Attachment C

Review of Environmental Factors – Pop-Up Cycleway – Moore Park Road

Review of Environmental Factors

Moore Park Road Pop-Up Cycleway

Prepared for City of Sydney Council
March 2021

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Review of Environmental Factors

Moore Park Road Pop-Up Cycleway

Report Number

J210104 RP#1

Client

City of Sydney Council

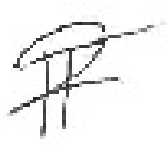
Date

9 March 2021

Version

v3 Final

Prepared by



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1 Introduction

This report is a Review of Environmental Factors (REF) for the continued operation for up to two years of a pop-up cycleway along Moore Park Road (the project) in the Sydney Local Government Area (LGA). The existing pop-up cycleway was constructed under *the Environmental Planning and Assessment (COVID-19 Development – Temporary Cycleways) Order 2020*. The proponent is City of Sydney Council (City of Sydney).

By virtue of Clause 94(1) of the State Environmental Planning Policy (Infrastructure) 2007 (the Infrastructure SEPP), the project is development that is permissible without consent and to which Part 5 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) applies.

This REF assesses the project against Clause 228 of the NSW *Environmental Planning and Assessment Regulations* 2000 (EP&A Regulation). It allows City of Sydney, as the determining authority, to fulfil its duty to examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity as required under Section 5.5 of the EP&A Act.

This REF was prepared in accordance with City of Sydney's *Part 5 Environmental Impact Assessment Procedures Manual* (City of Sydney 2012).

Included in the REF are details of the site and surrounds, the project, the relevant strategic planning framework, an assessment of the potential environmental impacts, and the proposed management measures.

The REF is accompanied by the following:

- Aboriginal and Historic Heritage Due Diligence Assessment (Appendix A).

2 Site analysis

2.1 Site location and context

The existing pop-up cycleway is located in the Sydney local government area (LGA), extending from its eastern extent at the intersection of Moore Park Road, Lang Road and Oxford Street and traversing along the southern side of Moore Park Road (westbound) to the intersection with Anzac Parade and Flinders Street. The location of the cycleway is shown below in Figure 2.1.

The western end of the pop-up cycleway connects with another existing pop-up cycleway along Fitzroy Street, which is also intended to be retained, and which is subject to a separate REF being prepared on behalf of City of Sydney. The two pop-up cycleways connect the existing Bourke Street cycleway to the west with the Centennial Park cycleway along Oxford Street to the east.

2.2 Land ownership and legal description

The project is within the boundaries of Moore Park Road on land owned by the City of Sydney.

2.3 Existing environment

2.3.1 Cycling infrastructure

The pop-up cycleway was constructed between 9 June 2021 and 8 August 2020 by Transport for NSW (TfNSW) under *the Environmental Planning and Assessment (COVID-19 Development – Temporary Cycleways) Order 2020*. It opened for use on 11 August 2020.

The cycleway is two-way and approximately 1.3 km in length. The cycleway was constructed within the roadway and includes line and paint markings, signage, and Klemmfix barriers to separate the cycleway from road traffic. A small section located on the western extent (approximately 350 m) is shared with an existing pedestrian path. At the signalised intersection of Moore Park Road and Driver Avenue, the existing pram ramp was widened, and cycle lanterns added as part of the original cycleway installation. The key features of the pop-up cycleway are shown in Photograph 2.1 and Photograph 2.2.

2.3.2 Parking and restrictive use zones

The eastern portion of Moore Park Road is typified by on-street parking for various permissible durations.

Along Moore Park Road, the roadway is subject to variable Event Mode conditions from Poate Road and Driver Avenue and is a no-stopping zone through from Driver Avenue to Anzac Parade.

2.3.3 Special event clearway zones

During Event Mode, there is a part-time clearway in effect along the southern edge of Moore Park Road between Poate Road and Anzac Parade. This clearway is to accommodate and disperse the heavy traffic volumes which converge on the stadium during events. From Poate Road to Regent Street, the clearway zone also operates as a de facto taxi area. From Regent Street to Driver Avenue, the clearway zone operates as a bus lay-by and drop-off area.

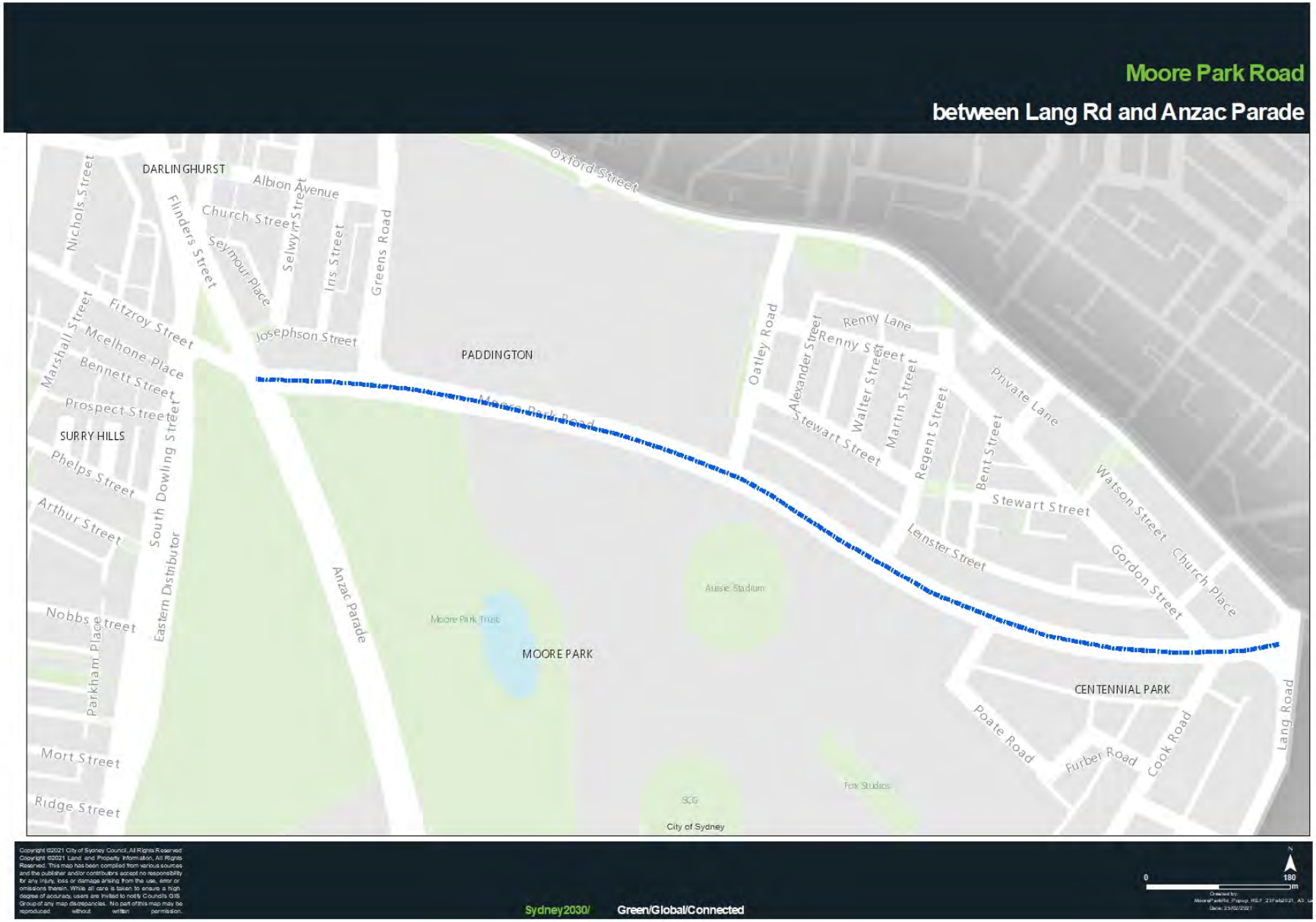

Figure 2.1 **Moore Park Road pop-up cycleway location**

Photograph 2.1 **Moore Park Road pop-up cycleway – looking westwards**

Photograph 2.2 **Moore Park Road pop-up cycleway – looking eastwards**

2.3.4 Public transport

There is one bus route (355 Bondi Junction to Marrickville) along Moore Park Road which runs between Oxford Street and Cook Road (in addition to school bus services).

2.3.5 Street trees and public open space

Street trees located within proximity to the project are primarily located within nature strips and hard surfaced shared pedestrian/cycle paths adjoining residential and commercial properties. Due to the restrictive nature of their growing environment, many trees have caused local damage (such as uplift) to concrete kerb infrastructure.

An iconic row planting of 33 Cabbage Tree Palms (*Livistonia australis*) line the central median that separates eastbound and westbound traffic along Moore Park Road. The equidistant spacings between these palms are populated with various decorative plantings. The specialised Elsholz kerb which forms the median functions as a barrier wall, allowing the palms to be planted within such close proximity of a 40 km/h signposted road.

The northwest corner of Moore Park features a historically and culturally significant grouping of figs which date from the late-Victorian period. These trees include six Moreton Bay Figs (*Ficus macrophylla*) and two slightly smaller Port Jackson Figs (*Ficus rubiginosa*) which range between 15-20 m in height and have a canopy spread between 18-30 m in diameter.

Moore Park is 115 ha of open space south of Moore Park Road and includes the sporting playing fields, the ES Marks Athletics Field, an 18-hole Group One Championship Public Golf Course and Driving Range, tennis courts and netball courts.

2.3.6 Existing land use and zoning

The project area along Moore Park Road passes a variety of mixed land use areas. The eastern and northern boundaries of Moore Park Road are surrounded by Mixed Use and General Residential areas, whereas the southern and south-western edges of Moore Park Road are typified by Special Activity areas (Sydney Cricket and Sports Grounds), Public Recreation Areas (Moore Park) and Infrastructure (Anzac Parade, South Dowling Street and Eastern Distributer).

The project is within land zoned R1 General Residential under the *Sydney Local Environmental Plan 2012* (Sydney LEP). Adjacent land zones include:

- B4 Mixed Use;
- R2 Low Density Residential;
- RE1 Public Recreation;
- SP1 Special Activities; and
- SP2 Infrastructure.

2.4 Surrounding development

As noted above, the surrounding area contains a mix of residential, commercial, mix use and recreational lands. Residential and commercial development is largely in the form of small-lot terrace house development.

Notable development in proximity to the project include Victoria Barracks, Centennial parklands, Sydney Football Stadium (SFS) and the Sydney Cricket Ground. These are described in further detail below.

Victoria Barracks is an active Australian Army base (including historic Georgian army barracks) located between Oxford Street and Moore Park Road, north of the project.

Centennial Parklands (south and east of the project) encompasses Centennial Park, Moore Park (including the Entertainment Precinct) and Queens Park, in total around 360 hectares. Centennial Park is a grand park in the European tradition. It features formal gardens, ponds, grand avenues, statues, heritage buildings and sporting fields. Queens Park is set within a natural amphitheatre at the foot of sandstone cliffs with panoramic views of the Sydney skyline. Moore Park comprises 115 hectares of open space and contains playing fields, the E.S. Marks Athletics Field, an 18-hole golf course and a tennis centre.

The SFS is a football stadium located at Moore Park, south of the project, with 45,000 seats and up to 55,000 patron capacity in concert mode. The SFS hosts Rugby League, Rugby Union, Football and concerts. The SFS is currently under construction and is estimated to open in 2022.

The Sydney Cricket Ground is also located at Moore Park, south of the project, and has the capacity to hold 48,000 people. The stadium is widely recognised for retaining its historic members and ladies grandstands. The Sydney Cricket and Sports Ground Trust is responsible for managing the Sydney Cricket Ground and Allianz Stadium.

3 The proposal

3.1 Overview

The existing pop-up cycleway was constructed between June and August 2020 under the *Environmental Planning and Assessment (COVID-19 Development-Temporary Cycleways) Order* 2020. The cycleway provides a safe connection from the Eastern Suburbs to Central Sydney and usage has steadily increased over time to an average of 1,915 trips per week in February and 2,165 trips in the first week of March.

City of Sydney proposes to continue the operation of the existing two-way cycleway currently operating along Moore Park Road for a period up to two years while the City considers and consults on a permanent project.

The project is not anticipated to require further construction works as the cycleway is currently constructed. During operation of the cycleway, minor maintenance activities may be undertaken such as:

- site inspection(s) by City of Sydney to ensure the infrastructure remains adequate for continued use;
- replacement of the safety barriers with other materials that may be more suitable for ongoing operation (eg a concrete product or similar).

The continued operation of the cycleway would extend the temporary removal of parking spaces on the westbound kerbside lane of Moore Park Road. To address community concerns raised during operation of the cycleway, City of Sydney will go through the necessary processes to implement overnight parking along the southern side of Moore Park Road between Cook Road and Poate Road. The proposed parking restrictions would be *1P permit exempt, 7pm-6am, 7 days, Area 13, no stopping other times*.

The City of Sydney will work with Transport for NSW and Woollahra Council to develop a cycleway on Oxford Street between Taylor Square and Centennial Park. When a concept design has been developed, the City of Sydney will consult extensively with communities. Once the Oxford Street cycleway is delivered, it is the City of Sydney's intention is to remove the pop-up cycleway on Moore Park Road.

3.2 Objectives

The cycleway was initially installed and intended as a temporary cycleway to facilitate physical distancing and safe cycling to support travel during the COVID-19 recovery. Temporary 'pop-up' cycleways were installed where it was identified as a strategic priority. This included locations where existing cycleways were discontinuous, where there was demand for cycling infrastructure, where there was a recognised route to key employment areas or where there was a recognised hot spot of congestion requiring more transport choices including access to recreation.

The Moore Park Road cycleway fills a missing bike network connection between the Eastern suburbs, the city centre and towards the West. It is part of the NSW Government's Co-designed Bicycle Network Blueprint and City of Sydney's Cycling Strategy and Action Plan network (Bike Network). The cycleway provides an alternative option to bus, rail and light rail travel from eastern suburbs to CBD and west and provides a cycleway connection to key transport junctions such as Bondi Junction Station, Central Station Light Rail corridor, Anzac Parade and Oxford Street bus corridor.

The extended operation of the cycleway will continue to provide a safe means of active transport to key employment and recreational areas.

3.3 Project justification

The project is justified by the following aspects which are discussed further below:

- benefits of cycling infrastructure (particularly separated cycleways) to improve safety, increase ridership and reduce pressure on public transport and car use;
- integration of the project within the City of Sydney and NSW's strategic transport framework; and
- consideration of alternatives.

3.3.1 Benefits of cycling infrastructure

The creation of a comprehensive, co-ordinated and practical bike network across the local government area, and connecting to cycleways in adjoining local government areas, will benefit current and future cyclists and the wider community. Benefits include improvements to environmental and health conditions, reductions in traffic congestion and enhanced motorist, cyclist and pedestrian safety.

Riders travelling through inner Sydney are required to travel with general traffic for the portions of their journey where separated cycling infrastructure is not available. This can discourage new and inexperienced riders and contributes to an overall reduction in cycling demand.

Separation between bikes and vehicles is one of the most effective ways to encourage more people to ride. Increasing bike riding takes pressure off public transport and creates more space on the roads for those who need to drive including taxis and couriers.

Up to 84 per cent of people who do not ride regularly would consider riding more often if dedicated lanes and off-road routes were made available (Environmetrics 2006). Furthermore, research undertaken for the NSW bike plan for Council showed there was a strong public desire for the NSW Government and local councils to provide greater levels of dedicated cycling infrastructure.

