Sydney Metro: Central Station – Combined Services Route

Archaeological Method Statement

Report to Laing O'Rourke

August 2019

artefact

Artefact Heritage
ABN 73 144 973 526
Level 4, Building B
35 Saunders Street
Pyrmont NSW 2009
Australia

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

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Author:	Jessica Horton, Jayden Van Beek Jenny Winnett, Iain Stuart, Sandra Wallace
Project manager:	Jayden Van Beek
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EXECUTIVE SUMMARY

This Archaeological Method Statement (AMS) outlines the archaeological methodology to manage potential construction impacts to significant non-Aboriginal archaeological remains within the footprint of the Combined Services Route (CSR), as required under the Minister's Conditions of Approval for the Sydney Metro City & Southwest Chatswood to Sydenham project Critical State Significant Infrastructure (CSSI) approval (SSI15_7400).

On 22 March 2017, the Premier of NSW and the Minister for Transport and Infrastructure announced Central Walk as the first step in revitalising Central Station. Central Walk would involve the construction and operation of a new east concourse and a new eastern entry (from Chalmers Street). These works have been addressed in a separate Archaeological Method Statement (AMS). The current AMS responds to management of impact to potential archaeological remains associated with the CSR only.

A modification report for Central Walk was lodged with the Department of Planning and Environment and publicly exhibited from 21 June 2017 to 2 August 2017. The modification was approved under Section 115ZI of the EP&A Act on the 21 December 2017.

Section 6.6.1 of the Central Walk Modification Report (SSI Mod 2) detailed how potential impacts to Central Station would be reduced via the construction a combined services route (CSR). The existing services routes at Central Station are contained within the underground service and pedestrian tunnels beneath the existing platforms (refer to Chapter 7 of the Environmental Impact Statement (EIS) for further details). In order to avoid damage to the existing services and to provide uninterrupted access for the construction of the Metro platforms, the services must be relocated into a combined service route around Central Station.

The CSR has the potential to impact on archaeological remains associated with the Devonshire Street Cemetery, First, Second and Third phases of the development of Central Railway Station.

The assessment of archaeological potential and significance provided in this AMS is based on the Archaeological Assessment and Research Design (AARD) prepared for the CSSI approval.[1] Where necessary these assessments have been amended to account for additional information obtained during the preparation of the AMS. The AMS also outlines the archaeological management approach based on the AARD and in response to the construction methodology and program. The recommended archaeological management approach is outlined in the following table:

Date	Archaeological resource	Potential	Significance	Management
1820 - 1865	Devonshire Street Cemetery	Low	State	Monitoring/salvage
1855 - 1874	First and second railway station	High	Local/State	Testing/monitoring/salvage
1900 - present	Third Central Station	Moderate	Local/no significance	Monitoring/Unexpected finds

[1] Artefact Heritage 2016a. *Sydney Metro City & Southwest - Chatswood to Sydenham Non-Aboriginal Archaeological Assessment and Research Design.* Report prepared for Jacobs / Arcadis / RPS.; and Artefact Heritage 2017. *Central Walk – Addendum Archaeological Assessment and Research Design.* Report prepared for JAR.

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1.1 Background

Planning approval for Sydney Metro City & Southwest Chatswood to Sydenham was granted by the Minister for Planning under Part 5.1 of the Environmental Planning and Assessment Act 1979 (EP&A Act) on 9 January 2017.

On 22 March 2017, the Premier of NSW and the Minister for Transport and Infrastructure announced Central Walk as the first step in revitalising Central Station. Central Walk would involve the construction and operation of a new east concourse and a new eastern entry (from Chalmers Street).

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Although the CSR was identified as a concept in the EIS and SSI Mod 2, the detailed design process has since identified an optimised route from an operational and maintenance perspective. In order to demonstrate consistency of the design with the project approval a Consistency Assessment is required to be approved by Sydney Metro. The assessment has found that constructability is consistent with what was identified in Mod 2.

A separate AMS for Aboriginal archaeological management at the Central Walk site has been prepared by Artefact Heritage, which refers to this AMS and is consistent with its methodology.

Several AMS's for pre-construction works have been prepared by Artefact Heritage for the project in consultation with the former Heritage Division of the Office of Environment and Heritage (OEH) as a delegate of the NSW Heritage Council (now Heritage, Department of Premier and Cabinet (DPC)). This AMS has been informed by, and is in accordance with, the following project assessment and management documents:

- Artefact Heritage 2016a. Sydney Metro City & Southwest - Chatswood to Sydenham Non-Aboriginal Archaeological Assessment and Research Design (ARD)
- Artefact Heritage 2016b. Sydney Metro City & Southwest - Chatswood to Sydenham Aboriginal Cultural Heritage Assessment Report (CHAR)
- Artefact Heritage 2017. Central Walk – Addendum ARD
- Artefact Heritage April 2018 updated May 2018. Central Station Main Works – Early Works: Archaeological Method Statement (AMS)

- Artefact Heritage July 2018. Central Station Main Works – Platforms and Sydney Yard enabling works (AMS)
- Artefact Heritage May 2018 updated June 2018. Central Station Main Works – Early Works: Archaeological Method Statement for piling and Excavation (AMS)
- Artefact Heritage September 2018. Sydney Yard Access Bridge Construction Project – Excavation Directors Report (results report)
- Artefact Heritage February 2019. Additional Archaeological Works, Central Station Main Works Station Box (advice memo)
- Sydney Metro Authority 2019. Sydney Metro Unexpected Heritage Finds Procedure
- Sydney Metro Authority 2019. Sydney Metro Exhumation Management Plan.

1.2 Project background

The Sydney Metro network consists of Sydney Metro Northwest (previously known as the North West Rail Link), Sydney Metro City & Southwest and Sydney Metro West.

As part of the Central Walk project, the existing services routes at Central Station are contained within the underground service and pedestrian tunnels beneath the existing platforms (refer to Chapter 7 of the Sydney Metro City and Southwest EIS for further details). In order to avoid damage to the existing services and to provide uninterrupted access for the construction of the Metro platforms, the services must be relocated into a combined service route around Central Station. The CSR will extend as a circular route around the site, utilising existing service infrastructure where this is available and providing new installations as required to complete the system. The CSR will provide for communications services (voice, data and IT connectivity, requiring 6 to 8 cables) and high voltage electrical (HV) services that will service the whole site, both existing and the new infrastructure installations that are being introduced as part of the Central Station Main Works

1.3 Site location

The CSR footprint is located within Central Station, which is located within the City of Sydney Local Government Area (LGA) and in the Parish of Petersham. The site location is bound by, and within, an active rail corridor, platforms, rail buildings and rail infrastructure, in addition to portions of Chalmers Street and commercial buildings.

Central Railway Station is listed on the State Heritage Register (SHR) (SHR Item No. 01255), Railcorp Section 170 Heritage and Conservation Register (SHI No. 4801296), and Sydney Local Environmental Plan (LEP) 2012 (LEP Item No. I824) as an item of state significance (Figure 2).

Figure 1: Project overview and station locations

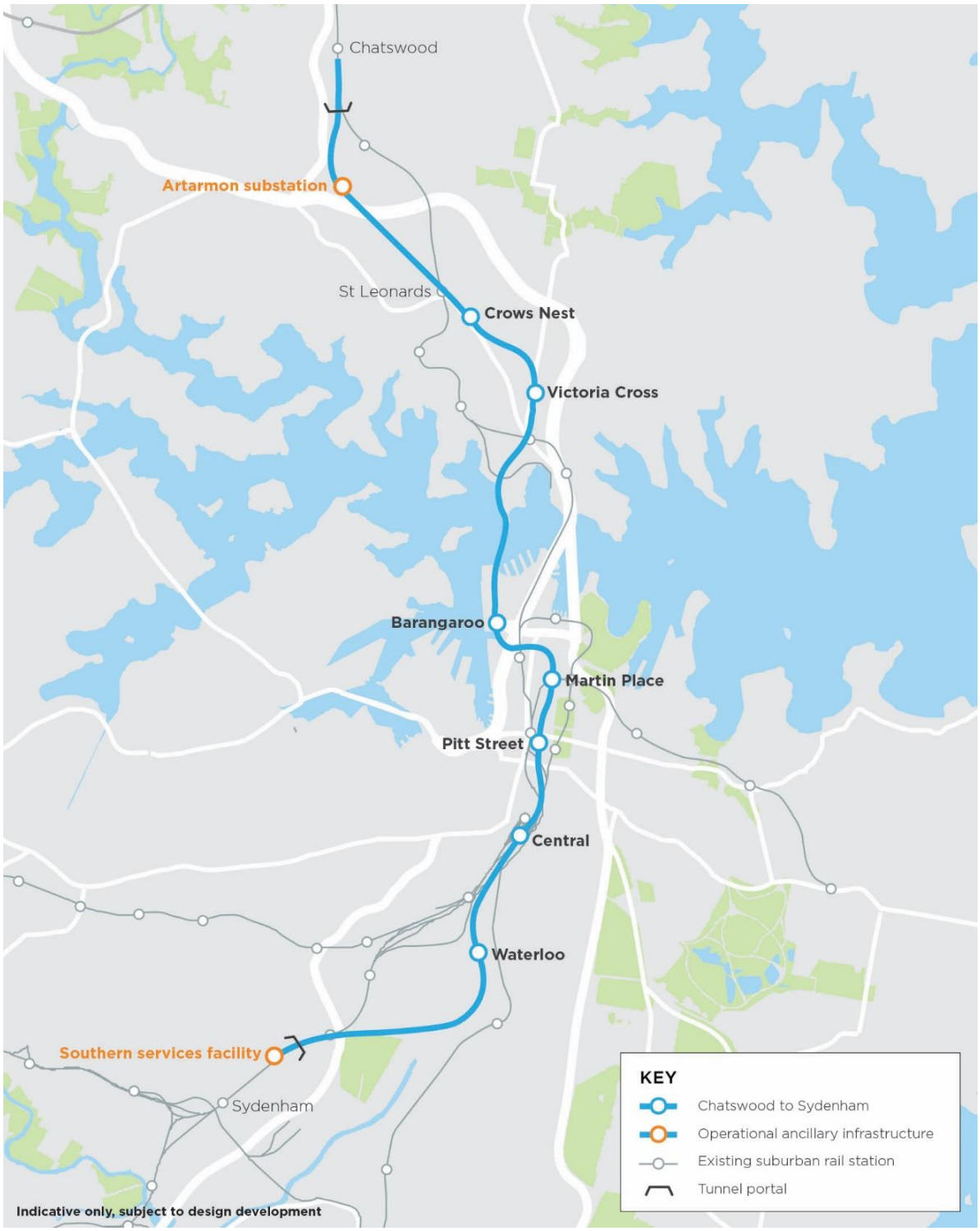


Figure 2: Heritage listings for Central Railway Station including Central Walk

1.3.1 Archaeological management zones

A plan of archaeological management for the Central Walk site was prepared as part of the 2016 *Sydney Metro City & Southwest - Chatswood to Sydenham* AARD.[2] An Addendum ARD for the project as modified was also produced in 2017 to guide the Central Walk project.[3]

The Central Walk works are located within Archaeological Management Zones (AMZ's) CS 4, and CS 10. This AMS is based on the recommendations of the AARD for archaeological management in these AMZs, with some revisions as a result of additional research and resulting refinement of assessments of archaeological potential and significance.

The following table defines the extent of each AMZ. If additional works are required outside these management zones during construction, the closest management zone will be used as a comparison, or the Excavation Director will approve the most appropriate management measures consistent with similar impacts outlined in this AMS.

Table 1: Archaeological Management Zone and contemporary land use in the Central Station site

AMZ	Description of Area	Lot	Address
CS 4	Sydney Yard siding area located between the rail corridors of the T1 line (associated with platform 16) and the country services line (associated with platform 15).	Lot 118 DP1078271	Central Station, Haymarket, NSW
CS 10	Area coinciding with Platforms 16-25 and intervening rail corridor; extending from Platform 16 to the eastern edge of Chalmers Street.	Lot 118 DP1078271	Central Station, Haymarket, NSW

1.4 Conditions of approval

The Minister's Conditions of Approval for the Sydney Metro City & Southwest Chatswood to Sydenham project were amended in December of 2017 to reflect the Central Walk project modification.

Amended condition E17 states that an AMS must be prepared in consultation with the Heritage Council of NSW (or delegate) prior to the commencement of archaeological investigation.

Under Amended condition E17 the final methodology must:

(a) Provide for the detailed analysis of any heritage items discovered during the investigations;

(b) Include detailed site specific archaeological management and artefact management strategies;

[2] Artefact Heritage 2016a. *Sydney Metro City & Southwest - Chatswood to Sydenham Non-Aboriginal Archaeological Assessment and Research Design.* Report prepared for Jacobs / Arcadis / RPS

[3] Artefact Heritage 2017. *Central Walk – Addendum Archaeological Assessment and Research Design.* Report prepared for JAR

(c) Include cored soil samples for soil and pollen for the Pitt Street site within the Tank Stream Valley; and

(d) Provide for a sieving strategy

This AMS satisfies amended condition E17 and will be provided for review to the Heritage DPC. Both the nominated Primary and Secondary Excavation Directors have reviewed and endorsed this AMS.

Condition E18 requires the nomination of an Excavation Director who complies with the Heritage Council of NSW's Criteria for Assessment of Excavation Directors (July 2011). Information on the nominated Excavation Directors have been provided for comment to Heritage DPC as a delegate of the NSW Heritage Council. On 7 May 2018 Heritage Division acknowledged that both the Primary and Secondary Excavation Directors meet the Heritage Council's Criteria for Assessment of Excavation Directors (2011) for the Central Station Main Works project which includes the CSR. The Primary Excavation Director would oversee the archaeological excavations and advise on archaeological issues. The Primary Excavation Director would provide clearance once archaeological management has been completed in an area, as per the methodology outlined in Section 6.16. This meets the requirements of Condition E18.

Condition E19 requires an Unexpected Heritage Finds Procedure to be prepared in accordance with any guidelines and standards prepared by the Heritage Council of NSW or OEH and by a suitably qualified and experienced heritage specialist. The Sydney Metro Unexpected Heritage Finds Procedure has been prepared for the project and would be implemented for the CSRc project works as per the archaeological methodology described in Section 6.11.

Condition E20 requires an Archaeological Relics Management Plan be prepared when an unexpected relic is discovered. This would be prepared as per the archaeological methodology described in Section 6.2. It is noted that under E20 an Archaeological Relic Management Plan would only be required for archaeological remains of State significance that were not identified in the AARD or this AMS.

1.5 Authors

This report has been prepared by Jenny Winnett (Secondary Excavation Director – Historical Archaeology), Dr Iain Stuart (Primary Excavation Director – Historical Archaeology) and Dr Sandra Wallace (Project Director).

2.0 PROPOSED WORKS

2.1 Introduction

The existing services routes at Central Station are contained within the underground service and pedestrian tunnels beneath the existing platforms (refer to Chapter 7 of the Environmental Impact Statement (EIS) for further details). In order to avoid damage to the existing services and to provide uninterrupted access for the construction of the Metro platforms, the services must be relocated into a combined service route around Central Station.

The site wide CSR will be delivered across the following 2 phases:

- Phase A – Western Baggage Tunnel, Northern Baggage Tunnel, and Platform 1 works
- Phase B – Darling Harbour Goods Line, Mortuary Sidings, Mortuary Tunnel, Sydney Yard, Water Main Tunnel, and Sydney Network Base (Phase is currently under development).

2.2 Phase A

The Phase A works will comprise of civil construction works cabling and electrical works, which are described in greater detail below, commencing around the northern corner of the site and progressing in an anti-clockwise direction (see Figure 3 for overview). The scope of Phase A works includes the following:

1. Western Baggage Tunnel (WBT) and Northern Baggage Tunnel (NBT)
    a. Concrete riser/encasement for comms/HV dropping down from Platform 1 through the WBT roof
    b. Concrete Encasement of HV along the eastern side of the WBT from the riser transitioning into Galvanised Steel Troughing (GST) when crossing the portal of the NBT before continuing into Service Tunnel Riser 2 (STR2)
    c. Comms in cable tray from the riser along the WBT with connection into existing CENA36 connms riser
    d. Comms in cable tray along the NBT to the back of house area at the eastern end of the tunnel.
2. Platform 1
    a. Trenched portion containing buried HV/comms conduits
    b. Conduits tied to cable tray in the southern hollow portion of platform 1

2.2.1 Construction methodology

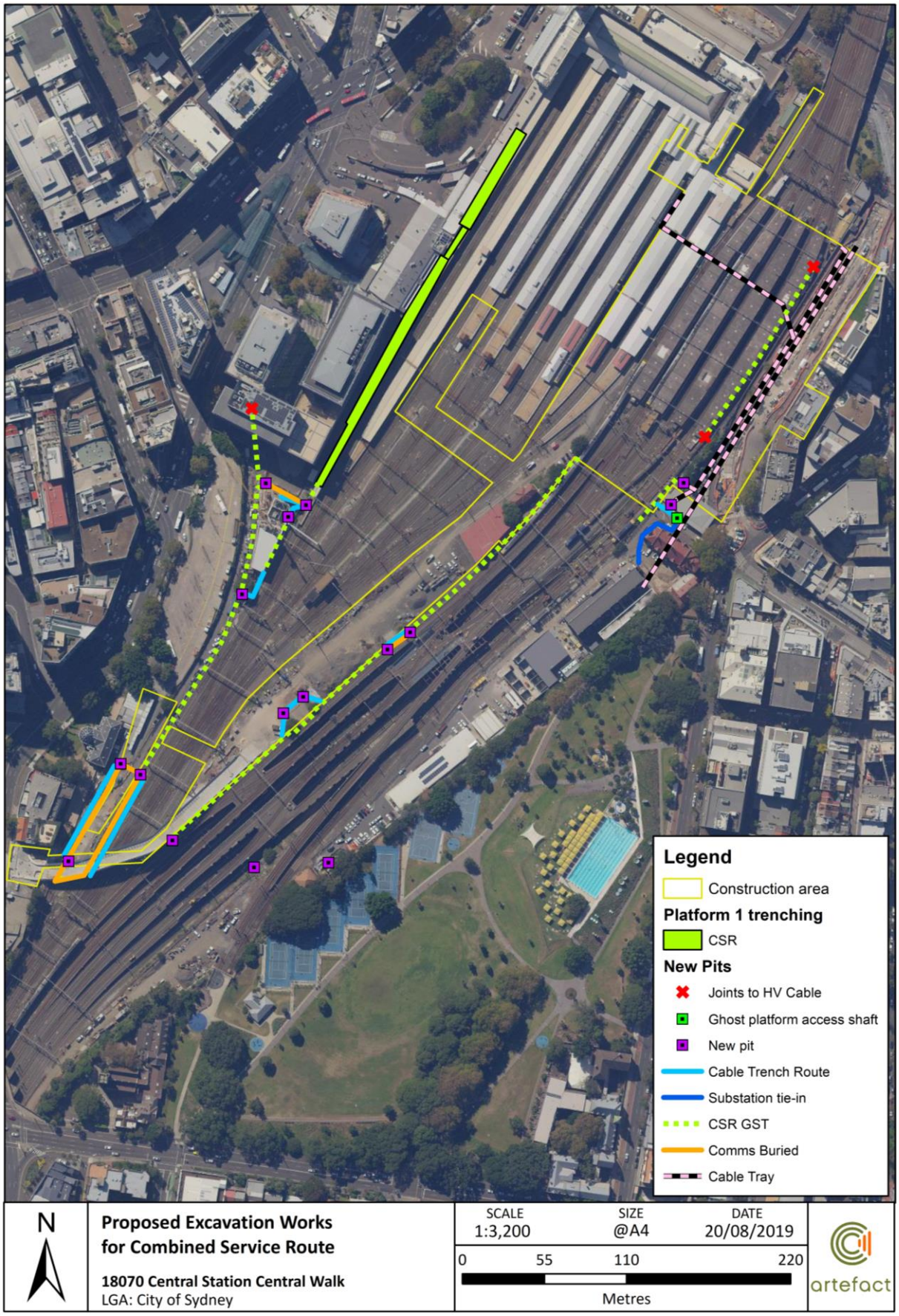
The CSR will extend as a circular route around the site and will be constructed using existing service infrastructure where this is available and providing new installations as required to complete the system. The sequence of construction is in principal as outlined below:

