Attachment B

Review of Environmental Factors for the Bridge, Railway and Henderson Pop-up Cycleway

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City of Sydney Council
09 Mar 2021

Review of Environmental Factors

Ashmore Precinct: Bridge Street, Railway Parade and Henderson Road pop-up cycleways

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Client: City of Sydney Council

ABN: N/A

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Abbreviations

Abbreviation	Meaning
AAP	Areas of archaeological potential
ASS	Acid Sulfate Soils
ASSMP	Acid sulfate soil management plan
AZP	Archaeological Zoning Plan
BC Act	*Biodiversity Conservation Act 2016*
CBD	Central Business District
CEMP	Construction Environmental Management Plan
The City/Council	The City of Sydney Council
CLM Act	*Contaminated Land Management Act 1997*
CMMP	Contaminated Materials Management Plan
CNVMP	Construction Noise Vibration Management Plan
CO	Carbon Monoxide
dB(A)	A weighted decibels
DCP	Development Control Plan
DPIE	Department of Planning, Industry and Environment
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
ESD	Ecologically Sustainable Development
EMP	Environmental Management Plan
EMMP	Excavated Materials Management Plan
EMS	Environmental Management System
EPA	Environment Protection Authority
EP&A Act	*NSW Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPI	Environmental Planning Instrument
EPBC Act	*Environment Protection Biodiversity and Conservation Act 1999*
HMP	Heritage Management Plan
ICNG	Interim Construction Noise Guideline
ICOMOS	International Council on Monuments and Sites
Km	Kilometres
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
m	Metres

Abbreviation	Meaning
NEPM	National Environment Protection Measures
NES	National Environmental Significance
NO_2	Nitrogen Dioxide
NPI	National Pollutant Inventory
NPW Act	*National Parks and Wildlife Act 1974*
O_3	Ozone
OEH	Office of Environment and Heritage
Pb	Lead
PM	Particulate matter
POEO Act	*Protection of the Environment Operations Act 1997*
REF	Review of Environmental Factors
RMS	Roads & Maritime Services
RT Act	*Road Transport Act 2013*
SDS	Safety Data Sheet
SEPP	State Environmental Planning Policy
SO_2	Sulfur Dioxide
STA	State Transit Authority
Streets Code	City of Sydney Streets Code
The Minister	The NSW Minister for Planning
The Regulations	NSW Environmental Impact Assessment Part 5 Procedures Manual (City of Sydney)
TMAP	Transport Management Accessibility Plan
TMP	Traffic management plan
TPZs	Tree protection zones
Transport	Transport for NSW (TfNSW)
WARR Act	*Waste Avoidance and Resource Recovery Act 2001*
WMP	Waste Management Plan

1.0 Introduction

The City of Sydney propose to continue the operation of a pop-up cycleway for up to two years along Bridge Street, Railway Parade and Henderson Road at Erskineville, Alexandria and Eveleigh as part of the broader NSW Govt Co-designed Bicycle Network Blueprint and City of Sydney's Cycling Strategy and Action Plan network (Bike Network) (the proposal). The existing pop-up cycleway was constructed in June and July 2020 under the *Environmental Planning and Assessment (COVID-19 Development-Temporary Cycleways) Order 2020*. The cycleway provides a safe connection from Erskineville to Central Sydney and usage has steadily increased over time to an average of 2,468 trips per week in February and 2,405 trips in the first week of March.

For the Bridge Street, Railway Parade and Henderson Road separated cycleway project, the City of Sydney is both the proponent and the determining authority for this Review of Environmental Factors (REF) under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This REF has been prepared by AECOM Australia Pty Ltd (AECOM) on behalf of the City of Sydney for the proposal. The purpose of this REF is to describe the proposal, assesses the potential for the proposal to result in environmental impacts, and to inform the decision to proceed with the proposal. In accordance with Clause 94(1) and Clause 94(2) of the Infrastructure SEPP, development consent is not required, and the proposal is designated as 'development without consent' under Division 5.1 of the EP&A Act. However, it is still necessary and required to consider environmental impacts of the proposal under Part 5 of the EP&A Act. The proposal and associated environmental impacts have been described in the context of clause 228 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), fulfilling the requirements of Section 5.5 of the EP&A Act.

This assessment finds that the proposal would not result in any significant impacts upon the environment and as such may be approved with relevant mitigations applied. Detail of the environmental assessment is provided in the following sections of this REF.

1.1 Overview of the proposal

1.1.1 Background

Cycling and walking are integral to Sydney's transport future because they are the most accessible, equitable, sustainable and reliable forms of transport. Since 2007, the City of Sydney has invested an average of $11 million per annum to build a safe and connected bike network. This has resulted in the doubling of average cycling trips across Sydney.

The *Cycling Strategy and Action Plan – For a more sustainable Sydney 2018 – 2030* was prepared by the City of Sydney to guide planning and development decisions to make bicycle transport easier, safer, attractive, and a more feasible option for a greater number of people. This strategic planning document is discussed in greater detail in **Section 2.1.2**.

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.

Walking and cycling are also key means to supplement the public transport network and reduce demand on the road system while physical distancing measures are in place and beyond. *Future Transport 2056* identifies Transport for NSW's (TfNSW) vision to create a cycleway network connecting strategic centres and local centres, (known as the Principal Bicycle Network) over the next 20 years.

As part of Bike Network, the City of Sydney proposes to continue the operation of the existing two-way separated cycleway along Bridge Street, Railway Parade and Henderson Road at Erskineville, Alexandria and Eveleigh for two years. The proposal seeks to minimise additional infrastructure requirements whilst contributing positively to the safety, functionality and amenity of the streets for people on bikes, and without compromising essential motorised vehicle operations, pedestrian space and the legibility of the street as an urban place. This proposal is the subject of this REF.

1.1.2 Key features of the proposal

The core deliverable of the proposal would comprise the continued operation of a two-way, separated cycleway along Bridge Street, Railway Parade and Henderson Road at Erskineville, Alexandria and Eveleigh for two years. The pop-up cycleway is located immediately north of the intersection of Bridge Street and Ashmore Street in Erskineville, continues along the western side of Bridge Street in a northerly direction to the intersection of Bridge Street and Swanson Street, then along the western side of Railway Parade in a north easterly direction to the intersection of Park Street, then along the northern side of Henderson Road in an eastern direction, terminating at the intersection with Davy Road/Mitchell Road.

1.2 Site analysis

1.2.1 Proposal location and context

The proposal is located within the City of Sydney Local Government Area (LGA), in the suburbs of Erskineville, Alexandria and Eveleigh. The proposal is located about four kilometres south-west of the Sydney CBD, about 600 metres north of the Sydney Park wetlands, and about three kilometres north of Sydney Airport. King Street, Newtown is located about 500 metres south-west of the proposal. The location of the proposal in a regional context is shown on Figure 1-1.

The proposal is located on Bridge Street, Railway Parade and Henderson Road as shown on Figure 1-2. The area surrounding the proposal can be generally described as a highly developed modern urban environment, characterised by a large volume of single and multi-story housing, with commercial and recreational land uses at street level. Erskineville Public School is located on Bridge Street, adjacent to the proposal area, which along with other premises adjacent to the proposal area, has local heritage significance (refer to **Section 6.4**).

Street trees as well as landscaped/planted medians, verges and gardens are located along the extent of the alignment. Swanson Street and Mitchell Road are busy through roads intersecting the proposal area, and are designated as classified State roads under the NSW *Roads Act 1993*.

For the purpose of this assessment, the extent of the works as shown on Figure 1-2 (defined by a red dashed line) is referred to as the proposal area.

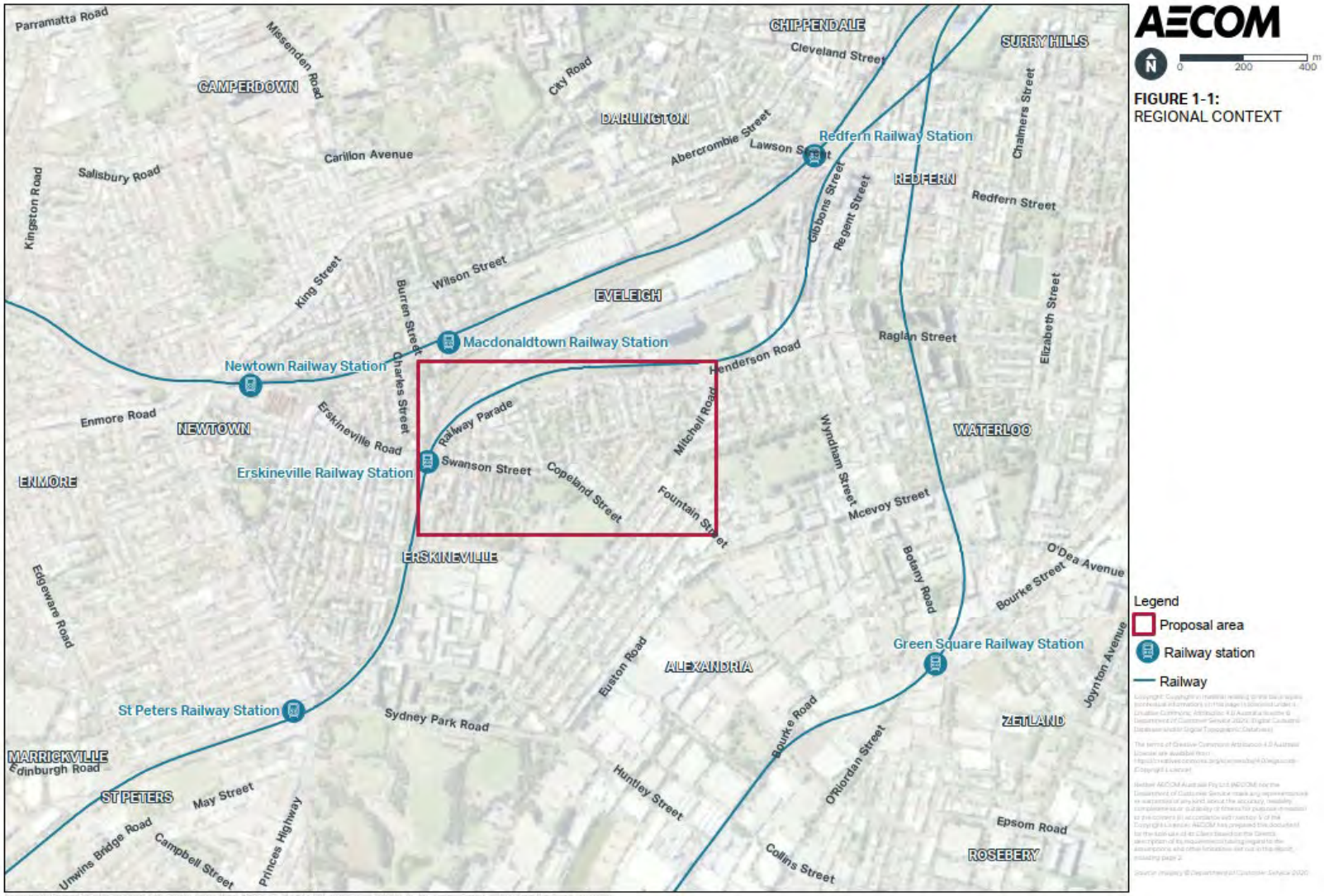

Figure 1-1 Regional context of the proposal

Figure 1-2 proposal footprint

1.2.2 Existing environment and surrounding land uses

Land uses surrounding the proposal area include office premises, residential premises, an educational facility, food and drink premises, and commercial and industrial premises.

Key sensitive receivers (land uses which are sensitive to potential noise, air and visual impacts) along the alignment primarily consist of residential properties. These are located adjacent to the proposal on Bridge Street, Railway Parade and Henderson Road. Other key sensitive receivers along the alignment include:

- Bridge Street – Erskineville Public School
- Railway Parade – PACT centre for emerging artists
- Henderson Road – Tavas Takeaway Food
- Henderson Road – Camelia Grove Hotel
- Henderson Road – Australian Technology Park which houses technology, banking and legal firms and university research centres as well as exhibition and dining facilities
- Henderson Road – Alexandria Childcare Centre
- Henderson Road – South Eveleigh Skatepark
- Henderson Road – JSH Motors
- Henderson Road – S.S. Scooter Engineering
- Henderson Road/Mitchell Road – Australia Post Office.

