



Sydney Yard Access Bridge: Sydney Yard Piling Works Archaeological Method Statement

Project: Sydney Metro – Chatswood to Sydenham	Date: 15 June 2017 updated 11 July 2017
Project site: Sydney Yard Piling Works, Sydney Yard Access Bridge	Author: , Dr Iain Stuart (Excavation Director - Historical), Dr Sandra Wallace (Excavation Director – Aboriginal), Duncan Jones (Heritage Consultant)
Contractor: Laing O'Rourke	

Background

This Archaeological Method Statement (AMS) outlines the archaeological approach and methodology to mitigate construction impacts to potential non-Aboriginal (historic) and Aboriginal archaeological deposits within the Sydney Yard at the location of piling required for installation of the Sydney Yard Access Bridge (SYAB). Where required this AMS should be updated to account for revised impacts, or in response to unexpected finds. This AMS does not include management for other areas of the Central Station project site.

The methodology has been informed by, and is in accordance with, the following documents:

- Artefact Heritage 2016a. Sydney Metro Chatswood to Sydenham Non-Aboriginal Archaeological Research Design (ARD)
- Artefact Heritage 2016b. Sydney Metro Chatswood to Sydenham Aboriginal Cultural Heritage Assessment Report (CHAR)
- Laing O'Rourke 2017. Sydney Metro City and Southwest Sydney Yard Access Bridge Project, Construction Heritage Management Plan (CHMP)
- Transport for NSW 2016a. Salvage and Storage Strategy of the Sydney Metro Integrated Management System.
- Transport for NSW 2016b. Sydney Metro Chatswood to Sydenham Unexpected Finds Policy
- Transport for NSW 2016c. Sydney Metro Chatswood to Sydenham Exhumation Policy

Condition E17 of the Minister's Conditions of Approval for the Sydney Metro Chatswood to Sydenham project states that an AMS must be prepared in consultation with the Heritage Council of NSW prior to the commencement of archaeological investigation. This AMS is provided to satisfy condition E17 and was sent to the NSW Heritage Division as a delegate of the Heritage Council for consultation on 15/06/17. Records of consultation are attached. This AMS has been updated to include additional construction information and scope in relation to pile capping. Additional mitigation has also been included. The updated AMS has been sent to NSW Heritage Division for their records.

There is generally a nil-low potential for archaeological resources within the areas of proposed piling. Three of the four piling lines are within the area designated as CS5, Zone 3 in the ARD (Figure 1). Zone 3 areas are unlikely to contain significant archaeological remains and would be managed under the Sydney Metro Chatswood to Sydenham Unexpected Finds Policy. The fourth piling line is just within the southern section of CS4 which was assessed as having some potential to contain State and locally significant remains associated with the first and second railway stations. Archaeological management as per the ARD is to prepare an AMS and conduct archaeological investigation where required (for example test excavation or monitoring) for works that have the potential to impact on significant archaeological remains. This AMS fulfils the requirement for CS4 in relation to piling works. The majority of the piling locations do not require an AMS as they are within CS5, but have been included in this document as best practice.

The archaeological potential at the location of this northern piling line (within CS4) has been investigated in more detail and has been found to have a nil-low potential to contain significant archaeological remains (page 4).

Non Destructive Digging (NDD) works have previously been undertaken in the piling locations under the Sydney Metro Chatswood to Sydenham Unexpected Finds Policy. An AMS was not required for these works as an AMS is only required for 'works with potential to impact archaeological resources' (Artefact 2016a: 311). The completed NDD was for service location only and no archaeological remains were impacted. Results of the NDD have informed the assessment of archaeological potential for the piling locations.

Proposed Works

Piling works are required as part of the construction of SYAB in preparation for installation of the bridge piers. Prior to piling work NDD was undertaken to identify any services to be avoided by the works.

Non-destructive digging (NDD) for services location

NDD was undertaken at each of the seventeen piling locations (Figure 2).

The methodology for NDD was:

- Pressure hose sediment to loosen material. Maximum 2000psi so as to not damage services
- Vacuum up loose fines.
- Cut slit trenches in the shape of a cross 1.5m x 1.5m directly over the pile location at 300mm width.

