

NON-ABORIGINAL HERITAGE

CHAPTER FOURTEEN

14 Non-Aboriginal heritage

This chapter provides an assessment of the potential impact on non-Aboriginal heritage items and archaeological remains as a result of the project, and identifies mitigation measures to address these impacts. This chapter draws on information in Technical paper 4 – Non-Aboriginal heritage.

14.1 Secretary’s environmental assessment requirements

The Secretary’s environmental assessment requirements relating to non-Aboriginal heritage, and where these requirements are addressed in this Environmental Impact Statement, are outlined in Table 14-1.

Table 14-1 Secretary’s environmental assessment requirements – non-Aboriginal heritage

Ref.	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: <ul style="list-style-type: none"> a. environmental heritage, as defined under the <i>Heritage Act 1977</i> b. items listed on the National and World Heritage lists c. 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 d. Aboriginal places of heritage significance, as defined in the Standard Instrument – Principal Local Environmental Plan 	Environmental heritage is addressed in Section 14.5. National and World heritage is addressed in Section 14.5. Aboriginal heritage impacts are addressed in Chapter 15 (Aboriginal heritage). Cumulative impacts are addressed in Chapter 26 (Cumulative impacts).
7.2	Where impacts to State or locally significant heritage items are identified, the assessment must: <ul style="list-style-type: none"> a. include a statement of heritage impact for all heritage items (including significance assessment) b. consider impacts to the item of significance caused by, but not limited to, vibration, demolition, archaeological disturbance, altered historical arrangements and access, visual amenity, landscape and vistas, curtilage, subsidence and architectural noise treatment (as relevant) c. outline measures to avoid and minimise those impacts in accordance with the current guidelines d. be undertaken by a suitably qualified heritage consultant(s) (note: where archaeological excavations are proposed the relevant consultant must meet the NSW Heritage Council’s Excavation Director criteria). 	<i>Technical paper 4 – Non-Aboriginal heritage.</i> Non-Aboriginal heritage impacts are addressed in Section 14.5. Mitigation measures are outlined in Section 14.6.
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 <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i> (Department of Environment, Climate Change and Water, 2010a).	No archaeological investigations carried out.
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 Chapter 15 (Aboriginal heritage).

14.2 Assessment methodology

14.2.1 Study area

For the non-Aboriginal heritage assessment, the boundary of the study area was defined as a 25-metre buffer around the project footprint. It includes the physical footprint of the project incorporating ancillary sites, facilities and access ways to each area during construction.

The application of a buffer helps to identify heritage items that may be within the visual catchment of the project and where potential visual impacts on that item may occur. It also supports assessment of other potential indirect impacts on heritage fabric of heritage items that may be in the vicinity of the site (eg as a result of vibration). Any reference to the 'study area' in this chapter includes reference to the 25-metre buffer, unless otherwise stated.

As well as aboveground construction sites, the project footprint includes underground work associated with station construction, such as mined platforms and underground pedestrian connections. Tunnel sections between stations would generally be too deep to affect heritage items or archaeological deposits and as such the study area for assessment of potential impacts to heritage items does not extend to areas above the tunnel alignment that are outside the nominated study area buffers for each construction site (refer to Section 14.2.2 for further information).

14.2.2 Identification, significance and assessment of heritage items

Identification of heritage items

This chapter considers potential impacts of the project on:

- Heritage listed items – buildings or other structures, places, items, areas or cultural landscapes that are located aboveground
- Archaeological heritage – significant physical remains of the past, including relics and artefacts, that are located underground.

Heritage listed items within the study area have been identified through a search of various heritage registers. These listed heritage items have been previously assessed against the NSW Heritage Office guideline *Assessing Heritage Significance* (2001). Statements of heritage significance identified in this chapter are consistent with those included in relevant heritage inventory sheets and are based on the 2001 guideline.

Historic archaeological potential is defined as the potential of a site to contain historical archaeological relics, as classified under the *NSW Heritage Act 1977*. Preliminary assessment of the archaeological potential was considered based on review of several historical archaeological investigations within or close to the study area that provide evidence that helps to evaluate the potential historical archaeological resource of the study area. Portions of the study area have also previously been evaluated in various archaeological zoning and management plans, including the *Central Sydney Archaeological Zoning Plan* (City of Sydney, 1992), *The Rocks and Millers Point Archaeological Management Plan* (Higginbotham et al, 1991), *Archaeological Excavation Barangaroo South Preliminary Results* (Casey & Lowe, 2012) and the *Barangaroo Archaeological Assessment and Management Plan* (Austral Archaeology, 2010).

Significance of heritage items

Determining the significance of heritage items or a potential archaeological resource involves a system of assessment that generally follows the evaluation criteria set out in the NSW Heritage Office guideline *Assessing Heritage Significance* (2001). The level of heritage significance in relation to a place, building, work, relic, moveable object or precinct, can be considered to be at a local or State level of significance – that is, important in a local context or in a NSW State context – if it meets one or more of the following criteria:

- Criterion (a): Historic significance
- Criterion (b): Associative significance
- Criterion (c): Aesthetic significance
- Criterion (d): Social significance
- Criterion (e): Research potential
- Criterion (f): Rarity
- Criterion (g): Representativeness.

The heritage significance of all identified relics, items, areas and / or landscapes that are considered to be potentially directly or indirectly affected by the project are identified in *Technical paper 4 – Non-Aboriginal heritage*.

Assessment of heritage impact

Impacts on heritage are identified as either:

- Direct impacts, resulting in the demolition or alteration of fabric of heritage significance
- Indirect impacts, resulting in changes to the setting or curtilage of heritage items or places, historic streetscapes or views
- Potential direct impact, resulting in impacts from vibration and demolition of adjoining structures.

The vibration modelling referenced in this heritage assessment considers a ‘worst case’ construction vibration scenario, being excavation by rock breakers at surface level. Vibration levels have been modelled at the closest façade of buildings adjacent to this construction activity. Vibration impacts have also been considered with respect to demolition of structures adjacent to heritage items.

Specific terminology and corresponding definitions are used in this assessment to consistently identify the magnitude of the project’s direct, indirect or potentially direct impacts on heritage items or archaeological remains. The terminology and definitions are based on those contained in guidelines produced by the International Council on Monuments and Sites (ICOMOS) and are shown in Table 14-2.

Table 14-2 Terminology for assessing the magnitude of heritage impact

Magnitude	Definition
Major	Actions that would have a long term and substantial impact on the significance of a heritage item. Actions that would remove key historic building elements, key historic landscape features, or significant archaeological materials, thereby resulting in a change of historic character, or altering of a historical resource. These actions cannot be fully mitigated.
Moderate	Actions involving the modification of a heritage, including altering the setting of a heritage item or landscape, partially removing archaeological remains, or the alteration of significant elements of fabric from historic structures. The impacts arising from such actions may be able to be partially mitigated.
Minor	Actions that would result in the slight alteration of heritage buildings, archaeological remains, or the setting of an historical item. The impacts arising from such actions can usually be mitigated.
Negligible	Actions that would result in very minor changes to heritage items.
Neutral	Actions that would have no heritage impact.

Vibration screening levels

A conservative vibration damage screening level of 7.5 millimetres per second peak particle velocity has been adopted for all heritage items. This screening level has been established with reference to the minor cosmetic damage criteria for unreinforced or light framed structures in *British Standard BS 7385:2 - 1993*. The vibration levels specified in this standard are designed to minimise the risk of threshold or cosmetic surface cracks, and are set well below the levels that have potential to cause damage to the main structure.

During main tunnelling works, it is anticipated that ground-borne vibration associated with the use of tunnel boring machines would be much lower than the 7.5 millimetres per second peak particle velocity screening level (refer to Chapter 10 (Construction noise and vibration)). As such the study area for assessment of potential impacts to heritage items does not extend to areas above the tunnel alignment that are outside the nominated study area buffers for each construction site.

14.3 Sydney's early European history

14.3.1 The North Shore

On the lower North Shore, land grants were made to free settlers from the late 18th century that were often never occupied given the challenges of utilising an uncleared landscape. Land sales and subdivisions were prevalent in the mid-19th century in the area around present-day North Sydney and Crows Nest. The T1 North Shore Line was formally opened in January 1890.

The majority of the lower North Shore, and land surrounding the study area, is associated with large land grants given to soldiers, convicts and free settlers in the early 19th century.

14.3.2 Sydney CBD

The European colonisation of Australia began with the establishment of a colony at Sydney Cove by Captain Arthur Phillip in January 1788 on land inhabited by the Gadigal people. The subject site and immediately surrounding area were an integral part of the pre- and post-contact history of both the Gadigal people and the Aboriginal peoples across the surrounding region.

The colony was founded around the mouth of a freshwater source provided by the Tank Stream, which flowed into the cove at the northern end of present day Pitt Street. In the months following the first landing, First Government House was established on the corner of present-day Bridge and Phillip streets, with a government wharf built on the shoreline to the north of the house.

The initial growth of the settlement was largely unplanned, with streets and laneways developing organically, shaped by the natural topography. When Governor Macquarie took office in 1810, he attempted to impose some order on the development of the city and a grid pattern was superimposed on the southern, eastern, and western sides of the expanding town. As the city grew throughout the 19th century, most of the Sydney CBD was developed with commercial buildings, while warehouses and wool stores were located on or near the waterfront, and workers' housing was located in The Rocks and Millers Point area.

South of the Sydney CBD, industrial land uses began to define the area of Chippendale and Darlington, with the Kent Brewery established on Parramatta Road in 1835, and the Eveleigh Railway Workshops and various factories established in the latter half of the 19th century.

14.4 Historical context of the project area

14.4.1 Chatswood dive site (northern)

The original focus of Chatswood was centred on the intersection of Mowbray Road and Lane Cove Road, where the Bush Mission Society had constructed a small chapel and John Bryson established a timber yard and 'school of arts' hall by the 1870s. The Great Northern Hotel was opened by Henry Russell in 1870 and in 1876 the area was sub-divided and called the Chatswood Estate. Chatswood, as it is today, was largely created after World War II and the western side of the railway was designated for commercial development. In the 1960s the first major retail stores were opened on the eastern side of the railway.

Historic plans suggest that the Chatswood dive site was occupied as early as 1836. The study area has been extensively developed over time and currently contains low-rise commercial buildings and a works depot.

14.4.2 Artarmon substation

In 1794, the first land grants were made in the area that was to become known as Artarmon. The suburb of Artarmon is believed to have been named for a 150-acre land grant made in 1810 by Governor Macquarie. A large house was built in the area in the mid-19th century and in 1922 the estate was purchased by the North Sydney Brick and Tile Company. The house was demolished in 1939.

In the mid-20th century, the study area was occupied by small-scale residential subdivisions. Some of the residences were demolished for construction of the Gore Hill Freeway, which is likely to have resulted in substantial modification to the surrounding landscape.

14.4.3 Crows Nest Station

Historic plans suggest that the earliest structures in the study area are from the late 19th century associated with the Berry's Estate subdivision.

The lower North Shore was generally held in large estates until the mid-19th century when subdivision of the area occurred more frequently. After the T1 North Shore Line was completed in 1893, suburban settlement in the area continued. However, due to difficulties crossing the harbour, this was slow.

The study area has the potential to contain archaeological remains associated with late 19th and early 20th century residential subdivision.

14.4.4 Victoria Cross Station

The area was gazetted as the township of St Leonards in the early 19th century and it is unlikely that soldiers, convicts or free settlers lived in the Victoria Cross Station study area until the mid-19th century. By the late 19th century, Miller Street was part of the commercial and civic centre of St Leonards.

Settlement in the area increased dramatically during the early to mid-20th century, and a number of public buildings, such as the former School of Arts, Post Office / Court House / Police Station complex and a Masonic Hall were all built at this time. The Sydney Harbour Bridge had dramatically changed the streetscapes in the area and redevelopment in the area was primarily associated with Art Deco architecture.

The late 1950s and early 1960s saw a dramatic change in the area with low land prices attracting large corporations that built substantial office blocks and towers, many conglomerating along the Pacific Highway, taking over land on Berry and Miller streets.

