sydney METRO | city & southwest

SYDENHAM TO BANKSTOWN

# ENVIRONMENTAL IMPACT STATEMENT

> Technical Paper 4 - Aboriginal heritage assessment

NSW GOVERNMENT

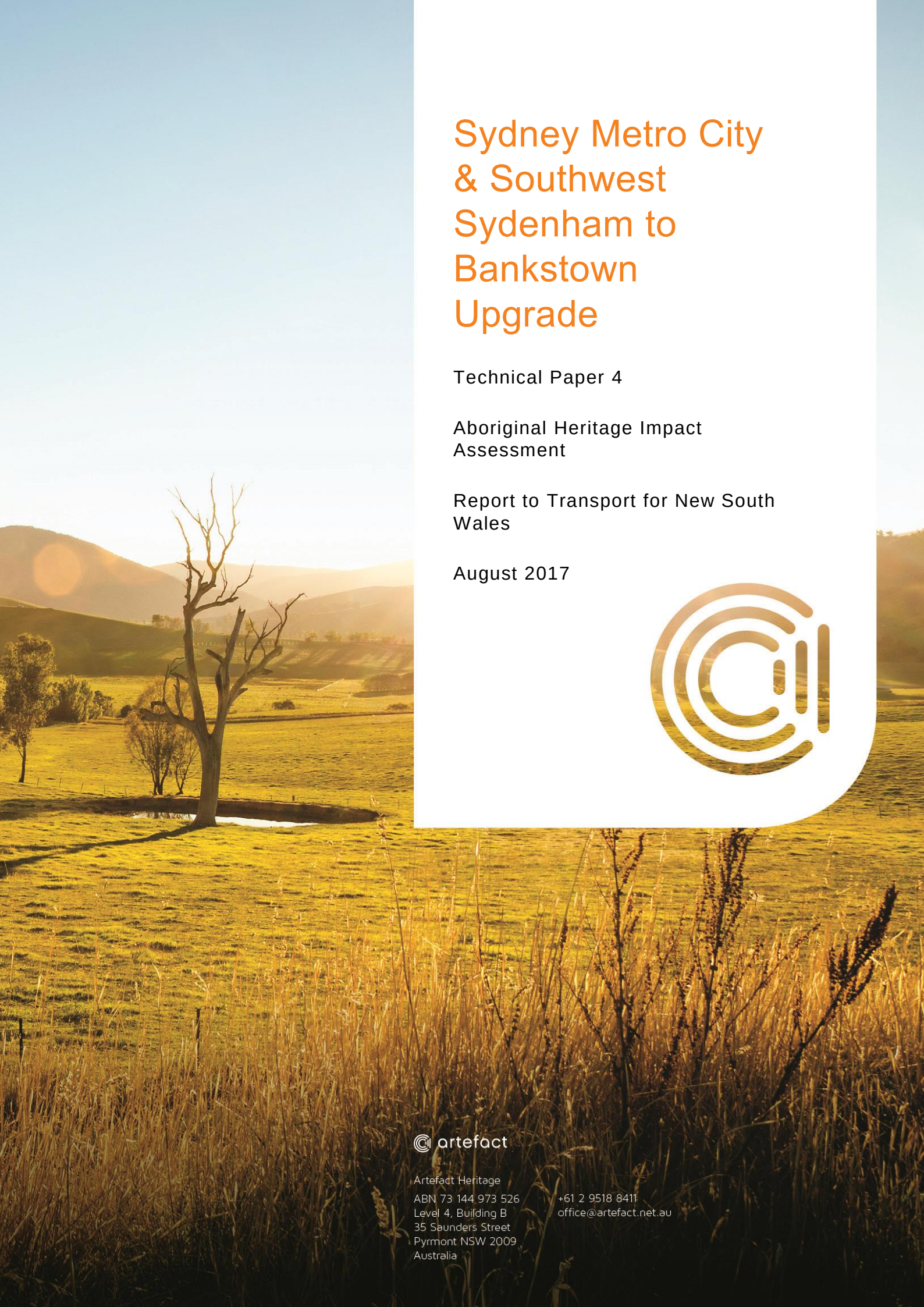
# Sydney Metro City & Southwest Sydenham to Bankstown Upgrade

Technical Paper 4

Aboriginal Heritage Impact Assessment

Report to Transport for New South Wales

August 2017



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# EXECUTIVE SUMMARY

## Project Background

The New South Wales (NSW) Government is implementing Sydney's Rail Future (Transport for NSW, 2012a), a plan to transform and modernise Sydney's rail network so that it can grow with the city's population and meet the needs of rail customers into the future.

Sydney Metro is a new standalone rail network identified in Sydney's Rail Future, providing 66 kilometres of metro rail line and 31 metro stations. The NSW Government is currently delivering the first two stages of Sydney Metro, shown in Figure 1, which consist of Sydney Metro Northwest (between Rouse Hill and Chatswood) and Sydney Metro City & Southwest (between Chatswood and Bankstown).

Sydney Metro Northwest is currently under construction. Sydney Metro Northwest services will start in the first half of 2019, with a metro train running every four minutes in the peak period. Services will operate between a new station at Cudgegong Road (beyond Rouse Hill) and Chatswood Station.

Sydney Metro City & Southwest will extend the Sydney Metro system beyond Chatswood to Bankstown, delivering about 30 kilometres of additional metro rail, a new crossing beneath Sydney Harbour, new railway stations in the lower North Shore and Sydney central business district (CBD), and the upgrade of existing stations from Marrickville to Bankstown. City & Southwest trains would run between Sydenham and Bankstown stations in each direction, at least every four minutes in peak periods, averaging around 15 trains per hour. Sydney Metro City & Southwest comprises two core components (shown in Figure 1):

- the Chatswood to Sydenham project
- the Sydenham to Bankstown upgrade ('the project' and the subject of this document).

The project is subject to assessment and approval by the NSW Minister for Planning under Part 5.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

## Report Purpose

The project is subject to assessment and approval by the Minister for Planning under Part 5.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This report has been prepared to support the Environmental Impact Statement for the project. The Environmental Impact Statement has been prepared to accompany the application for approval of the project, and addresses the environmental assessment requirements of the Secretary of the Department of Planning and Environment ('the Secretary's environmental assessment requirements').

This technical paper has also been prepared within the context of the NSW Office of Environment and Heritage (OEH) *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* [1] and the OEH *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* [2] and includes the following:

- A description of the project and the extent of the study area

[1] Department of Environment and Conservation 2005
[2] OEH 2010

- A description of Aboriginal stakeholder consultation that has been conducted
- Discussion of the environmental context of the study area
- Discussion of the Aboriginal and historical context of the study area
- A summary of the archaeological context of the study area including a discussion of previous archaeological work in the area
- Description and analysis of archaeological potential
- Development of a significance assessment and impact for the project
- Development of management and mitigation measures.

## Assessment

The Sydenham to Bankstown rail corridor consists of an undulating landform including slope, crest and flat landform contexts. Large portions of the rail corridor are located through significantly modified landform contexts, including large cuts through the underlying shale and sandstone geology. The archaeological potential of the majority of the project area is considered to be nil to low. This is due to the significant disturbance and landform modifications which would have removed any archaeological deposits.

S2B PAD01 in Belmore is an area of archaeological potential. A relatively intact area was identified during the site inspection within a small council park, Guide Park, located outside the rail corridor on Redman Parade. The analysis of aerial photography indicates that the area has remained an open space since at least 1943 and no major ground disturbance has occurred. This area has been assessed as having Aboriginal archaeological potential and designated as S2B PAD01.

S2B PAD01 is outside the project area and would not be impacted.

S2B PAD02 in Punchbowl is an area of archaeological potential. This is located within the small park between Punchbowl Road and Urunga Parade. Analysis of aerial photography from 1943 and over the past 10 years indicates that there appears to have been little subsurface disturbance to S2B PAD02. Intact A horizons were observed in a cutting to the north of the Punchbowl Station survey unit. Therefore, there is low to moderate potential that intact archaeological deposits may be identified within this area.

S2B PAD02 is within the project area and would be subject to impacts associated with construction of the northern entrance for Punchbowl Station.

## Mitigation Measures

Specific mitigation and management measures have been identified for implementation within the study area during the construction of the project.

Mitigation and management measures were developed following consideration of:

- Statutory requirements under the *National Parks and Wildlife Act 1974* as amended
- The results of the background research, site survey and assessment
- Consultation with the relevant Aboriginal Land Councils.

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# 1.0 INTRODUCTION

## 1.1 Overview

### 1.1.1 Project Background

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Sydney Metro is a new standalone rail network identified in Sydney's Rail Future, providing 66 kilometres of metro rail line and 31 metro stations. The NSW Government is currently delivering the first two stages of Sydney Metro, shown in Figure 1, which consist of Sydney Metro Northwest (between Rouse Hill and Chatswood) and Sydney Metro City & Southwest (between Chatswood and Bankstown).

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- the Chatswood to Sydenham project
- the Sydenham to Bankstown upgrade ('the project' and the subject of this document).

### 1.1.2 The project for which approval is sought

Transport for NSW ('the proponent') is seeking approval to construct and operate the Sydenham to Bankstown upgrade component of Sydney Metro City & Southwest (the project).

The project involves upgrading the 10 existing stations west of Sydenham (Marrickville to Bankstown inclusive), and a 13 kilometre long section of the Sydney Trains T3 Bankstown Line between west of Sydenham Station and west of Bankstown Station, to improve accessibility for customers and meet the standards required for metro operation. The project would enable Sydney Metro to operate beyond Sydenham, to Bankstown.

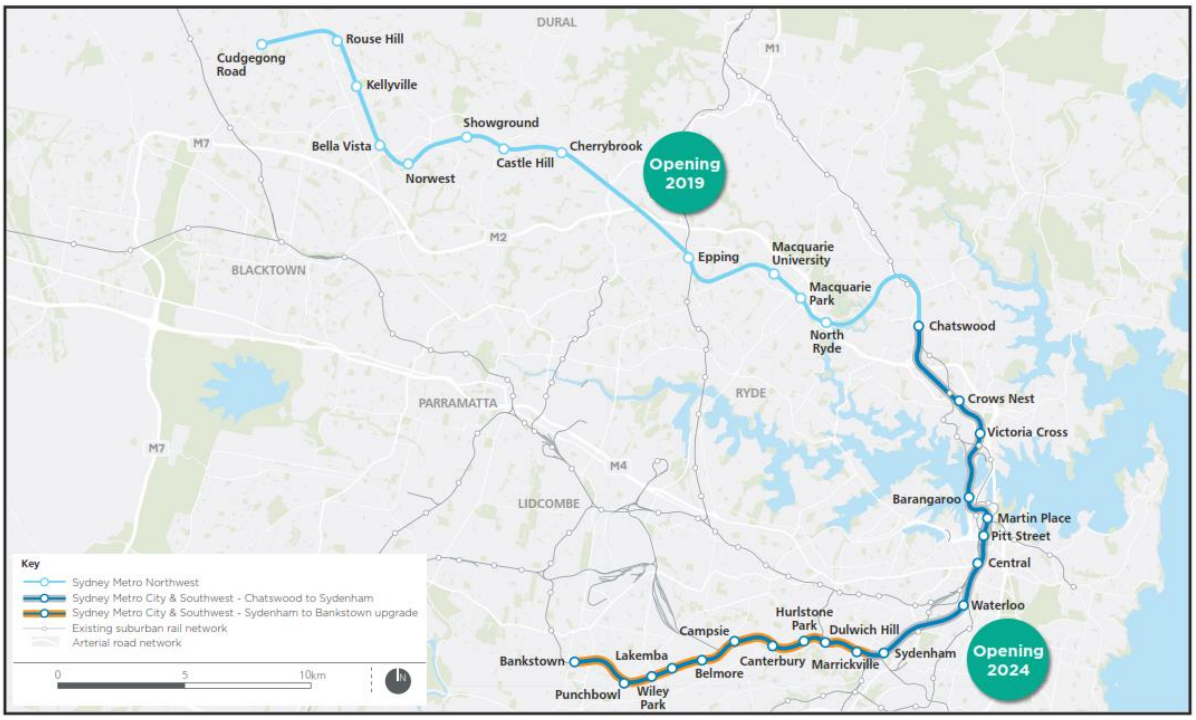
A key element of the project is upgrading stations along the corridor from Marrickville to Bankstown, to allow better access for more people by providing infrastructure such as new concourses, level platforms, and lifts at stations. These upgrades aim to provide a better, more convenient and safer experience for public transport customers by delivering:

- stations that are accessible to people with a disability or limited mobility, the elderly, people with prams, and people travelling with luggage
- upgraded station buildings and facilities for all transport modes that meet the needs of a growing population

- interchanges that support an integrated transport network and allow seamless transfers between different modes for all customers.

The project is subject to assessment and approval by the NSW Minister for Planning under Part 5.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

Figure 1: The Sydney Metro network




## 1.2 The project

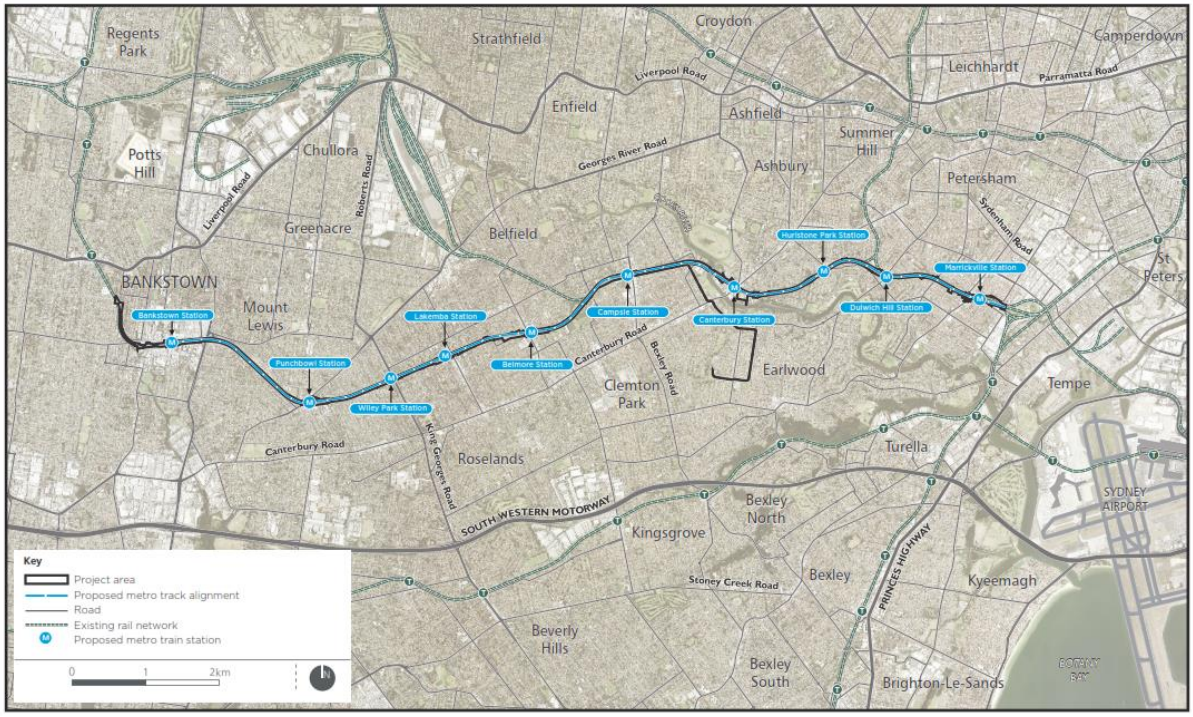
### 1.2.1 Location

The location of the project is shown in Figure 2.

The key elements of the project are located mainly within the existing rail corridor, from about 800 metres west of Sydenham Station in Marrickville, to about one kilometre west of Bankstown Station in Bankstown. The project is located in the Inner West and Canterbury-Bankstown local government areas.

The term ‘project area’ is used throughout this document to refer to the area where the physical works for the project would be undertaken. This area encompasses the existing rail corridor (as described above), the 10 existing stations within the corridor, and areas surrounding the rail corridor as shown in Figure 2.

**Figure 2: Overview of the project**




## 1.2.2 Key features

The key features of the project are summarised below.

### *1.2.2.1 Works to upgrade access at stations*

The project includes upgrading the 10 stations from Marrickville to Bankstown as required, to meet legislative requirements for accessible public transport, including the requirements of the *Disability Discrimination Act 1992* and the *Disability Standard for Accessible Public Transport 2002*. The proposed works include:

- works to platforms to address accessibility issues, including levelling and straightening platforms
- for some stations a new station concourse and station entrance locations, including:
  - new stairs and ramps
  - new or relocated lifts
- provision of additional station facilities as required, including signage and canopies.

