Central Station Main Works- Station Box

Aboriginal Archaeological Method Statement

Report to Laing O'Rourke

September 2018

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

Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
1	31 July 2018	SW	SW	31 July 2018	First draft
2	31 July 2018	CM	SW	31 July 2018	Second draft – Client review
3	1 August 2018	RAPs, OEH	SW	13 September 2018	Final
4	18 September 2018	CM	SW	26 September 2018	Final with RAP responses added as appendix

Printed:	
Last saved:	26/09/2018 10:15
File name:	Central Metro Station Box- Aboriginal Archaeological Method Statement
Project name:	Sydney Metro: Central Station Main Works
Author:	Sandra Wallace
Project manager:	Sandra Wallace
Name of document:	Central Station Main Works – Station Box: Aboriginal Archaeological Method Statement
Name of organisation:	Artefact Heritage
Document version:	Final

CONTENTS

FIGURES

1.0 INTRODUCTION

1.1 Conditions of approval

This Archaeological Method Statement (AMS) outlines the archaeological methodology to manage potential construction impacts to Aboriginal objects and Aboriginal archaeological deposits at the Central Station Main Works site 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).

Condition of Approval E23 for the CSSI states that:

> The Proponent must take all reasonable steps so as not to harm, modify or otherwise impact any Aboriginal object associated with the CSSI except as authorised by this approval.

This AMS provides measures to identify and manage Aboriginal objects and archaeological deposits during construction with provisions for avoidance if possible.

Condition of Approval E24 for the CSSI states that:

> *Before excavation, the Proponent must implement the Aboriginal Cultural Heritage Assessment prepared for the CSSI and included in the PIR. Excavation and/or salvage must be undertaken by a qualified archaeologist in consultation with the Registered Aboriginal Parties for the CSSI.*

A Cultural Heritage Assessment Report (CHAR) was prepared by Artefact Heritage (2016) as part of the Preferred Infrastructure Report (PIR) which forms part of the approved project as modified. The CHAR outlined an archaeological management methodology for test and salvage excavation, triggers for staged investigation, approach to methodology and reporting. The CHAR also addressed the relationship between Aboriginal and non-Aboriginal archaeological management.

The CHAR requires that an AMS would be prepared for each activity or site specific work stage that may impact Aboriginal archaeology. The AMS would adhere to the excavation methodology outlined in the CHAR and provide detailed information on site-specific and/or activity specific archaeological management requirements. This AMS outlines how E24 will be met by describing how the methodology provided in the CHAR will be implemented and Aboriginal archaeology will be managed for the Central Station Main Works project.

Comprehensive Aboriginal consultation was undertaken as part of the preparation of the CHAR. All Registered Aboriginal Parties (RAPs) who responded through consultation were in support of the proposed archaeological management methodology included in the CHAR.

Condition of Approval E25 for the CSSI states that:

> Where previously unidentified Aboriginal objects are discovered during construction of the CSSI, construction must stop in the vicinity of the affected area and a suitably qualified and experienced Aboriginal heritage expert must be contacted to provide specialist heritage advice, before works recommence. The measures to consider and manage this process must be specified in the Heritage

Management sub-plan required by Condition C3 and, where relevant, include registration in the OEH's Aboriginal Heritage Information Management System (AHIMS).

The Sydney Metro Unexpected Heritage Finds Procedure has been prepared for the project and would be implemented for the Central Station Main Works site in regard to Aboriginal archaeology.

1.2 Project site

The Central Station Main Works are occurring within Central Station, which is located within the City of Sydney Local Government Area (LGA) and in the Parish of Petersham.

Central Station Main Works site is located within Lot 118 DP1078271. The site is bound on all sides by an active rail corridor, platforms, rail buildings and rail infrastructure.

1.3 Consultation with the Office of Environment and Heritage

The Office of Environment and Heritage (Aboriginal Heritage, Regional Operations Division) were provided with a copy of the draft AMS. OEH responded on 27th August advising they had no issues with the methodology.

1.4 Authorship

This AMS was prepared by Sandra Wallace of Artefact Heritage.

Figure 1: The project site

2.0 PROPOSED WORKS

2.1 Project scope

The Central Station Main Works scope involves the excavation and construction of two new Metro platforms below the existing intercity platforms 13, 14 and 15 (Figures 2 and 3). This would include the construction of two new underground concourses, one above the Metro platforms and one constructed eastwards under the suburban platforms connecting to Chalmers Street. This would give access to all suburban platforms and enable passenger interchange between train services, new platforms and Sydney Light Rail.

The existing intercity platforms 13, 14 and 15 would be demolished to allow the Metro station box to be constructed. Once the Metro station box is completed, platforms 13 and 14 would be reinstated. This would involve providing two new level-access platforms as part of the Metro station box, including tracks on track slab.

The Metro station box scope includes, but is not limited to:

- A 5-level basement structure approximately 230 m long, 29 m wide and 27 m deep constructed within excavated Sydney sandstone beneath existing platforms 13, 14 and 15
- Construction of a retaining wall at high level around the perimeter of the Metro station box to enable excavation through the soft fill and shale to the sandstone layer.
- The station box intersects the Olympic and Baggage tunnels.
- The station box crosses the Devonshire tunnel and provides permanent support following underpinning.
- The Concourse is one level below the intercity platforms and connected to platforms 13 and 14 by a series of lifts and escalators. There is a connection to the eastern walkway, the northern concourse as well as the intersected Olympic and Baggage tunnels.
- The plant rooms inside the Metro station box are located at level B1 and at the north and south ends of the station and serve the Metro station box alone.
- Levels B2 and B3 are predominately ducts carrying air and services between the plant rooms at each end of the box and upwards to ventilation structures at intercity platform level.
- The Metro platform is at the base of the structure and is connected to the Concourse by 3 triple banks of escalators, a lift and emergency egress stairs within the back of house areas at either end of the Metro station box.
- The future operator for the Metro will be separate from Sydney trains.

2.2 Platform and canopy removal/demolition

To allow for construction of the station box, the first stages require demolition and removal of the existing rail infrastructure, platforms, canopies, track etc. prior to major excavation works.

Steps include:

- Potholing and utility identification

- Prior to excavation works occurring, the contractor will identify existing services / utilities etc using Non-Destructive Digging (NDD).
- To allow for temporary retention of Platform 12, the Contractor will install piles through the existing Platform 12 to support future works.
- Removal of rail infrastructure and spoil beneath existing platforms

2.3 Excavations in the Sydney Yard

Multiple works would be carried out within the Sydney Yard and surrounds of the station box.

- Prior to excavation works occurring, the contractor will identify existing services / utilities etc using Non-Destructive Digging (NDD) at various locations in the Sydney Yard. This will include:
  - Potholing using a vacuum truck to a depth of 1500 mm
  - Slit trenching using vacuum truck to a depth of 1500 mm
- Other works within the Sydney Yard will include
  - Levelling of ballast down to 500mm
  - Trenching for installation of electrical infrastructure
  - Sewer connection (2m x 2m) to a depth of around 3000mm to connect to existing sewer main
  - Removal of footings of demolished structures
  - Excavation of a 2m x 2m services pit to 2m depth, including sheet piling to around 7m
  - Potholing, footprint excavation and installation of OHW structures
  - NDD and trenching for ULX installation
  - Potholing at platform zero
  - NDD and trenching to locate buried track infrastructure (under current ballast)

2.4 Excavation for the Metro Station Box

Excavation of the Metro station box will occur in multiple stages. The general stages are outlined below:

- Prior to excavation works occurring, the Contractor will identify existing services / utilities etc using NDD.
- To allow for retention of the Metro station box excavation perimeter, the Contractor will install piles around the entire boundary of the Metro station box. Piles are spaced at ~2m centres and are generally 750mm diameter.
- To allow for insertion of large steel “plunge columns” for future structural connections, the Contractor will two piles every 15 lineal metres up the centre of the Metro station box. Piles are generally 1200mm diameter and to a depth of 25 metres into rock. Piles will be backfilled with steel and low strength concrete.