Piling

Seventeen 750mm piles will be installed within the four piling lines within the Sydney Yard (Figure 2).

The methodology for piling is:

- The area must be confirmed as clear of services by from non-destructive digging
- The auger is position over the centre of the pile position.
- Auger the pile shaft to top of rock using a 750mm auger.

- Complete the rock socket and clean the pile toe
- Install the reinforcement
- Pour the concrete to fill the piles
- Pile capping would be undertaken in an area surrounding the pile locations. Excavation would be undertaken to a depth of around 600mm.

Figure 1: Archaeological management plan for Central Railway Station (Source: Artefact 2016: 333)

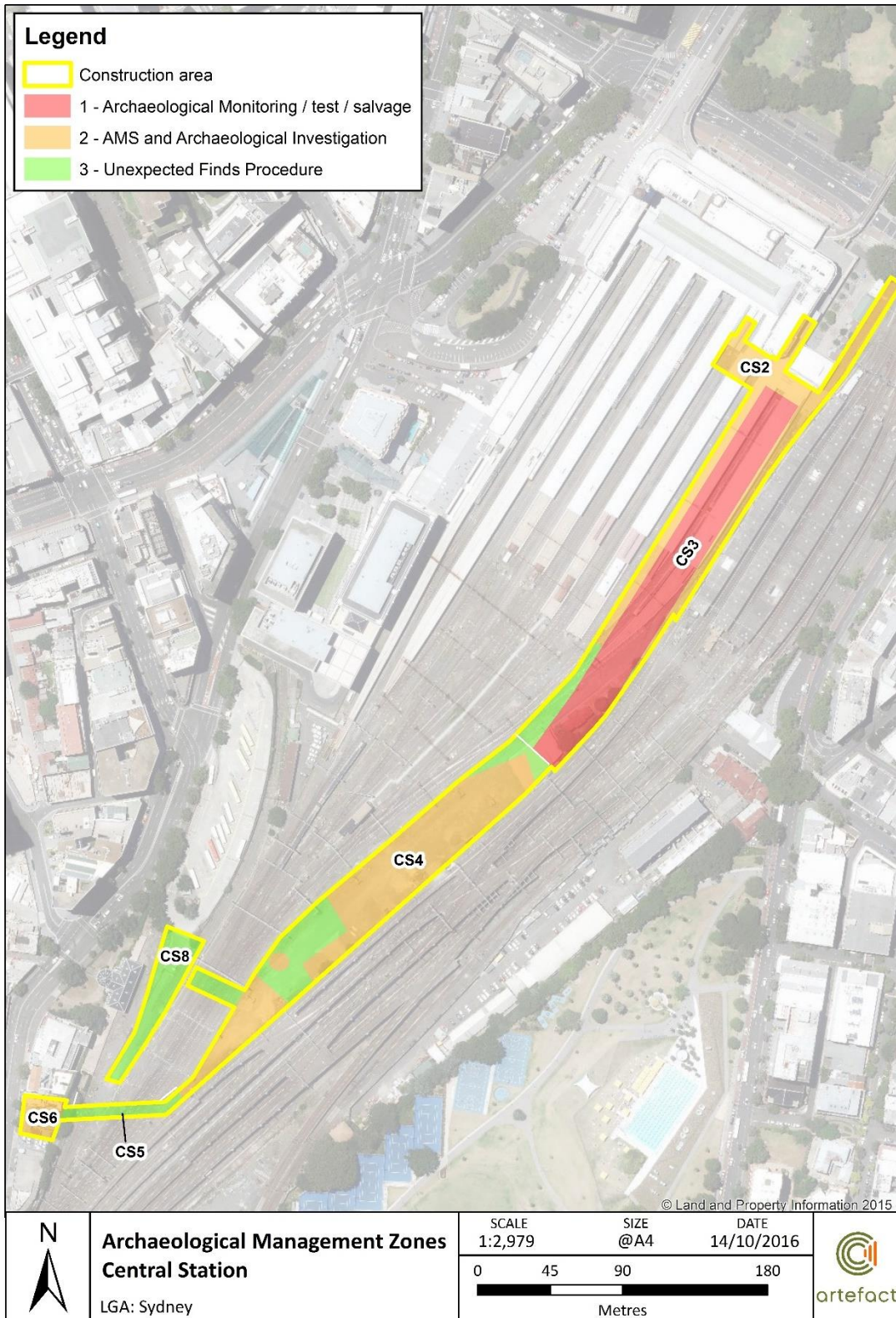
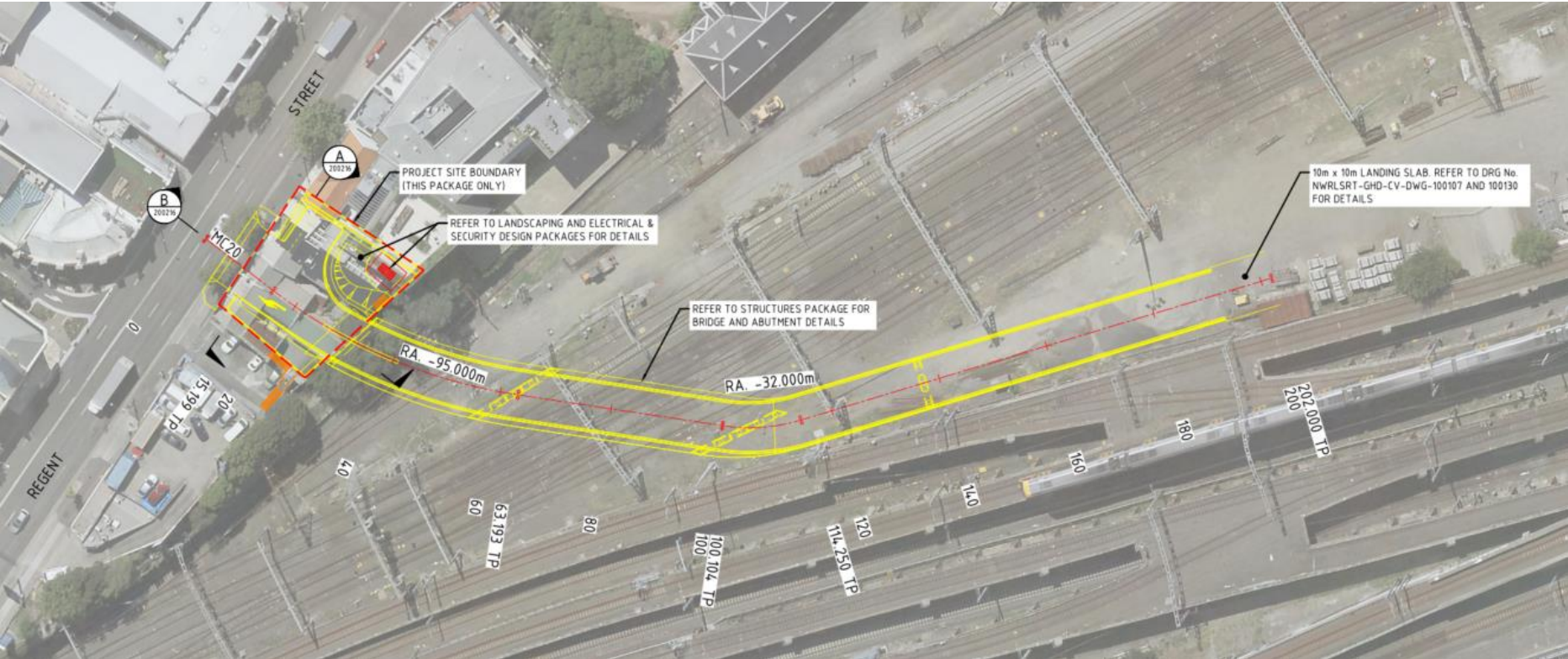


Figure 2: Piling locations in relation to SYAB project (provided by LoR)



Non-Aboriginal Archaeological Resources

Prior to the development of the first Sydney Station in 1855, the study area was located on a sandy open area of common ground known as the Cleveland Paddocks. The ongoing development of the Sydney Central Railway Station in this area has removed any archaeological potential for remains related to this phase of European occupation. A complete history and discussion of the archaeological potential of the area has been provided in the Sydney Metro Chatswood to Sydenham Non-Aboriginal Archaeological Research Design (ARD) (Artefact 2016) and the following discussion provides a summary of the archaeological significance and potential of the study area.