Construction of successive phases of buildings in the study area would have impacted on archaeological remains. Typically, the earlier the building was constructed, the less impact it would have had on the potential archaeological remains. There is some potential that archaeological remains dating from the mid-19th to early 20th century may be located within the study area.

14.4.5 Blues Point temporary site

The study area was originally located within land granted to William (Billy) Blue in 1817. Blue was appointed ferryman to the North Shore and began a rowing boat service between Dawes Point in the Rocks and Blues Point. The configuration of the study area in the early 19th century is unknown, although it can be assumed that it may have contained simple wharves and associated structures.

Blues Point Road was gazetted from 1839 as a thoroughfare from the ferry wharf to the St Leonards township (today known as North Sydney) and Blue's estate was subdivided from the mid-19th century, with the earliest developments occurring around its northern end. Other wharf structures were also present at Blues Point in the mid-19th century.

By the 1870s, the middle and southern portions of the peninsula had been subdivided and a vehicular ferry was established in 1900. From the late 19th century, the foreshore was known for its boat building and repair industry. Commercial and residential development was present in the study area in the early 20th century.

14.4.6 Sydney Harbour

The Heritage Division of the Office of Environment and Heritage (OEH) is the agency responsible for the management of maritime archaeology and underwater cultural heritage in NSW. The Division administers both the Commonwealth's *Historic Shipwrecks Act 1976*, and the *NSW Heritage Act 1977*. The two acts, together with the Annex to the *UNESCO Convention on the Protection of the Underwater Cultural Heritage 2001* (endorsed by the Heritage Council of NSW as best practice in 2005), provide protection to maritime archaeology and underwater cultural heritage sites in NSW and adjacent waters.

A number of vessels, including *The Three Bees* (1814), *The Sea Nymph* (1882) (probably raised soon after) and *The Birkenhead* (1913), are known to have been shipwrecked in the waters surrounding Dawes Point and Blues Point throughout the late 19th and early 20th centuries. However, no wrecks listed on the Australian National Shipwreck Database are located within the study area.

One item, a propeller, is listed on the OEH Maritime Heritage register. The propeller is located about 300 metres east of the proposed Harbour Crossing location.

14.4.7 Barangaroo Station

Development of the Barangaroo Station study area is thought to have occurred from the early 19th century. Occupation of the eastern side of what was to be named Cockle Bay (and later Darling Harbour) was confined to several key land grants to those associated with the military, including the military hospital, military bathing house and the military barracks.

From the early 19th century, the town of Sydney expanded and developed, with an organised layout of streets and construction of a wharf at the base of Market Street to allow for easy transport of produce from the farms on the Hawkesbury River. Over the following decades, numerous shipbuilding and transport wharves were constructed along the eastern shore of Darling Harbour. From 1908, the Sydney Harbour Trust carried out a number of improvements in north Darling Harbour, including the construction of Hickson Road in the mid-1920s.

The Rocks and Millers Point Archaeological Management Plan (Higginbotham et al, 1991) identifies that the study area is mostly disturbed. However, deep features, such as wells and cesspits, may be present under Hickson Road.

Archaeological investigations were also carried out for the Barangaroo development site (Austral Archaeology, 2010) that assessed the site as having potential to contain archaeological evidence of 19th and 20th century remains of wharves and associated buildings, shoreline modifications such as sea walls, and evidence of trade and industry.

A large sandstone seawall was encountered during roadwork within Hickson Road (McLeod, 2000) and subsequent archaeological investigations have found that reclamation buried, rather than demolished, this earlier evidence of land modification.

14.4.8 Martin Place Station

Soon after the arrival of Europeans at Sydney Cove in 1788, the Tank Stream was recognised as being a vital source of fresh water in the colony. The stream, today located below Pitt Street, is reflected in the layout of the streets in the vicinity of the study area. George Street (originally High Street), Pitt and Castlereagh streets (originally Camden Street) were all laid out parallel to the stream. By the early 1800s, the Martin Place Station study area began to be subdivided and developed.

By the early 1830s, many of the early landholdings and leases had been formerly granted, and plans indicate that numerous buildings were located within the Martin Place Station study area at this time. It is not known what the buildings on these early land grants were used for, but it is likely they were associated with commercial, residential and small-scale industrial uses.

Development continued through the mid-19th century and the construction of the General Post Office on the corner of George and Pitt streets between 1870 and 1880 saw the first phase of urban planning for what would become Martin Place. Sydney City Council began to promote Martin Place as the major financial and insurance centre of Sydney, resulting in many prominent banking, financial and insurance companies establishing in the area from the 1900s. In 1979, the entirety of Martin Place became a pedestrian precinct, and Martin Place Railway Station was opened.

There is potential for archaeological remains within the Sydney CBD to be substantially intact, and date from early phases of the development of the colony. An intact and early archaeological resource in the Martin Place Station study area has the potential to have significance at a State level. For example, archaeological monitoring and testing undertaken in 1997 in Angel Place (between Pitt and George streets) uncovered remains of early European settlement (circa 1810) in areas of the site that were found to have been undisturbed by later development (Godden Mackay, 1997).

Preliminary analysis suggests that archaeological remains, if they survive within the study area, would be associated with early to late 19th century residences, shopfronts and small scale industrial workshops.

14.4.9 Pitt Street Station

During the earliest years of settlement, it is likely that the study area was considered to be too far from Sydney Cove to attract substantial occupation. The presence of the burial ground, in the vicinity of present-day Sydney Town Hall, to the west of the Pitt Street Station study area, suggests that this area was considered the outer limit of the Town of Sydney. By the 1790s, the northern portion of Pitt Row, that would later become Pitt Street, had been laid out.

Sydney had greatly expanded by the 1840s, particularly due to a massive building boom in the 1830s. Land that once had been on the outer limits of the town was incorporated into the spreading commercial district. By the mid-19th century, the area was densely occupied by a number of residences and retail frontages. The majority of the buildings are likely to have been constructed of brick, and consisted of one or two storeys.

By the early 20th century, the area in the vicinity of the Pitt Street Station study area was occupied by coach factories and workshops, an auction room, numerous hotels, ironmongers, churches, a private school, food retailers, a photographer and an undertaker, among other uses.

The *Central Sydney Archaeological Zoning Plan* (City of Sydney, 1992) identifies a number of properties in Park Street (numbers 30–40) and Bathurst Street (numbers 107–109, 131–135 and 137–139) as areas of either archaeological potential or high archaeological potential due to limited physical disturbance.

The Metropolitan Fire Brigade and the Masonic Club buildings (refer Section 14.5.8) are listed as having an archaeological component to their heritage significance. The Pitt Street Station north site was ‘occupied’ by historic structures from an earlier period than the Pitt Street Station south site and preliminary analysis suggests that the archaeological resource, if it survives within the study area, would be associated with mid to late 19th century residences, shopfronts and small-scale industrial workshops.

14.4.10 Central Station

Central Railway Station is built on the site of the two earlier Sydney railway terminals. The Sydney Railway Company constructed the first Sydney Station in 1855. In the early 1870s, a lack of facilities identified at the original station led to the construction of a larger station which was completed 1874. Positioned in the same location as the first Sydney Station, its northern frontage faced onto Devonshire Street.

In 1892, the Chief Railway Engineer submitted proposals to the Railway Commission to build a large terminus for country trains on the site of the Benevolent Asylum and Devonshire Street Cemetery. This additional country terminus required the resumption of land occupied by a number of structures including the Devonshire Street Cemetery (1820–1867), the Benevolent Asylum, the Steam Tram Depot (established in 1879) and the Christ Church Parsonage (established in 1855).

Over time, increased congestion in the city led to a series of public infrastructure changes in Sydney. These infrastructure upgrades have become some of Sydney’s most prominent transport landmarks, including the underground eastern suburbs railway, and initial planning for the Sydney Harbour Bridge. A new electric train platform on the eastern side of the existing terminal building was constructed in 1917 and involved the demolition of a carriage shed, several storage sheds and an old sewer.

The archaeological potential of the Central Station precinct was assessed in the *Central Station Conservation Management Plan* (Rappaport and Government Architect’s Office, 2013). The key archaeological research value of the Central Station site is associated with the sites of the former Benevolent Asylum and government buildings.

Prince Alfred Park was part of the Government (or Cleveland) Paddocks. Continuity of use and layout of Prince Alfred Park, including the alignments of paths and planted areas have remained remarkably consistent over time and thus the layout of the park has remained unchanged since its inception. Prince Alfred Park was the site of the Royal Agricultural Society Show from 1869–1880 and an exhibition hall was constructed at the northern portion of the site in 1870. Other temporary buildings were constructed according to demand for the show. The former exhibition building was demolished in the 1950s to make way for a swimming pool.

Prince Alfred Park was listed as an archaeological item on the *Sydney Local Environmental Plan 2005*, but is not listed as having a substantial archaeological component on the *Sydney Local Environmental Plan 2012*.

14.4.11 Waterloo Station

The suburb of Waterloo is associated with a 1400-acre grant given to William Hutchinson in 1823 and it is unlikely that substantial development within the Waterloo Station study area occurred during this period. Prior to development, the area consisted of extensive swamps and although agricultural activity took place in the area in the early 19th century, the risk of flooding and marshy conditions did little to encourage settlement.

By the late 19th century, the introduction of drainage systems along areas of increased occupation and leveling of various land formations resulted in further development. Plans show that the Waterloo Station study area contained a congregational church and a bank, amongst other structures. In the early 20th century, increased industrial development in Waterloo meant warehouses and factories became prominent within the landscape and by the mid-20th century the study area was heavily developed.

14.4.12 Marrickville dive site (southern)

Most of the western half of Sydenham, including the area now occupied by Sydenham Railway Station, was previously a swamp. The swamp provided an effective boundary for early European land grants. The majority of Sydenham, including the Marrickville dive site study area, is located within the site of Douglas Farm, which was granted to Thomas Moore in 1799. The farm grew maize and wheat and also had valuable stands of timber that were logged (some were used for boat building).

Unwin's Bridge Road, located to the south and east of the study area, was originally constructed using convict labour in 1836, during a period when the area was occupied primarily by brick makers. During the Great Depression in the 1930s, a large brick-lined drainage pit (a State heritage listed item known as 'Sydenham Pit and Drainage Pumping Station 1') was constructed in Garden Street as a relief work scheme. Sydenham Railway Station, located to the southwest of the study area, was built on the duplicated line from Illawarra Junction to Hurstville and opened in 1884.

Analysis of early plans does not provide evidence of structures being present in the Marrickville dive site study area earlier than the mid-19th century. Thomas Moore owned large amounts of land in the vicinity, and it is unlikely that he had a residence in this location or used the land for more than the grazing of stock during the early 19th century. There is a possibility that the study area contains archaeology dating to the mid-19th century or later.

Industrial areas within Sydney and the inner suburbs tended to develop quickly, and were subject to rapid modification as the development of technologies required different infrastructure. Aerial photography from 1943 indicates that numerous potential clay pits were located in the area. It can be assumed, due to substantial ground disturbance, that if a late 19th or early 20th century brick-making pit is located within the study area, any archaeological remains associated with earlier phases of development are likely to have been impacted or removed.

14.5 Assessment of heritage significance and impact

This section summarises the potential impact of the project on heritage items or potential archaeological remains. Detail on all heritage listed items and potential archaeological remains in the study area is provided in *Technical paper 4 – Non-Aboriginal heritage*.

