Appendix F

Non-Aboriginal Archaeological Research Design

Sydney Metro West

Non-Aboriginal Archaeological Research Design

Report to Sydney Metro

October 2020

artefact

Artefact Heritage
ABN 73 144 973 526
Suite 56, Jones Bay Wharf
26-32 Pirrama Road
Pyrmont NSW 2009
Australia

+61 2 9518 8411
office@artefact.net.au

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Author:	Jessica Horton and Duncan Jones
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EXECUTIVE SUMMARY

Sydney Metro West is a critical step in the delivery of the Future Transport Strategy 2056. It will provide fast, reliable and frequent rail service between Greater Parramatta and the Sydney CBD.

Sydney Metro (as 'the proponent') is seeking planning approvals as follows:

- Approval for the whole Sydney Metro West (at concept level) concurrent with Stage 1. Stage 1 involves major civil construction works between Westmead and The Bays (the subject of this archaeological research design)
- Future stage(s) may include the remaining major civil construction works from The Bays to the Sydney CBD, rail systems fit-out, station fit-out and aboveground building construction, and operation of the Metro line (future application(s)).

Sydney Metro West was declared as State significant infrastructure and critical State significant infrastructure under sections 5.12(4) and 5.13 of the *Environmental Planning and Assessment Act 1979* respectively on 23 September 2020. Schedule 5 of State Environmental Planning Policy (State and Regional Development) 2011 has been amended to include Sydney Metro West as critical State significant infrastructure as a result of this declaration.

Artefact Heritage was engaged to prepare a non-Aboriginal heritage assessment for inclusion in the Environmental Impact Statement (EIS) for Stage 1.[1] The EIS, including the non-Aboriginal heritage assessment, was published for public exhibition on 30 April 2020. The non-Aboriginal heritage assessment identified that potential significant non-Aboriginal archaeological resources would be impacted within two of the proposed construction sites for Stage 1, namely the Parramatta metro station construction site and The Bays Station construction site. The assessment recommended preparation of an Archaeological Research Design (ARD) to manage impacts to these potential archaeological resources. It is noted that the ARD is a high level document that sets management approaches and parameters. The archaeological; management would be further refined in site specific Archaeological Method Statements (AMS) which would be prepared by the construction contractors once detailed constructability methodology is known.

Sydney Metro has engaged Artefact to prepare a non-Aboriginal ARD to provide a detailed assessment of the potential to discover any archaeological remains across Stage 1, including an evaluation of their likely significance. Artefact has also been contracted to outline an archaeological methodology for managing any remains found during construction.

Archaeological management

The sites have been divided into archaeological management zones based on archaeological potential and current construction impacts. Archaeological management zone mapping (Figure 37 - Figure 38) has been prepared according to the following colour code:

- **Red** (Zone 1): Direct impact to significant archaeology. Archaeological investigation required prior to any construction impacts such as bulk excavation. Investigate as early as possible in

[1] Artefact April 2020. *Sydney Metro West Technical Paper 3: Non-Aboriginal Heritage*. Report prepared for Sydney Metro.

the project program. Prepare an Archaeological Method Statement (AMS) once construction methodology and impacts are known.

- **Amber** (Zone 2): Potential impact to significant archaeology. Prepare an Archaeological Method Statement (AMS) once construction methodology and impacts are known. Archaeological investigation is likely required.
- **Green** (Zone 3): Unlikely to contain significant archaeology. Construction to proceed with an Unexpected Finds Procedure only, as there is nil-low potential to discover significant archaeological remains.

The following Stage 1 construction sites have been assessed as Zone 3 (green) sites. Only limited archaeological management is required as significant archaeological remains are not expected to be present therefore mapping of these sites has not been provided:

- Westmead metro station construction site
- Clyde stabling and maintenance facility construction site
- Silverwater services facility construction site
- Sydney Olympic Park metro station construction site
- North Strathfield metro station construction site
- Burwood North Station construction site
- Five Dock Station construction site.

The non-Aboriginal heritage assessment report for Stage 1 identified potential significant archaeological remains at Parramatta metro and The Bays Station construction sites. Archaeological management recommendations for these Zone 1 (red) and Zone 2 (amber) construction sites are outlined below.

Construction site	Phase	Site feature and potential archaeological remains	Potential and significance	Mitigation	Zone
Parramatta metro station construction site	**Phase 1 (1788 – 1821)**	**Convict huts, yards and gardens** – remains include timber posts and postholes, earthen floor surfaces, informal drains, buried historical soil deposits, isolated artefact deposits (bone, glass, metal, ceramic, stone).	Low and Low - Moderate, State significant	AMS, monitoring of final building removal, salvage excavation	1

Construction site	Phase	Site feature and potential archaeological remains	Potential and significance	Mitigation	Zone
	Phase 2 (1821 – 1850)	**Early colonial residences and yards** – remains include timber posts and postholes, sandstock brick or stone footings, timber boards and underfloor artefact deposits, fence and informal earthen or stone drains and kerbs, former yard surfaces, deep well and privy refuse deposits, buried historical soils, and isolated artefact deposits (bone, glass, metal, ceramic, stone).	Low - Moderate, local to State significant	AMS, monitoring of final building removal, salvage excavation	1
		Convict drain – remains include sandstock brick-lined barrel drain or later machine-pressed brick drain repairs, infilled artefact and soil deposits.	Low - Moderate, local to State significance	AMS, Test and salvage excavation	1
	Phase 3 (1850 – 1900)	**Commercial buildings, rear yards and outbuildings** – brick footings, timber postholes and posts, ceramic drains, fence and informal earthen or stone drains and kerbs, former yard surfaces, industrial debris and slag, deep well and privy refuse deposits, buried historical soils, and isolated artefact deposits (bone, glass, metal, ceramic, stone).	Moderate, may reach threshold for local significance	AMS, test excavation with salvage excavation as required	1
	Phase 1 (1800 – 1851)	**Historic soil deposits and discarded artefacts** – Archaeological remains associated with this site would include stratigraphically controlled and sealed soil deposits, *ex-situ* artefactual material from this period which may have washed into site or been discarded.	Nil to Low, local significance	Unexpected Finds Procedure	2
The Bays Station construction site	**Phase 2 (1851 – 1912)**	**Outbuildings and structures of the original White Bay Hotel** – Archaeological remains associated with these former buildings could include brick and stone footings, timber boards and intact underfloor deposits, ceramic pipes, brick- or stone-lined drains, isolated ceramic, glass, bone, or metal deposits. Lined cesspits or wells containing occupation or discarded artefactual (glass, ceramic, bone) material and soil deposits.	Low - Moderate, local significance	AMS, test excavation / salvage as required	2

Construction site	Phase	Site feature and potential archaeological remains	Potential and significance	Mitigation	Zone
		Reclamation fills – Archaeological remains relating to reclamation fills could include discrete stratigraphic historic soil deposits, artefactual (glass, ceramic, bone, timber, brick) materials and infill rubble, and timber retaining or infill structures such as piers, posts, beams or walls.	Moderate, may reach the threshold for local significance	AMS, test excavation	2
	Phase 3 (1912 – 1984)	**Rail infrastructure and former industrial structures** – Archaeological remains could include evidence of turntables, stabling facilities and roundhouses, loading equipment, rail beams, ballast and timber or concrete sleepers, rail switches, levers and points, concrete, steel and brick building footings, tile and brick rubble, discarded industrial equipment, artefactual refuse deposits (metal, glass, ceramic).	High, local significance	AMS, archaeological monitoring of selected significant rail infrastructure remains	2

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1.0 INTRODUCTION

1.1 Project overview

Sydney Metro West is a critical step in the delivery of Future Transport Strategy 2056. It will provide fast, reliable and frequent rail service between Greater Parramatta and the Sydney CBD.

Sydney Metro is seeking planning approvals as follows:

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Sydney Metro has engaged Artefact to prepare a non-Aboriginal ARD to provide a detailed assessment of the potential to discover any archaeological remains across Stage 1, including an evaluation of their likely significance. Artefact has also been contracted to outline an archaeological methodology for managing any remains found during construction.

1.1.1 Overview of Stage 1

Stage 1 involves major civil construction work between Westmead and The Bays, including:

- Enabling works
- Tunnel excavation including tunnel support activities
- Station excavation for new metro stations at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock and The Bays

[2] Artefact April 2020. *Sydney Metro West Technical Paper 3: Non-Aboriginal Heritage*. Report prepared for Sydney Metro.

- Shaft excavation for services facilities at Rosehill, Silverwater and between Five Dock Station and The Bays Station
- Civil works for the stabling and maintenance facility at Clyde including earthworks and structures for crossings of A'Becketts Creek and Duck Creek
- A concrete segment facility for use during construction located at the Clyde stabling and maintenance facility construction site
- Excavation of a tunnel dive structure and associated tunnels at Rosehill to support a connection between the stabling and maintenance facility and the mainline metro tunnels.

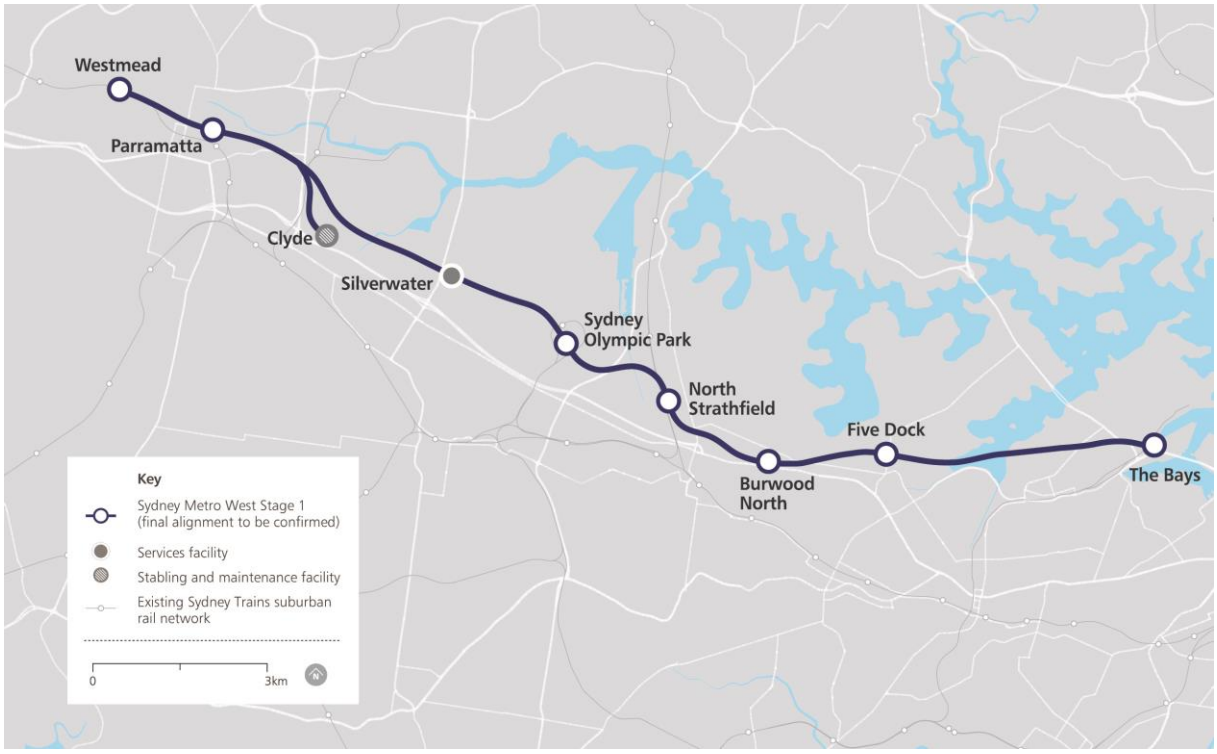

Figure 1: Sydney Metro West – Stage 1 overview

1.2 Study area for this assessment

The non-Aboriginal heritage assessment identified two construction sites as potentially containing significant archaeological remains: the Parramatta metro station construction site and The Bays Station construction site.

As significant archaeological remains have not been predicted at other Stage 1 construction sites, this ARD does *not* provide specific archaeological management measures for the following:

- Westmead metro station construction site
- Clyde stabling and maintenance facility construction site
- Silverwater services facility construction site
- Sydney Olympic Park metro station construction site
- North Strathfield metro station construction site

- Burwood North Station construction site
- Five Dock Station construction site.

1.3 Assessment and research design methodology

1.3.1 Outline

The preparation of the report has included the following steps.

- **Historical research:** Additional primary archival research (review of maps, plans and other sources) has been undertaken in greater detail than was considered in the EIS, to identify the location of former structures or features within the project sites
- **Literature review:** Relevant existing archaeological studies and investigation reports were consulted to inform the archaeological potential and significance assessments
- **Archaeological assessment:** Detailed archaeological assessment was undertaken based on the additional research and literature review
- **Archaeological management:** Based on the potential for significant archaeological remains, and potential archaeological impacts, an archaeological management strategy was developed for each site. General archaeological management and investigation methodologies, including research questions, have also been provided.

1.3.2 Grades of archaeological potential

The archaeological potential of each site is presented in terms of the likelihood of the presence of archaeological remains, considering the land use history and previous impacts at the site. This evaluation is presented using the following grades of archaeological potential:

- **Nil:** No evidence of historical development or use, or where previous impacts would have removed all archaeological potential
- **Nil-Low:** Low intensity historical activity, such as grazing, with little to no archaeological 'signature' expected, or where previous impacts were extensive, such as considerable bulk excavation and other earthwork activities such as grading
- **Low:** Research indicates little historical development, or where there have been substantial previous impacts, disturbance and truncation in locations where some archaeological remains such as deep subsurface features may survive
- **Low-Moderate:** evidence of some historical development with known previous impacts, remains and deep subsurface features are likely to survive with some disturbance and truncation
- **Moderate:** Analysis demonstrates known historical development and some previous impacts, but it is likely that archaeological remains survive with some localised truncation and disturbance
- **High:** Evidence of multiple phases of historical development and structures with minimal or localised twentieth century development impacts, and it is likely the archaeological resource would be largely intact.

1.3.3 Archaeological significance

The assessment of historical archaeological sites requires a specialised framework in order to consider the range of values associated with each site. The *NSW Heritage Manual* provides the framework for this significance assessment.[3] These guidelines incorporate key aspects of cultural heritage value identified in the *Burra Charter*.[4] This significance assessment has also taken into account two documents issued by the former NSW Heritage Branch (now Heritage NSW): *Assessing Significance for Historical Archaeological Sites and 'Relics'* and *Archaeological Assessment Guidelines*.[5]

The most widely used framework for evaluating archaeological significance is the schema developed by Bickford and Sullivan.[6] It comprises three key questions:

- *Can the site contribute knowledge that no other resource can?*
- *Can the site contribute knowledge that no other site can?*
- *Is this knowledge relevant to general questions about human history or other substantive questions relating to Australian history, or does it contribute to other major research questions?*

The emphasis in these three questions is on the need for archaeological research to add to the knowledge of the past in an important way. It helps avoid duplicating known information or information that might be more readily available from other sources such as documentary records or oral history.

1.3.4 Archaeological management framework

Table 1 provides an overview of the framework used when considering archaeological management strategies. The key factor is the likely significance of potential archaeological remains. The table is not definitive and is only a general guide to mitigating the archaeological impact of construction work. The level of impact and the proposed construction methodology also influence how potential archaeological resources are managed.

Table 1: Archaeological management framework

Archaeological potential	Archaeological significance	Archaeological impact mitigation
Nil	N/A	Unexpected Finds Procedure
Nil to low	Unlikely to reach the threshold for local significance	Unexpected Finds Procedure
	Local	Unexpected Finds Procedure
	State	Unexpected Finds Procedure
Low	Unlikely to reach the threshold for local significance	Unexpected Finds Procedure

[3] Heritage manual
[4] Australia ICOMOS 2013
[5] NSW Heritage Branch 2009; NSW Heritage Office 1996: 25 – 27
[6] Anne Bickford and Sharon Sullivan, 'Assessing the Research Significance of Historic Sites', in *Site Surveys and Significance in Australian Archaeology*, ed. Sharon Sullivan and Sandra Bowdler (Canberra: Research School of Pacific Studies, ANU, Canberra, 1984), 19–26.

Archaeological potential	Archaeological significance	Archaeological impact mitigation
	Local	Unexpected Finds Procedure
	State	Monitoring (recording or salvage if archaeology found – depending on intactness)
Low - moderate	Unlikely to reach the threshold for local significance	Unexpected Finds Procedure
	Local	Monitoring or test/savage excavations depending on extent of impacts (for example trenching may require monitoring where bulk excavation of a large area may require test/salvage excavation)
	State	Test/salvage excavations
Moderate	Unlikely to reach the threshold for local significance	Unexpected Finds Procedure
	Local	Test/salvage excavations
	State	Test/salvage excavations
Moderate - High	Unlikely to reach the threshold for local significance	Unexpected Finds Procedure
	Local	Salvage excavations
	State	Salvage excavations
High	Unlikely to reach the threshold for local significance	Unexpected Finds Procedure
	Local	Salvage excavations
	State	Salvage excavations

1.3.5 Historic themes

Historic themes are a way of describing important processes or activities that have significantly contributed to Australian history. Historic themes are described at a national and state level. The Heritage Council of NSW has prepared a list of state historic themes relevant to the demographic, economic and cultural development of the state. The use of these themes provides historical context in order to allow archaeological items to be understood in a wider historical context. Identified archaeological remains at each construction site are assessed against historic themes to develop their significance and research focus.

1.4 Authorship

This report was prepared by Jessica Horton (Heritage Consultant) and Duncan Jones (Principal). Management input and review was provided by Sandra Wallace (Managing Director).

2.0 PARRAMATTA METRO STATION CONSTRUCTION SITE

2.1 Historical analysis

2.1.1 Founding of Parramatta and early convict settlement, 1788–1821

Exploration to the west of Sydney Cove began soon after the first arrival of British colonists in 1788, as it was found that the sandstone soils of coastal Sydney were unsuited to cultivation.[7] In addition, the first crop of wheat failed at Sydney and on Norfolk Island due to weevil infestation and overheating of seeds during the voyage of the First Fleet. The fleet's flagship, HMS *Sirius,* was sent almost immediately to source flour and seed grain from the Cape of Good Hope.[8] In order to save the colony from starvation and to prepare fertile soil for the anticipated seeds, an exploration party lead by Captain John Hunter left the colony at Sydney Cove and rowed up what is now the Parramatta, Duck and George's Rivers in search of arable land for farming.[9]

Fertile soil was discovered and a settlement with a military redoubt (a form of fortress) was established at the head of Parramatta River. This hamlet was named Rose Hill after George Rose, Secretary to the British Treasury.[10] Convicts were sent to the settlement, which was located at the Crescent, now Parramatta Park. The area was cleared of trees and prepared for crops. *Sirius* returned to the colony in May 1789 and wheat was sown from June.

The first successful harvest at Rose Hill was gathered in December 1789, producing over 200 bushels of wheat, 35 bushels of barley, in addition to oats and maize. This hefty crop stood in contrast to the 25 bushels of barley produced at Farm Cove in Sydney.[11] Lieutenant of Marines with the First Fleet, Watkin Tench, provides an account of this agricultural activity:

> *The view from the top of the wheat field takes in, except a narrow slip, the whole of the cleared land at Rose Hill. From not having before seen an opening of such extent for the last three years, this struck us as grant and capacious. The beautiful diversity of the ground (gentle hill and dale) would certainly be reckoned pretty in any country. Continued our walk and crossed the old field, which is intended to form part of the main street of the projected town.*[12]

The Government Farm had a house for Edward Dodd, and a barn with granaries. Dodd was Governor Arthur Phillip's personal servant, who had managed farming at Farm Cove.[13] The convicts were permitted to build huts with their own gardens.

The Second Fleet arrived in June 1790, bringing a further influx of convicts. A Government House was built near the Government Farm, prompting the development of a township. Laid out in 1790, the town was planned along a long street – now called George Street – which linked Government House to the original landing place on the river. Occupying land previously used for crops, George Street was soon lined with convict huts, a granary, stores, and military barracks. On 2 June 1791 Governor

[7] Artefact Heritage, 2014: 24
[8] Terry Kass, Carol Liston, John McClymont, 1996. *Parramatta: A Past Revealed.* Parramatta: Parramatta City Council. p. 9; Edward Higginbotham & Paul-Alan Johnson, 2010. *The Future of Parramatta's Past: An Archaeological Zoning Plan 1788 to 1844.* Sydney: The Department of Planning NSW & The University of NSW. p. 4.
[9] Ibid.
[10] Terry Kass, 2008. 'Parramatta'. Accessed 1 May 2019, https://dictionaryofsydney.org/entry/parramatta
[11] Higginbotham & Johnson, 2010. *The Future of Parramatta's Past*. p. 5.
[12] Watkin Tench, 1793. *A Complete Account of the Settlement at Port Jackson in New South Wales.* London: G. Nicol and J. Sewell. p. 52.
[13] Ibid.

Phillip renamed it Parramatta, using the local name used by the Burramattagal. Thus it was the first colonial settlement to use an Aboriginal name.[14] Tench provides an account of the town:

> *The main street of the new town is already begun. It is to be a mile long, and of such breadth as will make Pall-Mall and Portland-Place "hide their diminished heads". It contains at present 32 houses completed, of 24-feet by 12 each, on a ground floor only, built of wattles plaistered with clay, and thatched. Each house is divided into two rooms, in one of which is a fireplace and a brick chimney. These houses are designed for men only; and ten is the number of inhabitants allotted to each; but some of them now contain 12 or 14, for want of better accommodation. More are building; in a cross street stand nine houses for unmarried women: and exclusive of all these are several small huts where convict families of good character are allowed to reside. Of public buildings, beside the old wooden barrack and store, there is a house of lath and plaister, 44 feet long by 16 wide, for the governor, on a ground floor only, with excellent out-houses and appurtenances attached to it. A new brick store house, covered with tiles, 100 feet long by 24 feet wide, is nearly completed, and a house for the store-keeper. The first stone of a barrack, 100 feet long by 24 wide, to which are intended to be added wings for the officers, was laid to-day. The situation of the barrack is judicious, being close to the store-house, and within a hundred and fifty yards of the wharf, where all boats from Sydney unload. To what I have already enumerated, must be added an excellent barn, a granary, an inclosed yard to rear stock in, a commodious blacksmith's shop, and a most wretched hospital, totally destitute of every conveniency.*[15]

Initially the river was the main form of transport to and from Parramatta, but an overland track between Parramatta and Sydney was cleared through the bush between 1789 and 1791, which became the basis for 'the road to Parramatta'.[16]

Parramatta was planned out by Surveyor General Augustus Alt. The main avenue was one mile long by 205 feet wide, running from the wharf to Government House. A 1792 plan of Parramatta (Figure 7 and Figure 8) shows the main avenue (George Street) crossed by two streets: Bridge Street (now Pitt Street) and Cross Street (now Church Street). Running parallel and south of the main avenue was South Street or Back Row (now Macquarie Street).[17]

Governor Phillip wanted to convey 'grandeur' in the town plan. In order to deliver this impression, allotments were large, allowing for the wide dispersal of houses. The wide streets encouraged air flow, giving convicts the space to recover from their long, cramped sea journeys. It also counteracted the impact of diseases which often spread within close proximities.[18] Garden allotments had been granted to all classes of colonists, with the intention of producing vegetables as these were not provided by the government stores. At Parramatta, allotments measured 100 by 200 feet and convicts were encouraged to work on their own land.[19] Governor Phillip's plan was to eventually replace the convicts with settlers, planning for amenities including town hall and market place. At its foundation, however, Parramatta was a 'gaol town' occupied by convicts and their custodians.[20]

[14] Ibid.
[15] Tench, 1793. *Settlement at Port Jackson.* p. 78.
[16] James Jervis, 'The Road to Parramatta: Some Notes on Its History', *Royal Australian Historical Society Journal and Proceedings* XIII, no. II (1927): 65–85.
[17] Kass, Liston, McClymont, 1996. *Parramatta: A Past Revealed*. p. 22; Higginbotham & Johnson, 2010. *The Future of Parramatta's Past*. p. 7-8.
[18] Kass, Liston, McClymont, 1996. *Parramatta: A Past Revealed*. p. 24.
[19] Higginbotham & Johnson, 2010. *The Future of Parramatta's Past*. p. 8.
[20] Higginbotham & Johnson, 2010. *The Future of Parramatta's Past*. p. 9.

Free settlement within NSW occurred from March 1791. Within the vicinity of Parramatta, grants ranging in size from 30 to 140 acres were provided to James Ruse, Robert Webb, William Reid and Phillip Schaffer. The first town lease went to John Macarthur in September 1796, indicating the change from convict town to free settlement. Nineteen town leases had been provided by 1800, going to personnel of the NSW Corps, civil servants, churchmen and emancipated convicts. By the turn of the new century, Parramatta had the largest population of any town within the settlement. An additional 55 leases were made from 1800 to military and civil officials. In November 1808, the first grants of town allotments were made to Anthony Fenn Kemp and James Larra.

An 1804 plan of Parramatta (Figure 10 and Figure 11) indicates that by this time, development had extended to the north of the Parramatta River. An 1805 painting by George William Evans (Figure 5) shows High Street (George Street) as a dirt road, with convict huts set back within fenced garden spaces.

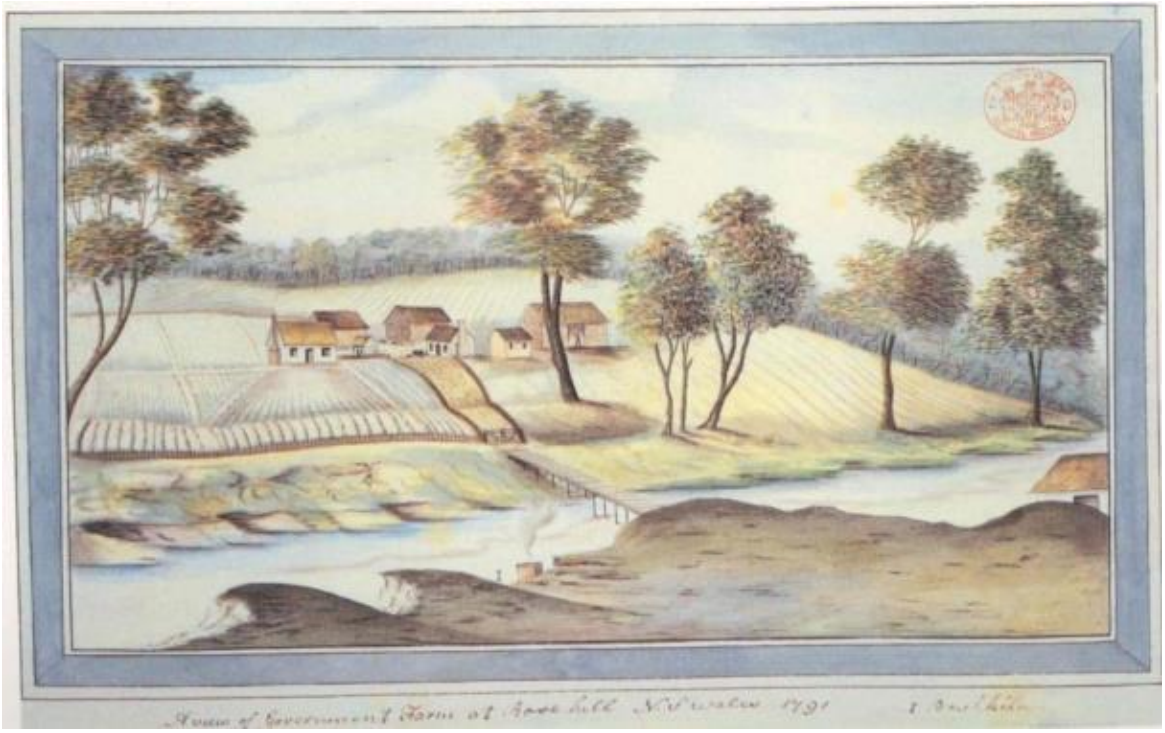

Figure 2: Government Farm at Rose Hill in 1791 (Watling and Lambert Collection, Natural History Museum, British Museum)

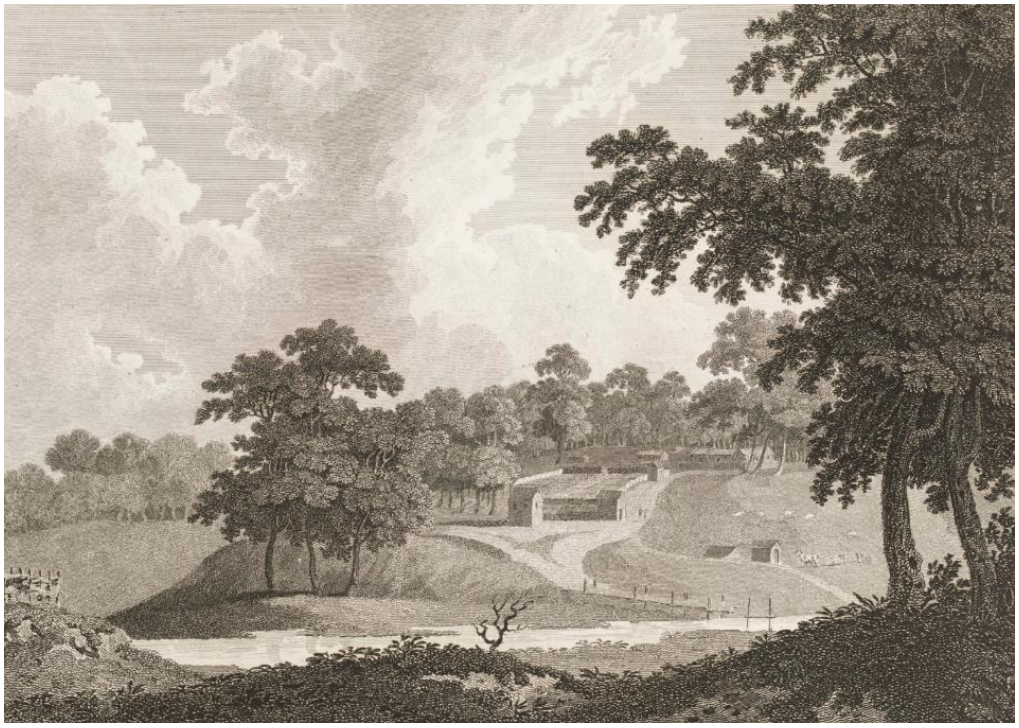

Figure 3: 'View of Rose Hill', drawn by E. Dayes from a sketch by Captain John Hunter, printed 1793 (Historical journal of the transactions of Port Jackson and Norfolk Island). Southerly view across Parramatta River showing structures at Rose Hill.

