series Plan (Figure 69) show the outline of the hall at that time, and of the three double storey dwellings to its

[165] 'Advertising', 22 August 1885.
[166] 'Advertising'.
[167] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Edward Street (east side), 1886-87.
[168] Cf. City of Sydney Archives, *Assessment Books*, Denison Ward – Union Street, 1880.
[169] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Edward Street (east side), 1888-89.
[170] 'Advertising', 22 August 1885.
[171] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Union Street (north side), 1882-1887; cf. 'The Pyrmont Brewery', *Sydney Morning Herald*, 5 August 1880, 7, http://nla.gov.au/nla.news-article13465534.
[172] 'The Pyrmont Brewery Company (Limited)', *New South Wales Government Gazette*, 25 February 1887, 1355, http://nla.gov.au/nla.news-article219935997.
[173] 'Academy of Music', *Sydney Morning Herald*, 26 December 1887, 6, http://nla.gov.au/nla.news-article28347584.
[174] 'Academy of Music'.
[175] 'Academy of Music'.

east, followed by the double storey shop at 107 Union Street. The buildings to the east of this shop, at 109 and 111 Union Street, appear to have been separated by a laneway providing access to the rear. These were later replaced by three storey buildings with a shared party wall. 113 Union Street formed the eastern end of the terrace row, with an unnumbered timber building located on the corner of Union Street and Pyrmont Bridge Road. This was likely Robert E. Berry's old grocer's shop, which had been listed as the last building before Pyrmont Bridge Road in the *Sands* until 1884. The shop was no longer listed after 1884, with 113 Union Street being noted as the last building from 1885 until 1887.

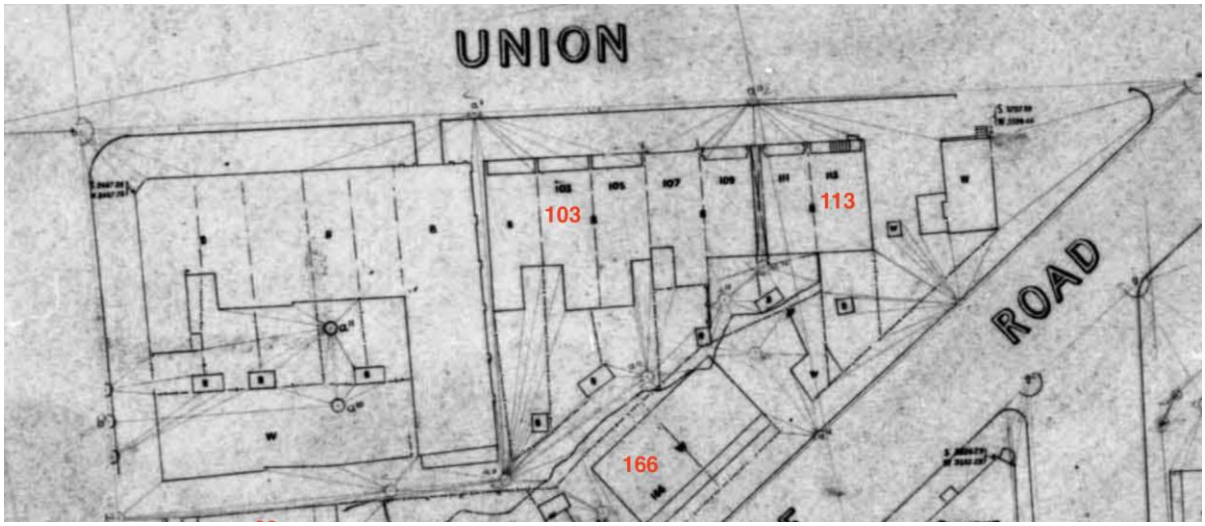


Figure 68: c1886 – Detail from Public Works Department plan for Pyrmont, Sheet K3, submitted to the Surveyor General on 9 October 1886. This shows the buildings on the Union Street frontage, with the outline of 'Elder's Hall' clearly visible on the left portion. (Source: Sydney Water Archives, PWDS1544-S235)

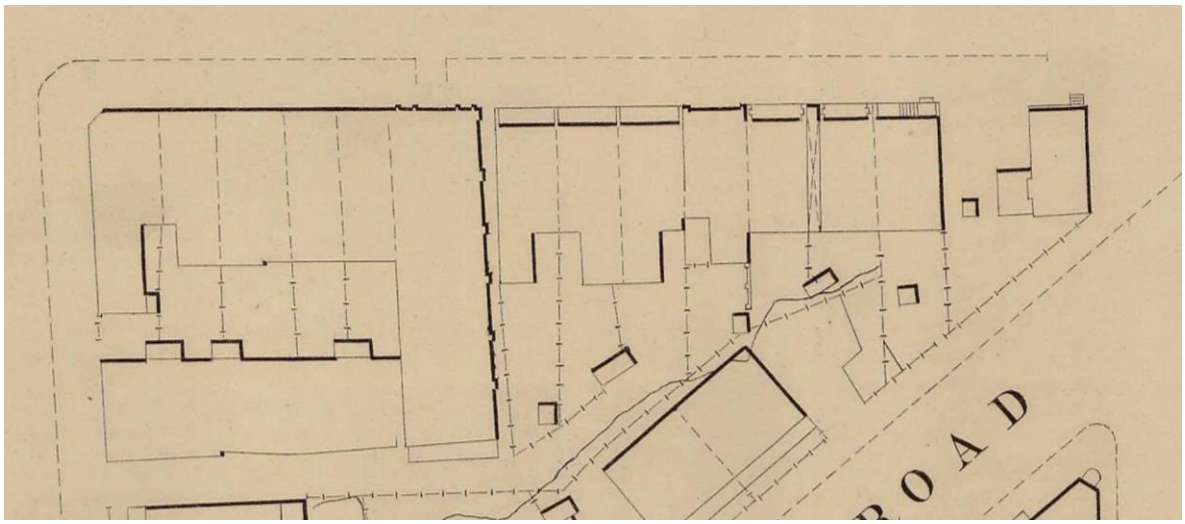


Figure 69: c1888 – Detail from City of Sydney Section (Metropolitan Detail Series), Sheet K3, showing the development on Union Street, largely identical with the plan in Figure 68. This plan was lithographed and printed in May 1888, based on an earlier survey. (Source: State Library of NSW, Z/M Ser 4 811.17/1, https://collection.sl.nsw.gov.au/record/74VKqv5pXe4b/bBWNZQV5XWRll#viewer)

2.6.2.2.3 Further development and W. Elders' bankruptcy (1887-1892)

It appears that in c1887, two new buildings were added on the eastern side of the terrace row, even though that is not reflected in the 1888 plan in Figure 69 above. The *Sands* for 1888 noted the

following occupants in the buildings on Union Street, from west to east: Hall, T. W. butcher (No. 89); Ridgewell, John, fruiterer (No. 91); Taplen, Mrs., storekeeper (No. 93); Skues, Mrs. (No. 95); Ferguson, Archibald, blacksmith (No. 97); Elder's hall – William Elder, proprietor (No. 99); Ferguson, Archibald, boiler maker (unnumbered, under No. 99); Davis Mrs., boardinghouse (No. 103); Smith, James (No. 105); Brew, James (No. 109); Fagan, Thomas, boardinghouse (No. 111); Elder William, blacksmith (No. 113); Peromall, John, hairdresser (unnumbered, under No. 113); Fursey, Samuel, bootmaker (No. 115); Irwin, Ellen, grocer (No. 117).[176]

The last two addresses, being 115 and 117 Union Street, were new listings, and it appears that it was at this time that two new buildings had been completed to the east of 113 Union Street, replacing the old timber building at No. 117 (this was still noted in the 1888 plan in Figure 69 which was printed in May 1888). While from that time onward, 115 and 117 Union Street appeared on the western side of Pyrmont Bridge Road, confusingly, both numbers had previously been noted on the eastern side of the road, and one of these had also been occupied by Samuel Fursey (although he had previously been listed at No. 117 and was now listed at No. 115). To add to the confusion, the numbering on the eastern side of Pyrmont Bridge Road began with No. 117, leaving two Nos. 117 on Union Street in 1888. However, the numbering was continuous again from 1889 onwards, with 117 noted on the western side.

William Elder had moved to 113 Union Street in c1883, and the address had been noted as his residence in 1886, when his wife died.[177] Mary Jane Elder was only 29 when she died on 3 April 1886.[178] Elder was listed at the address for the last time in 1888, when he appeared alongside John Peromall, the hairdresser who had previously been located at 107 Union Street.[179] Peromall subsequently occupied the building at 113 Union Street which was from 1890 onwards listed as 61 Union Street, after renumbering of the street.

In 1888, not long after completion of the hall extensions for 'Elder's Pyrmont Academy of Music', there were even grander plans for the hall. By then, William Elder had entered a partnership with Edward John Erskine, trading as Elder, Erskine & Co., Manufacturers of Agricultural Implements, and the company enquired at the City Council about the approximate cost of "laying on the salt water and also the after cost of water through meter", as they had "the intention of making a swimming bath under the hall known as Elder's Academy Union".[180] The letter was dated 18 May 1888 and signed by Erskine, but it appears that the plans for the indoor swimming pool did not go ahead.

The partnership was dissolved on 29 October 1888, likely because Elder had run into financial difficulties, and the business was from that time headed by E. J. Erskine who continued trading under the old name at the same address, which was given as 99 Union Street, placing it with the hall.[181] By March 1889, C. P. Stephen had become the proprietor of the Academy, and he opened the new 'West Sydney Skating Rink and Dancing Academy' on St. Patrick's Day, 16 March 1889. The advertisement for the opening noted that "the skating and dancing room has been largely extended, and every convenience made to suit the public generally. The floors have been renewed, the skates are in first-class order. Good instructors in attendance. Commencing, 2 to 5 p.m. end 7.30 to 10.30. Admission to rink, gents 1s 6d, ladies 1s. Admission to dancing, gents 1s 6d, ladies free."[182]

[176] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Union Street (south side), 1888.
[177] 'Family Notices', *Daily Telegraph*, 5 April 1886, 1, http://nla.gov.au/nla.news-article237242020.
[178] 'Family Notices', *Sydney Morning Herald*, 5 April 1886, 1, http://nla.gov.au/nla.news-article13638980.
[179] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Union Street (south side), 1888.
[180] 'Letter: Elder, Erskine & Co, Importers and Manufacturers of Agricultural Machinery, Electrical & City of Sydney Archives, accessed 20 January 2022, https://cosaprod.recollect.net.au/nodes/view/1549998. Elder, Erskine & Co. still occupied the blacksmith's shop to the rear of the Union Street buildings on the corner of Edward Street, see City of Sydney Archives, *Sands Sydney Directory*, City Directory – Edward Street (east side), 1889.
[181] 'Advertising', *Sydney Morning Herald*, 31 October 1888, 3, http://nla.gov.au/nla.news-article13701703.
[182] 'Advertising', *Evening News*, 18 March 1889, 1, http://nla.gov.au/nla.news-article108788188.

In September 1888, the lease for the Union Street buildings had been offered for sale again by Richardson and Wrench, with the advertisement (Figure 70) noting that the overall property, which comprised a 185 feet frontage to Union Street as well as frontage to Pyrmont Bridge Road, contained "4 shops, 6 houses, large hall premises, and skating rink, and blacksmith's shop, being No. 89 to 105 and 107 to 113."[183] The lease term was 50 years from 1 July 1877.

William Elder soon had to declare bankruptcy. It appears that he still held the (sub-)lease for some of these sites by May 1890, as the lease for several houses as well as the Assembly Hall was sold by E. M. Stephen as the official assignee in the bankrupt estate of William Elder.[184]

The 1890 sales advertisement for Elder's bankrupt estate described the land to be sold as two separate parcels, in addition to land at Glebe and Guildford. The first parcel at Pyrmont was for the "Second Mortgage of £1500 (subject to a first charge of £2830) over two dwelling houses, Nos. 51 and 53 Union-street, Assembly Hall adjoining thereto, and two dwelling houses, Nos. 57 and 59 Union-street, erected on land having frontage to Union-street, Pyrmont, of about 98ft. Title, leasehold; 50 years from July, 1877. Ground rent, £ - per annum."[185]

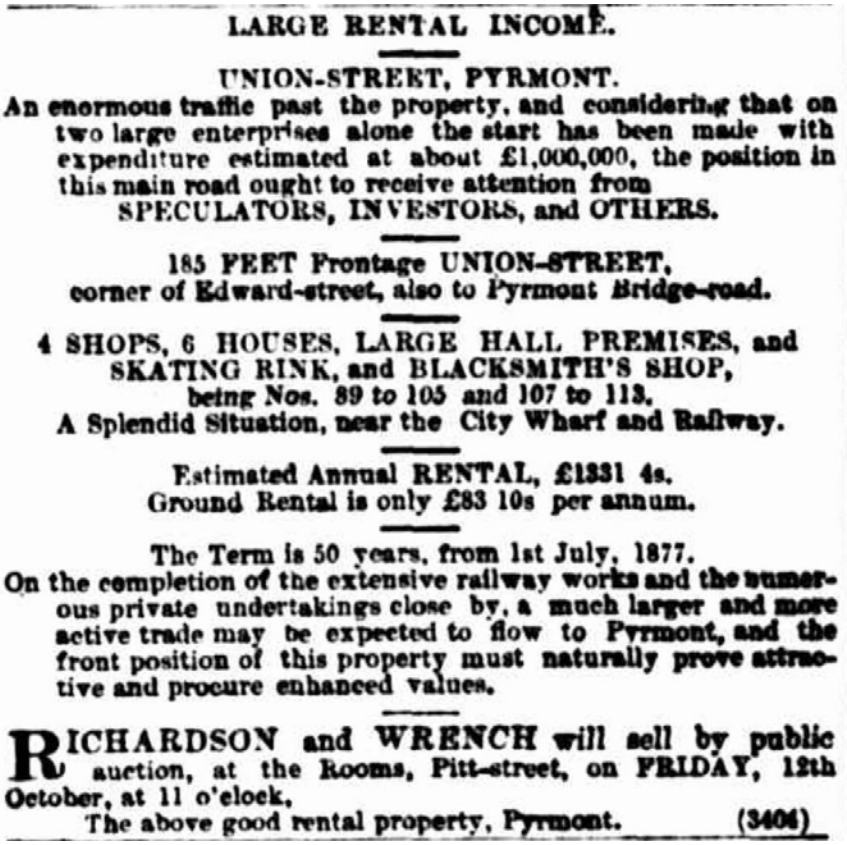
The second parcel was for "Pyrmont. – Land having 15ft. frontage to Union-street, on which is erected business premises of brick, iron roof, containing shop and 4 dwelling rooms, occupied as hairdressig establishment at 30s per week. Title, leasehold; 50 years, from 1877." [186] This was likely for 61 Union Street, occupied by John Perumall.

The 1891 *Assessment Books* suggest that the leasehold for the buildings at 51 and 53, and 59 Union Street had been sold to a person named "Kurtzer" who also owned the buildings at 43 to 51 Union Street, including the shop and hall at 49 and 49a Union Street. The shop at 55 Union Street (formerly No. 107), occupied by fruiterer J. Ridgewell, was owned by C. Delohery, while the two shops at 57 and 61 (formerly at 109 and 113) Union Street were owned by two different estate agents.

59 to 67 Union Street were all noted as three storey brick and stone shops in 1891, with 67 Union Street being a new number. The lease for 63 to 67 Union Street was owned by A. Streatfield (also noted as 'Stratfield'), with the occupants being listed as A. Bowan (No. 63), H. Rosenberg (No. 65) and W. G. Furzey (No. 67). However, the numbering in the *Sands* for that period was inconsistent and the next *Assessment Books*, for 1896, noted 63/65 as one address, followed by 67 Union Street. This may suggest that there were still only two building to the east of 61 Union Street (formerly 113 Union Street), i.e. those constructed in c1887.

A photograph dated late 1890s to 1900s (Figure 72) seems to confirm this, suggesting that 67 Union Street was in fact a double storey building, located to the east of four three storey buildings. 63/65 Union Street was by 1896 occupied by Josiah White, grocer, who was listed at 63 and 63/65 in the Sands from 1892 onwards. In 1896, White had a new building constructed for himself at the corner of Union Street and Pyrmont Bridge Road, known as 69 Union Street.

[183] 'Advertising', 22 September 1888.
[184] 'Advertising', *Sydney Morning Herald*, 3 May 1890, 16, http://nla.gov.au/nla.news-article13769001.
[185] 'Advertising'.
[186] 'Advertising'.



LARGE RENTAL INCOME.

UNION-STREET, PYRMONT.

An enormous traffic past the property, and considering that on two large enterprises alone the start has been made with expenditure estimated at about £1,000,000, the position in this main road ought to receive attention from SPECULATORS, INVESTORS, and OTHERS.

185 FEET Frontage UNION-STREET, corner of Edward-street, also to Pyrmont Bridge-road.

4 SHOPS, 6 HOUSES, LARGE HALL PREMISES, and SKATING RINK, and BLACKSMITH'S SHOP, being Nos. 89 to 105 and 107 to 113. A Splendid Situation, near the City Wharf and Railway.

Estimated Annual RENTAL, £1331 4s. Ground Rental is only £83 10s per annum.

The Term is 50 years, from 1st July, 1877. On the completion of the extensive railway works and the numerous private undertakings close by, a much larger and more active trade may be expected to flow to Pyrmont, and the front position of this property must naturally prove attractive and procure enhanced values.

RICHARDSON and WRENCH will sell by public auction, at the Rooms, Pitt-street, on FRIDAY, 12th October, at 11 o'clock, The above good rental property, Pyrmont. (3404)

Figure 70: 22 September 1888 – Sales advertisement for the property at 89-113 Union Street, Pyrmont (Source: Advertising, Sydney Morning Herald, 22 September 1888, 18, https://trove.nla.gov.au/newspaper/article/13697481/1389741)

2.6.2.2.4 Construction of corner shop at 69 Union Street (1896)

On 14 June 1896, a fire broke out at Josiah White's grocer shop and dwelling at 63 Union Street. The *Daily Telegraph* provided the following account of the building at that time:

> *"The building was occupied by Mrs. Josiah White, and owned by Mrs. Streatfield, of Livingstone-road, Marrickville. The front part of the ground floor was the shop, while the back rooms on this floor and the back rooms on the floor above were used as store rooms. The remainder of the first floor and the whole of the second floor were occupied as a dwelling. The fire broke out in the lower storerooms, and this, together with the storerooms above, were gutted, and the contents completely destroyed. The remainder of the premises were damaged by the water used in quenching the conflagration. An empty shop adjoining was also damaged by fire and water. The origin of the fire is unknown. The grocer's shop was insured in the Imperial Insurance Company for £800. The other premises were uninsured."*[187]

While his old premises were partly destroyed by fire, White's new premises were being built at the corner of Union Street and Pyrmont Bridge Road. Josiah White had bought this corner site in early 1896, and the land had officially been transferred to him on 28 May 1896.[188] By the end of August 1896, the new three storey building with basement was completed, with the *Sunday Times* providing the following description:

[187] 'Fires', *Daily Telegraph*, 15 June 1896, 6, http://nla.gov.au/nla.news-article238593602.
[188] NSW LRS, Primary Application 12754.

> *"Mr. Sam Hordern very generously presented the residents of Pyrmont last week with a handsome drinking fountain, which is undoubtedly an improvement to Union-street, and an equally striking addition to that portion of the borough is the building just completed for Mr. Josiah White, shipping and family grocer, at the corner of Union-street and Pyrmont Bridge-road. The peculiar ground formation at that corner required all the architect's skill to utilise space and give ample room for Mr. White's increasing business. This has, however, been successfully accomplished. The building, which was opened for business yesterday, is four stories high, with ample basement room for storage. A spiral staircase ascends to the upper floors, and a lift from basement to top floor has been conveniently placed. Taken altogether, a prominent and imposing structure meets the view from Pyrmont Bridge, and Mr. J. White's new outlay should be rewarded by increased business."*[189]

Josiah White used a depiction of the building in advertisements for his new premises, such as the one included in Figure 71 below. The building is also shown in Figure 72 and Figure 73. In September 1897, White was involved in a court case, defending himself against accusations by his former landlord, A. Streatfield, who claimed that White was owing 16 weeks rental for the premises at 63 and 65 Union Street. White pleaded that "the plaintiff did not let him the property on the terms alleged, and that the premises were surrendered before the said rent became due."[190]

Development in this portion of the Eastern Construction Site may have included additions to the rear of 61, 63-65 and 67 Union Street. From 1899, the *Sands Directory* intermittently listed occupants at 2, 4 and 6 Pyrmont Bridge Road, immediately adjacent to White's corner shop.[191] However, it was not until 1924 that 2 Pyrmont Bridge Road was for the first time listed as a separate building in the *Assessment Books*, described as a double storey brick building with cellar.[192] A double storey building in this location is visible in Figure 73. In 1930, the *Assessment Books* noted 6 Pyrmont Bridge Road with 61 Union Street and 4 Pyrmont Bridge Road as part of 63/65 Union Street, suggesting that these buildings had access to both, Pyrmont Bridge Road and Union Street.[193]

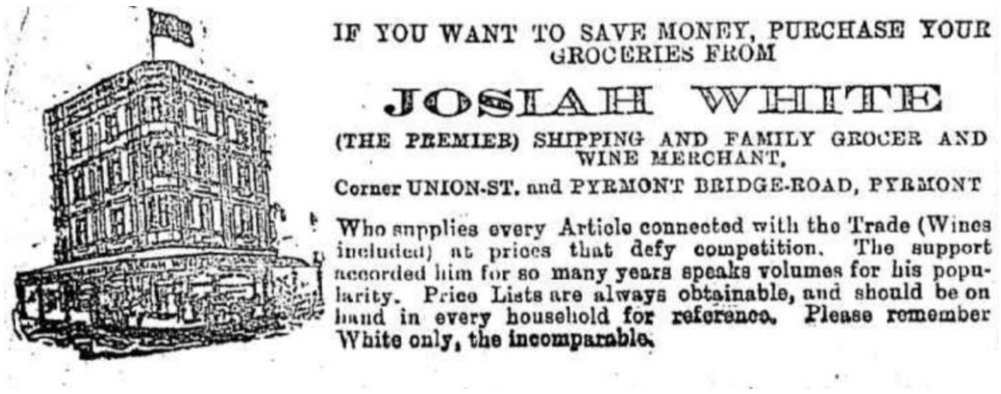


Figure 71: 24 October 1897 – Sales advertisement for Josiah White's corner shop (Source: Advertising, Sunday Times, 24 October 1897, 11, https://trove.nla.gov.au/newspaper/article/126249216/13493081)

[189] 'No Title', *Sunday Times*, 30 August 1896, 7, http://nla.gov.au/nla.news-article130405487.
[190] 'No. 2 Jury Court', *Sydney Morning Herald*, 3 September 1897, 3, http://nla.gov.au/nla.news-article14118088.
[191] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Pyrmont Bridge Road – North side, for instance, 1899, 1901, 1911.
[192] City of Sydney Archives, *Assessment Books*, Pyrmont Ward – Pyrmont Bridge Road, 1924.
[193] City of Sydney Archives, *Assessment Books*, Pyrmont Ward – Pyrmont Bridge Road, 1930.



Figure 72: Late 1890s to 1900s – The buildings at 51 to 69 Union Street as outlined in red, with the decorative parapet of the double storey shop at 55 Union Street visible at lower right. Photography by Charles H. Kerry (Source: Powerhouse Collection, Sydney from Pyrmont, 85/1284-1778. https://collection.maas.museum/object/28399)



Figure 73: 1 December 1911 – Corner of Union Street and Pyrmont Bridge Road, with the Wine Bar at 69 Union Street on the right and small cottages to the rear (Source: City of Sydney Archives, Pyrmont (01/12/1911), [A-00038966]. https://archives.cityofsydney.nsw.gov.au/nodes/view/676948)

2.6.2.2.5 Redevelopment of Elder's Hall (c1905)

In 1899, the *Sands Directory* listed the following occupants of the buildings at 37 to 67 ½ (69) Union Street: No. 37 – Cassidy Joseph, butcher; No. 39 – Newell Henry, J., fish and oyster saloon; No. 41 – Baird Steward, bootmaker; No. 43 – Sheriff William; No. 45 – Gray John; No. 49 – Athenaeum Hall; No. 49a – Higson, W., property agent; No. 51 – Bourke Patrick; No. 53 – Brogan Mrs. Catherine; No. 55 – Greenhalph J. H., ham and beef shop; No. 57 – Gordon Mrs. A.; No. 59 – Cousens William, tailor; No. 61 – McLennan, Alexander V., hairdresser; No. 67 Lobo R. F., fruiterer; No. 67 ½ - White Josiah, grocer.[194] This shows that the shop at 39 Union Street was now in use as a fish and oyster saloon, while 55 Union Street was now a ham and beef shop and 61 Union Street continued to be used as a hairdresser.

Elder's Hall at 49 (also sometimes listed at 49a) Union Street, was now known as 'Athenaeum Hall', having been renamed in around 1895.[195] It continued to be used for various performances and meetings, as well as dancing events.[196]

However, in October 1903, a fire destroyed the hall, with the *Australian Star* describing the building and the event that destroyed it, as follows:

> *"Elder's Hall, the principal meeting place in Pyrmont, was destroyed by fire about mid-night. The hall was situated in Union-street, and was a two-storied building, fronted by two shops, and also occupied partly as a dwelling. The alarm was sent to the M.F.B., and Deputy-Superintendent Sparks ordered out a big detachment of men, with steamers. After some little time the flames were overcome, the firemen being successful in keeping the outbreak practically confined to the one building, though the roof of No. 45, adjoining, was partly damaged. On the way to the fire the axle of the steamer from Redfern Station broke, the men were thrown off, but not seriously injured, though the steamer was badly wrecked."*[197]

Alfred Thomas Barnes, hairdresser, who stated that he had rented the shop at 61 Union Street from Mr. Cassidy for nearly five years, was subsequently charged for setting the hall on fire, and he was subsequently committed for trial.[198] During the trial, Barnes mentioned that the hall contained a gymnasium with adjacent supper-room, with the gymnasium used for card games on Sundays and let for boxing.

The hall was subsequently demolished, and until 1905 the *Sands* did not list any occupants between 41 and 53 Union Street. From 1906 onwards, the numbering was again continuous all the way, suggesting that the hall had been replaced by double storey residences in c1905. The 1907 *Assessment Books* for the Pyrmont Ward noted the following buildings:

Table 9: Occupants of 41-53 Union Street, 1907

No	Occupant	Owner	Type	Material	Roof	Storeys	Rooms
37	Joseph Cassidy	Eden George	Shop & house	Brick	Iron	2	10
39	John Martin	Eden George	Shop & house	Brick	Iron	2	6

[194] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Union Street – South side, 1899.
[195] 'Advertising', *Daily Telegraph*, 28 September 1895, 2, http://nla.gov.au/nla.news-article238537455.
[196] 'Advertising', *Evening News*, 19 August 1896, 1, http://nla.gov.au/nla.news-article111034507.
[197] 'Fire at Pyrmont', *Australian Star*, 26 October 1903, 3, http://nla.gov.au/nla.news-article228611179.
[198] 'Pyrmont Fire', *Australian Star*, 11 November 1903, 6, http://nla.gov.au/nla.news-article228613191; 'Pyrmont Fire', *Australian Star*, 12 November 1903, 6, http://nla.gov.au/nla.news-article228612288.

No	Occupant	Owner	Type	Material	Roof	Storeys	Rooms
41	Charles Hart	Eden George	Shop & house	Brick	Iron	2	6
43	Dupue	Eden George	House	Brick	Iron	2	6
45	J Cunningham	Eden George	House	Brick	Iron	2	6
47	Lever	Australian Mutual Provident Soc	House	Brick	Iron	2	6
49	W Candish	Australian Mutual Provident Soc	House	Brick	Iron	2	6
49a	Alfred Foys	Australian Mutual Provident Soc	House	Brick	Iron	2	6
51	Mary Leaver	Australian Mutual Provident Soc	House	Brick	Iron	2	5
53	August Newman	Australian Mutual Provident Soc	House	Brick	Iron	2	5
55	William Percy	H Reynolds	Shop & house	Brick	Iron	2	5
57	Margaret Wilson	Australian Mutual Provident Soc	House	Brick	Iron	2	5
59	Carl Nelson	Australian Mutual Provident Soc	House	Brick	Iron	2	5
61	Alfred Barnes	H H King	shop & house	Brick	Iron	2	6
63/65	Alice Rush	H H Streatfield	shop & house	Brick	Iron	2	10
67	Frank Lobo	Adam Wilson	shop & house	Brick	Iron	2	4
69	Edward Keogh	Union Bank of Aust	shop & house	Brick	Iron	2	4

While the 1907 *Assessment Books* wrongly noted all buildings as double storey structures, even though the buildings at 57 to 69 Union Street contained three, the entry shows that the site of the former hall now formed part of a row of five double storey terraced houses. This corresponds with the plan in Figure 74 and the photographs in Figure 75, Figure 77-Figure 78, and Figure 83. Various photographs showing the buildings during the 1910s and 1920s are also included below.