14.5.1 Chatswood dive site (northern) and northern surface works

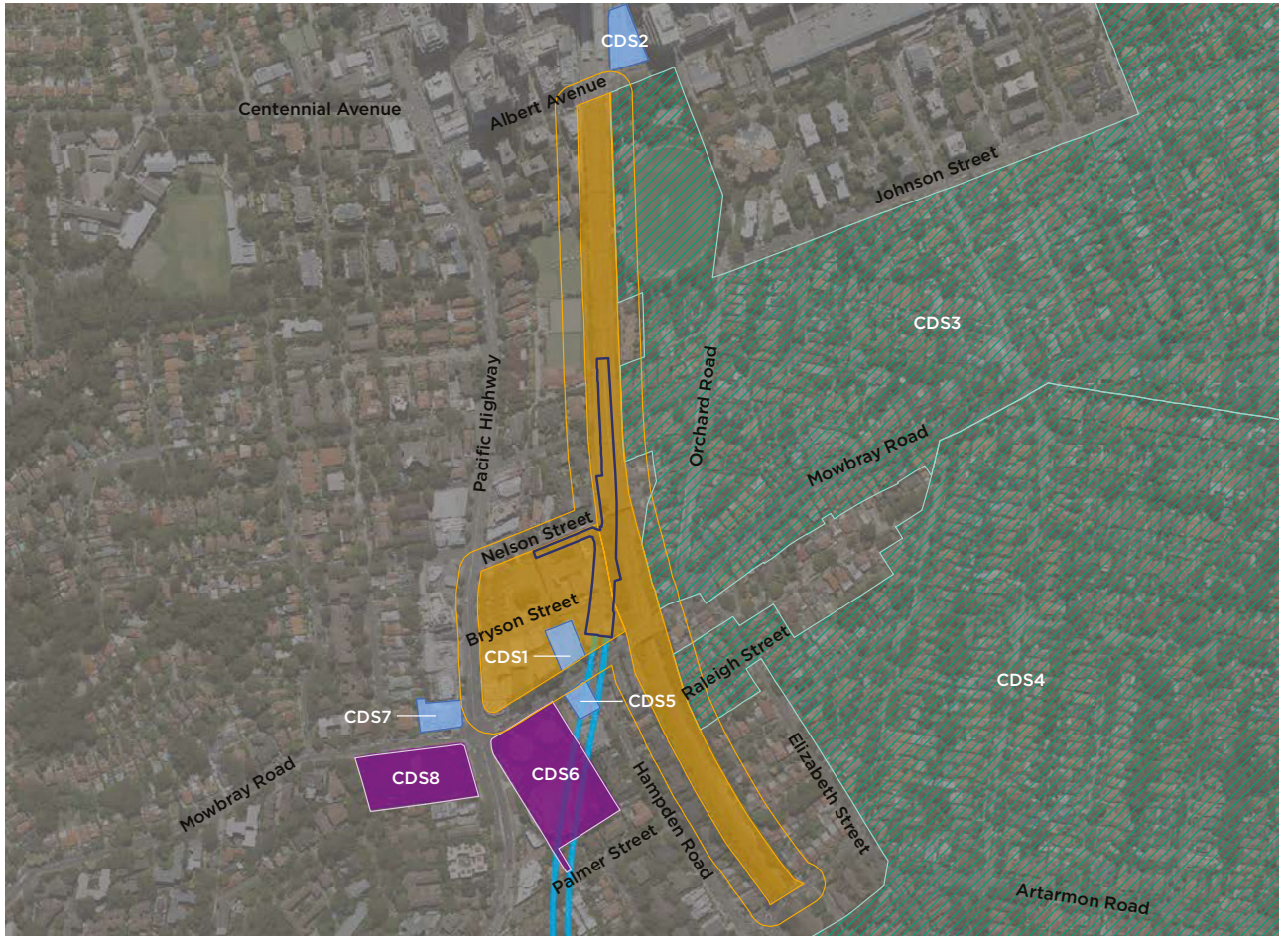
Heritage items and conservation areas

The study area for the Chatswood dive site and northern surface works incorporates the area along the T1 North Shore Line between Chatswood Station, Chatswood and Brand Street, Artarmon. The project would impact, directly or indirectly, on a number of listed heritage items or heritage conservation areas, as identified in Table 14-3 and shown in Figure 14-1.

Table 14-3 Chatswood dive site (northern) – impacts on heritage items and conservation areas

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
CDS1	Mowbray House	LEP and s.170	Local	<ul style="list-style-type: none"> ○ Direct impact: Minor (physical impact). Item would be retained and demolition of non-original outbuildings would be required. The façade of the building would not be impacted and any interior modifications would be reversible ○ Potential direct impact: Minor (vibration). The closest façade of this item would experience vibration above the 7.5mm/s screening level for cosmetic damage ○ Indirect impact: Minor (views and vistas). Visually, the surrounding buildings that would be demolished do not contribute to the heritage setting of the item.
CDS2	Garden of Remembrance	LEP	Local	○ Indirect impact: Negligible (views and vistas).
CDS3	South Chatswood Conservation Area	LEP	Local	○ Indirect impact: Negligible (views and vistas).
CDS4	Artarmon Conservation Area	LEP	Local	○ Indirect impact: Negligible (views and vistas).
CDS5	Chatswood zone substation No.80 (Ausgrid)	LEP	Local	○ Indirect impact: Negligible (views and vistas).
CDS6	Chatswood Reservoirs No.1 and No.2	SHR	State	○ Indirect impact: Negligible (views and vistas).
CDS7	The Great Northern Hotel	LEP	Local	○ Indirect impact: Negligible (views and vistas).
CDS8	Chatswood South Uniting Church and Cemetery	SHR, LEP	State	○ Indirect impact: Negligible (views and vistas).

¹ SHR: State Heritage Register; s.170: Listing under section 170 (of the Heritage Act 1977); LEP: local environment plan



KEY

- Chatswood to Sydenham
- Proposed construction site area
- 25 m buffer
- Proposed operational area at surface
- State Heritage Register item
- LEP Heritage item
- LEP Heritage Conservation Area

Indicative only, subject to design development



Figure 14-1 Chatswood dive site - impacts on heritage items and conservation areas

Archaeological remains

Table 14-4 identifies the type of archaeological remains that may be present, the potential for those archaeological remains to occur within the study area, their likely heritage significance and the potential for those remains to be impacted by the project.

Table 14-4 Chatswood dive site (northern) – impacts on archaeological remains

Potential archaeological remains	Potential for occurrence	Heritage significance	Preliminary archaeological impact assessment
Evidence of mid-19th century occupation of the study area	Low	Local	Minor to moderate impact on potential archaeological resources, dependent on the location and extent of the proposed excavation works.
Evidence of mid to late 19th century residential and commercial development	Low to moderate	Local	
Evidence of 20th century residential and commercial development	Moderate	Unlikely to be of local significance	

14.5.2 Artarmon substation

Heritage items

There are no listed heritage items in the Artarmon substation study area.

Archaeological remains

Table 14-5 identifies the type of archaeological remains that may be present, the potential for those archaeological remains to occur within the study area, their likely heritage significance and the potential for those remains to be impacted by the project.

Table 14-5 Artarmon substation – impacts on archaeological remains

Potential archaeological remains	Potential for occurrence	Heritage significance	Preliminary archaeological impact assessment
Evidence of early occupation of the study area	Nil to low	Local	Minor impact on potential archaeological resources, dependent on the location and extent of the proposed excavation works.
Evidence of mid-19th century development	Nil to low	Local	
Evidence of late 19th and early 20th century residential development	Low to moderate	Unlikely to be of local significance	

14.5.3 Crows Nest Station

Heritage items

The project would indirectly impact on one listed heritage item, as identified in Table 14-6 and shown in Figure 14-2.

Table 14-6 Crows Nest Station – impacts on heritage items

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
CN1	St Leonards Centre	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Negligible (views and vistas). Project elements would not compete visually with the heritage item Potential direct impact: Minor (vibration). The closest façade of this item would experience vibration above the 7.5mm/s screening level for cosmetic damage.
CN2	Higgins Buildings	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Negligible (views and vistas).

¹ LEP: local environment plan



KEY

- Chatswood to Sydenham
- Proposed construction site area
- 25 m buffer
- Proposed operational area at surface
- LEP Heritage item

Indicative only, subject to design development



Figure 14-2 Crows Nest Station – impacts on heritage items

Archaeological remains

Table 14-7 identifies the type of archaeological remains that may be present, the potential for those archaeological remains to occur within the study area, their likely heritage significance and the potential for those remains to be impacted by the project.

Table 14-7 Crows Nest Station – impacts on archaeological remains

Potential archaeological remains	Potential for occurrence	Heritage significance	Preliminary archaeological impact assessment
Evidence of early occupation of the study area	Nil to low	Local	Excavation of the cut-and-cover station would result in the complete removal of archaeological remains within the station box footprint. Therefore, works in this location would have a major impact on any potential archaeological resources.
Evidence of mid to late 19th century residential and commercial development	Low to moderate	Local	
Evidence of 20th century commercial or residential development	Moderate	Unlikely to be of local significance	

14.5.4 Victoria Cross Station

Heritage items and conservation areas

The project would impact, directly or indirectly, on a number of listed heritage items and heritage conservation areas, as identified in Table 14-8 and shown in Figure 14-3.

Table 14-8 Victoria Cross Station – impacts on heritage items and conservation areas

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
VC1	Restaurant (196 Miller Street)	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Neutral (views and vistas) Potential direct impact: Minor (vibration). The closest façade of this item would experience vibration above the 7.5mm/s screening level for cosmetic damage.
VC2	House (31 McLaren Street)	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Neutral (views and vistas) Potential direct impact: Minor (vibration). The closest façade of this item would experience vibration above the 7.5mm/s screening level for cosmetic damage.
VC3	Fairhaven (33 McLaren Street)	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Neutral (views and vistas) Potential direct impact: Minor (vibration). The closest façade of this item would experience vibration above the 7.5mm/s screening level for cosmetic damage.
VC4	O'Regan (192 Miller Street)	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Minor (views and vistas). Demolition of adjacent buildings would have a minor impact to the setting of the heritage item Potential direct impact: Minor (vibration). The closest façade of this item would experience vibration above the 7.5mm/s screening level for cosmetic damage.

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
VC5	Monte Sant' Angelo Group	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Negligible (views and vistas).
VC6	Shop at 187 Miller Street	LEP	Local	<ul style="list-style-type: none"> Direct physical impact: Major (complete demolition). The item would not retain its heritage significance and would no longer provide a representative example of its type.
VC7	MLC Building (105-153 Miller Street)	LEP	Local	<ul style="list-style-type: none"> Potential direct impact: Neutral (vibration). The closest façade of this item would not experience vibration above the 7.5mm/s screening level for cosmetic damage Potential direct impact: Minor (demolition of adjacent and adjoining structure potentially resulting in impacts to fabric of heritage item).
VC8	McLaren Street Conservation Area	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Minor (views and vistas). Demolition of existing buildings within this site would have a minor impact as views and vistas to the south are currently compromised by a modern building that does not contribute to the setting of the heritage item.
VC9	Rag and Famish Hotel (199 Miller Street)	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Minor (views and vistas). Demolition of existing buildings opposite this item and construction of the proposed station entrance would have a minor impact on the streetscape of this item Potential direct impact: Neutral (vibration). The closest façade of this item would not experience vibration above the 7.5mm/s screening level for cosmetic damage.
VC10	Commercial building (201 Miller Street)	LEP	Local	<ul style="list-style-type: none"> Potential direct impact: Neutral (vibration). The closest façade of this item would not experience vibration above the 7.5mm/s screening level for cosmetic damage.
VC11	North Sydney bus shelters	LEP	Local	<ul style="list-style-type: none"> Direct physical impact: Moderate (removal and re-location). Reinstatement of the item would retain its historic significance.

¹ LEP: local environment plan



KEY

- Chatswood to Sydenham
- Proposed construction site area
- LEP Heritage item
- LEP Heritage Conservation Area
- 25 m buffer
- Proposed operational area at surface

Indicative only, subject to design development



Figure 14-3 Victoria Cross Station - impacts on heritage items and conservation areas

Archaeological remains

Table 14-9 identifies the type of archaeological remains that may be present, the potential for those archaeological remains to occur within the study area, their likely heritage significance and the potential for those remains to be impacted by the project.

Table 14-9 Victoria Cross Station – impacts on archaeological remains

Potential archaeological remains	Potential for occurrence	Heritage significance	Preliminary archaeological impact assessment
Evidence of early occupation of the study area	Nil to low	Local	The extent of excavation within the Victoria Cross Station site varies from discrete areas of minor excavation through to two open shaft excavations. Therefore, works in this location are likely to have a minor to major impact on potential archaeological resources, dependent on the location and extent of excavation.
Evidence of mid-19th century residential and commercial development	Low to moderate	Local	
Evidence of late 19th century and early 20th century residential and commercial development	Moderate	May be of local significance	

14.5.5 Blues Point temporary site

Heritage items and conservation areas

The project would impact, directly or indirectly, on a number of listed heritage items and heritage conservation areas, as identified in Table 14-10 and shown in Figure 14-4.