The first Sydney Station was constructed within the study area in 1855, with plans from 1865 indicating that an early carriage workshop was constructed in the vicinity of piling works (Figure 3). This carriage shed was a timber framed building with a metal-clad roof. The area in which this shed was constructed has been heavily modified over time, with substantial earthworks and later structures constructed in the same area. The archaeological potential for remains related to this early carriage workshop would be considered Nil to Low as any remains would be insubstantial (postholes) which are likely to have been impacted by subsequent modification. However, remains relating to the first Sydney Central Station may be considered to be of State heritage significance depending on intactness.

With the growth of the NSW rail network throughout the 1850s and 1870s, Sydney Central Railway Station was substantially enlarged in 1874. The metal-roofed workshop located in the study area was eventually replaced with a more substantial locomotive workshop by 1884. Maps from 1895 show that a small wagon turntable was located to the south of the locomotive repair shop away from the current study area. Subsequent earthworks and rail construction, in particular the construction of the suburban line flyover in the 1920s, have largely removed any material evidence of this structure. Archaeological remains relating to the second Sydney Central Station may be considered of State or local heritage significance depending on nature and intactness, but would have a Nil to Low potential to remain intact within the study area.

The third, and current, Sydney Central Station was completed in 1906. The third station involved the construction of a new rail terminus and concourse to the north of Devonshire Street. The construction of the Sydney CBD underground railway network from the 1920s and the electrification of the rail network also involved the construction of a large multi-track series of fly-overs directly to the east of the study area. The construction of this fly-over has largely removed archaeological remains from earlier phases of the station in this area. Aerial photographs from 1949 show that the nineteenth century structures within the study area had been entirely removed (Figure 4). By this time, the study area contained a series of stabling sidings to access maintenance facilities at the Eastern Carriage Shed. With the demolition of the Eastern Carriage Shed in the late twentieth century, the former rail lines through the study area were removed and the Sydney Yard has been used as a maintenance and laydown area since that time. There would be a moderate - high potential for the identification of archaeological remains related to former rail track and ancillary support structures (overhead wiring footings, disused signalling equipment) of the third (current) Sydney Central Station within the study area, however these remains would not meet the threshold for local heritage significance.

Piling works have the potential to impact archaeological remains related to the first and second Sydney Stations. However, the potential for locating intact and legible remains relating to these resources would be considered Nil to Low, due to the extensive history of earthworks and redevelopment within the Sydney Yard area.

