

20 Aboriginal cultural heritage

This chapter assesses the potential impacts of the project on Aboriginal cultural heritage, including cultural and archaeological impact, and how the desired performance outcomes for Aboriginal cultural heritage have been met. **Table 20-1** sets out the SEARs relevant to Aboriginal cultural heritage and where the requirements have been addressed in this EIS.

Table 20-1 SEARs - Aboriginal cultural heritage

SEARs	Where addressed in this EIS
<p>1. The Proponent must identify and assess any direct and/or indirect impacts (including cumulative, vibration and visual impacts) to the heritage significance of listed (and nominated) heritage items inclusive of:</p> <p>a) Aboriginal places and objects, as defined under the <i>National Parks and Wildlife Act 1974</i> and in accordance with the principles and methods of assessment identified in the current guidelines;</p> <p>b) Aboriginal places of heritage significance, as defined in the Standard Instrument – Principal Local Environmental Plan;</p>	<p>Direct and/or indirect impacts resulting from construction are presented in section 20.3.1, while direct and/or indirect impacts resulting from operation are presented in section 20.3.2. There are no Aboriginal places of heritage significance within the project footprint.</p> <p>Cumulative impacts are presented in section 20.4.</p>
<p>2. Where impacts to State or locally significant heritage items or archaeology are identified, the assessment must:</p> <p>c) be undertaken by a suitably qualified heritage consultant(s);</p>	<p>Assessment of Aboriginal cultural heritage was undertaken by Dr Darran Jordan, Senior Archaeologist and Heritage Specialist at AECOM. Dr Jordan has over 12 years' experience as a heritage consultant and a doctoral degree from the University of Sydney in Archaeology.</p>
<p>3. The Proponent must identify and describe the Aboriginal cultural heritage values of the area and where this includes archaeological investigations of Aboriginal objects, this must be conducted by a suitably qualified archaeologist, meeting the minimum qualification requirements specified in section 1.6 of the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010).</p>	<p>Aboriginal cultural heritage values are described in section 20.2.5.</p>
<p>4. Where impacts to Aboriginal objects and/or places are proposed, or Aboriginal cultural heritage values are identified, consultation must be undertaken with Aboriginal people in accordance with the current guidelines and conservation, management and impact mitigation measures must be identified.</p>	<p>Consultation undertaken as part of the assessment is presented in section 20.1.5.</p> <p>Management measures are provided in section 20.5.</p>
<p>5. The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented and any Aboriginal objects recorded as part of the assessment must be documented and notified to OEH.</p>	<p>Consultation undertaken as part of the assessment is presented in section 20.1.5.</p> <p>Field survey inspection / assessment results are provided in section 20.2.4.</p>

20.1 Assessment methodology

20.1.1 Overview

The Aboriginal cultural heritage assessment involved:

- A desktop review of background literature including previous investigations and register searches such as the Aboriginal Heritage Information Management System (AHIMS)
- Consultation with the relevant Local Aboriginal Land Council (LALC)
- An archaeological field inspection conducted on 25 January 2017 attended by an archaeologist and a representative from the Metropolitan Local Aboriginal Land Council (MLALC)
- Identification of mitigation measures to reduce potential impacts to Aboriginal cultural heritage, including Aboriginal archaeological and culturally sensitive sites as well as areas of Potential Archaeological Deposit (PAD).

Assessment of Aboriginal cultural heritage was conducted by a suitably qualified heritage consultant in accordance with the:

- *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW,2010)
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010)
- *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010c)
- *Procedure for Aboriginal Cultural Heritage Consultation and Investigation* (PACHCI) (Roads and Maritime, 2011).

The PACHCI procedure codifies how the *Aboriginal cultural heritage consultation requirements for proponents* and the *Due Diligence Code of Practice* are implemented on Roads and Maritime projects. While the full PACHCI procedure involves four stages, projects that can avoid impacts to Aboriginal cultural heritage may only be required to complete some stages of the procedure. The four stages include:

- Stage 1: An initial assessment (desktop) to determine whether the project is likely to harm Aboriginal cultural heritage. For this project this stage was carried out by a Roads and Maritime Services Aboriginal Cultural Heritage Officer
- Stage 2: Further assessment and site survey with Aboriginal stakeholder involvement and an archaeologist to assess the project's potential to harm Aboriginal cultural heritage
- Stage 3: Formal consultation and preparation of a cultural heritage assessment report when Stage 1 and Stage 2 have led to the preliminary view that harm to Aboriginal cultural heritage is likely to occur
- Stage 4: Implementation of project mitigation measures based on recommendations in Stage 3 and to obtain an Aboriginal Heritage Impact Permit (AHIP), if required.