Table 14-10 Blues Point temporary site – impacts on heritage items and conservation areas

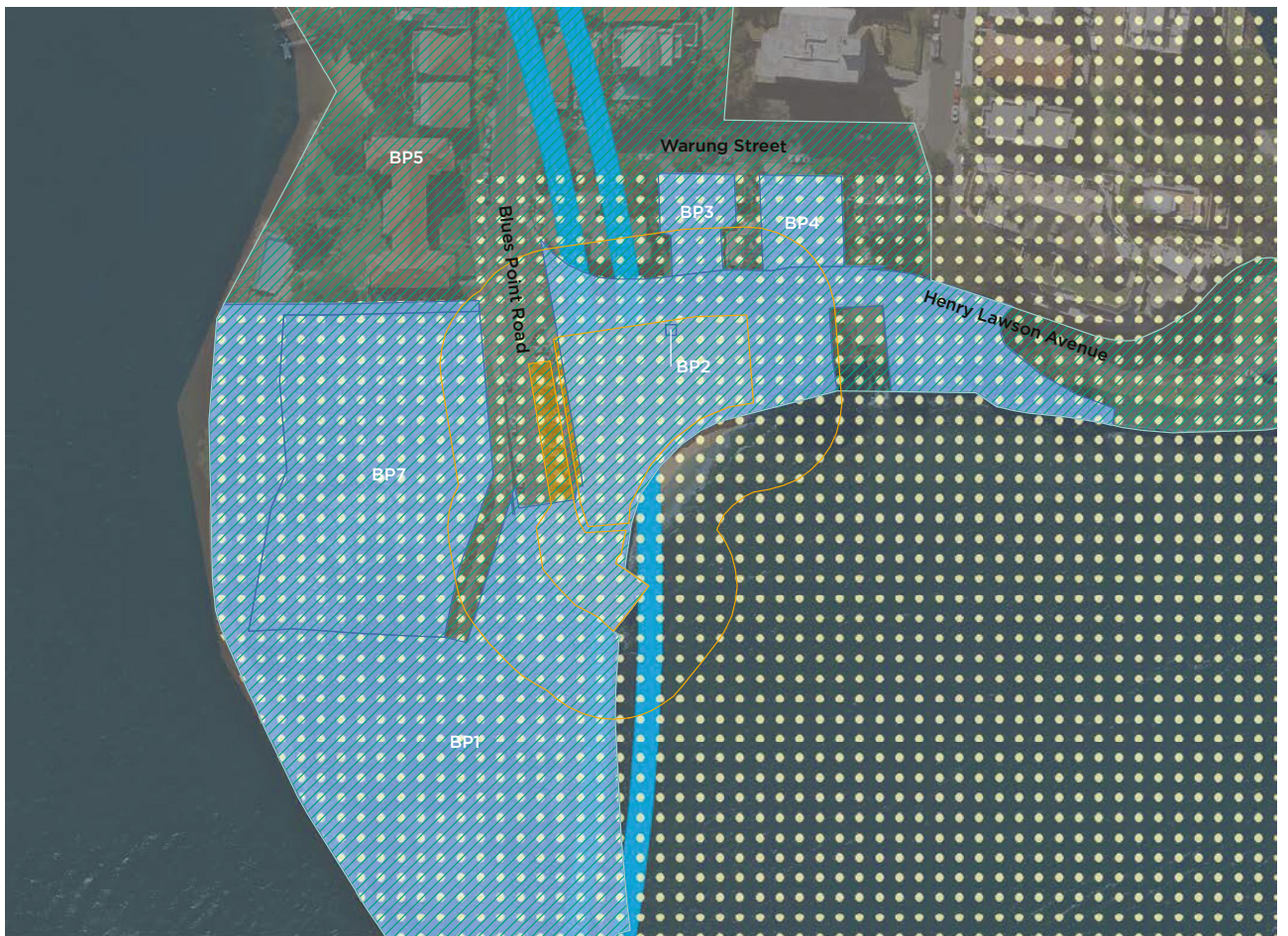
Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude ²
BP1	Blues Point Waterfront Group ³	LEP	Local	<ul style="list-style-type: none"> Direct physical impact: Minor to moderate (excavation of tunnel support shaft). Direct impacts as a result of the construction site would have direct minor to moderate impacts within the reserve. These impacts would be within the existing park, which would be reinstated Temporary indirect impact: Minor to moderate (views and vistas). The construction site would have a temporary minor to moderate visual impact on this highly regarded public reserve with important views to and from the harbour.
BP2	North Sydney bus shelters	LEP	Local	<ul style="list-style-type: none"> Direct physical impact: Moderate (removal and re-location). Reinstatement of the item would retain its historic interest significance.
BP3 and BP4	House (3 Warung Street) and House (5 Warung Street)	LEP	Local	<ul style="list-style-type: none"> Temporary indirect impact: Minor (views and vistas). The temporary construction site would have a minor impact on the setting of these items and their views across the harbour.

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude ²
BP5	McMahons Point South Heritage Conservation Area	LEP	Local	<ul style="list-style-type: none"> Direct physical impact: Minor to moderate (excavation of tunnel support shaft). Direct impacts as a result of the construction site would have direct minor to moderate impacts within the reserve. These impacts would be within the existing park, which would be reinstated Temporary indirect impact: Minor to moderate (views and vistas). The construction site would have a temporary minor to moderate visual impact on this area. The visual impact would be removed upon finalisation of the works and reinstatement of the site.
BP6	Sydney Opera House buffer zone	WHL	Outstanding universal value	<ul style="list-style-type: none"> Temporary indirect impact: Negligible (views and vistas).
BP7	Blues Point Tower	LEP	Local	<ul style="list-style-type: none"> Temporary indirect impact: Minor to moderate (views and vistas). The construction site would have a minor to moderate temporary impact to aesthetic significance of this item, including its relationship with the landscape.

¹ LEP: local environment plan; WHL: World Heritage List

² Heritage impact and magnitude described is temporary in nature based on this being a temporary (construction only) site

³ The Blues Point Waterfront Group listing includes all lands south of the cliff face that forms the northern boundary of Henry Lawson Drive, from the McMahons Point Ferry Wharf to the northernmost end of the public reserve on the western side of Blues Point, but additionally includes the public steps from the corner of East Crescent Street and Warung Street down to the McMahons Point Ferry Wharf. Most of the land, excepting the Blues Point Tower, is publicly owned. The Blues Point Waterfront Group listing also includes the Foreshore shelf; Former tram turning circle and McMahons Point ferry wharf; Ferry access steps; Vehicular ferry dock remains; Former Holmes residence and slipway; Stone retaining wall; Bollards; WW2 observation post and steps; Excavation and Steps and Bollards.



KEY








- | | | | |
|---|--------------------------------------|---|---|
|  | Chatswood to Sydenham |  | LEP Heritage item |
|  | Proposed construction site area |  | LEP Heritage Conservation Area |
|  | 25 m buffer |  | World heritage buffer zone (Sydney Opera House) <small>Indicative only, subject to design development</small> |
|  | Proposed operational area at surface | | |



Figure 14-4 Blues Point temporary site – impacts on heritage items and conservation areas

Archaeological remains

Table 14-11 identifies the type of archaeological remains that may be present, the potential for those archaeological remains to occur within the study area, their likely heritage significance and the potential for those remains to be impacted by the project.

Table 14-11 Blues Point temporary site – impacts on archaeological remains

Potential archaeological remains	Potential for occurrence	Heritage significance	Preliminary archaeological impact assessment
Evidence of pre-1850's development of the foreshore	Low	May be of State significance	The extent of excavation at the Blues Point temporary site varies from discrete areas of minor excavation through to a substantial open shaft excavation. Therefore, works in this location are likely to have a minor impact on potential archaeological resources where discrete areas of minor excavation are proposed; and are likely to have a major impact on potential archaeological resources where more substantial shaft excavation is proposed
Evidence of mid to late 19th century boat-building industry	Moderate	Local	
Evidence of early 20th century development	Moderate	Unlikely to be of local significance	

14.5.6 Barangaroo Station

Heritage items and conservation areas

The project would impact, directly or indirectly, on a number of listed heritage items and heritage conservation areas, as identified in Table 14-12 and shown in Figure 14-5.

Table 14-12 Barangaroo Station – impacts on heritage items and conservation areas

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
BN1	Warehouses and Dalgety's Bond Store Group (6-20 Munn Street)	SHR and s.170	State	<ul style="list-style-type: none"> Indirect impact: Minor (views and vistas). The introduction of new station infrastructure in this location would result in a minor impact to the setting of the heritage item. The heritage significance of the item would not be impacted Potential direct impact: Minor (vibration). The closest façade of this item would experience vibration above the 7.5mm/s screening level for cosmetic damage.
BN2	Shops and residences including interiors (1-7 Argyle Place)	SHR; s.170 and LEP	State	<ul style="list-style-type: none"> Indirect impact: Negligible (views and vistas).
BN3	Terrace Duplexes (2-36 High Street)	SHR; s.170; LEP	State	<ul style="list-style-type: none"> Indirect impact: Negligible (views and vistas).
BN4	Terrace Duplexes (38-72 High Street)	SHR; s.170; LEP	State	<ul style="list-style-type: none"> Indirect impact: Negligible (views and vistas).
BN5	Terrace Duplexes (74-80 High Street)	SHR; s.170; LEP	State	<ul style="list-style-type: none"> Indirect impact: Negligible (views and vistas).

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
BN6	Millers Point and Dawes Point Village Precinct	SHR	State	<ul style="list-style-type: none"> Direct impact: Minor (fabric). Excavation of the station would result in impacts to fabric within the Hickson Road corridor. These impacts to fabric would be minor in the context of the precinct as a whole. Indirect impact: Minor to moderate (views and vistas). The station entrances and services building would be located to the west of Hickson Road, outside the precinct. However ventilation risers and skylights fronting the Hickson Road wall would be within the precinct and would have a minor impact on the setting of the precinct.
BN7	Millers Point Conservation Area	SHR; s.170; LEP; RNE	State	<ul style="list-style-type: none"> Indirect impact: Negligible (views and vistas).
BN8	Shops and residences (6-8 Argyle Place)	SHR; s.170; LEP	State	<ul style="list-style-type: none"> Indirect impact: Negligible (views and vistas).
BN9	Bridges over Hickson Road	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Minor, temporary (views and vistas). The temporary impact would not affect the historical significance of the items, being the physical evidence of major state government redevelopment of the district in the years following the 1901 bubonic plague.
BN10	Palisade fence and High Steps	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Negligible (views and vistas).
BN11	Terrace Duplexes (3-9 High Street)	SHR; s.170; LEP	State	<ul style="list-style-type: none"> Indirect impact: Negligible (views and vistas).
BN12	Oswald Bond Store	SHR; s.170; NTR	State	<ul style="list-style-type: none"> Indirect impact: Negligible (views and vistas).
BN13	Lance Kindergarten including buildings and interiors, early remnant fencing and grounds (including trees).	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Negligible (views and vistas).
BN14	Walsh Bay Wharves Precinct (including Terrace and MSB Bond Store No.3)	SHR	State	<ul style="list-style-type: none"> Indirect impact: Neutral (views and vistas).