- To allow for pedestrian tunnel retention, the Contractor will drive large steel sheet piles vertically beside the existing tunnel. Sheet piles will extend to a depth of up to 10 metres, with some holes pre-drilled if required.
- Excavation and spoil removal
- Demolition of pedestrian tunnel would be undertaken during excavation of the works, and following construction of an alternative pedestrian tunnel route.
- Excavation at and adjacent to the Devonshire Street Tunnel:

Some works, including but not limited to, NDD and trenching would need to be completed outside the areas shown in these figures, in which case the archaeological management approach would be consistent with the methodology in the project CHAR and this AMS. Locations of works shown may also be altered during construction in response to constructability issues, to avoid significant archaeology identified in testing or monitoring, or in response to project design requirements. In this case archaeological management would be consistent with the methodology in this AMS.

Figure 2: Plan of proposed station box works

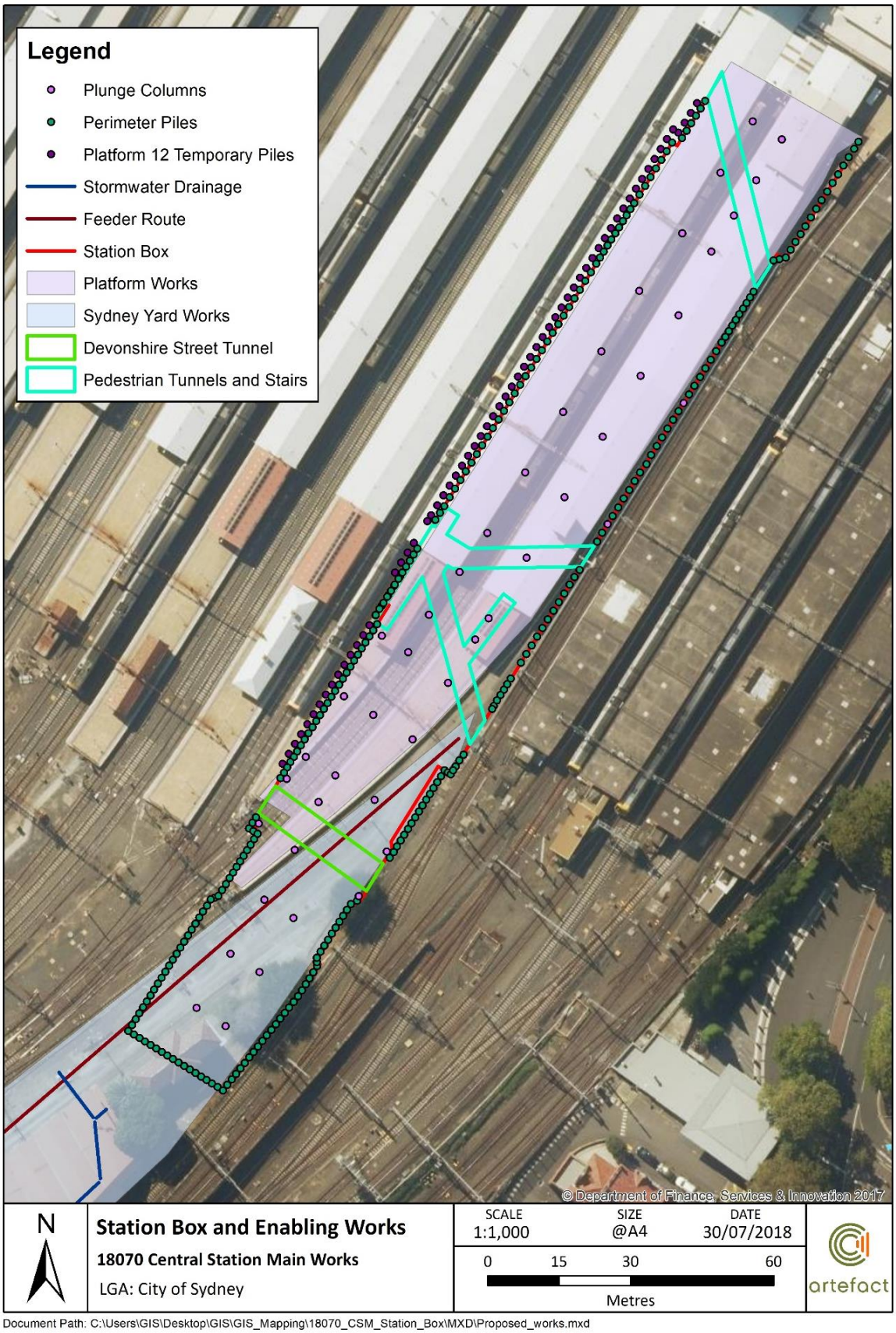
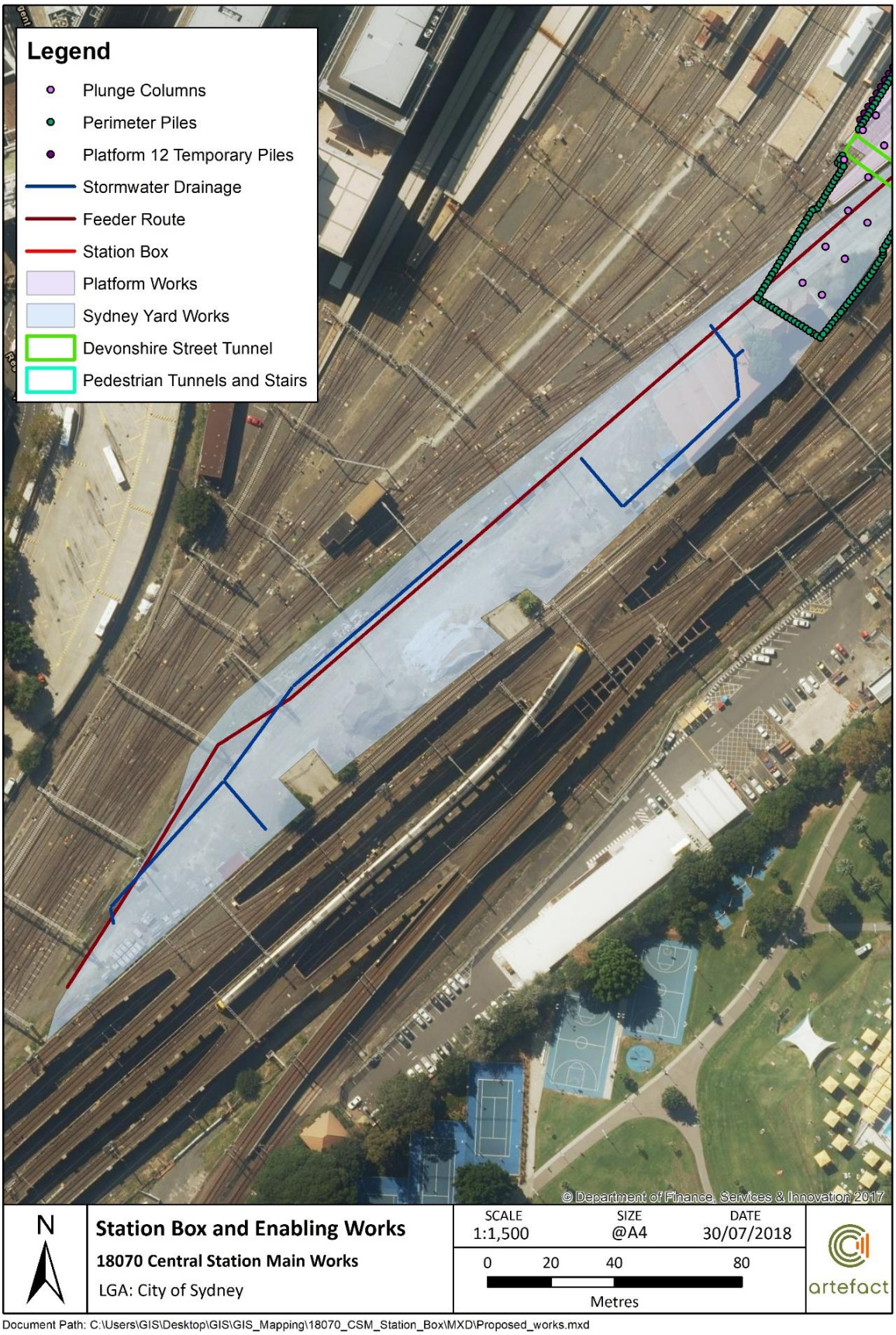