Key existing infrastructure within the proposal footprint includes:

- Underground electricity, stormwater, sewerage and telecommunications infrastructure
- Several bus stops along the various streets of the alignment
- Footpaths on both sides of the alignment
- Street lighting.

1.2.3 Existing pop-up Cycleway

In June 2020 the City of Sydney constructed the existing temporary two-way cycleway on Bridge Street, Railway Parade and Henderson Road.

The existing cycleway consists of a two-way cycleway located on the western and northern side of Bridge Street, Railway Parade and Henderson Road. The cycleway has painted markings on the pavement, divider barriers, flexible posts and temporary kerbs.

Construction works started 18 June 2020 and completed 7 July 2020 and consisted of:

- Removal of around 32 parking spaces on Bridge Street
- Installation of divider barriers
- Installation of flexible posts
- Updated line marking
- Removal of left turn from Swanson Street onto Railway Parade for traffic travelling east.

The construction of the existing pop-up cycleway was completed under the *Environmental Planning and Assessment (COVID-19 Development-Temporary Cycleways) Order 2020* which authorised the construction of the temporary cycleways without the need for any approval under the *Environmental Planning and Assessment Act 1979*, providing the works are undertaken by a pubic authority.

1.2.4 Existing zoning

The applicable land zoning for the proposal is specified by the *Sydney Local Environmental Plan 2012* (Sydney LEP). The proposal footprint is located within areas zoned as R1 – General Residential and B4 – Mixed Use.

Adjacent land zones to the proposal footprint comprise the following:

- RE1 – Public Recreation
- R1 – General Residential
- B4 – Mixed Use
- SP2 – Infrastructure (classified road).
- SP2 – Infrastructure (railways)
- SP2 – Infrastructure (educational establishment).

1.2.5 Land ownership

The land on which work is carried out is owned by the City of Sydney. The proposal does not require the acquisition of any property.

2.0 Need and options considered

This chapter discusses the need and objectives of the proposal within the context of the broader objectives of the Bike Network. This chapter also provides a summary of the options that have been considered during development of the proposal and justification as to why the preferred option has been chosen.

2.1 Strategic justification

2.1.1 Overview

The provision of separated cycleways can have immediate and long term impacts on usage, according to the *Inner Sydney Regional Bicycle Network Demand Assessment and Economic Appraisal* (AECOM 2010). Strong shifts in cycling demand have been observed where separated cycleway infrastructure has been constructed, for example, the development of two cycleways by the City on King Street and Bourke Road saw cycling levels increase by up to 30% immediately after opening.

The *Inner Sydney Regional Bicycle Network Demand Assessment and Economic Appraisal* discusses the fragmented and disjointed nature of Sydney's bicycle network. The lack of safe and available cycling connections forces people on bikes to mix with general traffic, which can lead to conflicts with large vehicles. Safety concerns arising from this risk may discourage cycling as an option. However, the report found that up to 84% of non-regular cyclists would be willing to consider cycling or cycling more often if dedicated cycleways and off-road routes were available. The report also included community feedback showing that there is a strong public desire for greater levels of dedicated cycling infrastructure.

2.1.2 Relevant policies and strategies

The proposal would be consistent with the policies and strategies that are described below.

2.1.2.1 Sydney City Centre Access Strategy

The NSW Government's *Sydney City Centre Access Strategy* was the state's first detailed plan of how people will enter, exit and move in and around Sydney's city centre over the next 20 years (TfNSW, 2013). One of the key features of the strategy was to deliver an integrated cycleway network. The proposal would align with the strategy as it would "meet the increased demands within the city centre and make better use of the available street space" and "support the continued growth in cycling within the city centre" (TfNSW, 2013).

2.1.2.2 Environmental Action 2016 – 2021: Strategy and Action Plan

Sustainable Sydney 2030 outlines the community expectation that the Sydney LGA should be an environmental leader on a global scale. To guide the implementation of *Sustainable Sydney 2030*, the City of Sydney developed a series of environmental master plans and strategies between 2008 and 2015. The *Environmental Action 2016 – 2021: Strategy and Action Plan* combines the insights and data from those documents.

2.1.2.3 Sustainable Sydney 2030 Vision

The Sustainable Sydney 2030 Vision proposes a Liveable Green Network to provide safe, quality, continuous routes for pedestrians and people on bikes. It proposes a cycling network that is safe enough for children to use, giving priority to separated, dedicated cycle lanes. The proposal would be consistent with this objective.

2.1.2.4 Cycling Strategy and Action Plan 2018-2030

The City of Sydney's *Cycle Strategy* supports the Sustainable Sydney 2030 vision. The City of Sydney's *Cycling Strategy and Action Plan 2018-2030* outlines the vision for cycling in Sydney. This includes an objective to connect the existing cycleway network and to make it safer for people to use. Actions to achieve this that are relevant to the proposal include:

- Completing the 11 regional bike routes, and substantially complete the local bike network
- Build the regional routes as separated cycleways where feasible and necessary

- Add local wayfinding signs
- Improve safety and access by including measures such as:
  - replacing bicycle shoulder lanes
  - adding new contra-flow provisions
  - lowering speeds and reducing traffic on local streets
  - installing kerb ramps at road closures
  - upgrading stormwater grates to be bike-safe
  - maintaining road surfaces and coordinating with utility authorities where required
  - ensuring regular asset inspections, street cleaning and maintenance of the bike network and associated signage
- Continue to provide bike parking in the public domain where needed and on request, including on-street bike parking corrals in suitable high demand locations, and continue to provide bike racks for public schools in our area
- Provide separated paths on, and alternative routes for, state roads where the City is not currently permitted to reallocate road space
- Investigate and respond to suggestions and comments from our community about the bike network to improve safety, access and comfort
- Advocate to the NSW Government to complete the Sydney City Centre Access Strategy bike network
- Advocate for TfNSW to fully fund their portion of the network and pursue multi-year funding agreements with TfNSW
- Consider all bike network users, including those on cargo bikes, e-bikes, trishaws and mobility scooters, in the design of infrastructure.

2.1.2.5 Sydney Metropolitan Strategy

A Plan for Growing Sydney (The Sydney Metropolitan Strategy) was released in 2015 as the NSW Government's 20-year plan for the Sydney Metropolitan Area. It provides direction for Sydney's productivity, environmental management and liveability; and for the location of housing, employment, infrastructure and open space. The Plan establishes a vision for Sydney as a strong global city, and great place to live. The vision is supported by key goals and principles aimed at encouraging improvements in transport infrastructure, housing, resilience and sustainability while maintaining a strong and competitive economy. The proposal would be consistent with The Plan, as it would enhance transport infrastructure, improve connectivity, and provide increased amenity for residents, workers and visitors.

2.1.2.1 Future Transport 2056 - TfNSW Principal bicycle network

The *Future Transport 2056 Strategy* and the *Future Transport 2056 - Greater Sydney Services and Infrastructure Plan* includes a section about growing the bicycle network across Sydney. It states that cycling helps reduce congestion, create places, lower carbon emissions, improve public health outcomes, and increase catchments to public transport. It recommends prioritising cycling networks around the Sydney CBD and Strategic Centres. It also recommends that cycling networks form part of the Green Grid (such as connecting parkland).

The Principal Bicycle Network supports shorter distance city-serving and centre-serving journeys. The Proposal is consistent with the TfNSW Principal bicycle network as it would maintaining improved access and improve journey time reliability for cyclists using Bridge Street, Railway Parade and Henderson Road and connecting networks.

2.1.2.2 Our Greater Sydney 2056, A metropolis of three cities

In October 2017, the Greater Sydney Commission published *Our Greater Sydney 2056*, which supports the vision for a metropolis of three cities to balance growth and deliver its benefits more equally and equitably to residents across Greater Sydney.

The proposal is consistent with the broader metropolitan vision for Greater Sydney by ensuring that it would support local access for an increasing number of residents moving in the area.

2.2 Proposal objectives

The objectives of the proposal are consistent with those that described for the delivery of the overall Bike Network and aim to provide active transport infrastructure that supports the movement of people on bikes along Bridge Street, Railway Parade and Henderson Road, that is:

- Safe and functional
- Separated from general traffic and pedestrians
- Meets current and future community needs
- Prioritises people on bikes.

The proposal would comprise the continued operation of the existing two-way pop-up cycleway on Bridge Street, Railway Parade and Henderson Road. The proposal is not anticipated to require construction as the cycleway is currently constructed. Maintenance works may involve replacement of the safety barriers with other materials that may be more suitable for ongoing operation.

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 establishment of the cycleway as a permanent form of infrastructure will continue to provide a means of active transport to key employment and recreational areas. The average weekly usage in the month of February 2021 was 2,468.

2.3 Alternatives considered

2.3.1.1 Option 1 – 'Do Nothing'

As the proposal was constructed under the *Environmental Planning and Assessment (COVID-19 Development-Temporary Cycleways) Order 2020*, the 'do nothing' option would require that the cycleway be decommissioned, with all existing infrastructure removed. The removal of the pop-up cycleway would reverse the positive impacts and outcomes of the cycleway and therefore be an adverse impact on the area. This option would not achieve the proposal objectives, nor would it achieve the City of Sydney's strategic objectives towards providing a connected active transport network and supporting equitable access and healthy lifestyles. Therefore the 'Do Nothing' option is not the preferred option.

2.3.1.2 Option 2 – Bridge Street, Railway Parade and Henderson Road separated cycleway - Preferred Option

This option meets the objectives of the proposal as well as the relevant strategy documents by increasing access and safety for people on bikes along Bridge Street, Railway Parade and Henderson Road. It would also improve modal integration by developing infrastructure that ties in with and complements the wider transport network, inclusive of existing cycleway networks in the area. This is the preferred option.

Option 2 proposes a solution to support active transport, healthy lifestyles and minimise motorist emissions. It also provides a safe mode of transport for people to ride to work, study or access local services, helping to mitigate risks associated with the spread of COVID-19 in the short term and to help mitigate chronic disease in the long term.

2.4 Proposal benefits

The *Inner Sydney Regional Bicycle Network Demand Assessment and Economic Appraisal* (AECOM, 2010), found that the key benefit of separated cycleways is the perceived and actual safety they offer

to people on bikes. The level of separation between people on bikes and motorists is a key driver in both actual and perceived safety, which in turn is a key driver of demand for cycling.

Constructing the cycleway would provide these benefits and encourage the uptake of cycling more generally.

Benefits arising from increased uptake of cycling as a mode of transport may include:

- Time travel savings
- Environmental savings including as a result of reduced greenhouse gas emissions, air pollution and noise
- Savings on public transport vehicle procurement, operation and maintenance as well as reduced road infrastructure investment
- Cycling-specific benefits including improved public health and journey ambience.

The proposal would also result in the following specific benefits:

- Improved access and journey time reliability for people on bikes
- Improved integration with public transport through reduced vehicle traffic congestion
- Public transport de-crowding
- Improved equity and accessibility outcomes
- Improved localised economic activity and potential for wider economic benefits beyond the transport sector
- Reduced energy dependence and transport emissions.

City of Sydney Council worked with TfNSW to develop and undertake a monitoring and evaluation of the pop-up cycleway along Bridge Street, Railway Parade and Henderson Road. Benefits observed from the evaluation report (CoS, 2020) include but not limited to:

- Henderson Road had a 40% reduction of total daily vehicle volumes
- Most people felt safe on Bridge Street, Railway Parade and Henderson Road and said it’s safer than previous road conditions
- The pop-up project costed 20% of the permanent project cost and took six weeks to construct and install compared to up to eight months for a permanent project
- Walking is safer due to fewer riders using the shared paths
- Observations indicate that people cross with little or no delays.

3.0 Proposal description

Chapter 3.0 describes the proposal in detail and summarises key design features. The description of the proposal is based on the pop-up cycleway along Bridge Street, Railway Parade and Henderson Road at Erskineville, Alexandria and Eveleigh.

3.1 The proposal

As described in **Section 1.1.2**, the primary feature of the proposal involves the continued operation of a two-way separated cycleway along Bridge Street, Railway Parade and Henderson Road in Erskineville and Alexandria. To continue the operation of the cycleway, no new construction works would be required. Maintenance works may involve replacement of the safety barriers with other materials that may be more suitable for ongoing operation. The layout of the existing cycleway is shown on **Figure 3-1** to **Figure 3-5**.