¹ SHR: State Heritage Register; s.170: Listing under section 170 (of the Heritage Act 1977); LEP: local environment plan; RNE: Register of the National Estate; NTR: National Trust Register

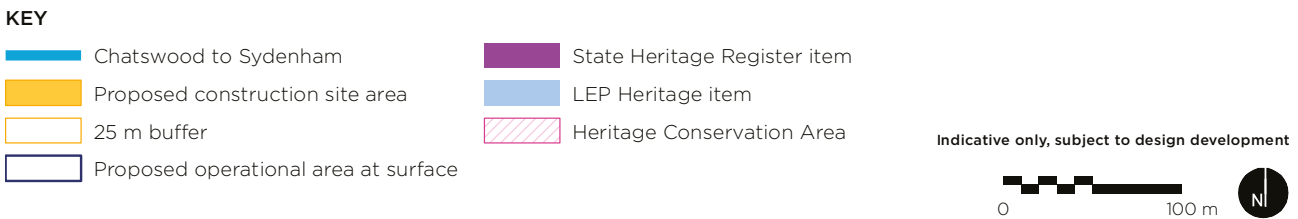


Figure 14-5 Barangaroo Station - impacts on heritage items and conservation areas

Archaeological remains

Table 14-13 identifies the type of archaeological remains that may be present, the potential for those archaeological remains to occur within the study area, their likely heritage significance and the potential for those remains to be impacted by the project.

Table 14-13 Barangaroo Station – impacts on archaeological remains

Potential archaeological remains	Potential for occurrence	Heritage significance	Preliminary archaeological impact assessment
Evidence of pre-1830s use of the foreshore	Low to moderate	State	The excavation of the cut-and-cover station would result in the complete removal of any archaeological remains within the station footprint. Therefore, works in this location would have a major impact on any archaeological resources present.
Evidence of pre-1850s resumption and development of the foreshore, wharves and / or industrial development	Moderate	Local – State	
Evidence of pre-1900 wharves and industrial development	Moderate to high	Local	
Evidence of early 20th century resumption and construction of Hickson Road	High	Local	

14.5.7 Martin Place Station

Options development and station design

As discussed in Chapter 4 (Project development and alternatives), Martin Place is intended to serve Sydney's financial district and the civic spaces and uses along Martin Place and Macquarie Street. Convenient interchange between the proposed metro station and the existing Martin Place Station is a key locational driver. Designing for Martin Place as a 'one station solution' that provides station-to-station interchange within the paid concourse areas of both stations places a geographical constraint on the station's location.

The specific location of the proposed Martin Place Station has also been influenced by a number of other key constraints. These include:

- Underground constraints such as basements and other services and infrastructure that influence the tunnel alignment and depth and therefore the location and orientation of the station itself
- Minimising impacts to heritage buildings and places, including direct and indirect impacts to the Commonwealth Bank building and the existing Martin Place Station, which are heritage items listed on the State Heritage Register
- Minimising impacts to, and optimising integration of the station with the public domain of Martin Place, a major civic spine that is a focus of the City of Sydney's *Martin Place Urban Design Study*.

The above constraints have resulted in the separation of the northbound and southbound tunnel alignments generally beneath Castlereagh and Pitt streets respectively; two station footprints (rather than one) that increase the offset distance from the Commonwealth Bank Building; and the provision of station entrances that avoid the direct use of Martin Place.

Heritage items

The project would impact, directly or indirectly, on a number of listed heritage items as identified in Table 14-14 and shown in Figure 14-6.

Table 14-14 Martin Place Station – impacts on heritage items

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
MP1	Former City Mutual Life Assurance building, including interior	SHR and LEP	State	<ul style="list-style-type: none"> Indirect impact: Minor (views and vistas). The heritage item has a direct visual connection with the proposed northern station entry, which would have a minor visual impact on the setting of the heritage item. The structures to be demolished within the Martin Place north construction site do not contribute to the heritage significance or setting of the item Potential direct impact: Neutral (vibration). The closest façade of this item would not experience vibration above the 7.5mm/s screening level for cosmetic damage.
MP2	Former Qantas House, including interior	SHR and LEP	State	<ul style="list-style-type: none"> Indirect impact: Minor (views and vistas). The heritage item has a direct visual connection with the proposed northern station entry, which would have a minor visual impact on the setting of the heritage item. The structures to be demolished within the Martin Place north construction site do not contribute to the heritage significance or setting of the item Potential direct impact: Neutral (vibration). The closest façade of this item would not experience vibration above the 7.5mm/s screening level for cosmetic damage.
MP3	Richard Johnson Square, including monument and plinth	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Minor (views and vistas). The heritage item has a direct visual connection with the proposed northern station entry, which would have a minor visual impact on the setting of the heritage item. The structures to be demolished within the Martin Place north construction site do not contribute to the heritage significance or setting of the item. There would be no impact to the heritage significance if the item.
MP4	Chifley Square	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Minor (views and vistas). The heritage item has a direct visual connection with the proposed northern station entry, which would have a minor visual impact on the setting of the heritage item. There would be no impact to the heritage significance if the item.

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
MP5	Flat building, including interior (7 Elizabeth Street)	LEP	Local	<ul style="list-style-type: none"> Direct physical impact: Major (complete demolition). The heritage values of the item would be lost and it would not retain its local heritage significance.
MP6	Bennelong Stormwater Channel No.29	s.170	Local	<ul style="list-style-type: none"> Potential direct impact: Minor (vibration). This item would experience vibration above the 7.5mm/s screening level for cosmetic damage.
MP7	Commonwealth Bank of Australia, including interior	SHR and LEP	State	<ul style="list-style-type: none"> Potential direct impact: Minor (vibration). The closest façade of this item would not experience vibration above the 7.5mm/s screening level for cosmetic damage as a result of mined construction of underground pedestrian connections, however demolition of existing adjacent and adjoining structures may result in vibration impacts above the screening level for cosmetic damage Potential direct impact: Minor (demolition of adjacent and adjoining structure potentially resulting in impacts to fabric of heritage item) Indirect impact: Moderate (views and vistas). The aesthetic significance of the item is primarily in relation to its design and materials. These elements of aesthetic value would not be impacted by the project. The buildings to be demolished to the north and south of the item do not contribute to the heritage significance or setting of the item. The demolition of buildings to the north and south of the item and the introduction of the southern station entry would have a moderate impact on setting of the heritage item. The social significance of the item would not be impacted as it would retain its use as a banking institution and public association with that industry. The rarity of the item would not be impacted by the project as the fabric of the item would not be impacted.

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
MP8	Former MLC building, including interior	SHR and LEP	State	<ul style="list-style-type: none"> ○ Potential direct impact: Neutral (vibration). The closest façade of this item would not experience vibration above the 7.5mm/s screening level for cosmetic damage ○ Indirect impact: Minor (views and vistas). The heritage item has a direct visual connection with the proposed southern station entry, which would have a minor visual impact on the setting of the heritage item. The structures to be demolished within the Martin Place south construction site do not contribute to the heritage significance or setting of the item.
MP9	Martin Place	LEP	Local	<ul style="list-style-type: none"> ○ Direct physical impact: Moderate (cut and cover excavation and removal of existing station entrances within Martin Place for proposed station concourse). The project would not affect the historic significance of the item ○ Indirect impact: Minor to moderate (views and vistas). The heritage item has a direct visual connection with the proposed southern station entry, which would have a minor to moderate visual impact on the setting of the heritage item. This would impact its aesthetic significance.
MP10	Martin Place Railway Station	SHR; s.170 and LEP	State	<ul style="list-style-type: none"> ○ Direct physical impact: Moderate (construction of direct connection to Martin Place Station from proposed metro station concourse). The project would result in moderate impact to the heritage item's aesthetic significance through removal of original fabric (including red ceramic tiling). There are other examples of red ceramic tiling throughout the item, which would not be impacted by the project. The historical, social significance, rarity and representativeness of the item would not be adversely impacted as the project would have limited impact to fabric and it would retain its use, public association with that use and its character.

¹ SHR: State Heritage Register; s.170: Listing under section 170 (of the Heritage Act 1977); LEP: local environment plan



KEY

- Chatswood to Sydenham
- Proposed construction site area
- 25 m buffer
- Proposed operational area at surface
- State Heritage Register item
- LEP Heritage item
- Section 170 heritage item

Indicative only, subject to design development



Figure 14-6 Martin Place Station - impacts on heritage items

Archaeological remains

Table 14-15 identifies the type of archaeological remains that may be present; the potential for those archaeological remains to occur within the study area, their likely heritage significance and the potential for those remains to be impacted by the project.

Table 14-15 Martin Place Station – impacts on archaeological remains

Potential archaeological remains	Potential for occurrence	Heritage significance	Preliminary archaeological impact assessment
Evidence of early establishment of the colony	Nil to low	Local – State	The excavation of the shafts for access and vertical transport and cut-and-cover of Martin Place would result in the complete removal of any archaeological remains within those areas. Therefore, works in these locations would have a major impact on any archaeological resources present.
Evidence of pre-1850s residential and commercial development	Moderate	Local – State	
Evidence of late 19th century residential and commercial development	Moderate	Local	
Evidence of early to mid 20th century commercial development	Moderate to high	May be of local significance	

14.5.8 Pitt Street Station

Heritage items

The project would impact, directly or indirectly, on a number of listed heritage items, as identified in Table 14-16 and shown in Figure 14-7.

Table 14-16 Pitt Street Station – impacts on heritage items

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
PS1	'National Building' incl. interior (248A-250 Pitt Street)	LEP	Local	<ul style="list-style-type: none"> ○ Indirect impact: Minor (views and vistas). The heritage item has a visual connection with the proposed northern station entry. The demolition of adjacent buildings for the Pitt Street north construction site would impact the setting of the heritage item and the introduction of a station entry adjacent to the item would have a minor visual impact. The project would not impact on the historic or aesthetic significance of the item ○ Potential direct impact: Minor (vibration). The closest façade of this item would experience vibration above the 7.5mm/s screening level for cosmetic damage and demolition of existing adjacent and adjoining structures may also result in vibration impacts above the screening level for cosmetic damage ○ Potential direct impact: Minor (demolition of adjacent and adjoining structures potentially resulting in impacts to fabric of heritage item).

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
PS2	Masonic Club (169-173 Castlereagh Street)	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Minor to moderate (views and vistas). The demolition of adjacent buildings for the Pitt Street north construction site would impact the setting of the heritage item and the introduction of a station entry and services infrastructure adjacent to the item would have a minor to moderate visual impact. The project would not impact on the social or historic significance of the item Potential direct impact: Minor (vibration). Demolition of existing adjacent and adjoining structures may result in vibration impacts above the screening level for cosmetic damage Potential direct impact: Minor (demolition of adjacent and adjoining structure potentially resulting in impacts to fabric of heritage item).
PS3	Great Synagogue (166 Castlereagh Street)	SHR	State	<ul style="list-style-type: none"> Indirect impact: Negligible (views and vistas) Potential direct impact: Neutral (vibration). The closest façade of this item would not experience vibration above the 7.5mm/s screening level for cosmetic damage.
PS4	Former Australian Consolidated Press façade (189-197 Elizabeth Street)	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Neutral (views and vistas) Potential direct impact: Neutral (vibration). The closest façade of this item would not experience vibration above the 7.5mm/s screening level for cosmetic damage.
PS5	Criterion Hotel	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Minor to moderate (views and vistas). The demolition of buildings for the Pitt Street north construction site would impact the setting of the heritage item through alteration of the existing streetscape. The introduction of a station entry opposite the item would have a minor to moderate visual impact. The project would not impact on the social or historic significance of the item Potential direct impact: Neutral (vibration). The closest façade of this item would not experience vibration above the 7.5mm/s screening level for cosmetic damage.

