ABORIGINAL HERITAGE

CHAPTER FIFTEEN

15 Aboriginal heritage

This chapter provides an assessment of the potential impact on Aboriginal heritage sites and areas of archaeological potential as a result of the project, and identifies mitigation measures to minimise these impacts. This chapter draws on information in Technical paper 5 – Aboriginal heritage.

15.1 Secretary's environmental assessment requirements

The Secretary's environmental assessment requirements relating to Aboriginal heritage, and where these requirements are addressed in this Environmental Impact Statement, are outlined in Table 15-1.

Table 15-1 Secretary's environmental assessment requirements – Aboriginal heritage

No.	Secretary's environmental assessment requirements	Where addressed
7. Heritage		
7.1	The Proponent must identify and assess any direct and/or indirect impacts (including cumulative impacts) to the heritage significance of: **a.** Aboriginal places and objects, as defined under the *National Parks and Wildlife Act 1974* and in accordance with the principles and methods of assessment identified in the current guidelines **b.** Aboriginal places of heritage significance, as defined in the Standard Instrument – Principal Local Environmental Plan **c.** Environmental heritage, as defined under the *Heritage Act 1977* **d.** Items listed on the National and World Heritage lists.	Aboriginal heritage impacts are addressed in Section 15.4. Cumulative impacts are addressed in Chapter 26 (Cumulative impacts).
7.3	Where archaeological investigations of Aboriginal objects are proposed these must be conducted by a suitably qualified archaeologist, in accordance with section 1.6 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (Department of Environment, Climate Change and Water, 2010b).	Outlined in Chapter 15 (Aboriginal heritage).
7.4	Where impacts to Aboriginal objects and / or places are proposed, consultation must be undertaken with Aboriginal people in accordance with the current guidelines.	Aboriginal heritage impacts are addressed in Section 15.4.

15.2 Assessment methodology

The purpose of the Aboriginal heritage assessment was to identify potential Aboriginal heritage impacts that could occur during construction and operation of the project, based on the locations of previously recorded Aboriginal heritage sites and the archaeological potential of the study area.

For this assessment, the Aboriginal heritage study area was defined as all land located within 25 metres of the proposed construction sites (as described in Chapter 7 (Project description – construction)). The extent of the Aboriginal heritage study area is shown in *Technical paper 5 – Aboriginal heritage*.

The scope of the Aboriginal heritage assessment comprised:

- A review of previous archaeological investigations and an extensive search of the NSW Office of Environment and Heritage's (OEH) Aboriginal Heritage Information System (AHIMS) to determine whether Aboriginal heritage sites had previously been recorded in the vicinity of the project. Information from the search was also used to determine the archaeological context of the study area
- Development of a predictive model for the study area to help determine archaeological potential
- A site inspection of the study area, in the presence of a representative from the Metropolitan Local Aboriginal Land Council
- Assessment of the project's potential to disturb Aboriginal heritage (sites, objects, remains, values, features or places) and, where this is the case:
  - Determine, in consultation with relevant stakeholders, the potential for Aboriginal heritage resources within the project area
  - Determine the extent and significance of impact on those resources as a result of construction and / or operation of the project
  - Identify any requirements for in-situ conservation of items and / or areas (as appropriate), further archaeological testing and / or detailed archaeological excavations
  - Identify appropriate measures to avoid, minimise and / or mitigate potential impacts.
- Development of environmental mitigation measures that would be implemented to minimise the risk of impacting previously unrecorded items of Aboriginal heritage significance and / or areas of Aboriginal cultural sensitivity during construction.

The following government guidelines were considered during the preparation of the Aboriginal heritage assessment:

- *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW* (Department of Environment, Climate Change and Water, 2011b)
- *Aboriginal Cultural Heritage Consultation requirements for proponents* (Department of Environment, Climate Change and Water, 2010a)
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (Department of Environment, Climate Change and Water, 2010b)
- *NSW Skeletal Remains: Guidelines for Management of Human Remains* (Heritage Office, 1998b)
- *Criteria for the assessment of excavation directors* (NSW Heritage Council, 2011).