Figure 3-1 Existing Pop-up cycleway - Figure 1 of 5

Figure 3-2 Existing Pop-up cycleway - Figure 2 of 5

Figure 3-3 Existing Pop-up cycleway - Figure 3 of 5

Figure 3-4 Existing Pop-up cycleway - Figure 4 of 5

Figure 3-5 Existing Pop-up cycleway - Figure 5 of 5

3.1.1 Scope of works

Construction for this project commenced 9 June 2020 and completed 7 August 2020 under the Minister for Planning and Public Spaces *Environmental Planning and Assessment (COVID-19 Development-Temporary Cycleways) Order 2020*.

These works consisted of:

- Removal of around 32 parking spaces on Bridge Street
- Installation of divider barriers
- Installation of flexible posts
- Updated line marking
- Removal of left turn from Swanson Street onto Railway Parade for traffic travelling east.

As discussed in **Section 3.1**, City of Sydney Council would conduct site inspections to ensure the infrastructure remains adequate for continued use.

Previous operation and configuration

Bridge Street

- Kerb side parking available on the western side of Bridge Street
- Two travel lanes – one for each direction
- No formal bike lane.

Figure 3-6 shows the previous configuration of Bridge Street.

Figure 3-6 Previous configuration of Bridge Street (looking south)

Railway Parade

- Two travel lanes – one for each direction
- Shared bike and road lane.

Figure 3-7 shows the previous configuration of Railway Parade.

Figure 3-7 Previous configuration of Railway Parade (looking south)

Henderson Road

- Kerb side parking available on the norther and southern side of Henderson Road
- Cycle lane shares existing kerb road lines
- Roundabout at the Henderson Road and Park Street intersection
- Right hand turn availability at roundabout onto Alexandra Street when travelling west.

Figure 3-8 shows the previous configuration of Henderson Road.

Figure 3-8 Previous configuration of Henderson Road (looking west toward Alexandra Street roundabout)

Current configuration

The current configuration of Bridge Street, Railway Parade and Henderson Road includes:

- A two-way cycleway on Bridge Street, Railway Parade and Henderson Road.
- Removal of around 32 parking spaces on of Bridge Street
- Removal of the roundabout at the Henderson Road and Park Street intersection to accommodate the cycleway
- Removal of left turn from Swanson Street onto Railway Parade for traffic travelling east
- Adjustment of kerbside parking locations on Henderson Street
- Addition of a ‘no right turn’ sign from Henderson Road onto Alexandra Street for traffic travelling west.

Figure 3-9, **Figure 3-10** and **Figure 3-11** show the current configuration of the pop-up cycleway on Bridge Street, Railway Parade and Henderson Road.

Figure 3-9 Current configuration of Bridge Street (looking south)

Figure 3-10 Current configuration of Railway Parade (looking north)

Figure 3-11 Current configuration of Henderson Road (looking west toward Alexandra Street roundabout)

4.0 Statutory and planning framework

This chapter provides a summary of the statutory considerations relevant to the proposal, including a consideration of Commonwealth legislation, NSW legislation and policies, and local environmental planning instruments.

4.1 Commonwealth legislation

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

The (Commonwealth) *Environment Protection and Biodiversity Conservation Act* (EPBC Act) provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places – defined in the EPBC Act as 'Matters of National Environmental Significance' (MNES). The EPBC Act requires the assessment of whether the proposal is likely to significantly impact on MNES or Commonwealth land. These matters are considered in full in **Appendix A**.

The proposal would not significantly affect any MNES or Commonwealth land. Therefore, a referral to the Commonwealth Minister for the Environment is not required.

4.2 State legislation

4.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act* (EP&A Act) establishes the system of environmental planning and assessment in NSW. This proposal is subject to the environmental impact assessment and planning approval requirements of Division 5.1 of the EP&A Act. This division specifies the environment impact assessment requirements for activities undertaken by public authorities such as City of Sydney, which are permissible without development consent.

In accordance with section 5.5 of the EP&A Act, City of Sydney, as the proponent and determining authority, must examine and consider to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposal. Clause 228 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) defines the factors which must be considered when determining if an activity assessed under Division 5.1 of the EP&A Act has a significant impact on the environment.

Chapter 6.0 of this REF provides an environmental impact assessment of the proposal in accordance with clause 228, and **Appendix B** specifically responds to the factors for consideration under clause 228.

4.2.2 Other key NSW legislation and regulations

Table 4-1 provides a list of other key relevant legislation applicable to the proposal.

Table 4-1 Other NSW legislation applicable to the proposal

Applicable legislation	Considerations
Biodiversity Conservation Act 2016 (BC Act)	The BC Act establishes a framework for assessing and protecting environmental and biodiversity interests that seeks to maintain a healthy, productive and resilient environment. **Section 6.9** of this REF outlines that potential impacts to biodiversity resulting from the proposal would not be significant.
***Heritage Act 1977* (Heritage Act)**	The following sections of the Heritage Act are relevant to the proposal: • Sections 57 and 60 (approval) where items listed on the State Heritage Register (SHR) are to be affected • Sections 139 and 140 (permit) where relics are likely to be exposed • Section 170 where items listed on a government agency Heritage and Conservation Register are to be affected.
Protection of the Environment	The proposal does not involve a 'scheduled' activity under Schedule 1 of the POEO Act.

Applicable legislation	Considerations
***Operations Act 1997* (POEO Act)**	However, in accordance with Part 5.7 of the POEO Act, City of Sydney would notify the EPA of any pollution incidents that occur onsite. This would be managed in the CEMP to be prepared and implemented by the construction contractor.
***Roads Act 1993* (Roads Act)**	The two-way pop-up cycleway was designed and constructed by the City of Sydney.

4.2.3 State Environmental Planning Policy (Infrastructure) 2007

The *State Environmental Planning Policy (Infrastructure)* 2007 (ISEPP) is the key environmental planning instrument (EPI) which determines the permissibility of a proposal of this nature and how it is assessed under the EP&A Act. Clause 94(1) of the Infrastructure SEPP allows for the development of 'roads and road infrastructure facilities' by or on behalf of a public authority without consent on any land and Clause 94(2)(c) specifically notes "*alterations or additions to an existing road (such as widening, narrowing, duplication or reconstruction of lanes…"* as development permitted without consent.

Clause 93 of the ISEPP defines 'road infrastructure facilities' as those relevant to 'road related areas', as determined by the *Road Transport Act 2013* (RT Act). The RT Act identifies 'road related areas' to include areas open to the public and designated for use by people on bikes. As such, the proposal meets the definition of 'road infrastructure facilities' under Clause 93 of the Infrastructure SEPP.

Therefore, in accordance with the abovementioned Clauses of the Infrastructure SEPP, development consent is not required, and the proposal is designated as 'development without consent' under Division 5.1 of the EP&A Act. However, it is still necessary and required to consider environmental impacts of the proposal under Part 5 of the EP&A Act.

Part 2 of the Infrastructure SEPP contains provisions for public authorities to consult with State Emergency Services and other public authorities prior to the commencement of certain types of development. **Section 5.0** of this REF discusses the consultation undertaken under the requirements of the ISEPP.

It is noted that the Infrastructure SEPP prevails over all other EPIs except where State Environmental Planning Policy (State Significant Precincts) 2005 *or State Environmental Planning Policy (Coastal Management) 2018 applies*. These SEPPs do not apply to the proposal area or proposed activity and therefore do not require further consideration as part of this REF.

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

The *State Environmental Planning Policy (Vegetation in Non-Rural Areas*) *2017* (Vegetation SEPP) provides a mechanism for the protection of vegetation in non-rural areas of the State of NSW including the City of Sydney LGA. This policy aims to protect the biodiversity values of trees and other vegetation and preserve the amenity of non-rural areas of the State.

The proposal would not involve the removal of three trees. This is further discussed in **Section 6.9**.

4.3 Local

4.3.1 Sydney Local Environmental Plan 2012

The proposal is located in the Sydney LGA and is subject to The *Sydney Local Environmental Plan 2012* (Sydney LEP).

Provision description	Relevance to the proposal
Clause 2.3 – Zone objectives and Land Use Tables	The majority of works undertaken for the proposal were carried out on land zoned as R1 General Residential, RE1 General Residential and B4 Mixed Use and is adjacent to an SP2 Infrastructure zone. The proposal is consistent with the objectives of the R1 and SP2 zoned land on which it is located. The

Provision description	Relevance to the proposal
	proposal would not affect the land use objectives of those zones or surrounding land zones.
Clause 5.10 – Heritage conservation	Clause 5.10 of the Sydney LEP 2012 aims to: • conserve the environmental heritage of Sydney • conserve the heritage significance of heritage items and heritage • conservation areas, including associated fabric, setting and views • conserve archaeological sites • conserve Aboriginal objects and Aboriginal places of heritage significance. Bridge Street and part of Railway Parade is within heritage conservation area 'C24 Erskineville Malcolm Estate heritage conservation area' and 'C4 Malcolm Estate'. The remaining area of Railway Parade and Henderson Road is within heritage conservation area 'C3 Kingsclear Road'. A discussion of impacts to heritage is included in **Section 6.4**.

4.3.2 Ecologically sustainable development

The City of Sydney is committed to ensuring that its projects are implemented in a manner that is consistent with the principles of ecologically sustainable development (ESD). Defined under clause 7(4) of Schedule 2 to the EP&A Regulation, ESD is defined as including

- The precautionary principle – A lack of full scientific uncertainty should not be used to postpone measures against risk of extreme environmental degradation
- Intergenerational equity – the present generation should ensure that the health of the environment for the benefit of future generations
- Conservation of biological diversity and ecological integrity – ensuring the survival of a diversity of genes, species, populations and their communities, as well as the ecosystems and habitats they belong to
- Improved valuation, pricing and incentive mechanisms – environmental factors should be included in the valuation of assets and services.

The principles of ESD have been adopted by the City of Sydney throughout the development and assessment of the proposal. **Chapter 6.0** includes an assessment of the impact of the proposal on a range of environmental factors, including greenhouse gas emissions and climate change. **Chapter 7.0** lists mitigation measures to ensure ESD principles are incorporated during the construction phase of the proposal.

5.0 Consultation

Chapter 5.0 discusses the consultation undertaken to date for the Proposal and the results of consultation with the community, relevant government agencies and stakeholders.

The Minister for Planning and Public Spaces made an order under section 10.17 of the Environment Planning and Assessment Act 1979 named the Environmental Planning and Assessment (COVID-19 Development-Temporary Cycleways) Order 2020 authorising development of temporary pop-up cycleways, superseding the normal path of requiring a Review of Environmental Factors (REF) mandated under the Infrastructure SEPP 2007.

The City of Sydney and Transport for New South Wales jointly notified the community prior to construction of the pop-up cycleways and responded to concerns raised over the course of installation

5.1 Community notification

The City provided notification prior to work commencing, including a description of the works and the construction period, to properties on the alignment of the cycleway 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 between 24 August 2020, through to 16 November 2020. Activities undertaken during this period included:

- Structured site observations and intercept surveys with people on bikes (55 hours)
- Bike count data collection (110 riders)
- Review of feedback received via online community engagement platform Sydney Your Say in relation to the pop-up cycleway.

The majority of the wider community feedback have been positive and supportive of cycleways. The key themes raised in local community feedback included:

- Concern over loss of local parking, and access to the Railway Parade from Erskineville road, which has been mostly resolved
- Concern over increased traffic on Park Street (adjacent to the pop-up cycleway) and safety of pedestrians crossing the street. The City of Sydney are investigating additional traffic calming measures to mitigate this through angled parking and raised crossings.
- Concern over lack of consultation. The City of Sydney will conduct further community consultation related to changes int eh proposal area.

5.2 Consultation requirements under the Infrastructure SEPP

Part 2, Division 1 of the Infrastructure SEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. Clauses 13-15 and 15A provides details of consultation requirements with councils for development impacts on council-related infrastructure, local heritage, flood liable land and land within the coastal zone. As City of Sydney Council is the proponent, these clauses are regarded as considered. Clauses 15AA and 16 provides details for consultation requirements with State Emergency Services for flood liable land, and for consultation with public authorities other than councils for land under the *National Parks and Wildlife Act 1974.* Since the proposal area does not contain any of these characteristics, these clauses do not apply.

6.0 Environmental Impact Assessment

Chapter 6.0 of this REF provides a detailed description of the known or likely environmental impacts associated with the construction and operation of the proposal. For each impact, the existing environment is characterised and then an assessment is undertaken as to how the proposal affects the existing environment.