1. Subway Passage System: North and West Baggage Tunnels Install ceiling and wall mounted cable trays to support new Comms. Services. Wall fixed GST for HV services, transitioning to concrete encasement of GST at southern end of west baggage tunnel

2. Intercity Platform 1- From the west baggage tunnel: the communications/HV services transition vertically within a concrete riser to Platform 1, where separate communications and HV pits will be trenched into the platform in areas constructed on fill
3. Intercity Platform 1- In the area where the platform has been extended: new services will be suspended on cable trays in the existing hollow of the platform. Openings will be created in the western brick wall supporting the platform slab for the passage of services
4. Trenching near Western Boundary: Adjacent to the Lee Street Substation the CSR will comprise a trenched route
5. Darling Harbour Goods Line: Installation of galvanised steel trough (GST) cable route for HV and Comms. along the Darling Harbour Cut. The GST would be installed on either a post into the ground or on top of a brick embankment wall
6. Lee Street Substation: Installation of galvanised steel trough (GST) cable route for HV services around Lee Street Substation. HV services will be transitioned from Platform 1 to GST on posts around the Lee Street substation, with a small area of local trenching to connect to the existing pits
7. Mortuary Station / Mortuary Tunnel: Where the dive embankment wall tapers off to the south, GST on posts mounted into the ground will be extended into the yard. Services will then be trenched in ground and connected to the existing pit that accesses the Mortuary Tunnel. CSR services will then be extended through the Mortuary Tunnel with approximately 6/No. 150mm core holes introduced for installation of new cables
8. Route to SYAB: A new pit will be constructed adjacent to SYAB on the east side, with services brought vertically and then run along the top of the SYAB wall. This will then connect to a new padmount transformer in Mortuary Yard south of the SYAB.
9. Sydney Yard: Install GST on top of east batter wall of SYAB and extend on posts through Sydney Yard
10. Water Main Tunnel: Extend CSR services through the Water Main Tunnel
11. Trenching around the former Railway Institute Building: Construction of HV pits and trenching to the around the Railway Institute Building and Prince Alfred Substation
12. Connection to Prince Alfred Substation: HV Connection to Prince Alfred Substation at Basement Level.

The AMS will cover any scope of works that require ground penetration along the CSR as overlayed in the various trigonometric surveys and plans.

Figure 3: Key features of the CSR



3.0 HISTORICAL CONTEXT

The following history has been adapted and summarised from the CSMW AARD with additional new information and figures added as relevant.[4] Historical background of the Devonshire Street Cemetery has been adopted from the archaeological results memo produced by Artefact Heritage on 8 February 2019.[5] For a complete historical overview of the Central Station site, refer to the documents referenced in Section 1.1.

3.1 The Devonshire Street Cemetery

By 1820 the Old Sydney Burial Ground, located on George Street at the corner with Druitt Street (now occupied by Sydney Town Hall), had reached capacity, was overgrown and used as an informal dumping ground. A second cemetery was proposed for the southern outskirts of town. The new site had been reserved by Governor Macquarie in 1818 and was chosen due to the remote location of the cemetery at the edge of town, beyond the cattle and hay markets. Located at the farthest outer limit of the town past the Brickfields, the cemetery was situated at a suitable distance to avoid inconveniencing the gentrifying township and was significant in that there were allotments for various religious denominations.

The new burial grounds, originally called the Sandhills Cemetery due to its landscape of a steep sand ridge, and later, the Devonshire Street Cemetery following the formation of Devonshire Street, were officially consecrated in 1820. The government Order issued on the 29th January 1820 closed the Sydney burial ground and opened the Devonshire Street Cemetery. The Central Walk study area is primarily located with the Roman Catholic burial ground (Figure 5).[6]

Elizabeth Street formed the eastern boundary of the Devonshire Street Cemetery and at that time it was known as Elizabeth Street South. Elizabeth Street ran over the sand ridge on which the cemetery was situated. By all accounts it was a steep rise "a hill-not a mole-bill but a mountain".[7] Public agitation from local residents was for Elizabeth Street to be lowered and this seems to have occurred around 1841 once more properties were developed, although the precise date has yet to be established. This excavation seems to have caused the cemetery wall and sides of the cutting to collapse.

By 1900, the grounds had become neglected with a Citizen's Vigilance Committee member stating '*a thick, disorderly, and in some places almost impenetrable scrub covers most of the ground; and tombstones lie scattered in careless confusion all over the place*. *Where standing, they present grotesque attitudes like a party of a drunken men crossing a field*'.[8]

On 11 December 1900, an Act of Parliament passed enabling the construction of Central Railway Station. Two proposals for this station had been considered – the first at Hyde Park and the second over the Devonshire Street Cemetery. The latter proposal was adopted and the clearing of the Devonshire Street Cemetery, along with the demolition of the Benevolent Asylum, Carters Barracks and the Police Barracks and other buildings commenced in 1901.

On the 17 January 1901, the government issued notices declaring that representatives of any deceased in the Devonshire Street Cemetery must remove their relatives' remains and monuments within two

[4] Artefact Heritage 2016a
[5] Artefact Heritage 'Memo – DRAFT Additional Archaeological works, Central Station Main Works Station Box' 8 February 2019
[6] Keith A Johnson & Malcolm R Sainty, *Sydney burial Ground 1819-1901: Elizabeth and Devonshire Streets and History of Sydney's Earliest Cemeteries from 1788,* Library of Australian History, Sydney, 2001. p, 205.
[7] "ANATOMY OF LATEST BRITISH AND FOREIGN INTELLIGENCE." The Sydney Gazette and New South Wales Advertiser (NSW : 1803 - 1842) 10 March 1836: 2
[8] Joseph Waugh, 'The Sydney Burial Ground'*, The Deacon's Treasure No. 25,* December 1998, p. 27, citing the Citizen's Vigilance Committee.

months[9]. The exhumations were conducted under the supervision of the Department of Public Works with detailed records kept by the State Records. It became apparent that due to the large number of graves identified under paths and various other objects, trenching was required over the entire area at a depth of several feet to retrieve the remains. By 1902, most of the remains had been exhumed. Relatives of the deceased had collected approximately 8500 remains, whilst the approximate remaining 30,000 remains and 2800 monuments were transported to the new Bunnerong Cemetery at Botany, today known as the Pioneer Memorial Park within the Eastern Suburbs Memorial Park.

Accounts of the exhumation work filled the Sydney newspapers in 1901. There appears to have been no plan and the Government was rapidly forced to begin the work by clearing the vegetation to allow relatives to actually find the graves they were looking for. That being completed individual exhumations began with families and undertakers involved. Finally, a process of trenching was undertaken. The Evening News described the work as

> *It is gruesome to watch the men at work in the trench. They dig forward, and as they draw out a spadeful, turn it over, and the bones are picked up and put into a sieve near by; then the earth is shaken off and they are placed, carefully in a coffin that stands near.*[10]

However, newspaper reports suggest that the work of exhumation may not have gone all that smoothly. The sensationalist newspaper Truth published "the gruesome facts which have recently been brought under our notice" The allegations were that only the Anglican and the Jewish sections of the cemetery were properly trenched to a depth of 9 feet and the remaining areas were not properly exhumed with claims that excavations barely reached 4 feet below the surface "while all descriptions of bones are strewn among the sand and earth without any attempt being made to gather them for conveyance and burial at La Perouse."[11]

Archaeological investigation undertaken as part of the CSMW has since identified that numerous graves, many including skeletal material, were not removed during these works. The survival of such remains appears to be related primarily to the topography of the former sandhills and is not consistent throughout the station site. This has been discussed further in Section 4.3.1.

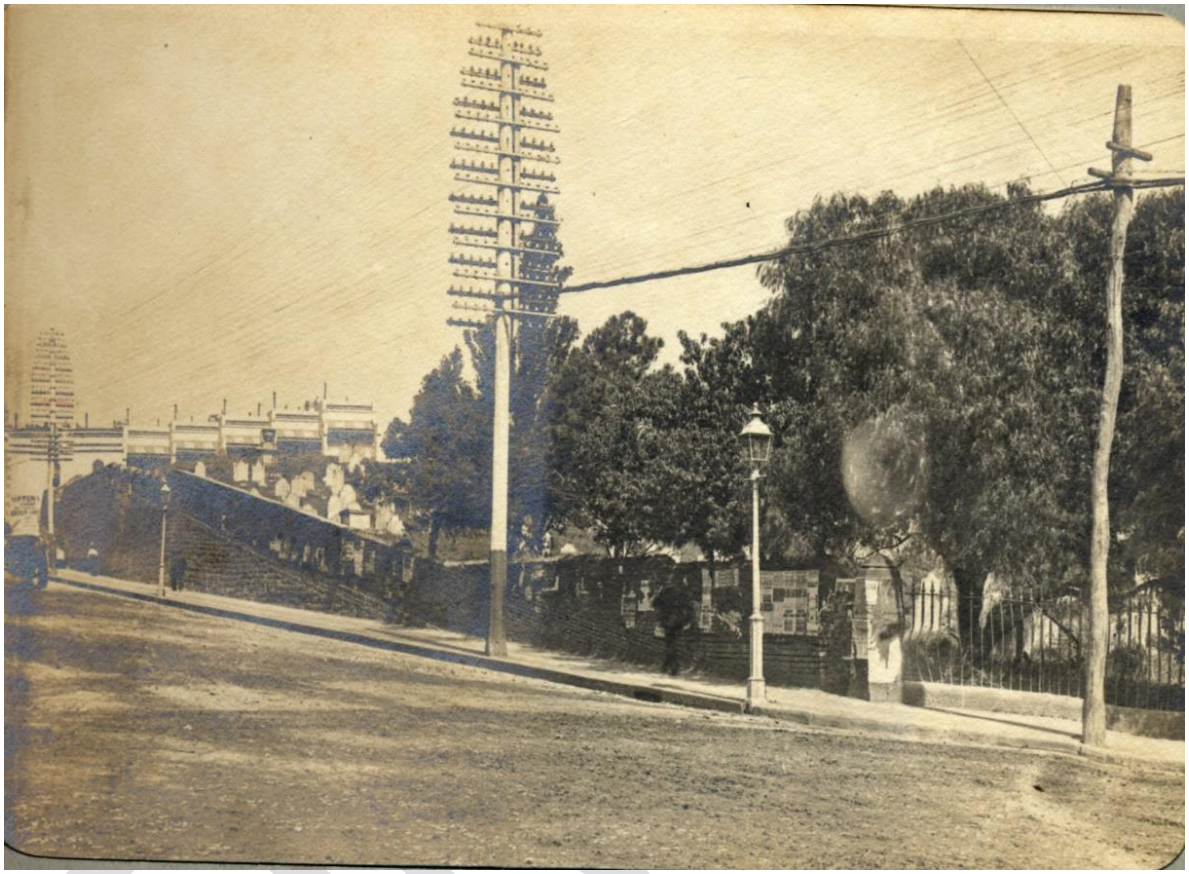
The sand hills were noted as being significantly higher than the level of the existing station line on the eastern side, with infill required to create a level platform on the western side. In addition to the land resumptions of the Devonshire Street Cemetery and the Benevolent Asylum, the Central Railway Station project required the resumption of the steam tram depot at the corner of Pitt Street and Garden Road, the Convent of the Good Samaritan on Pitt Street, the Sydney Female Refuge, the Police Superintendent's Residence on Pitt Street, the Christ Church parsonage on Pitt Street, the Police Barracks on Garden Street, along with various residential properties along Railway Parade.

To the south of Devonshire Street (today represented by the alignment of the Devonshire Street tunnel) was an area of named the Cleveland, or Government, Paddocks (named after the Cleveland estate to the east). This was reportedly the location of an Aboriginal camp until the mid-nineteenth century.[12] The surviving portion of this space is today known as Prince Alfred Park (Figure 6).[13] These paddocks were owned by the government and used ostensibly for public recreation and pasturage.

[9] The Devonshire-street Cemetery Act, 1901 formalised this procedure later in 1901.
[10] "Nobody's Friends at Devonshire Street Cemetery." Evening News (Sydney, NSW : 1869 - 1931) (Sydney, NSW), 06 July 1901 1901, EVENING NEWS SUPPLEMENT, 1
[11] The Cemeteries Scandal
[12] City of Sydney, Prince Alfred Park (Cleveland Paddocks), 2013, http://www.sydneybarani.com.au/sites/prince-alfred-park-cleveland-paddocks/, viewed 2 May 2018.
[13] Rappoport Pty Ltd & NSW Government Architects Office. 2013. *Central Station Conservation Management Plan*. pp. 32 – 35.

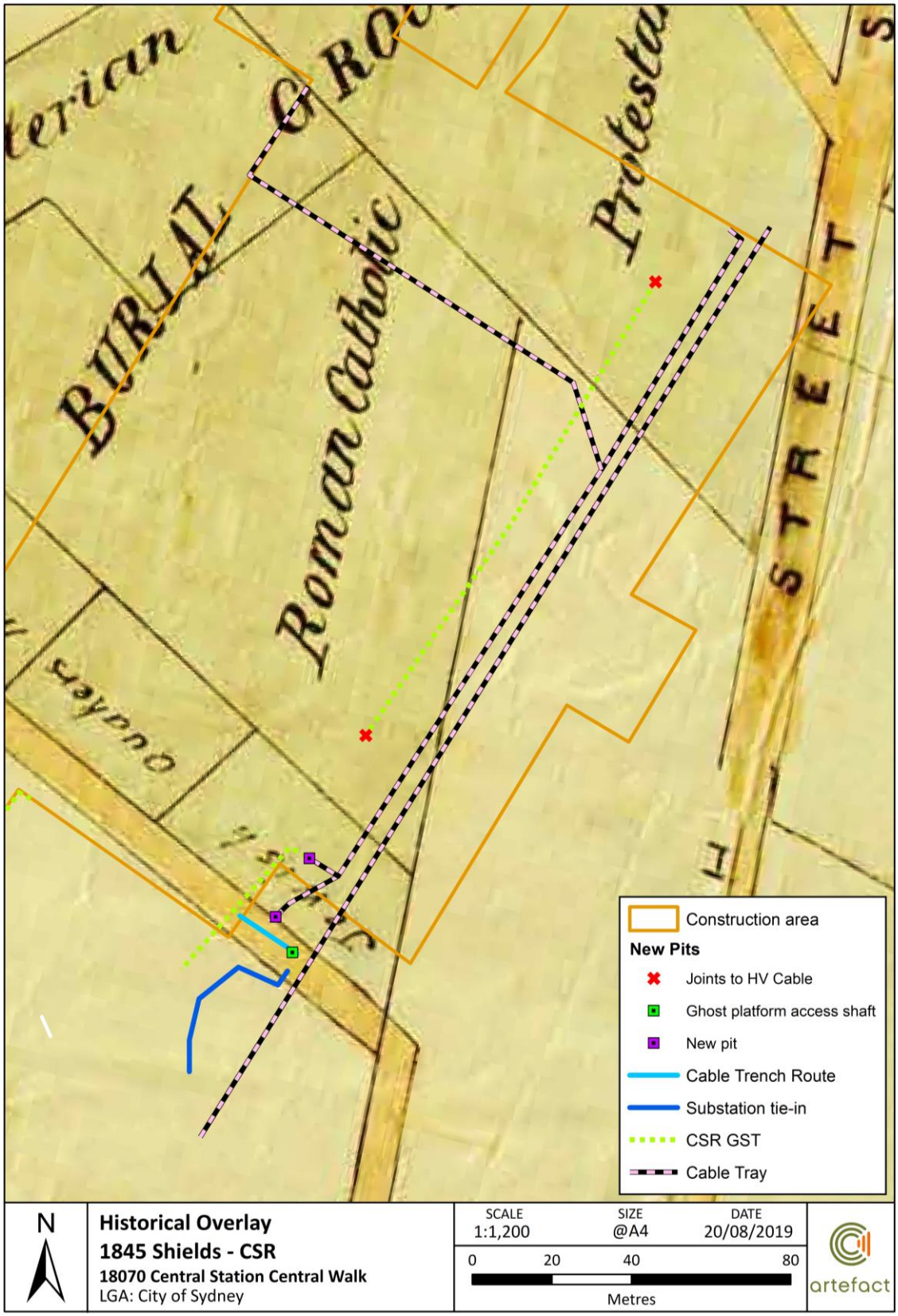
Their location at the outer edge of the town, and the perceived insalubriousness of the area around the Benevolent Asylum, led to complaints of robbery and theft in the paddock by the 1840s.[14] Sketches from this time show that the paddock consisted of undulating sand dunes with thin grass where on dark nights the "ditches and holes serve effectually to conceal any footpads."[15]

Figure 4: View of the eastern boundary wall of Devonshire Street Cemetery in 1901[16]



[14] *The Australian Magazine* 15 May 1847
[15] *Ibid.*
[16] RAHS

Figure 5: The Devonshire Street Cemetery c.1845[17]



[17] Detail from Assistant City Surveyor Frances Webb Sheilds' 1845 survey of the City of Sydney, version produced in 1896-1897, copied from the 1845 plan. Accessed via the City of Sydney Council's 'Historical Atlas of Sydney' on 10 May 2019 https://atlas.cityofsydney.nsw.gov.au/maps/city-of-sydney-sheilds-1845/

In a 1901 newspaper article on the subject of exhumations from Truth titled 'Devonshire Street Cemetery : A General Clearance', it was reported that; 'the ground in each section has been trenched to a considerable depth, and…when Mr. O'Sullivan[18] withdraws his men, not a bone or human relic will be within the compass of the acres that have held thousands of bodies for the last 80 years'. In addition to this, a July 1901 article by the Telegraph titled 'Buried Alive' reported: many of the graves in the cemetery contain the remains of several bodies. These are shovelled into a sieve, shaken, and the bones emptied into a box preparatory to removal to Botany. Archaeological investigation undertaken as part of the CSMW has since identified that numerous graves, many including skeletal material, were not removed during these works. The survival of such remains appears to be related primarily to the topography of the former sandhills, and is not consistent throughout the station site. This has been discussed further in Section 4.3.1.