Further details on the Aboriginal heritage assessment methodology are provided in *Technical paper 5 – Aboriginal heritage*.

15.3 Existing environment

15.3.1 Historical background

Evidence of Aboriginal occupation in NSW dates back to around 50,000 to 60,000 years at Lake Mungo (in NSW's southwestern region, about 110 kilometres northeast of Mildura) and up to 30,000 years at Parramatta. Prior to the appropriation of their land by Europeans, Aboriginal people lived in small family or clan groups that were associated with particular territories or places. The language group spoken across Sydney was known as Darug. The Darug language group is thought to have covered the area south from Port Jackson, north from Botany Bay, and west from Parramatta (Attenbrow, 2010).

Archaeological and historical records indicate that marine and estuarine resources formed an important part of the subsistence activities of the Aboriginal people that inhabited the Port Jackson area. Shellfish not only formed an important subsistence resource, but were also used as fish-hooks, shafted onto spears, used for repairing spears, and for cutting (Attenbrow, 2010). Other locally available raw materials, including quartz, were also favoured for cutting edges (Baker, 2004).

Subsistence resources known to occur in the study area at the time of Aboriginal occupation include tidally influenced mud flats associated with the mouth of the Tank Stream (situated roughly within Circular Quay), and fresh water from the Tank Stream (which flowed through the Sydney CBD in the vicinity of Pitt Street).

15.3.2 Previously registered Aboriginal heritage sites

Extensive searches of the OEH Aboriginal Heritage Information System (AHIMS) identified one previously recorded Aboriginal heritage site within 100 metres of the project. This site comprises a sub-surface archaeological deposit associated with Angel Place. The recorded location of the site is 75 metres north of the proposed Martin Place Station. However, it is likely that the AHIMS coordinates for this site are incorrect. Rather, it is thought that the sub-surface archaeological deposit is located 200 metres west of the proposed Martin Place Station at Angel Place.

A number of previously recorded Aboriginal heritage sites were identified within the broader locality at distances greater than 100 metres from the project. The closest sites include:

- An artefact and shell midden site recorded about 560 metres west of the proposed Blues Point temporary site
- An open camp site at Moore's Wharf recorded about 300 metres north of the proposed Barangaroo Station
- A rock engraving near the site of the Maritime Services Board tower recorded about 180 metres north of the proposed Barangaroo Station
- A potential archaeological deposit (PAD) recorded about 380 metres northwest of the proposed Pitt Street Station
- A sub-surface archaeological deposit recorded about 380 metres southwest of the proposed Pitt Street Station
- An artefact site recorded about 330 metres northwest of Central Station
- An artefact and shell midden site recorded about 275 metres north of the proposed Waterloo Station
- A potential archaeological deposit recorded about 350 metres west of the proposed Marrickville dive site.

15.3.3 Aboriginal heritage sites identified during site inspections

No Aboriginal heritage sites were identified within the study area during site inspections.

15.3.4 Archaeological potential and significance

An assessment of archaeological potential and significance of the study area is provided in Table 15-2. Generally, the likelihood of Aboriginal heritage sites surviving to the present is influenced by a range of factors, including the durability of the material evidence and the subsequent impacts that have occurred at that location.

While large portions of the study area have been significantly altered by land developments (particularly within the Sydney CBD), significant archaeological resources have been identified in discrete areas that have been preserved beneath developed areas. For example, in the Sydney CBD, excavation at William Street demonstrated that the sandstone footings from the first phase of building construction protected the underlying Aboriginal archaeological deposit during subsequent demolition and deposition of fill across the site (Baker, 2004).