The cycleway was initially installed and intended as a temporary cycleway to facilitate physical distancing and safe cycling to support travel during the COVID-19 recovery. Temporary cycleways were installed where it was identified as a strategic priority. This included locations where existing cycleways were discontinuous, where there was demand for cycling infrastructure, where there was a recognised route to key employment areas or where there was a recognised hot spot of congestion requiring more transport choices including access to recreation.

The extended operation of the cycleway will continue to provide a means of active transport to key employment and recreational areas.

The benefits realised in the first six months of pop-up cycleway operation include:

- an average of 1,915 trips per week in the month of February 2021;
- 15% increase in ridership between week 1 and week 12 of the cycleway being opened;
- 92% of people feel that the pop-up cycleway is safer than the previous road conditions; and

- 98% of riders surveyed (n=100) intended to ride at least weekly in the future, compared to 57% prior to the pop-up cycleway.

3.3.2 Strategic transport context

The *NSW State Plan* and the (now superseded) *City of Cities: Sydney Metropolitan Strategy*, both acknowledged that cycling has a significant role to play in the NSW Government's pursuit of a number of initiatives aimed at decreasing car dependence and improving the environment.

i Sustainable Sydney 2030

Sustainable Sydney 2030 (City of Sydney 2017) is the Council's community strategy plan and is a long-term program and commitment to achieving the vision and targets set out for a green, global, connected city.

The vision outlined for the LGA is a city which is clean, green and connected. To achieve the vision of a connected city, the plan aims to create a city which is easy to get around and has a local network for walking and cycling, and transit routes connecting the city's villages, and the city centre. It includes ten strategic directions to guide the future of the LGA, as well as ten targets against which to measure progress. This project is aligned with the following *Sustainable Sydney 2030* strategic directions and objectives:

1. Direction 3 – Integrated Transport for a Connected City:

    a) Objective 3.2 – Enhanced opportunities for inner Sydney residents to walk and cycle to the city centre.

    b) Objective 3.3 – An integrated approach to traffic management, public transport, walking and cycling and public domain design.

2. Direction 4 – A City for Walking and Cycling:

    a) Objective 4.1 – Develop a network of safe, linked pedestrian and cycle paths integrated with green spaces throughout both the City and Inner Sydney.

    b) Objective 4.2 – Give greater priority to cycle and pedestrian movements and amenity in the City Centre.

    c) Objective 4.3 – Promote green travel for major workplaces and venues in the City.

3. Target 7 - By 2030, at least 10 per cent of City trips will be made by bicycle and 50 per cent by pedestrian movement.

ii City of Sydney's Cycle Strategy and Action Plan

The *City of Sydney Cycle Strategy and Action Plan 2018-2030 (*City of Sydney 2018) (cycling strategy) is the Council's commitment to making cycling an equal first choice transport mode with along with walking and public transport. It aims to facilitate an increase to 10% of all trips made in the LGA by 2016 to be by bicycle. It also aims to promote a culture of bicycle use, increase the proportion of cyclists who feel safe and confident when cycling and improve cyclist safety. The cycling strategy is based on a comprehensive analysis of cycling issues by consultants for the Council.

The cycling strategy identifies the city's cycling network and proposes a high level of provision on key routes through the LGA. The project is part of the Regional Route Network as identified in the cycling strategy and is also part of the Transport for NSW (TfNSW) regional cycle route.

iii Sydney's Cycling Future

Sydney's Cycling Future (TfNSW 2013) follows on from the NSW Government's Transport Master Plan and outlines how improvements to Sydney's cycle network will be made through the planning of new transport and infrastructure projects. The project is identified as a strategic bicycle corridor for Connecting Inner Sydney. Further, the report identified that 75% of customers engaged by the NSW Government for the plan felt quite, or very, safe and comfortable using separated cycleways (off road and on road).

3.3.3 Evaluation of alternatives

The following alternatives were considered for the project:

- Option 1 – 'Do-nothing'; or
- Option 2 – continued operation of Moore Park Road pop-up cycleway (preferred option).

i Do-nothing

Should no continuation of the current cycleway on Moore Park Road be sought, then it would be removed at the lapse of COVID-19 Development – Temporary Cycleways Order (2020).

The do-nothing option is not the preferred option as it would not provide a connected and safe cycling network that would encourage cycling within the inner CBD as per the strategic objectives identified above in Section 3.3.2. The do-nothing option would also reverse the positive impacts and benefits of the current cycleway and disrupt an established pattern of use.

A 'do nothing' option would therefore have both a short-term and long-term negative impact.

ii Continued operation

Continued operation of the Moore Park Road cycleway is the preferred option and, therefore, is the subject of this REF. Continued operation of the cycleway assists in providing a connected and safe cycling network that would encourage cycling within the inner city region and, therefore directly meets the strategic objectives identified above in Section 3.3.2.

By retaining the existing cycleway arrangements, there is a greater alignment with the stated strategic direction of transport in Sydney and a consistent, stable adjustment for road network users across all transport modes towards those strategic goals.

Continued operation would result in the positive impacts and benefits of the current cycleway operation being extended for a further period. This option would result in the continued removal of parking spaces on the westbound kerb of Moore Park Road; however, these impacts are considered to be outweighed by the overall positive impacts of the project and mitigation measures have been (or will be) implemented (see Chapter 8).

4 Legislative and planning framework

4.1 Planning and State legislation

4.1.1 Environmental Planning and Assessment Act 1979 and Environmental Planning and Assessment Regulation 2000

Pursuant to Clause 94(1) of the Infrastructure SEPP, the project does not require development consent and is also not treated as exempt development in any instrument. The provisions of Part 5 of the EP&A Act are, therefore, enlivened.

Section 5.5 of the EP&A Act requires that, in considering an activity under Part 5, a determining authority shall "examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity".

Further, Clause 228 of the EP&A Regulation requires that:

> "... for the purposes of Part 5 of the Act, the factors to be taken into account when consideration is being given to the likely impact of an activity on the environment include:
>
> (a) for activities of a kind for which specific guidelines are in force under this clause, the factors referred to in those guidelines, or
>
> (b) for any other kind of activity:
>
> (i) the factors referred to in the general guidelines in force under this clause, or
>
> (ii) if no such guidelines are in force, the factors referred to subclause (2)."

This REF has been prepared to enable Council to examine and take into account the environmental impacts of the project in accordance with Section 5.5, including consideration of the factors specified in Clause 228(2) of the EP&A Regulation.

An activity that has a significant environmental impact may require further assessment in the form of an environmental impact statement (EIS) or species impact statement (SIS) under Section 5.7 of the EP&A Act.

4.1.2 Roads Act 1993

The NSW *Roads Act 1993* establishes roads authorities, typically TfNSW or local councils, and provides those authorities with a range of functions with respect to road works. TfNSW has jurisdiction over major roads and local government over minor roads. The *Roads Act 1993* also sets out the rights of the public in regard to access to public roads.

Under section 138 or Part 9, Division 3 of the NSW *Roads Act 1993*, a person must not undertake any works that impact on a road, including connecting a road (whether public or private) to a classified road, without approval of the relevant authority, being either TfNSW or local council, depending upon classification of the road.

Council has jurisdiction over all roads within the project area but also meet regularly with TfNSW to discuss road matters. Further, it is noted that the cycleway was originally constructed by TfNSW.

4.1.3 National Parks and Wildlife Act 1974

Aboriginal objects and places are protected in NSW under Part 6 of the NSW *National Parks and Wildlife Act* 1974 (NPW Act). Section 90 of the NPW Act requires an Aboriginal heritage impact permit (AHIP) for harm to an Aboriginal object or Aboriginal place.

The project is unlikely to have any significant impacts on Aboriginal heritage sites, with no Aboriginal objects identified within the project area during a site survey conducted as part of the Aboriginal cultural heritage due diligence assessment. Further discussion of the potential impacts to Aboriginal heritage sites resulting from the project are detailed in Section 6.6.

4.1.4 Heritage Act 1977

The *Heritage Act 1977* is the primary piece of State legislation affording protection to items of cultural heritage in NSW. Under the Heritage Act, 'items of environmental heritage' include places, buildings, works, relics, moveable objects and precincts identified as significant based on historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic values. State significant items are listed on the SHR and are given protection under the Heritage Act against any activities that may damage an item or affect its heritage significance. Further discussion of the potential impacts to heritage items resulting from the project are detailed in Section 6.6.

4.1.5 Sydney Cricket and Sports Ground Act 1978

The *Sydney Cricket and Sports Ground Act* 1978 constituted the Sydney Cricket and Sports Ground Trust that are charged with the care, control and management of the Sydney Cricket Ground and the Sydney Football Stadium. Under the *Sydney Cricket and Sports Ground Act* 1978, the Sydney Cricket and Sports Ground Trust may carry out works for the improvements, development and maintenance of the applicable lands.

The Sydney Cricket and Sports Ground Trust is considered a key stakeholder with which City of Sydney has ongoing consultation in relation to projects in proximity to the Sydney Cricket and Sports Ground Trust.

4.2 State and local policies and plans

4.2.1 State Environmental Planning Policy (Infrastructure) 2007

The project falls within the provisions of the *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP). Under Clause 94(1) of the SEPP, development for the purpose of a road or road infrastructure facilities may be carried out, or on behalf of, a public authority without consent on any land. Road infrastructure facilities are defined in Clause 93 of the Infrastructure SEPP and include 'road related areas' within the meaning of the NSW *Road Transport Act 2013* which includes separated cycleways and shared paths.

Further, Clause 94(2) states

> In this clause and clause 96, a reference to development for the purpose of road infrastructure facilities includes a reference to development for any of the following purposes if the development is in connection with a road or road infrastructure facilities—
>
> (a) construction works (whether or not in a heritage conservation area), including—

(i) temporary buildings or facilities for the management of construction, if they are in or adjacent to a road corridor, and

(ii) creation of embankments, and

(iii) extraction of extractive materials and stockpiling of those materials, if—

(A) the extraction and stockpiling are ancillary to road construction, or

(B) the materials are used solely for road construction and the extraction and stockpiling take place in or adjacent to a road corridor, and

(iv) temporary crushing or concrete batching plants, if they are used solely for road construction and are on or adjacent to a road corridor, and

(v) temporary roads that are used solely during road construction,

(b) emergency works or routine maintenance works,

…

(c) alterations or additions to an existing road (such as widening, narrowing, duplication or reconstruction of lanes, changing the alignment or strengthening of the road),

(d) environmental management works, if the works are in or adjacent to a road corridor.

As the activity being undertaken is on behalf of a public authority (Council), and involves development listed in Clause 94(2) of the Infrastructure SEPP, the project is development that is permissible without consent and to which Section 4.1 of the EP&A Act applies. The proponent, Council, is the determining authority for the works.

4.2.2 State Environmental Planning Policy No 47 – Moore Park Showground

The project area is adjacent to Moore Park, which is subject to the provisions of the State Environmental Planning Policy No 47 – Moore Park Showground (SEPP 47). However, as the project will not impact land within the SEPP 47 relevant Land Application Map, the project is not subject to the provisions of the SEPP 47.

4.2.3 State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017

The State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 applies to the City of Sydney LGA and to land zone R1. Approval from Council or the Native Vegetation Panel is required to clear vegetation in non-rural areas. No vegetation would be cleared under the project.

4.2.4 Sydney Local Environmental Plan 2012

The project is within land zoned R1 General Residential under the Sydney LEP. Relevant provisions of the Sydney LEP include:

- Clause 2.3 Zone objectives and land use tables – the project is considered to be consistent with the objectives of the R1 zone; and

- Clause 5.10 Heritage conservation – the project area does not contain any heritage items. However, it is located in proximity to a number of heritage items. Impacts to heritage is discussed further in Section 6.6.

4.3 Commonwealth legislation

The Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) aims to protect matters of national environmental significance (MNES) including:

- world heritage properties;
- national heritage places;
- Ramsar wetlands of international importance;
- nationally threatened species and ecological communities;
- migratory species;
- Commonwealth marine areas;
- the Great Barrier Reef Marine Park;
- nuclear actions (including uranium mining); and
- a water resource, in relation to coal seam gas development and large coal mining development.

If an action which will, or is likely to, have a significant impact on any MNES, it is deemed to be a 'controlled action' and requires approval from the Commonwealth Minister for the Environment Minister or the Minister's delegate.

Given the scope of the project and the urban environment, it is unlikely that the project will have a significant impact on MNES and, therefore, a referral is not required. However, the project continues to be bound by that legislation.

5 Consultation

5.1 Agency consultation

Liaison, consultation, and coordination undertaken on matters of design of the pop-up cycleway with the following stakeholders:

- TfNSW;
- Department of Premier and Cabinet; and
- State Transit Authority (STA).

A number of City of Sydney internal stakeholders have also been involved in the design of the pop-up cycleway, including:

- Project and Design Managers: The City of Sydney, City Projects;
- City of Sydney: City Infrastructure & Traffic Operations (maintenance and operational);
- City of Sydney – Cycling Unit;
- City of Sydney – Transport Planning.

Further consultation with agencies was not considered to be warranted for the project. No consultation with agencies as specified under the Infrastructure SEPP is required for the project.

5.2 Community consultation

5.2.1 Pop-up construction and operation phase

City of Sydney provided notification prior to work commencing, including a description of the works and the construction period, to properties on the alignment of the pop-up cycleway.

Community members were provided with an opportunity to register their interest in the pop-up cycleway and be consulted when a permanent plan is developed. Community could also provide feedback which can inform the concept design and raise issues relating to the ongoing operation of the pop-up. This opportunity will remain open while the City develops a permanent plan for the street.

The City of Sydney collected and monitored feedback related to the impacts of the pop-up cycleway on street users including motorists, people on bikes, pedestrians and the broader community for the period 24 August 2020 to 16 November 2020. Activities undertaken during this period included:

- structured site observations;
- bike count data collection;
- intercept surveys with people on bikes; and

- review of feedback received via online community engagement platform Sydney Your Say in relation to the pop-up cycleway.

There were 670 submissions to Sydney Your Say about Moore Park Road and Fitzroy Street with 71% of comments positive about the project. There were also 160 submissions directed to the Lord Mayor and CEO of which 87% were negative.

The key outcomes of the consultation activities, related to the Moore Park Road pop-up cycleway, include:

- 92% of people feel that the pop-up cycleway is safer than the previous road conditions;
- there was a 15% increase in ridership between week 1 and week 12 of the cycleway being opened;
- 98% of riders surveyed (n=100) intended to ride at least weekly in the future, compared to 57% prior to the pop-up cycleway; and
- negative feedback related to lack on consultation, parking and access loss (on southern side between Cook Road and Poate Road) and the reduced posted speed limit from 50 km/hr to 40 km/hr.

6 Environmental assessment

Relevant environmental factors are considered, pursuant to Clause 228(2) of the EP&A Regulation.

6.1 Traffic and transport

This section assesses traffic, parking, pedestrian and cyclist safety impacts for the project. The assessment is based on a desktop analysis and a recent site inspection and observations by EMM's traffic engineer Abdullah Uddin. Any detailed traffic counts and modelling are considered unnecessary for this REF as the cycleway has been in operation since August 2020. The assessment compares the current operational phase of the pop-up cycleway to the existing conditions prior to the installation.

6.1.1 Existing environment

Moore Park Road is a regional road under the care and control of the City of Sydney. This road performs a sub-arterial function between the main arterial roads and local access roads within the locality. It has primarily dual lane carriageway in each direction with additional turning lanes at its intersections with Cook Road, Greens Road, Oatley Road and Regent Street. The posted speed limit on this road is 40 km/h and a central raised landscaped median is provided along most of its length separating the eastbound and westbound carriageways.

A number of signalised intersections (most of which also include pedestrian crossings) are present along this road at Lang Road, Cook Road/Gordon Street, Regent Street, Oatley Road, Driver Avenue, Greens Road and Anzac Parade.