Figure 4: 'A View of the Governor's House at Rose Hill, in the Township of Parramatta', published in David Collins, 1798. (An account of the English colony in NSW, State Library NSW). Western view along George Street towards Government House showing convict huts.

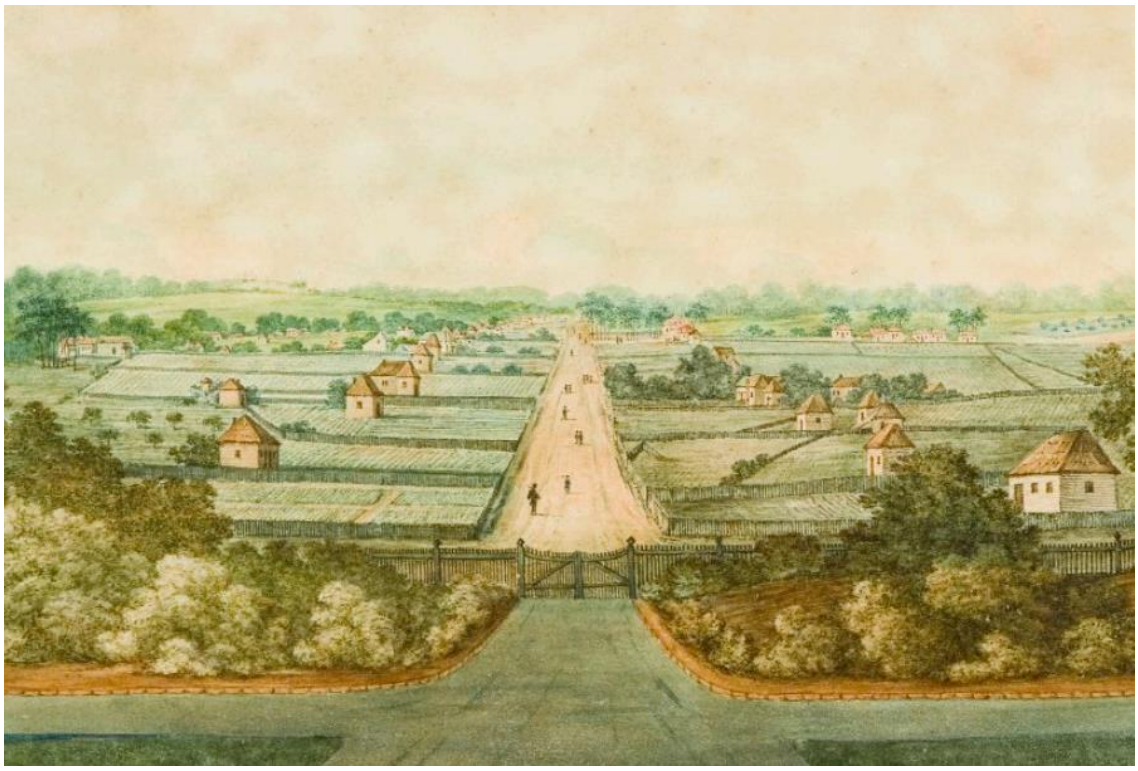

Figure 5: High Street (now George Street), Parramatta from the grounds of Government House, George William Evans, 1805 (Caroline Simpson Collection, Historic Houses Trust of NSW).

Figure 6: Western view of Parramatta, 1819 by Joseph Lycett (State Library NSW).

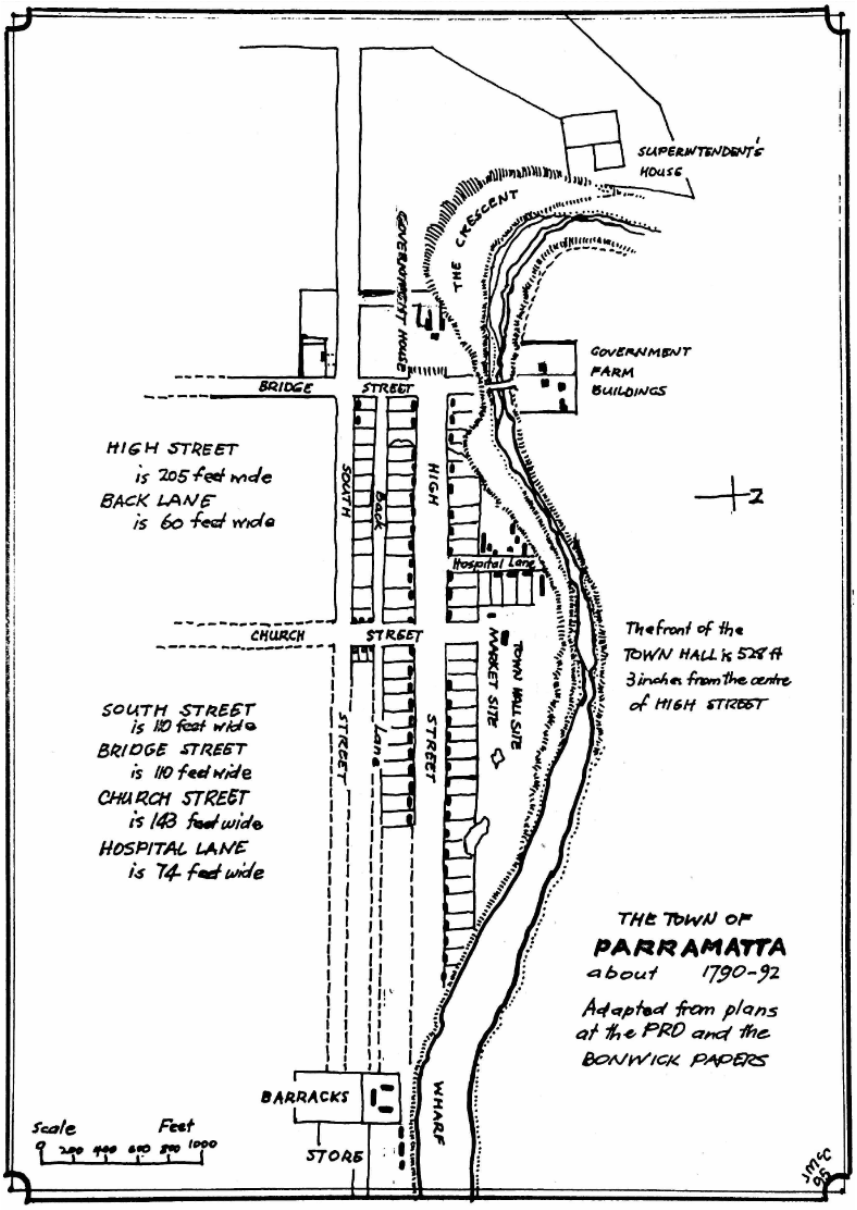

Figure 7: 'The Town of Parramatta' 1790–92 (Parramatta: A Past Revealed).

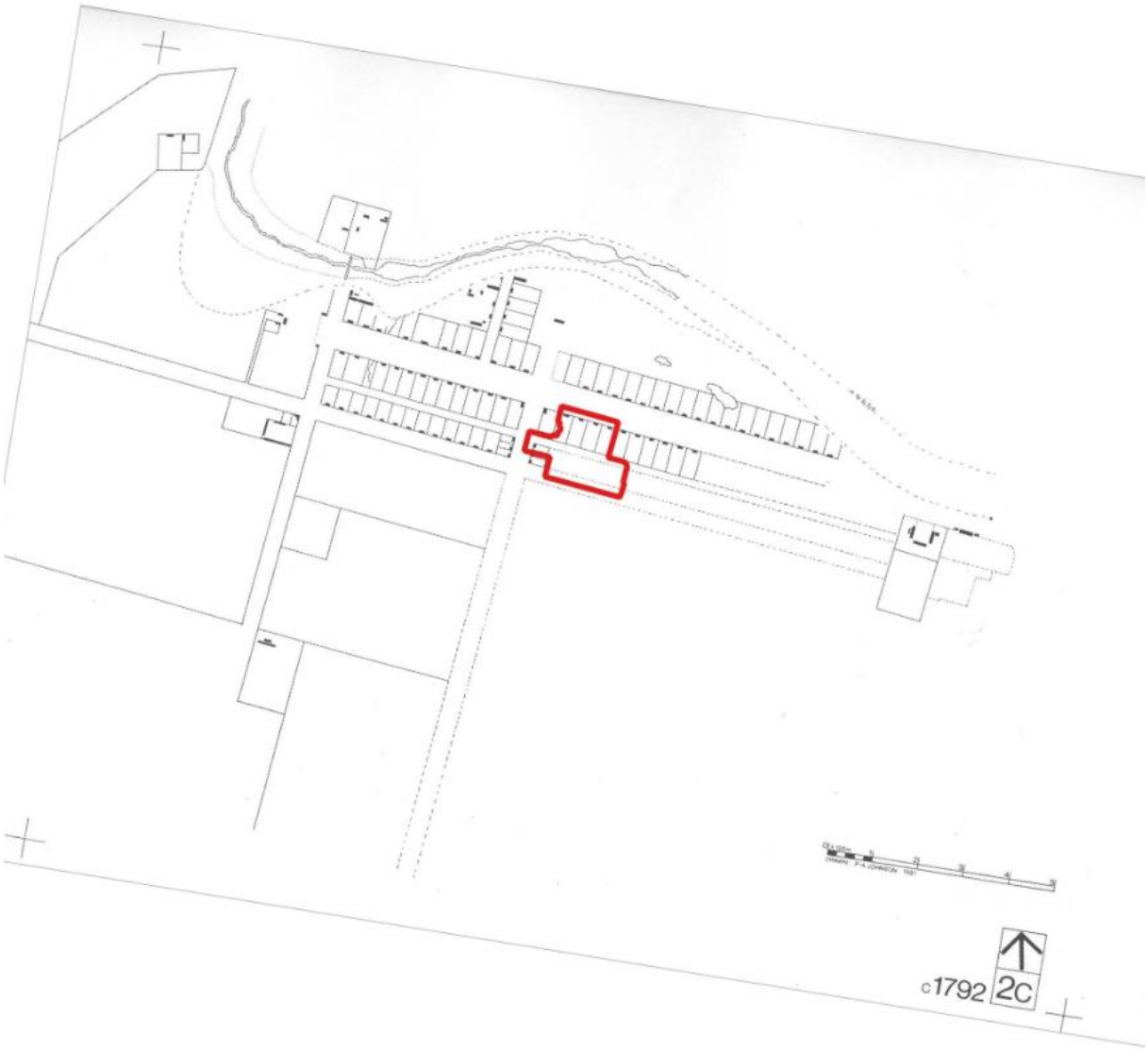

Figure 8: Detail of the 1792 street layout in the Parramatta Archaeological Zoning Plan, showing the Parramatta metro station construction site outlined in red

Figure 9: Detail of the 1804 street layout in the Parramatta Archaeological Zoning Plan, showing the Parramatta metro station construction site outlined in red

Figure 10: Evans' 1804 map of Parramatta, showing the Parramatta metro station construction site outlined in red

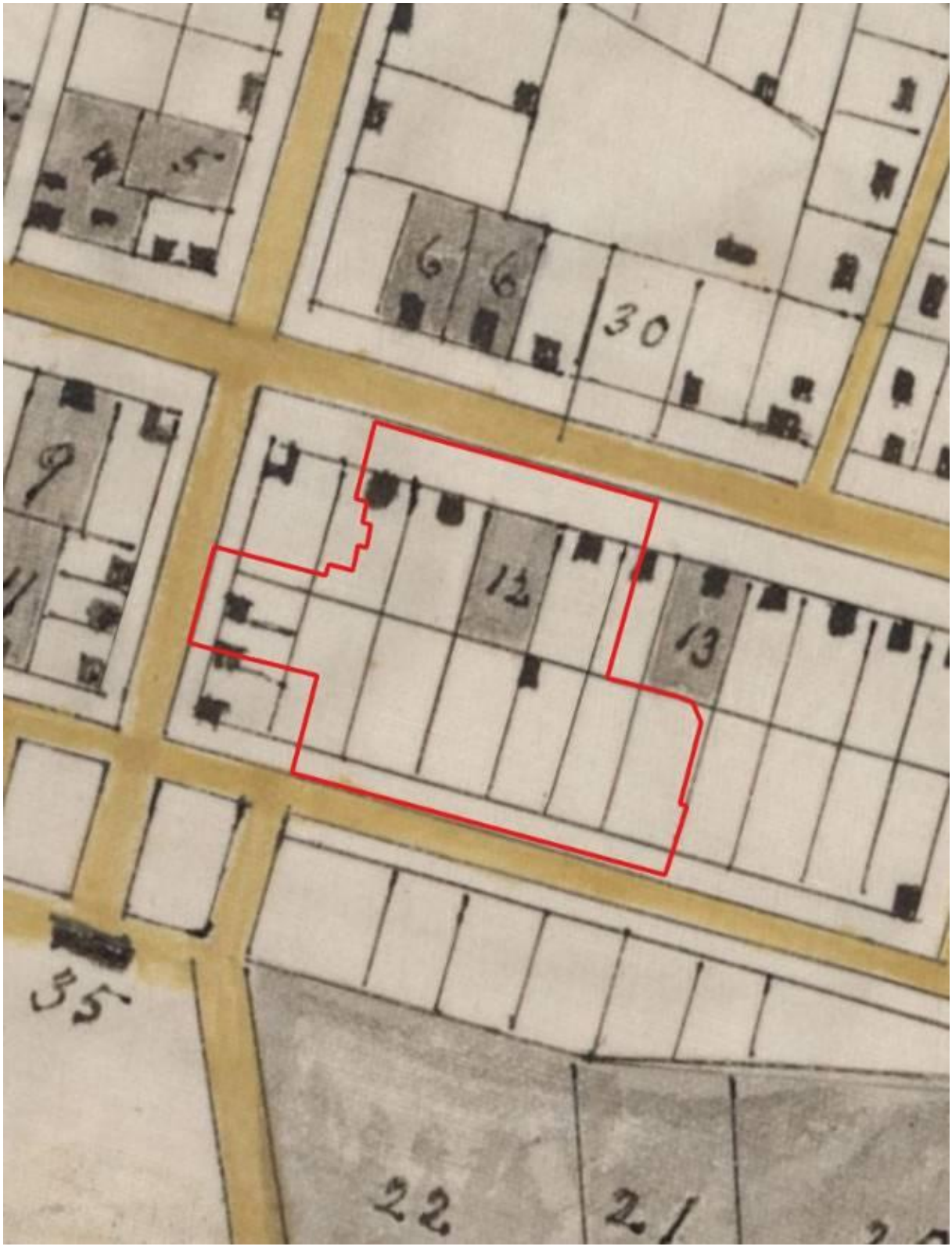

Figure 11: Detail of Evans' 1804 plan of Parramatta, showing the Parramatta metro station construction site outlined in red

2.1.2 Growth of the Parramatta township, 1821–50

Over its first decades of growth, Parramatta was transformed from a convict settlement into a township, with farms and homesteads developing in the surrounding areas. Parramatta was the main centre in the region for professional services, specialist suppliers, education and health.

The end of the transportation of convicts to Australia in the 1840s resulted in the decline of the Parramatta economy. The convict buildings in the area were converted into public institutions such as the Lunatic Asylum (the former Female Factory and now Cumberland Hospital) near Westmead, the Benevolent Asylum (George Street convict barracks), the Lancer Barracks (former military barracks), and Parramatta Gaol.[21]

Early historic mapping shows that the Parramatta metro station construction site is located within an area first laid out by Governor Philip during the late eighteenth century for the establishment of rows of early convict accommodation. These timber, wattle and daub huts featured small gardens which provided food for residents (Figure 8 to Figure 11). These huts were built along Church and George Streets, including one located on the northern side of today's City Centre (Horwood Place) car park at the Parramatta metro station construction site. Although Macquarie Street does not appear to have been utilised for convict housing, the area may have been used for horticultural purposes.

An 1804 town plan of Parramatta indicates the northward development of allotments and lease holdings. The Parramatta metro station construction site falls within the boundaries of 13 early allotments, six of which have featured structures. One lease went to Sarah Elliot (Brabyn) (number '12' on the 1804 plan), who was provided with an allotment measuring 100 feet by 198 feet in 1804. Elliot was born in Ireland in 1764 and although it is unclear when she arrived in NSW, her first husband, Bernard (or Barney or Barnaby) Dennison, was an Irish convict who had arrived aboard the *Martha* in 1791. Following Dennison's death, Elliot married Lieutenant John Brabyn in 1802. Brabyn's allotment was utilised for vegetable growing and may have appeared similar to the fenced allotment depicted by George William Evans in 1805 (Figure 5).

The timber, wattle and daub convict accommodation along Church and George Streets was gradually replaced from the 1820s by more substantial residences and workshops made from brick and sandstone. In particular, the newly developed structures along George Street were likely to have been private residences. The small gardens and horticultural plots to the rear of the convict huts were developed into residential and trades yards. These developments can be seen in a comparison of Evans 1804 plan (Figure 10 and Figure 11) and Brownrigg's 1844 plan (Figure 13). In addition, the Brownrigg plan provides ownership or land occupation information. Owners or residents along the Church Street portion of the Parramatta metro station construction site included J. Barnes, Williams and Whelan. Owners or residents along the George Street portion of the Parramatta metro station construction site included J. Montgomery, N. Andrews, and M. Bishop. J. Montgomery refers to John Montgomery, a former convict who was granted a publican's license at 45 George Street. The hotel that he erected and named the 'Inn St Patricks' is still extant and is potentially the oldest commercial building in Parramatta.[22]

By 1823, structures likely to have been private homes were developed along Macquarie Street. These residences included rear yards which may have been utilised for informal trades. The 1844 Brownrigg plan reveals that owners or residents along the Macquarie Street portion of the Parramatta metro station construction site included D. Radley, J. Walker, W. C. Wood, T. Oakes, J. Bateman, and J. Housion. J. Bateman refers to John Bateman (Batman), later one of the founders of the city of Melbourne. Bateman was born within a former structure at 64 Macquarie Street, which survived up

[21] Kass, 2008. 'Parramatta'.
[22] Parramatta LEP I703

until the 1960s. The extant structure, *Kia Ora*, was constructed on this site by James Houison in c1842. Houison and his family lived there until 1865.[23]

By the 1840s, the horticultural plots at the Horwood Place portion of the Parramatta metro station construction site had been developed into residential and trades yards to the rear of the properties along George and Macquarie Streets. In addition, a sandstock brick-lined drain is known to have been constructed within the south-eastern corner of the Parramatta metro station construction site during the 1820s.[24]

Table 2 provides historical information for owners or residents of allotments identified on the 1804 and 1844 plans of Parramatta.

Table 2: Description of allotments on Brownrigg's 1844 map.

Street	Owner	Structures documented	Description
Church Street	Joseph Barnes (1800–63)	Yes	Joseph Barnes was born in England in 1800 and sentenced to death for stealing a horse, although this sentence was reduced to 14 years transportation. Barnes arrived in Sydney Cove in 1825 aboard the *Asia* where he was assigned to Surveyor John Oxley. He married Elizabeth McIntosh, Oxley's housekeeper, in 1827. McIntosh died in 1835 and Barnes soon began a relationship with Elizabeth Beasley. The pair married in 1851 and had 11 children.[25] Sources indicate that Barnes was the publican of the Red Lion Hotel located on Church Street, potentially at the allotment seen in Brownrigg's 1844 plan.[26]
Church Street	William Goodin (1812–86)	Yes	William Goodin was a prominent landowner in Parramatta, owning a large number of properties in Parramatta and elsewhere.
Macquarie Street	John Thorn (1794–1838)	Yes	John Thorn was born in Greater Sydney in 1794 to Humphrey and Rebecca Thorn. Thorn was originally a farmer who married Jane Matilda Humm in 1815. In 1821, he became Chief Constable at Parramatta, notable for his 'wiping out' of Bushranger John Macnamara.[27] While it is unclear what his allotment was, he subsequently developed the White Horse Cellars (later White Horse Hotel) at the corner of George and Church Streets.[28]
Macquarie Street	John Walker (1799–1846)	No	John Walker was born in Parramatta in 1799 to Jane Walker. He is thought to have started his professional career as a wheelwright for Hugh Taylor, later running his own successful business. Walker is known to have resided in a convict hut from 1823 at 45 Macquarie Street, which was built around 1800. However, limited information remains regarding his use of the land at the allotment within the Parramatta metro station construction site.[29]

[23] PLEP I716
[24] PLEP I647
[25] Author unknown, n.d. 'Joseph Barnes'. Accessed online 21 May 2020, https://convictrecords.com.au/convicts/barnes/joseph/83082
[26] PARRAMATTA. (1859, April 21). *The Sydney Morning Herald (NSW: 1842 - 1954),* p. 5. Retrieved May 21, 2020, from http://nla.gov.au/nla.news-article13024058
[27] "THE SIXTY YEARS IN PARRAMATTA." *The Cumberland Argus and Fruitgrowers Advocate (Parramatta, NSW: 1888 - 1950)* 19 June 1897: 5. Web. 22 May 2020 <http://nla.gov.au/nla.news-article85762582>.
[28] Parramatta Heritage Centre, 2014. 'The White Horse Hotel'. Accessed online 22 May 2020, http://arc.parracity.nsw.gov.au/blog/2014/10/22/the-white-horse-hotel-parramatta/
[29] OEH, n.d. 'Archaeological site and associated artefacts'. Accessed online 22 May 2020, http://141.243.8.146/heritageapp/ViewHeritageItemDetails.aspx?ID=5055138

Street	Owner	Structures documented	Description
Macquarie Street	C. Wood	Yes	At what is now 58–66 Macquarie Street, a large L-shaped structure was known to have stood at the allotment, constructed c1820s. A convict brick barrel drain was also constructed through this area between 1820 and 1836. Part of this drain is on display within the foyer of the building currently occupying 16–18 Smith Street.
Macquarie Street	Francis Oakes (1770–1844)	No	Francis Oakes was born in England in 1770. A shoemaker and member of the Congregational Church, he arrived at Port Jackson in 1798. After accepting 100 acres at Dundas, Oakes abandoned his missionary obligations. He remained at Dundas until 1805 when he was appointed Chief Constable at Parramatta. Oakes married Rebecca Small in 1806 with whom he had 14 children.[30] Although it is unclear how he utilised the land at the Parramatta metro station construction site, he is known to have been a baker, shop-keeper and contractor as well as police officer and farmer.[31]
Macquarie Street	William Faithful (1774–1847)	No	William Faithful arrived at Sydney as a private in Captain Joseph Foveaux's company aboard the *Pitt* in 1792. Faithful was discharged from the army in 1799, taking up farming at Petersham Hill, Liberty Plains, Jordan Hill, Richmond and Goulburn. He married Susannah Pitt in 1804 at Parramatta, later marrying Margaret Thompson in 1821 after Susannah's death; and then Maria Bell in 1843 following Margaret's death. He had six children with his first two wives.[32] It is unclear that Faithful utilised the allotment at the Parramatta metro station construction site for.
Macquarie Street	William Bateman (Batman) (1765–1833)	Yes	The allotment was originally granted to convict ad timber-yard owner William Bateman, father of John Batman. William Bateman was sentenced to 14 years transportation for his involvement in stealing 600 pounds of saltpetre with his brother-in-law William Mobbs. Bateman arrived in Sydney aboard the *Ganges* along with his wife Mary and their two children. The Batemans had another four sons upon arrival, including John Batman. William Bateman purchased land in the township of Parramatta in 1823, presumed to be at the allotment, and was given permission to harvest cedar wood. An 1828 census cited the family as living in Parramatta on 25 acres, 15 cleared, 12 cultivated, two horses and 13 horned cattle with William's occupation listed as Timber Merchant.[33] John Batman was born in an earlier wattle and daub structure to the rear of *Kia Ora* at the site in c1801. Portions of this structure including the kitchen are thought to have survived until the 1960s.[34] Records show William Bateman at the Macquarie Street site in 1823, with the land later granted to James Houison. During this time, two wooden structures set well back from Macquarie Street and a brick structure closer to

[30] THE OAKES FAMILY. (1931, January 3). *The Sydney Morning Herald (NSW: 1842 - 1954*), p. 5. Retrieved May 22, 2020, from http://nla.gov.au/nla.news-article16743039
[31] Neil Gunson, n.d. 'Francis Oakes'. Accessed online 21 May 2020, http://adb.anu.edu.au/biography/oakes-francis-2513
[32] Australian Royalty, n.d. 'William Faithful'. Accessed 22 May 2020, https://australianroyalty.net.au/tree/purnellmccord.ged/individual/I71974/William-Faithful
[33] Author unknown, n.d. 'William Bateman / Batman'. *Our Family Past.* Accessed 22 May 2020, https://www.ourfamilypast.com/article/topic/11693/haa007-breakout-article-william-bateman-batman
[34] JOHN BATMAN (1929, June 21). *Windsor and Richmond Gazette (NSW: 1888 - 1961),* p. 16. Retrieved May 22, 2020, from http://nla.gov.au/nla.news-article85930378

Street	Owner	Structures documented	Description
			Macquarie Street (Houison's Cottage) were located at what is now 62–68 Macquarie Street.[35] Bateman is known to have changed the family name to Batman to remove stigma of his criminal past, hence the differentiation from his son.[36] John Batman is widely recognised as being one of the founders of Melbourne in 1835.
Macquarie Street	James Houison (1800–76)	Yes	The allotment was original granted to convict and timber-yard owner William Bateman (see above). Records show William Bateman at the site in 1823, with the land later granted to James Houison. Houison's Cottage was a brick structure located close to Macquarie Street on a site now encompassing 62–68 Macquarie Street. James Houison was born in 1800 in Scotland. He married Ann Stark in 1834, with whom he had 11 children. Houison was a pioneer builder and architect. He designed *Kia Ora* at the site in c1840s, where he lived with his family for many years until moving to *Nairn Cottage* in Westmead.[37] In addition to the elegant Georgian Colonial *Kia Ora* residence, Houison left his mark on a number of other private and public structures throughout Parramatta: Hannibal Hawkins Macarthur's Vineyard (later Subiaco), St Patrick's Church, Parramatta's first courthouse, Parramatta Gaol, Nathaniel Payten's George Street home (later renamed *Tara* before becoming the original location of the Anglican Girls School), and the Methodist Centenary Church.[38]
Macquarie Street	Bateman	Yes	A brick structure was located on the allotment leased to Bateman (see above), then purchased by Lacy (below).
Macquarie Street	Lacy	Yes	A brick structure was located on the allotment leased to Bateman, then purchased by Lacy.
Smith Street	Hugh O'Donnell (1769–1834)	Yes	Brownrigg's 1844 plan shows a cottage at the centre of the allotment as seen in 1823, with two buildings added along the Smith Street frontage. O'Donnell is shown as the original lessee and C or G Blanchard as the current land holder. Hugh O'Donnell was born in 1769 in Ireland. He married Mary Lakeman in 1798 with whom he had five children. A solider, O'Donnell sailed aboard the *Anne II* with the 73rd regiment as an escort for convicts in 1810. He was accompanied by his family. Army records show him to be 5'9", tall with dark brown hair, grey eyes and a fair complexion. It is thought that the O'Donnell family were residing at the Smith Street allotment by 1825. O'Donnell also owned 100 acres bear Parramatta which had been granted on 30 June 1823.[39]

[35] OEH, n.d. 'Kia Ora and Potential Archaeological Site'. Accessed 22 May 2020, https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2240356
[36] Author unknown, n.d. 'William Bateman'. Accessed online 22 May 2020, http://www.whiteburys.com/william-bateman-featured.html
[37] Australian Royalty, n.d. 'James Houison'. Accessed online 22 May 2020, https://australianroyalty.net.au/tree/purnellmccord.ged/individual/I74071/James-Houison
[38] Michaela Ann Cameron, 2019. 'Houison's He-Creature: A Valentine's Day Storey of Unrequited Love'. Accessed online 22 May 2020, https://femalefactoryonline.org/category/parramatta-female-factory/
[39] Edward Higginbotham, 2004. *Report on the Archaeological Excavations, 25 Smith and 26-78 Macquarie Street, Parramatta'.* Report to Kann Finch Architects. p. 7.

