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
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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.

Contents

List of figures

List of tables

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.

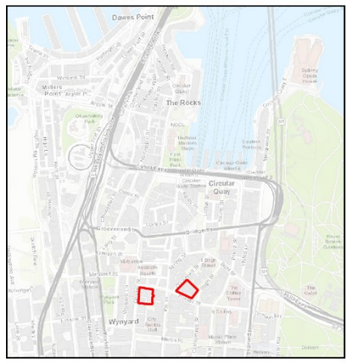
The dominant soil profiles are a loose, coarse sandy loam (gy1) (A1), above an earthy clayey sand, commonly with an apedal massive structure and porous earthy fabric (gy2) (A2). Sandstone, ironstone, and charcoal fragments are common in this horizon. Sandy clayey loam (gy3) or clay (gy4) usually occur 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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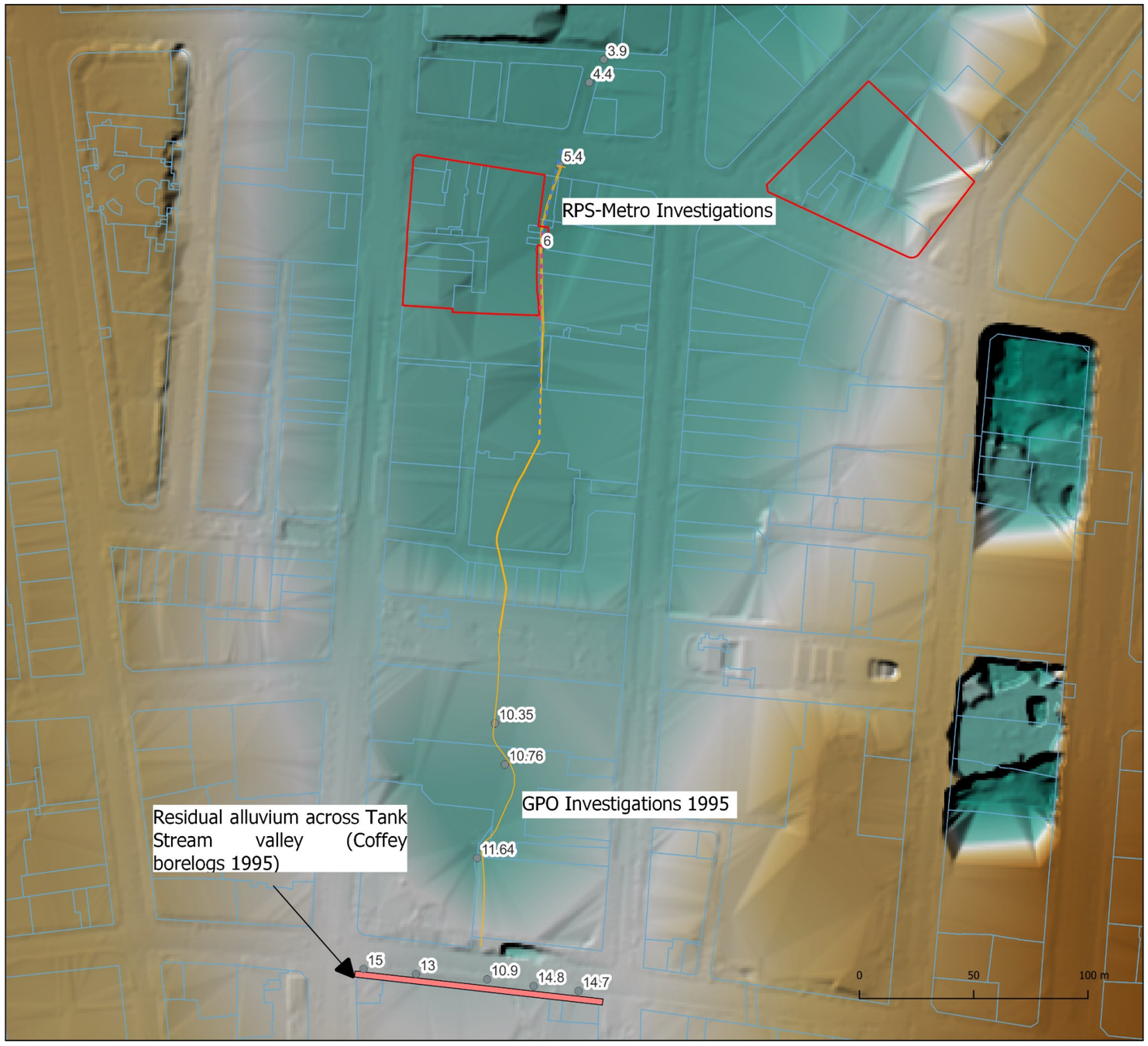
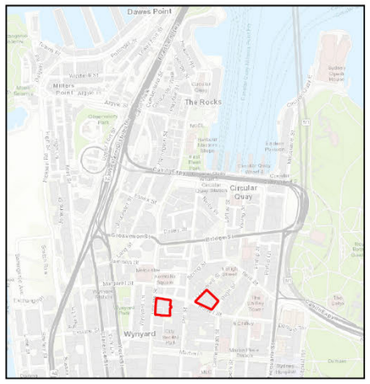


Figure 4. Current landscape and contours. *Source*: Extent Heritage 2022.

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.

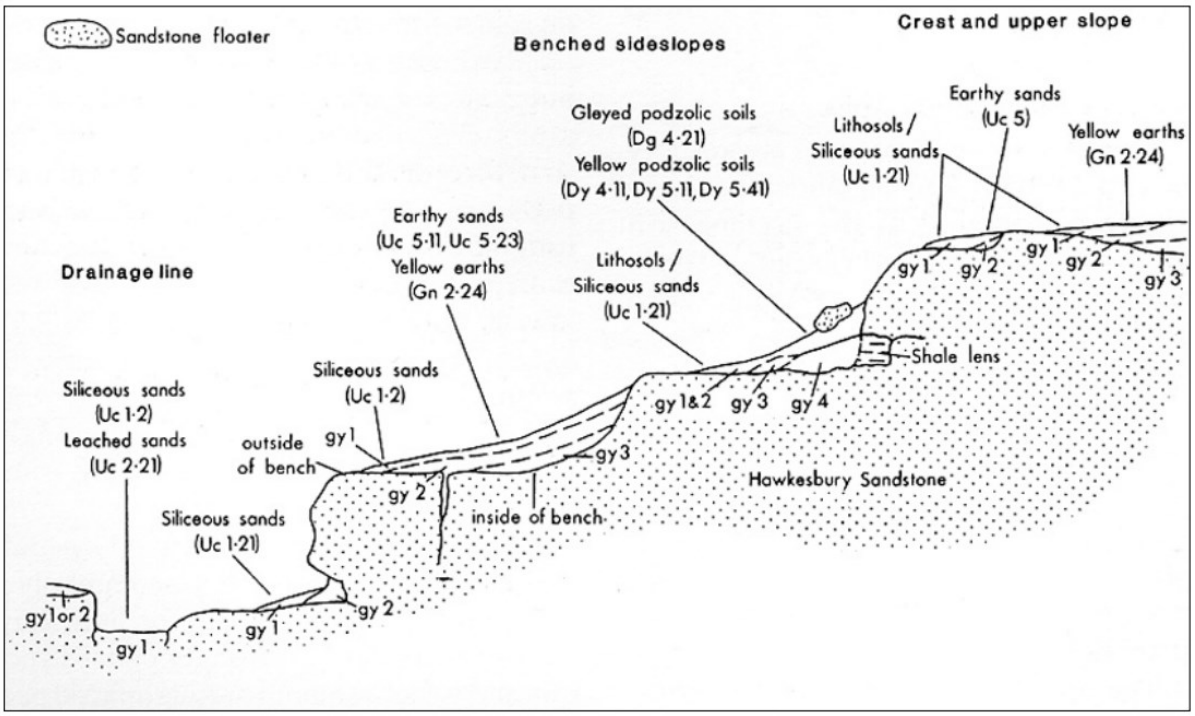


Figure 6. Schematic cross-section of Gymea soil landscape illustrating the occurrence and relationship of dominant soil materials. *Source*: DPIE n.d.

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).

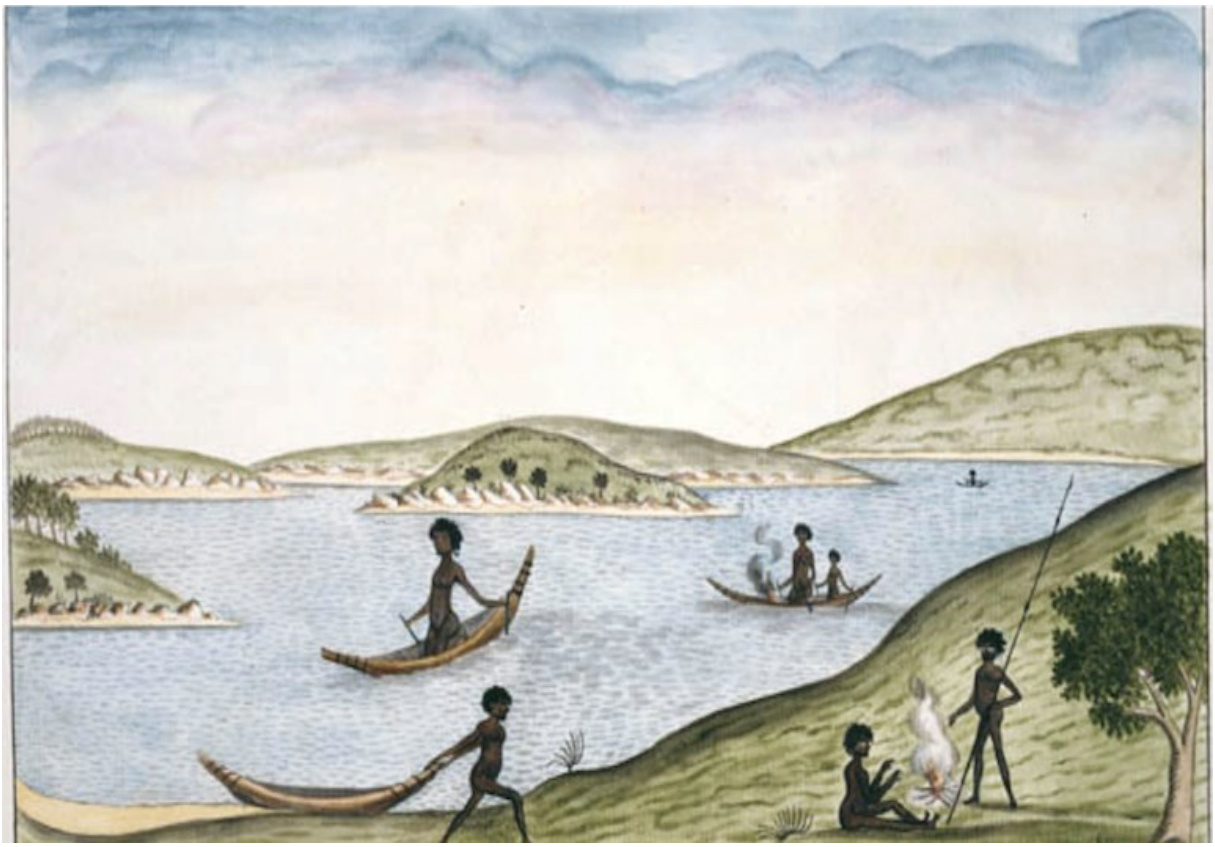


Figure 7. 1790 painting of Aboriginal people fishing. *Source:* Pyrmont History Group n.d.

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).

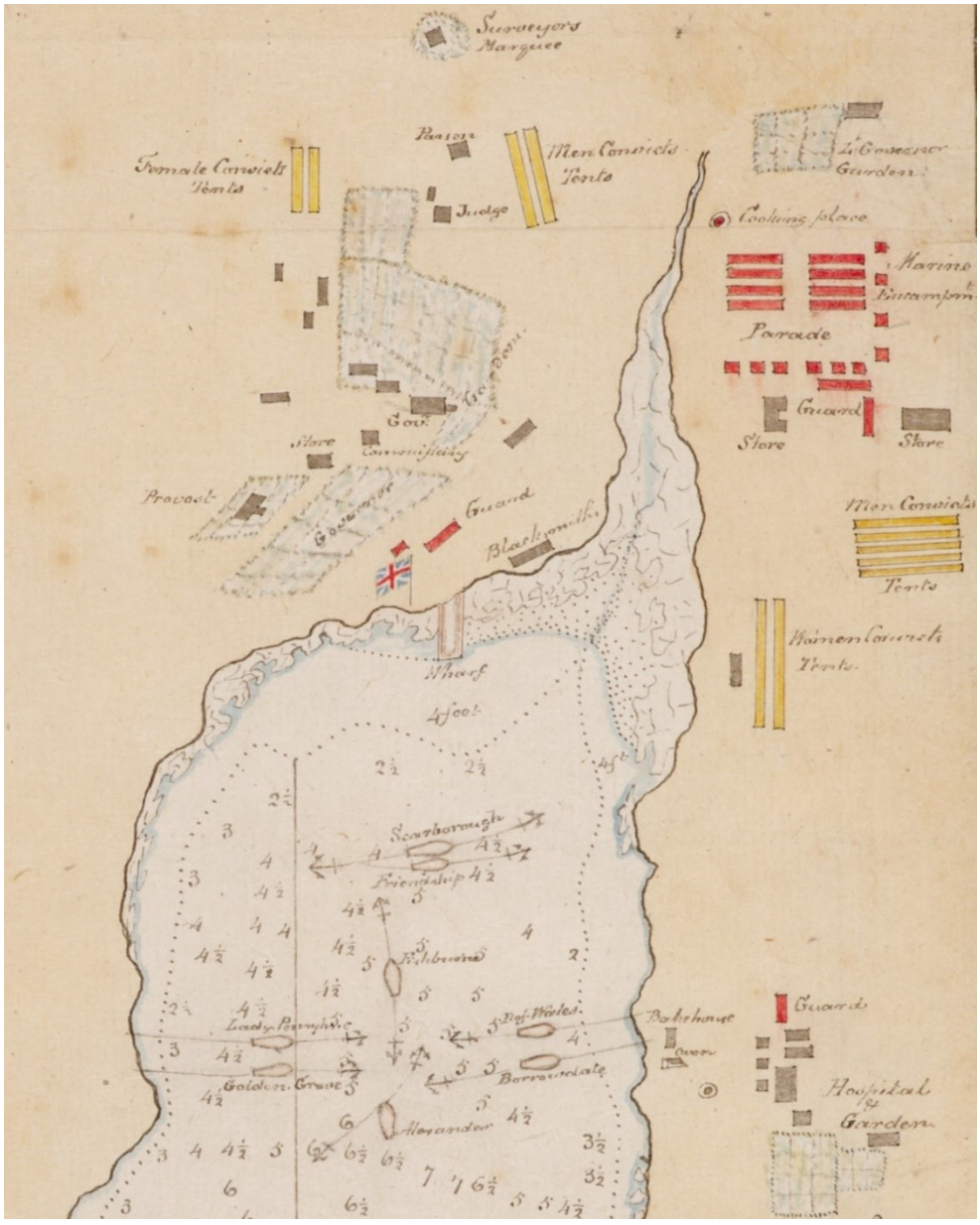


Figure 11. Detail of 'Sydney Cove, Port Jackson: The Position of the encampment of buildings are as they stood 1 March 1788', William Bradley. *Source:* Bradley 1802, SLNSW, Safe 1/14, 7.

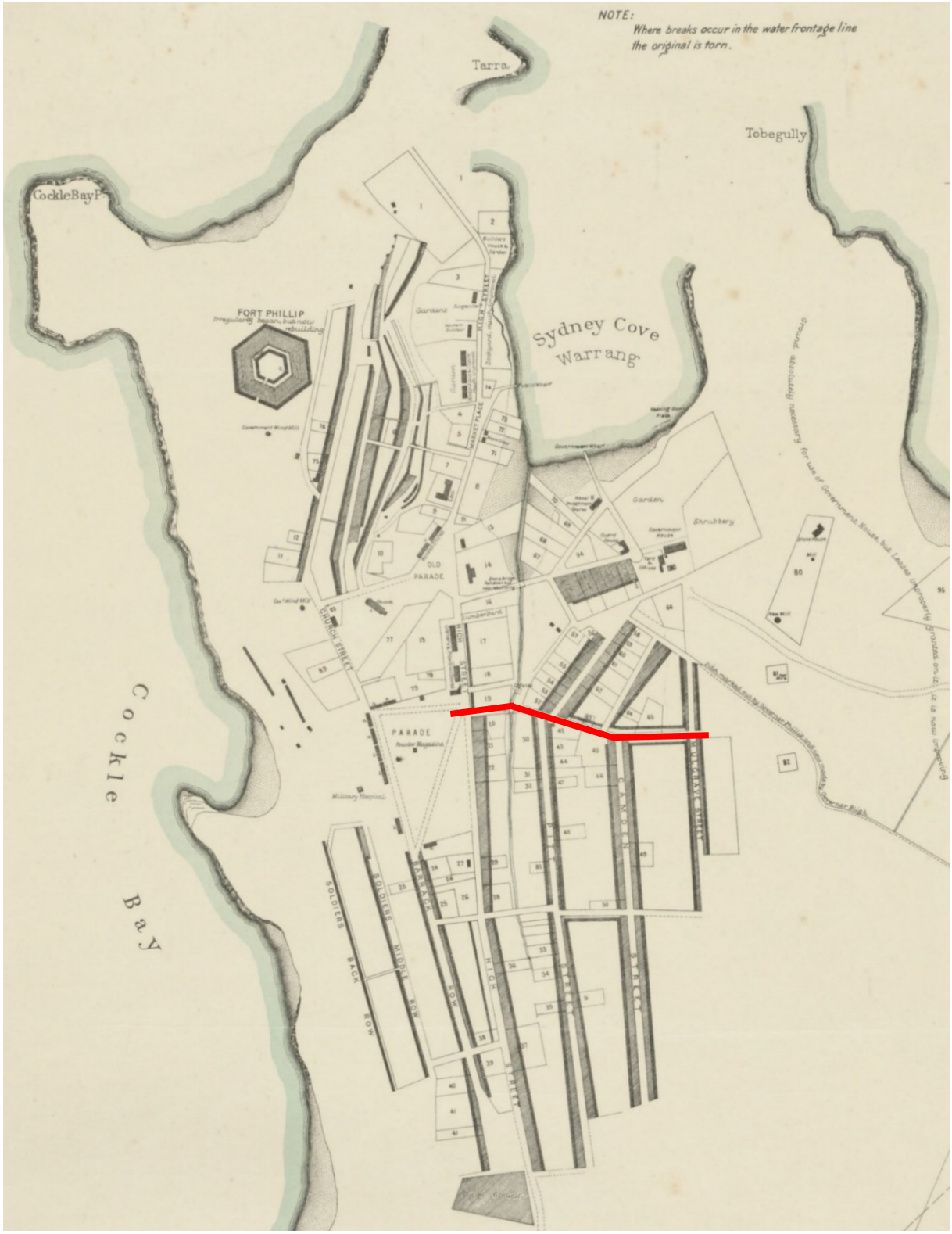


Figure 12. Lithograph reproduction of 'Plan of the Town of Sydney in New South Wales', Jas Meehan, 1807, showing the location of 'Bell Street', now Hunter Street. *Source:* NLA MAP F 105B.

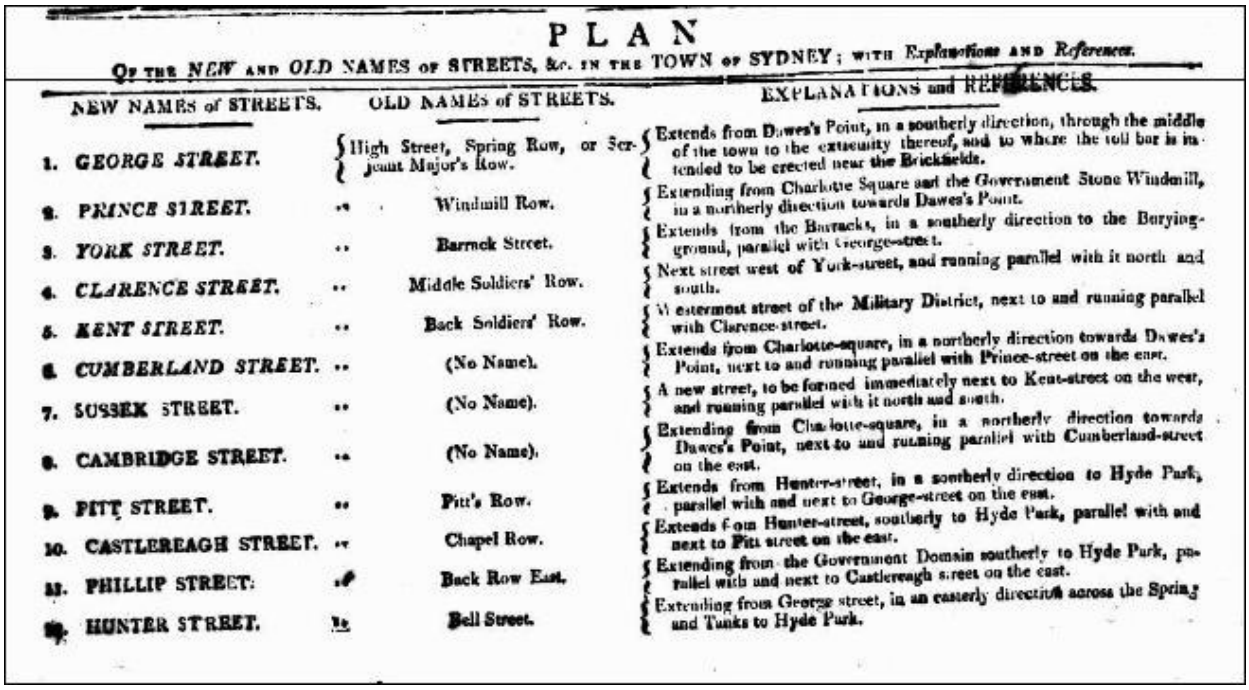
None of the structures in early Sydney Town were purely residential—even the grandest houses of the early colony were spaces where work and home were mixed (Karskens 2009, 180). Yards in the early colony were used as slaughterhouses, blacksmiths, and premises for stonemasons,

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 Sergeant 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].

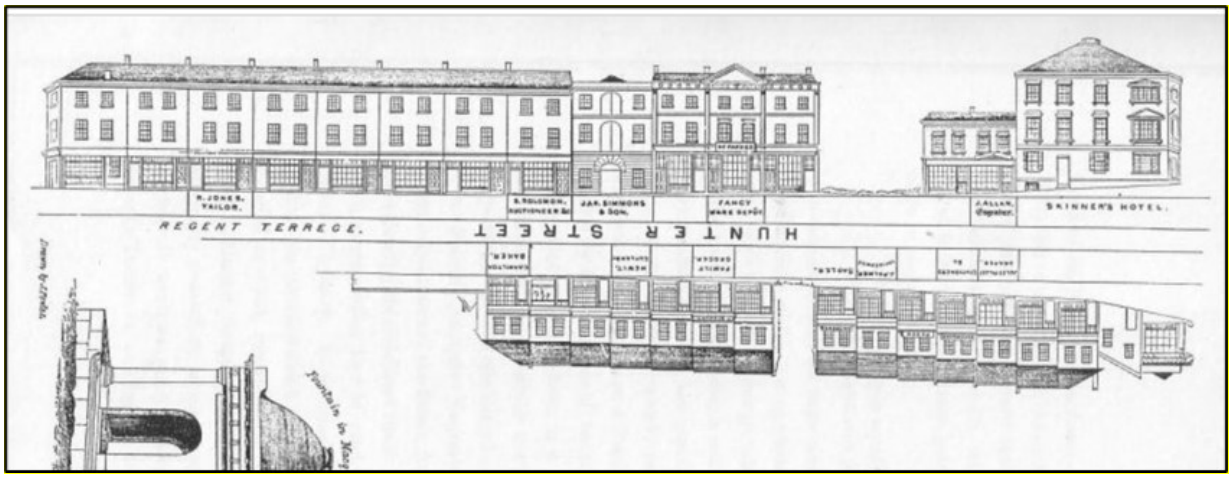


Figure 18. The southern Hunter Street streetscape between Pitt Street (left) and George Street (right) (Joseph Fowles, Sydney in 1848).

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'.

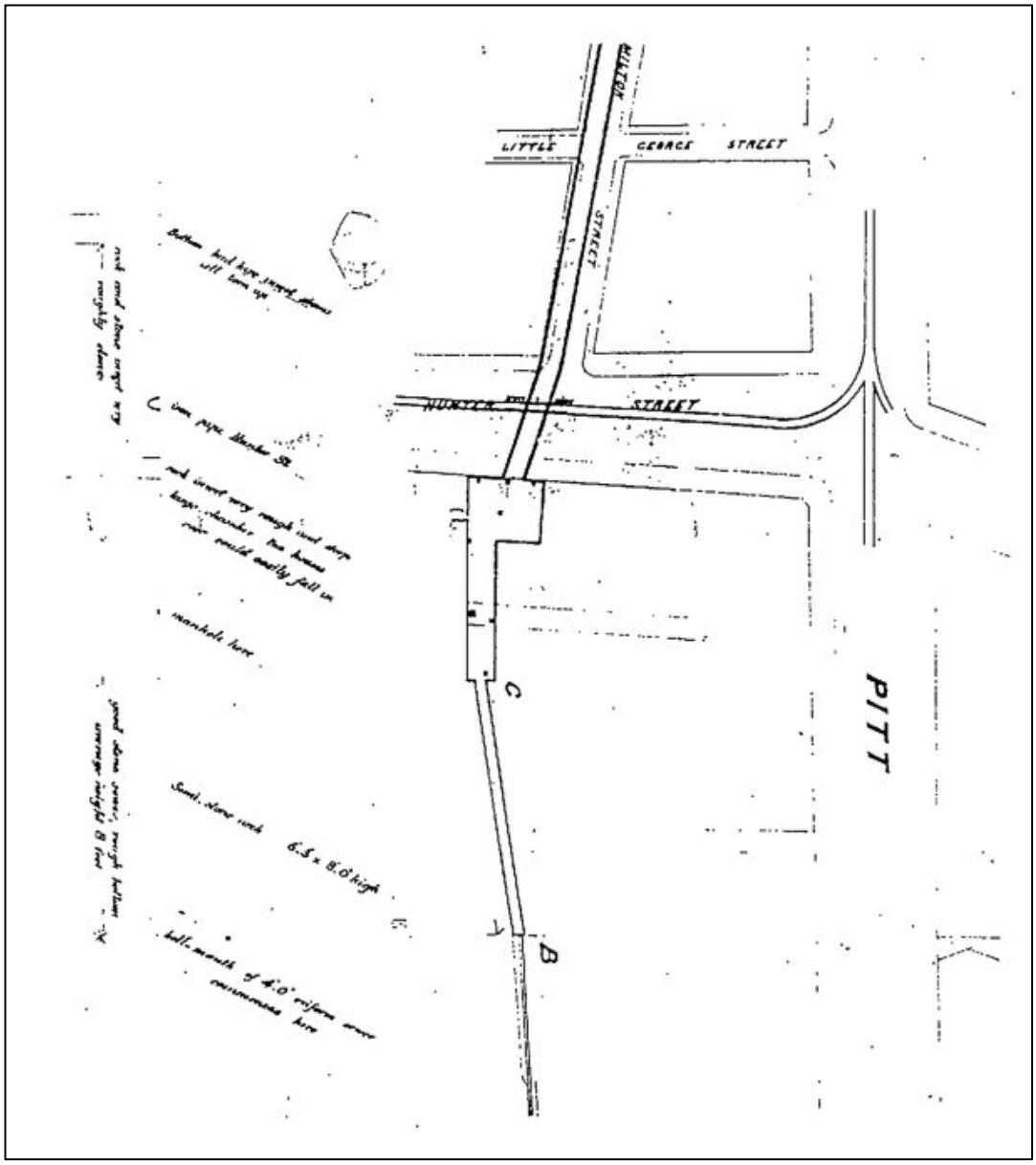


Figure 21. OCP 289 showing chamber and existing drain in 1879. *Source:* Sydney Water.

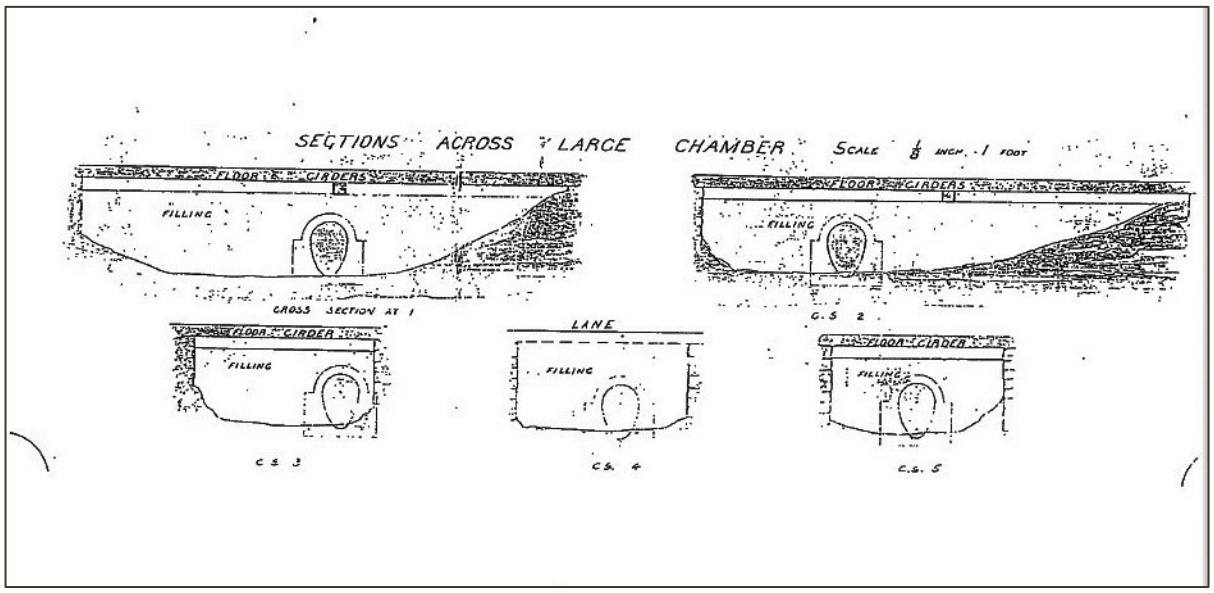


Figure 22. OCP 289 west-east sections through large chamber in 1879. *Source:* Sydney Water.