During that time, the occupants of buildings were the following, based on sample editions of the *Sands Directories*:

Table 10: Occupants of 57-69 Union Street, 1911 - 1929

No	1911	1915	1921	1926	1929
37	Young James, butcher	Young Arthur, butcher	Leimasar John, dining rooms	Gibbon Mrs. May, cafe	
39	Swanson Mrs. Susan, newsagent	Swanson, Mrs. Susan, newsagent	Swanson Mrs. Susan, newsagent	Dillon Mrs. S., smallgoods	Jorgensen Christian, smallgoods

No	1911	1915	1921	1926	1929
41	Callaghan Jack, tobacconist	Callaghan Jack, tobacconist	Callaghan Jack, tobacconist	Callaghan Mrs. J., tobacconist	
43	Shaw Henry, laundry	Shaw Henry, laundry	Cunningham John, bootmaker	McGregor Robert	
45		Shaw Henry, laundry	Abrahams Barnett, outfitter	Rivers Charles	
47	King William	Williams Charles	Balks John J.	Cunningham John	Cunningham John, boot repairer
49	Callaghan Mrs. Jane	Callaghan Mrs. Jane	Hackett John	Hawthorne Eric H.	
49a	Fors Mrs. Maria	Fors Mrs. Maria	Appleby George	Dye James	Williams Mrs. J.
51	Leaver Mrs. Mary	Leaver Mrs. Mary	Wilson Percy	Wilson Percy	Harvie Mrs. M.
53	Martin Alexander	Plummer Charles	Gibbons Miss Caroline	Kermode Mrs. G.	Kermode Mrs. O.
55	Macartney H. B., grocer	Plumber Charles, grocer		Tarrent George F.	
57	Bonnie Mrs. Susan	Alkins Frederick	Carter James	Carter Mrs. Helen	Borg J.
59	Osborne James	Plummer William	Carter Henry		Vaughan Mrs. J.
61	Clarke George, trunk manufacturer	Clarke George, dealer	Perry E., bag and sack dealer	Perry George, sack store	
63/65	Irvine Henry, bootmaker	Maher Miss E., confectioner (63) McCarthy M., bootmaker (65)	Carr James, storekeeper	Carr James, storekeeper	McInerney John, grocer
67	Gregerio Dinaro, fruiterer	O'Connor Arthur, hairdresser	Defries W. A., watchmaker		
69	Smart Alfred, Woonona Wine Bar	Clancy J. J., wine bar	Sullivan L., wine bar	Dunn David B., wine bar	Rowley Cecil, wine bar

On 28 June 1913, Sir Matthew Harris, who had by then become the owner of Block 59b, had transferred the site to his son, Arthur Leslie Harris.[199] Despite that, Matthew Harris was still noted as the owner of 37 to 69 Union Street in the 1914 *Assessment Book*.[200]

On 1 August 1929, J. D. Cowling, builder, applied to Council for consent to demolish the premises at 37/45 Union Street and Edward Street (BA 821/29).[201] The same applicant also submitted applications for demolition of the eight buildings on the Pyrmont Bridge Road frontage, while the buildings at 47 to 69 Union Street were not part of the site to be demolished at that time.[202]

[199] NSW LRS, PA 56103; Conveyance Bk 1007 no 871.
[200] City of Sydney Archives, *Assessment Books*, Pyrmont Ward – Union Street, 1914.
[201] City of Sydney Archives, *Planning Street Cards*, Union Street (1928-1994), Union St 37/45 Edward St.
[202] City of Sydney Archives, *Planning Street Cards*, Pyrmont Bridge Road (1928-1994), Cnr Pyrmont Bridge Rd & Edward St.

The buildings at 37 to 45 Union Street appear to have been demolished in early 1930, as the 1930 *Assessment Books* noted the site as vacant land.[203] The buildings at 47 to 69 Union Street remained occupied, however, on 17 October 1930, S. J. Harrison submitted a building application for demolition of the premises at 47 to 55 Union Street (BA 1015/30), followed by an application for a fence on 17 November 1930 (BA 1104/30). A "monster building material sale" of building materials from five demolished houses at 47 to 53 Union Street was held on 16 October 1930.[204] The photographs in Figure 83 and Figure 84 show demolition of these buildings underway in October 1930. On 12 December 1930, Harrison also applied for demolition of 57 and 59 Union Street (BA 1172/30), with demolition likely carried out in early 1931, as the 1932 *Sands Directory* no longer listed these buildings.

By 1933, the *Assessment Books* only noted the four buildings at 61, 63-65, 67 and 69 Union Street as extant, as well as the double storey shop at 2 Pyrmont Bridge Road. The wine saloon on the corner was noted as being owned by Caldwell's Wines Limited in 1933.

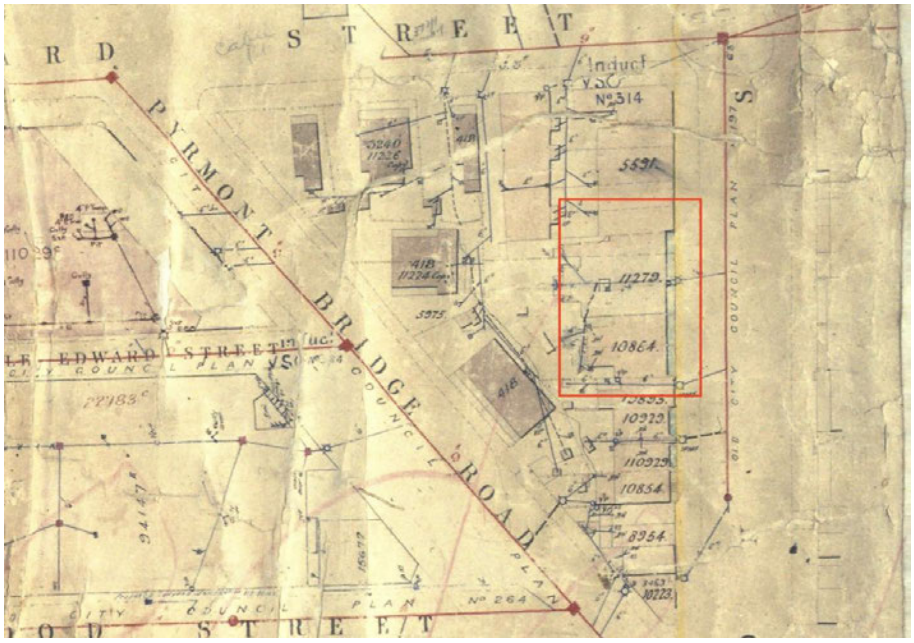


Figure 74: Detail from Blackwattle Sheet, prepared by the Board of Water Supply and Sewerage, 1908 (with later updates), showing that the hall has been demolished and replaced with double storey terraces (now five in total, area outlined). The blacksmith's shop to the rear of 37-45 Union Street was still standing by then. (Source: Sydney Water Archives, BLKWTL 3716)

[203] City of Sydney Archives, *Assessment Books*, Pyrmont Ward – Union Street, 1930.
[204] 'Advertising', *Sydney Morning Herald*, 11 October 1930, 10, http://nla.gov.au/nla.news-article16721541.



Figure 75: 8 September 1916 – Photograph of dwellings at 47-59 Union Street, Pyrmont, with workers working on the parapet. From Demolition Books. In c1905, these terraces replaced the former hall which was once located at 49/49a Union Street, before being gutted by fire in 1903. It is unclear what works were carried out to the terraces at that time, as double storey houses continued to be located at the site until the early 1930s (Source: City of Sydney Archives, Dwellings, Union St (47-59), Pyrmont, 8 September 1916 (08/09/1916), [A-00036813]. https://archives.cityofsydney.nsw.gov.au/nodes/view/663180)



Figure 76: c1920s – Looking south from Edward Street, across Union Street, with the verandah structure of the corner building at 37 Union Street just visible on the right. Said to date from 1931, however, the verandah structure was already gone by 1929, see Figure 81 (Source: City of Sydney Archives, Edward Street, Pyrmont (01/01/1931 - 31/12/1931), [A-00011914]. https://archives.cityofsydney.nsw.gov.au/nodes/view/572559)

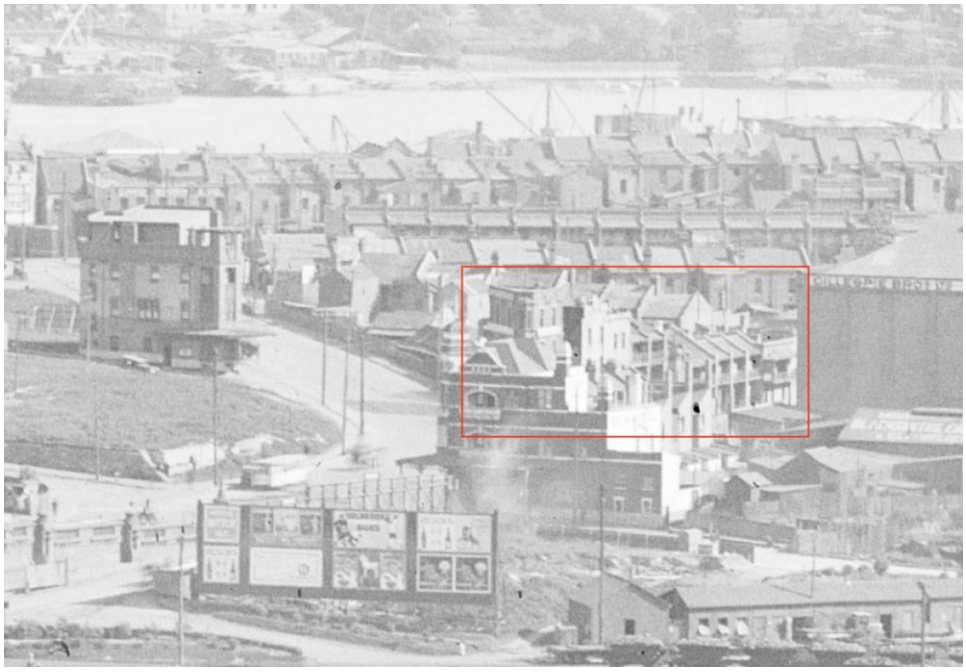


Figure 77: c1920s – Detail from 'Panorama of Darling Harbour and Pyrmont bridge from the city', by A. E. Foster, ca 1916-1947, with the Union Street buildings outlined. Gillespie Brothers Flour Mill, on the right, was constructed c1921 (Source: SLNSW, Series 06: Sydney Views, Box 32 No. 360, FL410934. https://collection.sl.nsw.gov.au/record/nX6OPA8Y/04wlNBGeVg0OD#viewer)

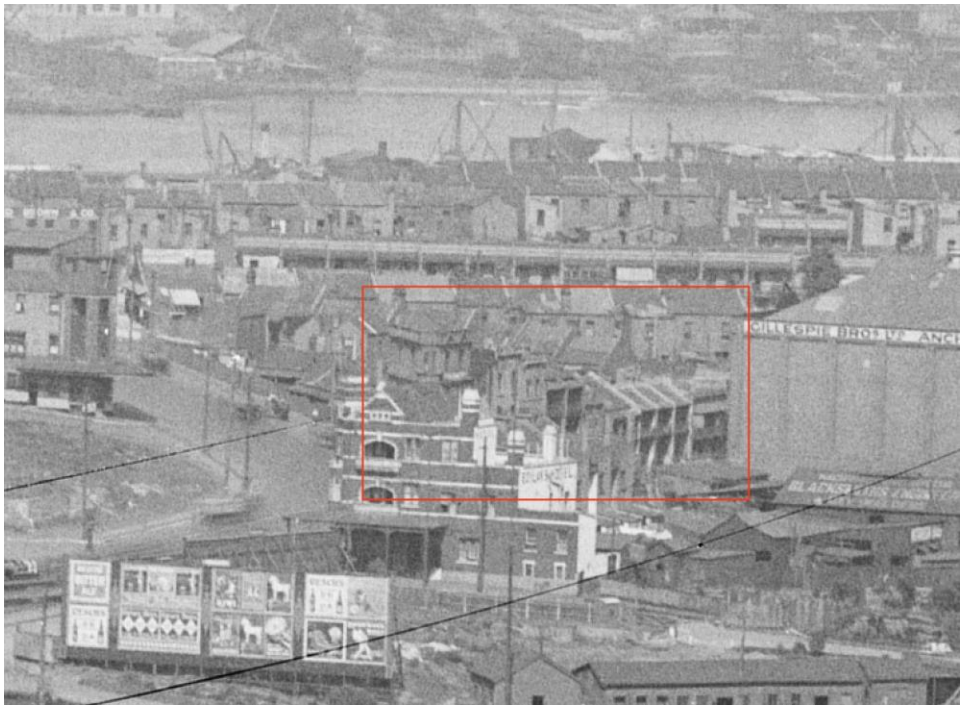


Figure 78: c1920s – Detail from 'Panorama of Darling Harbour and Pyrmont bridge from the city', by A. E. Foster, ca 1916-1947, with the Union Street buildings outlined. Gillespie Brothers Flour Mill, on the right, was constructed c1921 (Source: SLNSW, Series 06: Sydney Views, Box 32 No. 359, FL410934. https://collection.sl.nsw.gov.au/record/nX6OPA8Y/r3RDxyrxpR7BZ)



Figure 79: 1920s – 'Aerial view of Pyrmont Bridge and wharves', with the Eastern Construction Site area at centre (Source: NLA, PIC/15611/15348, Fairfax archive, https://nla.gov.au/nla.obj-163003956)



Figure 80: c1920s – Aerial photograph by Milton Kent, said to date from 1932 but all buildings are still standing, suggesting a date prior to 1930 (Source: SLNSW, Milton Kent aerial views of Sydney, 1932, FL8812118, https://archival.sl.nsw.gov.au/Details/archive/110367483)



Figure 81: 2 August 1929 – The store at the corner of Union and Edward Streets is for sale (Source: City of Sydney Archives, 37-45 Union Street, Pyrmont (02/08/1929), [A-00037606]. https://archives.cityofsydney.nsw.gov.au/nodes/view/663973)



Figure 82: 1930 – Detail from aerial view showing the buildings on Union Street shortly prior to demolition. The blacksmith's workshop to the rear of 37 to 45 Union Street is no longer standing (Source: Fairfax Corporation. (1930). Aerial view of Darling Harbour showing Pyrmont Bridge closing following passage of a ship, Sydney, ca. 1930s. http://nla.gov.au/nla.obj-163204711)



Figure 83: 20 October 1930 – Houses being demolished at Union Street, near corner of Edward Street. The shop on the left was located at 55 Union Street, however, the numbering of houses to the west (on right) was not always consistent (Source: City of Sydney Archives, Houses being demolished (20/10/1930), [A-00037644]. https://archives.cityofsydney.nsw.gov.au/nodes/view/664011)



Figure 84: 20 October 1930 – Shops and houses being demolished at Union Street, near corner of Edward Street. Shop at 55 Union Street bearing date 1881 (Source: City of Sydney Archives, Shop and houses being demolished (20/10/1930), [A-00037643]. https://archives.cityofsydney.nsw.gov.au/nodes/view/664010)



Figure 85: 1930 – Aerial view by Milton Kent, showing the site after demolition of the buildings on the corner of Union and Edward Streets. The image is said to have been taken in 1932, however, by then all the buildings had been demolished (Source: SLNSW, Milton Kent aerial views of Sydney, 1932, FL8812121, https://archival.sl.nsw.gov.au/Details/archive/110367483)

2.6.2.3 Development of 68-74 Edward Street (c1878-1930)

On the Edward Street frontage of the triangular block, four double-storey timber houses were constructed in c1878, and the *Sands Directory* listed boatbuilder P. O'Sullivan, engineer W. Middleton, schoolmaster S. Pegum and engineer Joseph Rose for the first time on the eastern side of Edward Street in 1879.[205]

The Assessment Books for 1880 noted the four houses at 68 to 74 Edward Street as double storey timber buildings with iron roofs, each containing five or six rooms.206 Photographs and plans show that 68 and 74 Edward Street were freestanding buildings, while 70-72 Edward Street were semi-detached (Figure 65 -Figure 67 and Figure 85-Figure 87). Outbuildings were located to the rear.

By 1882, the *Assessment Books* noted the (leasehold) owner of all four buildings as Mills & Pile, corresponding with entries for Union Street and Pyrmont Bridge Road (see Sections 2.6.2.2.1 and 2.6.2.4).[207] It is likely that the timber buildings were primarily used as residences. While some commercial activity may have been conducted from these sites, occupations of the persons listed at these addresses were only rarely given in the relevant *Sands Directories*. Occupancies changed frequently over time, with the following occupants listed at 68 to 74 Edward Street in the *Sands Directories* from 1883 to 1895 (occupations are noted, where known):

Table 11: Occupants 68-74 Edward Street, 1883-1895

No	Occupant	Year
	Not listed	1883
	Calcraft, George	1884
68	Miller, John, carpenter	1885-1886
	Webb, John	1887-1888
	Brook, Robert, sawyer	1889-1895

[205] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Edward Street, Pyrmont – East side, 1879.
[206] City of Sydney Archives, *Assessment Books*, Denison Ward – Edward Street, 1880.
[207] City of Sydney Archives, *Assessment Books*, Denison Ward – Edward Street, 1882.

No	Occupant	Year
70	Bulgar, George O'Sullivan, Peter Calcraft, William, stonemason Jarvis John Johnston Nixon J. Anderson Andrew	1883 1884 1885-1887 1888-1892 1893-1894 1895
72	Goursat, Ulysses, engineer Not listed Claesson, Johan T.	1883-1890 1891-1892 1892-1895
74	James, Henry Heaton James Potter, Thomas Heaton James W.	1883-1886 1887-1893 1894 1895

While the 1891 *Assessment Book* still noted Mills & Pile as the owners of the leasehold, by 1896, the owner was noted as a certain 'Hancock'.[208] There appears to have been no change to the buildings, and from the late 1890s, the *Sand*s did not list any occupations of persons listed, suggesting that any commercial uses, if present earlier, had ceased by then, and the buildings were primarily used as dwellings.[209]

In the 1907 edition of the *Assessment* Books, the leasehold owner was given as Cecil W. Darley, who was still noted as the lessee in 1914, when the owner of the four houses was listed as Matthew Harris.[210] Darley was still the lessee in 1918, when Arthur L. Harris was noted as the owner of the four double storey timber houses with iron roofs.

On 10 September 1929, J. D. Cowling, builder, applied to Council for consent to demolish 8 houses on the corner of Pyrmont Bridge Road and Edward Street (BA 1005/29).[211] This included the four cottages on Pyrmont Bridge Road as well as the four houses on Edward Street. The 1930 *Assessment Book* still noted all four buildings on Edward Street, however, only the house at No. 74 was occupied.[212] The *Sands Directory* no longer listed the buildings in its 1930 edition and the 1933 *Assessment Book* no longer listed the site, instead referring to it as part of 'land' at 37-59 Union Street.[213]

On 12 September 1930, Blundell and Brown submitted a building application (BA 911/30) for a fence at the site on the corner of Pyrmont Bridge Road and Edward Street, suggesting that the demolition of the buildings was carried out at around that time and the fencing was required to secure the vacant site from intruders.[214] Photographs showing the buildings in the 1920s and shortly prior to demolition in 1930 are included in Figure 86-Figure 88 below.

[208] City of Sydney Archives, *Assessment Books*, Denison Ward – Edward Street, 1891 and 1896.
[209] From around 1899, the *Sands Directory* intermittently listed additional persons immediately to the east of the four houses, at numbers 2 to 6. However, the 1924 *Assessment Books* noted 2 Pyrmont Bridge Road, listing it for the first time, as a double storey brick house with cellar, suggesting that this was part of the corner building on Union Street, see Section 2.6.2.2.4.
[210] City of Sydney Archives, *Assessment Books*, Pyrmont Ward – Edward Street, 1907 and 1914.
[211] City of Sydney Archives, *Planning Street Cards*, Pyrmont Bridge Road (1928-1994), Cnr Pyrmont Bridge Rd & Edward St.
[212] City of Sydney Archives, *Assessment Books*, Pyrmont Ward – Edward Street, 1930.
[213] City of Sydney Archives, *Assessment Books*, Phillip Ward – Edward Street and Union Street, 1933.
[214] City of Sydney Archives, *Planning Street Cards*, Pyrmont Bridge Road (1928-1994), Cnr Pyrmont Bridge Rd & Edward St.

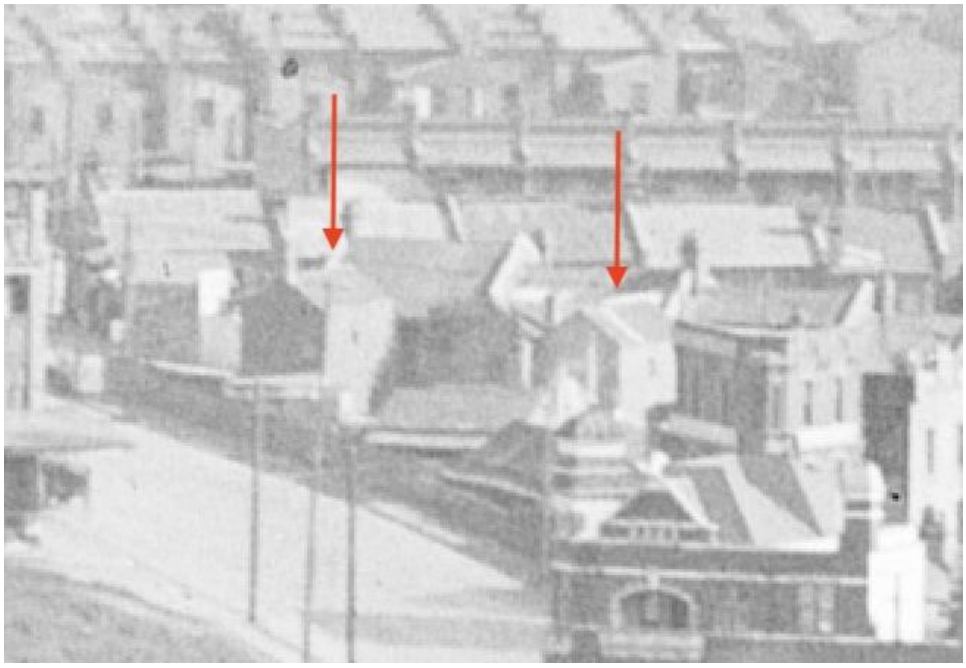


Figure 86: c1920s – Detail from 'Panorama of Darling Harbour and Pyrmont bridge from the city', by A. E. Foster, ca 1916-1947, with two of the gabled buildings on Edward Street noted by the arrow. (Source: SLNSW, Series 06: Sydney Views, Box 32 No. 360, FL410934. https://collection.sl.nsw.gov.au/record/nX6OPA8Y/04wlNBGeVg0OD#viewer)



Figure 87: 2 August 1929 – Corner of Union and Edward Streets, showing buildings on Edward Street on the right (Source: City of Sydney Archives, 37-45 Union Street, Pyrmont (02/08/1929), [A-00037607]. City of Sydney Archives, accessed 17 Jan 2022, https://archives.cityofsydney.nsw.gov.au/nodes/view/663974)



Figure 88: 1930 – Detail from aerial view showing the four gabled buildings on Edward Street shortly prior to demolition (Source: Fairfax Corporation. (1930). Aerial view of Darling Harbour showing Pyrmont Bridge closing following passage of a ship, Sydney, ca. 1930s. http://nla.gov.au/nla.obj-163204711)

2.6.2.4 Development of 8 to 14 Pyrmont Bridge Road (c1878-1930)

On the Pyrmont Bridge Road frontage of the Eastern Construction Site, four single-storey timber houses were constructed in c1878, and the *Sands Directory* listed constable Thomas Cootes, butcher William H. Steel, master mariner Jacob Condio, and toll collector Richard Peisley as the only occupants on the northern side of Pyrmont Bridge Road in 1879, as the first listing for the street.[215]

The next *Sands* listing in 1880 noted Thomas Coates (note the different spelling) as a drayowner, followed by William Steele (also with different spelling) and Horatio Walpole, who was also a butcher, trading from the corner shop on Union and Edward Streets at that time (see Section 2.6.2.2.1).

The *Assessment Books* for 1880 still noted the four houses as the only four buildings on Pyrmont Bridge Road. Numbered at 158 to 164 Pyrmont Street, starting at Union Street, these were single storey buildings with iron roofs, each containing four rooms.[216] Plans and photographs suggest that they were in fact two pairs of semi-detached cottages with verandahs (Figure 65 - Figure 67). They were located on irregularly shaped allotments, separated by fences, and an irregular black line running behind the buildings may have denoted the presence of a creek. The (leasehold) owner of the buildings was noted as Bull & Co in the 1880 *Assessment Books,* and the occupants were listed as Thomas Coates (No. 164); H. W. Steel (No. 162); Horatio Walpole (No. 160); and Richard Peisley (No. 158).

By 1881, the numbering had changed and was now increasing from Union Street, from 164 to 170 Pyrmont Bridge Road. While Thomas Coate (different spelling again), van proprietor, was still located at No. 164, James Heaton now occupied No. 166 to the west, and William Duval, master mariner, occupied No. 168, while No. 170 was not listed in the 1882 *Sands Directory*.[217]

The 1882 *Assessment Books* noted the (leasehold) owner of all four buildings as Mills & Pile, corresponding with the entries on Union and Edward Streets (see Sections 2.6.2.2.1 and 2.6.2.3).[218] It

[215] City of Sydney Archives, *Sands Sydney Directory*, City Directory – Pyrmont Bridge Road – North side, 1879.
[216] City of Sydney Archives, *Assessment Books*, Denison Ward – Pyrmont Bridge Road, 1880.
[217] The 1882 *Sands Directory* listed the buildings on the wrong (south) side of the road.
[218] The old numbering was still used in the 1882 *Assessment Books* for the Denison Ward.

is likely that the four timber buildings at 164 to 170 Pyrmont Bridge Road were primarily used as residences, however, some commercial activity may have been conducted from these sites. Occupancies changed frequently over time and the following persons were listed in the *Sands Directories* from 1883 to 1895, with a change of numbering occurring in 1889 (occupations are given, where known):

Table 12: Occupants 8-14 Pyrmont Bridge Road, 1883-1895

No (until 1889)	No (from 1890)	Occupant	Year
164	8	Elder William, blacksmith Finn, John Burns, Patrick, van proprietor Burlow, Charles Smith, David Potter, Thomas Heaton, James Taylor, James	1883 1884-1885 1886-1888 1889 1890-1892 1893 1894 1895
166	10	Eaton, John and Turner, William, engineer Heaton, James, carter Johnston, Nixon, carter Kelly, Joseph Nicholas, Henry, woodcarver Reid, George	1883 1884-1886 1887 1888 1889-1894 1895
168	12	Loventure, - and Reid, George, boatbuilder Johnston, N., [carter] Lewis, Jack Jack, Mrs. A. Johnson Charles	1883 1884-1886 1887-1892 1893-1894 1895
170	14	Phillips, Stephen J., commission agent Miller, William	1884-1891 1892-1895

While the 1891 *Assessment Book* still noted Mills & Pile as the owners of the leasehold, by 1896, the Australian Joint Stock Bank had taken over the lease.[219] There appears to have been no change to the buildings, and from the late 1890s, the *Sands* did not list any occupations of persons listed, suggesting that any commercial uses, if present earlier, had ceased by then, and the buildings were primarily used as dwellings.[220]

In the 1907 edition of the *Assessment* Books, the leasehold owner was given as Cecil Darley, who was still noted as the lessee in 1911 and 1914, when the owner of the four houses was listed as Matthew Harris.[221] By 1918, the lessees were George and Rebecca Morris, with Arthur L. Harris noted as the owner of the four cottages.

On 10 September 1929, J. D. Cowling, builder, applied to Council for consent to demolish 8 houses on the corner of Pyrmont Bridge Road and Edward Street (BA 1005/29).[222] This included the four cottages on Pyrmont Bridge Road as well as the four houses on Edward Street. The 1930

[219] City of Sydney Archives, *Assessment Books*, Denison Ward – Pyrmont Bridge Road, 1891 and 1896.
[220] From around 1899, the *Sands Directory* intermittently listed additional persons immediately to the east of the four houses, at numbers 2 to 6. However, the 1924 *Assessment Books* noted 2 Pyrmont Bridge Road, listing it for the first time, as a double storey brick house with cellar, suggesting that this was part of the corner building on Union Street, see Section 2.6.2.2.4.
[221] City of Sydney Archives, *Assessment Books*, Pyrmont Ward – Pyrmont Bridge Road, 1907, 1911 and 1914.
[222] City of Sydney Archives, *Planning Street Cards*, Pyrmont Bridge Road (1928-1994), Cnr Pyrmont Bridge Rd & Edward St.

Assessment Book still noted all four buildings on Pyrmont Bridge Road, with those at No. 8 and No. 10 occupied, however, the *Sands Directory* no longer listed the buildings in its 1931 edition and the 1933 *Assessment Book* no longer listed the site, instead referring to it as part of 'land' at 37-59 Union Street.[223]

On 12 September 1930, Blundell and Brown submitted a building application (BA 911/30) for a fence at the site on the corner of Pyrmont Bridge Road and Edward Street, suggesting that the demolition of the buildings was carried out at around that time and the fencing was required to secure the vacant site from intruders.[224] Photographs showing the buildings in the 1920s and shortly prior to demolition in 1930 are included in Figure 89 and Figure 90 below.

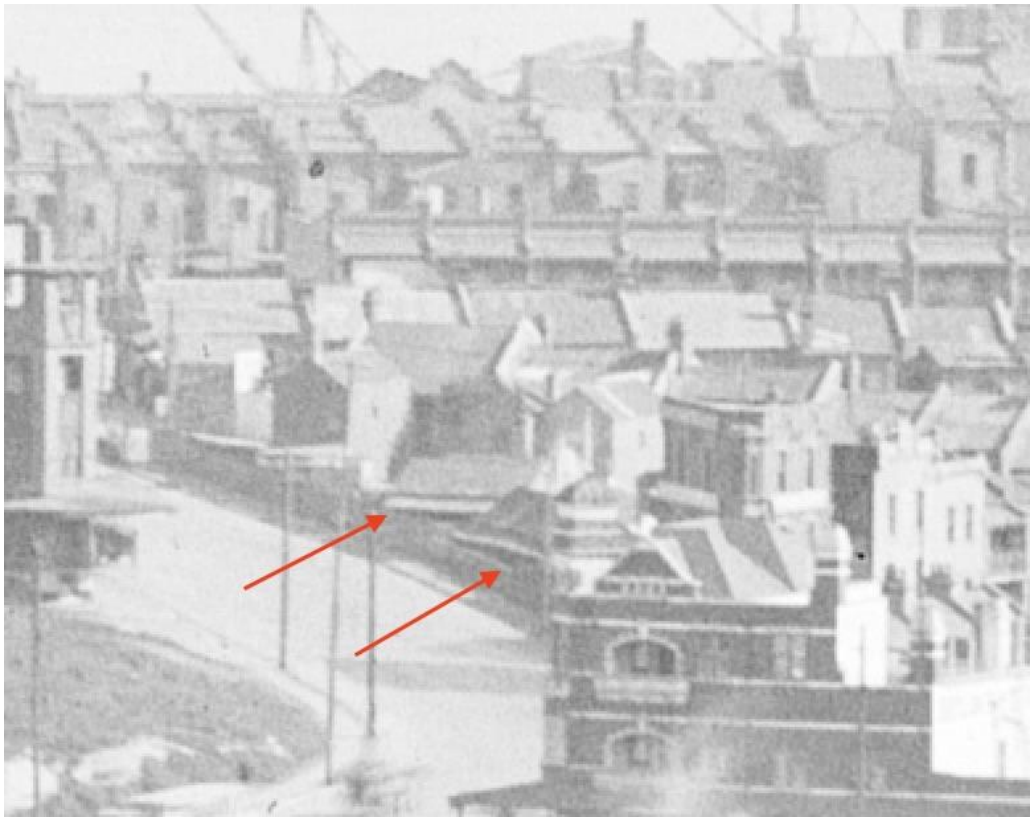


Figure 89: 1920s – Detail from 'Panorama of Darling Harbour and Pyrmont bridge from the city', by A. E. Foster, ca 1916-1947, with the buildings at 8 to 14 Pyrmont Bridge Road indicated by the arrow (Source: SLNSW, Series 06: Sydney Views, Box 32 No. 360, FL410934. https://collection.sl.nsw.gov.au/record/nX6OPA8Y/04wlNBGeVg0OD#viewer)

[223] City of Sydney Archives, *Assessment Books*, Pyrmont Ward – Pyrmont Bridge Road, 1930; Phillip Ward – Union Street and Pyrmont Bridge Road, 1933.
[224] City of Sydney Archives, *Planning Street Cards*, Pyrmont Bridge Road (1928-1994), Cnr Pyrmont Bridge Rd & Edward St.