Street	Owner	Structures documented	Description
Smith Street	C. Blanchard		Brownrigg's 1844 plan shows a cottage at the centre of the allotment as seen in 1823, with two buildings added along the Smith Street frontage. O'Donnell is shown as the original lessee and C or G Blanchard as the land holder. [40] No further information has come to light about Blanchard.
George Street	John Montgomery	Yes	The allotment is known to have had had two convict huts, with the remains of one surviving *in situ* within the modern redevelopment. The remaining hut is thought to have been constructed in 1790–91. It was weatherboarded in formal government repairs before 1801, remaining up to the c1820s. John Montgomery, a former convict, was the initial lessee in 1823, potentially operating the St Patrick's Inn at the site.[41] The land was left to the Church who subdivided the lot into three. A baker, Frederick Beale purchased the site, who sold it to Peter Miller in 1854. The lot was transferred to chemist Henry Charles Woolcott in 1876. The structures used by Woolcott largely remained at the site until a 1996 development.[42]

[40] Edward Higginbotham, 2004. *Report on the Archaeological Excavations, 25 Smith and 26-78 Macquarie Street, Parramatta'.* Report to Kann Finch Architects. p. 7.
[41] OEH, n.d. 'Shops and Potential Archaeological Site'. Accessed online 22 May 2020, https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2240208
[42] Casey & Lowe, 1957-. *Breaking the Shackles: historic lives in Parramatta's archaeological landscape.* NSW: Parramatta Heritage Centre and Casey & Lowe. p. 33.; PARRAMATTA PUBLICANS. (1832, August 10). *The Australian (Sydney, NSW: 1824 - 1848),* p. 3. Retrieved May 22, 2020, from http://nla.gov.au/nla.news-article42008518

Figure 12: Detail of the 1823 street layout in the Parramatta Archaeological Zoning Plan, showing the Parramatta metro station construction site outlined in red

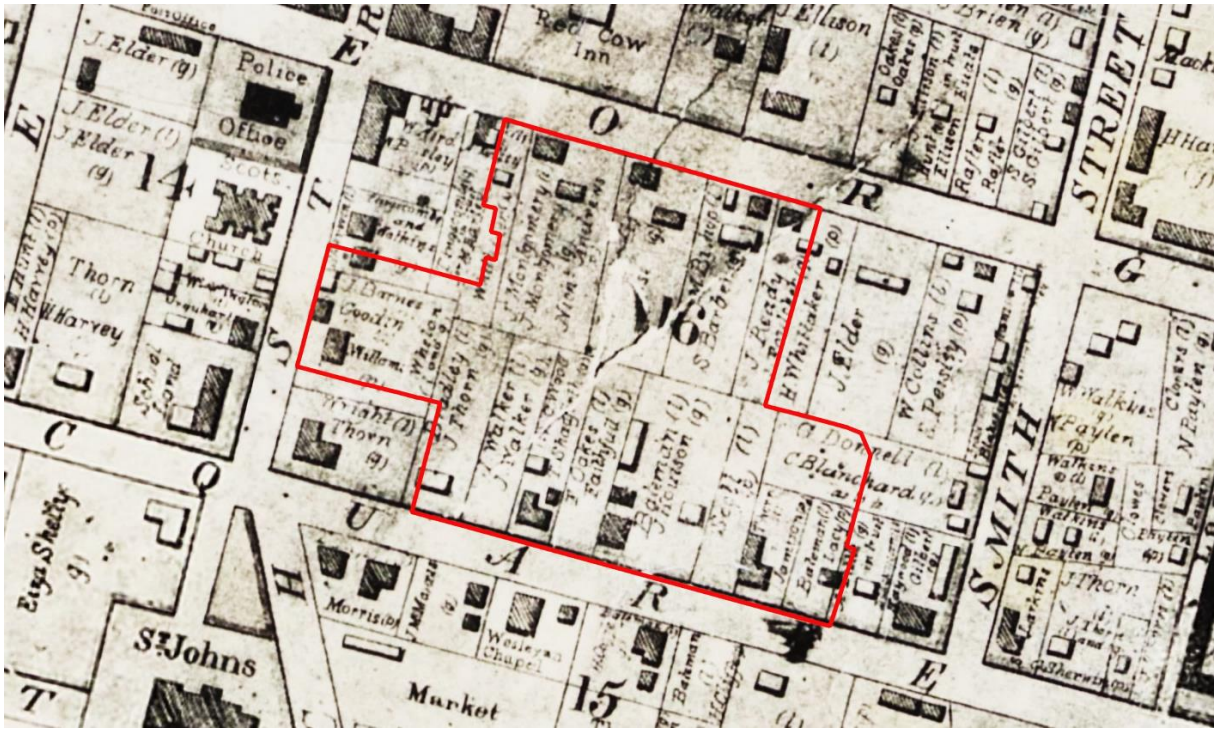

Figure 13: Detail of Brownrigg's 1844 plan of Parramatta, showing the Parramatta metro station construction site outlined in red

2.1.3 Late nineteenth-century commercial development, 1850–1900

During the late nineteenth century, brick commercial buildings were constructed along Church Street, predominantly mercantile rather than industrial. Such premises included tailors, chemists, drapers and tobacconists. This development can be seen in a comparison of Brownrigg's 1844 plan (Figure 13) and the 1895 detail of Parramatta plan (Figure 14). This 1895 plan also indicates that there were a number of outbuildings within the Parramatta metro station construction site; the existing structure at 220 Church Street may have been built at this time. Mercantile and industrial structures with outbuildings were also constructed along George Street during the same period. Such premises included blacksmiths and pawnbrokers, while by 1884 the Victoria Theatre operated at approximately 37–43 George Street.

In 1860 the railway was extended from Parramatta Junction (now Granville) to the town of Parramatta, changing the focus of commercial buildings in the area from George Street to Church Street. A tramway was also established down Windsor Road and Church Street but was removed by the mid-twentieth century.

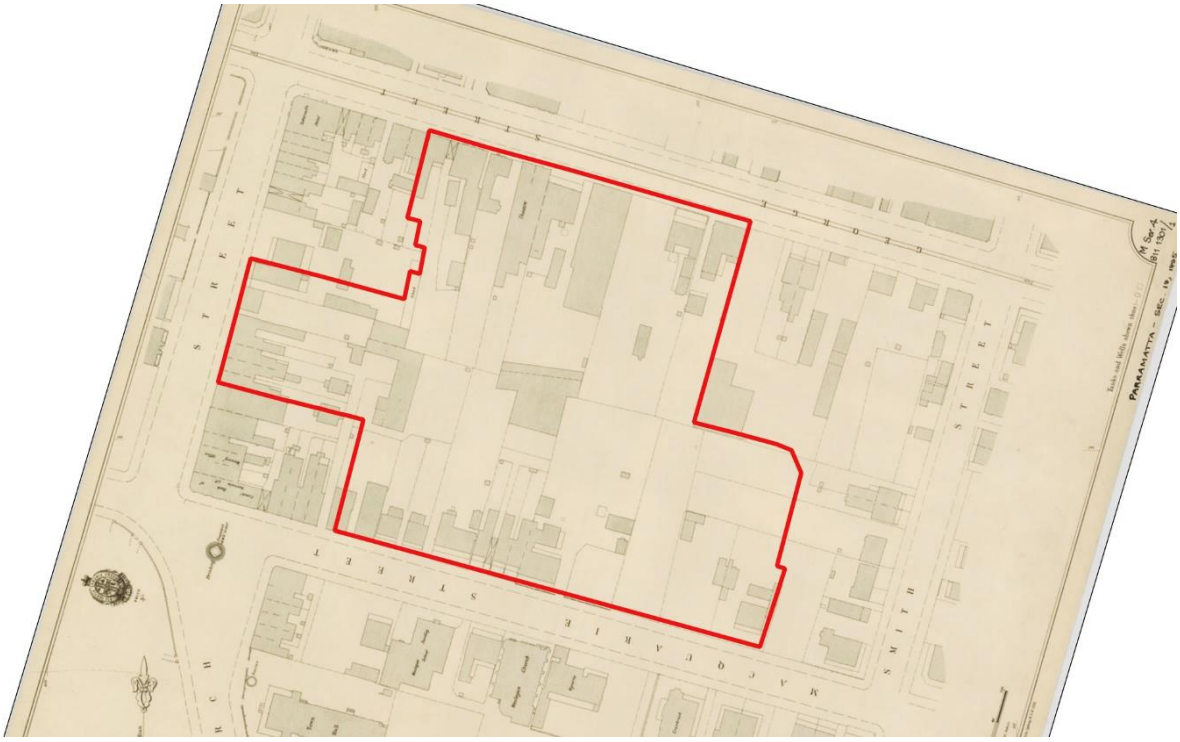

Figure 14: Detail of Parramatta Map Sheet No. 18, 1895 showing the Parramatta metro station construction site outlined in red[43]

2.1.4 Twentieth century Parramatta, 1900–present

At the Macquarie Street portion of the Parramatta metro station construction site, commercial premises with outbuildings were erected during the late nineteenth century. Their tenants included auctioneers, dressmakers and bootmakers. Horwood Place also contained a number of outbuildings associated with the newly developed commercial premises along George and Macquarie Streets.

The turn of the twentieth century saw the construction of several new buildings within the Parramatta metro station construction site. Many of the rear yards associated with the commercial structures fronting Church, George and Macquarie Streets remained open until the c1980s development of Horwood Place. A comparison of aerial imagery (Figure 15 to Figure 18) with Google Earth shows that the site underwent frequent commercial redevelopment, gradually replacing the mid-nineteenth century structures (Figure 17). During the second half of the twentieth century, the Parramatta CBD developed into the modern commercial precinct that is seen today.

[43] Author unknown, 1895. 'Parramatta Sheet No. 18'. Accessed 8 April 2019, http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?embedded=true&toolbar=false&dps_pid=IE3741194

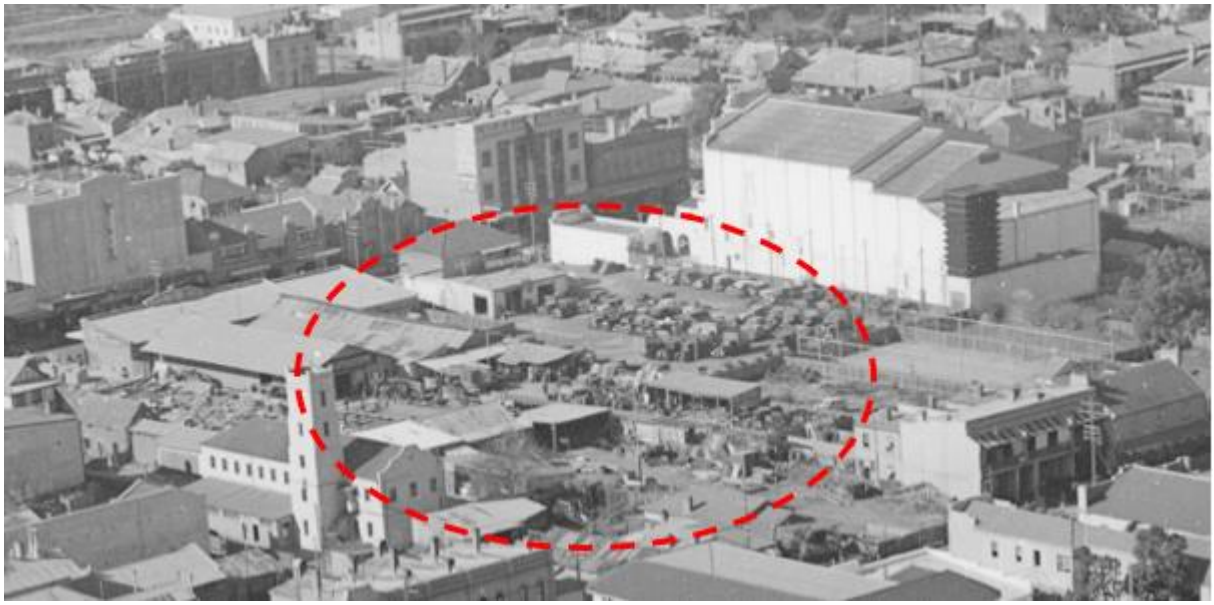

Figure 15: Detail of aerial photograph of Parramatta, c1935, showing the Parramatta metro station construction site (circled in red) adjacent to the Roxy Theatre (right) [44]

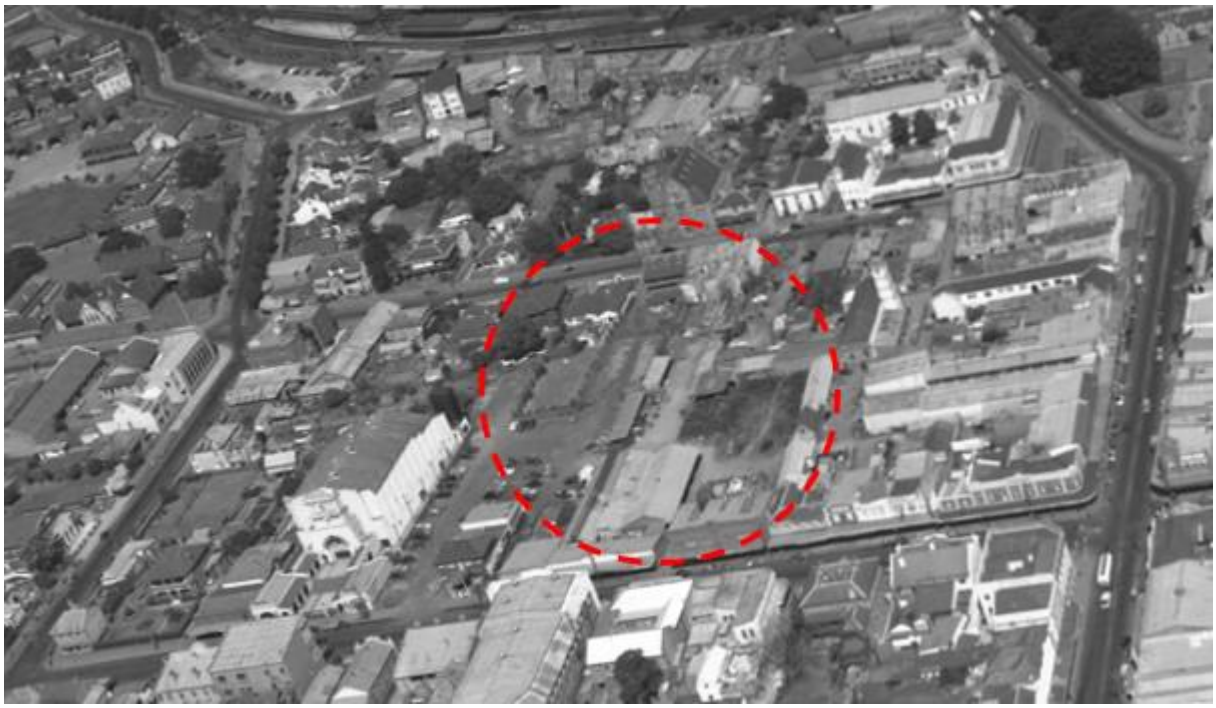

Figure 16: Detail of aerial photograph of Parramatta, c1920–60, showing the Parramatta metro station construction site (circled in red) bounded by the Roxy Theatre (left), George Street (foreground) and Macquarie Street (background) [45]

[44] Edward William Searle, c1920-1955. 'Aerial view of St Johns Church Parramatta'. Accessed online 5 July, https://nla.gov.au/nla.obj-141919607/view
[45] Hurley Frank, c1910-1962. 'Aerial photograph of Parramatta'. Accessed online 5 July 2019, https://nla.gov.au/nla.obj-160018036/view

Figure 17: 1943 aerial imagery, showing the Parramatta metro station construction site outlined in red[46]

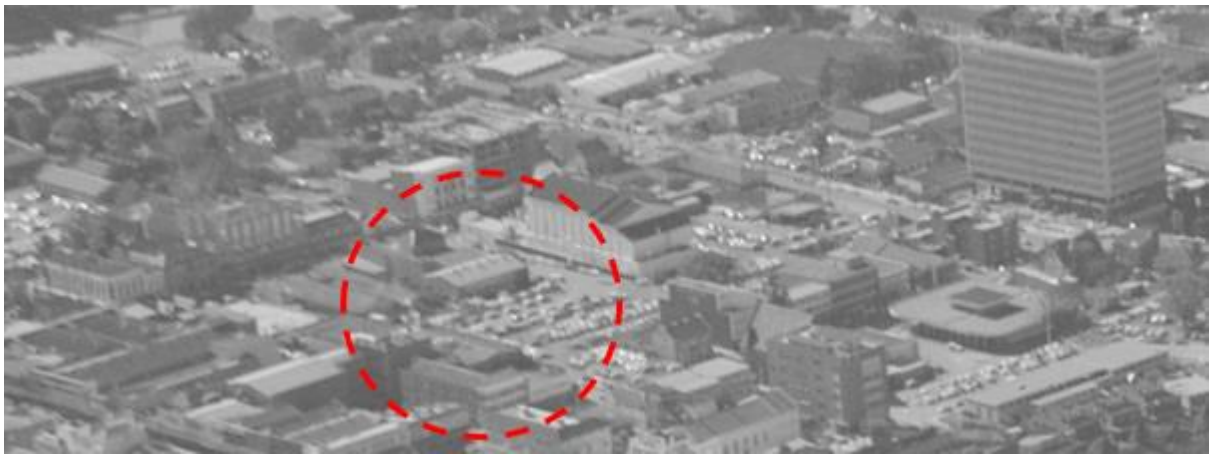

Figure 18: Detail of aerial view of Parramatta, 1970, showing the approximate location of the Parramatta metro station construction site circled in red[47]

2.2 Previous archaeological studies

Archaeological investigations have taken place within the Parramatta CBD area since the 1980s, with many sites reported since that time. This section does not discuss all archaeological programs conducted in the Parramatta CBD area, but instead focusses on those excavations which are either close to the Parramatta metro station construction site, or that have identified archaeological remains similar to those predicted to be located in this current assessment. These investigations provide

[46] Sixmaps 2019, '1943 aerial imagery'. Accessed online 8 April 2019, https://maps.six.nsw.gov.au/
[47] Milton Kent, 1970. 'Aerial views of Darlinghurst, Kingsgrove, Parramatta'. Accessed online 5 July 2019, http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?embedded=true&toolbar=false&dps_pid=IE8809740&_ga=2.47889698.483110839.1561942794-1916469023.1561336942

insight into the types, frequency and intactness of archaeological remains which may be present within the Parramatta metro station construction site.

2.2.1 Archaeological Zoning Plan of Parramatta (AZP)[48]

Historical and archival research conducted in the 1990s was used to prepare a zoning plan of Parramatta to guide future archaeological assessment and investigation. As part of this zoning plan, early historical plans were redrawn for clarity and inventory numbers assigned for much of Parramatta where former structures were suspected to be located.

The AZP provides six archaeological inventory listings within the current Parramatta metro station construction site. All but one of these inventory listings indicate that convict huts were present on the site from the 1790s until at least the 1820s (and possibly longer). These inventory listings are all considered of high significance; however, a detailed understanding of modern ground disturbance is not provided in the AZP.

2.2.2 Convict Hut excavation, Parramatta, 1985[49]

In 1985, an excavation was undertaken in response to the intended construction of the Commonwealth Offices by Leighton Contractors, alongside the erection of the Law Courts building by the then Department of Housing. Historical research and trial testing indicated that one of the four convict huts originally constructed on this large site was likely to have survived. This prospect was confirmed during excavation. It revealed a convict hut on sandstock brick footings, with a large rectangular structure situated directly behind it, believed to have added between 1790 and 1820. Evidence of repairs made on the structure suggested its ongoing use.

2.2.3 'The Babes in the Wood' site, Parramatta, 1989[50]

'The Babes in the Wood' archaeological excavation was undertaken in 1989 at the site of the former Prospect Electricity Staff Car Park, prior to the site's redevelopment. The site is located on the south-eastern corner of Smith and George Streets, Parramatta.

The archaeological excavation delivered many finds, including the site of the Babes in the Wood Hotel (c1810s–80s); the site of a convict hut (c1790s), the second to be excavated within Parramatta; and evidence of later subdivision and development. In addition, the excavation revealed that the alignment of George Street has remained the same since 1790. As a result, the positioning of convict huts can be plotted using a method of extrapolation from historical measurements of the town layout and allotments. One of the most significant findings was the recognition of an introduced soil type (c1840 onwards), either deposited by wind or water, indicating the degradation of the local environment as a result of clearance, agriculture and colonial settlement.

The excavation of the convict hut showed evidence of structural modification, barrel pits and a cellar. In addition, the artefact assemblage offered insights into the living conditions of convicts and the early development of Parramatta, which was very dense from the c1810s onwards. The barrel pits and

[48] Higginbotham, Edward A. K & Johnson, Paul A. (Paul Alan), Architectural historian & New South Wales. Department of Planning (1991). *The future of Parramatta's past : an archaeological zoning plan : 1788 to 1844*. Dept. of Planning, Sydney

[49] Higginbotham, E. (1985) George Street, Parramatta, 1985: Report on the Archaeological Excavation o/Buildings Associated with the Early Township, 1790 to c. 1820s, for the Commonwealth Department of Housing and construction and Leighton Contractors

[50] Edward Higginbotham, 1990. *The Babes in the Wood, Parramatta: Report on the archaeological excavation of the former Prospect Electricity Staff Car Park.* Prospect County Council, Haberfield.

cellar provided evidence of a dairy, while pollen analysis and the artefact assemblage suggested that other horticultural activities likely occurred in the vicinity.

2.2.4 Telephone Exchange, 21A George Street, Parramatta, 1992[51]

Excavations were undertaken in 1992 at 21A George Street, Parramatta. They revealed the historic settlement of the site prior to the excavation of the cable trench between George Street and the new Telephone Exchange, fronting Marsden Street, Parramatta.

Archaeological features included post holes and pits interpreted as forming the walls of a convict hut; shallow pits, which were most likely rubbish pits; the presence of outbuildings; a well and associated backfill; remains of a cottage constructed between 1836–44 and associated demolition remains; and a large artefact assemblage.

2.2.5 The New Blood Bank, Parramatta Hospital, George Street, Parramatta, 1993[52]

Excavations were undertaken in 1993 as part of the redevelopment of part of Parramatta Hospital for a new Blood Bank. These excavations made a significant contribution to the knowledge of the eighteenth- and early nineteenth-century development of Parramatta. Archaeological features included the remains of a convict hut and an archaeological assemblage. In addition, the site revealed that the convict hut underwent at least four stages of repair, rebuilding or reconstruction, illustrating a slow adaption to building techniques and styles more suitable to the climate and local environment.

2.2.6 Parramatta Hospital, Parramatta, 1990[53]

An archaeological potential assessment was undertaken of the Parramatta Hospital site to determine archaeological potential prior to redevelopment. The site promised to contribute to many research themes in historical archaeology, including the historic sequence of development in this part of Parramatta and life within the early township.

The report found that potential archaeological finds may include the remains of the hospital site, which is the oldest continuously occupied for its purpose in Australia; remains of town allotments associated with early convict and emancipist occupation; remains of Brislington town house; remains of the Emu Brewery – the earliest privately owned brewery in Parramatta; and remains associated with the Aboriginal occupation of the area.

2.2.7 153 Macquarie Street, Parramatta, 2015–16 [54]

Excavations were undertaken at the corner of 153 Macquarie Street and Leigh Place, the former Australia Post Office site, over 2015–16. These excavations revealed a series of historical construction phases, including the remains of three brick houses fronting Macquarie Street, which were built in the 1880s with associated cesspits and outbuildings. Archaeological excavations also revealed stables with brick drainage system associated with the White Horse Inn, and the remains of a house thought to have been in place from 1810, which included fireplaces, occupation deposits, a large timber base-plate, postholes and sandstone footings. Its associated yard deposits accompanied a brick-lined well and brick sump draining towards the Town Drain. The dig also identified sections of

[51] Edward Higginbotham, 1992. *Report on the Archaeological Excavations in advance of cable laying on the site of the Telephone Exchange, 21A George Street, Parramatta, NSW, 1992.* Telecom Australia, Sydney.
[52] Edward Higginbotham, 1994. *Report on the Archaeological Excavation of the site of the new Blood Bank, Parramatta Hospital, George Street, Parramatta.* NSW Public Works, Health Development, Sydney.
[53] Edward Higginbotham, 1990. *Historical and Archaeological Analysis of Parramatta Hospital, Parramatta.* The Department of Public Works, NSW.
[54] Casey & Lowe, 2016. *153 Macquarie Street, Parramatta.* Parramatta City Council, Sydney.

this drain, in the form of a large sandstone box drain running across Civic Place, and evidence for early agricultural use of the site. Taking the form of hoe marks and extensive plough lines crossing historic lot boundaries, these traces probably date to the late eighteenth century or early nineteenth century.

2.2.8 Parramatta Children's Court, corner of George & O'Connell Streets, Parramatta, 2004[55]

Excavations were undertaken in 2004 at the Parramatta Children's Court. This work included the in-situ conservation of the archaeological remains of two convict huts within a Conservation Zone extending east-west across the site and into the O'Connell Street footpath.

The excavations revealed extensive occupation of the site, with remains including a storage cellar with artefacts believed to be linked to emancipated convict Samuel Larkin. These finds encompassed early locally-made pottery, early clay roofing tiles, gun flint, a French or American cowboy-style spur and Chinese export porcelain. Another find was a series of pits containing artefacts contemporary to the storage cellar, plus the remains of an 1830s timber masonry house. The site also boasted the remains of the Emu Brewery and associated cellar, which was backfilled with demolition material and quantities of artefacts. A drain or sump from the floor of the cellar emptied into the eastern creek line, while a mortar bedding and robbed walls outlined the layout of the brewery. Additional features included a well with quantities of artefacts and the remains of an 1880s terrace house built with re-used sandstock bricks.

The excavation provided an insight into emancipated convict life, from convict existence to government employment. Interpretation of the assemblage revealed that Parramatta's convict period was fleeting, disappearing soon after Governor Phillip's departure in 1792.

2.2.9 95–101 George Street, Parramatta, 2005[56]

An archaeological assessment of 95–101 George Street Parramatta was undertaken in 2005, prior to the commercial development of the site. At the time of assessment, the site was vacant, however a number of later nineteenth-century and twentieth-century buildings and yard spaces had occupied the site shortly beforehand.

The assessment found that the site had the potential to include soil profiles containing pollens and micro-flora associated with settlement landscape and the impact of European settlement, plus evidence of Aboriginal occupation. It might also suggest the original form and width of George Street over 1790–1823. The site potentially contained the remnants of two convict huts and their associated garden allotments, wells and cesspits, and evidence of the expansion of one of the huts into a public house or hotel and associated outbuildings. Further potential included traces of the hotel's demolition and replacement with a residential building, and the construction of a timber store or warehouse and evidence of c1884 'Hampstead' House and associated outbuildings. Additional prospects included commercial buildings constructed during the latter part of the nineteenth century, evidence of extensive modification and structure erection at 101 George Street during the 1930s – including outbuildings behind Hampstead House – and information regarding the impact of the 1950s NRMA Building on previous structures and stratigraphy. Services likely to be found on the site included early nineteenth-century timber or brick drains and wells, later nineteenth-century ceramic piped services and twentieth-century cables, in addition to hard landscape components such as paths and fence

[55] Casey & Lowe, 2006. *Archaeological Investigation: Parramatta Children's Court cnr George & O'Connell Streets, Parramatta.* NSW Department of Commerce, Sydney.
[56] Wendy Thorpe, 2005. *Archaeological Assessment: 95-101 George Street, Parramatta.* Leighton Properties, Sydney.; Austral Archaeology Pty Ltd., 2007. *Archaeological Salvage Excavations: 95-101 George Street, Parramatta, NSW.* Unpublished report for Cultural Resources Management on behalf of Leighton Properties.

lines. Lastly, the assessment found that there is high potential for an extensive artefact assemblage deriving from all periods of European occupation.

In 2007, Austral Archaeology undertook salvage excavation at the site. The excavation revealed a total of 601 whole and broken flakes, noting that the raw materials would have been sourced both locally (Parramatta River) and from other regions. The investigation concluded that much of the artefact production had occurred *in situ.* The historic ground disturbance had left much of the archaeological deposit intact and the artefacts were found within the sandy matrix of the sand terrace that lay below the phases of historic occupation.

2.2.10 143–169 Macquarie Street (One Parramatta Square), Parramatta, 2014–15[57]

Archaeological monitoring and salvage excavation were undertaken at 143 and 169 Macquarie Street (One PSQ) over 2014–15. One PSQ is part of Parramatta Square, formerly known as Civic Place, Parramatta.

The excavations identified several phases of European site occupation, as well as Aboriginal artefacts. Archaeological remains included structural remains of the pre-1850s White Horse Inn stables, plus an early nineteenth-century brick and sandstone well and drain, possibly associated with William Mahon, an emancipist who first settled on the site in 1823. Also recorded were a number of late nineteenth- and early twentieth-century buildings that once stood along the Smith Street frontage, notably 9–17 Smith Street; and an assemblage of 2795 artefacts.

2.2.11 25 Smith Street and 76-78 Macquarie Street, Parramatta, 2003[58]

Archaeological excavation was undertaken at 25 Smith Street and 76–78 Macquarie Street in 2003. The excavation revealed a number of features including an 1840s sandstone box drain, which provided insights into construction methods and subsequent modifications. Evidence of a house on allotment 74 (76 Macquarie Street) was revealed. The historical investigation revealed that this property was originally under land ownership by Robert Bateman, offering greater understanding of career paths and lifestyles during the nineteenth century. It also helped explain later occupation and reasons for the eventual vacation of the site. In addition, an artefact assemblage was uncovered dating from c1830–80. Lastly, a house identified on allotment 72 (northern portion of 78 Macquarie Street) allowed for detailed dating, functional and spatial analysis of the structure.

2.2.12 41–59 George Street, Parramatta, 1996[59]

In 1991, 41–59 George Street was identified as having archaeological potential within the AZP (Parramatta Archaeological Management Unit (PAMU) 2873-2874). Excavations in 1996 identified underfloor deposits within existing buildings (43–47 George Street), which had been formerly disturbed or destroyed during previous works during the 1920s.[60] The PAMU 2873 also identified that the site also offers potential for archaeological features and deposits to remain cut into the B soil horizon, although the rear yard at 41 George Street has been horizontally truncated to an extent which has removed the nineteenth century deposits. There is also potential for the earliest archaeological remains of European activity to be present at the site. At 49–53 George Street, a strip

[57] GML Heritage, 2015. *143-169 Macquarie Street (One PSQ), Parramatta: Historical Archaeological Excavation Report.* Leighton Properties Ltd, Sydney.
[58] Edward Higginbotham, 2004. *Report of the Archaeological Excavations, 25 Smith and 76-78 Macquarie Street, Parramatta.* Kann Finch Architects, Haberfield.
[59] Office of Environment and Heritage, 2000. 'Parramatta Archaeological Management Unit 2873'. Accessed 29 May 2019, https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2242873
[60] Office of Environment and Heritage, 2000. 'Parramatta Archaeological Management Unit 2873'. Accessed 29 May 2019, https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2242873

along the street frontage was truncated, most likely during the construction of the Walton's Building during the 1950s. Archaeological deposits relating to 53 George Street have been cut in half by the construction of the Parramall, while later stormwater drains would have also impacted the archaeological potential of the site. It was concluded that the construction of the Officeworks Superstore at the site in 1996 would have removed any existing archaeological remains.