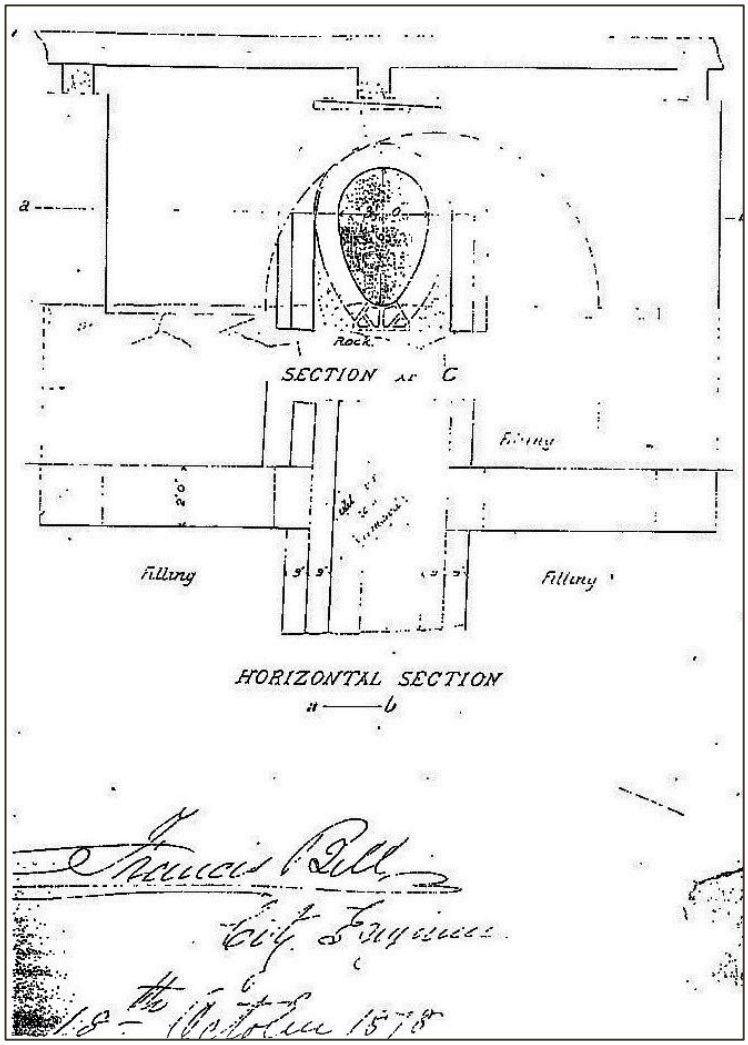


Figure 23. OCP 289 Section/elevation at southern end of large chamber in 1879. *Source:* Sydney Water.

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.

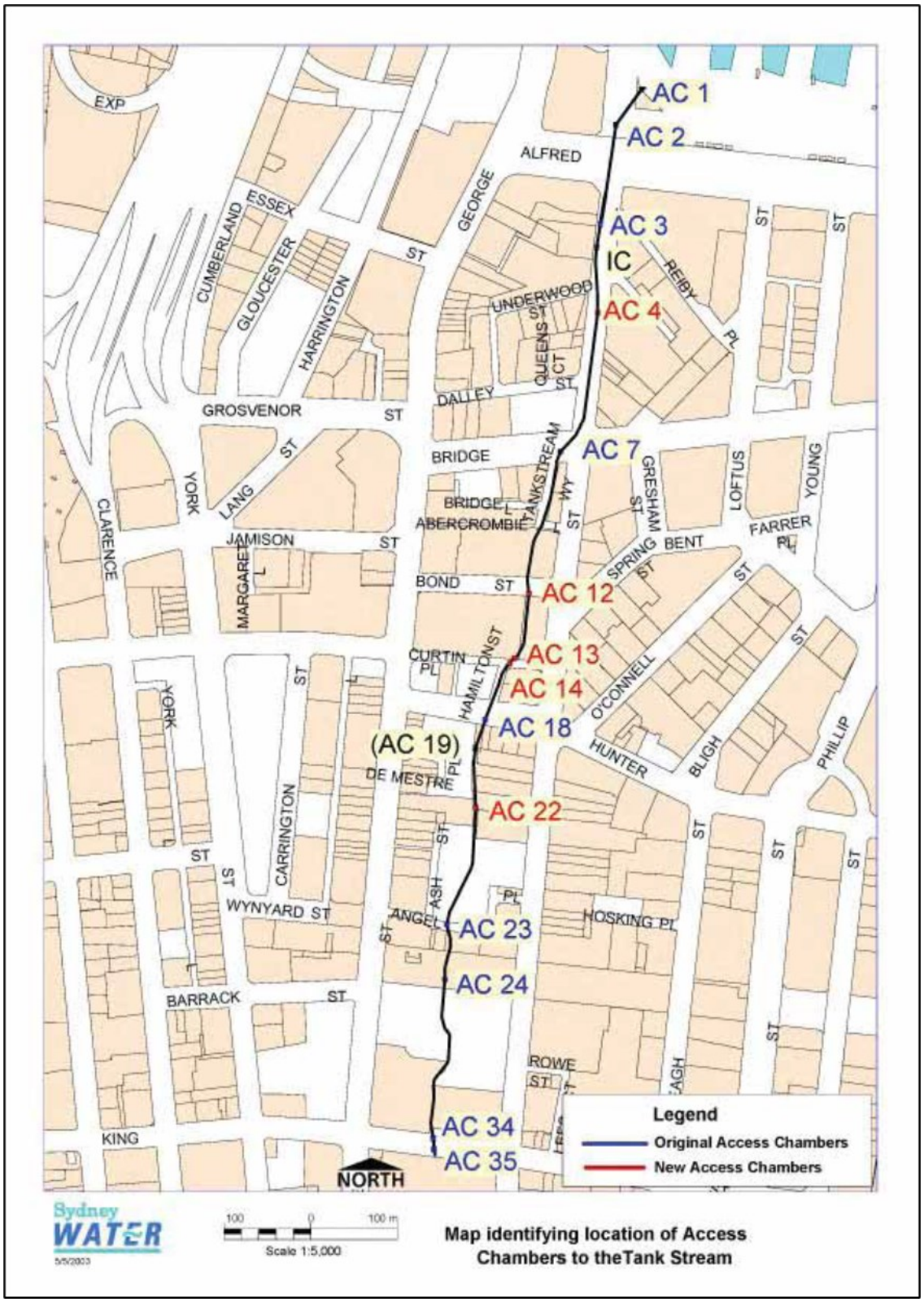


Figure 24. Historic and New Access Chambers. *Source:* Sydney Water 2005 (Figure 3-3).

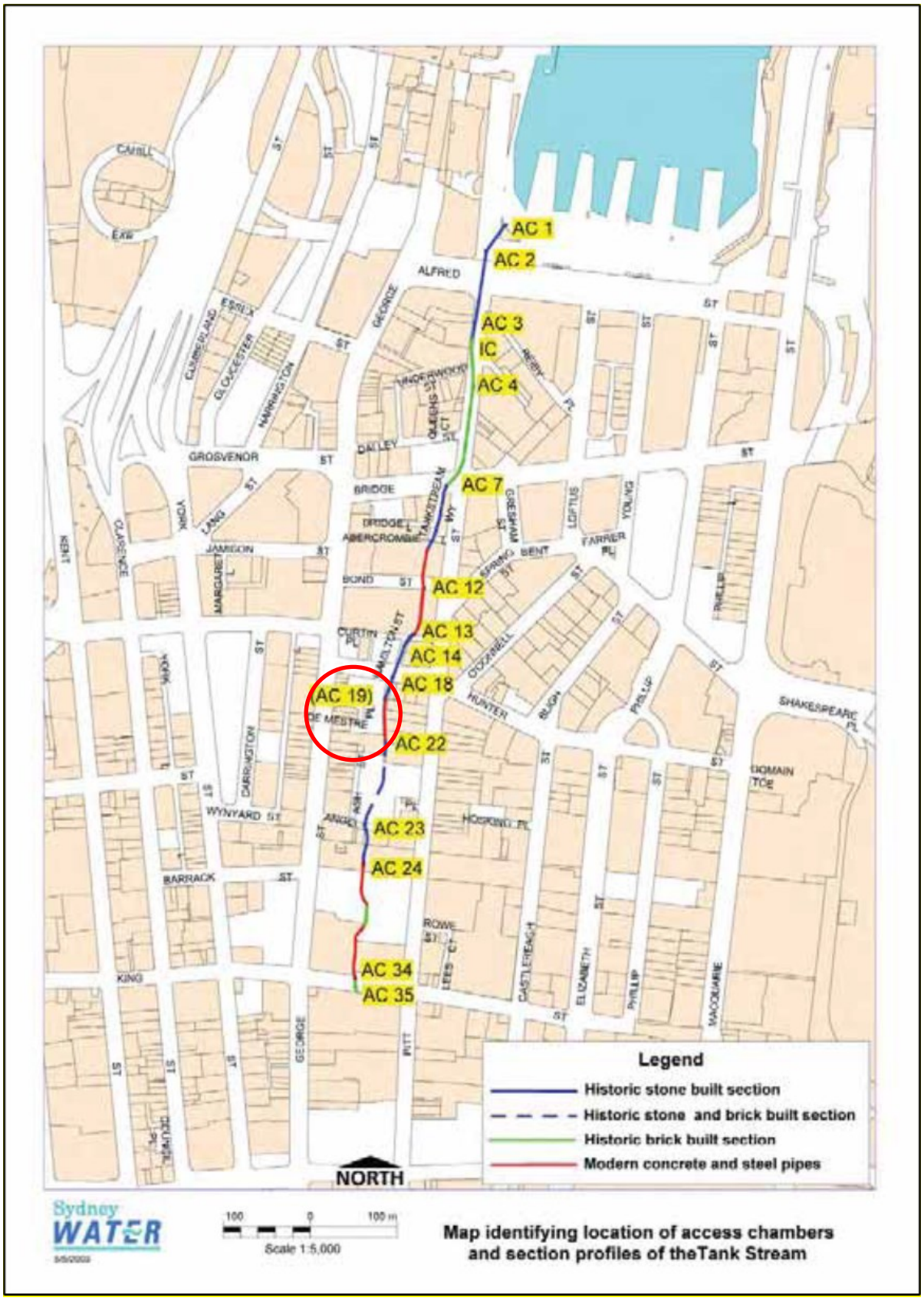


Figure 25. Historic and new profiles of the Tank Stream. The original fabric of the Tank Stream drain has been replaced with modern fabric. *Source:* Sydney Water 2005 (Figure 3-2).

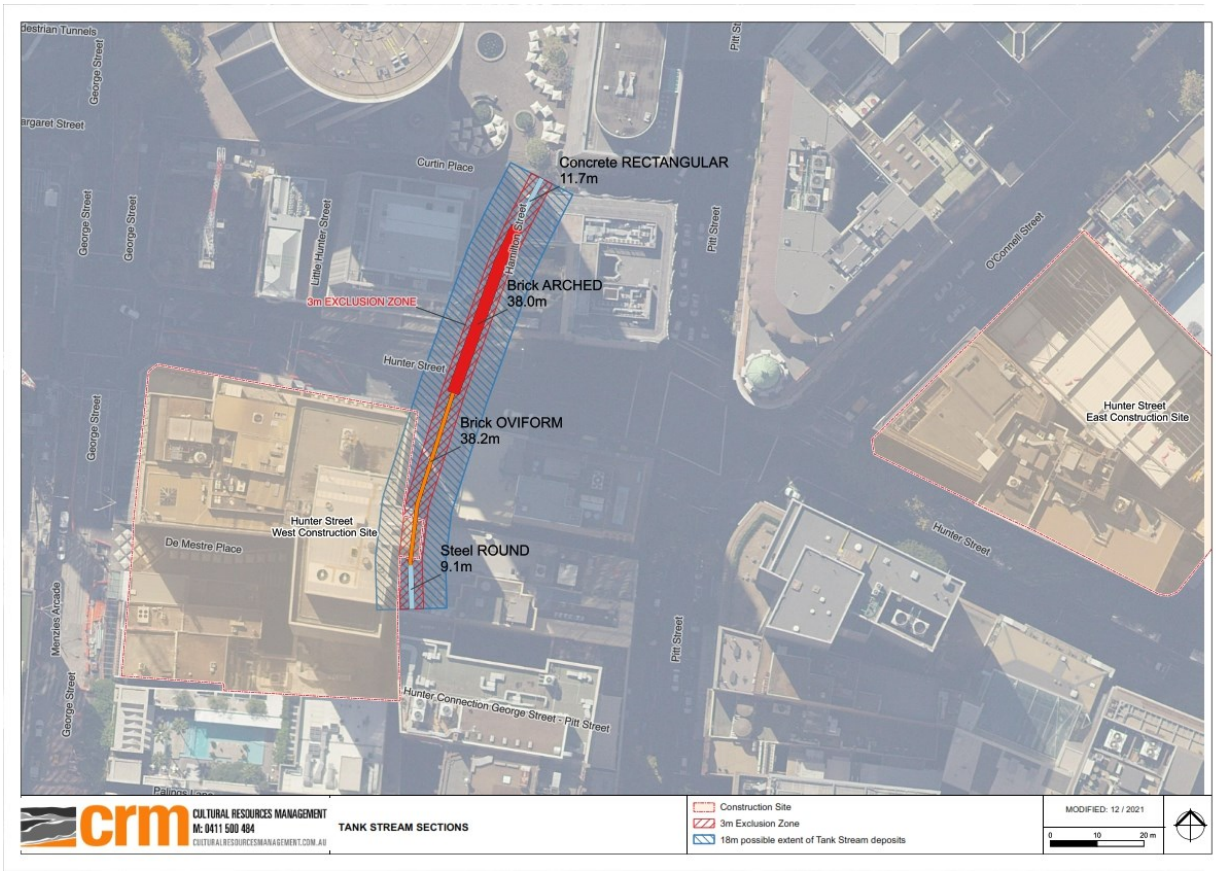


Figure 26. Tank Stream sections. *Source*: CRM / RPS 2021

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).

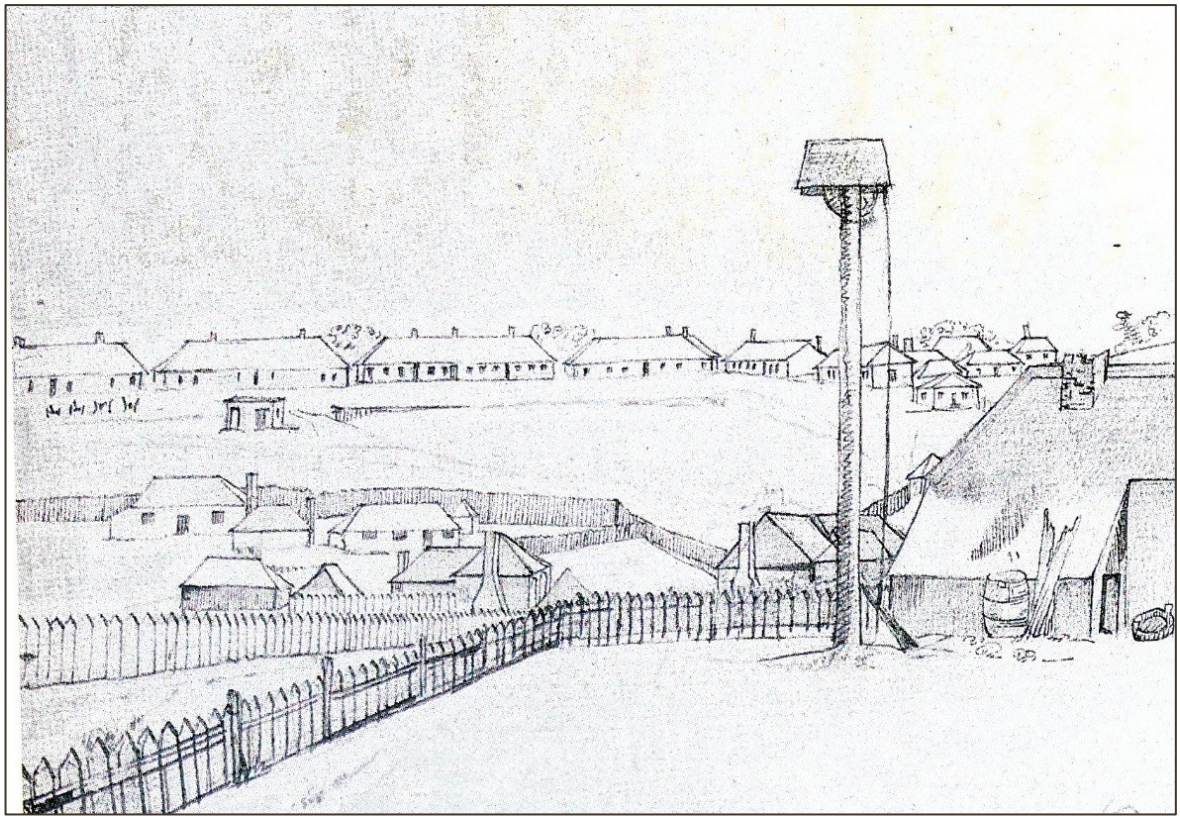


Figure 28. 1802, view westward from the first church site represented by the bell-post (now the corner of Hunter and Castlereagh Streets) showing buildings occupying the George Street and Hunter Street properties at centre left. *Source:* Lesueur, Charles-Alexandre, Vue d'un quartier de Port Jackson.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

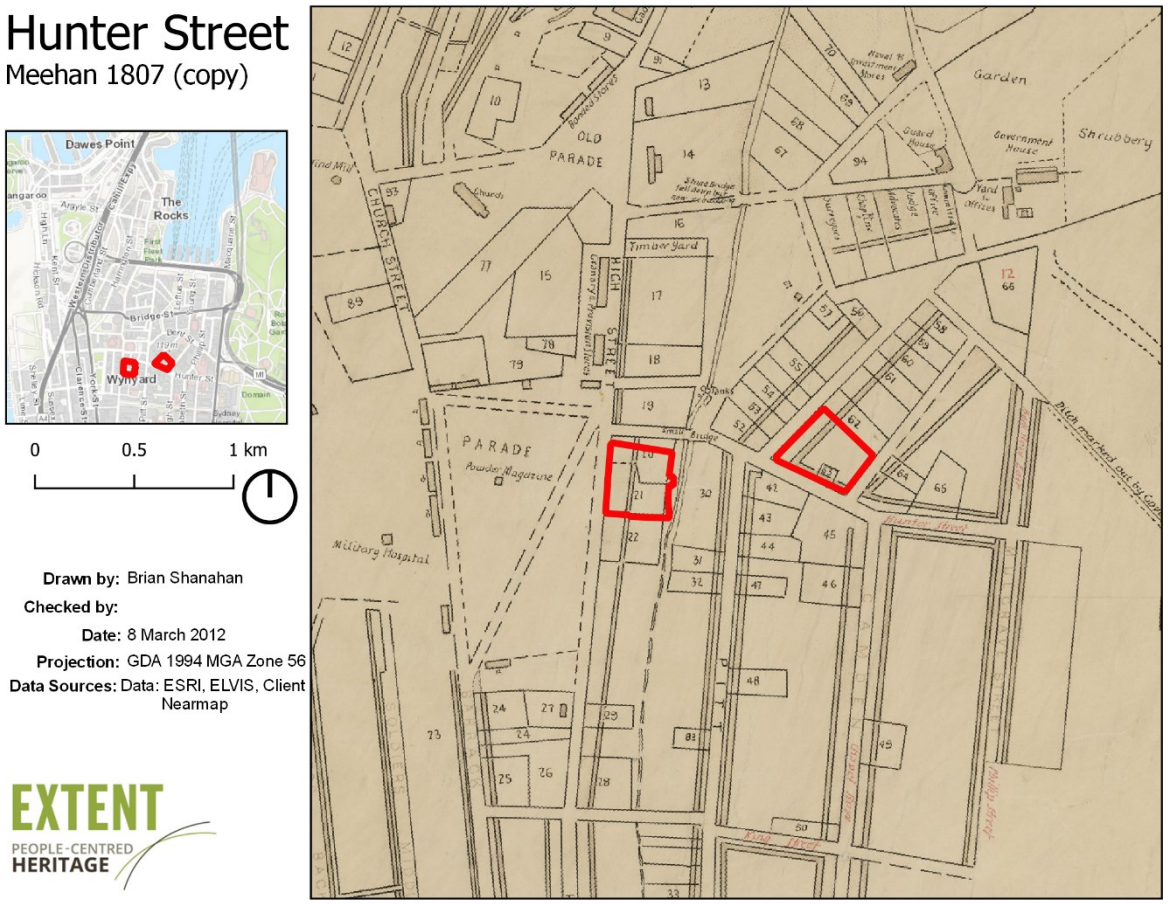


Figure 29. Detail from 'Plan of the Town of Sydney in New South Wales', Jas Meehan, 1807, showing the western and eastern construction sites for Hunter Street Station. The study area is outlined in red. *Source:* NLA MAP F 105B.

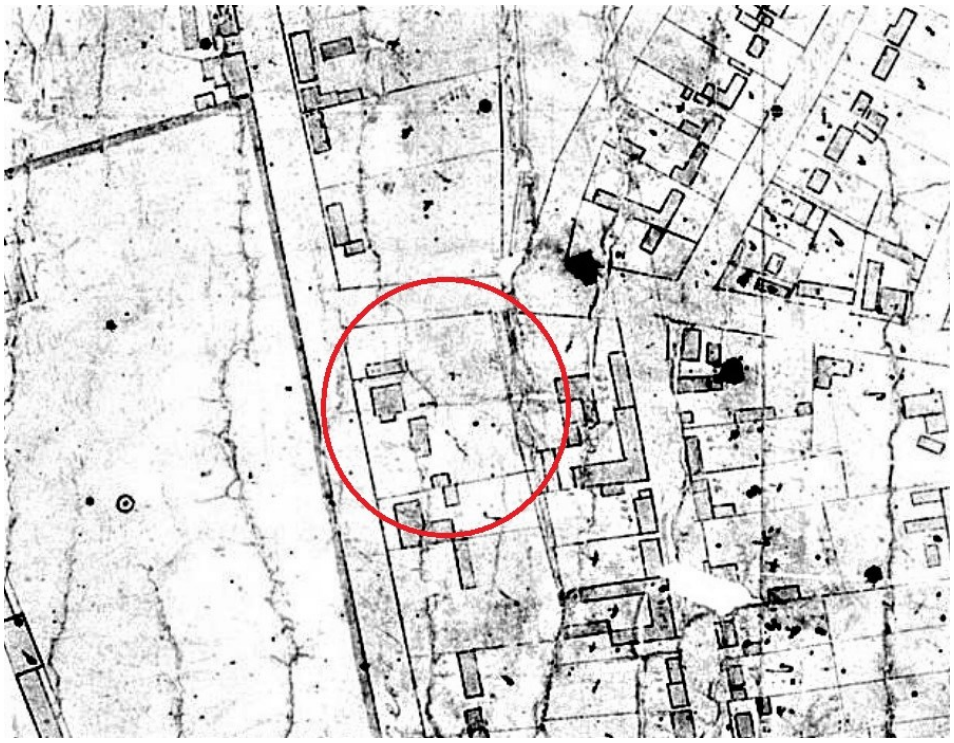


Figure 30. Western construction site as shown in 'Harper's Plan of the Town of Sydney'. *Source:* Stewart & Harper 1822–23, CP S.268 SANSW

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).

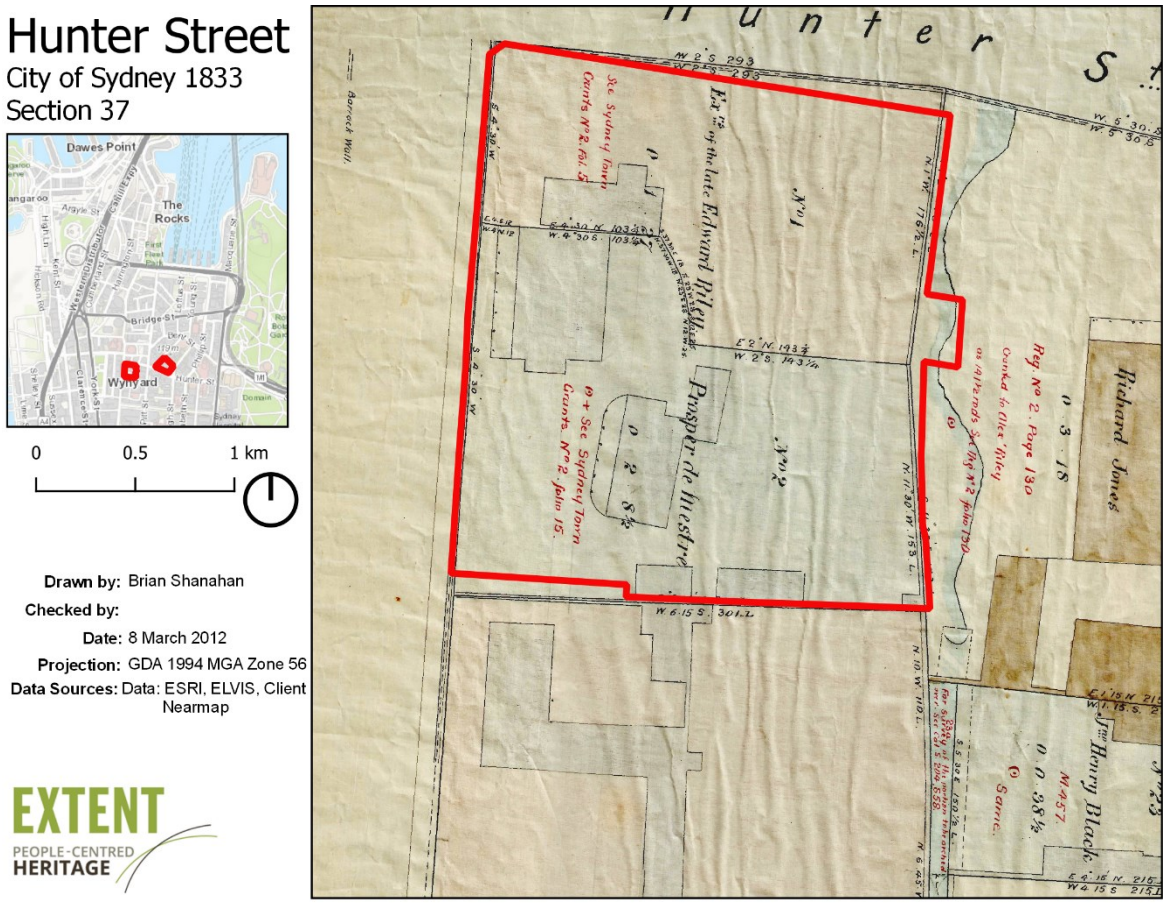


Figure 31. Detail from City of Sydney Survey Plans, 1833, Section 37, showing the name of land owners in Edward Riley and Prosper de Mestre in western construction site (outlined in red). *Source:* City of Sydney ID A-00880287.

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).

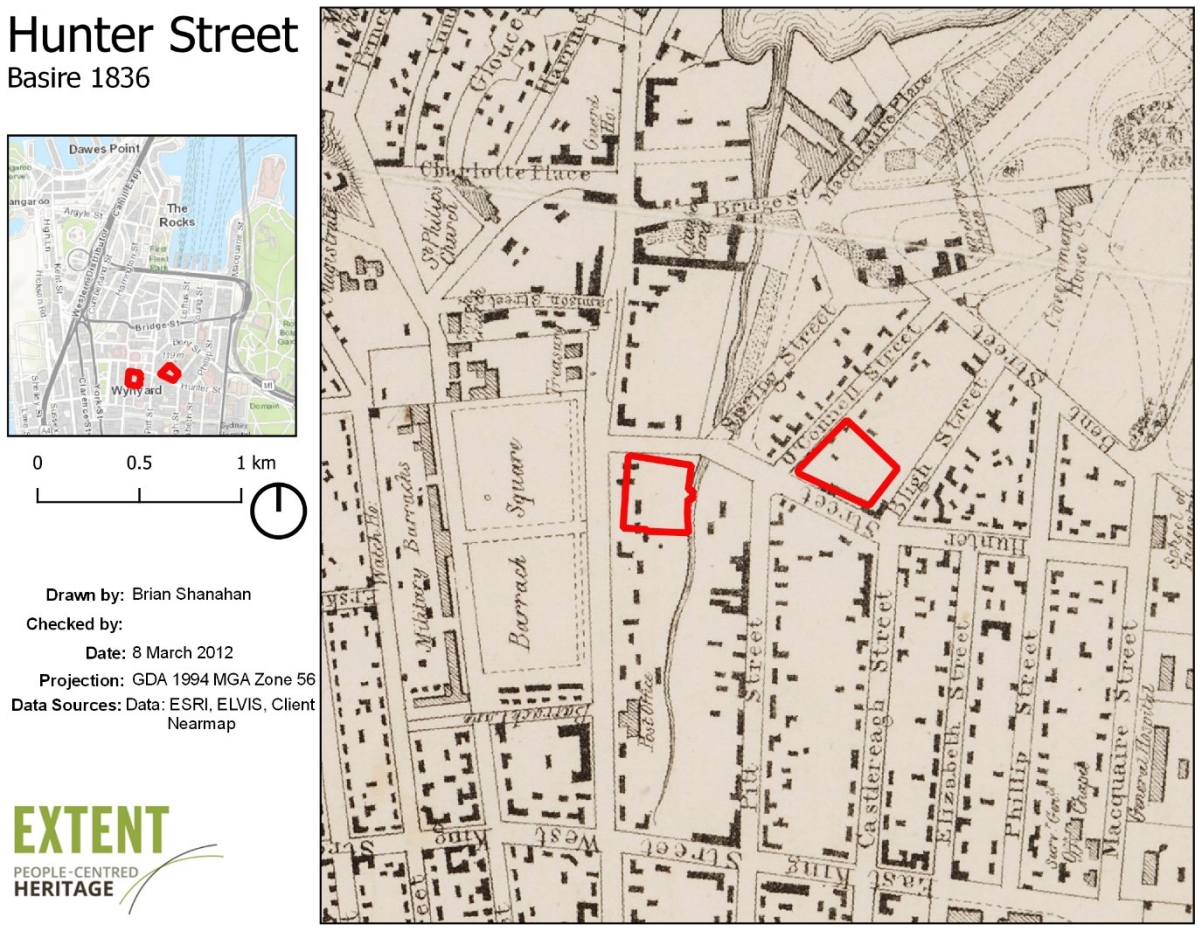


Figure 32. Detail from 'Plan of Sydney with Pyrmont, New South Wales.', J Basire, 1836, showing the western and eastern construction sites for Hunter Street Station (outlined in red). *Source:* NLA Map T 1551.

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.

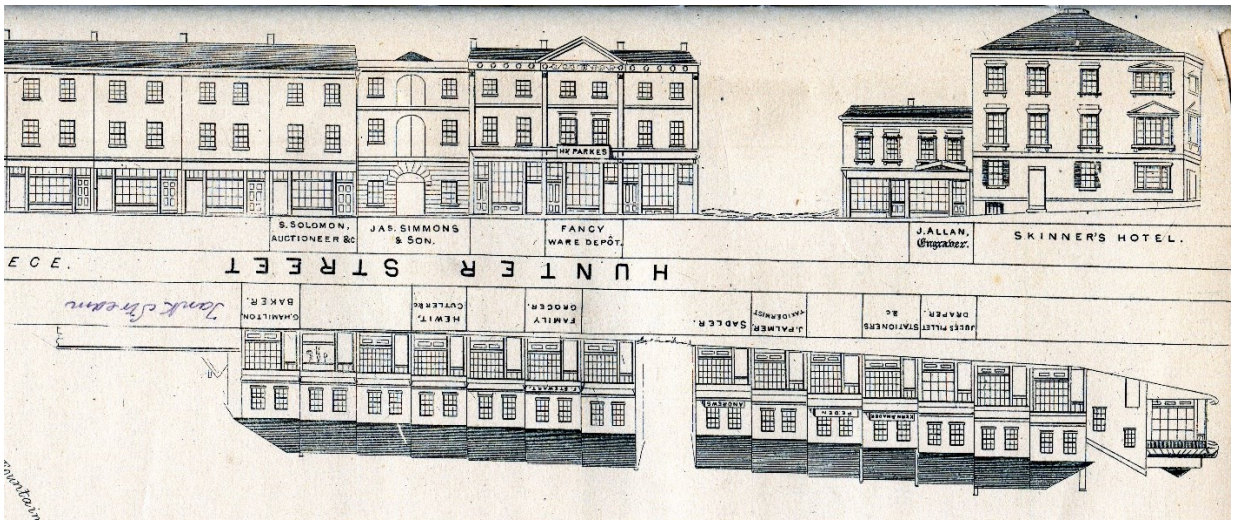


Figure 35. Facades of the Hunter Street face of the western construction site in 1848, facing south. *Source:* Fowles 1882, Plate 20A.

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.