Figure 90: 1930 – Detail from aerial view showing the single storey semi-detached cottages on Pyrmont Bridge Road, indicated by the red arrows, shortly prior to demolition (Source: Fairfax Corporation. (1930). Aerial view of Darling Harbour showing Pyrmont Bridge closing following passage of a ship, Sydney, ca. 1930s. http://nla.gov.au/nla.obj-163204711)

2.6.3 Phase 3 (1930-1986) – Timber and builders' yard, car park and service station

2.6.3.1 Development of 37-61 Union Street as timber and builders' yard (1930-1954)

After the buildings at 37 to 59 Union Street, and the houses on Edward Street and Pyrmont Bridge Road had been demolished by 1931, that portion of the site became a timber yard. On 5 October 1932, a building application was submitted to erect fence hoarding around the site (BA 540/32).[225] While in 1933 the site was unoccupied, the 1936 and 1939 *Assessment Books* noted H. C. Corfe, or Herbert Corfe, as the occupant of the land and office at 37-61 Union Street.[226] It is possible that Corfe used the existing three-storey building at 61 Union Street as his office, while using the vacant land to store timber. This timber yard use is noted on the plans included in Figure 93-Figure 94 and Figure 97.

By 1945, Corfe was no longer listed, and in 1947, United Distillers Pty Ltd submitted an interim development application for a three or four storey factory at the site, for their bottling department (IDA 75/1947).[227] At that time, in June 1947, the site was noted as being mainly used as a storage yard and workshop by Hornibrook McKenzie & Clark, contractors for the New Pyrmont Power Station. They were also said to occupy a corrugated iron and timber workshop on the corner of Union and Edward Streets, likely erected on the site during the 1930s. Although the interim development application was approved, construction of the new factory building did not go ahead. The corrugated iron and timber workshop in the north-western corner is shown in the 1949 aerial in Figure 98. By 1949, another building had been constructed on the Pyrmont Bridge Road frontage, likely used as a workshop or storage shed. It is shown in the plan in Figure 97 and in the 1949 aerial in Figure 98.

[225] City of Sydney Archives, *Planning Street Cards*, Pyrmont Bridge Road (1928-1994), Pyrmont Bridge Rd, 65/69 Union St & Edward St.
[226] City of Sydney Archives, *Assessment Books*, Phillip Ward – Union Street, 1933, 1936 and 1939.
[227] City of Sydney Archives, IDA 75/1947, 'Proposed Factory Building, Pyrmont Bridge Rd, Union St & Edward St for United Distillers Pty Ltd. Cf. City of Sydney Archives, *Assessment Books*, Phillip Ward – Union Street, 1945.

By 1948, Herbert Corfe was noted as the occupant of the site again, however, two years later, on 19 May 1950, another interim development application (IDA 349/50) was submitted for the property.[228] The application was for a proposed cellar and macaroni factory and offices for M. Fiorelli Pty Ltd. The application form noted "a few old timber sheds and 2 very old houses unfit for habitation" on the otherwise vacant site which excluded the corner shop at 69 Union Street. One of the two remaining (three storey) buildings on Union Street was said to be four storeys, which suggests that it may have contained a basement/cellar. The ground floor shops of this four-storey part were said to be disused, while the remaining portion was used for residential purposes. A sketch plan identifying these buildings is included in Figure 99.

A formal lease agreement between Arthur Leslie Harris and Fiorelli Pty Ltd for a lease term of 99 years was registered on 1 March 1951.[229] A sketch plan showing the footprint of the proposed new factory is shown in Figure 100. Although approval was granted on 13 June 1950, the work did not go ahead. Instead, the building inspector noted on 23 January 1951 that the vacant land was used by James Wallace & Sons, builders, in connection with the construction of the new power station nearby, and the situation was unchanged in August 1951. In February 1953, a development application was submitted for temporary sheds and builders' offices in timber yard, which was again used by Hornibrook McKenzie Clark Pty Ltd who had a major contract for the Pyrmont 'B' Power Station.[230] This suggests that the site continued to be used as a builders' yard and for storage of machinery and materials at least until the site was subdivided in 1954.



Figure 91: 1932 – Aerial view by Milton Kent, showing the subject block at centre largely vacant and surrounded by fencing and hoarding, with three buildings remaining standing on the corner of Union Street and Pyrmont Bridge Road (Source: SLNSW, Milton Kent aerial views of Sydney, 1932, FL8812119, https://archival.sl.nsw.gov.au/Details/archive/110367483)

[228] City of Sydney Archives, IDA 349/50 Correspondence File, 'Cnr Bridge Rd., Union St & Edward St, Pyrmont – Erection of factory & office building – M. Fiorelli Pty Ltd – Interim Development Application.'; cf. 2866/50, 'Premises, Site bounded by Pyrmont Bridge Rd, Union St & Edward St. M. Fiorelli Pty Ltd – Demolition of two (2) dwellings & sheds & erection of building for use as factory, store & offices'; City of Sydney Archives, *Assessment Books*, Phillip Ward – Union Street, 1948.
[229] NSW LRS, PA 56103; Deed Bk 2165 No 193.
[230] City of Sydney Archives, *Planning Street Cards*, Union Street (1928-1994), 37/61 Union Street & 68/71 Edward St & 14 Pyrmont Bridge Rd. Cf. 'A Major Building Job: Hornibrook Mackenzie Clark's Work at Pyrmont "B" Power Station', *Building, Lighting and Engineering*, 24 February 1954, 46, http://nla.gov.au/nla.obj-299925342.



Figure 92: 1932 – Aerial view by Milton Kent, showing the subject block at centre largely vacant and surrounded by hoarding, with three buildings remaining standing on the corner of Union Street and Pyrmont Bridge Road (Source: SLNSW, Milton Kent aerial views of Sydney, 1932, FL8812120, https://archival.sl.nsw.gov.au/Details/archive/110367483)

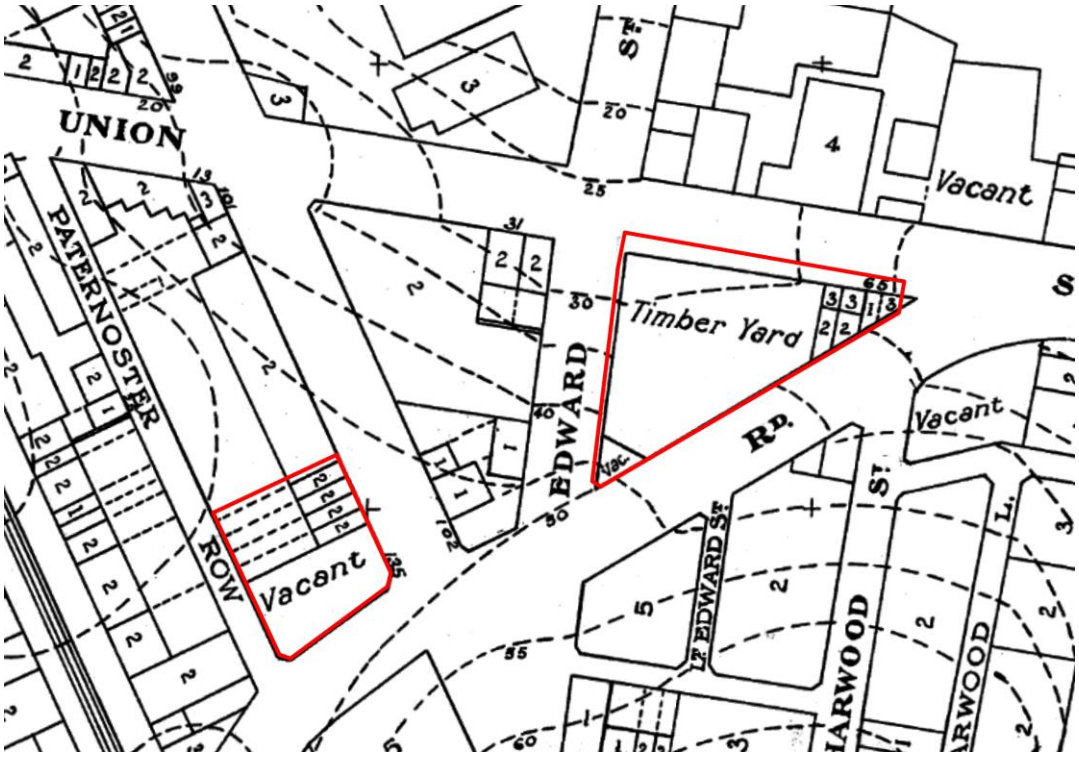


Figure 93: 1938-39 – Detail from City of Sydney Civic Survey, Map 17, with the triangular site noted as a timber yard (Source: City of Sydney Archives, City of Sydney - Civic Survey, 1938-1950: Map 17 – Pyrmont, [A-00880354]. https://archives.cityofsydney.nsw.gov.au/nodes/view/1709281)

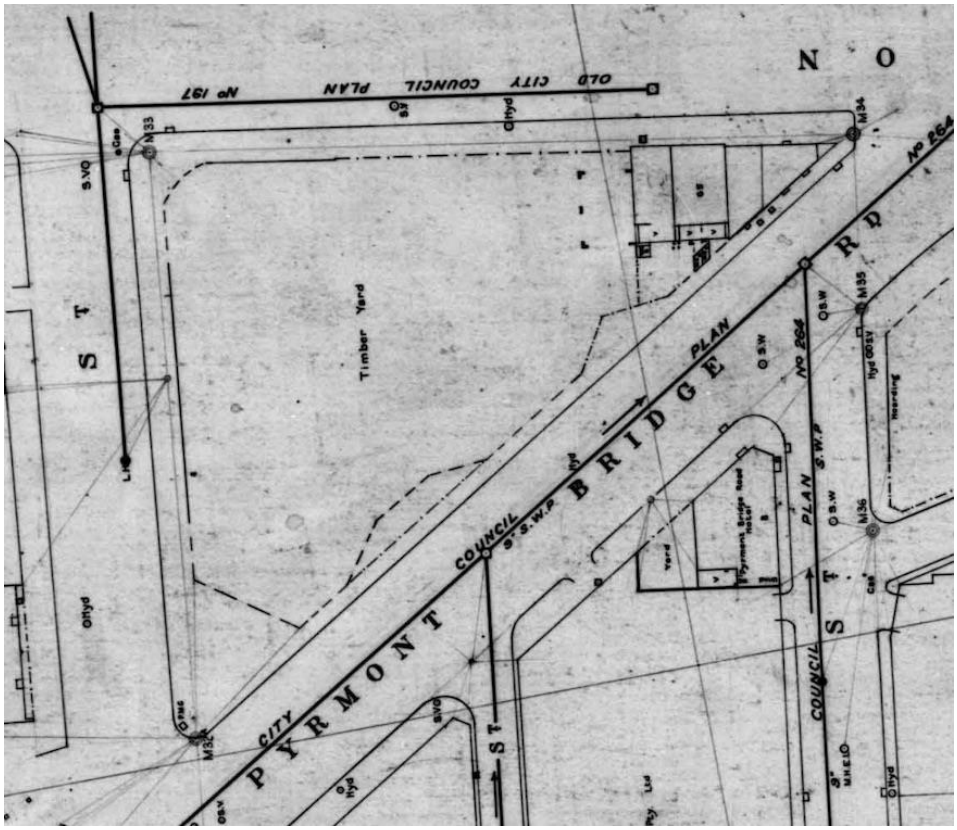


Figure 94: 1940 – Detail from City of Sydney Detail Sheets, K3, based on a survey dated September 1940, with the site noted as a timber yard surrounded by hoarding (Source: Sydney Water Archives, DTS 2674)



Figure 95: circa early 1940s – Streetscape at the corner of Union Street (at front) and Pyrmont Bridge Road, showing existing corner buildings and hoarding (Source: Sydney Living Museums, Caroline Simpson Library & Research Collection, Record No. 31219, http://collection.hht.net.au/firsthhtpictures/picturerecord.jsp?recno=31219)



Figure 96: 1943 – Aerial photograph showing the site in use as a timber and storage yard. Note that access appears to have been from Edward Street. Hoarding is in place around the site, with the buildings on the corner of Union Street and Pyrmont Bridge Road still standing (Source: NSW LRS, SIX Maps, 1943 aerial imagery)

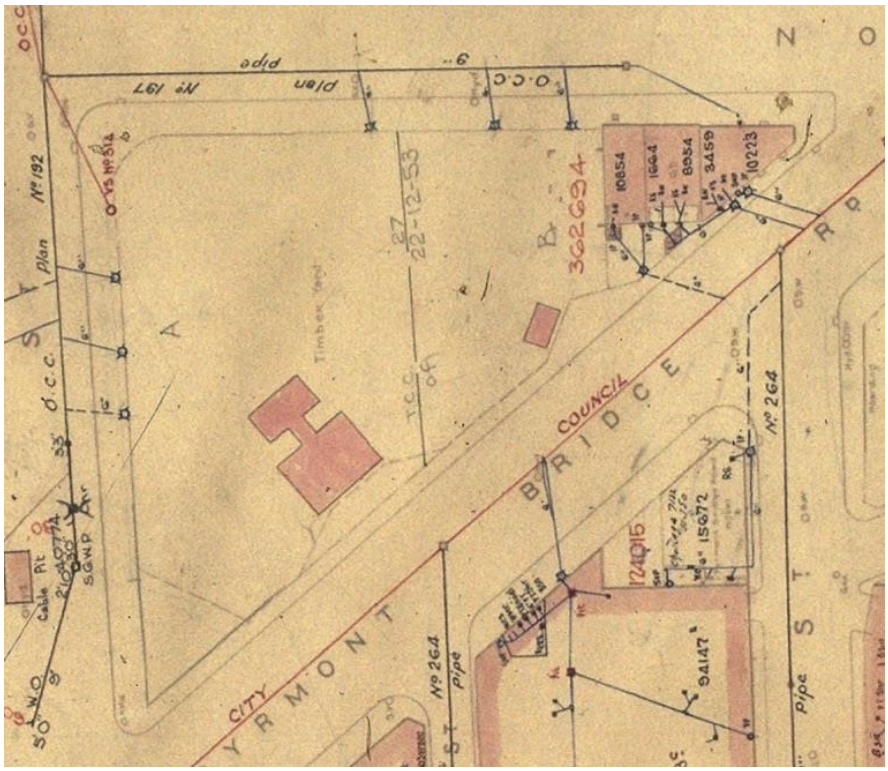


Figure 97: 1940s – MWS & DB survey made in September 1940 and renewed in April 1949, showing the location of the extant buildings on the corner of Union Street and Pyrmont Bridge Road, and the hoarding around the timber yard, with a building noted on the Pyrmont Bridge Road frontage (Source: Sydney Water Archives, BLKWTL 3716-4)

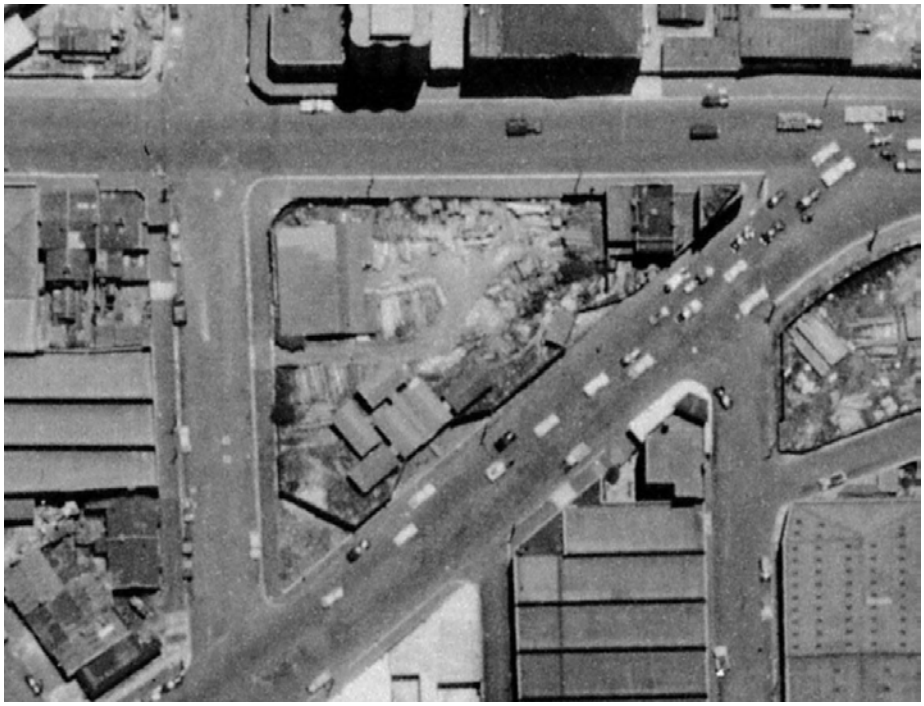


Figure 98: 15 December 1949 – Aerial photograph showing the site with several buildings, including those shown in the 1940s survey above. The building in the upper left (north-western) corner of the site was likely a corrugated iron and timber workshop. Several other, smaller sheds are located at the site (Source: City of Sydney Archives, A-00879983, City of Sydney Aerial Photographic Survey 1949: Image 38)

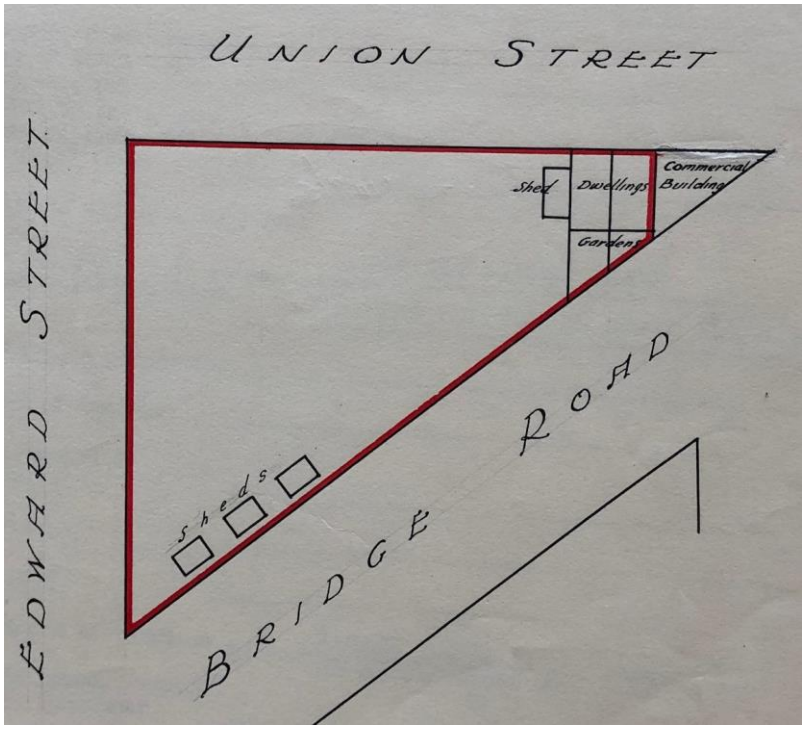


Figure 99: 1950 – Sketch plan noting the existing buildings at the site, including three sheds on the Pyrmont Bridge Road frontage, however, this was likely extremely indicative only (Source: City of Sydney Archives, 2866/50, 'Premises, Site bounded by Pyrmont Bridge Rd, Union St & Edward St. M. Fiorelli Pty Ltd – Demolition of two (2) dwellings & sheds & erection of building for use as factory, store & offices.')

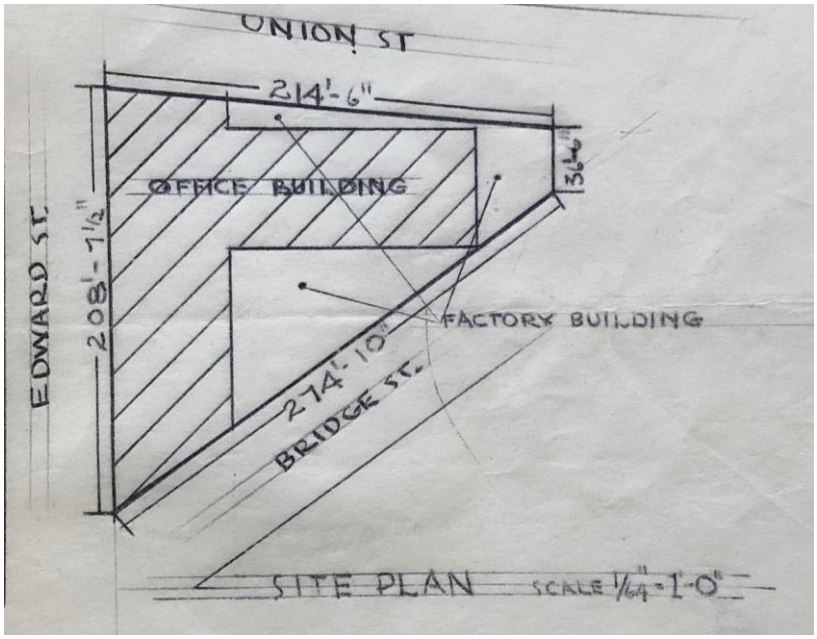


Figure 100: 1950 – Sketch plan for the proposed new factory, submitted by Fiorelly Ltd Ptd as part of IDA 349/50. This development did not go ahead (Source: City of Sydney Archives, IDA 349/50 Correspondence File, 'Cnr Bridge Rd., Union St & Edward St, Pyrmont – Erection of factory & office building – M. Fiorelli Pty Ltd – Interim Development Application.')



Figure 101: March 1954 – Photograph of the Pyrmont Power Station, by Max Dupain, showing part of the hoarding at the corner of Union and Edward Streets (Source: SLNSW, FL19484880, https://collection.sl.nsw.gov.au/record/nvgPBWJ1)

2.6.3.2 Site subdivision for lease purposes (1953)

On 22 December 1953, a certificate was issued by the Town Clerk for the subdivision of the site owned by Arthur Leslie Harris.[231] The subdivision created two allotments, known as Lot A and Lot B. This excluded the site occupied and owned by Caldwell's Wines on the corner of Union Street and

[231] NSW LRS, Deed Bk 2396 No 85.

Pyrmont Bridge Road that remained on its own, much smaller allotment. The plan of subdivision by Colwell & Larcombe, registered surveyors, is included in Figure 102.

The subdivision was specifically for lease purposes only. While the overall leasehold remained in the ownership of Fiorelli Pty, a sublease to Vacuum Oil Co Pty Ltd was registered from 1 July 1955, for a term of 30 years.[232] Vacuum Oil Co Pty Ltd acquired 69 Union Street, on the corner of Union Street and Pyrmont Bridge Road, which had been owned by Caldwells Wines Ltd since 1920, on 15 September 1955.[233] By that time, two development applications for the remainder of the site had been submitted to Council.

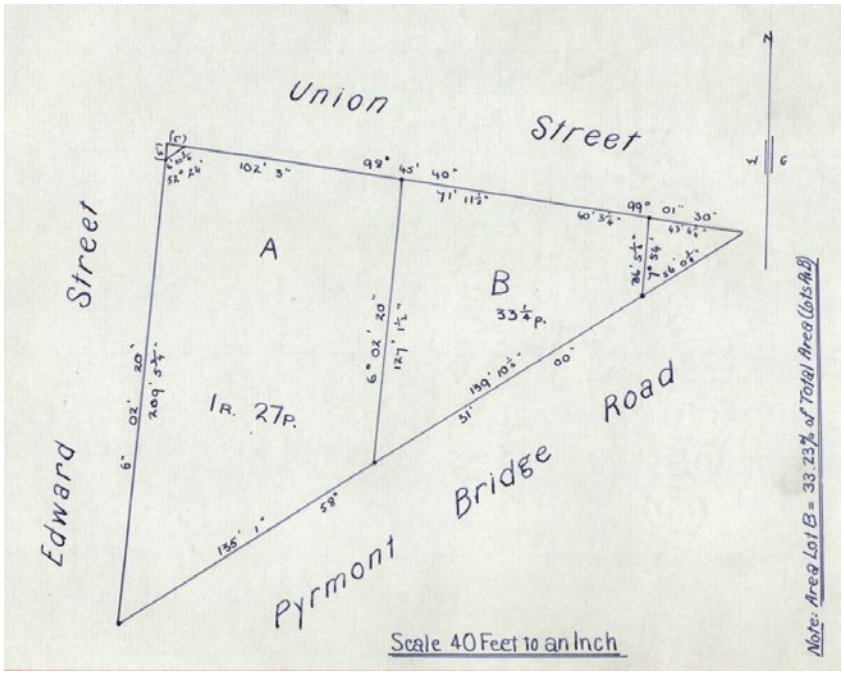


Figure 102: 1953 – Plan showing the subdivision of the site owned by Arthur Leslie Harris into two allotments (A and B), excluding the corner allotment at top right, for lease purposes (Source: NSW LRS, Deed Bk 2396 No 85)

2.6.3.3 Car park, parking station and service station (1954-1986)

On 27 February 1954, Lyell Boyd Pratt, of Randwick, sought permission to use both allotments (A and B) as a car park for privately owned vehicles (DA 189/1954).[234] This was the first development application after the 1953 subdivision. The application form noted that Pratt intended to lease the land and use the vacant site "until such time as owner may require same for building."[235] No buildings were proposed for the land which was described as having previously been used as a timber yard but was no longer in use. The existing buildings were to be retained as part of that scheme. The application was approved on 3 May 1954, but the site remained unoccupied until at least March 1955. Instead, another development application was submitted for part of the site, for use as a petrol station. With this application, the development of the site known as 61-69 Union Street and Pyrmont Bridge Road and that of the western portion fronting Edward Street became separate.

2.6.3.3.1 Mobil service station at 61-69 Union Street and Pyrmont Bridge Road (1954-1986)

On 15 September 1954, Vacuum Oil Company submitted a development application (DA 804/54) for the erection of a two-level service station at Pyrmont Bridge Road and 65/69 Union Street,

[232] Cf. NSW LRS, PA 56103. Cf. Bk 2396 No 85
[233] NSW LRS, CT Vol 1485 fol 7.
[234] City of Sydney Archives, DA 189/54, 'Union St, Pyrmont Bridge Rd & Edward St, Pyrmont. Use land for the purpose of a car park. L. B. Pratt."
[235] *Ibid.*

Pyrmont.[236] This was to be located on Lot B of the site, including the corner of Union Street and Pyrmont Bridge Road, requiring the demolition of the existing corner buildings.

The plans submitted with the application (Figure 103 and Figure 104) still noted the existing wine store on the corner, proposing a new double storey building with a lubritorium, store and sales counter, with service islands on both the Union Street and Pyrmont Bridge Road frontages. Each service island was connected to a 3,000-gallon underground tank, with the location of each of these three tanks noted on the plan. The whole site received a bitumen surface, and a new retaining wall was constructed near the ramp leading down from the Pyrmont Bridge Road frontage to Union Street. The plans noted that "retaining walls & filling [were] required to develop site for a two level station."

By 25 January 1955, the two old buildings on the site had been vacated. While Council initially refused the proposal due to another proposed widening of Pyrmont Bridge Road (which never affected the subject site), approval was granted on 25 July 1955, subject to conditions. A building application (1421/55) was submitted on 9 August 1955 and approved on 19 September 1955.[237] Structural engineers were P.O. Miller and the brick structure with reinforced concrete floors was built by Howe & Bamber. Work on the service station began in November 1955 and was noted as having been completed to approval on 2 July 1956.

After official acquisition of the corner site (69 Union Street) by Vacuum Oil Co Pty Ltd on 15 September 1956, the north-easternmost tip was resumed by the Council of the City of Sydney on 11 May 1956 for the creation of a splay.[238]

After construction of the building, further alterations were carried out during subsequent years, including the following applications listed in the City's *Planning Street Cards*:[239]

- BA 2168/4, dated 8 September 1964, for structural support for roof signs, by Mobil Oil Australia, estimated at £50;
- BA 2169/64, dated 8 September 1964, for alterations and additions, by Mobil Oil Australia, at £1250;
- DA 189/67, dated 15 March 1967, for proposed erection of a steel canopy to be used in conjunction with existing use, by Mobil (Aust) Ltd;
- BA 292/67, dated 13 December 1967, for canopy by Mobil Oil P/L, at £3,500;
- DA 965/68, dated 18 October 1968, for using the premises as existing and erection of sign by Mobil (Aust) Ltd; and
- BA 1844/69, dated 31 February 1969, for canopy, by Mobil Oil P/L, at £3,500.

[236] City of Sydney Archives, DA 804/54, 'Pyrmont Bridge Road & 65/69 Union Street, Pyrmont. Erection of a two level Service Station. Vacuum Oil Company Pty Ltd.'
[237] City of Sydney Archives, BA 1421/55, 'Cnr Union St & Pyrmont Bridge Rd, Pyrmont, New Building (service station).'
[238] NSW LRS, CT Vol 1485 fol 7.
[239] City of Sydney Archives, *Planning Street Cards*, Union Street (1928-1994), 61/69 Union St, Edward Street.