This environmental impact assessment has been undertaken in accordance with clause 228 of the EP&A Regulation. A checklist of clause 228 factors and how they have been specifically addressed in this REF is included in **Appendix B**.

6.1 Traffic and transport

This section assesses and describes the impacts of the proposal on traffic, transport and pedestrian and cyclist access within and surrounding the proposal area. The assessment is based on a desktop analysis and from observed operation. Detailed traffic counts and modelling were not considered necessary for the proposal.

6.1.1 Existing environment

Public transport

The nearest train station for the proposal area is Erskineville Station which is serviced by multiple train lines that connect the area to the north to the CBD as well as to train lines to the south. Erskineville Station is located approximately eight metres to the west of the Bridge Street pop-up cycleway. There are no bus stops within the proposal area.

Road network and traffic

The proposal is located in an east-west corridor that connects Erskineville to Eveleigh. Within the proposal area, the main road is Bridge Street, Railway Parade and Henderson Road. Within the proposal area, Bridge Street is a north south road which consists of one unmarked lane in each direction. On street parking is available in the southbound direction.

Railway Parade and Henderson Road are east-west roads which consists of one unmarked lane in each direction, and roadside parking lanes on both sides of the road. The Previous configuration of Bridge Street, Railway Parade and Henderson Road is described in **Section 3.1.1**.

Access

Bridge Street, Railway Parade and Henderson Road are used to access residential properties, small businesses, restaurants and Recreational areas such as South Sydney Rotary Park. Footpaths are located on both sides all roads within the proposal area.

The proposal may affect, but is not limited to affecting, the following users:

- Users of South Sydney Rotary Park
- Users (pedestrians, motorists, people on bikes) of Bridge Street, Railway Parade and Henderson Road
- Residences of Bridge Street, Railway Parade and Henderson Road
- Businesses and restaurants on Henderson Road.

Kerbside use

Within the proposal area, kerbside parking is located on Bridge Street (southbound), Railway Parade and Henderson Road (eastbound and westbound). The majority of these parking spaces are restricted parking (typically 2 hours free parking) between 8am and 6pm Monday to Friday.

Existing bicycle routes are currently located along Bridge Street, Railway Parade and Henderson Road.

6.1.2 Potential impacts

Operation

Public Transport

The proposal would be unlikely to cause negative impacts on any other nearby public transport infrastructure or its operation

Road network and traffic

Continued operation of the cycleway would likely have a positive impact on the surrounding businesses with continued access and cyclist through traffic. The proposal would support the safe and functional use of Bridge Street, Railway Parade and Henderson Road as a key public transport priority corridor whilst achieving the proposal objectives of prioritising people on bikes and meeting current and future community needs.

The proposal may have an impact on the travel times of vehicles as result of the removal of the right turn on to Alexandra Street from Henderson Road. To assist with mitigating this issue, monitoring of roadway and cycleway traffic to track cycleway usage and possible congestion impacts would continue.

It is noted that the construction of the pop-up cycleway required the restriction of Railway Parade to one-way only, with eastbound traffic being diverted. This has resulted in broader network impacts, with traffic diverting up other local roads such as Swanson Street and Park Street. The City of Sydney is currently investigating additional treatments of roads in this area to mitigate the effect of this additional traffic and to improve local amenity generally.

Access

The proposal would provide a positive operational impact by connecting people on bikes directly to other existing parts of the cycleway network.

The proposal would not result in any substantial operational changes to access for the businesses fronting the proposal area. Businesses and residents would be notified of changes to their driveway access arrangements.

Kerbside use

The proposal would result in changes to kerbside usage. The kerbside may become busier than it is currently, with people on bikes occupying this space. The kerbside adjacent to local shops would likely become busier due to the increased accessibility to people on bikes from the road. The overall impact would be of a neutral effect on pedestrians and moderate-major positive effect for local motorists and people on bikes.

Furthermore, existing taxi and loading zones would be retained and impacts to these zones during the operation of the proposal are unlikely.

6.1.3 Mitigation measures

The following mitigation measures are recommended to minimise traffic and transport impacts:

- Continued monitoring of roadway and cycleway traffic to track cycleway usage and possible congestion impacts
- Conduct community consultation on traffic management solutions to mitigate the flow on effects that have been raised during the pop-up cycleway implementation and consultation.

6.2 Noise and vibration

This section assesses and describes the impacts of the proposal of noise and vibration on receivers surrounding the proposal area. The assessment is based on a desktop analysis.

6.2.1 Existing environment

The proposal is situated in an inner-city suburb to the south of the Sydney CBD. As such, the existing environment is generally of low-moderate noise level during the day and night. The major noise sources include traffic (both local and distant), pedestrians, business operations, educational facilities, sports, and entertainment venues. As a result, most nearby receivers would not be accustomed to the background noise levels required by the proposed works.

6.2.2 Potential impacts

6.2.2.1 Operation

The proposal aims to increase the number of people on bikes using the proposal area. Both the noise and vibration impact associated with this increase is considered to be negligible.

Over time, the development of the proposal has the potential to contribute to a reduction in the number, type and/or frequency of vehicles travelling along Bridge Street, Railway Parade and Henderson Road, and surrounding streets. This change in transport mode is desirable and would result in a further reduction in existing sources of noise and vibration in the area.

6.2.3 Mitigation measures

No mitigation measures are required for noise and vibration impacts.

6.3 Landscape and visual

6.3.1 Existing environment

The proposal area is surrounded by a densely urbanised environment near the Sydney CBD. The area is mainly comprised of low-medium density residential buildings including town houses, multi-dwelling housing, a local school and local businesses. The proposal area is also tree-lined along Bridge Street Railway Parade and Henderson Road, which creates a suburban feel. South Sydney Rotary Park is located about 5 metres north of the proposal area, along Henderson Road. Bridge Street, Railway Parade and Henderson Road are all two-way lane roads that serve as a key thoroughfare for road users travelling from the inner city location to northern and southern destinations.

6.3.2 Potential impacts

6.3.2.1 Operation

The visual appearance of the proposal area changed as a result of:

- Introduction of the two-way cycleway on the western side of Bridge Street Railway Parade and Henderson Road
- Altered traffic lane markings and arrangements
- Alteration of existing intersection arrangements.

The introduction of the cycleway and other street components would changed the visual appearance of the proposal area. Changes to the visual amenity of the proposal area are considered to have a negligible impact as the new road elements would generally fit within the existing urbanised street environment and are not visually intrusive.

The proposal results in minor benefits to the visual environment. The lack of parked vehicles reduce visual clutter within the streetscape and provide extended sight lines for pedestrians, people on bikes and drivers. This acts to draw attention more to the built environment, including buildings and the street environment itself. The presence of the cycleway may also encourage a shift in transport modes

used for workers and residents in this area towards cycling. This would further reduce the number of vehicles and improve the overall streetscape.

6.3.3 Mitigation measures

No mitigation measures are required for landscape and visual impacts.

6.4 Non-Indigenous heritage

This section assesses and describes the impacts of the proposal on non-Indigenous heritage within and surrounding the proposal area. This assessment is based on a desktop analysis of the relevant heritage registers. The proposal area includes items of State heritage significance under the NSW State Heritage Register and local heritage significance under the Sydney LEP and Section 170 Heritage and Conservation Register.

6.4.1 Existing environment

A search of the following heritage registers was undertaken in December 2020 to identify any potential non-Indigenous heritage items located within and surrounding the proposal area. This included a search of the following databases:

- Australian Heritage Places Inventory
- Commonwealth EPBC Heritage List
- NSW State Heritage Register (SHR)
- Section 170 Heritage and Conservation Registers (S170)
- City of Sydney Local Environmental Plan 2012.

Heritage items identified in Table 6-1 were found within a one kilometre buffer of the proposal area. The items are shown in Figure 6-1.

Table 6-1 Heritage items surrounding the proposal area

Item	Address	Listing	Significance	Location relative to the proposal
Greater Eveleigh Railway Precinct	Henderson Road	106189	National (Australian Heritage Database).	North of the proposal area where it connects to Davy Road.
Pressure Tunnel and Shafts	Item is located below ground across multiple locations between the suburbs of Potts Hill and Waterloo	01630	State	Under a section of Railway Parade, between Sydney Street and Clara Street
Enginemans Resthouse	39 Brandling Street, Alexandria	SHR 5001229 Sydney LEP Item No. I1846	State	65 metres south of the proposal area
Erskineville Public School	13 Swanson Street, Erskineville	S170 5065803 Sydney LEP Item No. I626	State (Section 170)	10 metres east of the proposal area
Erskineville Public School – Buildings B00B and B00C	13 Swanson Street, Erskineville	S170 5065779	State (Section 170)	10 metres east of the proposal area

Item	Address	Listing	Significance	Location relative to the proposal
Erskineville Railway Station Group	Swanson Street, Erskineville	S170 4801158 Sydney LEP Item No. I625	State (Section 170)	10 metres west of the proposal area
Alexandria Park heritage conservation area	Henderson Road (incl. no. 12), Wyndham St (incl. nos. 118-120), Power Ave, Park Rd, Buckland Street (incl. Nos. 1-23) and Mitchell Road.	Sydney LEP Item No. C1	Local	15 metres east from the proposal area
Kingsclear Road heritage conservation area	Between Railway Parade, Hendersen Road, Mitchell Road, Copeland Street, Swanson Street, Ada Lane, and southern boundary of 107-125 Railway Parade and Sydney Street.	Sydney LEP Item No. C3	Local	0 metres from the proposal area
Terrace group including interiors and front fencing	91–105 Railway Parade	Sydney LEP Item No. I620	Local	10 metres east of the proposal area
Terrace group including interiors and front fencing	1–10 Bridge Street	Sydney LEP Item No. 604	Local	10 metres east of the proposal area
Erskineville Estate heritage conservation area	Bounded by Swanson/Copeland Street, Henderson Road, Ashmore Street and Binning Street.	Sydney LEP Item No. C22	Local	163 metres east of the proposal area
Erskineville Malcolm Estate heritage conservation area.	Railway Parade, the northern boundary of No. 2 Sydney Street, Ada Lane, the western boundary of No. 54 Swanson Street, Swanson Street, Binning Street, Ashmore Street (including numbers. 1-55) and Bridge Street (including numbers. 23-31).	Sydney LEP Item No. C24	Local	0 metres from the proposal area

Given the separation of the above heritage items from the proposal area, no further assessment is required.