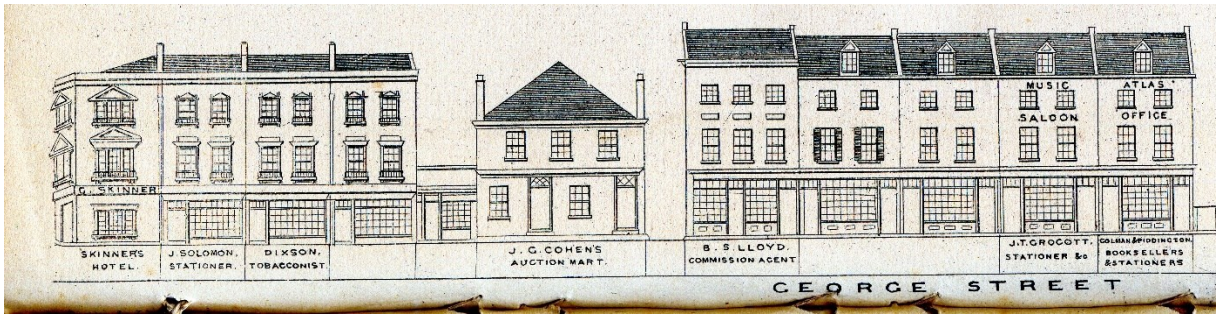


Figure 36. Facades of the George Street face of the western construction site in 1848, facing east. Source: Fowles 1882, Plate 22A.

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).

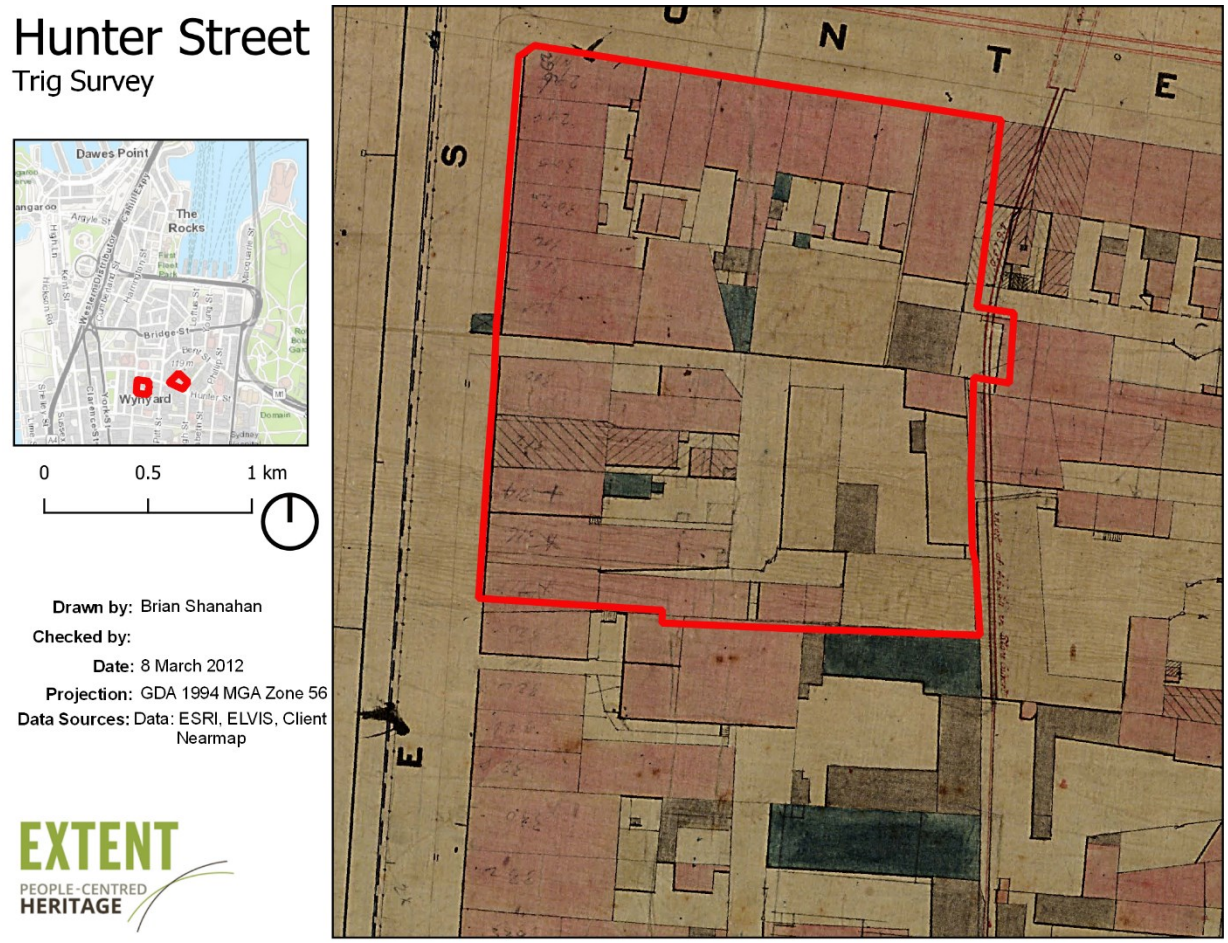


Figure 39. Detail from the City of Sydney Trigonometrical Survey, Block D2, 1865 (the Hunter Street West site is outlined in red). *Source:* City of Sydney A-00880381.

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.

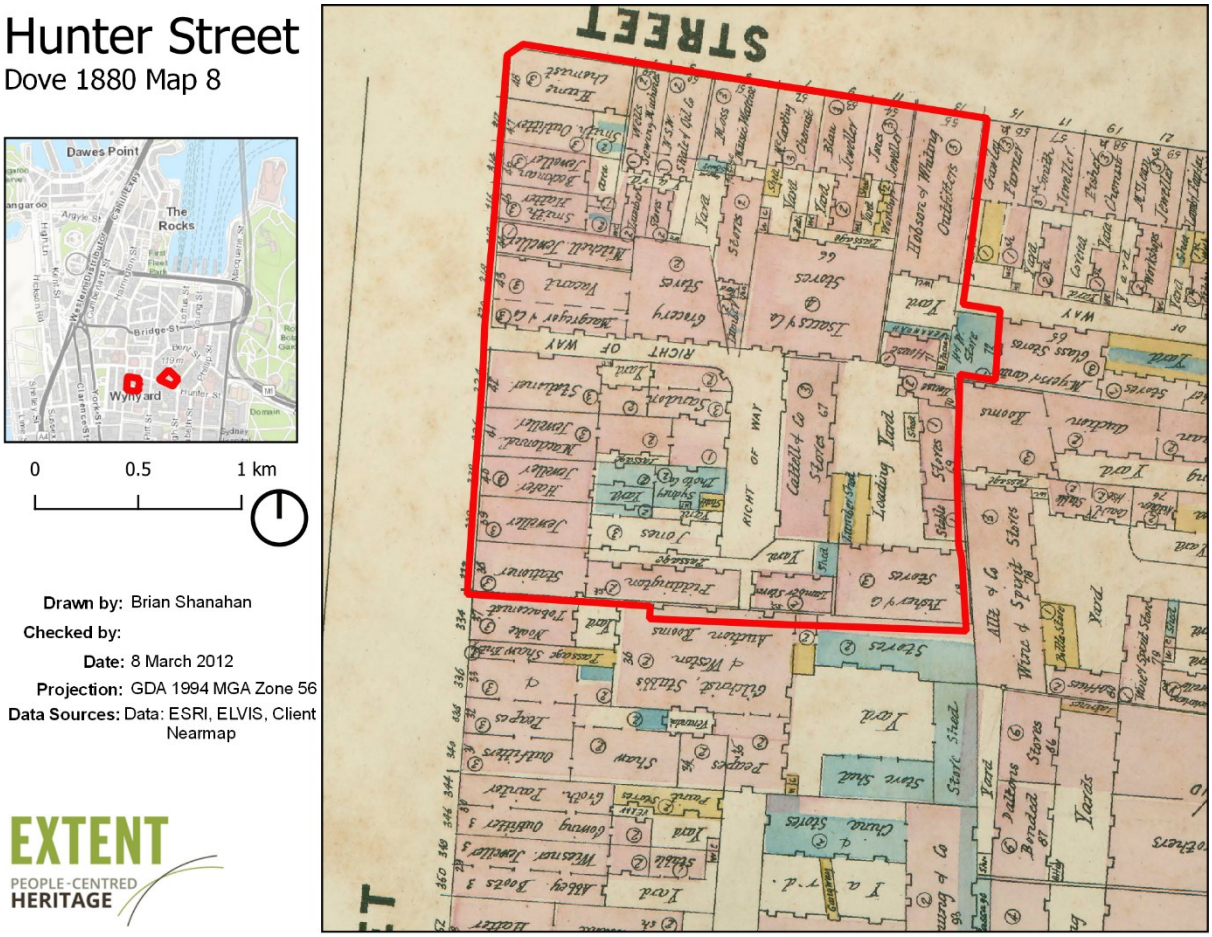


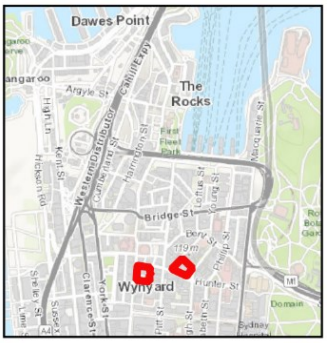
Figure 41. Detail from Dove's 'Plans of Sydney', 1880, Map 8. (The Hunter Street West site is outlined in red) *Source:* City of Sydney A-00880151.

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.

Hunter Street

Fire Underwriters 1917

Blocks 122-130



0 0.5 1 km

Drawn by: Brian Shanahan

Checked by:

Date: 8 March 2012

Projection: GDA 1994 MGA Zone 56

Data Sources: Data: ESRI, ELVIS, Client Nearmap

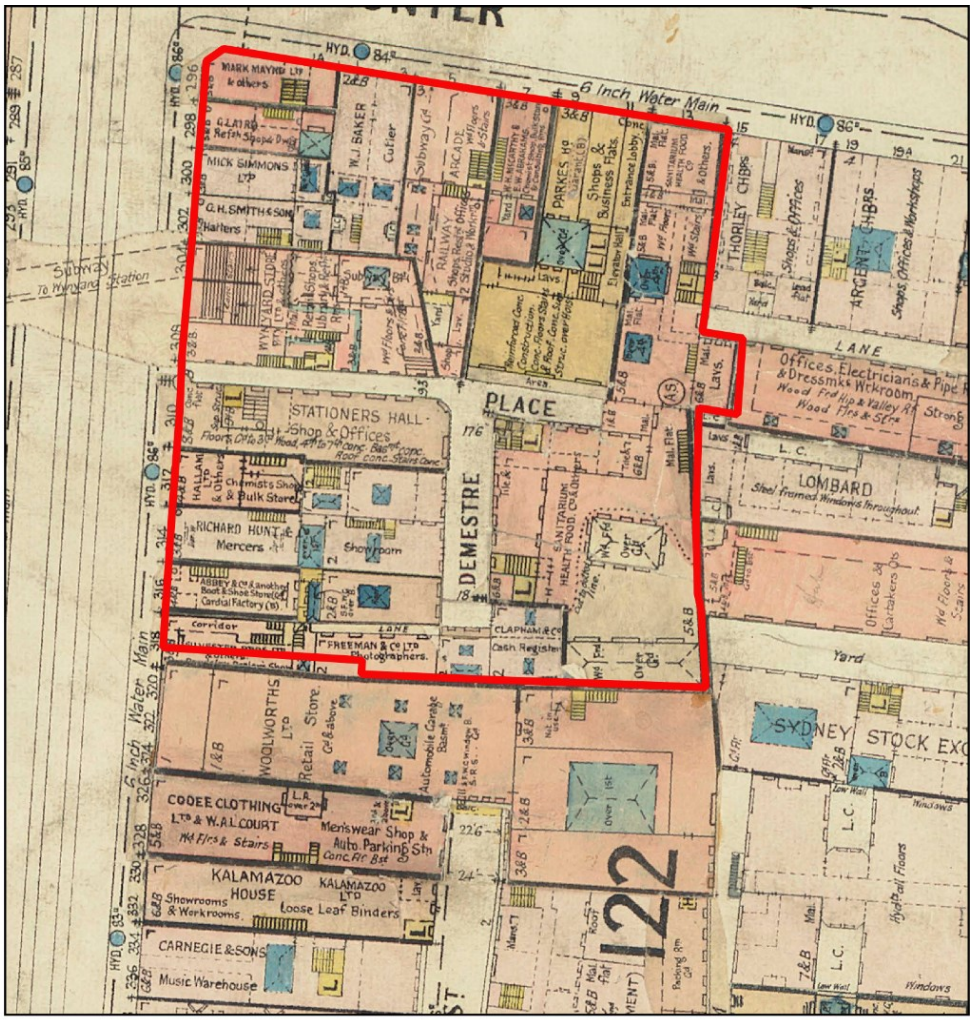


Figure 42. Detail from Fire-Underwriters Association of NSW Detail Survey Map, 1917-1939 (the Hunter Street West site is outlined in red). Block 122 and 130, 1917-1939. *Source:* City of Sydney A-00880236.

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.

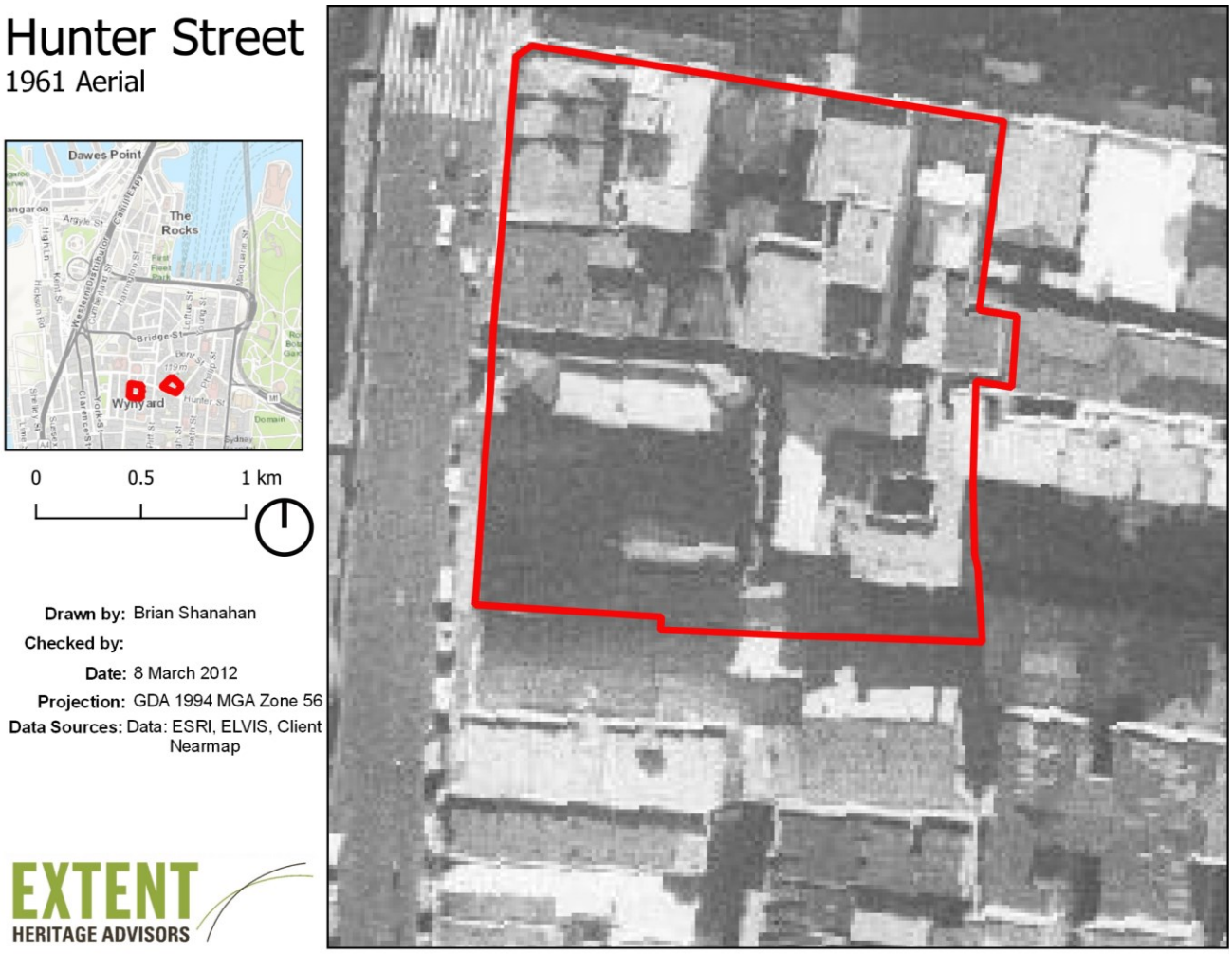


Figure 46. 1961 historical aerial, showing the western construction site (outlined in red). *Source:* Spatial NSW.

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.

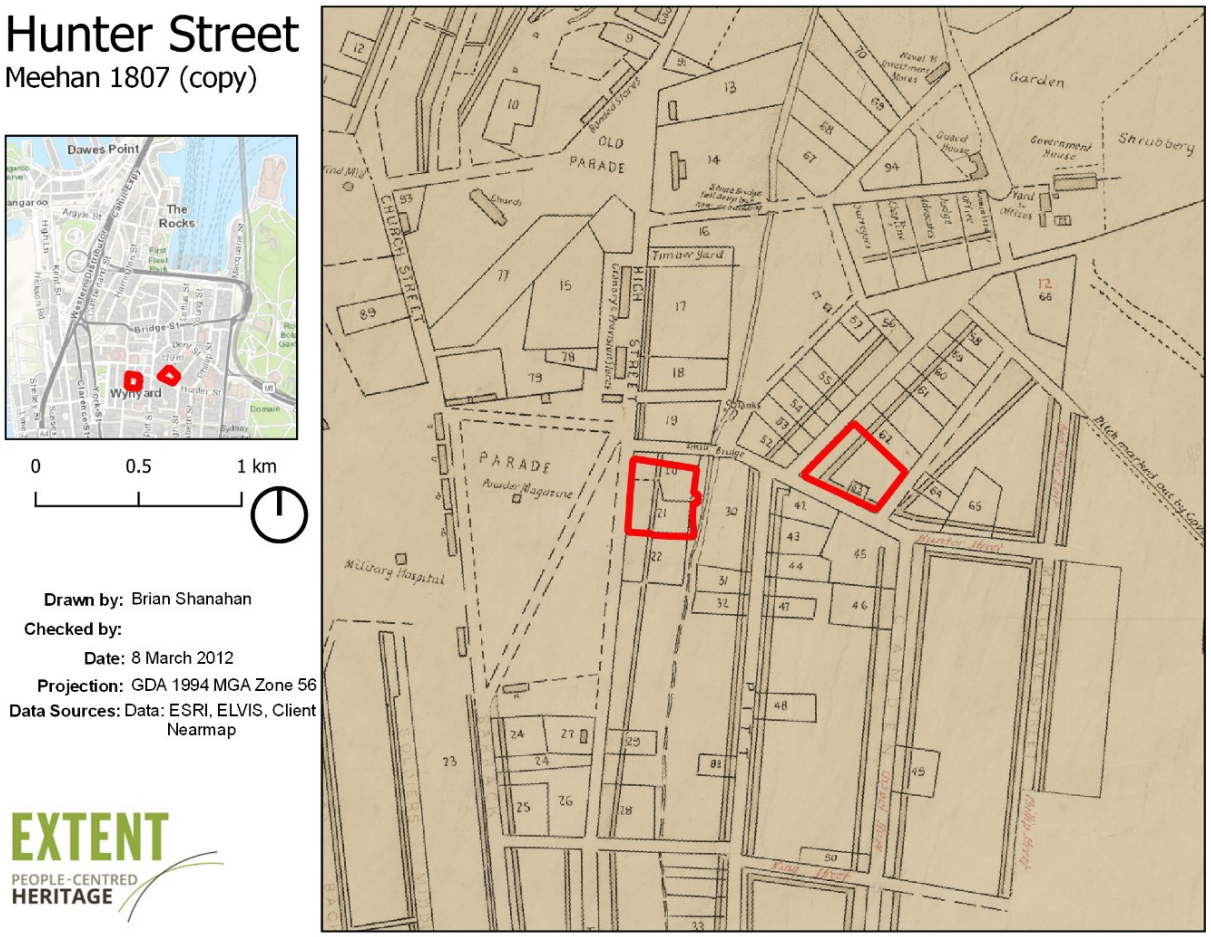


Figure 48. Detail from 'Plan of the Town of Sydney in New South Wales', Jas Meehan, 1807, showing the western and eastern construction sites for Hunter Street Station (outlined in red). *Source:* NLA MAP F 105B.

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.

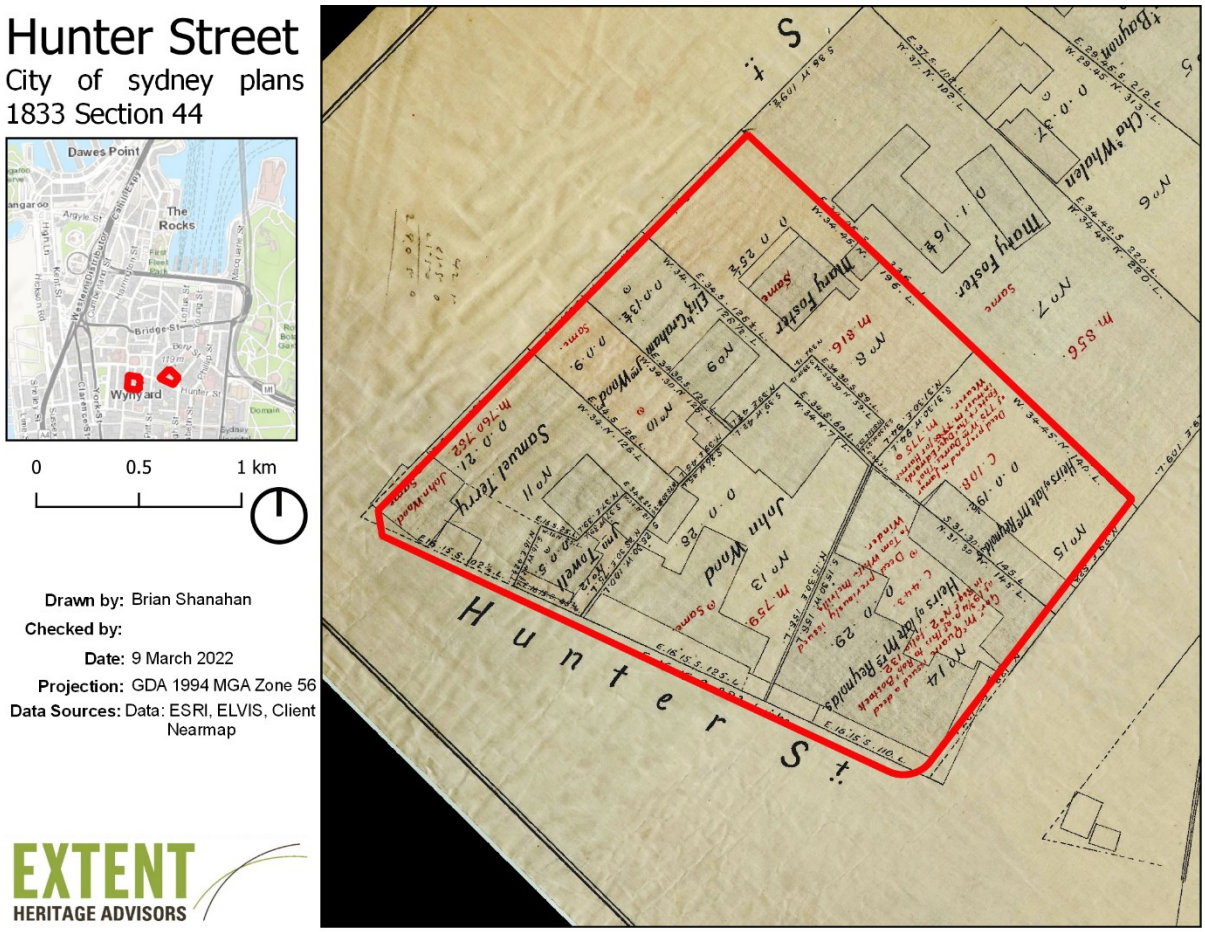


Figure 50. Detail from City of Sydney Survey Plans, 1833, Section 44, showing the eastern construction site (outlined in red). *Source:* City of Sydney A-00880294.

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.

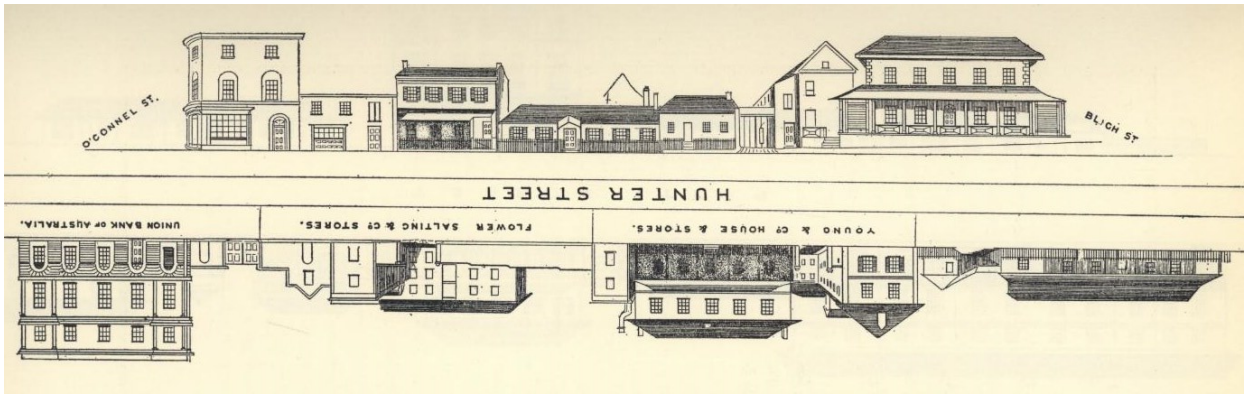


Figure 53. Facades of Hunter Street between O'Connell Street and Bligh Street in 1848. *Source:* Fowles 1882, Plate 40A.

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.

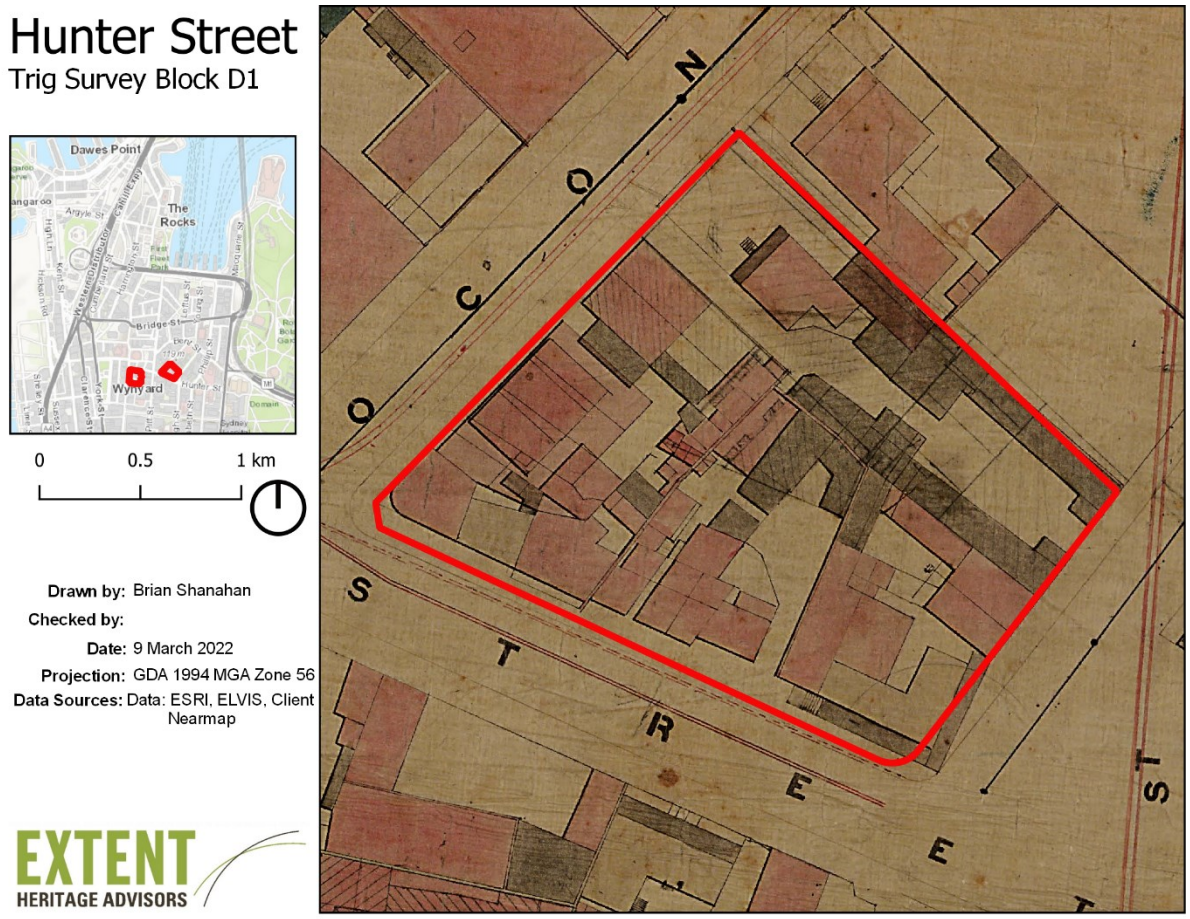


Figure 57. Detail from the City of Sydney Trigonometrical Survey, Block D2, 1865(the Hunter Street East site is outlined in red). *Source:* City of Sydney A-00880381.

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.