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
PS6	Pilgrim House including interiors (262-264 Pitt Street)	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Negligible (views and vistas) Potential direct impact: Neutral (vibration). The closest façade of this item would not experience vibration above the 7.5mm/s screening level for cosmetic damage.
PS7	Former "CENEF House" including interiors (201 Castlereagh Street)	LEP	Local	<ul style="list-style-type: none"> Potential direct impact: Neutral (vibration). These items would not experience vibration above the 7.5mm/s screening level for cosmetic damage.
PS8	St George's Church including interior and forecourt (201A Castlereagh Street)	LEP	Local	
PS9	"Porter House" including interior (203 Castlereagh Street)	LEP	Local	
PS10	Pitt Street Uniting Church (264 Pitt Street)	SHR	State	
PS11	Lincoln Building including interior (280-282 Pitt Street)	LEP	Local	
PS12	Former YMCA building	LEP	Local	
PS13	Former Speedwell House including interiors (284-292 Pitt Street)	LEP	Local	

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
PS14	Edinburgh Castle Hotel (294–294B Pitt Street)	LEP	Local	<ul style="list-style-type: none"> ○ Indirect impact: Minor to moderate (views and vistas). The demolition of adjacent buildings for the Pitt Street south construction site would impact the setting of the heritage item and the introduction of a station entry and services infrastructure adjacent to the item would have a minor to moderate visual impact. The project would not impact on the social or historic significance of the item ○ Potential direct impact: Minor (vibration). The closest façade of this item would experience vibration above the 7.5mm/s screening level for cosmetic damage and demolition of existing adjacent and adjoining structures may also result in vibration above the screening level ○ Potential direct impact: Minor (demolition of adjacent and adjoining structures potentially resulting in impacts to fabric of heritage item).
PS15	Metropolitan Fire Brigade building including interior (211–217 Castlereagh Street)	LEP	Local	<ul style="list-style-type: none"> ○ Potential direct impact: Minor (vibration). The closest façade of this item would experience vibration above the 7.5mm/s screening level for cosmetic damage, and demolition of existing adjacent and adjoining structures may result in vibration above the screening level ○ Potential direct impact: Minor (demolition of adjacent and adjoining structures potentially resulting in impacts to fabric of heritage item). There would be no impact to the historical and aesthetic significance of the item ○ Indirect impact: Neutral (views and vistas).
PS16	Former Sydney Water building (339–341 Pitt Street)	SHR	State	<ul style="list-style-type: none"> ○ Indirect impact: Moderate to major (views and vistas). The heritage item has a direct visual connection with buildings currently on the Pitt Street south construction site. The demolition of these buildings would considerably alter the setting of the heritage item through alteration of the existing streetscape. The introduction of a station entry opposite the item would have a minor to moderate visual impact. The historical, social significance, rarity and representativeness of the item would not be adversely impacted as the project.

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
PS17	Bennelong Stormwater Channel No. 29	s.170	Local	<ul style="list-style-type: none"> Potential direct impact: Minor (vibration). This item would experience vibration above the 7.5mm/s screening level for cosmetic damage.

¹ SHR: State Heritage Register; s.170: Listing under section 170 (of the Heritage Act 1977); LEP: local environment plan



KEY

- Chatswood to Sydenham
- Proposed construction site area
- 25 m buffer
- State Heritage Register item
- LEP Heritage item
- Section 170 heritage item
- Proposed operational area at surface

Indicative only, subject to design development



Figure 14-7 Pitt Street Station - impacts on heritage items

Archaeological remains

Table 14-17 identifies the type of archaeological remains that may be present; the potential for those archaeological remains to occur within the study area, their likely heritage significance and the potential for those remains to be impacted by the project.

Table 14-17 Pitt Street Station – impacts on archaeological remains

Potential archaeological remains	Potential for occurrence	Heritage significance	Preliminary archaeological impact assessment
Evidence of early establishment of the colony	Nil to low	Local – State	The excavation of the shafts for access for platform construction, vertical transport and paid and unpaid concourse areas would result in the complete removal of any archaeological remains within those areas. Therefore, works in this location would have a major impact on any archaeological resources present.
Evidence of pre-1850s residential and commercial development	Moderate	Local – State	
Evidence of late 19th century residential and commercial development	Moderate	Local	
Evidence of early to mid 20th century commercial development	Moderate to high	May be of local significance	

14.5.9 Central Station

Options development and station design

Central Station is the busiest station in the Sydney transport network, providing key interchange for suburban and intercity rail services, light rail, bus, taxi and intercity coach services. Central Station has a large catchment comprising education, commercial and residential land uses. Having Sydney Metro services at Central Station reinforces the role of Central Station as the primary transport interchange for Sydney and also recognises the potential for the area around Central to be the civic, economic and community focus of the southern Sydney CBD.

Sydney Metro would build on the significant transport investments being made at Central, including the CBD and South East Light Rail project. The new metro platforms would support and enhance Central Station's historical role as the major interchange in the Sydney transport network and further build on the interchange functionality of the station.

Chapter 4 (Project development and alternatives) provides further discussion on a number of locations investigated for the provision of Sydney Metro platforms at Central Station. The introduction of underground metro platforms at Central Station would have material impacts to the station irrespective of the option chosen. Decision-making on the placement of the underground metro platforms seeks to balance the substantial benefits with the recognised constraints and challenges associated with its introduction.

Chapter 4 (Project development and alternatives) also discusses how specific elements of the design, such as the station services building, Sydney Yard Access Bridge and temporary pedestrian footbridge have been subject to ongoing design development to optimise the performance of the station while minimising impacts, including heritage impacts, to the existing station and adjacent heritage items. In summary:

- On balance, metro platforms below existing platforms 13 to 15 would have similar or reduced heritage impacts compared with other metro station locations considered
- The design has minimised the extent of services and other infrastructure in the northern part of the station to reduce the footprint within the existing Central Station northern concourse and below the Bradfield Building (former Lost Property Office)
- The design of the station services building has also been refined to minimise the bulk and scale of above ground infrastructure that in turn, reduces visual impacts and changes within the setting of heritage items
- A new access for Sydney Yard is required due to the removal of the existing access via Eddy Avenue. The Sydney Yard Access Bridge is the preferred solution for this new access.

The design of metro infrastructure at Central Station, including the Sydney Yard Access Bridge, is ongoing and would minimise direct impacts as well as impacts to the setting of adjoining and nearby heritage items. It would be developed in consultation with Sydney Trains and the Heritage Council of NSW and would be subject to review by the Sydney Metro Design Review Panel, including periodic independent review by an appropriately qualified and experienced heritage architect.

Heritage items

The project would impact, directly or indirectly, on a number of listed heritage items, as identified in Table 14-18 and shown in Figure 14-8.

Chapter 6 (Project description – construction) and Chapter 7 (Project description – construction) include figures that further illustrate the proposed scope of work at Central Station. Photomontages illustrating the project from key viewpoints are provided in Chapter 16 (Landscape character and visual amenity).

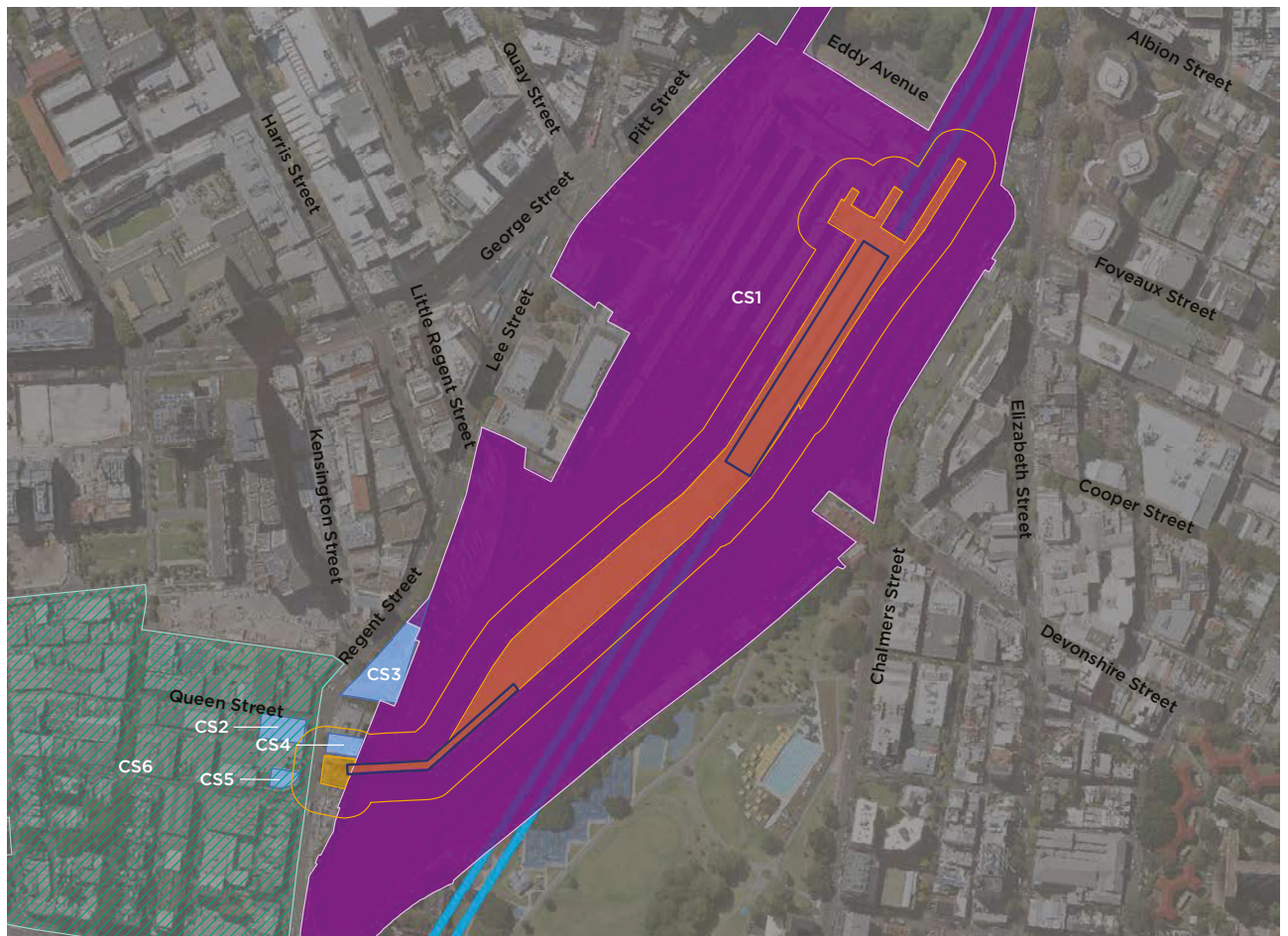
Table 14-18 Central Station – impacts on heritage items

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
CS1	Sydney Terminal and Central Railway Stations Group	SHR; s.170 and DCP	State	<ul style="list-style-type: none"> <li data-bbox="991 495 1505 1429">● Direct physical impact: Moderate to major. The project would impact on platforms, including the removal of platforms 13 to 15. This would result in impacts to elements of heritage significance including overhead wiring structures, signalling, steel and timber furniture, awning and trusswork, goods lifts, signage, and hardwood buffers at the termination of the platforms. The station services building at the southern end of the station would extend into Sydney Yard, requiring removal of the Rolling Stock Officers Building, the Cleaners Amenities Building, and the Rolling Stock Officers Garden (these impacts would result in a total loss of significance of these elements). There would also be impacts to underground pedestrian connections (including the Devonshire Street Tunnel) that would result in the loss of original fabric and a change to the historical alignment and pedestrian flow. A temporary (up to 10 years) pedestrian bridge would span Platforms 4 to 23 and would require removal and modification of sections of heritage significant canopy on each of those platforms as well as direct impacts to each platform for construction of bridge piers. A portion of the Sydney Yard would be used as a construction site and a services ring would be constructed to house relocated utilities <li data-bbox="991 1440 1505 1760">● Indirect impact: Moderate to major (views and vistas). Impacts include temporary and permanent visual impacts as a result of the services building, through the establishment of the Sydney Yard construction site; changed access arrangements from Eddy Avenue and the introduction of the Sydney Yard Access Bridge. The temporary pedestrian bridge would also have a temporary visual impact on the heritage item <li data-bbox="991 1771 1505 2056">● Potential direct impact: Minor (vibration). The main central station building and the Bradfield Building (former Lost Property Office) would not experience vibration above the 7.5mm/s screening level for cosmetic damage. The closest adjacent, but not directly affected, intercity and suburban platforms would experience vibration above the 7.5mm/s screening level for cosmetic damage.