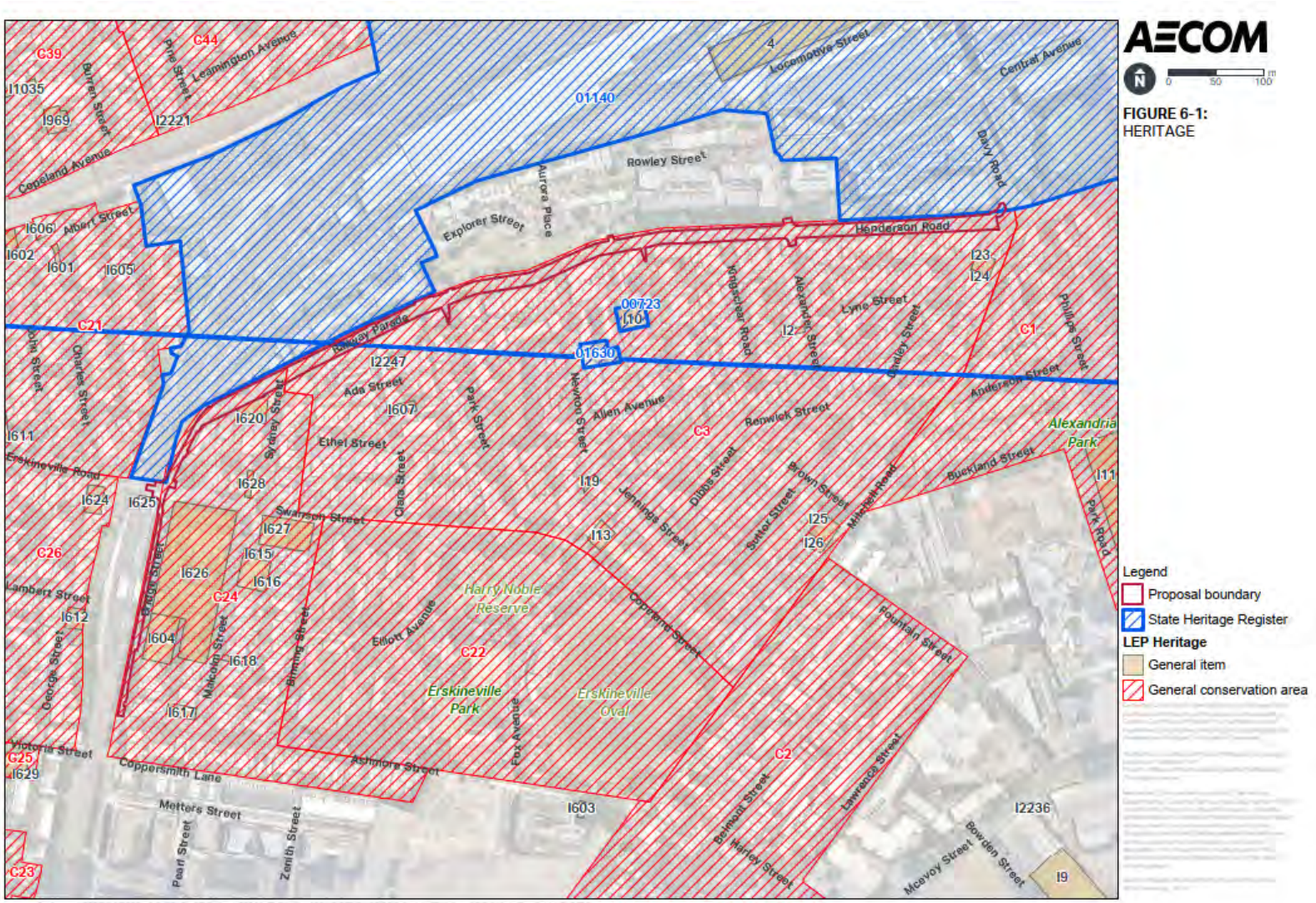

Figure 6-1 Non-Indigenous heritage items nearby the proposal area

Of the above 10 State and local heritage items identified adjacent to the proposal area, one was identified as areas of archaeological potential (AAP) (City of Sydney Archaeological Zoning Plan, 1992). This heritage item has been identified as an area of high archaeological potential due to the level of physical disturbance the area has been subjected to. No additional information is available for the AAP.

6.4.2 Potential impacts

6.4.2.1 Operation

During operation, impacts to non-Aboriginal heritage items would be largely experienced as changes to landscape character and visual amenity.

6.4.3 Mitigation measures

The following mitigation measures are recommended to minimize impacts to non-Indigenous heritage items:

- Continued monitoring of community feedback regarding visual impacts on non-Indigenous heritage items.

6.5 Indigenous heritage

This section assesses and describes the impacts of the proposal on Indigenous heritage within and surrounding the proposal area. A desktop assessment was undertaken to determine whether the proposal has the potential to affect Aboriginal cultural heritage (including indigenous sites, objects and places as defined under the NPW Act) and if further assessment or investigation is required.

6.5.1 Existing environment

The proposal area is located within the City of Sydney LGA and Metropolitan Local Aboriginal Land Council (LALC). The Metropolitan LALC covers a large proportion of the Sydney Basin from the Georges River in the south to Yengo National Park in the north. The Gadigal people were the original inhabitants of the land now encompassed by the City of Sydney LGA.

A search of the Aboriginal Heritage Information Management System (AHIMS) was conducted on 10 December 2020. The AHIMS searches did not identify any Aboriginal heritage items within or adjacent to the proposal area (200 m buffer) (refer **Appendix C**).

The proposal area does not contain any landscape features that indicate the presence of Indigenous heritage objects and the cultural heritage potential of the proposal area and surrounds appears to be significantly reduced due to past disturbance.

6.5.2 Potential impacts

6.5.2.1 Operation

The ongoing operation of the cycleway would not affect Indigenous heritage.

6.5.3 Mitigation measures

No mitigation measures are required for Indigenous heritage impacts.

6.6 Socioeconomic impacts

6.6.1 Existing environment

6.6.1.1 Population and growth

Within Sydney LGA, the proposal area is in the SA2 area of Erskineville-Alexandria which covers approximately 431.7 hectares of land. In 2015, the estimated resident population was 16,713. The population is relatively young, with the median age group estimated at between 25-34 years old. The industry in the area is mainly comprised of rental, hiring and real estate, professional, scientific and technical services, wholesale trading, and retail businesses. According to the ABS, approximately 55% of residents have a registered vehicle in the SA2 area. Out of nearly 10,000 employed people surveyed in 2011, approximately 35% drove to work, followed by approximately 25% that used the trains. According to this survey approximately 4% of people cycled to work in the SA2 area.

The northern section of Henderson road and Davy Street within the proposal area is in the suburb of Eveleigh. In 2016, the estimated population of Eveleigh was 663. The population is relatively young, with the median age group estimated at between 25-34 years old. The industry in the area is mainly comprised of higher education, computer related services, hospitals, management advice and related consulting services, cafes and restaurants. According to the ABS, approximately 54.2% of residents have a registered vehicle in the suburb. In 2016, about 31.2% of residents caught the train to work and about 1.8% of people cycled to work.

The Sydney LGA experienced a growth of about 23% between 2011 and 2016, which was slightly higher than the rate of growth of the suburb of Sydney which was about 20.5% for the same period. This is a substantial increase in population growth compared to the period between 2006 and 2011, where growth for these locations was 7.6% and 7% respectively. This is attributed to the substantial increase in high-density residential buildings within the suburb of Sydney and within the Sydney LGA generally.

The 2019 Population Projections indicate that the population of the Sydney LGA is estimated to increase to 287,100 people. Natural increase is estimated to drive future population growth in the Sydney LGA. People will also continue to move into the City, especially students and young workers (NSW Department of Planning Industry and Environment, 2019).

In 2018, vehicle numbers entering the Sydney city centre between 6am and 10am dropped by 12% compared to 2015, while the peak hour between 8am and 9am decreased by 12.6% in that same period. Over the day, vehicles entering the Sydney city centre dropped by up to 6.5%, freeing up space for public transport, pedestrians and people on bikes.

6.6.1.2 Social infrastructure

Social infrastructure refers to community facilities, services and networks which help individuals, families, groups and communities meet their social needs, maximise their potential for development and enhance community wellbeing.

The suburbs of Erskineville and Alexandria provide a wide range of community services and facilities catering for local residents, commercial and industrial uses. Most of the area was formerly industrial estate, however gentrification has taken place slowly and this area is now comprised of a mix of uses. These include residential neighbourhoods, local centres, education facilities, transport facilities, parks, entertainment precincts, retail, warehouses, and other services.

Key social infrastructure located near the proposal includes:

- Erskineville Railway Station
- Open space and parks, including (but not limited to) Erskineville Oval, Alexandria Park, Eveleigh Green and (further south) Sydney Park
- Educational facilities, including (but not limited to) St Mary’s Catholic Primary School, Erskineville Public School, Central Sydney Intensive English High School, Alexandria Park Community School, Our Lady of Mt Carmel Catholic Primary School, Village Nation, Yudi Gunyi School and Sydney Film School

- Cycle facilities, including (but not limited to) temporary cycleways on Railway Parade at Erskineville Station, and off-Road shared cycleways or low traffic Streets or bike lanes in the surrounding Streets on Copeland Street, Monks lane, Henderson lane. There are also some low traffic Street or bike lanes with wayfinding signage on Buckland Street, Bridge Street and Ashmore Street.

To meet the needs of the residents, the City of Sydney has committed to be green, global and connected. Relevantly, the City of Sydney intends to make the city easy to get around, with a local network for walking and cycling, connecting the city's villages, city centre and the rest of inner Sydney (City of Sydney, *Sustainable Sydney 2030 – Community Strategic Plan 2017 – 2021*).

6.6.2 Potential Impacts

6.6.2.1 Operation

The proposal forms part of an expanding bike network within the City of Sydney LGA. It supports longer term modal shifts away from the use of private motor vehicles towards active transport, in response to the growing number of residents and workers who prefer the convenience, mobility and sustainability benefits that cycling provides. This brings improvements in air quality, noise, the streetscape and equality in transport access. Increases in active transport also brings broader (and more subtle) public health benefits.

The continued operation of the existing pop-up cycleway would benefit the public domain of Erskineville-Alexandria and Eveleigh by:

- Maintaining improved connectivity and equitable access for residents and businesses.
- Providing stability for transitioning to cycling as a primary mode of transport for residents.
- Avoiding the decommissioning of the cycleway and reversal of positive social impacts associated with the cycleway.
- Helping to reduce the number of private motor vehicles travelling into and through the CBD, making it a safer and more enjoyable place for city residents, workers and tourists
- Improving safety and amenity by reducing the speed limit.

6.6.3 Mitigation measures

Several environmental safeguards are recommended to minimise potential impacts on the community with a particular focus on keeping the community informed including:

- Mitigation measures in respect of potential impacts on amenity (e.g. noise, dust and visual) as listed in **Chapter 7.0**
- Continued monitoring of community feedback relating to the ongoing operation of the pop-up cycleway.

6.7 Contamination, landform, geology and soils

6.7.1 Existing environment

6.7.1.1 Landform, geology and soils

The elevation of the proposal areas is relatively flat with slight variations. The proposal area has an Australian Height Datum (AHD) of 12-16 metres.

Reference to the 1:100,000 Geological Map of Sydney identified that the underlying geology of the proposal area is mainly underlain by Medium to fine-grained “Marine” sand with podsols within Alexandria and Eveleigh and Black to dark-grey shale and laminate within the section of the proposal within Erskineville.

The soil landscape of the proposal area is located within the boundaries of the Tuggerah landscape and the Blacktown landscape (eSPADE, 2020). The Tuggerah landscape has a low-medium capability for urban development although most of the land development in this area has been urban residential and heavy industry. The Tuggerah landscape mainly comprises of gently undulating plains and rolling undulating rises of broad, level to very gently inclined, swales and dunes. Soils are typically deep, Podzols on dunes or Podzols/Humus Podzol integrades on swales. Limitations of this landscape include wind erosion hazard, and non-cohesive soils and other water-based limitations.

The Blacktown landscape has a high capability for urban development with appropriate foundation design. The Blacktown landscape mainly comprises of Ashfield Shale consisting of laminite and dark grey siltstone and Bringelly Shale which consists of shale, with occasional calcareous claystone, laminite and coal. Soils are shallow to moderately deep ‘Red and Brown Podzolic Soils’ on crests, upper slopes and well-drained areas and ‘Yellow Podzolic Soils and Soloths’ on lower slopes and in areas of poor drainage. Limitations of this landscape include moderately reactive highly plastic subsoil, low soil fertility, poor soil drainage.

Above the recorded soil and geological landscape, the proposal area is likely to consist of human-imported fill material, concrete and road base as a result of the ongoing construction and maintenance of the road.

6.7.1.2 Acid sulfate soils

Acid sulfate soil (ASS) risk maps have been obtained from the Sydney LEP. Based on the ASS map, the proposal area is located on land mapped as containing Class 3 and Class 5 ASS. Class 3 ASS zoned to occur on the section of Bridge Street between Ashmore Street and Swanson Street. The rest of the proposal area is located within the Class 5 zone.

6.7.1.3 Contamination

A search of the NSW EPA Contaminated Land Register on 14 December 2020 did not identify any contaminated sites within or nearby the proposal area. The proposal area at this section has not been declared as significantly contaminated and is not regulated under the CLM Act.

Given the urbanised nature of the proposal area in this location, there is potential for contaminants to be present within the soils underlying the road. The construction and ongoing maintenance of the road way would likely have involved the introduction of fill and potential spills of ash, fuel, oil and other chemicals.

6.7.2 Potential Impacts

6.7.2.1 Operation

During the operational phase of the proposal, general, non-periodic maintenance is likely to be required to ensure the continued, efficient operation of the cycleway and the road generally. During maintenance, there is potential for contamination to occur as a result of accidental fuel, oil or chemical spills. Furthermore as no excavations are required within the scope of works it is unlikely that ASS will be encountered. The potential impact as a result of this would be mitigated through the appropriate protocols for those maintenance works.

6.7.3 Mitigation measures

Should acid sulfate soils be uncovered during maintenance and modification of the existing cycleway, an acid sulfate soil management plan will be implemented..