The methodology adopted for this assessment is in accordance with the requirements of Stage 1 and Stage 2 of the PACHCI process. Stage 1 was completed by a Roads and Maritime Aboriginal Cultural Heritage Officer on the 17 January 2018. This report comprises the results of the Stage 2 assessment.

20.1.2 Relevant legislation

National Parks and Wildlife Act 1974 (NSW)

The *National Parks and Wildlife Act 1974* (NPW Act) is the primary legislation for the protection of Aboriginal cultural heritage in NSW and provides for the proper care, preservation and protection of 'Aboriginal objects' and 'Aboriginal places', defined under the Act. Under Part 6 of the NPW Act it is an offence to harm or desecrate Aboriginal objects or places.

Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Commonwealth)

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSIHP Act) provides for the preservation and protection of places, areas and objects of particular significance to Indigenous Australians. Under the ATSIHP Act, the Australian Government Minister for the Environment and Energy, in consultation with the relevant State/Territory minister, may make a declaration to protect an Aboriginal area or object.

20.1.3 Project footprint

For the purposes of both the desktop assessment and field survey, the study area was defined as the project footprint. This includes the main alignment, tunnel portals and surface works as well as the permanent power supply route and the locations of ancillary facilities such as construction compounds, ventilation facilities and motorway operation centres. It also includes the alignment of a route proposed for the construction/installation of a permanent power supply connection from the Ausgrid Canterbury subtransmission substation to the Rockdale Motorway Operations Complex. Refer to **Figure 20-1** for the project footprint.

20.1.4 Desktop review

As part of Stage 1 and Stage 2 of the PACHCI process, a desktop review was undertaken. This included a review of background literature and previous investigations, as well as undertaking searches of relevant registers to determine if any known or potential Aboriginal archaeological and culturally sensitive sites were known to be located within the project footprint.

The results of the desktop review are detailed in **section 20.2**.

20.1.5 Consultation

The Stage 1 PACHCI assessment undertaken by Roads and Maritime concluded that the project had the potential to disturb land on which Aboriginal objects or significant cultural values could occur. The Roads and Maritime Officer identified that a Culture and Heritage Officer from the Metropolitan Local Aboriginal Land Council (MLALC) was the appropriate stakeholder and engaged representative Selina Timothy to attend the field inspection. Consultation and a field inspection were undertaken with the MLALC representative as per the Stage 2 PACHCI process. During fieldwork, the MLALC Culture and Heritage Officer was consulted for any relevant cultural information pertaining to the project footprint. The results of the field inspection and consultation are detailed in **section 20.2.4**.

