Prepared for
City of Sydney
ABN: 22 636 550 790

Review of Environmental Factors

2023 Cycleways Program: Phillip Street to College Street Cycleway

05 Jun 2024
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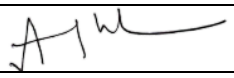
4	05-Jun-2024	Final version	Anoop Sridhar Project Manager	

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Acronyms and abbreviations

Acronyms and abbreviations	Definition
ABS	Australian Bureau of Statistics
AECOM	AECOM Australia Pty Ltd
AEP	Annual exceedance probability
AHIMs	Aboriginal Heritage Information Management System
ASS	Acid sulfate soils
BC Act	*Biodiversity Conservation Act 2016*
CBD	Central business district
CEMP	Construction Environmental Management Plan
CLM Act	*Contaminated Land Management Act 1997*
CLMP	Community Liaison Management Plan
CNVMP	Construction Noise and Vibration Management Plan
CO	Carbon monoxide
CoS	City of Sydney
CTMP	Construction Traffic Management Plan
dB(A)	A-weighted decibel
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPE	Department of Planning and Environment
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2021*
EPA	Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Act 1999*
EPI	Environmental planning instrument
ESCP	Erosion and Sedimentation Control Plan
ESD	Ecologically Sustainable Development
ICNG	Interim Construction Noise Guideline
km	Kilometre
LA_{90}	Background noise level
LEP	Local Environmental Plan
LGA	Local Government Area
LoS	Level of Service
m	Metres
mm	Millimetre
MNES	Matters of National Environmental Significance
NO_2	Nitrogen dioxide
NPW Act	*National Parks and Wildlife Act 1974*
O_3	Ozone
OOHW	Out of hours work
PASS	Potential acid sulfate soils
PCT	Plant community type
PM	Particulate matter
PMF	Probable maximum flood

Acronyms and abbreviations	Definition
POEO Act	*Protection of the Environment Operations Act 1997*
REF	Review of Environmental Factors
Roads Act	*Roads Act 1993*
SEED	The Central Resource for Sharing and Enabling Environmental Data in NSW
SEPP	State Environmental Planning Policy
SO_2	Sulfur dioxide
SoHI	Statement of Heritage Impacts
TEC	Threatened ecological community
TfNSW	Transport for NSW
TPZ	Tree protection zone
WARR Act	*Waste Avoidance and Resource Recovery Act 2001*
WMP	Waste Management Plan

1.0 Introduction

1.1 Overview of the Proposal

1.1.1 Background

The City of Sydney (CoS) propose to deliver a priority cycleway that would connect the existing Phillip Street/King Street and College Street cycleways (the Proposal). The Proposal would include a new separated two-way cycleway from the current northern end of the College Street cycleway, continuing along Prince Albert Road and then turning north into Macquarie Street and crossing Queen's Square to connect to King Street. The proposal would also include an additional 130 m section of cycleway within the southern kerbside lane of St James Road.

The proposal would occupy one westbound lane currently used by general traffic on Prince Albert Road and St James Road (i.e., the southern kerbside lane), as well as one northbound lane currently used by general traffic on the western side of Macquarie Street.

The City of Sydney Council (CoS) 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 CoS for the Proposal. The purpose of this REF is to describe the Proposal, assess the potential for the Proposal to result in environmental impacts, and to inform the decision of whether to proceed with the Proposal. The Proposal and associated impacts have been described in the context of Section 171 of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation), fulfilling the requirements of Section 5.5 of the EP&A Act. Appendix A specifically responds to the factors for consideration under Section 171.

This assessment finds that the Proposal would not result in any significant impacts upon the environment and as such may be approved with relevant mitigation measures applied. Detail of the environmental assessment is provided in Chapter 6.0 of this REF.

1.1.2 Key features of the Proposal

Key features of the Proposal would include:

- A new separated two-way cycleway from the current northern end of the College Street cycleway, continuing along Prince Albert Road for about 250 m and then turning north into Macquarie Street. The cycleway would then turn east, crossing Queen's Square to connect to the intersection of King Street and Phillip Street
- A new single-direction 130 m section of cycleway within the southern kerbside lane of St James Road. There would be no median separating the cycleway on St James Road from the road carriageway
- A new signalised crossing for people on bikes to cross the St James Road/Macquarie Street intersection
- Changes to road layouts and intersection movements for general traffic on the above roads
- Changes to the existing shared path arrangements through Queen's Square
- New surface finishes and line marking.

Refer to Chapter 3.0 for further detail on the Proposal.

1.2 Site analysis

1.2.1 Proposal location and context

The Proposal is located within the City of Sydney Local Government Area (LGA), within the heart of the Sydney central business district (CBD). The location of the Proposal in a regional context is shown on Figure 1-1. The area surrounding the Proposal can be generally described as a highly developed

modern urban environment, characterised by administrative offices, as well as high density retail, commercial and residential development.

For the purposes of this assessment, the extent of the works as shown on Figure 1-2 is referred to as the Proposal Area (defined by a red outline).