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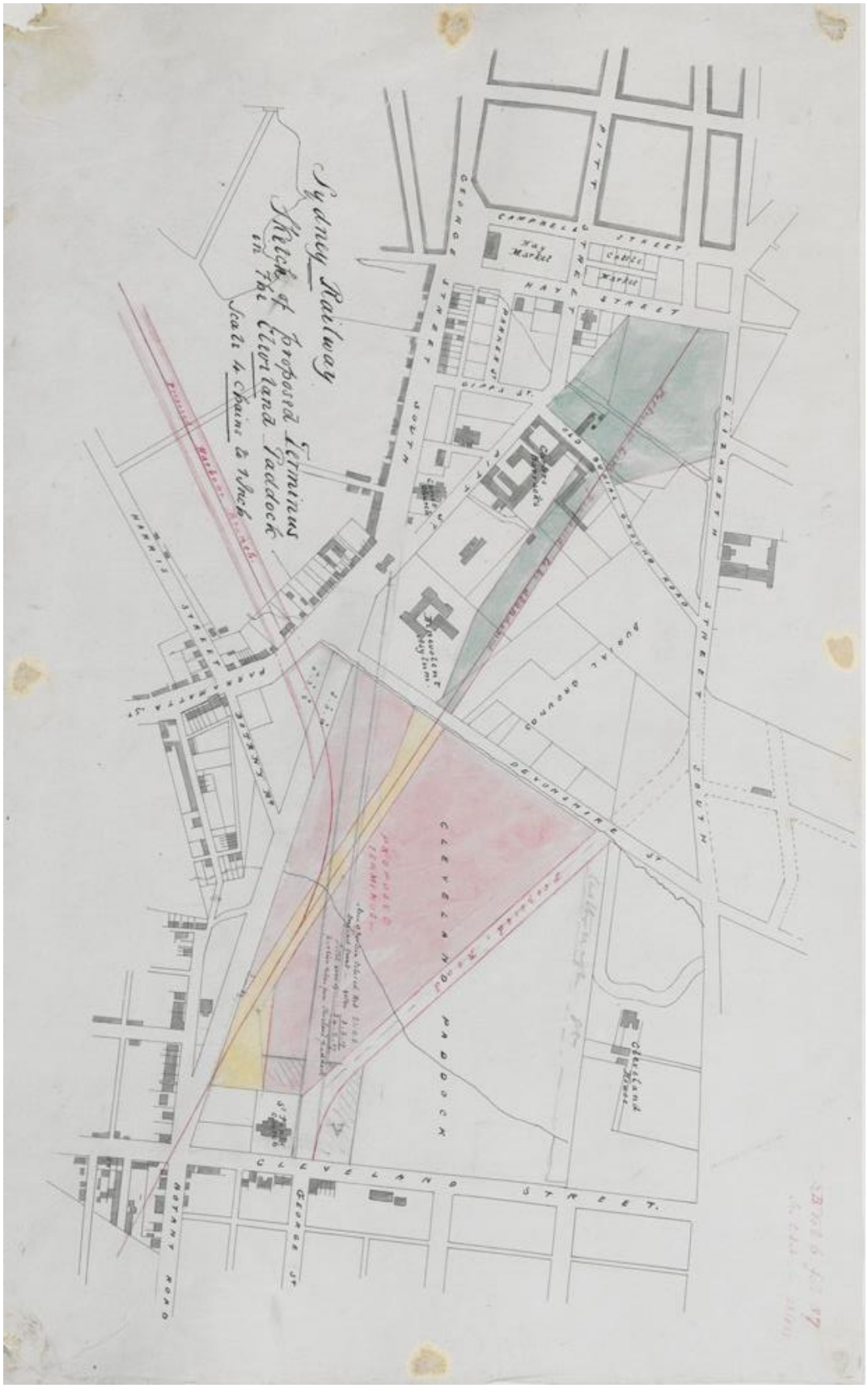
[18] O'Sullivan was the Minister for Public Works
[19] City of Sydney, Prince Alfred Park (Cleveland Paddocks), 2013, http://www.sydneybarani.com.au/sites/prince-alfred-park-cleveland-paddocks/, viewed 2 May 2018.
[20] Rappoport Pty Ltd & NSW Government Architects Office. 2013. *Central Station Conservation Management Plan*. pp. 32 – 35.
[21] *The Australian Magazine* 15 May 1847
[22] *Ibid.*

Figure 6: Sydney St Lawrence - Sydney Railway, Sketch of proposed Terminus in the Cleveland Paddock 01 Jan 1853[23]



3.2 Central Railway Station

3.2.1 First and second railway stations (1855 – 1900)

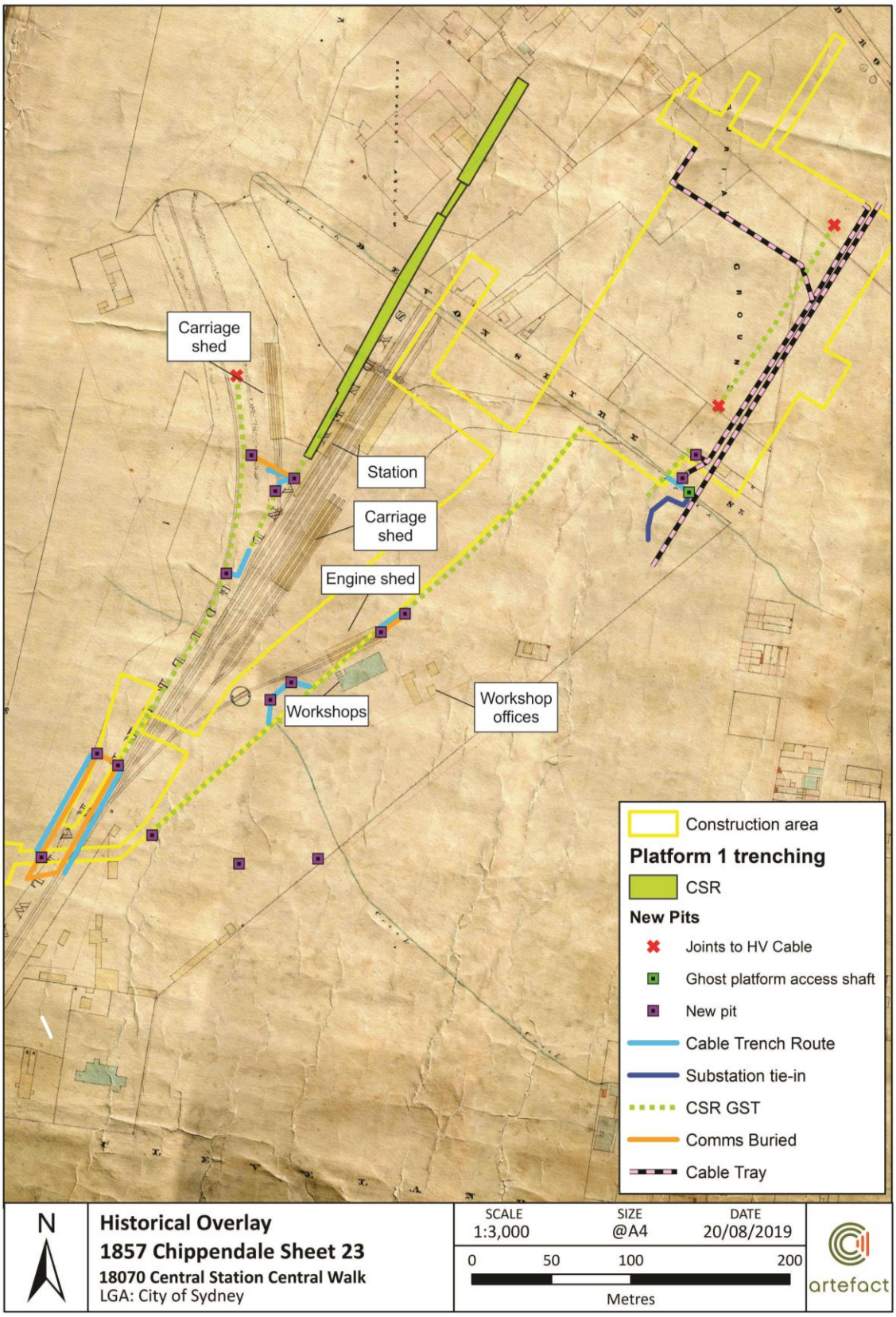
The development of railway technology in England in the early 1830s coincided with the opening up of agricultural and pastoral settlement of the interior of New South Wales. The need to ship wool and other produce from the interior to the coastal ports for export drove the economic demand for the growth of railways.[24] By 1846, a railway line was proposed to operate between the two main settlements at Sydney and Parramatta, with the Parramatta station to be constructed near Mort Street in what is now the suburb of Granville. Various proposals were put to the Colonial Government and following correspondence, approval was received by the Secretary of State for Colonies to sell Crown Land for the purposes constructing railways.[25] After much debate as to an appropriate location of the Sydney terminus, the Sydney Railway Company applied for land grants from the Government for the construction of the station between Devonshire and Cleveland Streets. By 1853 the location of the terminus and associated infrastructure had settled on the Government Paddocks with a goods line running to serve Darling Harbour[26]. The exact site of the first Sydney railway terminus was fixed in December 1853.

The first Sydney railway terminus was officially opened in 1855, with the first train departing on the 26 September.[27] The first Sydney train station was originally called Redfern Station, with the current Redfern Station originally named Eveleigh Station. The station was not a grand affair due to the Sydney Railway Company's dire financial situation resulting in the decision to construct a temporary station rather than a 'grand terminus'.[28]

The original station consisted of a galvanised corrugated iron shed of about 100 feet by 30 feet, covering a raised wooden platform and single rail track. The site also contained a small number of semi-permanent iron buildings for carriages, offices and public rooms.[29] Almost immediately, the single main line tracks were duplicated.[30] The passenger platform, enclosed by the iron train shed was soon discovered to be too short for operations and 100 foot wooden extension was added in 1856.[31] Associated with the station was a series of workshop buildings (located on the eastern side of the site). The 1857 City of Sydney detail plan (Figure 7) illustrates the location of the station building and second platform, carriage sheds and workshops.

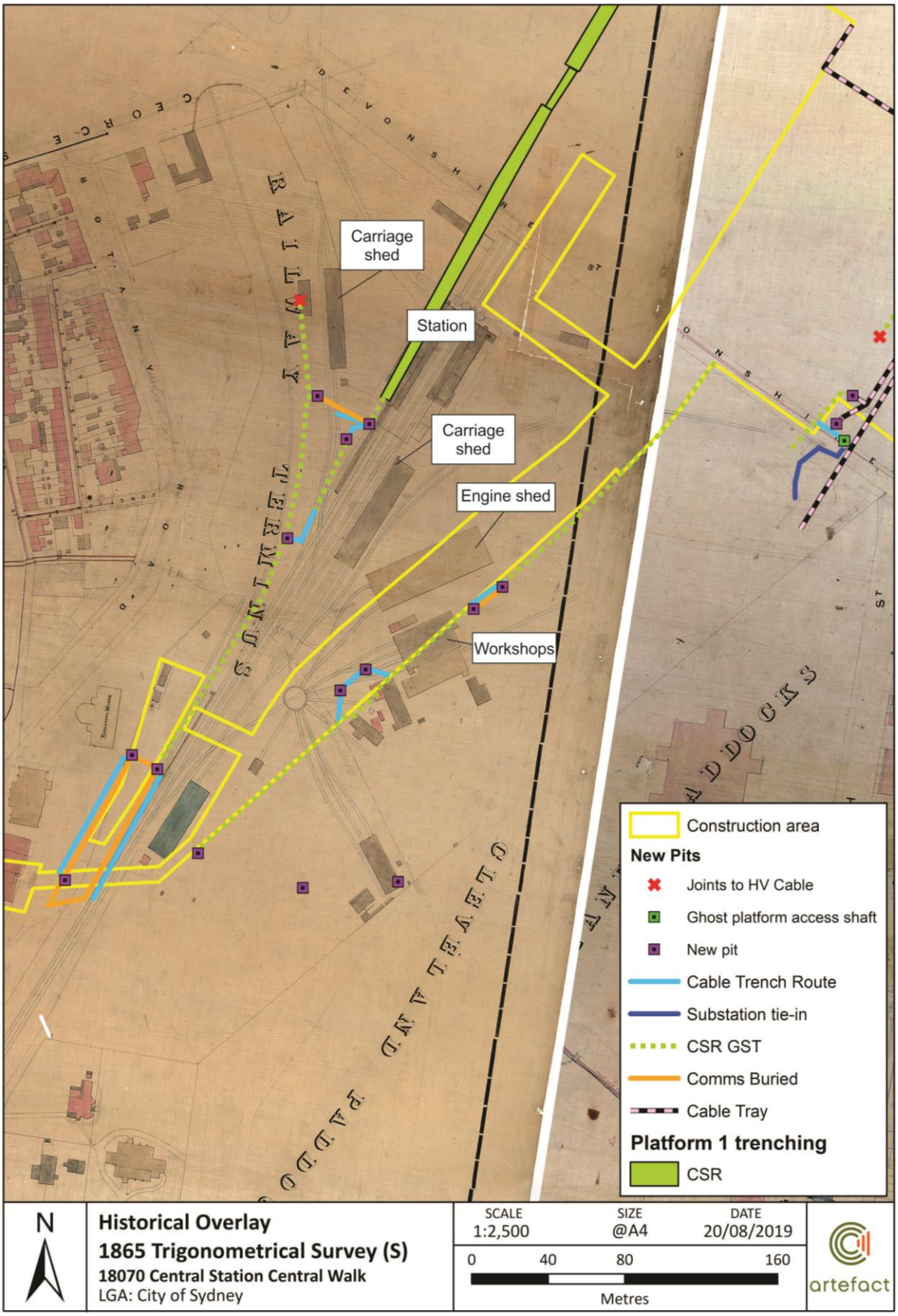
[23] [Sketch book 6 folio 87] State Records, NRS 13886
[24] Rappoport Pty Ltd & NSW Government Architects Office. 2013. p. 31
[25] Hagarty, D 2005, *The building of the Sydney Railway: the known story of the work of six men - a naval surveyor, four engineers, and the contractor who, with many others, built the first railway from Sydney to Parramatta 1848-1857*, Australian Railway Historical Society, New South Wales Division, Redfern, N.S.W. pp 23-39.
[26] Singleton 1955, p111-112.
[27] R. McKillop, D Ellsmore and J Oakes, 2008. A Century of Central: Sydney's Central Railway Station 1906 to 2006, (Australian Railway Historical Society), p. 7.
[28] Hargerty 2005:197
[29] McKillop, Ellsmore and Oakes, 2008. A Century of Central, p. 8.
[30] Singleton, CC. November 1941. History of Sydney Railway Station Part 1 First Station, *Australian Railways Historical Society Bulletin*, Vol. 8, No. 49, p. 56.
[31] Singleton, CC. November 1941. History of Sydney Railway Station Part 1 First Station, *Australian Railways Historical Society Bulletin*, Vol. 8, No. 49, p. 56.

Figure 7: City of Sydney – Detail Plans: Plan A Chippendale February 1857 with elements of the first station in proximity to the Central Walk excavation works labelled[32]



[32] Plan A Chippendale Sheet signed by Edward J. Burrows February 1857, Accessed 10 May 2019 via the Historical Atlas of Sydney http://atlas.cityofsydney.nsw.gov.au/

Figure 8: Trigonometric Survey of Sydney Sheets S1 and S2 (1865). Sheets overlain and annotated



Excavation works were carried out within the Cleveland Paddocks in 1864 for the in-filling of Darling Harbour. These excavation works worked favourably at Old Redfern Station as an extension of the yard was achieved. By this time, the locomotive stock had risen to 13, and a new stone engine shed with capacity for 16 engines to accommodate the new engines and a goods yard were constructed in 1866.[33] The site became crowded as demand for passenger facilities and railway maintenance increased (Figure 8), leading to the development of a second station site.

Figure 9: 1871 Photo of First Sydney Railway station carriage buildings[34]

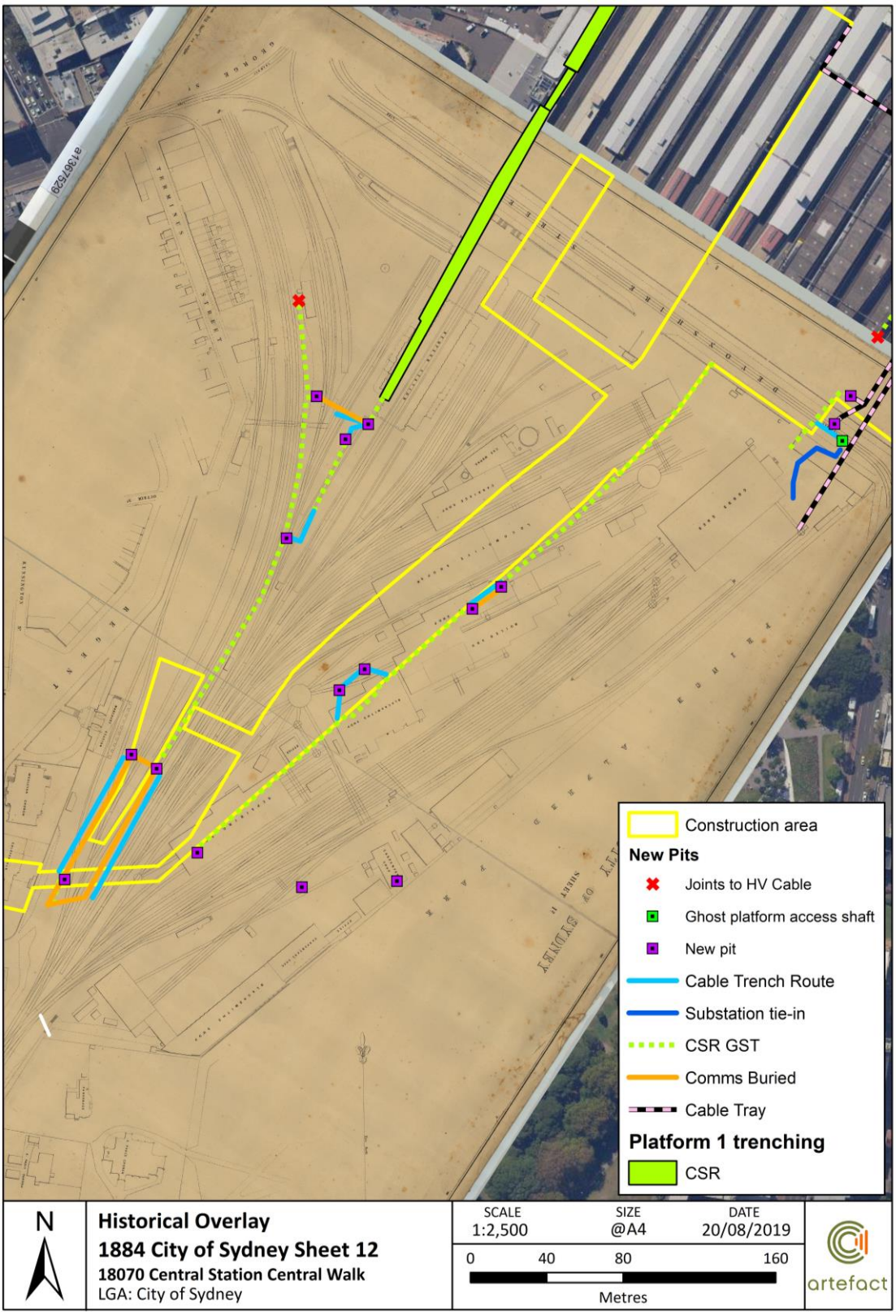
Designs for the second Sydney Station were completed in 1871 by Engineer-in-Chief, John Whitton. The permanent structure was constructed in 1874. Designed in a Neo-Classical style the building was constructed of red brick with lighter facings and a galvanised iron roof. The main feature of the site was a train shed spanning 236 by 43 feet, covering the main lines and both the arrival and departure platforms (Figure 10).