6.8 Air quality

6.8.1 Existing environment

The air quality of Sydney is comparable with other Australian cities and is relatively good compared to other urban regions overseas. Concentrations of air pollutants including carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2) and lead (Pb) are low and stable, and consistently meet the national air quality standards. However, ozone (O_3) and particulate matter (PM_{10} and $PM_{2.5}$) levels can exceed the national standard from time to time across Sydney (Office of Environment and Heritage, 2018).

The proposal area would generally follow those trends, however it is located within a highly-urbanised locale in the Sydney region and experiences high volumes of vehicle traffic (along with the rest of the City). According to the Office of Environment and Heritage (OEH), transport remains a major source of air pollution in the Sydney region, being the largest source of oxides of nitrogen and carbon monoxide emissions and contributing significantly to total emissions of volatile organic compounds and fine particles (Office of Environment and Heritage, 2018). Given the proposal area's location, it is reasonable to deduce that the air quality within the proposal area may be worse than areas of Sydney that do not experience similar levels of traffic.

A search of the National Pollutant Inventory (NPI) database was undertaken on 11 December 2020. Searches were conducted within an extent of 1 kilometre of the proposal area. The database search did not identify any facilities whose emissions meet the NPI reporting requirements.

Potentially affected receivers within the vicinity of the proposal area include local residents, businesses, community centres and educational facilities surrounding the site.

6.8.2 Potential impacts

Operation

The proposal is anticipated to encourage a mode shift to active transport from the use of private vehicles, aiding a reduction in emissions in the long-term. The proposal would also reduce the capacity of kerbside parking and result in improved air quality for pedestrians on Bridge Street, Railway Parade and Henderson Road. By reducing the number of vehicles travelling along Bridge Street, Railway Parade and Henderson Road, the proposal may result in a minor improvement in local air quality.

6.8.3 Mitigation

The operation of the pop-up cycleway is unlikely to negatively impact the surrounding air quality.

6.9 Biodiversity

6.9.1 Existing environment

6.9.1.1 Landscape context

The proposal is located within an inner-city suburb south of Sydney's CBD. The area is heavily urbanised and vegetation is generally refined to landscaped areas (vegetated medians, parks and residential gardens) and street trees.

The proposal area is tree lined on the both sides of Bridge Street, Railway Parade and Henderson Road. The roadside kerb also features some shrub vegetation and grass cover. A small number of private properties on Bridge Street, Railway Parade and Henderson Road have vegetation which contribute to urban greenery on the street.

6.9.1.2 Database searches

Database searches do not provide the exact species that are located within or around the proposal area. They provide an indication of the species that may, are likely, or known to occur in the area based on species' historic sightings, favoured habitats and behaviours.

A search of the Atlas of NSW Wildlife (NSW BioNet) on 18 December 2020 returned records of 58 threatened flora and fauna species listed under the BC Act within a 10 square kilometre area around the proposal area. According to the BioNet Atlas Map, the following individual species have been recorded in the area:

- *Pteropus poliocephalus* (Grey-headed flying-fox):
    - 23 Bridge Street, Erskineville, NSW – sighted in 2012 about 22 metres south east of the proposal area
    - 1 Ashmore Street, Erskineville, NSW – sighted in 2017 about 40 metres south east of the proposal area
    - 102 George Street, Erskineville, NSW – sighted in 2003 about 38 metres west of the proposal area
    - Buckland Avenue, Erskineville, NSW – sighted in 2003 about 177 metres south east of the proposal area.
- *Ninox strenua* (Powerful Owl) near 65 Park Street, Erskineville NSW – sighted in 2015 about 190 metres south of the proposal area.

A further search was undertaking using the EPBC Act Protected Matters Search Tool (11 December 2020). The search was undertaken for the proposal area and a 1 km buffer around the proposal area The search identified the following:

- Five listed threatened ecological communities:
    - Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin – community may occur within area
    - Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community – community may occur within area
    - Coastal Upland Swamps in the Sydney Basin Bioregion – community may occur within area
    - Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion – community may occur within area
    - Western Sydney Dry Rainforest and Moist Woodland on Shale – community may occur within area.
- 5 listed threatened ecological communities
- 35 listed threatened species
- 17 listed migratory species.

6.9.1.3 Flora

The proposal area currently features approximately 66 trees along Bridge Street, Railway Parade and Henderson Road, all different sizes and a variety of different species. These include *Melaleuca quinquenervia*, *Eucalyptus robusta, Eucalyptus sideroxylon* and *Tristaniopsis laurina* City of Sydney's Significant Tree Register does not list any significant trees within the proposal area.

6.9.1.4 Fauna

The proposal area is located within an area subject to ongoing human activity including vehicle and pedestrian movements throughout the day and night. As such the potential habitat value for threatened or migratory fauna is minimal.

Despite this, common fauna to Sydney's inner-city suburbs may be present such as birds, possums, flying foxes, bats and introduced rodents. There are two threatened species in Sydney that may be present in the proposal area including: powerful owls and grey-headed flying foxes.

6.9.2 Potential impacts

6.9.2.1 Operation

The likelihood of threatened species occurring is low however cannot be completely excluded. The activities outlined in the proposal would be unlikely to pose significant stress on these populations outside of those found in the current environment.

6.9.3 Mitigation measures

No mitigation measures are required for biodiversity.

6.10 Hydrology and water quality

6.10.1 Existing environment

The nearest watercourse to the proposal area is the Sheas watercourse/drainage system located approximately one kilometre from Railway Parade. This concrete watercourse connects to the tree-lined Alexandra Canal. This Canal then intersects with the Cooks River, part of the Cooks River catchment which begins in Yagoona and flows through to the inner south west of Sydney to Botany Bay.

The proposal is in an area where soils have been heavily modified by urban development. The catchment is highly urbanised and contains a high proportion of impervious surfaces. The Cooks River is in a degraded condition. Historically the catchment was stripped of natural vegetation, and dumped with sewerage, industrial and domestic waste, stormwater pollution and rubbish. Industrial pollution is now much better managed however sewerage overflows, rubbish and stormwater runoff are continuing processes affecting the river's water quality. Water quality that drains to the Cooks River is generally poor. Stormwater from the urban catchment is generally not treated (except for gross pollutants in some locations). Common urban stormwater pollutants are likely to exist.

As outlined in **Section 6.7.1**, a review of the list of NSW Contaminated Sites notified to the Environment Protection Authority as of 14 December 2020 identified no contaminated sites within the proposal area.

6.10.2 Potential impacts

6.10.2.1 Operation

The operation of the new cycleway would not result in any exposure of soil or increase in impervious surfaces. The design of the cycleway would not alter the existing drainage regime. Therefore, no impacts to hydrology, water quality or drainage are anticipated during operation of the cycleway.

6.10.3 Mitigation measures

No mitigation measures are required for hydrology and water quality.

6.11 Climate change and greenhouse gas emissions

6.11.1 Climate change

The dynamic nature of our climate system indicates a need to focus attention on how to adapt to the changes in climate and understand the limitation of adaptation. The effects of climate on the Sydney Metropolitan region can be assessed in terms of weather changes, storm and rainfall intensities, flooding and increased risk of fire.

Sydney may be affected in future by an increase in maximum and minimum temperatures across all seasons, more days of extreme heat and heatwaves, changes in seasonal rainfall patterns and increased intensity of extreme rainfall events and increased drought conditions.

Climate change could lead to an increase in average temperatures as well as additional extreme heat days over 40°C and increased heatwaves (three consecutive days over 40°C). Impacts associated

with extreme heat include compromising the structural integrity of road and access path surfaces, causing heat stress in users of the cycleway and heat stress to landscaped vegetation. Measures such as the provision of landscaping to increase shade should be reviewed for feasibility during detailed design to help reduce impacts from extreme heat.

Climate change is also expected to lead to an increase in average rainfall, increase in extreme rainfall and increased average recurrence interval for hail events. Impacts associated with changes to rainfall include localised flooding and surface flow, damage to aboveground structures where hail and/or damaging winds occur with the rainfall event and damage to vegetation due to overwatering and/or impact damage. Adequate drainage over the road network would help reduce impacts from extreme rainfall.

The proposal area can also be subject to what is known as the “heat island effect”. This occurs in metropolitan areas which have a significantly warmer climate than the surrounding rural area. The heat island effect is primarily due to human activities such as urban development replacing vegetation with hardstand areas. Concrete and asphalt are the main contributors to the heat island effect.

6.11.2 Greenhouse gas emissions

The proposal has the potential to encourage a longer term mode shift towards the use of active transport and a relative decrease in use of private motor vehicles by commuters travelling around the city. This shift in transport usage would result in a reduction in fuel consumption by private vehicles and therefore a corresponding relative reduction in associated greenhouse gas emissions in the local area.

6.12 Waste

6.12.1 Existing environment

The waste regulatory framework is administered under the POEO Act and the WARR Act as outlined in **Table 4-1**. The purpose of these acts are to prevent degradation of the environment, eliminate harmful wastes, reduce the amount of waste generated and establish priorities for waste reuse, recovery and recycling. The WARR Act establishes a waste hierarchy, which comprises the following principles

- Avoidance of waste – minimising the amount of waste generated during construction by avoiding unnecessary resource consumption (ie avoiding the use of inefficient plant and construction equipment and avoiding materials with excess embodied energy, waste and excessive packaging)
- Resource recovery – reusing, reprocessing and recycling waste products generated during construction to minimise the amount of waste requiring disposal
- Disposal – where resources cannot be recovered, they would be appropriately disposed of to minimise the potential adverse environmental impacts likely to be associated with their disposal.

By adopting the WARR Act principles, City of Sydney encourages the most efficient use of resources and reduces cost and environmental harm in accordance with the principles of ecologically sustainable development.

The City is committed to recycling and reusing 80% of waste generated during construction and this remains a priority with the proposal.

6.12.2 Potential impacts

Operation

The operation of the proposal is unlikely to result in increased waste generation. Any materials left over from maintenance or replacement works would be disposed of or recycled.

6.12.3 Mitigation

No mitigation measures are required for waste.

6.13 Cumulative impacts

The delivery of the proposal has the potential to result in cumulative impacts. This would primarily occur during the construction stage of the proposal, due to coinciding development projects in the area. Collectively, the proposal and nearby developments could result in increased cumulative impacts on the local community related to traffic, noise and air quality impacts during construction.

There are currently no nearby developments that would interact with the proposal.

6.13.1.1 Operation

The proposal would facilitate the integrated movement of cyclists as identified in City of Sydney's '*Cycling strategy and action plan*'. The proposal is also part of a wider program to manage traffic congestion and provide transport systems for Sydney's future growth. The predicted increase in daily bike movements along the network may be expected to translate into a reduction in vehicle volumes in the surrounding area. This would result in improvements in traffic congestion and safety as well as overall health benefits from improved air quality and a greater number of individuals participating in active transport.

6.13.2 Mitigation measures

No mitigation measures are required for cumulative impacts.

7.0 Environmental management

This chapter describes how the proposal would be managed through environmental management plans and specific safeguards, to reduce the potential environmental impacts throughout detailed design, construction and operation.

Mitigation measures have been developed to be consistent with the Clause 228 Guidelines.

7.1 Construction environmental management plans

No construction is to be undertaken associated with the proposal.

7.2 Safeguards and mitigation measures

Environmental safeguards and mitigation measures proposed for the proposal are outlined in the table below. These safeguards would minimise the potential adverse engineering, environmental and planning impacts of the proposal described in **Section 6.0**.

Table 7-1 Environmental safeguards and mitigation measures

No.	Impact	Environmental safeguards	Timing
TT1	Congestion	Continued monitoring of roadway and cycleway traffic to track cycleway usage and possible congestion impacts.	Operation
TT2	Congestion and community concerns	Community consultation would continue to consult on traffic management solutions to mitigate the flow on effects that have been raised during the pop-up cycleway implementation and consultation.	Operation
HER1	Visual amenity	Continued monitoring of community feedback regarding visual impacts on non-Indigenous heritage items.	Operation
SE1	Community impacts	Continued monitoring of community feedback relating to the ongoing operation of the pop-up cycleway.	Operation
S1	Acid Sulfate Soils	Should acid sulfate soils be uncovered during maintenance and modification of the existing cycleway, an acid sulfate soil management plan will be implemented	Operation

7.3 Licensing and approvals

No licences or additional approvals will be required for the proposal.