In contrast, an identified Aboriginal archaeological deposit at Angel Place was largely destroyed by subsequent building construction and other related activities bordering the Tank Stream, with only a very small portion of archaeological deposit found to remain intact (Godden Mackay, 1997).

Given the varying extent to which the project sites have been impacted by previous developments, archaeological potential for Aboriginal objects is likely to be present in sub-surface contexts in those parts that have not been extensively disturbed by sub-surface impacts.

As shown in Table 15-2, the following areas have a moderate or moderate to high archaeological potential:

- Blues Point temporary site – there is moderate archaeological potential associated with the presence of a possible natural landform in the northwest portion of the site
- Sydney Harbour (ground improvement work) – Sydney Harbour consists of a river valley that was inundated by sea level rise during the Pleistocene period. Preliminary geotechnical investigations have identified the potential for an intact valley floor with the associated potential for intact Aboriginal archaeological deposits
- The western portion of the Barangaroo Station footprint – there is archaeological potential in areas that are likely to contain surviving natural shoreline context(s) associated with the former shoreline of Darling Harbour
- Martin Place and Pitt Street stations – there is an area of archaeological potential where there are remaining 'A' horizon soil contexts beneath current structures on Elizabeth, Castlereagh and Hunter streets ('A' horizon soils refer to the topmost mineral soil layer, which is generally referred to as the 'topsoil' layer.)
- Central Station – there is potential for Aboriginal objects to occur in sub-surface contexts where there are surviving portions of 'A' horizon soils
- Waterloo Station – there is potential for Aboriginal objects to occur in the sub-surface archaeological deposits where there are surviving portions of 'A' horizon sands. The significant phases of building construction across the site and associated landform modification in the area indicate the possibility that there are no surviving natural contexts

- Marrickville dive site – there is potential for Aboriginal objects to occur in the sub-surface archaeological deposits where there are surviving portions of 'A' horizon soils. The significant phases of building construction, creek channelisation and possible extraction of natural materials for brick-making across the site suggest that there are limited remaining areas of natural 'A' horizon soils.

The research significance of any intact Aboriginal archaeological deposit identified within the Sydney CBD would be high, given the rarity of such deposits in this area. Notwithstanding, such artefacts are not considered likely to demonstrate high archaeological significance as they would be unlikely to provide accurate information or answers to relevant research questions.

Table 15-2 Archaeological potential and significance

Location	Archaeological potential	Archaeological significance
Chatswood dive site (northern)	**Low** – The site is located on a crest away from major watercourses and is likely to contain shallow soils (associated with Ashfield Shale). Construction of commercial buildings, roads and a large rail cutting is likely to have impacted or removed archaeological deposits.	**Low** – The site would have low archaeological significance as high levels of previous ground disturbance would have impacted any surface or subsurface Aboriginal sites. As the site is located on a sandstone ridge and slope landform with shallow soils, any remnant archaeological deposits that may exist are likely to be low density and are unlikely to represent areas of focus for Aboriginal occupation.
Artarmon substation	**Low** – The site has been subjected to high levels of surface disturbance, including construction and subsequent demolition of a dwelling and construction activities associated with the Gore Hill Freeway. These developments are likely to have impacted or removed archaeological deposits.	**Low** – The site would have low archaeological significance as high levels of previous ground disturbance would have impacted any surface or subsurface Aboriginal sites. As the site is located on a sandstone ridge and slope landform with shallow soils, any remnant archaeological deposits that may exist are likely to be low density and are unlikely to represent areas of focus for Aboriginal occupation.
Crows Nest Station	**Low** – The site is located on a crest away from major watercourses and is likely to contain shallow soils (associated with Ashfield Shale). Construction of commercial buildings, roads and a large rail cutting is likely to have impacted or removed archaeological deposits.	**Low** – The site would have low archaeological significance as high levels of previous ground disturbance would have impacted any surface or subsurface Aboriginal sites. As the site is located on a sandstone ridge and slope landform with shallow soils, any remnant archaeological deposits that may exist are likely to be low density and are unlikely to represent areas of focus for Aboriginal occupation.
Victoria Cross Station	**Low** – The site is located on a crest away from major watercourses and is likely to contain shallow soils (associated with Ashfield Shale and crest landscapes of Hawkesbury Sandstone). Construction of commercial buildings, roads and underground services is likely to have impacted or removed archaeological deposits.	**Low** – The site would have low archaeological significance as high levels of previous ground disturbance would have impacted any surface or subsurface Aboriginal sites. As the site is located on a sandstone ridge and slope landform with shallow soils, any remnant archaeological deposits that may exist are likely to be low density and are unlikely to represent areas of focus for Aboriginal occupation.