Figure 3: Plan of proposed station box and enabling works



3.0 ABORIGINAL COMMUNITY CONSULTATION

Consultation with the RAPs was undertaken during concept design as part of the Sydney Metro Chatswood to Sydenham Environmental Impact Statement assessment, and also during preparation of the CHAR in accordance with OEH's guidelines *Aboriginal cultural heritage consultation requirements for proponents* (2010).

The following individuals and organisation are registered for the project.

- Darug Land Observations
- Darren Duncan
- Murri Bidgee Mullangari Aboriginal Corporation
- Tocomwall
- Darug Aboriginal Cultural Heritage Assessments
- Kamilaroi-Yankuntjatjara Working Group
- Woronora Plateau Gundangarra Elders Council
- Aboriginal Archaeology Service Inc
- Gandangara Local Aboriginal Land Council
- Metropolitan Local Aboriginal Land Council
- Gundungurra Tribal Technical Services
- Tony Williams
- Bilinga Cultural Heritage Technical Services
- Gunyuu Cultural Heritage Technical Services
- Munyunga Cultural Heritage Technical Services
- Murrumbul Cultural Heritage Technical Services
- Wingikara Cultural Heritage Technical Services

RAPs were invited to review and comment on the Construction Heritage Management Plan (CHMP) for the Central Station Main Works site, and to attend an Aboriginal Focus Group (AFG) which was held on 30th July 2018 and included discussion of the methodology presented in this AMS. RAPs were given the opportunity to review and comment on this AMS. The draft AMS was sent to all RAPs on 1st August 2018.

The following comments were received in relation to the draft AMS:

Barry Gunther from Tharawal agreed with the methodology

Tony Williams öf Aboriginal Archaeology Service (AAS) Inc, agreed with the recommendations of the AMS and noted that AAS would like to see any artefacts collected displayed for all to see in the museum, local library or local government building or reburied in close proximity of the area.

Phil Kahn from •Kamilaroi-Yankuntjatjara Working Group supported the AMS and noted that if Aboriginal people were buried at the century they may have been buried outside the formal boundaries and potentially would not have been removed during disinterment.

Ryan Johnson of Murra Bidgee Mullangari endorsed the recommendations of the AMS.

Copies of these responses and the consultation log are included in the Appendix to this AMS.

Consultation with the RAPs will also be undertaken at a future date in regard to heritage interpretation.

RAPs will be given the opportunity to participate in any archaeological test or salvage excavations for Aboriginal archaeology. Artefact Heritage would liaise with the RAPs to organise participation and scheduling of fieldwork.

RAPs would also be notified in the event of an unexpected find of an Aboriginal object in accordance with E25, or human remains that may be Aboriginal (in accordance with the Sydney Metro Exhumation Management Plan).

4.0 SUMMARY OF BACKGROUND INFORMATION

4.1 Environmental context

The study area is located within the Sydney Basin. The basin spans from Batemans Bay, to the south, Newcastle to the north and Lithgow to the west. The geology within the study area consists of Hawkesbury Sandstone, Ashfield Shale and Quaternary sediments.

The site is located on the northern edge of the ridge dividing the Sydney Harbour catchment with that of Botany Bay. The line of Cleveland Street partially runs along this divide rising to the main ridge line.

Prior to European settlement the study area consisted of a sand dune network, covered in heath, low scrub, creeks and freshwater wetlands. It would have been a habitat for various fauna including birds, fish and eels and the hunting ground and home to Aboriginal people.

Early plans show a stream running east-west across the Cleveland Paddocks rising in the Strawberry Hills area and then running down into Blackwattle Bay. The stream was utilised by the Kent Brewery and various roads had to bridge the stream. When the railway was constructed the stream was contained in a substantial brick drain.

Another stream running along Devonshire Street is shown in plans from the 1850s. The creek rose in the Strawberry Hills area and discharged into Darling Harbour. The course of the stream is shown as running parallel and adjacent to Devonshire Street and it is presumed that the creek was in a channel at that time.

4.2 Aboriginal land use

Assumptions about land use patterns are made on the basis of archaeological information gained from the local area, from observations made by the Europeans after settlement of the area, and from information known about available natural resources.

As Aboriginal people were mobile hunter-gatherers, it is likely that they moved across the landscape between resources. It is also likely that movement was related to socio/cultural factors such as gatherings and ceremonial obligations. Campsites would have provided temporary residences such as bark structures. It is difficult to ascertain whether a campsite existed at a given location, but correlations between stone artefact density and campsites are often assumed. While it is likely that knapping would have occurred at a campsite, it is also likely that knapping would have occurred during movement across the landscape, as tools were prepared or repaired during hunting and gathering activities.

4.2.1 Aboriginal ethno-historic context

The study area is located within the traditional lands of the Gadigal clan. There are around 30 Aboriginal clans within the Sydney metropolitan area which are collectively known as the Eora Nation. The name ‘Eora’ was given to the coastal dwelling Aboriginal peoples within Sydney. Eora means ‘here’ or ‘from this place’ or ‘people’. The territory of the Gadigal stretched from South Head, through to Sydney Cove, Cockle Bay and Darling Harbour to Blackwattle Creek, taking in the suburbs known today as Redfern, Erskineville, Surry Hills and Paddington, down to the Alexandra Canal and Cook’s River.

The British settlers first encountered the Gadigal people in and around the coves and bays of Port Jackson. The settlers included the name Gadigal, or its alternative spellings of Cadigal and Cadi, in

some of the earliest records of European settlement in Sydney, for describing the Aboriginal people they had encountered. Following the smallpox epidemic in 1789, up to 70 per cent of Aboriginal people within Sydney were killed by the disease. Only three members of the 60-strong Gadigal clan survived the epidemic.