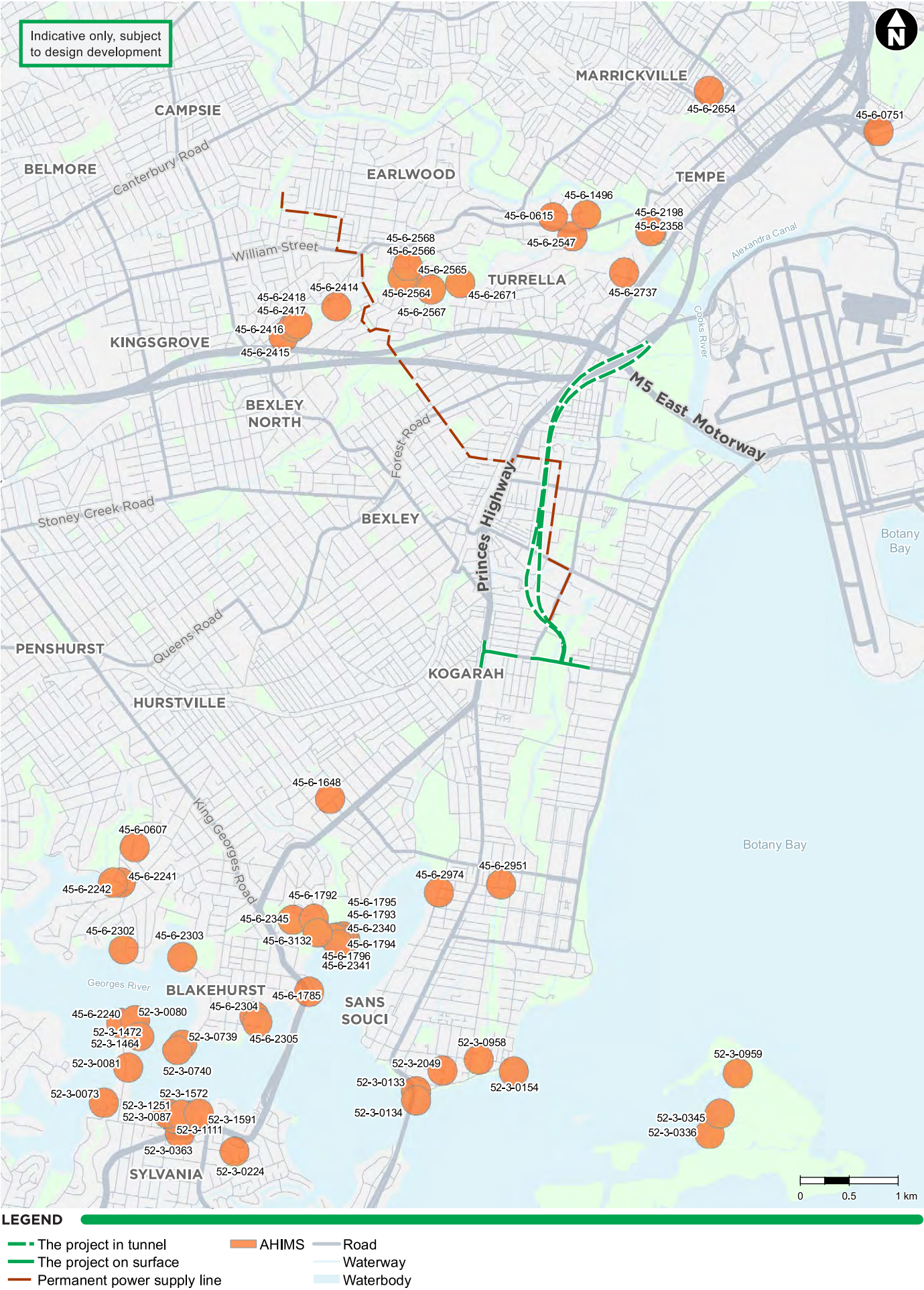


Figure 20-1 AHIMS Sites within the project vicinity

20.2 Existing Environment

In this section the existing environment for Aboriginal cultural heritage addresses:

- Occupation of the land (pre-European settlement)
- Aboriginal occupation within the landscape context of the area
- AHIMS register records
- Any previous Aboriginal cultural heritage investigations
- Results and discussion of the Stage 2 PACHCI field investigation.

20.2.1 Overview

The project footprint falls within the Aboriginal language group of the Eora, according to the boundaries identified on the AIATSIS Map of Indigenous Australia¹. The Eora area is predominantly coastal and ranges from Port Jackson in the north down to La Perouse in the south. The AIATSIS Map defines the surrounding language groups as Kuring-gai to the north, Tharawal to the south and Dharug to the west².

Early usage of the term Eora was not in relation to the description of any particular tribal group, but rather was a more general reference to Aboriginal people. As the name Eora was only introduced in later sources and not contained in the earliest ethnographic recordings, it suggests that the Eora area was either part of the Kuring-Gai area or the Dharug area. Some studies have argued that the Dharug territory extended to the coastline between Port Jackson and Botany Bay, based on the ethnographic observations of explorers and settlers, while other texts, such as the writings of Threlkeld, suggest the Kuring-Gai area may have extended further south along the coast³.

The Dharug language group (comprised of two coastal and hinterland dialects) is known to have stretched from the Hawkesbury River in the north, to Appin in the south, and from the coast west across the Cumberland Plain into the Blue Mountains. Some sources indicate that the coastal dialect of the Dharug language was spoken on the Sydney peninsula and the country to the north of Port Jackson, and a hinterland dialect, spoken on the Cumberland Plain from Appin in the south to the Hawkesbury River in the north⁴.

The primary unit of social organisation amongst the Dharug was the clan, with each clan, or 'tribe', consisting of around 50 to 60 people and taking its name from the place where its members resided⁵. Unlike many Australian Aboriginal groups, social organisation amongst the Dharug did not comprise a class system based on moieties or sections but rather was based on clan membership attained through patrilineal descent.

As to the name of the Dharug clan occupying land within the project corridor at contact, available sources suggest that this may have been the *Gameygal* clan (also spelt *Kameygal*). Attenbrow (2010) has suggested that the Gameygal likely occupied land around Botany Bay.