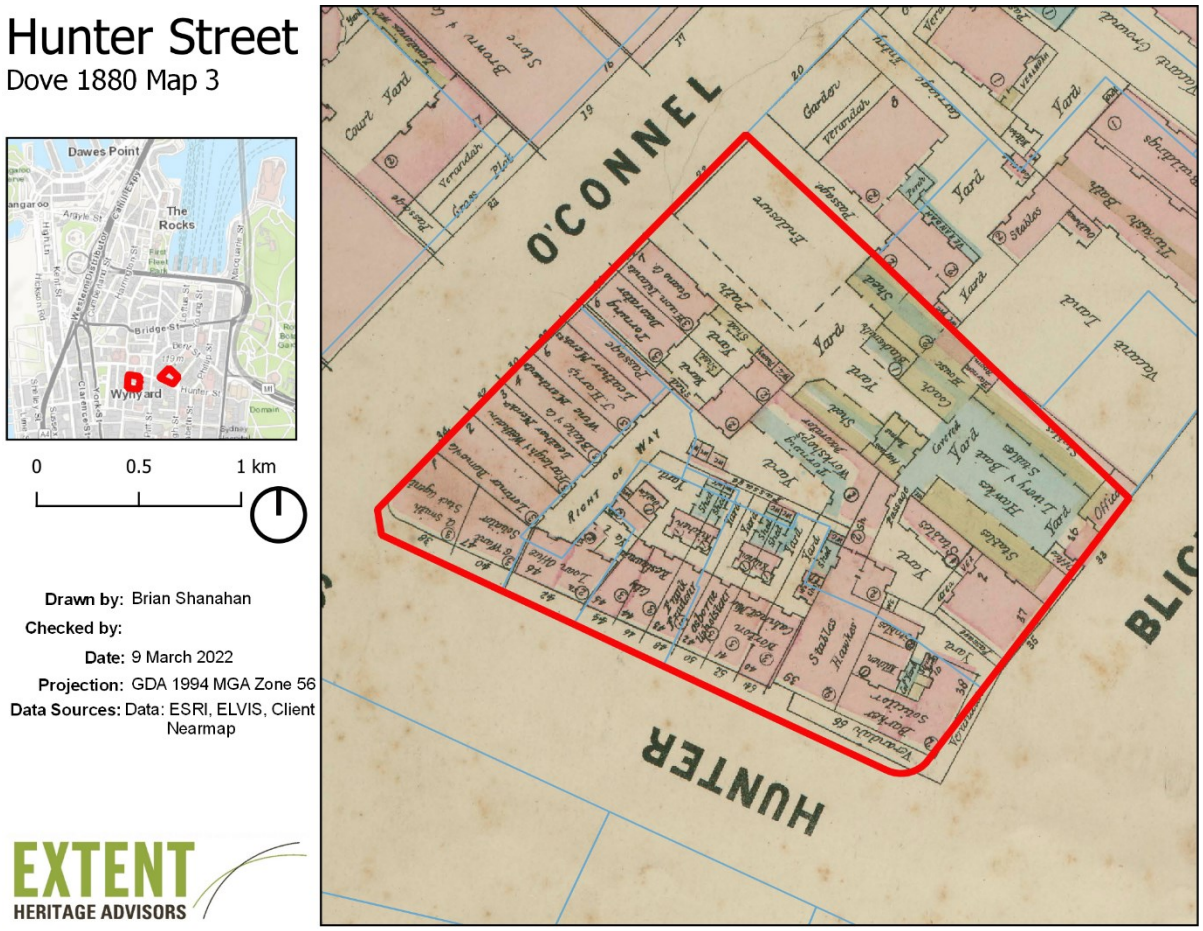


Figure 58. Detail from Percy Dove's 'Plans of Sydney', 1880, Map 3 (the Hunter Street East site is outlined in red). *Source:* City of Sydney A-00880130.

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).

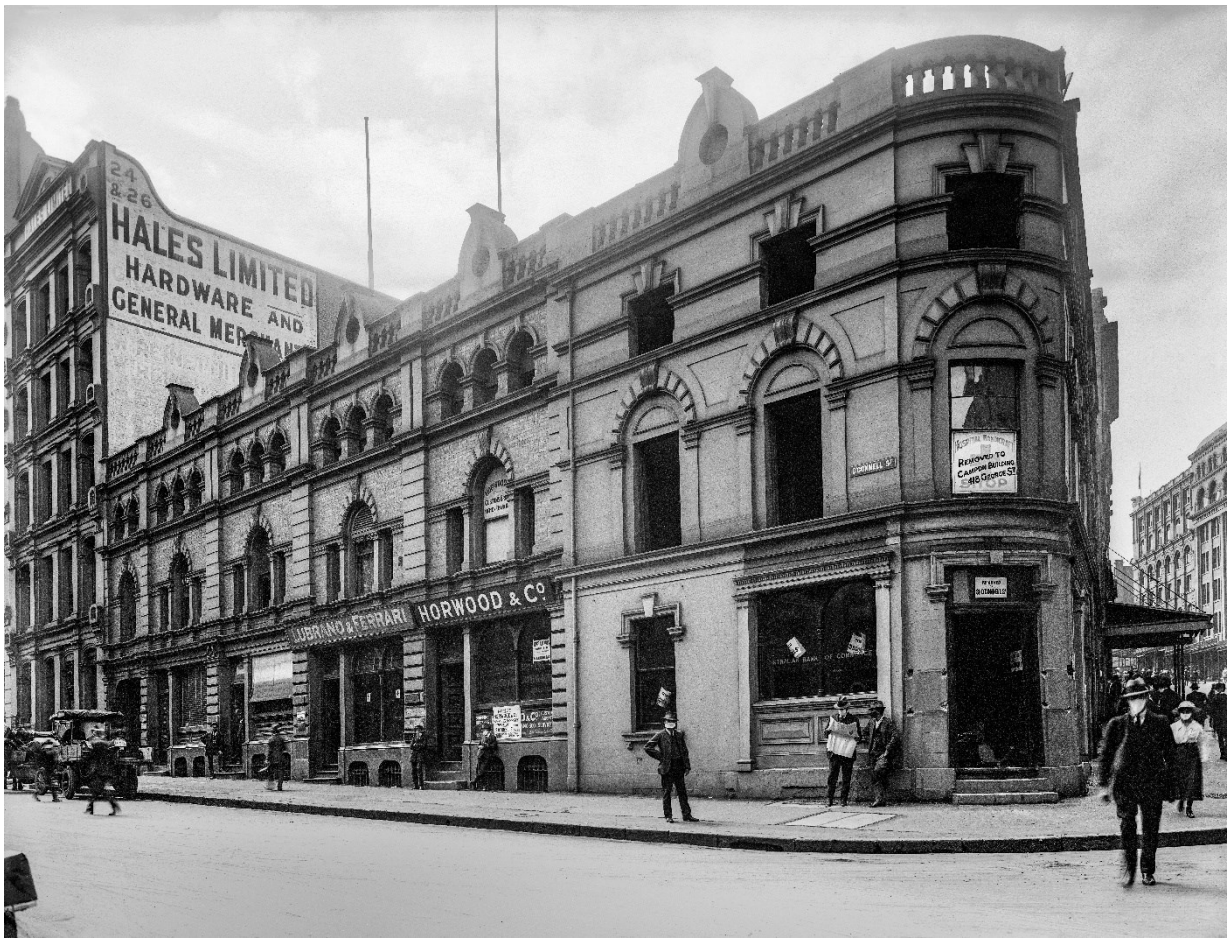


Figure 60. Hunter and O'Connell Streets Sydney, 1919. *Source:* City of Sydney A-01000471. Series of Demolition Books, glass negative

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.

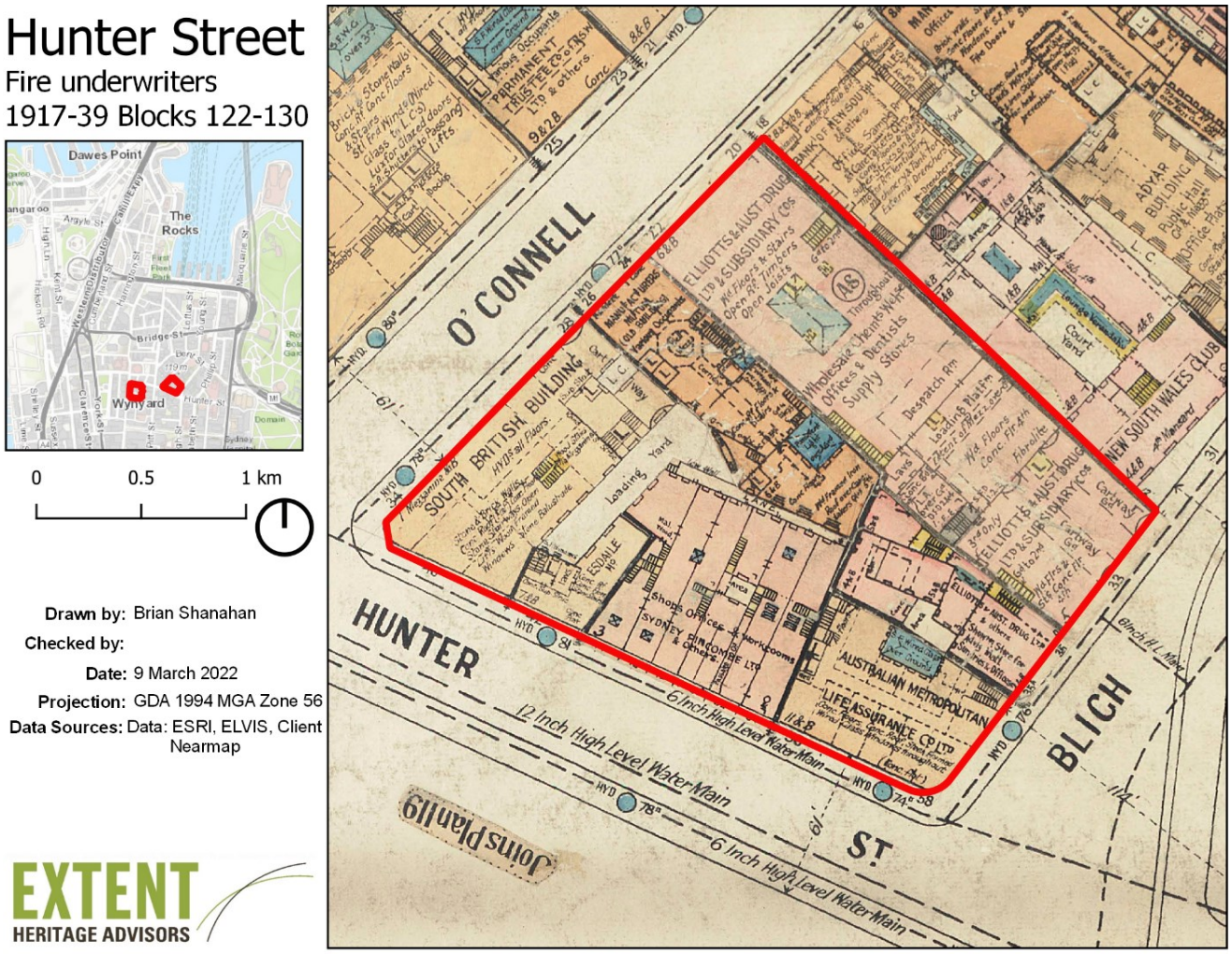


Figure 62. Detail from Fire-Underwriters Association of NSW Detail Survey Map (the Hunter Street East site is outlined in red). Block 115 and 118, 1917-1939. Source: City of Sydney A-00880234.

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.

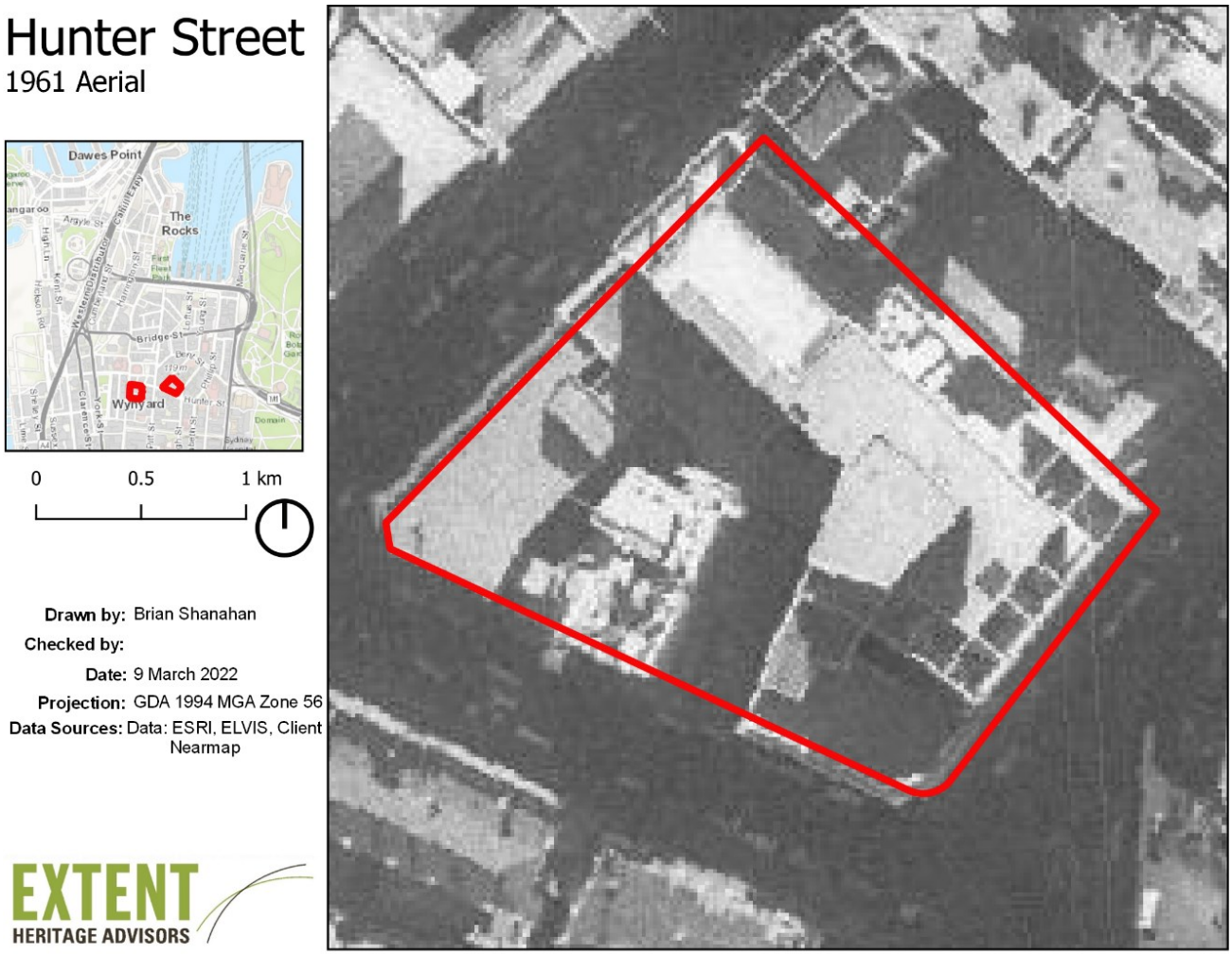


Figure 65. 1961 historical aerial, showing the eastern construction site (outlined in red). *Source:* Spatial NSW.

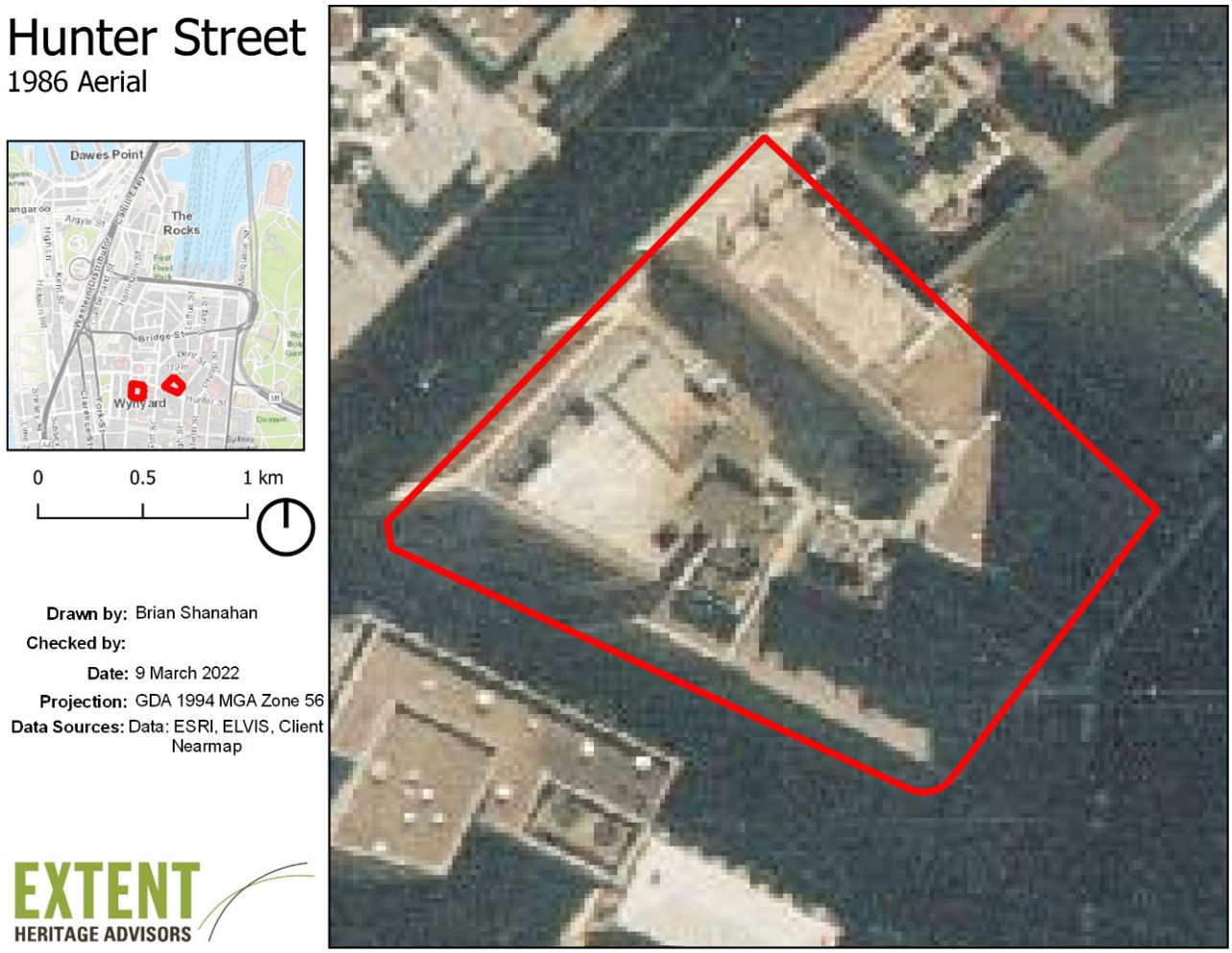


Figure 66. 1986 historical aerial, showing the eastern construction site (outlined in red). *Source:* Spatial NSW

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.

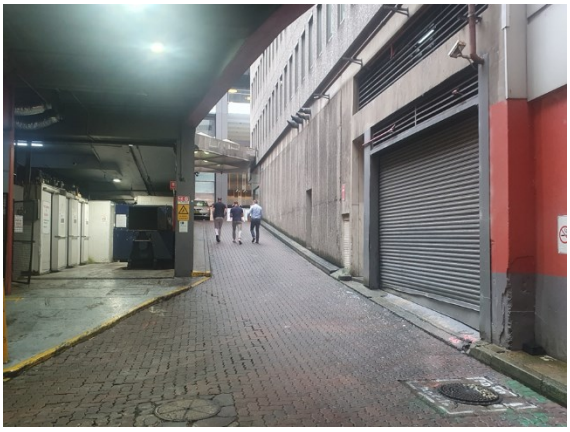


Figure 70. View looking west showing basement in Hunter Connection/De Mestre Place. Note the service area cut beneath the lane level which is under the Hunter Connection access ramp and indications of drains or services within the laneway.

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.

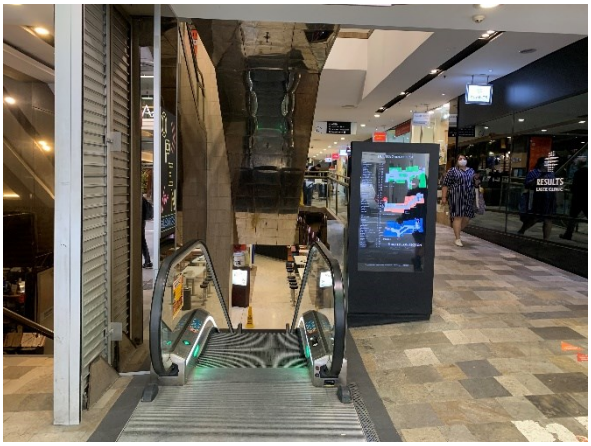


Figure 73. Escalator leading to basement level of Hunter Connection on Hunter Street.

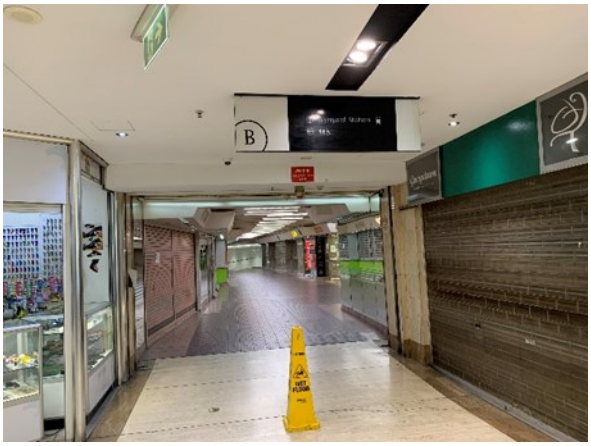


Figure 74. Hunter Street West site; Wynyard Station Connnection from the basement of Hunter Connection.

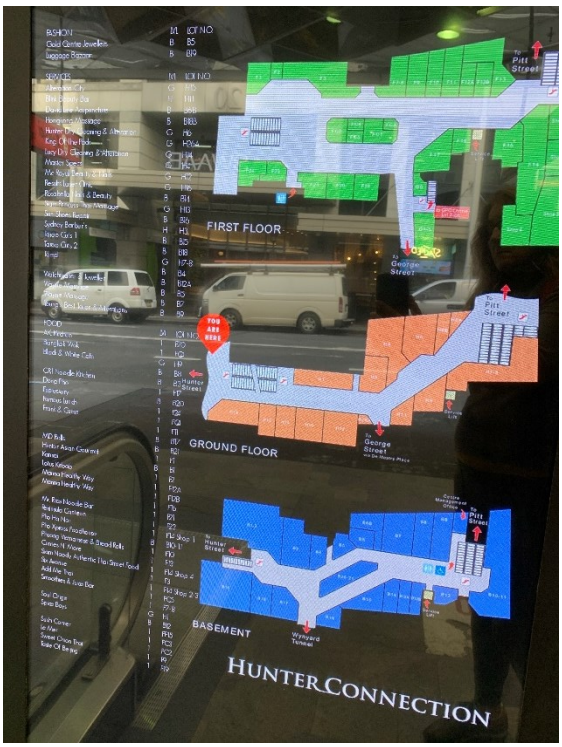


Figure 75. Hunter Connection directory panel.

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)

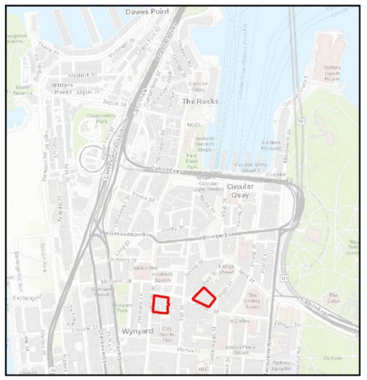
In 2012, GML undertook a project of historical and Aboriginal archaeological test excavations of the site known as '200 George Street', Sydney. The site included three addresses, 200 George Street, 190 George Street, and 4 Dalley Street. At the time of the assessment, the project area comprised three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



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

EXTENT HERITAGE ADVISORS

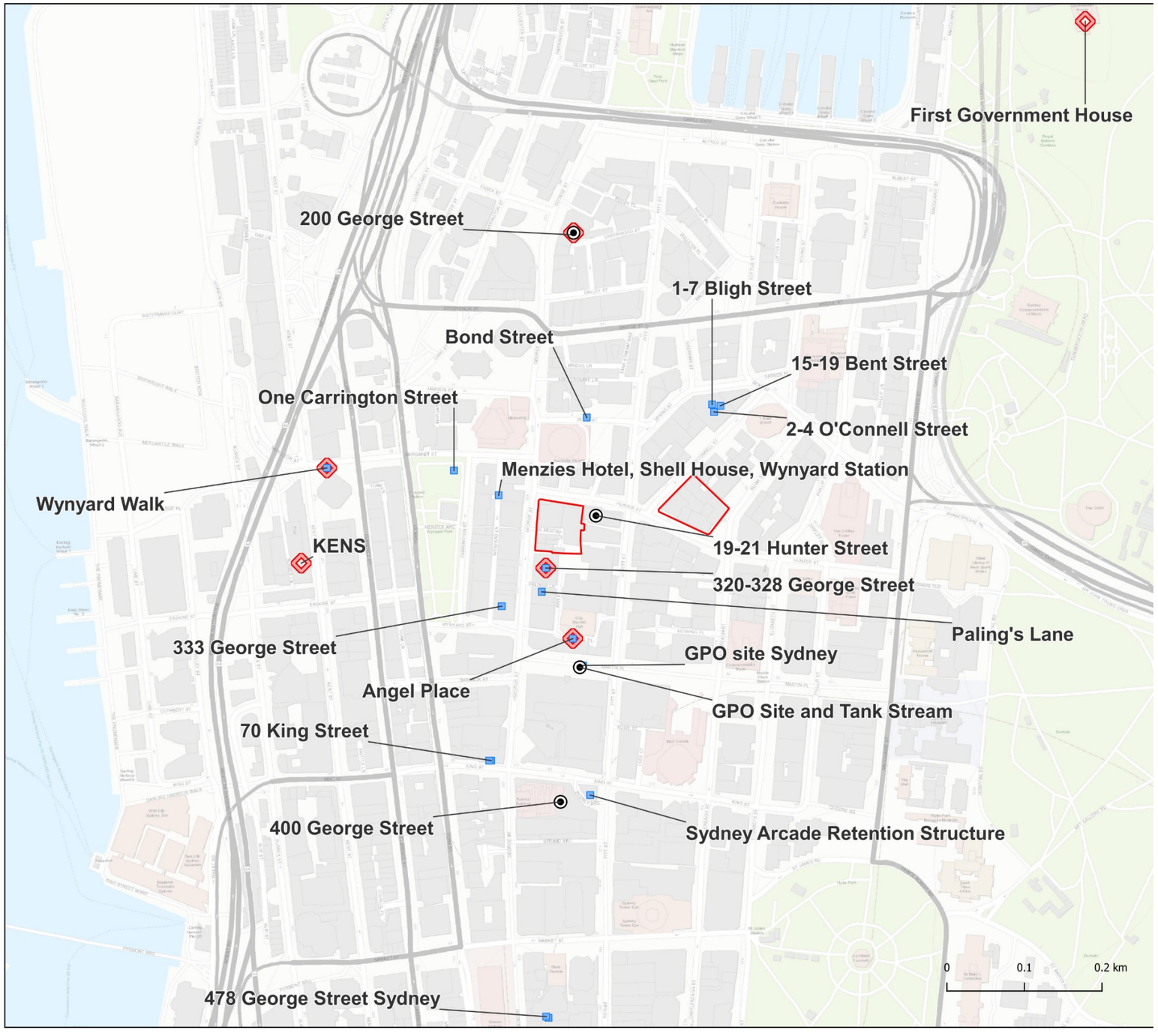


Figure 82. Map of previous investigations undertaken in the vicinity of the study area (outlined in red).

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).

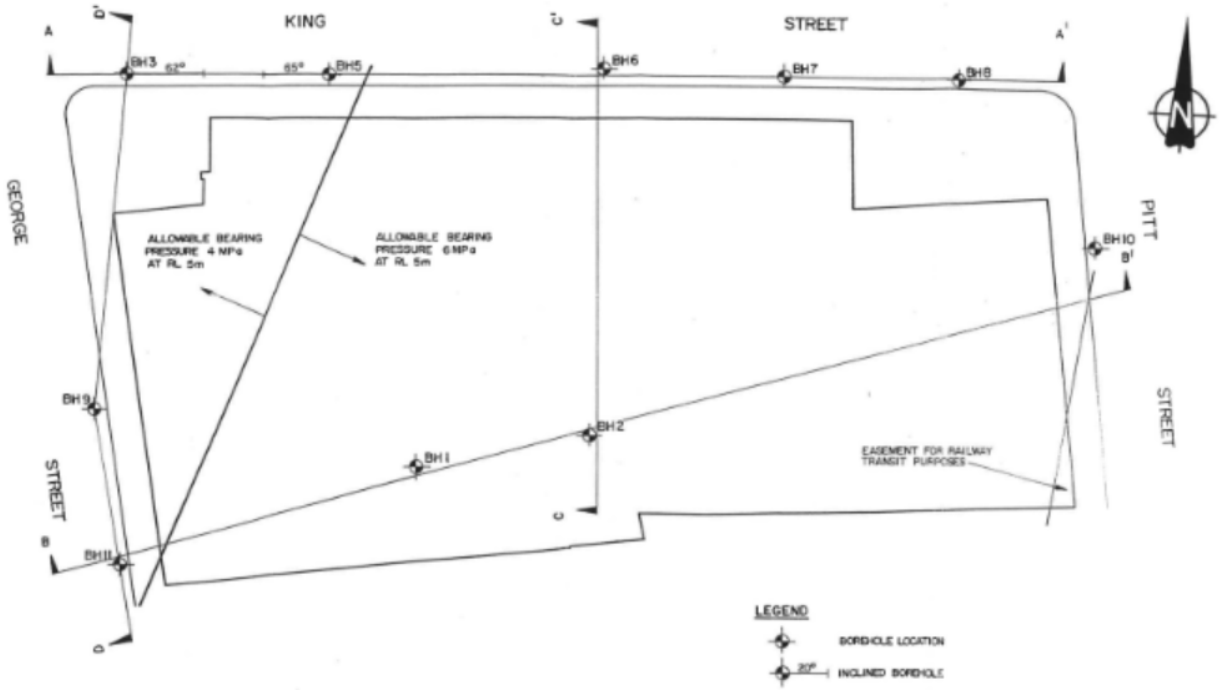


Figure 83. Location of boreholes drilled at 400 George Street. *Source*: Coffey 1995, drawing no. SIO376/1-1.

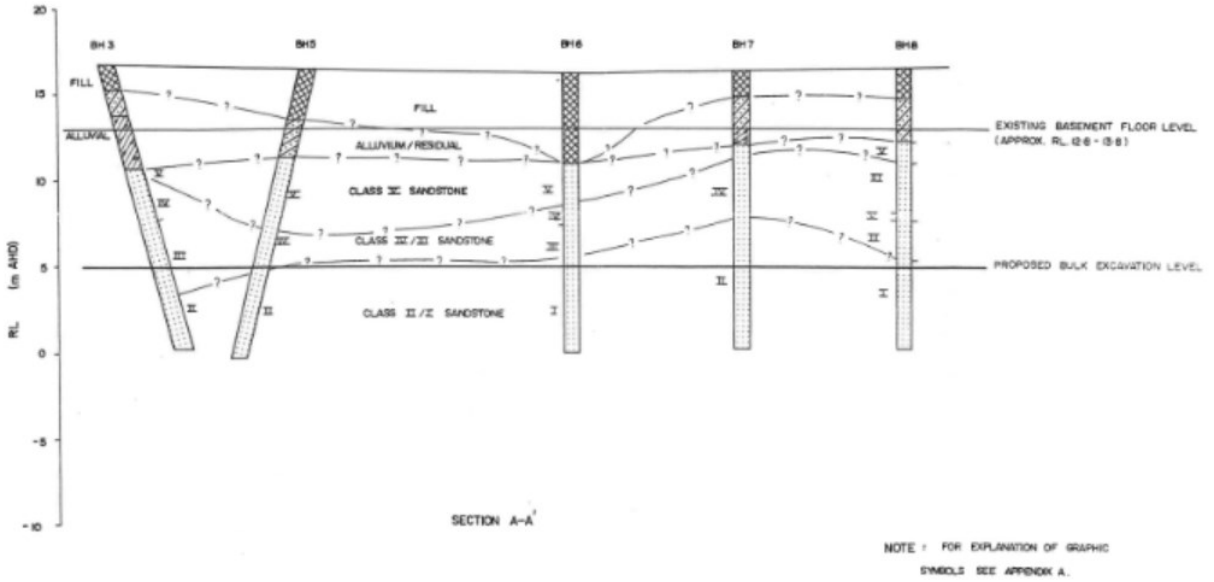


Figure 84. Results of boreholes drilled at 400 George Street. *Source*: Coffey 1995, drawing no. SIO376/1-2.

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).