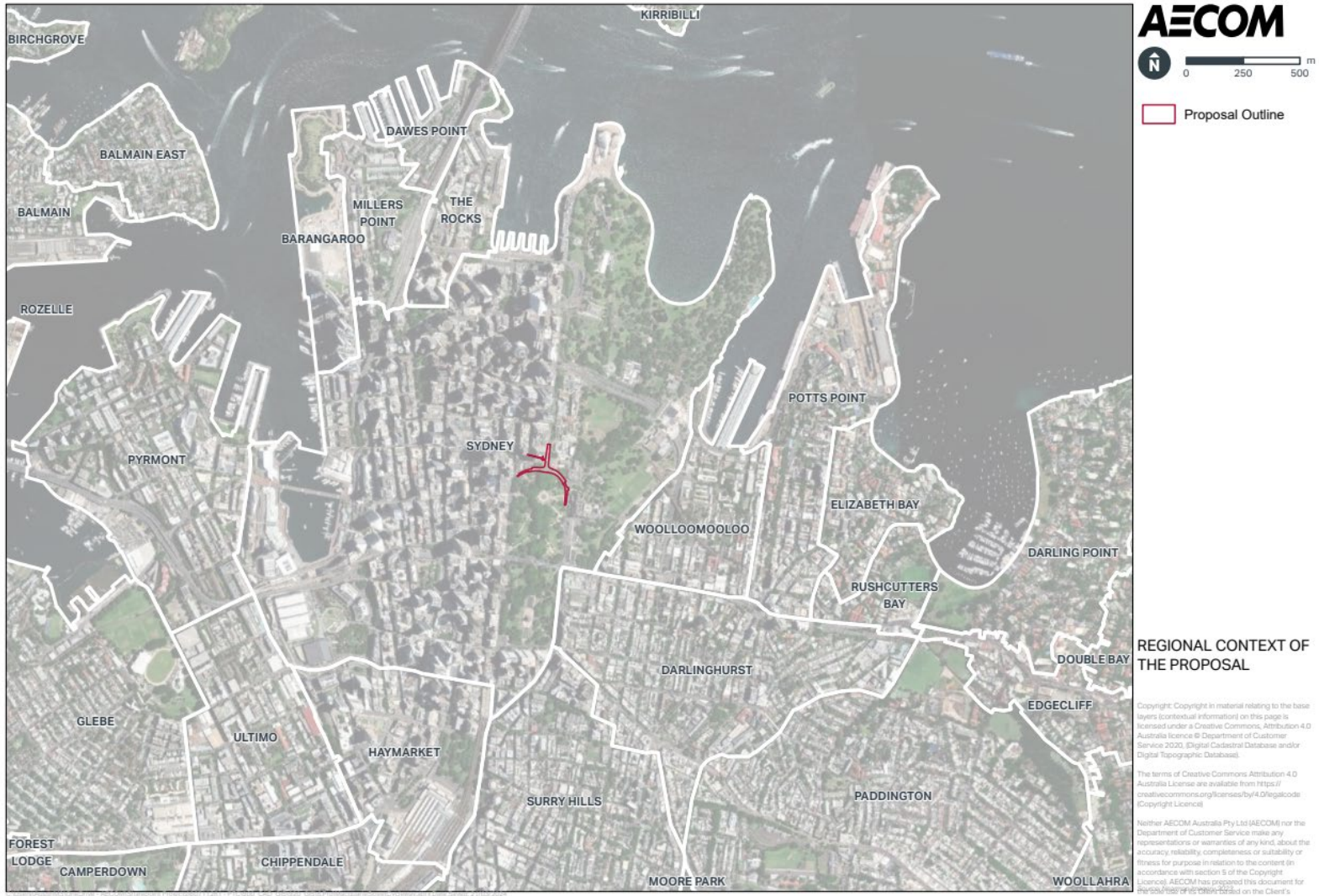

Figure 1-1: Regional context of the Proposal

Figure 1-2: The Proposal

1.2.2 Existing infrastructure and surrounding land uses

Land uses surrounding the Proposal include commercial and administrative offices, high-density residential, food and drink premises, public recreation areas, places of worship, retail premises, educational facilities, health services facilities and hotel/motel accommodation.

Sensitive receivers (receivers which are sensitive to potential noise, air, and visual impacts) adjacent to the Proposal include, but are not limited to:

- First Men's Hostel
- Central Sydney Dermatology
- Sydney Sexual Health Centre
- Various cafes and restaurants
- St James' Church
- Hyde Park Barracks
- Hyde Park
- St Mary's Cathedral
- St James Road Court
- Law Courts Building
- St James station entrance.

Key existing infrastructure within the Proposal Area includes:

- Underground electricity, stormwater, sewerage, and telecommunications infrastructure
- Shared paths for pedestrians and people on bikes
- Street lighting.

1.2.3 Existing zoning

The applicable land use zoning for the Proposal Area is specified by the *Sydney Local Environmental Plan 2012* (Sydney LEP). The Proposal is located within the SP5 Metropolitan Centre zone and the RE1 Public Recreation zone (indicative cycleway within Queen's Square).

1.2.4 Land ownership and legal description

The Proposal would be carried out fully within the road corridor of St James Road, Macquarie Street and Prince Albert Road. All roads within the Proposal Area are classified as regional roads and are managed by CoS.

2.0 Needs, objectives and options

This chapter discusses the need, objectives and options of the Proposal within the context of relevant policies and strategies. 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 *Inner Sydney Regional Bicycle Network Demand Assessment and Economic Appraisal* (CoS, 2010) outlines key benefits of the future provision of separated cycleways within Sydney, specifically immediate and long-term improvements to usage by people on bikes. This is consistent with the strong improvement in cycling demand that has been observed in other parts of Sydney where separated cycleway infrastructure has been provided. For example, the development of two cycleways by CoS on King Street in the CBD and Bourke Road in Alexandria saw cycling levels increase by up to 30% for both cycleways immediately after opening.

The *Inner Sydney Regional Bicycle Network Demand Assessment and Economic Appraisal* (CoS, 2010) outlines the currently fragmented nature of Sydney's bicycle network. It also outlines that the lack of safe cycling connections in key parts of the city forces people on bikes to mix with general traffic, which can lead to conflicts with vehicles. Subsequent safety concerns may discourage cycling as a viable transport option for many people. However, community feedback shows that there is a strong public desire for greater levels of dedicated cycling infrastructure and 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. These types of cycling infrastructure provide a separation from general traffic, addressing people's main safety concerns.

Since 2007, CoS has invested an average of $11 million per annum to build a safe and connected cycling network throughout the LGA. This has resulted in the doubling of the average number of cycling trips across Sydney.

The Proposal would contribute directly to the aims of this strategy by providing a missing link between the existing cycleways on College Street and Phillip Street/King Street. This would provide safe access for people on bikes into the heart of the CBD for work, study, shopping, socialising or recreation. The Proposal would also support the development of the broader bicycle network and would contribute to an improved 'network effect' for Sydney's cycling network.

2.1.2 Proposal objectives

The objectives of the Proposal are to:

- Deliver a separated cycleway between College Street and Phillip Street/King Street, as well as along part of St James Road
- Create a safe bike network connection that encourages increased use of the subject roads by people on bike, and designed to a standard that could be comfortably used by a child riding independently to school
- Prioritise footpath width for people walking
- Minimise the need for major civil works such as kerb alignment, impacts on underground or utilities.

2.1.3 Relevant policies and strategies

The consistency of the Proposal with the following policies and strategies is outlined below.

2.1.3.1 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 (CoS, 2023a). It proposes a cycling network that is safe enough for children to use, giving priority to a separated, dedicated cycleway.