Works would also be undertaken in the areas around the stations to better integrate with other modes of transport, improve travel paths, and meet statutory accessibility requirements as far as possible. This would include provision of pedestrian, cyclist, and other transport interchange facilities; as well as works to the public domain, including landscaping.

### *1.2.2.2 Works to convert stations and the rail line to Sydney Metro standards*

***Station works***

In addition to the station upgrades to improve accessibility, works to meet the standards required for metro services would be carried out, including:

- installation of platform screen doors
- provision of operational facilities, such as station services buildings.

***Track and rail system facility works***

Upgrading the track and rail systems to enable operation of metro services would include:

- track works where required along the 13 kilometre long section of the rail corridor, including upgrading tracks and adjusting alignments, between west of Sydenham Station and west of Bankstown Station
- new turnback facilities and track crossovers
- installing Sydney Metro rail systems and adjusting existing Sydney Trains rail systems
- overhead wiring adjustments.

***Other works***

Other works proposed to support Sydney Metro operations include:

- upgrading existing bridges and underpasses across the rail corridor
- installation of security measures, including fencing
- installation of noise barriers where required
- modifications to corridor access gates and tracks
- augmenting the existing power supply, including new traction substations and provision of new feeder cables
- utility and rail system protection and relocation works
- drainage works to reduce flooding and manage stormwater.

***Active transport corridor and surrounding development***

The project would also provide for:

- parts of an active transport corridor where located within the station areas or surplus rail corridor land, to facilitate walking and cycling connections to each station and between Marrickville and Bankstown
- enabling works to support possible future development at Campsie Station (any future development would be subject to a separate approvals process).

***Temporary works during construction***

During construction, the project would involve:

- provision of temporary facilities to support construction, including construction compounds and work sites
- implementation of alternative transport arrangements for rail customers during possession periods and/or station closures, guided by the proposed Temporary Transport Strategy.

### 1.2.3 Timing

An overview of the construction and operation timing of the project is outlined below.

#### *1.2.3.1 Construction*

Construction of the project would commence once all necessary approvals are obtained (anticipated to be in 2018), and would take about five years to complete.

The T3 Bankstown Line would remain operational for the majority of the construction period. However, to ensure the station and infrastructure upgrade works are completed as efficiently and safely as possible, and to accommodate works that cannot be undertaken when trains are operating, it would be necessary to undertake some work during rail possession periods, when trains are not operating. It is anticipated that these rail possession periods would comprise the routine weekend maintenance possessions, together with some longer possession periods during periods of reduced patronage such as school holidays.

A final, longer possession of about three to six months would also be required. This would involve full closure of the line to enable conversion to metro operations. This would include works such as the installation of new signalling, communication systems, and platform screen doors.

During each possession period when the line is closed, alternative transport arrangements would be implemented to ensure that rail customers can continue to reach their destinations.

#### *1.2.3.2 Operation*

Sydney Metro City & Southwest would be fully operational by 2024, with the opportunity of operation commencing in two phases. Initially, Sydney Metro Northwest services would be extended by the City & Southwest project, and would operate from Chatswood Station to Sydenham Station. Some months later, metro operations would extend from Sydenham Station to Bankstown Station, with both phases planned to be completed before the end of 2024. The opportunity for phased opening of the project would enable metro trains to operate from Cudgegong Road Station to Sydenham Station prior to the final conversion of the T3 Bankstown Line to metro operations.

Once the project is operational, Sydney Trains services would no longer operate along the T3 Bankstown Line between Sydenham and Bankstown stations. Customers would be able to interchange with Sydney Trains services at Sydenham and Bankstown stations. Sydney Trains services to and from Bankstown to Liverpool and Lidcombe stations would not be affected.

## 1.3 Purpose and Scope of this Report

This report has been prepared to support the Environmental Impact Statement for the project. The Environmental Impact Statement has been prepared to accompany the application for approval of the project, and addresses the environmental assessment requirements of the Secretary of the Department of Planning and Environment ('the Secretary's environmental assessment requirements').

This technical paper has also been prepared within the context of the NSW Office of Environment and Heritage (OEH) *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* [3] and the OEH *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* [4] and includes the following:

- A description of the project and the extent of the study area
- A description of Aboriginal stakeholder consultation that has been conducted

[3] Department of Environment and Conservation 2005
[4] OEH 2010

- Discussion of the environmental context of the study area
- Discussion of the Aboriginal and historical context of the study area
- A summary of the archaeological context of the study area including a discussion of previous archaeological work in the area
- Description and analysis of archaeological potential
- Development of a significance assessment and impact for the project
- Development of management and mitigation measures.

An outline of the site inspection methodology and significance and impact assessment for the study area is provided in Section 2.

## 1.4 Secretary's Environmental Assessment Requirements

The Secretary's environmental assessment requirements relating to Aboriginal heritage, and where these requirements are addressed in this technical paper, are outlined in Table 1.

**Table 1: Secretary's environmental assessment requirements – Aboriginal heritage**

| Secretary's environmental assessment requirements | Where addressed |
|---|---|
| 1. The Proponent must identify and assess any direct and/or indirect impacts (including cumulative impacts) to the heritage significance of:<br>(a) Aboriginal places and objects, as defined under the National Parks and Wildlife Act 1974 and in accordance with the principles and methods of assessment identified in the current guidelines; | See section 5.3.3 |
| (b) Aboriginal places of heritage significance, as defined in the Standard Instrument – Principal Local Environmental Plan; | See section 5.3.3 |
| (c) environmental heritage, as defined under the Heritage Act 1977; and | See Technical Paper 3 |
| (d) items listed on the National and World Heritage lists. | See Technical Paper 3 |
| 2. Where impacts to State or locally significant heritage items are identified, the assessment must:<br>(a) include a statement of heritage impact for all heritage items (including significance assessment); | See Technical Paper 3 |
| (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) | See Technical Paper 3 |
| (c) outline measures to avoid and minimise those impacts in accordance with the current guidelines; and | See Technical Paper 3 |
| (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). | See Technical Paper 3 |
| (e) have regard to the values of historic structures (such as footbridges, overhead booking offices, platforms and platform buildings) and conservation approaches provided in the relevant conservation strategies and design guides and conservation management plans, as applicable; and | See Technical Paper 3 |
| (f) identify potential uses for heritage items to be retained within the corridor. | See Technical Paper 3 |

| Secretary's environmental assessment requirements | Where addressed |
|---|---|
| 3. Where archaeological investigations of Aboriginal objects are proposed these must be conducted by a suitably qualified archaeologist, in accordance with section 1.6 of the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010). | See Section 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. The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be assessed. | See Section 4 |

## 1.5 Author

Claire Rayner, archaeologist (Artefact Heritage), Duncan Jones (Artefact Heritage), and Josh Symons, Principal (Artefact Heritage) prepared this report with review by Dr Sandra Wallace, Director (Artefact Heritage).

## 1.6 Limitations and Constraints

This report provides an assessment of Aboriginal heritage and does not provide a non-Aboriginal (historical) heritage assessment. This assessment is based on impact information available at the time of report preparation.

# 2.0 ASSESSMENT METHODOLOGY

This section outlines the methodology used to prepare this heritage assessment. The methodology used in assessing the study area and areas of archaeological potential are also provided.

## 2.1 Study Area

The project runs from Marrickville to Bankstown Station, with ancillary works extending to the west of Bankstown Station. The project area is shown in Figure 2.

The study area for the purposes of this technical paper is defined as the project area as outlined in red in Figure 3, excluding the Canterbury to Campsie high voltage feeder.

The Canterbury to Campsie feeder line is not included in the Aboriginal heritage assessment as all works would be undertaken within existing road corridors in areas of previous disturbance. No registered sites are located in the vicinity of the proposed feeder line. Trenching associated with the feeder route would be unlikely to impact Aboriginal objects.

## 2.2 Study Methodology

### 2.2.1 Site inspection

#### *2.2.1.1 Site definition*

An Aboriginal site is generally defined as an Aboriginal object or place. An Aboriginal object is the material evidence of Aboriginal land use, such as stone tools, scarred trees or rock art. Some sites, or Aboriginal places can also be intangible and although they might not be visible, these places have cultural significance to Aboriginal people.

OEH guidelines state in regard to site definition that one or more of the following criteria must be used when recording material traces of Aboriginal land use:

- The spatial extent of the visible objects, or direct evidence of their location
- Obvious physical boundaries where present e.g. mound site and middens (if visibility is good), a ceremonial ground
- Identification by the Aboriginal community on the basis of cultural information.

For the purposes of this study an Aboriginal site, or potential Aboriginal site, was defined by recording the spatial extent of visible traces or the direct evidence of their location within the study area.

#### *2.2.1.2 Survey methodology*

A site inspection was conducted with Jay Daley, Culture and Heritage Officer at Metropolitan Local Aboriginal Land Council (MLALC) and Brady Maybury and Carrell Fabar, Cultural and Heritage Officer at Gandangarra Local Aboriginal Land Council (GLALG) on Friday 17 June 2016.

A second series of site inspections were conducted on 7 March 2017 with Brad Maybury from GLALC and on 8 March 2017 with Nathan Moran from MLALC.

For the purposes of the field survey the study area was split up into survey units. Each station area (and associated construction compound) was considered as a survey unit. The remaining portion of the study area was considered as one survey unit.

All survey units were covered on foot where it was safe to do so. Areas of surface visibility within the station areas were virtually non-existent, with the majority of each station area covered by buildings, roads and concrete footpaths. Discussions and observations during the survey focussed on archaeological potential and verifying background information on landform context.

Aerial photographs and topographic maps were carried by the survey team. A photographic record was kept of all sections of the study area. Photographs were taken to document the environment within the study area.

A discussion of the survey results for the study area is included in the discussion for each survey unit.

### 2.2.2 Recorded Aboriginal sites and areas of archaeological potential

Information on recorded Aboriginal sites, including type and location, is included in the discussion of each survey unit as well as an assessment of archaeological potential.

The assessment of archaeological potential incorporates available information on existing and past structures, including the location of basements and underground car parks that are likely to have removed archaeological deposits.

### 2.2.3 Geotechnical information

Geotechnical investigations show that the majority of the Marrickville to Bankstown rail corridor is topped with fill layers to varying depths, generally dependant on topography.

From around Marrickville Station to Punchbowl Station the profile is generally a fill layer over thin layers of residual soil, or straight onto Ashfield shale on Hawkesbury Sandstone bedrock within cuttings or areas that have been levelled. Pockets of truncated alluvial deposits are located near Canterbury Station.

Near Punchbowl Station, Bringelly shale rises with some associated residual soils evident in core samples. This profile continues with varying depth of residual soil to Bankstown Station.

### 2.2.4 Significance assessment

An assessment of archaeological significance is presented for each survey unit (refer to Section 6.0). The following criteria was used as the basis for the significance assessment.

Archaeological significance refers to the archaeological or scientific importance of a landscape, site or area. This is characterised using archaeological criteria such as archaeological research potential, representativeness and rarity of the archaeological resource and potential for educational values. These significance criteria are outlined below:

- Research potential: does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or State's natural and cultural history?
- Representativeness: how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?
- Rarity: is the subject area important in demonstrating a distinctive way of life, custom, process, land-use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?

- Education potential: does the subject area contain teaching sites or sites that might have teaching potential?

An assessment of cultural significance would be completed following consultation with MLALC, GLALC and with other registered Aboriginal stakeholders when comprehensive consultation is completed (see to Section 3.0).

### 2.2.5 Impact assessment

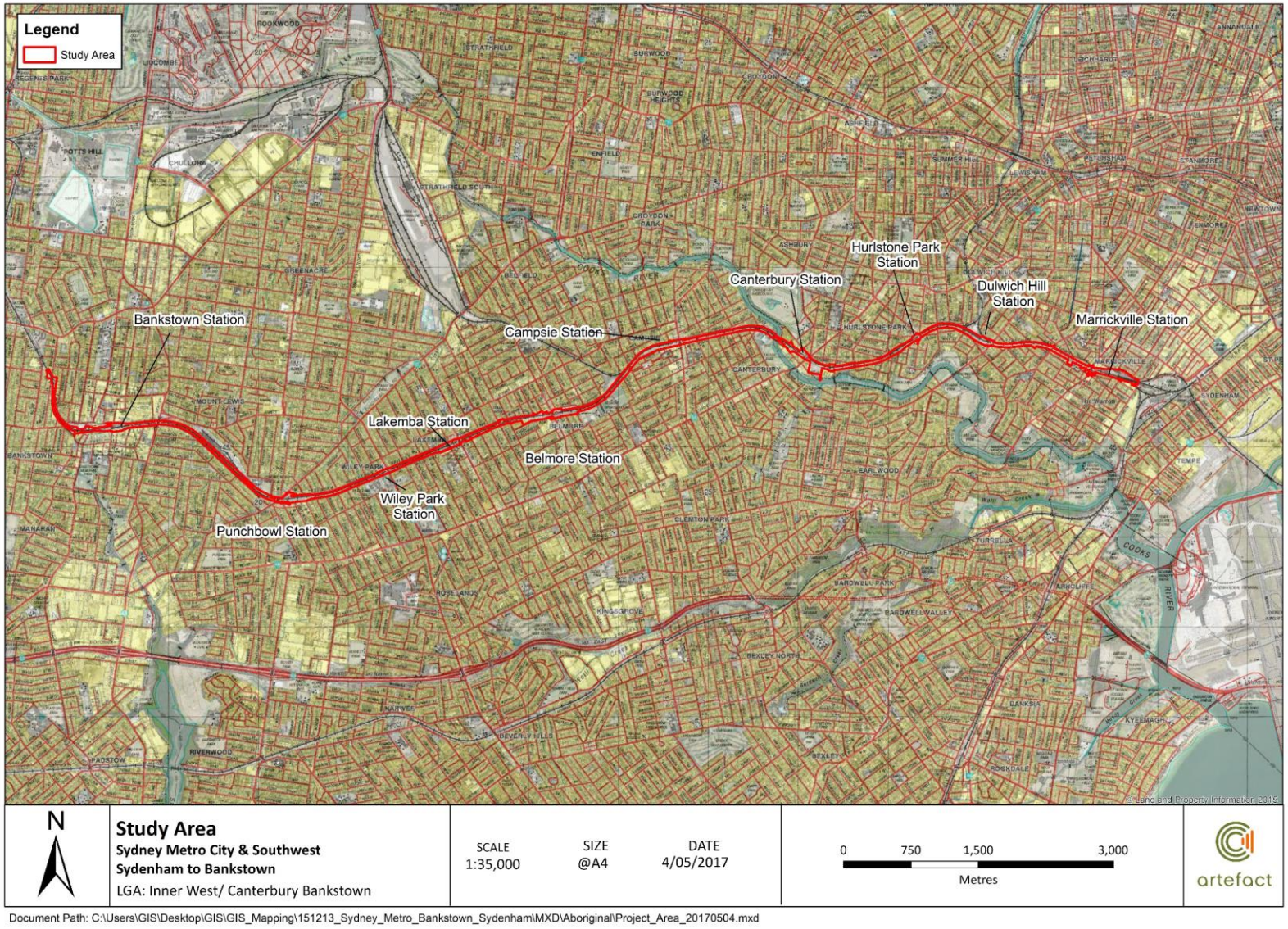
The impact assessment section will discuss potential impacts to any identified Aboriginal sites or areas of archaeological potential as a result of the project within the study area.

### 2.2.6 Mitigation measures

General mitigation measures for the project are presented in Section 7.0 and include:

- Guiding principles
- Recommendations for further archaeological investigation
- Construction Heritage Management Plan (CHMP) and unexpected finds procedure
- Discovery of human remains procedure.

**Figure 3: The study area**



# 3.0 LEGISLATIVE CONTEXT

## 3.1 National Parks and Wildlife Act (1974) (NPW Act)

The NPW Act, administered by the OEH provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) under Section 90 of the Act, and for 'Aboriginal Places' (areas of cultural significance to the Aboriginal community) under Section 86.

The protection provided to Aboriginal objects applies irrespective of the level of their significance or issues of land tenure. However, areas are only gazetted as Aboriginal Places, if the Minister is satisfied that sufficient evidence exists to demonstrate that the location was, and/or is, of special significance to Aboriginal culture.

The NPW Act was amended in 2010 and as a result, the legislative structure for seeking permission to impact on heritage items has changed. A Section 90 permit is now the only Aboriginal Heritage Impact Permit (AHIP) available and is granted by the OEH. Various factors are considered by OEH in the AHIP application process, such as site significance, Aboriginal consultation requirements, Environmentally Sustainable Development (ESD) principles, project justification and consideration of alternatives. The penalties and fines for damaging or defacing an Aboriginal object have also increased.

The project has been assessed under Part 5.1 of the *Environmental Planning & Assessment Act* 1979 and therefore permits issued under the NPW Act are not required, however similar processes would be followed where required.