2.2.13 Brick Barrel Drain, 126–138 George Street Parramatta, 1981[61]

Excavations were undertaken in 1981 at 126–138 George Street, Parramatta, revealing sections of a brick barrel drain constructed between 1822–28.[62] The drain system was assessed to have been created by at least two phases of construction, serving to disperse stormwater from part of Parramatta, which was otherwise poorly drained at the time. The drain commences near the junction of Church and Darcey Streets, proceeding in a north-easterly direction, crossing Macquarie Street before taking an easterly direction across Smith Street and Barrack Lane, then turning north across George Street, finally emptying into the Parramatta River.

The drain was constructed of a cylinder of sandstock brickwork with lime mortar, two courses of 200 millimetre brick with an internal diameter ranging from 1200–1300 millimetres. The drain has undergone a number of modifications, particularly during the c1930s which saw the introduction of concrete capping to sections of the drain. Excavations identified modern silt deposits which had not been removed by stormwater in restricted areas.

The excavation has provided insight into drainage, an aspect of early town planning that is often overlooked. The drainage system is closely linked to the topography and street plan of Parramatta, which is located within a shallow river valley between low rounded hills. Stormwater from Church Street would have been rapidly carried away, improving the neighbouring land. The swamps and ponds within the area would have been drained or flow minimised, while Lower George Street would have seen improved drainage.

2.3 Parramatta Historical Archaeological Landscape Management Study (PHALMS) listings and discussion

The Parramatta metro station construction site is located across six listed Parramatta Archaeological Management Units (PAMUs), identified in the Parramatta Historical Archaeological Landscape Management Study (PHALMS)[63] which are discussed in the subsections below. The PHALMS was launched in 2000 by the NSW Government with the overall objective of seeing Parramatta's significant archaeological heritage incorporated into plans for the city's future development.

The Archaeological Management Plans (AMPs) have largely replaced Archaeological Zoning Plans which were developed in the c1990s. These zoning plans had an emphasis on mapping gradings or 'zones' of historical archaeological sensitivity. In general, the AMPs provide a more comprehensive overview of surviving remains, including significance, than AZPs.

AMPs doe no have independent legal status but are an advisory tool and early warning mechanism designed to assist those with an obligation to responsibly manage archaeological remains. As such, the AMPs can be used in conjunction with local planning instruments such as Local Environmental Plans and Development Control Plans.

[61] Edward Higginbotham, 1983. *The Excavation of a Brick Barrel-drain at Parramatta.* Higginbotham, Haberfield.
[62] Edward Higginbotham, 1983. *The Excavation of a Brick Barrel-drain at Parramatta.* Higginbotham, Haberfield.
[63] Godden Mackay Logan Heritage Consultants, 2000. *Parramatta Historical Archaeological Landscape Management Study.* Report to NSW Heritage Office.

The location of the PAMUs is illustrated in Figure 19.

2.3.1 PAMU 2873

PAMU 2873 is located in the north-western portion of the Parramatta metro station construction site. It is described as follows: [64]

> *This AMU has no current archaeological research potential.*
>
> *This area was part of the early Rose Hill settlement and the commercial centre of Parramatta through the convict and colonial periods to the present day.*
>
> *The physical archaeological evidence within this area is unlikely to include features which have potential to yield information relating to major historic themes and current research questions.*
>
> *Archaeological evidence at this site is likely to have been totally removed.*
>
> *This AMU has no archaeological significance.*

The PAMU for this area is largely below the extant gym building at 41–59 George Street. The designation of no archaeological potential is based on the results of archaeological monitoring conducted during the construction of the existing building.

However, the degree of disturbance within this building footprint may not be as widespread across the site as the PAMU suggests. The archaeological potential for remains underneath this building footprint have been assessed as Nil to Low, but there remains the possibility that small localised areas may still be intact.

2.3.2 PAMU 3075

PAMU 3075 is located across the majority of the Parramatta metro station construction site, with the exception of the south-eastern portion and a small area on George Street: [65]

> *This AMU has exceptional archaeological research potential.*
>
> *This area was part of the early Rose Hill settlement and the commercial centre of Parramatta through the convict and colonial periods to the present day.*
>
> *The physical archaeological evidence within this area may include built landforms, structural features, intact subfloor deposits, open deposits and scatters, ecological samples and individual artefacts which have potential to yield information relating to major historic themes including Commerce, Convicts, Cultural Sites, Government and Administration, Housing, Land Tenure, Law and Order, Labour and Townships.*
>
> *Archaeological evidence at this site is likely to be subject to minor disturbance.*

[64] Godden Mackay Logan, 2001. *Parramatta Archaeological Management Unit 2873*, accessed online at: https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2242873
[65] Godden Mackay Logan, 2001. *Parramatta Archaeological Management Unit 3075*, accessed online at: https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2243075

This AMU is of State significance.

This archaeological assessment corroborates the statement of significance from the PAMU description. The PAMU entry also recommends archaeological excavation associated with any ground disturbing work in this area, which this assessment also recommends.

2.3.3 PAMU 3177

PAMU 3177 is located in within the City Centre car park, and is described as follows: [66]

This AMU has no current archaeological research potential.

This area was part of the early Rose Hill settlement and the commercial centre of Parramatta through the convict and colonial periods to the present day. The Roxy Cinema was constructed within the area in 1930 and the rest of the area was redeveloped as a multi-storey carpark in the 1980s.

The physical archaeological evidence within this area is unlikely to include features which have potential to yield information relating to major historic themes and current research questions.

Archaeological evidence at this site is likely to be totally removed.

This AMU has no archaeological significance.

This archaeological assessment has not assumed that disturbance caused by the construction of City Centre car park at Horwood Place would have entirely removed deep deposits (such as cesspits or wells). Furthermore, buried historical soils may still be present. The archaeological potential for remains has therefore been categorised in this report as Nil to Low, with the possibility that small localised areas may still be intact.

2.3.4 PAMU 3178

PAMU 3178 is located in Macquarie Lane and extends south through to Macquarie Street, on the south-eastern edge of the Parramatta metro station construction site: [67]

This AMU has high archaeological research potential.

This area was part of the early Rose Hill settlement and the commercial centre of Parramatta through the convict and colonial periods to the present day.

The physical archaeological evidence within this area may include built landforms, structural features, intact subfloor deposits, open deposits and scatters, ecological samples and individual artefacts which have potential to yield information relating to major historic themes including Commerce, Convicts, Cultural Sites,

[66] Godden Mackay Logan, 2001. *Parramatta Archaeological Management Unit 3177*, accessed online at: https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2243177
[67] Godden Mackay Logan, 2001. *Parramatta Archaeological Management Unit 3178*, accessed online at: https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2243178

Government and Administration, Housing, Land Tenure, Law and Order and Persons.

Archaeological evidence at this site is likely to have been subject to minor disturbance.

This AMU is of State significance. Archaeological evidence at this site is likely to be subject to minor disturbance.

This AMU is of State significance.

This archaeological assessment corroborates the statement of significance from the PAMU description. The PAMU entry also recommends archaeological excavation associated with any ground disturbing work in this area, which this assessment also recommends.

2.3.5 PAMU 3180

PAMU 3180 is located at 58–60 Macquarie Street, a multistorey commercial block which has basement levels: [68]

This AMU has no current archaeological research potential.

This area was part of the early Rose Hill settlement and the commercial centre of Parramatta through the convict and colonial periods to the present day.

The physical archaeological evidence within this area is unlikely to include features which have potential to yield information relating to major historic themes and current research questions.

Archaeological evidence at this site is likely to be totally removed.

This AMU has no archaeological significance.

This archaeological assessment provisionally corroborates the statement of significance from the PAMU description, pending confirmation of final building basement depths which, if shallower than expected, may not have impacted deep archaeological deposits (wells, privies or cisterns) entirely.

2.3.6 PAMU 3181

PAMU 3181 is located at 70 Macquarie Street and 72 Macquarie Street, on the southern margin of the Parramatta metro station construction site. The 70 Macquarie Street building consists of two structures, with the street-facing structure a modern multistorey commercial building (with likely basements), however the rear of the property is an early twentieth-century two-storey building which

[68] Godden Mackay Logan, 2001. *Parramatta Archaeological Management Unit 3180*, accessed online at: https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID= 2243180

may not have basement levels. The building at 72 Macquarie Street is a multistorey commercial building with likely basements. Its assessment is as follows: [69]

This AMU has no current archaeological research potential.

This area was part of the early Rose Hill settlement and the commercial centre of Parramatta through the convict and colonial periods to the present day.

The physical archaeological evidence within this area is unlikely to include features which have potential to yield information relating to major historic themes and current research questions.

Archaeological evidence at this site is likely to be totally removed.

This AMU has no archaeological significance.

This archaeological assessment supports the statement of significance from the PAMU description for the property at 72 Macquarie Street and the street-facing building at 70 Macquarie Street. The early twentieth-century building behind the street frontage at 70 Macquarie Street is not likely to have had basement excavation, and archaeological features may be preserved below this building. Pending detailed investigation on the depth and extent of basement levels at these properties, it is likely that deeper or isolated archaeological remains are preserved within the boundaries of this PAMU.

[69] Godden Mackay Logan, 2001. *Parramatta Archaeological Management Unit 3181*, accessed online at: https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID= 2243181

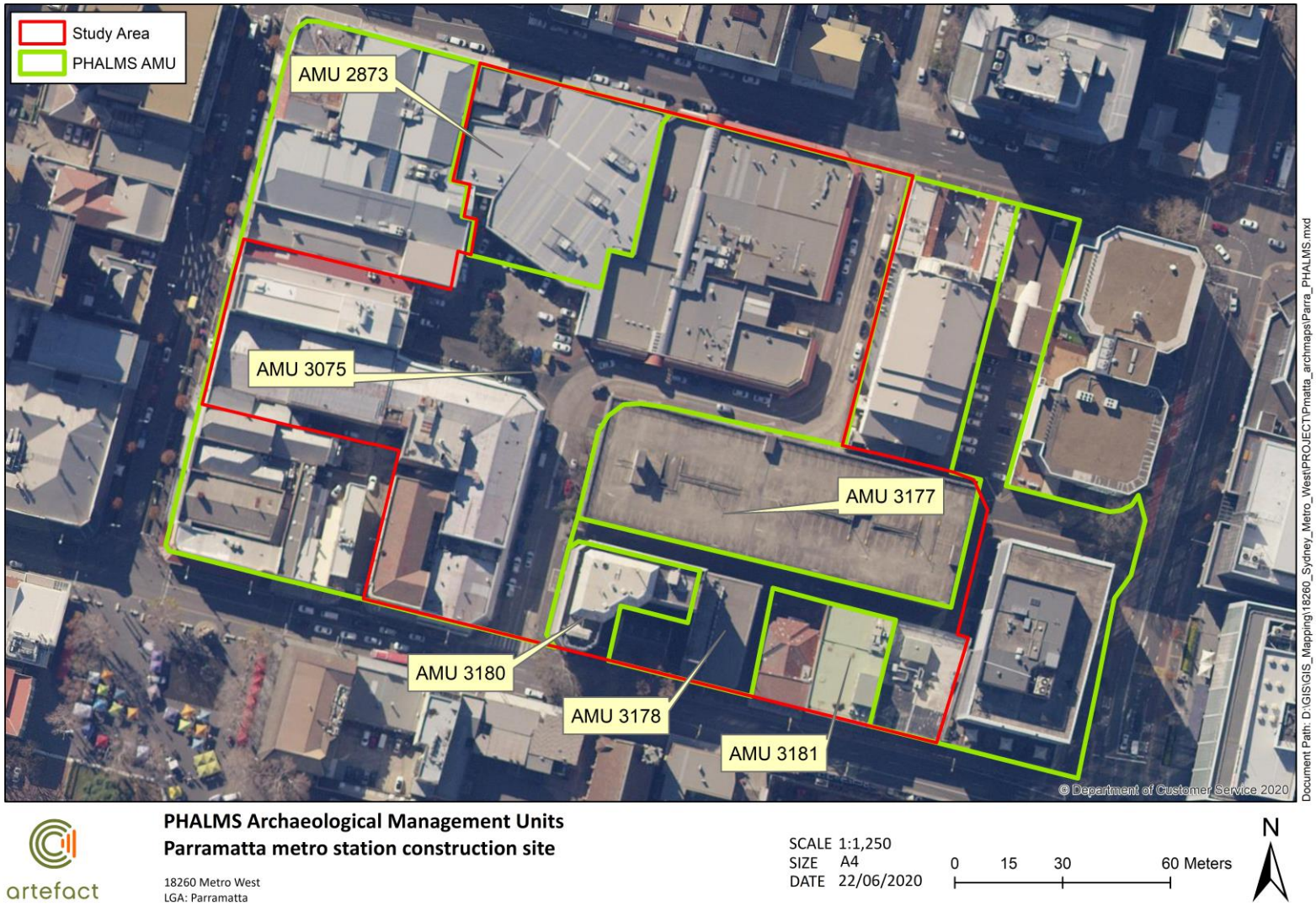

Figure 19: PHALMS AMU within the Parramatta metro station construction site

2.4 Land use summary

For this assessment, the historical development of the Parramatta metro station construction site has been divided into the following historical phases of activity.

- Phase 1 (1788–1821): Convict settlement at Parramatta. The Parramatta metro station construction site overlies an area where Governor Phillip laid out ordered rows of early timber housing, initially for convict accommodation for Rose Hill colony. Historical records describe small gardens located in the yards of these huts, which were used to supplement food supplies for individual convict families.
- Phase 2 (1821–50): Growth of the Parramatta township. The increase in free settlement in Parramatta led to the replacement of early timber and itinerant structures with brick and sandstone residences and workshops as the township developed.
- Phase 3 (1850–1900): Late nineteenth-century commercial development. The Parramatta metro station construction site developed into a commercial precinct at the centre of Parramatta.
- Phase 4 (1900–Present): Twentieth-century Parramatta. The Parramatta metro station construction site underwent frequent development and redevelopment in accordance with commercial and demographic changes, including the proclamation of the City of Parramatta in 1938.

2.5 Previous ground disturbance

The Parramatta metro station construction site has been continuously developed as an urban and commercial centre since the founding of the British colony in 1788. Sequential phases of building construction would not have entirely removed archaeological resources. Some sites developed over earlier sites with minimal, if any, vertical truncation of archaeological deposits.

Typically, twentieth-century construction and development have had a more severe subsurface impact than nineteenth-century construction, largely due to basement excavation or excavation required for laying deep subgrades for heavier building construction. Utility service installations are also present within the Parramatta metro station construction site. These include a number of electrical substations visibly present within the Horwood Place area, plus likely extensive high- and low-voltage electrical mains below ground. Road construction and resurfacing, with thick concrete and potentially deep subgrades, would also have impacted any remaining archaeological resources.

This assessment has been prepared without access to detailed service or building basement data. As such, the following discussion is inferred entirely from historical plans and reports, supplemented by site inspection of publicly accessible areas.

Several buildings along Church Street are Victorian-era commercial buildings which have been renovated for modern use, and it is expected that any archaeological remains below these structures would be in a relatively good condition. Infill redevelopment on Church Street may have modern basements which would have caused larger localised impacts to any present archaeological resources.

Existing structures on Macquarie Street to the west of Horwood Place include a post-war three-storey office building and a late twentieth-century single-storey shopping strip. No basement structures were

immediately visible for these buildings, although this assumption would need to be confirmed during archaeological investigation.

Structures on Macquarie Street to the east of Horwood Place are twentieth-century commercial buildings, with the exception of *Kia Ora* at 62–64 Macquarie Street. *Kia Ora* was originally constructed in 1841, although earlier structures were noted on the site from 1823. Development for 60 Macquarie Street has encroached over the former rear yards of the *Kia Ora* property, which is likely to have impacted shallow archaeological remains in any surviving basement levels.

The two-storey structure at 70 Macquarie Street was originally constructed in the early twentieth century, with a new building on the Macquarie Street frontage built in the 1950s. It is considered unlikely that the original building has significant basement levels. Office buildings at 68, 72 and 74 Macquarie Street may have subfloor levels which would have impacted archaeological remains. Macquarie Lane, directly behind these buildings, does not show evidence of deep ground disturbance beyond service installation and road construction. A small laneway to the west of 70 Macquarie Street is also likely to be minimally disturbed.

Structures on George Street include the Victorian-era sandstone building at 45 George Street (which would not be demolished for Stage 1), as well as a two-storey gym complex and single-storey shopping mall. Archaeological monitoring of excavation conducted for the construction of the gym complex in the 1990s indicated that earlier construction had removed all previous archaeological remains in this location.[70] The single-storey shopping mall does not appear to have any significant basements.

The lowest storey of the City Centre car park is on the same elevation as the local ground level, with no subsurface level present. However, construction for the car park would have likely involved ground excavation for installation of a suitable subgrade as well as for laying concrete foundations and supports. While this construction has likely resulted in a high degree of ground disturbance, it is possible that small areas of undisturbed archaeological remains may be present in localised areas underneath the building footprint. This possibility would need to be confirmed with further archaeological research and ground truthing.

The construction of the modern roadway for Horwood Place and car parking locations in the rear yards of Church and George Streets may not have resulted in widespread subsurface impacts. It is possible that archaeological remains within this area have been preserved, albeit with some truncation from road construction and utility services within the road corridor.

2.6 Assessment of archaeological potential

The historical development of the Parramatta metro station construction site is spatially and temporally complex. The assessment of archaeological potential within the Parramatta metro station construction site has been divided into discrete phases for clarity. As such, each specific land use phase is discussed and individually in the subsections below.

2.6.1 Phase 1 (1788–1821): Contact period and early convict settlement

Based on the history of the site and historical ground disturbance that has occurred within the Parramatta metro station construction site, a summary of predicted archaeological remains dating from the earliest phase of settlement is outlined in Table 3. The locations of areas of archaeological potential are illustrated in Figure 20.

[70] Godden Mackay Logan, 2001. *Parramatta Archaeological Management Unit 2873*, accessed online at: https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2242873

Table 3: Predicted archaeological remains for Phase 1 (1788–1821) at the Parramatta metro station construction site

Site area	Site feature	Potential archaeological remains	Potential
	Contact archaeology	Aboriginal objects, stratigraphic relationships etc	**Low-moderate**
Church Street properties	Convict huts	Timber, wattle and daub convict hut accommodation was known to have been built along the Church Street frontage of the Parramatta metro station construction site. Archaeological remains relating to these early structures could include timber posts and postholes, beams and former earthen floor surfaces, fence and informal earthen or stone drains, cisterns / dumps etc. Artefactual material may include ceramic, glass, bone or metal deposits. Existing structures on Church Street have been developed and redeveloped since the late nineteenth century, apparently with limited basement excavation. This construction and reconstruction on the site has likely partially disturbed any significant deposits.	**Low – moderate**
	Convict hut yards and gardens	The areas surrounding the former convict huts were known to be utilised as small commercial gardens by their residents. Archaeological remains relating to this use could include timber posts and postholes, fence and informal earthen or stone drains, artefact material, Historic soil deposits associated with late eighteenth-century horticulture may also be present. Existing structures on Church Street have been developed and redeveloped since the late nineteenth century, with limited apparent basement excavation. This construction and reconstruction on the site has likely partially disturbed any significant deposits.	**Nil to Low**
George Street properties	Convict huts	Timber, wattle and daub convict hut accommodation was known to have been built along the George Street frontage of the Parramatta metro station construction site. Archaeological remains relating to these dwellings could include timber posts and postholes, beams and former earthen floor surfaces, fence and informal earthen or stone drains, Existing structures on George Street have been developed and redeveloped since the late nineteenth century, although archaeological investigation conducted during the construction of the current 41–59 George Street building did not identify any archaeological remains due to the degree of historical disturbance. However, remains situated below the shopping plaza at 61 George Street and in the northern entrance to Horwood Place are likely less disturbed, and significant deposits may be preserved in these locations.	**Low – moderate**
	Convict hut yards and gardens	The areas surrounding the former convict huts were known to be utilised as small commercial gardens by the convict residents. Archaeological remains relating to this use could include timber posts and postholes, fence and informal earthen or stone drains, palynological evidence and artefacts Historic soil deposits associated with late eighteenth-century horticulture may also be present. Existing structures on George Street have been developed and redeveloped since the late nineteenth century, although archaeological investigation conducted during the construction of the current 41–59 George Street building did not identify any	**Low**

Site area	Site feature	Potential archaeological remains	Potential
		archaeological remains due to the degree of historical disturbance. However, remains situated below the shopping plaza at 61 George Street and in the northern entrance to Horwood Place are likely less disturbed, and significant deposits may be preserved in these locations.	
Macquarie Street properties	Convict hut yards and gardens	Historic plans from the late eighteenth and early nineteenth centuries do not record any discrete convict huts located on the Macquarie Street frontage of the Parramatta metro station construction site. The area may have been in use as a garden or yard for other huts in the area during this time. Archaeological remains relating to this period could include timber posts and postholes, fence and informal earthen or stone drains, palynological evidence, artefacts etc. Historic soil deposits associated with late eighteenth-century horticulture may also be present. Structures were constructed and redeveloped in this area from the mid-nineteenth century through to the 1960s. Construction in this area has likely heavily impacted archaeological remains relating to this phase, with any remaining resources likely fragmentary or truncated, if present at all.	**Low**
Horwood Place road and City Centre car park	Convict huts	A single convict hut is recorded in the 1804 plan, situated on the northern side of what is now the City Centre car park. Archaeological remains relating to this residence could include timber posts and postholes, beams and former earthen floor surfaces, fence and informal earthen or stone drains, isolated ceramic, glass, bone, or metal deposits. This area was predominantly used as rear yards throughout most of the nineteenth and twentieth centuries. With the exception of the City Centre car park, this portion of the Parramatta metro station construction site is mostly hardstand road. Previous ground excavation has likely truncated or disturbed earlier archaeological deposits, although it is likely that more robust structural elements may remain intact below ground.	**Low – moderate**
	Convict hut yards and gardens	The areas surrounding the location of the former convict huts were known to be utilised as small commercial gardens by their residents. Archaeological remains relating to this use could include timber posts and postholes, fence and informal earthen or stone drains, isolated ceramic, glass, bone, or metal deposits. Historic soil deposits associated with late eighteenth-century horticulture may also be present. This area was predominantly used as rear yards throughout most of the nineteenth and twentieth centuries. With the exception of the City Centre car park, this portion of the Parramatta metro station construction site is mostly hardstand road. Previous ground excavation has likely truncated or disturbed earlier archaeological deposits, although it is likely that buried soil deposits are intact below ground.	**Low**

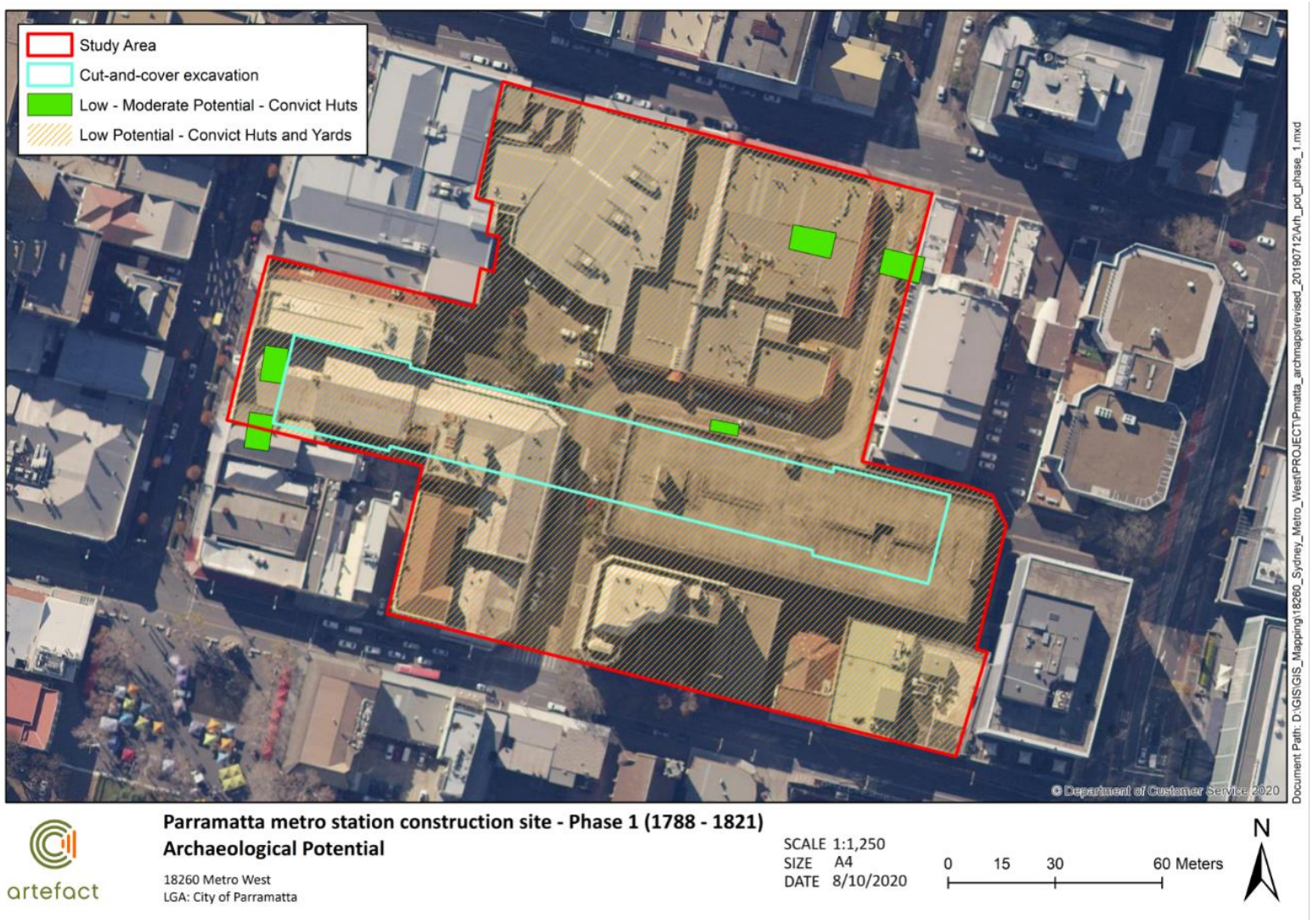

Figure 20: Areas of archaeological potential for Phase 1 (1788–1821) at the Parramatta metro station construction site. Convict hut locations for 1792 determined from Archaeological Zoning Plan figures

2.6.2 Phase 2 (1821–50): Growth of the Parramatta township

Based on the history of the site and historical ground disturbance that has occurred within the Parramatta metro station construction site, a summary of predicted archaeological remains for the second phase of Parramatta's development is outlined in Table 4. The locations of areas of archaeological potential are illustrated in Figure 21.