During any major event at the Moore Park precinct, there is a part-time clearway in effect along the southern edge of Moore Park Road between Poate Road and Anzac Parade. This clearway is a tool to accommodate and disperse the heavy volumes of traffic at the beginning or end of an event.

Prior to installation of the cycleway, the parking and loading conditions in the westbound direction of Moore Park Road were:

- 77 x unrestricted parking spaces;
- 23 x 1P (8.00am-10.00pm) 'permit holders excepted' parking spaces;
- 2 x loading zones; and
- 1 x accessible parking space.

This parking is subject to clearways during special events at Moore Park detailed above.

6.1.2 Impact assessment

i Traffic impacts

Due to the installation of the pop-up cycleway, the principal change in Moore Park Road is removal of on-street parking on the southern side of the road. This has not resulted in any loss of trafficable carriageway. The other major change is the removal of a left turn movement from Lang Road to Moore Park Road by the closing of the slip lane to ensure cyclist safety. This minor change of traffic arrangement has not caused any significant traffic impact in the locality as left turn movements onto Moore Park Road can continue to be made via Cook Road (100 m west) and there is a left turn movement from Lang Road to Oxford Street approximately 70 m north.

The project may also have potential positive transport impacts by providing cycling facilities to encourage an alternative mode of transport.

ii Parking impacts

The project will continue the temporary loss of parking spaces on the southern side of Moore Park Road. To mitigate the parking impact, City of Sydney has converted 21 unrestricted parking spaces on the northern side of Moore Park Road to '1P, 8:00am-10:00pm, Permit Holder Exempt' parking spaces. Residents on the southern side of Moore Park Road are eligible for a parking permit to park on the northern side of the street. Further, the accessible parking space, located near the Moore Park Road/Cook Road intersection, has been relocated along the southbound lane on Poate Road next to the Moore Park Road/ Poate Road intersection.

There is a childcare centre at 61 Moore Park Road (Gumnut Gardens) which has been affected by the removal of unrestricted parking used by parents' for pickup and drop-off. To mitigate the impact, TfNSW installed three 15-minute parking spaces between 7:30am-6:00pm Monday to Friday on the western side of Cook Road at the intersection with Moore Park Road, just after the No Stopping zone.

A loading zone was previously present in front of the Rugby League Australia office which has been removed to accommodate the pop-up cycleway. As a mitigation measure, two loading zones (7:00am to 5:00pm between Monday to Saturday) have been installed in Poate Lane. This has allowed for access for drop-offs, trade vehicles and deliveries for residents.

The City of Sydney and TfNSW are investigating the feasibility of overnight parking on the southern side of Moore Park Road between Cook Road and Poate Road (next to the cycleway).

Based on the above mitigation measures, the adverse parking impact in the locality due to the cycleway is considered minimal.

iii Impacts on public transport

Only one bus stop, located between Lang Road and Cook Road, has been affected due to the installation of the pop-up cycleway. Since the installation of the pop-up cycleway, this bus shelter has been upgraded by providing a reasonable gap behind the shelter for the cyclists so that there is no conflict between the cyclists and the waiting bus passengers (refer Photograph 6.1).

Photograph 6.1 Bus stop on Moore Park Road between Lang Road and Cook Road

The project may also have potential positive public transport impacts by providing cycling facilities to encourage an alternative mode of transport.

iv Safety assessment

The on-road section of the cycleway is separated from general traffic by Klemmfix barriers (bolted to the road) for increased cyclist safety. The two-way cycleway is 3.5 m wide which complies with the Austroads requirements for recreational cyclists. The cycleway is placed on a generally flat grade which is ideal for cycling.

At several sections, the pop-up cycleway has been provided with a green colour surface treatment and bicycle pavement markings to increase driver and cyclist separation, safety and awareness (see Photograph 6.2). Additional wayfinding signage has been installed to support the operation of this cycleway. The Moore Park Road/ Poate Road intersection has been added with a warning sign to advise right turning traffic from Moore Park Road about cyclists crossing the Poate Road intersection. Additionally, give way line marking has been added to the cycleway for both east and west bound directions and the stop line on Poate Road has been repainted.

Photograph 6.2 Example of cycleway surface treatment

Source: Google map

A reduction of the posted speed limit from 50 km/h to 40 km/h has been implemented during operation of the cycleway. The relationship between vehicle speed, accident risk and accident outcome severity is well established in traffic safety literature (see, for example, Archer et al 2008). The reduction of the posted speed limit is, therefore, likely to have increased safety for cyclists and other road users along the pop-up cycleway.

Bicycle lanterns have been installed at Moore Park Road/Driver Avenue intersection to improve bicycle safety and connectivity. Further, new bicycle ramps have been installed for smoother transition between the cycleway and the shared path (see Photograph 6.3). Green bicycle surface markings have been installed at intervals on approach to driveways and intersections throughout the length of the on-road cycleway.

Photograph 6.3 Examples of bicycle ramps on cycleway

The SFS construction site has one access (Gate 1A) along Moore Park Road. A green cyclist logo has been installed on the approach to the driveway to alert construction vehicles entering and exiting the work site (see Photograph 6.4).

Photograph 6.4 Sydney Football Stadium construction access

The pop-up cycleway is expected to operate as per the current conditions for the duration of the SFS redevelopment. After the redevelopment of the SFS, there is potential for the cycleway to be closed during special events due to safety reasons. Information could be added to the special event clearway signage for the periods when the cycleway is closed.

Waste collection in the residential section of Moore Park Road (between Lang Road and Poate Road) is provided during early morning outside of peak commuter hours. Hence, there is no apparent safety issue associated with waste collection for the majority of cyclists.

During EMM's site visit, it was observed that a number of obstructions existing in the cycleway including the Variable Message Sign (VMS) and Wayfaring Signage on Moore Park Road between Driver Avenue and Greens Road (see Photograph 6.5). Some safety treatment for these hazards could include reflective markings for night-time cyclists, path widening and lane markings.

Photograph 6.5 Variable message sign base/footing within cycleway

In summary, there are no major road user safety issues along the cycleway. The combined effect of separation between vehicles and cyclists, and the reduction in speed limit along Moore Park Road adjacent to the cycleway, are recognised in the literature as contributors to both road safety and higher levels of patronage for cycling as a transport mode.

As noted in Archer et al 2008, drivers generally expect a good level of mobility in the traffic system such that it takes as little time as possible for a journey, but they also expect a reasonable level of safety. It is also noted that a general but often misleading assumption made by drivers is that increasing their speed will, to a similar degree, reduce overall travel time. In the urban environment, however, drivers must frequently stop or slow down for different forms of regulatory control (such as signalised intersections or pedestrian crossings) or for congestion. These factors suggest that the relationship between speed limits and travel time is far more complex than might be anticipated, and that small decreases in speed limits can have negligible impacts on overall journey time.

6.1.3 Conclusion

The existing pop-up cycleway at Moore Park Road establishes regional connectivity between Lang Road and Anzac Parade. The majority of the cycleway is separated from general traffic and pedestrians which provides a safe cycling route for cyclists of all levels. Separation between cyclists and vehicles is one of the most effective ways to encourage more people to ride. Hence, there is a potential that if the existing cycleway infrastructure is retained, its user level will gradually increase over time. Increased patronage of this cycleway can take pressure off public transport and will create more space on the roads for those who need to drive, including taxis and couriers.

There are no major traffic, parking, public transport or safety issues associated with this cycleway and, therefore, the continued operation of the cycleway would not generate any substantial impacts for local traffic and transport.

6.2 Noise and vibration

The project area is within an inner-city suburb of Sydney, adjacent to a sporting complex, and the acoustic environment is characterised by road traffic noise, pedestrians, business operations and sporting events.

The project does not involve any construction activities that would generate noise and vibration. Ongoing maintenance activities or minor works may generate low levels of noise; however, these would be short in duration and undertaken during standard construction hours. Therefore, noise impacts to sensitive receivers are unlikely to be significant.

The project has the potential to result in a reduction in road noise due to the presence of traffic calming measures and reduction in motor vehicle usage. Although, no noticeable reduction in noise has been observed to date.

6.3 Visual

The visual character of the project area is mostly suburban (residential and commercial) and partly recreational environment. The construction of the cycleway resulted in a partial visual modification to the existing roadway, consisting of safety barriers, new signage, paint and line markings. No additional visual features would be introduced under the project, though the safety barriers may be replaced with similar materials that would have a similar visual effect.

The continued operation of the cycleway may increase usage of Moore Park Road by cyclists which would have potential visual impacts during the day and lighting impacts at night. As increased cyclist usage is expected to result in decreased vehicle usage of the road, no additional (cumulative) visual impacts are expected under the project.

6.4 Air quality

The project area is within an inner-city suburb of Sydney, adjacent to a sporting complex currently undergoing construction. Background air quality is expected to be dominated by vehicle exhaust emissions and dust associated with construction activities at the SFS.

The project does not involve construction activities, and maintenance activities are unlikely to generate dust emissions that would impact air quality. Further, the project may result in improved air quality by a reduction in vehicle emissions associated with reduced motor vehicle traffic.

6.5 Socio-economic

The Inner City Regional Bicycle Network is estimated to provide access for 1.2 million people in 164 suburbs and across 15 (now 11 following the amalgamations) local government areas (AECOM 2010). The bicycle network is estimated to deliver a net economic benefit of $506 million (in today's dollars over a 30-year period, and that every dollar spent on delivering the interconnected cycleway will generate an economic return of $3.88 (AECOM 2010). As part of the network, the project will contribute towards these regional socio-economic benefits.

As detailed above, the project is unlikely to impact negatively on local amenity, traffic flow or parking within the project area. Further, the project will provide socio-economic benefits by allowing for more transport choices to the city. Other potential benefits include:

- benefits to cyclists:
  - vehicle operating costs savings;
  - parking cost savings;
  - journey ambiance;
  - health benefits including reduced mortality and absenteeism;
  - reduced vehicle accidents and associated costs;
- benefits to the general public:
  - reduced vehicle traffic volumes;
  - travel time savings;
  - reduced air pollution;
  - reduced noise pollution;
  - greenhouse gas reduction;
  - reduced water pollution;
  - reduced urban separation; and
  - reduced pressure on government infrastructure and services.

6.6 Heritage

An Aboriginal and historical heritage due diligence assessment was completed for the proposed Moore Park Road cycleway project during the design phase (EMM 2017). The 2017 assessment remains relevant as the cycleway alignment for the current project remains consistent. Key findings are detailed below. The full assessment is included as Appendix A.

It is noted that the due diligence assessment considered a wider footprint then the project area, including parts of Fitzroy Street, and, therefore, only findings relevant to the project area are considered in this REF.

6.6.1 Aboriginal heritage

Searches were made of the following databases on 12 September 2017:

- the Aboriginal Heritage Management System (AHIMS);
- the Aboriginal places register via NSW State Heritage Register (SHR);

- schedule 5 of the City of Sydney's Local Environment plan (LEP); and
- the Native Title Vision website.

An AHIMS search for an area with a radius of 1 km around the project area identified two sites within the search area – refer to Table 6.1. Neither of these Aboriginal sites are within the project area. No impacts are anticipated to known Aboriginal sites from the project.

Table 6.1 AHIMS sites

Site ID	Site type	Status
45-6-0647	Rock engraving	destroyed
45-6-3155	Artefacts	destroyed

A search of the Aboriginal places register confirmed that none are situated in or within the vicinity of the project area. No impacts are anticipated to known Aboriginal places from the project.

Searches of the Native Vision GIS system on the www.nntt.gov.au website found that none of the project area is subject to any registered native title claims, Indigenous Land Use Agreements (ILUAs), or joint management arrangements.

The review of the findings of previous reports, the historical background and a site inspection indicates that the project area has been highly disturbed and, therefore, has low archaeological potential. As there are no construction activities proposed, and maintenance activities are unlikely to require surface disturbance, the project is unlikely to harm Aboriginal objects.

6.6.2 Historical heritage

Searches were made of the following databases on 12 September 2017:

- The National Heritage List (NHL);
- The Commonwealth Heritage List (CHL);
- The State Heritage Register (SHR);
- Schedule 5 of the City of Sydney Local Environment Plan (LEP); and
- The Register of the National Estate (RNE, non-statutory).

The potential impacts of the project on historical heritage are addressed in Table 6.2. The details of each of these items were reviewed on the State Heritage Inventory (SHI) to identify which of their aspects (if any) may be impacted by the project.

The project area is along the edges of three conservation areas. Generally, the project will not adversely impact on the heritage significance or character of the streetscape because the cycleway is along existing roads and paths and no construction activities are required.

Table 6.2 Register search for items within the project area and potential impacts

Register	Register listing	Overview of significant features relevant to the project	Potential Impacts
National Heritage List (NHL)	The land within the project area is not listed on the NHL.	Not applicable.	Not applicable
Commonwealth Heritage List (CHL)	The land within the project area is not listed on the CHL.	Not applicable.	Not applicable
State Heritage Register (SHR)	00568 – Busby's Bore, Centennial Park to College St, Surry Hills. This item intersects with the cycleway near the junction of Moore Park Road and Driver Avenue.	Water supply tunnel from Centennial Park to Hyde Park. Built 1827–1837.	Bore is beneath the surface of the road and the project will not result in disturbance of the roadway. Therefore, impacts are not anticipated.
City of Sydney LEP (2012)	Item 1 – Busby's Bore, including tunnels, shafts and wells.	Refer to SHR listing above.	Refer to SHR listing above
	Conservation Area C6 – Furber Road	The significance of Moore Park Road within this conservation areas is quoted from the SHI as follows: "Southern side only from Poate Road to Cook Road: very intact very few intrusions. Predominant character: Two storey grand Federation era terraces and semi-detached houses, largely intact. Detracting elements: high front fences to Moore Park Road, 1st floor balcony enclosures to facades to Moore Park Road, and the post war residential flat building at 59 Moore Park Road. Street Rating: A"	No construction works other than maintenance activities for the existing cycleway are to be undertaken within the conservation area. Therefore, impacts will be negligible.
	Conservation Area C36 and C60 – Moore Park	The curtilage of Moore Park where it intersects with the project is part of the greater Centennial Parklands which is a unique place of exceptional National, State and Local heritage significance. It is a grand, linked open space of largely nineteenth-century landscape design intended for social and physical activity.	No construction works other than maintenance activities for the existing cycleway are to be undertaken within the conservation area. Therefore, impacts will be negligible.
	Conservation Area C37 – Sydney Cricket Ground	Significance of this conservation area primarily relates to the cricket grounds and not necessarily Moore Park Road.	No construction works other than maintenance activities for the existing cycleway are to be undertaken within the conservation area. Therefore, impacts will be negligible.

Table 6.2 Register search for items within the project area and potential impacts

Register	Register listing	Overview of significant features relevant to the project	Potential Impacts
Register of the National Estate	1795 – Busby's Bore or The Tunnel, Oxford St, Sydney.	Refer to SHR listing above.	Refer to SHR listing above

The project enters the curtilage of one SHR listed heritage item: Busby's Bore. The project will not impact significant features but approval from the Heritage Council will be required. While a section of the project is directly above Busby's Bore, no damage will be done to the underground tunnel, given it is below ground surface and that the cycleway is already in place.

6.7 Biodiversity

No trees or vegetation would be removed, pruned or disturbed under the project. Therefore, no impacts to flora, including threatened species or endangered ecological communities, would occur under the project.

The project would not remove or disturb any area habitat for fauna species including threatened species. The continued use of the cycleway is unlikely to result in additional disturbance to fauna species that may be present in proximity to the project area.