By the 1880s the development of workshops, siding yards and carriage works had expanded to such a degree that a new site was chosen in Eveleigh to house further expansion (Figure 11).[35] During this period, various improvements were made and by 1896 the number of passenger platforms had increased to two single-platforms and two double-platforms, with a profusion of sidings, the Prince Alfred goods yards, station buildings, workshops and carriage sheds, as well as the Mortuary Station facilities and Darling Harbour goods line. During this period, the Devonshire Street Cemetery had been declared at capacity, and took no more burials from 1865 onwards.

Figure 10: 1895 photo of the second railway station, facing south-east from Pitt Street[36]

[33] Singleton C.C. November 1941. History of Sydney Railway Station Part 1 First Station, *Australian Railways Historical Society Bulletin*, Vol. 8, No. 49, p. 56.
[34] State Records of NSW. http://gallery.records.nsw.gov.au/index.php/galleries/through-the-lens-central-railway-station/ viewed 1 June 2016.
[35] *Rappoport Pty Ltd & NSW Government Architects Office. 2013*. pp. 38 – 39.
[36] Kerry & Co. 1895. "Original Redfern Railway Station, Sydney". National Library of Australia, http://nla.gov.au/nla.obj-148351252/view viewed 1 June 2016.

Figure 11: Central Railway Station in 1884[37]



[37] City of Sydney detailed section plans, plan I2. Accessed 10 May 2019 via SLNSW https://search.sl.nsw.gov.au/primo-explore/fulldisplay?docid=SLNSW_ALMA2193462470002626&context=L&vid=SLNSW&search_scope=BJM&tab=default_tab&lang=en_US

Figure 12: 1901 photo of the Devonshire Street Cemetery with the goods sheds of the second railway station at Central Station in the background[38]

Figure 13: Detail of a photograph taken in November of 1870 showing the Goods Sheds. Source AMAC November 2016, courtesy of Bill Phippen

[38] RAHS photographic collection: no. 22566017

3.2.2 Third station expansion (1901 - 1930)

The third station was designed by Government Architect Walter Liberty Vernon on the site of the former Devonshire Street cemetery. The foundation stone was laid on 30 April 1902 by Edward O'Sullivan, Minister for Public Works. The new railway terminus and main concourse level were completed in 1906.

Despite the new station the problem of access to the City remained. In order to rectify this, the City Rail project commenced in 1922. Electric trains operated along the Illawarra Line from June 1926. The city underground system opened later that year, connecting St James and Museum Stations to the network. The project included the advanced design feature of the 'flying junctions' or flyovers, which allowed trains to change tracks on approach to Central Station. In order to cater for the additional railway lines, Central Station had four additional double platforms constructed on its eastern side by 1926 (today's platforms 16 – 23; Figure 15). The construction of these new platforms resulted in the demolition of the existing three eastern platforms, rail sidings and goods sheds.[39]

3.2.3 Eastern Suburbs Railway (ESR)

With the rapid expansion of Sydney city, it became apparent that new ways of incorporating Central into the growing metropolis were required. The largest renovations were the incorporation of platforms 24 and 25 for the ESR in 1979. The ESR involved the excavation of new tunnels north of the station with two double platforms constructed underneath what is now the footpath on Chalmers Street. The platforms were constructed on top of each other although the lower platforms were never used and have no railway lines attached to them.[40]

Figure 14: Photograph showing excavation of the ESR, extending across the total width of Chalmers Street. Source: City of Sydney Archives late 1940s excavation Syd Ref Coll SRC136

[39] *Ibid.* pp. 53 – 54.
[40] Rappoport Pty Ltd & NSW Government Architects Office 2013. pp. 56 – 57.

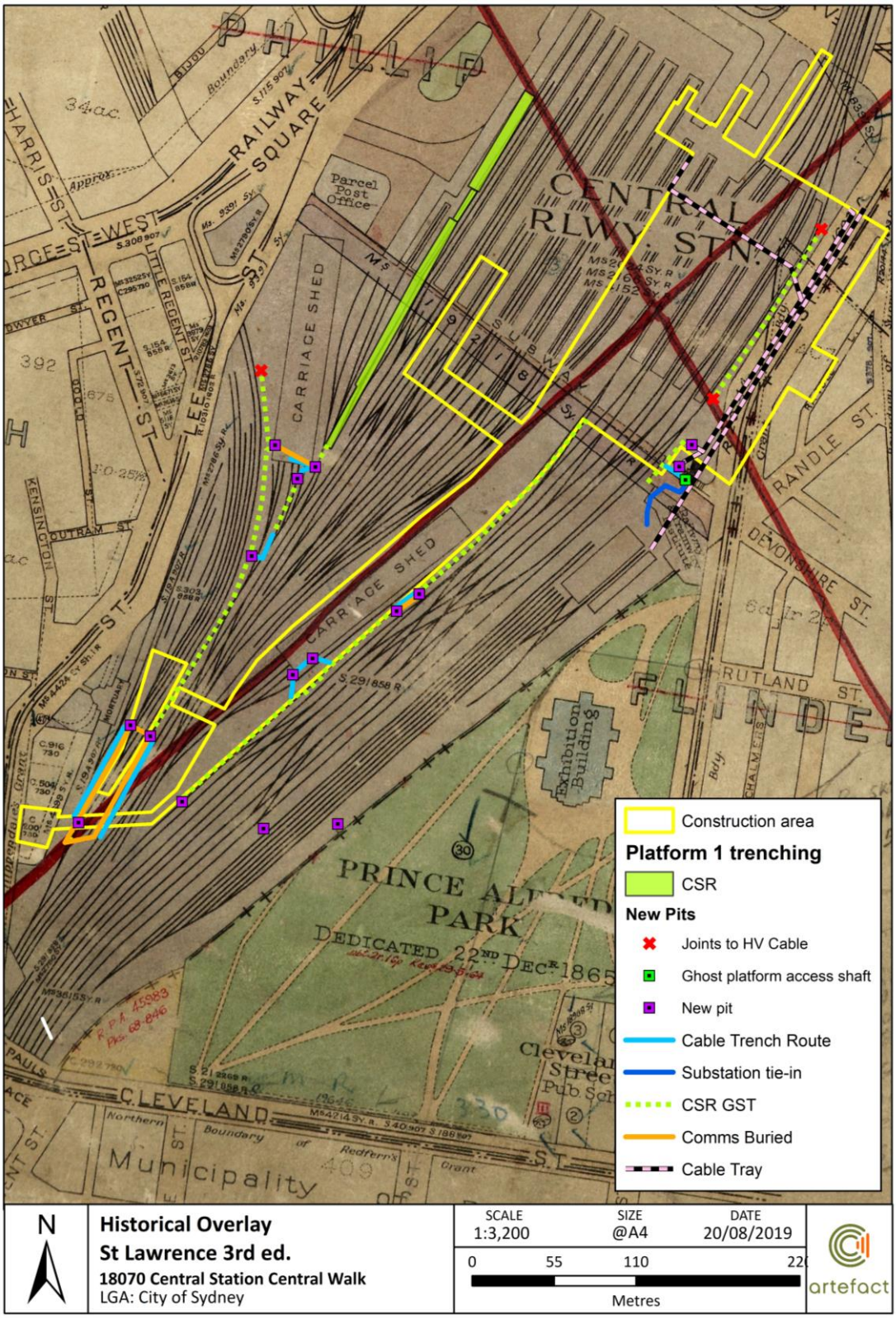
3.2.4 Twentieth century station modifications (1930 – present)

A number of renovations were made to Central Station after the completion of its primary facilities in 1926. With the rapid expansion of Sydney city, it became apparent that new ways of incorporating Central into the growing metropolis were required. The largest renovations were the incorporation of platforms 24 and 25 for the Eastern Suburbs Railway in 1979. The Eastern Suburbs Railway involved the excavation of new tunnels north of the station with two double platforms constructed underneath what is now the footpath on Chalmers Street. The platforms were constructed on top of each other although the lower platforms were never used and have no railway lines attached to them.[41]

Today, Central Railway Station is the busiest train station in NSW, averaging around 40,000 passenger station exits between 6:00am and 9:00am on an average work day.[42]

[41] Rappoport Pty Ltd & NSW Government Architects Office 2013. pp. 56 – 57.
[42] Transport for NSW, 2014. Train Statistics: Everything you need to know about Sydney Trains and NSW TrainLink.

Figure 15: Central Railway Station in the mid-20th century. Detail from plan of the Parish of St Laurence, 3rd edition[43]



[43] Undated plan of the county of St Laurence, Parish of Cumberland, 3rd edition. Accessed via NSW Lands and Registry Services, Historic Lands Record Viewer
http://www.nswlrs.com.au/land_titles/historical_research/parish_maps

4.0 ARCHAEOLOGICAL POTENTIAL

4.1 Recent archaeological investigations

Several recent archaeological investigations have taken place within and adjacent to Central Station. The results of these excavations indicate that archaeological evidence of the Devonshire Street Cemetery and the earliest phases of Central Railway Station can and do remain preserved. Some of these remains are far more intact than previously expected. The results of these excavations, some ongoing, have been included in the following sections, and illustrated in Figure 17.

4.1.1 Sydney Metro – Central Station Main Works – Artefact Heritage (ongoing)

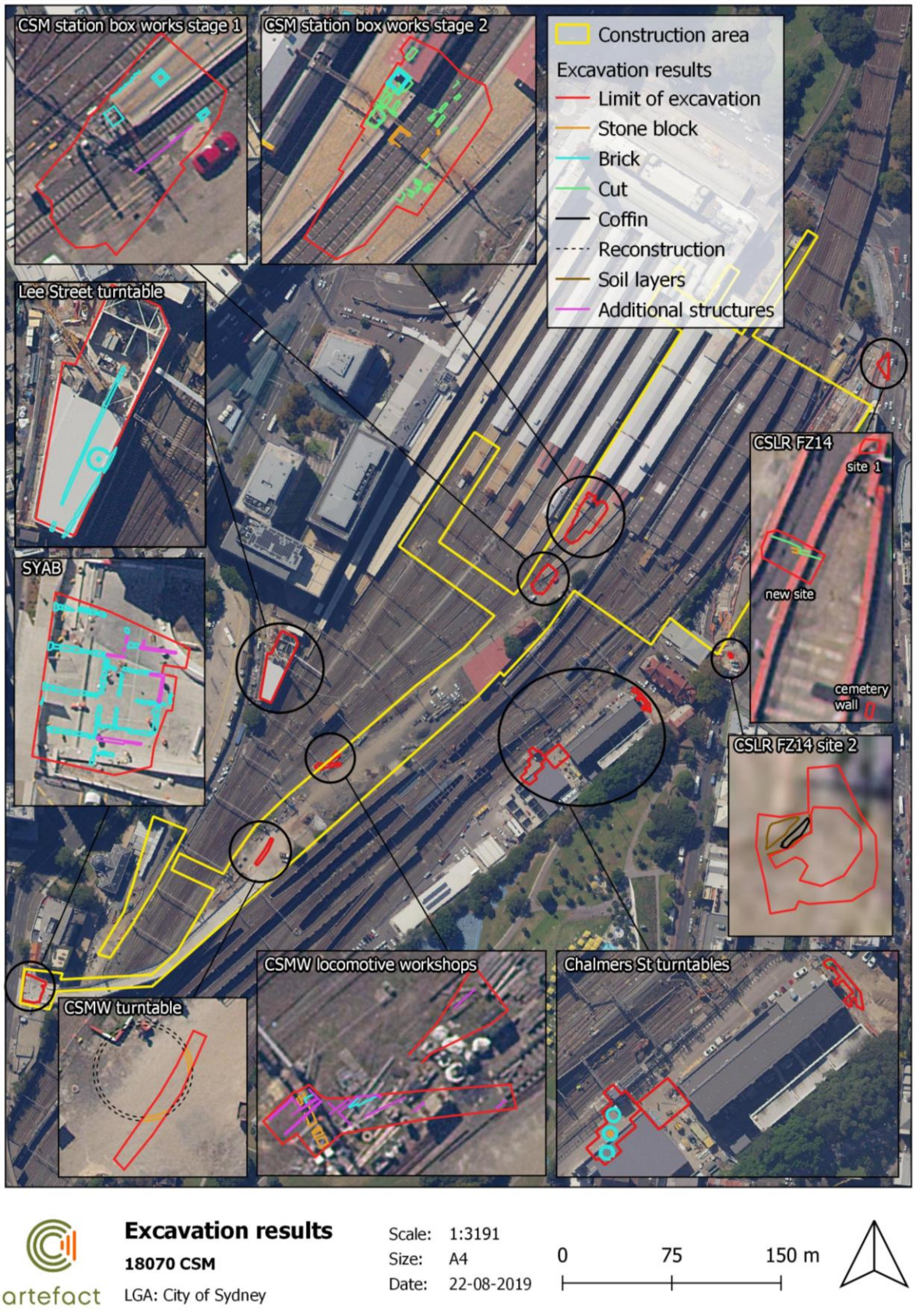
Artefact Heritage were engaged by Laing O'Rourke to archaeologically manage construction activities for the CSMW study area, which is part of the Sydney Metro City & Southwest – Chatswood to Sydenham project. The project works included excavations for a range of activities in the Sydney Yards, the platforms, and around Randle Lane and Chalmers Street, including the establishment of the station box, service investigations and installations, the removal of the platforms.

4.1.1.1 Randle Lane

In November 2018, service investigations were conducted on Randle Lane consisting of the excavation of four slit trenches. In all trenches natural shale was encountered at most 500mm below the ground surface where modern services had been installed. Where no services had been installed the shale was typically located 200-300mm below the surface. However, in one trench at the rear of 7-9 Randle Street revealed that the building footings were situated over sandstock footings three courses deep (Figure 16). These footings were founded on shale at a depth of 400mm.

Figure 16: Evidence of previous structures within Randle Lane. Artefact Heritage 2018.

Figure 17: Overview of known archaeological investigations undertaken within and adjacent to Central Station.



4.1.1.2 First Redfern station and second station expansion

In November 2018, during excavations for the installation of an elevator and stairs to access the Olympic Tunnel within Platform 22/23, a brick feature was identified within the hoarding. The feature consisted of a wall measuring more than 6m long, 480mm wide, and continuing to a depth of at least 1.5m. The feature was interpreted as possibly being the original platform surface prior to infilling and raising the platform to the current level.

On 31 January 2019, during archaeological monitoring of service investigation works, a brick wall was identified to the south of the construction site storage sheds. This wall was interpreted as being associated with the Locomotive Workshop (Second Station Expansion). A program of targeted test excavation was undertaken prior to the planned excavations for the stormwater drainage and feeder route (Figure 20). A program of targeted test excavations was also undertaken in the likely location of the First and Second Station Expansion turntables. The excavation identified well preserved subsurface elements of both the Locomotive Workshop and the Turntable (Figure 18).

4.1.1.3 Devonshire Street Cemetery

Archaeological monitoring of parallel to Platform 13 identified a sandstone structure in November 2018. This was determined to be a vault (referenced as 'Vault 1') and excavation commenced on 30 November 2018. To date, excavation has identified four vaults (three sandstone lined), a single sandstone lined grave cut and 72 grave cuts. Articulated and disarticulated human remains have been excavated. These are in the process of being analysed by Dr Denise Donlan.

Archaeological testing within an area north of the Devonshire Street tunnel was undertaken to investigate an area likely to contain re-deposited sands and thus potentially containing Aboriginal objects as well as archaeological remains from the former Devonshire Street Cemetery . During removal of an area of recent fill a brick structure was identified. Archaeological excavation focused on clearing the area and the structure was revealed to be rectangular in shape with evidence of partial filling by brick demolition rubble. A human pre-molar was found in the sieving reside on the 15th January 2019 and excavation ceased. This structure has been referenced as 'Vault 2'.

Further excavation in the area identified several grave cuts into the underlying natural clay (Figure 19). Wet sieving of material from Aboriginal test pits excavation throughout this area also identified human remains, in the form of small fragments of bone, mostly less than 1cm, captured in a 3mm mesh sieve. The fragmentary human remains were identified as having their origin in a light-grey sand deposit that appears to be a redeposited and highly disturbed remnant from the original Botany Sands that extends over much of the Stage 2 test area.

The sand was found to overly a yellow clayish sand which is a natural deposit. In turn this layer overlies a grey clay with extensive red mottles which rests on a shale deposit. This stratigraphic sequence occurs over the majority of the northern portion of the Station Box site. This possibly reflects the historic process of cutting down of the sandhills and levelling the Central Station site with fill (presumably from the sandhills) to make a level surface for the railway lines and platform[44].

The results of the early archaeological investigations have further reinforced the assumption that the ground-surface within the former Devonshire Street Cemetery undulated considerably, and this has led to differentiating levels of preservation throughout the Central Station site.

[44] The project team includes Dr Sam Player, geomorphologist who is assisting in determining the stratigraphic sequence across the station box site.