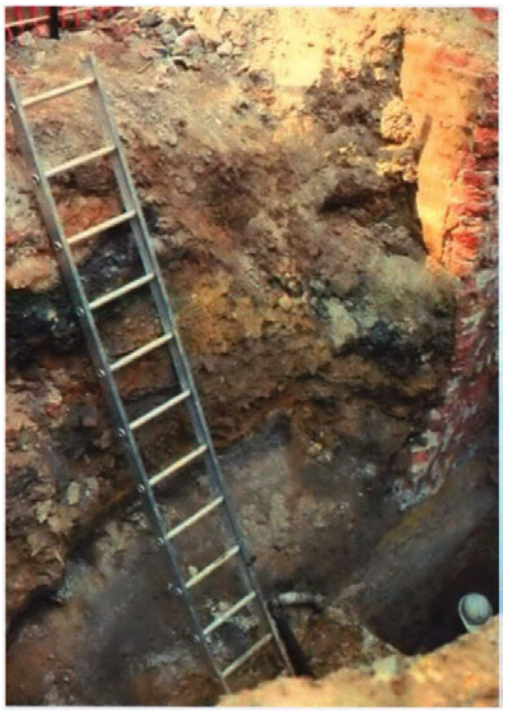


Figure 85. ‘A section through reclamation fills and building levels down into the natural estuarine soils of the Tank Stream Valley on the Dalley Street telephone exchange site in 1986.’. *Source*: GML 2014, fig. 4.27.

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).

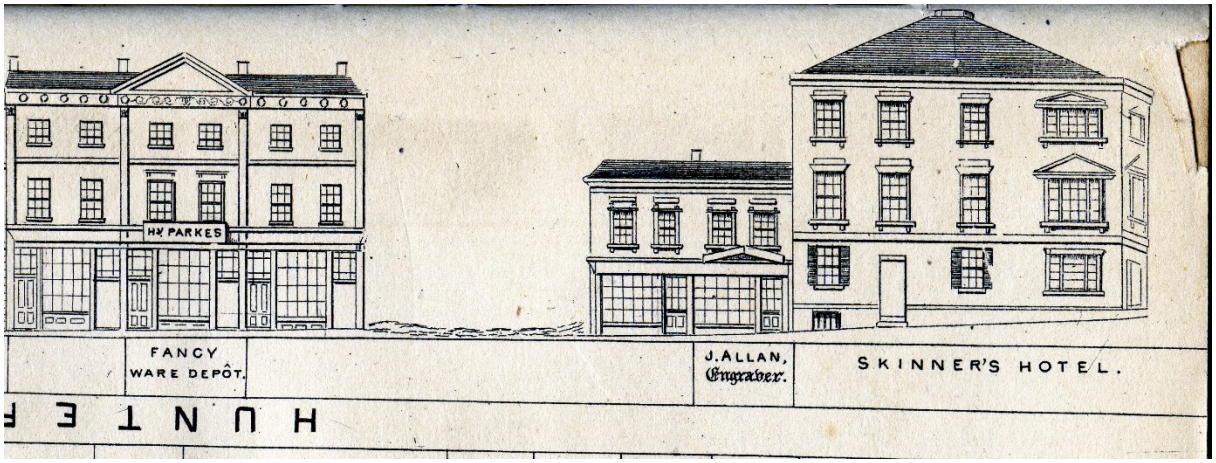


Figure 89. Skinners Hotel and Hunter Street as depicted by Joseph Fowles, 1848. *Source:* Fowles 1882, Plate 20A City of Sydney Archives.

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.

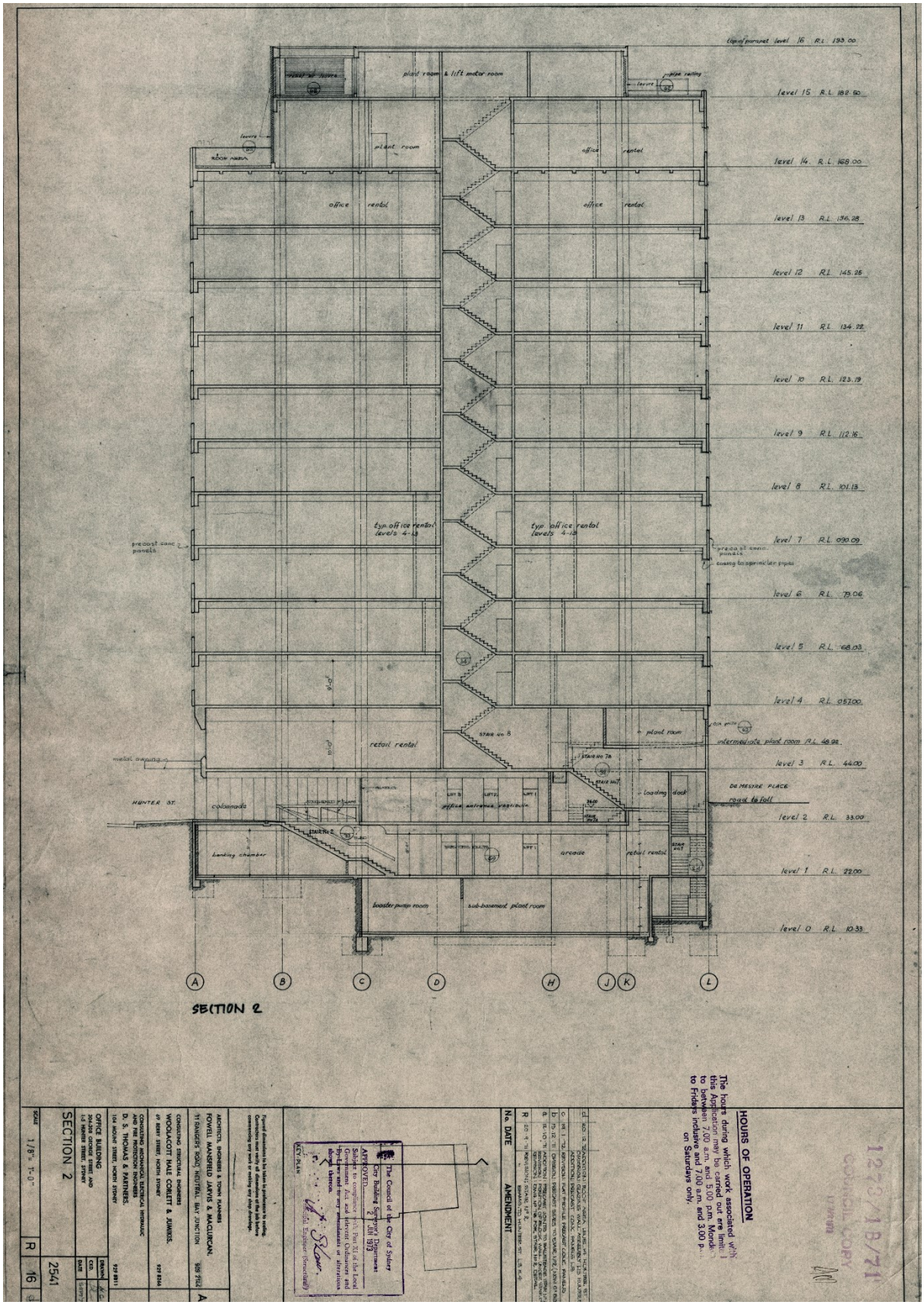


Figure 91. Section 2.

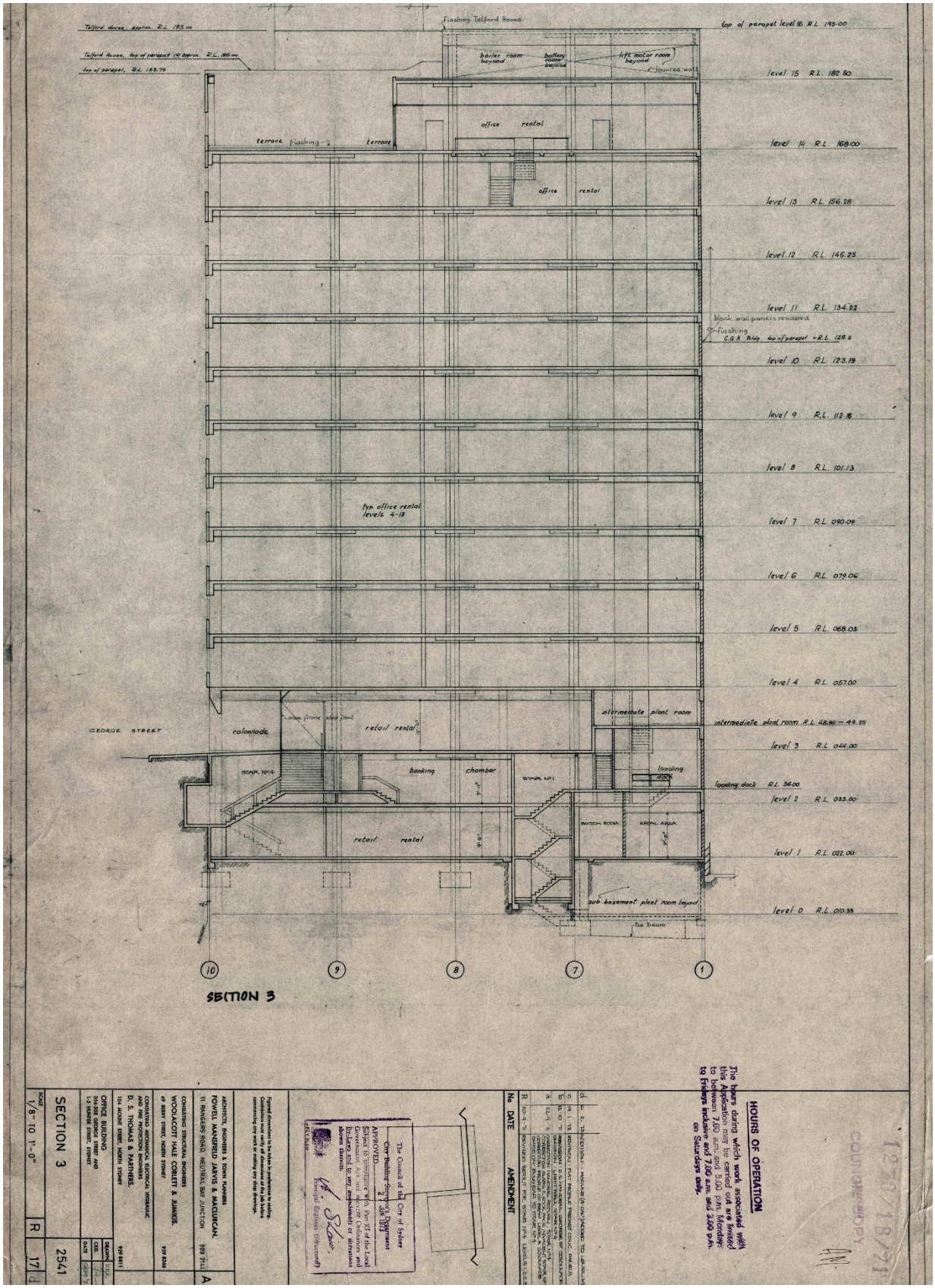


Figure 92. Section 3.

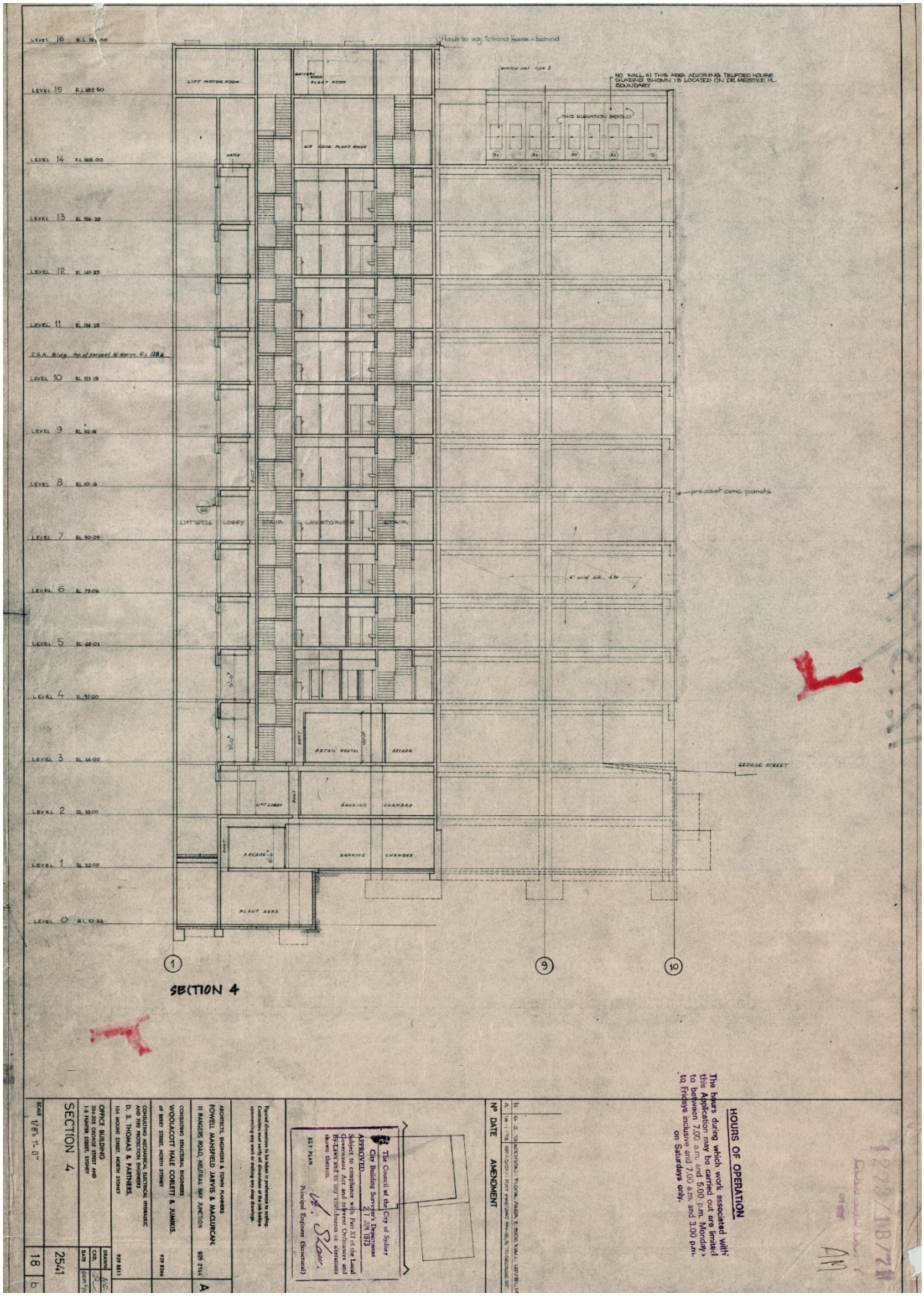


Figure 93. Section 4.

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.

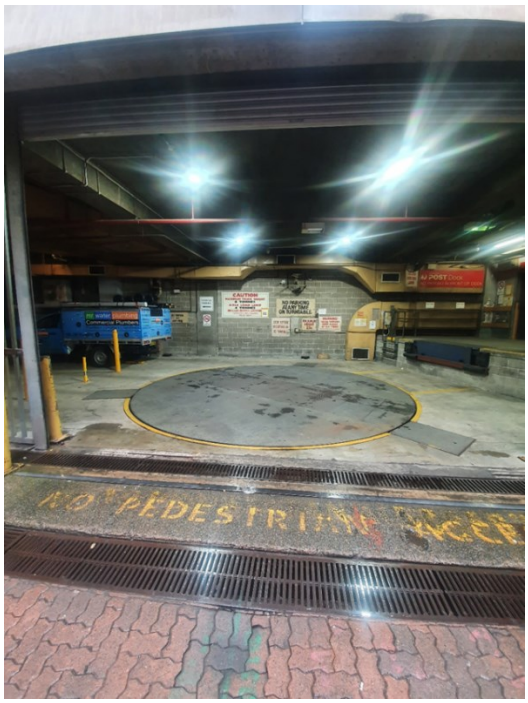


Figure 94. View of turning circle and loading bay at the end of De Mestre Place looking west.

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.

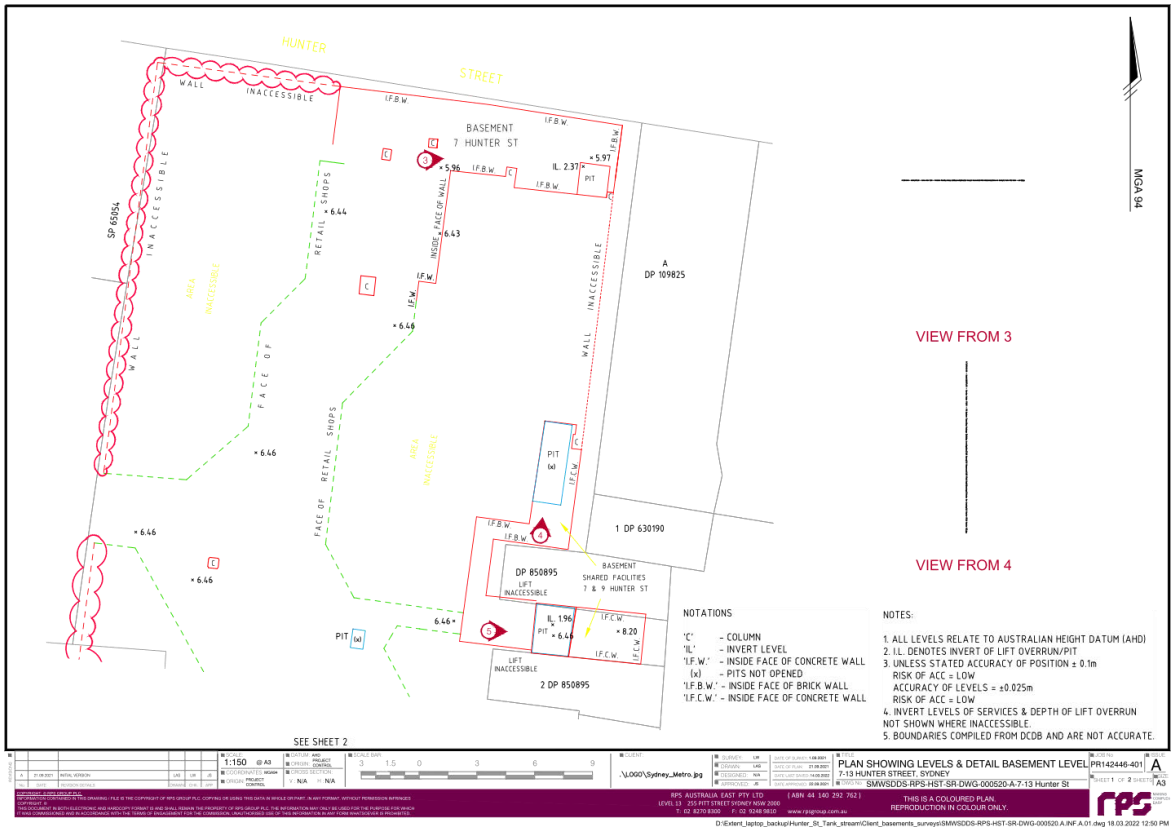


Figure 97. Extract from survey of basement levels across eastern half of the site. *Source:* RPS.

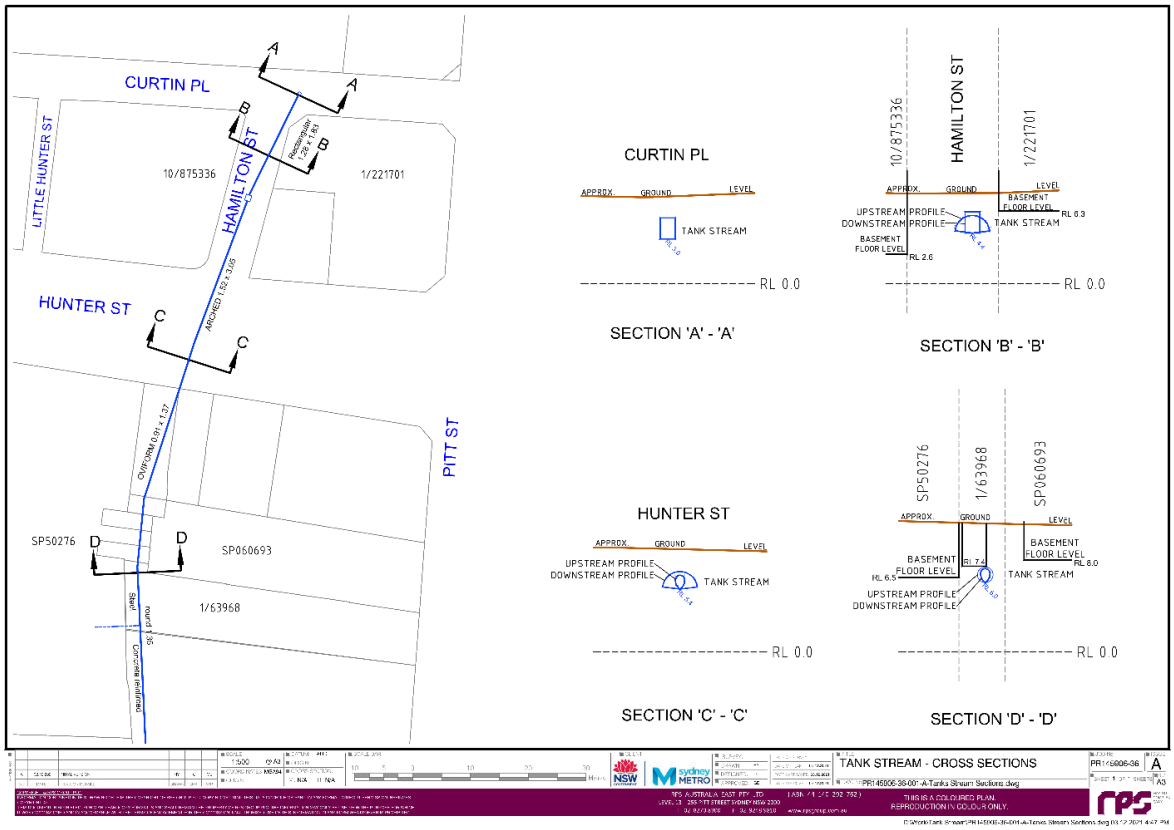


Figure 98. Tank Stream cross section. *Source:* RPS.

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.

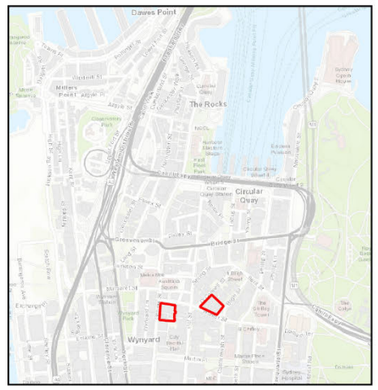
- The eastern half of the site is occupied by the basement level of the Hunter Connection. Although there appears to have been significant deep impacts (2.5-3 m) this also corresponds to the lowest part of the Tank Stream valley within the site and that some early soils, creek deposits and structures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

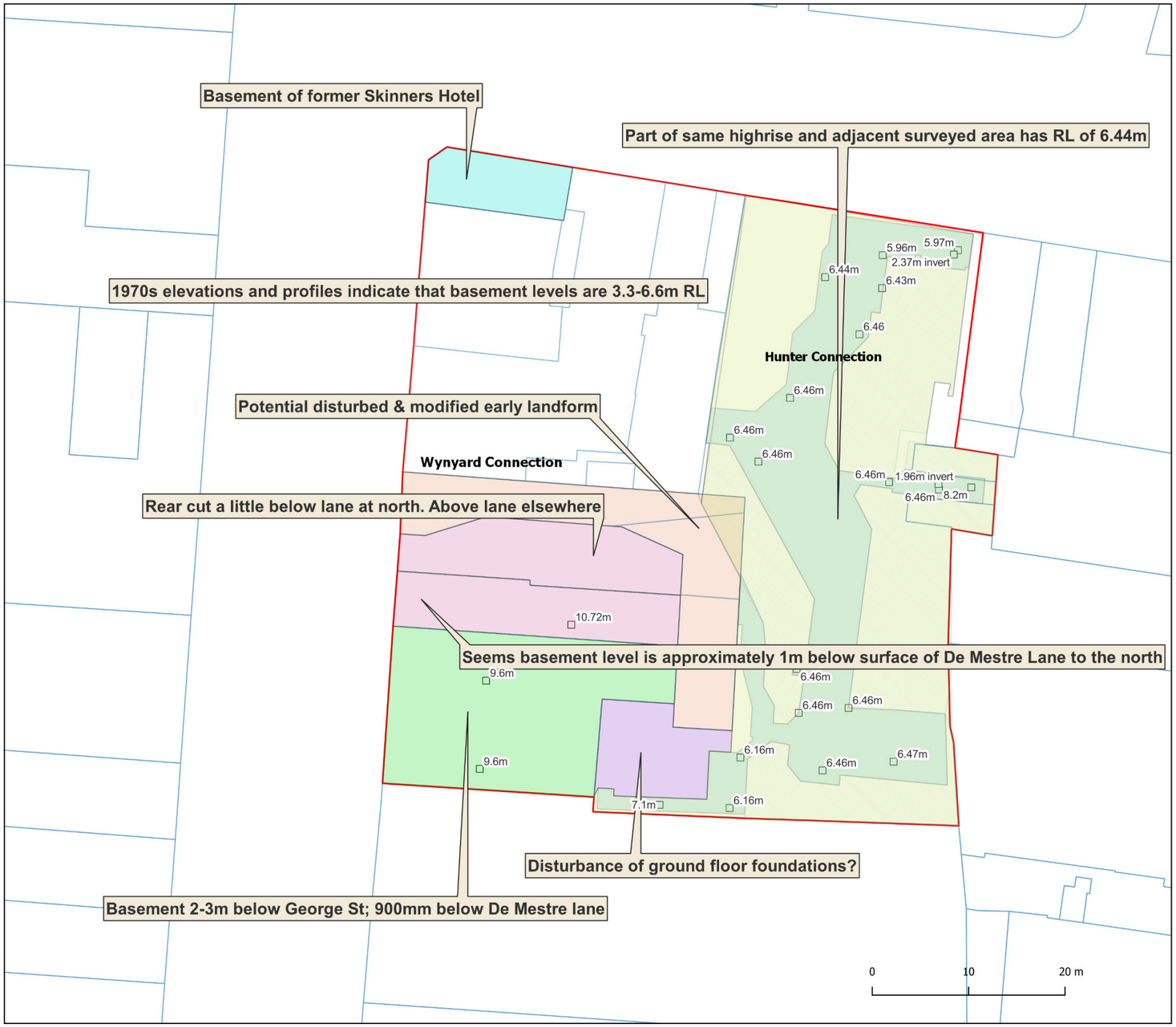
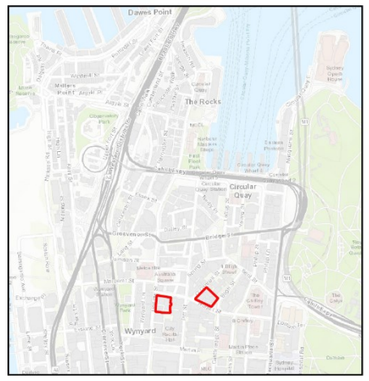


Figure 99. Current basement levels derived from modern surveys.

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

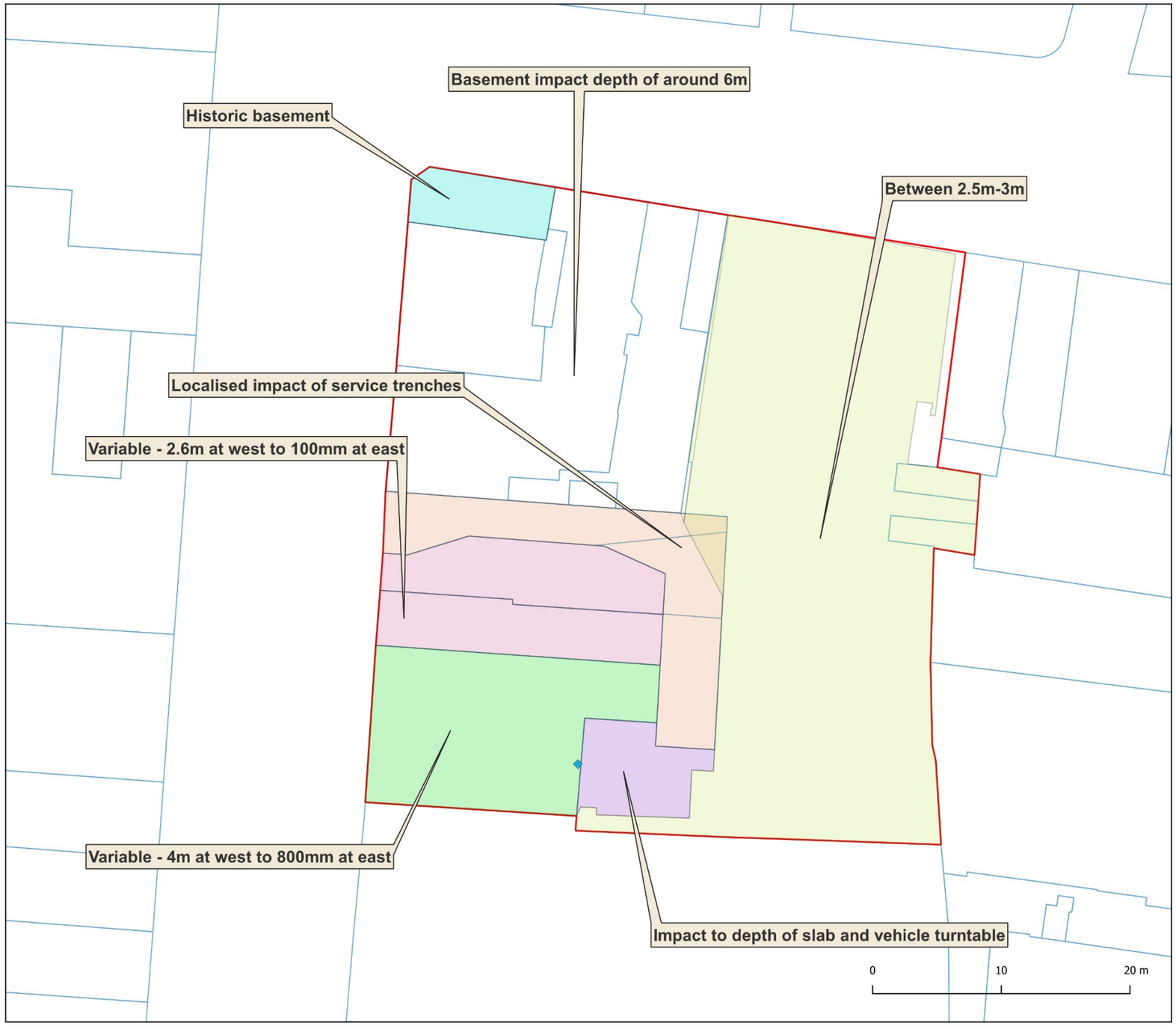


Figure 100. Generalised summary of disturbance depths across the Hunter Street West site (outlined in red).

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.