Table 4: Predicted archaeological remains for Phase 2 (1821–50) at the Parramatta metro station construction site

Site area	Site feature	Potential archaeological remains	Potential
Church Street properties	Convict huts and early residences	The replacement of former timber convict huts within the Parramatta metro station construction site occurred at some point from the 1820s onward. The 1844 survey of Parramatta indicates at least three structures, likely brick, were located within this portion of the Parramatta metro station construction site. Archaeological remains relating to these deposits could include timber posts and postholes, sandstock brick or stone footings, timber boards and intact underfloor deposits, fence and informal earthen or stone drains, Artefactual material may include ceramic, glass, bone or metal deposits. Existing structures on Church Street have been developed and redeveloped since the late nineteenth century, with limited apparent basement excavation. This construction and reconstruction on the site has likely at least partially disturbed any significant deposits.	**Low – moderate**
	Residential yards	The small horticultural plots which surrounded the convict huts in the late eighteenth century developed into residential and trades yards in the rear of the properties by the 1840s. Archaeological remains relating to these spaces could include yard surfaces, timber posts and postholes, fence and informal earthen or stone drains, isolated ceramic, glass, bone, or metal deposits. Cisterns, wells and privies are not noted on the 1844 Brownrigg plan. However, it is likely that outhouses would have been present at that time somewhere in the rear yards. Archaeological remains relating to former wells or privies could include stone- or brick-lined pits, containing deep artefactual (glass, ceramic, bone) occupation and refuse deposits, as well as soil and faecal remains of archaeological interest. The depth of these potential deposits also suggest that they could be preserved below later building and basement construction.	**Low**
George Street properties	Convict huts and early residences	The replacement of former timber convict huts within the Parramatta metro station construction site occurred at some point from the 1820s onward. The 1844 survey of Parramatta indicates at least three structures, likely brick, were located within this portion of the Parramatta metro station construction site. Archaeological remains relating to these deposits could include timber posts and postholes, sandstock brick or stone footings, timber boards and intact underfloor deposits, fence and informal earthen or stone drains, isolated ceramic, glass, bone, or metal deposits. Existing structures on George Street have been developed and redeveloped since the late nineteenth century, although archaeological investigation conducted during the construction of the current 41–59 George Street building did not identify any archaeological remains due to the degree of historical disturbance. However, remains situated below the shopping	**Low – moderate**

Site area	Site feature	Potential archaeological remains	Potential
		plaza at 61 George Street and in the northern entrance to Horwood Place are likely less disturbed, and significant deposits may be preserved in these locations.	
	Residential yards	The small horticultural plots which surrounded the convict huts in the late eighteenth century developed into residential and trades yards in the rear of the properties by the 1840s. Archaeological remains relating to these spaces could include yard surfaces, timber posts and postholes, fence and informal earthen or stone drains, isolated ceramic, glass, bone, or metal deposits. Cisterns, wells and privies are not noted on the 1844 Brownrigg plan. However, it is likely that outhouses would have been present at that time somewhere in the rear yards. Archaeological remains relating to former wells or privies could include stone- or brick-lined pits, containing deep artefactual (glass, ceramic, bone) occupation and refuse deposits as well as soil and faecal remains of archaeological interest. The depth of these potential deposits also suggest that they could be preserved below later building and basement construction.	**Low**
Macquarie Street properties	Early residences	Historic plans indicate that structures were developed within this area by 1823 and were likely private residences. Archaeological remains relating to these deposits could include timber posts and postholes, sandstock brick or stone footings, timber boards and intact underfloor deposits, fence and informal earthen or stone drains, isolated ceramic, glass, bone, or metal deposits. Structures were known to have been constructed and redeveloped in this area from the mid-nineteenth century. Construction in this area has likely heavily impacted archaeological remains relating to this phase, with any remaining resources likely fragmentary or truncated, if present at all.	**Low – moderate**
	Residential yards	Rear residential yards, which may have been used for informal trades, would have likely been located surrounding the structure identified in the 1823 plan, as well as structures identified in the 1844 plan. Archaeological remains relating to residential and possible trades yards could include yard surfaces, timber posts and postholes, fence and informal earthen or stone drains, isolated ceramic, glass, bone, or metal deposits. Cisterns, wells and privies are not noted on the 1844 Brownrigg plan. However, it is likely that outhouses would have been present at that time somewhere in the rear yards. Archaeological remains relating to former wells or privies could include stone- or brick-lined pits, containing deep artefactual (glass, ceramic, bone) occupation and refuse deposits as well as soil and faecal remains of archaeological interest. The depth of these potential deposits also suggest that they could be preserved below later building and basement construction.	**Low**
	1820s drain	A sandstock brick-lined drain is known to have been constructed through the far south-eastern corner of the Parramatta metro station construction site. This item is listed on the Parramatta Local Environmental Plan (LEP) 2011 as item no. I647 'Convict drain'.[71] A fragment of this drain may be located beneath properties on Macquarie Street. Archaeological remains relating to this drain could include a barrel-vaulted sandstock brick tunnel lining, with accrued artefactual (glass, ceramic, bone) and soil deposits.	**Low - Moderate**

[71] PLEP I647

Site area	Site feature	Potential archaeological remains	Potential
		The intactness of the drain in this location is not known. Remnants of the former convict drain elsewhere in Parramatta have been replaced with machine-made brick tunnel lining where the drain has previously failed. Excavation work for construction and renovation of existing buildings along Macquarie Street may have impacted this resource.	
Horwood Place road and City Centre car park	Convict huts and early residences	The replacement of former timber convict huts within the Parramatta metro station construction site occurred at some point from the 1820s onward. The 1844 survey of Parramatta indicates that a number of structures, likely brick, were located within this portion of the Parramatta metro station construction site. Archaeological remains relating to these buildings could include timber posts and postholes, sandstock brick or stone footings, timber boards and intact underfloor deposits, fence and informal earthen or stone drains, isolated ceramic, glass, bone, or metal deposits. This area was predominantly used as rear yards throughout most of the nineteenth and twentieth centuries. With the exception of the Horwood Place multistorey carpark, this portion of the Parramatta metro station construction site is mostly hardstand road. Previous ground excavation has likely truncated or disturbed earlier archaeological deposits, although it is likely that more robust structural elements may remain intact below ground.	**Low – moderate**
	Residential yards	The small horticultural plots which surrounded the convict huts in the late eighteenth century developed into residential and trades yards in the rear of the properties by the 1840s. Archaeological remains relating to these spaces could include yard surfaces, timber posts and postholes, fence and informal earthen or stone drains, isolated ceramic, glass, bone, or metal deposits. Cisterns, wells and privies are not noted on the 1844 Brownrigg plan. However, it is likely that outhouses would have been present at that time somewhere in the rear yards. Archaeological remains relating to former wells or privies could include stone- or brick-lined pits, containing deep artefactual (glass, ceramic, bone) occupation and refuse deposits as well as soil and faecal remains of archaeological interest. The depth of these potential deposits also suggest that they could be preserved below later building and basement construction.	**Low**
	1820s drain	A sandstock brick-lined drain is known to have been constructed through the far south-eastern corner of the Parramatta metro station construction site. This item is listed on the Parramatta LEP 2011 as item no. I647 'Convict drain'.[72] A small fragment of this drain may be located beneath Macquarie Lane. Archaeological remains relating to this drain could include a barrel-vaulted sandstock brick tunnel lining, with accrued artefactual (glass, ceramic, bone) and soil deposits. The intactness of the drain in this location is not known. Remnants of the former convict drain elsewhere in Parramatta have been replaced with machine-made brick tunnel lining where the drain has previously failed. Excavation work for road construction in Macquarie Lane, as well as construction work to create the current 25 Smith Street Parramatta building, may have impacted the resource.	**Low - Moderate**

[72] PLEP I647

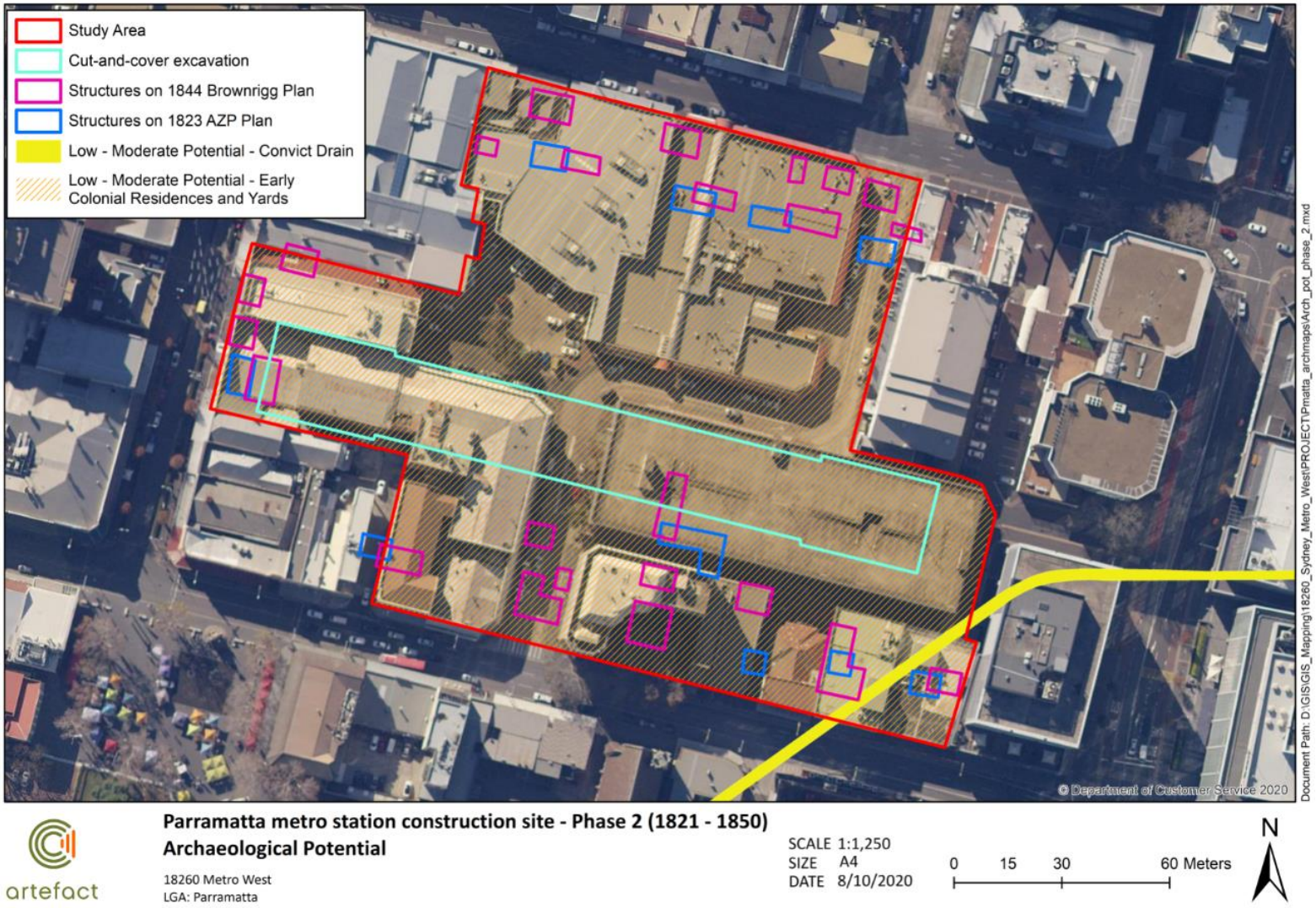

Figure 21: Areas of archaeological potential for Phase 2 (1821–50) at the Parramatta metro station construction site

2.6.3 Phase 3 (1850–1900): Late nineteenth-century commercial development

Based on the history of the site and historical ground disturbance that has occurred within the Parramatta metro station construction site, a summary of predicted archaeological remains dating from this phase is outlined in Table 5. The locations of areas of archaeological potential are illustrated in Figure 22.

Table 5: Predicted archaeological remains for Phase 3 (1850–1900) at the Parramatta metro station construction site

Site area	Site feature	Potential archaeological remains	Potential
Church Street properties	Commercial structures	Brick one- and two-storey commercial premises were incrementally developed over the course of the late nineteenth century. Archaeological remains related to these former commercial buildings could include brick and stone footings, timber boards and intact underfloor deposits, ceramic pipes, brick- or stone-lined drains, isolated ceramic, glass, bone, or metal deposits. Existing structures on Church Street have been developed and redeveloped since this phase. However, the current building at 220 Church Street is likely the same structure present in the 1895 plan. Even those buildings which have been removed for later development were likely to be materially more robust than preceding timber and itinerant structures. It is therefore likely that archaeological remains related to these structures have been preserved.	**Moderate**
	Commercial rear yards and outbuildings	Commercial premises on Church Street in the late nineteenth century were predominantly mercantile and not industrial in nature (tailors, chemists, drapers, tobacconists). Working yards are not expected to be located behind the buildings on this site. However, a number of smaller sheds, storehouses and outhouses are visible on 1890s plans of the area. Reticulated sewerage services were only provided to the Parramatta area after 1898. Archaeological remains relating to these structures could include brick footings, timber postholes and posts, ceramic drains, and isolated artefact deposits. Former privies or wells could contain deep stone- or brick-lined cesspits or wells containing occupation or discarded artefactual (glass, ceramic, bone) material and soil deposits. The depth of these potential deposits also suggests that they could be preserved below later building and basement construction.	**Moderate**

Site area	Site feature	Potential archaeological remains	Potential
George Street properties	Commercial structures	Brick one- and two-storey commercial premises were incrementally developed over the course of the late nineteenth century. The Victoria Theatre was in operation here by at least 1884. Archaeological remains related to these former commercial buildings could include brick and stone footings, timber boards and intact underfloor deposits, ceramic pipes, brick- or stone-lined drains, and isolated ceramic, glass, bone, or metal deposits. With the exception of remains that would have underlain the 41–59 George Street property, it is likely that at least truncated structural remains associated with these former buildings remain in the Parramatta metro station construction site.	**Moderate**
	Commercial and industrial rear yards and outbuildings	Commercial premises on George Street in the late nineteenth century were mercantile and industrial (Victoria Theatre, blacksmiths, pawnbrokers) with some remnants of industrial yards potentially present on the site. In addition, a number of smaller sheds, storehouses and outhouses are visible on 1890s plans of the area. Reticulated sewerage services were only provided to the Parramatta area from the 1880s onward. Archaeological remains relating to these structures could include brick footings, timber postholes and posts, ceramic drains, and isolated artefact deposits. Industrial yards could leave archaeological remains including metal and timber machines and equipment, metal and industrial slag and former yard surfaces. Former privies or wells could contain deep stone- or brick-lined cesspits or wells containing occupation or discarded artefactual (glass, ceramic, bone) material and soil deposits. The depth of these potential deposits also suggests that they could be preserved below later building and basement construction.	**Moderate**
Macquarie Street properties	Commercial structures	Brick one- and two-storey commercial premises were incrementally developed over the course of the late nineteenth century. Archaeological remains related to these former commercial buildings could include brick and stone footings, timber boards and intact underfloor deposits, ceramic pipes, brick- or stone-lined drains, isolated ceramic, glass, bone, or metal deposits. Extant buildings located on the Macquarie Street frontage may not have significant basements, so archaeological evidence from the former late-Victorian buildings in this area may be significantly preserved.	**Moderate**

Site area	Site feature	Potential archaeological remains	Potential
	Commercial rear yards and outbuildings	Commercial premises on Macquarie Street in the late nineteenth century were predominantly mercantile and not industrial in nature (auctioneers, surgeons, dressmakers, bootmakers), so working yards are not expected to be located behind the buildings on this site. However, a number of smaller sheds, storehouses and outhouses are visible on 1890s plans of the area. Reticulated sewerage services were only provided to the Parramatta area from the 1880s onward. Archaeological remains relating to these structures could include brick footings, timber postholes and posts, ceramic drains, and isolated artefact deposits. Former privies or wells could contain deep stone- or brick-lined cesspits or wells containing occupation or discarded artefactual (glass, ceramic, bone) material and soil deposits. The depth of these potential deposits also suggests that they could be preserved below later building and basement construction.	**Moderate**
Horwood Place Road and City Centre car park	Commercial rear yards and outbuildings	This portion of the Parramatta metro station construction site was located in the rear yards of commercial properties on George Street and Macquarie Street, and several large sheds and structures are apparent on the 1895 plan. Outhouses and privies are also visible on this plan. Reticulated sewerage services were only provided to the Parramatta area from the 1880s onward. Archaeological remains relating to these structures could include brick footings, timber postholes and posts, ceramic drains, and isolated artefact deposits. Former privies or wells could contain deep stone- or brick-lined cesspits or wells containing occupation or discarded artefactual (glass, ceramic, bone) material and soil deposits. The depth of these potential deposits also suggests that they could be preserved below later building and basement construction.	**Moderate**

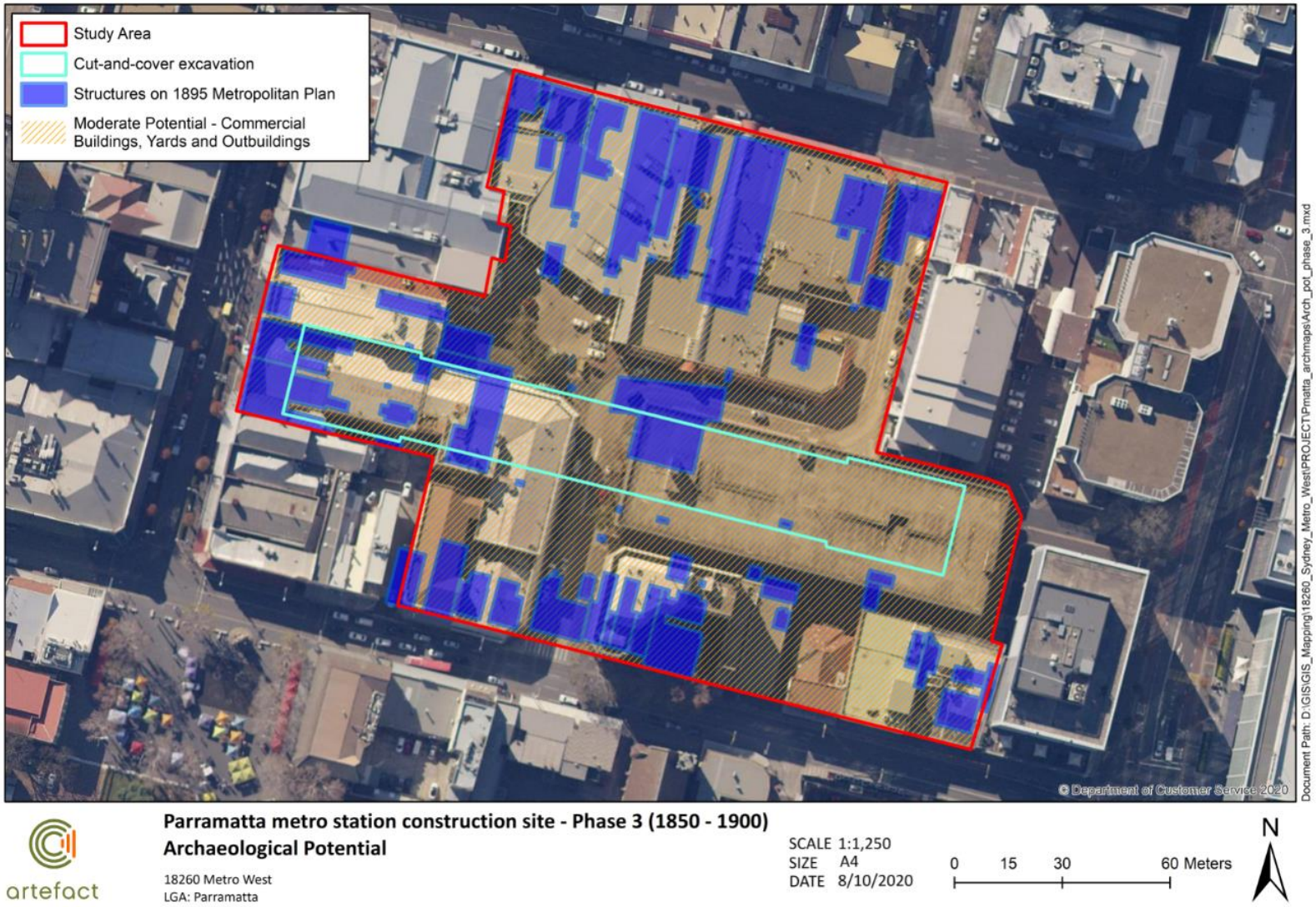

Figure 22: Areas of archaeological potential for Phase 3 (1850–1900) at the Parramatta metro station construction site

2.6.4 Phase 4 (1900–Present): Twentieth-century Parramatta

Based on the history of the site and historical ground disturbance that has occurred within the Parramatta metro station construction site, a summary of predicted subsurface remains dating from the most recent phase of Parramatta's history is outlined in Table 6.

Archaeological remains related to this phase of occupation are unlikely to reach the threshold for local heritage significance and this prediction of subsurface material from this phase is provided as a summary of past ground disturbing events in the Parramatta metro station construction site. For this reason, no plan has been created to document potential Phase 4 remains.

Table 6: Predicted archaeological remains for Phase 4 (1900–Present) at the Parramatta metro station construction site

Site Feature	Potential archaeological remains	Potential
Early twentieth-century structures	A number of commercial buildings present on the 1895 plan were still present in the Parramatta metro station construction site in 1930. However, aerial imagery from 1961 and 1970 indicates that several new buildings were constructed on consolidated lots within the Parramatta metro station construction site, several of them still present today. Archaeological remains related to former structures from this phase within the Parramatta metro station construction site are likely to persist below modern structures which do not have basements. Archaeological remains relating to this phase could include: brick and concrete footings and subfloor walls; ceramic pipes and services; demolition waste, rubble and fill; twentieth-century discarded artefact deposits (glass, ceramic, plastic, metal).	**Moderate to High**
Mid-twentieth century rear yards	Many of the rear yards of commercial properties throughout the twentieth century remained open up until the laying of Horwood Place in the 1950s and the construction of the City Centre car park in the 1980s. Yard areas were predominantly used for storing material, out sheds, carparks and loading bays. Archaeological remains related to this phase could include former asphalt, bitumen and concrete surfaces, concrete and brick footings and kerbs, garden plantings, and isolated artefact deposits.	**Moderate**
Road surfacing	Horwood Place was constructed through the centre of the Parramatta metro station construction site in the 1950s, and the rear yards of the properties were expanded into open carparks from this time onwards. Subsurface remains relating to this phase could include asphalt, bitumen and concrete surfaces, trachyte and concrete kerbing, road base and gravel subgrades, redeposited local soil and clean sand, and isolated modern artefact deposits (plastic, glass, ceramic, metal).	**High**
Utility installation	Subsurface utility services are common throughout the Parramatta metro station construction site. Archaeological remains related to this infrastructure would include metal, ceramic and plastic pipes, protective brick structures, redeposited local soil and clean sand, and isolated modern artefact deposits (plastic, glass, ceramic, metal).	**High**

2.7 Assessment of archaeological significance

For clarity, assessments of archaeological significance for the Parramatta metro station construction site have been divided by historical phase in the subsections below. Significance assessments have been prepared according to the methodology outlined in Section 1.3.3 of this report.

2.7.1 Historical themes

Historical themes are the central means of evaluating the meaning and significance of archaeological remains and deposits that may be revealed during construction. Australian and NSW interpretive themes relevant to the Parramatta metro station construction site are summarised in **Error! R eference source not found.**.

Table 7: Historical themes for archaeological resources in the Parramatta metro station construction site

Australian Theme	NSW Theme	Comment
2. Peopling Australia	Convict	Archaeological remains relating to former convict allotments and huts could demonstrate the government-organised living and working conditions of convicts in Parramatta.
3. Developing local, regional and national economies	Agriculture	Allotments utilised by Parramatta convicts to develop their own gardens for private use. Archaeological evidence of these initial smallholding farms would demonstrate early farming practices in Parramatta.
3. Developing local, regional and national economies	Commerce	By 1844 the majority of allotments had been developed into commercial premises and warehouses. Archaeological remains at the site could demonstrate commercial and retail practices in early nineteenth-century Parramatta.
3. Developing local, regional and national economies	Industry	As well as commercial premises, the Parramatta metro station construction site hosted workshops for a variety of industries in the early nineteenth century.
4. Building settlements, towns and cities	Towns, suburbs and villages	Convict allotments were laid out along a deliberately established road to emphasise the orderly development of a reformatory prison colony. The road and land allotments were the first iteration of the township of Parramatta.
4. Building settlements, towns and cities	Utilities	An early drain was constructed through the south-eastern portion of the Parramatta metro station construction site to manage drainage and flooding in the fledgling Parramatta colony.
8. Developing Australia's cultural life	Domestic life	Archaeological remains related to the former convict huts and later residences within the Parramatta metro station construction site have the potential to provide information on past lifeways in late eighteenth- and early nineteenth-century Parramatta.

2.7.2 Significance of predicted archaeological remains for Parramatta metro station construction site – Phase 1 (1788–1821)

Table 8 discusses the potential significance of archaeological remains that may be located within the Parramatta metro station construction site for Phase 1 of the European history of the site.

Table 8: Assessment of significance for Phase 1 (1788–1821) archaeological remains at the Parramatta metro station construction site

Criteria	Discussion
Research potential	The material conditions and lifeways of the first European inhabitants of Parramatta are not comprehensively documented in historical records of the early colony. This is also the case for early contact between Aboriginal and non-Aboriginal people in the area. While documentary evidence suggests the location of former convict hut structures and gardens, their exact spatial location is not precisely known. Intact archaeological remains relating to these structures and the surrounding gardens could answer a wide array of research questions associated with domestic and industrial practices of convicts, material conditions of life in the early colony, questions of diet and subsistence, interactions between new settlers and the original Aboriginal inhabitants, palaeoecological questions in regard to floral regimes in Parramatta, and evidence of hierarchy and social change within the early penal structure of the colony. Intact archaeological remains relating to the first settlement of Parramatta are of exceptional research potential and are a unique source of information which is not available from other documentary sources of evidence.
Association with individuals, events or groups of historical importance	Archaeological remains relating to this phase of occupation in Parramatta are strongly associated with the founding of the colony of New South Wales, the layout of Parramatta in accordance with the town plan, the development of the first viable agricultural farms in Australia, convict settlement, and with specific emancipists and free settlers who lived in the township.
Aesthetic or technical significance	Intact archaeological remains relating to this phase of occupation in Parramatta could provide information on the early and ad hoc construction techniques during the first settlement of Parramatta. Domestic artefacts and structures could provide evidence of adaptation to the materially poor environment of the early colony.
Ability to demonstrate the past through archaeological remains	Structural, artefactual and paleo environmental remains from this phase of occupation could demonstrate ways in which convicts adapted to the Australian environment within the institutional confines of the transportation system.
Statement of significance	Archaeological remains relating to the convict accommodation and horticulture in Parramatta is of State significance. Intact archaeological resources would be of exceptional research value, strongly indicative of past practices, of technical and demonstrative value. Intact archaeological resources relating to this phase of occupation are a rare and unique resource.

2.7.3 Significance of predicted archaeological remains for Parramatta metro station construction site – Phase 2 (1821–50)

Table 9 discusses the potential significance of archaeological remains that may be located within the Parramatta metro station construction site for Phase 2 of the European history of the site.

Table 9: Assessment of significance for Phase 2 (1821–50) archaeological remains at the Parramatta metro station construction site

Criteria	Discussion
Research potential	The redevelopment of residential accommodation and the first commercial developments in Parramatta, prior to 1850, are not well understood. The continuation of lease-holding in the Parramatta metro station construction site led to a relatively slow pace of development of structures in the area. Due to inconsistencies with lease-holding arrangements, the identity of individuals residing at premises within the Parramatta metro station construction site during this time is not well known. Archaeological remains relating to this phase would be of high research potential in providing information on the social identity of settlers, in addition to information on their material domestic practices and lifeways, and evidence of colonial trades and industrial practices.
Association with individuals, events or groups of historical importance	Archaeological remains relating to this phase of occupation are associated with the residences of emancipist settlers and material remains may provide more information on the identity and material culture of these people during this time. This would not necessarily demonstrate significance at local level under this criterion.
Aesthetic or technical significance	Intact archaeological remains relating to this historical phase could provide technical information on the development of settler housing and land use as the area was incrementally developed.
Ability to demonstrate the past through archaeological remains	Structural, artefactual and paleo environmental remains from this phase of occupation would be broadly demonstrative of the early municipal development of Parramatta.
Statement of significance	Archaeological remains relating to this historical phase would likely be of local to State significance, depending on the intactness of remains, and their ability to demonstrate the beginning of the free settler / emancipist commercial and residential development of Parramatta.

2.7.4 Significance of predicted archaeological remains for Parramatta metro station construction site – Phase 3 (1850–1900)

Table 5 discusses the potential significance of archaeological remains that may be located within the Parramatta metro station construction site for Phase 3 of the European history of the site.

Table 10: Assessment of significance for Phase 3 (1850–1900) archaeological remains at the Parramatta metro station construction site

Criteria	Discussion
Research potential	Archaeological remains related to this phase of occupation would answer a limited array of research inquiries, due to the extensive documentary sources which are available for Parramatta at this time. Archaeological remains would be considered of low research potential from this historical phase.
Association with individuals, events or groups of historical importance	Archaeological remains for this historical phase are not strongly associated with historically notable social groups or individuals.
Aesthetic or technical significance	Archaeological remains related to this historical phase are considered historically and archaeologically common and would not likely reach the threshold for significance under this criterion.
Ability to demonstrate the past through archaeological remains	Archaeological remains related to this phase would be broadly demonstrative of the commercial growth of Parramatta in the late nineteenth century. Substantially intact commercial and industrial remains would also be demonstrative of commercial and industrial practices for the Municipality of Parramatta.
Statement of significance	Substantial archaeological remains from this historical phase may be of local heritage significance depending on their degree of intactness, for their demonstrative potential to illustrate late-Victorian commercial and industrial practices of the Municipality of Parramatta.

2.7.5 Significance of predicted archaeological remains for Parramatta metro station construction site – Phase 4 (1900–Present)

Table 11 discusses the potential significance of archaeological remains that may be located within the Parramatta metro station construction site for Phase 4 of the European history of the site.

Table 11: Assessment of significance for Phase 4 (1900–Present) archaeological remains at the Parramatta metro station construction site

Criteria	Discussion
Research potential	Twentieth-century commercial redevelopment of Parramatta is well recorded in documentary records. As such, subsurface archaeological remains related to this phase are not a unique resource and would not answer substantive historical research questions.
Association with individuals, events or groups of historical importance	Archaeological remains for this historical phase are not strongly associated with historically notable social groups or individuals.

Criteria	Discussion
Aesthetic or technical significance	Archaeological remains of this phase of occupation would not provide new or unique information on technical or construction practices and is not considered significant against this criterion.
Ability to demonstrate the past through archaeological remains	Archaeological remains of twentieth-century commercial and civic construction and redevelopment would not be strongly demonstrative of past practices or historical events.
Statement of significance	Archaeological remains relating to this phase of occupation would be demonstrative of twentieth-century structural remnants and utility services. These remains are a common subsurface resource and would not answer historical research questions. Archaeological remains from this phase would not reach the threshold for local significance.