Figure 18: Results of Test Trenches One and Two. G. Hazell 2019

Figure 19: Ortho of the excavations showing the base of grave cuts and excavated vaults. G. Hazell 2019

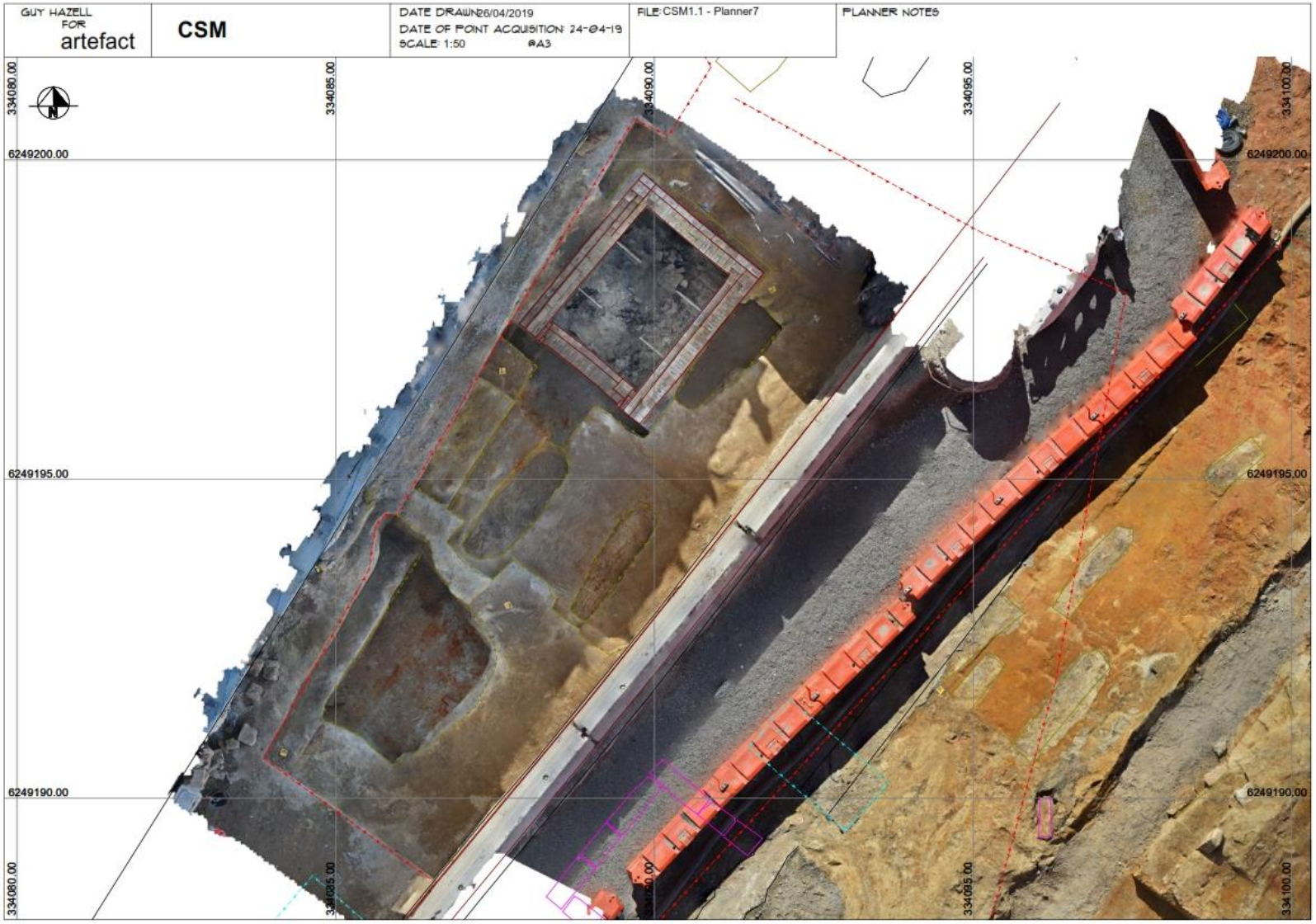
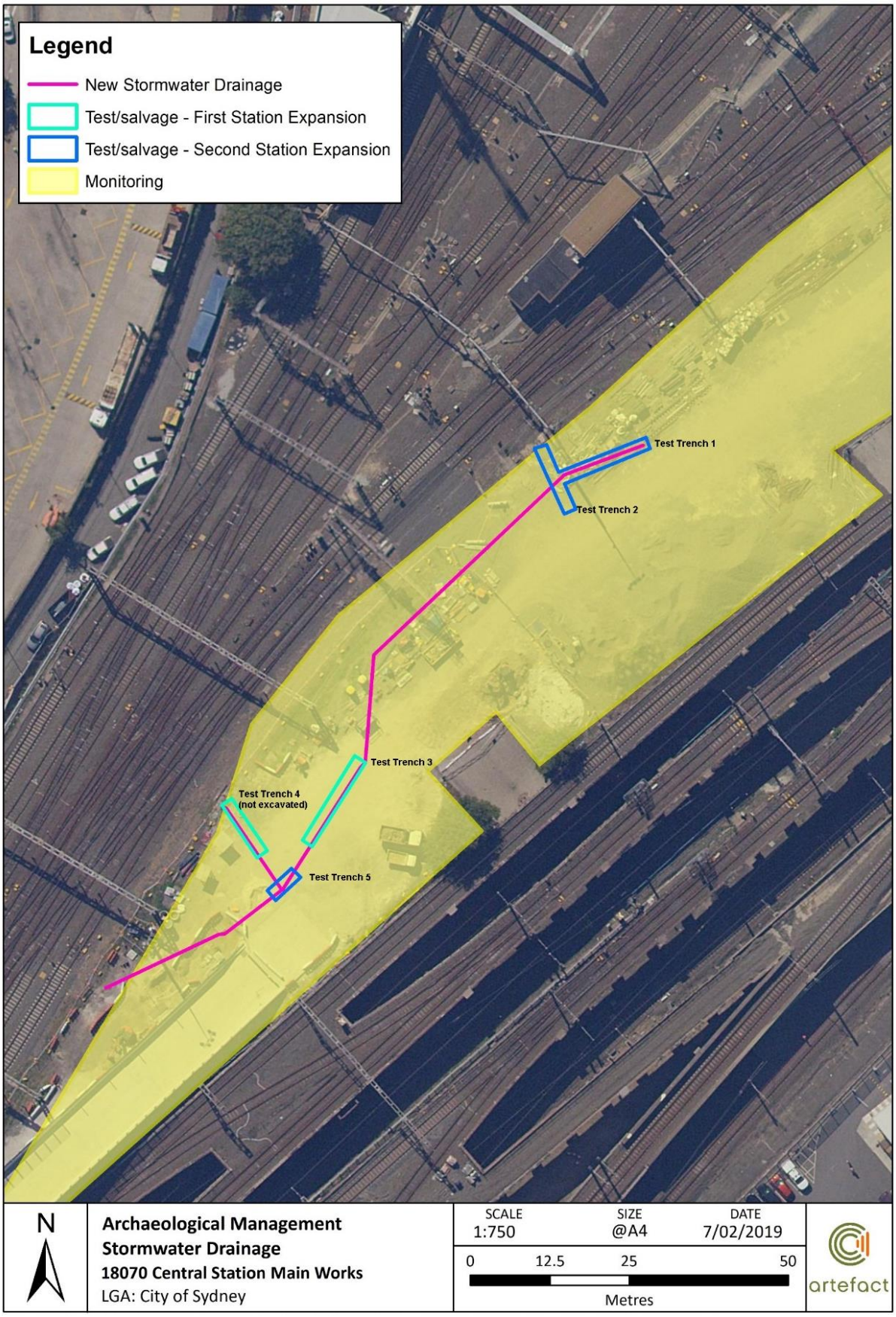


Figure 20: Location of testing undertaken for CSMW drainage works



4.1.2 Sydney Yard Access Bridge (SYAB) – Artefact Heritage

Artefact Heritage were engaged by Laing O'Rourke to archaeologically manage construction activities for the SYAB, which is part of the Sydney Metro City & Southwest – Chatswood to Sydenham project. The construction of SYAB involved excavations within Sydney Yard in AMZ CS 4. Monitoring works in November 2017 uncovered brick remains of a former structure, likely associated with the 'Railway Shop' which was part of the 'second station' development phase of Central Railway Station. The remains were recorded with only a minor portion removed (one course of bricks) and assessed as being of local significance. Access pits to drains and footings of stanchions associated with the third phase of construction of Central Station in the twentieth century were investigated, recorded, and removed. These were assessed as not meeting the threshold for local significance.[45]

4.1.3 CBD and South East Light Rail (CSELR) – Artefact Heritage and GML

Artefact Heritage were engaged by Acciona to archaeologically manage investigation and construction activities for the CBD and South East Light Rail (CSELR) project. The utility and civil works involved excavations within the Former Radio Workshop of Central Station, and within the road corridors of the surrounding streets.

In late October and early November 2018, two sets of human skeletal remains were unexpectedly discovered in Fee Zone 14. The first at the corner of Elizabeth Street and Chalmers Street, Surry Hills (Site 1), and the second near the junction of Chalmers Street and Randle Street, Surry Hills (Site 2). Upon discovery works in the area ceased and the loose remains were recovered and lodged with the NSW Coroners Court for assessment. Once it had been determined that the remains were likely associated with the Devonshire Street Cemetery a permit was approved to investigate and exhume additional potential remains. The investigations of the two sites were undertaken in March and April 2019. The investigations identified the remains of an *in situ* coffin at Site 2, containing additional skeletal remains. A possible grave cut was identified at Site 1, though no *in situ* remains were identified. Instead the soil primarily consisted of fill containing loose skeletal remains were recovered from the fill. To date no other skeletal remains have been uncovered outside of these two isolated areas.

The investigation at Site 2 identified an intact section of the Botany Sands, confirmed by Geomorphologist Dr Sam Player. Although intact Botany Sands were not identified at Site 1, redeposited sands were evident in the fill. However, an inspection of the stratigraphy outside the buildings on the east side of Chalmers Street confirmed that no evidence of the Botany Sands was present, and the soil quickly came down onto virgin shale. This demonstrated that the Botany Sands likely only survives in discrete pockets in the area.

On 15 May 2019, on the western side of Chalmers Street, approximately 8m south of the pedestrian crossing from Chalmers Street to Elizabeth Street, a sandstone feature was identified that was preliminarily interpreted as being a possible burial.[46] In addition to the sandstone feature (Figure 17) a human tooth was recovered during the sieving of the soil above it. Redeposited Botany Sands were also identified in the vicinity, further reinforcing the likelihood that the find is a burial associated with the Devonshire Street Cemetery.

In March 2018 a sandstone structure was identified on the west side of Elizabeth Street during trenching for the installation of a conduit alignment. The feature was identified as likely representing the remains of the boundary wall of the former Devonshire Street Cemetery. The remains were

[45] Artefact Heritage December 2017. *Memo – Archaeological monitoring summary report;* Artefact Heritage September 2018 *Sydney Yard Access Bridge Construction Project Excavation Directors Report*
[46] Artefact Heritage May 2019. *Memo – Section 146 Notification of Relics*

assessed as potentially being State significant and a s146 notification was provided to the former NSW Heritage Division (now Heritage DPC).

4.1.4 Lee Street Turntables and First Station archaeology – AMAC

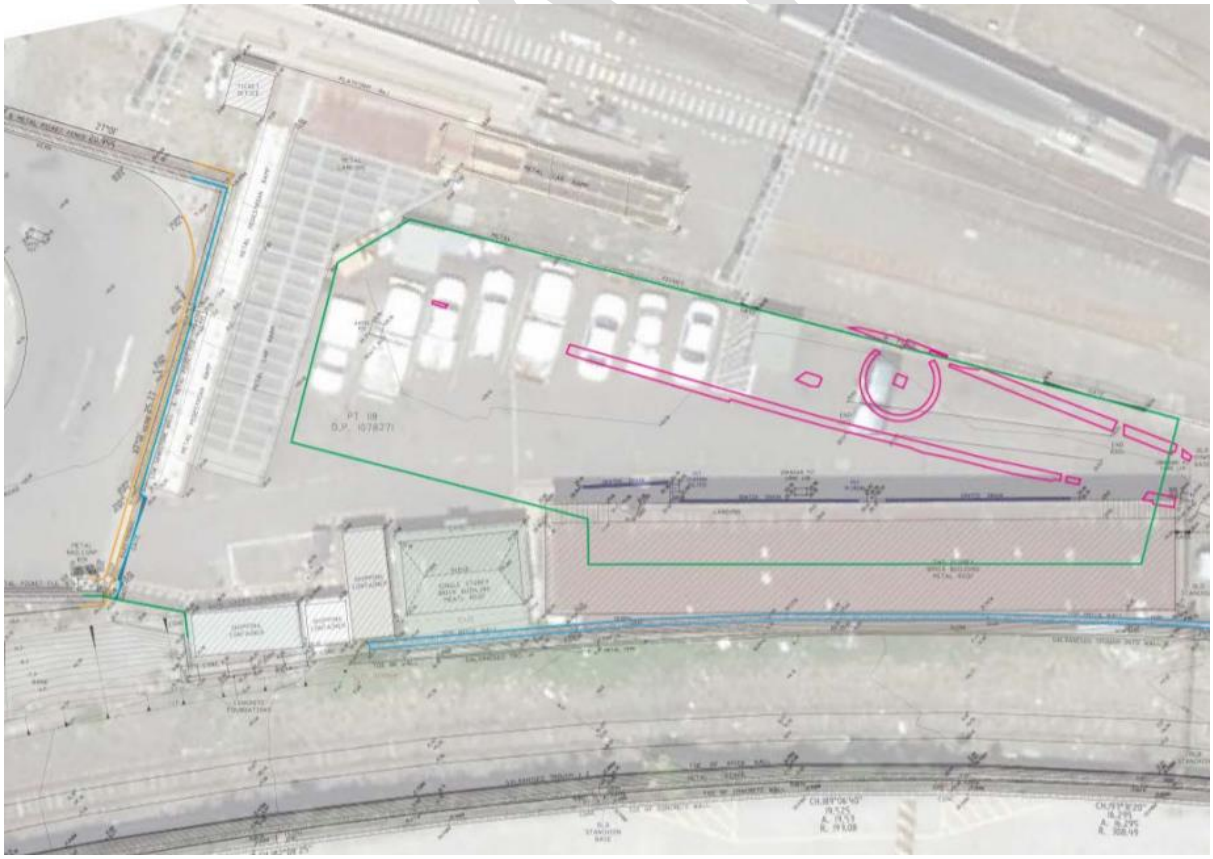
From September to November 2016 archaeological monitoring was undertaken of excavation work undertaken for the Lee Street Substation site. Footings of a platform and remains of a turntable were identified.[47]

The key archaeological remains identified were parallel brick footings which seem to relate to an extension of the platform associated with the Second station period and the expansion of passenger facilities c1880's. The platforms are shown on the 1884 City of Sydney Detailed Series map.

Based on stratigraphic evidence, the turntable dates from before the platform construction. The turntable appears to have been decommissioned prior to the construction of the Second Sydney Station in the 1880s.

The implications of these results are that archaeological remains from the first and second station eras can survive despite the main structures being demolished and built over by later railway infrastructure.

Figure 21: Overlay of the former survey plan, Six Maps aerial and the survey of archaeological results. J. Baloh for AMAC, November 2016.



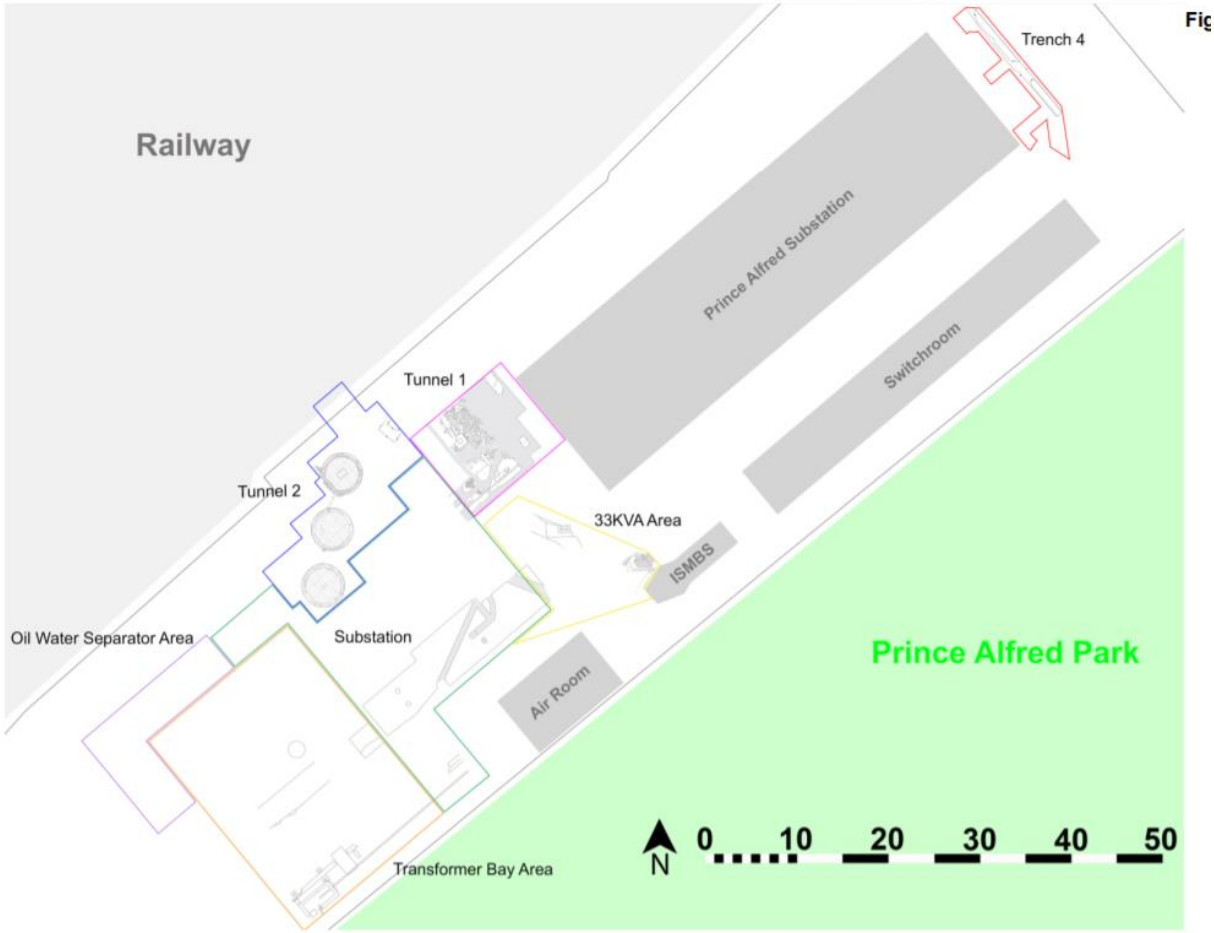
[47] AMAC Group 2016 Archaeological Assessment and s60 Permit Application Chalmers Street Substation, Report for Abergeldie on behalf of Transport for NSW

4.1.5 Chalmers Street Turntables – Archaeological Management & Consulting Group (AMAC)

AMAC undertook archaeological integrations within the Chalmers Street substation site between 2016 and 2019. The majority of the site was found to be heavily truncated and a vast number of services have left the archaeological record in a fragmentary state. Three c.1870 wagon turntable footings, a sandstone crane foundation and counterweight from the Second Sydney Station phase were salvaged. Other relics retained in situ were a c.1855 well shaft, c.1855-1865 culvert, pit and sandstone wall footings associated with the First Sydney Station phase. Second Station phase relics that were recorded and removed included macadam sandstone road base, late 19th century buffer stops and a disturbed sandstone footing for the 1870 Goods Shed (Figure 22).

One of AMAC's areas of investigation, referred to as Trench 4 (see Figure 22), is in close proximity to proposed CSR excavation works. This trench was found to contain disturbed basalt stone paving and a concrete slab associated with construction of the Prince Alfred Substation, constructed c.1925. These features were located above a deep natural clay fill, suggesting that the areas had been heavily disturbed during construction of the substation. Several 20th century services were also identified. It was concluded that Trench 4 had been subject to mass excavation and re-filling, likely as a result of the c.1925 demolition of the 1870 Goods Shed and the construction of the Prince Alfred Substation, Switch Room and their associated services. As such, the entire area was considered a disturbed 20th century context and no evidence of 19th century activity was encountered.

Figure 22: Overview of archaeological results. Source: AMAC June 2019.



4.2 Geotechnical testing

The AARD stated that:

> *Geotechnical investigations conducted for the Sydney Metro project have shown that underneath the rail corridor between platform 15 and 16, local Quaternary sands are present at a depth between 0.6 metres and 1.7 metres. These sand deposits are up to 3.6 metres thick. The degree to which these sand deposits represent imported or redeposited local sand as fill or back-fill, or in situ Tuggerah sands, is unknown.*

Additional geotechnical works, with an extensive number of boreholes across the station box area were completed in 2018 and present an altered interpretation of the subsurface nature of the site.

On the eastern side of the footprint of the former cemetery, adjacent to the Central Walk study area, geotechnical investigations have shown that the area consists of modern fills directly overlying Ashfield Shale (Figure 23). Whilst unlikely, there is some potential that residual pockets of intact sand, with unexhumed burial remains, may exist. Excavation works for the construction of the east concourse would involve horizontal excavation to a depth of up to 6 metres below the Chalmers Street level.

4.2.1 Shale soil transition and location of the Botany sands

It was assumed based on the results of earlier geotechnical testing that the shale soil transition was close to the western edge of the station box, and potentially outside the project area. The latest geotech work undertaken as part of the CSMW identifies the Ashfield shale transition with associated residual soils in the majority of the CSMW study area, across the northern half of the station box and extending to the north of the Devonshire Street tunnel around the southern branch of the pedestrian tunnel. The shale is overlain by some residual soils, varying in depth, but in some places close to the surface and likely to be overlain only by ballast fill.

A layer of Quaternary sand is identified in the geotechnical results extending for around 40m south of the Devonshire Street tunnel at around 10m depth. This is overlain by redeposited fill which may represent the infill of the former creek line as well as fill put in place during the construction of the tunnel and levelling of the cemetery.