The Proposal would be consistent with the objectives of this report.

2.1.3.2 Cycling Strategy and Action Plan 2018-2030

The *Cycling Strategy and Action Plan 2018-2030* (the Cycling Strategy) outlines the vision for cycling in Sydney (CoS, 2022). This includes an objective to connect the network and make it safer for people to ride in Sydney. The Cycling Strategy supports the *Sustainable Sydney 2030 Vision* through the provision of infrastructure that supports sustainable transport. Top priorities of the Cycling Strategy include connecting the cycling network more broadly and facilitating more people riding bikes.

The Proposal would be consistent with this report in that it would provide a separated and dedicated cycleway that connects key parts of the existing Sydney cycle network.

2.1.3.3 Sydney City Centre Access Strategy

The NSW *Government's Sydney City Centre Access Strategy*, released in 2013, provided a detailed plan for how people would enter, exit, and move in and around Sydney CBD over the next 20 years (TfNSW, 2013). One of the key features of the strategy was for an integrated cycleway network.

The Proposal would align with the strategy as it would '*support the continued growth in cycling within the city centre'* (TfNSW, 2013).

2.2 Alternatives considered

During the strategic design process, several possible designs were assessed for the provision of a cycleway to connect to the College Street and Phillip Street/King Street cycleways.

Do nothing option

The do nothing option would not deliver a cycleway that would connect to the College Street and Phillip Street/King Street cycleways. This option would not incur a cost or any environmental impacts. However, this option would not meet the Proposal objectives and so is not preferred.

Option 1 – Queen's Square, Macquarie Street, Prince Albert Road and St James Road - preferred option

Option 1 would be commence at Phillip Street/King Street and continue onto Macquarie Street via Queen's Square (Figure 2-1). This option would also include a one-way cycleway within the southern kerbside lane of St James Road. This option would also have the least impact to heritage and the ongoing operation of the relevant intersections.

Option 2 – Queen's Square and St James Road

Option 2 would be commence on Phillip Street/King Street, continue south through Queen's Square then link to St James Road between the Queen Victoria monument and the St James station entrance (Figure 2-1). This option was not considered feasible since the level differences throughout this alignment would limit accessibility to the cycleway. Furthermore, this proposal would require the removal of mature trees.

Option 3 – Elizabeth Street and St James Road

This option would commence on King Street, turning south onto Elizabeth Street, and then east onto St James Road (Figure 2-1). This option was not considered feasible given the steep decline and incline on both Elizabeth Street and St James Road, which would make for a less comfortable/desirable journey for people on bikes. This option would also have greater impact on existing intersections and traffic arrangements.

Preferred option

Of the three options to deliver a cycleway between Phillip Street/King Street and Prince Albert Road, Option 1 was preferred as it would provide the most comfortable and direct journey for people on bikes and would have the least impact on existing heritage items, mature trees, and existing traffic arrangements.

Figure 2-1: Options considered to deliver a cycleway between Phillip Street/King Street and Prince Albert Road

2.3 Proposal benefits

The Proposal would provide the following specific benefits:

- Improved safety for people on bikes
- Improved access and journey time reliability for people on bikes
- Improved connections within the regional cycling network
- Contribute towards reducing vehicle traffic congestion.

3.0 Proposal description

This Chapter describes the Proposal and summarises its key design parameters, associated infrastructure construction method and related activities. The description of the Proposal is based on detailed design.

3.1 The Proposal

The Proposal include a new two-way cycleway connecting the existing College Street and King Street cycleways. This proposed cycleway aims to bridge the gap between these two cycleways, starting from College Street, following the southern side of Prince Albert Road and the western side of Macquarie Street, passing through Queen's Square, and joining the King Street cycleway at the junction with Phillip Street.

The intersection of Prince Albert Road, St James Road, and Macquarie Street is proposed to be modified as part of these works. These modifications will interface with the proposed upgrades to Macquarie proposed to be delivered as part of the Macquarie Street East Precinct transformation. Key features of the Proposal include:

- A new separated two-way cycleway from the current northern end of the College Street cycleway, continuing along Prince Albert Road for about 250 m and then turning north into Macquarie Street. The cycleway would then turn east, crossing Queen's Square to connect to the intersection of King Street and Phillip Street (see Figure 1-2 and Appendix B)
- A bluestone 400 millimetre (mm) median to separate the cycleway on Macquarie Street and Prince Albert Road to separate the proposed cycleway from the road carriageway
- Reconstruction of gutters adjacent the proposed cycleway on Prince Albert Road to reduce gutter width and increase cycleway pavement
- A new single-direction 130 m section of cycleway within the southern kerbside lane of St James Road. There would be no median separating the cycleway on St James Road from the road carriageway
- Provision of a signalised crossing for people on bikes to cross the St James Road/Macquarie Street intersection
- Provision of a new traffic signal on the existing median at the Prince Albert Street and College Street intersection to improve road safety sight lines for vehicles approaching from the south
- The proposed cycleway would displace the following lanes currently available to general traffic:
  - One westbound lane on Prince Albert Road and St James Road
  - One northbound lane on the western side of Macquarie Street.
- Changes to Queen's Square including:
  - Extension of the kerb at the corner of St James Road and Macquarie Road junction to provide additional space for pedestrians
  - Provision of a new kerb ramp on Macquarie Street for people on bikes to move from the proposed on-road cycleway onto the existing shared path through Queen's Square
  - Provision of pavement marking through Queen's Square, to guide cyclists through the square
  - A new ramp access to Queen's Square, northwest of the St James Road and Macquarie Road junction, formed by relaying existing pavers, as shown on Figure 3-1. This ramp access is proposed to join the existing King Street Cycleway and the proposed College Street Cycleway to provide a continuous path for cyclists
- Provision of pavement markers or markings, and signage, indicating the pedestrian only area at the intersection of St James Road and Macquarie Street near the Queen Victoria statue

- Provision of a new kerb ramp on College Street near the intersection with St Mary's Road for people on bikes to leave the cycleway and use the signalised pedestrian crossing to cross College Street and access the eastern side of St Marys Road
- Provision of low-level plantings adjacent to the signalised cyclist crossing at St James Road
- Removal of existing painted median on St James Road between the intersections with St Marys Road and Macquarie Street to allow the general traffic lanes to be reconfigured around the provision of the cycleway within the southern kerbside lane
- Adjustment of the existing centre median on St James Road west of Macquarie Street intersection to allow the general traffic lanes to be reconfigured around the provision of the cycleway within the southern kerbside lane
- Removal of the existing cycleway median on College Street where the Proposal would connect to the College Street cycleway
- Relocation of traffic control signal pole on the western side of Prince Albert Road, at the St Marys Road intersection with Prince Albert Road, to north of the existing pedestrian ramp
- Changes to intersection movements for general traffic, including:
  - Removal of a right turn lane from the southbound direction of Macquarie Street turning onto St James Road (see Figure 3-2)
  - Conversion of one of the two existing southbound left turn lanes on Macquarie Street into a right turn lane (see Figure 3-2)
  - Reduction of St James Road departure lanes from two to one at the intersection on St James Road and Macquarie Street (see Appendix B).