8.0 Conclusion and certification

8.1 Conclusion

This Review of Environmental Factors has been prepared to assess the environmental impacts of the proposed Bridge Street, Railway Parade and Henderson Road pop-up cycleway for two years. This cycleway is part of the Accelerated Bike Network Program which has been developed by the City of Sydney to improve cycling access throughout the CDB and City of Sydney LGA. The proposal would generate benefits including:

- Improved journey time reliability for people on bikes
- Improved integration with public transport
- Potential public transport de-crowding
- Improved equity and accessibility outcomes
- Potential for wider economic benefits beyond the transport sector
- Improved localised economic activity
- Reduced energy dependence.
- Improved safety for bicycle riders and pedestrians
- Long term individual and community health benefits from increased active transport.

This Review of Environmental Factors has been prepared in accordance with Part 5 of *the NSW Environmental Planning and Assessment Act 1979* and has assessed those matters listed in Clause 228 of the *NSW Environmental Planning and Assessment Regulation 2000*. The format of the report and level of environmental impact assessment also complies with the *City of Sydney Part 5 Environmental Impact Assessment Procedures* manual.

The proposal complies with relevant State and local planning strategy and policy, specifically the City's *Cycling Strategy and Action Plan 2018*. This plan includes an objective to connect the network and make it safer for people to ride in Sydney. The Cycling Strategy and Action Plan was adopted by the City in 2007, and incorporated into the City's strategic plan, *Sustainable Sydney 2030.* The strategy aims to achieve the *Sustainable Sydney 2030* target for 10% of all trips in the city to be made by bike. The City has since planned and largely implemented the delivery of the first suite of cycle network projects and updated the Strategy and Action Plan in 2018.

The assessment has confirmed that the proposal would not result in any significant impact on any declared critical habitat, threatened species, populations or ecological communities or their habitats. A Species Impact Statement is therefore not required. The assessment determined that the proposal would improve local access and would integrate within the existing transport network.

The City would continue to work with affected landowners to minimise impacts during construction and operation and would also obtain the necessary permits and approvals by working together with stakeholders for utilities impacts and Transport for NSW for classified road impacts.

The public exhibition of this REF would provide an opportunity for the community, businesses and landowners to comment on the proposal's benefits.

The REF has assessed key environmental and planning issues including traffic and transport, noise and vibration, non-Indigenous heritage and socio-economic impacts. Mitigation measures outlined in **Chapter 7.0** would also be implemented to minimise environmental impacts during the construction stage, which includes the preparation of a Construction Environmental Management Plan.

The recommended mitigation measures would ensure that the proposal does not result in any significant adverse effect on the environment. In this regard, an Environmental Impact Statement is not required.

8.2 Certification

This review of environmental factors provides a true and fair review of the proposal in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposal.

Jamie McMahon

Environmental Scientist - Associate Director

AECOM

Date: 9 March 2021

9.0 References

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Appendix A

Consideration of Matters of National Environmental Significance

The table below demonstrates City of Sydney's consideration of the matters of NES under the EPBC Act to be considered in order to determine whether the proposal should be referred to the Commonwealth Department of the Environment and Energy.

Matters of NES	Impacts
Any impact on a World Heritage property?	**Nil**
Any impact on a National Heritage place?	**Nil**
Any impact on a wetland of international importance?	**Nil**
Any impact on a listed threatened species or communities?	**Nil**
Any impacts on listed migratory species?	**Nil**
Does the proposal involve a nuclear action (including uranium mining)?	**Nil**
Any impact on a Commonwealth marine area?	**Nil**
Does the proposal involve development of coal seam gas and/or large coal mine that has the potential to impact on water resources?	**Nil**
Additionally, any impact (direct or indirect) on Commonwealth land?	**Nil**

Appendix B

Consideration of Clause 228

The table below demonstrates City of Sydney's consideration of the specific factors of clause 228 of the EP&A Regulation in determining whether the proposal would have a significant impact on the environment.

Factor	Impacts
(a) Any environmental impact on a community? **The proposal is located within a significantly modified urban area and would not result in any environmental impact on a community. The proposal would involve public domain and additional street tree planting the provide a positive contribution to the environment.**	Minor
(b) Any transformation of a locality? **There is no transformation of the locality anticipated with the proposal.**	Negligible
(c) Any environmental impact on the ecosystem of the locality? **The proposal exists in a significantly modified urban area with limited natural environmental areas or values. There are no identified threatened species or habitats and no affected heritage items within the proposed area.**	Minor
(d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality? **The proposal area has a distinct cultural aesthetic which would not be impacted by the proposal.**	Negligible
(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? **The proposal would have minor, indirect impacts upon items of heritage significance.** **In addition, the proposal would have a minor positive impact on Bridge Street, Railway Parade and Henderson Road for future generations through the provision of needed active transport infrastructure.**	Minor
(f) Any impact on the habitat of protected fauna (within the meaning of the *National Parks and Wildlife Act 1974*)? **The proposal exists in a significantly modified urban environment that is unlikely to contain any habitat of protected fauna.**	Minor
(g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air? **The proposal exists in a significantly modified urban environment that is unlikely to contain any habitat of protected fauna.**	Minor

Factor	Impacts
(h) Any long-term effects on the environment? **The proposal is proposed as a transport solution to improve access in the area and active transport networks. The proposal is aimed at encouraging a modal shift of transport to active transport, reducing the volume of vehicles within the City, thereby reducing vehicle emissions.**	Minor
(i) Any degradation of the quality of the environment? **The proposal would not degrade the quality of the environment.**	Negligible
(j) Any risk to the safety of the environment? **The proposal poses no risks to the safety of the environment. This REF has proposed a number of mitigation measures aimed at reducing any risks to the environment.**	Minor
(k) Any reduction in the range of beneficial uses of the environment? **The proposal would provide for an increase in sustainable transport use and public domain enhancements would provide increased value to the area.** **The proposal would ensure long term access improvements in the area.**	Minor
(l) Any pollution of the environment? **The proposal would not result in increase in air pollution.**	Negligible
(m) Any environmental problems associated with the disposal of waste? **No waste will be generated in association with the Proposal.**	Negligible
(n) Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply? **The proposal is unlikely to increase demand on resources (natural or otherwise) that are, or are likely to become, in short supply.**	Negligible
(o) Any cumulative environmental effect with other existing or likely future activities? **The proposal would coincide with the construction of a number of other proposals in the Sydney city centre. Cumulative impacts as a result of concurrent development are unlikely.**	Minor
(p) Any impact on coastal processes and coastal hazards, including those under Proposed climate change conditions? **The proposal is located approximately 5 km from the coastline and is unlikely to impact on coastal processes.**	Negligible

Appendix C

AHIMS Search – 200m Buffer

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : Bridge/Railway

Client Service ID : 556517

Nicholas Woodard

17 Warabrook Boulevard
Warabrook New South Wales 2304

Attention: Nicholas Woodard

Email: nicholas.woodard@aecom.com

Date: 10 December 2020

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -33.9035, 151.1842 - Lat, Long To : -33.8959, 151.1964 with a Buffer of 200 meters, conducted by Nicholas Woodard on 10 December 2020.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.

A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (http://www.nsw.gov au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Appendix D

BioNet Atlas and Protected Matters Search Tool

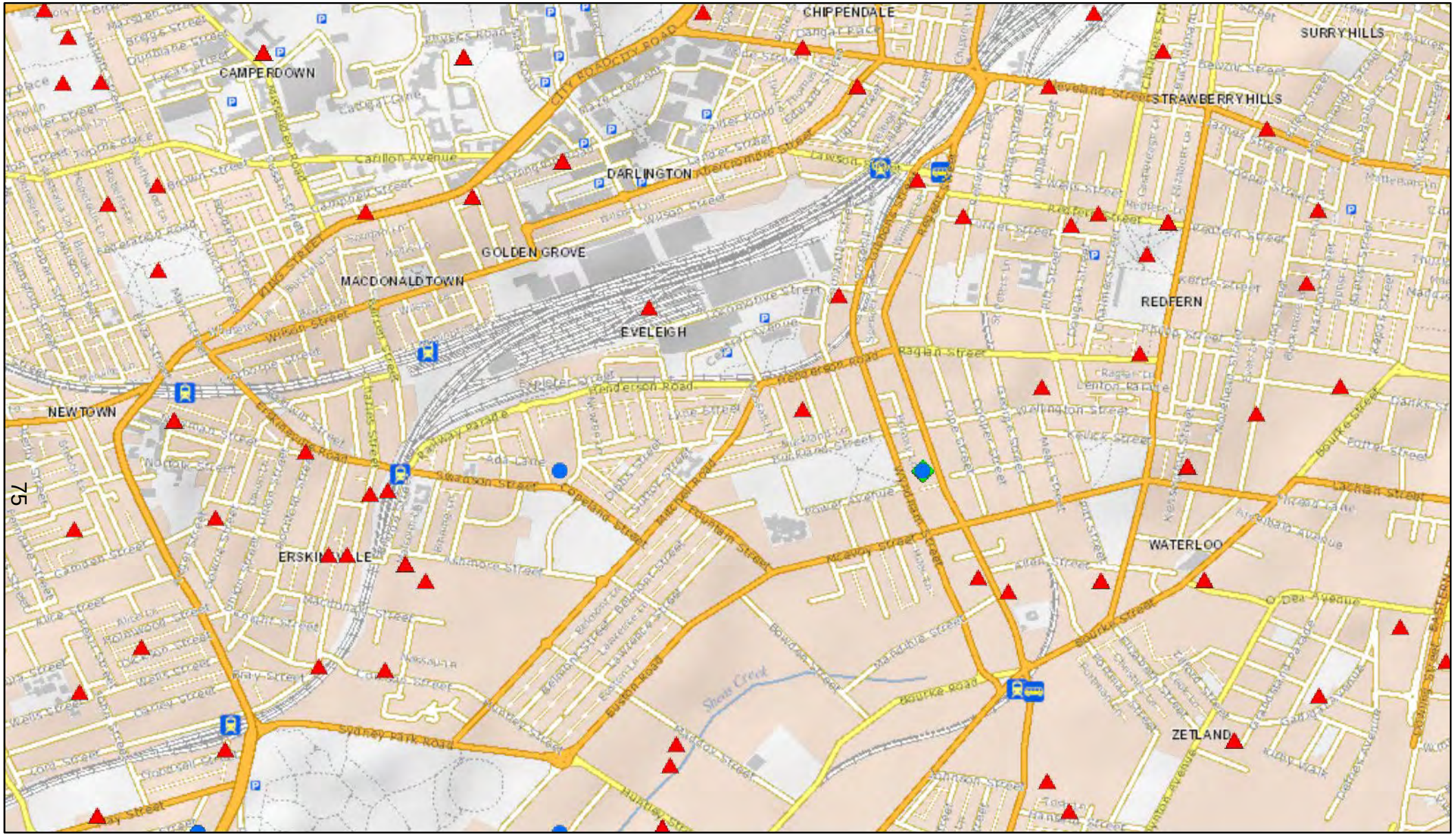
Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Public Report of all Valid Records of Threatened (listed on BC Act 2016) Entities in selected area [North: -33.84 West: 151.14 East: 151.24 South: -33.94] returned a total of 2,054 records of 58 species.
Report generated on 18/12/2020 11:46 AM