There is no clear evidence in the geotechnical results of intact dune formations that are associated with the Botany Sands formation. It is possible that the Botany Sands proper did not extend into the study area, and that the sand hills, on which the cemetery was located were formed by the progression of mobile dunes into the study area after deforestation. This would be consistent with the historical accounts of windblown sand around the brickfields nearby.

Once the cemetery was in place the dune landscape would have become more stable with the construction of retaining walls around the cemetery, cemetery infrastructure and vegetation (grass and the occasional larger trees as evidenced in historical photos).

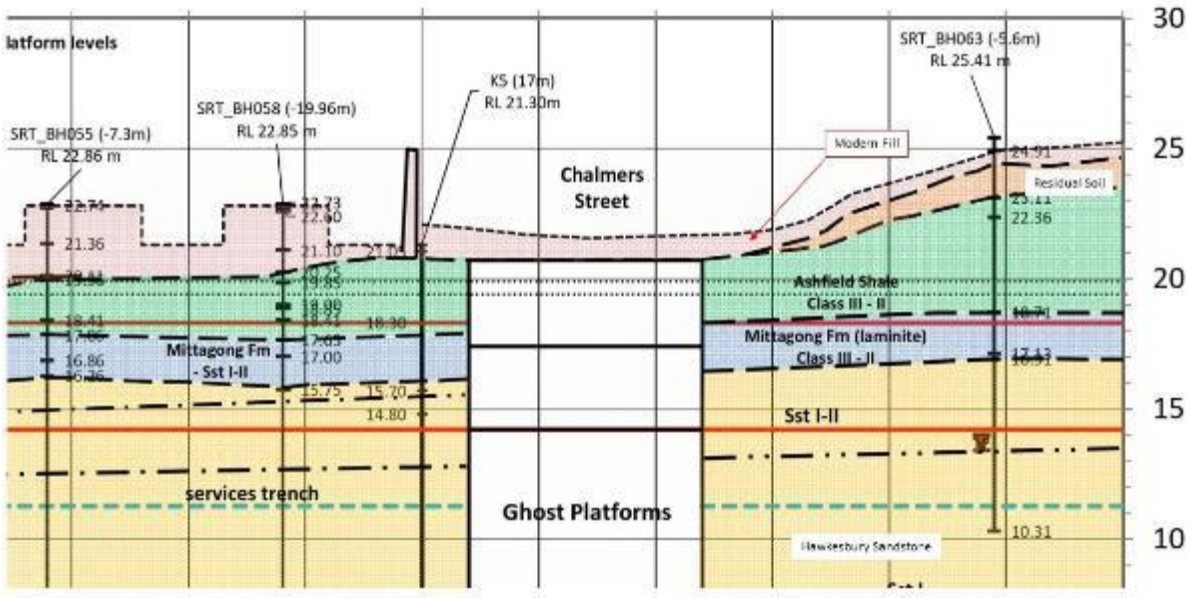
4.2.2 Location and nature of fill and re-deposited soils

The geotechnical testing has confirmed that fill was located across the CSMW site. The testing data did not clearly differentiate between fill that may be of archaeological value and that which is modern ballast fill or imported fill with no archaeological potential.

The nature of topsoil movement and fill introduction, especially to the north of the Devonshire Street Tunnel at the site of the former cemetery, is unknown. Historical photos suggest that large amounts of sand were moved to the south as the cemetery was cleared and in some photos clay is obviously present (testified to be the deep wagon ruts). This is consistent with the geotechnical testing results which show residual soils (silty clay with high plasticity) below the ballast, or layers of sand/gravel fill.

Excavation works for the CSMW have identified pockets of brown/grey sand in several locations. This has been interpreted as being material mixed and redeposited during resumption of the Devonshire Street Cemetery . Where this sand exists, it often contains fragmented human and other artefactual remains.

Figure 23: Geological cross section of Central Station, detail of Central Walk study area, in the vicinity of the unused Eastern Suburbs Railway platforms.



4.3 Revised assessment of archaeological potential

Archaeological resources associated with the following phases of development have the potential to be located within the CSR footprint:

- Devonshire Street Cemetery
- First and second Sydney railway terminals
- Third (current) railway station

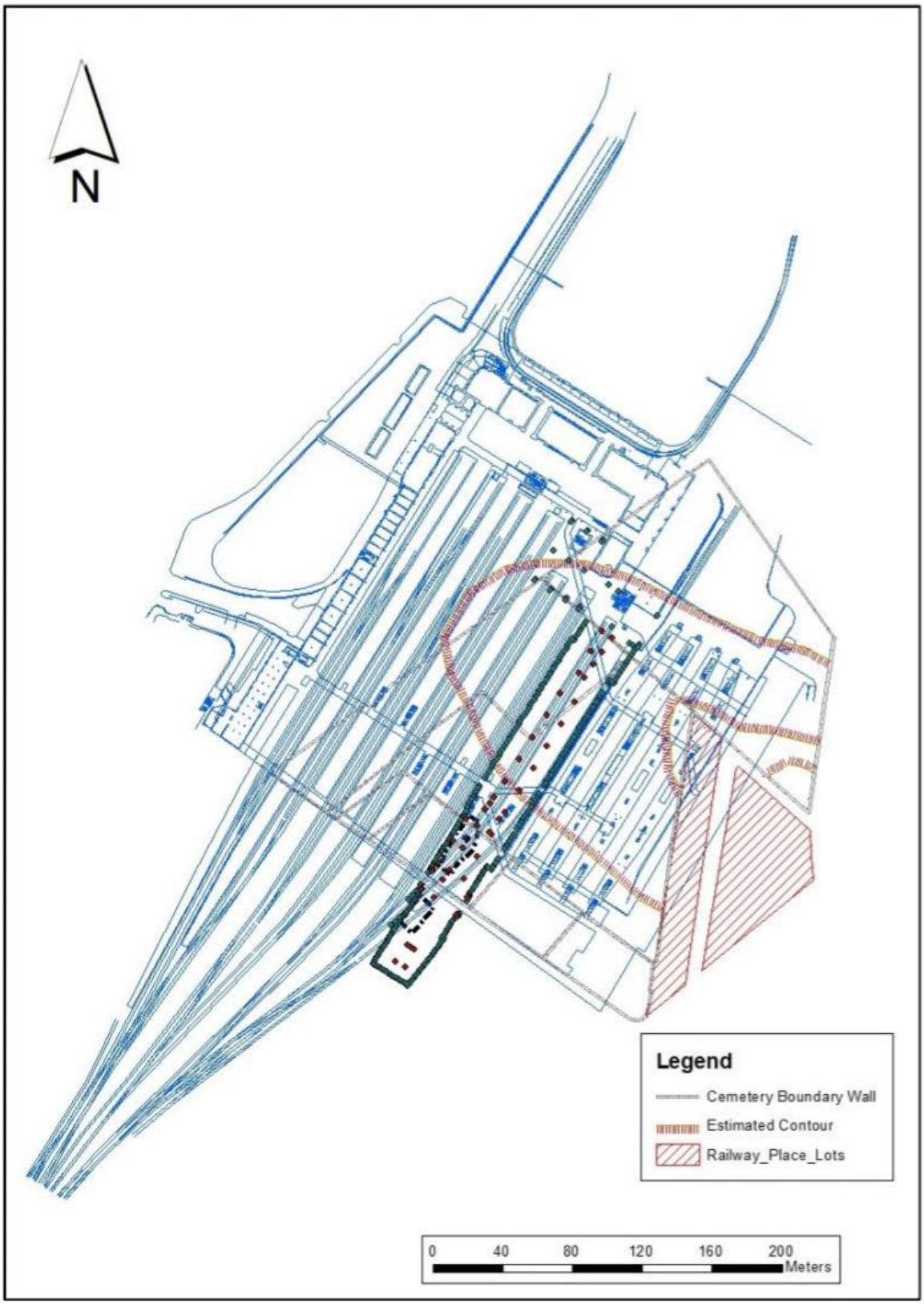
4.3.1 Devonshire Street Cemetery

Excavation works for the CSR within the boundary for the former cemetery are primarily within cable tray (i.e. no in-ground impacts), with the exception of two service pits to be excavated adjacent to the Devonshire Street Tunnel, within the former Jewish portion of the Devonshire Street Cemetery.

Archaeological investigation undertaken by Artefact Heritage for the CSMW has confirmed that the cemetery resumptions in 1902-3 were in places incomplete. The work has identified burial vaults, grave cuts, articulated skeletal remains and disturbed Botany Sands containing fragmentary skeletal material. The excavation has confirmed that the potential for cemetery archaeology to be preserved varies considerably, and survival of remains is largely dependent on the historical topography of the area (see Figure 24). However, due to the extensive impact to the area for construction of the

Devonshire Street Tunnel, the two service pits have limited potential to encounter in situ archaeological remains associated with the Devonshire Street cemetery.

Figure 24: Approximation of the historical contours of the Devonshire Street Cemetery and Railway Place. Iain Stuart/Artefact Heritage 2018.



4.3.2 First and second railway stations

During this phase land use is predominantly associated with the development of Sydney's first railway station and the expansion of the railway station. Earthworks and industrial rail infrastructure developed on the site at this time. Road building and grading occurred in the area as nearby subdivisions were laid out and built on. Construction of early water and sewerage infrastructure also occurred. The growth of Central Station during this phase involved the progressive increase in railway lines and accompanying rail infrastructure across the site. Archaeologically recognisable items would include rail beams, sleepers and ballast; signalling equipment and rail point technology. The latter pieces of equipment, if preserved, would provide a potentially datable technological assemblage. These technological changes would assist in individuating phases of the intertwined and interconnected development of rail infrastructure at the station.

Limited excavation works are required within the areas identified as having potential to contain archaeological remains associated with the first terminal and second station expansion. Works include installation of a new pad mount substation, NDD for GST installation and the excavation of service pits and trenching.

Communications and HV trenching and the installation of GST posts are required around the entire perimeter of the Lee Street substation, which was archaeologically investigated by AMAC in November 2016 (AMAC 2016; Figure 21). AMAC identified that this area contained two north-south oriented brick footings dating to the late 19th century and second station phase. The remains were interpreted as representing the southern extent of former Platform 1. Trenching in this area has the potential to encounter additional remains associated with the extension of the former platform.

The CSR will require trenching and installation of GST for communications and HV within Sydney Yard. Archaeological investigation undertaken by Artefact Heritage as part of the CSMW has identified that the yards have high archaeological potential to contain significant archaeological remain from the 1st and 2nd Station periods. The trenching and service pits for Central Walk are within an area previously occupied by an engine shed associated with the first station phase, a fitting shop during the second station phase and feeder tracks for the turntable identified during testing during the CSMW. It is expected that the trenching works will encounter archaeological remains associated with these buildings.

A trench will be excavated through the driveway of the Railway Institute (north and adjacent to the Prince Alfred Substation). During the second station phase this area contained the brick goods sheds. Excavation undertaken by AMAC between 2016-18 indicates that this area had been subject to mass excavation and re-filling as a result of the c.1925 demolition of the 1870 Goods Shed and the construction of the Prince Alfred Substation, Switch Room and their associated services. As such, the entire area was considered a disturbed 20th century context and no evidence of 19th century activity was encountered. These results, in combination with the current utilities plans for the area, indicate that the CSR excavation in this location is unlikely to encounter archaeological remains of the goods shed.

Trenching works are also required to the north and south of Mortuary Station, approximately 40m north-east of an area excavated by Artefact Heritage prior to the construction of the SYAB, connecting into the existing SYAB pad mount. A small outbuilding potentially associated with the former Wesleyan Chapel was identified in this area. The trenching will be located in an area used as mortuary station railway line in the later 19th century, until its decommissioning. The area is unlikely to have contained structural remains.

The expansion of Central Station in the early twentieth century involved the removal of prior station platforms and their replacement with the current alignment of platforms 1 – 23. Investigation undertaken by Artefact Heritage for the CSMW to date has identified that platforms 12/13 and 14/15

have been constructed with an arched concrete base and brick superstructure which form the platform edges. The concrete base has been constructed into the underlying natural deposits, whilst the area between the platform faces has been filled. This internal fill rests at a higher level that the concrete arch base, sitting on top of the underlying natural soil. In-platform excavation works required for the Central Walk project have some potential to encounter earlier platform infrastructure within the existing platform fill. Archaeological remains associated with nineteenth century platforms would consist of brick and concrete footings and walls. Remains of former station signs, canopy pylons and supports could also be present.

4.3.3 Earlier phases of the third (current) Central Railway Station)

The large-scale expansion of Central Station in 1906 – 1926 involved extensive excavation works and the construction of the present structures on the site today. Archaeological remains associated with this phase of construction may be present. The present-day above-ground railway platforms were completed by the 1920s, although they have been subsequently altered and extended since their original construction. Alterations include the excavation and construction of new below-platform utility services and several phases of resurfacing and platform elevation adjustment. In particular, renovations to the station platforms during the 1990s laid several courses of brick to increase the height of the platforms.

Early twentieth century services such as terracotta drain pipes which have been identified through NDD during the CSMW early works could also be present.

Other archaeological remains could consist of twentieth century access pits to drains, rail infrastructure, stanchion pads, loose rail and sleepers, rail bolts, and disused signalling equipment.

4.3.4 Summary of potential archaeological remains

Archaeological potential is defined by the NSW Heritage Office Archaeological Assessment Guidelines[48] as 'the degree of physical evidence present on an archaeological site'. This section draws on the above historical analysis to consider archaeological potential of the study area.

Archaeological potential can be subdivided into the following categories, based on the likely occurrence of archaeological material:

- High Potential - areas with known archaeological remains;
- Moderate Potential - areas that may have archaeological remains based on other lines of evidence such as maps or documents;
- Low Potential - areas that are likely to have minimal archaeological remains based on analysis of known or likely disturbance;

Based on historical information, land use data and evidence of sub-surface impacts, a summary of the potential archaeological remains in the CSR footprint are provided in Table 2 below.

[48] Heritage Office 2009

Table 2: Summary of potential archaeological remains at the Central Walk study area

Phase	Types of remains	Potential	Works with the potential to impact remains
Devonshire Street Cemetery	Potential archaeological remains such as skeletal material, coffin furniture, personal items such as jewellery and clothing, coffin timber, disarticulated human skeletal material and artefacts. Redeposited sands also have the potential to contain fragmented human remains and artefacts.	Low	In-ground works with low potential to encounter remains of the cemetery include: • Service pits adjacent to Devonshire Street Tunnel
First and Second Railway Station remains	This area was predominantly the location of the main rail sidings and train storage areas, including the locomotive shops, carriage shop, fitting shop, blacksmiths shop, and repairing shop. Buildings consisted of stone, wood and brick train sheds and workshops, of which former footings and discarded industrial objects are likely to be present. Rail siding lines also present, likely partially remaining below modern ground surface.	Moderate	In ground works with low potential to encounter remains associated with the First station phase platform 1 include: • Installation of pad mount substation and HV trenching south of the Lee Street substation In ground works with low potential to encounter remains associated with the First Station phase include: • Communications and HV trenching to the north of the Lee Street substation In ground works with low potential to encounter remains associated with the Second Station phase include: • Communications and HV trenching to the north of the Lee Street substation In-ground works with low potential to encounter remains of the Second station phase Goods Sheds include: • Communications and HV trenching in Institute Drive
First and Second Railway Station remains	This area was predominantly the location of the main rail sidings and train storage areas, including the locomotive shops, carriage shop, fitting shop, blacksmiths shop, and repairing shop. Buildings consisted of stone, wood and brick train sheds and workshops, of which former footings and discarded industrial objects are likely to be present. Rail siding lines also present, likely partially remaining below modern ground surface.	High	In ground works with high potential to encounter remains associated with the First station phase Engine Shed and Second station phase Fitting Shops include: • Communications and HV trenching, GST NDD and service pits in the Sydney Yard
Third Central Station	Potential archaeological remains include twentieth century access pits to drains, terracotta pipes, rail infrastructure, stanchion pads, loose rail and sleepers, rail bolts, and disused signalling equipment.	Moderate	In-ground works with moderate potential to encounter remains of the third station include: • Communications and HV trenching and service pits

5.0 ARCHAEOLOGICAL SIGNIFICANCE

5.1 Assessment of significance

The following statements of archaeological significance have been adapted from the AARD. The results from the SYAB project, and the results from the early works monitoring for CSMW have also informed the assessment of the level of significance of potential archaeological remains within the study area. A reassessment of significance would be provided in the Final Excavation Report once the nature of finds is known and the research question have been addressed.

5.1.1 Devonshire Street Cemetery

The Devonshire Street Cemetery was the second formal burial ground established in the colony in 1820 and continued in use until the 1860s. Despite the cemetery's exhumation and levelling in 1901 and 1902, as well as the lack of evidence that human remains have been located or recovered since the cemetery was exhumed, it is possible that some remnants of human remains, coffin furniture or headstones may be present, although most likely to be fragmentary and in re-deposited fill.

Archival records can supply some information on the identities of the people who were buried at the cemetery, however this record may not be complete. Pauper's graves and lacunae within the historical record may mean that some interments are incompletely documented. The division of the burials into separate congregational areas may have material distinctions between the burial evidence of the graves. Forensic, osteological and isotopic analysis of skeletal remains can yield information about the health and diet of the interred, information which is not available from other sources. Burial ornamentation such as tombstones and tomb structures provide valuable symbolic evidence of funerary practices and attitudes towards death. These types of symbolic values are understood for wealthier burials from historic records, however the large number of poor or historically unmentioned people in the early colony are not as clearly understood from archival records. Burials from the period of the early colony at around 1820, particularly during the convict period (before 1840), and up to 1865 when the cemetery closed, are rare and highly valuable archaeological resources.

Legible in situ archaeological remains associated with the Devonshire Street Cemetery would be State significant under Criteria A, D, E and F.

5.1.2 First and second railway station expansion

The first railway station at Central (then Redfern Station) represents the terminus of the second railway in Australia and the first railway in New South Wales. The construction of this railway, station, and associated buildings was considered a significant event in the colony at the time, as demonstrated by the crowds that turned up for both the beginning of construction of the station and for the first train trip at the station. The technology to construct locomotives and railway infrastructure in the 1850s is relatively rare compared to the majority of rail infrastructure apparent today, which is predominantly of a later period of manufacturing. Material evidence of the buildings associated with the first railway station, such as the Engine Shop, would be State heritage significant because of their potential research and technical value, and historical connections with the development of infrastructure in NSW.

Archaeological remains associated with the second railway station, including material evidence of the Fitting Shop, would also have historical associations. The second railway station was the central terminus of the expanding railway network in the 1870s. By the 1870s when the second station was constructed, railway networks had been established in rural areas in order to transport goods, particularly wool, to Sydney ports for export. As the terminus point and one of the principal

maintenance stations for the goods rail network, archaeological remains associated with the second railway station could have historic, associative, technical values and research potential.

A number of carriage sheds and workshops were constructed in the study area, dating from the first station (1850's) and second station. stone and brick Footings related to these buildings in this area may exist below the present Sydney Yard and adjacent to the Prince Alfred Substation. Intact remnants of some of these buildings may represent some of the earliest material evidence of railway infrastructure in Australia. Residual rail infrastructure such as signalling equipment and railway point switches could provide evidence of continuation of use of the station, as well as evidence of technological change over time. Archaeological remains would have historical and associative significance and, if relatively intact, could provide information about railway functions and engineering at the advent of the rail industry in NSW.