The final arrangements at the intersections will be subject to the approval of the traffic control signal plans from TfNSW. The Proposal would not require the removal of any trees or parking spaces. The existing kerb alignment within the Proposal Area would be retained.

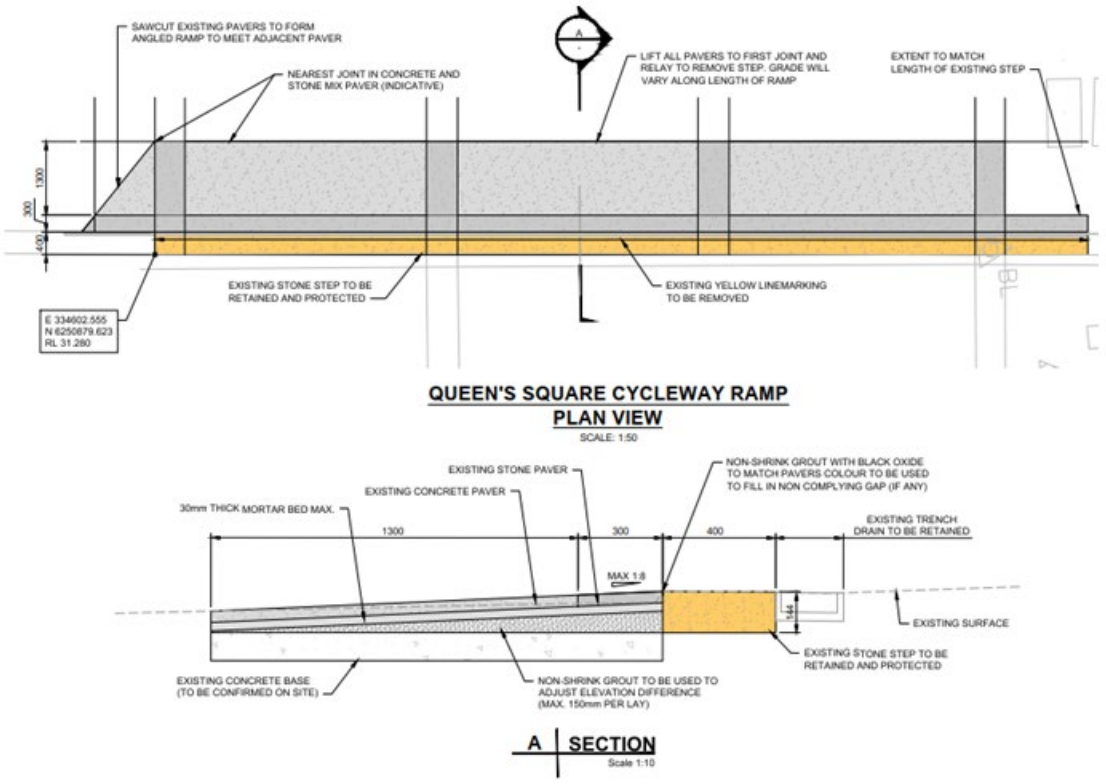

Figure 3-1: Schematic of proposed regrading of concrete step within Queen's Square to a cyclist ramp

Figure 3-2: Proposed intersection changes (indicative only)

3.1.1 Methodology

The following works would be undertaken to construct the Proposal:

- Site establishment
- Water blasting to remove existing line marking as required
- Milling and resheeting of road surface where the cycleway is proposed (about 550 m^2)
- Removal/realignment of the cycleway median on College Street
- Installation of a median to separate the new sections of cycleway from the general traffic lanes on St James Road, Macquarie Street and Prince Albert Road, except where there are pedestrian crossings
- New kerb ramp on Macquarie Street from the proposed on-road cycleway to the existing shared path through Queen's Square
- New ramp access to Queen's Square formed by relaying existing pavers
- Relocation of traffic control signal pole on the western side of Prince Albert Road, at the St Marys Road intersection with Prince Albert Road, to north of the existing pedestrian ramp
- New traffic signal pole on the College Street median
- Kerb extension at the corner of St James Road and Macquarie Road junction
- New kerb ramp on College Street near St Mary's Road intersection
- Landscaping for ground level vegetation at the St James Road and Macquarie Street intersection
- Installation of new signage
- Line marking and lane painting to mark cycleways
- Site demobilisation.

3.1.2 Construction timing and duration

Subject to approval, construction is expected to commence in November 2024 and take approximately 28 weeks to complete.

Most works required for the Proposal would be undertaken during standard construction hours as follows:

- Monday to Friday, 7am to 6pm
- Saturday, 8am to 1pm
- Sunday and Public Holidays, no work.

Where out of hours works/night works would be required, they would be carried out from 8pm until 6am. There would be a preference to carry out proposed works during weekdays rather than weekends.

Generally, noisier activities would be scheduled to take place around times of higher background noise, prior to 11pm. Additionally, such works would be short term and temporary and would take place progressively along the alignment, limiting the duration that any one sensitive receiver may be exposed to any construction noise. A plan would be developed for night work to determine the number of nights that work could occur and the type of works to minimise the potential noise impacts to nearby sensitive receivers.

A Construction Transport Management Plan (CTMP) would also be prepared in accordance with the Council's *Standard Requirements for Construction Traffic Management Plan* (CoS) and would include traffic controls and measures for motor vehicles and pedestrians. Work would be carried out taking into consideration Section 6 Work practices of the ICNG, work outside standard construction hours would be considered in consultation with relevant stakeholders. Procedures would include notifying sensitive receivers prior to works commencing.