## 3.2 Environmental Planning & Assessment Act (1979) (EP&A Act)

The EP&A Act establishes the framework for cultural heritage values to be formally assessed in the land use planning, development assessment and environmental impact assessment processes.

The project is assessed under Part 5.1 of the EP&A Act, which establishes an assessment and approval regime for State Significant Infrastructure (SSI). An EIS is being prepared to assess the impacts of the project, in accordance with requirements issued by the Secretary of the Department of Planning and Environment (DP&E).

## 3.3 Aboriginal Land Rights Act (1983)

The *Aboriginal Land Rights Act 1983* is administered by the NSW Department of Human Services - Aboriginal Affairs. This Act established Aboriginal Land Councils (at State and Local levels). These bodies have a statutory obligation under the Act to; (a) take action to protect the culture and heritage of Aboriginal persons in the council's area, subject to any other law, and (b) promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area. The study area is located within the MLALC and GLALC boundaries.

## 3.4 Native Title Act (1994)

The *Native Title Act 1994* was introduced to work in conjunction with the Commonwealth Native Title Act. Native Title claims, registers and Indigenous Land Use Agreements are administered under the

Act. No Native Title Claims within the study area are shown in the National Native Title Tribunal (NNTT) *Native Title Vision* mapping service.[5]

[5] Accessed on 8 July 2016 http://www.ntv.nntt.gov.au/IntraMaps80/default.htm?project=NTV_NSW

# 4.0 CONSULTATION

Aboriginal community consultation has been guided by NSW OEH '*Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation*'[6], and using the OEH '*Aboriginal cultural heritage consultation requirements for proponents*'[7] as best practice. Consultation has been conducted for the Sydney Metro City and Southwest Chatswood to Bankstown component which includes the project area. A registered stakeholder list has been drawn up for the Sydney Metro City and Southwest Chatswood to Sydenham and Sydenham to Bankstown projects.

A summary of consultation to date related to the project is provided below. Note that the former Council names are listed as consultation was undertaken prior to the NSW council amalgamations.

In accordance with Step 4.1.2 of the OEH consultation requirements, a letter was sent to the following organisations requesting the details of Aboriginal people who may hold cultural knowledge relevant to determining the Aboriginal significance of Aboriginal objects and/or places within and adjacent to the project area:

- Regional Operations Group, Metropolitan Region, OEH
- Metropolitan Local Aboriginal Land Council (MLALC)
- Gadangarra Local Aboriginal Land Council (GLALC)
- The Registrar, *Aboriginal Land Rights Act 1983*
- National Native Title Tribunal
- NTSCORP
- City of Canterbury Council
- City of Sydney Council
- North Sydney Council
- Greater Sydney Catchment Management Authority

In accordance with Step 4.1.3 of the consultation requirements, an advertisement was placed in the Sydney Morning Herald and Koori Mail on 4 May 2016. The advertisement invited all Aboriginal persons and organisations who hold cultural knowledge relevant to determining the significance of Aboriginal objects and places in the project area to register their interest by 18 May 2016.

Letters were sent to all Aboriginal persons or organisations identified through responses from agencies contacted as part of Step 4.1.2. The letters provided details about the location and nature of the project, as well as an invitation to register as an Aboriginal stakeholder for the project by 9 June 2016.

Following the completion of Steps 4.1.2 and 4.1.3, fifteen Aboriginal stakeholders registered as persons or organisations that may hold cultural knowledge relevant to determining the Aboriginal cultural values of the study area. The registered Aboriginal stakeholders are listed below.

- Darug Land Observations PTY LTD (DLO) – Gordon Workman
- Darug Land Observations PTY LTD (DLO) – Jamie Workman
- Murri Bidgee Mullangari Aboriginal Corporation (MBMAC)
- Tocomwall
- Darug Aboriginal Cultural Heritage Assessments (DACHA)

[6] Department of Environment and Conservation 2005
[7] Department of Environment, Climate Change and Water 2010

- Kamilaroi-Yankuntjatjara Working Group (KYWG)
- Woronora Plateau Gundangarra Elders Council
- Aboriginal Archaeology Service INC (AAS)
- Gandangara Local Aboriginal Land Council
- Metropolitan Local Aboriginal Land Council
- Gundungurra Tribal Technical Services (GTTS) – Peter Foster
- Gundungurra Tribal Technical Services (GTTS) – David Bell
- Gundungurra Tribal Technical Services (GTTS) – Chris Payne
- Aboriginal Heritage Office (North Sydney Council)
- Tony Williams

In accordance with Step 4.1.6 of the consultation requirements, a list of registered Aboriginal stakeholders and a copy of the published Step 4.1.3 advertisement were forwarded to both OEH, and the MLALC.

The registered stakeholders will be invited to participate in an Aboriginal Focus Group (AFG) meeting during the preparation of the Aboriginal Cultural Heritage Assessment Report (ACHAR) following finalisation of this report. Comments will also be sought on any areas of cultural significance.

Representatives from the MLALC and GLALC attended the site survey and assisted in identifying areas of Potential Archaeological Deposit (PAD).

Additional site inspections were conducted on 8 and 9 March 2017. A representative from GLALC was present for site inspections on 8 March 2017 and a representative from MLALC was present for site inspections on 9 March 2017.

# 5.0 EXISTING ENVIRONMENT

## 5.1 Geology and Soils

The study area is located within the Sydney Basin, a large depositional geological feature that spans from Batemans Bay to the south, Newcastle to the north and Lithgow to the west. The underlying geology of the study area consists of Wianamatta Group shales overlying Hawkesbury sandstone (see Figure 4). Ashfield Shale is the most extensive formation of the Wianamatta Group[8] and is the dominant underlying geology of the study area west of Canterbury Station[9], with some minor instances of Bringelly Shale underlying the western portion of the study area.

Ashfield Shale consists of black to dark-grey shale and laminate.[10] Fired Ashfield shale was used by colonists in the manufacture of bricks and supplied the characteristic dark red colour of many terrace houses in the inner suburbs of Sydney[11]. Soils occurring across the Ashfield Shale portions of the study area generally consist of residual soils developed *in situ* from the underlying shale geology. These soil contexts include the Blacktown and Gymea soil landscapes (see Figure 5). Gymea soils consist generally of shallow sandy soils with high erosion hazard in cleared areas.[12] The Blacktown soil landscape consists of deep to moderately deep soils and generally low soil fertility.[13] The Birrong soil landscape also occurs within floodplain areas draining the Upper Cooks River near Belmore Station and Wiley Park Station.

Hawkesbury Sandstone is one of the most ubiquitous geological layers of the Sydney Basin. Hawkesbury Sandstone surrounds the incised Cooks River Valley and is the dominant geology underlying Dulwich Hill and Hurlstone Park stations. This geological formation was used extensively by both Aboriginal people and British colonists for a variety of shelter and subsistence requirements. Evidence of Aboriginal use of Hawkesbury Sandstone in the Sydney area includes occupation deposits in natural shelter formations created by weathering processes in exposed sandstone, grinding grooves where edge-ground stone axes were manufactured or maintained, and rock engravings or pigment motifs that were applied to exposed sandstone. British colonisers primarily utilised Hawkesbury Sandstone for building material, and many buildings and bridges were constructed with sandstone before clay bricks became the predominant construction material. The residual Gymea soil landscape overlies Hawkesbury Sandstone within the study area. The upper lens of Hawkesbury sandstone beneath is likely to be weathered and fractured, resulting in 'floating' bedrock at the soil/bedrock transition.[14]

The occurrence of Bringelly Shale in the study area is restricted to the eastern portion of Wiley Park Station. Bringelly Shale overlies Ashfield Shale and is the topmost layer of the Wianamatta Group[15]. The formation consists of shale carbonaceous claystone, laminate and fine to medium grained lithic sandstone[16]. Bringelly Shale is generally associated with alluvial and estuarine coastal plain environments. The Blacktown soil landscape overlies Bringelly Shale within the study area.

[8] Herbert, C 1980a "Sydney Basin Stratigraphy" in C Herbert (ed) *Geology of the Sydney 1:100,000 Sheet*, Geological Survey of NSW Department of Mineral Resources, Sydney, p 22
[9] Herbert C 1983, Sydney 1:100 000 Geological Sheet 9130, 1st edition. Geological Survey of New South Wales, Sydney.
[10] Herbert 1980a
[11] Herbert, C 1980b "Introduction" in C Herbert (ed) *Geology of the Sydney 1:100,000 Sheet*, Geological Survey of NSW Department of Mineral Resources, Sydney, p 1
[12] Chapman, GA and Murphy, CL 1989, *Soil Landscapes of the Sydney 1:100,000 Sheet (Report),* Department of Conservation and Land Management, Sydney
[13] Chapman and Murphy 1989.
[14] Lawrie, R 1999, 'Soil Chemical Properties at Historical Archaeological Sites of Inner Sydney, New South Wales', in *Australasian Historical Archaeology*, 17: 70.
[15] Herbert 1980a, p 22
[16] Herbert 1983

Quaternary sediments occur in association with the Cooks River alignment and former shores of Botany Bay. These deep alluvial and estuarine sediments occur within the south eastern corner of the Canterbury Station area, and the eastern portion of the Marrickville Station area[17]. The Quaternary sediments in these areas consist of peat, sandy peat and mud and comprise of the deep soils (250 cm) of the Birrong soil landscape.[18] The Birrong soil landscape is typically comprised of soils that are water-logged and subject to localised flooding, and are a high erosion hazard.[19]

## 5.2 Landform and Hydrology

The majority of the study area consists of modified rail corridor cut into the natural landform. Prior to the construction of the railway, the study area was typified by the undulating landform of the Cumberland Plain. This is evident throughout the areas surrounding the rail corridor. The rail line generally runs along a low lying undulating ridge.

Various watercourses transect the study area. The Cooks River intersects the study area between Canterbury Station and Campsie Station. The former alignment of Sheas Creek (now Alexandra Canal) lies 2.1 kilometres south east of Marrickville Station, Coxs Creek intersects the study area just west of Wiley Park Station and Salt Pan Creek is located approximately 600 metres south west of Bankstown Station.

[17] *ibid*
[18] Bannerman and Hazelton 1990 p.83
[19] Ibid p.83

**Figure 4: Geology of the study area**

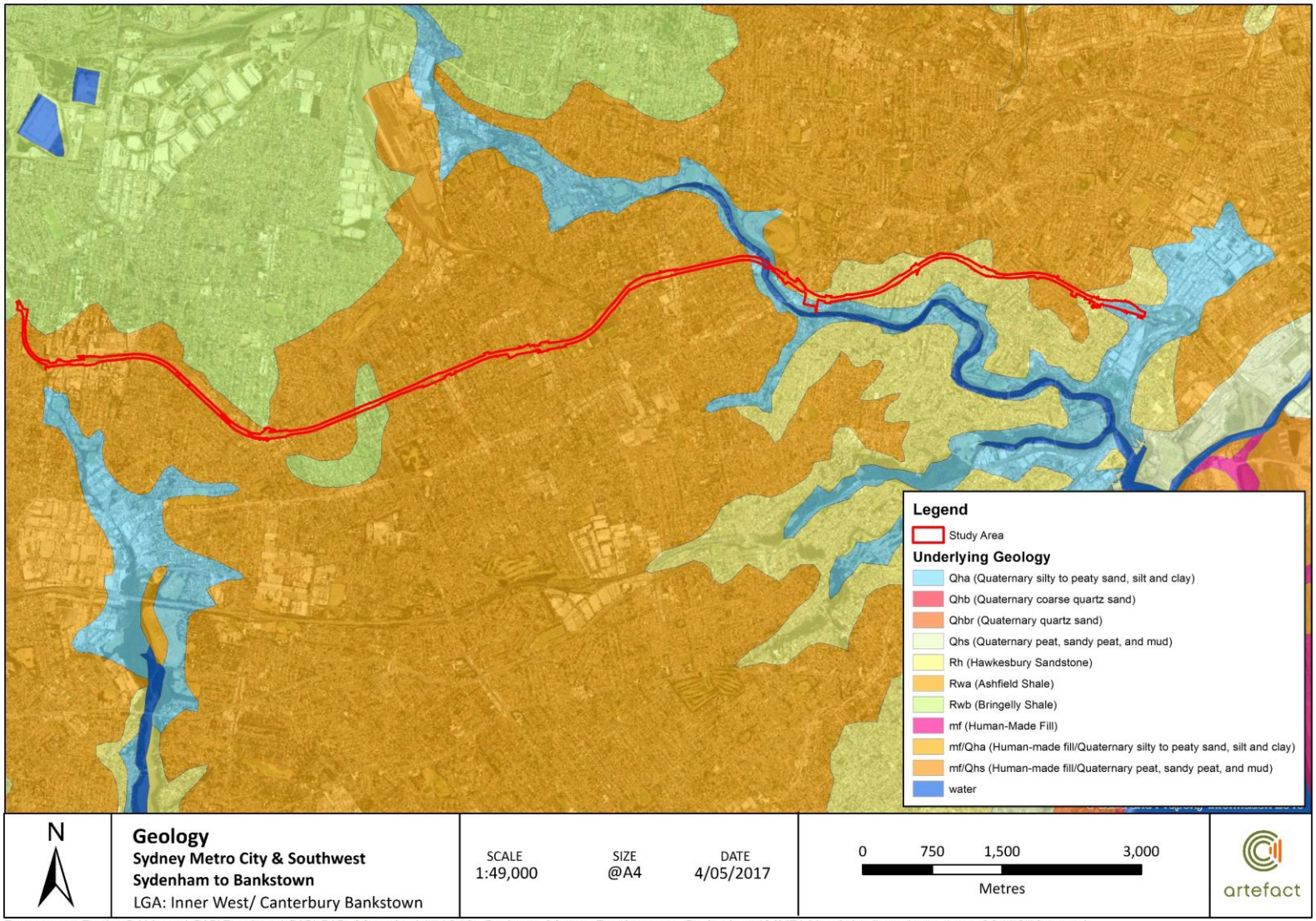



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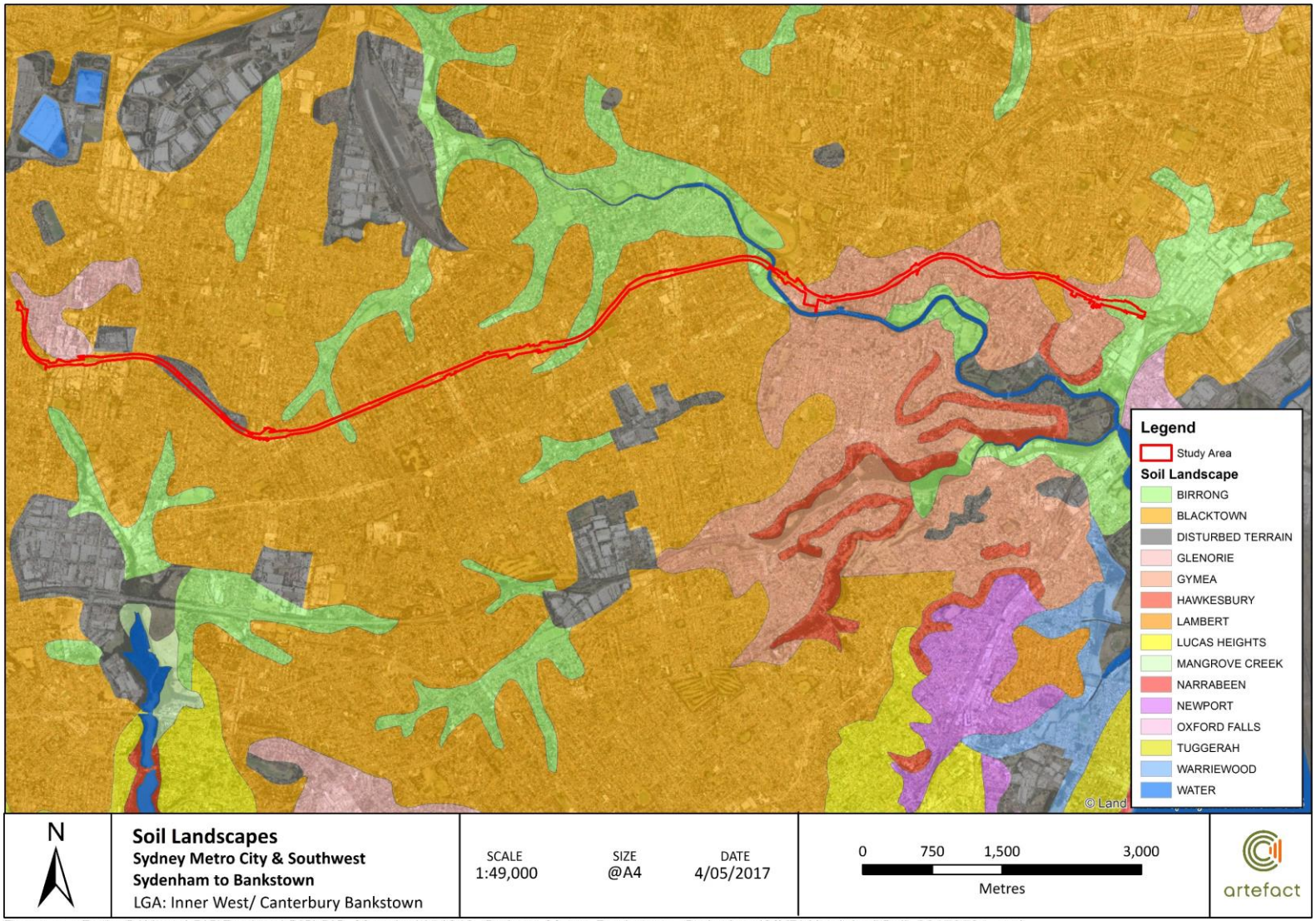
**Figure 5: Soil landscapes within the study area**

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## 5.3 Aboriginal History and Context

### 5.3.1 Aboriginal material culture

The archaeological understanding of the early Aboriginal settlement of the Sydney Basin and surrounds is constantly expanding and developing. At present, the earliest occupation known is associated with deposits on the Parramatta and Nepean Rivers, which have been dated to c.25-30,000 years before present[20] and 36,000 years before present[21]. The archaeological material record provides evidence of this long occupation, but also provides evidence of a dynamic culture that has changed through time.