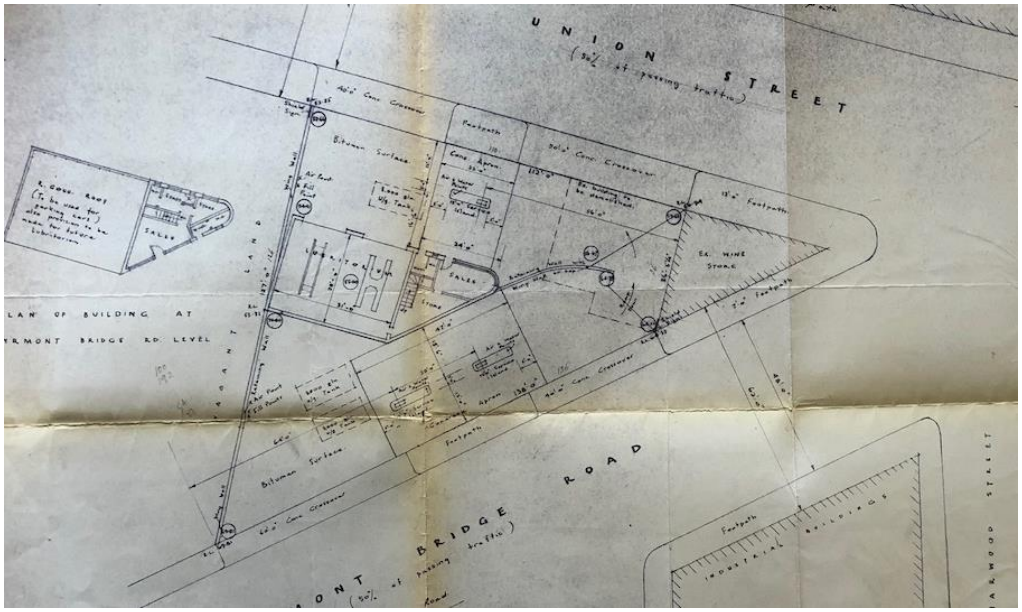


Figure 103: 1954 – Plan submitted as part of DA 804/54, for a new service Station (Source: City of Sydney Archives, DA 804/54, 'Pyrmont Bridge Road & 65/69 Union Street, Pyrmont. Erection of a two level Service Station. Vacuum Oil Company Pty Ltd.')

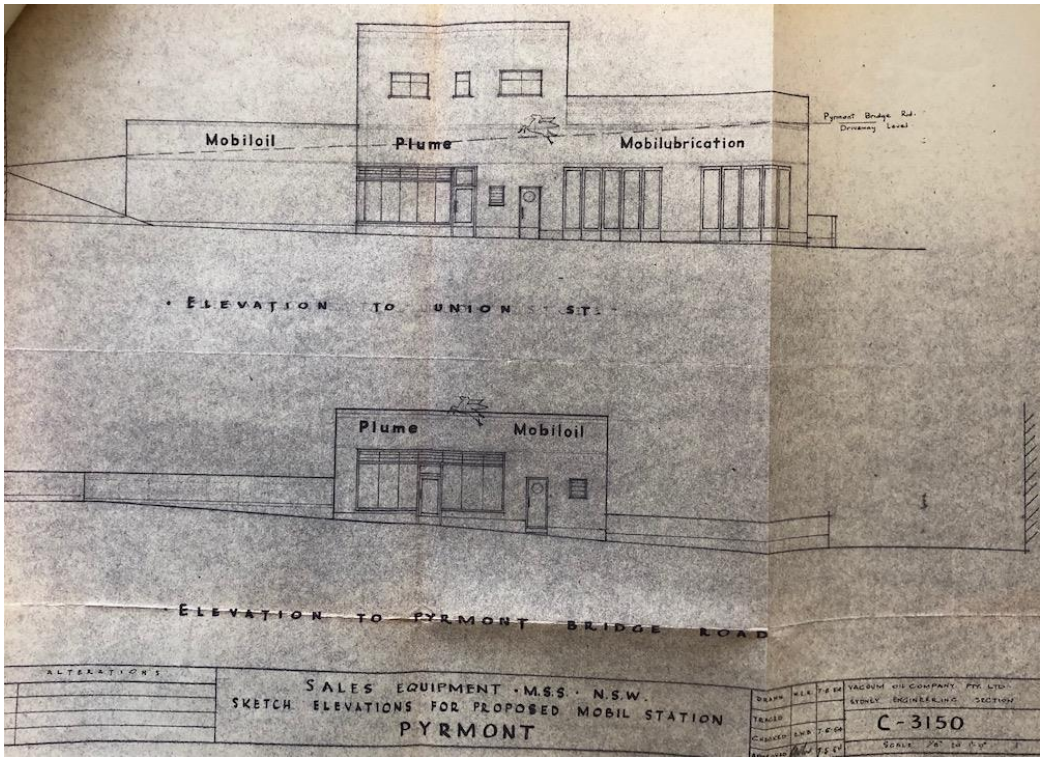


Figure 104: 1954 – Elevations submitted as part of DA 804/54, for a new service Station (Source: City of Sydney Archives, DA 804/54, 'Pyrmont Bridge Road & 65/69 Union Street, Pyrmont. Erection of a two level Service Station. Vacuum Oil Company Pty Ltd.')



Figure 105: 1979 – Mobil Service Station, showing elevation to Union Street (Source: Mobil Service Station, Union Street Pyrmont, 1979 (01/01/1979 - 31/12/1979), [A-00008061]. https://archives.cityofsydney.nsw.gov.au/nodes/view/568706)

2.6.3.3.2 Car park at 37-59 Union Street, Edward Street and Pyrmont Bridge Road (1956-1969)

The site at the corner of Union and Edward Streets, noted as 37-59 Union Street, Edward Street and Pyrmont Bridge Road, remained unused long after approval had been granted to L. B. Pratt on 3 May 1954 for use of the site as a car park.[240]

On 27 August 1956, Yellow Express Carriers Ltd, headquartered at nearby 103 Murray Street, Pyrmont, applied to Council to use the land for the parking of trucks and trailers (DA 4309/56).[241] The company leased the land from M. Fiorelli Pty Ltd, and intended to clear and level the land to give easy access for trucks. This was approved on 17 September 1956.

It appears that Yellow Express Carriers indeed used the land for parking of their vehicles, as this was the current use noted when the next development application was submitted on 3 June 1963 (DA 599/63).[242] The new applicant was William Harold Parton, who rented the land from M. Fiorelli Pty Ltd by then. The owner of the site was noted as Arthur L. Harris and the Perpetual Trustee Company. As part of the new use, the land was to be levelled and asphalted, with the private car park to operate from 7am to 7pm daily. Approval was granted on 22 July 1963.[243]

However, no work was carried out and the site remained vacant and unused, and on 29 January 1965, the Building Inspector made a note that a 'for sale notice' had been erected on site.[244] The development was still pending in July 1968. On 9 October 1968 the Building Inspector noted that

[240] City of Sydney Archives, DA 189/54, 'Union St, Pyrmont Bridge Rd & Edward St, Pyrmont. Use land for the purpose of a car park. L. B. Pratt."
[241] City of Sydney Archives, DA 4309/56, 'Pyrmont Bridge Rd., 68/74 Edward St. & Union St. Yellow Express Carriers Ltd. To use land for the parking of trucks and trailers.'
[242] City of Sydney Archives, DA 599/1963, '37 Union St., 68-74 Edward St., 14 Pyrmont Bridge Rd, Pyrmont. Use vacant land as a private car parking area. William H. Parton.'
[243] City of Sydney Archives, *Planning Street Cards*, Union Street (1928-1994), 37/61 Union Street & 68/75 Edward St & 14 Pyrmont Bridge Rd.
[244] City of Sydney Archives, DA 4309/56, 'Pyrmont Bridge Rd., 68/74 Edward St. & Union St. Yellow Express Carriers Ltd. To use land for the parking of trucks and trailers.'

"there were 5 cars parked on subject land at time of inspection. Inquiries to business premises in area revealed that cars are parked on property every day but that no person runs site as a car park."[245]

Cars accessed the site via an approved vehicular crossing from Edward Street, and the use of the site as an unsupervised car park by the public continued until July 1969. Cars were mostly parked in the northern portion of the site. On 2 July 1969, John Alexander Draper applied for a Parking Station License, followed by a blasting licence on 6 August 1969, likely for works in connection with the levelling of the site.[246] On 18 August 1969, a licence was issued, and the file for DA 599/63 closed.

2.6.3.3.3 Pyrmont Parking Station at 37-59 Union Street, Edward Street and Pyrmont Bridge Road (1969-1986)

It appears that in spring 1969, the site was indeed prepared for use as a paid parking station, known as the 'Pyrmont Parking Station'. On 24 September 1969, another development application was lodged for the site, to supplement the approved parking station with a car wash and 8 petrol bowsers (DA 655/69).[247] The application form noted an existing company office building at the site, described as a single storey steel building with a concrete floor and a square footprint of 9' 6'' x 9' 6''. It appears that this building had been constructed shortly prior to lodgement of the application, in around August or September 1969, as the files in DA 599/63 had described the site as vacant.

The application form noted that the present use of the site would begin on 25 September 1969, the day after the application was lodged by Pyrmont Parking Station, headquartered in Cammeray.[248] The company intended to lease the parking station site subject to the DA being approved. Five new single storey buildings were proposed as part of the car wash, as well as a vehicular turntable and fuel pumps with associated fuel tanks. Although approval was granted, the proposed car wash and fuel stations were never constructed. However, the site was from September 1969 in use as an official, fenced in car parking station.

In October 1969, as part of DA 655/69, the City of Sydney's Engineer's Department entered into negotiations with the owner regarding the acquisition of land on the corners of the site, to increase the existing splay on the corner of Edward and Union Streets from 5 to 10 feet and create a new splay of 10 feet on the corner of Edward Street and Pyrmont Bridge Road. This was noted in the *Planning Street Cards* on 6 December 1971, suggesting that the splays were transferred or created around that time.[249]

Further development proposals, all for the overall site, were submitted during the 1970s and early 1980s, none of which went ahead. They included the approved proposal by James Wallace Pty Ltd for a multi-storey car parking development to provide over 800 car parking spaces, submitted in September 1970 (DA 533/70), and the proposed construction of two residential buildings by Goodway and Southwell, submitted on 12 June 1981 (DA 44-81-0470).[250]

[245] *Ibid.*
[246] City of Sydney Archives, *Planning Street Cards*, Union Street (1928-1994), 37/61 Union Street & 68/74 Edward St & 14 Pyrmont Bridge Rd.
[247] City of Sydney Archives, DA 655/69, '37-61 Union Street & 68-74 Edward Street Pyrmont. Pyrmont Parking Station. Use premises for car parking and washing and also for selling petrol.'
[248] The lease was noted in Bk 2396 No 85.
[249] City of Sydney Archives, *Planning Street Cards*, Union Street (1928-1994), 37/61 Union Street & 68/74 Edward St & 14 Pyrmont Bridge Rd. Noted as 661/1/71.
[250] City of Sydney Archives, *Planning Street Cards*, Union Street (1928-1994), 37/part 61 Union St, 68/74 Edward St & 14 Pyrmont Bridge Rd. Part 61/63/65 Union Street & 2/14 Pyrmont Bridge Rd



Figure 106: 1978 – Aerial photograph showing the Eastern Construction site, containing the Pyrmont Parking Station and Mobil Service Station (Source: NSW Spatial Services, aerial photograph, 6 May 1978, 2713-16-064)

2.6.4 Phase 4 (1986 - present) – Commercial development

In 1982, the triangular site was sold to Hardale Pty Ltd, ending the site's long association with the Harris family.[251] Hardale had been a lessee at the time of acquisition. On 26 October 1983, Susila Dharma Pty Ltd was registered as the owner, together with Project Sunrise Pty Ltd. Three years later, on 30 June 1986, Copeland Mercantile Ventures Pty Ltd took ownership of the site, and it was under these new owners that the block containing the service station and parking station was redeveloped, resulting in the demolition of all existing structures at the site.

On 23 April 1986, development approval was granted to Cedra Constructions Pty Ltd under DA 44-86-0031 to construct a new building of ground, mezzanine, and two upper levels, for use as eleven light industrial units, with associated office, parking and loading facilities, on the triangular block bounded by Union Street, Edward Street and Pyrmont Bridge Road.[252]

This was followed by a building application (BA 86/1056) approved on 11 July 1986.[253] The redevelopment of the site, for Copeland Mercantile Ventures Pty Ltd, involved demolition of all existing structures at the site, including the existing service station. Prior to demolition a photograph was taken of the petrol station, which is included in Figure 107. The ground floor plan and elevations for the redevelopment, designed by Butler & Sky Pty, architects, and approved on 10 April 1987, are included in Figure 108 and Figure 109. The relevant BA file does not contain any site plan showing the location of buildings prior to redevelopment.

After completion of the building, the development underwent various alterations for subsequent commercial tenancies, however, these were largely minor and limited to internal alterations and

[251] NSW LRS, CT Vol 14782 fol 182.
[252] City of Sydney Archives, DA 44-86-0031, '37 - 69 Union St Pyrmont - Erect 4 Storey Industrial Complex Copeland Mercantile Venture Pty Ltd.'
[253] City of Sydney Archives, BA 86/1056, '37 - 61 63 - 65 67 & 69 Union St Pyrmont - Construct New Office Warehouse Building $1800000 22 05 86 Cedra Construction Pty Ltd (22/05/1986 - 14/02/1992).' BA plans were accessed online in January 2022 at https://archives.cityofsydney.nsw.gov.au/nodes/view/1720703 (PART 01 [A-00590385]) and https://archives.cityofsydney.nsw.gov.au/nodes/view/1720704 (PART 02 [A-00590386]).

fitouts.[254] On 8 April 1988, the site was transferred again, to Donald Gordon Mackay and Adrian John Lane as joint tenants, with the site being subject to a number of subsequent ownership transfers and various leases.



Figure 107: c1985-86 – Photograph showing the Service Station at centre prior to demolition, with a portion of the fence surrounding the parking station on the right, facing Union Street. (Source: City of Sydney Archives, BA 86/1056, '37 - 61 63 - 65 67 & 69 Union St Pyrmont - Construct New Office Warehouse Building $1800000 22 05 86 Cedra Construction Pty Ltd (22/05/1986 - 14/02/1992).')

[254] As documented in the City of Sydney Archives, *Planning Street Cards*, Union Street (1928-1994), the City of Sydney Archives' online catalogue, and the City of Sydney's online DA Tracker.



Figure 108: 1986 – Elevations prepared by Butler & Sky Pty Ltd, architects, dated May 1986, for 37-69 Union Street, approved on 11 July 1986. Minor later amendments were also approved (Source: City of Sydney Archives, BA 86/1056, '37 - 61 63 - 65 67 & 69 Union St Pyrmont - Construct New Office Warehouse Building $1800000 22 05 86 Cedra Construction Pty Ltd (22/05/1986 - 14/02/1992).')

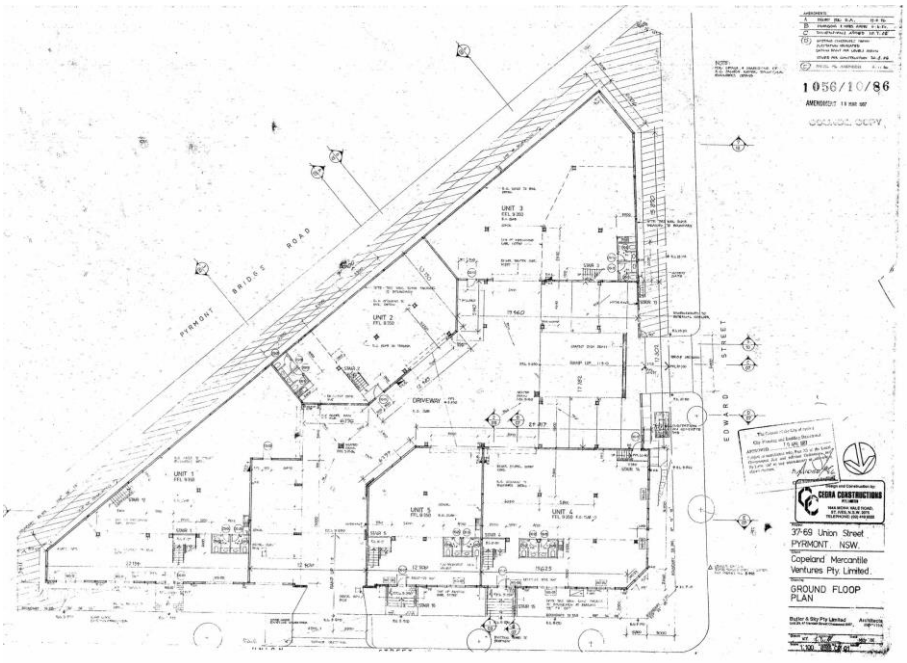


Figure 109: 1986 – Ground floor plan prepared by Butler & Sky Pty Ltd, architects, dated May 1986, for 37-69 Union Street, as amended, approved on 10 April 1987 (Source: City of Sydney Archives, BA 86/1056, '37 - 61 63 - 65 67 & 69 Union St Pyrmont - Construct New Office Warehouse Building $1800000 22 05 86 Cedra Construction Pty Ltd (22/05/1986 - 14/02/1992).')



Figure 110: August 1986 – Aerial photograph showing the site already cleared (Source: NSW Spatial Services, Historical Aerial Imagery, 3 August 1986, 3528-22-061)



Figure 111: August 1991 – Aerial photograph showing the new buildings completed (Source: NSW Spatial Services, Historical Aerial Imagery, 14 August 1991, 4029-10-133)

3.0 ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL AND SIGNIFICANCE

3.1 Assessment of archaeological potential

The assessment of historical archaeological potential discusses the study area's potential to contain historical archaeological resources. This assessment is based on consideration of historic land use, current ground conditions, analysis of the historical development of the study area, and considering whether subsequent actions (either natural or human) may have impacted on archaeological evidence for these former land uses.

'Archaeological potential' refers to the likelihood that an area contains physical remains associated with an earlier phase of occupation, activity or development of that area. This is distinct from 'archaeological significance' and 'archaeological research potential'. 'Archaeological significance' refers to the cultural value of the known items within an area, whilst 'archaeological research potential' refers to the cultural value of the potential archaeological remains in an area.

Knowledge of previous archaeological investigations, and an understanding of the potential archaeological remains have been assessed with due consideration of the historic land use and previous ground disturbance that may have impacted any subsurface archaeological remains. This is presented using the grades of archaeological potential provided in Table 13.

Table 13. Grades of archaeological potential

Grading	Justification
Nil	No evidence of historical development or use, or where previous impacts such as deep basement structures would have removed all archaeological potential.
Low	Little or low intensity historical development, or where there have been substantial previous impacts, disturbance and truncation in locations where some archaeological remains such as deep subsurface features (privies, cesspits or wells) may survive.
Moderate	Known historical development and some previous impacts, but it is likely that archaeological remains survive with some localised truncation and disturbance.
High	Evidence of multiple phases of historical development and structures with minimal or localised later development impacts, and it is likely the archaeological resource would be largely intact.

3.2 Research potential and archaeological significance

In 1984, Bickford and Sullivan[255] examined the concept and assessment of archaeological research potential; that is, the extent to which archaeological resources can address research questions. They developed three questions which can be used to assess the research potential of an archaeological site:

- Can the site contribute knowledge that no other resource can?
- Can the site contribute knowledge that no other site can?

[255] Bickford, A. and S. Sullivan, 1984. "Assessing the research potential of historic sites" in *Sites Surveys and Significance Assessment in Australian Archaeology*.

- Is this knowledge relevant to:
  - General questions about human history?
  - Other substantive questions relating to Australian history?
  - Other major research questions?

In the 2009 guidelines *Assessing Significance for Historical Archaeological Sites and 'Relics'*, the NSW Heritage Division has since provided a broader approach to assessing the archaeological significance of sites, which includes consideration of a site's intactness, rarity, representativeness, and whether many similar sites have already been recorded, as well as other factors. This document acknowledges the difficulty of assessing the significance of potential subsurface remains, because the assessment must rely on predicted rather than known attributes.[256] A site can have high potential for archaeological remains, and yet still be of low research potential if those remains are unlikely to provide significant information or make contributions to our current state of knowledge.

In addition, these archaeological guidelines address the potential significance of archaeological remains against the NSW Heritage Assessment Criteria. A discussion of how these criteria apply to assessments of archaeological remains has been extracted from the 2009 guidelines and provided in Table 14.

Table 14. NSW Heritage criteria for assessing significance related to archaeological sites and relics[257]

Criteria	Discussion
Archaeological research potential (criterion E)	Archaeological research potential is the ability of archaeological evidence, through analysis and interpretation, to provide information about a site that could not be derived from any other source and which contributes to the archaeological significance of that site and its 'relics'. The integrity of the site, the state of preservation of archaeological material and deposits will also be relevant.
Associations with individuals, events or groups of historical importance (criteria A, B & D)	Archaeological remains may have particular associations with individuals, groups and events which may transform mundane places or objects into significant items through the association with important historical occurrences.
Aesthetic or technical significance (criterion C)	Whilst the technical value of archaeology is usually considered as 'research potential' aesthetic values are not usually considered to be relevant to archaeological sites. This is often because until a site has been excavated, its actual features and attributes may remain unknown. It is also because aesthetic is often interpreted to mean attractive, as opposed to the broader sense of sensory perception or 'feeling' as expressed in the Burra Charter. Nevertheless, archaeological excavations which reveal highly intact and legible remains in the form of aesthetically attractive artefacts, aged and worn fabric and remnant structures, may allow both professionals and the community to connect with the past through tangible physical evidence.

[256] NSW Heritage Branch 2009
[257] *ibid*

Criteria	Discussion
Ability to demonstrate the past through archaeological remains (criteria A, C, F & G)	Archaeological remains have an ability to demonstrate how a site was used, what processes occurred, how work was undertaken and the scale of an industrial practice or other historic occupation. They can demonstrate the principal characteristics of a place or process that may be rare or common. A site may best demonstrate these aspects at the time of excavation. It may also be possible to explain the nature of the site and demonstrate past practices via public interpretation either before, during, or after excavation.

3.3 Overview of historic context

The history of the construction sites has been broken into discrete historical phases to discuss potential archaeological remains. Within each historic phase specific remains are assessed for their archaeological potential and archaeological significance in accordance with the methodology provided in Section 3.1.

A summary of the historical phases of the two construction sites is outlined in Table 15 and Table 16.

Table 15: Summary of historic phases for western construction site

Phase	Date Range	Use of site
Phase 1	1788-1879	Part of the Ultimo Estate, potentially used for livestock grazing
Phase 2	1879-1914	Residential housing and commercial properties
Phase 3	1914-1947	Resumed for road widening, potential storage area for building material or soil, residential housing and commercial properties
Phase 4	1947-present	Gilbey's Distillery and connected carpark, 'Frankel House' and connected basement carpark

Table 16: Summary of historic phases for eastern construction site

Phase	Date Range	Use of site
Phase 1	1788-1878	Part of the Ultimo Estate, potentially used for livestock grazing
Phase 2	1883-1930	Residential housing, commercial properties, 'Elder's Hall'
Phase 3	1930-1986	Timber and building materials storage yard, and associated sheds and offices, fuel service station, car park
Phase 4	1986-present	Commercial properties

3.4 Previous Archaeological Investigations

Non-Aboriginal archaeological excavations which have been previously conducted in the Pyrmont area, specifically those sites which are either near to the proposed construction sites or that may feature similar archaeological remains as those which are predicted at the Pyrmont Station construction sites, are discussed below. The purpose of this section is to provide an indication of the archaeological potential for the Pyrmont Station construction sites and to explore comparative research design questions which may provide insight into the material culture of the Pyrmont neighbourhood at various phases through the nineteenth and early twentieth centuries.

3.4.1 Pyrmont Peninsula Place Strategy (Godden Mackay Logan, October 2020)

The Pyrmont Peninsula Place Strategy contained a non-Indigenous cultural heritage study prepared by GML[258]. This study aimed to understand the non-Indigenous heritage of the study area and immediate surrounds and gain an appreciation of the roles and value on non-Indigenous heritage for place identity, cision and character today, particularly the role of heritage to help create an authentic, attractive and vibrant place. As part of the study, GML also made recommendations on how matters of non-Indigenous heritage could be considered as part of the ongoing governance of the study area.

As stated with then study, the Pyrmont Peninsula has:

> *...outstanding heritage significance for its ability to demonstrate human intervention and modification of a visually prominent, distinctive harbour landform. Since colonisation the peninsula has been modified and transformed, it is a significant historic cultural landscape that demonstrates a distinctive evolutionary pattern of large land grants, subdivision, agriculture and industrial development, quarrying, land reclamations, industry, rail lines and wharf construction, urbanisation, technological development, industrial decline, and government-led urban planning, consolidation and renewal writ large. Associated with major shifts in Australia's industrial and political economy, these significant historical shaping forces have resulted in dramatic and significant changes in community and working life expressed through an urban landscape and a complex amalgam of significant public infrastructure, industrial, residential, and commercial development and public space... Pyrmont-Ultimo has substantial potential to yield archaeological information that will contribute to an understanding of NSW's cultural and natural history fabric and Sydney's early development and industrial history, along with buried deposits relating to those activities.*

The Place Strategy commended that a detailed, area-wide Archaeological Zoning or Management Plan is required to better identify potential archaeological sites and locations where more area-specific archaeological assessment is warranted within the Pyrmont Peninsula. The Place Strategy also identified the area occupied by the Gilbey's Distillery as an "area of archaeological potential that is partially disturbed or destroyed".

[258] Godden Mackay Logan, 2020. *Pyrmont Peninsula Place Strategy – Non-Indigenous Cultural Heritage Study – Final Report*.

3.4.2 26-32 Pyrmont Bridge Road, Pyrmont – Archaeological Research Design (Godden Mackay Logan, 2000)

Godden Mackay and Logan prepared an Archaeological Research Design report for proposed basement carpark excavation work at the 26 –32 Pyrmont Bridge Road site[259]. This site is located within the Pyrmont Station western construction site. Basement work at the site was to be confined to the northern half of the property.

The Archaeological Research Design report identified that the site was not known to have been developed beyond its use for cattle grazing prior to the 1880s, when terrace housing was constructed on both the Pyrmont Bridge Road and Pyrmont Street frontages. Terrace housing was identified as both residential and commercial in nature. The following statement of significance of provided for potential archaeological remains at the site:

> *The study site at 26 –32 Pyrmont Bridge Road, Pyrmont is a significant archaeological resource both in terms of the later development of Pyrmont and the local community. The site is likely to contain intact archaeological resources including structural remains, outbuildings and occupation deposits which yield information about the residential and trade occupations of inhabitants of the 1880s to 1915 terraces as well as the site's earlier occupation and uses which contribute to the history of Pyrmont.*

Relevant site-specific research questions for this site were developed during preparation of the Archaeological Research Design, including:

- How does the material culture of the site compare with urban sites of a similar period and site use?
- What evidence exists of European occupation of the site before it was developed [in the 1880s]?
- What evidence exists of uses of the buildings which occupied the site?
- Can individuals be identified in the archaeological record?
- What evidence exists of uses of exterior spaces?
- Construction of the privies –do the rear yards of the terraces contain privies, or were sewer services incorporated into their construction?
- Are there any wells within the study site?

While this archaeological research design recommended a program of archaeological monitoring, the results of any archaeological investigation at the site are not publicly available. The construction of the basement carpark occurred in the northern portion of the Pyrmont Station western construction site, meaning that the southern portion containing the location of the 1880s terraces was not impacted by these works. Consequently, the above research design questions are still applicable to this area of the western construction site and are addressed in this archaeological research design.

[259] Godden Mackay Logan, *26-32 Pyrmont Bridge Road, Pyrmont – Archaeological Research Design*. Prepared for Property Partnerships Pacific (May 2000).

3.4.3 50-72 Union Street, Pyrmont –Archaeological Investigation for Charter Hall Holdings (Casey and Lowe May 2010)

Between November and December 2003, Casey and Lowe conducted a program of archaeological excavation at 50-72 Union Street, Pyrmont ahead of the redevelopment of the site[260]. The site, which is situated directly north of the eastern construction site on the opposite side of Union Street, was previously occupied by c1840s terraces and a 1920s flour mill, which was demolished in the 1980s.

Archaeological investigations found that while much of the pre-1920s evidence of occupation had been destroyed by the construction of the flour mill, evidence of the terraces houses, which included stone footings, a fireplace, drain and floor surfaces were still present. Furthermore, building materials, ceramics, glass, metal, and animal bone artefacts were located in deposits around the site. Pollen remains from soil samples were also used to reconstruct vegetation from the site. The investigation of the site provided an interesting insight into the early working-class history of Pyrmont and the lives of the individuals who resided and worked there.

The findings of this investigation provide a potential indication of the type of artefactual remains that may be encountered during works at the Pyrmont Station eastern construction site. Give the proximity of these two sites and the presence of contemporaneous terraces in both locations, Casey and Lowe's investigation provides an indication of the likely archaeological remains that may be present at the Pyrmont Station site.

3.4.4 55 Pyrmont Bridge Road, Pyrmont –Archaeological Monitoring of Former McWilliams Wines Premises for City West Centre (Edward Higginbotham 1994)

During March 1994, archaeological monitoring was carried out at 55 Pyrmont Bridge Road, Pyrmont, during the redevelopment of the Former McWilliams Wines Premises[261]. The factory was purchased by the company in 1941, and a new building and underground wine tanks had been constructed which incorporated the previous premises of the early twentieth century ironworks on the site, expanded in the 1960s with a set of concrete tanks. Bulk excavations at this site revealed evidence of the underground tanks for the storage of bulk wine, with a large portion of the southern end of the excavated site occupied by disturbed to sandstone bedrock. Crushed sandstone overlaying bedrock was encountered under the northern end of the site. No evidence of the former foundry was encountered, likely having been removed due to the substantial excavations and levelling which took place for the new building and wine tanks in the 1940s, as well as for the additional wine tanks in the 1960s.

This site is located approximately 50m to the southwest of the Pyrmont Station western construction site. It demonstrates the lack of potential associated with sites which have experienced extensive below-ground excavation and disturbance.