3.1.3 Plant and equipment

An indicative list of plant and equipment likely to be used during construction of the Proposal include:

- Hand tools
- Bobcat
- Tipper truck
- Line marking equipment
- Concrete saw
- Vacuum truck
- Water cart
- Concrete truck
- Wacker packer
- Road planer
- Jackhammer
- Ute
- Vibratory roller
- Excavator
- Concrete agitator
- Air compressor
- Backhoe
- Forklift.

3.1.4 Earthworks

Earthworks required for the Proposal would be minor, being generally limited to milling and resheeting of the surface layer of the existing road surface within the proposed cycleway alignment. The level of excavation is likely to be limited to less than 1 m in most locations and associated with the installation of footings and signage. Milling and resheeting would not occur within Queen's Square. Line marking would be used to demarcate the cycleway.

Small amounts of waste material would be generated from construction activities such as replacement of the existing road pavement. Waste generated by the Proposal work would be recycled or disposed of at a licensed waste facility.

3.1.5 Source and quantity of materials

The source and quantity of materials would consider the requirements of ISCA IS Rating Scheme version 1.2. Materials would be sourced from local suppliers where practicable. Reuse of existing and recycled materials would be undertaken where practicable.

3.1.6 Construction traffic and access

The Proposal Area would be accessed via St James Road, Macquarie Street, Prince Albert Road, King Street, Phillip Street and/or College Street, following existing traffic arrangements. Traffic generated by construction activities would include construction worker light vehicles (including utility vans), as well as heavy vehicles for periodic delivery and removal of materials, construction plant and equipment.

The traffic generated from the construction phase of the Proposal is not anticipated to exceed 30 light vehicles and five heavy vehicles per day during peak construction. In addition to these vehicle movements the Proposal would also involve the operation of mobile plant and equipment within and around the work sites.

Emergency vehicle access would be maintained at all times during construction, as would rubbish truck access (as necessary).

During construction, the ordinary movement of vehicles, people on bikes and pedestrians would be altered. Full or partial lane closures would be put in place and pedestrians and people on bikes would

be subject to temporary diversions. To manage these impacts, some works would be undertaken outside of peak traffic hours or standard construction working hours.

Traffic management measures, as well as appropriately planned construction staging would seek to reduce impacts to the movement of vehicles, pedestrians, and people on bikes. A CTMP would be prepared in accordance with CoS's *Standard Requirements for Construction Traffic Management Plan* (CoS) and would include suitable traffic controls and measures for motor vehicles and pedestrians.

3.1.7 Ancillary facilities

The use of designated construction ancillary facilities, such as construction compounds, is not required as part of the Proposal. It is anticipated that active work areas within the Proposal Area would be cordoned off, with most works taking place within these areas.

4.0 Statutory and planning framework

This Chapter provides a summary of the statutory considerations relating to the Proposal including a consideration of Commonwealth legislation, NSW legislation, environmental planning instruments and NSW Government policies and strategies.

4.1 Commonwealth planning policy

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Act 1999* (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. These matters are considered in full in Appendix C.

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

4.1.2 Other Commonwealth legislation

Table 4-1 provides a list of other relevant Commonwealth legislation applicable to the Proposal.

Table 4-1: Other Commonwealth legislation applicable to the Proposal

Applicable legislation	Considerations
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	Under the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984,* there is an obligation on a person who discovers anything which they have reasonable grounds to suspect are Indigenous items to report that discovery to the Minister, giving particulars of the remains and their location. Mitigation measures have been proposed in Section 6.5 to ensure that unexpected finds of Indigenous heritage, or Indigenous remains, are dealt with appropriately and in accordance with the applicable legislation. A basic search of the Aboriginal Heritage Information Management System (AHIMS) database on 25 October 2023, did not indicate the presence of known Indigenous artefacts within 200 m of the Proposal (Appendix E).
Native Title Act 1983	The *Native Title Act 1983* provides for the recognition and protection of Native Title, how Native Title land is used and establishes a mechanism for determining claims to Native Title. A search of the Native Title Vision website on 31 October 2023 confirmed that the Proposal would not be located on land subject to a Native Title decision (National Native Title Tribunal, 2023).

4.2 State planning policy

4.2.1 Environmental Planning and Assessment Act 1979

The 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 CoS, which are permissible without development consent.

In accordance with Section 5.5 of the EP&A Act, CoS, 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. Section 171 of the 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 Section 171, and Appendix A specifically responds to the factors for consideration under Section 171.

4.2.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

The *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP) is the key environmental planning instrument (EPI) determining the permissibility of the Proposal and influencing how it is assessed under the EP&A Act.

Under Division 17, clause 2.113(1)(a)(iv), the Proposal is classified as 'pedestrian and cyclist facilities' and, as it is proposed to be carried out by CoS (a public authority), it can therefore be classified as exempt development. This means the Proposal can be undertaken without the need for development consent under Part 4 of the Act, nor development approval under Part 5.

Despite the Proposal being exempt development, CoS have elected to prepare this REF to assess the potential for the Proposal to result in environmental impacts, and to inform the decision of whether to proceed with the Proposal. This REF also outlines mitigation measures to manage the potential environmental impacts identified.

Division 1 of the Transport and Infrastructure SEPP contains provisions for public authorities to consult with local councils, State Emergency Service, and public authorities other than councils prior to the commencement of development without consent. However, this consultation is not required in this case as the Proposal is exempt development. Despite this, Chapter 5.0 of this REF discusses the consultation undertaken with view to maintaining consistency with the requirements of Division 1 of the Transport and Infrastructure SEPP.

4.2.3 Heritage Act 1977 (NSW)

The *Heritage Act 1977* provides for the conservation of buildings, work, relics, and places that are of historic, scientific, cultural, social, archaeological, architectural, natural, or aesthetic significance to the State. Matters protected under the Act include items subject to an Interim Heritage Order and items listed on the State Heritage Register, the heritage schedules of local environmental plans, and the heritage and conservation registers established under section 170 of the *Heritage Act 1977* by NSW Government agencies (Section 170 Heritage and Conservation Registers). The Act also provides for the protection of archaeological 'relics', being any deposit, object or material evidence that relates to the non-Indigenous settlement of NSW and is of State or local heritage significance.

Approval under Section 60 of the *Heritage Act 1977* is required for any action that would adversely affect an item that is subject to an Interim Heritage Order or a listing on the State Heritage Register.