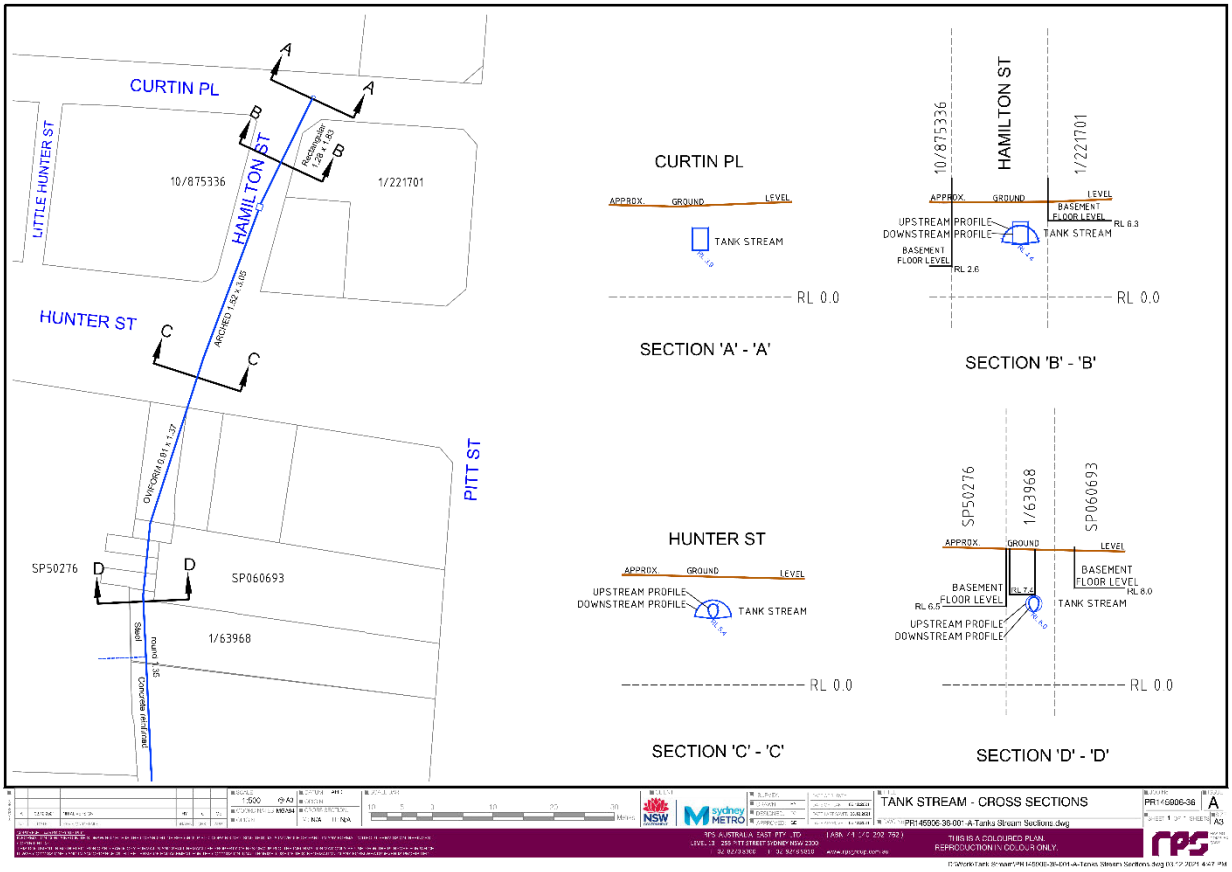


Figure 101. Tank Stream Cross Sections 2-12-2021 RPS for Sydney Metro.

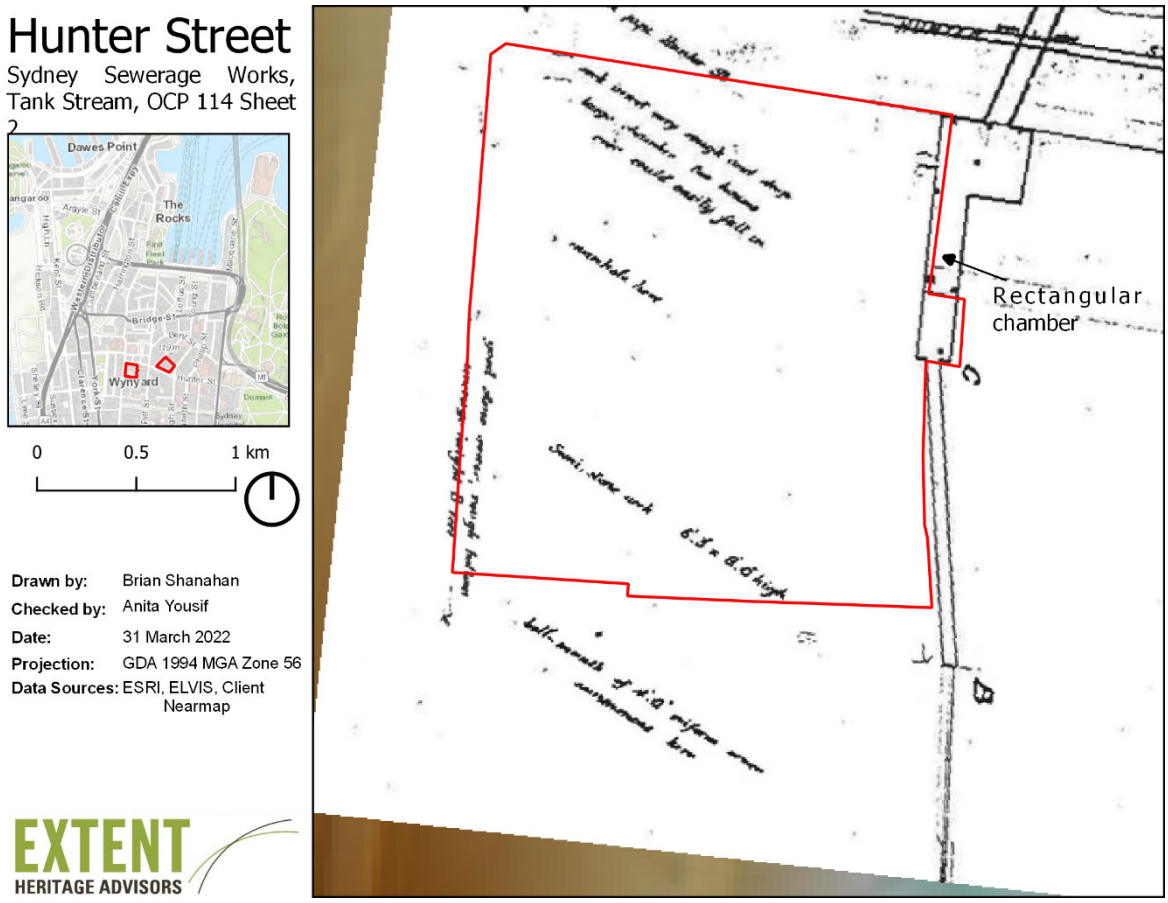
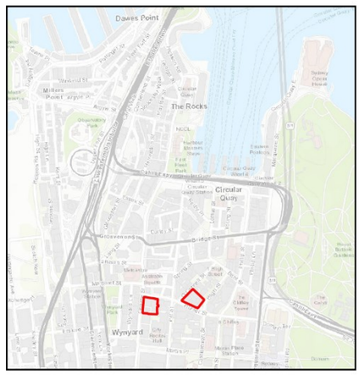


Figure 102. Proposed works on the Tank Stream drain showing rectangular chamber.

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

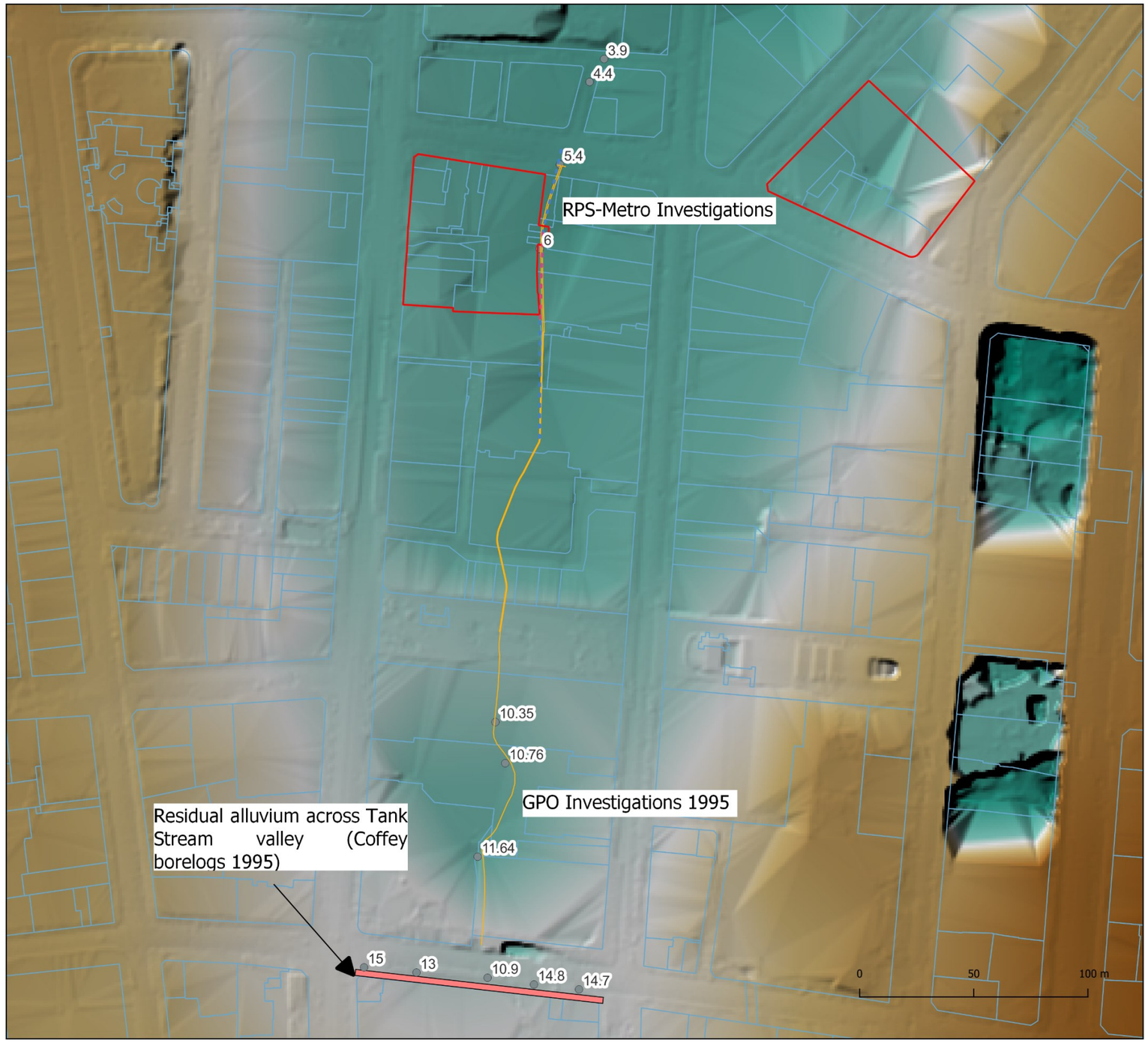


Figure 103. Location of Tank Stream showing potential invert levels and borelog RLs across the site of the Tank Stream Valley on King Street. *Source:* Coffey & others.

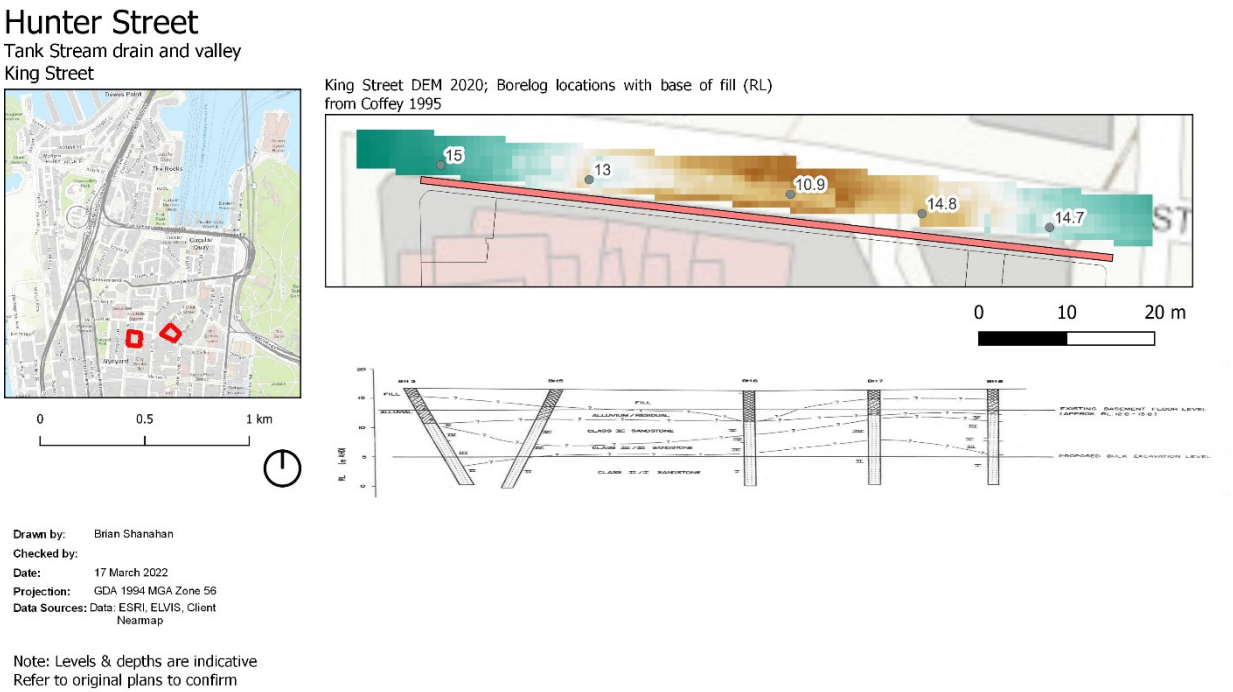


Figure 104. Location of Tank Stream Valley on King Street based on Digital Elevation Model of the current road surface and aligned with borelogs showing interface of fill and residual alluvium. *Source:* Coffey.

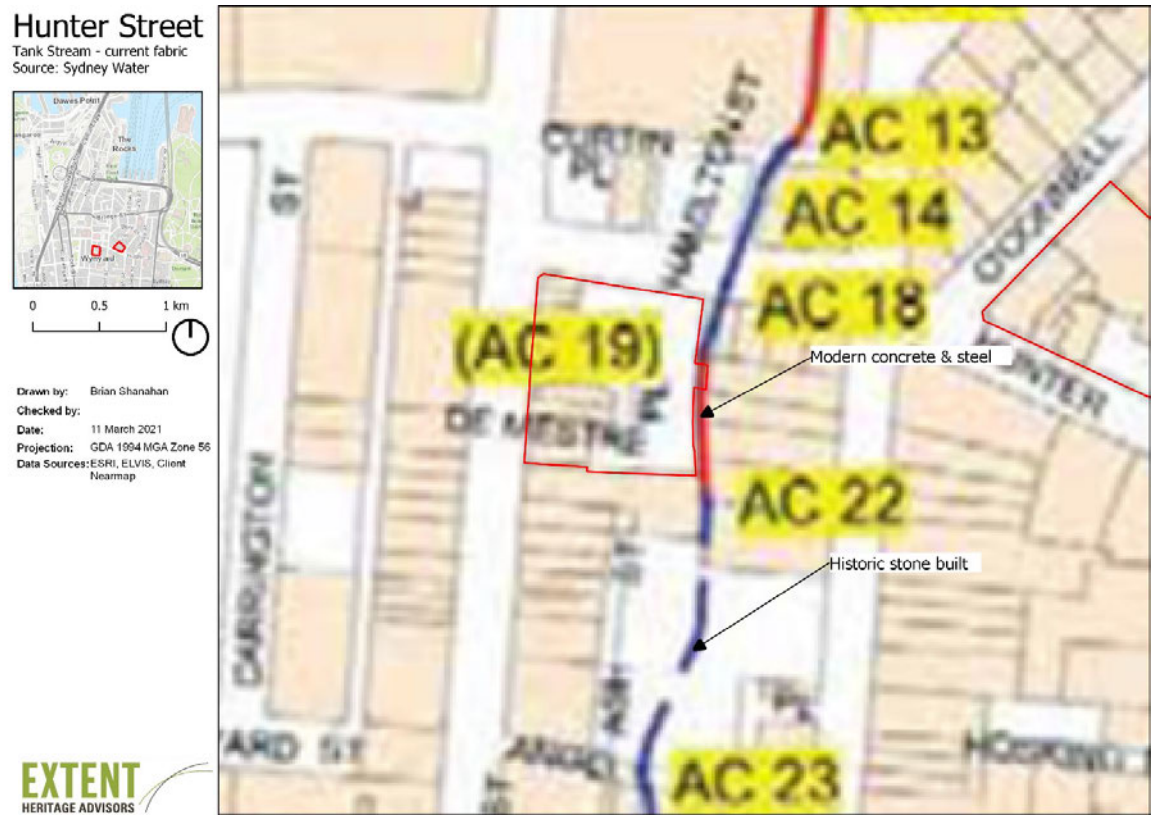
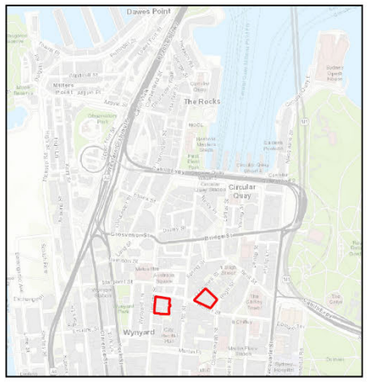


Figure 105. Location of modern Tank Stream fabric relative to Hunter Street West site. *Source*: Sydney Water CMP.

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).

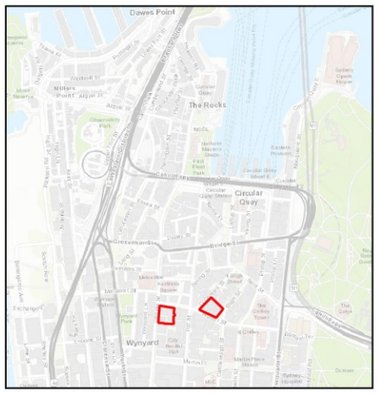
The area of the Tank Stream, along the eastern boundary of the study area, has also been determined to have a moderate potential for Aboriginal archaeology. A buffer of up to 8 m was given to the original location of the Tank Stream marked on the 1833 section plan to account for the extent of the original 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.

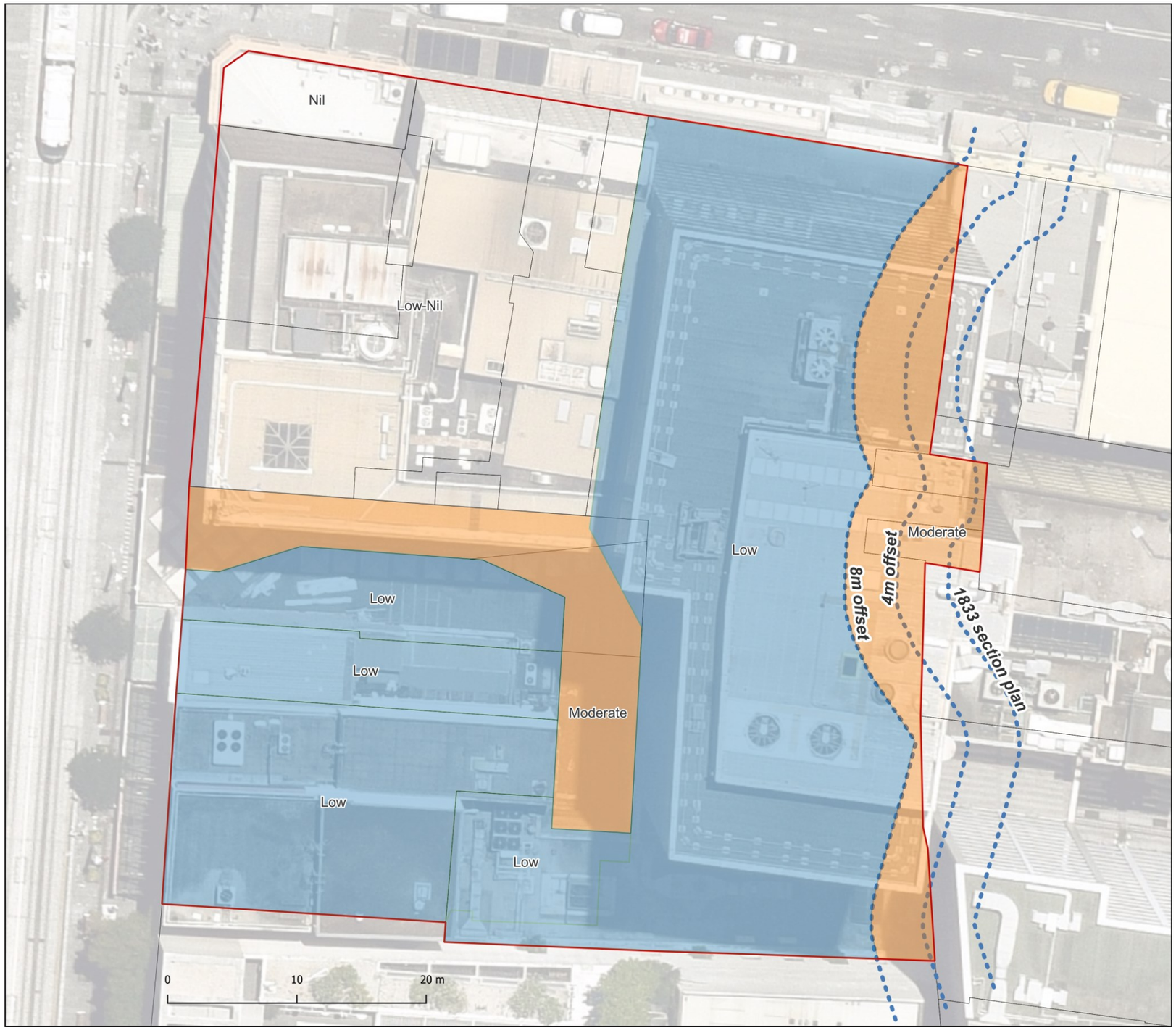
Hunter Street

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

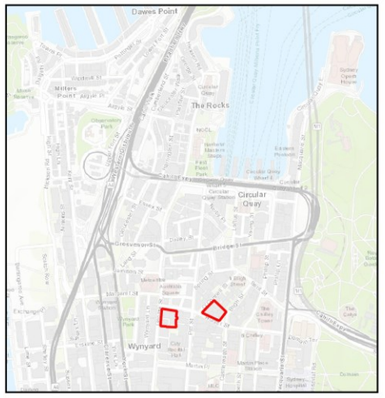
Figure 109 outlines the Aboriginal archaeological potential at the eastern site. The northern portion of the study area has been partly disturbed by current construction projects.

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

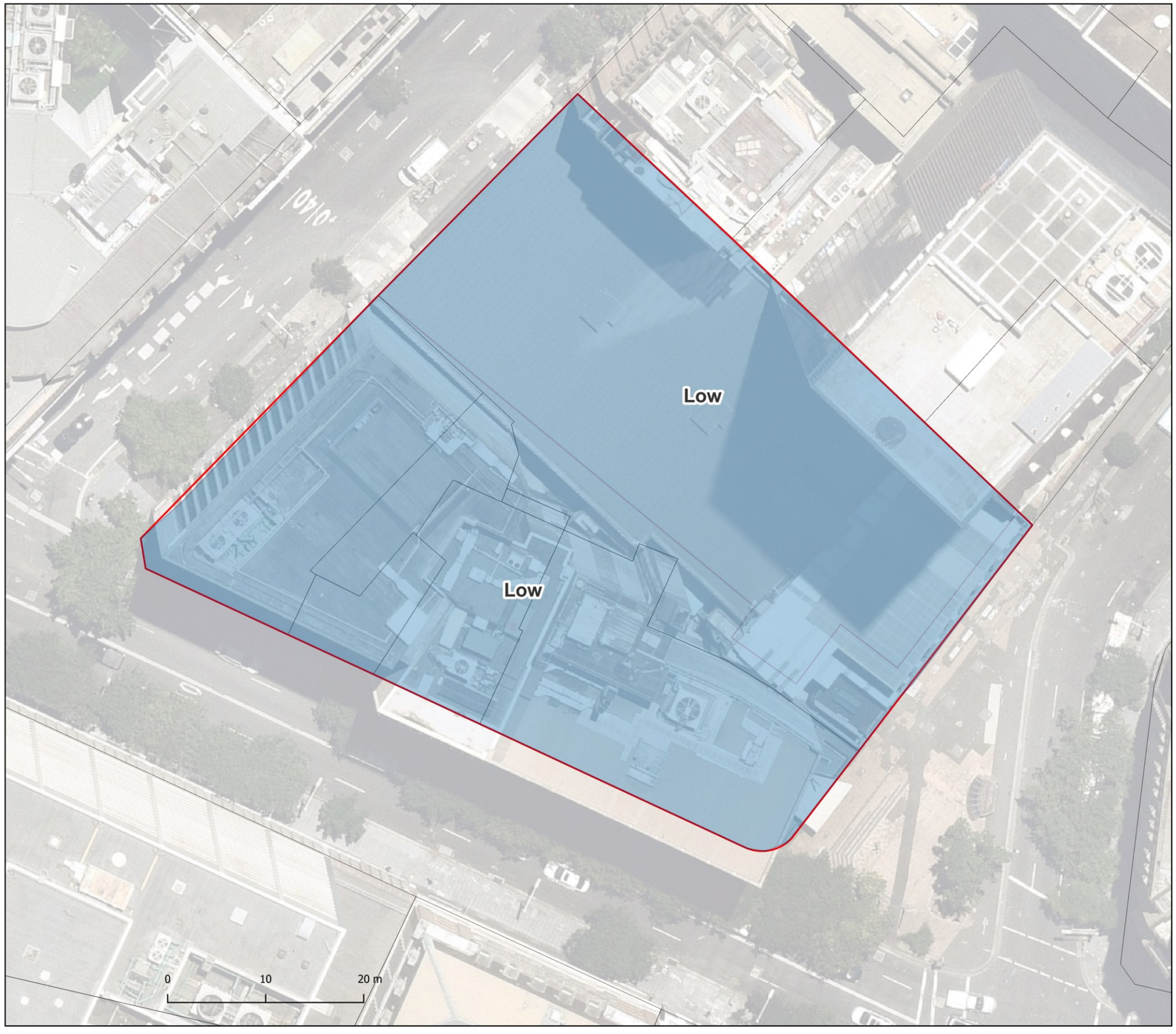


Figure 109. Aboriginal archaeological potential at Metro Hunter Street East. *Source*: Extent Heritage 2022.

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.

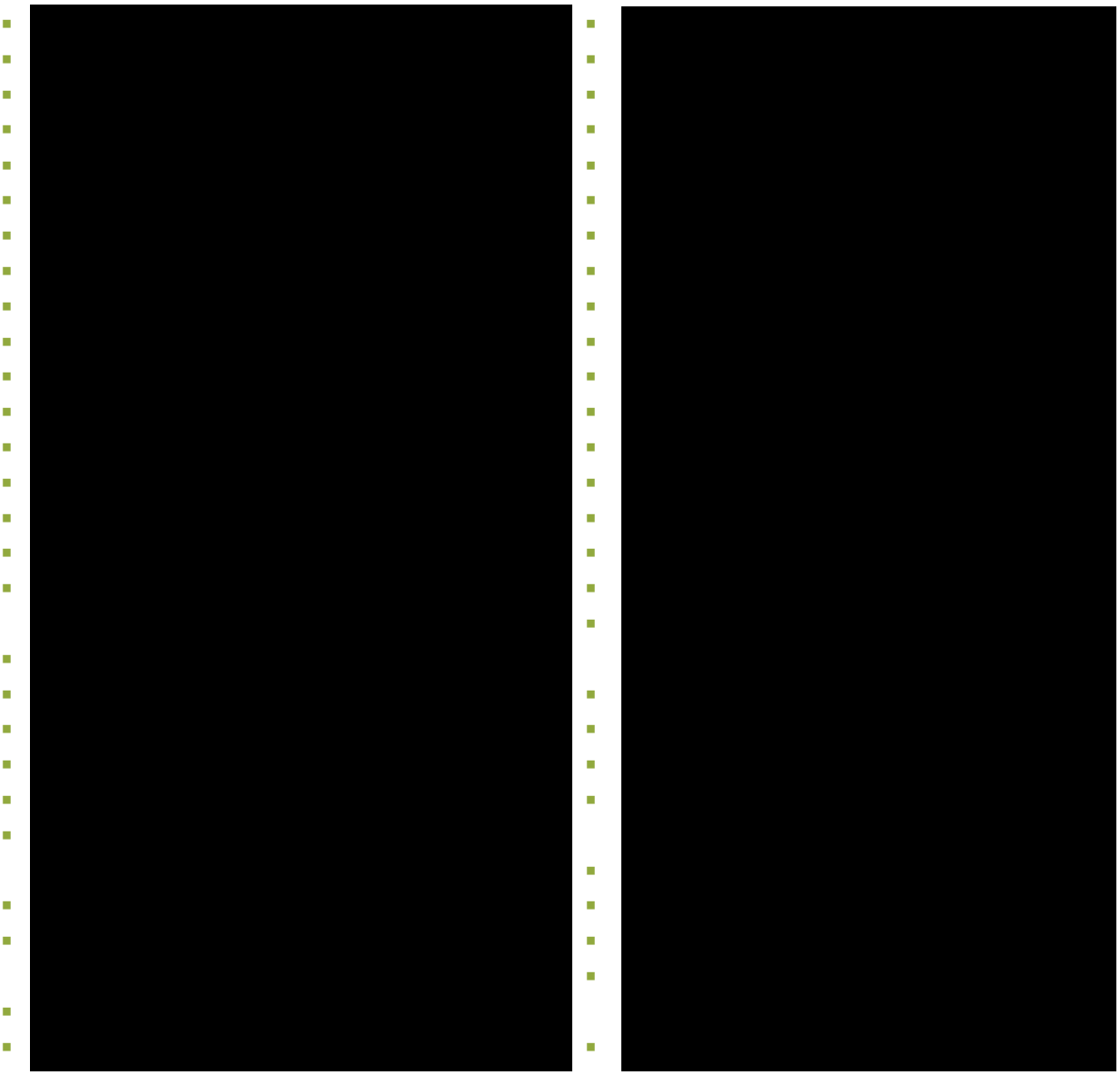
Potential archaeological evidence	Ability to provide information	Likelihood of survival	Archaeological significance
Open camp sites Stone artefacts Shell middens	May demonstrate subsistence activities. Would add to a small corpus of known surviving sites and artefacts in Sydney CBD. Survival in urban 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.

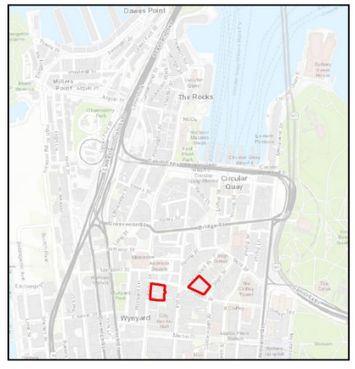
Figure 112. Hunter Street West site (outlined in red); features documented in 1865. *Source*: Extent Heritage 2022.