As Sydney grew, Aboriginal people from outer NSW gravitated towards the city and joined the remaining Gadigal in forming an urban Aboriginal community. Residing in outer city suburbs such as Emu Plains, Campbelltown, Manly and La Perouse, along with harbour side suburbs including Elizabeth Bay, Potts Point and Woolloomooloo throughout the mid-1800s, and into areas surrounding the study area such as Pyrmont, Balmain, Rozelle, Glebe and Redfern by the early 1900s (Artefact 2016). Aboriginal people are known to have camped within the study area around the Cleveland Paddocks before the construction of the railway station.

4.3 Land use and disturbance

This original landscape of the Central Station Main Works site has been significantly modified since European settlement, predominantly from work associated with the use and decommissioning of the cemetery and construction of Central Station in its three phases of development. However, this ground disturbance has not been uniform across the site and is not easily discernible or predictable from historical sources or geotechnical information.

The construction of the third (current) railway station with the main concourse on Eddy Avenue involved the excavation of large amounts of pre-existing sand dune in the eastern part of the site. Areas on the sloping west-ward side were filled in to make the site level. The Devonshire Street cemetery was exhumed, excavated and graded level prior to the construction of the concourse buildings (Figures 4, 5 and 6). The burial ground had a variable ground level, with a higher elevation in the east than in the west. The interments were also excavated below the previous ground level, up to potentially two metres deep. Despite the clearing and levelling of the burial ground in 1901 and 1902, the degree to which the vertical profile of the graves is disturbed throughout the entire cemetery is uncertain. While the majority of the cemetery was likely removed, these impacts may not have been uniform or complete.

Further excavation between Eddy Avenue and Devonshire Street occurred to build the below-platform tunnels and storage areas at the station. These tunnels and storage areas are not uniform across the northern part of the site however. While below-platform elements have been installed, the extent to which these excavations continue underneath the rail corridor is not certain.

South of Devonshire Street, ground disturbance has been less severe. Multiple rail corridors have been constructed, modified and rebuilt. However, the deepest grade cutting is associated with the Darling Harbour goods line, which is located outside of the Central Station Main Works site. The construction and later removal of rail lines and sidings may not necessarily have required extensive excavation. While the upper surfaces of this area are disturbed from these infrastructure installation activities, the depth of this ground disturbance is unknown.

The Sydney Yard area has seen several phases of rail line, workshop and carriage shed remodelling since the station was constructed. While the renovation of these areas is likely to have involved excavation, once again the depth of these excavations are unknown.

Figure 4: 1901 photo of interments being exhumed in the Devonshire Street Cemetery[1]

Figure 5: Removing headstones from the Devonshire Street Cemetery by steam tram in 1902[2]

[1] Photograph Collection of Redfern Railway Station and Central Railway Station, 1871-1920. State Library of NSW http://acms.sl.nsw.gov.au/album/ItemViewer.aspx?itemid=1017387&suppress=N&imgindex=16 viewed 15 May 2018.
[2] Mrs a G Forster, E Downs Collection, ARHS Rail Resource Centre.

Figure 6: 1902 photo of the cleared Devonshire Street Cemetery area for the construction of the Main Concourse, view from Pitt Street facing south[3]

4.3.1 Geotechnical testing results

Geotechnical investigations conducted for the Sydney Metro project suggested 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.

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 identifies the Ashfield shale transition with associated residual soils in the majority of the station box, across its northern half 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.

[3] Photograph Collection of Redfern Railway Station and Central Railway Station, Sydney, 1871 – 1920. State Library of New South Wales, http://acms.sl.nsw.gov.au/album/ItemViewer.aspx?itemid=1017387&suppress=N&imgindex=16 viewed 1 June 2016.

A layer of Quaternary sand is identified in the geotechnical results extending for around 40m below 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).

The geotechnical testing has confirmed that fill is located across the site. The testing data does not clearly differentiate between fill that may contain Aboriginal objects out of context, and that which is modern ballast fill or imparted 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. Archaeological testing would be required to confirm the nature of this fill. Redeposited local fill could still retain Aboriginal objects, although they would not be in situ.

4.1 Archaeological potential and significance

There is a moderate-high potential that intact former ground surface and migrating sand dunes are located within the proposed station box excavation site, although they may be localised. Aboriginal sites may be associated with this landform. The site's location on a raised, well-drained area close to estuarine resources at Cockle Bay indicates potential for Aboriginal objects to be present below the ground surface in areas that have not been significantly impacted or excavated.

Across the remainder of the Central Station site there is a low – moderate potential for Aboriginal objects to occur in sub-surface contexts where natural soil contexts remain. These areas are also likely to be localised.

Any Aboriginal objects and sites that may be identified within the Central Station Main Works site would therefore be considered to be of moderate to high archaeological significance as a result of their rarity. Aboriginal objects and sites are also likely to have cultural significance.

5.0 ARCHAEOLOGICAL METHODOLOGY

5.1 Research framework

Question 1: How does evidence of Aboriginal occupation at the site differ within the shale soil landscape to the west and any Botany Sand located (including remanent mobile sand dune)?

The location of the investigation area across the transition between underlying shale and Botany sand sheet geology provides the opportunity to compare the distribution and nature of any associated archaeological remains. The soil formation process and bioturbation within residual soils associated with underlying shale geology suggests a relatively shallow archaeological record subject to vertical and horizontal mixing as a result of bioturbation and historical land-use activities. The archaeological record associated with the Botany sand sheet may extend to a greater depth, with the potential for buried podsols and truncation due to historical land-use activities. Investigation may include analysis of the stratigraphic integrity of each context, and whether the deeper Botany sand sheet may provide greater opportunity for secure dating and stratified separation of archaeological remains. Is there identifiable evidence in the archaeological record of differing land-use strategies between each area, such as differing use of raw materials and artefact production techniques.

Question 2: Can differing occupation strategies, cultural activities or behaviours be recognised from recovered artefact assemblages? Does the artefactual evidence correlate with paleo-environmental information?

The Central Station Main Works site was originally a transitional landscape between the dunes and swampy margins of the Botany Sand Sheet and the marine environment of Cockle Bay. Historical records show that there would have been permanent water in the area. Was the site a route between different recourse zone, or was it a suitable location for hunting and gathering. Can this information be provided from the archaeological evidence?

Question 3: Is there any evidence of contact archaeology associated with the Aboriginal camp which is said to have been located in the Cleveland Paddocks prior to the construction of the railway station?

Contact archaeology may include evidence of Aboriginal artefacts manufactured from materials including glass and ceramics. Other materials were sometimes utilised, such as historical accounts of umbrella wires used to manufacture spears for fishing around the harbour foreshore. The archaeological investigation would assess historical finds, such as glass and ceramic, for any evidence of modification by Aboriginal people for use as tools.

5.2 CHAR methodology

The CHAR divided the Sydney Metro City & Southwest - Chatswood to Sydenham project into Method Areas (MA) for the management of Aboriginal archaeology. This approach was necessary because of the diverse range of landscapes and disturbance histories of the various project sites.

Central Station Main Works site was identified as within MA2. The main common archaeological attributes of MA2 project sites are:

- They will be the focus of historical archaeology investigations
- The survivability of natural contexts is likely to be limited by multiple phases of construction and landform modification at each location.

- Natural contexts are likely to be isolated and discrete.

The archaeological management approaches for MA2 are detailed below in accordance with the CHAR.

5.3 Excavation methodology

5.3.1 Excavation approach

Testing and salvage for Aboriginal archaeology will focus on the station box, where geotechnical testing has shown that sand deposits may be present. Even if these soil profiles are re-deposited as a result of site disturbance Aboriginal objects may still be present.