A Statement of Heritage Impacts (SoHI) was prepared to assess potential impacts of the Proposal on heritage items within and adjacent to the Proposal. It is anticipated that the works will not cause any significant impact to heritage items within and adjacent to the Proposal Area. See Section 6.4 for the non-Indigenous heritage assessment, and Appendix D for the SoHI.

4.2.4 Other NSW legislation and regulations

Table 4-2 provides a list of other relevant legislation applicable to the Proposal.

Table 4-2: 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 the environment and biodiversity interests that seeks to maintain a healthy, productive, and resilient environment. Section 6.8 of this REF outlines that potential impacts to biodiversity resulting from the Proposal would not be significant.
Contaminated Land Management Act 1997 (CLM Act)	Section 60 of the CLM Act imposes a duty on landowners to notify the Department of Planning and Environment (DPE), and potentially investigate and remediate land if contamination is above Environment Protection Authority (EPA) guideline levels.

Applicable legislation	Considerations
	A search of the EPAs Contaminated land record of notices on 25 October 2023 did not indicate the presence of any registered contaminated site within 1 km of the Proposal Area (Appendix F).
National Parks and Wildlife Act 1974 (NPW Act)	The Proposal does not encroach on reserved land under the *National Parks and Wildlife Act 1974*. The proposed works would be limited to paved and asphalted areas. The Proposal would not result in the destruction or damage of any known Indigenous objects. The mitigation measures proposed in Section 6.5 would manage the potential for impacts to unanticipated Indigenous heritage items that may be uncovered during construction.
Protection of the Environment Operations Act 1997 (POEO Act)	The Proposal does not involve a 'scheduled' activity under Schedule 1 of the POEO Act. However, in accordance with Part 5.7 of the POEO Act, CoS would notify the EPA of any pollution incidents that occur onsite. The potential for any pollution events would be managed by measures outlined in the CEMP.
Roads Act 1993 (Roads Act)	The Proposal would require works on St James Road, Macquarie Street and Prince Albert Road, which are regional roads under the care and management of CoS as the relevant road authority. A Road Opening Permit would be obtained from CoS for any work within the public way. A Road Occupancy Licence would be obtained from Transport for NSW's Traffic Management Centre when working within 50 metres of an intersection or when advised by CoS when applying for the Road Opening Permit. Major CBD and city-wide events would be considered when scheduling construction activities and applying for a Road Opening Permit or Road Occupancy Licence. Lead times to make such applications are to be managed by the Service Provider so that any delays from this process are minimised. Any activities and restoration shall comply with *Part B12: Road Opening and Restoration* of the Sydney Street Technical Specifications (CoS, 2023b).
Waste Avoidance and Resource Recovery Act 2001 (WARR Act)	CoS would carry out the Proposal having regard to the requirements of the WARR Act. A site-specific Waste Management Plan would be prepared by the construction contractor.
Crown Land Management Act 2016	The *Crown Land Management Act 2016* provides for the ownership and equal management of parcels of land which are identified as 'Crown Land' under this Act. Some parts of the Proposal (Queen's Square) would be located on Crown Land. Crown Land within Queen's Square is managed by CoS. Table 4 in the *CBD Civic Spaces Draft Plan of Management* identifies permissible uses and development activities within CBD Civic Spaces, which includes Queen's Square (CoS, 2021). Development activities that improve active transport access is a permissible development activity within Queen's Square. As such, no further assessment or licencing is required to carry out the Proposal in relation to Crown Land.

4.3 Local planning policy

4.3.1 Sydney Local Environment Plan 2012

The Proposal is located within the Sydney LGA. Given that the works are exempt development, the Sydney LEP does not apply to the development of the Proposal.

4.3.2 Ecologically sustainable development

The *Environmental Planning and Assessment Regulation 2021* sets out the principles of Ecologically Sustainable Development (ESD) to guide the integration of economic and environmental considerations in decision-making processes. For the Proposal, ESD is to be achieved through the implementation of the following principles:

- The precautionary principle, namely that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
- Intergenerational equity, namely that the present generation should ensure that the health, diversity, and productivity of the environment is maintained or enhanced for the benefit of future generations
- Conservation of biological diversity and ecological integrity should be a fundamental consideration
- Improved valuation, pricing, and incentive mechanisms, namely that environmental factors should be included in the valuation of assets and services.

Section 6.10 includes an assessment of the impact of the Proposal on a range of environmental factors, including greenhouse gas emissions and climate change. Section 7.2 lists mitigation measures to ensure potential risks to the environment are avoided, reduced, or managed.

5.0 Consultation

This Chapter discusses the consultation undertaken to date for the Proposal and that proposed for the future.

5.1 Community consultation

Consultation for the Proposal was carried out between 20 February 2023 and 21 March 2023. This provided an opportunity for stakeholders and the community to review and comment on the proposed design (see Consultation Report - Appendix G). Consultation activities included an online survey and interactive map, two information sessions at Queen's Square, a letter to residents and businesses and a targeted email to businesses.

The purpose of the engagement was to:

- Get feedback on walking and cycling improvements
- Find out about access to properties and how people currently use the area
- Determine if anything had been missed by calling on local knowledge.

Feedback received included:

- The *Sydney Your Say* page was visited 675 times during the consultation period
- The interactive map had 95 comments from 60 people
- 23 email submissions were received
- About 90 people attended the information sessions in Queen's Square.

A summary of key issue themes and CoS's response to community concerns is listed in Table 5-1. For more detailed information on issues raised and CoS's detailed responses see Appendix G.

Table 5-1: Issues and suggestions raised in community engagement

Issue theme	CoS response
Potential conflict between pedestrians and people on bikes.	The Proposal aims to reduce conflict between pedestrians and people on bikes by: • Providing priority cycle lanes across Queen's Square • Line marking to instruct people on bikes to give way to pedestrians • Converting the shared path area near the Queen Victoria statue into a pedestrian only zone • Providing a separate signalised cyclist crossing adjacent to the pedestrian crossing at the St James Road and Macquarie Street intersection • Providing an on-road cycleway on St James Road, from the western end of Prince Albert Road.
Belief that cycleways are not well used.	CoS expect the usage of the proposed cycleway to be at least 2,000 bike trips per day on weekdays.
Concerns over impacts to accessing local businesses.	The Proposal would not be in areas that would block access to local businesses.
Provide clear marking in shared areas.	• The Proposal would provide appropriate and clear pavement markings • Line marking to instruct people on bikes to give way to pedestrians • Converting the shared path area near the Queen Victoria statue into a pedestrian only zone.