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
CS2	Terrace Group including interior (99-105 Regent Street)	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Moderate (views and vistas). This heritage group has a direct visual connection with buildings currently on the Sydney Yard Access Bridge site. The demolition of the buildings on the Sydney Yard Access Bridge site would alter the setting of this heritage item through alteration of the existing streetscape.
CS3	Former Mortuary Railway Station including interior, ground, fence and railway platforms	SHR; s.170 and LEP	State	<ul style="list-style-type: none"> Indirect impact: Moderate to major (views and vistas). The Sydney Yard Access Bridge would substantially detract from the setting of the heritage item. It would impact on views and vistas: towards Mortuary Station from Regent Street; from within Sydney Terminal (including views from passing trains); and from Mortuary Station into Sydney Yard. Although the Sydney Yard is visually cluttered with overhead wiring, signage, signalling and other infrastructure, the construction of the bridge would constitute a major intrusive element.
CS4	Co-Masonic Temple including interior (54 Regent Street)	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Moderate to major (views and vistas). This heritage item is adjacent to and has a direct visual connection with buildings currently on the Sydney Yard Access Bridge site. The demolition of the buildings on the Sydney Yard Access Bridge site and the introduction of the Sydney Yard Access Bridge has the potential to detract from the setting of the heritage item and would impact on views and vistas towards the Co-Masonic Temple from Regent Street Potential direct impact: Neutral (vibration). The closest façade of this item would not experience vibration levels above the 7.5mm/s screening level for cosmetic damage.
CS5	Former Crown Hotel including interior	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Moderate (views and vistas). This heritage item has a direct visual connection with buildings currently on the Sydney Yard Access Bridge site. The demolition of the buildings on the Sydney Yard Access Bridge site would alter the setting of this heritage item through alteration of the existing streetscape.

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
CS6	Chippendale Conservation Area	LEP	Local	<ul style="list-style-type: none"> Indirect impact: Moderate (views and vistas). This conservation area has a direct visual connection with buildings currently on the Sydney Yard Access Bridge site. The demolition of these buildings and the introduction of the Sydney Yard Access Bridge would alter the setting of the heritage item through alteration of the existing streetscape.

¹ SHR: State Heritage Register; s.170: Listing under section 170 (of the Heritage Act 1977); LEP: local environment plan; DCP: development control plan Railway Square/Central Station Special Character Area



KEY

- Chatswood to Sydenham
- Proposed construction site area
- 25 m buffer
- Proposed operational area at surface
- State Heritage Register item
- LEP Heritage item
- LEP Heritage Conservation Area

Indicative only, subject to design development

Figure 14-8 Central Station – impacts on heritage items

Archaeological remains

Table 14-19 identifies the type of archaeological remains that may be present; the potential for those archaeological remains to occur within the study area, their likely heritage significance and the potential for those remains to be impacted by the project.

Table 14-19 Central Station – impacts on archaeological remains

Potential archaeological remains	Potential for occurrence	Heritage significance	Preliminary archaeological impact assessment
Evidence of earlier phases of Central Station development within the Sydney Terminal and Central Railway Stations group area	Moderate	Local – State	Excavation works have moderate potential to encounter archaeological remains associated with earlier configurations of Central Station.
Whole or fragmentary burials related to the former cemetery	Low	Local – State	It is possible that some remains were not reinterred during removal of the cemetery. If human remains survive they would be managed appropriately in line with an Exhumation Policy developed for the project.

14.5.10 Waterloo Station

Heritage items

The project would impact, directly or indirectly, on a number of listed heritage items, as identified in Table 14-20 and shown in Figure 14-9.

Table 14-20 Waterloo Station – impacts on heritage items

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
WS1	Congregational church including interior (103-105 Botany Road)	LEP	Local	<ul style="list-style-type: none"> ○ Potential direct impact: Neutral (vibration). The closest façade of this item would not experience vibration above the 7.5mm/s screening level for cosmetic damage ○ Indirect impact: Minor (views and vistas). Waterloo Station would be located to the rear of the item and the demolition of existing buildings and introduction of the station entry would have a minor impact on the setting of the heritage item. The architectural significance and social significance of the item would not be affected.
WS2	Former CBC Bank including interior (60 Botany Road)	LEP	Local	<ul style="list-style-type: none"> ○ Indirect impact: Minor (views and vistas). The demolition of existing buildings and introduction of the station entry would alter the streetscape and have a minor impact on the setting of the heritage item.
WS3	Cauliflower Hotel including interior (123 Botany Road)	LEP	Local	<ul style="list-style-type: none"> ○ Indirect impact: Minor (views and vistas). The demolition of existing buildings and introduction of the station entry would alter the streetscape and have a minor impact on the setting of the heritage item.

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
WS4	Alignment Pin, Waterloo (South East corner of Wellington Street and Botany Road)	s.170	Local	○ Neutral (no impact).

¹ LEP: local environment plan; s.170: Listing under section 170 (of the Heritage Act 1977)



KEY

- Chatswood to Sydenham
- Proposed construction site area
- 25 m buffer
- LEP Heritage item
- Section 170 heritage item
- Proposed operational area at surface

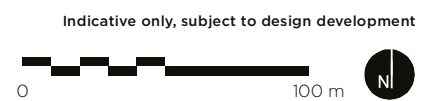


Figure 14-9 Waterloo Station – impacts on heritage items

Archaeological remains

Table 14-21 identifies the type of archaeological remains that may be present; the potential for those archaeological remains to occur within the study area, their likely heritage significance and the potential for those remains to be impacted by the project.

Table 14-21 Waterloo Station – impacts on archaeological remains

Potential archaeological remains	Potential for occurrence	Heritage significance	Preliminary archaeological impact assessment
Evidence of Hutchinson's development of the study area	Nil to low	Local	The excavation of the station would result in the complete removal of any archaeological remains within those areas. Therefore, works in this location would have a major impact on any archaeological resources present.
Evidence of pre-1850s residential and commercial development	Low to moderate	Local	
Evidence of late 19th and early 20th century residential and commercial development	Moderate	May be of local significance	

14.5.11 Marrickville dive site (southern)

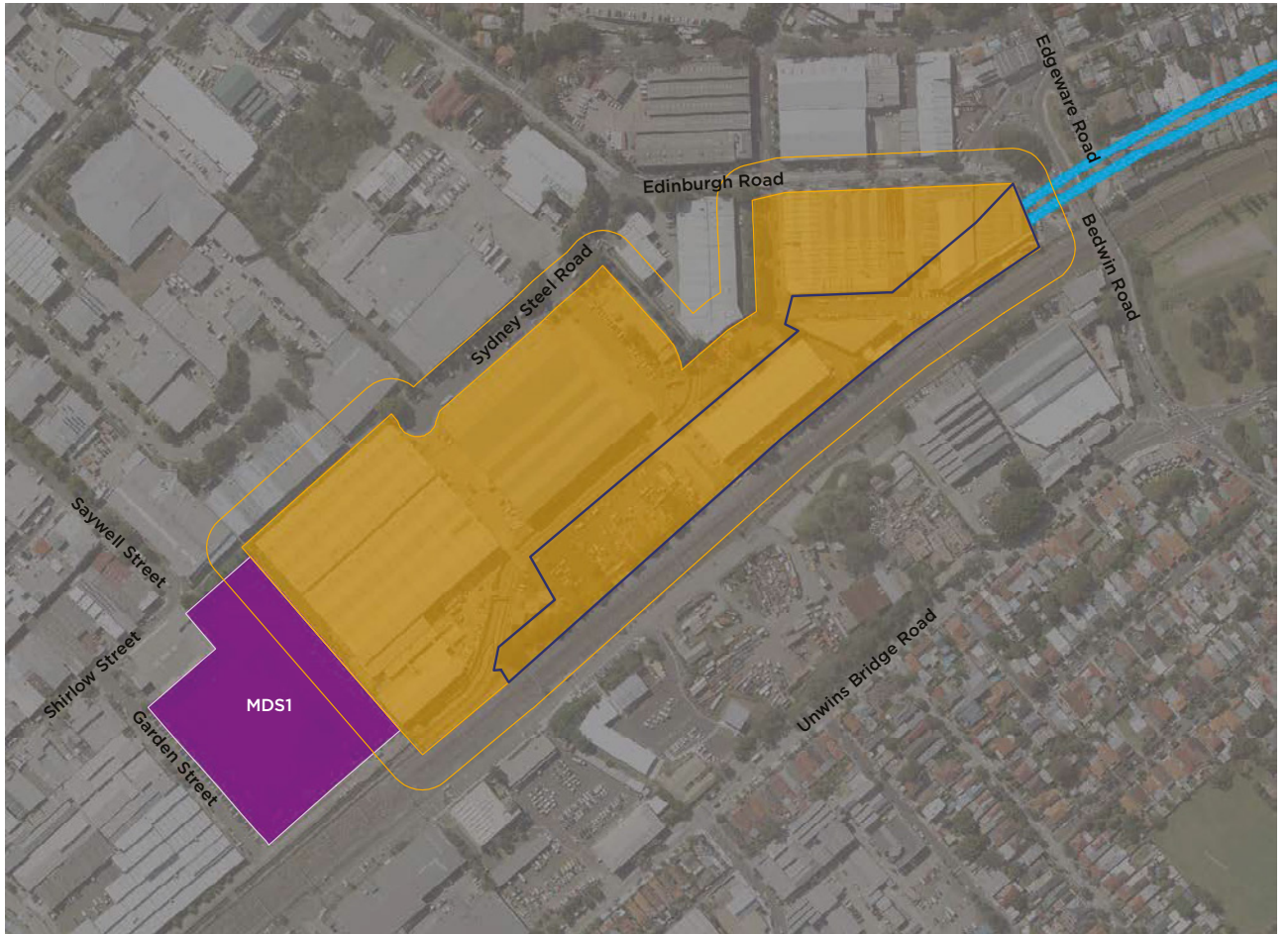
Heritage items

The project would impact indirectly on one listed heritage item (see Table 14-22 and Figure 14-10).

Table 14-22 Marrickville dive site (southern) – impacts on heritage items

Ref	Description	Listing ¹	Heritage significance	Heritage impact and magnitude
MDS1	Sydenham Pit and Drainage Pumping Station 1	SHR, s.170 and LEP	State	<ul style="list-style-type: none"> Indirect impact: Minor (views and vistas). The establishment of the construction site in the adjacent property would result in temporary minor visual impacts to the setting of the item. The southern services facility would be about 50 metres to the north-east of the heritage item and would have negligible long term visual impacts to the setting of the item Potential direct impact: Neutral (vibration). This item would not experience vibration above the 7.5mm/s screening level for cosmetic damage.

¹ SHR: State Heritage Register; LEP: local environment plan; s.170: Listing under section 170 (of the Heritage Act 1977)



KEY

- Chatswood to Sydenham
- Proposed construction site area
- 25 m buffer
- Proposed operational area at surface
- State Heritage Register item

Indicative only, subject to design development



Figure 14-10 Marrickville dive site (southern) – impacts on heritage items

Archaeological remains

Table 14-23 identifies the type of archaeological remains that may be present; the potential for those archaeological remains to occur within the study area, their likely heritage significance and the potential for those remains to be impacted by the project.

Table 14-23 Marrickville dive site (southern) – impacts on archaeological remains

Potential archaeological remains	Potential for occurrence	Heritage significance	Preliminary archaeological impact assessment
Evidence of early development of study area (Moore's Grant)	Nil to low	Local	Works with the potential to impact archaeological resources at this site are likely to be limited to discrete locations including the dive structure itself. Works in this location are likely to have a minor impact on potential archaeological resources, dependent on the location and extent of the proposed excavation works.
Evidence of brickmaking	Low to moderate	Unlikely to be of local significance	

14.5.12 Power supply routes

The majority of the power supply routes would be constructed by trenching within the road reserve. Where major roads are crossed by the route (such as Mowbray Road for the Chatswood dive site power supply), alternative construction methods would be used such as under boring in order to avoid impacts on the road network. Alternative construction methods such as under boring may also be used to avoid other constraints such as services or areas of environmental sensitivity.

Trenches are expected to be around one metre wide and 1.5 to two metres deep. It is therefore likely any subsurface archaeological remains existing to this depth below the road treatment and pavement would be impacted. Where previous disturbance, such as utilities installation, has occurred the archaeological potential would be low.

The following review includes only those listed items that may be impacted by the power supply route work. It is assumed that the power supply routes would be located within the road corridor.

Assessments of archaeological significance provided in Table 14-24 are preliminary and are based on assessments of station sites prepared for this project and the results of other investigations. More detailed consideration of impacts would be included in the relevant archaeological research designs for the project.