3.4.5 1-9 Pyrmont Bridge Road, Pyrmont – Archaeological Monitoring Program for redevelopment of site for Powalu Pty Ltd (Godden MacKay Logan 1994-1996)

In July 1996, GML carried out archaeological monitoring at 1-9 Pyrmont Bridge Road, Pyrmont during the removal of a concrete slab and excavation of the underlying fill[262]. Initial test pits and coring

[260] Casey and Lowe, *Archaeological Investigation 50-72 Union Street, Pyrmont. Volume 1: Main Report* (May 2010).
[261] Edward Higginbotham and Associates, *Report on the archaeological monitoring programme during redevelopment of the former McWilliams Wines Premises, 55 Pyrmont Bridge Road, Pyrmont, N.S.W* (August 1994).
[262] Godden Mackay Logan, *1-9 Pyrmont Bridge Road, Pyrmont – Archaeological Monitoring Report* (September 1996).

suggested that intact archaeological deposits may have survived in the eastern portion of the site. This was supported by the identification of a stratigraphic layer containing bricks, gravel, and artefacts, which were associated with the levelling of the site during construction work in the 1950s.

Ultimately the site was found to be highly disturbed though and limited evidence for land use prior to the 1880s could be retrieved. However, evidence of former structures on the site was located, including the remains of a brick, north-south wall with evidence of sandstone footings below the concrete slab floor of the 1950s building. Additionally, sandstone footings and a slate damp course were located and associated with neighbouring structures, as well as a rectangular brick outbuilding complete with sewer pipes. These remains provided evidence on the post-1878 development of the area, likely indicating the existence of a row of terraces built along Pyrmont Bridge Road in 1880.

The study area for this monitoring program is in close proximity to the Pyrmont Station eastern construction site, directly to the southeast on the opposite side of Pyrmont Bridge Road. The findings uncovered in this investigation offer some comparative insights into the neighbourhood of the Pyrmont Station eastern construction site and reflect indicative archaeological deposits that may be associated with the 1870s terrace housing in the northern portion of the Pyrmont Station construction site.

3.4.6 "Falling through the Cracks: Method and Practice at the CSR Site, Pyrmont" (Casey M., 2004)

Casey and Lowe undertook archaeological excavation at the former Colonial Sugar Refining (CSR) site in Pyrmont in 1996. The former refinery, which was complete with terrace housing for workers, was constructed in 1878, with the workers' houses being demolished in the 1950s to make way for expansions to the refinery. The archaeological excavations focused on the workers' residences, and a detailed assessment of the domestic artefact deposits from the under-floor spaces of multiple terrace houses was conducted.

Mary Casey, who acted as Excavation Director for the investigation prepared a journal article in 2004 which outlined a detailed methodology for comparative analyses of domestic archaeological deposits based on the findings from the excavation program[263]. Casey discussed appropriate standards of artefact cataloguing, which allow for detailed scrutiny of artefact distribution patterns between domestic archaeological deposits. Casey also specified a detailed methodology for understanding the depositional process which contribute to the formation of underfloor deposits, highlighting the greater propensity for these deposits to form underneath kitchens as opposed to sleeping areas. Moreover, Casey also provided a detailed spatial excavation methodology which was utilised during the CSR site investigations, and then correlated this to the occupants of the terraces in order to provide more focused and detailed social and material information about the inhabitants.

This paper details specific approaches that can be adopted when investigating places where working-class people lived such as the terraces housing seen in both the Pyrmont Station construction sites. In particular, a focus on the underfloor deposits of the kitchen areas can provide comparative insights into the "'typical' profile of lives as lived within working-class housing" across other later nineteenth century housing in Pyrmont and the broader urban Sydney area. The site of the former CSR workers terrace houses is about 300m to the northwest of the Pyrmont Station western construction site, and dates to within 20 years of construction.

[263] Casey, M. 2004. "Falling through the Cracks: Method and Practice at the CSR Site, Pyrmont", *Australasian Historical Archaeology*, 22: 27-43.

3.5 Known impacts

3.5.1 Western construction site

The southernmost portion of the western construction site was purchased by W & A Gilbey in 1947. Excavation for a new building commenced in 1948. The building inspector noted on 12 March 1948: "excavation for foundation shows rock at varying depths below ground level."[264] The nature of the foundation was noted as 'rock' in the Building Inspector's Card, and the depth of the footings was noted as 4 feet. It is likely that this work has resulted in considerable truncation of the western construction site in areas containing the concrete foundations for this building.

The northern portion of the western construction site contains a substantial basement, excavated c.1999. Godden Mackay and Logan prepared an Archaeological Research Design report for proposed basement carpark excavation work at the 26 –32 Pyrmont Bridge Road site.[265]

3.5.2 Eastern construction site

Josiah White obtained the eastern construction site in 1896. White built a three-storey building with basement on the corner of Union Street and Pyrmont Bridge Road in the same year. Newspaper articles from the time refer to the ample basement room and lifts. [266]

A fuel service station was constructed in the eastern corner of the construction site in the 1960s. Later excavation for the construction of the 1980s office building has likely removed all remnants of this structure with the possible exception of any residual deep fuel storage tanks.

3.6 Assessment of archaeological potential

3.6.1 Pyrmont Station western construction site

A summary of the predicted archaeological remains at the Pyrmont Station western construction site and their potential is presented in Table 17. This summary is informed by the historical background contained within this report and an analysis of previous archaeological assessments.

Table 17: Summary of archaeological remains and potential at western construction site

Phase	Site use	Predicted archaeological remains	Potential
Phase 1 (1788-1879)	Part of the Ultimo Estate, potentially used for livestock grazing	Land clearing is presumed to have occurred during this time, but no known construction occurred within the Pyrmont Station western construction site during this time. Land utilised for informal grazing or farming may have left ephemeral archaeological remains such as animal bones (cattle or sheep), tree boles, fencing post holes or field drains. However, with the later development of the site and with significant basements in the northern portion of the site, these remains are not anticipated to be present.	**Nil**
Phase 2 (1879-1914)	Residential housing and commercial properties	Terrace housing used for commercial and residential tenants was constructed in 1883 in the southern portion of the Pyrmont Station western construction site. These	**Moderate for truncated remains**

[264] 'Building Inspectors Card'.
[265] Godden Mackay Logan, *26-32 Pyrmont Bridge Road, Pyrmont – Archaeological Research Design*. Prepared for Property Partnerships Pacific (May 2000).
[266] 'No Title', *Sunday Times*, 30 August 1896, 7, http://nla.gov.au/nla.news-article130405487.

Phase	Site use	Predicted archaeological remains	Potential
		terraces were the living and working spaces of a variety of retail trades, including bakers, grocers, drapers, newsagencies, and restaurants. Archaeological remains related to these premises would only be situated within the southern portion of the site due to basement excavation present in the north. The location of the former terrace houses with respect to the construction site and known basement excavation is provided in Figure 112. The area of archaeological potential within the construction site is associated with the central and rear portions of the terrace buildings, which would include rear kitchens. Privies were located within the rear yards however these are situated within the area of later basement excavation. Archaeological resources relating to development within these subdivisions include: • Building foundations—sandstone or brick—associated with documented and undocumented structures; • Demolition fills, postholes and rubbish deposits; • Undocumented features including basements, drains, cesspits, utilities, cisterns and wells • Yard and workshop surfaces • Evidence of gardens and yard layouts. The study area has generally low potential to contain artefact-bearing occupation/underfloor deposits.	
Phase 3 (1914-1947)	Resumed for road widening, potential storage area for building material or soil, residential housing and commercial properties	During this phase the northern portion of the construction site still housed terraces used in both a residential and commercial capacity. However, the ground disturbance caused by the construction of the basement carparks will have undoubtedly destroyed the archaeological remains associated with this section. It is possible that some of the same potential artefacts predicted for Phase 2 may have been discarded in the southern portion of the site, or been redeposited by subsequent construction works. The southern portion of the site' was used for storing building materials at this time. There will likely be minimal archaeological remains associated with this use. Any such remains will likely be limited to building materials, rubbish deposits, and introduced soil deposits. Historical evidence indicates that structures related to the storage yard were likely impermanent sheds, possibly of timber construction. This would suggest that remnants of such structures will be limited to postholes, remnants of the structures' construction materials, and possibly items that were being stored within.	**Low**
Phase 4 (1947-present)	Gilbey's Distillery and connected carpark, 'Frankel House' and connected basement carpark	The current building was constructed at the beginning of this phase. Although the building was constructed on pile footings, it is likely that excavation work has resulted in considerable truncation of the western construction site in areas containing the concrete foundations for this building. Remains associated with the former use of the building as a distillery may be present in the sub-floor cavity of the building from chance discard, including glass bottles / bottle fragments, metal equipment and rubbish deposits.	**Moderate**

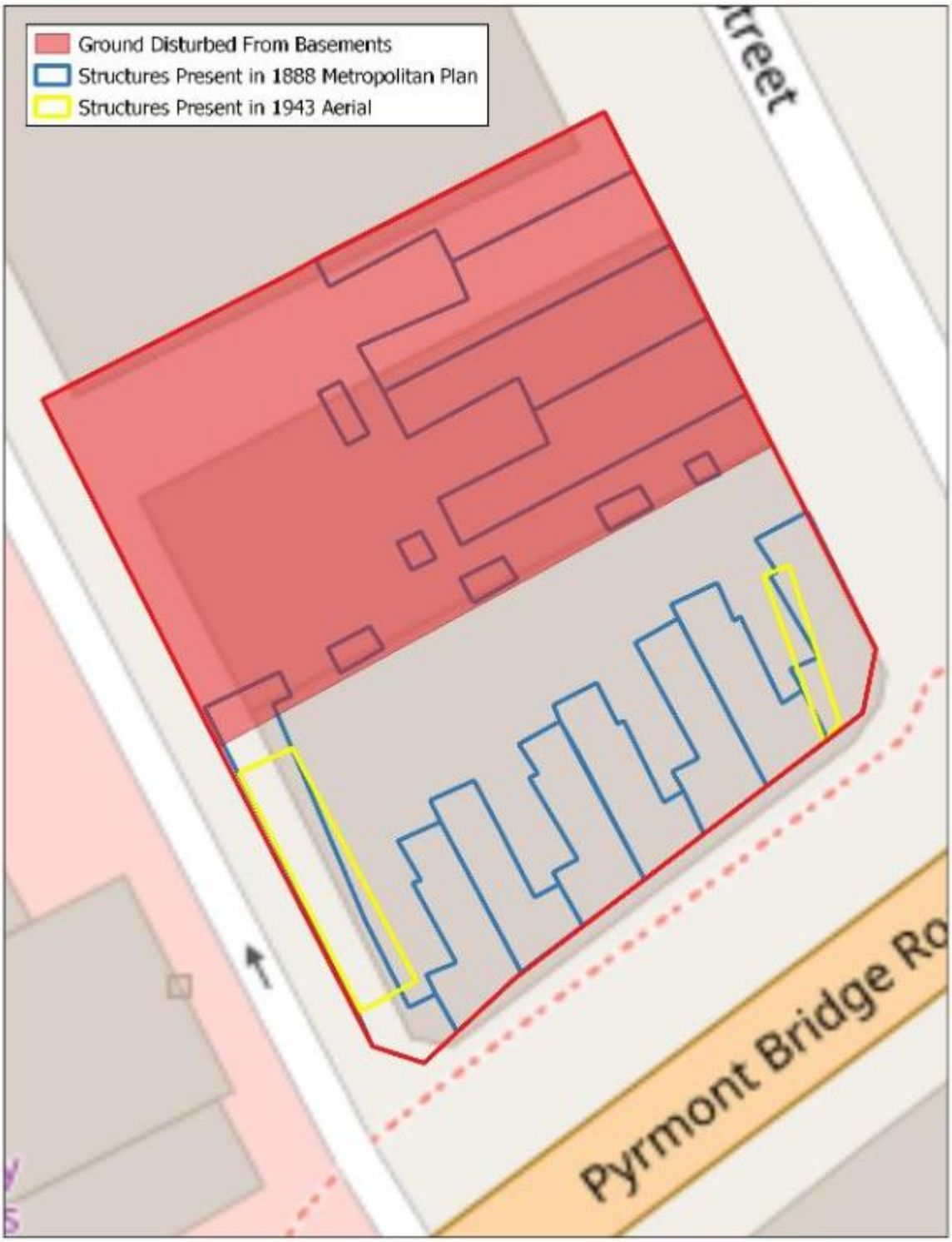


Figure 112: Overlay of potential archaeological remains within Pyrmont Station western construction site.

3.6.2 Pyrmont Station eastern construction site

A summary of the predicted archaeological remains at the Pyrmont Station western construction site and their potential is presented in Table 18. This summary is informed by the historical background contained within this report and an analysis of previous archaeological assessments.

Table 18: Summary of archaeological remains and potential at eastern construction site

Phase	Site use	Predicted archaeological remains	Potential
Phase 1 (1788-1878)	Part of the Ultimo Estate, potentially used for livestock grazing	Land clearing is presumed to have occurred during this time, but no known construction occurred within this Pyrmont Station western construction site during this time. Land utilised for informal grazing or farming may have left ephemeral archaeological remains such as animal bones (cattle or sheep), tree boles, fencing post holes or field drains. However, with the later development of the site and with significant basements in the northern portion of the site, these remains are not anticipated to be present.	**Nil**
Phase 2 (1883-1930)	Residential housing, commercial properties, 'Elder's Hall'	Terrace housing used for commercial and residential tenants were constructed in 1878. These terraces were the living and working spaces of a variety of retail trades, including butchers, grocers, hairdressers, and general stores, as well as "Elder's Hall' a local community centre at the time. Archaeological remains related to these premises would only be situated within the northern portion of the site due to basement excavation present in the south. The location of the former terrace houses with respect to the construction site and known basement excavation is provided in Figure 113. The area of archaeological potential within the construction site is associated with the front rooms of these former terraces and only for a small section of the original Union Street row of buildings. Privies and kitchens are likely not preserved due to their presence in the rear of the properties which have been removed from excavation for basement parking. Archaeological resources relating to development within these subdivisions include: • Building foundations—sandstone or brick—associated with documented and undocumented structures; • Demolition fills, postholes and rubbish deposits; • Undocumented features including basements, drains, cesspits, utilities, cisterns and wells • Yard and workshop surfaces • Evidence of gardens and yard layouts. The study area has generally low potential to contain artefact-bearing occupation/underfloor deposits.	**Moderate for truncated remains**

Phase	Site use	Predicted archaeological remains	Potential
Phase 3 (1930-1986)	Timber and building materials storage yard, and associated sheds and offices, fuel service station, car park	This phase saw the western portion of the construction site used for lumber storage which would preclude the likely accumulation of significant archaeological remains. Chance archaeological remains from this phase could include timber and brick footings for walls or fences, as well as isolated rubbish deposits, however later disturbance to construct office buildings in the 1980s involved ground excavation would have likely removed all of these relatively ephemeral remains. The fuel service station was constructed in the eastern corner of the construction site in the 1960s. Later excavation for the construction of the 1980s office building has likely removed all remnants of this structure with the possible exception of any residual deep fuel storage tanks.	**Nil for storage yard** **Low for deep deposits (fuel tanks) only**
Phase 4 (1986-present)	Commercial properties	Subsurface archaeological remains are not anticipated to be present from the construction of the 1980s office building on the site	**Nil for subsurface remains**

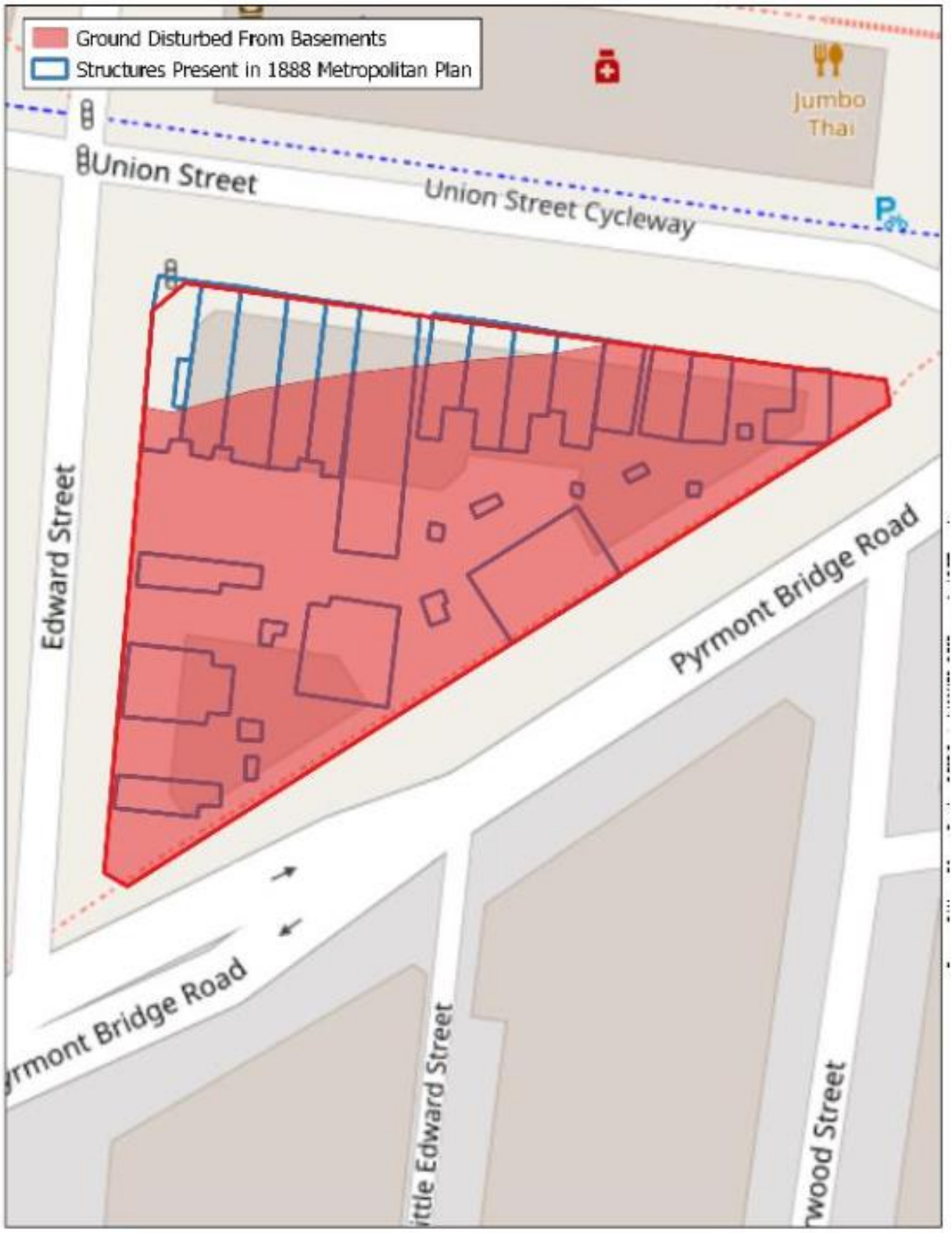


Figure 113: Overlay of potential archaeological remains within the Pyrmont Station eastern construction site.

3.7 Assessment of archaeological significance

The following assessments of significance for archaeological remains are provided for remains predicted to be located within the construction sites only. Land use phases for which archaeological remains have not been predicted are not included in this discussion of archaeological significance. Archaeological remains related to later twentieth century phases are also not included in these assessments of significance.

Predicted archaeological deposits relating to late-nineteenth and early twentieth century remains within both Pyrmont Station construction sites are assessed in accordance with the methodology outlined in Section 3.2. in Table 19.

Table 19: Assessment of archaeological significance for Pyrmont Station western construction site phase 2 (1883 –1914 –commercial and residential development) and the Pyrmont Station eastern construction site phase 2 (1878 –1940 –commercial and residential development.

Criteria	Discussion
Research potential (criterion E)	Archaeological remains related to small-scale late-nineteenth and early twentieth century domestic and commercial industries, if a robust dataset, has research potential for its ability to investigate the domestic and working practices of the people who resided in these buildings. Robust domestic and commercial artefactual deposits, when spatially interrogated, can respond to questions regarding the trades, class, gender, ethnicity, and habits of the people who discarded them. Artefactual datasets can be compared with similar comparative deposits from other Pyrmont late-nineteenth archaeological sites. This could further answer questions regarding to respectability and material aspirations of the residents and workers in what was a predominantly working class suburb for much of its history. **If substantial and intact archaeological resources associated with Phase 2 are present within the study area, these remains would reach the threshold for local significance under this criterion**.
Association with individuals, events or groups of historical importance (criteria A, B & D)	While the Ultimo Estate was originally the possession of John Harris and was subdivided by his family, the archaeological remains of late nineteenth terrace houses (and associated artefactual deposits) would not be associated with Harris or his family. No individual, events or groups of historic importance are associated with the predicted remains. Archaeological remains would not reach the threshold for local significance under these criteria.
Aesthetic or technical significance (criterion C)	Artefactual remains related to trades and commercial practices have the potential to provide insight into the activities that took place. Artefact assemblages may have aesthetic significance, and be able to be used in interpretive displays, dependant on the intactness of the objects recovered. Structural remains associated with the former terraces and shopfronts have the potential to exhibit the layout, form and function of a former late nineteenth commercial high street. Domestic artefactual remains, particularly those related to families, child rearing or education, may be of aesthetic value. Archaeological remains would be considered of local significance under this criterion.

Criteria	Discussion
Ability to demonstrate the past through archaeological remains (criteria A, C, F & G	The use and operation of combined commercial and residential terrace houses would be able to demonstrate the working-and middle-class lives of the former occupants of these buildings. Former terrace buildings on Pyrmont Bridge Road and Union Street would have formed a small commercial 'high' street as Pyrmont grew with increased traffic after the construction of Pyrmont Bridge. The operation of this commercial area, which may show the material aspirations of the largely working class residents of Pyrmont, would likely display past practices and lifeways of these inhabitants. Artefacts associated with Phase 2 of residential development, if recovered from intact occupation deposits, may provide information about prior uses of the study area and its residents. Artefacts from secure contexts may further contextualise the lifeways of the residents who occupied the study area in the mid to late 19th century, providing insight into personal preferences, cottage industry and/or trade networks. Such artefacts may prove useful as comparative material for previous similar archaeological investigations in the area. Expanding the corpus of available archaeological information may highlight heretofore unknown variation or homogeneity in domestic lives through future intra-regional studies. **If substantial and intact archaeological resources associated with Phase 2 are present within the study area, these remains would reach the threshold for local significance under these criteria**.
Statement of significance	Archaeological remains associated with late-nineteenth and early-twentieth century commercial and residential terrace houses (and associated artefactual deposits) are of local significance for their ability to answer research questions about trades, class, gender and aspiration. Archaeological remains recovered from these sites can be interrogated against comparative datasets of other Pyrmont archaeological investigations. These remains may provide information on the manufacture, operation and retail of a variety of commercial trades. Remains would be demonstrative of the practices and lifeways of a burgeoning local commercial community which tended to the daily needs of a busy maritime and industrial working-class precinct.

3.7.1 Summary of archaeological potential and significance at the Pyrmont Station construction sites

A summary of predicted significant archaeological remains located within the Pyrmont Station construction sites is provided in Table 20 and the anticipated location of these remains is shown in Figure 114.

Table 20: Summary of significant non-Aboriginal archaeological remains within the Pyrmont Station construction sites.

Site	Phase	Predicted remains	Potential	Significance
Pyrmont Station western construction site	**Phase 2 (1879-1914)**	Archaeological remains related to this phase may include brick and stone footings, hearths, yard and workshop surfaces, rubbish scatters and isolated rubbish pits/bottle dumps.	Moderate	Local
		Dependant on the extent of former basement excavation impacts in the northernmost portion of the site, the study area has some potential to contain deeper subsurface structures such as wells, privies and cisterns. These structures may contain artefact bearing deposits.	Low	Local
		The site has limited potential to contain underfloor deposits (discarded ceramic, pins, buttons and glass).		

Site	Phase	Predicted remains	Potential	Significance
Pyrmont Station eastern construction site	**Phase 2 (1883-1930)**	Archaeological remains related to this phase may include brick and stone footings and hearths.	Moderate	Local
		The site has limited potential to contain underfloor deposits (discarded ceramic, pins, buttons and glass), artefacts deposited within decommissioned deeper subsurface structures such as wells, cisterns or privies. Yard and workshop surfaces and isolated rubbish deposits	Low	Local



Figure 114: Significant non-Aboriginal archaeological resources at the Pyrmont Station construction sites.

4.0 RESEARCH DESIGN

4.1 Historic themes

Contextual analysis is undertaken to place the history of a particular site within relevant historical contexts, in order to gauge how typical or unique the history of a particular site actually is. This is usually ascertained by gaining an understanding of the history of a site in relation to the broad historical themes characterising Australia at the time. Such themes have been established by the Australian Heritage Commission and the NSW Heritage Office and are outlined in synoptic form in New South Wales Historical Themes, issued by the NSW Heritage Office. [267]

4.1.1 Summary of relevant themes

The Pyrmont Station construction sites have the potential to contain locally significant archaeological resources associated with late-nineteenth century residences and early 20th century small-scale light industry. Archaeological remains associated with the history of the site may include building foundations, demolition rubble and fill and isolated artefact deposits. The potential archaeological resource may relate to the NSW Historic Themes of 'Industry', 'Accommodation' and 'Domestic Life'. Each theme will be discussed in turn to contextualise the site history and identify potential archaeological evidence. Historic themes and their descriptions have been derived from the Heritage Council of NSW Historical themes guidelines.[268]

Table 21: Historic themes relevant for the predicted archaeological remains

Australian Theme	NSW Theme	Discussion
3. Developing local, regional and national economies	Industry	The study area has the potential to contain an archaeological resource associated with the construction and use of industrial spaces and factories through artefactual resources and yard/workshops layout. Artefact bearing deposits may provide insight into the goods manufactured and/or traded through the study area.
4. Building settlements, towns and cities	Towns, suburbs and villages	Archaeological remains relating to the settlement of the study area may provide evidence of activities associated with creating, planning, and managing urban functions, landscapes and lifestyles in towns, suburbs and villages. This may provide information regarding streetscape, subdivision pattern and town plan. Evidence may include building foundations, undocumented subsurface features, former fence lines and property boundaries.
4. Building settlements, towns and cities	Land tenure	Archaeological remains relating to the settlement of the study area are likely to be present, potentially providing evidence of activities and processes for identifying forms of ownership and occupancy of land. Evidence may include former fence lines and property boundaries.
4. Building settlements, towns and cities	Utilities	Archaeological remains relating to the settlement of the study area are likely to be present, potentially providing

[267] Heritage Council of NSW 2001. *New South Wales Historical Themes*. Heritage Office guidelines. Accessed online 20 September 2021: https://www.heritage.nsw.gov.au/assets/Uploads/a-z-publications/g-i/Historical-Themes.pdf
[268] Heritage Council of NSW 2001. *New South Wales Historical Themes*. Heritage Office guidelines. Accessed online 20 September 2021: https://www.heritage.nsw.gov.au/assets/Uploads/a-z-publications/g-i/Historical-Themes.pdf

Australian Theme	NSW Theme	Discussion
		evidence of activities associated with the provision of services, especially on a communal basis. Evidence may include water pipelines, sewerage tunnels, wells, cesspits, and rubbish pits.
4. Building settlements, towns and cities	Accommodation	Archaeological remains relating to the residential development of the study area are likely to be present, potentially providing evidence of the provision of accommodation. Evidence may include building foundations, undocumented subsurface features and artefact scatters.
5. Working	Labour	The study area was occupied by several businesses and light industry throughout the late nineteenth and into the mid twentieth century. Archaeological remains relating to their use of the site may provide information regarding labour practices and activities of that time.
8. Developing Australia's cultural life	Domestic life	Archaeological remains relating to the nineteenth century residences are likely to be present, potentially providing evidence of activities associated with creating, maintaining, living in and working around houses and institutions. Evidence may include domestic artefact scatters, building foundations and undocumented subsurface features.
8. Developing Australia's cultural life	Leisure	Archaeological remains relating to the Captain Cook / Bunnerong Hotel are likely to be present within the study area, potentially providing evidence of activities associated with recreation and relaxation. Evidence may include artefact scatters.

4.2 Archaeological research questions

4.2.1 Methodology

"Archaeological research potential is the ability of archaeological evidence, through analysis and interpretation, to provide information about a site that could not be derived from any other source, and which contributes to the archaeological significance of that site and its 'relics'"[269] .

The significance of a potential archaeological resource therefore lies predominantly in its ability to respond to research agendas in a meaningful way, rather than duplicating known information, or information that might be more readily available from other sources, such as documentary records or oral history. Therefore, the aim of the following research questions is to ensure that the proposed archaeological investigation is focused on genuine research needs.

The Statement of archaeological Significance, in combination with the NSW Historic Themes,[270] have provided the basis for the research design framework. Archaeological resources within the construction sites have the potential to contribute to research areas such as:

- Domestic occupation and material culture in the late 19th and early 20th centuries
- Consumer behaviour and the household

[269] Heritage Branch, Department of Planning NSW. Assessing Significance for Historical Archaeological Sites and 'Relics'. Endorsed by the Heritage Council of NSW in December 2009 p11.
[270] Heritage Council 2001

- Industrial archaeology and late 19th century material culture
- The intersection of commercial space and the household
- Comparative analysis of archaeological results in Pyrmont.

Additional research questions may be posed (and existing questions modified) as the archaeological excavation progresses and the extant and condition of the archaeological resource is revealed.

4.2.2 Research questions

4.2.2.1 Domestic occupation and material culture in the 19th century

Early plans indicate that a number of semi-detached residences and shopfronts were located at both sites, dating from the late 19th century. The historical record indicates that these residences were primarily occupied by working-class individuals and families. Evidence of the residences is likely to consist of stone footings and foundations, postholes associated with timber structures and outhouses, and deposits containing evidence of such as yard scatters. The age of the residences indicates that underfloor deposits are unlikely to be present. The site may contain evidence of cottage gardens, the layout and use of yard areas, and artefact scatters and refuse pits associated with former residents.

The western construction site, dependant on the extent of the basement constructed on the northern portion of the site, has some potential to contain former privies and/or undocumented water sources such as wells or cisterns. Privies dating to the later 19th century, and therefore after the introduction of mandatory sewerage installation enforced by the Sydney City Council from c. 1875, may contain artefacts discarded within the structures on decommissioning. Similarly, wells and cisterns can be backfilled with artefact-bearing fills.

Evidence of domestic occupation and identity obtained from artefacts recovered from the sites would relate to the NSW Historic Theme of ‘Domestic life’, ‘Accommodation’ and ‘Utilities’.