5.2 Consultation requirements under the Transport and Infrastructure SEPP

Division 1 of the Transport and Infrastructure SEPP contains provisions for undertaking consultation with local councils and other public authorities prior to the commencement of certain types of development. Division 1 Consultation sets out the requirement to consult with council, State Emergency Service, and/or authorities other than councils (see Section 2.15 of the Transport and Infrastructure SEPP) where it has been identified that a development is not exempt.

Since CoS is the proponent of this Proposal, and because the Proposal is exempt development, the abovementioned consultation would not be required.

5.3 Ongoing consultation

Should CoS determine to proceed with the Proposal, the Proposal team would keep the community, and other key stakeholders informed of the process, identify any further issues as they arise, and develop additional mitigation measures to minimise the impacts of the Proposal, as required.

6.0 Environmental impact assessment

This Chapter provides a description of the likely environmental impacts associated with the construction and operation of the Proposal. For each likely impact, the existing environment is characterised and then an assessment is undertaken as to how this would be affected by the Proposal. Mitigation measures are provided as appropriate.

6.1 Traffic and transport

6.1.1 Existing environment

6.1.1.1 Public transport

The Proposal Area is located near the St James and Martin Place Train Stations, with various forms of public transport being accessible around the Proposal Area. Bus services are available within about 100 m of the Proposal including at:

- Martin Place Station, Macquarie St
- Martin Place Station, Elizabeth St
- St Mary's Cathedral, College St
- St Mary's Cathedral, St Marys Rd.

6.1.1.2 Road and network traffic

A Traffic Modelling Assessment was prepared to assess the performance of the subject intersection and to outline the likely traffic impacts associated with the Proposal (Appendix B). This assessment indicated that the AM and PM road network peak hours occurred between 8.15am and 9.15am and between 5pm and 6pm, respectively. Existing AM and PM peak hour traffic volumes are shown on Figure 6-1 and Figure 6-2, respectively.

The Macquarie Street/St James Road/ Prince Albert Road intersection currently operates under a three-phase arrangement, as shown on Figure 6-3.