Available historic records indicate that a wide range of marine, freshwater, terrestrial and avian fauna were exploited by Dharug-speaking peoples for food. In coastal areas, an emphasis on the exploitation of marine resources, principally fish and shellfish, is attested in the writings of several early observers⁶. The plant food resources of coastal and hinterland Dharug-speaking peoples are poorly represented in the writings of early colonial observers. Nonetheless, available descriptions suggest that plants formed a regular part of the diets of groups in both areas⁷.

¹ Horton, D. R. (1996). *Aboriginal Australia*. Canberra, ACT: Aboriginal Studies Press.

² State Library of NSW. (2006). *EORA: Mapping Aboriginal Sydney 1770-1850*. (K. V. Smith & T. Willsteed, Eds.). Sydney: State Library of New South Wales.

³ Threlkeld, L. E. (1827). *Specimens of a Dialect of the Aborigines of New South Wales; Being the First Attempt to Form Their Speech Into a Written Language*. Sydney: Monitor Office.

⁴ Attenbrow, V. (2010). *Sydney's Aboriginal Past: Investigating the Archaeological and Historical Records*. Sydney: University of New South Wales Press.

⁵ Kohen, J. (1993). *Darug and their Neighbours: The Traditional Aboriginal Owners of the Sydney Region*. Sydney: Darug Link in association with Blacktown and District Historical Society.

⁶ Collins, D. (1798). *An Account of the English Colony in New South Wales. Vol. 1*. (B. H. Fletcher, Ed.). London: T. Cadell Jun. & W. Davie

⁷ Attenbrow, V. (2010). *Sydney's Aboriginal Past: Investigating the Archaeological and Historical Records*. Sydney: University of New South Wales Press.

Evidence from European documentation identifies such practices as fishing from bark canoes, utilising grass tree stems for spear shaft manufacture, wrapping hair in paperbark strips for decoration and partaking in a variety of art activities occurring in this area. Early observations in this area describe fishing and the collection of oysters, mussels and cockles as primary contributions to the diet of Aboriginal people. Associated implements included bark canoes, spears, hooks and lines. Other items of material culture that were recorded in observations of the area include shields and spear throwers. Stone tools have also been identified in the archaeological record of the region⁸.

Two major forms of shelter appear to have been utilised by Dharug speaking peoples at the time of European contact: rockshelters and small huts built from sheets of bark, branches and bushes^{9,10}. In keeping with the linguistic division of the Dharug language into coastal and hinterland dialects, differences in the nature of huts built along the coast and in the hinterland are attested in early colonial writings, with the former reportedly larger and “formed of pieces of bark from several trees put together in the form of an oven with an entrance...large enough to hold six to eight people”. Regarding settlement duration, “there is little direct historical evidence for the length of time people stayed at any one campsite (be it a rockshelter or bark hut), how often they moved, or what motivated them to move to another campsite”.

With the spread of European settlement across the Sydney region there came numerous acts of Aboriginal resistance. One of the best known is the guerrilla war waged by Pemulwuy, a *Bidjigal* man from the George’s River area. Between 1791 and his death in 1802, Pemulwuy is believed to have organised numerous raids on settler farms and to have speared many travellers around Botany Bay and the Georges River¹¹. As he operated in the larger region, it has been suggested that he is likely to have hidden in swampy areas when active around Botany Bay.¹² Widely known and respected in his community due to his various acts of resistance and evasion, many Aboriginal people believed Pemulwuy to be invincible. After his eventual death, Governor King acknowledged Pemulwuy as “an active, daring leader of his people” and “brave and independent character”.

In 1896 an Aboriginal site was identified during construction of the Alexandra Canal. It was comprised of dugong bones and axe heads located within a layer of dark bluish grey sandy clay with marine shells. The finds were considered significant at the time as they showed evidence of transverse and oblique curved cuts and scars that appeared to have been produced by a blunt-edged instrument. The axe heads were located approximately 500 metres from the dugong bones, within the same stratigraphic layer. The excavated material was collected and retained by the Australian Museum and in 2009 the dugong bones were radiocarbon dated, producing a date of 5,520±70 years¹³.

⁸ Navin Officer Heritage Consultants. (2003). Cultural Heritage Assessment of the Proposed Port Botany Expansion.

⁹ Barrington, G. (1802). *The History of New South Wales, including Botany Bay, Port Jackson, Parramatta, Sydney and all its Dependents*. London: Paternoster Row.

¹⁰ Collins, D. (1802). *An Account of the English Colony in New South Wales. Vol. 2.* (J. Collier, Ed.). London: T. Cadell Jun. & W. Davies [Reproduced 1971 by the Libraries Board of South Australia. Australiana Facsimile Editions No. 76] Sydney].