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

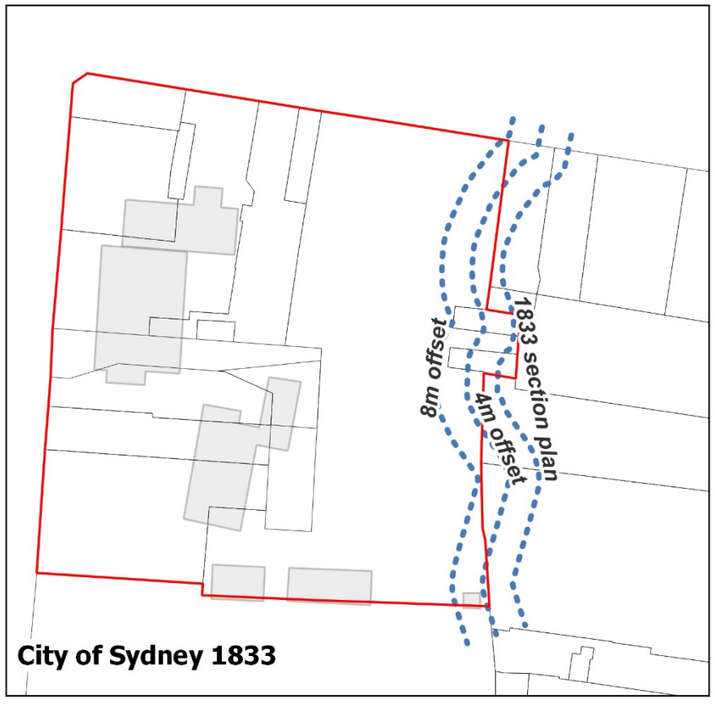


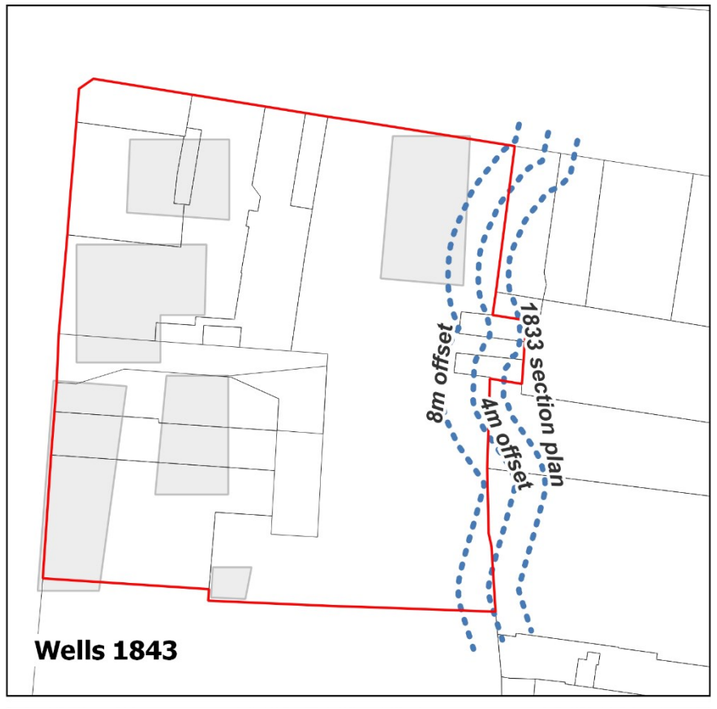
Construction sites
Lot boundary

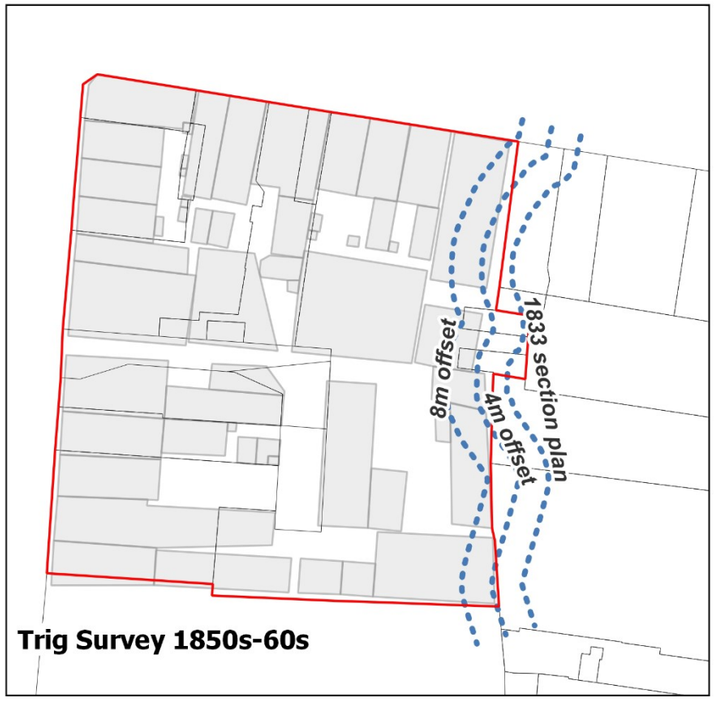
Historic building
Possible bank of Tank stream based on1833 section map

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







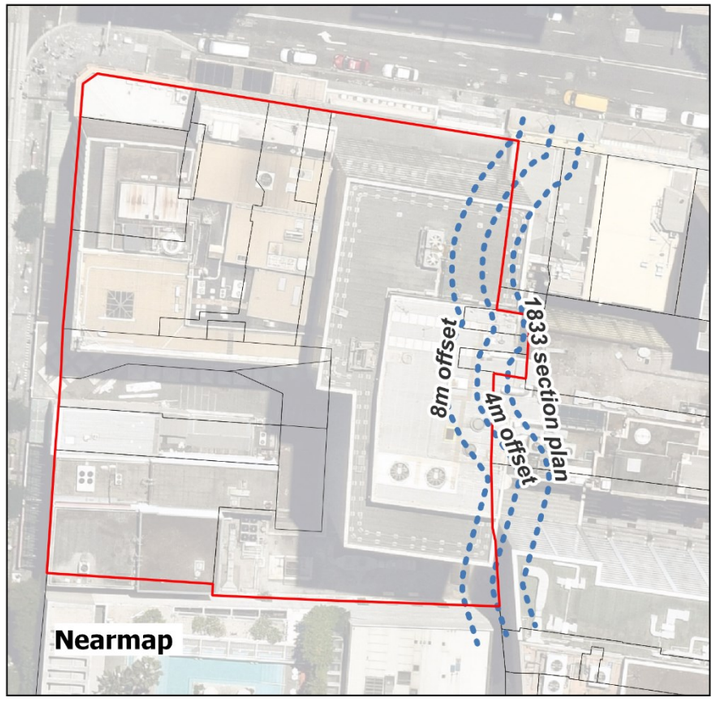
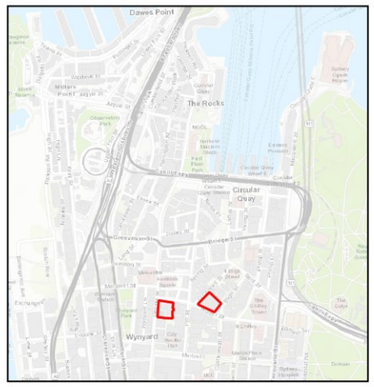


Figure 114. Sequence of development at the Hunter Street West site. *Source*: Extent Heritage 2022.

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

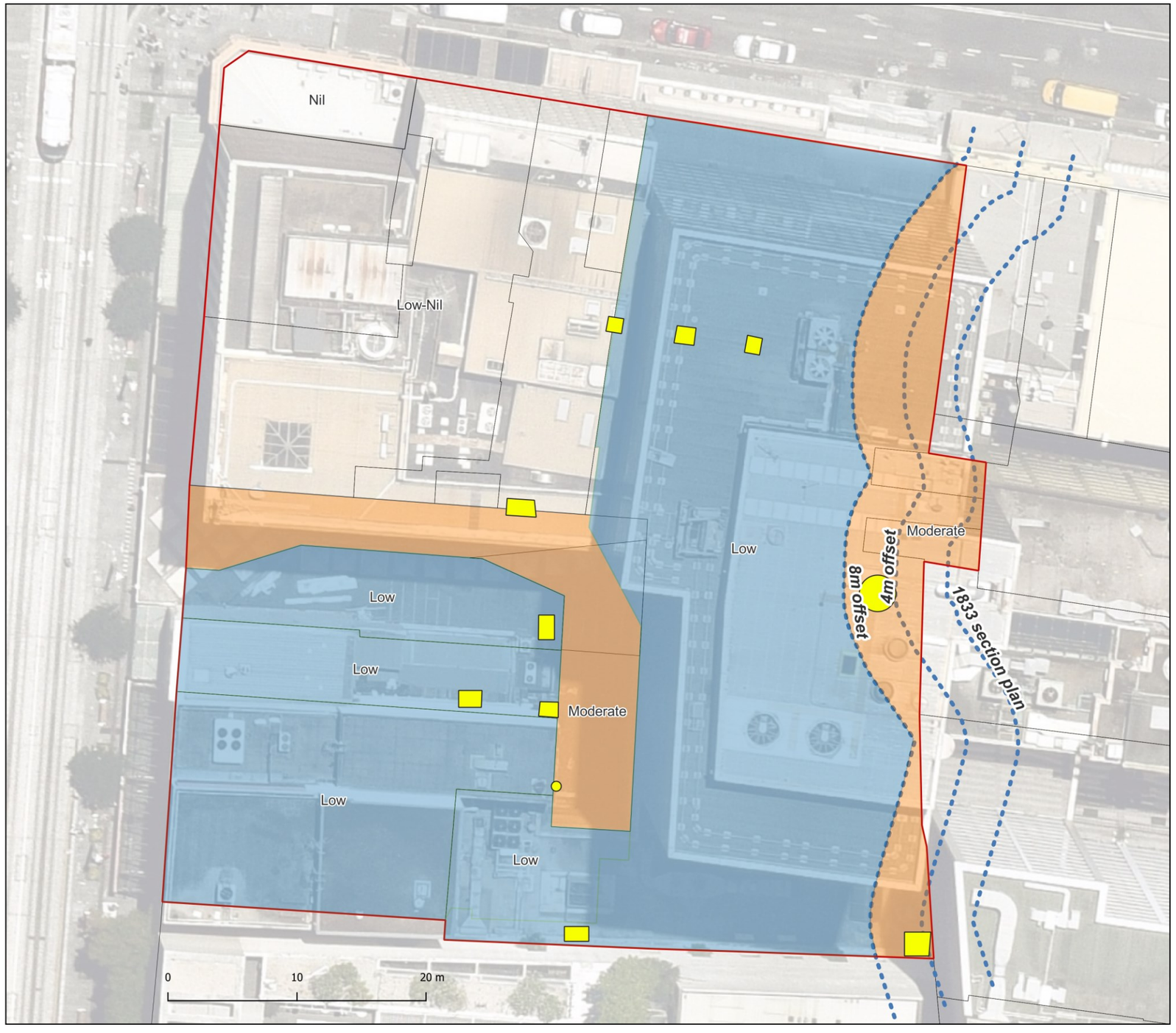


Figure 115. Historical archaeological potential at the Hunter Street western site. *Source*: Extent Heritage 2022.

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.

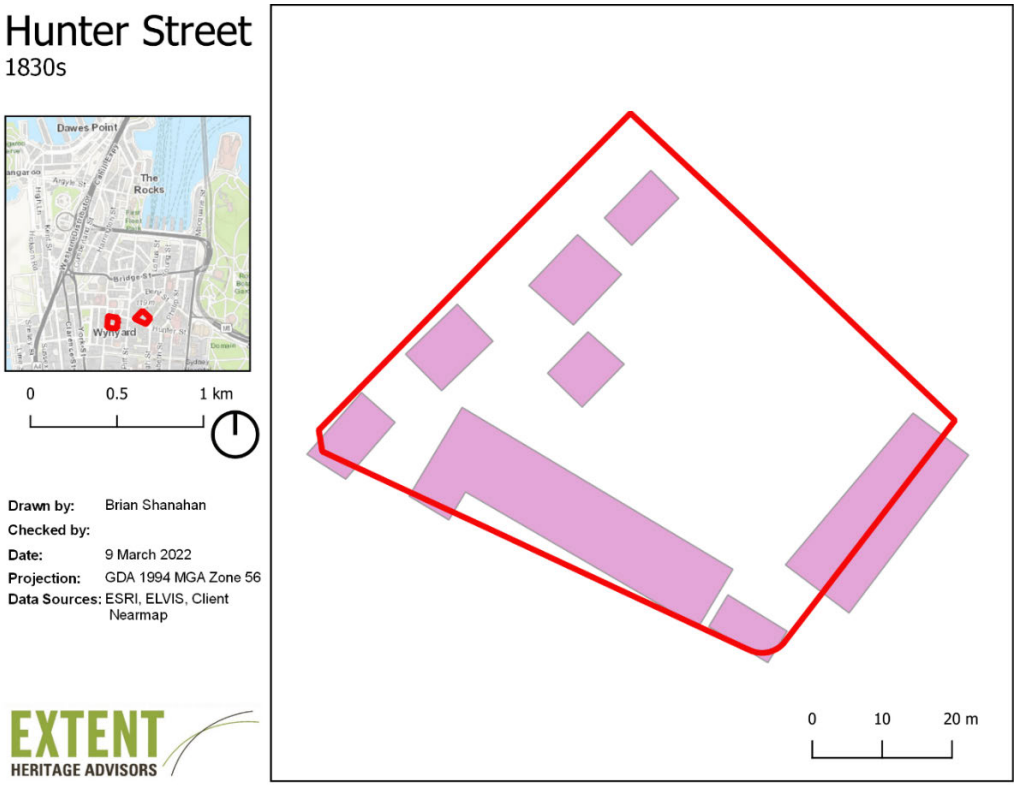


Figure 117. Hunter Street East site (outlined in red); features documented in the later 1830s. *Source*: Extent Heritage 2022.

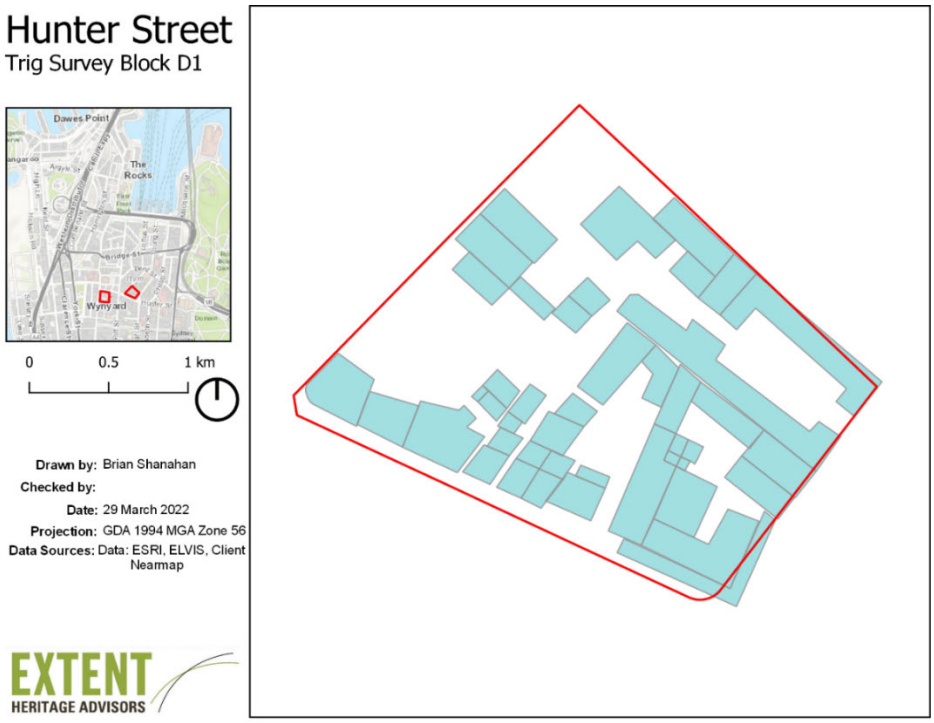
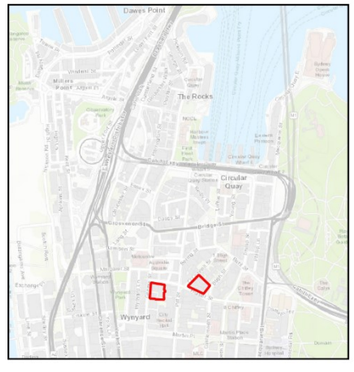


Figure 118. Hunter Street East site (outlined in red); features documented in 1865. *Source*: Extent Heritage 2022.

Hunter Street

Plot development

Eastern site



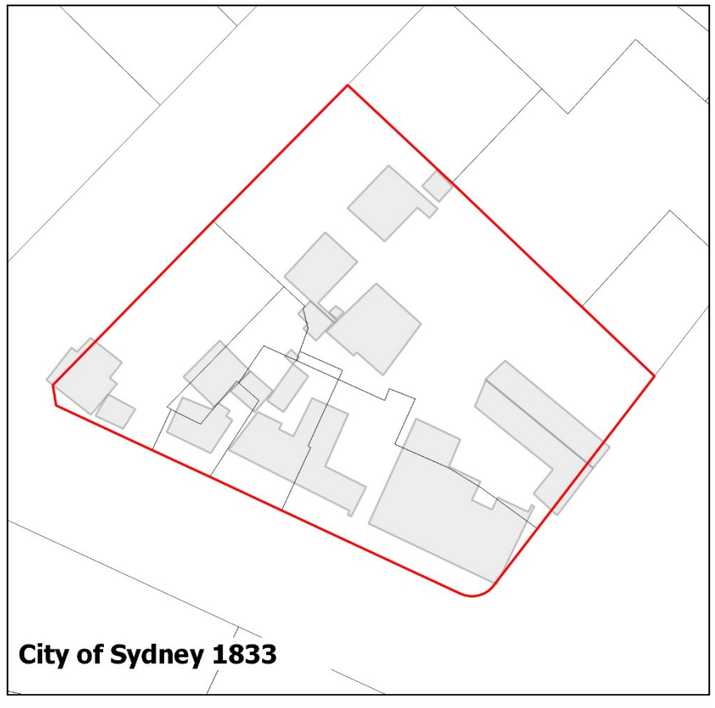
Construction sites

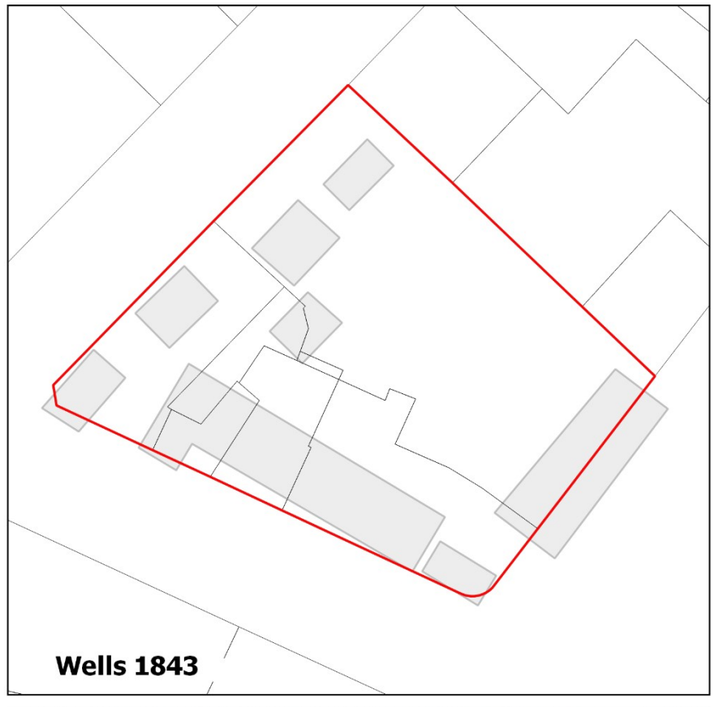
Lot boundary

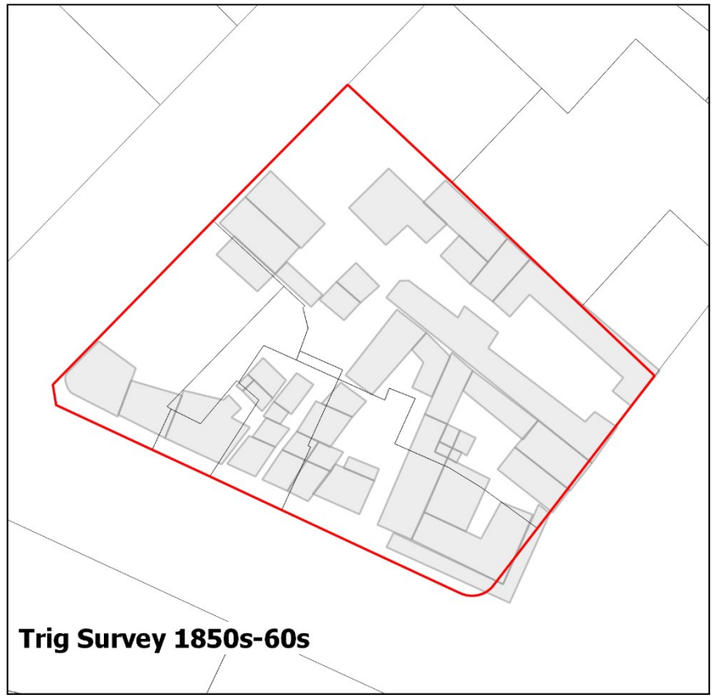
Historic building

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







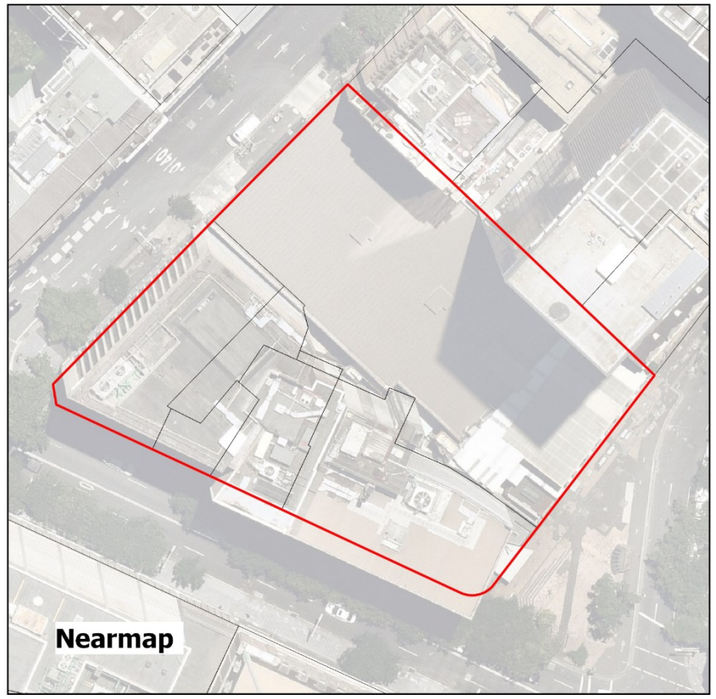
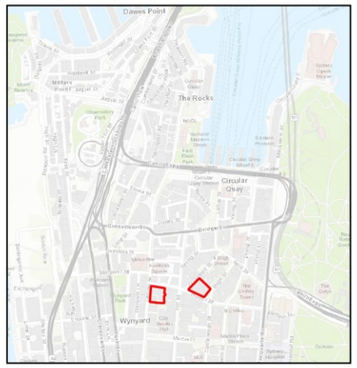


Figure 119. Sequence of historical development for the Hunter Street East site.

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

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	

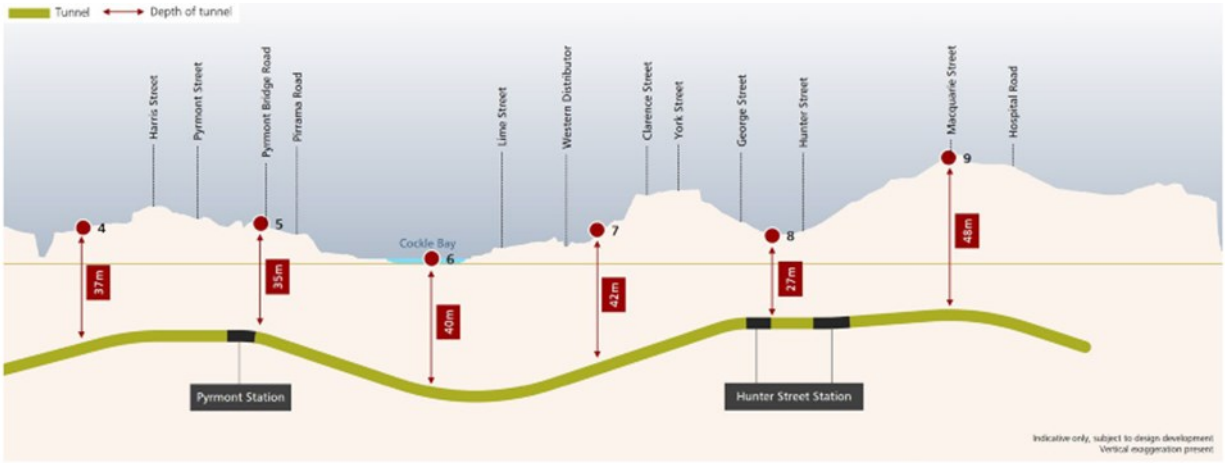


Figure 121. Indicative tunnelling alignment plan and depths in section.

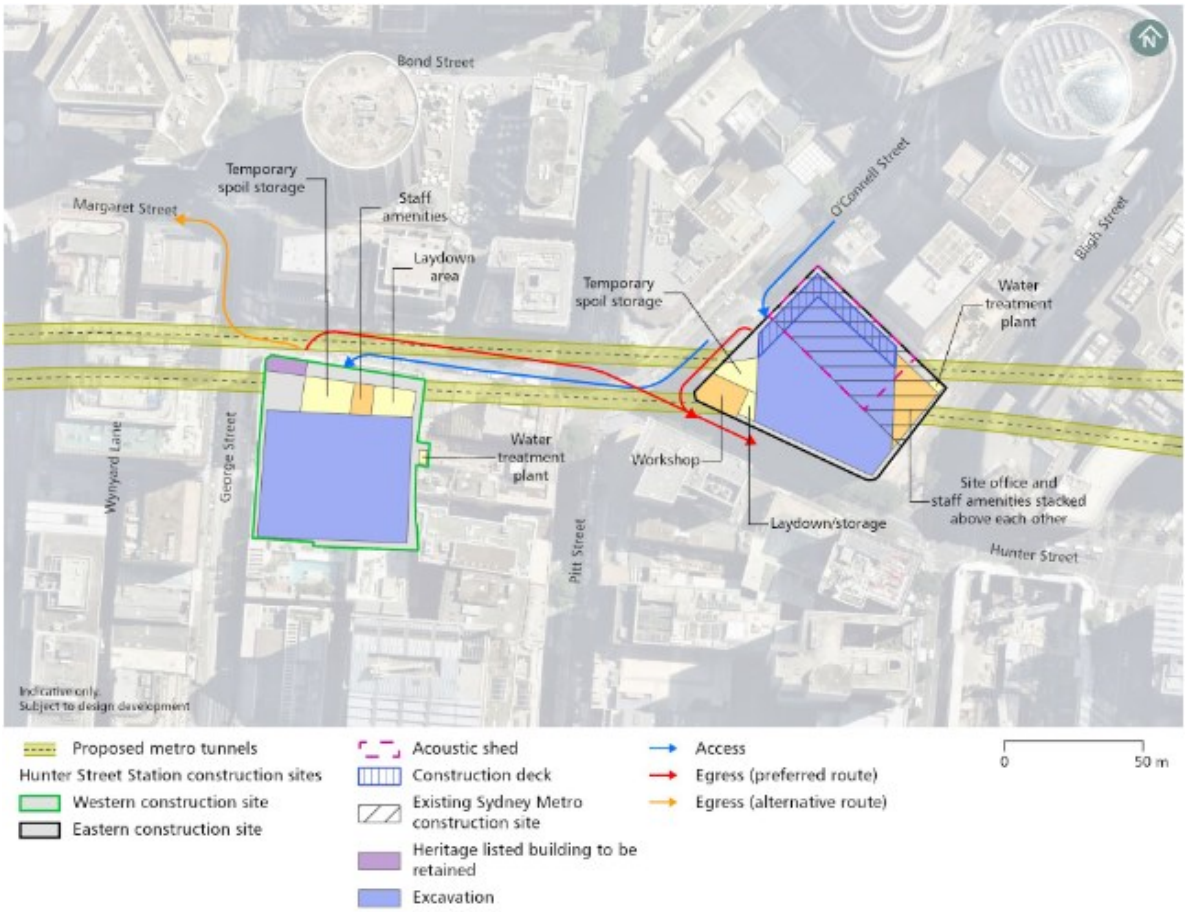


Figure 122. Indicative layout of the Hunter Street Station sites and associated activities. *Source:* EIS, 2020, Chapter 5, 5-14).

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.

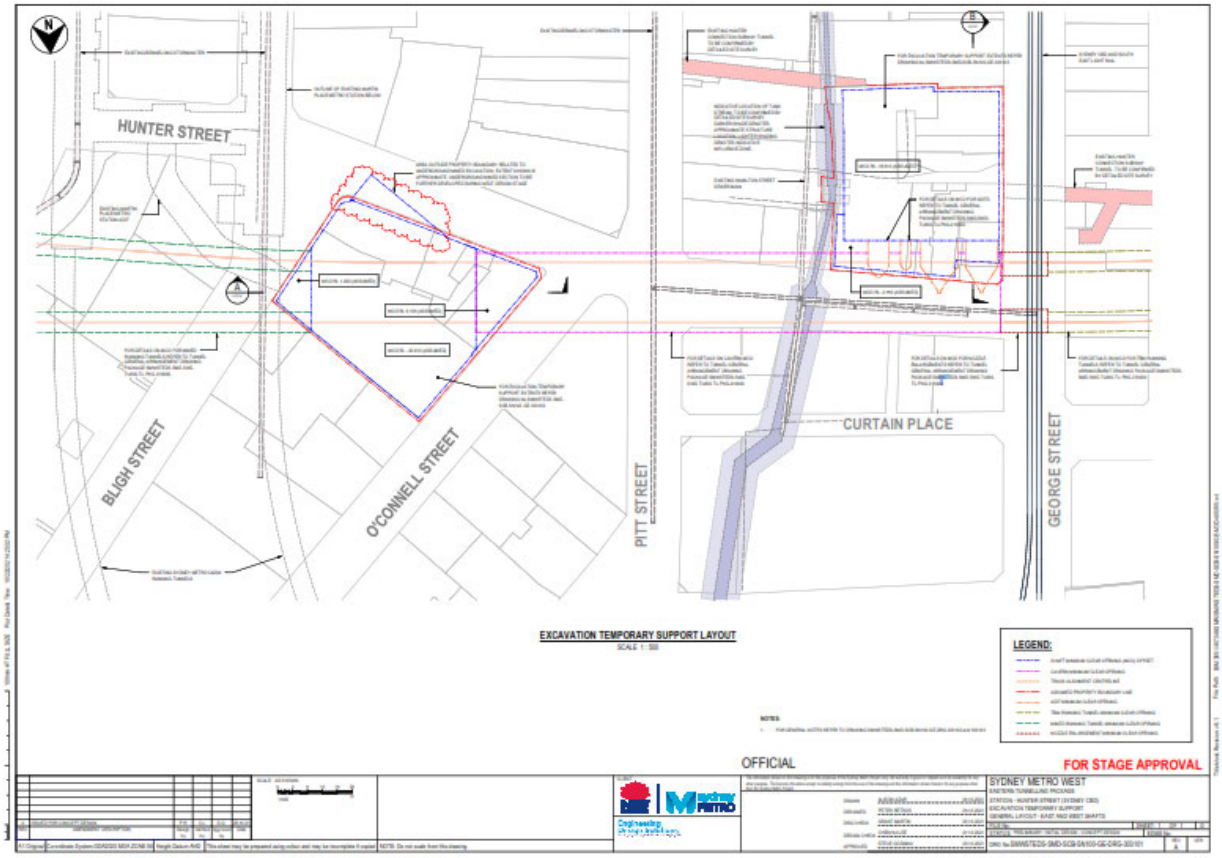


Figure 123. Indicative plan of excavation areas and depths for both construction site. *Source:* Sydney Metro

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.