Figure 3: 1865 Trigonometric plan of Sydney with piling locations in red

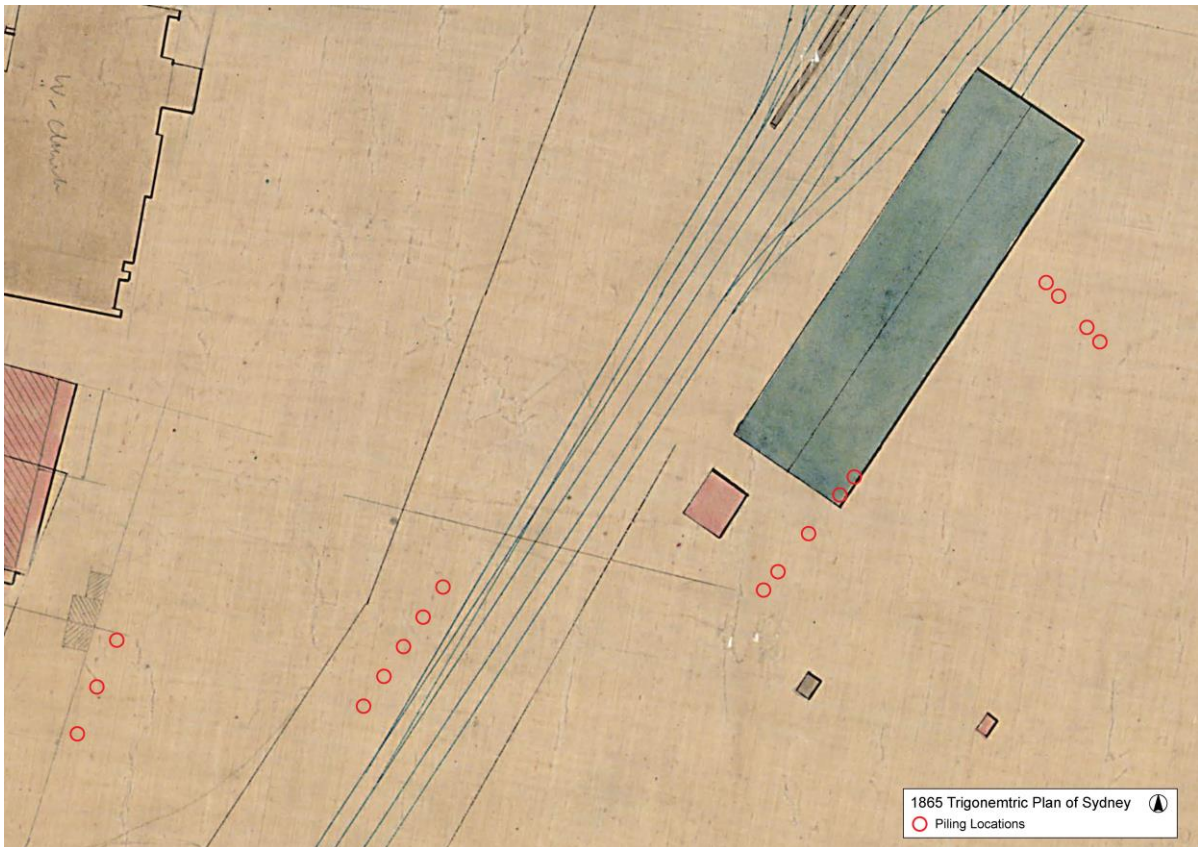
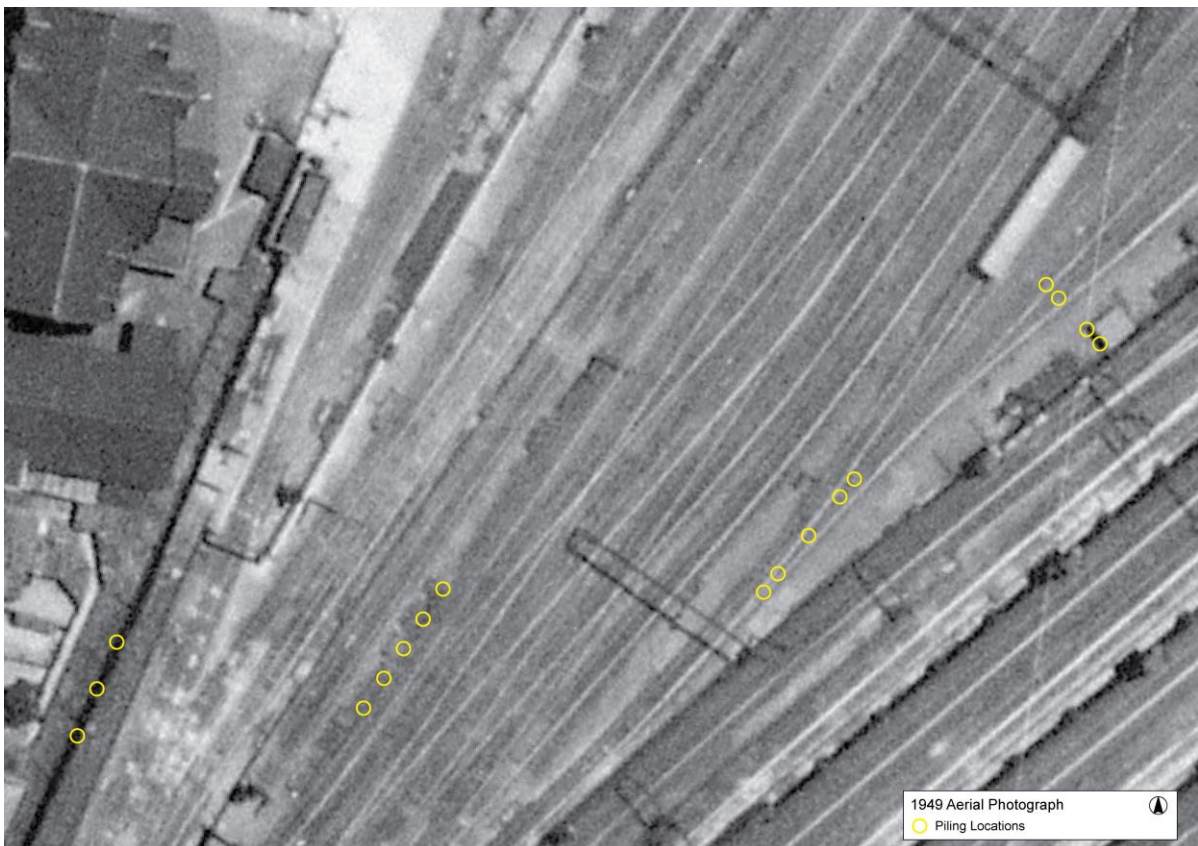