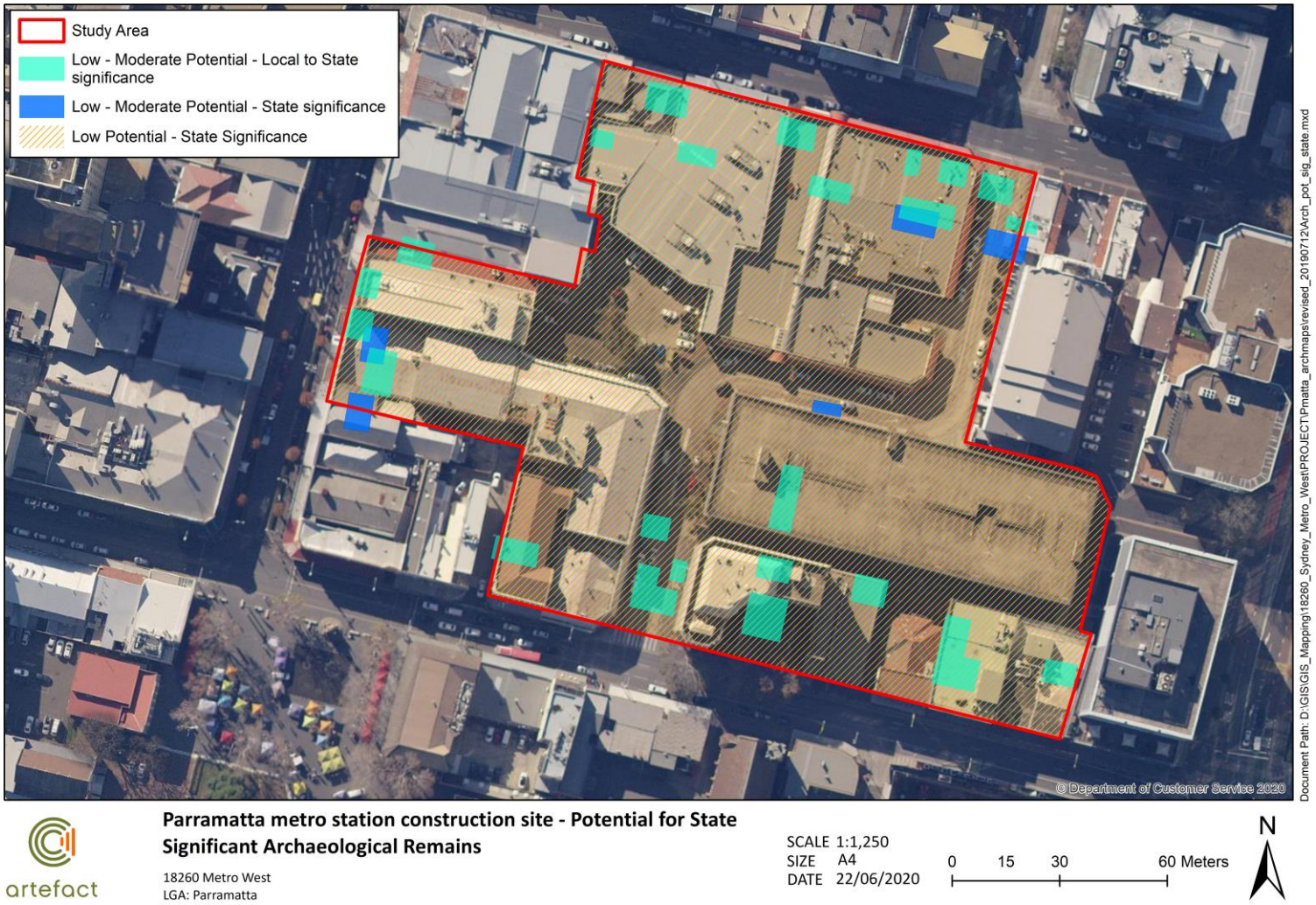

Figure 23: Areas of State significant archaeological potential in the Parramatta metro station construction

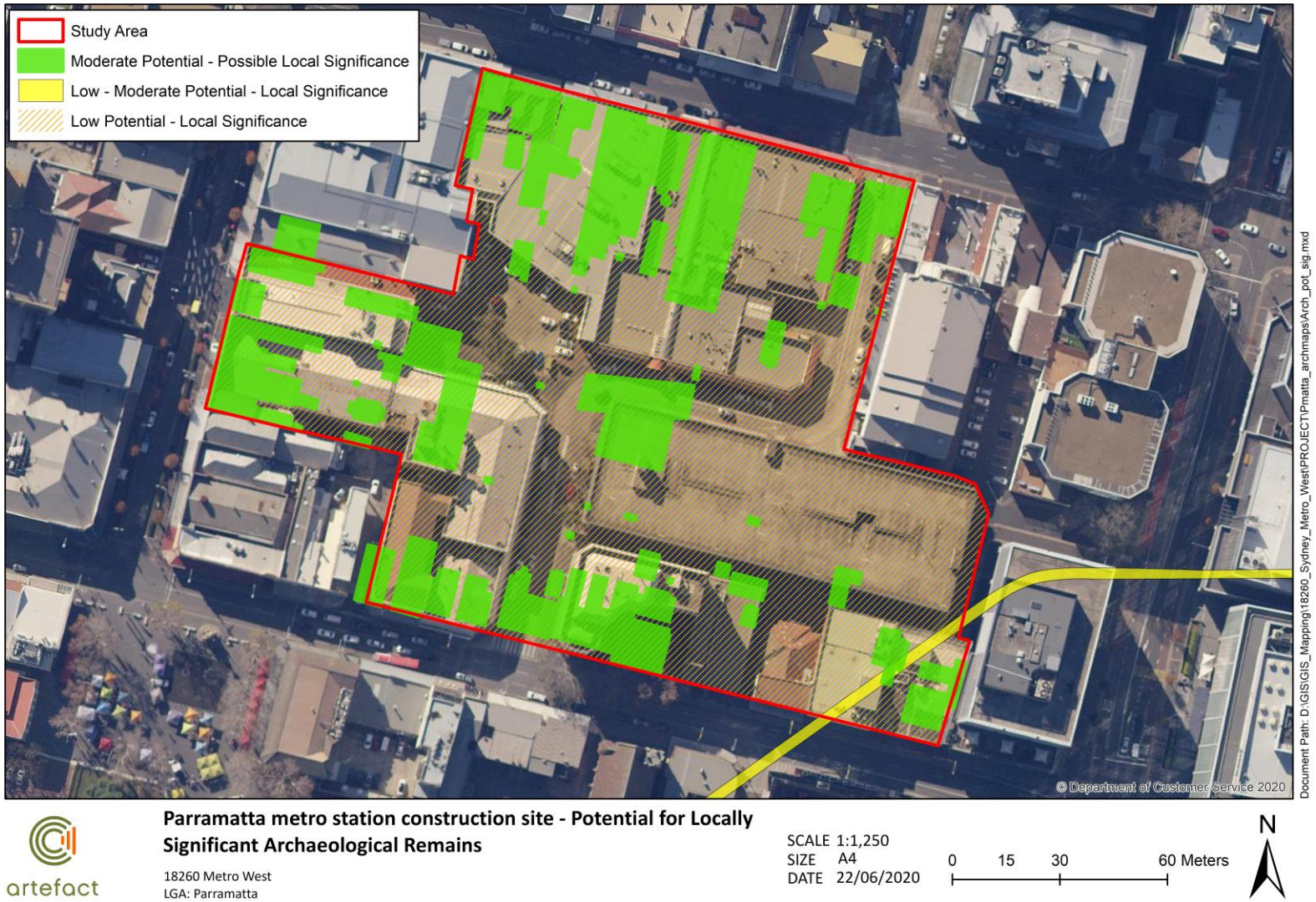

Figure 24: Areas of locally significant archaeological potential in the Parramatta metro station construction site

2.8 Archaeological impact assessment

2.8.1 Proposed works

The Parramatta metro station would be constructed as a cut-and-cover excavation, located across Horwood Place in Parramatta. The site currently contains medium-density commercial structures, public roads (Horwood Place and Macquarie Place), rear access carparking for commercial properties and a public multistorey carpark (City Centre car park).

The Parramatta metro station construction site is illustrated in Figure 25. All existing structures, except two heritage-listed buildings, would be removed from the site in order to clear the area for future excavation and construction. The two heritage-listed buildings to be retained are the two-storey sandstone building at 41–59 George Street and *Kia Ora* at 62–64 Macquarie Street.

The final excavation depth of this station would be around 25 metres in depth.

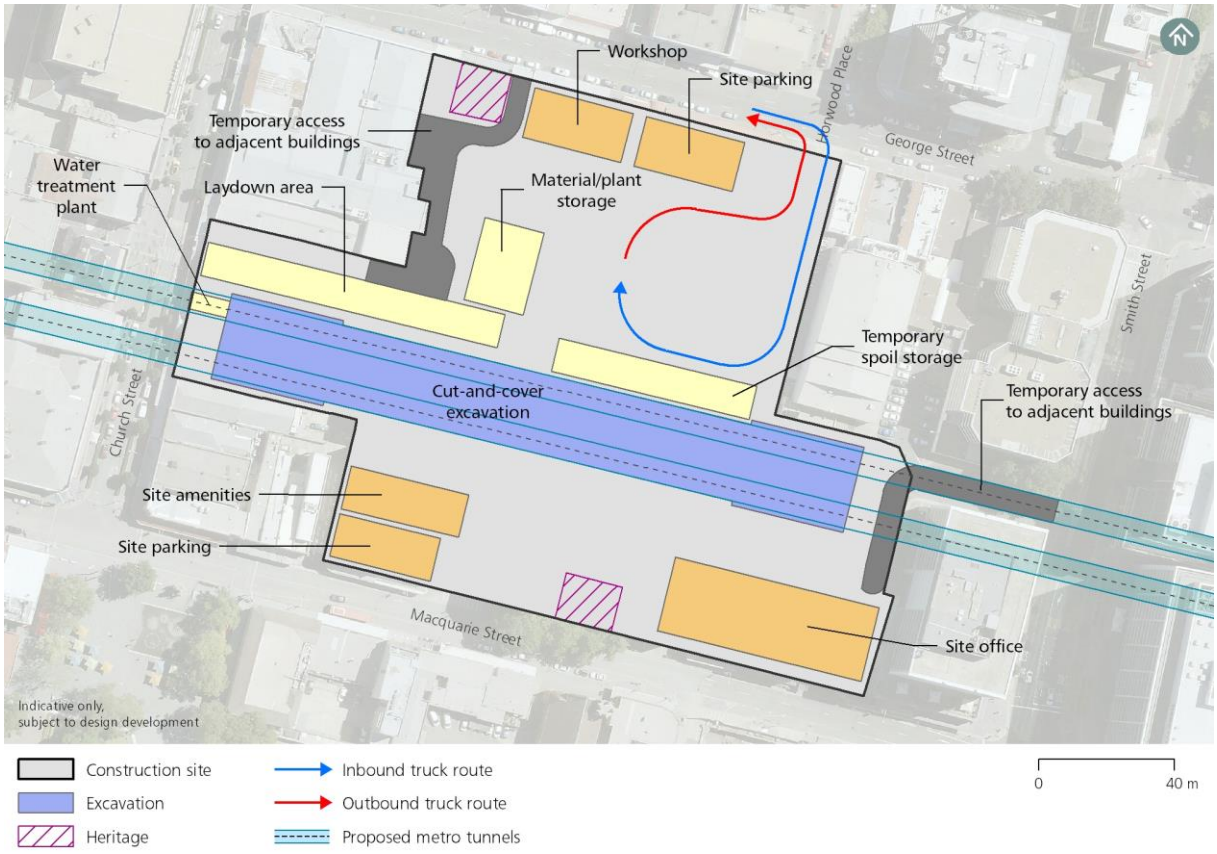

Figure 25: Parramatta metro station construction site layout

2.8.2 Potential archaeological impacts

Ground disturbance would be comprehensive across the Parramatta metro station construction site, with all existing buildings and street surfaces removed. The only exceptions are the preservation of the heritage-listed structure at 45 George Street and *Kia Ora* House at 62–64 Macquarie Street. The area of deepest excavation would occur at the station location. Elsewhere, the ground surface would be stripped following building and surface demolition, involving the removal of all rippable subsurface materials.

This ground disturbance would result in a major and permanent impact to all significant archaeological resources across the Parramatta metro station construction site. Other ground-disturbing enabling works across the site should be archaeologically monitored where possible.

2.9 Archaeological management

The potential early colonial archaeological remains located at the Parramatta metro station construction site represent a highly significant and rare deposit of high research potential. Archaeological investigation would be conducted prior to the commencement of works. A range of archaeological excavation tasks would be required to effectively manage and understand the resource prior to the bulk levelling and excavation across the site.

Archaeological excavation would be required to investigate all significant potential archaeological resources. This process would likely require combined archaeological testing and open area salvage excavation across large portions of the site. Archaeological remains related to the earliest founding of the colony are considered particularly rare, and while the potential for the recovery of intact remains related to early convict huts is considered low, less comprehensive archaeological excavation techniques (such as machine monitoring) would be less likely to identify discrete eighteenth-century remains due to the possible fragility and dispersed distribution of these materials.

Archaeological remains related to the European settlement of the Parramatta colony are also likely to directly overlay, or potentially abut, archaeological remains associated with Aboriginal land use and occupation. Aboriginal and non-Aboriginal interaction in the Parramatta area is historically not well-documented and the potential for the recovery of material evidence of this interaction would be considered rare.

While the demolition of existing above-ground structures on the site may not impact archaeological resources directly, the excavation of existing basements and the uplifting of existing concrete and floor slabs would be archaeologically monitored, if not actively incorporated into a wider archaeological excavation program.

2.9.1 Overview of archaeological management

Archaeological management measures for the Parramatta metro station construction site are described in Table 12.

Table 12: Archaeological management measures for the Parramatta metro station construction site

Phase	Site feature and potential archaeological remains	Potential	Significance	Mitigation
Phase 1 (1788–1821)	**Convict huts, yards and gardens** – remains include timber posts and postholes, earthen floor surfaces, informal drains, buried historical soil deposits, isolated artefact deposits (bone, glass, metal, ceramic, stone).	Low and Low - Moderate	State	Monitoring of final building and slab removal, salvage excavation
Phase 2 (1821–50)	**Early colonial residences and yards** – remains included timber posts and postholes, sandstock brick or stone footings, timber	Low - Moderate	Local to State	Monitoring of final building and slab removal, salvage excavation

Phase	Site feature and potential archaeological remains	Potential	Significance	Mitigation
	boards and underfloor artefact deposits, fence and informal earthen or stone drains and kerbs, former yard surfaces, deep well and privy refuse deposits, buried historical soils, and associated artefacts			
	Convict drain – remains include sandstock brick-lined barrel drain or later machine-pressed brick drain repairs, infilled artefact and soil deposits.	Low - Moderate	Local to State	Test and salvage excavation
Phase 3 (1850–1900)	**Commercial buildings, rear yards and outbuildings** – brick footings, timber postholes and posts, ceramic drains, fence and informal earthen or stone drains and kerbs, former yard surfaces, industrial debris and slag, deep well and privy refuse deposits, buried historical soils, and isolated artefact deposits (bone, glass, metal, ceramic, stone).	Moderate	May reach the threshold for local significance	Test excavation with salvage excavation as required

2.9.2 Research questions

Archaeological resources within the Parramatta metro station construction site have the potential to answer a number of important research questions in NSW history. Research questions provided for the testing program are preliminary, focusing primarily on confirming the location, integrity and provenance of any non-Aboriginal archaeological resource. More broadly themed archaeological research questions have been included, based on wider historical themes identified in Parramatta's history, noting that the capacity for broader research questions to be addressed by archaeological remains is contingent on the unknown degree of integrity of the archaeological resource.

The following general and analytical research questions are intended to guide the conduct and interpretation of archaeological excavation within the Parramatta metro station construction site. Additional research questions may be included within the Work Specific Archaeological Method Statements (AMS) to be produced for the Parramatta metro station construction site.

General research questions

- What is the integrity of the remains? Have they been truncated or dispersed by later demolition and construction work within the Parramatta metro station construction site?
- Are significant artefactual 'relics' present in the Parramatta metro station construction site? What structures or archaeological features are these 'relics' associated with?
- What physical evidence of former activities can be identified within the site?
- What contexts, phases, and activity areas are evident in revealed archaeological remains?

- What natural and cultural taphonomic processes have contributed to the formation of the archaeological site and its associated deposits/features?
- How do people consciously express class identity through material culture?
- How did commerce and consumption patterns change over time in Parramatta?
- Can archaeological analysis of existing or subsurface building remains assist in dating Parramatta's built heritage?

Convict huts and early allotments

- Can remains related to the archaeologically ephemeral convict huts be identified? Are these remains limited to subtle traces such as postholes, or are more robust archaeological deposits (brick or stone foundations) present which allow the location of the former structures to be discerned?
- If present, are former convict huts located in the area anticipated from historical plans and images? Were the huts laid out in an orderly regular manner or were they developed in a more ad hoc manner? How does this evidence accord with historical depictions of early Parramatta?
- Are property divisions or fences between allotments archaeologically visible?
- Are remains of former gardens and fields associated with the allotments discernible?
- Are preserved environmental deposits relating to early nineteenth-century use of the Parramatta metro station construction site present? Are garden soils or horticultural remains present? Can these deposits yield macro- or micro-botanical information on plant taxa present at the site during the earliest settlement period?
- Are domestic deposits present? What information can artefactual remains from the former convict accommodation provide about the lives and practices of the people who lived there?
- Can archaeological evidence provide information on the social identities of convicts who lived in these huts?
- Is there evidence of adaption and change to the buildings over time?
- What differences are there between the lives of free and forced or institutionalised settlers which are identifiable from the archaeological record?
- How does the eighteenth-century gaol town of Parramatta compare with Sydney and the later, free town?
- Why is there variability in the convict hut assemblages in Parramatta? What can this tell us about convict life?
- To what extent did convicts participate in commercial life? Did they carry out work from home?
- Are there recognisable material differences between married-convicts, unmarried-convicts and unmarried-female-convicts in any preserved convict hut sites?
- Are town allotments in different areas of Parramatta developed differently?

Early nineteenth-century residences and commercial premises

- Were the former convict huts adapted or incorporated into later early nineteenth-century structures at the Parramatta metro station construction site, or were they demolished and replaced by later development?
- Are industrial or commercial archaeological deposits present? If so, can these provide information on the commercial and industrial development of Parramatta?
- Can archaeological remains provide evidence of specific working and labour practices at these sites?
- Is there evidence that the workers were engaged in activities outside of their working life (gaming, smoking, sewing, etc)?
- Is there evidence of the conditions in which the employees worked?
- What evidence is there of gardens, and the layout and use of the yard areas? Does this show evidence of recreational activities, e.g. marbles or games? What can the garden sites suggest about daily life and food habits?
- Did Parramatta represent a community of net consumption or production?
- Is Parramatta exploited as a classic ‘periphery’ by the ‘core’ of Sydney? Do the 1820s mark a change in economic relationship between the two centres?
- Did Parramatta’s residents utilise mass-produced or home-made goods?

Convict drain

- Is the drain through the south-eastern corner of the property substantially intact as its original sandstone and brick canal? Has it been replaced or upgraded?
- Have artefactual remains accumulated within the drain from the nineteenth century?
- Considering the extensive damage or removal of segments of the drain throughout Parramatta, would the remains within the Parramatta metro station construction site be considered rare and meet the threshold for State significance?

3.0 THE BAYS STATION CONSTRUCTION SITE

3.1 Historical analysis

3.1.1 Nineteenth-century White Bay foreshore

The first land grant encompassing White Bay was made to George Johnston in 1799. The Bays Station construction site straddles this grant, plus another made to William Balmain in 1800, a grant to John Piper in 1811 and a 50-acre grant made to Francis Lloyd in 1819 (Figure 26).[73]

The early land grants were subdivided throughout the late 1820s, with wealthy and prominent members of Sydney society buying up property along the Johnston's Bay foreshore. These subdivisions, and the utilisation of the waterfront, led to the establishment of a number of industries within the bay during the 1830s. By the early 1840s, a boiling-down works run by W. Bell Allen was constructed at Blackwattle Bay. Bensusan and Musson established a copper smelting works on Johnston's Bay at Annandale, while abattoirs were constructed at Glebe Island during the 1850s. During the 1860s, the future site of White Bay Power station was subdivided for housing, with dwellings remaining in place until the power station development during the early twentieth century. In 1861 a causeway was proposed near White Bay, connecting Glebe Island with Victoria Road.

The close of the nineteenth century saw extensive land reclamation programs at Glebe Island which significantly altered the natural landscape. In 1889, the tidal swamp along the boundaries of Glebe and Annandale were reclaimed; the 1890s saw Blackwattle Swamp filled in; and Johnston's Creek was channelled underground.

White Bay originally extended much further southwest to current-day Victoria Road, nearly joining with Rozelle Bay to make Glebe Island almost an island. However, the Sydney Harbour Trust (later Maritime Services Board) reclaimed the headwaters during the early twentieth century for wharfage construction. The approaches to the Anzac Bridge are laid on the built-up causeway to Glebe Island which now separates White Bay and Rozelle Bay.[74] The geographical relationship between White Bay, its long water frontage, and its close proximity to Sydney CBD was paramount in its development. Road transport to Sydney was often uncertain, expensive and time consuming, while watercraft offered quick, reliable and relatively cheap transportation to carry both passengers and merchandise to and from the area.[75]

[73] Wendy Thorp, 1990. *Draft Report: Thematic History of White Bay and Glebe Island - Central Railway to Eveleigh Heritage Study.* Department of Planning, Sydney: p. 9.
[74] Graham Spindler, 2011. 'historical Notes and Background'. Accessed 4 April 2019, http://www.walkingcoastalsydney.com.au/brochures/documents/HC2011Day4HistoricalNotesApril2011.pdf
[75] Wendy Thorp, 1990. *Thematic History: White Bay, Glebe Island Heritage Study.* Department of Planning, Sydney, p. 9.

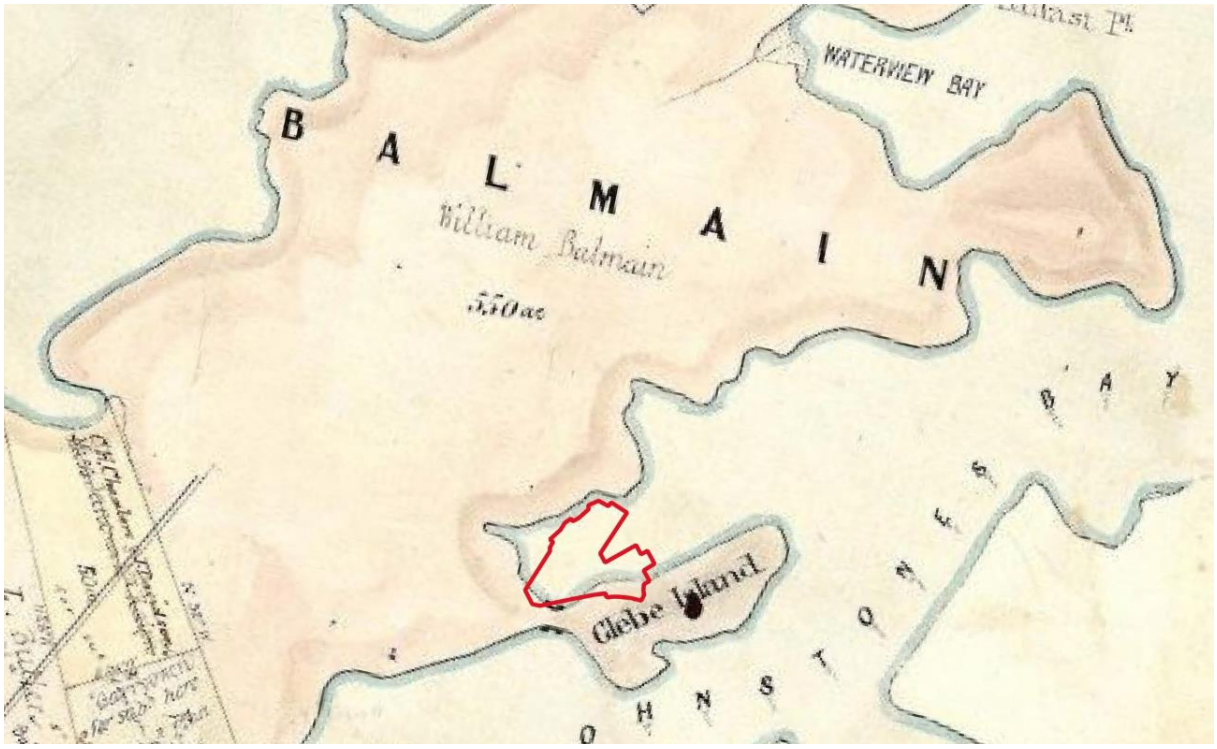

Figure 26: Detail of Parish of Petersham map, date unknown (The Bays Station construction site outlined in red). Showing George Johnston's 1799 land grant (290 acres), William Balmain's 1800 grant (550 acres), John Piper's 1811 grant (165 acres) and Francis Lloyd's 1819 grant (50 acres) [76]

3.1.2 Glebe Island Abattoir

In 1850, the NSW government resumed land at Glebe Island by an Act of Parliament for the construction of an abattoir. Work began in 1853, with the abattoir commencing operation in 1860. The first structures to open were designed by Colonial Architect Edmund Blacket. Meat was transported from the abattoir to Sydney via a punt to Pyrmont, where butchers waited to collect the carcases via carts. During the c1860s, a low-level, timber-framed bridge named 'Blackbutt' was constructed by the Pyrmont Bridge Company, connecting the island to Pyrmont. Replacing the earlier punt, it operated as a toll bridge and a drawbridge. By this point, tanners, tripe makers and soap and candle manufacturers were all working within close proximity to the abattoir.[77]

Shortly after establishment, there were calls from Balmain and Glebe residents for the closure of the abattoir due to poor management, unsanitary conditions and an unbearable smell which led to the 1883 Royal Commission into noxious and offensive trades. The Commission found that at the facility, blood was converted into fertilizer, waste materials were boiled down, blood and offal were dumped into the harbour and cattle, sheep and pigs were driven through the surrounding suburban streets. Despite the severe conditions and a local push for the abattoir's relocation, the Commission recommended improvements rather than closure.[78]

By 1903, it was revealed that secret overflows were still being dumped into Blackwattle Bay which was at times descried as 'blood red'. Construction of a new abattoir at Homebush was authorised in

[76] Land Registry Services, date unknown. 'Parish of Petersham Map'. Accessed online: http://hlrv.nswlrs.com.au/pixel.htm#
[77] Glebe Society Bulletin, 2006. 'Glebe's Industrial History'. Accessed online 8 July 2019, https://www.glebesociety.org.au/wp-content/uploads/bulletins/2006_03.pdf
[78] Ibid.

1906. By 1916, the Glebe Island Abattoir, which was described as 'a noxious nuisance … a source of serious loss to the government … and hopelessly out of repair', had closed.[79]

With the development of the White Bay Power Station in the early twentieth century, widespread landscaping and levelling was conducted across the former rocky headland of Glebe Island. Excavation for the development of the foreshore precinct excavated the entirety of the area of the former abattoir and reduced the elevation of this site to several metres below its original level.

Figure 27: Glebe Island Abattoir, 1896[80]

Figure 28: Glebe Island swing bridge with Glebe Island Abattoir in the background, c1903–15[81]

[79] Ibid.
[80] Sydney Mail, 22 February 1896 cited in Glebe Society Bulletin, 2006. 'Glebe's Industrial History'. Accessed online 8 July 2019, https://www.glebesociety.org.au/wp-content/uploads/bulletins/2006_03.pdf
[81] Author unknown, c1903-1915. 'Glass plate negative of Sydney's Glebe Island swing bridge with Glebe Island abattoir in the background'. Accessed online 8 July 2019, https://collection.maas.museum/object/495200

3.1.3 White Bay Power Station

The Sydney tramway system had expanded throughout the nineteenth century from horse power, to steam, to cable and finally to electrical traction. To facilitate electrification of the service, a number of power stations were constructed within Sydney at Ultimo, Pyrmont and Balmain.[82]

The White Bay Power Station was constructed by the NSW Railway Commissioners in order to support the ever-expanding tramway network. It was intended to facilitate the anticipated electrification of the railway system and the proposed underground railway system within the CBD (Figure 29).[83] The tramway network within Sydney was much more extensive than in Melbourne at this time, and was challenged by much steeper topography. As such, a newer, larger and more flexible power station was required to fulfil Sydney's needs.[84]

Construction of the facility began over 1912–17. During which time, the turbine hall, switch house and one boiler house were built. At this stage, the buildings had been completed but most of the plant had yet to be installed. The power station therefore commenced operation with one 7500 kw, 6600 volt, 25-cycle turbo alternator and associated boiler equipment on temporary foundations. From 1916–19, two new turbo-alternators and the No. 9 alternator were installed at White Bay.[85] From 1923–28 White Bay was extended utilising steel framing and reinforced concrete, rather than brickwork.[86] In addition, three 22,000 kW, 11,000 volt, 50-cycle turbo alternators and two 18,750 kw 6600 volt, 25-cycle turbo alternators were installed.

By the 1930s, White Bay had grown substantially and the 7,500 kw turbo alternator was transferred to the Zaara Street Power Station. In 1930, a 25,000 kva frequency charger was installed, tying the 25- and 50-cycle systems together, increasing the effective capacity of both systems and reducing the amount of stand-by equipment.[87] During World War II, funding required for the upkeep and modernisation of the facility was diverted to the war effort. As such, in 1948, two battery boilers and the two 18,750 kw turbo alternators were replaced with a 50,000 kw 50-cycle Parsons turbo alternator.

In 1953, the power station was transferred to the Electricity Commission of NSW. At this time, the c1920s boiler house was replaced with a new steel-framed structure. With the progressive closure of Sydney's tram network over the 1950s and early 1960s, the station was no longer required to serve its original purpose. As local industry also declined over the following decades, a number of buildings and features were removed during the 1970s, due to a drop in demand for electricity. The station remained in use up until Christmas Day in 1983 and was finally decommissioned the following year.[88]

[82] Office of Environment and Heritage, 2000. 'White Bay Power Station'. Accessed 4 April 2019, https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=4500460
[83] Lisa Murray, 2016. 'White Bay Power Station'. Accessed 4 April 2019, http://home.dictionaryofsydney.org/white-bay-power-station-2/
[84] OEH, 2000. 'White Bay Power Station'.
[85] OEH, 2000. 'White Bay Power Station'.
[86] OEH, 2000. 'White Bay Power Station'.
[87] OEH, 2000. 'White Bay Power Station'.
[88] OEH, 2000. 'White Bay Power Station'.

Figure 29: White Bay Power Station and the White Bay Hotel, c1930 (City of Sydney Archives SRC352)

3.1.4 White Bay Hotel

The original White Bay Hotel was opened by Robert Symonds at the corner of the Victoria and Lilyfield Road (previously Weston and Abattoir Road) Rozelle in 1860. In 1910, the hotel was resumed for the development of rail lines to service the White Bay Power Station and demolished in 1915. To compensate, a parcel of land off Victoria Road was provided for the reconstruction of the hotel.[89] The location of the original White Bay Hotel is within the south-western portion of The Bays Metro station construction site.

Historic plans from 1890 show that the former White Bay Hotel had rear stables, yards, sheds, cisterns and privies. This pub was known to be frequented by maritime trade workers as well as abattoir workers at the nearby Glebe Island Abattoir.