The existing archaeological record is limited to certain materials and objects that were able to withstand degradation and decay. As a result, the most common type of Aboriginal objects remaining in the archaeological record are stone artefacts, followed by bone and shell. There is potential for Aboriginal objects to occur across the landscape. The nature of the underlying geology and proximity of water sources to portions of the study area indicates the potential for the occurrence of artefact sites and/ or midden sites.

Stone artefacts are one of the most common types of Aboriginal objects remaining in the archaeological record. Archaeological analyses of these artefacts in their contexts have provided the basis for the interpretation of change in material culture over time. Technologies used for making tools changed, along with preference of raw material. Different types of tools appeared at certain times. It is argued that changes in material culture were an indication of changes in social organisation and behaviour.

### 5.3.2 Aboriginal history and contact period

Prior to the appropriation of their land by Europeans, Aboriginal people lived in small family or clan groups that were associated with particular territories or places. It seems that territorial boundaries were fairly fluid, although details are not known. The language group spoken across Sydney was known as Darug (Dharruk – alternate spelling). This term was used for the first time in 1900, as before the 1800s language groups or dialects were not discussed in the literature.[22] The Darug coastal dialect is thought to have covered the area south from Port Jackson, north from Botany Bay, and west from Parramatta.[23].

The name Gadigal and its alternative spellings (Cadigal, Cadi) was used in the earliest historical records of the European settlement in Sydney to describe the Aboriginal band or clan that lived on the southern shore of Port Jackson, from South Head west to the Darling Harbour area. The study area is likely located within the area thought to have been inhabited by the Wangal clan. The Wangal clan's territory extended between the Parramatta River and the Cooks River from Darling Harbour to Rosehill[24].

The study area is located within an area rich with resources. The wetlands associated with the Cooks River and Gumbramorra Swamp would have been reliable fresh water and food sources. The

[20] JMCHM. 2005a. Archaeological salvage excavation of site CG1 (NPWS #45-5-2648), at the corner of Charles and George Streets, Parramatta, NSW. Report for Meriton Apartments Pty Ltd.
[21] AHMS, 2015. SIMTA Intermodal Terminal Facility – Stage 1: Aboriginal Heritage Impact Assessment, Report to Hyder Consulting Pty Ltd.
[22] Matthews, RH and Everitt, MM 1900, 'The Organisation, Language and Initiation Ceremonies of the Aborigines of the South-East Coast of N.S. Wales', *Journal and Proceedings of the Royal Society of NSW*, 34: 262-281; Attenbrow, V 2010, *Sydney's Aboriginal Past: Investigating the Archaeological and Historical Records. 2nd Edition*, University of New South Wales Press Ltd, Sydney: 31.
[23] Attenbrow 2010: 34.
[24] *ibid*

Hawkesbury Sandstone around the Cooks River would have provided Aboriginal people with shelter and the surrounding environment would have provided ample materials for tools and other material culture.

Observations of Aboriginal people living on the Cooks River made early after the British arrival in Australia indicate the importance of these riverine and estuarine environments for Aboriginal people. Watkin Tench noted a camp consisting of twelve huts near the Cooks River in 1788[25], whilst another account by James Backhouse details the construction of canoes using heat from fires in the 1830s[26]. Other accounts observed Aboriginal people in canoes and shell middens indicate the procurement of fish and shell fish for food[27]. The discovery of butchered dugong bones during the excavation of Alexandria Canal in the late 19th century highlights the ways in which Aboriginal people took advantage of their environments particularly during periods of climate change around 6,000 years ago[28].

**Plate 1: From Mud Bank Botany Bay – Mouth of Cooks River 1830 - three Aboriginal people can be seen seated in the foreground next to wooden spears, one of which appears to have a barbed head.[29]**

[25] Muir, L 2013, Aboriginal People of the Cooks River Valley, *Dictionary of Sydney*, available at <http://dictionaryofsydney.org/entry/aboriginal_people_of_the_cooks_river_valley> accessed 19 May 2016
[26] Backhouse, J 1834, *A Narrative of a Visit to the Australian Colonies*, Hamilton, Adams and Co, London.
[27] ibid
[28] R Etheridge, TW Edgeworth David & JW Grimshaw, 'On the Occurrence of a Submerged Forest, with Remains of the Dugong, at Shea's Creek, near Sydney', Journal and Proceedings of the Royal Society of New South Wales, vol 30, 1896, pp 158–185
[29] Thompson, J From the Collection of the State Library of N.S.W [DL PXX 31, 2a]

### 5.3.3 Registered Aboriginal sites

The locations and details of Aboriginal sites are considered culturally sensitive information. Culturally sensitive information will be removed prior to this report being made public.

An extensive search of the Aboriginal Heritage Information System (AHIMS) database was conducted on 12 May 2017 for sites registered within the following parameters:

| | |
|---|---|
| GDA 1994 MGA 56 | 317000mE – 331600mE<br>6244000mN – 6246900mN |
| Buffer | 50 m |
| Number of sites | 13 |
| AHIMS Search ID | 281006 |

The AHIMS search area encompasses the wider region around the study area, in order to give context. The distribution of recorded sites within the AHIMS search area is shown in Figure 6. The frequency of site feature types is summarised in Table 2 below. AHIMS site #45-6-2358, K1, is listed as a "deleted" site. This site is the same as AHIMS site 45-6-2198, View Street. Therefore, it has been excluded from the discussion and the total number of AHIMS site in the extensive search area is six.

**Table 2: Frequency and percentage of site features in extensive AHIMS site search**

| Site Feature | Frequency | Percentage |
|---|---|---|
| Artefact | 5 | 38% |
| Shell and artefact | 5 | 38% |
| Shell, artefact and art (engraved or pigment) | 1 | 8% |
| Artefact, Potential Archaeological Deposit (PAD) | 1 | 8 |
| Potential Archaeological Deposit (PAD) | 1 | 1 |

"Artefact" and "shell and artefact" are the most frequent site types in the search area. Three of the sites containing shells are listed with the site type as midden. Two of the sites (#45-6-0615 and #45-6-2568) are listed in association with rock shelters. The sites are clustered around the eastern end of the extensive search area, particularly in relation to the Cooks River and Wolli Creek. The frequency of sites with shell in proximity to the Cooks River correlates with the estuarine resources that would likely have been available in that environment (shell sites n=3, 50%).

The recorded coordinates of AHIMS site #45-6-2654, Fraser Park PAD place the PAD approximately 650 metres northeast of the study area boundary. The Fraser Park sporting complex is located approximately 130 metres to the east of the study area. However, information contained in the test excavation report[30] indicate that the area of PAD is the Fraser Park sporting complex, located approximately 130 metres east of the study area.

It is likely that the discrepancy between the coordinates listed on AHIMS and the actual location of the PAD is due to a coordinate projection error. The recorded coordinates are in Australian Geodetic Datum (AGD), and therefore the discrepancy could be associated with the 200 metre error that can

[30] McIntyre-Tamwoy, S., 2003, 'MetroGrid Project: Test Excavation of Buried Shell Bed at Fraser Park, Marrickville. A preliminary report on the findings', A report to TransGrid

occur between AGD and Geocentric Datum of Australia (GDA) coordinates. Taking the coordinate discrepancy into consideration.

**Figure 6: Distribution of AHIMS sites**

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### 5.3.4 Previous archaeological investigations

A number of archaeological investigations have been conducted in the vicinity of the study area. The results of those investigations and implications for the study area are discussed below.

**Val Attenbrow, Search Archaeological Enterprises 1984, St Peters Brick Pit, Sydney NSW Investigation of Shell Material.**

Val Attenbrow was originally engaged by the Sydney City Council in 1983 to assess shell material identified within the St Peters Brick Pit. The material was considered to form part of a shell midden and subsequently registered with AHIMS as site #45-6-1496. This report details a reassessment of the site was carried out by geologists, archaeologists, a malacologist, client representatives and government representatives.

This reassessment considered the material to represent a former shoreline associated with Botany Bay rather than cultural consumption and discard. This hypothesis was supported by the discovery of dugong bones during the excavations of the Alexandra Canal in the late 19th century. Another hypothesis proposed that the shell material had been introduced in association with brick production.

It was recommended that the site card be updated and that AHIMS site #45-6-1496 not be considered to be an Aboriginal site. The site is currently listed as valid therefore it appears that this recommendation was not followed through.

The maps and description of the location of AHIMS site #45-6-1496 contradict the recorded location on AHIMS. The AHIMS coordinates place the site within Gough Whitlam Park on the southern bank of the Cooks River. However, descriptions and maps by Attenbrow indicate that the site more likely to have been located to the north of Burrows Road and east of Canal Road. Locational discrepancies often occur with older AHIMS sites that were recorded using topographical maps and have later been transferred to the digital database. The site is located approximately 1.1 kilometres south east of Sydenham Station.

**Susan McIntyre-Tamwoy (2003), MetroGrid Project Test Excavation of Buried Shell Bed at Fraser Park, Marrickville, NSW – Preliminary Report**

As part of investigations for proposed underground electricity supplies in the area, McIntyre-Tamwoy conducted archaeological investigations at Fraser Park, approximately 130 metres east of the current study area. The sub-surface investigation involved excavation by machine of 5 pits along the proposed underground service alignment. The excavation identified layers of introduced fill overlying natural swamp deposit and naturally deposited shell beds. The report noted that due to the nature of the silt associated with the shell bed it was assumed that the shell was deposited when that area was underwater. The conclusion of the report is that prior to British settlement, the Fraser Park area had previously been underwater, and prior to British settlement had been a low-lying swamp.

**Navin Officer Heritage Consultants (NOHC) 2005, Intermodal Logistics Centre at Enfield, EIS, Assessment of Indigenous Heritage**

NOHC conducted an Aboriginal heritage assessment of the Enfield Intermodal Logistics Centre as part of the EIS for that project. NOHC indicate in its report that as the surface of that site had been extensively used for industrial purposes over a long time period, that the assessment was mainly concerned with archaeological potential and not surface Aboriginal sites. The site is located 1.4 kilometres north of Lakemba Station portion of the current study area.

The NOHC assessment area was located within a similar environmental context to the Western portion of the current study area. This includes underlying Shale and sandstone geology, and location

within the Cooks River catchment area. A tributary of Cooks River, Coxs Creek, ran to the east of the NOHC assessment area. The soils of the area were described as comprising the Blacktown, Birrong and disturbed terrain soil landscapes. The elevation of parts of the assessment area would have provided vantage points over the surrounding areas.

The site inspection conducted by NOHC for the assessment did not identify any Aboriginal objects or areas of archaeological potential. The site inspection revealed that little to no topsoil had been preserved throughout the assessment area. This is typical of areas where mechanical scraping has occurred within shallow soils such as the Blacktown soil landscape. The assessment concluded that any Aboriginal sites that may have been located within the area had been destroyed by past land use activity.

**Jo McDonald Cultural Heritage Management (JMcD CHM) 2005, Archaeological assessment of Aboriginal site (45-6-615) a rock shelter with art and midden at 32 Undercliffe Road, Undercliffe, NSW**

An archaeological assessment was prepared by JMcD CHM for AHIMS site #45-6-0615. The site consists of a rock shelter with art, with a shell midden at the front of the shelter. The art comprised of hand and foot stencils in white. The coordinates on AHIMS place the site within 42 Undercliffe Road. However, the site description records the site as located at the rear of 32 Undercliffe Road. The examination of aerial imagery available on Google Earth indicates what appears to be a sandstone overhang at the rear of 32 Undercliffe Road. Therefore, there is likely to be an error in the coordinates recorded on the AHIMS site register. AHIMS site #45-6-615 is located approximately 1.5 kilometres south of the study area.

The surrounding environment of the site was characterised by JMcD CHM as comprising the Cooks River estuarine system of extensive marshes prior to 20th century development. The underlying geology is similar to that outside the study area at Sydenham, which consists of Quaternary sediments overlying Hawksbury sandstone. The shelter itself is located in an outcrop of Hawkesbury sandstone which originally formed part of an outcrop along a ridge crest landform context.

JMcD CHM assessed the site as demonstrating high archaeological significance at the local and regional level. The site was considered to be rare within the Sydney basin context, especially in association with the shell midden. The rock art was assessed to be in good condition. The midden was assessed to be in relatively poor condition based on superficial inspection. Subsurface inspection was recommended to fully assessed impacts to the midden. No information is available to suggest that any archaeological investigation has been conducted at AHIMS site #45-5-0615.

**AECOM 2015, WestConnex New M5, Technical Working Paper: Aboriginal Heritage**

An Aboriginal Heritage assessment was conducted by AECOM as part of the M5, WestConnex EIS. The assessment area is located to the south of the study area encompasses areas of similar geology and soil landscapes.

The predictive statements for the assessment area considered that there was potential for archaeological deposits to occur within areas of the Gymea, Blacktown and Birrong soil landscapes across all landforms. However archaeological potential in areas of the Gymea and Birrong soils where high erosion has occurred could be limited. AECOM considered it likely that artefact bearing deposits would be present in areas adjacent to the Alexandra Canal. It was also considered likely that shell midden sites could occur at considerable distances from existing foreshore areas due to past sea level fluctuations.

The study identified two areas of potential remnant landscape which could contain evidence of past Aboriginal occupation of the area. This assessment was based on the location of previously recorded AHIMS sites and disturbance levels. The study also identified a number of new Aboriginal sites

consisting of five sandstone overhangs with associated PAD to the south of the Cooks River and outside the current study area.

### 5.3.5 Archaeological implications

The presence of intact Aboriginal archaeological deposits within the study area is largely dependent on the nature and extent of disturbance associated with historical construction activities. Subsurface disturbance such as the removal of top soil and other bulk earthworks would substantially lower the potential for intact archaeological deposits in those areas. This is especially relevant in areas of relatively shallow residual soils, which includes the majority of the study area.

In some instances, the various phases of construction may act to preserve intact soil profiles. For example, the introduced fill and rail ballast used in the construction of the railway at Wickham served to protect the underlying intact sand profile[31]. Excavations within the Sydney CBD have also identified sites in which the overlying construction phases have protected intact archaeological deposits[32]. It is also likely that whilst intact soil profiles may occur, they may not contain evidence of Aboriginal occupation as was the case at AHIMS site #45-6-1496, identified within the St Peters Brick Pit.

In summary, whilst the study area is likely to have been a site of Aboriginal occupation in the past, the likelihood of evidence of this occupation surviving to the present is influenced by a range of factors. These factors include the durability of the material evidence and subsequent impacts such as bulk earth works. The large-scale removal and modification of underlying Wianamatta Group geology and associated shallow residual soils during construction of the existing rail line, is likely to have significantly impacted or removed many former natural landform contexts and associated archaeological potential in the study area.

### 5.3.6 Predictive model

Archaeological data gathered in the locality has demonstrated the widespread and varying use of the area by Aboriginal people. The study area is located across a range of contexts, including areas within close proximity to marine and estuarine resources, fresh water and varying terrestrial subsistence resources.

Previous archaeological investigations of the greater Sydney area in general demonstrate the distribution of recorded Aboriginal sites as reflecting the use of the landscape by Aboriginal people, including movement between resources and activity areas. The distribution of recorded Aboriginal sites in built environments, such as the majority of the study area, is largely limited to areas that have been subject to archaeological excavation and/ or not impacted by development.