Aboriginal archaeological testing would be undertaken in conjunction with historical archaeological testing within the following areas as shown in Figures 7 and 8.

- Two areas adjacent to the Devonshire Street tunnel (east and west) where geotechnical testing has identified the potential for sand deposits
- The perimeter pile locations to the south of Devonshire Street tunnel where possible
- The plunge column pile locations through the centre of the station box where possible or adjacent areas

If the planned testing within the station box does not provide enough information to inform a refined assessment of archaeological potential for the remainder of the station box, 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. The additional number of test pits would be capped at 30, assumed to be a consistent size with those excavated for the plunge columns and piles (around 1 x 1 m or 2 x 1 m). If these pits do not provide enough information to sufficiently characterise stratigraphy across the station box, archaeological monitoring would be an acceptable management measure for portions of the station box that require it.

If archaeological remains associated with the cemetery or Aboriginal occupation of the area are located during any of the archaeological management phases within the station box, additional archaeological excavation may be required across the station box. For Aboriginal objects or human remains are located during testing of the piling locations, a full testing and salvage program may be required to ensure that Aboriginal objects and human remains are retrieved and recorded across the bulk excavation area. In this circumstance salvage of human remains would be undertaken in accordance with the Exhumation Management Plan, the archaeological salvage methodology and the non-Aboriginal archaeological AMS.

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 deposits.

Archaeological testing outside the station box would be in response to triggers for Stage 1 testing as discussed in Section 5.3.2.

Figure 7: Archaeological management approach for the station box

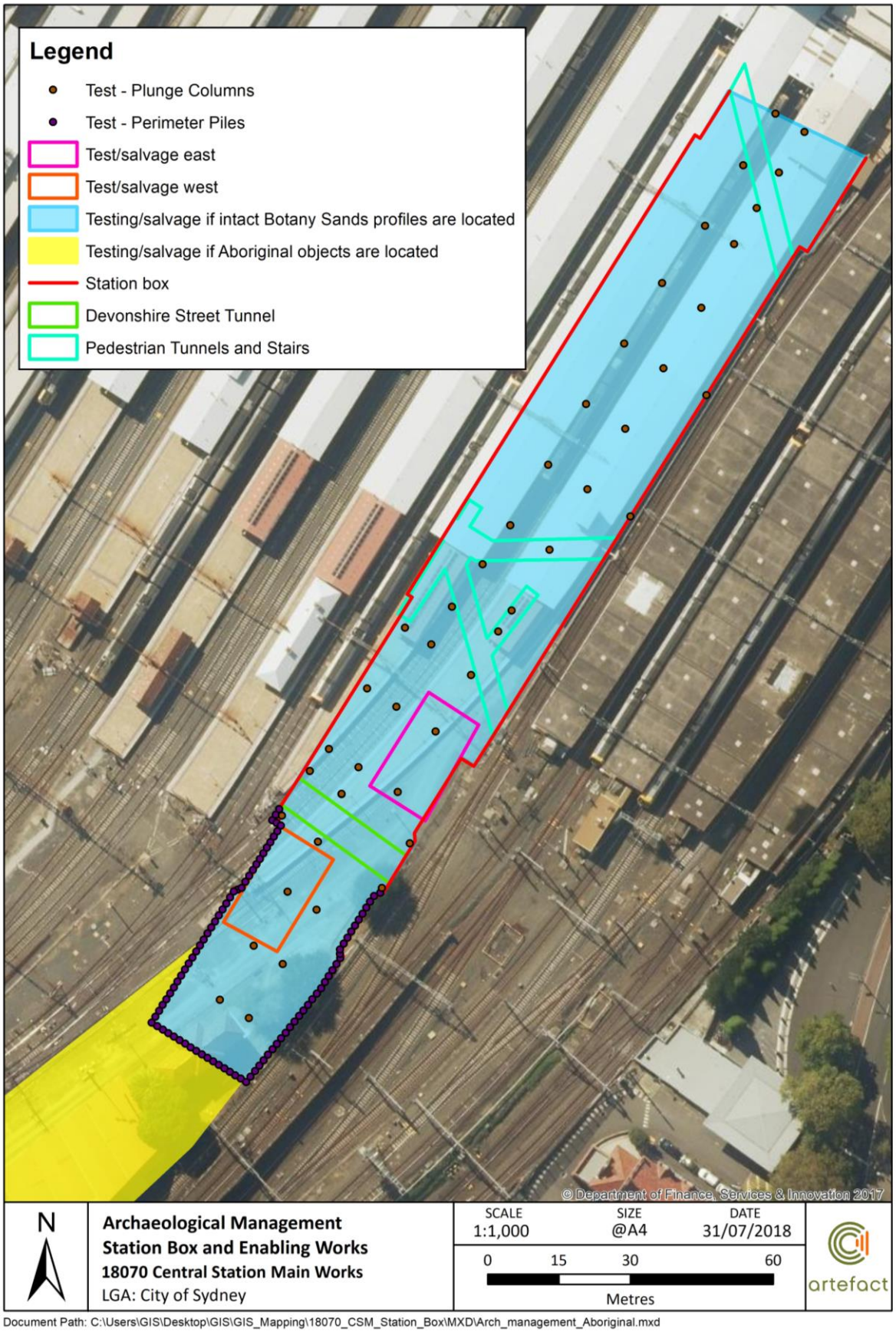
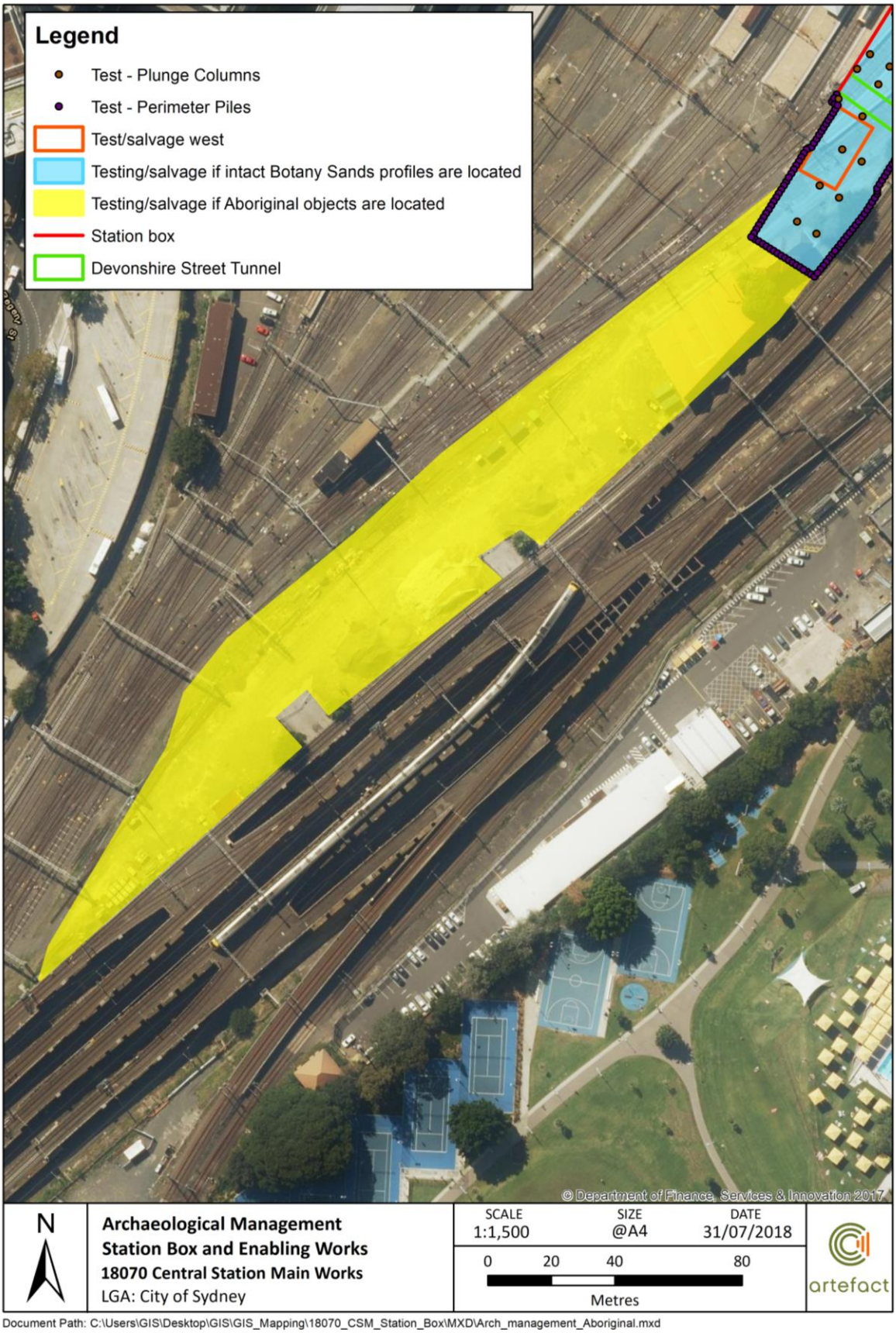