The site is likely to contain an archaeological resource that is typical of the late Victorian period of development. Evidence of footings, yards surfaces and utilities are unlikely to provide additional information beyond that which has already been ascertained through archaeological excavation of sites of a similar date or can be obtained from the historical or cartographic record. However, should artefact bearing occupation deposits survive in situ, these have the potential to provide detailed insight into the lives of individuals residing and working in the study area. Artefacts may prove useful as comparative material for previous similar archaeological investigations in the area. Expanding the corpus of available archaeological information may highlight heretofore unknown variation or homogeneity in domestic lives through future intra-regional studies.

Potential research questions relating to the lifeways of these individuals include the following:

- Is there evidence that the residents were engaged in recreational activities? (gaming, smoking, sewing, etc)
- Is there evidence of the intersection of work and home life? Is there evidence of other small-scale industrial practises occurring in a seemingly domestic environment?
- What food were the residents of the cottages consuming? Is there evidence of the cooking methods, brand or food preferences?
- What evidence is there of gardens, workshops and the layout and use of yard areas?

- How do the archaeological remains compare to other sites excavated in Pyrmont and the inner suburbs of Sydney? are the study areas typical of a late 19th century light industrial and residential site, or do the remains provide information that is rare in the regional context?
- Does the archaeological resource provide insight into activities split along gender or age lines? Is there evidence for the presence of women and children? Does the resource provide information about family dynamics in early Sydney?
- Does the archaeological resource provide evidence of social standing and status? Does this support the notion that the area was working class? Is there evidence that former inhabitants of the site displayed their social standing or ethnicity through items of personal adornment or preferences for certain consumables?

4.2.3 Industrial archaeology

It is anticipated that the study area may contain archaeological remains associated with small-scale shopfronts of the later 19th and early 20th century. Archaeological remains associated with the layout of warehouses and other industrial buildings, construction materials and methods, are unlikely to be particularly significant or rare, as discussed in Section 3.7 of this report. However, there is some potential for the study area to contain an artefactual resource within former building cavities and refuse pits that may be associated with the individuals who worked and resided within the study area. Potential research questions relating to the lifeways of these individuals include the following:

- Does the artefact assemblage provide information on the daily life of employees and/or workers at the site? Do any intact deposits provide useful spatial information, identify discrete activity areas or provide spatial data on the range of tasks undertaken within the building over time?
- Is there artefactual or other evidence of the practising of trades and industry other than those recorded in the historic record, such as cottage industries associated with women and children?
- Is there evidence of the division of labour spaces, yards and sheds?
- Is there evidence of the conditions in which the employees worked?
- If evidence of rubbish disposal practises are encountered, that can be associated with industrial rather than domestic purposes, do they contain assemblages that differ dramatically from those in more domestic environments? Are those individuals working at the site disposing of the same rubbish/materials that they would at home in addition to industrial waste?
- Is there evidence of the types of foods consumed by the workers?
- Is there evidence of food production on-site?
- Do the artefacts provide some indication of the types of eating utensils and vessels being used? Do these conform to those found in typically ‘industrial’ archaeological settings?
- Can the archaeological resource provide us with information regarding the day-to-day life of workers in the late 1800s? Is there evidence of consumer choices and preferences or gender-

specific artefactual remains that may provide information on the lives of working class men and women?

4.2.4 Public utilities and services

Any drainage features, cisterns, outbuildings (including cesspits) and water infrastructure identified to date the nineteenth century have the potential to contribute to our understanding of the types of amenities available to the throughout the nineteenth century, as well as the adaptation of infrastructure to the local landscape. Solutions to landscape, drainage, water supply and sewage issues unique to this area can be explored through these types of remains. The Pyrmont area was somewhat unique, in that it was located in such close proximity to the city, but was almost entirely undeveloped until the later nineteenth century. Does the archaeological resource indicate that

The abandonment of the cesspit and pan toilet, and connection into the municipal sewerage system, was made compulsory by the City Council c.1875, although the rate at which it was adopted in working class neighbourhoods, typically those associated with lower socio-economic standing, is unknown. Archaeological resources present at the site may reveal answers to the following research questions:

- Can the archaeological resources at the site provide insight into when this new technology was adopted in this part of Pyrmont? Can they also inform us how this was achieved?

5.0 ARCHAEOLOGICAL METHODOLOGY

5.1 Introduction

The study area has been assessed as generally having moderate potential to contain locally significant archaeological remains in the form of structural evidence and artefacts associated with the late 19th century residential and commercial development of Pyrmont.

It is proposed that management of the potential archaeological resource include the following processes. These have been defined in Table 22 and illustrated in Figure 115:

- Heritage induction (completed prior to demolition; see Section 5.2)
- Unexpected Finds Procedure during demolition of extant structures and excavation within areas previously impacted by basements as illustrated on Figure 114 (see Section 5.5)
- Monitoring and/or Unexpected Finds Procedure for enabling works (see Section 5.4.1)
- Eastern construction site - Monitoring and salvage (if required) of excavation work within the area of moderate archaeological potential (see Figure 115)
- Western construction site - Testing and salvage (if required) of areas proposed for excavation within the area of moderate archaeological potential (see Figure 115).

It is recommended that the final archaeological program be developed by the ETP contractor and the Excavation Director engaged for the project.

Table 22: Definition of archaeological methodologies

Methodology	Definition
Monitoring	Archaeological monitoring is where an archaeologist is in attendance and supervising construction excavation work with potential to expose or impact archaeological remains. Monitoring is generally undertaken where there is lower potential for significant archaeological remains and/or where minor excavation work is in an area of archaeological sensitivity. If archaeological remains are identified during monitoring, they would be excavated and recorded by the site archaeologist
Test excavation	Archaeological test excavation involves excavation of small sample trenches within a potential archaeological site. Testing is usually undertaken prior to construction to clarify the extent of the potential remains, archaeological significance, potential of a construction task to impact significant archaeology and inform requirements for further archaeological investigation, such as salvage excavation or monitoring.
Salvage excavation	Archaeological salvage refers to open-area archaeological excavation under the control of the Excavation Director undertaken prior to impact. Salvage includes the horizontal excavation of the entire historical archaeological site. Manual excavation would be undertaken using hand tools, by a qualified archaeological team.

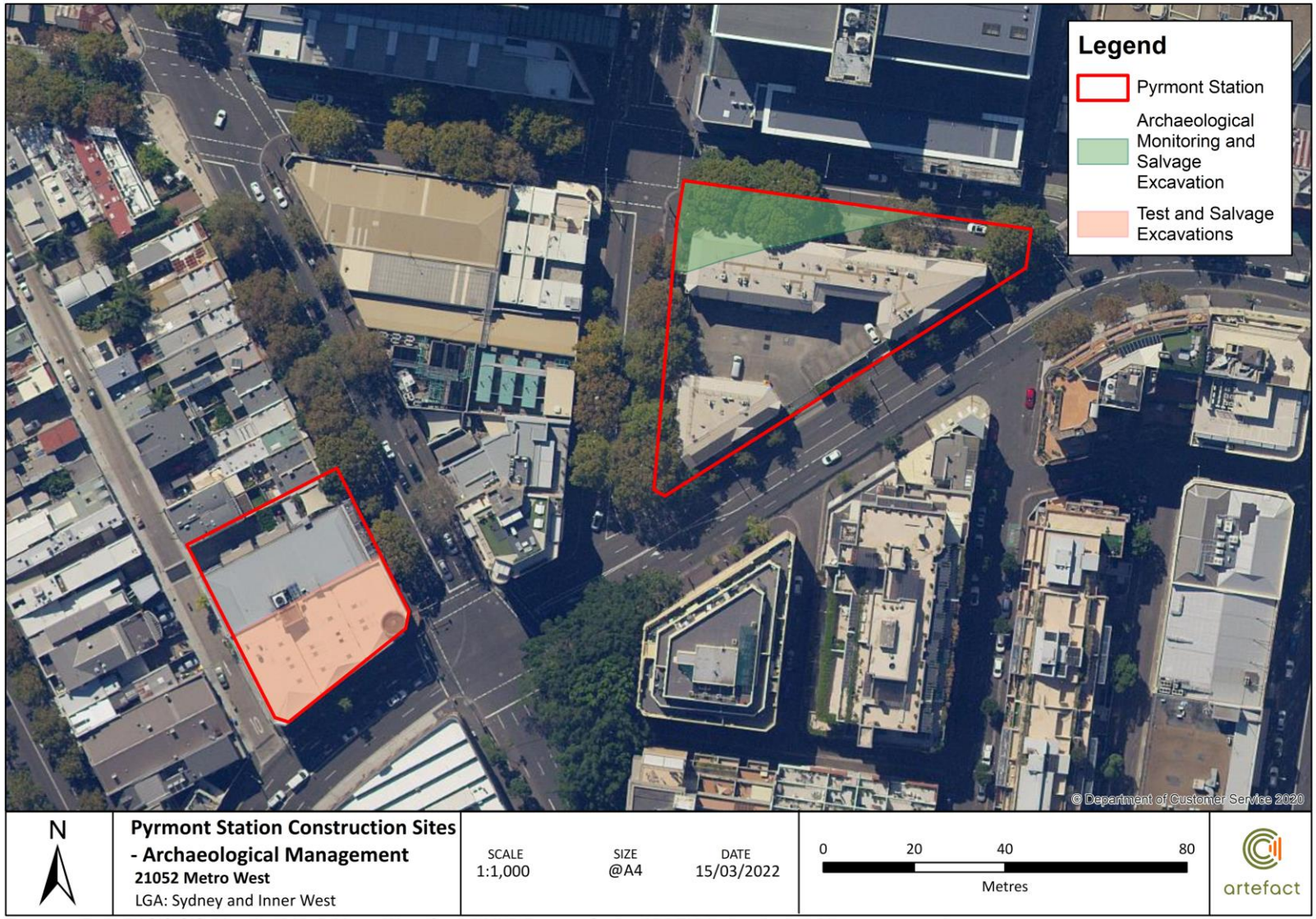


Figure 115: Overview of archaeological management

5.2 Heritage induction

Archaeological heritage would be included in the general project induction as described in the project CEMP or CEMP for each contract. Additional site specific archaeological inductions would be provided to staff and contractors. At a minimum this process would include an overview of the project obligations and archaeological areas of potential, the role of the archaeological team, and the project unexpected finds procedure including typical potential archaeological remains identified in this assessment.

Location maps for predicted areas of archaeological potential would be made available to all relevant contractor personnel along with a copy of this ARDEM. A visual guide of potential archaeological items would be provided as part of the heritage induction to all work crews to assist with potential unexpected heritage find identification.

Contact details for the Excavation Director and Site Director would be provided to all necessary work managers and environmental assessment personnel.

5.3 Archaeological team

5.3.1 Excavation Director

Archaeological investigations would be managed by a suitably qualified and experienced Excavation Director who would meet the NSW Heritage Council criteria. The Excavation Director would be responsible for overseeing the archaeological investigation program.

A Site Director may also be required to support the Excavation Director on site.

A suitably qualified and experienced Aboriginal Archaeological Excavation Director would be nominated as required.

5.3.2 On site archaeologists

Archaeological excavation and monitoring tasks would be conducted by appropriately trained archaeologists under the coordination of the Excavation Director and Site Director.

5.4 Archaeological excavation methodologies

5.4.1 Enabling works

Should excavation work be required prior to archaeological testing of the eastern construction site (see Section 5.4.2) or monitoring of the western construction site (see Section 5.4.3) appropriate management methodologies would be adopted by the ETP contractor in consultation with the nominated Excavation Director.

It is assumed that enabling works may include a combination of contamination and geotechnical testing and trenching to disconnect or relocate utilities. It is assumed that this work may take the form of auguring, Non-Destructive Digging and or machine excavation.

Dependant on the location and excavation methodology required, archaeological monitoring (as per the methodology outlined in Section 5.4.2) and/or implementation of the Unexpected Finds Procedure may be appropriate.

5.4.2 Archaeological monitoring – Eastern construction site

It is recommended that archaeological monitoring and salvage (if required) of project excavation work occur within the area of moderate archaeological potential in the eastern construction site (see Figure 115). Archaeological monitoring is considered to be the most appropriate management for this location, due to the limited size of the area of potential, likely disturbance through the introduction of utilities adjacent to the public footpath and low potential for intact artefact-bearing deposits to be present.

Archaeological monitoring would be conducted by on site archaeologists who would be coordinated by the Site Director and Excavation Director.

The on site archaeologist would supervise excavation but would also be able to direct machine excavation contractors in consultation with contractor supervisors, to excavate areas of interest under their direction, so long as excavation does not exceed the approved impact area for the scope of work. Should construction excavation work endanger potential archaeological deposits, the machine excavation contractor must cease excavation if advised by the monitoring archaeologist.

If archaeological remains are identified during archaeological monitoring, they would be recorded and assessed to determine if further investigation or salvage is required. Localised stoppages in the construction work would be required to facilitate this process. Works would not recommence until the monitoring archaeologist has completed the recording and the Excavation Director is satisfied that further investigation is not required.

If significant and intact archaeological remains are identified, then archaeological salvage would be required prior to construction impacts. Assessments of significance of all finds would be supervised and confirmed by the Excavation Director.

5.4.3 Test excavation – Western construction site

It is assumed that excavation impacts would be required throughout the construction site and that, therefore, any intact archaeological remains would be removed by the project.

The test excavation program would include the excavation of five (5) test trenches within the area of moderate potential (see Figure 116). The test excavation program would target locations deemed to have a higher likelihood of containing deeper subsurface structures and intact artefact-bearing deposits, such as yards, outbuildings and structural footings based on historic mapping and research. The primary aim of the testing is to verify the extent of any previous impacts and identify whether significant archaeological deposits, structures or features survive within the site.

Should the location of any test trench be found to be unsuitable due to the presence of additional underground services, overhead wires, tree roots or other practical reasons, it is proposed that the trenches be moved to a more suitable location, within 3 metres of the proposed location. Should initial; testing results indicate that historic mapping / prepared overlays are incorrect, it is proposed that the location of the remaining trenches be moved to better accommodate this, to obtain the best outcome in terms of identifying the archaeological resource.

The 5 test trenches, measuring 1.5 metres by 6 metres, be excavated in the locations illustrated on Figure 116 and described below. The length of test trenches was selected to span the distance, wherever possible, between potential structural remains associated with neighbouring properties, therefore increasing the likelihood of encountering archaeological remains within any given trench and achieving a useful sample of the overall site.

Test Trench 1
Trench 1 is located within an area previously occupied by two Phase 2 residences and yards and a Phase 3 structure. Testing in this location will provide insights into disturbance that may have resulted from the construction of Phase 3 and 4 buildings and assess the survival of any potential Phase 2 archaeological remains such as underfloor deposits, services, footings and yard surfaces. The extent of Phase 3 demolition activities may also be identified during the program.

Test Trench 2
Trench 2 Is located in an area previously occupied by a Phase 2 residence and extends into the former yard. Testing in this location would provide insight into the survival of stratigraphy in this location and identify the extent of survival of the Phase 2 structure. The trench has been placed to include the former rear yard threshold, a location where discarded artefacts often accumulate. The extent of Phase 3 demolition activities may also be identified during the program.

Test Trench 3
Trench 3 is located within an area previously occupied by two Phase 2 residences. The trench has been placed to encompass potential rear yard thresholds and the former property boundary. Testing in this location would provide insights into the survival of Phase 2 remains and features including underfloor deposits, footings, services and post holes and extent of Phase 3 demolition activities.

Test Trench 4
Trench 4 is located within an area that was utilised as yard through Phases 2 and 3. Testing in this location would provide insight into the survival of stratigraphy in this location and will allow for a comparison between the eastern and western portions of the site. This trench has also been placed to confirm that the privies and outbuildings located against the former property boundary are definitely outside the area of moderate potential (within the Phase 4 basement), as the property boundaries may have shifted over time.

Test Trench 5
Trench 5 is located within an area previously occupied by two Phase 2 residences and a Phase 3 structure. Testing in this location will provide insights into disturbance that may have resulted from the construction of Phase 3 and 4 buildings and assess the survival of any potential Phase 2 archaeological remains such as underfloor deposits, services, footings and yard surfaces. The extent of Phase 3 demolition activities may also be identified during the program.

5.4.3.1 Triggers for archaeological salvage
Should significant and intact archaeological remains be identified during test excavation, and these remains show they are part of a larger feature which extends beyond the limit of the test excavation area, salvage excavation may be proposed by the Excavation Director. Salvage excavation of a resource would be proposed if one or more of the following conditions are met:

- Substantially intact archaeological remains in association with *in situ* artefact bearing deposits that have the ability to address the research questions (see Section 4.2) 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 had value for heritage interpretation or public outreach purposes.

Should salvage excavation be required, the methodology outlined in Section 5.4.3 would be adopted.



Figure 116: Proposed test trench locations – Western construction site

5.4.4 Salvage excavation methodology

The need for salvage excavation would be triggered by the discovery of considerably intact stratigraphy and/or locally significant archaeological remains identified during the archaeological monitoring and test excavation programs. Please note that the archaeological testing and/or monitoring programs may identify that only portions of the areas of archaeological potential require full salvage excavation.

Open area salvage excavation is a method of archaeological investigation in which the full horizontal extent of an area of site is investigated and cleared, whilst preserving the stratigraphic record.

Removal of modern fills and disturbance would be undertaken by an appropriately sized excavator and flat bucket, manned by an experienced operator, under direct archaeological supervision. On the identification of any historical/archaeological fills, detailed excavation would commence using hand by a qualified archaeological team. Archaeological features would be cleaned, investigated (excavated) and recorded in detail. In urban archaeological sites, careful machine excavation may also be employed to assist the detailed archaeological excavation process. Where contaminated deposits are identified, remote recording techniques may be utilised to minimise exposure to harmful materials.

Construction works would not proceed until the salvage excavation is completed and the Excavation Director has provided clearance for the area in question.

5.4.4.1 Deep subsurface structural remains

Structural remains of wells, cisterns and cesspits/privies can contain substantial amounts of backfilled material and artefactual remains. Artefacts find their way into these features through a number of actions, including deliberate placement and accidental loss. Structures of this type often contain a number of backfill or deposition events and are typically excavated suing a combination of machine excavation and hand excavation at depth. Accumulated deposits are often useful for soil and pollen analysis.

If a feature is found to extend to a substantial depth, complete excavation of the fill may not be possible due to Occupational Health and Safety requirements. In this situation fill would be removed to a safe depth to allow for the recording of the structure and collection of a representative stratified sample of any fill or artefacts. It is possible that further excavation or monitoring of particularly deep structures, such as wells, may be able to be undertaken by machine at a later date. As this would involve the removal of substantial amounts of soil, the archaeological program would need to have been finalised in the immediate vicinity to avoid disturbance to any archaeological remains or deposits.

Should any intact and deep structural features be encountered it may be necessary to remove any demolition or fill material within by mechanical excavation under the supervision of an archaeologist. Any material removed by excavator would be examined for artefacts by the archaeologists.

5.4.4.2 Occupation deposits

The study area has generally low potential to contain underfloor or occupation deposits that may have accumulated beneath flooring. Deposits of this type are sensitive and are investigated via a methodical system utilising grid squares, careful excavation with hand tools and sample sieving.

Intact underfloor deposits would be excavated in a grid system, either 50 centimetre or 1 metre depending on extent of deposit. Excavation would be by context if stratigraphic layers are identifiable. If the deposit is homogenised, excavation would proceed in 5 or 10 centimetre spits. Excavated material would be wet or dry sieved if required. The range and percentage of archaeological material collected would be in accordance with a sieving strategy developed by the Excavation Director and Site Director.

This type of investigation can recover data that may be utilised in the analyses of interior spaces and in the identification of activities within those spaces.

5.4.4.3 Open days

Excavation schedules and planning should allow for public access to the site where appropriate. Open days, site tours and school access should all be considered where state significant archaeological resources are identified and when safe access can be provided.

5.5 Unexpected finds procedure

Unexpected archaeological finds would be managed under the Sydney Metro Unexpected Heritage Finds Procedure. The procedure should be implemented during all excavation work on site not subject to direct management by on-site archaeologists.

5.6 Contaminated materials

Due to the potential for contaminants across the Pyrmont Station construction sites, archaeological excavation would be undertaken in accordance with the specified WH&S and environmental protocols established for the site, prior to the commencement of works on site. The archaeological team is reliant on contamination and hygienist contractors to provide prompt analysis of potential contaminants and detail contamination controls for safe excavation.

Should the discovery of contaminants on site likely result in the potential harm to archaeological staff, there may be a requirement to deviate from the proposed archaeological methodology, in order to ensure the health and safety of onsite staff. This response may include the use of protective clothing, face masks, and specified gloves, additional washing protocols, through to the need to cease hand excavation on site. It is noted that whole-of-body PPE (such as contamination suits) exacerbate heat stress in workers and the routine use of this PPE to excavate through contaminated deposits is not recommended – rather, where archaeological remains are identified in contaminated deposits, remote recording techniques are recommended over risking worker safety. However, basic contamination control PPE would be present with the archaeological team at all times (specifically, N2-masks for preventing inhalation of airborne asbestos fibres as well as impermeable gloves for handling soil).

The Excavation Director would provide justification wherever this proposed excavation methodology is deviated from in order to protect human health during archaeological investigation and outline the revised archaeological methodology for investigating specific remains.

Should the requirement to employ mechanical excavation rather than hand excavation arise, archival photographic recording of archaeological material would be conducted from a safe distance (as specified in the WH&S requirements of the remediation specialists). Should significant and robust archaeological remains be identified within contaminated deposits, opportunities for photogrammetry and orthography would be prioritised.

Should artefactual material located within bulk contaminated soil deposits be identified, the Excavation Director would consider opportunities for wet sieving of artefacts, within contamination PPE, depending on environmental and hygienist controls for managing run-off and disposing of contaminated soil. Artefacts which are composed of hazardous materials, or which have been embedded in known contamination areas (and which therefore may have absorbed harmful contaminants) would also not be collected if they are not deemed to be safe or for which storage of these items would be hazardous off-site.

Manual excavation is not anticipated at a depth where the water table is anticipated to be encountered with the exception of benched test excavation for reclamation fills within the station box

excavation area. In circumstances where ground-water is present during archaeological excavation, archaeological staff would follow all OH&S advice provided to contractor crews. All opportunities to avoid handling or excavating within contaminated ground water would be undertaken, including vacuum suction of contaminated water if possible and remote recording of exposed archaeological remains with photogrammetry or drone photography where possible.

5.7 Archaeological recording and documentation procedures

5.7.1 Introduction

Archaeological recording would be undertaken by allocating each stratigraphic unit a context number and completing a record of each context on a context sheet.

Mapping, planning and recording would be coordinated through a GIS system that would combine data from varying sources and present it in the form of maps.

The Excavation Director and the Site Director would complete a daily journal outlining the aims for the work to be done each day, what is achieved and what the next task is. In this way, the progress of the excavation and the day-to-day work and decisions are captured for reference if required, and to inform the preliminary and final excavation reports.

5.7.2 Survey Control

A survey control for the site would be established, tied to the Geocentric Datum of Australia (GDA) 2020. For preference, survey data would be recorded with a DGPS and post-processed to sub 1cm accuracy. Alternatively, a Total Station would be used to establish the survey and record survey data. An automatic level could also be used to record depths and tied to known datum points.

Due to the likelihood of staged and sequential works, a physical site grid for the whole of the site is not likely to be able to be established or preserved. Surveyed datums would be established at the commencement of each excavation program, with these datums measured either with a DGPS or total station survey. Hand-drawn plans would then be measured off these datums, with at least 4 datums used for measurement control.

Within an archaeological excavation area, the archaeological team would set out a grid for ease of recording and, where required, and establish main and subsidiary datums based on survey information. Further datums for vertical control will be established to allow all trenches to be surveyed in to a nearby datum. These will be tied back to Australian Height Datum and the survey grid.

Where electronic surveying equipment is not available to the archaeological team, horizontal measurements and detailed scaled plans of excavation areas and features would be prepared. Vertical relative elevations would be taken with Dumpy level. These plans and levels would be tied to a previously surveyed main or subsidiary datum. Every level taken is assigned a number and is recorded on a level sheet (particularly for Dumpy readings).

Where dateable or otherwise special artefacts are located, they would be recorded in three dimensions with surveying equipment if available.

5.7.3 Recording of Contexts

All soil deposits and significant features would be given a unique context number without duplication. Context numbers will be recorded in a register of context numbers to ensure context numbers are not duplicated. Each context is numbered sequentially.

Rubble deposits would be recorded only where it provides specific information regarding masonry and construction (i.e., wall finishes, material etc.). Fills need to be described in detail as there are varying types of fills (e.g., demolition, levelling).

Contexts would be related to each other through the use of a Harris Matrix. The relationships between each of the contexts are recorded on the context sheet and these are also recorded in Stratify, a computer program used for producing Harris Matrices.

5.7.4 Recording of Archaeological Features

Archaeological features would be recorded through the preparation of plans and sections. Structural elements, such as brick walls or timber posts, would be recorded in situ to observe phases in construction, and then removed in stratigraphic sequence.

Plans and sections will be labelled with details of what is being recorded, context numbers and details of the recorder. Each plan, map or section will be catalogued and receive a number which is put on the plan and in the catalogue. The plan, map or section will be placed flat in an artist portfolio.

Plans need four control points on each plan that can then be surveyed in to georeference the plan. All records of vertical sections would include elevation data to ensure accurate measurement of stratigraphic layers at the site. Excavation open areas of significant features would include elevation levels throughout site, recorded either with a DGPS or total station, or with a dumpy level measured off surveyed datum control points for the site. The surface level and end of excavation elevation levels for all test excavation trenches, and all salvage excavation areas, would be recorded.

5.7.5 Photography

All photographic recording would be carried out in accordance with *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Office 2006), accepting that parts of these guidelines are technically obsolete. The team would use a digital SLR camera and shoot in raw format to capture the maximum amount of information from the camera sensors. The photograph number and direction would be recorded, and a description provided for all photographs and the locations from which each image was taken would be recorded on a site base plan. Photographs would be recorded in a register identifying the shot number, direction and a description of the scene.

The archaeological team should record the site using digital techniques such as photogrammetry and/or laser scanning. This will ensure that an augmented site archive will be available for creative digital interpretation and that interactive reconstructions can be produced during content development. In photographically recording archaeological features, the practice would be to shoot to the requirements for photogrammetry, which includes accurate scale bars, overlapping of images and recording with a colour card where required.

5.7.6 Collection of Artefacts

Artefacts would be collected and bagged with reference to the soil deposit's context number. Each artefact bag or individual artefact would tagged with a Tyvek tag and sealed in plastic bags. Delicate materials such as bone or metal may need to be stored in a paper bag before being taken off site for conservation. All artefact bags would be catalogued prior to being stored in an archival quality storage container to prevent loss or misattribution of contextual data.

Retained artefacts would be cleaned processed, catalogued and analysed by an archaeologist experienced in historical artefact assemblages. Artefact analysis would include production of a database in accordance with best practice archaeological data recording. The resulting information would be included in the final excavation report.

5.7.6.1 Artefact discard policy

It is not considered feasible to collect all artefactual remains from an archaeological site. Often artefacts lack stratigraphic integrity or represent a large number of almost identical items (such as bricks) or may be hazardous materials (such as asbestos cement sheeting).

Artefacts that are manufactured from hazardous material such as asbestos or may be contaminated due to being in contaminated deposits, would not be collected to minimise danger to human health. These items would be catalogued and recorded, and then disposed of in an appropriate manner according to contractor site protocols for managing hazardous and contaminated spoil.

Artefacts from fills and other bulk deposits that lack stratigraphic integrity would be recorded in the field without collection. A record of artefacts would be made to be included with the context record for the fill or deposit. Should diagnostic or significant artefacts be present within the fill layers (out-of-context), a sample would be retained as part of the archaeological record. Any discarded items would be recorded on context or discard sheets (in the case of sieving).

Building materials and other ubiquitous and non-diagnostic infrastructure items such as bricks or tiles would not be collected due to their limited diagnostic value and difficulty in storing and accessioning. Rather, a type collection would be collected for reference purposes if required, with records made in contextual records of the presence of these materials. If required, samples of building materials may be collected for further analysis.

5.7.7 Long term management of recovered artefacts

Archaeological remains collected and analysed from archaeological investigation would be stored safely by Sydney Metro following the completion of analysis of remains. Opportunities for artefacts to be interpreted would be considered in the Heritage Interpretation Plan for Pyrmont. Should recovered archaeological artefacts or material be considered unstable for long-term storage, assessment of their condition, integrity and significance would be undertaken in the first instance. This assessment should be undertaken by the artefact specialist and Excavation Director. Opportunities for interpretation should also be considered during the preparation of the assessment.

Should artefactual remains be considered to be suitably significant to justify long-term storage and conservation, a specialist conservator would be engaged. The material would be stabilised and stored securely.

Should unstable artefacts not be considered suitable for long-term storage and/or display, they would be subject to the discard policy outlined above.

5.8 Clearance

On immediate completion of each stage of archaeological investigation i.e. monitoring of the eastern construction site, testing of the western construction site or any salvage required, a brief clearance letter would be provided by the Excavation Director indicating next steps for the location or clearing the area for project works.

5.9 Preliminary results reporting

Preliminary archaeological results reports would be prepared for Sydney Metro within a month of the completion of each stage of archaeological investigation i.e. monitoring of the eastern construction site, testing of the western construction site or any salvage required.

These reports would be prepared using Sydney Metro templates and would outline the main archaeological findings, post-excavation and analysis requirements.

The preliminary results reports would also identify opportunities for interpretation as per the Heritage Interpretation Plan. Recommendations for the use of materials in design development would be provided if appropriate. The preliminary report would also provide high level information on any significant finds that might be suitable for incorporation into heritage interpretation planning.

5.10 Post-excavation analysis and reporting

Following the completion of on-site archaeological works, post-excavation analysis of the findings would be undertaken. This includes artefact analysis, environmental and building material sample analysis, stratigraphic reporting and production of Harris Matrices, production of detailed site survey plans, illustrations and interpretative drawings, generation of catalogues, data records and site registers.

Artefacts would be catalogued and analysed in a robust database in accordance with the EAMC (Exploring the Archaeology of the Modern City) catalogue architecture and methodology to facilitate inter-site artefactual comparative analysis.[271] The use of artefact recording techniques such as photogrammetry and laser scanning of significant or diagnostic finds to allow for use in digital interpretation would be considered and incorporated where appropriate.