¹¹ Flynn, M. (1995). *Place of Eels: Parramatta and the Aboriginal Clans of the Sydney Region: 1788-1845*. Unpublished report for Parramatta City Council.

¹² Madeline Hourihan from Bayside Council has run a contemporary wetlands tour, with local zoologist Dr Arthur White taking the tour to Patmore Swamp and using it as a touchstone to discuss the Pemulwuy story, noting that he could have hidden in swampy areas in the vicinity when active in the Botany Bay area (St George and Sutherland Shire Leader, 2013).

¹³ Lindbergh, J. (2009). AMBS celebrates National Archaeology Week - Australian Museum. Retrieved October 15, 2012, from <http://australianmuseum.net.au/BlogPost/Science-Bytes/AMBS-celebrates-National-Archaeology-Week>



Plate 1 Dugong bones and stone tools excavated at Sheas Creek in 1896; Australian Museum curator Robert Etheridge at centre¹⁴

20.2.2 Landscape context

The project is located across the Botany Lowlands physiographic region, characterised by deep sand dunes and patches of swampland surrounding Botany Bay. Surface geology comprises a mixture of Quaternary alluvium and sands associated with watercourses. Additional information regarding the geology surrounding the project is described in **Chapter 16** (Soils and contamination).

The project footprint originally consisted of flat swampy land. While the swamp itself was not utilised, the area around Botany Bay and Cooks River was used for farming, lime extraction, textile manufacturing and flour milling. In 1812 a section of the project footprint located in Scarborough Park was granted to Patrick Moore (Patmore Swamp). In the 1930s the government drained Patmore Swamp, creating artificial lakes through the area, with the modified landscape renamed Scarborough Park¹⁵.

In the 1890s, the search for new permanent clean water sources resulted in the diversion of Sheas Creek and excavation of Alexandra Canal immediately to the north of the project area. Major expansions at Sydney Airport included large scale disturbance works such as the diversion of Cooks River and reclamation of the mangrove and saltmarsh basin located at its mouth¹⁶. Today, the modified wetlands consist of a system of tidal and freshwater swamps that drain into Botany Bay.

20.2.3 Aboriginal Heritage Information Management System

The AHIMS register provides records of Aboriginal objects reported in accordance with section 89A of the NPW Act. It contains information about Aboriginal places which have been declared by the Minister for the Environment to have special significance with respect to Aboriginal culture. Previously recorded Aboriginal objects and declared Aboriginal places are referred to by AHIMS as 'Aboriginal sites'.

A search of the AHIMS register was undertaken on 16 January 2018. The search area measured 10 kilometres by 11 kilometres, being larger than and centred on the project footprint. A total of 63 sites were listed in the search results. These are described in **Table 20-2** and shown on **Figure 20-1**. One restricted site was identified, being a site that has been deemed by the recorder to be culturally sensitive, with information about it restricted to an approved list of people. In the case of this restricted site (#52-3-1114), AHIMS administrator Eva Day confirmed on 22 January 2018 that it was located outside the bounds of the project footprint and would not be affected by the proposed works. This site is well away from the project, located within the bounds of the Kamay Botany Bay National Park (north and south) and Towra Point Nature Reserve (SHR 01918).

¹⁴ Lindbergh, J. 2009. *AMBS celebrates National Archaeology Week - Australian Museum*. Retrieved from <http://australianmuseum.net.au/BlogPost/Science-Bytes/AMBS-celebrates-National-Archaeology-Week>

¹⁵ NSW Office of Environment & Heritage. (2017). NSW State Heritage Register. Retrieved from <http://www.environment.nsw.gov.au/heritage/listings/stateheritageregister.htm>

¹⁶ Sydney Airport Corporation Limited. (2009). *Sydney Airport Environment Strategy 2010-2015*.

The AHIMS search results also contained two sites listed as 'Not a Site' (#45-6-1496 and #45-6-2951). This designation refers to a site recording that, following further investigation after its initial recording, has been determined to not be of Aboriginal origin. One site in the search results was listed as 'Deleted', #45-6-2358 being a duplicated entry of #45-6-2198. A further site (#45-6-0751) was listed as 'Destroyed', being the location of the Aboriginal stone axes and cut dugong bones (refer **section 20.2.1**) that were identified during excavation works for the Alexandra Canal in 1896.

In addition, one Aboriginal Place was identified in the AHIMS search results, the Kamay Botany Bay National Park (north and south) and Towra Point Nature Reserve (SHR 01918). This Aboriginal Place is located approximately 5.5 kilometres to the south-east of the proposed disturbance area and would not be affected directly or indirectly by the proposed works.