The distribution of overlapping and higher concentrations of stone artefacts in the Sydney area tended to be associated with high order watercourses and creek confluences, whilst lower density and more isolated activity areas in other parts of the landscape represented different and varying activities important to the understanding of overall landscape use.[33]

The predictive statements for the study area are as follows:

[31] Artefact Heritage 2016 DRAFT *Wickham Transport Interchange Archaeological Salvage Excavation Report*, report to GHD
[32] Baker, N 2004, Archaeological Salvage of an Aboriginal Site at William Street, East Sydney, Report to Zonie Construction and Design Pty Ltd.
[33] White, E. & McDonald, J. 2010. Lithic Artefact Distribution in the Rouse Hill Development Area, Cumberland Plain, New South Wales. Australian Archaeology. 70: 29-38.

- The survivability of Aboriginal objects would be largely dependent on the extent and nature of subsequent phases of historical construction activities
- Sub-surface artefact sites tend to consist of lower density isolated occurrences in areas away from major watercourses, including freshwater, marine and estuarine areas
- More frequent and higher concentrations of sub-surface artefact sites are likely to occur in the vicinity of major watercourses
- Sandstone shelters suitable for archaeological deposit and outcrops suitable for engravings may be preserved in ridge crest and ridge slope landform contexts that correspond to the underlying Hawkesbury Sandstone geology
- Shell midden sites are more likely to be identified in close proximity to marine and estuarine areas. Note that due to land reclamation in the Botany Bay area former marine and estuarine areas may be set-back from contemporary shoreline areas
- Surviving portions of deeper soil profiles within the study area, including the Birrong soil landscape may provide stratified evidence of occupation.

# 6.0 HERITAGE IMPACT ASSESSMENT

## 6.1 Introduction

The study area (project area) as defined in Section 1.6 has been divided into the following survey units:

- Station survey units
- A survey unit for the remainder of the rail corridor.

A summary of the site inspection results is provided in this chapter as well as an overview of archaeological potential, archaeological significance and potential impacts as a result of the project.

## 6.2 Marrickville Station Survey Unit

### 6.2.1 Site inspection results

The Marrickville Station survey unit includes the Marrickville Station concourse, platforms and rail corridor and surrounds (see Figure 7). The survey unit extends to the south incorporating Leofrene Avenue, Station Street and portions of Riverdale, Schwebel Street, Warburton Road and Illawarra Road. The survey unit also includes two construction compounds.

There was very little surface visibility outside the rail corridor due to sealed roads, pathways, structures and grass (Plate 2). Surface visibility improved within the rail corridor, however it was still fairly limited due to rail station infrastructure and ballast. Areas of improved ground surface visibility were observed within the rail corridor to the east of Marrickville Station. Exposures were noted within an area where erosion had occurred (Plate 3).

**Plate 2: Marrickville Station survey unit view east**

**Plate 3: Marrickville Station survey unit-small area of erosion observed within the rail corridor to the east of the station platforms**

### 6.2.2 Assessment of archaeological potential

The Marrickville Station survey unit is considered to have been largely disturbed by construction of Marrickville Station, the existing commuter and goods railway lines and surrounding residential and commercial buildings. The rail corridor and Marrickville Station are located within an artificial cut below Illawarra Road.

The Cooks River is approximately one kilometre to the south of the survey unit and is the closest major watercourse. Following the predictive statements and observations made during the site inspection for this assessment, it is unlikely that intact archaeological deposits are located within the Marrickville Station survey unit. This is due to the high degree of disturbance and modification evident throughout the survey unit and the distance of the survey unit to reliable water sources. Any sub-surface artefacts would likely be isolated occurrences in disturbed contexts. Therefore, the archaeological potential is considered to be nil to low.

### 6.2.3 Significance assessment

The archaeological significance of the Marrickville Station survey unit is assessed as low. This is due to the nil to low archaeological potential of the survey unit as a result of extensive previous ground disturbance that would have impacted any surface or subsurface Aboriginal sites. Any Aboriginal objects within the survey unit would be in low densities and in disturbed contexts, therefore it is unlikely that these objects would be considered rare or that they would contribute to regional research questions. No Aboriginal sites have been identified within the survey unit.

### 6.2.4 Impact assessment

No identified Aboriginal sites would be impacted by construction or operation of the project within the Marrickville Station survey unit (see Figure 7).

Due to the landscape context and largely modified nature of the Marrickville Station survey unit the archaeological potential has been assessed as nil to low. Therefore, it is unlikely that the project would impact Aboriginal objects.

**Figure 7: Marrickville Station survey unit**


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## 6.3 Dulwich Hill Station Survey Unit

### 6.3.1 Site inspection results

The Dulwich Hill Station survey unit consists of the current Dulwich Hill Station concourse, platforms, the Dulwich Hill Light Rail Station platform and surrounds (see Figure 8). It includes the Wardell Road overbridge and extends west along Ewart Lane. The survey unit also spans Bedford Crescent, and portions of Dudley Street and Wardell Lane and a construction compound.

The rail corridor is located within a cut below Wardell Street (Plate 4). Sections of Hawkesbury Sandstone are visible from the station concourse (Plate 5). Visibility was nil throughout the survey unit due to sealed roads, pathways and car parks, structures and vegetation.

**Plate 4: View west along platform, rail corridor is located within a cut below Wardell Road**

**Plate 5: Underlying Hawkesbury sandstone is visible from station concourse**

### 6.3.2 Assessment of archaeological potential

The Dulwich Hill Station survey unit is located within a highly disturbed and modified landform. Any archaeological deposits would have been disturbed during the construction of the rail corridor which involved construction of a large cutting through underlying Hawkesbury Sandstone. Therefore, the archaeological potential of the survey unit is considered to be nil to low.

### 6.3.3 Significance assessment

The archaeological significance of the Dulwich Hill Station survey unit is assessed as low. This is due to the nil to low archaeological potential of the survey unit as a result of high levels of ground disturbance that would have impacted any surface or subsurface Aboriginal sites. Any Aboriginal objects within the survey unit would be in low densities and in disturbed contexts, therefore it is unlikely that these objects would be considered rare or that they would contribute to regional research questions. No Aboriginal sites have been identified within the survey unit.

### 6.3.4 Impact assessment

No identified Aboriginal sites would be impacted by construction or operation of the project within the Dulwich Hill Station survey unit.

Due to the landscape context and largely modified nature of the Dulwich Hill Station survey unit the archaeological potential has been assessed as nil to low. Therefore, it is unlikely that the project would impact Aboriginal objects.

**Figure 8: Dulwich Hill Station survey unit**


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## 6.4 Hurlstone Park Station survey unit

### 6.4.1 Site inspection results

The Hurlstone Park Station survey unit extends approximately 130 metres to the east of the Crinan Street overbridge and approximately 370 metres to the west (see Figure 9). The survey unit encompasses portions of Duntroon Street, Crinan Street, Mill Lane, Floss Street and surrounds. The survey unit also includes a proposed construction compound (see Figure 9).

The rail corridor is located within a cut through the Hawkesbury Sandstone underlying Crinan Street (Plate 6). The natural landform appears to have been a slope landform context descending west from Crinan Street towards Foord Avenue.

Visibility was generally limited throughout the survey unit. Outside of the rail corridor visibility was impeded by sealed roads, pathways, carparks and structures. Inside the rail corridor visibility was impeded by structures, sealed surfaces, rail ballast and vegetation. Some exposures did occur within areas of erosion within the corridor, where introduced fill was observed and no Aboriginal objects were identified.

**Plate 6: View west from the upper concourse area. The original crest and slope landform can be seen on the right hand side of the image**

**Plate 7: Exposures down track of Hurlstone Park within the rail corridor. Introduced fill was evident within exposures**

### 6.4.2 Assessment of archaeological potential

The Hurlstone Park Station survey unit is located within a highly disturbed and modified landform. Any archaeological deposits would have been disturbed during the construction of the rail corridor due to its location within a cut through the underlying Hawkesbury Sandstone. Therefore, the archaeological potential is considered to be nil to low.

### 6.4.3 Significance assessment

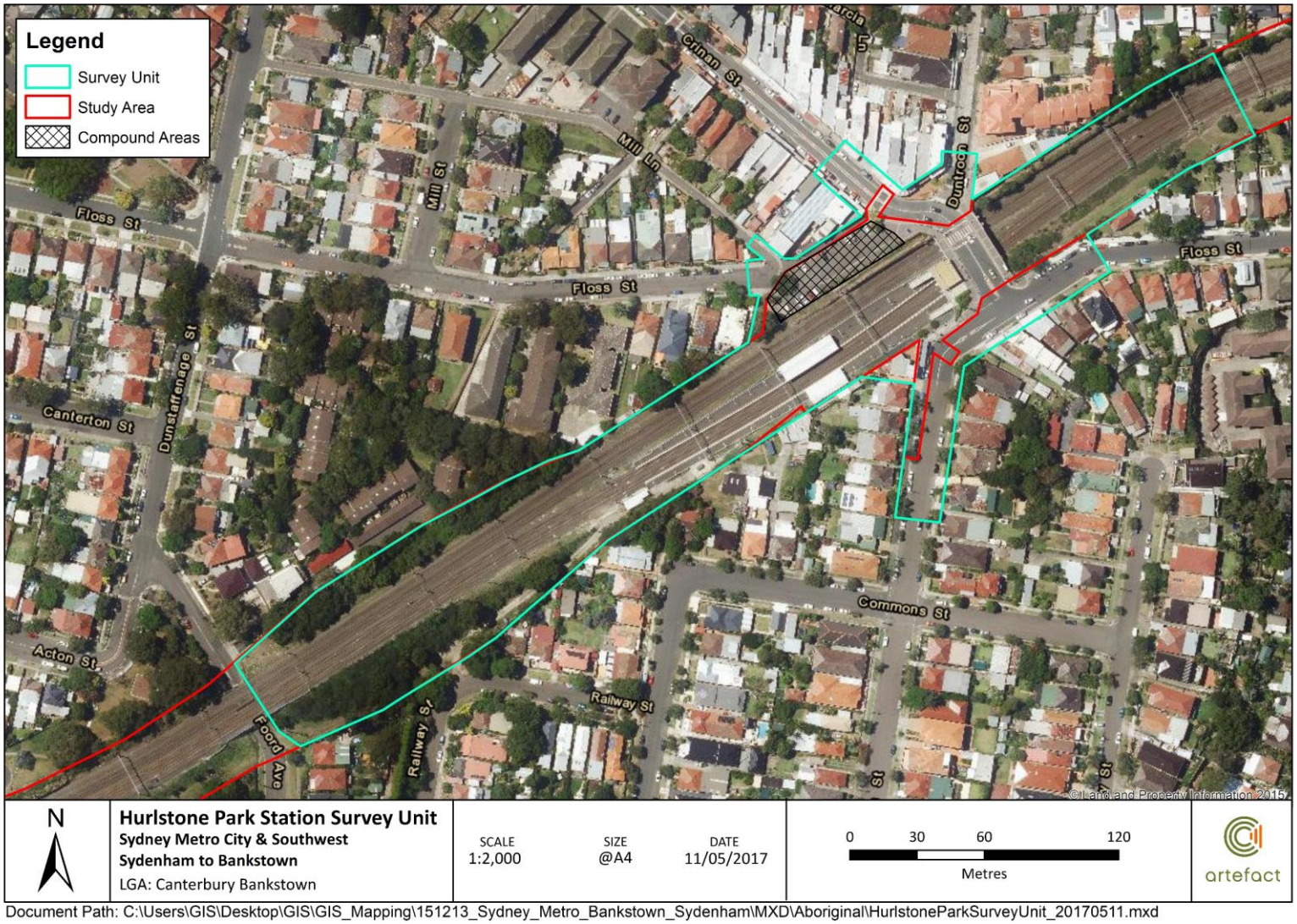
The archaeological significance of the Hurlstone Park Station survey unit is assessed as low. This is due to the nil to low archaeological potential of the survey unit as a result of high levels of ground disturbance that would have impacted any surface or subsurface Aboriginal sites. Any Aboriginal objects within the survey unit would be in low densities and in disturbed contexts, therefore it is unlikely that these objects would be considered rare or that they would contribute to regional research questions. No Aboriginal sites have been identified within the survey unit.

### 6.4.4 Impact assessment

No identified Aboriginal sites would be impacted by construction or operation of the project within the Hurlstone Park Station survey unit (see Figure 9).

Due to the landscape context and largely modified nature of the Hurlstone Park Station survey unit the archaeological potential has been assessed as nil to low. Therefore, it is unlikely that the proposed works would impact Aboriginal objects.

**Figure 9: Hurlstone Park Station survey unit**



## 6.5 Canterbury Station Survey Unit

### 6.5.1 Site inspection results

The Canterbury Station survey unit includes the Canterbury Station concourse, platforms and rail corridor and surrounds (Plate 8, see Figure 10). It extends approximately 115 metres east of the Canterbury Road overbridge and approximately 50 metres west from the station platforms. The survey unit encompasses portions of the surrounding streets, including Broughton Street, Charles Street and Canterbury Road and the major intersection to the north of the station concourse. The survey unit includes the buildings at the corner of Charles Street and Canterbury Road. The survey unit includes two proposed construction compounds.

Visibility was generally low across the survey unit. It was impeded outside of the rail corridor by sealed roads, pathways, carparks and structures. Visibility was limited inside the rail corridor due to existing structures, sealed surfaces, rail ballast and dense grass. No Aboriginal objects were identified.

The eastern portion of the survey unit has been cut into the existing crest landform beneath Canterbury Road. The western portion of the survey unit has been filled and raised above the surrounding landform.

**Plate 8: Canterbury Station, view east from western edge of platform three**

**Plate 9: View east from western edge of platform one**

### 6.5.2 Assessment of archaeological potential

The Canterbury Station survey unit consists of highly disturbed and modified areas. Whilst the survey unit is located within 100 metres of the Cooks River, the high levels of disturbance identified throughout the survey unit indicate that it is unlikely that intact archaeological deposits would occur.

The existing station is located within a cut beneath Canterbury Road. Any archaeological deposits would likely have been removed during the construction of the rail corridor. Therefore, the archaeological potential is considered to be nil to low.

### 6.5.3 Significance assessment

The archaeological significance of the Canterbury Station survey unit is assessed as low. This is due to the nil to low archaeological potential of the survey unit as a result of high levels of ground disturbance that would have impacted any surface or subsurface Aboriginal sites. Any Aboriginal objects within the survey unit would be in low densities and in disturbed contexts, therefore it is

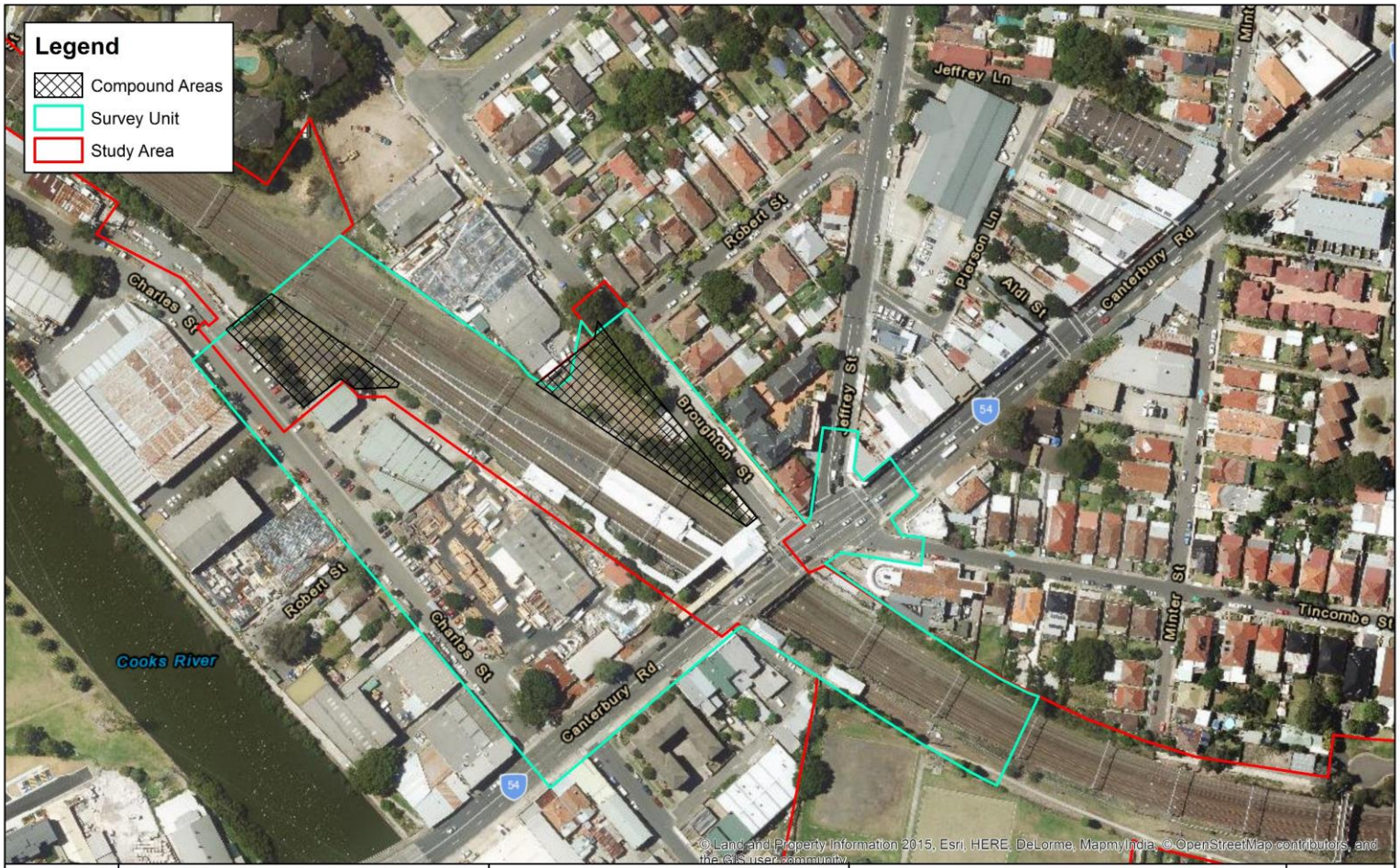
unlikely that these objects would be considered rare or that they would contribute to regional research questions. No Aboriginal sites have been identified within the survey unit.