The second White Bay Hotel was constructed in 1916 by Tooth and Co. Brewers. The decline of the hotel coincided with the closure of the White Bay Power Station during the 1980s and the development of surrounding roads including the City West Link and Victoria Road. The hotel closed in 1992, when it became home to squatters. Redevelopment proposals were suggested in 2008,

[89] The Sydney Harbour Foreshore Authority, 2011. 'White Bay Power Station CMP'. Accessed online 8 July 2019, https://thebayssydney.nsw.gov.au/assets/Document-Library/White-Bay-Power-Station-resources-2004-2011/2011-WBPS-Conservation-Management-Plan.pdf

however the hotel was destroyed by fire within the same year under suspicious circumstances and the debris was cleared in 2010.[90]

3.1.5 White Bay redevelopment

In 1966, the Maritime Services Board drew up a ten-year plan for the development of White Bay for shipping containerisation which included new container berths. It was at this point that blasting activities took place, removing the Bald Rock and other natural features, damaging many homes in the process. The new facility including new container berths opened in 1969, however, the wharves lacked back-up space for truck movements and a larger facility was eventually opened at Botany Bay.[91]

During the 1980s, Leichhardt Council developed a landscaped park between Donnelly Street and the container facility to provide a visual and sound buffer against the new container facility. The park named White Bay Park opened in 1982, later being renamed Birrung Park.[92] The Bays has been subject to other recent redevelopments including establishment of the White Bay Cruise Terminal in 2013. In 2013, construction also began on the interim Sydney Exhibition Centre at Glebe Island, which opened in February 2014 and was decommissioned and removed in 2017 after the redevelopment of the Sydney Convention and Exhibition Centre was completed. In 2015, the NSW Government began negotiations to redevelop the White Bay Power Station into an international technology hub. Thirteen companies submitted proposals for the project including Google, however these proposals did not come to fruition.[93] Most recently, the NSW Government announced The Bays Precinct Urban Transformation Project in 2015. The Bays Precinct Sydney Project Update: Bays West Update (INSW formerly UrbanGrowth NSW, 2018) further develops the vision set out in the Transformation Plan to focus on long term mixed-use urban renewal driven by key road and transport projects and integrated with necessary port and working harbour activities over the next 10 years.[94]

3.1.6 The Bays Station construction site

The Bays Station construction site lies within the curtilage of William Balmain's 1800 land grant (Figure 26). The site is not known to have been developed until the 1850s, when the Glebe Island Abattoir was developed, and the White Bay Hotel built. From the mid-nineteenth century, Rozelle and Balmain were subdivided, which led to the development of maritime and noxious industries in the area and the greater White Bay foreshore. At this time, White Bay remained unreclaimed (Figure 30 to Figure 33), however, a number of rear yard structures were built above the high-tide line within the western most portion of The Bays Station construction site.

The White Bay shoreline underwent extensive reclamation during the 1890s. During this time, Mullens Street was extended which allowed for the construction of a number of properties within the western portion of The Bays Station construction site.

The turn of the twentieth century marked the closure of the Glebe Island Abattoirs, followed by the introduction of the White Bay Power Station, which was in operation up until 1983. Aerial imagery from 1943 shows the White Bay Power Station during operation, including additional structures which have since been demolished (Figure 34).

[90] Ibid.
[91] Peter Reynolds, 2008. 'White Bay'.
[92] Peter Reynolds, 2008. 'White Bay'.
[93] Sarah Gerathy, 2017. 'Google Backs out of plan to turn Sydney's White Bay Power Station into next Silicon Valley'. Accessed 4 July 2019, https://www.abc.net.au/news/2017-04-12/google-backs-down-on-plans-to-base-itself-at-white-bay/8436686
[94] Infrastructure NSW, 2018. 'About The Bays Growth Centre'. Accessed online 30 July 2019, https://www.ugdc.nsw.gov.au/growth-centres/the-bays-precinct/

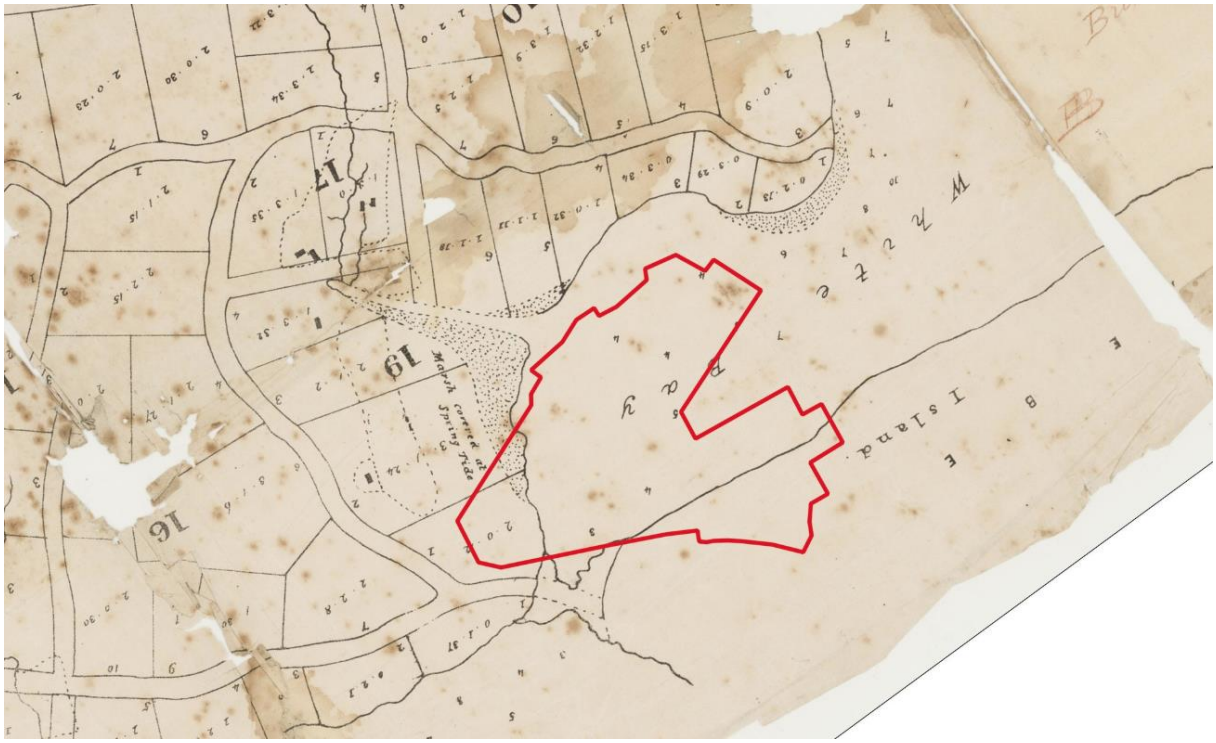

Figure 30: Overlay of The Bays Station construction site on subdivision plan of William Balmain's Estate in 1851 (The Bays Station construction site outlined in red)

Figure 31: Overlay of The Bays Metro station construction site with Municipality of Balmain plan, 1883 (The Bays Station construction site outlined in red)

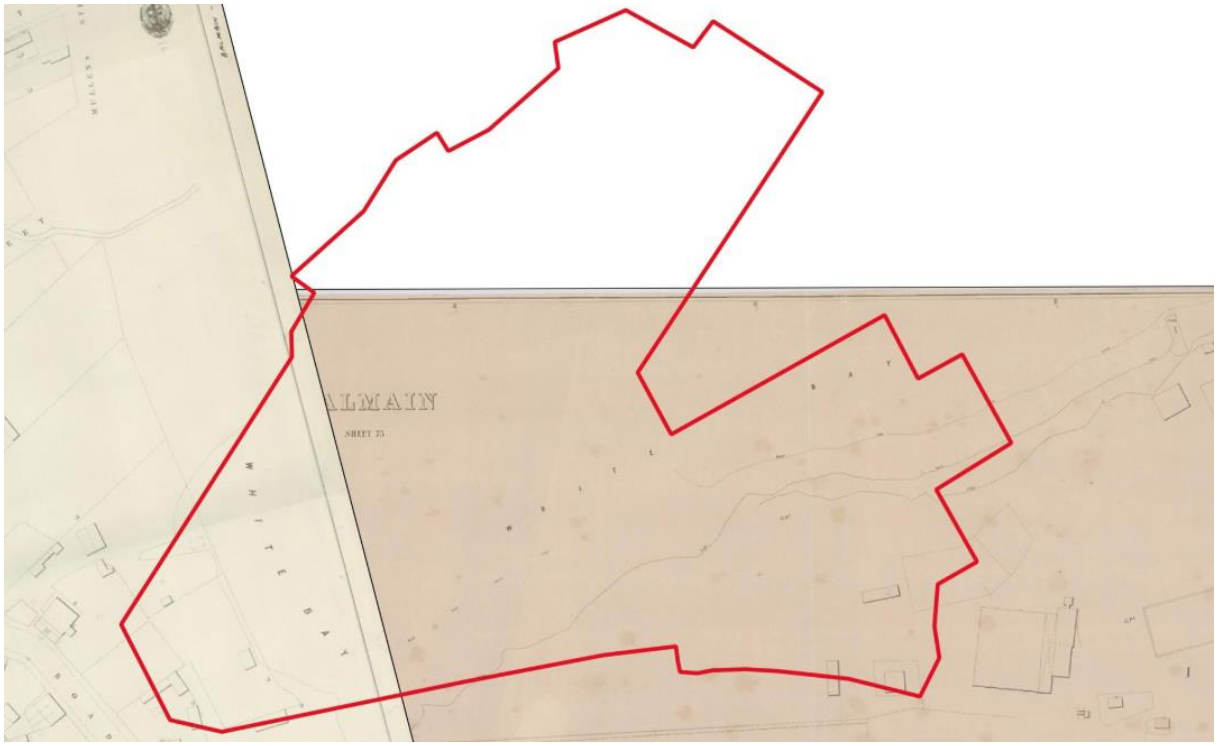

Figure 32: Overlay of The Bays Station construction site (outlined in red) on composite of Balmain Metropolitan Plans from 1890 and 1892

Figure 33: Overlay of The Bays Station construction site (outlined in red) on late nineteenth-century subdivision plan of White Bay, showing proposed Mullens Street extension and dyke

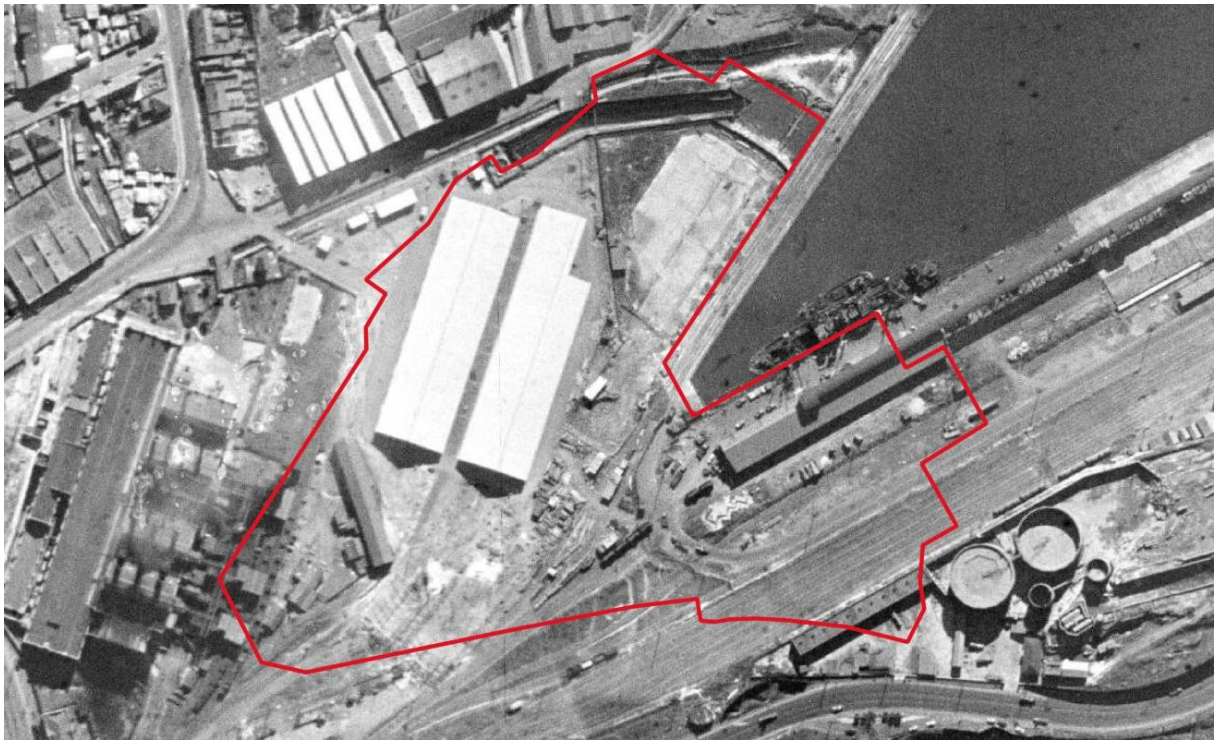

Figure 34: Overlay of The Bays Station construction site (outlined in red) on 1943 historical aerial image

3.2 Previous archaeological studies

Owing to the complex post-1850 disruption of the natural landform at The Bays Station construction site, the most relevant work informing the archaeological research design is the analogous Barangaroo South excavation.

3.2.1 Barangaroo South, 2010–12

Archaeological excavations were undertaken between 2010 and 2012 for the development of Barangaroo South by Lend Lease. Despite being beyond the vicinity of The Bays Station construction site, these excavations reveal information regarding potential archaeological remains associated with land reclamation along the Sydney Harbour foreshore.[95]

The Barangaroo South excavations revealed quarry marks within natural bedrock as part of later nineteenth-century modifications to the natural landscape. They also discovered evidence of the reclamation process, including the deposition of rubble sandstone to form a platform to the high water level, and compacted sands and clays to form a new ground about one metre above the high tide level. The remains of a boat ramp or skid consisting of sloping sandstone pavers were located at the high tide mark, with sandstock brick piers and postholes further up the slope indicating that a timber element had once been present for small vessels. A thin, timber-rich silt surface with a high frequency of copper nails also overlaid the reclamations fills. The excavation demonstrated that multiple phases of historical occupation are clearly identifiable and preserved below reclamation fills.

[95] Casey & Lowe, 2012. *Archaeological Excavation: Barangaroo South, preliminary results.* Lend Lease, Sydney.

3.3 Land use summary

The historical development of The Bays Station construction site has been divided into the following historical phases of activity for this assessment.

- Phase 1 (1800–51): William Balmain Estate. The Bays Station construction site was located on the outer margin of the William Balmain Estate, granted in 1800 over the entirety of Balmain, Birchgrove and most of Rozelle. The Bays Station construction site during this time consisted of largely estuarine mudflats which were mostly inundated at high tide, with the rocky foreshore of Glebe Island on its southern margin.
- Phase 2 (1851–1912): Rozelle Subdivisions and Waterfront Industries. The Rozelle and Balmain peninsula was subdivided over this period, with maritime and noxious industries developing along the White Bay and Glebe Island foreshores. No effort was made to reclaim the head of White Bay in The Bays Station construction site at this time. However, some rear yard buildings were constructed in the far western portion of The Bays Station construction site above the high tide line. In 1890, Mullens Street was extended south from the intersection of Parsons Street to (then) Abattoir Road over the head of White Bay, with new properties constructed facing off from Mullens Street in the western portion of The Bays Station construction site.
- Phase 3 (1912–84): White Bay Power Station and Port Facilities. The Mullens Street resumption area was purchased by the government, then cleared while the adjacent White Bay foreshore jetty was constructed. The White Bay Rail Line was connected through newly reclaimed land to the west of The Bays Station construction site. The White Bay area operated as a coal- and goods-loading port, with shifting configurations of rail infrastructure and buildings over the course of 70 years.
- Phase 4 (1984–Present): Decommissioned Site. White Bay Power Station was decommissioned in 1984, with the rail line suspending operations to White Bay jetties in 1996. Former infrastructure in the area was sequentially removed.

3.4 Previous ground disturbance

The development of White Bay Power Station in 1912 and surrounding construction work to install the connecting rail lines and new jetties, involved considerable land and foreshore modification. Large portions of the sandstone headland on the northern side of Glebe Island were quarried and the ground was levelled near to sea level across the site.

However, on the western side of The Bays Metro station construction site, successive phases of foreshore reclamation involved significant infilling of ground to construct a level surface over ground which was largely intertidal. Reclamation soil and fill deposits often act as a protective layer for archaeological remains and can aid in their preservation.

As such, while the southern margin of The Bays Station construction site is expected to be cut down (from the original rocky foreshore of Glebe Island), the western and northern parts of The Bays Station construction site are likely to demonstrate infilling events which may have preserved

archaeological remains. Geotechnical information indicates that natural foreshore and marine sediments are likely to be preserved below fill layers of up to 2.8 metres.

The horizontal and vertical extent of infill deposits across site is not clearly understood. The construction of the rail line and multiple infrastructural remodelling events within the former rail corridor is likely to have required excavation into infilled soil deposits. The degree of disturbance is likely to be quite variable across the whole of the site.

3.5 Assessment of archaeological potential

Based on the history of the site and the later historical ground disturbance that has occurred within The Bays Station construction site, the potential for the identification of archaeological remains is predicted in Table 13. The location of the former White Bay Hotel and nineteenth-century harbour reclamation is shown in Figure 35.

Table 13: Predicted archaeological remains and potential at The Bays Station construction site

Phase	Site Feature	Potential archaeological remains	Potential
Phase 1 (1800–51)	Historic soil deposits	The Bays Metro station construction site was not known to have been developed by Europeans during this historical phase, although European settlement along the shores of Port Jackson was occurring at this time. Washed-in artefactual material may have accrued on the former intertidal flat which could be buried by later infill. Soil samples may also have been sealed from early reclamation phases and could provide information on the environment of early Sydney.	**Nil to Low**
Phase 2 (1851–1912)	Out sheds, former structures in the western portion of The Bays Station construction site	The rear yard buildings for the original 1860 White Bay Hotel were located in the far western portion of The Bays Metro station construction site. These structures could have included accommodation and stable structures, as well as toilets and wells. Archaeological remains associated with these former buildings could include brick and stone footings, timber boards and intact underfloor deposits, ceramic pipes, brick- or stone-lined drains, isolated ceramic, glass, bone, or metal deposits, lined cesspits or wells containing occupation or discarded artefactual (glass, ceramic, bone) material and soil deposits. While these buildings were removed during resumption for the White Bay Power Station development, their relative elevation would have involved infilling of the foreshore in the early twentieth century, which would have likely preserved some portion of these remains.	**Low - Moderate**
	Former abattoir buildings	The southern portion of The Bays Metro station construction site overlaps the north-western portion of the former Glebe Island Abattoir. One historical plan indicates that at least three structures were situated in this area during the late nineteenth century. However, the redevelopment of the White Bay precinct involved the removal of the former abattoir, followed by extensive quarrying of the natural sandstone to reduce the raised elevation down to the current level of the White Bay foreshore, which was several metres higher than the ground surface is today. This process would have removed all potential archaeological remains in this area.	**Nil**

Phase	Site Feature	Potential archaeological remains	Potential
	Reclamation fills	Soils and sediments used to infill the foreshore at the head of White Bay would be expected to be found throughout the western portion of The Bays Station construction site from this phase. Reclamation fills are likely to be artefact-rich although geographically dispersed. Archaeological remains relating to this deposit could include discrete stratigraphic historic soil deposits, artefactual (glass, ceramic, bone, timber, brick etc) materials and infill rubble, and timber retaining or infill structures such as piers, posts, beams or walls.	**Moderate**
Phase 3 (1912–84)	Reclamation fill deposits	Reclamation fill used to extend the foreshore during the construction of the White Bay Power Station is likely to have been materially more robust than earlier phases of small-scale and informal reclamation. Archaeological remains relating to this infilling event could include brick, stone or concrete rubble, artefactual discard deposits (glass, ceramic, timber), timber retaining structures such as piers, posts or beams, and buried concrete structural elements.	**High**
	Rail infrastructure and former warehouses and structures	The Bays Station construction site had numerous rail lines and rail support facilities (including turntables, stabling facilities and roundhouses, switching and loading gears). While many of these facilities have been removed, there are surface remnants of some of this material and it is likely that buried remnants remain across the site. Archaeological remains relating to rail infrastructure from this phase could include rail beams, ballast and timber or concrete sleepers, rail switches, levers and points, concrete, steel and brick building footings, discarded industrial equipment, artefactual refuse deposits (plastic, metal, glass, ceramic). Historical aerial imagery indicates that several ancillary buildings were situated within The Bays Station construction site. Subsurface remains could include concrete and brick footings, tile and brick rubble, discarded industrial equipment, artefact refuse deposits (plastic, metal, glass, ceramic).	**High**

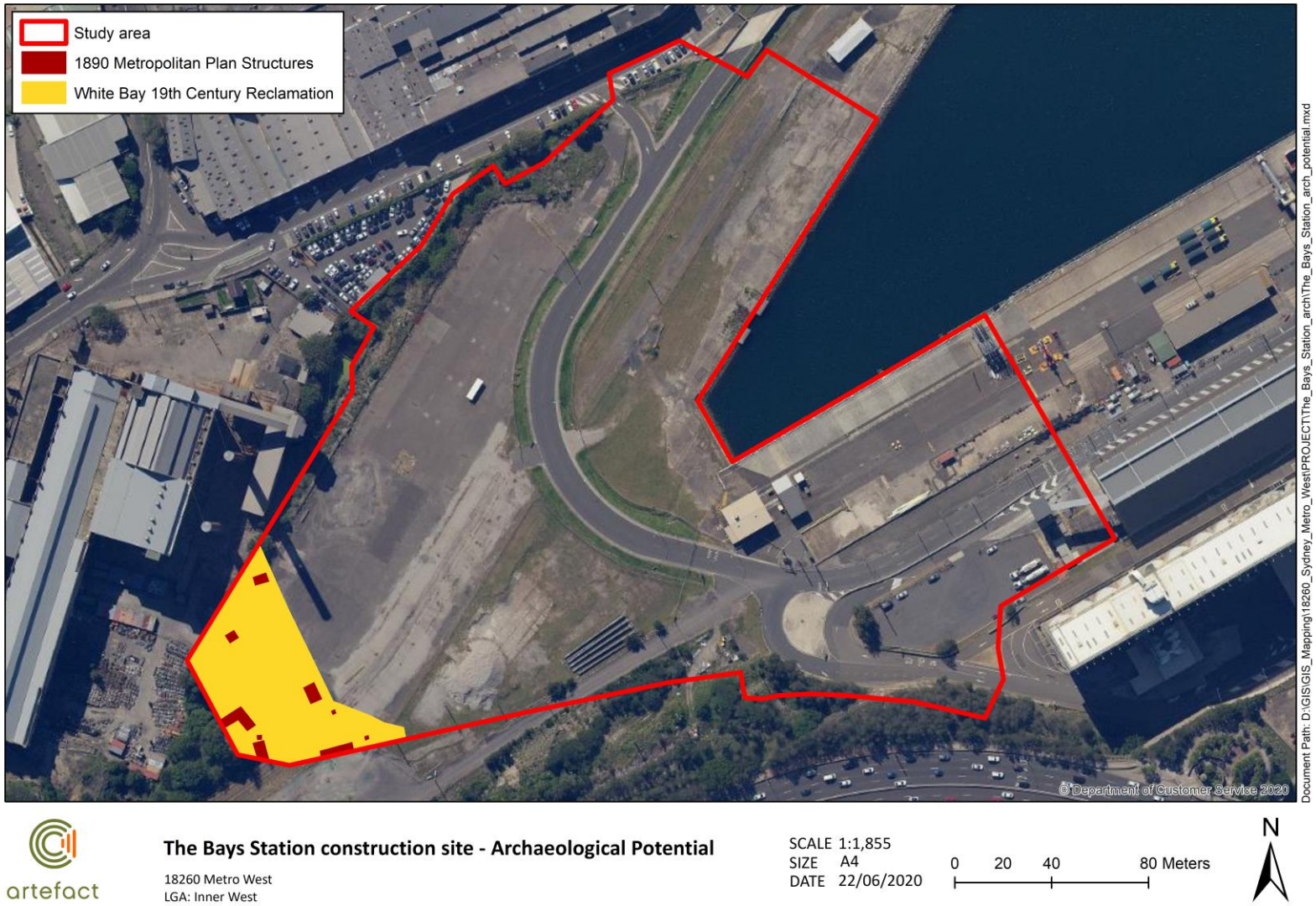

Figure 35: Location of former White Bay Hotel and nineteenth century foreshore boundary

3.6 Assessment of archaeological significance

3.6.1 Historic themes

Historical themes relevant to The Bays Station construction site are summarised in **Error! Reference s ource not found.**.

Table 14: Historic themes for archaeological resources in The Bays Station construction site

Australian Theme	NSW Theme	Discussion
3. Developing local, regional and national economies	Commerce	Archaeological remains relating to the original White Bay Hotel may provide information on the commercial industries that operated at White Bay as well as on the operation of the hotel itself.
3. Developing local, regional and national economies	Environment – cultural landscape	The reclamation of the White Bay foreshore occurred in stages and included several phases of causeway and foreshore reconstruction. Archaeological remains could demonstrate this phasing.
3. Developing local, regional and national economies	Industry	Archaeological remains at The Bays Station construction site may provide information on former industrial practices (i.e. remains of machinery or tools) of both the White Bay Power Station, associated railyards, as well as former earlier maritime industries in the area.
3. Developing local, regional and national economies	Transport	Archaeological remains relating to the former use of The Bays Station construction site as a maritime and rail centre during the twentieth century are likely to be present.
5. Working	Labour	The first White Bay Hotel was a hotel frequented by power station, rail and maritime industry workers. Archaeological remains relating to their use of the site may provide information on the labour practices and activities of that time.
8. Developing Australia's cultural life	Domestic Life	Archaeological remains related to former workers of the White Bay Hotel may provide evidence of domestic activities at the site.

3.6.2 Significance of predicted archaeological remains for The Bays Station construction site – Phase 1 (1800–51)

Table 15 discusses the potential significance of archaeological remains from Phase 1 of the European history that may be located within The Bays Station construction site.

Table 15: Assessment of significance for Phase 1 (1800–51) archaeological remains at The Bays Station construction site

Criteria	Discussion
Research potential	Buried historical soil samples, if stratigraphically controlled, would have the potential to provide unique scientific data on the marine and ecological conditions of the Port Jackson area during the early years of the Sydney colony.

Criteria	Discussion
Association with individuals, events or groups of historical importance	Isolated artefact samples and buried historic soils are not materially associated with any group, person or event of historic note.
Aesthetic or technical significance	Isolated artefact samples and buried historic soils are unlikely to demonstrate any aesthetic or technical significance.
Ability to demonstrate the past through archaeological remains	Substantial buried soil deposits may be able to broadly demonstrate the environmental past from the time of the early founding of the colony.
Statement of significance	Isolated artefact deposits and stratigraphically intact buried historic soils from this phase would be of local heritage significance for their ability to provide ecological information relating to the environment at the time of the early founding of the British colony around Port Jackson.

3.6.3 Significance of predicted archaeological remains for The Bays Station construction site – Phase 2 (1851–1912)

Table 16 discusses the potential significance of archaeological remains from Phase 2 that may be located within The Bays Station construction site.

Table 16: Assessment of significance for Phase 2 (1851–1912) archaeological remains at The Bays Station construction site

Criteria	Discussion
Research potential	Archaeological materials related to reclamation fills at White Bay as well as potential privy or well deposits associated with the original White Bay Hotel could provide a palimpsest of artefactual material that would be chronologically stratified. This would be a unique material resource for understanding the domestic practices of the working population of Glebe Island and White Bay.
Association with individuals, events or groups of historical importance	Archaeological material may include significant remains associated with the original White Bay Hotel are associated with the Glebe Island Abattoirs, as the venue where many workers from that facility congregated. This material would demonstrate both industrial and domestic practices within the White Bay area during this period.
Aesthetic or technical significance	Archaeological remains relating to the original White Bay Hotel may include significant recreational artefact collections, although it is not likely that these collections would be considered aesthetically or technically significant in their own right.
Ability to demonstrate the past through archaeological remains	Archaeological remains related to the original White Bay Hotel could demonstrate recreational and domestic working-class practices and activities from the mid-nineteenth century. Reclamation fills are also likely to have accrued significant artefactual materials from the period of their deposition, which would broadly demonstrate material industrial practices in the White Bay area.

Criteria	Discussion
Statement of significance	Archaeological remains associated with the original White Bay Hotel and reclamation fills from this historic phase would be of local significance for their potential to inform research questions on the domestic life of working people of the area, their association with the Glebe Island Abattoirs, and for demonstrating the past lifeways and industrial practices of working people in the mid-nineteenth century.

3.6.4 Significance of predicted archaeological remains for The Bays Station construction site – Phase 3 (1912–84)

Table 17 discusses the potential significance of archaeological remains from Phase 3 of the European history that may be located within The Bays Station construction site.

Table 17: Assessment of significance for Phase 3 (1912–84) archaeological remains at The Bays Station construction site

Criteria	Discussion
Research potential	Information on the former rail infrastructure and surface structures in The Bays Station construction site is archivally available, meaning that archaeological remains would not likely add significant new information to understanding the history of the site. Reclamation fills used for the 1912 White Bay reclamation are more likely to utilise modern infill materials in bulk (concrete, stone) and would have a reduced artefactual signature compared with nineteenth-century informal and accreted reclamation events. It is unlikely for reclamation fills from this phase to provide research potential.
Association with individuals, events or groups of historical importance	Evidence of former rail infrastructure and working buildings would be associated with the operation of the White Bay Power Station and its workers. Rail infrastructure would be associated with the use of White Bay during the wartime industrial and shipping efforts of that period. These remains would also be associated with organised labour movements and labour organisational efforts. It is unlikely that archaeological remains of reclamation fills from post-1912 to be associated with any group, person or event of historic note.
Aesthetic or technical significance	The scale of the rail and port facilities at White Bay was considerable and technically complex, and the archaeological remains of a working industrial centre of this kind would be of high technical significance. It is unlikely that archaeological remains of reclamation fills from post-1912 to be of aesthetic or technical significance.
Ability to demonstrate the past through archaeological remains	Archaeological remains associated with former rail infrastructure and industrial buildings are strongly demonstrative of large-scale twentieth-century industrial practices. Archaeological remains of reclamation fills from post-1912 contexts would likely be modern bulk material fill materials and structural elements and would be unlikely to be demonstrative of past events or practices.

Criteria	Discussion
Statement of significance	Remnants of rail infrastructure, particularly larger items such as turntables and roundhouses, as well as former industrial structures, would be locally significant for their association with the State significant White Bay Power Station. Their size and complexity would be aesthetically and technically significant, and that they would be demonstrative of large-scale industrial and organisational practices of the twentieth century.

3.7 Archaeological impact assessment

3.7.1 Proposed works

The Bays Station would be constructed as a cut-and-cover excavation, along the foreshore of White Bay, near to White Bay Power Station in Rozelle. The site currently contains open areas of hardstand and port with several small industrial buildings present.

The Bays Station construction site is illustrated in Figure 36. All existing structures would be removed from the site in order to clear the area for future excavation work and construction. The final excavation depth of this station would be around 32 metres in depth.