The AHIMS data also contains multiple inaccuracies. It is possible that some of the artefact scatter sites may be isolated artefacts, as information on the number of artefacts located in site areas is not present for all of those identified in the search results. Coordinate inaccuracy for AHIMS data is also known from past assessments to be an issue, often the result of errors translating coordinates from one datum to another when updating the register. The given coordinates only represent a centroid, not the full extent of a site's area. Consideration of these limitations was kept in mind during this assessment. Site card recordings are the most accurate representation of the available site data and are treated as the primary source for any relevant AHIMS sites.

Table 20-2 AHIMS sites identified within the extensive search area

Site Type	Number of Sites	Percentage of Sites
Rockshelter (being natural rock overhangs containing evidence of Aboriginal use / occupation)	22	34.9%
Midden (comprising deposits of shells / other materials)	19	30.1%
Art Site	6	9.5%
Artefact Scatter	6	9.5%
Resource and Gathering	2	3.2%
Not a Site	2	3.2%
Burial	1	1.6%
Restricted Site	1	1.6%
Isolated Artefact	1	1.6%
Potential Archaeological Deposit (PAD)	1	1.6%
Deleted	1	1.6%
Destroyed	1	1.6%
TOTAL	63	100%

None of the sites identified in the AHIMS search results were within the project footprint, including the footprint for the permanent power supply. The closest registered site centre point to the project footprint was approximately 710 metres to the north of its northern-most extent (AHIMS #45-6-2737 – a partially destroyed artefact scatter with associated Potential Archaeological Deposit (PAD) at Tempe House, 8 Brodie Spark Drive, Wolli Creek). The closest site coordinate to the permanent power supply route was approximately 290 metres to the west of the footprint (AHIMS #45-6-2414 – a rockshelter located on Wolli Creek approximately 50 metres to the south of Bray Avenue, Earlwood). Based on an assessment of the available AHIMS data, no previously recorded Aboriginal sites would be affected by the proposed works.

Based on aerial images, areas that had been subject to lower levels of past disturbance were assessed for archaeological potential including reserves and parks, particularly if located in proximity to water sources and/or known sites. Public park areas within the project footprint included Patmore Swamp, Illinden Sports Centre, Memorial Fields, Rockdale Bicentennial Park, Rockdale Skate Park and Civic Avenue Reserve with its associated dog park. These areas were assessed through background research and as part of the field inspection and were found to be highly disturbed and unlikely to contain in situ cultural deposits (see **section 20.2.4**).

Possible areas of low disturbance associated with the permanent power supply footprint were not subject to field inspection or MLALC consultation. Aerials indicated that areas with the potential for sensitivity included McCarthy Reserve, Rockdale Park, Gardiner Park, Bardwell Valley Golf Club, Charles Daly Reserve, the Wolli Creek reserve corridor, Earlwood Oval and Hughes Park. Of these areas, the Wolli Creek reserve corridor was identified as having archaeological potential due to low levels of past disturbance. Aboriginal sites have previously been identified along its extent, outside of the project footprint to the east and west of where the permanent power supply footprint would cross the creek alignment. As previously recorded sites follow the course of Wolli Creek, it suggests that further sites may be present in both surface and subsurface contexts.

Available archaeological reports focussed on the areas of recorded AHIMS sites, which were all outside the project footprint. One report noted that Aboriginal skeletal material had been identified in the vicinity of Kogarah. The remains were transferred to the Australian Museum in 1983 and were later examined by anatomist Dr Denise Donlan in 1994 and Professor Richard Wright in 1996. The remains were from a mineral rich layer within an old sand dune located parallel to the coast. It was noted in the report that the sand dunes in this area had high levels of acidity, with bone unlikely to remain extant more than a few hundred years.¹⁷ As there are no intact in situ sand dune deposits in the project footprint, it is highly unlikely that any burials would be present.

Patmore Swamp is listed for its natural and landscape values as part of the wetlands corridor, and has also been noted as having historical value due to the public works program that reshaped its landscape during the depression era. It is listed on the *Rockdale Local Environmental Plan 2011* as Item 202 (including the Scarborough Park Lakes within its bounds). Despite the high levels of past impact in this area, the retention of sections of (now modified) wetland within the project footprint allows for an opportunity to recognise the prior presence of Aboriginal people by highlighting resource zones they may have used in the past.

20.2.4 Archaeological field inspection

The archaeological field inspection included:

- The identification and recording of existing surface evidence of past Aboriginal activity
- Identification of areas with the potential for subsurface archaeology
- Investigation and development of strategies for avoiding and/or mitigating potential impacts to Aboriginal cultural heritage.