Figure 4: 1949 aerial with piling locations in yellow



Unexpected finds during NDD works

Three unexpected finds were reported during completed NDD works as discussed below (Figure 5). Artefact Heritage (Duncan Jones and Jenny Winnett), responded to the finds with input from Iain Stuart, Primary Excavation Director (Figure 5).

Find 1 - A find of two vertical brick courses was located at 210mm depth within the southern section of CS4 (at the location of the northernmost piles). The feature was assessed as being a footing related to the third (current) station, probably to support electrical wiring.

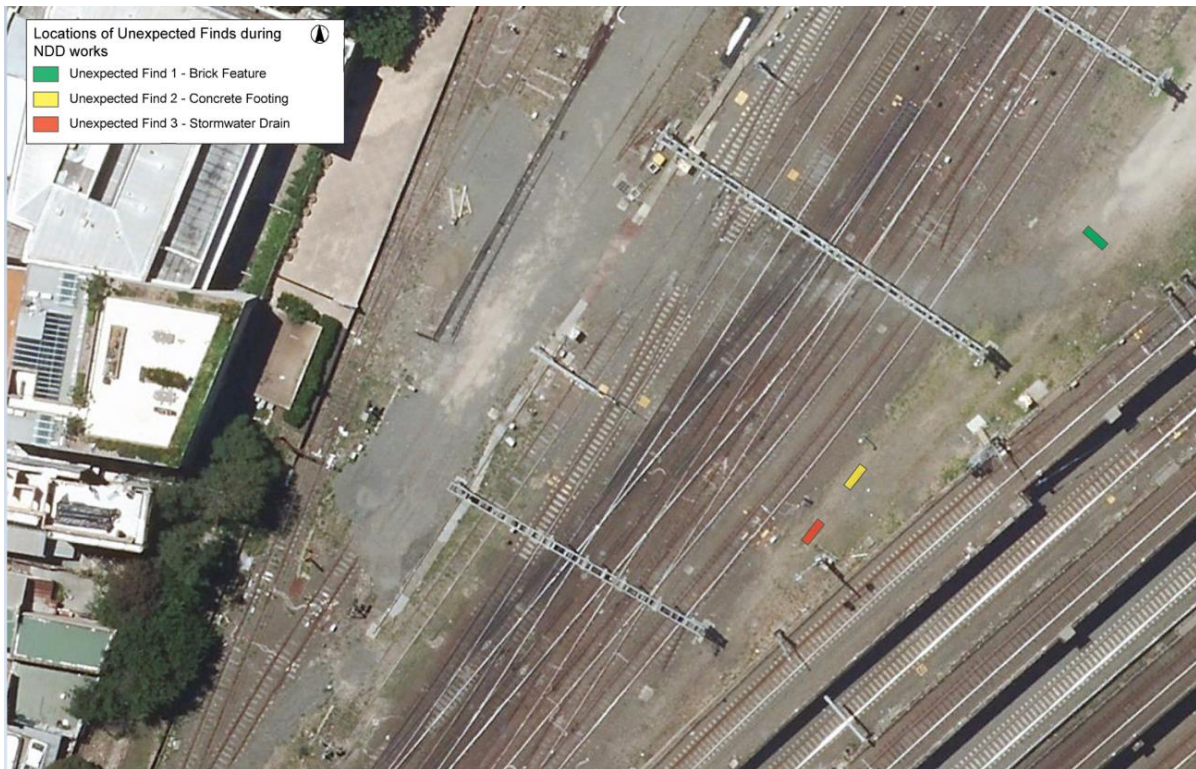
Find 2 - A mid-late twentieth century concrete footing was exposed within CS5 and was assessed as being related to the current phase of Central Station.