### 6.5.4 Impact assessment

No identified Aboriginal sites would be impacted by construction or operation of the project within the Canterbury Station survey unit (see Figure 10).

Due to the largely modified nature of the Canterbury Station survey unit, the archaeological potential has been assessed as nil to low. Therefore, it is unlikely that the project would impact Aboriginal objects.

**Figure 10: Canterbury Station survey unit**

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## 6.6 Campsie Station survey unit

### 6.6.1 Site inspection results

The Campsie Station survey unit consists of the Campsie Station concourse, platforms, rail corridor and surrounds. It extends east of the station structures to Duke Street and west to Dewar Street (see Figure 11). The survey unit incorporates the surrounding streets to the north and south of the station, including North Parade, Beamish Street, South Parade and Lilian Street. The survey unit includes residential and commercial areas.

The survey unit encompasses two construction compounds. This worksite area extending west of Platform 1 appears to already be in use as a worksite (Plate 10).

Visibility was low throughout the survey unit due to the built up nature of the area. Visibility was impeded by sealed surfaces, structures and vegetation. Some surface visibility within the rail corridor was observed across the proposed compound area (Plate 10). Introduced gravels were evident across the ground surface. No Aboriginal objects were identified. As with the majority of stations in the study area, the Campsie Station is located within a cut below street level (Plate 11).

**Plate 10: View west across the project area, west of Platform 1 at Campsie Station**

**Plate 11: Campsie Station is located within a cut below street level**

### 6.6.2 Assessment of archaeological potential

The Campsie Station survey unit is located within a highly modified and disturbed area. The survey unit is located over one kilometre away from a major watercourse. The station and rail line are located within a cut through bedrock, therefore any archaeological deposits would have been removed during the construction of the rail corridor. The archaeological potential is considered to be nil to low.

### 6.6.3 Significance assessment

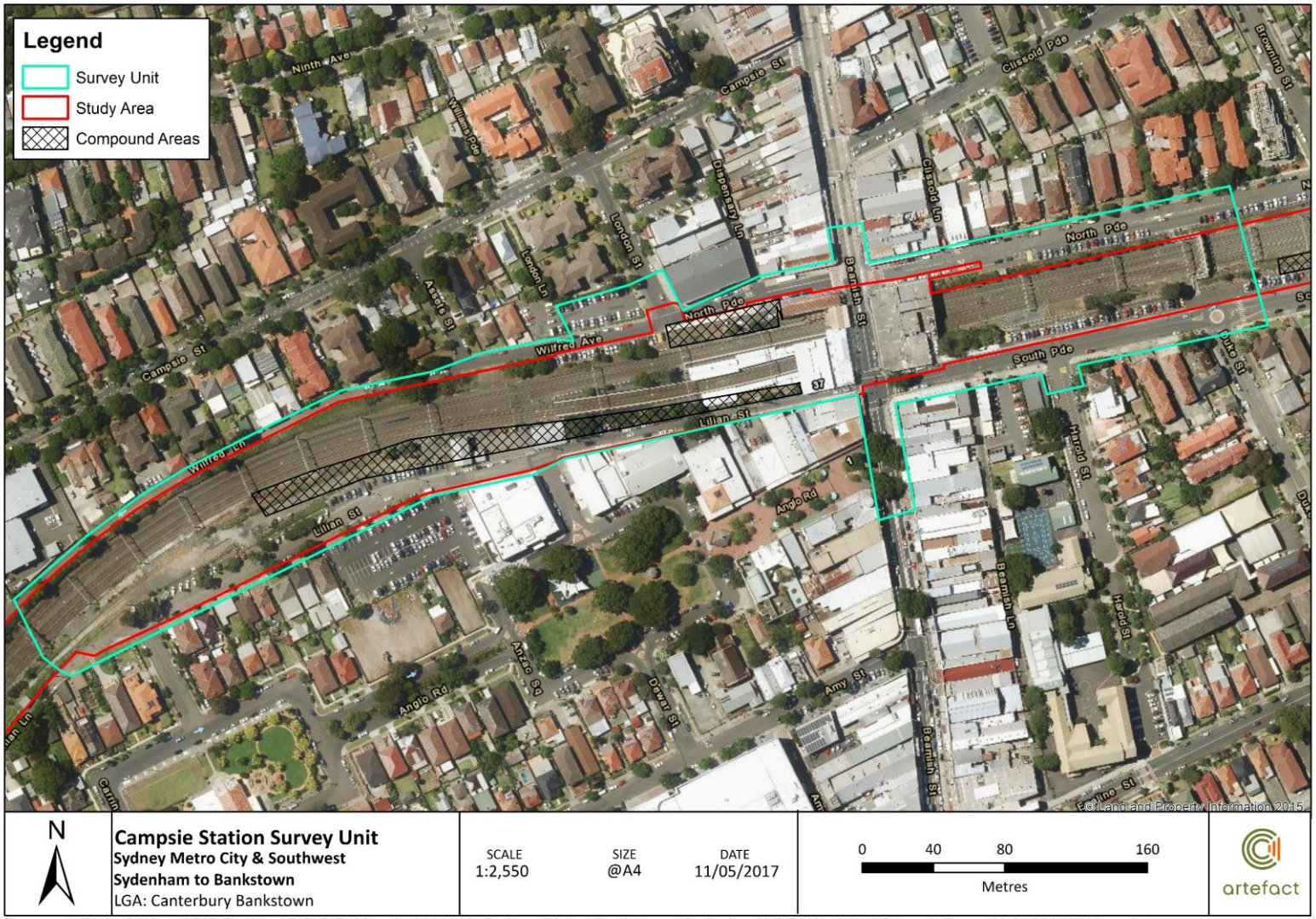
The archaeological significance of the Campsie Station survey unit is assessed as low due to the nil to low archaeological potential of the survey unit as a result of high levels of ground disturbance that would have impacted any surface or subsurface Aboriginal sites. Any Aboriginal objects within the survey unit would be in low densities and in disturbed contexts, therefore it is unlikely that these objects would be considered rare or that they would contribute to regional research questions. No Aboriginal sites have been identified within the survey unit.

### 6.6.4 Impact assessment

No identified Aboriginal sites would be impacted by construction or operation of the project within the Campsie Station survey unit (see Figure 11).

Due to the landscape context and largely modified nature of the Campsie Station survey unit the archaeological potential has been assessed as nil to low. Therefore, it is unlikely that the project would impact Aboriginal objects.

**Figure 11: Campsie Station survey unit**

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## 6.7 Belmore Station Survey Unit

### 6.7.1 Site inspection results

The Belmore Station survey unit encompasses the Belmore Station concourse, platforms, rail corridor and surrounds. It extends east of the existing station to Myall Street and west to the Canterbury League Club (see Figure 12). The survey unit includes the car park, structures and Redman Parade on the north side of the existing station and extends part way along Burwood Road, Acacia Street, Tobruk Avenue and Bridge Road.

The survey unit also includes two proposed construction compound areas. Part of the construction compound to the south of Belmore station appears to have been used as a compound/ stockpile area previously, as evidenced by introduced gravels across the ground surface. The proposed compound to the north of Belmore Station is located across an existing hardstand carpark and steep railway embankment contexts.

Visibility was low and exposures were rare throughout the survey unit. Visibility was impaired by sealed surfaces, structures and vegetation. Exposures were inspected for Aboriginal objects however none were identified. The existing station platforms and rail corridor are located within a cut below Burwood Avenue.

**Plate 12: Exposures were rare within the survey unit and no Aboriginal objects were identified. Introduced fill was evident throughout**

**Plate 13: Belmore station view west along platforms 1 and 2. This photo shows the cutting and Burwood Avenue overbridge in the distance**

### 6.7.2 Assessment of archaeological potential

The Belmore Station survey unit is located within a heavily urbanised and developed area. The existing station and rail is located within a cut below street level. This indicates that any archaeological deposits within this area would have been highly disturbed during construction. Therefore the archaeological potential within the rail corridor and areas that have been highly disturbed is considered to be nil to low.

**Sydenham to Bankstown PAD01 (S2B PAD01)**

A relatively intact area was identified during the site inspection located within a small council park (Guide Park) located outside the rail corridor on Redman Parade within lot 11/DP802657 (see Figure 12). The area is covered by dense grass and several trees. Visibility was low and exposures limited to the base of trees. The analysis of aerial photography indicates that the area has remained an open space since at least 1943 and no major ground disturbance has occurred. This area has been

assessed as having Aboriginal archaeological potential and designated Sydenham to Bankstown PAD01 (S2B PAD01).

### 6.7.3 Significance assessment

The archaeological significance of the disturbed portions of the Belmore Station survey unit is considered to be low due to its nil to low archaeological potential resulting from high levels of ground disturbance that would have impacted any surface or subsurface Aboriginal sites. Any Aboriginal objects within these areas would be in low densities and in disturbed contexts, therefore it is unlikely that these objects would be considered rare or that they would contribute to regional research questions. No Aboriginal sites have been identified within the survey unit.

The indicative archaeological significance of S2B PAD01 is considered to be low to moderate. Current design information indicates that the proposed works would not impact on the PAD. Should the project be altered with the potential to impact the PAD, archaeological test excavation would be required to accurately determine the nature and significance of the PAD. The PAD has potential to contribute to research questions for this portion of the Cumberland Plain given the paucity of recorded sites in the local area.

### 6.7.4 Impact assessment

No identified Aboriginal sites would be impacted by construction or operation of the project within the Belmore Station survey unit.

Due to the landscape context and largely modified nature of the majority of the Belmore Station survey unit the archaeological potential has been assessed as nil to low. Therefore, it is unlikely that the project would impact Aboriginal objects in these areas (see Figure 12).

S2B PAD01 would not be impacted by the project as it is located outside of the project area boundary.

**Figure 12: Belmore Station survey unit and S2B PAD01**


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## 6.8 Lakemba Station survey unit

### 6.8.1 Site inspection results

The Lakemba Station survey unit includes the Lakemba Station concourse, platforms, rail corridor commuter car parks and surrounds (see Figure 13). The survey unit extends east of the existing station to Quigg Street North and Quigg Street South and extends approximately 45 metres west of the station platforms. The survey unit encompasses Railway Parade to the north and The Boulevard to the south, including portions of Haldon Street North and Haldon Street South. The survey unit also includes tree construction compounds.

The eastern portion of the rail corridor within the survey unit is located within a shallow cut below street level (Plate 14). The western portion of the rail corridor including the proposed compound areas north and south of the rail corridor appears to have been built up on an artificial embankment above street level (Plate 15).

**Plate 14: Lakemba Station view west along Platform 1. This image shows the shallow cut in which the station and rail is located**

**Plate 15: View west across proposed construction compound adjacent to Lakemba Station. The rail is located on an artificial embankment above street level at this location**

### 6.8.2 Assessment of archaeological potential

The Lakemba Station survey unit is located within a heavily urbanised and developed area. The rail corridor has been artificially cut into the natural landform in the eastern portion of the survey unit and built up on an artificial embankment to the west. The construction of the corridor and station would have disturbed any intact archaeological deposits that may have been located within these areas. There are no major watercourses located nearby. The archaeological potential of the Lakemba Station survey unit is considered to be nil to low.

### 6.8.3 Significance assessment

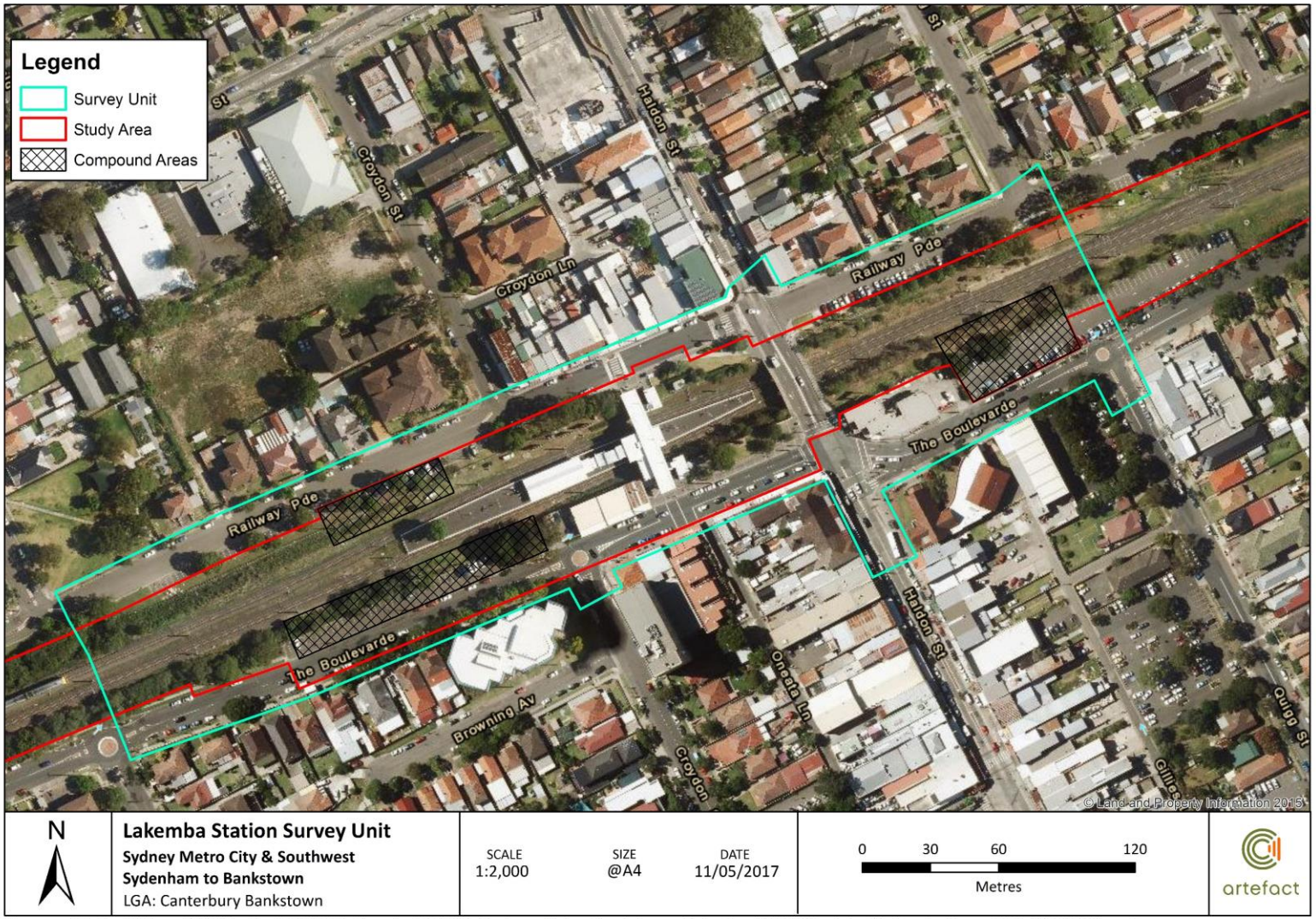
The archaeological significance of the Lakemba Station survey unit is assessed as low. This is due to the nil to low archaeological potential of the survey unit as a result of high levels of ground disturbance that would have impacted any surface or subsurface Aboriginal sites. Any Aboriginal objects within the survey unit would likely be in low densities and disturbed contexts. Therefore, it is considered unlikely that these objects would be considered rare or that they would contribute to regional research questions. No Aboriginal sites have been identified within the survey unit.