Figure 8: Archaeological management approach for the Sydney Yards



Document Path: C:\Users\GIS\Desktop\GIS\GIS_Mapping\18070_CSM_Station_Box\MXD\Arch_management_Aboriginal.mxd

5.3.2 Stage I excavation (test excavation)

Triggers for potential Stage one excavation within MA2 would include:

- Notification by the Historical ED that potential intact soil profiles, or Aboriginal objects, have been identified during historical archaeological investigations. Confirmation by the Aboriginal archaeological ED that the finds are intact soil profiles or Aboriginal objects.
- At Central Station, the identification of intact soil profiles within the station box only, prior to or during construction.
- Aboriginal object(s) identified as an unexpected find.

Stage one would require hand excavation of test pits in controlled Excavation Units. Excavation Units would comprise of test pits excavated in either arbitrary 100 mm spits or stratigraphic units where applicable. The size of these test pits would depend on the location, impacts and requirement of the historical archaeological program. For example, test pits around the perimeter piles would be around 1 m x 1 m while the test pits at the plunge column pile location would be around 3m x 3m. In some instances, where very small portions of intact natural soil profile remain, the Excavation Unit size would be smaller than one square metre.

Excavation Units would be excavated to archaeologically sterile deposit has been reached, enough information has been retrieved to trigger Stage two salvage excavation, or a depth of 1.5 metres (or safe working depth) has been reached, whichever is the shallowest. If archaeological deposit extend below a safe depth (1.5m) deeper archaeological excavation should be considered such as shoring or stepping.

Where there is sufficient space, a grid of Stage one test pits would be established across the area to be tested. Where there are constraints on the grid layout, such as disturbed areas or services, test pits may be offset to an adjacent location within the area of proposed impact.

Machine excavation would be utilised where required to remove introduced fill layers overlying areas to be hand excavated. Machine excavation of fill overlying areas to be hand excavation will likely cover a greater areal extent than 2 metres x 1 metres for OHS reasons.

Due to the potentially deep extent of the archaeological resource in some portions of the study area and the need to interact with the historical archaeological program, it may be determine it is more practical to conduct some Stage one excavation by machine.

5.3.3 Stage II excavation (salvage excavation)

Triggers for potential Stage two excavation within MA2 would include:

- Identification of Aboriginal artefact(s) during Stage one excavation. Minimum number not set due to potential high significance of sites in MA2.
- Identification of rare or significant artefacts, features or site type.
- Identification by the Aboriginal archaeological ED and/ or the geomorphologist of Aboriginal artefacts in contexts that may provide significant information on site formation, including the potential extracting samples suitable for dating.

Should a Stage one excavation trigger the need to undertake Stage two archaeological salvage excavation, a salvage excavation methodology generally in accordance with that outlined below

would be followed. Stage two excavation would involve the continuation of hand excavation in Excavation Units. Stage two will cease once the excavation has retrieved a sufficient sample to describe the intactness, nature, extent, significance and is a statistically comparable quantity.

OHS considerations would need to be taken into account for 'stepping' of excavation in areas of deeper deposit.

Machine excavation would be utilised to remove introduced fill layers where required, or to excavate below a safe depth where archaeological sterile deposits have not been reached.

5.3.4 Interaction with historical archaeological excavation

In the section of the station box to the north of the Devonshire Street tunnel, within the boundaries of the cemetery, any insitu or re-deposited sands would have the potential to contain both Aboriginal objects and remains associated with the cemetery. All tested and salvaged material in this area would be sieved to identify both Aboriginal objects and remains associated with the cemetery. RAPs would participate in this exercise, as further discussed in the non-Aboriginal archaeological AMS.

Soil profiles in the majority of the Sydney Yard are thought to be 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 historical archaeological excavation or construction activities for areas outside the station box.

If suspected Aboriginal objects were identified in other sections of the Central Station Main Works site, 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 RAPs would be notified and would participate in test and salvage excavation as required under the CHAR.

5.3.5 Excavation recording

All excavated squares would be recorded in detail including photographs, level readings, plans and context sheets.

Stratigraphic section drawings would be prepared for both stage one and stage two excavations. Accurate levels would also be taken for all excavation squares, with a minimum level sampling of the present ground surface, the surface of any remaining intact sand deposits, and the final depth of excavation. Plan drawings would be made of final excavation areas as well as any encountered archaeological remains.

A resealable bag and paper tag would be prepared for each spit and annotated with details including context number, spit context, date and excavators. These bags would be transported to a sieving area in the buckets of excavated soil. Any artefacts retrieved would be placed in these re-sealable bags.

5.3.6 Sieving

Sands and residual clay spoils (intact and re-deposited) within the study area have the 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.

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.

5.3.7 Geomorphologist

A geomorphologist would assist in the identification of soil profiles and assessment of the nature of re-deposited fill throughout the excavation process. This information would inform a refinement of archaeological potential particularly in the station box area where depositional processes have been complex and the nature of the original soil landscape is not definitively known.

5.3.8 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.

5.3.9 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. All suspected bone must be treated as potential human skeletal remains and work around them must stop while they are protected and investigated. Gloves would be used when handling all bone material.

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.

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. Preliminary notification to the NSW Police will be undertaken by the Environmental Representative.

If the remains are found to be Aboriginal in origin the RAPs wold be notified and consulted during the management process.

No works to recommence until clearance is provided by OEH and/or the NSW Police as per the Sydney Metro Exhumation Management Plan.

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

5.3.10 Clearance

A written clearance confirmation would be provided by the Aboriginal Archaeological 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.

5.3.11 Care and management of Aboriginal objects

Any recovered artefacts would be analysed in accordance with standard Artefact Heritage methodology for assemblages within the Greater Sydney region.