Kingdom	Class	Family	Species Code	Scientific Name	Common Name	NSW status	Comm. status	Records
Animalia	Amphibia	Myobatrachidae	3116	*Pseudophryne*	Red-crowned Toadlet	V,P		1
Animalia	Amphibia	Hylidae	3166	*Litoria aurea*	Green and Golden Bell Frog	E1,P	V	194
Animalia	Reptilia	Cheloniidae	2004	*Caretta caretta*	Loggerhead Turtle	E1,P	E	2
Animalia	Reptilia	Dermochelyidae	2013	*Dermochelys coriacea*	Leatherback Turtle	E1,P	E	1
Animalia	Aves	Anseranatidae	0199	*Anseranas*	Magpie Goose	V,P		9
Animalia	Aves	Anatidae	0214	*Stictonetta naevosa*	Freckled Duck	V,P		1
Animalia	Aves	Columbidae	0023	*Ptilinopus superbus*	Superb Fruit-Dove	V,P		6
Animalia	Aves	Diomedeidae	0086	*Diomedea exulans*	Wandering Albatross	E1,P	E	2
Animalia	Aves	Ardeidae	0197	*Botaurus poiciloptilus*	Australasian Bittern	E1,P	E	2
Animalia	Aves	Accipitridae	0223	*^Erythrotriorchis*	Red Goshawk	E4A,P,2	V	1
Animalia	Aves	Accipitridae	0226	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	V,P		23
Animalia	Aves	Accipitridae	0225	*Hieraaetus*	Little Eagle	V,P		1
Animalia	Aves	Accipitridae	0230	*^^Lophoictinia isura*	Square-tailed Kite	V,P,3		1
Animalia	Aves	Burhinidae	0174	*Burhinus grallarius*	Bush Stone-curlew	E1,P		3
Animalia	Aves	Haematopodidae	0130	*Haematopus*	Pied Oystercatcher	E1,P		2
Animalia	Aves	Scolopacidae	0161	*Calidris ferruginea*	Curlew Sandpiper	E1,P	CE,C,J,K	8
Animalia	Aves	Scolopacidae	0160	*Xenus cinereus*	Terek Sandpiper	V,P	C,J,K	1
Animalia	Aves	Laridae	0117	*Sternula albifrons*	Little Tern	E1,P	C,J,K	5
Animalia	Aves	Cacatuidae	0265	*^Calyptorhynchus lathami*	Glossy Black-Cockatoo	V,P,2		1
Animalia	Aves	Psittacidae	0309	*^^Lathamus discolor*	Swift Parrot	E1,P,3	CE	5
Animalia	Aves	Strigidae	0246	*^^Ninox connivens*	Barking Owl	V,P,3		1
Animalia	Aves	Strigidae	0248	*^^Ninox strenua*	Powerful Owl	V,P,3		131

Animalia	Aves	Meliphagidae	0603	*Anthochaera phrygia*	Regent Honeyeater	E4A,P	CE	1
Animalia	Aves	Meliphagidae	0448	*Epthianura albifrons*	White-fronted Chat	V,P		1
Animalia	Aves	Meliphagidae	0448	*Epthianura albifrons*	White-fronted Chat population in the Sydney Metropolitan Catchment Management Area	E2,V,P		1
Animalia	Aves	Artamidae	8519	*Artamus cyanopterus cyanopterus*	Dusky Woodswallow	V,P		3
Animalia	Aves	Petroicidae	0380	*Petroica boodang*	Scarlet Robin	V,P		1
Animalia	Aves	Estrildidae	0652	*Stagonopleura guttata*	Diamond Firetail	V,P		2
Animalia	Mammalia	Peramelidae	1097	*Perameles nasuta*	Long-nosed Bandicoot population in inner western Sydney	E2,P		19
Animalia	Mammalia	Phascolarctidae	1162	*Phascolarctos*	Koala	V,P	V	3
Animalia	Mammalia	Pteropodidae	1280	*Pteropus poliocephalus*	Grey-headed Flying-fox	V,P	V	1396
Animalia	Mammalia	Emballonuridae	1321	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	V,P		4
Animalia	Mammalia	Molossidae	1329	*Micronomus norfolkensis*	Eastern Coastal Free-tailed Bat	V,P		10
Animalia	Mammalia	Vespertilionidae	1353	*Chalinolobus dwyeri*	Large-eared Pied Bat	V,P	V	2
Animalia	Mammalia	Vespertilionidae	1357	*Myotis macropus*	Southern Myotis	V,P		21
Animalia	Mammalia	Muridae	1466	*Pseudomys gracilicaudatus*	Eastern Chestnut Mouse	V,P		1
Animalia	Mammalia	Otariidae	1543	*Arctocephalus forsteri*	New Zealand Fur-seal	V,P		2
Animalia	Mammalia	Otariidae	1882	*Arctocephalus pusillus doriferus*	Australian Fur-seal	V,P		5
Animalia	Mammalia	Balaenidae	1561	*Eubalaena australis*	Southern Right Whale	E1,P	E	1
Animalia	Insecta	Petaluridae	I007	*Petalura gigantea*	Giant Dragonfly	E1		1
Plantae	Flora	Dilleniaceae	11422	*Hibbertia puberula*		E1		1
Plantae	Flora	Doryanthaceae	1020	*Doryanthes palmeri*	Giant Spear Lily	V,P		1
Plantae	Flora	Elaeocarpaceae	6205	*Tetratheca glandulosa*		V		1
Plantae	Flora	Elaeocarpaceae	6206	*Tetratheca juncea*	Black-eyed Susan	V	V	8
Plantae	Flora	Euphorbiaceae	9501	*Amperea xiphoclada var. pedicellata*		E4	X	1

Plantae	Flora	Fabaceae (Mimosoideae)	9672	*Acacia terminalis subsp. terminalis*	Sunshine Wattle	E1	E	43
Plantae	Flora	Lamiaceae	3418	*^^Prostanthera*	Seaforth Mintbush	E4A,3	CE	4
Plantae	Flora	Myrtaceae	4067	*Eucalyptus camfieldii*	Camfield's Stringybark	V	V	1
Plantae	Flora	Myrtaceae	4134	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint	V	V	5
Plantae	Flora	Myrtaceae	4163	*Eucalyptus*	Silver-leafed Gum	V	V	1
Plantae	Flora	Myrtaceae	4248	*Melaleuca deanei*	Deane's Paperbark	V	V	8
Plantae	Flora	Myrtaceae	4283	*Rhodamnia*	Scrub Turpentine	E4A		1
Plantae	Flora	Myrtaceae	4293	*Syzygium*	Magenta Lilly Pilly	E1	V	30
Plantae	Flora	Orchidaceae	4386	*^Caladenia tessellata*	Thick Lip Spider Orchid	E1,P,2	V	2
Plantae	Flora	Poaceae	4895	*Dichanthium setosum*	Bluegrass	V	V	1
Plantae	Flora	Proteaceae	5458	*^^Persoonia hirsuta*	Hairy Geebung	E1,P,3	E	4
Animalia	Mammalia	Miniopteridae	1346	*Miniopterus australis*	Little Bent-winged Bat	V,P		1
Animalia	Mammalia	Miniopteridae	3330	*Miniopterus orianae oceanensis*	Large Bent-winged Bat	V,P		66

BioNet Atlas Map



December 18, 2020

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Australian Government

Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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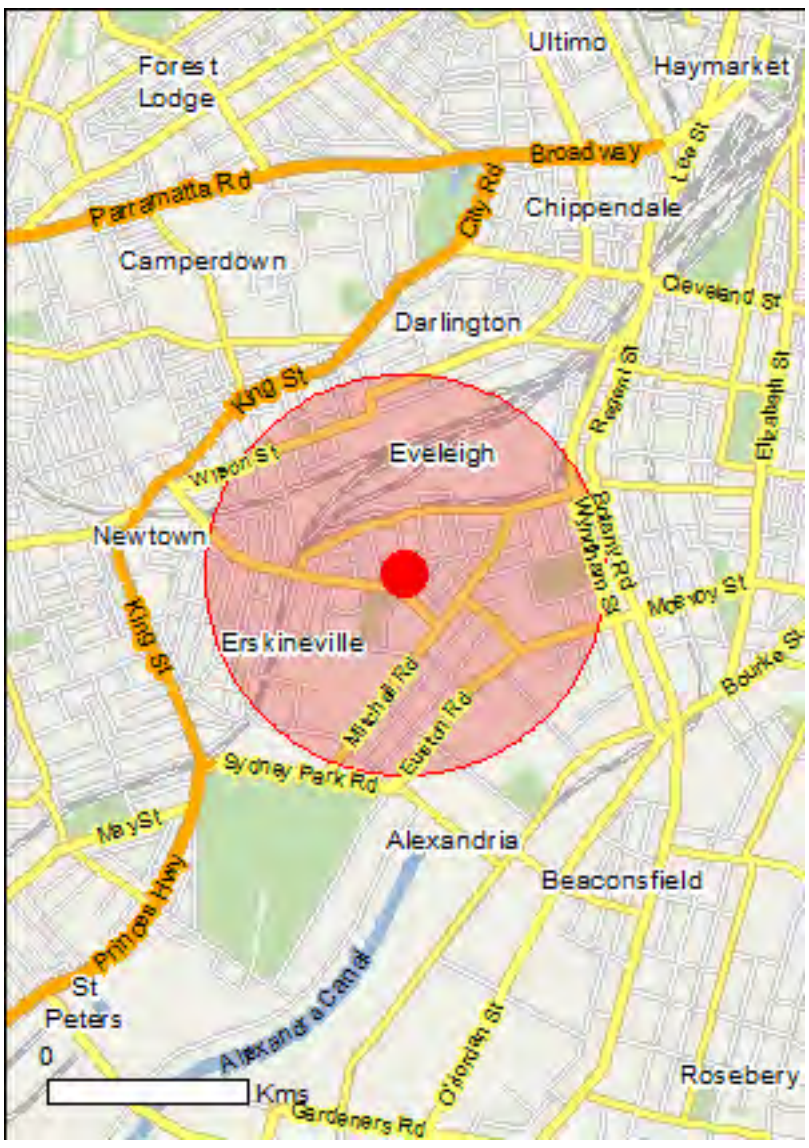

This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

Coordinates

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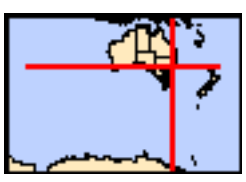

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	35
Listed Migratory Species:	17

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	3
Commonwealth Heritage Places:	None
Listed Marine Species:	23
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	48
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion	Endangered	Community may occur within area
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area
Coastal Upland Swamps in the Sydney Basin Bioregion	Endangered	Community may occur within area
Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion	Critically Endangered	Community may occur within area
Western Sydney Dry Rainforest and Moist Woodland on Shale	Critically Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species

Name	Status	Type of Presence
		habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
Thinornis cucullatus cucullatus Hooded Plover (eastern), Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat may occur within area
Fish		
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Frogs		
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat may occur within area
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
Isoodon obesulus obesulus Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat likely to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat likely to occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat may occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Plants		
Acacia pubescens Downy Wattle, Hairy Stemmed Wattle [18800]	Vulnerable	Species or species habitat may occur within area
Acacia terminalis subsp. terminalis MS Sunshine Wattle (Sydney region) [88882]	Endangered	Species or species habitat may occur within area
Allocasuarina glareicola [21932]	Endangered	Species or species habitat may occur within area
Caladenia tessellata Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat likely to occur within area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur

Name	Status	Type of Presence
		within area
Eucalyptus camfieldii Camfield's Stringybark [15460]	Vulnerable	Species or species habitat likely to occur within area
Genoplesium baueri Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchiid [7528]	Endangered	Species or species habitat likely to occur within area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area
Persoonia hirsuta Hairy Geebung, Hairy Persoonia [19006]	Endangered	Species or species habitat may occur within area
Pimelea curviflora var. curviflora [4182]	Vulnerable	Species or species habitat may occur within area
Pimelea spicata Spiked Rice-flower [20834]	Endangered	Species or species habitat may occur within area
Syzygium paniculatum Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat known to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Hoplocephalus bungaroides Broad-headed Snake [1182]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Rhipidura rufifrons		
Rufous Fantail [592]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Australian Postal Commission
Commonwealth Land - Australian Telecommunications Commission
Defence - SYDNEY UNIVERSITY REGIMENT - DARLINGTON

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat likely to occur

Name	Threatened	Type of Presence within area
[Ardea ibis](#) Cattle Egret [59542]		Species or species habitat may occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
[Merops ornatus](#) Rainbow Bee-eater [670]		Species or species habitat may occur within area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat known to occur within area
[Monarcha trivirgatus](#) Spectacled Monarch [610]		Species or species habitat may occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat known to occur within area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat known to occur within area
[Neophema chrysogaster](#) Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
[Pandion haliaetus](#) Osprey [952]		Species or species habitat may occur within area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat likely to occur within area
[Rostratula benghalensis (sensu lato)](#) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Thinornis rubricollis rubricollis		
Hooded Plover (eastern) [66726]	Vulnerable*	Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis		
Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis		
Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos		
Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis		
European Goldfinch [403]		Species or species habitat likely to occur within area
Carduelis chloris		
European Greenfinch [404]		Species or species habitat likely to occur within area
Columba livia		
Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata		
Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus		
House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus		
Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Pycnonotus jocosus		
Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat known to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species

Name	Status	Type of Presence
		habitat likely to occur within area
Asparagus scandens Asparagus Fern, Climbing Asparagus Fern [23255]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and		Species or species

Name	Status	Type of Presence
Sterile Pussy Willow [68497]		habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-33.90005 151.19071

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

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