### 6.8.4 Impact assessment

No identified Aboriginal sites would be impacted by construction or operation of the project within the Lakemba Station survey unit (see Figure 13).

Due to the landscape context and largely modified nature of the Lakemba Station survey unit the archaeological potential has been assessed as nil to low. Therefore, it is unlikely that the project would impact Aboriginal objects.

**Figure 13: Lakemba Station survey unit**

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## 6.9 Wiley Park Station Survey Unit

### 6.9.1 Site inspection results

The Wiley Park Station survey unit consists of the Wiley Park Station concourse, platforms and rail corridor and surrounds (see Figure 14). It extends approximately 100 metres east of the King George Road overbridge and west to Cornelia Street. The survey unit encompasses Stanlea Parade and a section of King Georges Road to the north and The Boulevard to the south. The survey unit also includes two proposed construction compounds.

The station platforms and rail have been cut into the natural landform below street level (Plate 16), whilst the western portion of the survey unit appears to be at street level (Plate 17). Surface visibility was low throughout the survey unit. Visibility was impaired by sealed surfaces, structures and dense vegetation within the rail corridor (Plate 18). Areas of surface exposures were inspected for Aboriginal objects; however, none were identified.

**Plate 16: Wiley Park Station view east along Platform two. The east portion of the station is cut below street level**

**Plate 17: View north from western end of proposed construction compound. Rail at street level**

**Plate 18: View east along proposed construction compound adjacent to Wiley Park. Dense vegetation and rail infrastructure reduced visibility to zero**

### 6.9.2 Assessment of archaeological potential

The Wiley Park Station survey unit is located within a heavily urbanised and developed area. A large portion of the rail corridor has been cut into the natural ridge crest landform within the eastern portion of the survey unit which is located approximately 70 metres east of Coxs Creek. Whilst Aboriginal objects may occur in subsurface contexts in close proximity to watercourses, the highly erosive nature of the surrounding Blacktown soil landscape and high levels of disturbance observed indicate that

intact archaeological deposits are unlikely to occur within the survey unit. Therefore, the archaeological potential is considered to be nil to low.

### 6.9.3 Significance assessment

The archaeological significance of the Wiley Park Station survey unit is assessed as low. This is due to the nil to low archaeological potential of the survey unit as a result of high levels of ground disturbance that would have impacted any surface or subsurface Aboriginal sites. Any Aboriginal objects within the survey unit would be in low densities and disturbed contexts. Therefore, it is unlikely that these objects would be considered rare or that they would contribute to regional research questions. No Aboriginal sites have been identified within the survey unit.

### 6.9.4 Impact assessment

No identified Aboriginal sites would be impacted by construction or operation of the project within the Wiley Park Station survey unit (see Figure 14).

Due to the landscape context and largely modified nature of the Wiley Park Station survey unit the archaeological potential has been assessed as nil to low. Therefore, it is unlikely that the project would impact Aboriginal objects.

**Figure 14: Wiley Park Station survey unit**


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## 6.10 Punchbowl Station Survey Unit

### 6.10.1 Site inspection results

The Punchbowl Station survey unit includes the Punchbowl Station concourse, platforms, rail corridor and surrounds (see Figure 15). The survey unit extends approximately 185 metres east of the eastern end of the platforms and the western boundary is defined by the Punchbowl Road overbridge. The survey unit extends north along Punchbowl road and east along Urunga Parade including the small park in between these roads. The survey unit encompasses The Boulevarde along the southern boundary. The survey unit includes two proposed compound locations north and south of Punchbowl Station.

The station platforms and rail are located within a shallow cut below street level (Plate 19). The construction compound to the north of Punchbowl Station was found to have been heavily disturbed. Large quantities of fill were evident across the site and it appears that the area is currently used as a construction compound during rail possessions (Plate 20).

Visibility was low across the survey unit impeded by sealed surfaces, structures and rail infrastructure as well as introduced fill and grass cover (Plate 21).

**Plate 19: Punchbowl Station view west from concourse. The rail corridor is located within a cut**

**Plate 20: View across portion of proposed construction compound (north of Punchbowl Station). A drain and introduced fill can be seen in this image**

**Plate 21: View east across proposed construction compound (north of Punchbowl Station). Visibility is low across area due to introduced fill and grass cover**

### 6.10.2 Assessment of archaeological potential

The Punchbowl Station survey unit is located within an urban area. The rail corridor has been artificially cut into the natural landform in some locations and is at street level to the east and west of the existing station platforms. These areas are unlikely to contain intact archaeological deposits due to the high degree of disturbance and modification evident throughout and have a nil to low archaeological potential.

**Sydenham to Bankstown PAD02 (S2B PAD02)**

An area of archaeological potential was identified during the site inspection within the small park located between Punchbowl Road and Urunga Parade (see Figure 15). Analysis of aerial photography from 1943 and over the past 10 years indicates that there appears to have been little subsurface disturbance to S2B PAD02. Intact A horizons were observed in a cutting to the north of the Punchbowl Station survey unit. Therefore, there is low to moderate potential that intact archaeological deposits may be identified within this area. This area has been assessed as having Aboriginal archaeological potential and designated Sydenham to Bankstown PAD02 (S2B PAD02).

### 6.10.3 Significance assessment

The indicative archaeological significance of S2B PAD02 is considered to be moderate. Current design information indicates that the PAD would not be impacted. Should the project area be altered and the PAD potentially impacted, archaeological test excavation would be required to accurately determine the nature and significance of the impact.

The background research conducted for this study indicates that there is a paucity of Aboriginal sites recorded in the area. This has been attributed to the lack of archaeological investigations rather than a reflection of Aboriginal land use in the past. Therefore, the identification of Aboriginal objects within S2B PAD02 would contribute to a knowledge gap in the region and contribute to research questions for the Sydney Basin more generally.

The remainder of the survey unit is considered to be of low archaeological significance due to its nil to low archaeological potential. Any Aboriginal objects within the remainder of the survey unit would likely be in low densities and disturbed contexts. Therefore, it is unlikely that these objects would be considered rare or that they would contribute to regional research questions. No Aboriginal sites have been identified within the survey unit.

### 6.10.4 Impact assessment

No identified Aboriginal sites would be impacted by construction or operation of the project within the Punchbowl Station survey unit.

Due to the landscape context and largely modified nature of the majority of the Punchbowl Station survey unit, the archaeological potential has been assessed as nil to low. Therefore, it is unlikely that the project would impact Aboriginal objects.

A portion of S2B PAD02 would be impacted by the proposed new access way from Punchbowl Road to Punchbowl Station, as well as a small portion impacted by proposed landscaping works. The proposed layout of Punchbowl Station and associated landscaping and access track works in relation to S2B PAD02 is shown in Figure 16.

**Figure 15: Punchbowl Station survey unit and S2B PAD02**

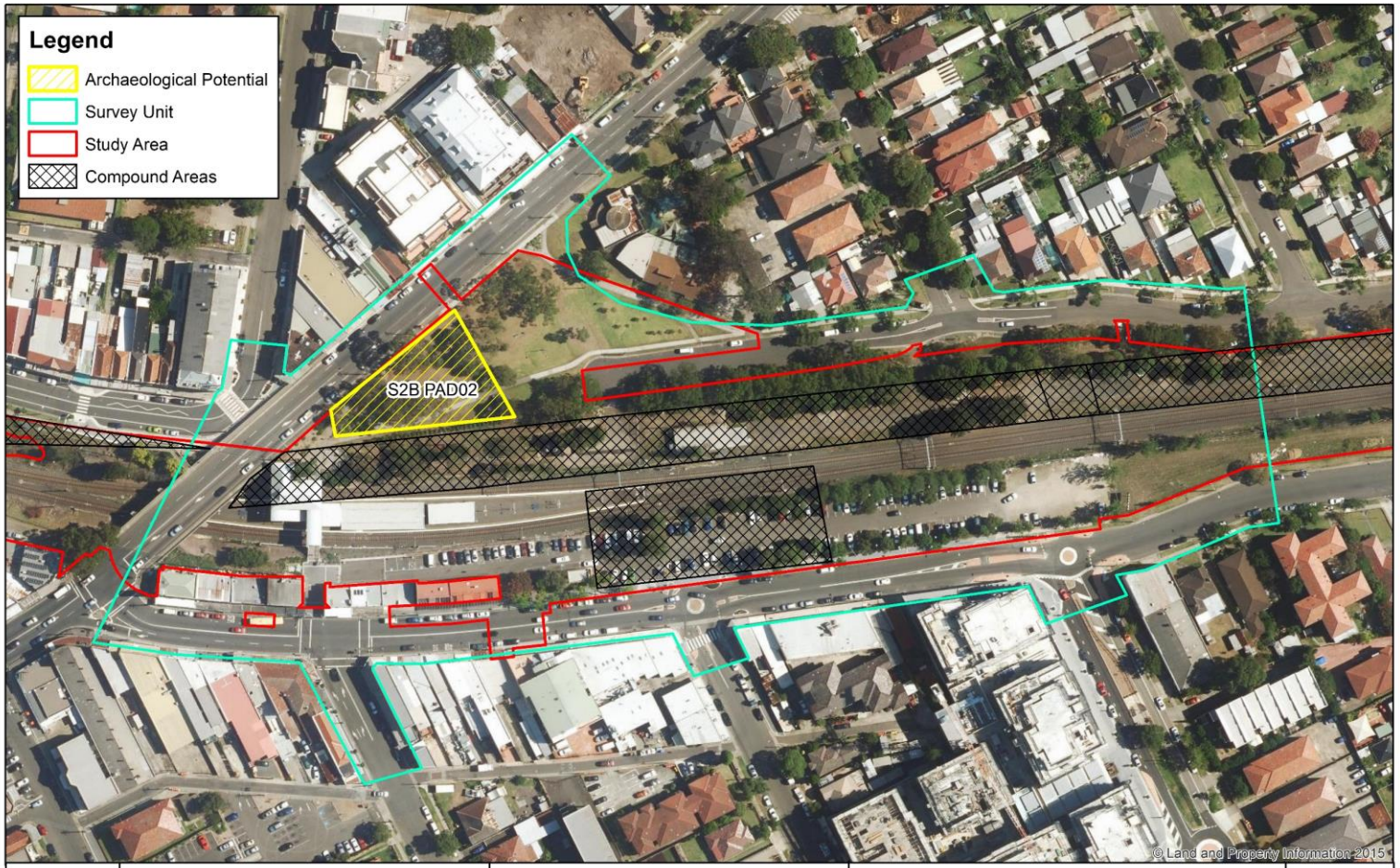


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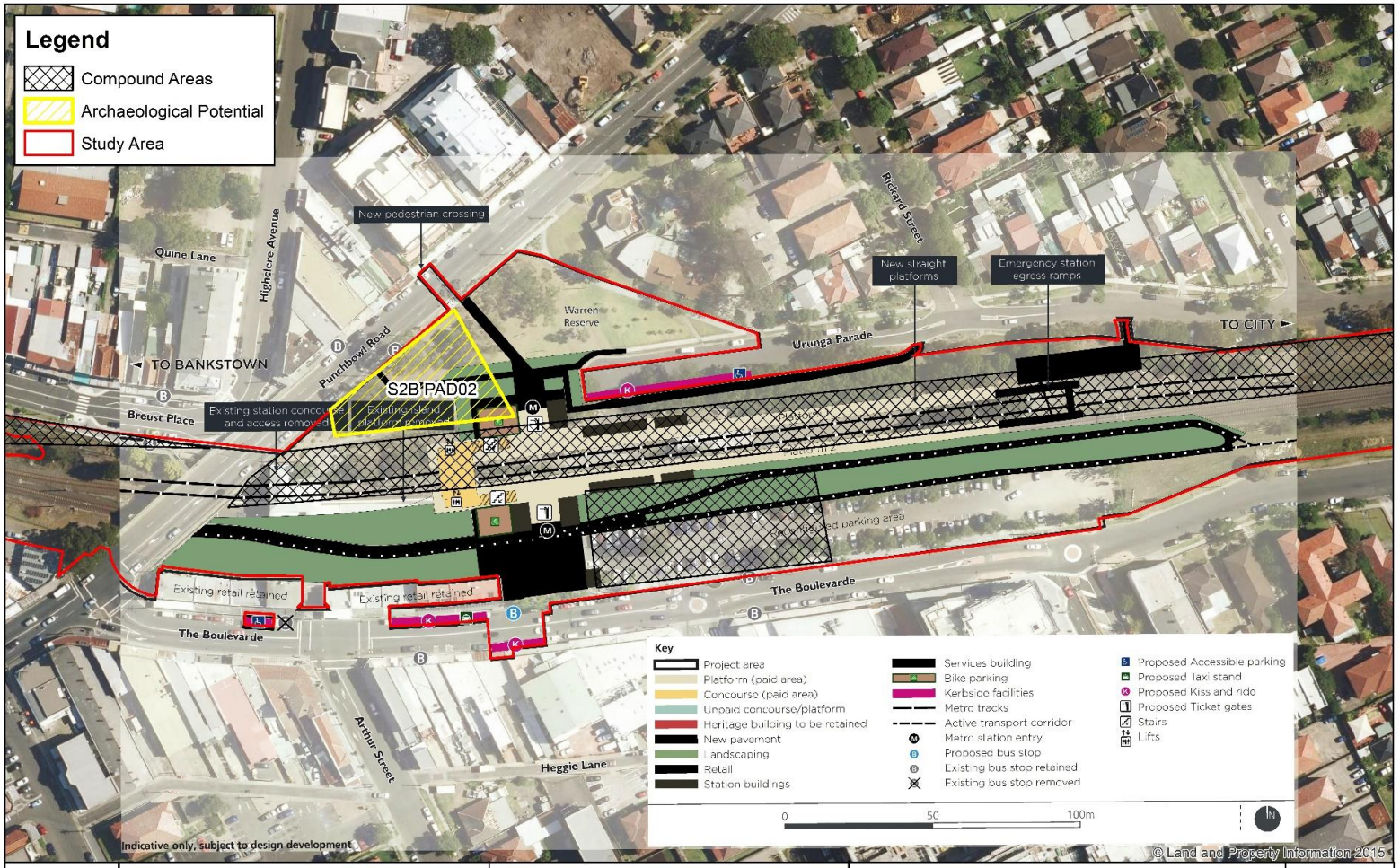
**Figure 16: Indicative layout of Punchbowl Station with reference to S2B PAD02**

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## 6.11 Bankstown Station Survey Unit

### 6.11.1 Site inspection results

The Bankstown Station survey unit includes the existing Bankstown station concourse, platforms, rail corridor and surrounds (see Figure 17). The survey unit encompasses the Bankstown City Plaza and extends east to the West Terrace overbridge including North and South Terrace. The survey unit also includes two proposed constructions compound north and south of the station. The construction compound south of the station includes a landscaped area and bus interchange. The construction compound to the north of the station includes the commuter car park and small park between the rail corridor and North Terrace.

The survey unit predominantly consists of sealed surfaces and structures; therefore, visibility was generally nil. Some green spaces are located outside of the rail corridor and exposures occurred near the roots of trees in these areas. These exposures were inspected for Aboriginal objects; however, none were identified.

**Plate 22: View west across location of proposed construction compound**

**Plate 23: Bankstown Station survey unit, exposures were inspected for Aboriginal objects**

### 6.11.2 Assessment of archaeological potential

The Bankstown Station survey unit is located within a highly modified and disturbed area. The survey unit is located over 500 metres away from a major watercourse. The station and rail are located within a cut indicating that any archaeological deposits would have been highly disturbed during the construction of the rail corridor. Therefore, the archaeological potential is considered to be nil to low.