It is understood that Aboriginal objects would be stored at the Sydney Metro storage facility at Rosebery after analysis by Artefact Heritage. During the analysis period artefacts may be stored at the Artefact Heritage office at Pyrmont. They would be stored in a lockable cupboard or safe with all labelling and bags intact.

RAPs would be consulted regarding the final management of Aboriginal objects. This may include reburial, use in interpretation or a control agreement through OEH for a permanent keeping place, for example with one of the RAP groups.

5.3.12 Unexpected finds

Following the discovery of new finds of Aboriginal objects – works will cease in the immediate area and the area secured. In accordance with E23 avoidance would be considered.

Assessment of the site/object and subsequent management of the site will be carried out in accordance with the Sydney Metro Unexpected Finds Procedure. The use of the Sydney Metro Unexpected Finds Procedure would satisfy the requirement in E25 to include measures to manage an unexpected find in the CHMP.

5.3.13 Heritage Interpretation

The heritage interpretation program for Central Station Main Works will include an Aboriginal heritage component., The Heritage Interpretation Strategy for the project is in preparation and will consider the results of the archaeological excavation work.

6.0 REFERENCES

Artefact Heritage 2016. Sydney Metro City and Southwest Chatswood to Sydenham: Aboriginal Cultural Assessment. Report to Jacobs / Arcadis / RPS.

Office of Environment and Heritage (OEH) [formerly Department of Environment, Climate Change & Water]. 2010. *Aboriginal Cultural Heritage Consultation Requirements for Proponents*.

Office of Environment and Heritage (OEH) [formerly Department of Environment, Climate Change & Water]. 2010. *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.*

Office of Environment and Heritage (OEH) [formerly Department of Environment, Climate Change & Water]. 2010. *Guide to Investigating and Reporting on Aboriginal Cultural Heritage in NSW.*

7.0 APPENDIX

Consultation log and RAP responses

	Gordon Workman/ Darug Land Observations PTY LTD	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
	Christopher Payne/ Gundungurra Tribal Technical Services	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
	Ryan Johnson/ Murri Bidgee Mullangari Aboriginal Corporation	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
	Scott Franks/ Tocomwall	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
	Kayla Williamson/ Woronora Plateau Gundangarra Elders Council	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
	Tony Williams/ Aboriginal Archaeology Service INC	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
CSM-Station Box	Barry Gunther/ Gandangara Local Aboriginal Land Council	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
	Nathan Moran/ Metropolitan Local Aboriginal Land Council	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
AMS	Peter Forster/ Gundungurra Tribal Technical Services	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
	David Bell/ Gundungurra Tribal Technical Services	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
	Darren Duncan/ Duncan Suey & Associates	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
	Wandai Kirkbright and Robert Brown/ Bilinga Cultural Heritage Technical Services	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
	Darlene Hoskins-McKenzie/ Gunyuu Cultural Heritage Technical Services	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
	Robert Brown and Suzanne McKenzie/ Munyunga Cultural Heritage Technical Services	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
	Levi McKenzie-Kirkbright/ Murrumbul Cultural Heritage Technical Services	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
	Suzannah McKenzie and Wandai Kirkbright/ Wingikara Cultural Heritage Technical Services	Jennifer Norfolk/ Artefact	Email	01/08/2018	Sent AMS for CSM - Station Box for review
	Pollowan Phillip Khan/ Kamilaroi-Yankuntjatjara Working Group	Jennifer Norfolk/ Artefact	Letter	01/08/2018	Sent AMS for CSM - Station Box for review
	Celestine Everingham/ DACHA	Jennifer Norfolk/ Artefact	Letter	01/08/2018	Sent AMS for CSM - Station Box for review
	Nathan Moran/ Metropolitan Local Aboriginal Land Council	Jennifer Norfolk/ Artefact	Letter	01/08/2018	Sent AMS for CSM - Station Box for review
	Jennifer Norfolk/ Artefact	Barry Gunther/ Gandangara Local Aboriginal Land Council	Email	02/08/2018	Received review - happy with the methodology
	Jennifer Norfolk/ Artefact	Ryan Johnson/ Murri Bidgee Mullangari Aboriginal Corporation	Email	02/08/2018	agrees with recommendations
	Jennifer Norfolk/ Artefact	Andrew Williams/ Aboriginal Archaeology Service INC	Email	10/08/2018	agrees with recommendations and would like to see artefacts displayed in a museum
	Jennifer Norfolk/ Artefact	Pollowan Phillip Khan/ Kamilaroi-Yankuntjatjara Working Group	Letter	16/08/2018	supports the recommendations

Aboriginal **A**rchaeology **S**ervice
INC: 1400988
2/24 Goodwin Street Narrabeen
Mobile: 0456 399 687
Email: aas.info@bigpond.com

Aboriginal Archaeology Service INC.
Darug Traditional Owners

10th August 2018

Artefact

Attention: Jennifer Norfolk

Aboriginal Cultural Heritage Assessment – Central Station Main Works – Station Box

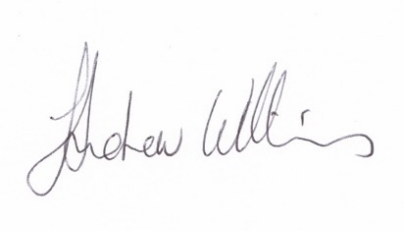
A.A.S agrees with the recommendations as documented by Artefact Pty Ltd in the Aboriginal Archaeological Method Statement. AAS would like to see any artefacts collected displayed for all to see in the museum, local library or local government building or reburied in close proximity of the area.

Aboriginal Archaeology Service is seeking *involvement* in all consultation meetings and fieldwork for the above-mentioned project, as we are registered traditional owners of the area. AAS immediate family has lived in the area from 1897 and retains local and oral history on behalf of its first nation people. We have no objection to our information being provided to the Office of Environment and Heritage and the Local Aboriginal Land Council.

AAS can assist with input that can be incorporated into a written assessment of cultural values of the area. We are also able to provide fit staff to assist with work that may involve physical labour. We can provide our schedule of rates and copies of relevant certificates of currency for business insurances on request.

All correspondence should be emailed to AAS.info@bigpond.com and. The area is an important part of our culture and valued by our family.

Yours truly



Andrew Williams

Jennifer Norfolk

From: Barry Gunther <BGunther@glalc.org.au>
Sent: 2 August, 2018 10:14 AM
To: Jennifer Norfolk
Subject: RE: Sydney Metro City and Southwest – Central Station Main Works
Attachments: CSMW Aboriginal AMS 1August2018.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Jennifer,

I have reviewed the CSMW AMS (attached) and provided comments. Nothing except a couple of typos otherwise all good from me.

Regards

Barry
GLALC Cultural Heritage and Land Management Officer
103 Moore Street Liverpool NSW 2150
Ph: 9602 5280
Fax: 9602 2741
Email: BGunther@GLALC.org.au

From: Jennifer Norfolk <Jennifer.norfolk@artefact.net.au>
Sent: Wednesday, August 1, 2018 2:50 PM
To: bookings@metrolalc.org.au; Barry Gunther <BGunther@glalc.org.au>
Cc: Sandra Wallace <Sandra.Wallace@artefact.net.au>
Subject: RE: Sydney Metro City and Southwest – Central Station Main Works

You have been listed as a Registered Aboriginal Party (RAP) for the *Sydney Metro City and Southwest – Chatswood to Sydenham* project. As such Artefact Heritage would appreciate your review of the Aboriginal Archaeological Method Statement (AMS) prepared for the Central Station Main Works portion of the Metro project. The AMS outlines Aboriginal archaeological management for the site and is consistent with the approved Cultural Heritage Assessment Report (CHAR). Aboriginal archaeological management will be undertaken in conjunction with historical archaeological managing as a result of the nature of subsurface deposits at the site.