6.8 Land and soils

The project is unlikely to impact soils or landforms in the area due to no earthworks or excavation forming part of the project.

6.9 Surface water

The site of the project is an urban area and predominantly hardstand. Permeable surfaces are generally limited to verges and local parks. Rainwater is carried to the stormwater system either directly through downpipes or overland to drainage inlet pits along the streets. No changes to the stormwater system would result from the project. No construction activities that would require sediment and erosion management would be undertaken during the project.

Materials/chemicals used in maintenance activities are to be appropriately stored, handled and disposed to minimise the potential for accidental spills and contamination of waterways. Any such materials/chemicals would be in very small volumes so significant impacts to water quality in the event of a spill are unlikely.

6.10 Wastes

Wastes generated by the project are limited to those produced during maintenance activities and those from users of the cycleway. Any wastes produced during maintenance activities are to be removed from the area by maintenance workers and reused, recycled or disposed at appropriately licensed facilities.

There is potential for road users to deliberately or accidentally leave waste material within the cycleway. Regular cleaning of roads, pathways and cycleways is undertaken by City of Sydney's street cleaners which would remove any waste material. Further, there is existing potential for the generation of waste from other road users and not just those that would use the cycleway. Therefore, the project would not result in a significant increase in waste generation.

6.11 Public access and safety

As noted in Section 3.3, the separated cycleway will improve the safety of cyclists and pedestrians by separating pedestrians, cyclists and motor vehicles and minimising interactions. Transitions between the separated cycleway, shared pedestrian/cyclist and mixed cyclist/motor vehicle zones may present safety risks. Signage and road markings are present to notify users of the transitions between areas to mitigate the risks.

6.12 Future land use

No impacts to future land use are expected as part of the project.

6.13 Natural hazards

Due to its limited scope and location, the project is unlikely to be impacted by or exacerbate natural hazards.

6.14 Sea level rise

The project will not have an impact on sea level rise and the elevation of the cycleway (approximately 41 m to 70 m AHD) is unlikely to be impacted by any rise in sea level during the standard forecast period to 2100.

6.15 Ecological sustainable development and sustainability

As noted in Chapter 3, the project aligns with several strategies that aim to reduce motor vehicle usage and promote sustainable transport modes. The project will result in a safer and more accessible cycle route to multiple destinations across the Sydney CBD. This will reduce motor vehicle usage in the area and associated environmental impacts and, therefore, increase the sustainability of the area.

6.16 Cumulative impacts

The redevelopment of the SFS is currently being undertaken and is expected to be completed in 2022. Given that the project involves a completed cycleway and no construction activities are required, cumulative impacts with the SFS redevelopment are not expected.

Positive cumulative impacts associated with transport and access and sustainability may occur due to enhanced linkages between residential, commercial and recreational land resulting from a more complete cycleway network.

7 Consideration of environmental factors

7.1 Consideration of Clause 228 factors

Consideration of each of the factors in Clause 228 of the EP&A Regulation is included in Table 7.1.

Table 7.1 Consideration of Clause 228 Factors

Clause 228 Factors[1]	Comment	Impact			
		N/A	Negative	Nil	Positive
(a) any environmental impact on a community	No significant negative environmental impacts are expected from the project. The project will result in an improved environment by reducing motor vehicle usage and increasing visual amenity.				Long term positive
(b) any transformation of a locality	The project will result in enhanced cycleway linkages, assisting in positive transformation associated with active transport.				Long term positive
(c) any environmental impact on the ecosystems of the locality	No significant negative environmental impacts are expected from the project.			Nil	
(d) any reduction of the aesthetic, recreation, scientific or other environmental quality or value of a locality	The project will result in long term benefits to the aesthetic and recreational values of the area with enhanced streetscapes and an accessible cycleway.				Long term positive
(e) any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations,	No significant impacts are expected from the project.			Nil	
(f) any impact on the habitat of protected fauna (within the meaning of the *National Parks and Wildlife Act 1974*),	No significant impacts are expected from the project.			Nil	
(g) any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air,	No significant impacts are expected from the project.			Nil	
(h) any long-term effects on the environment,	The project will result in a cycleway which will reduce motor vehicle usage and increased vegetation.				Long term positive
(i) any degradation of the quality of the environment,	No significant impacts are expected from the project.			Nil	

Table 7.1 Consideration of Clause 228 Factors

Clause 228 Factors[1]	Comment	Impact			
		N/A	Negative	Nil	Positive
(j) any risk to the safety of the environment,	The project will result in a safer streetscape for pedestrians and cyclists, presenting a long-term benefit.				Long term positive
(k) any reduction in the range of beneficial uses of the environment,	The project will result in enhanced pedestrian and cyclist access across the Council and regional area.				Long term positive
(l) any pollution of the environment,	The project will result reduced motor vehicle usage and reduce pollution.				Long term positive
(m) any environmental problems associated with the disposal of waste,	Maintenance wastes will be disposed in an appropriate manner. Regular cleaning of streets is undertaken.			Nil	
(n) any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply,	The project will result in reduced motor vehicle usage and reduce dependence on fossil fuels and associated rare earth elements.				Long term positive
(o) any cumulative environmental effect with other existing or likely future activities,	The project will complement similar proposals in the regional area, enhancing active transport access, resulting in long term cumulative benefits.				Long term positive
(p) any impact on coastal processes and coastal hazards, including those under proposed climate change conditions.	The project is not expected to have a measurable impact on sea level rise. However, it is possible that the expected reduction in motor vehicle use will aid in easing the causes of sea level rise.				Long term positive

Notes: 1. Adapted from City of Sydney Part 5 Procedures Manual.

7.2 Consideration of national environmental significance

Due to the scope and nature of the project, no impacts on MNES are expected, as per the EPBC Act.

8 Mitigation measures summary

In response to the community feedback received during operation of the cycleway, City of Sydney has proposed a number of mitigation measures that are detailed in Table 8.1. The majority of these have already been implemented with only two remaining outstanding.

Table 8.1 Mitigation of community concerns

Mitigation	Source of feedback	Type of feedback	Status of Mitigation
Install two loading zones in Poate Lane	Community	Access for drop offs, trade vehicles and deliveries	Resolved
Install mobility space relocated to Poate Road	City of Sydney Transport Team	Parking	Resolved
Right turn arrows installed east of road crest	Road Safety Audit	Safety	Resolved
Klemmfix bolted to road	City of Sydney Transport Team	Safety	Resolved
Speed reduced to 40km/hr, signs installed	City of Sydney Transport Team	Safety	Resolved
Give way line marking has been added to the cycleway for both east and west bound traffic. The Stop line on Poate Rd has been repainted. Warning signs have been installed on Moore Park Rd to advise right turning traffic cyclists are crossing the Poate Road intersection.	City of Sydney Transport Team	Safety	Resolved
Kerb inlet pits have bike safe grates	City of Sydney Transport Team	Safety	Resolved
Three new P15 spaces installed adjacent to bus stop for drop offs and pick up near Cook Road	Community	Access for drop offs, trade vehicles and deliveries	Resolved
Parking outside barracks changed to Permit Holder Exempt	Community	Parking	Resolved
Overnight parking along Moore Park Road between Cook Avenue and Poate Road	Community	Parking	In negotiation
Maintain access along back lane when loading zones in use - Traffic Operation verified access	Community	Access for drop offs, trade vehicles and deliveries	Resolved
Loading zone for Rugby Australia - alternative proposal on Driver Ave	Community	Access for drop offs, trade vehicles and deliveries	In negotiation
All two-post signage will be replaced with single posts to minimise obstructions	City of Sydney Transport Team	Safety	Resolved
Speed reduced to 40km/hr	City of Sydney Transport Team	Safety	Resolved
Discuss retiming of waste collection with City waste Services Management to be outside peaks	Community	Safety	Resolved

In addition, the following mitigation measures recommended in Chapter 6 would be undertaken during the project:

- provide safety treatments for the VMS and Wayfinding sign on Moore Park Road;
- materials/chemicals used in maintenance activities are to be appropriately stored, handled and disposed to minimise the potential for accidental spills and contamination of waterways;
- any wastes produced during maintenance activities are to be removed from the area by maintenance workers and reused, recycled or disposed of appropriately; and
- regular monitoring and evaluation are recommended to ensure best practice in cycleway management. It would be beneficial to continue to collect quantitative and qualitative data at regular intervals to monitor usage and any maintenance/improvement that may be required from time to time.

9 Conclusion and certification

This REF identifies the likely impacts of the project on the environment and details the mitigation measures to be implemented to minimise the potential impact to the environment.

The assessment has concluded that the proposed works as described in this REF, including any proposed management measures and safeguards, will not result in a significant effect on the environment. Therefore, an EIS is not required to be prepared.

The proposed works will not result in a significant impact on any declared critical habitat, threatened species, populations or ecological communities or their habitats. Therefore, an SIS is not required to be prepared.

Prepared by:

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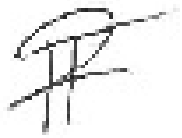

Signature –

Date – 9 March 2021

Determining officer (print name) _____

Position _____

Signature _____

Date _____

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Appendix A

Aboriginal and Historical Heritage Due Diligence Assessment

Bondi Junction to City Cycleway

Aboriginal and historical heritage due diligence assessment

Prepared for Spackman Mossop Michaels | 30 July 2018

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Bondi Junction to City Cycleway

Final

Report J17247RP1 | Prepared for Spackman Mossop Michaels | 30 July 2018

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Signature			Signature	
Date	2 November 2017	2 November 2017	Date	2 November 2017

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1 Introduction

1.1 Introduction

City of Sydney Council (Council) proposes to install a cycleway connecting Centennial Park and Moore Park Trust's Oxford Street Cycleway and Pedestrian Path with the Bourke Street Separated Cycleway (the project) in the Sydney Local Government Area (LGA). The project will primarily involve constructing a two-way separated cycleway along Moore Park Road. The design of the project is attached in Appendix A and the project area that covers the extent of proposed works is shown in Figure 1.1.

EMM Consulting Pty Limited (EMM) has prepared an Aboriginal and historical due diligence assessment to support a review of environmental factors (REF) for the project. The main aims of the assessment were to:

- determine if Aboriginal objects, Aboriginal places or statutory listed historical heritage items will be impacted by the project;
- determine if further assessment or permits are required prior to project construction.

1.2 Description of the project

1.2.1 Overview

The project will provide a safe route for bike riders between Bondi Junction and the City. It will extend along Moore Park Road and a short section of Fitzroy Street connecting with existing cycleways at the northern edge of Centennial Park (Oxford Street) and Bourke Street in the City. The works will be undertaken in accordance with all relevant City of Sydney policies and specifications

1.2.2 Project details

i Cycleway works

- A two-way cycleway is proposed on the south side of Moore Park Road, between Lang Road and South Dowling Street;
- the existing marked bike lanes are currently on each side of the road. This space will be consolidated to the south side and the protection provided by a separated cycle facility will provide a higher level of safety for bike riders. The existing traffic and parking lanes and planted median will be shifted north;
- the cycleway in front of the stadium (between Driver Avenue and Poate Road) will be at the same level as the footpath so that during an event, the cycleway can be closed and provide more footpath space for pedestrians. An alternative route has been proposed during special events;
- the cycleway will occupy the footpath at Fitzroy Street between Anzac Parade and South Dowling Street; and
- the cycleway crossings at signalised and un-signalised intersections will be improved, to provide a safer crossing point for people both walking and cycling.

ii Adjusted traffic signals

- In order to allow people to continue cycling through signalised intersections without dismounting, bicycle lanterns are proposed on existing traffic signals along the route. This will provide bike riders a safe phase within the signal sequence to cross concurrently with pedestrian movements;
- the existing slip lane at the intersection of Fitzroy Street and South Dowling Street will be signalised, to provide a safer crossing for people walking and riding; and
- the existing slip lane at the intersection of Lang Road and Moore Park Road will be removed and an additional left-only traffic lane will be provided instead. This will improve safety at this intersection, and enable a bus stop upgrade.

iii Footpath works

- To improve amenity and safety, the footpath will be widened at Anzac Parade, Oatley Road, Regent Street, Poate Road, Gordon Street and Lang Road;
- to provide space for the cycleway, the footpath will be realigned up to 0.8 m into Moore Park between Anzac Parade and Driver Avenue. The Eastern Distributor tunnel exit along this section prevents this space being harvested from the road. Three Box Brush street trees will require removal. Furthermore, no Moore Park trees will be affected. The proposed design is supported by the Centennial Parklands Trust, and consistent with its masterplan currently on exhibition;
- a larger pedestrian island for people walking and riding will be provided at the intersection of South Dowling and Fitzroy Streets;
- the existing footpath in Moore Park around the Korean War Memorial will be realigned and widened along with new lighting and planting;
- a new bend-out cycleway intersection is proposed at Poate Road to slow vehicles down and provide a safer environment for pedestrian and cyclists; and
- footpaths from Poate Road to South Dowling will be improved with new verge landscaping, to provide better amenity for people walking with the existing footpath and verge retained from Lang Road to Poate Road.

iv Bus Stops

- The existing bus stop on Moore Park Road near Lang Road will be relocated and a new footpath area will be provided for people getting on and off the bus; and
- a shuttle bus stop for the new UTS Moore Park Precinct and Australian Rugby Development Centre will be provided close to the new campus. A setdown area will be provided at the bus stop.

v Parking

No parking will be removed as part of this project. There may be temporary parking loss during construction.

vi Lighting improvement works

- Lighting will be upgraded as required to meet relevant Australian standards at the following intersections:
    - the intersection of Albion Street and Flinders Street; and
    - the intersection of Anzac Parade/Flinders Street and Moore Park Road.
- lighting along the pedestrian crossing on the slip lane at Fitzroy Street and South Dowling Street will be upgraded as required to ensure a compliant level of lighting; and
- lighting will be improved along the upgraded footpath around the Korean War Memorial in consultation with the Centennial Park and Moore Park Trust.

vii Stormwater renewal works

The project will also include stormwater renewal works along Moore Park Road in between Oatley and Gordon Street/Cook Road to address overflow issues in the area. Proposed stormwater renewal works and connections will meet City of Sydney and Sydney Water requirements as applicable.