Table 14-24 Power supply routes – potential impacts on heritage items and archaeological remains

Description	Listing ¹	Heritage significance	Heritage impact and magnitude
Chatswood			
Chatswood zone substation No.80 (Ausgrid)	Willoughby LEP Ausgrid s170	Local	<ul style="list-style-type: none"> Impacts to fabric and visual impacts are expected to be minor.
Archaeological resources	N/A	Potentially Local	<ul style="list-style-type: none"> Potential for locally significant archaeology in undisturbed sections of the road corridor.

Description	Listing ¹	Heritage significance	Heritage impact and magnitude
Crows Nest and North Sydney			
Archaeological resources	N/A	Potentially Local. Evidence of early occupation and development of the locality.	<ul style="list-style-type: none"> ○ Potential for locally significant archaeology in undisturbed sections of the road corridor.
Millers Point to Darling Harbour			
Millers Point and Dawes Point Village Precinct	SHR	State	<ul style="list-style-type: none"> ○ Within conservation area. Impacts to fabric and visual impacts are likely to be temporary and minor.
Millers Point Conservation Area	SHR; Dept of Housing s.170; Sydney LEP LEP; RNE	State	<ul style="list-style-type: none"> ○ Within conservation area. Impacts to fabric and visual impacts are likely to be temporary and minor.
Archaeological resources	N/A	Potentially Local to State. Potential for evidence of former gas works, reclamation, Girard's flour Mill, former wharfs and industry and 1860s residential.	<ul style="list-style-type: none"> ○ Potential for locally significant and State significant archaeology in undisturbed sections of the road corridor.
King Street Wharf to Martin Place			
Tank Stream including tanks and tunnels	SHR Sydney Water s170	State	<ul style="list-style-type: none"> ○ The power supply route would cross the Tank Stream on Margaret Street near its intersection with George Street. The Tank Stream has a curtilage of three meters from the structure. Trenching may be up to two meters deep and therefore may encroach into the curtilage of the item. The Tank Stream Conservation Management Plan states that in this area the Tank Stream is generally around three to five meters below the current ground surface. Impacts within the curtilage of the Tank Stream would be avoided.
Richard Johnson Square including monument and plinth	Sydney LEP	Local	<ul style="list-style-type: none"> ○ Impacts to fabric and visual impacts are likely to be temporary and minor.
Bennelong Stormwater Channel	Sydney Water s170	Local	<ul style="list-style-type: none"> ○ The feeder line would cross the alignment of the Bennelong Stormwater Channel at Hunter, Bligh, Elizabeth, Philip and Macquarie Streets. Impacts within the curtilage of this item would be avoided.

Description	Listing ¹	Heritage significance	Heritage impact and magnitude
Archaeological resources	N/A	Potentially Local to State. Potential evidence of early occupation and development of Sydney including drains, early road surfaces.	<ul style="list-style-type: none"> ○ Potential for locally significant and State significant archaeology in undisturbed sections of the road corridor.
Pitt Street to Surry Hills			
Archaeological resources	N/A	Potentially Local to State. Potential evidence of early occupation and development of Sydney including drains, early road surfaces.	<ul style="list-style-type: none"> ○ Potential for locally significant and State significant archaeology in undisturbed sections of the road corridor.
Pymont to Pitt Street			
Former Pymont Power Station Administrative building (42 Pymont Street) including interiors	City of Sydney LEP	Local	<ul style="list-style-type: none"> ○ Impacts to fabric and visual impacts are expected to be minor.
Archaeological resources	N/A	Potentially Local to State. Potential evidence of early occupation and development of Sydney including drains, early road surfaces.	<ul style="list-style-type: none"> ○ Potential for locally significant and State significant archaeology in undisturbed sections of the road corridor ○ Sections of the feeder route around Pymont are reclaimed land and would have low archaeological potential ○ Market Street alignment has not changed since the 1810s so there is some potential for intact early remains.

¹ SHR: State Heritage Register; RNE: Register of the National Estate; LEP: local environmental plan; s170: Listing under section 170 (of the Heritage Act 1977)

14.6 Mitigation measures

Information on how the project design has been developed to avoid or minimise likely adverse impacts on heritage items is provided in Chapter 6 (Project description – operation) and Chapter 7 (Project description – construction). The following mitigation measures seek to further minimise heritage impacts.

14.6.1 Site specific mitigation measures

Mitigation measures identified in other chapters of the Environmental Impact Statement that are relevant to the management of potential heritage impacts include:

- Chapter 10 (Construction noise and vibration) with respect to management of potential vibration impacts
- Chapter 16 (Landscape character and visual amenity) with respect to management of potential visual impacts during construction and operation.

The mitigation measures that would be implemented to address potential impacts on non-Aboriginal heritage sites and areas of archaeological potential are listed in Table 14-25. Section 14.6.2 discusses, in general terms, the project approach to archaeological research design, test excavation, test and salvage excavation and archaeological monitoring.

Table 14-25 Mitigation measures – Non-Aboriginal heritage

Ref	Mitigation measure	Applicable location(s) ¹
NAH1	<p>Archival recording and reporting of the following heritage items would be carried out in accordance with the NSW Heritage Office's <i>How to Prepare Archival Records of Heritage Items</i> (1998), and <i>Photographic Recording of Heritage Items Using Film or Digital Capture</i> (2006):</p> <ul style="list-style-type: none"> ○ The internal heritage fabric and any non-original elements removed from within the curtilage of Mowbray House, Chatswood ○ The interior, exterior and setting of the shop at 187 Miller Street, North Sydney ○ The fabric and setting of the North Sydney bus shelters requiring removal and temporary relocation at Victoria Cross Station and Blues Point temporary site ○ Any component of the Blues Point Waterfront Group and the McMahons Point South heritage conservation area to be directly affected or altered, including vegetation and significant landscape features ○ Hickson Road wall in the vicinity of proposed ventilation risers and skylights for Barangaroo Station ○ The interior, exterior and setting of the 'Flat Building' at 7 Elizabeth Street, Sydney ○ Martin Place, between Elizabeth and Castlereagh streets, Sydney ○ The heritage fabric of areas of the existing Martin Place Station affected by the project ○ The Rolling Stock Officers Garden, Rolling Stock Officers Building and Cleaners Amenities Building in Sydney Yard and any other component of the Sydney Terminal and Central Railway Stations group to be removed or altered. 	CDS, VC, BP, MP, CS
NAH2	<p>An archaeological research designs would be prepared and implemented to identify the need for archaeological testing or monitoring. Archaeological mitigation measures recommended in the archaeological research design would be carried out in accordance with Heritage Council guidelines, and where identified in the archaeological research design, would be supervised by a suitably qualified Excavation Director with experience in managing State significant archaeology.</p>	CDS, CN, VC, BP, BN, MP, PS, CS, WS, PSR

Ref	Mitigation measure	Applicable location(s) ¹
NAH3	An <i>Exhumation Policy and Guideline</i> would be prepared and implemented. It would be developed in accordance with the <i>Guidelines for Management of Human Skeletal Remains</i> (NSW Heritage Office, 1998b).	All except metro rail tunnels.
NAH4	The method for the demolition of existing buildings and / or structures at Chatswood dive site, Victoria Cross Station, Martin Place Station, Pitt Street Station, Central Station and Waterloo Station would be developed to minimise direct and indirect impacts to adjacent and / or adjoining heritage items.	CDS, VC, MP, PS, CS, WS
NAH5	Prior to total or partial demolition of heritage items at Victoria Cross and Martin Place stations, heritage fabric for salvage would be identified and reuse opportunities for salvaged fabric considered. This would include salvage and reuse of heritage tiles to be impacted at Martin Place Station.	VC, MP
NAH6	An appropriately qualified and experienced heritage architect would form part of the Sydney Metro Design Review Panel and would provide independent review periodically throughout detailed design.	All
NAH7	The project design would be sympathetic to heritage items and, where reasonable and feasible, minimise impacts to the setting of heritage items. The detailed design for Martin Place Station and Central Station would be developed with input from a heritage architect.	STW, CDS, CN, VC, BN, MP, PS, CS, WS, MDS
NAH8	Appropriate heritage interpretation would be incorporated into the design for the project in accordance with the <i>NSW Heritage Manual</i> , the NSW Heritage Office's <i>Interpreting Heritage Places and Items: Guidelines</i> (August 2005), and the NSW Heritage Council's <i>Heritage Interpretation Policy</i> .	CDS, CN, VC, BP, BN, MP, PS, WS
NAH9	A Central Station heritage interpretation plan would be developed and implemented. It would be consistent with the <i>Central Station Conservation Management Plan</i> (Rappoport and Government Architects Office, 2013) and in accordance with the guidelines identified in NAH8.	CS
NAH10	The design of the Sydney Yard Access Bridge would be sympathetic to surrounding heritage items and minimise impacts to sight lines, views and setting of surrounding heritage items, including to Mortuary Station and the Sydney Terminal and Central Railway Stations group. As a minimum the design would: <ul style="list-style-type: none"> ● Incorporate materials and finishes sympathetic to the heritage context of the railway station ● Minimise height and bulk of the structure. 	CS
NAH11	Except for heritage significant elements affected by the project, direct impact on other heritage significant elements forming part of the following items would be avoided: <ul style="list-style-type: none"> ● The Blues Point Waterfront Group (including the former tram turning circle, stone retaining wall, bollards and steps) ● The Millers Point and Dawes Point Village Precinct ● The existing Martin Place Station ● Sydney Terminal and Central Railway Stations group ● Sydney Yard (including the Shunters Hut and Prince Alfred Sewer). 	BP, BN, MP, CS
NAH12	Power supply works would be designed and constructed to avoid impacts to the Tank Stream and Bennelong Stormwater Channel.	PSR

Ref	Mitigation measure	Applicable location(s) ¹
NAH13	The design and detailed construction planning of work at Central Station would consider the requirements of the <i>Central Station Conservation Management Plan</i> (Rappoport and Government Architects Office, 2013) and include consideration of opportunities for the retention, conservation and / or reuse of original and significant heritage fabric. Consultation would be carried out with Sydney Trains and the Heritage Council of NSW during design development.	CS

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.

14.6.2 Non-Aboriginal heritage archaeological research design

Archaeological research design

Where an archaeological research design is required, it would be prepared based on research information included in *Technical paper 4 – Non-Aboriginal heritage* and would be supplemented by additional detailed historical research of each site, with reference to the project design and proposed construction methods at each site. Based on the detailed literature review, the archaeological research designs would identify the need for, and provide a detailed methodology for undertaking:

- Archaeological test excavation or test and salvage excavation
- Archaeological monitoring.

Test excavation

Test excavation would not be carried out prior to the preparation of an archaeological research design. For this project, it is likely that the archaeological research designs would recommend test excavation:

- In areas where access for excavation activities is not restricted by buildings or other structures, and
- Where additional information regarding the nature of subsurface deposits generated through test excavation could inform the assessment of archaeological potential and / or significance at that site.

Archaeological excavation can be carried out prior to project approval as per the requirements of the Secretary’s environmental assessment requirements (refer requirement 7.2(d) in Table 14-1) on the condition that archaeological relics are not removed.

Test and salvage excavation

Test and salvage excavation would not be carried out prior to the preparation of an archaeological research design. For this project, it is likely that the archaeological research designs would recommend test and excavation:

- Where detailed archival research and understanding of modern disturbance (such as basement information) needs to be supplemented with more site-specific (on-ground) information to better define the archaeological potential and / or significance of the site
- In areas where access for excavation activities is restricted by buildings or other structures.

Test and salvage excavation would generally be recommended in areas where there is a moderate to high potential for relics of local or state significance to be present. It would involve locating and recording any relics found prior to their removal by construction. Test and salvage excavation could only be carried out after project approval.

Archaeological monitoring

Archaeological monitoring involves the monitoring of construction phase excavation activities by a qualified archaeologist who would record any significant remains uncovered by excavation. Based on additional detailed historical research, the archaeological research design (see above) may identify areas where archaeological monitoring would be required. Examples of where archaeological monitoring may be required include:

- Areas where construction activities are considered low impact (such as narrow trenching)
- Areas with a low potential to contain remains of state significance.