Find 3 - An access pit and drain assessed as being constructed in the 1920s, contemporary with the construction of platforms 16-23 was identified within CS5. The drain is not marked on available plans, and is not associated with the significant Blackwattle Drain which is located to the north.

None of the unexpected finds were assessed as meeting the threshold for local significance.

The results of the NDD indicate that it is unlikely that significant archaeological remains are located within the areas to be impacted by piling and confirms the assessment of nil-low archaeological potential.

Figure 5: Locations of unexpected finds during NDD works.



Work Stage Specific Archaeological Methodology

The AMS archaeological methodology general meets the requirements of Chapter 12 of the project ARD which discusses details of archaeological methodologies. These requirements are not reproduced in detail, but where relevant are discussed below.

The Archaeological Method section of the ARD in relation to Central Station notes that piling would be required.

Piling at this site may result in archaeological impacts. Archaeological mitigation is not always possible and a review of the piling design should be undertaken to identify potential mitigation strategies (testing prior to piling or unexpected finds procedure during piling).

As the piling area is mostly within CS5, piles are only 750mm in diameter, and the portion within CS4 has been assessed as having a nil-low potential for survival of relics, management under unexpected finds is considered appropriate considering the limitations of monitoring piling works.

The piling works would be undertaken under the Sydney Metro Chatswood to Sydenham Unexpected Finds Policy.

The subsurface excavation for pile capping in all locations would be monitored by an archaeologist. Monitoring would initially ground truth assessed disturbance. If as predicted disturbance to 600mm is high, the excavation could revert back to unexpected finds.

Reporting

If archaeological remains were identified and assessed during the program of works a results memo would be provided.

Human Remains

Discovery of suspected human remains would be managed under the project Unexpected Finds Policy and the Exhumation Policy (Transport for NSW 2016b; Transport for NSW 2016c).

Aboriginal archaeological heritage strategy

The Sydney yard piling works are within Method Area 2 as outlined in the Aboriginal Cultural Heritage Assessment Report (CHAR) (Artefact Heritage 2016b). 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. The Aboriginal archaeological team would be notified by the Excavation Director and a qualified archaeologist experienced in Aboriginal archaeology would assess the find. If the find was found to trigger archaeological management under the CHAR, the registered Aboriginal Parties and Office of Environment and Heritage (OEH) would be notified in accordance with the Unexpected Finds Procedure.

If Aboriginal objects or areas of intact soil profile were to be identified this AMS would be updated to outline an appropriate methodology for the works in accordance with the CHAR. Any excavation and analysis would be undertaken in accordance with the project CHAR.

Team and timing

Archaeological team

The archaeological team would comprise:

- Primary Excavation Director – Iain Stuart (JCIS Consultants/ Artefact Heritage)
- Secondary Excavation Director – Jenny Winnett (Senior Heritage Consultant, Artefact Heritage)
- Supervising Archaeologist – Shona Lindsay (Heritage Consultant, Artefact Heritage)
- Excavation Director (Aboriginal) – Sandra Wallace (Principal, Artefact Heritage)

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

Excavation timing

The Excavation Director would be on call during the piling works to oversee responses to unexpected finds as required.

The pile capping works would be monitored by an archaeologist as required under the direction of the Excavation Director. .