### 6.11.3 Significance assessment

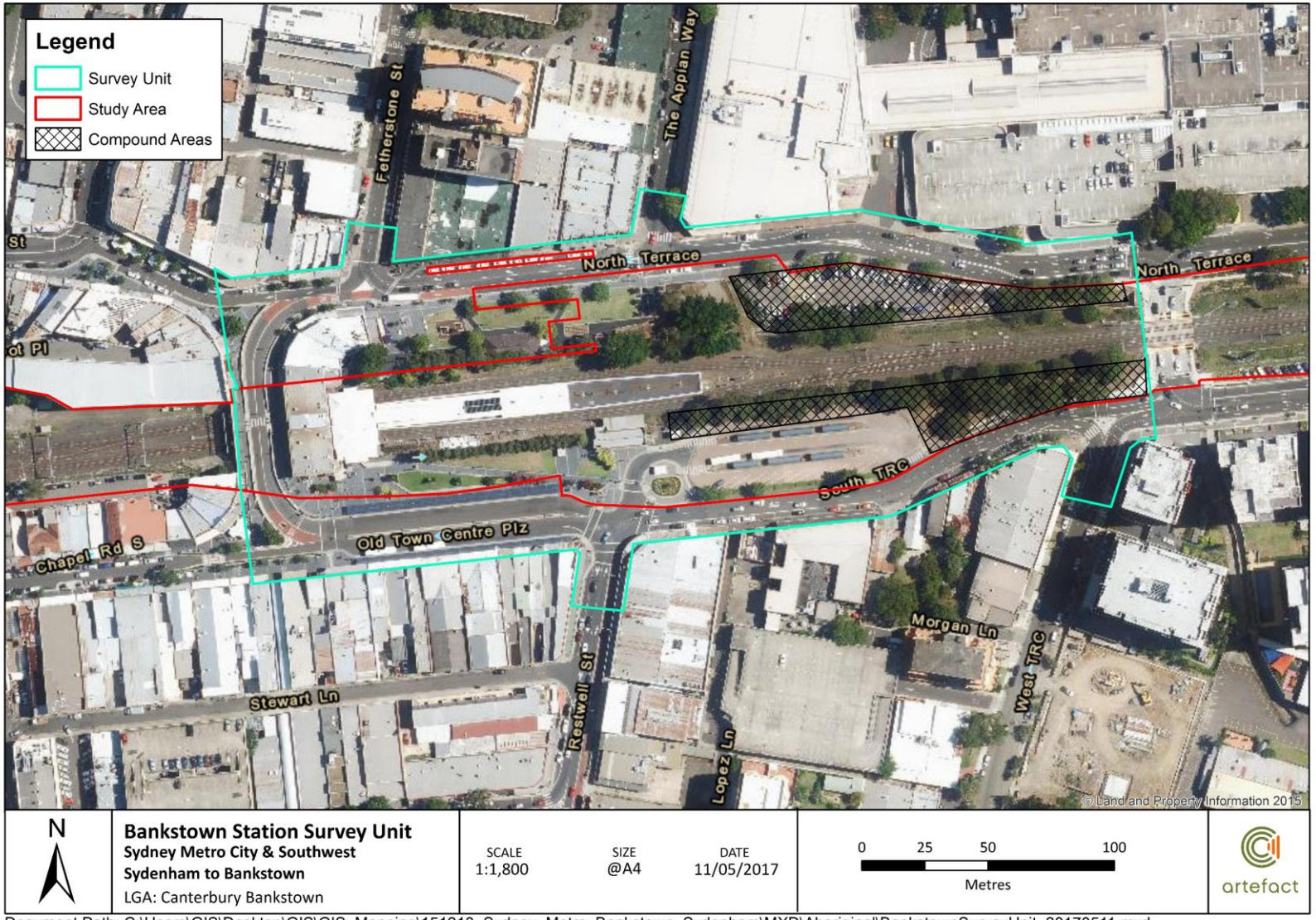
The archaeological significance of the Bankstown survey unit is considered to be low due to its nil to low archaeological potential resulting from high levels of ground disturbance that would have impacted any surface or subsurface Aboriginal sites. Any Aboriginal objects within the survey unit would be in low densities and disturbed contexts, therefore it is unlikely that these objects would be considered rare or that they would contribute to regional research questions. No Aboriginal sites have been identified within the survey unit.

### 6.11.4 Impact assessment

No identified Aboriginal sites would be impacted by construction or operation of the project within the Bankstown Station survey unit (see Figure 17).

Due to the landscape context and largely modified nature of majority of the Bankstown Station survey unit, the archaeological potential has been assessed as nil to low. Therefore, it is unlikely that the project would impact Aboriginal objects in areas of nil to low potential.

**Figure 17: Bankstown Station survey unit**

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## 6.12 Remaining areas of the rail corridor

Sections 6.13 discusses site inspection results, the archaeological potential and significance assessment and impact assessment of those areas within the study area that fall outside the Station survey units. For the purposes of this discussion these remaining areas are considered as one survey unit.

This survey unit has been split into four sections for the purposes of this discussion, the general survey unit for the remainder of the corridor, and then three additional areas that were subject to surveys in March 2017.

### 6.12.1 Remaining areas of the rail corridor - General

#### *6.12.1.1 Site inspection results*

The rail corridor consists of an undulating landform including slope, crest and flat landform contexts. Large portions of the rail corridor are located through significantly modified landform contexts, including large cuts through the underlying shale and sandstone geology (Plate 24 and Plate 25).

Visibility was generally low throughout the corridor, impeded by vegetation, structures, fill, rail track and ballast. Soil exposures occurred within areas of erosion in vehicle access tracks and cuts, however no Aboriginal objects were identified within these areas. Impacts within the rail corridor are extensive, and include landform modification, subsurface infrastructure such as gas pipelines and galvanised steel troughs (GSTs), electricity and telecommunications cables as well as rail infrastructure such as overhead wiring structures.

**Plate 24: Albermarle Road Bridge located between Marrickville and Dulwich Hill**

**Plate 25: View east from Canterbury Road Bridge**

#### 6.12.1.2 Assessment of archaeological potential

The archaeological potential of the majority of this section of the survey unit is considered to be nil to low. This is due to the significant disturbance and landform modifications which would have removed any archaeological deposits.

#### 6.12.1.3 Significance assessment

The archaeological significance of this section of the survey unit is considered to be low due to its nil to low archaeological potential resulting from high levels of ground disturbance that would have impacted any surface or subsurface Aboriginal sites. Any Aboriginal objects within this section of the survey unit would be in low densities and disturbed contexts, therefore it is unlikely that these objects would be considered rare or that they would contribute to regional research questions. No Aboriginal sites have been identified within this section of the survey unit.

#### 6.12.1.4 Impact assessment

No identified Aboriginal sites would be impacted by construction or operation of the project within this section of the survey unit.

### 6.12.2 Remaining areas of the rail corridor – McNeilly Park Marrickville

#### 6.12.2.1 Site inspection results

This section of the survey unit is located in McNeilly Park, Marrickville, approximately 100 m to the west of Marrickville Station on the southern side of the rail corridor. This section of the survey unit is within McNeilly Park, totalling approximately 2100 $m^2$ in size (Figure 18). This section of the survey unit is approximately 900 m from the nearest freshwater course, a canalised drainage line into the Cooks River.

This section of the survey unit is located on level ground to the south of the rail corridor currently used as open space in the public park. This portion of the survey unit is located on a slight depression in the local landscape, however the ground has been levelled flat and topsoil has been redeposited. Introduced grasses and planted gardens surround this western portion of the survey unit.

**Plate 26: Level ground in western portion of the survey unit, west aspect**

**Plate 27: Planted Casuarina trees on outer margins of park, north-west aspect**

#### 6.12.2.2 Assessment of archaeological potential

Historical aerial photos from 1943 of this section of the survey unit show the area to be open ground to the south of the rail corridor. These aerials show evidence of ground disturbance, including the construction of wartime air raid shelters directly to the south of the western portion of the survey unit. Depressions in the ground have been infilled and topography cut down to make a level surface. The exposed soil profile shows introduced top dressing for the garden use.

No Aboriginal objects were identified in this section of the survey unit nor areas of PAD. This section of the survey unit is considered to have nil to low potential for Aboriginal archaeological deposits.

#### *6.12.2.3 Significance assessment*

No Aboriginal sites have been identified within this section of the survey unit.

Due to the high degree of disturbance throughout this section of the survey unit, the archaeological significance was determined to be nil to low. Any Aboriginal objects within this section of the survey unit would be in disturbed contexts and likely low densities. Artefacts recovered from a-contextual deposits would not likely provide research value nor would they likely be rare.

#### *6.12.2.4 Impact assessment*

No identified Aboriginal sites would be impacted by construction or operation of the project within this section of the survey unit.

### 6.12.3 Remaining areas of the rail corridor – Canterbury Bowling Club, Canterbury

#### *6.12.3.1 Site inspection results*

This section of the survey unit is located on an artificially terraced south-facing hillside that overlooks Cooks River in Canterbury, to the south of the rail corridor. This section of the survey unit encompasses the site of the Canterbury Bowling Club, as well as an additional area of land on Close Street. This area also includes a 10 m wide strip of land that extends from the eastern portion of the former bowling club to the Cooks River through an open foreshore dog park. This section of the survey unit is approximately 13,900 $m^2$ in extent (Figure 19).

The Canterbury Bowling Club area consists of a two-storey club building, a lower car park, and three landscaped bowling greens on the upper part of the hillside, adjacent to the railway corridor. The surrounding landform is steeply sloped and the bowling club has been terraced into a lower cut on the Close Street frontage, and an upper terrace towards the railway corridor. The upper terrace has been artificially raised on the southern side, and artificially cut in on the northern side. The bowling green has been landscaped and cleared.

The eastern extension of land in this section of the survey unit runs through the foreshore park towards the Cooks River. Evidence of previous ground disturbance and utility services are present along this alignment of land. The foreshore portion has been raised on a concrete abutment to an artificial height above the edge of the river. The ground surface in the foreshore park has been artificially introduced and does not represent a natural ground surface.

**Plate 28: Landscaped and levelled bowling greens, north-east aspect**

**Plate 29: View of artificial ground and the concrete abutment at foreshore of the Cooks River, south aspect**

#### *6.12.3.2 Assessment of archaeological potential*

The majority of this section of the survey unit consists of artificially cut or artificially filled ground. The steep hillslope on the northern bank of the Cooks River has been terraced to create level surfaces, with multiple retaining walls to stabilise the slope. Numerous services and stormwater drainage channels cut through the study area, with major sewerage lines along the alignment of Close Street. Stormwater drainage lines and culverts run along the eastern extent of the survey unit.

No Aboriginal objects were identified within this section of the survey unit. Despite proximity to the Cooks River, ground disturbance along the foreshore had been extensive. The upper portions of the survey unit consist almost entirely of cut or filled land. As such, no areas of PAD were identified.

#### *6.12.3.3 Significance assessment*

No Aboriginal sites have been identified within this section of the survey unit.

Due to the high degree of disturbance throughout this section of survey unit, the archaeological significance was determined to be nil to low. Any Aboriginal objects within this section of the survey unit would be in disturbed contexts and likely low densities. Artefacts recovered from a-contextual deposits would not likely provide research value nor would they likely be rare.

#### *6.12.3.4 Impact assessment*

No identified Aboriginal sites would be impacted by construction or operation of the project within this section of survey unit.

### 6.12.4 Remaining areas of the rail corridor – Brancourt Avenue Park, Bankstown

#### *6.12.4.1 Site inspection results*

This section of the survey unit is located in an area of public parkland, adjacent to the rail corridor, off Brancourt Avenue in the suburb of Bankstown (Figure 20). The survey unit is bounded by medium density housing to the north and east and is roughly triangular in shape. The area is lightly vegetated with regrowth Eucalyptus trees. An asphalt path is runs through the centre of the survey unit parallel to the rail corridor. This section of the survey unit is approximately 2,650 $m^2$ in extent.

The ground surface has been ablated by up to 20 cm, and has been redressed with topsoil. Asphalt and gravel has been laid over the centre. Areas where topsoil has eroded away reveal natural underlying clay. This section of the survey unit is located on ground with a slight slope facing towards the south.

**Plate 30: Introduced topsoil at northern edge of survey unit, west aspect**

**Plate 31: View of introduced soil and exposed underlying clay, south aspect**

#### *6.12.4.2 Assessment of archaeological potential*

The ground in this section of survey unit has been heavily eroded and redressed with imported soils. Clay exposures reveal the original shallow depth of the original topsoil in the area. As such, the original topsoil has been almost entirely removed from the study area.

No Aboriginal objects were identified during the site inspection. As the original ground surface has been heavily eroded, no areas of PAD were identified.

#### *6.12.4.3 Significance assessment*

No Aboriginal sites have been identified within this section of survey unit.

Due to the high degree of disturbance, the archaeological significance was determined to be nil to low within this section of the survey unit. Any Aboriginal objects would be in disturbed contexts and likely low densities. Artefacts recovered from a-contextual deposits would not likely provide research value nor would they likely be rare.

#### *6.12.4.4 Impact assessment*

No identified Aboriginal sites would be impacted by construction or operation of the project within this section of the survey unit.

**Figure 18: Additional Survey Unit – McNeilly Park Marrickville**


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**Figure 19: Additional Survey Unit – Canterbury Bowling Club, Canterbury**

**Figure 20: Additional Survey Unit – Brancourt Avenue Park, Bankstown**


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# 7.0 MITIGATION MEASURES

## 7.1 Approach to mitigation

### 7.1.1 Guiding principles

The overall guiding principle for cultural heritage management is that where possible Aboriginal sites would be conserved. If conservation is not practical, measures would be taken to mitigate against impacts to Aboriginal sites.

The nature of mitigation measures recommended is primarily based on an assessment of archaeological significance. The recommendations are also informed by cultural significance, which would be discussed with the MLALC, GLALC and other registered Aboriginal stakeholders.

### 7.1.2 Aboriginal Cultural Heritage Assessment Report

An Aboriginal Cultural Heritage Assessment Report (ACHAR) is currently being prepared in accordance with the OEH *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*. The report will include:

- Details of Aboriginal stakeholder consultation
- An assessment of cultural significance for the project area and identification of any specific areas of cultural significance based on consultation with Aboriginal stakeholders
- A methodology for archaeological management including test excavation and salvage where required.

### 7.1.3 Test / salvage excavation of S2B PAD01 and S2B PAD02

Testing would only be required within identified areas of PAD where subsurface impacts are proposed. If impacts can be avoided no further archaeological investigation would be required.

S2B PAD01 is outside the project area boundary and would not be impacted.

Sample testing of the portion of S2B PAD02 that would be impacted would allow the nature and significance of it to be more accurately assessed. Test excavation could be undertaken in accordance with the SEARs and the OEH code of practice. The results could then be input into the ACHAR. Note that if Aboriginal objects are located during testing pre-approval, salvage of the site could not be undertaken until the project is approved.

If testing does not occur prior to approval, a flexible test/salvage methodology would be adhered to in areas of PAD that were to be impacted. The methodology would be outlined in the ACHAR.

### 7.1.4 Unexpected finds

The ACHAR would provide a method to manage potential heritage constraints and unexpected finds during construction works across the entire project area. This document would include information on any requirements during construction for:

- Protecting any identified Aboriginal heritage sites in the immediate area during construction activities

- A procedure to manage reporting and investigation when unexpected finds are encountered.

The ACHAR should also incorporate mitigation measures and to be applied during construction, including but not limited to contractor training in general Aboriginal cultural heritage awareness, and any on-going opportunities for Aboriginal community engagement.

### 7.1.5 Discovery of human remains

If suspected human skeletal remains are uncovered at any time throughout the proposed works, the unexpected finds procedure should be implemented.

## 7.2 Mitigation and management measures – Construction

The measures detailed in Table 3 are proposed to address potential impacts on Aboriginal heritage sites and areas of archaeological potential during construction. There are currently no identified Aboriginal sites within the study area. However, archaeological excavation at S2B PAD02 may identify Aboriginal objects. Archaeological excavation would be required within the portions of those areas of archaeological potential that would be impacted (S2B PAD02).

Mitigation and management measures were developed following consideration of:

- Statutory requirements under the *National Parks and Wildlife Act 1974* as amended.
- The results of the background research, site survey and assessment.
- Consultation with the MLALC and GLALC

*(note: mitigation measures for archaeological excavation below assume that testing under the Secretary's environmental assessment requirements is not undertaken first. May not need these if impacts are avoided)*

**Table 3: Aboriginal heritage mitigation measures**

| Reference | Mitigation measure | Portion of the study area |
|---|---|---|
| AH1 | Aboriginal stakeholder consultation would be carried out in accordance with the NSW Office of Environment and Heritage's *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*. | All |
| AH2 | An Aboriginal cultural heritage assessment report would be prepared in accordance with the OEH *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*. The Aboriginal cultural heritage assessment report would include:<br>• Details of Aboriginal stakeholder consultation conducted in accordance with AH1<br>• An assessment of cultural significance for the project area and identification of any specific areas of cultural significance based on consultation with Aboriginal stakeholders<br>A methodology for archaeological management, including test excavation and salvage (refer to AH3). | All |
| AH3 | Archaeological test excavation (and salvage when required) would be carried out S2B PAD02 (Punchbowl). Excavations would be conducted in accordance with the methodology outlined in the Aboriginal cultural heritage assessment report. | Punchbowl Station |

| Reference | Mitigation measure | Portion of the study area |
|---|---|---|
| AH4 | Appropriate Aboriginal heritage themes would be incorporated into the Heritage Interpretation Strategy for the project in consultation with Aboriginal stakeholders. | All |

## 7.3 Mitigation and Management Measures – Operation

No additional mitigation measures for Aboriginal heritage are required.

# 8.0 REFERENCES

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SYDENHAM TO BANKSTOWN

# ENVIRONMENTAL IMPACT STATEMENT

> Technical Paper 4 – Aboriginal heritage assessment