The archaeological survey was carried out on the 25 January 2018, attended by an AECOM senior archaeologist and a MLALC representative in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*¹⁸ and the PACHCI¹⁹.

The inspection was conducted on foot and by vehicle of both the above-ground sections of the project as well as areas above the proposed tunnels, during which details of the ground surface visibility and land condition were observed. Relevant information was recorded on a hand-held GPS and photographs were taken.

No Aboriginal archaeological sites or objects or areas of Potential Archaeological Deposit (PAD) were identified during the survey. No specific cultural values were identified by the MLALC representative during the survey, although it was noted that this area would have been utilised in the Aboriginal past, having had swamp resources and being close to coastal resources at that time.

¹⁷ Wright, R. 1997. *Report on Human Skeletal Remains from Kogarah in New South Wales* (No. E.85991).

¹⁸ Department of Environment, Climate Change and Water (2010) *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*

¹⁹ NSW Roads and Maritime Services. (2011). *Procedure for Aboriginal Cultural Heritage Consultation and Investigation*

The project footprint has been subject to high levels of disturbance in the recent past, meaning that if any Aboriginal sites were previously present, they are likely to have been destroyed. Impacts noted during the survey included earthworks associated with swamp reclamation and artificial channel construction, dating to the 1930s depression relief program that drained Patmore Swamp and created artificial lakes. In addition there was evidence of road construction, park landscaping, the creation of pathways, parks, residential development and industrial business development as well as ovals, playing fields and other recreational areas and facilities (including Illinden Sports Centre, Memorial Fields, Rockdale Bicentennial Park, Rockdale Skate Park, Civic Avenue Reserve and the associated dog park). Due to the change in landscape from swamp to raised areas for parks and other development, the area has been subjected to high levels of disturbance. Given these past impacts, it is unlikely that any intact in situ deposits would be present within the project footprint. No surface expression of artefacts were noted during the survey and no mature vegetation with the potential for cultural modification was identified. Photographs of areas of disturbance taken during the survey of the project footprint are included below (see **Plate 2** to **Plate 15**).



Plate 2 Civic Avenue Reserve pathway, view north



Plate 3 Civic Avenue Reserve park area, view northwest



Plate 4 President Avenue, view west towards Princes Highway



Plate 5 Park area on the northern side of President Avenue, view east



Plate 6 Illinden Sports Centre, view east



Plate 7 Rockdale Bicentennial Park, view northeast



Plate 8 Waterway between Rockdale Bicentennial Park and Memorial Fields, view north



Plate 9 Memorial Fields, view north



Plate 10 Rockdale Bicentennial Park walkway, view west towards West Botany Street



Plate 11 Industrial businesses adjacent to Rockdale Bicentennial Park, view north



Plate 12 Industrial businesses adjacent to Rockdale Bicentennial Park, view northwest



Plate 13 Car park area off West Botany Street, view northeast



Plate 14 Corner of Marsh Street and M5 East, view northeast



Plate 15 Corner of Marsh Street and M5 East, view northeast

20.2.5 Aboriginal cultural heritage values

MLALC representative Selina Timothy provided a separate report specifically discussing the Aboriginal cultural heritage values of the project footprint. It stated that MLALC “has no objection to the proposed development of this site”, but highlighted the likelihood of Aboriginal use of the general area in the past.

The report describes the general area as “a significant spiritual and social area” based on the past water resources that would have been at the original pre-disturbance swamp location likely being “very suitable as hunting and breeding grounds for Aboriginal people due to the abundance of bird and fish life, native food, fresh drinking water and swimming areas”.

The report further describes some of the resources that would have been available, including water fowl, fish, different species of frogs, wallabies and other mammals, shellfish, yams, berries and lilies, concluding that: “this area was quite lush and sustainable for the Ancestors who lived off this land”.

The MLALC report is included in full in **Appendix N** (Statement of heritage impact).

20.3 Potential impacts

20.3.1 Construction

Impacts on Aboriginal cultural heritage as a result of the project can be either direct or indirect. Direct impacts include physical damage or destruction of Aboriginal sites, while indirect impacts largely relate to vibration from machinery/blasting or subsidence/ground settlement from tunnelling. Indirect impacts could also include activities taking place in culturally significant locations construing a visual impact, or which provide a more generalised sense of harm or loss to Aboriginal cultural heritage values.

Based on the assessment of the project footprint and proposed works with relation to Aboriginal cultural heritage, construction of the project is not likely to result in direct or indirect impacts upon Aboriginal cultural heritage.