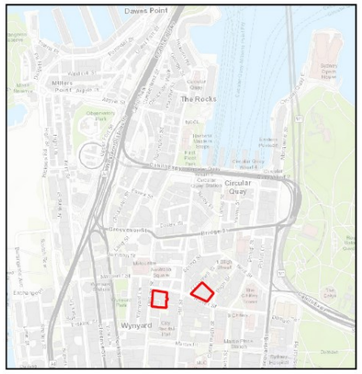
The proposed locations and number of test pits are shown in Figure 124. There are seven test pits, at intervals of 10 m, strategically placed within the lane to avoid anticipated services and historical disturbances. Test pits would be 1 x 1 m (four 50 x 50 cm test pits combined), permitted by the *Code 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

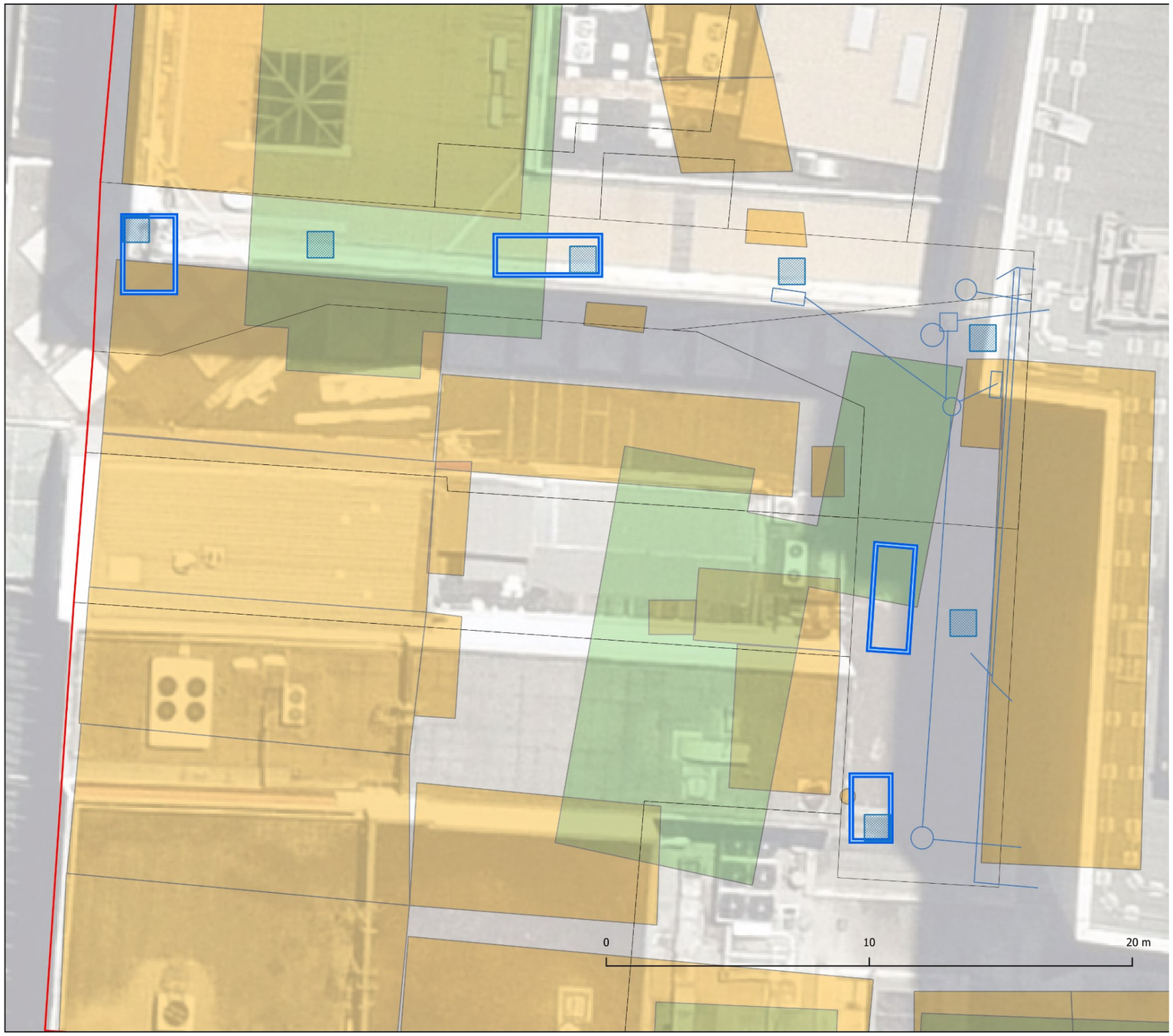


Figure 124. Proposed location of test trenches at De Mestre Place. The Hunters Street West site boundary is outlined in red. *Source*: Extent Heritage 2022.

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

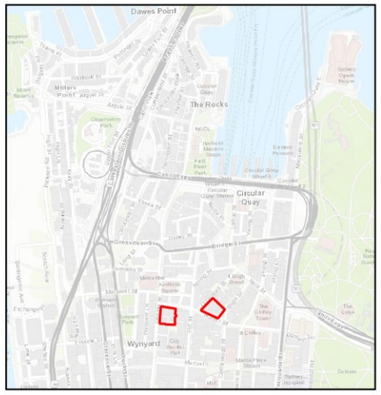
The Tank Stream Valley along the eastern boundary of the study area has been determined to hold moderate archaeological and environmental potential. Predictive modelling suggests that the Aboriginal archaeological record will comprise isolated artefacts and discrete artefact scatters rather than evidence 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.

Hunter Street

Archaeological testing

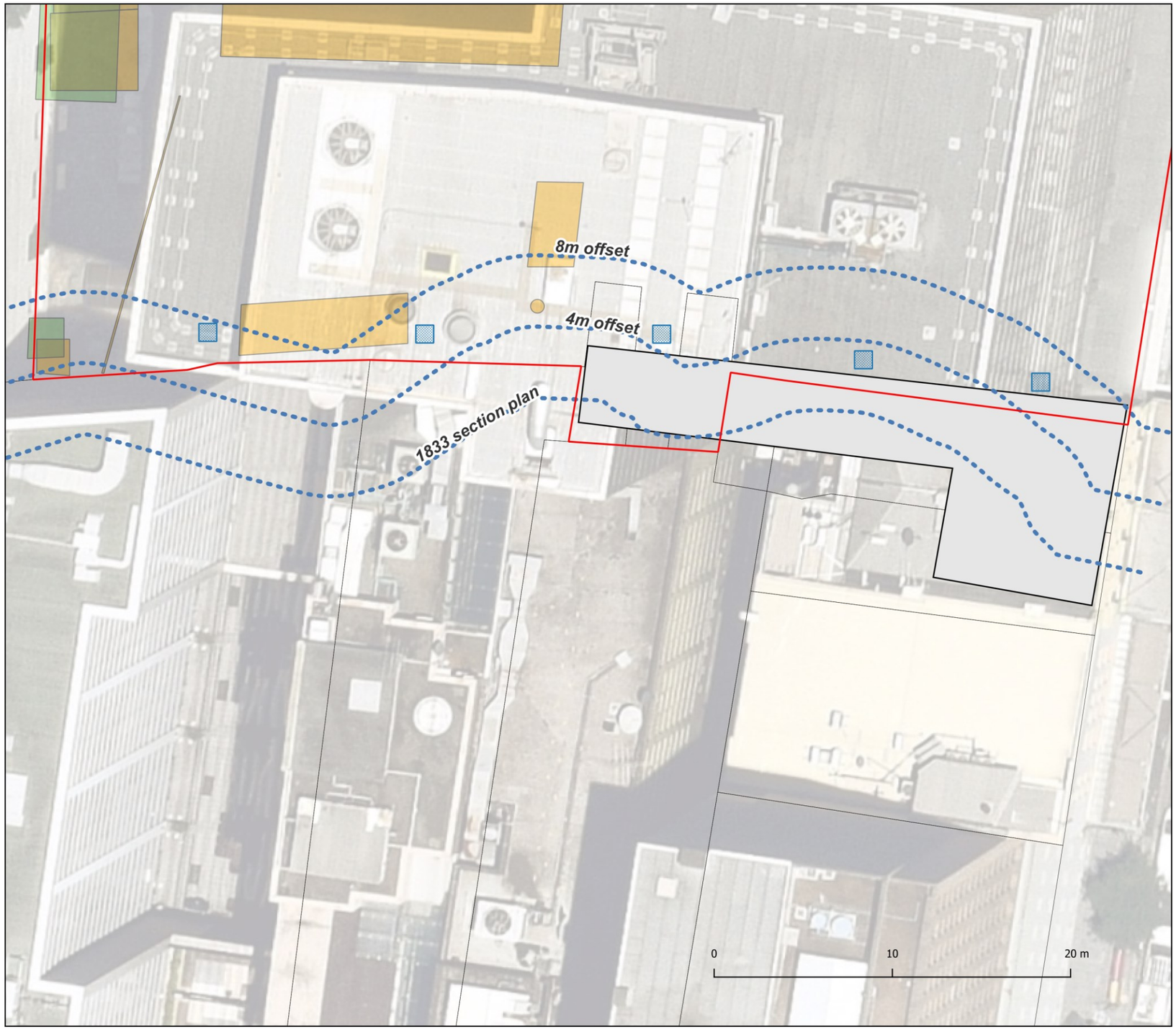


0 0.5 1 km

- 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

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)

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Table of contents

Figures

Tables

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.

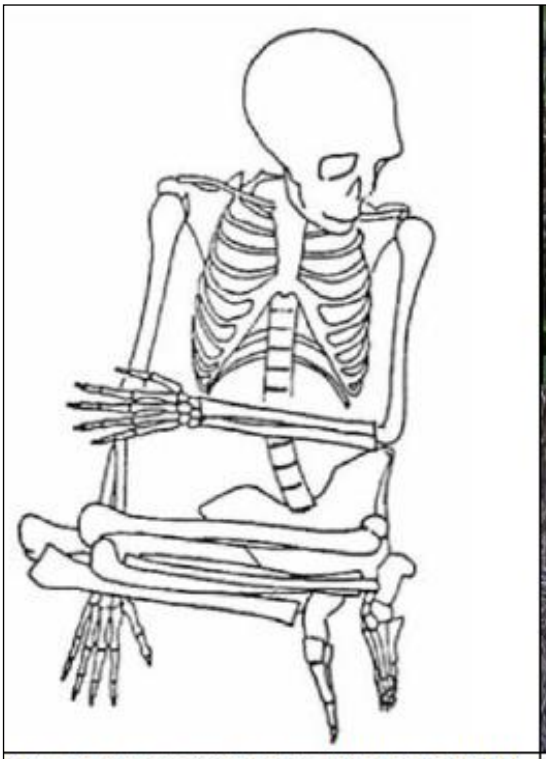

Figure 1: Schematic of a complete skeleton that is 'obviously' human [12].

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.

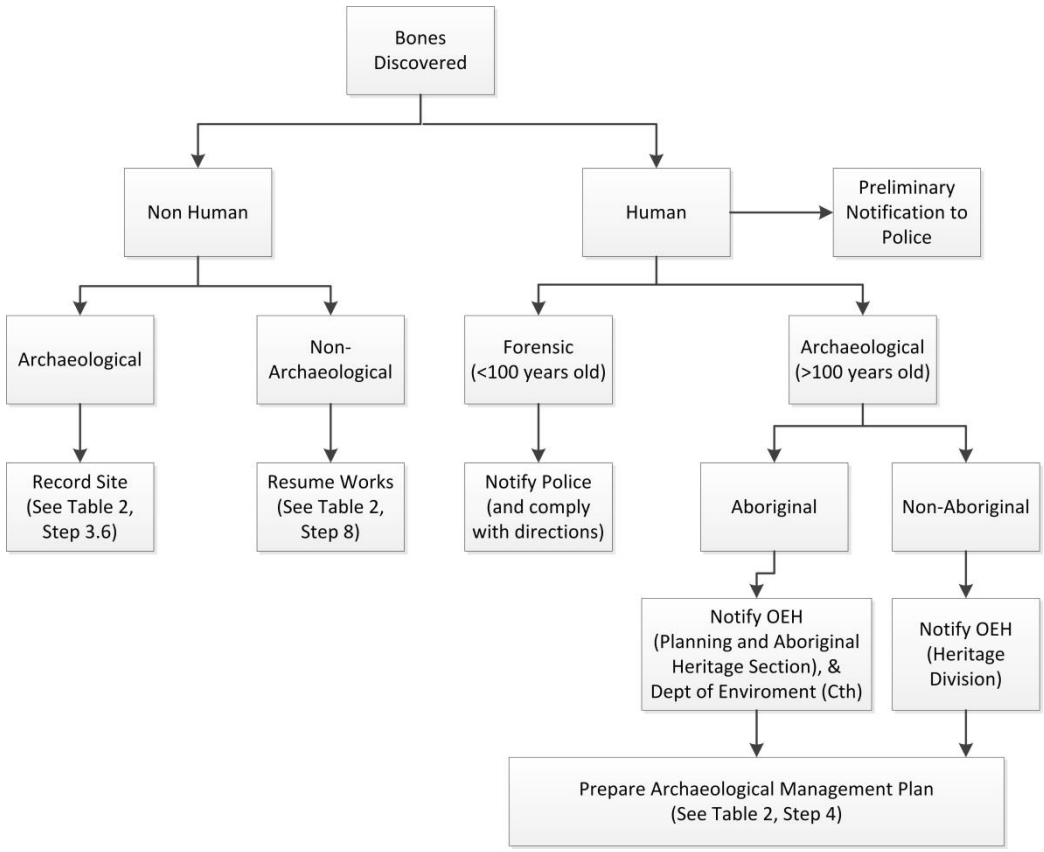

Figure 3 Overview of steps to be undertaken on the discovery of bones

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
Review date:	May 2022

Table of contents

Figures

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.

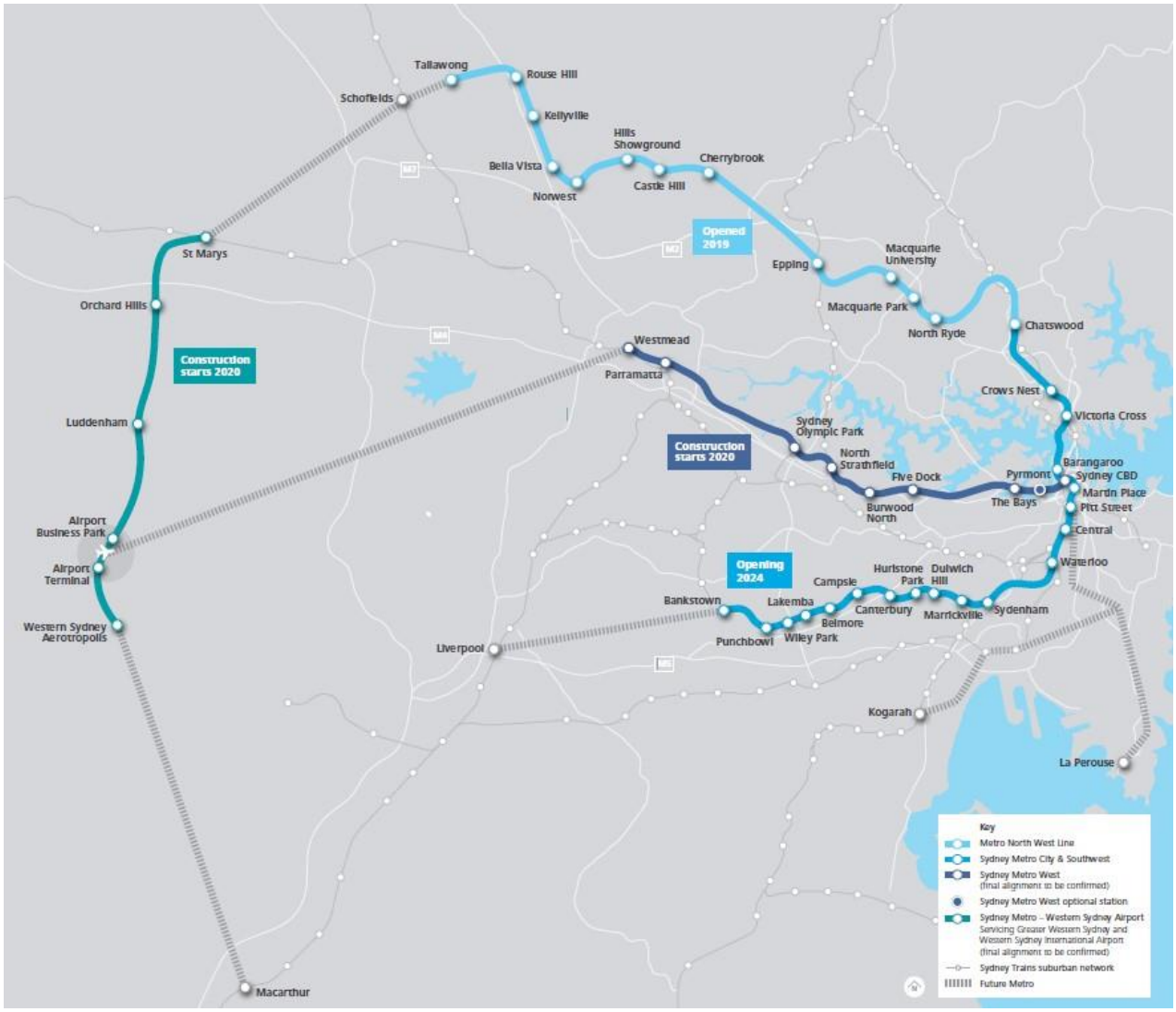

Figure 1 Sydney Metro project overview and station locations

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

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).

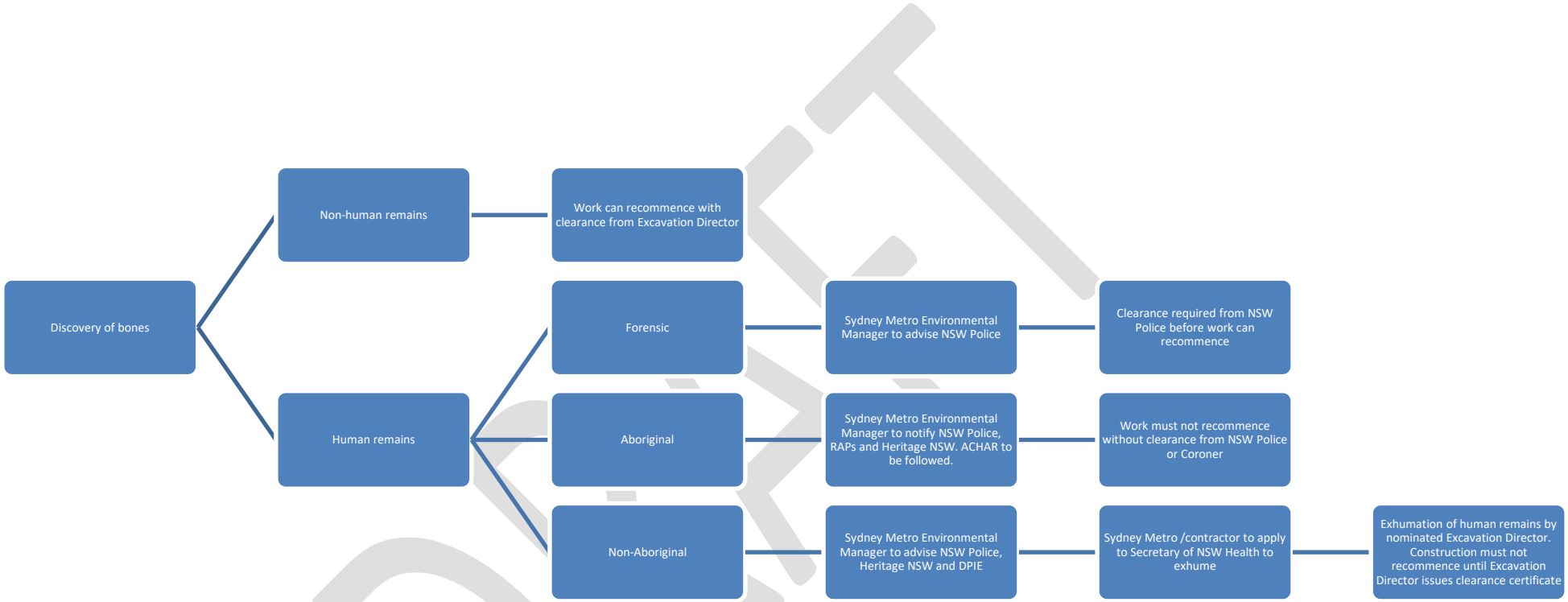

Figure 2 Exhumation procedure flow chart

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.

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

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,

Extent understands that you have registered your interest in the Sydney Metro West project, with construction between Westmead and the Bays. In July 2021, a Draft ACHAR for the Sydney Metro construction sites at Pyrmont and Hunter Street was distributed to you by Artefact Heritage (2021). Extent has produced an updated Archaeological Research Design (ARD) for the work on the Hunter Street Station sites. Much of the information has built upon the original ACHAR.

We would like to provide the document for your comment and review, as there have been changes made to archaeological potential and the excavation methodology at the Hunter Street Metro station site.

Extent has presented an integrated approach to investigating and understanding the archaeology on the site. As a result, the ARD attached includes investigation methodologies for Aboriginal and non-Aboriginal archaeology. We understand that this has made the document very long and not entirely focused on Aboriginal archaeology. Please understand that Extent has undertaken a full reassessment of the site, and sections which are similar are not the same. ections 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.

Sections which differ most from the original draft ACHAR are as follows:

- **Section 4.2**: Extent has reassessed the archaeological potential at the Hunter Street East and West sites. Additional research relating to geotechnical and environmental investigations (Section 3.3) have enabled us to gain a more nuanced understanding of site disturbance and archaeological survival.

- **Section 7**: Under the recommendation of Artefact in the ACHAR, Extent has produced a more detailed and site-specific archaeological research design.

- **Section 7.5**: This section shows the investigation methods that will be undertaken during the different stages of construction.

- **Section 7.6 and 7.6.2**: The excavation program will consist of stage 1 "test" excavations (seven 1m by 1m test trenches at 10m intervals) in De Mestre Place (Hunter Street West). This location was assessed as having moderate archaeological potential and limited disturbance compared to other parts of the site. These excavations will occur during the pre-construction phase. They will provide a useful understanding of the soil profile and integrity.

- **Section 7.8 and 7.9.2**: The second stage of works will be undertaken after the standing buildings have been demolished. We have called stage 2 a "savage". However, a trench (1m by 1m) will be placed in intervals of 10m where intact natural soil profiles are identified. Trenches will be expanded (as in the usual sense of the word "salvage") where occupation sites are found.

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

T 02 9555 4000
hmorris@extent.com.au
extent.com.au
Connect with us on:

EXTENT
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HERITAGE

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We acknowledge the Traditional Owners of Country throughout Australia, and recognise their continuing connection to land, waters and culture. We pay our respects to their elders, past, present and emerging.

EXTENT
HERITAGE ADVISORS
TO AUSTRALIA AND
THE ASIA PACIFIC

22 April 2022

[redacted]

Dear [redacted]

Metro Hunter Street East and West—Excavation methodology

Extent understands that you have registered your interest in the Sydney Metro West project, with construction between Westmead and the Bays. In July 2021, a Draft ACHAR for the Sydney Metro construction sites at Pyrmont and Hunter Street was distributed to you by Artefact Heritage (2021). Extent has produced an updated Archaeological Research Design (ARD) for the work on the Hunter Street Station sites. Much of the information has built upon the original ACHAR.

We would like to provide the document for your comment and review, as there have been changes made to archaeological potential and the excavation methodology at the Hunter Street Metro station site.

Extent has presented an integrated approach to investigating and understanding the archaeology on the site. As a result, the ARD attached includes investigation methodologies for Aboriginal and non-Aboriginal archaeology. We understand that this has made the document very long and not entirely focused on Aboriginal archaeology. Below, I have summarised some of the sections which have similar information to that outlined in the ACHAR, and the section which are different and would require more of your attention.

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.

Sections which differ most from the ACAR are as follows:

- **Section 4.2**: Extent has reassessed the archaeological potential at the Hunter Street East and West sites. Additional sections relating to geotechnical and environmental investigations (Section 3.3) have enabled us to gain a more nuanced understanding of site disturbance and archaeological survival.

- **Section 7**: Under the recommendation of Artefact in the ACHAR, Extent has produced a more detailed and site-specific archaeological research design.

- **Section 7.5**: This section shows the investigation methods that will be undertaken during the different stages of construction.

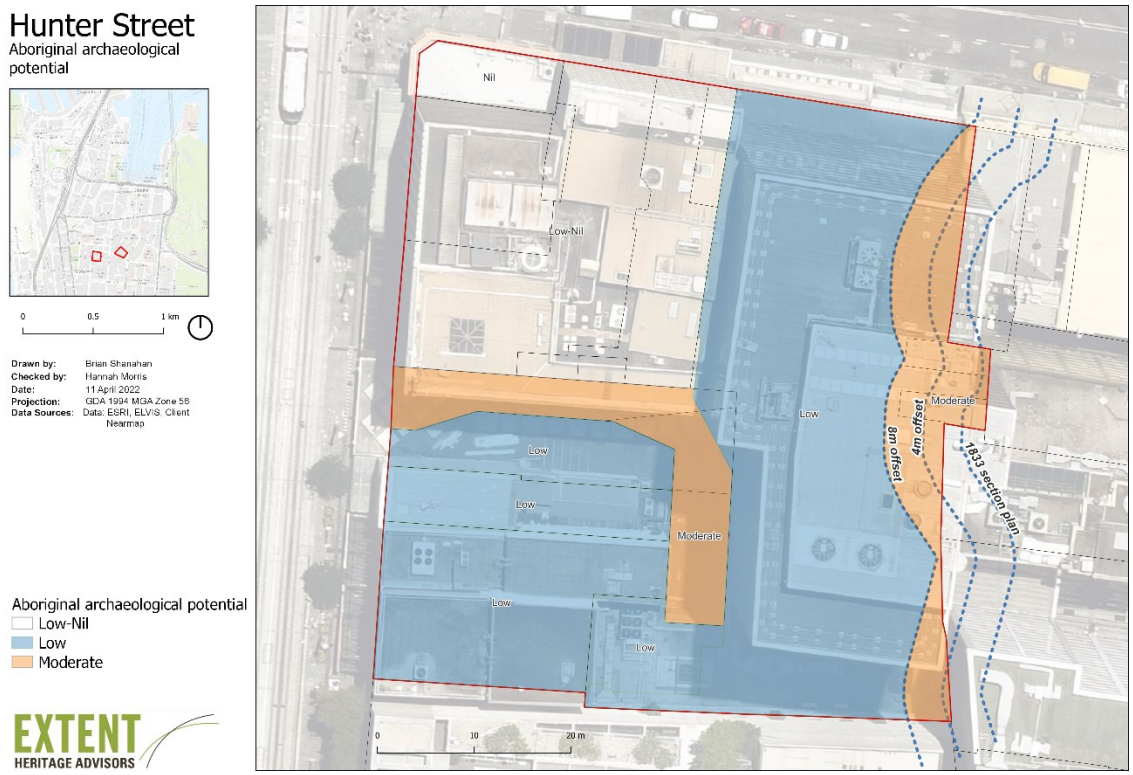
- **Section 7.6 and 7.6.2**: The excavation program will consist of stage 1 “test” excavations (seven 1m by 1m test trenches at 10m intervals) in De Mestre Place (Hunter Street West). This location was assessed as having moderate archaeological potential and limited disturbance compared to other parts of the site. These excavations will occur during the pre-construction phase. They will provide a useful understanding of the soil profile and integrity.

- **Section 7.8 and 7.9.2**: The second stage of works will be undertaken after the standing buildings have been demolished. We have called stage 2 a “savage”. However, a trench (1m by 1m) will be placed in intervals of 10m where intact natural soil profiles are identified. Trenches will be expanded (as in the usual sense of the word “salvage”) where occupation sites are found.

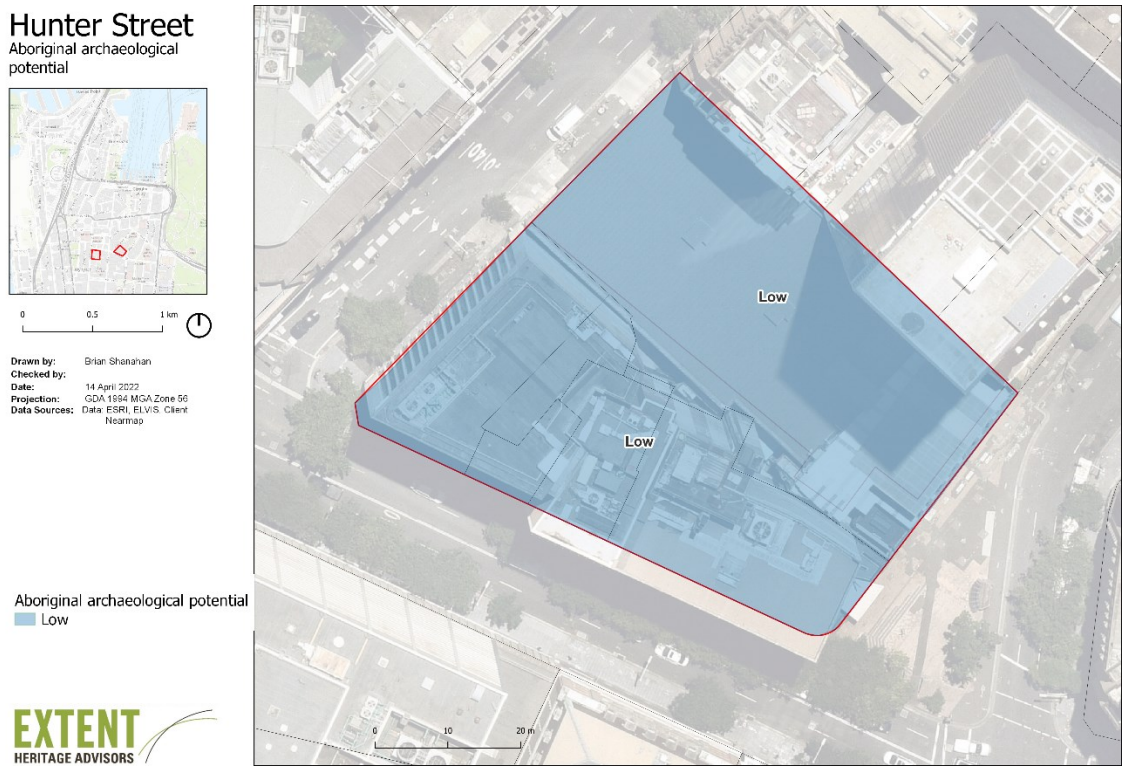
Please provide comments by **COB 20 May 2022**. Don’t hesitate to contact me if you have any questions, comments, or concerns regarding the updated methodology or process.

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

Dear Stakeholders, I hope you're all well,

Extent understands that you have registered your interest in the Sydney Metro West project, with construction between Westmead and the Bays. In July 2021, a Draft ACHAR for the Sydney Metro construction sites at Pyrmont and Hunter Street was distributed to you by Artefact Heritage (2021). Extent has produced an updated Archaeological Research Design (ARD) for the work on the Hunter Street Station sites. Much of the information has built upon the original ACHAR.

We would like to provide the document for your comment and review, as there have been changes made to archaeological potential and the excavation methodology at the Hunter Street Metro station site.

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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
Senior Heritage Advisor

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We acknowledge the Traditional Owners of Country throughout Australia, and recognise their continuing connection to land, waters and culture. We pay our respects to their elders, past, present and emerging.

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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>
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Kind regards,
Hannah Morris
Appendix G.

Hannah Morris
Senior Heritage Advisor

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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.

On Fri, 22 Apr 2022 at 5:01 pm, Hannah Morris <hmorris@extent.com.au> wrote:

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Kind regards,

Hannah Morris

Appendix A.

Hannah Morris
Senior Heritage Advisor

T 02 9555 4000
hmorris@extent.com.au
extent.com.au
Connect with us on:

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

T 02 9555 4000
hmorris@extent.com.au
extent.com.au

From: [redacted]
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Hannah Morris

Appendix A.

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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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