Location	Archaeological potential	Archaeological significance
Blues Point temporary site	**Moderate** – Although the site is likely to have been frequently used by Aboriginal people (due to its shoreline location), the development of a wharf and boat launching infrastructure is likely to have removed or significantly altered the original landform of the site. There is however some evidence of a possible natural landform in the northwest portion of the site.	**Potentially moderate to high** – Although the majority of the Blues Point temporary site is likely to have been significantly disturbed, natural profiles containing Aboriginal archaeological deposits are rare and if present would be of high research significance.
Ground improvement work	**Moderate to high** – Geotechnical investigation indicates the presence of a buried valley floor dating to the Pleistocene period.	**Potentially high** – Known intact Aboriginal deposits in Sydney Harbour are extremely rare and would be of high research significance. However, only a very small proportion of the buried valley floor underneath Sydney Harbour would be affected by the proposed ground improvement work.
Barangaroo Station	**Moderate to high** – Archaeological potential has been identified within the western portion of the Barangaroo Station footprint. This archaeological potential relates to the possible survivability of buried shell midden deposits associated with the original shoreline of Darling Harbour. The eastern portion of the Barangaroo Station footprint does not demonstrate archaeological potential due to the large-scale removal of the original sandstone context.	**Potentially high** – Intact Aboriginal archaeological deposits within the Sydney CBD are extremely rare and would be of high research significance. It is also possible that out-of-context Aboriginal artefacts may be present in the layers of fill used in the area. Any such artefacts would not likely demonstrate high archaeological significance as they would not have potential to provide accurate information or answers to relevant research questions.
Martin Place Station	**Moderate to high** – Discrete portions of surviving archaeological deposit containing Aboriginal objects may occur in very small areas. The location of Martin Place Station within the Tank Stream catchment and within 250 metres of that watercourse suggests potential for Aboriginal objects below the ground surface in areas that have not been significantly impacted or excavated (for example, during the construction of building basements and / or underground car parks).	**Potentially high** – Intact Aboriginal archaeological deposits within the Sydney CBD are extremely rare and would be of high research significance. It is also possible that out-of-context Aboriginal artefacts may be present in the layers of fill used in the area. Any such artefacts would not likely demonstrate high archaeological significance as they would not have potential to provide accurate information or answers to relevant research questions.