The permanent power supply connection would generally be located within the existing road reserve with the exception of where it would cross Bardwell Valley Golf Course, where it would be installed using a horizontal under boring method. It is unlikely that impacts on Aboriginal cultural heritage artefacts or deposits would occur. This would need to be confirmed through field investigation including consultation with MLALC once the final alignment is verified with particular reference to impacts (if any) to Bardwell Valley Golf Course.

20.3.2 Operation

Potential impacts to Aboriginal cultural heritage (either direct or indirect) during operation of the project largely relate to associated impacts such as landscape character and visual amenity. Operational impacts such as increased noise, vibration or air quality are not considered likely to affect Aboriginal cultural heritage given the lack of identified sites within close proximity of the project. Through consideration in design, the project has minimised the surface works to more closely integrate with the existing surrounding infrastructure and to be sympathetic to the surrounding landscape context. This is a prudent measure for the avoidance of Aboriginal cultural heritage sites and values, although in this case the assessment has shown there were no known sites or values in the vicinity that require avoidance.

20.4 Cumulative impacts

The project physically overlaps with the New M5 Motorway project in the vicinity of the Kogarah Golf Course including the colocation of the motorway operations centre, ventilation facilities and the New M5 stub tunnels. As noted within the EIS for the New M5 Motorway, no existing AHIMS sites nor impacts to Aboriginal cultural heritage were identified within the vicinity of Kogarah Golf Course.

The project has also included the use of the existing construction compound associated with the New M5 Motorway to avoid further disturbance within the vicinity of Kogarah Golf Course, minimising the potential for unexpected finds.

Furthermore, as it has been determined that the project is currently not likely to result in residual impacts upon any known Aboriginal cultural heritage sites, areas of sensitivity or areas identified as having cultural heritage value, it is considered that the project would not contribute to cumulative impacts in this context. As such, no further cumulative impact assessment has been undertaken.

20.5 Management of impacts

In order to reduce the risk of potential impacts to unexpected Aboriginal cultural heritage, environmental management measures are to be implemented during construction are provided in **Table 20-3**. Operational management measures are not considered warranted.

Table 20-3 Environmental management measures – Aboriginal cultural heritage

Impact	Reference	Environmental management measure	Timing
Unexpected discovery of Aboriginal objects	AH1	If an Aboriginal object(s) is discovered during construction it would be managed in accordance with the <i>Standard Management Procedure: Unexpected Heritage Items</i> (Roads and Maritime Services 2015).	Construction
Unexpected discovery of human remains	AH2	If human remains are discovered during construction, they would be managed in accordance with the <i>Standard Management Procedure: Unexpected Heritage Items</i> (Roads and Maritime Services, 2015).	Construction
Recognising the prior presence of Aboriginal people	AH3	The project would recognise the prior presence of Aboriginal people by highlighting resource zones they may have used. This could be undertaken through the implementation of interpretive signage and incorporated in to the Place Making and Urban Design Strategy. Should this be pursued, it will be undertaken in consultation with the MLALC.	Construction

This assessment has concluded that the construction and operation of the project is currently unlikely to result in direct or indirect impacts upon Aboriginal cultural values.

The results of this assessment have identified that further investigations (as per PACHCI Stage 3 and Stage 4) are not warranted.

20.6 Environmental risk assessment

An environmental risk assessment was undertaken in three phases as part of the project:

- During the preliminary environmental assessment, carried out as part of the SSI application report to allow for early identification of key Aboriginal cultural heritage issues
- Through an assessment of the key issues identified in the SEARs for the project
- During the EIS to confirm the impacts based on the results of detailed investigations.

The assessment process used a likelihood and consequence occurrence risk approach. Likelihood and consequence category descriptions can be found in **Appendix O** (Methodologies).

The risk analysis undertaken for Aboriginal cultural heritage is summarised in **Table 20-4**.

Table 20-4 Environmental management measures – Aboriginal cultural heritage

Summary of key impact	Construction / operation	Management / mitigation measure	Likelihood	Consequence	Residual Risk
Potential impact on previously unidentified Aboriginal cultural heritage items	Construction	AH1, AH2	Unlikely	Moderate	Low
Potential impact on previously unidentified Aboriginal cultural heritage places or values	Construction	AH1, AH2	Unlikely	Moderate	Low

Impacts identified as having a low residual risk are considered to have already been managed to a reasonable and feasible level. Despite the low risk rating however, review and continual improvement would be undertaken where relevant during detailed design and would be detailed in the Construction Environmental Management Plan and the Operational Environmental Management Plan.

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