McCallum, Chris

From: Siobhan Lavelle <Siobhan.Lavelle@environment.nsw.gov.au>
Sent: Friday, 16 June 2017 4:23 PM
To: McCallum, Chris
Cc: Ron Turner; 'Ron.Turner2@transport.nsw.gov.au'
Subject: FW: Sydney Yard Access Bridge - Sydney Yard Piling Archaeological Method Statement

Importance: High

RE_SEND

From: Siobhan Lavelle
Sent: Friday, 16 June 2017 3:17 PM
To: McCallum, Chris <CMcCallum@laingorourke.com.au>; OEH HD Heritage Mailbox <HERITAGEMailbox@environment.nsw.gov.au>
Cc: Sarah Jane Brazil <SarahJane.Brazil@environment.nsw.gov.au>; Felicity Barry <Felicity.Barry@environment.nsw.gov.au>; 'Ron.Turner2@transport.nsw.gov.au' <Ron.Turner2@transport.nsw.gov.au>; Ben.Armstrong2@transport.nsw.gov.au; Tucker, Craig <Craig.Tucker@transport.nsw.gov.au>; Rochelle Johnston <Rochelle.Johnston@environment.nsw.gov.au>; Lisa Mitchell <Lisa.Mitchell@planning.nsw.gov.au>
Subject: RE: Sydney Yard Access Bridge - Sydney Yard Piling Archaeological Method Statement
Importance: High

Dear Mr McCallum,

Thank you for sending through the Archaeological Work Method Statement prepared by Artefact Heritage for the Sydney Yard Access Bridge: Sydney Yard Piling Works, dated 15 June 2017.

I advise that the AWMS has been reviewed by the Heritage Division of OEH. It is noted that there is generally a nil-low potential for archaeological resources within the areas of proposed piling. Three of the four piling lines are within the area designated as CS5, Zone 3 in the ARD which is unlikely to contain significant remains. The fourth piling line is just within the southern section of CS4 which was assessed as having some potential to contain State and locally significant remains associated with the first and second railway stations, but more recent work at this specific location found it has nil-low potential to contain significant archaeological remains. It is noted that the AWMS concludes 'As the piling area is mostly within CS5, piles are only 750mm in diameter, and the portion within CS4 has been assessed as having a nil-low potential for survival of relics, management under unexpected finds is considered appropriate considering the limitations of monitoring piling works'.

I advise that the Heritage Division concurs with the strategy proposed in the AWMS and it is considered appropriate to guide the completion of the SYAB piling works.

Regards,

Siobhan

Dr Siobhán Lavelle OAM
Senior Team Leader Archaeological Heritage
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From: McCallum, Chris [<mailto:CMcCallum@laingorourke.com.au>]
Sent: Thursday, 15 June 2017 6:23 PM
To: OEH HD Heritage Mailbox <HERITAGEMailbox@environment.nsw.gov.au>
Cc: Siobhan Lavelle <Siobhan.Lavelle@environment.nsw.gov.au>; Sarah Jane Brazil <SarahJane.Brazil@environment.nsw.gov.au>; Felicity Barry <Felicity.Barry@environment.nsw.gov.au>; 'Ron.Turner2@transport.nsw.gov.au' <Ron.Turner2@transport.nsw.gov.au>; Ben.Armstrong2@transport.nsw.gov.au; Tucker, Craig <Craig.Tucker@transport.nsw.gov.au>
Subject: Sydney Yard Access Bridge - Sydney Yard Piling Archaeological Method Statement

Attn: Siobhan Lavelle.
Manager Heritage Division
Office of Environment & Heritage
Locked Bag 5020
Parramatta NSW 2124

Dear Siobhan

Sydney Metro, SSI_7400, C03, Sydney Yard Access Bridge – Piling Archaeological Method Statement; consultation by Heritage Council

As part of Condition E17 of the Sydney Metro City & Southwest Chatswood to Sydenham Conditions of Approval, final Archaeological Method Statements must be prepared in consultation with the Heritage Council of NSW before commencement of archaeological excavation works. As such, Laing O'Rourke would like to formally submit the attached Sydney Yard Access Bridge Piling Archaeological Method Statement for comment.

The earliest HD response would be very much appreciated. Thank you for your help and understanding and please do not hesitate in contacting me if required to discuss.

Kind regards,

Chris

Chris McCallum
Environmental Manager



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