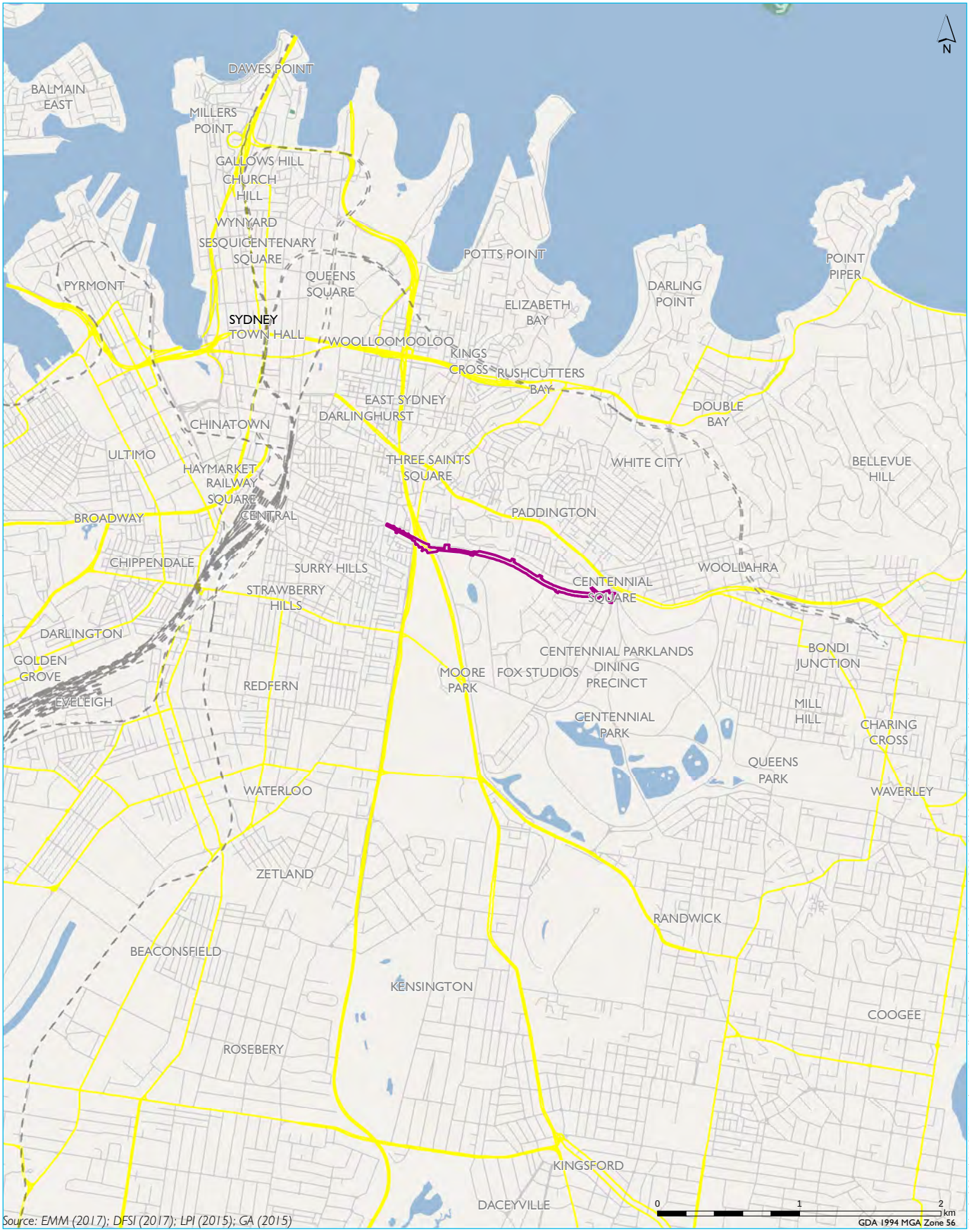
1.3 Construction activities

Construction works will include, but are not limited to, works to upgrade the existing roadway, paving and footpath, curbs, road crossings, parking arrangements, street tree and garden bed planting, and signage to fulfil design and safety requirements. Construction of the stormwater renewal works will be completed within existing stormwater trenches. However, if further ground disturbance of intact soil is required, further consideration may be required.

A number of palm trees along the Moore Park Road central median strip will be removed as part of the realignment of the median strip. Council propose to relocate the affected palms back into the modified central median following major construction.

The cycleway will be constructed of asphalt with the surfaces being delineated though colour treatments and line marking. The materials will reflect the local character and be made up of concrete for the footpath and shared zones, while the cycleway will (as per the entire cycleway to which it connects) be constructed from asphalt. Existing lighting signs and poles will be retained where possible and removed where safe access is required for pedestrians and cyclists. The redevelopment of the Sydney Football Stadium may impact on the construction of the cycleway.

Pedestrian access will be maintained on the southern side of Moore Park Road and Fitzroy Street at all times throughout construction.



Source: EMM (2017); DFSI (2017); LPI (2015); GA (2015)

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KEY

- Project area
- Rail line
- Main road
- Local road
- Waterbody

Project area

Bondi Junction to City cycleway
Aboriginal and historical
due diligence assessment

Figure 1.1

EMM

1.4 Legislative overview

1.4.1 Environmental Planning and Assessment Act 1979

The determining authority is Council. Council has the duty to consider the environmental impacts of the project under Section 5.5 of the NSW *Environmental Planning and Assessment Act 1979,* as at 1 July 2018 (EP&A Act). This due diligence assessment forms an appendix to the REF for the project.

1.4.2 Aboriginal heritage

Aboriginal objects and places are protected in New South Wales (NSW) under Part 6 of the NSW *National Parks and Wildlife Act 1974* (NPW Act). Section 90 of the NPW Act requires an Aboriginal heritage impact permit (AHIP) for harm to an Aboriginal object or Aboriginal place. Significant penalties are in place for harm to Aboriginal objects or places or regardless of whether the harm was committed knowingly or not. Defences against prosecution include impacts in compliance with an AHIP, acting in accordance with specified codes of practice or the conduct of certain low impact activities.

The *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (due diligence guidelines) (DECCW 2010) provide a generic code of practice used to determine whether activities will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm. A summary of the due diligence process is shown in Figure 1.2. If the due diligence assessment determines that Aboriginal objects or places are likely to be harmed, an AHIP is required to manage harm as defined by Part 6, Section 86 of the NPW Act.

1.4.3 Historical heritage

Listing on statutory registers provides legal protection for heritage items. In NSW, the *Heritage Act 1977* (the Heritage Act), and the *Environmental Planning and Assessment Act* (EP&A Act) are the primary statutory controls protecting historical heritage and archaeology within NSW. The State Heritage Register (SHR), the Section 170 registers, and heritage schedules of Local Environmental Plans LEPs have varying degrees of legal obligation. Places on the National Heritage List and the Commonwealth Heritage List are protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Register of the National Estate became a non-statutory register when the EPBC Act was gazetted.

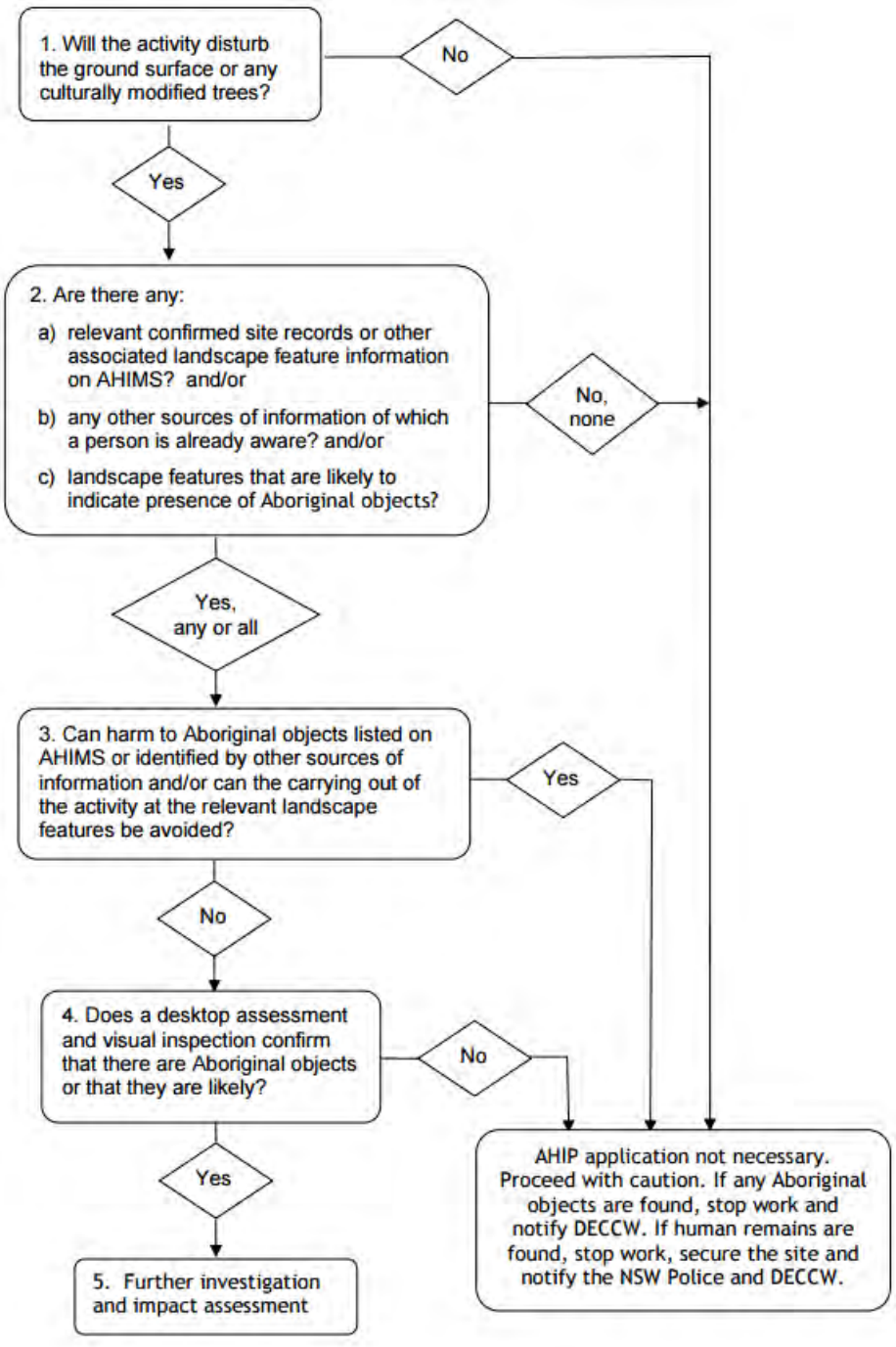


Figure 1.2 Due diligence process summary (source: due diligence guidelines (DECCW 2010)

1.5 Assessment methods

1.5.1 Aboriginal heritage

This report follows the due diligence guidelines. In summary, the assessment involved:

- a search of the Aboriginal Heritage Information System (AHIMS) database on 19 September 2017;
- consideration of existing Aboriginal cultural heritage studies in the area and region for the presence of Aboriginal objects or places;
- consideration of the environmental context for the presence of Aboriginal objects or places;
- a site inspection project area by an EMM archaeologist to identify any Aboriginal objects or areas of potential archaeological deposit (PAD); and
- determination of whether further heritage investigation and impact assessment is required.

Table 1.1 describes the basic steps of a due diligence assessment as set out in Section 8 of the due diligence guidelines (refer Figure 1.2). It also provides an overview of the assessment results in accordance with these steps and lists the section(s) in the report where each of these is addressed in full.

Table 1.1 Due diligence summary

Step	Results	Section in this report
STEP 1: Check for records of Aboriginal objects and places in area of proposed activity.	No Aboriginal objects have been recorded in the project area.	Section 2.1.2
STEP 2: Is the activity a 'Low Impact Activity', as defined in the National Parks and Wildlife Regulation?	The project is not a low impact activity.	Section 1.2
STEP 3: Are there any landscape features on undisturbed land that are likely to indicate the presence of Aboriginal objects?	The landscape is modified and highly disturbed. As such, the presence of Aboriginal objects is unlikely.	Section 2.1.1
STEP 4: Does a desktop assessment and visual inspection confirm that there are Aboriginal objects present or likely to be present?	Desktop assessment and a site inspection confirm that the project area is highly disturbed and therefore the presence of Aboriginal objects is unlikely.	Sections 2.1 and Chapter 3
STEP 5: Can the activity be relocated away from the known/likely area for Aboriginal objects?	Not applicable.	Not applicable.
STEP 6: Commence investigation for an Aboriginal heritage impact permit (AHIP).	Not applicable.	Not applicable.

1.5.2 Historical heritage

The purpose of the historical due diligence assessment was to identify historical heritage items and determine whether further assessment and/or permits are required. As such, the assessment has involved:

- Searches of statutory heritage registers;
- background research for an historical overview;
- a site inspection;
- a summary impact assessment; and
- recommendations for the potentially affected heritage items.

2 Existing environment

2.1 Aboriginal heritage

2.1.1 Landscape context

The purpose of reviewing the landscape context of the project footprint is to identify the likelihood of Aboriginal objects being deposited or preserved, in the context of historical and natural site disturbance processes.

The project area was originally part of the territory of the Gadigal Aboriginal group. It lies at the head of the Botany Bay catchment area within a Quaternary sand landscape characterised by gently undulating coastal dune fields (eSPADE 2017). Prior to historic land clearing, the vegetation was dry sclerophyll tall open woodland. Timber clearance led to problems with erosion by the mid nineteenth century.

The project area is now characterised by intensive development related to the construction of paths, roads and parklands. This has involved extensive ground disturbance within the limits of previous excavation for these developments. Any Aboriginal objects originally within the project area are likely to have been removed as a result of activities. Further details of current land use and disturbance are described in the site inspection results in Chapter 3.

2.1.2 Database searches.

Searches were made of the following databases on 12 September 2017:

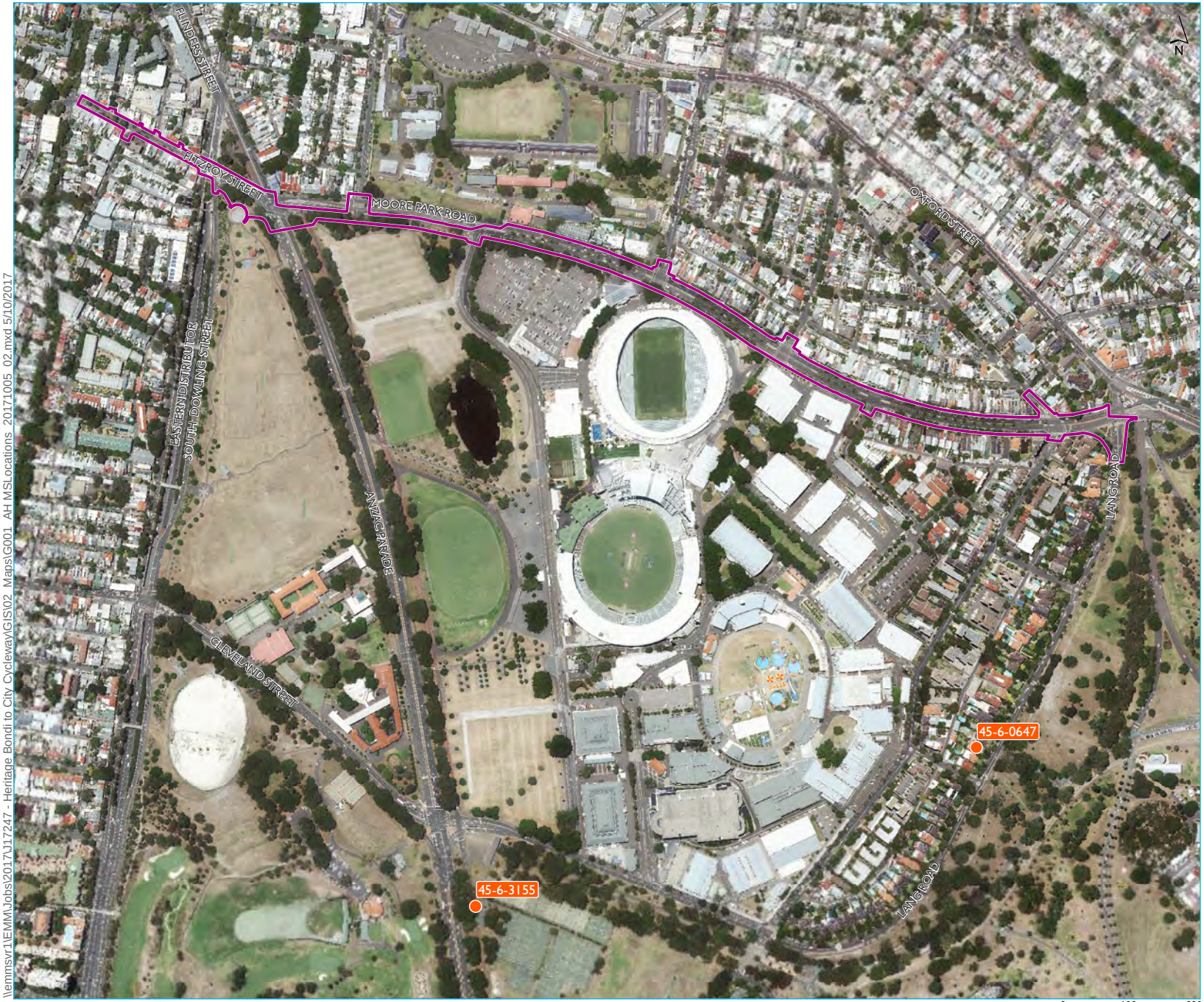
- the Aboriginal Heritage Management System (AHIMS);
- the Aboriginal places register via NSW State Heritage Register (SHR);
- schedule 5 of the City of Sydney's Local Environment plan (LEP); and
- the Native Title Vision website.