A final excavation report detailing the archaeological program and results would be prepared. It would include the results of the archaeological excavation and analysis, additional historical information if needed, photographs, illustrations and plans, catalogue and analysis of artefacts, and also respond to the research questions in detail. The report would also include a reassessment of archaeological significance based on the investigation results.

Final excavation reporting would be prepared within 12 months of the completion of all archaeological investigation at the construction site, in accordance with relevant CoA for the project. Sydney Metro post-excavation reporting templates would be used for post-excavation reports. This report would be a standalone report. The report would be submitted to the Planning Secretary, Heritage NSW and the City of Sydney Council when it is completed.

5.11 Interpretation

There is the potential for recovered artefacts as well as final archaeological reporting results to be provided for future public interpretation opportunities. Archaeological records – particularly survey and photogrammetry – would be provided in the preliminary archaeological reporting and would be considered for use in future public interpretation products to be developed for the site.

The following interpretive requirements for the archaeological component of the project have been summarised from the draft Heritage Interpretation Strategy prepared for Stage 1 of the project by Extent Heritage:[272]

- During Archaeological Excavation
    - Excavation schedules and planning should allow for public access to the site where appropriate. Open days, site tours and school access should all be considered where

[271] Crook and Murray, 2006. *Guide to the EAMC Archaeology Database*. Archaeology of the Modern City Series, Volume 10. Historic Houses Trust of New South Wales.
[272] Extent Heritage Pty Ltd, March 2022, draft Heritage Interpretation Strategy, p.71

state significant archaeological resources are identified and when safe access can be provided (see Section 5.4.3.3)

- Archaeology teams should record the site using digital techniques such as photogrammetry and/or laser scanning. This will ensure that an augmented site archive will be available for creative digital interpretation and that interactive reconstructions can be produced during content development (see Section 5.7.5).

- Post Excavation
  - During design development consideration should be given to the post excavation schedule to allow for future use of materials. This may include setting aside areas for future displays based on preliminary excavation reporting, in the event that artefacts are not yet ready for incorporation (see Section 5.9)
  - Preliminary archaeological reports (submitted within three months of the excavation program being completed) will provide high level information on any significant finds that might be suitable for incorporation into heritage interpretation planning (see Section 5.9)
  - Artefact analysis should consider the use of recording techniques such as photogrammetry and laser scanning on significant or diagnostic finds, to allow for use in digital interpretation (see Section 5.10).

It is noted that the following archaeological recommendations of the draft Heritage Interpretation Strategy should be considered during the design project:[273]

- Installation
  - Archaeological objects, and potentially features, should be displayed on site where appropriate, practical and relevant to do so
  - Design of displays will need to consider the ongoing protection and conservation of archaeological materials. Appropriate display cases suitable for conservation, stabilisation of materials and security should be considered during the design stage and the advice of conservation experts should be sought
  - Ongoing maintenance, condition assessment, cleaning should be considered during installation and a management plan may be required to manage displays during once installed
  - Interpretation of archaeological remains should not necessarily be confined to physical remains. Digital and online interpretation should also be considered in instances where evidence is significant, but not suitable for display, and where animations, 3D renders and other solutions could enhance audience experience.

[273] Extent Heritage Pty Ltd, March 2022, draft Heritage Interpretation Strategy, p.71



artefact

Artefact Heritage

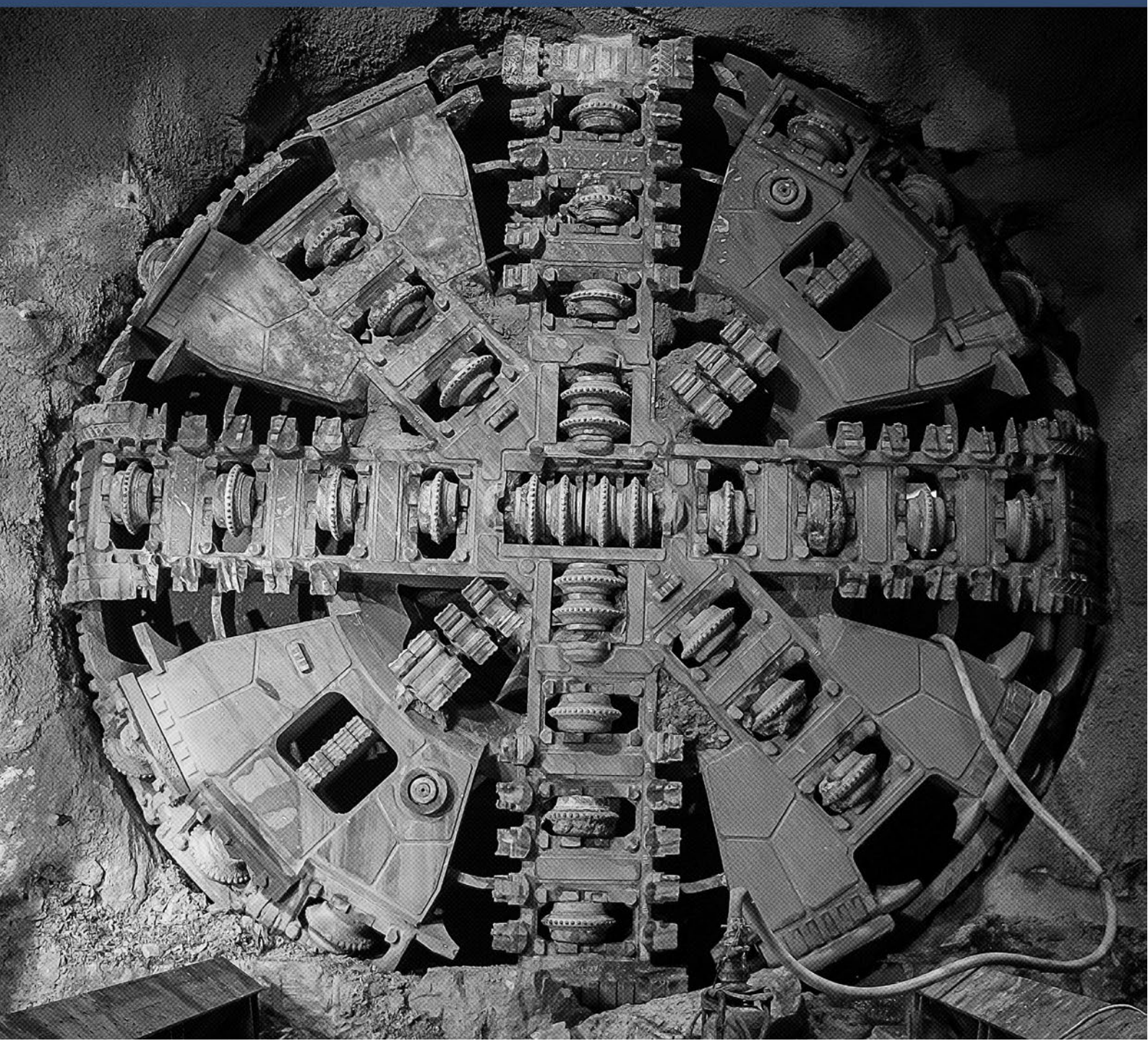
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Appendix E Consultation Report

EASTERN TUNNELLING PACKAGE
John Holland CPB Contractors Ghella JV

Consultation Report Heritage Management Sub-plan



CONSULTATION REPORT
Heritage Management Sub-plan

Project number	7040

Document approval

Rev	Date	Prepared by	Reviewed by	Comments	Approved by
A	14/02/2023	[redacted]	[redacted]	For submission to the ER for endorsement	[redacted]
B	17/02/2023	[redacted]	[redacted]	For submission to the ER for endorsement	[redacted]
Signature:					[redacted]

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1. Introduction

1.1. 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 2 of the planning approval process, the Eastern Tunnelling Package (ETP Works or Project), 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.

The Project was approved by the Minister for Planning on 24 August 2022 (SSI 19238057) under section 5.19 of the EP&A Act and will be delivered by the John Holland CPB Ghella Joint Venture (JCG).

1.2. Report scope

Reflecting the requirements of the SSI 19238057 Planning Approval, this report has been prepared to provide the evidence of consultation with the identified parties during the development of the Heritage Management Sub-Plan (Subject Document).

2. Consultation requirements

2.1. SSI 19238057 Planning Approval

The Conditions of Approval relevant to stakeholder consultation on the Subject Document are listed in Table 1.

Table 1: Conditions of Approval

Ref	Condition
A6	Where the conditions of this approval require a document or monitoring program to be prepared, or a review to be undertaken, in consultation with identified parties, evidence of the consultation undertaken must be submitted to the Planning Secretary with the document. The evidence must include: (a) documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval; (b) a log of the dates of engagement or attempted engagement with the identified party and a summary of the issues raised by them; (c) documentation of the follow-up with the identified party(s) where feedback has not been provided to confirm that the party(s) has none or has failed to provide feedback after repeated requests; (d) outline of the issues raised by the identified party(s) and how they have been addressed; and (e) a description of the outstanding issues raised by the identified party(s) and the reasons why they have not been addressed. *Note: *Consultation with the community and businesses will be undertaken in accordance with the Overarching Community Communication Strategy required under* Condition B1.
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)

2.2. Revised Environmental Mitigation Measures

There are no Revised Environmental Mitigation Measures (REMMs) relevant to stakeholder consultation on the Subject Document.

3. Consultation summary

In accordance with the SSI 19238057 Planning Approval, the Subject Document has been prepared in consultation with the identified parties. A summary of the consultation is provided in Table 2.

Table 2: Stakeholder consultation summary

Stakeholder	Consultation Summary	Status	Reference
City of Sydney Council	Issues raised have been adequately addressed in the Subject Document; there are no outstanding issues.	Addressed and closed.	Appendix A
Inner West Council	Stakeholder confirmed that there are no issues with the Subject Document.	No action required.	Appendix B
Place Management NSW	Issues raised have been adequately addressed in the Subject Document; there are no outstanding issues.	Addressed and closed.	Appendix C
Heritage NSW	Issues raised have been adequately addressed in the Subject Document; there are no outstanding issues.	Addressed and closed.	Appendix D

Appendix A City of Sydney Council Consultation Evidence

Table 3: Consultation Log

In/Out	Date	Medium	Details of Contact
Out	13 December 2022, 5:36pm	Email	Sydney Metro issues Subject Document to Tegan Mitchell (Manager Major Transport Projects) and specifies dates of review period.
In	14 December 2022, 3:00pm	Email	Tegan Mitchell (Manager Major Transport Projects) acknowledges receipt of Subject Document.
Out	15 December 2022, 7:42pm	TeamBinder Transmittal	Subject Document is provided to stakeholder via TeamBinder.
Out	10 January 2023, 1:22pm	Email	Sydney Metro follows up with Nathan English (Planning Coordinator, Major Transport Projects) regarding progress of Subject Document review. Sydney Metro offers to set up a meeting to clarify any outstanding questions and provide additional information.
In	12 January 2023, 11:17am	Email	Stakeholder advises they do not have any questions regarding the Subject Document.
Out	18 January 2023	Phone call	Sydney Metro requests update on the subject document review and reminds stakeholder that feedback is due 27/1/2023. Metro confirms that consultation includes DPE.
Out	24 January 2023	Phone call	Sydney Metro clarifies with stakeholder the process for returning feedback comments. Metro confirms that stakeholder has been granted an extension until 1/02 to provide feedback.
In	27 January 2023, 10:50am	Email	Stakeholder provides Sydney Metro with feedback on Subject Document.

Table 4: Issues Raised by Stakeholder

No	Issues Raised	How Addressed	Subject document ref
Heritage Management Sub-plan			
1	Methodologies developed for demolition and salvage for Gilbey's Distillery are be commented by CoS, as it is within a locally listed conservation area and has local significance. The methodologies should be consistent with the requirements of the practice of CoS.	It is noted that City of Sydney is not the approval authority for the demolition and salvage of Gilbey's Distillery. The demolition and salvage methodology will be developed by heritage specialists and suitably qualified engineers and reviewed by Sydney Metro and Heritage NSW. Regardless, JCG and Sydney Metro welcome input from City of Sydney's heritage specialists on demolition in conservation areas and would appreciate further knowledge.	Section 8.3 (Salvage of Significant Fabric)
2	It is advised that all heritage items being assessed to have moderate impact by construction vibrations should be monitored. Monitoring should be listed as a mitigation measure in the table.	Table 19 (Environmental Control Measures) includes the following control (ID 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.". This control is broader than that suggested by City of Sydney Council as it includes	Table 19 (Environmental Control Measures)

No	Issues Raised	How Addressed	Subject document ref
		all works which have the potential to impact heritage items.	
3	Item H19 and item H20 are not able to adequately address Condition C12(c) and (d). Details of the inspection plan and the means of rectifications requested in the condition are not specified. Though the actual rectifications will depend on the damage caused, the mechanism, procedures and principles of carrying out the rectification works should be stated. The rectifications measures for some common defects should be listed.	As detailed in the Compliance Table at the front of the document, Condition C12(c) is addressed in Section 7, Section 8 and Table 19 (control H21). Condition C12(d) is addressed in Section 5. In relation to the rectification requirements of Condition C12 (f), these are satisfied by Control H20 in Table 19. Given the broad range of rectification measures that may be required and the specific attributes of each heritage item, it would not be feasible to include this level of detail in the Heritage Management Plan. As detailed in Table 19 (control H20), rectification work will be conducted in consultation with a suitably qualified and experienced heritage consultant. JCG welcomes input and knowledge sharing from City of Sydney's heritage specialists on rectification works.	Compliance Table Table 19 (Environmental Control Measures)
4	Specialist Consultant only lists AMBS as the heritage consultant. Heritage architects and heritage structural engineers needed to implement Condition C12(c) and (d) should be specified. The condition survey and monitoring existing heritage buildings need input from a heritage structural engineer and any remedial works and protection measures need inputs from heritage architects.	The nominated specialist consultants (Table 9 in Section 4.2) have been revised to include a Built Heritage Expert and a Heritage Structural Engineer. The nominated specialists in Section 4.2 satisfy the requirements of the Infrastructure Approval and the REMMs.	Table 9, Section 4.2
5	Protection methodologies for heritage items within or adjacent to the development sites should be developed in consultation with the current or previous owners/occupants who may have better understandings of the buildings and their conditions.	Section 8.1.4 has been revised to note that consultation may be undertaken with the owners/occupiers of the heritage items, where relevant. Unfortunately, JCG are unable to consult with previous owners.	Section 8.1.4
6	Copies of recording of State heritage items should also be submitted to City of Sydney, in addition to other items.	Section 8.2 has been revised to note that archival recordings of State heritage items will be provided to City of Sydney.	Section 8.2

From: [redacted]
Sent: Tuesday, 13 December 2022 5:36 PM
To: [redacted]
Cc: [redacted]
<Phi[redacted]
Subject: Review of Environmental Management Plans - Sydney Metro West - Eastern Tunnelling Package

Hi [redacted]

Sydney Metro is providing City of Sydney with environmental management plans for review as part of the consultation process for the preparation of these plans.

These plans are required for the Eastern Tunnelling Package (ETP) Package that was recently awarded to John Holland CPB Ghella Joint Venture (JCG) for works that form part of Sydney Metro West – Stage 2 (major civil construction between The Bays to Sydney CBD) planning approval located here.

The review period is from 13 December 2022 to 27 January 2023. Please advise in the coming days if you require a meeting during this time to go through the plans.

We have sent these documents via secure transmittal, in addition to this email. We will also issue them via TeamBinder (our document management system).

If you have any questions please feel free to reach out.

Best regards
[redacted]
Manager, Stakeholder Engagement
Sydney Metro West
[redacted]
Level 43, 680 George Street, Sydney NSW 2000
PO Box K659, Haymarket NSW 1240

13 December 2022

Attn [redacted]
Manager Major Transport Projects
City of Sydney
PO Box 1591
SYDNEY NSW 2001

Dear [redacted]

Sydney Metro SSI 19238057 – Eastern Tunnelling Package – John Holland CPB Ghella Joint Venture – Construction Flora and Fauna Management Sub-plan; Heritage Management Sub-plan; Noise and Vibration Management Sub-plan; Noise and Vibration Monitoring Program; Soil and Water Management Sub-plan; Spoil Management Sub-plan; Surface Water Quality Monitoring Program

The Eastern Tunnelling Package (ETP) Package was recently awarded to John Holland CPB Ghella Joint Venture (JCG). These works form part of the Sydney Metro West – Stage 2 (major civil construction between The Bays to Sydney CBD) planning approval.

The planning approval requires the preparation of environmental management plans prior to construction commencing. Please find attached the ETP:

- Construction Flora and Fauna Management Sub-plan
- Heritage Management Sub-plan
- Noise and Vibration Management Sub-plan
- Noise and Vibration Monitoring Program
- Soil and water Management Sub-plan
- Spoil Management Sub-plan
- Surface Water Quality Monitoring Program

Prepared by JCG and issued to the City of Sydney for consultation in accordance with SSI 19238057 Conditions of Approval C5 and C14.

We are commencing a 6-week consultation process with you as of 13 December 2022 with this submission. In recognition of the Christmas holiday period, an extended consultation period has been nominated to allow sufficient time for review of the document(s). It is requested that comments (or confirmation of no comments) are provided by **27 January 2023**. In addition, if you would like to discuss the sub-plan details, please advise and we can arrange a specific meeting.

Should you have any questions or comments on the attached, please do not hesitate to contact [redacted].

Sydney Metro
Level 43, 680 George Street, Sydney NSW 2000 | PO Box K659, Haymarket NSW 1240
T 02 8265 9400 | sydneymetro.info | ABN 12 354 063 515

Yours sincerely

[redacted]

Director, Project Environment, Sustainability & Planning
Metro West
Sydney Metro

[redacted]

Subject: JV - Team introduction and meeting

CAUTION: This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Hi [redacted]

Thanks for sending through various sub plans etc.. – we will make every attempt to provide feedback by 27th, as I said yesterday the City is 150% supportive of the Metro project.

Yesterdays meeting was constructive , there are many issues still to discuss. Nathan will set up meetings as discussed 31 Jan.

Can you please confirm whether you will be sending through actions from yesterdays meeting?
I recall 4 actions (Other than the response to your plans) :

1. JV requested an up to date list of property owners for area around the Pyrmont station
2. JV request assistance in passing on quality furniture to charity organisations (JV to provide pack with details of items etc..)
3. City to provide contact details of Homeless unit
4. City to provide assistance with first nations artists to potentially prepare art for the wall for the Hunter connection food court.

The City asked for information about impacts to trees to be provided as soon as possible, noting trimming also has an impact on tree health and the City has ambitious tree canopy targets .

Please let me know if I have missed anything?
Can you please confirm this with the JV?
Many Thanks

Happy Christmas

[redacted]

[redacted]

Subject: Review of Environmental Management Plans - Sydney Metro West - Eastern Tunnelling Package

Caution: This email came from outside the organisation. Don't click links or open attachments unless you know the sender, and were expecting this email.

Hi [redacted]

Sydney Metro is providing City of Sydney with environmental management plans for review as part of the consultation process for the preparation of these plans.

These plans are required for the Eastern Tunnelling Package (ETP) Package that was recently awarded to John Holland CPB Ghella Joint Venture (JCG) for works that form part of Sydney Metro West – Stage 2 (major civil construction between The Bays to Sydney CBD) planning approval located here.

The review period is from 13 December 2022 to 27 January 2023. Please advise in the coming days if you require a meeting during this time to go through the plans.

We have sent these documents via secure transmittal, in addition to this email. We will also issue them via TeamBinder (our document management system).

If you have any questions please feel free to reach out.

Best regards

[redacted]

Level 43, 680 George Street, Sydney NSW 2000
PO Box K659, Haymarket NSW 1240

[redacted]

Subject: RE: Review of documents from JCG JV

CAUTION: This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Not sure yet – I'll get back to you.

[redacted]

[redacted]

Subject: Review of documents from JCG JV

Caution: This email came from outside the organisation. Don't click links or open attachments unless you know the sender, and were expecting this email.

[redacted]

I'm just following up on the review of the documents sent before Christmas. Just wondering if the reviewers have any questions on the documents transmitted. I'm happy to set up a meeting with the reviewers if they would like clarification or have any questions.

Best wishes

[redacted]

A/Senior Manager, Stakeholder Engagement
Sydney Metro West

[redacted]

Subject: Quick enquiry

CAUTION: This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Hi [redacted]

I don't think anyone has any questions as yet regarding the Sub Plans for ETP. Since I went on leave, have any further elements been released? I've not received anything to my knowledge…

[redacted]
Planning Coordinator, Transport Major Projects
City Access

[redacted]
cityofsydney.nsw.gov.au

[redacted]

Subject: Feedback from City re: Sydney Metro Eastern Tunnelling Package Environmental Management sub plans Jan 2023

CAUTION: This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Hi [redacted]

Please find attached feedback from City staff regarding the Environmental Management Sub

plans attached in 6 spread sheet documents

- Construction Flora and Fauna Management Sub-plan (Comments across two spread sheets)
- Heritage Management Sub-plan
- Noise and Vibration Management Sub-plan (includes comments on - Noise and Vibration Monitoring Program)
- Soil and water Management Sub-plan (Also contains comments on Surface Water Quality Monitoring Program)
- Spoil Management Sub-plan

Additional comments regarding feedback:

1. City staff have not provided feedback regarding ground water contamination – we require a few additional days to source this feedback. **ACTION**: City will update Metro Monday 30 Jan 2022.
2. City staff have emphasised that the removal of trees should be *minimised*. The City considers that mature trees have benefits for native and non-native fauna. In addition the Community place *a significant value on the amenity and shade* provided by these mature trees. **ACTION:** The City requests Mero reconsider the blanket removal of trees, and minimise impacts wherever possible. The City can provide advice on what measures can be taken to protect trees if requested.

Please let me know if you have any questions, I will pass on the next series of feedback as soon as it is completed.
Apologise for not providing the complete suite of responses, I will contact you on Monday with an update.

[redacted]
Manager Major Transport Projects
City Access

sydney METRO

REVIEW COMMENTS SHEET

Workbook last saved: 10m ago

NSW GOVERNMENT Transport for NSW

NI	DATI	RAISED	REVIEW DOC NO.	DOCUMENT RI	COM	EN CATEGOR	CLOSED (
73	23/12/2022	NJOHNSON	SMWSTETP-JCG-1NL-EN-PLN-000002	8.3 Salvage of significant fabric	Methodologies developed for demoltion and salvage for Dillbey's Distillery are be commented by CoS, as it is within a lcoally listed conservation area and has local significance. The methodologies should be consistent with the requirements of the practice of CoS.COMMENTED BY HUI WANG - CITY OF SYDNEY	Observation	N
			SMWSTETP-JCG-1NL-EN-PLN-000002	8.3 Salvage of significant fabric	Section 8.3 (Salvage of Significant Fabric) has been revised to note, "Where fabric is identified for salvage, a methodology will be prepared in consultation with Heritage NSW and City of Sydney Council and the items will be captured in the significant fabric and moveable heritage salvage register. The salvage methodology will be consistent with the requirements of the City of Sydney."	Observation	N
74	23/12/2022	NJOHNSON	SMWSTETP-JCG-1NL-EN-PLN-000002	Table 15 Summary of proposed impact and metigation measures	it is advised that all heritage items being assessed to have moderate impact by construciton vibrations should be monitored. Minitoring should be listed as a mitigation measure in the table.COMMENTED BY HUI WANG - CITY OF SYDNEY	Potential Non-Compliance	N
			SMWSTETP-JCG-1NL-EN-PLN-000002	Table 15 Summary of proposed impact and metigation measures	Table 19 (Environmental Control Measures) includes the following control (ID 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.". This control is broader than that suggested by City of Sydney Council as it includes all works which have the potential to	Potential Non-Compliance	N
75	23/12/2022	NJOHNSON	SMWSTETP-JCG-1NL-EN-PLN-000002	Table 18	Item H19 and item H20 are not able to adequately address Condition C12 (c) and (d). Details of the inspection plan and the means of rectifications requested in the condition are not specified.Though the actual rectifications will depend on the damage caused, the mechanism, procedures and princiles of carrying out the rectifications works should be stated. The rectifcation measures for some common defects should be listed.COMMENTED BY HUI WANG - CITY OF SYDNEY	Potential Non-Compliance	N
			SMWSTETP-JCG-1NL-EN-PLN-000002	Table 18	As detailed in the Compliance Table at the front of the document, Condition C12(c) is addressed in Section 7, Section 8 and Table 19 (control H21). Condition C12(d) is addressed in Section 5. In relation to the rectification requirements of Condition C12 (f), these are satisfied by Control H20 in Table 19. Given the broad range of rectification measures that may be required and the specific attributes of each heritage item, it would not be feasible to include this level of detail in the Heritage Management Plan. However, in recognition of the City of Sydney's interest in potential rectifications, Control Measure H20 (Table 19) has been revised to note that the rectification procedure for the nominated items will be prepared in consultation with the City of Sydney.	Potential Non-Compliance	N

Appendix B Inner West Council Consultation Evidence

Table 5: Consultation Log

In/Out	Date	Medium	Details of Contact
Out	13 December 2022, 5:42pm	Email	Sydney Metro issues Subject Document to Ken Walsh (Team Lead – Strategic Transport Planning) and specifies dates of review period.
Out	15 December 2022, 7:42pm	TeamBinder Transmittal	Subject Document is provided to stakeholder via TeamBinder
Out	10 January 2023, 1:18pm	Email	Sydney Metro follows up with Ajnesh Sharma (Road Access Engineer) regarding progress of Subject Document review. Metro offers to set up a meeting to clarify any outstanding questions and provide additional information.
Out	13 January 2023	Phone call	Sydney Metro follows up with stakeholder regarding progress of Subject Document review and offers to clarify any questions.
In	24 January 2023	Phone call	Stakeholder confirms they are on-track to provide comments by 27/01/2023.
In	30 January 2023, 10:51am	Email	Stakeholder confirms they have no feedback or comments on the Subject Document.

Table 6: Issues Raised by Stakeholder

No	Issues Raised	How Addressed	Subject document ref
Heritage Management Sub-plan			
4	No comments or issues are raised with the Heritage Management Sub-Plan	No action required	N/A

[redacted]

Subject: Review of Environmental Management Plans - Sydney Metro West - Eastern Tunnelling Package

Hi [redacted]

Sydney Metro is providing Inner West Council with environmental management plans for review as part of the consultation process for the preparation of these plans.

These plans are required for the Eastern Tunnelling Package (ETP) Package that was recently awarded to John Holland CPB Ghella Joint Venture (JCG) for works that form part of Sydney Metro West – Stage 2 (major civil construction between The Bays to Sydney CBD) planning approval located here.

The review period is from 13 December 2022 to 27 January 2023. Please advise in the coming days if you require a meeting during this time to go through the plans.

We have sent these documents via secure transmittal, in addition to this email. We will also issue them via TeamBinder (our document management system).

If you have any questions please feel free to reach out.

Best regards

[redacted]

Level 43, 680 George Street, Sydney NSW 2000
PO Box K659, Haymarket NSW 1240

13 December 2022

Attn [redacted]
Team Leader Transport Planning
Inner West Council
PO Box 14
PETERSHAM NSW 2049

Dear [redacted]

Sydney Metro SSI 19238057 – Eastern Tunnelling Package – John Holland CPB Ghella Joint Venture – Construction Flora and Fauna Management Sub-plan; Heritage Management Sub-plan; Noise and Vibration Management Sub-plan; Noise and Vibration Monitoring Program; Soil and Water Management Sub-plan; Spoil Management Sub-plan; Surface Water Quality Monitoring Program

The Eastern Tunnelling Package (ETP) Package was recently awarded to John Holland CPB Ghella Joint Venture (JCG). These works form part of the Sydney Metro West – Stage 2 (major civil construction between The Bays to Sydney CBD) planning approval.

The planning approval requires the preparation of environmental management plans prior to construction commencing.

Please find attached the ETP:

- Flora and Fauna Management Sub-plan
- Heritage Management Sub-plan
- Noise and Vibration Management Sub-plan
- Noise and Vibration Monitoring Program
- Soil and Water Management Sub-plan
- Spoil Management Sub-plan
- Surface Water Quality Monitoring Program.

Prepared by JCG and issued to the Inner West Council for consultation in accordance with SSI 19238057 Conditions of Approval C5 and C14.

Sydney Metro
Level 43, 680 George Street, Sydney NSW 2000 | PO Box K659, Haymarket NSW 1240
T 02 8265 9400 | sydneymetro.info | ABN 12 354 063 515

We are commencing a 6-week consultation process with you as of 13 December 2022 with this submission. In recognition of the Christmas holiday period, an extended consultation period has been nominated to allow sufficient time for review of the document(s). It is requested that comments (or confirmation of no comments) are provided by **27 January 2023**. In addition, if you would like to discuss the sub-plan details, please advise and we can arrange a specific meeting.

Should you have any questions or comments on the attached, please do not hesitate to contact Ari Stypel, Manager Environment on ari.stypel@transport.nsw.gov.au or 0450 737 536.

Yours sincerely

[redacted]

Director, Project Environment, Sustainability & Planning
Metro West
Sydney Metro

Cc [redacted]

[redacted]

Subject: RE: Meeting with JCG JV & Sydney Metro

Hi [redacted]

Happy new year and hope you enjoyed some time off over the holiday season.

I'm following up on the review of the documents you received before Christmas. Do you or Brigid have any questions on the documents transmitted by JCG JV. Let me know how you are going and if you would like to set up a meeting to discuss the review.

Many thanks

[redacted]
A/Senior Manager, Stakeholder Engagement
Sydney Metro West

[redacted]

Subject: FW: Meeting with JCG JV & Sydney Metro

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Hi [redacted]

Please find email from [redacted] below. I am available from 3rd January onwards.

Have a great Christmas.

Regards

[redacted]

[redacted]

Subject: Meeting with JCG JV & Sydney Metro

Hi [redacted]

I hope you're well. Can I just ask if you had any luck setting up the meeting around mid-January with your team. I'll need to have a few different dates and times to offer the contractor.

Many thanks

[redacted]
Stakeholder engagement manager
Sydney Metro West

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Consider the environment. Please don't print this e-mail unless really necessary.

[redacted]

Subject: Fw: Review Sydney Metro sub plans

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Hi Marion,

Hope you are well.