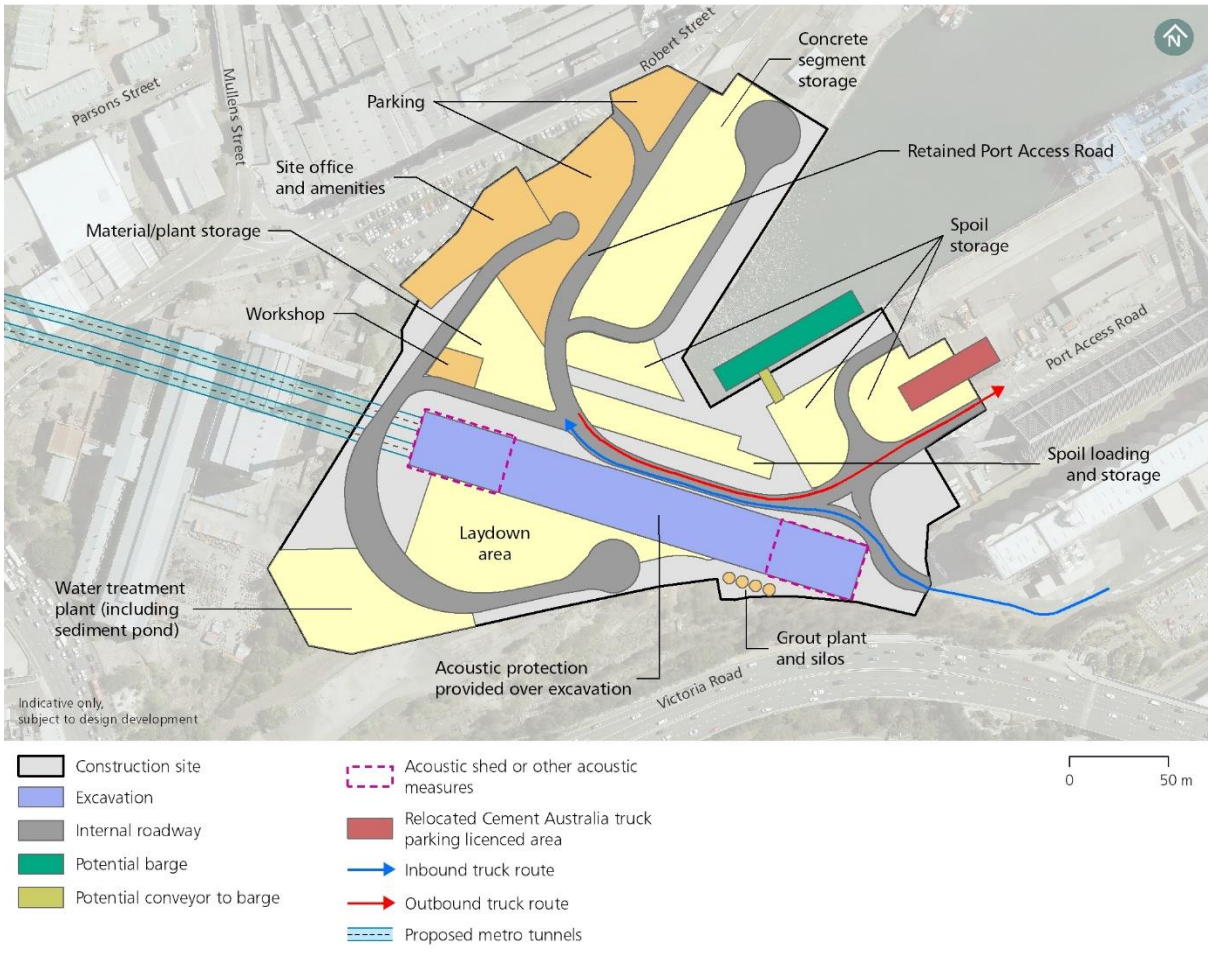

Figure 36: The Bays Metro station construction site layout

3.7.2 Potential archaeological impacts

Ground excavation to install the proposed sediment pond in the south-western corner of The Bays Station construction site would involve direct impacts to any remaining archaeological resources associated with the former first White Bay Hotel.

Building and hardstand removal across the site would expose and remove any buried remnants of former rail infrastructure which was located within The Bays Station construction site.

Ground excavation for the cut-and-cover station would impact any archaeological remains associated with reclaimed fills and buried artefacts which may be preserved in these fills.

3.8 Archaeological management

Former rail infrastructure within The Bays Station construction site is present on the ground surface, and historical plans of rail facilities through the twentieth century are archivally available. A program of photographic and drawn archival recording of surface rail industrial remains would be conducted. Based on historic rail plans, those rail elements of particular significance (such as roundhouses and turntables) would be identified and archaeological monitoring of ground disturbing and clearing works in these areas conducted to provide an adequate archival record of these remains.

Archaeological test excavation would be conducted to ascertain whether reclamation fills have preserved any evidence of pre-1910s structures which may be located in the western portion of The Bays Station construction site, to the west of the former alignment of Mullens Street. If significant and intact archaeological resources are identified during test excavation, open area archaeological salvage excavation would be required.

Reclamation fills are likely to be artefact-rich deposits with the potential of preserving buried historical soils and sediments. Buried natural and historic sediments and soils would be sampled for palaeoecological analysis and the position of their location recorded in securely controlled stratigraphic contexts. Specific methodologies for investigating whether significant historical materials have been preserved within the reclamation fill would be developed in future AMS reports once detailed construction methodologies have been prepared.

It is possible that unexpected finds within reclamation fills could be considerably more robust than for those recovered on terrestrial sites, with a small possibility that intact marine vessels, piers or structures were buried in this infill. Archaeological management methodologies would be put in place for unexpected finds of large archaeological deposits which are otherwise unanticipated.

3.8.1 Overview of archaeological management

Archaeological management measures for The Bays Station construction site are described in Table 18.

Table 18: Summary of significant potential archaeological deposits in The Bays Station construction site

Phase	Site feature and potential archaeological remains	Potential	Significance	Mitigation
Phase 1 (1800–1851)	**Historic soil deposits and discarded artefacts** – Archaeological remains associated would include stratigraphically controlled and sealed soil deposits, *ex-situ* artefactual material from this period which may have washed into site or been discarded.	Nil to Low	Local	Unexpected Finds Procedure
Phase 2 (1851–1912)	**Outbuildings and structures of the original White Bay Hotel** – Archaeological remains associated with these former buildings could include brick and stone footings, timber boards and intact underfloor deposits, ceramic pipes, brick- or stone-lined drains, isolated ceramic, glass, bone, or metal deposits. Lined cesspits or wells containing occupation or discarded artefactual (glass, ceramic, bone) material and soil deposits.	Low - Moderate	Local	Test Excavation / Salvage as required
	Reclamation fills – Archaeological remains relating to reclamation fills could include discrete stratigraphic historic soil deposits, artefactual (glass, ceramic, bone, timber, brick) materials and infill rubble, and timber retaining or infill structures such as piers, posts, beams or walls.	Moderate	May reach the threshold for local significance	Test excavation
Phase 3 (1912–1984)	**Rail Infrastructure and former industrial structures** – Archaeological remains could include evidence of turntables, stabling facilities and roundhouses, loading equipment, rail beams, ballast and timber or concrete sleepers, rail switches, levers and points, concrete, steel and brick building footings, tile and brick rubble, discarded industrial equipment, artefactual refuse deposits (metal, glass, ceramic).	High	Local	Archaeological monitoring of selected significant rail infrastructure remains

3.8.2 Research questions

The following general and analytical research questions are provided to guide investigation during archaeological test excavation within The Bays Station construction site. Additional research questions may be included within the AMS to be produced for the Parramatta metro station construction site.

General research questions

- What is the integrity of the remains? Have they been truncated or dispersed by later demolition and construction work within The Bays Station construction site?

- Are significant artefactual 'relics' present in The Bays Station construction site? What structures or archaeological features are these 'relics' associated with?
- What physical evidence of former activities can be identified within the site?
- What contexts, phases, and activity areas are evident in revealed archaeological remains?
- What natural and cultural taphonomic processes have contributed to the formation of the archaeological site and its associated deposits/features?

First White Bay Hotel

- Are archaeological remains related to former structures at the hotel and on the foreshore identifiable?
- Are enclosed privies or cisterns present which may provide sealed archaeological deposits?
- Can archaeological remains provide evidence of specific working and labour practices at these sites? Are the working activities of hotel patrons identifiable from material remains?
- Is there evidence that the workers were engaged in activities outside of their working life (gaming, smoking, sewing, etc)?
- Is there evidence of the conditions in which the employees worked?
- What evidence remains for gardens, and the layout and use of the yard areas? Does this show evidence of recreational activities? What information can the gardens provide about daily life and food habits?

Reclamation fills

- Can discrete stratigraphic phasing of fill materials be identified within bulk deposits?
- Are reclamation fills artefact bearing? Are preserved artefacts identifiable in discrete contexts within fill materials?
- Are preserved environmental deposits present relating to the early nineteenth-century occupation and development of the foreshore? Can these deposits yield macro- or microbotanical information on plant taxa present on the site during that period?
- Did reclamation activities involve the deliberate burying of timber materials such as piers, columns or boats?

White Bay Power Station rail head

- Can discrete stages of the development of rail infrastructure be identified at The Bays Station construction site?
- Are large-scale infrastructure elements such as rail turntables archaeologically present?

4.0 ARCHAEOLOGICAL METHODOLOGY

The following section details the archaeological methodologies proposed for this project.

4.1 Heritage induction

Archaeological heritage would be included in the general project induction for all personnel. At a minimum this process would include an overview of the project obligations and archaeological management zones, the role of the archaeological team, and the project unexpected finds procedure including typical potential archaeological remains encountered in railway contexts.

4.2 Archaeological investigation

Archaeological investigation refers to active archaeological involvement in the construction program. It is undertaken to manage and mitigate archaeological impacts. It refers to:

- Monitoring and recording
- Test excavation
- Test/salvage excavation
- Salvage excavation

4.2.1 Excavation Director

Archaeological investigations would be managed by a suitably qualified Primary and Secondary Excavation Directors with experience in the historical archaeology of Sydney.

- For sites with potential for locally significant remains, the Excavation Director should meet the NSW Heritage Council criteria for locally significant archaeological sites. Archaeological investigations at the following sites would be directed by a locally significant qualified Excavation Director:
  - The Bays Station construction site
- For sites with potential for State significant archaeology the Primary Excavation Director should meet the NSW Heritage Council criteria for State significant archaeological sites and should have experience in the excavation of urban convict sites. Archaeological investigations at the following sites would be directed by a State significant qualified Excavation Director:
  - Parramatta metro station construction site

4.2.2 Specialists

Archaeological investigation teams would include a number of specialists in addition to experienced field archaeologists. These include artefact specialists with experience in historical archaeological assemblages, a qualified surveyor and archaeological illustrator, a historian for any additional archival research, an expert in environmental data collection such as pollen analysis, a geomorphologist and other specialists as required.

4.3 Work Stage Specific Archaeological Method Statements

Information on the full extent of construction impacts was not available for the present stage of the project. A Work Stage Specific Archaeological Method Statement (AMS) is a brief document intended to clarify archaeological management requirements once the construction methodology is known. The AMS would adhere to the methodology provided in the approved ARD. An AMS would be prepared prior to construction works that have the potential to impact archaeological resources, as identified in this document. Staged construction programs may require more than one AMS to be prepared for each site. An AMS would include all archaeological management requirements, including Aboriginal archaeology and its relationship to historical archaeology where relevant.

Detailed site-specific AMS requirements are provided in the archaeological management section in each site chapter of this report. In regard to historical archaeology, the AMS generally includes the following steps:

- Review available geotechnical data, and existing services surveys if required
- Review detailed design, scope of works, construction program and methodology
- Reassessment of potential for impacts to significant archaeological resources based on construction methodology and program
- Review of contamination reports and archaeological mitigation requirements during any remediation program
- Identify opportunity for in situ conservation of archaeological remains, such as altering construction methodology to avoid impacts, if and where possible
- Confirm appropriate archaeological investigation methodology to mitigate various impacts
- Provide additional archival information and archaeological research questions if required
- Provide environmental sampling and sieving strategies where appropriate
- Outline opportunities to provide information regarding the archaeological investigations to the public
- Provide details of coordination with Aboriginal archaeological investigations where appropriate.

AMS methodologies should be prepared for early investigation works and enabling works activities in areas of identified significant archaeological potential. The outcome of enabling works archaeological management should be coordinated with later larger-scale archaeological management stages.

4.4 In situ conservation

In situ conservation is considered the most appropriate approach for intact State significant archaeological resources. State significant resources are possible at the Parramatta metro station construction site. If avoidance or conservation in situ is not feasible, then appropriate archaeological investigation would be undertaken including detailed salvage and recording in accordance with this document and the AMS.

4.5 Research questions

Archaeological investigations would be undertaken within a research framework. The research framework is based on the potential significance of the archaeological resource. Research questions

have been developed for the Parramatta metro station construction site and The Bays Station construction site where the construction activities have potential to impact significant archaeological remains and archaeological investigation is required.

The research questions are included in the sections 2.9.2 and 3.8.2. These are not exhaustive and additional research questions could be developed depending on further archaeological research, archaeological findings, theoretical approaches, or particular research interests of the Excavation Director. Additional research questions could be prepared as part of the AMS for the work stage.

4.6 Test excavation

Archaeological test excavation involves excavation of small sample trenches within a potential archaeological site. Testing is usually undertaken prior to construction to clarify the extent of the potential remains, archaeological significance, potential of a construction task to impact significant archaeology and inform requirements for further archaeological investigation, such as salvage excavation or monitoring.

4.7 Test/salvage excavation

Archaeological test/salvage refers to a staged archaeological program where testing is undertaken to refine the archaeological impacts and the extent of any salvage excavation. It generally applies to areas of moderate potential to impact locally significant archaeology and low-moderate or moderate potential to impact State significant archaeology.

Following the testing stage, trenches would be expanded to open areas for salvage excavation as required. Areas would only be handed back to the construction team once the Excavation Director has given clearance.

Test/salvage is generally undertaken following demolition and prior to excavation works.

4.8 Salvage excavation

Archaeological salvage generally refers to open area archaeological excavation under the control of the Excavation Director. It is undertaken following demolition and prior to bulk excavation. Open area salvage excavation is a method of archaeological investigation in which the full horizontal extent of a site is investigated and cleared, whilst preserving the stratigraphic record.

It involves removal of modern fills and disturbance to the top of archaeological layers by machine under archaeological supervision. On the identification of any historical/archaeological fills, salvage excavation would commence. This investigation would be undertaken using hand tools, by a qualified archaeological team. The archaeological remains are then cleaned by hand, investigated (excavated) and recorded in detail by the archaeological team. In urban archaeological sites, careful machine excavation may also be employed to assist the detailed archaeological excavation process.

Construction works would not proceed until the salvage excavation is completed and the Excavation Director has provided clearance.

4.8.1 Manual excavation

Upon encountering archaeological material, mechanical excavation would cease and excavation using hand tools would be undertaken by archaeologists trained in on-site historical excavation methods, under the guidance of the Excavation Director.

Should any intact and deep structural features be encountered, it may be necessary to remove any demolition or fill material by mechanical excavation under the supervision of an archaeologist. Any material removed by excavator would be examined for artefacts by the archaeologists.

Structural remains of wells, cisterns and cesspits often contain large amounts of backfilled material or artefactual remains. If structures such as these are encountered, they may be found to be partially constructed into the natural bedrock. If this is found to be the case, then complete excavation of the fill may not be possible due to Occupational Health and Safety requirements. In this situation, fill would be removed to a safe depth to allow for the recording of the structure and collection of a representative stratified sample of any fill or artefacts.

It is possible that further excavation or monitoring of particularly deep structures, such as wells, may be able to be undertaken by machine at a later date. As this investigation would involve the removal of substantial amounts of soil, the archaeological program would need to have been finalised in the immediate vicinity to avoid disturbance to any archaeological relics or deposits.

The archaeological program also has the potential to encounter underfloor or occupation deposits that may have accumulated beneath floorboards. Deposits of this type are sensitive and are often investigated via a methodical system utilising grid squares, careful excavation with hand tools and sample sieving. This type of investigation can recover data that may be utilised in the analyses of interior spaces and in the identification of activities within those spaces.

In the event that unexpectedly intact archaeological remains, or significant remains not identified in the archaeological assessment, are encountered during the salvage program, Heritage NSW would be consulted.

4.9 Monitoring

Archaeological monitoring is where an archaeologist is in attendance and supervising construction excavation work with the potential to expose or impact archaeological remains. Monitoring is generally undertaken where there is lower potential for significant archaeological remains and/or where minor excavation work is in an area of archaeological sensitivity.

Historical archaeological monitoring may also be undertaken in conjunction with Aboriginal heritage testing and salvage programs.

If archaeological remains are identified during archaeological monitoring, they would be recorded and assessed to determine if further investigation is required. Localised stoppages in the construction work would be required to facilitate this process. Works would not recommence until the monitoring archaeologist has completed the recording and is satisfied that further investigation is not required.

If significant archaeological remains are identified, then further investigation such as salvage would be required prior to construction impacts.

4.10 Archaeological recording

The archaeological archival recording would be undertaken in accordance with best practice and Heritage NSW guidelines. The level of recording detail would be in accordance with the significance of the archaeological remains. State significant remains require more detailed recording, in particular photographic, survey and photogrammetry.

The recording methodology includes the following:

- A site datum would be established

- A standard context recording system would be employed. The locations, dimensions in plan and characteristics of all archaeological features and deposits would be recorded on a sequentially numbered register
- Significant archaeological structural remains, deposits and features would be recorded on context sheets
- Photographic recording of all phases of the work on site would be undertaken
- Digital photography, in RAW format, using photographic scales and photo boards where appropriate. A photographic record of all phases of the work on site would be undertaken
- Detailed survey and/or measured drawings would be prepared, including the location of remains within the overall site
- Significant artefacts would be collected by context for later analysis in accordance with a discard policy outlined in the AMS
- Building material, soil and pollen samples would be collected for further analysis (as appropriate)
- Registers of contexts, photos, samples and drawings would be kept.

4.11 Underfloor and cesspit/well deposits

4.11.1 Underfloor deposits

Underfloor deposits may be present within the Parramatta metro station construction site. Underfloor deposits may provide particularly useful archaeological information in the context of domestic or industrial/manufacturing spaces.

Intact underfloor deposits would be excavated in a grid system, either 50 centimetre or one metre depending on extent of deposit. Excavation would be by context if stratigraphic layers are identifiable. If the deposit is homogenised, excavation would proceed in five or 10 centimetre spits. Excavated material would be wet sieved, or dry sieved if possible.

4.11.2 Cesspit/well deposits

Accumulated material at the base of cesspits, wells and even drains can also contain archaeological material of high research value. Stratified well and cesspit backfills or deposits would be excavated by context. Homogenised deposits and fills would be excavated in spits (10 or 20 centimetre spits for example). The material would be sample sieved or 100 per cent sieved depending on the significance of the deposit. Excavated material would be wet sieved, or dry sieved if possible.

It is noted that the excavation of wells may pose safety risks due to the depths required. Normal archaeological excavation techniques may need to be altered to include staged mechanical excavation and benching.

4.11.3 Sieving strategy

The range and percentage of archaeological material collected from sieving would be in accordance with a sieving strategy developed by the Excavation Director and artefact specialist. The strategy would consider research agendas and potential interpretation outcomes.

4.12 Environmental samples

Archaeological remains such as primary fills or accumulated deposits in underfloor spaces, wells, cesspits and drains could contain ecofacts (fossil pollens, plant seeds, etc) of high research potential regarding environmental conditions, diet and disease.

4.12.1 Sampling strategy

Salvage excavations would include an environmental sampling strategy developed by the Excavation Director in consultation with a geomorphologist and palynologist, and other relevant specialists. Retention of environmental samples should focus on those which would contribute to research questions and for archiving of significance deposits.

4.13 Artefacts

Artefacts are likely to be uncovered during excavations and are an integral part of archaeological investigations and datasets. The archaeological team would include an artefact specialist to advise the excavation team on artefact retention strategies.

Artefacts from significant and *in situ* contexts would be collected and recorded (by context). Retrieval of artefacts should focus on those where analysis would contribute to research agendas, or would be representative of the site. These items may warrant archiving or consideration for interpretative displays or similar heritage interpretation.

A discard policy for onsite and post collection culling would be provided in the AMS.

Retention of all artefacts from archaeological investigations in urban contexts is neither possible nor expected in current historical archaeological practice. Large amounts of fill and disturbed material is common on urban sites. Whilst these layers can provide important archaeological information regarding site formation and phasing, the material often contains artefacts of unknown provenance and limited research value. Potentially significant deposits such as occupation-related material within former structures could contain numerous artefacts of varying levels of significance or value.

Should diagnostic or significant artefacts be present within the fill layers (out-of-context), a sample would be retained to inform the research agenda, consideration in interpretation and as part of the archaeological record.

Retained artefacts would be cleaned, processed, catalogued, and analysed by an archaeologist experienced in historical artefact assemblages. Artefact analysis would include production of a database in accordance with best practice archaeological data recording. The resulting information would be included in the final excavation report.

Artefacts recovered from the archaeological investigations would be the property of Sydney Metro and would be securely stored by them or a nominated repository following completion of post-excavation analysis.

4.14 Unexpected finds procedure

Unexpected archaeological finds would be managed under the Sydney Metro Unexpected Finds Procedure.

4.15 Human skeletal remains

If suspected human skeletal remains were uncovered at any time during earthworks for the project, the following actions would need to be followed:

- Immediately cease all excavation activity
- Notify NSW Police and NSW Coroner's Office
- Consult a forensic anthropologist to determine the nature of the remains
- Notify Department of Planning, Industry and the Environment (formerly the Office of Environment and Heritage) via the Environment Line on 131 555 to provide details of the remains and their location
- Ensure no recommencement of excavation activity unless authorised in writing by DPIE.

If human skeletal remains are identified, and determined to be historical, any archaeological investigation would be undertaken in accordance with the *Skeletal Remains: Guidelines for Management of Human Skeletal Remains*.[96]

Human skeletal remains would be managed in accordance with the Sydney Metro Exhumation Policy.

4.16 Aboriginal heritage

Archaeological management for historical archaeology would be completed where necessary in combination with Aboriginal archaeological management requirements. The requirements outlined in the Aboriginal Cultural Heritage Assessment Report (ACHAR) including requirements for management of contact archaeology would be considered during preparation of the AMS and prior to any historical archaeological investigation works.

4.17 Contaminated materials

Due to the potential for contaminants across The Bays Station construction site, archaeological excavation would also be undertaken in accordance with the specified WH&S protocols established for the site, prior to the commencement of works on site. Should the discovery of contaminants on site likely result in the potential harm to archaeological staff, there may be a requirement to deviate from the proposed archaeological methodology, in order to ensure the health and safety of onsite staff. This response may include the use of protective clothing, face masks, and specified gloves, additional washing protocols, through to the need to cease hand excavation on site.

Should the requirement to employ mechanical excavation rather than hand excavation arise, archival photographic recording of archaeological material would be conducted from a safe distance (as specified in the WH&S requirements of the remediation specialists).

4.18 Preliminary results reporting

Interim or preliminary archaeological findings reports would be prepared following completion of archaeological investigation stages. These reports would outline the main archaeological findings, post-excavation and analysis requirements, and would also include any further archaeological

[96] Heritage Council of NSW, 1998

investigation requirements for a particular site or future construction task. The preliminary results report would also identify whether the findings should be considered for public interpretation.

4.19 Post-excavation analysis and reporting

Following the completion of on-site archaeological works, post-excavation analysis of the findings would be undertaken. This includes artefact analysis, environmental and building material sample analysis, stratigraphic reporting and production of Harris Matrices, production of detailed site survey plans, illustrations and interpretative drawings, generation of catalogues, data records and site registers.

A final excavation report detailing the archaeological program and results would be prepared in accordance with the standard conditions of archaeological permits issued under the NSW *Heritage Act* 1977. It would include the results of the archaeological excavation and analysis, additional historical information if needed, photographs, illustrations and plans, catalogue and analysis of artefacts, and also respond to the research questions. The report would also include a reassessment of archaeological significance based on the investigation results. Opportunities for archaeological interpretation would also be included in the final report.

4.20 Public interpretation

There is potential for significant archaeological remains within the project sites, in particular at the Parramatta metro station construction site which could be of State heritage significance. There is opportunity to interpret the archaeology and engage the public with the significance and stories of Sydney's past.

Significant findings from the archaeological investigation program would be included in heritage interpretation for the project and opportunities to include material on public display in the future Metro station could be considered. Preliminary results reporting and final reporting would identify significant findings which should be considered as part of heritage interpretation.

There may also be opportunity for public engagement such as open days or media releases during archaeological investigations. Information regarding State significant archaeological remains, such as at the Parramatta metro station construction site, would be provided to the public. This could include hoarding signage, pamphlets, media releases, information on the project website, social media and blog content during the excavation process.

Interpretation should build on existing interpretation especially in Parramatta and should seek to further develop understanding of the archaeological resource and convict history of the area.

5.0 ARCHAEOLOGICAL MANAGEMENT SUMMARY

5.1 Introduction

The sites have been divided into archaeological management zones based on archaeological potential and current construction impacts. Archaeological management zone mapping has been prepared according to the following colour code:

- **Red** (Zone 1): Direct impact to significant archaeology. Archaeological investigation required prior to any construction impacts (bulk excavation, etc.). Prepare AMS once construction methodology and impacts are known.
- **Amber** (Zone 2): Potential impact to significant archaeology. Prepare AMS once construction methodology and impacts are known. Archaeological investigation is likely required.
- **Green** (Zone 3): Unlikely to contain significant archaeology. Construction to proceed with Unexpected Finds Procedure as nil-low potential for significant archaeological remains.

5.2 Parramatta metro station construction site archaeological management

A summary of archaeological management measures for the Parramatta metro station construction site is provided in Table 19 and outlined in Figure 37

Table 19: Archaeological management measures for the Parramatta metro station construction site

Phase	Site feature and potential archaeological remains	Potential and Significance	Impact	Mitigation	Zone
Phase 1 (1788–1821)	**Convict huts, yards and gardens** – remains include timber posts and postholes, earthen floor surfaces, informal drains, buried historical soil deposits, isolated artefact deposits (bone, glass, metal, ceramic, stone).	Low and Low - Moderate, State significant	Removal of all rippable materials across site, direct impact	AMS, monitoring of final building and slab removal, salvage excavation	1
Phase 2 (1821–50)	**Early colonial residences and yards** – remains include timber posts and postholes, sandstock brick or stone footings, timber boards and underfloor artefact deposits, fence and informal earthen or stone drains and kerbs, former yard surfaces, deep well and privy refuse deposits, buried historical soils, and isolated artefact deposits (bone, glass, metal, ceramic, stone).	Low - Moderate, local to State significant	Removal of all rippable materials across site, direct impact	AMS, monitoring of final building and slab removal, salvage excavation	1
	Convict drain – remains include sandstock brick lined barrel drain or later machine-pressed brick	Low - Moderate,	Removal of all rippable materials	AMS, comparative analysis to	1

Phase	Site feature and potential archaeological remains	Potential and Significance	Impact	Mitigation	Zone
	drain repairs, infilled artefact and soil deposits.	local – State significance	across site, direct impact	determine significance, test and salvage excavation	
Phase 3 (1850–1900)	**Commercial buildings, rear yards and outbuildings** - brick footings, timber postholes and posts, ceramic drains, fence and informal earthen or stone drains and kerbs, former yard surfaces, industrial debris and slag, deep well and privy refuse deposits, buried historical soils, and isolated artefact deposits (bone, glass, metal, ceramic, stone).	Moderate, may reach threshold for local significance	Removal of all rippable materials across site, direct impact	AMS, test excavation with salvage excavation as required	1

5.3 The Bays Station construction site archaeological management

A summary of archaeological management measures for The Bays Station construction site is provided in Table 19 and outlined in Figure 38.

Table 20: Archaeological management measures for The Bays Station construction site

Phase	Site feature and potential archaeological remains	Potential and significance	Impact	Mitigation	Zone
Phase 1 (1800–51)	**Historic soil deposits and discarded artefacts** – Archaeological remains associated with this would include stratigraphically-controlled and sealed soil deposits, *ex-situ* artefactual material from this period which may have washed into site or been discarded.	Nil to Low, local significance	Cut and cover excavation, direct impact	Unexpected Finds Procedure	2
Phase 2 (1851–1912)	**Outbuildings and structures of the original White Bay Hotel** – Archaeological remains associated with these former buildings could include brick and stone footings, timber boards and intact underfloor deposits, ceramic pipes, brick or stone lined drains, isolated ceramic, glass, bone, or metal deposits. Lined cesspits or wells containing occupation or discarded artefactual (glass, ceramic, bone) material and soil deposits.	Low - Moderate, local significance	Excavation for installation of sediment pond, direct impact	AMS, test excavation/ salvage as required	2

Phase	Site feature and potential archaeological remains	Potential and significance	Impact	Mitigation	Zone
	Reclamation fills – Archaeological remains relating to reclamation fills could include discrete stratigraphic historic soil deposits, artefactual (glass, ceramic, bone, timber, brick) materials and infill rubble, and timber retaining or infill structures such as piers, posts, beams or walls.	Moderate, may reach the threshold for local significance	Cut and cover excavation, direct impact	AMS, test excavation	2
Phase 3 (1912–84)	**Rail Infrastructure and former industrial structures** – Archaeological remains could include evidence of turntables, stabling facilities and roundhouses, loading equipment, rail beams, ballast and timber or concrete sleepers, rail switches, levers and points, concrete, steel and brick building footings, tile and brick rubble, discarded industrial equipment, artefactual refuse deposits (metal, glass, ceramic).	High, local significance	Landscaping and levelling across site, direct impact	AMS, archaeological monitoring of selected significant rail infrastructure remains	2

5.4 Archaeological management zone maps

Archaeological management zones described in sections 5.2 and 5.3 above are illustrated in Figure 37 and Figure 38 below.

Figure 37: Archaeological management zones for the Parramatta metro station construction site

Figure 38: Archaeological management zones for The Bays Station construction site

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