An AHIMS search for an area with a radius of 1 km around the project area identified two sites within the search area (Figure 2.1). Neither of these Aboriginal sites is within the project area. No impacts are anticipated to known Aboriginal sites from the project.

Table 2.1 AHIMS sites

Site ID	Site type	Status
45-6-0647	Rock engraving	destroyed
45-6-3155	Artefacts	destroyed

A search of the Aboriginal places register confirmed that none are situated in or within the vicinity of the project area. No impacts are anticipated to known Aboriginal places from the project.



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Source: EMM (2017); DFSI (2017)

AHIMS sites

Bondi Junction to City cycleway
Aboriginal and historical
due diligence assessment

Figure 2.1

EMM

Searches of the Native Vision GIS system on the www.nntt.gov.au website found that none of the project area is subject to any registered native title claims, Indigenous Land Use Agreements (ILUAs), or joint management arrangements.

2.1.3 Previous Aboriginal heritage investigations

The following relevant Aboriginal heritage investigations have been reviewed to determine if Aboriginal objects have been recorded on similar landscapes in the local area and the potential for Aboriginal sites to exist within the project area.

In 2013 Godden Mackay Logan (GML) conducted an assessment for the CBD and South Light Rail Environment Impact Statement (GML 2013). They identified a number of potential archaeological deposits (PADs) in the project footprint and made the following predictions that are pertinent to the project area:

- Aboriginal objects may be present in historical archaeological stratigraphic layers;
- remnant Aboriginal archaeological deposits may survive in small pockets of remnant natural soils;
- given the likely depth of Botany sands within the Moore Park precinct, it is possible that intact soil profiles, which would have the potential for Aboriginal archaeological objects such as hearths or stone artefacts, remain below the modern disturbance; and
- if the pH is close to neutral or within anaerobic/waterlogged conditions, organic remains such as middens or burials may be present.

GML noted that archaeological test excavation would be required to confirm these predictions in key locations.

Australian Museum Business Services (AMBS 2002) assessed pre-colonial Aboriginal land and resource-use in Centennial, Moore and Queen's Parks. They concluded that there is some potential for Aboriginal sites to survive at depth below areas of disturbance and that any buried archaeological evidence would be most likely small scale artefact scatters, isolated artefacts, hearths and pounding/grinding stones. However further work was need to assess the full extent of the impact of disturbance on potential archaeological deposits.

GML and Austral Archaeology (1997) undertook a program of archaeological test pitting along the western edge of Moore Park as part of early works for the Eastern Distributor. Test pits were dug to 2.2 m. They found fill between 40–150 cm and no evidence of Aboriginal occupation.

The only case of Aboriginal artefacts being identified near the project area is a campsite beneath the car park of the Moore Park Tennis Centre which was discovered in 2014 (AHIMS 45-6-3155). It consisted of the remains of dune sands containing a small number of stone artefacts (Sydney Barani website).

2.2 Historical heritage

2.2.1 Historical overview

Centennial Parklands is part of land originally designated as Sydney Common in 1811. In 1820 a water reserve was set aside to the east of Sydney Common and between 1827 and 1838 Lachlan's Water Tunnel (Busby's Bore) was built, using convict labour, to provide fresh water to a terminal in Hyde Park (SHR 01384). The 'Bore' was approximately 5.5 foot (1.65 m) high, 4.5 foot (1.35 m) wide and extended for 12,000 feet (approximately 4 km). Shafts and wells were tapped into the bore, of which 28 have been located, including two in Victoria Barracks, opposite the project area (Sydney Water 2005).

A Permanent Conservation Order applies to the section of the Bore between Centennial Park and College Street. This includes the project area (DP205794/Lot 1 and DP 752011/Lot 1528). Busby's Bore has a heritage curtilage of 3 m from all surfaces of the horizontal channel of the bore itself and 3 m from all surfaces of all the vertical shafts, offset shafts and structures associated with it (SHR 00568).

In 1866 Sydney City Council dedicated the north-west section of Sydney Common as Moore Park for public recreation. Since then, the original topography of the project area has been modified by roads and modern development. Aerial photography shows that in 1943 there was little to no vegetation along the south side of Moore Park Road (SIX maps imagery).

2.2.2 Statutory register searches

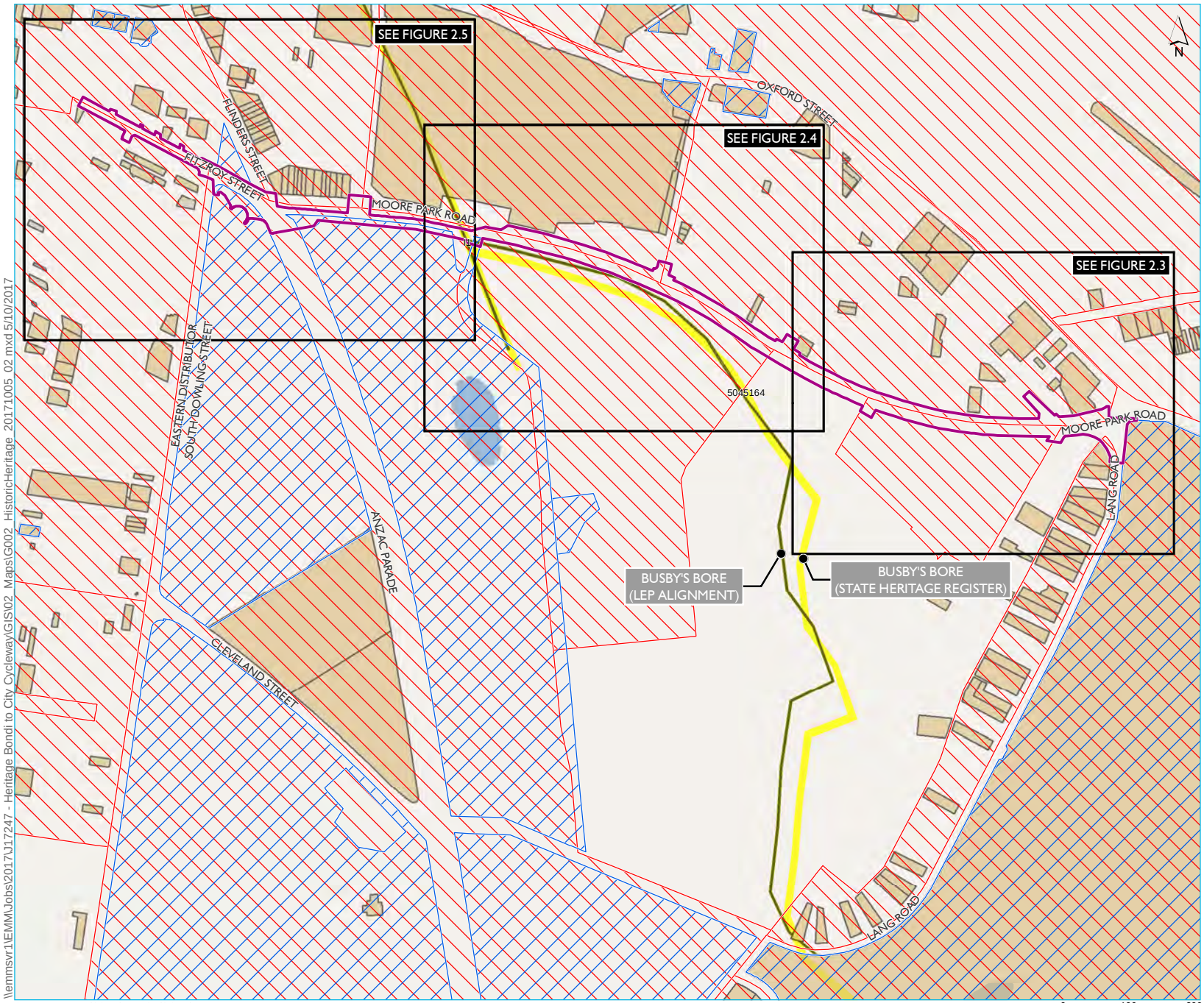
Searches were made of the following databases on 12 September 2017:

- The National Heritage List (NHL);
- The Commonwealth Heritage List (CHL);
- The State Heritage Register (SHR);
- Schedule 5 of the City of Sydney Local Environment Plan (LEP); and
- The Register of the National Estate (RNE, non-statutory).

The results of the register searches are listed in Table 2.2 and illustrated on Figures 2.2–2.5.

Table 2.2 Register search for items within the project area

Register	Register listing
National Heritage List (NHL)	The land within the project area is not listed on the NHL.
Commonwealth Heritage List (CHL)	The land within the project area is not listed on the CHL.
State Heritage Register (SHR)	00568 – Busby's Bore, Centennial Park to College St, Surry Hills. This item intersects with the cycleway near the junction of Moore Park Road and Driver Avenue. 01384 Centennial Park, Moore Park, Queens Park. Parts of the project area are within the north-western curtilage of Moore Park.
City of Sydney LEP (2012)	Item 1 – Busby's Bore, including tunnels, shafts and wells. Conservation Area C6 – Furber Road Conservation Area C7 – Lang Road Conservation Area C36 – Moore Park Conservation Area C37 – Sydney Cricket Ground Conservation Area C48 – Paddington South Conservation Area C49 – Victoria Barracks Conservation Area C59 – Bourke Street North Conservation Area 60 – Moore Park
Register of the National Estate (RNE, non-statutory)	1795 – Busby's Bore or The Tunnel, Oxford St, Sydney.



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Source: EMM (2017); DFSI (2017)

Overview of heritage listings

Bondi Junction to City cycleway
Aboriginal and historical
due diligence assessment

Figure 2.2

EMM

KEY

- Project area
- Busby s Bore (State Her tage Register)
- Conservation Area - General
- State Heritage Act
- Item - general

Source: EMM (2017); DFSI (2017)

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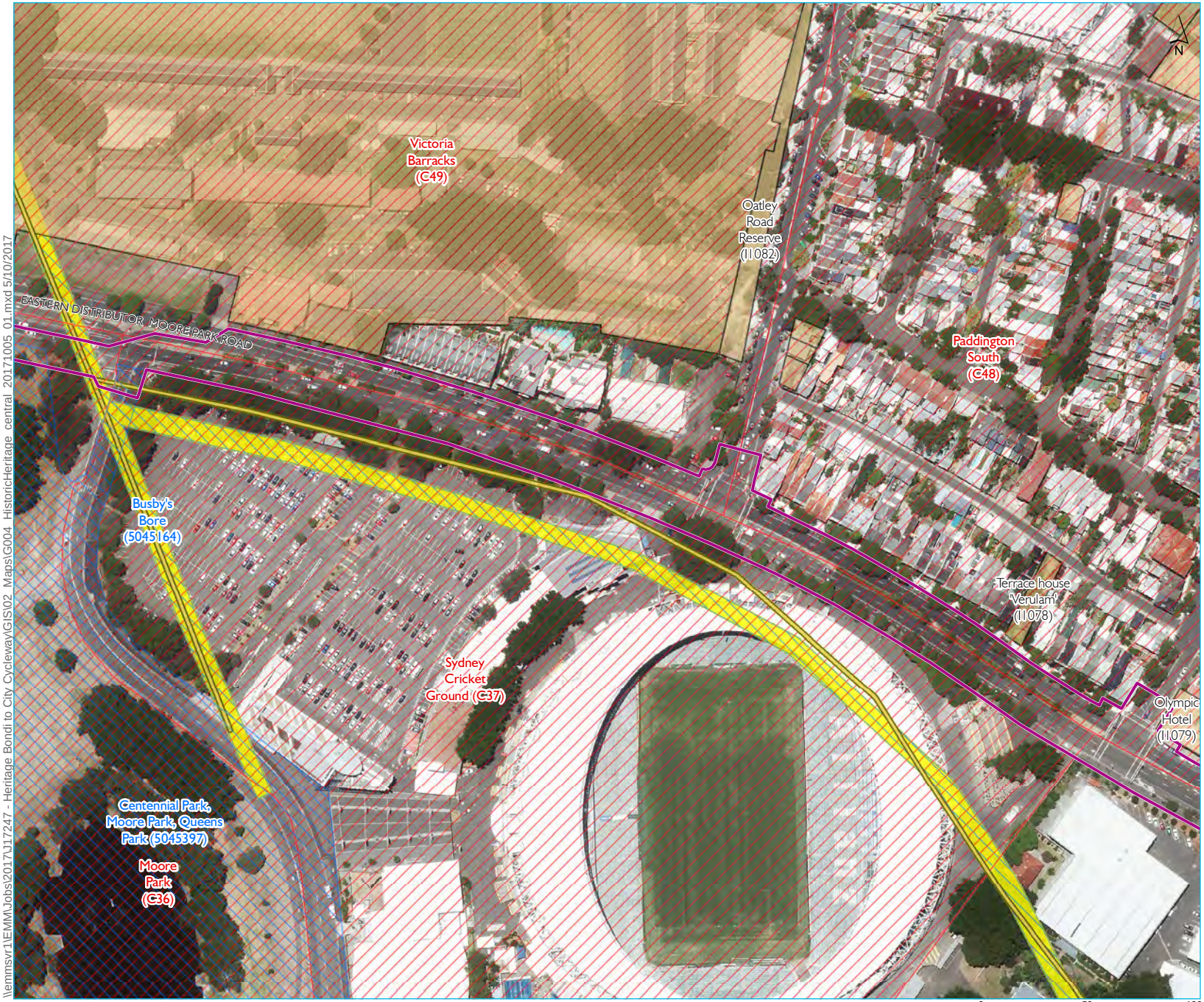
Heritage listings (east)

Bondi Junction to City cycleway
Aboriginal and historical
due diligence assessment

Figure 2.3

EMM



KEY

- Project area
- Busby s Bore (State Her tage Register)
- Conservation Area - General
- State Heritage Act
- Item - general

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Source: EMM (2017); DFSI (2017)

Heritage listings (centre)

Bondi Junction to City cycleway
Aboriginal and historical
due diligence assessment

Figure 2.4

EMM

\\emmsvr1\EMM\Jobs\2017\J17247 - Heritage Bondi to City Cycleway\GIS\02 Maps\G005 HistoricHeritage west 20171005 01 mxd 5/10/2017

Source: EMM (2017); DFSI (2017)

Heritage listings (west)

Bondi Junction to City cycleway
Aboriginal and historical
due diligence assessment

Figure 2.5

EMM

3 Site inspection

3.1 General

Pamela Chauvel (Archaeologist EMM) inspected the project area on 19 September 2017 in order to identify areas of archaeological potential or items of heritage interest. The inspection began at the corner of Moore Park Road and Oxford Street, the easternmost point of the project area and continued west along the southern side of Moore Park Road, following the route of the proposed cycleway, to the corner of Fitzroy Street and Bourke Street (Plate 3.11).

The project area slopes gently from east to west from Centennial Park to Oatley Road where it levels out before rising again towards Anzac Parade. From there it undulates and then rises more steeply along Fitzroy Street towards Bourke Street.