Should intact and extensive remains be present, these would be of State significance (Criteria A, E and F).

5.1.3 Earlier phases of third (current) Central Railway Station

Archaeological remains associated with buried infrastructural elements of the third railway station, are examples of the frequent upgrading of the technology and the continual alteration of the railway station. Former rail lines and building footings associated with post-1906 construction are unlikely to meet the threshold of local heritage significance.

Intact structures of the original platform surfaces for the third Central Station would meet the threshold of local significance (Criteria A and C).

5.2 Summary of significance potential archaeological remains

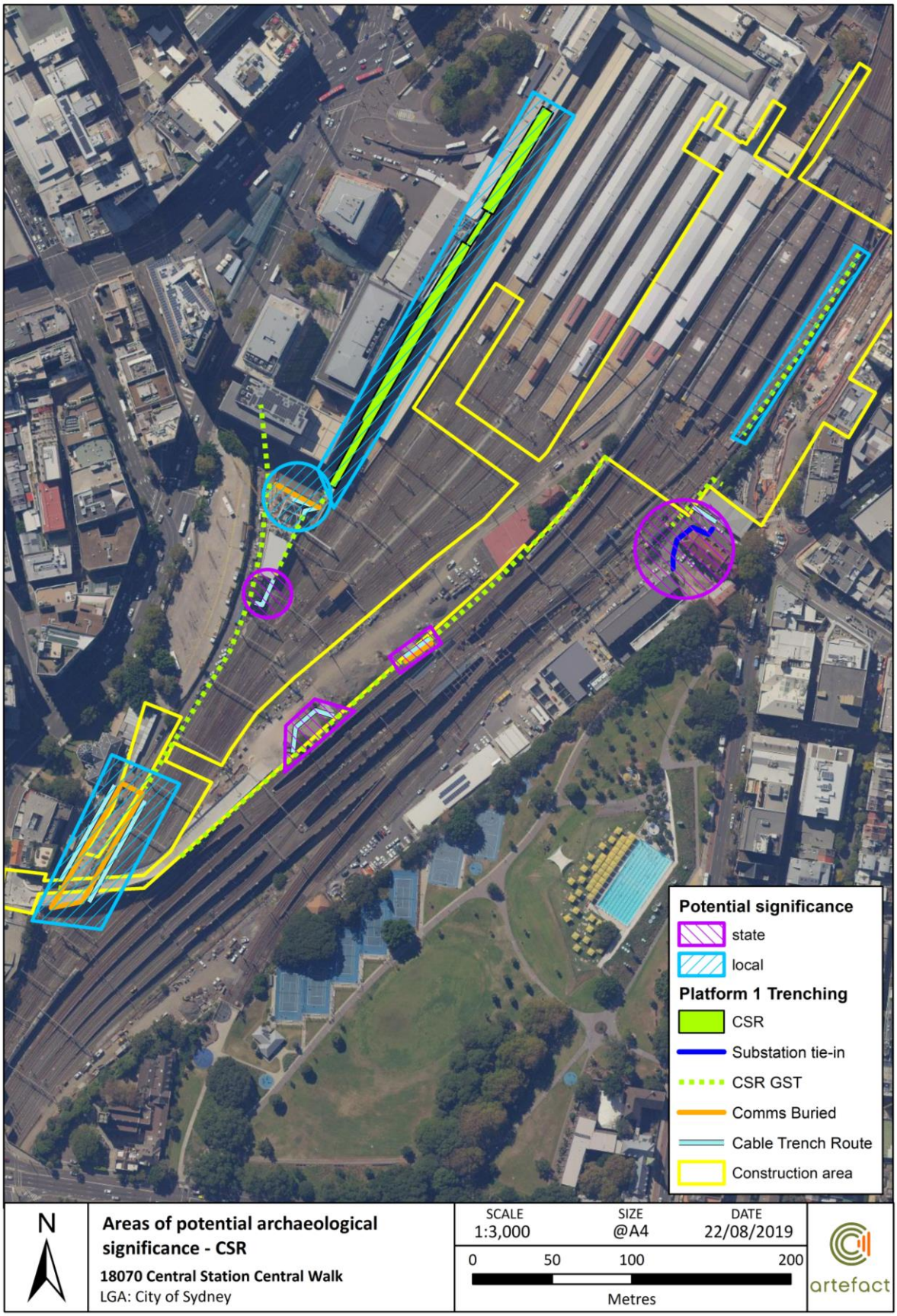
The following section outlines the potential archaeological remains for each site code within the study area and archaeological significance and has been divided by phase. It has been adapted from the AARD[49] and further refined through detailed historical research. A summary of archaeological potential is illustrated in Figure 25.

Table 3: Summary of significance of potential archaeological remains at the Central Walk study area

Date	Archaeological resource	Potential	Significance
1820 - 1865	Devonshire Street Cemetery	Low	State
1855 - 1874	First and second railway station	High	Local/State
1900 - present	Third Central Station	Moderate	Local/no significance

[49] Artefact 2016a

Figure 25: Areas of potential significant archaeology within Central Walk excavation areas



5.3 Research design

Archaeological resources within the study area have the potential to respond to a number of current research themes. Excavation for the Central Walk project has the potential to further refine our understanding of the development of the early landscape, the Devonshire Street Cemetery and Central Station. Additional research questions may be added if the archaeological resource allows for further, or more in-depth, investigation.

The archaeology within the study area has the potential to contribute to research areas such as:

- Social history and burial practices
- Environmental factors and scientific analysis
- Industrial archaeology
- Landscape archaeology

The ARD presented a number of research questions. As there is low potential for the Central Walk works to encounter intact remains associated with the Devonshire Street Cemetery, research questions relating to this phase have not been reproduced below. Refer to the ARD for these research questions.

Additional questions have been added in response to the potential archaeological resource within the Central Walk study area, primarily associated with Railway Place residences and data relating to the formation of the early 20th century landscape post-1903 resumption

5.3.1 Infrastructure associated with the first and second Central Railway Station

The area to the south of the Devonshire Street tunnel was originally occupied by the first and second railway stations and the infrastructure which supported the station function is located within the study area. Archaeological remains of these structures could provide information related to the development of the rail industry. Evidence could include building footings, refuse pits relating to industry, postholes from timber structures, and flooring surfaces. Evidence of the development of the rail industry within the study area would relate to the NSW Historic Theme of 'Industry', 'Technology', 'Transport', and 'Utilities'.

Industrial archaeology

- Are there intact remains of the first and second Sydney railway stations below the rail corridor? Are these remains legible?
- Has the development of Central Station over time, particularly construction works associated with the building of the third (current) station, completely removed earlier archaeological deposits associated with the first and second stations?
- Can archaeological evidence of former structures from the first and second railway stations be discriminated from later post-1906 building adaptations?
- Is there archaeological evidence before 1906 of the changes in use of former goods sheds, engine workshops and fitting shed if they were converted into other types of station buildings?

It is possible that miscellaneous finds of railway infrastructure could be recovered most of this will be of little archaeological research potential, however if pre-1915 items of rail are recovered these may have some archaeological research potential for technological information regarding the evolution of

rail design and the nature of rail imported into Australia prior to the establishment of BHP as an Australian based rail supplier.

5.3.2 Third Station expansion

The study area currently occupies the third Central Station and has undergone continuous expansion and upgrades since it was constructed in 1906. Archaeological remains relating to the third station expansion may provide evidence of the rapid technological development of the rail industry in the early twentieth century. Evidence may include earlier drains, culverts and structural remains associated with earlier workshops, rail sheds and offices.

Evidence of the development of the rail industry within the study area would relate to the NSW Historic Theme of 'Industry', 'Technology', 'Transport', and 'Utilities'.

5.3.3 Transformation of the landscape of the Cleveland Paddocks

At the end of the project, enough archaeological evidence should have been collected to document the transformation of the pre-colonial landscape which was known as the Cleveland Paddocks into Central Station and the Sydney Yard. The archaeological research aim would be to document this transformation utilising information collected in the course of the project to answer questions about the transformation of this landscape. Evidence of the transformation of the landscape of the Cleveland paddocks would relate to the NSW Historic Theme of 'Environment – cultural landscapes'.

- Was the original landscape sandhills, and how far did they extend?
- What was the original drainage and how were the creeks transformed?
- What evidence of excavation and transformation (such as levelling) is there?
- Is there any evidence of the original vegetation on the site?

6.0 WORK STAGE SPECIFIC ARCHAEOLOGICAL METHODOLOGY

6.1 Introduction

A complete series of archaeological methodologies for the approved project has been previously produced in the ARD.[50] The following section includes methodologies to be adopted during management of archaeological resources for the CSR. These have been defined in Table 4, and illustrated in Figure 26.

Table 4: Definition of archaeological methodologies

Methodology	Definition
Monitoring and recording	Archaeological monitoring is where an archaeologist is in attendance and supervising construction excavation work with potential to expose or impact archaeological remains. Monitoring is generally undertaken where there is lower potential for significant archaeological remains and/or where minor excavation work is in an area of archaeological sensitivity. If archaeological remains are identified during monitoring, they would be excavated and recorded by the site archaeologist
Test excavation	Archaeological test excavation is typically undertaken prior to impact, in areas where the survivability of the archaeological resource is unknown. The process of archaeological testing will involve the manual excavation of defined areas once overburden has been removed by machine. Manual excavation would be undertaken using hand tools, by a qualified archaeological team. On completion of archaeological testing, archaeological management of the area during excavation can be finalised i.e. movement to salvage excavation or a monitoring methodology
Salvage excavation	Archaeological salvage refers to open-area archaeological excavation under the control of the Excavation Director undertaken prior to impact. Salvage includes the horizontal excavation of the entire historical archaeological site. Manual excavation would be undertaken using hand tools, by a qualified archaeological team.

6.2 Archaeological management of specific work stages

It is proposed that management of the potential archaeological resource include the following processes. These have been illustrated in Figure 26 and Figure 27 and discussed further below.

- Archaeological testing of excavation works for the installation of HV and Communications and construction of pad mount to the south of the Lee Street substation and in the Sydney Yards
- Monitoring of trenching for HV and Communications south of Mortuary Station, at Lee St substation, adjacent to the Devonshire Street tunnel entrance and within driveway of the Railway Institute.

[50] Artefact Heritage 2016a, chapter 12

6.2.1 Archaeological testing for pad mount substation, service pits and trenching for the installation of HV and communications

Archaeological testing and salvage (if necessary), would occur prior to excavation works south of the Lee Street substation and in the Sydney Yards. These areas have moderate to high potential to contain archaeological remains associated with the first and second phases of Central Station.

The process of archaeological testing will involve the manual excavation of defined areas once overburden has been removed by machine. The vertical extent of the testing program would be determined by the depth of impact, or by the presence of intact natural deposits. Manual excavation would be undertaken using hand tools, by a qualified archaeological team. The archaeological remains would be 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. The excavation recording methodology would be as per Section 6.5.

Construction works would not proceed until the salvage excavation is completed and the Excavation Director has provided clearance. If state significant items are found, the exposed section would be recorded with the option of leaving it intact if the design can be changed to avoid impact.

Should hazardous materials or contaminants be identified during archaeological excavation, ground excavation would cease until appropriate controls or remediation is conducted by Laing O'Rourke.

If the planned testing does not provide enough information to inform a refined assessment of archaeological potential for the remainder of the works, additional testing may be required prior to bulk excavation commencing. This would be confirmed by the Excavation Director once the results of the testing program are known.

If Aboriginal objects are located, further testing focussed on Aboriginal archaeology would be required which would also require input from historical archaeologists to manage excavation of post-contact archaeological layers. The historical archaeological management would continue in accordance with this AMS.

6.2.2 Monitoring of excavation within platforms 16-23, service pits, HV and communications trenching

NDD excavation for the installation of HV and communications to the south of Mortuary Station, to the north of the Lee St substation and north of the Prince Alfred substation (near the eastern entry) would be subject to archaeological monitoring. These locations have been subject to previous considerable impact, and therefore have low to moderate potential to contain an intact archaeological resource.

If archaeological remains are identified during monitoring, they would be recorded by a qualified archaeologist, protected, and assessed to determine their heritage significance. If significant archaeological remains are identified, the area would be expanded where feasible to ensure the full extent of the archaeological remains are recorded. 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. The excavation recording methodology would be as per Section 6.5.

The requirements for management under archaeological monitoring may be downgraded to the management under the Sydney Metro Unexpected Heritage Finds Procedure at the discretion of the Excavation Director.

Should hazardous materials or contaminants be identified during archaeological monitoring, ground excavation would cease until appropriate controls or remediation is conducted by Laing O'Rourke.

6.2.3 Sydney Metro Unexpected Heritage Finds Procedure

Monitoring or testing works would revert to Sydney Metro Unexpected Heritage Finds Procedure at the discretion of the Excavation Director where it was found that significant archaeological remains were not likely to be impacted.

6.3 Heritage induction

Archaeological heritage will be included in the general project induction for all personnel in consultation with the Excavation Director. At a minimum, this would include an overview of the project and employee obligations, archaeological management and the role of the archaeological team. Toolbox meetings will also be undertaken as and when required; covering specific environmental issues and heritage control measures as identified in the Cultural Heritage Management Plan (CHMP). Personnel directly involved in implementing heritage control measures on site will be given specific training in the various measures to be implemented. Records of all training are to be filed in accordance with the project filing system.

6.4 Contractor responsibilities

The contractor would set up site and then operate under the direction of the archaeologists during archaeological investigation. This would include but not be limited to:

- Provide a heritage site induction to contractors in consultation with the Excavation Director
- Demolish existing buildings (retaining in-ground foundations and ground slab) on the site and remove rubble and spoil material from site
- Set out and secure the work area for the construction and archaeological team
- Provide machine plant to assist the removal of fill where required under the supervision of the archaeological team
- Provide shoring, if required
- Provide pressurised water and a sieving area, if required.

Figure 26: Archaeological management for CSR north

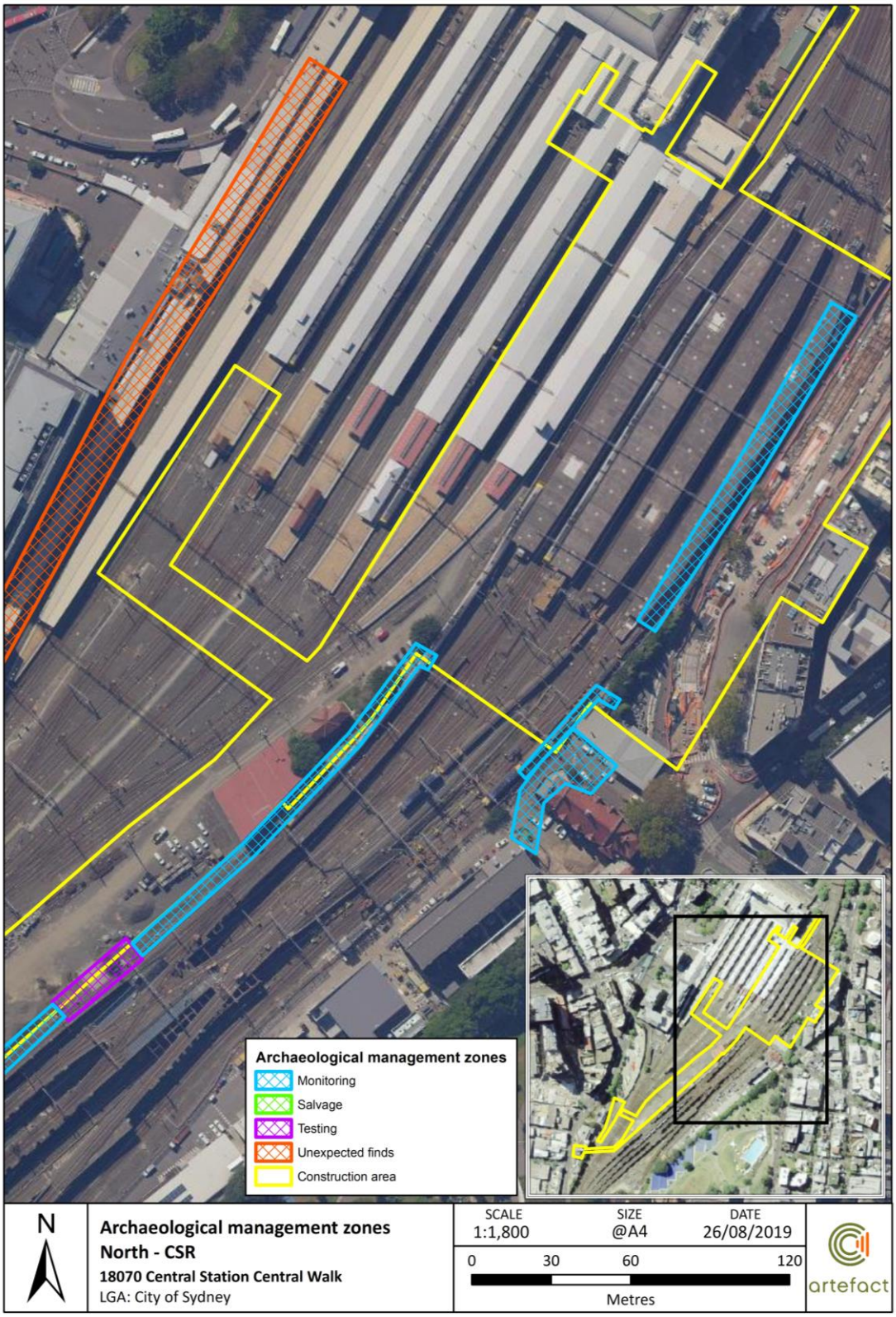
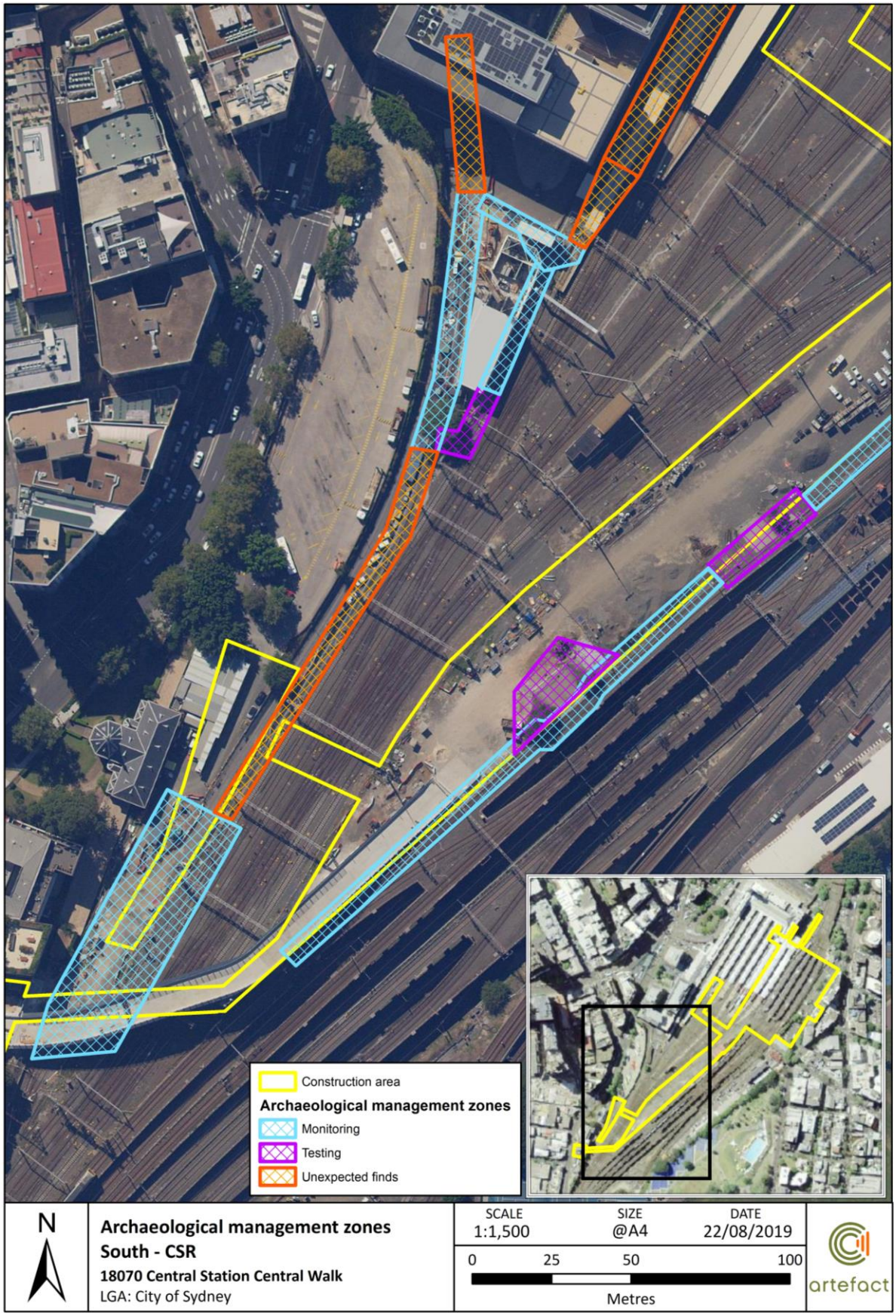


Figure 27: Archaeological management for CSR south



6.5 Excavation recording methodology

A record of archaeological investigation would be made in accordance with the methodology outlined in the AARD.[51] The recording methodology includes the following:

- A site datum would be established
- Survey and scaled plans of the area, trench locations and any significant archaeological features uncovered in the monitoring, test and salvage program. The plans would include elevations recorded with a dumpy level. Should a large amount of archaeological resources be identified during the excavation, the site would be digitally surveyed and recorded
- Scaled section drawings where appropriate
- Photogrammetry where appropriate
- 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
- A standard context recording system will be employed: The locations, dimensions and characteristics of all archaeological features and deposits will be recorded on a sequentially numbered context register. This documentation will be supplemented by preparation of a Harris matrix showing the stratigraphic relationships between features and deposits
- Artefact collection by context. Large or redundant artefactual materials from individual contexts would be sample collected. Hazardous material would not be collected.
- Registers of contexts, photos, samples and drawings would be kept.