Apologies for sending this in late.

Please find a set of comments below from Inner West Council.

Thanks

[redacted]



Subject: RE: Review Sydney Metro sub plans

Hi Ajnesh

Thanks for co-ordinating. I was able to access the files from your link to SharePoint (and I assume others can too), so no need to put them on the common drive. Apologies for not sending this to you last Fri. I was allowing time to run this by Ken, who has been the key Council person working on Metro West planning, but Ken is off sick this week.

I've had a quick look through all the plans, and am pleased to say that in general terms I can't see any significant impacts for our council area. That's not to say there are no impacts at all, and it needs to be kept in mind that the Rozelle/Balmain area continues to be subject to significant cumulative impacts from multiple major projects & activities. Unlike WestConnex & Western Harbour Tunnel, Metro West is public transport, so is supported at a strategic level by our council.

As these plans are concerned only with tunnel & station excavation from The Bays through to the CBD, the only construction activity within our council area is from one site within The Bays precinct. Most of this activity is underground and covered by acoustic sheds (which helps minimise impacts) and fortunately there doesn't appear to be any residential or other sensitive land uses within very close proximity to the construction site at The Bays. It's a different story over the border within the City of Sydney, where there are multiple construction sites with a variety of sensitive uses in very close proximity.

I also note that all spoil haulage will be along main roads like City West Link, not local roads. I'm pleased to see there's a condition of approval preventing spoil trucks operating from The Bays from using Robert Street (except in emergencies), which means they'll all be using James Craig Road to access City West Link.

As a transport planner I've focused on traffic/transport issues, but have included a few brief comments below on other topics based on my experience with WestConnex.

Hope these comments are useful, and happy to discuss any time - Kendall

Comments on the *Overarching Construction Traffic Management Plan*

- Table 5 shows that peak daily traffic movements for both heavy & light vehicles to be significant, although impacts should be minimised by Consent Condition D70, which requires all these movements to be via James Craig Road, not Robert Street. Council would like confirmation that there will not be unacceptable congestion along James Craig Road and at its intersection with City West Link. This confirmation should be part of the further assessment in the forthcoming site-specific Construction Traffic Management Plan (CTMP). This assessment will

need to consider cumulative impacts from other projects & activities in and around the precinct.

- Council supports the requirement that pedestrian movement plans be developed and implemented, although these plans should include cycling routes.
- It is noted that worker parking will be provided in White Bay (137 spaces) and that public transport and car-pooling encouraged to reduce worker parking demand. As there have been significant issues with worker parking demand from WestConnex, Council would like to see a firm commitment to provision of these spaces and incentives/penalties to ensure parking demand is minimised. This commitment should be detailed within the forthcoming *Construction Parking & Access Strategy* required by Consent Condition D78.
- It is noted that a truck marshalling area is to be created on Glebe Island to minimise impacts of trucks parking and idling. Based on its experience with significant impacts from WestConnex trucks parking and idling, Council would like to see a firm commitment to this action. The marshalling area would likely be located within the City of Sydney, so it is important that the City is satisfied that trucks would not affect any residential areas or other sensitive uses.
- It is noted that all spoil haulage routes for The Bays component of the project would be on main roads, with none on local roads within the inner West

Comments on the *Noise & Vibration Management Sub-plan*

- It is noted in Table 10 that there many out-of-hours (OOH) work periods are scheduled for The Bays precinct. Although (fortunately) most works will be underground, the main worksite will be covered by acoustic sheds and dwellings and other sensitive uses are not in very close proximity, noise from these works will add to existing night-time ambient noise, e.g. noise from cruise ship terminal. Cumulative noise impacts therefore need to be considered, particularly for OOH works.
- The 'additional mitigation measures' are noted. Council would like to see a generous approach to offering residents relief from noise impacts if needed, such as alternative accommodation.
- It is noted that Figure 3 shows there are many potential residential receivers in Balmain & Rozelle area

Comments on the *Soil & Water Management Sub-plan*

- Council has previously raised concerns about tunnel-related groundwater drawdown in relation to WestConnex. The assessment of this impact will need to consider cumulative impacts from the extensive tunnelling activity in this area.

Comments on the *Spoil Management Sub-plan*

- It is noted that spoil would be productively used for a range of projects mainly located in western Sydney
- It is noted that spoil haulage will be guided by a number of criteria to maintain effective spoil removal while minimising impacts on pedestrians, traffic, and sensitive receivers. These criteria are supported.

No comments or issues are raised with the *Flora & Fauna Management Sub-plan*

---

and the *Heritage Management Sub-plan.*

[redacted]

Appendix C Place Management NSW Consultation Evidence

Table 7: Consultation Log

In/Out	Date	Medium	Details of Contact
Out	7 December 2022, 4:00pm	Phone call	[redacted] Acting Director Leasing and Commercial (PMNSW) was called by Sydney Metro and briefed on document review cycle and timings
Out	13 December 2022, 6:03pm	Email	Sydney Metro emailed the Subject Document to [redacted], Senior Manager Leasing and Place Management (PMNSW). Offer of briefing provided.
Out	20 January 2023, 8:47am	Email	[redacted], Leasing & Place Management Officer (PMNSW) issued PMNSW comments to Sydney Metro

Table 8: Issues Raised by Stakeholder

No	Issues Raised	How Addressed	Subject document ref
Heritage Management Sub-plan			
7	White Bay Power Station (WBPS) is a significant (and sensitive) heritage building at the Bays precinct and is not referenced in the report. Vibration monitors have already been installed by AFJV for the Central Tunnelling package on the Power Station itself. While the Eastern tunnelling works will commence approximately 150m from the WBPS, monitors should remain in place for continuity and consistency during initial eastern tunnelling. Consultation with the PMNSW Heritage Wayne Johnson should be consulted prior to any decisions being made about the Power Station.	Reflecting the ETP Works tunnel alignment and surface works scope, the EIS determined the Project would not impact the White Bay Power Station. As such, there are no specific controls or monitoring requirements included in either the Heritage Management Sub-plan or the Noise and Vibration Management Sub-plan. Consultation with Place Management NSW will occur in the event of any changes in ETP Works scope that are assessed as having a potential impact on the White Bay Power Station.	Heritage Management Sub-plan

[redacted]

Subject: Sydney Metro West - Eastern Tunnelling Package - Environmental Management Plans (Placemaking NSW)

Hi [redacted]

Sydney Metro is providing Placemaking NSW environmental management plans for review as part of the consultation process for the preparation of these plans.

These plans are required under planning approvals for the Eastern Tunnelling Package (ETP) Package that was recently awarded to John Holland CPB Ghella Joint Venture (JCG) for works that form part of Sydney Metro West – Stage 2 (major civil construction between The Bays to Sydney CBD) planning approval located here.

The review period is from **13 December 2022 to 27 January 2023**, please advise in the coming days if you require a meeting during this time to go through the plans.

In addition to this email I have sent these documents to your colleague [redacted] via our document management system TeamBinder to assist in circulating to relevant reviewers within your team.

If you have any questions please feel free to reach out. Thank you,

[redacted]
Manager Environment
Environment, Sustainability & Planning
Sydney Metro

[redacted]
Level 43, 680 George Street, Sydney NSW 2000
PO Box K659, Haymarket NSW 1240

Transport for NSW

NSW GOVERNMENT

20 January 2023

Mr [redacted]
Director, Project Environment, Sustainability & Planning
Metro West
Level 43
680 George Street
SYDNEY NSW 2000

Dear [redacted]

Re: Comments – Sydney Metro SSI 19238057 – Eastern Tunnelling Package
Reference Number: #11765

Thank you for the opportunity to meet with you on Monday 19 December 2022 and provide feedback on the Sydney Metro SSI 19238057 – Eastern Tunnelling Package – John Holland CPB Ghella Joint Venture – Construction Heritage Management Sub plan; Noise and Vibration Management Sub-plan; Noise and Vibration Monitoring Program

Place Management NSW (PMNSW) has reviewed the documentation and provides the following comments:

- It is recommended that Renzo Tonin review and cross reference the Central Tunnelling package (AFJV), NVMPs to ensure appropriate baselines have been used and to ensure any monitoring and mitigation methods that are already in place can be used by both JVs. This is to both avoid duplication and to continue the currently applied methodologies and mitigation measures, along with being consistent with data collection and analysis. Eg: fixed noise monitors – are they proposed to be in the same location for continuous data collection – should more be included?
- White Bay Power Station (WBPS) is a significant (and sensitive) heritage building at the Bays precinct and is not referenced in the report. Vibration monitors have already been installed by AFJV for the Central Tunnelling package on the Power Station itself.
- While the Eastern tunnelling works will commence approximately 150m from the WBPS, monitors should remain in place for continuity and consistency during initial eastern tunnelling. Consultation with the PMNSW Heritage Wayne Johnson should be consulted prior to any decisions being made about the Power Station.
- It is noted that the tunnelling and "associated works" such as spoil transport can continue 24/7. Whilst it is understood that the impacts of this from a road traffic assessment will be undertaken, please also include additional noises

OFFICIAL

Place Management NSW
Placemaking NSW **Tel: 02 9240 8500**
Cites and Active Transport
Level 2, 66 Harrington Street, Sydney NSW 2000
PO Box N408, Grosvenor Place NSW 1220

Placemaking NSW is the registered business name of Place Management NSW

such as dumping spoil into the trucks this type of noise is intermittent, , and should be assessed in combination with general road noise and vibration impacts. There appears to be an acoustic shed constructed as part of the Central tunnelling package by AFJV although this is not referenced in this report as a mitigation measure for Bays.

- Complaints – PMNSW should be advised of any complaints in relation to noise and vibration from any stakeholder (community, Council or otherwise) within 24 hours of receiving the complaint, including how the complaint has been addressed and mitigation measures for future similar works that resulted in the complaint.
- Whilst there is no formal condition requiring SMW to consult with PMNSW some of the other EMP sub-plans, PMNSW would appreciate Metro providing all CEMP sub-plans as they are developed to PMNSW, as land owner, so that PMNSW can be across all issues and informed enough to be able to provide land owners consent when required
- Confirmation as to who the appointed he Environmental Representative for the Eastern tunnelling package to be provided to PMNSW

If you require any further information of wish to discuss the contents of this letter, please contact the undersigned on [redacted]

Yours sincerely

[redacted]

A/Director, Leasing & Commercial

OFFICIAL

Place Management NSW
Placemaking NSW
Cites and Active Transport
Level 2, 66 Harrington Street, Sydney NSW 2000
PO Box N408, Grosvenor Place NSW 1220

Tel: 02 9240 8500

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Appendix D Heritage NSW Consultation Evidence

Table 9: Consultation Log

In/Out	Date	Medium	Details of Contact
Out	15 December 2022, 9:02.am	Kiteworks	Sydney Metro issues Subject Document for Heritage NSW comment
Out	13 January 2023, 12:52pm	Email	Reminder that comments on the Heritage Management Sub-Plan are due 27 January 2023.
Out	24 January 2023, 11:21am	Email	Consultation in relation to proposed nomination of Excavation Directors
In	25 January 2023, 4:06pm	Email	Heritage NSW issues Sydney Metro with comments on the Heritage Management Sub-Plan

Table 10: Issues Raised by Stakeholder

No	Issues Raised	How Addressed	Subject document ref
Heritage Management Sub-plan			
8	Section 7 - Aboriginal cultural heritage. It is noted that archaeological excavations will take place in advance of construction and that investigations for both Aboriginal and environmental heritage will be integrated. It is further notes that the archaeological testing of De Mestre Place and the Tank Stream Valley will be undertaken, and that salvage excavations will occur where intact soil profiles and/or Aboriginal objects have been identified. These proposed measures are suitable to determine the nature and extent of Aboriginal cultural heritage sites and values associated with the proposed works. No further comments with respect to Aboriginal cultural heritage.	Noted.	N/A
9	Table 3: Add/refine/incorporate within the identified Targets: Ensure full compliance with the relevant legislative requirements and approvals. ▪ Minimise or avoid impacts to Aboriginal and non-Aboriginal heritage sites or their heritage significance. ▪ Follow correct procedure and ensure notification of any unexpected Aboriginal or non-Aboriginal heritage objects/places uncovered during construction. ▪ Ensure Heritage Awareness Training is provided to all personnel in the form of inductions before they begin work on-site.	Table 3 (Objectives, targets and key performance indicators) has been revised to include the additional targets proposed by Heritage NSW.	Table 3 (Objectives, targets and key performance indicators)
10	Section 3.3: List all relevant environmental documents, including the Environmental Impact Statement and Statements of Heritage Impact.	Section 3.3 (Other environmental documents) has been revised to include all relevant environmental documents.	Section 3.3 (Other environmental documents)
11	Section 4.2:	Section 4.2 (Table 9 - Roles and Responsibilities of AMBS personnel)	Table 9 - Roles and

No	Issues Raised	How Addressed	Subject document ref
	Include Heritage Engineer in the roles/responsibilities described in Section 4.2 (specified elsewhere in the document) or allocate responsibility to relevant team member to engage/manage additional specialist consultants as required.	has been revised to include a Heritage Engineer.	Responsibilities of AMBS personnel
12	Table 9, 10, 11, 12 and 13: To enable accurate identification and ease of cross reference between documents, include complete identifying information for listed heritage items, including SHR/listing numbers.	Note that the table numbers have been revised and Tables 9 to 13 are now Tables 10 to 14. Tables 10 (Summary of heritage listed items within a 25-metre buffer of the ETP Works areas) to Table 14 (Assessed non-Aboriginal archaeological impacts) have been revised to include complete identifying information for listed heritage items.	Tables 10 (Summary of heritage listed items within a 25-metre buffer of the ETP Works areas) to Table 14 (Assessed non-Aboriginal archaeological impacts)
13	Tables 10, 11, 12 and 13: Indicate/distinguish SHR items from other heritage items.	Tables 10 (Summary of heritage listed items within a 25-metre buffer of the ETP Works areas) to Table 14 (Assessed non-Aboriginal archaeological impacts) have been revised to include complete identifying information for listed heritage items. SHR items are denoted in bold font.	Tables 10 (Summary of heritage listed items within a 25-metre buffer of the ETP Works areas) to Table 14 (Assessed non-Aboriginal archaeological impacts)
14	Tank Stream (SHR 00636) Clarify the level of vibration impact to the Tank Stream – the above assessment implies there is potential for the level of impact to be Major rather than Moderate. It is essential that further detailed construction impact assessment is undertaken prior to work commencement to ensure no excessive vibration impacts are incurred to the Tank Stream, either through refinement of work methodology or other appropriate mitigation measures. The need for a detailed protection methodology for the Tank Stream is emphasized.	Table 13 (Assessed heritage impacts at the Hunter Street Station site) has been revised to improve clarity. The vibration impact of the ETP Works is assessed in the EIS as 'moderate'. The requirement to undertake further assessment of ground movement during design is noted in a number of sections, including 8.1.3, 8.1.4, Table 16, Table 17, 8.4.2, and Table 19.	Table 13 (Assessed heritage impacts at the Hunter Street Station site)
15	Table 15: Clarify or make consistent mitigation measures for NSW Club House Building and Former Bank – Delfin House. Both items have been assessed as having Moderate potential for vibration impacts. However, no additional mitigation measures are stated like the other items assessed to have potential for Moderate vibration impacts.	Note that the table numbers have been revised and Table 15 is now Table 16. Table 16 (Summary of proposed impacts and mitigation measures to heritage items) has been revised to include the following additional mitigation measure for NSW Club House Building and Former Bank - Delfin House, "Vibration testing for works which have the potential to impact the heritage item to identify safe working distances".	Table 16 (Summary of proposed impacts and mitigation measures to heritage items)

No	Issues Raised	How Addressed	Subject document ref
16	Section 6: State how additional detailed reports will be used. For example: “The results of the Condition Survey will be used to inform the next phase of project methodology development, with additional mitigation measures applied in accordance with recommendations.”	The following statement has been added to Section 8.1.2 (Noise and Vibration), "The results of the condition surveys will be used to inform the construction methodology, including management and mitigation measures."	Section 8.1.2 (Noise and Vibration)
17	If appropriate, update CHMP with results of further ground movement assessments to be undertaken at a later stage. 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.	Section 8.1.3 (Ground movement and settlement) has been revised to include the following statement, "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).	Section 8.1.3 (Ground movement and settlement)
18	State if the CHMP intersects with a Heritage Interpretation Plan and how interpretation will be addressed during construction (if relevant).	The Heritage Interpretation Plan is being prepared in accordance with the Sydney Metro West Heritage Interpretation Strategy (Extent, 2022) but is outside the scope of the ETP contract. As detailed in Section 8.3 (Salvage of significant fabric), "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."	Section 8.3 (Salvage of significant fabric)
19	Additional/refined mitigation measures for inclusion: ▪ 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. ▪ Architectural noise or vibration environmental management measures for heritage listed buildings will be installed by suitably qualified professionals.	Table 23 (ID 2.2) within Element 2 (Monitoring and Reporting), has been revised to include the first additional control measure. Table 19 (H23) includes the second control measure.	Table 23 (ID 2.2) and Table 19 (H23)

[redacted]

Subject: RE: Sydney Metro ETP Heritage Management Sub-plan

Good afternoon [redacted]

I've resent the document in Kiteworks. Please let me know if you have any issues downloading or opening the document.

[redacted]

From: [redacted]
Sent: Thursday, 15 December 2022 1:32 PM
[redacted]
Subject: RE: Sydney Metro ETP Heritage Management Sub-plan

Sorry Tanya. I'll resend the link.

[redacted]

Subject: RE: Sydney Metro ETP Heritage Management Sub-plan

You don't often get email from tanya.pelz@environment.nsw.gov.au. Learn why this is important

CAUTION: This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

[redacted]

The attachment – Heritage Management Sub-Plan pdf will not open. Please let me know if you can re-upload it or provide an alternative link so that I can download the document and register it to be actioned.

Regards

[redacted]

Working days Monday to Friday, 09:00am - 05:00pm

NSW GOVERNMENT

I acknowledge and respect the traditional custodians and ancestors of the lands I work across.

[redacted]

Subject: RE: ETP Heritage Management Sub Plan

CAUTION: This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

Thanks Cath – on track at this stage.
Regard
Rochelle

[redacted]

Level 14
4 Parramatta Square
Parramatta NSW 2150

Working days Monday to Friday, 09:00am - 05:00pm

I acknowledge the traditional custodians of the land and pay respects to Elders past and present. I also acknowledge all the Aboriginal and Torres Strait Islander staff working with NSW Government at this time.

Please consider the environment before printing this email.

[redacted]

Subject: ETP Heritage Management Sub Plan

Dear [redacted]
This is a reminder email about the review of the Eastern Tunnelling Package Heritage Management Sub Plan sent just before Xmas. Comments are due 27 January. As that is a short week, I thought Id get in early with the reminder!

1

Hope you're well and had a good break

Regards

[redacted]

Level 43, 680 George Street, Sydney NSW 2000
PO Box K659, Haymarket NSW 1240
sydneymetro.info

[redacted]

[redacted]

Subject: Sydney Metro West Excavation Director nomination for Eastern Tunnelling Package
Attachments: [redacted]

Dear [redacted]

Sydney Metro proposes to nominate [redacted] from AMBS Ecology and Heritage for approval as Excavation Directors under condition D16 of the Sydney Metro West – The Bays to Sydney CBD project approval (SSI-19238057). They will be the nominated Excavation Directors for the Eastern Tunnelling Package covering the Hunter Street and Pyrmont Station sites.

D16 of the of the Sydney Metro West project approval states:

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. 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.

As we are required by condition D16 to consult with Heritage NSW and will need to provide evidence of this consultation to DPE, please provide a written response to this proposed nomination by **Friday 10 February**.

As we are taking an integrated response to the investigation of Aboriginal and historic archaeology, I have attached a [redacted] who will be the Excavation Director for Aboriginal archaeology.

Please do not hesitate to contact me should you wish to discuss this matter.

Regards

[redacted]

Level 43, 680 George Street, Sydney NSW 2000
PO Box K659, Haymarket NSW 1240
sydneymetro.info

NSW GOVERNMENT | sydney METRO

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NSW GOVERNMENT | Heritage NSW

Our ref: DOC22/1116390-3

Mr [redacted]
Director - Project Environment, Sustainability & Planning
Metro West
Sydney Metro
Level 43
680 George Street
SYDNEY NSW 2000

By email: [redacted]

Dear [redacted]

Sydney Metro SSI 19238057 – Eastern Tunnelling Package – John Holland CPB Ghella Joint Venture – Construction Heritage Management Sub-plan

Thank you for your referral dated 14 December 2022, inviting consultation in accordance with SSI 19238057 Condition of Approval C5, for the *Sydney Metro West – Eastern Tunnelling Package – Construction Heritage Management Sub-Plan,* (CMHP) prepared by AMBS Ecology & Heritage, dated November 2022. The CHMP identifies construction environmental control and compliance measures for Aboriginal and non-Aboriginal heritage and describes how the heritage impacts for the construction phase of the project will be managed and minimized.

It is understood that the Eastern Tunnelling Package (ETP) Package forms part of the Sydney Metro West – Stage 2 (major civil construction between The Bays to Sydney CBD) and includes the following works:

- Demolition of existing buildings at Pyrmont East and West shaft sites and at Hunter Street East and West shaft sites.
- Tunnel Boring Machine (TBM) assembly, launch, tunnelling support from an existing shaft at The Bays.
- Approximately 2.5 km twin underground eastbound and westbound bored railway tunnels between The Bays and Hunter Street and six cross passages spaced up to 500 metres apart.
- Pyrmont Station excavation, including two shaft excavations, associated access adits and nozzle enlargements, including temporary ground support and cast *in situ* cavern linings.
- Excavation and lining of a mined crossover cavern to allow trains to cross from one track to the other.
- Hunter Street station mined cavern excavation, including:
  – Two shaft excavations, associated access adits
  – Nozzle enlargements
  – Conversion of an existing temporary connection adit at Bligh Street linking Hunter Street Station to Martin Place Station into a permanent pedestrian connection linking the stations (including temporary ground support and cast *in situ* linings).

Level 14, 4 Parramatta Square, Parramatta NSW 2150 ■ Locked Bag 5020 Parramatta NSW 2124
P: 02 9873 8500 ■ E: heritagemailbox@environment.nsw.gov.au

- A turnback extension tunnel, of approximately 675 metres, east of the Hunter Street Station works to enable Sydney Metro train storage and to change tracks and travel direction (eastbound to westbound).
- TBM disassembly and retrieval from Hunter Street East.

The following comments are relate to the Construction Heritage Management Subplan:

Aboriginal cultural heritage considerations under the Part 6, NSW National Parks and Wildlife Act 1974

Section 7 - Aboriginal cultural heritage. It is noted that archaeological excavations will take place in advance of construction and that investigations for both Aboriginal and environmental heritage will be integrated. It is further notes that the archaeological testing of De Mestre Place and the Tank Stream Valley will be undertaken, and that salvage excavations will occur where intact soil profiles and/or Aboriginal objects have been identified. These proposed measures are suitable to determine the nature and extent of Aboriginal cultural heritage sites and values associated with the proposed works. No further comments with respect to Aboriginal cultural heritage.

Environmental heritage considerations under the Heritage Act 1977

A number of State Heritage Register (SHR) items located within the study area and a low-moderate potential for historical archaeology has been identified; including:

Hunter Street East Site

- Former Perpetual Trustee Commercial Building, 33-39 Hunter St (SHR 00678)
- Former Wales House, 64-66 Pitt Street (SHR 00586)
- Former Rofe Chambers (Public Trust Office), 19-21 O'Connell Street (SHR 01019)
- Former NSW Club Building, 31 Bligh Street (SHR 00145)
- Former City Mutual Life Assurance building, 10 Bligh Street (SHR 00585)

Hunter Street West Site

- Former Skinners Family Hotel, 296 George Street (SHR 00584)
- Tank Stream - King Street to Circular Quay in tunnel (SHR 00636) (runs under the eastern boundary of the site)
- Little Hunter and Hamilton Street Precinct – includes NSW Sports Club and Grand Hotel (SHR 00599)
- Former Wales House, 64–66 Pitt Street (SHR 00586)

Tunnel Alignment

- Glebe Island Bridge (SHR 01914)
- Railway cutting, Pyrmont (SHR 01225)
- Former Railway House (part of Transport House) including interiors (SHR 01271)
- Former 'Qantas House' (SHR 01512)
- Chifley Square (SHR 01512)
- St James Railway Station (SHR 01248)
- State Library of NSW (SHR 01071)
- Royal Botanical Gardens and Domain (including Governor's Domain and Civic Precinct (SHR 01070)

It is noted that a number of items of Local heritage significance are also within the study area. As locally listed heritage items are within the jurisdiction of local council, this response focusses on State listed heritage items and their management.

The following general comments are provided:

- Table 3: Add/refine/incorporate within the identified Targets:
    - Ensure full compliance with the relevant legislative requirements and approvals.
    - Minimise or avoid impacts to Aboriginal and non-Aboriginal heritage sites or their heritage significance.
    - Follow correct procedure and ensure notification of any unexpected Aboriginal or non-Aboriginal heritage objects/places uncovered during construction.
    - Ensure Heritage Awareness Training is provided to all personnel in the form of inductions before they begin work on-site.

- Section 3.3: List all relevant environmental documents, including the Environmental Impact Statement and Statements of Heritage Impact.

- Section 4.2: Include Heritage Engineer in the roles/responsibilities described in Section 4.2 (specified elsewhere in the document) or allocate responsibility to relevant team member to engage/manage additional specialist consultants as required.

- Table 9, 10, 11, 12 and 13: To enable accurate identification and ease of cross reference between documents, include complete identifying information for listed heritage items, including SHR/listing numbers.

- Tables 10, 11, 12 and 13: Indicate/distinguish SHR items from other heritage items.

- *Tank Stream (SHR 00636)*
  The vibration impact assessment states:

  > *"Vibration levels are predicted to exceed the cosmetic damage screening criteria. Vibration is predicted to have a **major potential for direct impact on the Tank Stream**, due to its location within the western construction site, and close proximity in adjacent lots."*

  Clarify the level of vibration impact to the Tank Stream – the above assessment implies there is potential for the level of impact to be Major rather than Moderate. It is essential that further detailed construction impact assessment is undertaken prior to work commencement to ensure no excessive vibration impacts are incurred to the Tank Stream, either through refinement of work methodology or other appropriate mitigation measures. The need for a detailed protection methodology for the Tank Stream is emphasized.

- Table 15: Clarify or make consistent mitigation measures for NSW Club House Building and Former Bank – Delfin House. Both items have been assessed as having Moderate potential for vibration impacts. However, no additional mitigation

measures are stated like the other items assessed to have potential for Moderate vibration impacts.

- Section 6: State how additional detailed reports will be used. For example: "The results of the Condition Survey will be used to inform the next phase of project methodology development, with additional mitigation measures applied in accordance with recommendations."

- If appropriate, update CHMP with results of further ground movement assessments to be undertaken at a later stage. 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.

- State if the CHMP intersects with a Heritage Interpretation Plan and how interpretation will be addressed during construction (if relevant).

- Additional/refined mitigation measures for inclusion:
  - 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.
  - Architectural noise or vibration environmental management measures for heritage listed buildings will be installed by suitably qualified professionals.

If you have any questions regarding the above comments, please contact [redacted] Senior Assessments Officer, Major Projects at Heritage NSW on [redacted]

Yours sincerely

[redacted]

Senior Manager - Major Projects
Heritage NSW
Department of Planning & Environment
As Delegate of the Heritage Council of NSW
25 January 2023

Appendix F 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

17 February 2023

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

REF: 201208(G) HMP REVC

Dear [redacted]

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

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) on , 24 August 2022:

- Sydney Metro West, Eastern Tunnelling Package Heritage Management Sub-Plan Rev C dated 17 February 2023 (SMWSTETP-JCG-SWD-SW000-EM-PLN-002015).

It is noted that:

- The Heritage Management Sub-Plan (HMP Rev C) has been 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.
- Previous versions of the document have been reviewed and updated following comments from the ER.
- Sydney Metro has reviewed and commented on previous versions of the document.
- In accordance with CoA C5(c), consultation has been undertaken with the Heritage NSW, Place Management NSW (in respect of The Bays) and Relevant Council(s).

Following the above reviews, the document is considered to contain information required by the Conditions of Approval (SSI 1923805) in relation to the Heritage Management Plan.

As the approved Environmental Representative for the Metro West and as required by Conditions A32(d) and C7, on the basis of the above, the Heritage Management Sub-Plan (Revision C) is endorsed and considered appropriate for submission to DPE for their consideration for Approval.

Yours sincerely

[redacted]

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

Department of Planning and Environment

Our ref: SSI-19238057-PA-10

[redacted]
Associate Director Environment
Sydney Metro
Level 43, 680 George Street,
Sydney NSW 2000

22/03/2023

Attention: [redacted]

Subject: **Sydney Metro West, Eastern Tunnelling Package**
Construction Environmental Management Sub-Plans

Dear [redacted],

I refer to your recent submission of the Construction Environmental Management Plan Sub-Plans for SSI-19238057. I also acknowledge your response to the Department's review comments and requests for additional information.

I note these documents have been:

- prepared in accordance with the consultation requirements of Conditions C1 and C5 of the approval, including consultation with:
    - City of Sydney
    - Inner West Council
    - Place Management NSW
    - Heritage NSW
- reviewed by Sydney Metro and no issues have been raised with the Department;
- endorsed by the Environmental Representative and, where relevant, the Acoustic Advisor; and
- contain the information required by the conditions of approval.

As nominee of the Planning Secretary, I approve the documents tabulated below under the corresponding condition in the table:

Document Name	Document Version	Date	Approval Condition
Spoil Management Sub-Plan	C	20 February 2023	C7
Heritage Management Sub-Plan	C	17 February 2023	C7

Noise and Vibration Sub-Plan	D	15 February 2023	C7
Noise and Vibration Monitoring Program	D	15 February 2023	C18

Please note that no blasting is authorised as no blasting plans have been provided.

You are reminded that if there is any inconsistency between the approved document and the conditions of approval, then the requirements of the conditions of approval prevail.

Please ensure you make the document and this approval letter publicly available on the project website.

If you wish to discuss the matter further, please contact [redacted] or [redacted]

Yours sincerely

[redacted]

Director
Infrastructure Management

As nominee of the Planning Secretary