Ground surface visibility within the project area was poor, being mostly covered with a bitumen surface on roads and footpaths. Between Centennial Park and Poate Road there was a narrow (approximately 1 m) wide grassed verge between the road curb and bitumen footpath (Plate 3.1), but the footpath along the remainder of the route was completely surfaced with bitumen between the road curb and fences. The road curbs were all of concrete material and no historical sandstone curb material was observed during the site inspection.

No Aboriginal objects were identified during survey. The entirety of the project area is within a modified landscape.

3.2 Items of heritage interest

The site inspection focused on identifying historical items within the vicinity of the project footprint. These items were photographed and are discussed below.

The project will involve the removal and relocation of a number of palm trees along sections of the median strip on Moore Park Road (Plate 3.2 and Plate 3.3). These trees are well-established and contribute to the streetscape of Moore Park Road within their respective conservation areas.

The underground alignment of Busby's Bore intersects with the project area between Oatley Road and Driver Avenue. Construction works for the Australian Rugby Development Centre are currently occurring directly above Busby's Bore (Plate 3.4). Immediately to the west of Driver Avenue, there is a T-junction in the surface curtilage of Busby's Bore and it heads north-west across Moore Park Road (Plate 3.6). No features of Busby's Bore were visible as it is an underground structure.

Chain-linked bollards will be retained at the west of the corner of Moore Park Road and Driver Avenue (Plate 3.5) and to the north of the Korean War Memorial (Plate 3.9).

Other items of interest include sandstone columns related to the entrance and fencing of Moore Park (Plate 3.7, Plate 3.8 and Plate 3.10). These items will have new asphalt their bases but will not be physically impacted by the project. A small alignment of sandstone blocks around a garden bed near the corner of South Dowling Street and Fitzroy Street will be retained (Plate 3.10).

Plate 3.1 **Moore Park Rd between Centennial Park and Poate Road. Example of a small grass verge beside bitumen footpath (view west) that will form the cycleway**

Plate 3.2 **Example of palm trees requiring removal and relocation along a median strip of Moore Park Road (view east towards Centennial Park)**

Plate 3.3 Example of palm tree to be relocated along median strip of Moore Park Road (view north)

Plate 3.4 Location above the alignment of Busby's Bore showing current construction zone (view west)

Plate 3.5 Corner of Driver Avenue and Moore Park Road. Bollards will be retained (view west)

Plate 3.6 Corner of Driver Avenue and Moore Park Road where the underground alignment of Busby's Bore occurs (view east)

Plate 3.7 Sandstone pier (marked by red arrow) marking the end of a bollard fence (view east)

Plate 3.8 Example of the easternmost Moore Park Gateway Piers (view south)

Plate 3.9 Bollards near the Korean War Memorial that will be retained (view west)

Plate 3.10 The western-most Moore Park Gateway piers (left) and the sandstone garden wall that will be retained (shown by red arrow) near the Korean War Memorial (view north-east)

Plate 3.11 **View from Bourke St looking east along Fitzroy Street, the easternmost point of the project area. Footpaths on both sides of Fitzroy St are currently shared bike and pedestrian zones**

4 Potential impacts

4.1 Aboriginal heritage

Desktop assessment indicated that the project area exhibits landform elements, which if undisturbed, may have archaeological potential. However, review of the findings of previous reports, the historical background and a site inspection indicates that the project area has been highly disturbed and therefore has low archaeological potential. The width and depth of additional excavation required for the project is very likely to remain within the level of previous land use disturbance and therefore Aboriginal objects are unlikely to occur in this area.

It is likely that activities associated with the stormwater renewal works will remain within existing trenches or the highly disturbed soil directly surrounding it. However, if the works are anticipated to involve disturbance to intact soils then further investigation or impact assessment may be required.

4.2 Historical heritage

The potential impacts of the project on historical heritage are addressed in Table 4.1. The details of each of these items were reviewed on the State Heritage Inventory (SHI) to identify which of their aspects (if any) may be impacted by the project.

The project area is along the edges of eight conservation areas. Generally, the project will not adversely impact on the heritage significance or character of the streetscape because the proposed cycleway will be created along existing roads and paths. The removal and relocation of palm trees along the median strip of Moore Park Road will be a temporary visual impact during cycleway construction but it will not cause long-term impacts. Additional garden beds and plantings along the project area are encouraged according to the policy recommendations for relevant conservation areas. Overall the project is likely to have a neutral impact on the heritage conservation areas, with a temporary visual impact during construction.

The project enters the curtilage of two SHR listed heritage items: Moore Park and Busby's Bore. In July 2018, EMM conducted further assessment to more accurately map the Bore's horizontal and vertical channels so that a more reliable impact assessment could be made. Results of this assessment are included in Appendix **Error! Reference source not found.**.

The additional heritage assessment tasks completed for the project indicate that impacts are not anticipated to heritage items in the vicinity. Provided that City of Sydney Council consults with The Centennial and Moore Park Trust and the works are undertaken in accordance with the endorsed management plan, the following recommendations can be made:

- The proposed works within the curtilage of Centennial Park, Moore Park, Queens Park (SHR #01384) comply with the site specific SHR exemptions for the item. No exemption notification under Section 57(2) of the Heritage Act is required for Heritage Division approval for the proposed works to proceed.

- The proposed works are very unlikely to be within the heritage curtilage of Busby's Bore (SHR #00568). Therefore no standard exemption notification under Section 57(2) of the Heritage Act is required for the proposed works to proceed.

Table 4.1 Register search for items within the project area

Register	Register listing	Overview of significant features relevant to the project	Potential Impacts
National Heritage List (NHL)	The land within the project area is not listed on the NHL.	Not applicable.	Not applicable
Commonwealth Heritage List (CHL)	The land within the project area is not listed on the CHL.	Not applicable.	Not applicable
State Heritage Register (SHR)	00568 – Busby's Bore, Centennial Park to College St, Surry Hills. This item intersects with the cycleway near the junction of Moore Park Road and Driver Avenue.	Water supply tunnel from Centennial Park to Hyde Park. Built 1827–1837.	It is conservatively estimated that the proposed works are over 13 m from the nearest vertical shaft. The 1892 plan indicates that the horizontal channel of the bore is approximately 38 feet (116 m) below the ground surface. Proposed works will be less than 1 m. See Appendix C for the relevant maps and plan. As such, impacts are very unlikely.
	01384 Centennial Park, Moore Park, Queens Park. Parts of the project area are within the north-western curtilage of Moore Park.	The curtilage of Moore Park where it intersects with the project is part of the greater Centennial Parklands which is a unique place of exceptional National, State and Local heritage significance. It is a grand, linked open space of largely nineteenth-century landscape design intended for social and physical activity.	The project will involve minor changes within the northern boundary of the SHR curtilage. Originally planned changes to the Korean War Memorial will no longer take place.
City of Sydney LEP (2012)	Item 1 – Busby's Bore, including tunnels, shafts and wells.	Refer to SHR listing above.	Refer to SHR listing above
	Conservation Area C6 – Furber Road	The significance of Moore Park Road within this conservation areas is quoted from the SHI as follows: "Southern side only from Poate Road to Cook Road: very intact very few intrusions. Predominant character: Two storey grand Federation era terraces and semi-detached houses, largely intact. Detracting elements: high front fences to Moore Park Road, 1st floor balcony enclosures to facades to Moore Park Road, and the post war residential flat building at 59 Moore Park Road. Street Rating: A"	The palm trees subject to removal and relocation are not specifically referred to as significant features of the conservation area. However, the policy recommendations to enhance the significance of the conservation areas include maintaining street plantings to unify street scapes. Overall, the removal and relocation of the designated palm trees will cause a temporary visual impact to the streetscape. Other changes relate to the cycleway construction and will only occur on existing paths or roads. As such impacts will be minor to negligible.

Table 4.1 Register search for items within the project area

Register	Register listing	Overview of significant features relevant to the project	Potential Impacts
	Conservation Area C7 – Lang Road	Main significance is associated with residences and their setting adjacent to Centennial Park.	No significant features will be impacted. The project will only change the corner footpaths and road of Lang and Moore Park road. As stated in the policy recommendations for the heritage item, the proposed garden bed and trees are encouraged at street ends to reinforce landscape vistas. Other changes relate to the cycleway construction and will only occur on existing paths or roads. As such impacts will be minor to negligible.
	Conservation Area C36 and C60 – Moore Park	Refer to SHR listing for the item.	Refer to SHR listing for the item
	Conservation Area C37 – Sydney Cricket Ground	Significance of this conservation area primarily relates to the cricket grounds and not necessarily Moore Park Road.	The removal and relocation of palm trees would not impact the significance of the conservation area. Other changes relate to cycleway construction and will only occur on existing paths or roads. As such impacts will be minor to negligible.
	Conservation Area C48 – Paddington South	The significance of Moore Park Road within this conservation area relates to the Victorian building developments that characterise the area.	The palm trees subject to removal and relocation are not specifically referred to as significant features of the conservation area. However, the policy recommendations to enhance the significance of the conservation areas include maintaining street plantings to unify street scapes. Other changes relate to the cycleway construction and will only occur on existing paths or roads. As such impacts will be minor to negligible.
	Conservation Area C49 – Victoria Barracks	The significance of the conservation area primarily relates to the complex of buildings to the north and not particularly Moore Park Road.	The removal and relocation of palm trees would not impact the significance of the conservation area. Other changes relate to the cycleway construction and will only occur on existing paths or roads. As such impacts will be minor to negligible.
	Conservation Area C59 – Bourke Street North	Primary significance relates to Victorian era houses. The significance of Fitzroy Street is summarised as: "A street of Victorian character that is predominantly intact and contains a mixture of shops/residences and terraces. Subject to heavy traffic. New work should focus	Proposed changes relate to the cycleway construction and will only occur on existing paths or roads. As such impacts will be minor to negligible.

Table 4.1 Register search for items within the project area

Register	Register listing	Overview of significant features relevant to the project	Potential Impacts
		on reinstating balconies and restoring original elements. Dormers may be appropriate and should be considered on merit. Sections of sandstone curbing are present and should be maintained with missing sections rebuilt. Street Rating: A".	
Register of the National Estate (RNE, non-statutory)	1795 – Busby's Bore or The Tunnel, Oxford St, Sydney.	Refer to SHR listing for details.	Refer to SHR listing for details.

5 Recommendations

5.1 Aboriginal heritage

The following recommendations have been prepared to respond to the site conditions and current legislation and guidelines protecting Aboriginal cultural heritage:

- The nature and extent of ground disturbance activates associated with the stormwater renewal works must be resolved prior to excavation activities.
    - If the stormwater renewal works will be constructed within existing trenches and/or previously disturbed land, then no further investigation is required.
    - If the stormwater renewal works will involve ground disturbance intact soils (soils not previously disturbed) then further investigation and assessment is required to determine if Aboriginal objects will be harmed by the activity.
- No further assessment is required for the remaining project activities and it can proceed with caution in the project area.
- Aboriginal objects and places remain protected under the NPW Act. Considering this, all workers (including contractors) should be made aware that it is illegal to harm an Aboriginal object, and if a potential Aboriginal object is encountered during activities associated with the project all work will cease in the immediate vicinity of the item and a qualified heritage professional will be contacted for advice.
- In the event that known or suspected human skeletal remains are encountered during the activity, the following procedure will be followed:
    - all work in the immediate vicinity will cease and the find will be immediately reported to the work supervisor who will immediately advise the Environment Manager or other nominated senior staff member;
    - the Environment Manager or other nominated senior staff member will promptly notify the police and the state coroner (as required for all human remains discoveries);
    - the Environment Manager or other nominated senior staff member will contact OEH for advice on identification of the skeletal material;
    - if it is determined that the skeletal material is Aboriginal ancestral remains, the Local Aboriginal Land Council will be contacted and consultative arrangements will be made to discuss ongoing care of the remains; and
    - if it is determined that the skeletal material is not Aboriginal ancestral remains, further investigation will be conducted to determine if the remains represent a historical grave or if further involvement of the police is required.

5.2 Historical heritage

5.2.1 SHR items

No further heritage investigations or permits are required for the proposed works to proceed. However, significant historical archaeological remains are still protected under the Heritage Act through the operation of the 'relics' provisions in Sections 139–146 of the Heritage Act. If archaeological deposits are discovered during the works, all work must cease in the affected area(s) and the Heritage Division must be notified in accordance with Section 146 of the Heritage Act. Additional assessment and approval may be required prior to works continuing in the affected area(s) based on the nature of the discovery.

5.2.2 LEP items

The project is unlikely to detract from the heritage significance of heritage conservation areas through which it traverses. Table 4.1 of this report should be considered as a summary statement of heritage impact that demonstrate impacts will be minor to negligible.

It is recommended that the design and materials used for the cycleway are in keeping with established cycleways in the City of Sydney Council LGA and that these are sympathetic to the heritage significance of the conservation areas.

References

Australian Museum Business Services (AMBS), January 2002, *Pre-colonial Aboriginal land and resource use in Centennial, Moore and Queens Parks—assessment of historical and archaeological evidence for Centennial Parklands Conservation Management Plan*

eSPADE, NSW Soil and Land Information, accessed 5 October 2017, produced by Office of Environment and Heritage http://www.environment.nsw.gov.au/eSpade2WebApp#

Godden Mackay Logan, 2013, *CBD and South East Light Rail Environment Impact Statement – Heritage Impact Assessment*. Report prepared for Parsons Brinckerhoff on behalf of Transport for NSW

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Godden Mackay Pty Ltd and Austral Archaeology Pty Ltd, December 1997, POW Project 1995—Archaeological Investigation— Volume 2, Archaeology; Part 3—Aboriginal Archaeology, prepared for the South Eastern Sydney Area Health Service, Heritage Council of NSW and the NSW Department of Health

Sydney Barani website, accessed 5 October 2017 http://www.sydneybarani.com.au/, produced by City of Sydney Council

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Appendix A

AHIMS search results

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : J17247

Client Service ID : 300946

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-6-0647	Centennial Park	AGD	56	336273	6247961	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	**Recorders**	ASRSYS					**Permits**		
45-6-3155	Moore Park AS1	GDA	56	335613	6247909	Open site	Destroyed	Artefact : -		
	Contact	**Recorders**	Artefact - Cultural Heritage Management ,Mr.Josh Symons,Mr.Alex Timms					**Permits**	4019	

Report generated by AHIMS Web Service on 12/09/2017 for Pamela Chauvel for the following area at Datum :GDA, Zone : 56, Eastings : 334214 - 337654, Northings : 6247656 - 6250032 with a Buffer of 50 meters. Additional Info : Report for client. Number of Aboriginal sites and Aboriginal objects found is 2

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Appendix B

Additional assessment for Moore Park and Busby's Bore

11 July 2018

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Sydney NSW 2010

Re: Bondi Junction to City Cycleway: Additional heritage assessment and advice regarding State Heritage Register (SHR) items: Centennial Park, Moore Park, Queens Park (SHR #01384) and Busby's Bore (SHR #00568).

Dear Matthew

1 Background

City of Sydney Council (Council) proposes to install a cycleway connecting Centennial Park and Moore Park Trust's Oxford Street Cycleway and Pedestrian Path with the Bourke Street Separated Cycleway (the project) in the Sydney Local Government Area (LGA). The project will primarily involve constructing a two-way separated cycleway along Moore Park Road.

In November 2017, EMM Consulting Pty Limited (EMM) prepared an Aboriginal and historical due diligence assessment (heritage assessment) to support a review of environmental factors (REF) for the project. As part of the assessment outcomes, the report identified that the project may encroach upon the curtilages of two State Heritage Register (SHR) items: Centennial Park, Moore Park, Queens Park (SHR #01384) and Busby's Bore (SHR#00568). These heritage items are protected under the NSW *Heritage Act 1977* (Heritage Act).