6.6 Sieving strategy

Sands, residual clay spoils (intact and re-deposited), and intact occupation deposits within the study area have demonstrated considerable potential to contain human remains, historical archaeological remains and Aboriginal artefacts. The sieving strategy incorporates methodologies for both non-Aboriginal heritage and Aboriginal artefacts.

Soil and sand deposits retrieved from the excavation area would be hand sieved through a 3 mm mesh, by either wet or dry sieving. The Excavation Directors would determine whether to proceed with wet or dry sieving, or a combination of both throughout the excavation. All bone remains would be dealt with under the Sydney Metro Exhumation Management Plan. [52]

All recovered stone artefacts would be cleaned, dried and bagged with a brief analysis conducted in the field. This analysis would include logging artefact type, raw material, and dimensions. These items would then be taken off site to be analysed in detail by relevant specialists in consultation with Aboriginal stakeholder groups.

6.7 Artefact collection and recording methodology

Artefacts are likely to be uncovered during archaeological investigations. Artefacts from secure or in situ contexts would be collected and recorded (by context). Retrieval of artefacts should focus on

[51] Artefact June 2017, Section 7.8
[52] Transport for NSW 2018. *Sydney Metro Exhumation Management Plan*

diagnostic pieces and other items whose analysis would contribute to the research questions for this site are retained.

Should diagnostic or significant artefacts be present within the fill layers (out-of-context), a sample would be retained as part of the archaeological record.

Artefacts would be collected by context and bagged with a label recording their registered context number, site code, date and initials of the collecting individual/s. A record and description of relevant artefacts would be included in their corresponding context sheet and photographed where necessary.

6.7.1 Modern deposits

Artefacts from modern (post-1960) deposits would be sample collected to demonstrate the nature and context of the remains.

6.7.2 Historic fills and secondary deposits

Similarly, artefacts collected from historic fills and other bulk deposits that lack stratigraphic integrity will be recorded and a representative sample collected.

6.7.3 Primary deposits

All artefacts from primary deposits would be collected by context and bagged. Diagnostic or unique/fragile artefacts would be bagged separately under their corresponding context.

In addition:

All human remains or potential human remains should be collected, and

All Aboriginal objects or potential aboriginal objects should be collected

6.7.4 Building materials

Building and structural materials would be collected by type and sampled. For example, one full brick and one partial brick of the same type, two samples of mortar, stone, timber and plaster (bagged by context). All collected samples would be noted on their corresponding context sheet and recorded in a building material sample register.

6.7.5 Organic or fragile materials

Metal and fabric or organic materials such as timber, leather, bone or shell would be stored in plastic bags for conservation purposes under their corresponding context. If significant and diagnostic fabric or leather items are found, these would be submitted to a conservation specialist with two months of collection.

6.7.6 Hazardous materials

Artefacts manufactured from hazardous material such as asbestos or found within a contaminated deposit would not be collected, although their presence within the context would be recorded in their corresponding context sheet. Such artefacts be disposed of in an appropriate manner according to guidelines for dealing with hazardous waste.

6.8 Artefact discard guidelines

6.8.1 All deposits

Non artefactual material is not to be collected from sieves or the field unless in response to a targeted research question such as retention of soil samples. In the event that non artefactual material has erroneously entered artefact collections this may be disposed of at any stage without further recording. Non artefactual material includes:

- Hazardous material
- Modern material resulting from the demolition and excavation process (includes items such as dynabolts, geofab, food wrappers and containers, construction PVC)
- Fragments of construction material including railway ballast, broken bricks, pipes and tiles, metal items such as railway spikes
- Unmodified stones and rocks
- Metal items that have rusted to an unrecognisable form
- Items such as ceramic or glass that are smaller than 1cm x 1cm and which show no diagnostic features (visible pattern, decoration or makers mark)
- Pieces of wood that are not identifiable in form &/ are too small for species identification (5cm x 3cm)
- Items with no contextual ID (e.g. ‘cleanup near grave cut x’).
- Degraded items that cannot be identified.

6.8.2 Redeposited Botany Sands

This deposit has been recorded as ‘grey sand fill’ during excavation for the CSMW. Taking the AMS into account it should be noted that – the grey sand is not a primary deposit but rather a secondary deposit created by the process of exhumation c1901. Therefore, it would be considered under the category of Historic fills and secondary deposits. Secondary contexts are those in which identified disturbance to the archaeological record has taken place. Artefacts found within these contexts have a diminished capacity to inform on the history of the location. Fill deposits are a characteristic type of secondary deposit.

It is also noted that sieving has identified Densely Graded Base (DGB) mixed into the sand deposit – this material is a very modern deposit and can be discarded. A sample (~ 10 items) of each artefact type should be retained from the fill deposit. These items should be at least briefly catalogued.

As above:

All human remains or potential human remains should be collected, and

All Aboriginal objects or potential aboriginal objects should be collected

6.8.3 Discard after cataloguing

All artefactual material from primary contexts must be retained and must be catalogued. Items may be evaluated for discard based on the criteria provided in the CSMW Artefact Discard Policy (Artefact July 2019).

Discard other than of those non artefactual materials and excels to samples in secondary deposits should occur after cleaning and at a minimum cataloguing of the artefacts. Decisions around discard at this stage would be made around considerations such as adequate sample size, relevance to research questions and condition of the remains. Assessments and decisions to discard at this stage should be documented and decisions made by suitably experienced and qualified people under the direction of the Excavation Director. Note than non-archaeological material collected in error may be discarded during or prior to cleaning.

6.8.4 Integrity

No staff, volunteer, or immediate family of persons involved in these processes can benefit from any discarded object. Donations to other facilities in the public domain or returns to the project are permissible.

6.8.5 Occupational Health and Safety

Live ammunition, toxic or radioactive materials, or other hazardous substances should be disposed of appropriately according to appropriate guidelines.

6.8.6 Human Remains

Human remains (including potential human remains) must be treated with dignity and respect.

6.9 Artefact analysis methodology

Where possible artefact cleaning and preliminary cataloguing would occur on site, otherwise artefacts would be catalogued and stored off site at the Sydney Metro facility at Rosebery. 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.

6.10 Environmental sampling methodology

A geomorphologist would be engaged to assist in identification and interpretation of the nature of soil deposits. On identification of intact sands, soil samples would be collected for analysis. A geomorphologist will be engaged to attend site during excavation, take soil and sediment samples where required, and provide detailed reporting for the excavation report. The geomorphologist can provide geomorphology reporting and Optically Stimulated Luminescence dating for archaeological excavations.

If natural soils are encountered, bulk samples of those deposits could be sent to a qualified specialist for analysis. Artefact will engage a specialist if the collection of such samples is found to be warranted. Examples of potential deposits suitable for sampling may include natural sands, accumulate deposits within wells and cesspits.

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

- The location, quantity and material of samples will be determined by the Excavation Director prior to its collection

- Samples would be stored in a safe, secure and climate controlled location while excavations are in progress. This would be chosen by the Excavation Director
- Each collected sample would be given a unique catalogue number and a sample register would be recorded throughout the excavation
- 'Clean excavation' procedures would be followed during the sample collection process. This would include:
    - Latex gloves would be worn by individuals excavating soil samples. Gloves would be changed for each sample to prevent cross-contamination
    - Excavation tools/brushes would be cleaned prior to and after the collection of each sample to prevent cross-contamination
    - All bags containing samples for analysis would be bagged and labelled appropriately to prevent cross contamination and ensure they are handled and stored correctly.

6.11 Unexpected Finds Procedure

Unexpected archaeological finds would be managed under the Sydney Metro Authority Unexpected Heritage Finds Procedure.[53] Unexpected finds would also apply to the identification of intact sand deposits during excavation works.

6.12 Archaeological Relic Management Plan

An Archaeological Relic Management Plan as require under E20 would be prepared if archaeological remains of State significance were located that were not described in the AARD or AMS. The Plan would be prepared in consultation with the NSW Heritage Council (or delegate). Works would not re-commence in the location until the requirements of the Plan have been implemented.

6.13 Exhumation Management Plan

Discovery of suspected human remains would be managed under the Sydney Metro Unexpected Heritage Finds Procedure and the Sydney Metro Exhumation Management Plan.[54] All suspected bone must be treated as potential human skeletal remains and work around them must stop while they are protected and investigated.

If potential human skeletal remains are found during the project, works would cease immediately in that area and the remains would be managed under the Sydney Metro Exhumation Management Plan produced as per the Conditions of Approval (Condition E26 and E27) for the approved project.[55]

The discoverer will immediately notify machinery operators so that no further disturbance of the remains will occur, as well as notify the foreman/site supervisor, principal contractor, project archaeologist and Sydney Metro Environmental Representative. This requirement will form part of the site induction. The Sydney Metro Exhumation Management Plan will be enacted, noting the special provisions that are in place for remains within Central Station that relate to the former Devonshire Street Cemetery. If these provisions as outlined in the Sydney Metro Exhumation management Plan are met, notification to the Police, corner or NSW Health Department are not required.

[53] Sydney Metro Authority 2019. *Sydney Metro Unexpected Heritage Finds Procedure*
[54] Transport for NSW 2017; Transport for NSW 2018
[55] Transport for NSW 2018. *Sydney Metro Exhumation Management Plan*

Dr Denise Donlon is the nominated forensic anthropologist for the Project. She would be consulted in the event of a discovery of suspected human remains.

6.14 Aboriginal archaeological methodology

The Central Walk site and CSR footprint is within Method Area 2 as outlined in the Aboriginal Cultural Heritage Assessment Report (CHAR). In accordance with the provisions for MA2 Aboriginal archaeological test/salvage excavation would be undertaken where intact natural soil profiles with the potential to contain significant deposits, or Aboriginal objects, are located during historical archaeological excavations. It should be noted that the CHAR states that identification of intact natural soil deposits would only be a trigger at Central Station if it was within the station box area.

Based on the results of the CSMW archaeological investigation, which identified that natural soils have been cut down in the northern area of the station, the CSR footprint is unlikely to have Aboriginal archaeological potential. In addition, soil profiles in the majority of the Sydney Yard are within the shale soil transition and intact sand contexts with the potential for deep Aboriginal archaeological deposits are unlikely to be present. The trigger for test or salvage excavation for Aboriginal archaeology would therefore be the identification of an Aboriginal objects during CSR excavations.

If suspected Aboriginal objects were identified during works, the Aboriginal archaeological team would be notified by the Excavation Director and a qualified archaeologist experienced in Aboriginal archaeology would assess the find. If Aboriginal objects were identified the Registered Aboriginal Parties (RAPs) would be notified and would participate in test and salvage excavation as required under the CHAR.

6.15 Contaminated materials

Due to the potential for contaminants across the study area, the controlled archaeological excavation would also be undertaken in accordance with the specified work health and safety 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 working on site, there may be a requirement to deviate from the proposed archaeological methodology, in order to ensure the health and safety of onsite staff. This 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 recording of archaeological material would need to be taken in the form of photographic, and possibly 3D scanning, from a safe distance (as specified in the work health and safety requirements of the remediation specialists).

6.16 Clearance

A written clearance confirmation would be provided by the Primary Excavation Director to Laing O'Rourke once archaeological management has been completed in an area. Construction would continue under the Sydney Metro Unexpected Heritage Finds Procedure. [56]

[56] Transport for NSW 2017. *Sydney Metro Unexpected Heritage Finds Procedure*

6.17 Reporting

A preliminary findings report would be prepared following completion of the works outlined in this AMS in accordance with the AARD.[57] This report would outline the main archaeological findings, post-excavation and analysis requirements, and identify if further archaeological work would be required, or if results would be appropriate for public interpretation.

An archaeological excavation report for Central Walk would be prepared within two years following the completion of the program of archaeological works, as required under Condition E18 of the Minister's Conditions of Approval for the project. Progressive draft updates will also be submitted to Laing O'Rourke throughout the project. The final report would comprehensively describe and interpret the findings of the excavation program within the context of the research design. This would include artefact analysis, environmental and building material sample analysis, stratigraphic reporting and production of Harris Matrices, production of illustrations and detailed site plans interpretation of site plans and illustrations final excavation report detailing the archaeological program and results would be prepared. It would include photographs 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. The report would be prepared in accordance with the standard conditions of archaeological permits issued under the Heritage Act:

a. An executive summary of the archaeological programme;

b. Due credit to the client paying for the excavation, on the title page;

c. An accurate site location and site plan (with scale and north arrow);

d. Historical research, references and bibliography;

e. Detailed information on the excavation, including the aim, the context for the excavation, procedures, treatment of artefacts (cleaning, conserving, sorting, cataloguing, labelling, scale photographs and/or drawings, location of repository) and analysis of the information retrieved;

f. Nominated repository for the items;

g. Detailed response to research questions (at minimum those stated in the approved Research Design);

h. Conclusions from the archaeological programme. The information must include a reassessment of the site's heritage significance, statement(s) on how archaeological investigations at this site have contributed to the community's understanding of the site and other comparable archaeological sites in the local area and any relevant recommendations for the future management of the site information and artefacts;

i. Details of how this information about this excavation has been publicly disseminated (for example provide details about Public Open Days and include copies of press releases, public brochures and/or information signs produced to explain the archaeological significance of the site).

[57] Artefact 2016a:314

6.18 Curation of archaeological material

Storage and curation strategies have been adapted from the Salvage and Storage Strategy of the Sydney Metro Integrated Management System.[58]

Collection of artefacts would be in the context of the AARD, which state that "retrieval of artefacts would focus on those whose analysis would contribute to research agendas or would be representative of the site".[59]

Following excavation, all collected artefactual material would be stored by Artefact Heritage in order to conduct post-excavation material analysis. Once post-excavation analysis and salvage excavation reporting has been completed, ongoing curation and long-term care of the collection would be at the discretion of Transport for NSW. Archaeological materials may be incorporated into interpretative or public display depending on the nature of recovered finds.

Large archaeological items, or items that require special care (i.e. material that is in danger of deterioration post-excavation), would be stored in appropriate facilities co-ordinated with and managed by Sydney Metro under the projects salvage strategy.

6.19 Public engagement

There is potential for significant archaeological remains within the study area, in particular the Devonshire Street Cemetery . There is opportunity to interpret the archaeology and engage the public with the significance and stories of Central Station's past.

Significant findings from the archaeological investigation program would be included in heritage interpretation for the project. 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. This could include hoarding signage, pamphlets, media releases, information on the project website, social media and blog content during the excavation process.

If substantial archaeological remains are uncovered there would be an opportunity to publish the results.

6.20 SHR listing update

Prior to completion of the Project, an updated Central Station listing nomination form must be prepared in consultation with all relevant stakeholders including Heritage DPC under the authority of the Heritage Council of NSW. Archaeological results obtained during the Central Walk and CSMW projects would be included in the listing update.

6.21 Archaeological team

The archaeological team would be finalised based on availability at the time of excavation, but would comprise a combination of the below staff:

- Primary Excavation Director – Dr Iain Stuart (Principal, Artefact Heritage)
- Secondary Excavation Director – Jenny Winnett (Principal, Artefact Heritage)

[58] Transport for NSW 2016a: 5 – 6
[59] Artefact 2016a:315

- Site Director – Adele Zubrzycka (Senior Heritage Consultant, Artefact Heritage), Julia McLachlan (Heritage Consultant, Artefact Heritage), Jayden van Beek (Heritage Consultant, Artefact Heritage)
- Excavation Director (Aboriginal) – Dr Sandra Wallace (Director, Artefact Heritage)
- Forensic Anthropologist – Dr Denise Donlon (Senior Lecturer in Anatomy and Curator, Shellshear Museum, University of Sydney)
- Archaeologists – Jessica Horton, Duncan Jones, HollyMae Steane Price, Ryan Taddeucci, and others as needed.
- Archaeological Surveyors - Guy Hazell and Gala Hazell (ArcSurv)
- Environmental sampling – Sam Player and Dr Mike McPhail
- Artefact specialists - Jeanne Harris (Urban Analysts), Jenny Winnett, Michael Lever, and others as needed

The Excavation Directors meet the requirements of the AARD, CHAR and Condition E18.

The Primary Excavation Director would oversee the archaeological excavations and advise on archaeological issues. The Primary Excavation Director would provide clearance once archaeological management has been completed in an area, as per the methodology outlined in Section 6.16. The Secondary Excavation Director would support the Primary Excavation Director where needed. The Aboriginal archaeological excavation director would manage Aboriginal archaeological test and salvage in accordance with the CHAR including co-ordinating appropriate consultation with the RAPs. The Forensic Anthropologist would respond to finds of potential human remains in accordance with the Sydney Metro Exhumation Management Plan. This would be in accordance with the CHMP and relevant conditions of approval (E18).

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artefact

Artefact Heritage

ABN 73 144 973 526
Level 4, Building B
35 Saunders Street
Pyrmont NSW 2009
Australia

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