Location	Archaeological potential	Archaeological significance
Pitt Street Station	**Moderate to high** – The location of Pitt Street Station in a low-lying and gently sloping area around the headwaters of the Tank Stream suggests potential for Aboriginal objects below the ground surface in areas that have not been significantly impacted or excavated (for example, during the construction of building basements and / or underground car parks).	**Potentially high** – Intact Aboriginal archaeological deposits within the Sydney CBD are extremely rare and would be of high research significance. It is also possible that out-of-context Aboriginal artefacts may be present in the layers of fill used in the area. Any such artefacts would not likely demonstrate high archaeological significance as they would not have potential to provide accurate information or answers to relevant research questions.
Central Station	**Moderate to high** – There are likely to have been significant, although not necessarily comprehensive, sub-surface impacts across the site from construction of the station, including underground excavation for access tunnels, and the establishment and possible landform modifications for laying the extensive network of rail lines to the south of Central Station. 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.	**Potentially high** – Intact Aboriginal archaeological deposits within the Sydney CBD are extremely rare and would be of high research significance. It is also possible that out-of-context Aboriginal artefacts may be present in the layers of fill used in the area. Any such artefacts would not likely demonstrate high archaeological significance as they would not have potential to provide accurate information or answers to relevant research questions.
Waterloo Station	**Moderate to high** – There are likely to have been significant, although not necessarily comprehensive, sub-surface impacts across the site from 19th and 20th century construction and installation of services. Notwithstanding, discrete portions of surviving archaeological deposit containing Aboriginal objects may occur beneath buildings and deep layers of introduced fill. There is moderate to high potential for Aboriginal objects to be present in sub-surface contexts where there have not been extensive sub-surface impacts.	**Potentially high** – Intact Aboriginal archaeological deposits within the area are extremely rare and would be of high research significance. It is also possible that out-of-context Aboriginal artefacts may be present in the layers of fill used in the area. However, any such artefacts would not likely demonstrate high archaeological significance as they would not have potential to provide accurate information or answers to relevant research questions.

Location	Archaeological potential	Archaeological significance
Marrickville dive site (southern)	**Moderate to high** – The site has been significantly modified by previous developments, including channelisation of the natural watercourse through the area to Cooks River, construction of large industrial estates, and the large-scale use of the area for brick-making (including the extraction of clay soil). These activities are likely to have impacted or removed archaeological deposits. Notwithstanding, a previous archaeological excavation in the local area (Etheridge, 1905) identified Dugong bones and stone artefacts at Alexandria Canal, demonstrating the potential for Aboriginal objects to be present in sub-surface contexts where there have not been extensive sub-surface impacts.	**Potentially high** – Intact Aboriginal archaeological deposits in this area are extremely rare and would be of high research significance. It is also possible that out-of-context Aboriginal artefacts may be present in the layers of fill used in the area. However, any such artefacts would not likely demonstrate high archaeological significance as they would not have potential to provide accurate information or answers to relevant research questions.

15.4 Potential impacts

15.4.1 Construction

Impacts on Aboriginal heritage sites

Construction of the project would not directly (ie damaged as a direct result of construction) or indirectly (ie damaged due to construction vibration) impact on any previously recorded Aboriginal heritage sites. As outlined in Section 15.3.2, the closest previously recorded Aboriginal heritage site (comprising a sub-surface archaeological deposit) is located about 75 metres north of the proposed Martin Place Station. In addition, no previously unrecorded Aboriginal heritage sites were identified during the site inspection of the study area.

Impacts on areas of archaeological potential

As outlined in Section 15.3.4, there is a moderate or greater potential for previously unrecorded items of Aboriginal heritage significance to be present in sub-surface contexts at the following locations:

- The northwest corner of the Blues Point temporary site where there is evidence of natural landform
- The western portion of the Barangaroo Station footprint associated with the original shoreline of Darling Harbour
- Portions of the construction sites for Martin Place, Pitt Street, Central and Waterloo stations in situations where there are surviving portions of 'A' horizon soils
- Portions of the Marrickville dive site (southern) in situations where there are surviving portions of A' horizon soils.

The archaeological potential of these areas would vary across each site based on the locations and extent of historic sub-surface impacts (for example, the extent of excavations during the construction of existing building basements and / or car parks), with those areas containing remnant 'A' horizon soils or sand likely to have the highest potential to contain items of Aboriginal heritage significance.

Given the difficulty in performing archaeological test excavations within the study area (due to its location within the Sydney CBD and other highly developed areas), the potential for items of Aboriginal heritage significance to be present within the study area would need to be investigated further during detailed design and construction.