The heritage assessment identified that although the project will involve works within the curtilage of Moore Park (part of SHR #01384) on its very northern boundary, it unlikely to impact the heritage significance of the item. Moore Park is place of exceptional National, State and Local heritage significance. It is a grand, linked open space of largely nineteenth-century landscape design intended for social and physical activity. EMM advised that further assessment was needed to confirm that the proposed works within the small area of SHR curtilage are exempt from requiring a Section 60 application to impact a SHR item in accordance with Section 57(2) of the Heritage Act.

The heritage assessment identified that the project will involve works above the alignment of Busby's Bore which is a water supply tunnel from Centennial Park to Hyde Park built 1827–1837. EMM determined that the project was unlikely to impact Busby's Bore, but further investigation was recommended to more accurately map the Bore's horizontal and vertical channels so that a more reliable impact assessment could be made.

2 Methods and results

2.1 Centennial Park, Moore Park, Queens Park (SHR #01384)

2.1.1 Aims and methods

The aim of the additional assessment was to verify if the proposed works within curtilage of Moore Park (part of SHR #01384) qualify as being exempt activities under Section 57(2) of the Heritage Act and if an exemption notification form is required to be submitted to the NSW Heritage Council via the Heritage Division, Office of Environment and Heritage (Heritage Division). Accordingly, EMM completed the following:

- review of the proposed works against the site specific exemptions set out in Schedule C of the SHR exemption criteria; and
- consultation with the Heritage Division to determine if an exemption notification form is required.

2.1.2 Results

Site specific exemptions apply to Centennial Park, Moore Park, Queens Park (SHR #01384) under Section 57(2) of the Heritage Act, and which are listed on the items SHR datasheet. EMM consulted the Heritage Division on 9 November 2017 to determine if an exemption notification was required for the proposed works. The Heritage Division advised that no exemption notification would be required if the proposed works follow the activities set out in Schedule C of the SHR exemption criteria.

The proposed works are reviewed against the relevant exemption criteria in Table 1**.** Many of the exemption criteria are linked to activities aimed to implement the *Centennial Parklands Plan of Management*. The Plan of Management (2006–2016) is in the process of being replaced by the *2018 And Beyond* document (in draft). Management objectives specific to Moore Park are detailed in the subsidiary document, *Moore Park Master Plan 2040* which identifies improved access for cyclists and pedestrians throughout the park, including along Moore Park Road, as a key priority.

The Centennial and Moore Park Trust (the Trust) is responsible for the long-term strategic planning of the Parkland, implementing the Plan of Management, as well as the day-to-day management of the three parks – Centennial Park, Moore Park and Queens Park. EMM understand that Council has consulted with the Trust (Geoff Reinhard – Manager, Planning) about the proposed works to ensure the design and materials of the project within the SHR curtilage are in keeping with the Plan of Management and other Trust policies.

Overall, Table 1 demonstrates that the proposed works fall under the SHR exemption criteria, assuming that the Trust agrees that the nature of the proposed works are to implement the Plan of Management and other Trust policies. Accordingly, no exemption notification form is required to be submitted to the NSW Heritage Council.

Table 1 Centennial Park, Moore Park, Queens Park (SHR #01384) Exemption evaluation

SHR Exemption Criteria	Relevant proposed works
4. Alteration of roads, pathways and fences:	
i) Closure, removal, alteration or construction of roads and pathways to implement the Plan of Management and other Trust policies.	The proposed works includes alterations and constructions of pathways to create the cycleway. Council has consulted with the Trust so that the proposed works are in keeping with the Plan of Management and other Trust policies. The proposed works fulfil this exemption criterion.
ii) Repair, removal and installation of fences to implement the Trust's policies	The proposed works includes the removal and installation of fences along Moore Park Road. None of these were identified as heritage items during the heritage assessment. Council has consulted with the Trust so that the proposed works are in

Table 1 Centennial Park, Moore Park, Queens Park (SHR #01384) Exemption evaluation

SHR Exemption Criteria	Relevant proposed works
	keeping with the Plan of Management and other Trust policies. The proposed works fulfil this exemption criterion.
iii) Parking management measures to implement the Trust's parking policies.	Not applicable
5. Management of lawns, sports fields, garden beds, hard landscaping and living collection	
i) Removal and replacement of existing plantings.	The proposed works will involve the removal of four trees along Moore Park Road at the very edge of the SHR curtilage between Anzac Parade and Driver Avenue. These trees were not identified to have heritage significance during the heritage assessment. Most trees will be retained, including all of the fig trees south of the proposed cycleway near the Korean War Memorial. Council has consulted with the Trust so that the proposed works are in keeping with the Plan of Management and other Trust policies. The proposed works fulfil this exemption criterion.
ii) Removal, construction or alteration of garden beds, hard landscaping and plantings to implement the Plan of Management and other policies for the parklands where the Trust is satisfied that the activity will not materially affect the heritage significance of the Parklands as a whole or the area in which they are to be undertaken.	The proposed works will involve landscaping. Importantly, the landscaping will not remove the sandstone garden bed wall located adjacent to the Moore Park Gateway piers near the Korean War Memorial. Council has consulted with the Trust so that the proposed works are in keeping with the Plan of Management and other Trust policies. The proposed works fulfil this exemption criterion.

2.2 Busby's Bore (SHR#00568)

The aim of the additional assessment was to determine if the project will potentially impact Busby's Bore. EMM completed the following tasks:

- interpretation of the historical plan of Busby's Bore (1892) provided by the Heritage Division using GIS to determine the current location and depth of the bore and the vertical shafts depicted on the plan; and
- review of the maximum depth of excavation proposed for the project in the vicinity of Busby's Bore;
- assessment of the project's potential to impact Busby's Bore; and
- determination if further assessment or approvals required for the proposed works above Busby's Bore.

2.2.1 Results

EMM consulted the Heritage Division on 9 November 2017 to determine if an exemption notification needed to be submitted for the proposed works. The Heritage Division advised that no exemption notification is required if the proposed works do not fall within the identified curtilage of the bore. The SHR curtilage for Busby's Bore is described as:

> "All those pieces or parcels of land extending between Centennial Park and College Street, Sydney, along with a curtilage of three metres from all surfaces of the horizontal channel of the Bore itself and three metres from all surfaces of all the vertical shafts and offset shafts and structures associated with the Bore, as shown edged heavy black on the plan catalogued H.C. 1564 in the office of the Heritage Council of New South Wales."

The general alignment of the bore and its curtilage is provided on GIS spatial data issued by the Heritage Division. However, the data does not show the location of the bore's vertical shafts. To resolve this issue and measure the project's distance from the nearest vertical shafts, the EMM GIS team superimposed the 1892 plan of the bore onto a current map using the ArcGIS geo-referencing tools (Figures 1 and 2). Using a conservative measurement (measuring from outer rim of the vertical shaft marked on the 1892 plan), the proposed works are over 13 m from the nearest shaft (Shaft No.8). A more realistic measurement taken from the centre point of the shaft marked on the 1892 plan indicates that the proposed works are over 20 m from Shaft No.8.

The 1892 plan also includes a vertical plan showing the depth of the horizontal channel of the bore along its entire alignment (Plate 1). The vertical plan indicates horizontal channel of the bore is approximately 38 ft (11.6 m) below the ground surface. The proposed works above the bore will involve excavation to a maximum depth of 0.8 m associated with pathway construction. As such, the proposed works will not impact the ground within the heritage curtilage of the bore.

3 Conclusion and recommendations

The additional heritage assessment tasks completed for the project indicate that impacts are not anticipated to heritage items in the vicinity. Provided that City of Sydney Council consults with The Centennial and Moore Park Trust and the works are undertaken in accordance with the endorsed management plan, the following recommendations can be made:

- The proposed works within the curtilage of Centennial Park, Moore Park, Queens Park (SHR #01384) comply with the site specific SHR exemptions for the item. No exemption notification under Section 57(2) of the Heritage Act is required for Heritage Division approval for the proposed works to proceed.

- The proposed works are very unlikely to be within the heritage curtilage of Busby's Bore (SHR #00568). Therefore no standard exemption notification under Section 57(2) of the Heritage Act is required for the proposed works to proceed.

No further heritage investigations or permits are required for the proposed works to proceed. However, significant historical archaeological remains are still protected under the Heritage Act through the operation of the 'relics' provisions in Sections 139–146 of the Heritage Act. If archaeological deposits are discovered during the works, all work must cease in the affected area(s) and the Heritage Division must be notified in accordance with Section 146 of the Heritage Act. Additional assessment and approval may be required prior to works continuing in the affected area(s) based on the nature of the discovery.

4 Closing

I trust that this letter meets your requirements for works to proceed. Please do not hesitate to contact me on my details below.

Ryan Desic
Senior Archaeologist
rdesic@emmconsulting.com.au
M: 0411 329 712

T:\Jobs\2017\J17247 - Heritage Bondi to City Cycleway\GIS\02 Maps\G007 BusbysBoreLocation 20180710 02 mxd 16/07/2018

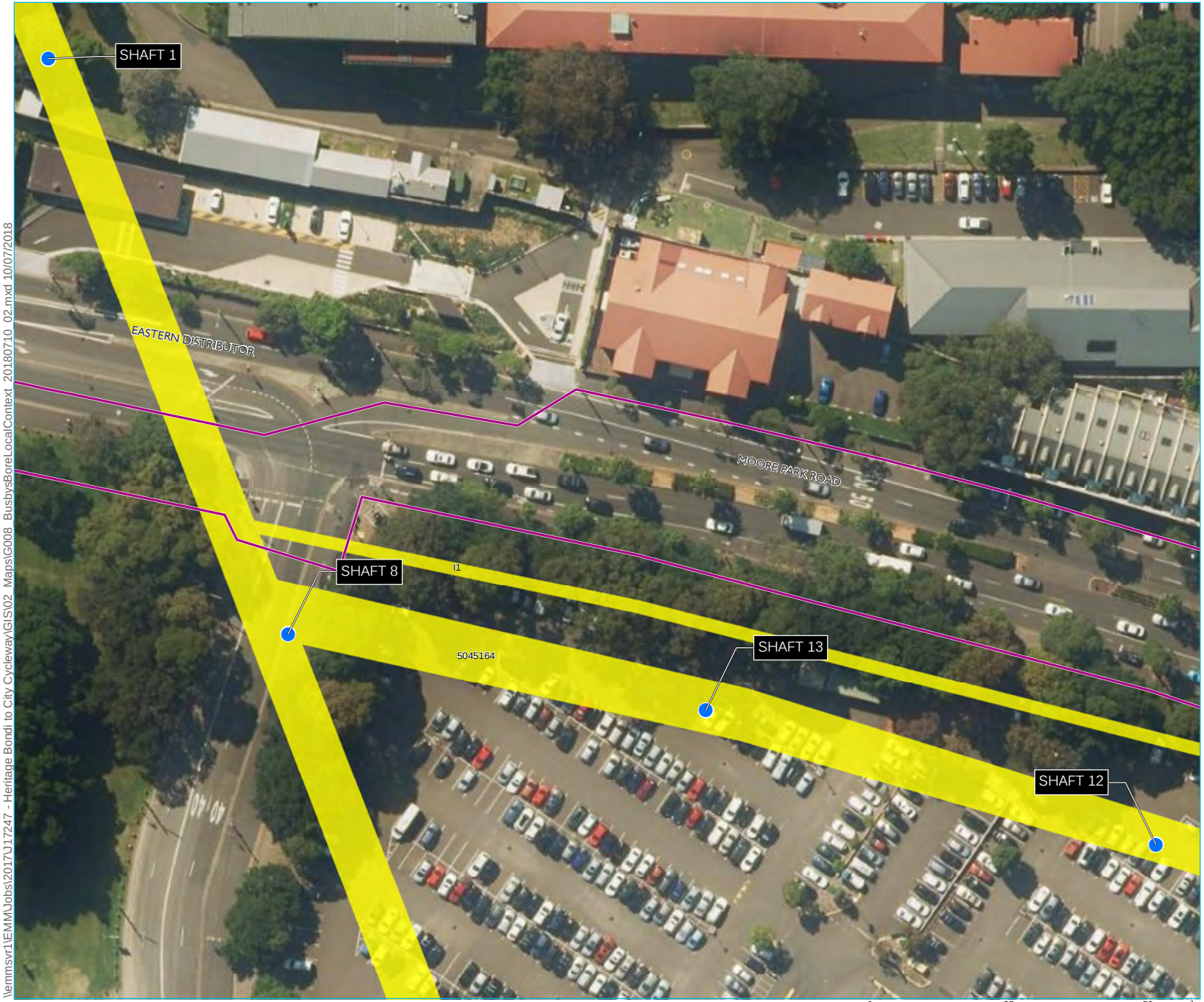
Source: EMM (2017); DFSI (2017)

Project area

Geo-referenced 1892 plan of Busby's Bore

Figure 1

EMM



KEY

- Indicative shaft location of Busby s Bore
- Project area
- Busby s Bore alignment (State Heritage Act)

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Source: EMM (2017); DFSI (2017)

Local extent

Geo-referenced 1892 plan of Busby's Bore

Figure 2

EMM

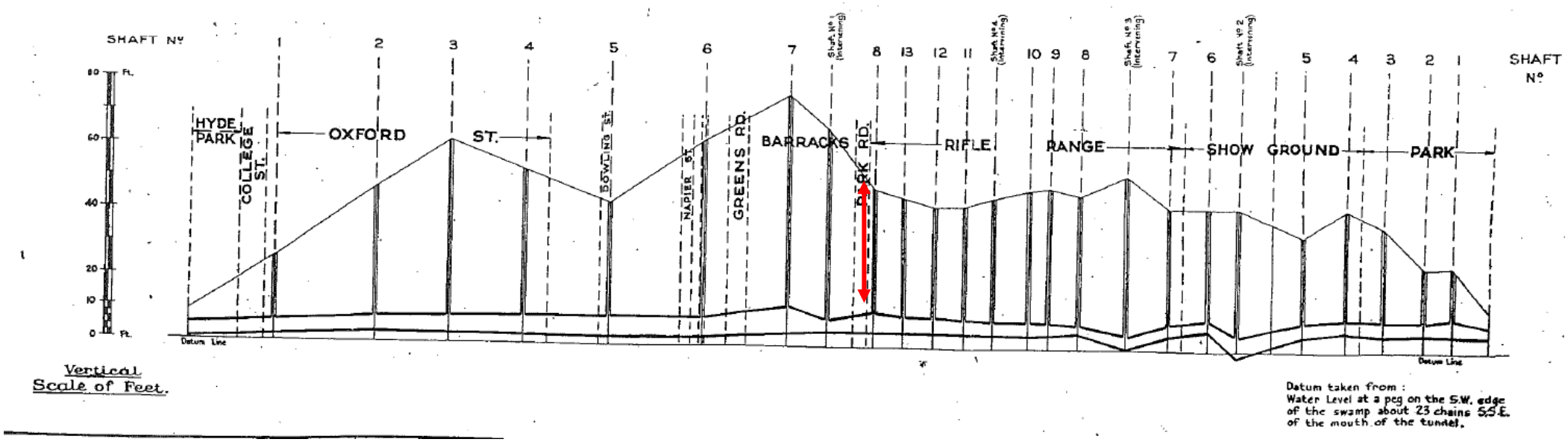

Plate 1 **Vertical plan of Busby's Bore with red arrow inserted by EMM to show the location of the proposed works and the distance between ground level and the top of the vertical bore channel (source: Heritage Council NSW, Plan Number H.C 1564).**