The document has been attached to this email, please provide any comments to Artefact via **jennifer.norfolk@artefact.net.au by the 16 August 2018**

If you have any further questions or require additional information don't hesitate to contact either myself or Sandra Wallace

Kind regards
Jennifer Norfolk
Heritage Consultant

ARTEFACT
Telephone: 61 2 9518 8411 **Mobile:** 0466 312 832
Address: Level 4, Building B, 35 Saunders Street, Pyrmont NSW 2009
Web: www.artefact.net.au

Cultural Heritage Management | Archaeology | Heritage Interpretation

We acknowledge the Traditional Custodians of Country in which we live and work, and pay our respects to them, their culture and their Elders past, present and future

Pollowan Phillip Khan
78 Forbes Street
Emu Plains NSW 2750
11,08, 2018
mobile: 0434545982

Jennifer Norfolk
Artefact Heritage
Level 4, Building B 35 Saunders St
Pyrmont NSW 2009

Dear Jennifer

Thank you for sending me the , Test Excavation Methodology for Central Station Main Works Station Box. I have read your report and am happy with it and support your recommendations. This area is very highly significant to the Aboriginal people of the Past and Future Aboriginal people as this is part of the first contact area. Wan Aboriginal people were killed or died they would of been buried outside of the Cemetery area or if and wan they removed the white people they wouldn't of moved the Aboriginal person. and it doesn't matter if there is fill in places and there is Aboriginal objects there is still a learning process from this and still have high significant to the Aboriginal people of today. Kamilaroi Yankuntjatjara working Group are Looking forward to be working with you and your team on this exciting projects . Regards' Philip Khan .

As Senior Aboriginal person who has for the past forty of so years (40) actively participated in the Protection Aboriginal Cultural Heritage throughout the Sydney Basin , and particularly throughout Western Sydney, I, on behalf of the Kamilaroi Yankuntjatjara Working Group, wish to provide to you my organisations' registration of interest.

Information in my registration of Interest:

1. I am a Senior Aboriginal and Principal of the Kamilaroi -Yankuntjatjara Working Group, and all Aboriginal entity (ABN33979702507).

2. I prefer communicating by, Mail, Telephone, and; and I am, the Principal, person to contact, and;
   My contact details are:
   Phillip Khan
   78 Forbes Street, Emu Plains NSW 2750
   Mobile 043 4545 982

3. I wish to be involved and participate in all levels of consultation/project involvement. I wish to attend all meetings, and, participate in available field work; and would receive a copy of the report.

4. I attach to this letter a copy of Kamilaroi- Yankuntjatjara Working Group's; GIO Public Liability Insurance; GIO Workers Compensation Certificate.

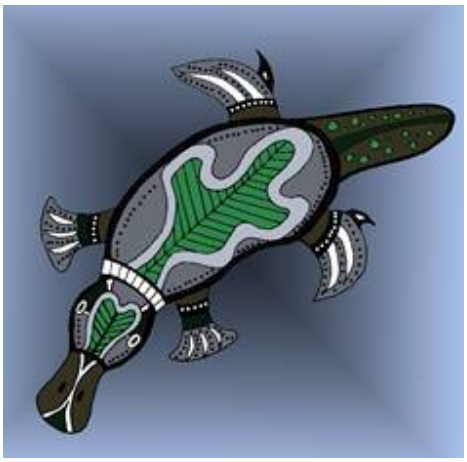
Should you wish me to provide further information, please do not hesitate to contact me on 0434545982.

Yours Sincerely,Pollowan Phillip Khan

Jennifer Norfolk

From: Ryan Johnson <murrabidgeemullangari@yahoo.com.au>
Sent: 2 August, 2018 9:33 PM
To: Jennifer Norfolk
Subject: RE: Sydney Metro City and Southwest - Central Station Main Works

Hi Jennifer,
I have read the Aboriginal Archaeological method and endorse the recommendations made Artefact, if you require further details please feel free to contact me on 0475565517.
Kind regards
Ryan Johnson | **Murra Bidgee Mullangari**



Aboriginal Corporation Cultural Heritage

A: PO Box 246, Seven Hills, NSW, 2147
E: murrabidgeemullangari@yahoo.com.au
ICN: 8112

From: Jennifer Norfolk [mailto:Jennifer.norfolk@artefact.net.au]
Sent: Wednesday, 1 August 2018 2:50 PM
To: bookings@metrolalc.org.au; Barry Gunther <BGunther@glalc.org.au>
Cc: Sandra Wallace <Sandra.Wallace@artefact.net.au>
Subject: RE: Sydney Metro City and Southwest – Central Station Main Works

You have been listed as a Registered Aboriginal Party (RAP) for the *Sydney Metro City and Southwest – Chatswood to Sydenham* project. As such Artefact Heritage would appreciate your review of the Aboriginal Archaeological Method Statement (AMS) prepared for the Central Station Main Works portion of the Metro project. The AMS outlines Aboriginal archaeological management for the site and is consistent with the approved Cultural Heritage Assessment Report (CHAR). Aboriginal archaeological management will be undertaken in conjunction with historical archaeological managing as a result of the nature of subsurface deposits at the site.

The document has been attached to this email, please provide any comments to Artefact via **jennifer.norfolk@artefact.net.au by the 16 August 2018**

If you have any further questions or require additional information don't hesitate to contact either myself or Sandra Wallace

Kind regards

Jennifer Norfolk
Heritage Consultant

ARTEFACT
Telephone: 61 2 9518 8411 **Mobile:** 0466 312 832
Address: Level 4, Building B, 35 Saunders Street, Pyrmont NSW 2009
Web: www.artefact.net.au

Cultural Heritage Management | Archaeology | Heritage Interpretation

We acknowledge the Traditional Custodians of Country in which we live and work, and pay our respects to them, their culture and their Elders past, present and future

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

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

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

Stuart Hodgson
Director
Program Sustainability Environment & Planning
Sydney Metro
Transport for NSW
PO Box K659
HAYMARKET NSW 1240

28 September 2018

Ref: CSMW Aboriginal AMS

Dear Stuart

RE: Endorsement of Laing O' Rourke - Central Station Main Works Station Box and Sydney Yards- Archaeological Method Statement

Thank you for providing the following document for Environmental Representative (ER) review and endorsement as required by the Condition of Approval (CoA) A24(d) of the Sydney Metro City & Southwest project (SSI – 15_7400 January 9 2017).

- Central Station Main Works- Station Box Aboriginal Archaeological Method Statement Report to Laing O'Rourke, Revision 4, 26 September 2018

This AMS satisfies conditions of approval E23 and E24 and was provided for review to the NSW Heritage Division as a delegate of the Heritage Council. This Archaeological Method Statement (AMS) outlines the archaeological methodology to manage potential construction impacts to Aboriginal objects and Aboriginal archaeological deposits at the Central Station Main Works site.

As an approved ER for the Sydney Metro City & Southwest project, I have reviewed this AMS with the consultation records from the Registered Aboriginal Parties (RAPs), NSW Heritage Division, and the endorsements of excavation directors and is now consider appropriate for implementation.

Yours sincerely,

Annabelle Tungol Reyes
Environmental Representative - Sydney Metro City & Southwest

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