The overall guiding principle for cultural heritage management for the project would be to conserve Aboriginal sites in situ, where possible. In situations where the conservation of an Aboriginal heritage site is not practical, mitigation measures would be developed (in consultation with the Metropolitan Local Aboriginal Land Council) and implemented to reduce the project's Aboriginal heritage impact. These measures would include:

- Consultation with the Metropolitan Local Aboriginal Land Council in accordance with the NSW Office of Environment and Heritage's *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation 2005* (Department of Environment and Conservation, 2005a)
- Archaeological test excavation and salvage (when required).

It is currently anticipated that archaeological test excavations would be required at those portions of the construction footprints for Barangaroo Station, Martin Place Station, Pitt Street Station, Central Station, Waterloo Station and the Marrickville dive site (southern) where remnant 'A' horizon soils or sand are identified, most likely during construction.

There is potential for Aboriginal objects to occur in the sub-surface archaeological deposits associated with a buried valley floor. Only a very small proportion of the buried valley floor underneath Sydney Harbour would be affected by the proposed ground improvement work.

The buried valley floor context is essentially inaccessible to humans and therefore the ability to apply specific mitigation is difficult in these circumstances. Investigation of feasible and reasonable mitigation measures to manage potential impacts at this location would be considered in consultation with the Office of Environment and Heritage.

Works along the proposed power supply routes would involve trenching to a depth of about two metres. Preliminary Aboriginal Heritage Information Management System (AHIMS) searches indicate that no Aboriginal sites are present along the proposed power supply routes. However, in locations where there has been no previous ground disturbance, these activities could affect areas with archaeological potential.

Measures to manage potential impacts on Aboriginal heritage are provided in Section 15.5.

15.4.2 Operation

Aboriginal heritage would not be impacted during the operation of the project as widespread ground disturbance and excavation would be restricted to the construction phase.

15.5 Mitigation measures

The mitigation measures that would be implemented to address potential impacts on Aboriginal heritage sites and areas of archaeological potential are listed in Table 15-3.

Table 15-3 Mitigation measures – Aboriginal heritage

Ref	Mitigation measure	Applicable location(s)[1]
AH1	Aboriginal stakeholder consultation would be carried out in accordance with the NSW Office of Environment and Heritage's *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.	All
AH2	An Aboriginal cultural heritage assessment report (ACHAR) would be prepared in accordance with the OEH *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*. The Aboriginal cultural heritage assessment report would include: • Details of Aboriginal stakeholder consultation conducted in accordance with AH1 • An assessment of cultural significance for the project area and identification of any specific areas of cultural significance based on consultation with Aboriginal stakeholders • A methodology for archaeological test excavation and salvage (refer to AH3).	All
AH3	Archaeological test excavation (and salvage when required) would be carried out where intact natural soil profiles with the potential to contain significant archaeological deposits are encountered at the Blues Point temporary site, Barangaroo Station, Martin Place Station, Pitt Street Station, Central Station, Waterloo Station and Marrickville dive site. Excavations would be conducted in accordance with the methodology outlined in the Aboriginal cultural heritage assessment report.	BP, BN, MP, PS, CS, WS, MDS
AH4	Appropriate Aboriginal heritage interpretation would be incorporated into the design for the project in consultation with Aboriginal stakeholders.	All
AH5	Feasible and reasonable mitigation at the ground improvement locations would be identified in consultation with the Office of Environment and Heritage.	GI
AH6	The Aboriginal cultural heritage assessment report would address areas of archaeological potential associated with the power supply routes.	PSR

1 *STW: Surface track works; CDS: Chatswood dive site; AS: Artarmon substation; CN: Crows Nest Station; VC: Victoria Cross Station; BP: Blues Point temporary site; GI: Ground improvement works; BN: Barangaroo Station; MP: Martin Place Station; PS: Pitt Street Station; CS: Central Station; WS: Waterloo Station; MDS: Marrickville dive site; Metro rail tunnels: Metro rail tunnels related not related to other sites (eg TBM works); PSR: Power supply routes.*