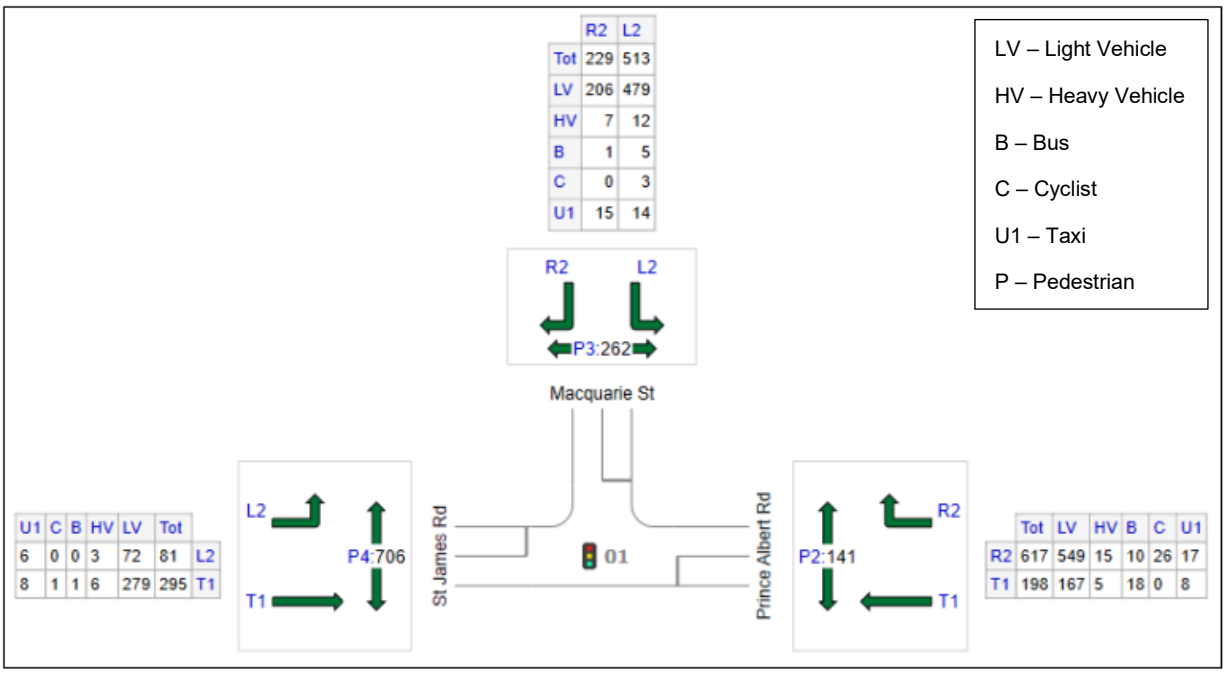

Figure 6-1: Existing AM peak hour traffic volumes

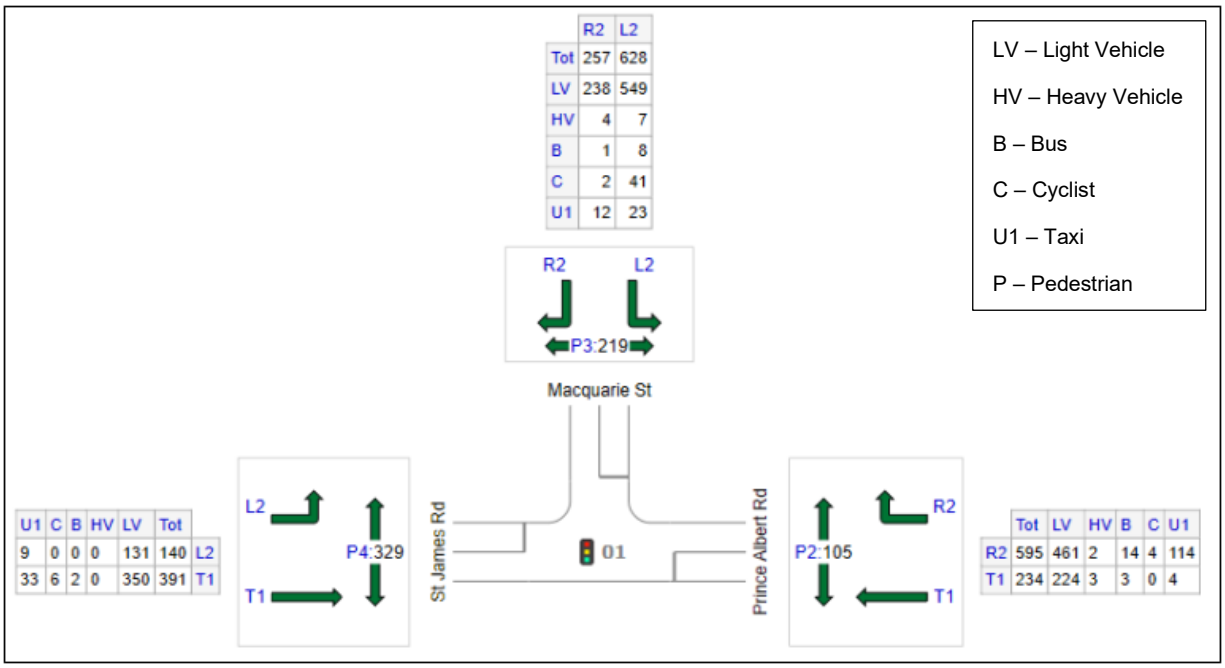

Figure 6-2: Existing PM peak hour traffic volumes

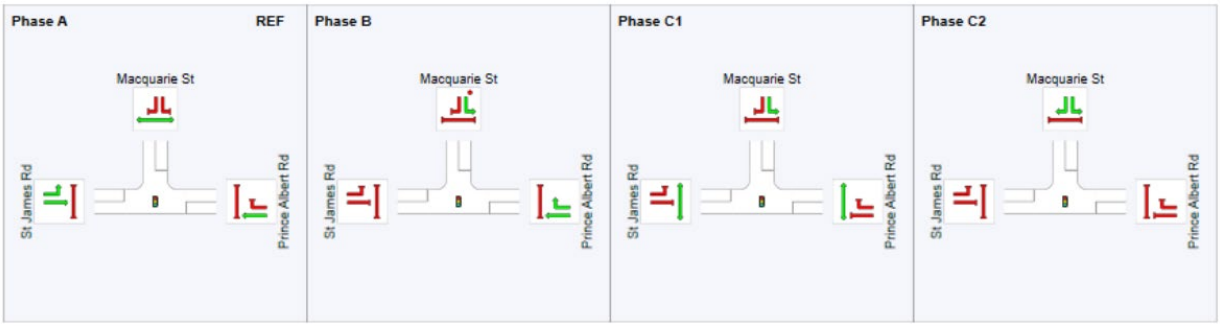

Figure 6-3: Existing phase diagram at the intersection

As part of the Traffic Modelling Assessment, SIDRA modelling was undertaken to determine the performance of the intersection under the operational Proposal scenario. SIDRA modelling utilises vehicle delay as a measure of Level of Service (LoS) of intersection performance. Note that traffic volumes used in this assessment were surveyed in 2022.

This modelling indicated that the intersection currently operates satisfactorily at LoS C during both AM and PM peak hours (Table 6-1).

Table 6-1: Existing (2022) intersection operating conditions

Peak	Approach	Degree of saturation	Average delay (seconds)	95th percentile queue (metres)	LoS
AM	Prince Albert Road	0.858	40.3	112.5	LoS C
	Macquarie Street	0.798	28.9	94.7	LoS C
	St James Road	0.413	36.5	43.4	LoS C
	Overall	0.858	35.2	112.5	LoS C
PM	Prince Albert Road	0.882	41.5	113.6	LoS C

Peak	Approach	Degree of saturation	Average delay (seconds)	95th percentile queue (metres)	LoS
	Macquarie Street	0.928	38.1	161.1	LoS C
	St James Road	0.611	38.1	57.8	LoS C
	Overall	0.928	39.4	161.1	LoS C

6.1.1.3 Cycleways

Currently, there is no formal cycleway within the Proposal Area. People on bikes utilise the road corridor, or shared paths, such as on Prince Albert Road. A shared path also currently passes through Queen's Square. There are no formal line marking within Queen's Square to indicate the shared path or to separate people on bikes and pedestrians. The shared path through Queen's Square links to a cycleway crossing at the intersection of Phillip Street and King Street, from which point a separated cycleway continues eastwards on King Street. A separated two-way cycleway is currently present on the western side of College Street, outside the southern extent of the Proposal Area.

6.1.1.4 Access

Several adjacent administrative, commercial, historical, and religious premises are accessed off Macquarie Street. There are existing driveways providing access to Hyde Park on College Street at the northern end of the existing College Street cycleway, and at the intersection of Prince Albert Road and Macquarie Street, in from of the Major General Lachlan Macquarie Statue.

6.1.1.5 Kerbside use

Kerbside parking is available on the northbound side of Macquarie Street, to the north of the Proposal Area. This parking would not be affected by the Proposal.

Clearways for special events are the primary parking restrictions on Macquarie Street, St James Road and Prince Albert Road within the Proposal Area. Timing for clearway requirements is dependent on the specific special event.

Kerbside parking is not permitted on Prince Albert Road or St James Road within the Proposal Area.

6.1.2 Potential construction impacts

6.1.2.1 Road and network traffic

During construction, traffic flows along Prince Albert Road, Macquarie Street and St James Road would be temporarily disrupted to allow for occupation of the space to build the Proposal, and to allow for construction vehicle access and deliveries of construction materials and equipment. These disruptions would result in temporary delays for vehicles and people on bikes travelling along these roads.

Construction activities could potentially increase road congestion and interfere with the movements of pedestrians due to temporary and intermittent closures of footpaths for construction activities. Partial or full footpath closures may be required and will be determined in subsequent design stages. Where partial closures are required, they will be managed through the CTMP and where full closures are required, appropriate alternative paths will be identified.

Emergency vehicle access, particularly to Sydney Hospital, would be maintained at all times during construction, as would rubbish truck access (as necessary).

Construction of the Proposal would be planned in coordination with TfNSW's Transport Management Centre to ensure that these impacts are minimised. Suitable traffic control measures would be identified in the CTMP and would be developed in accordance with CoS's *Standard Requirements for Construction Traffic Management Plans*.

6.1.2.2 Access

There are several adjacent administrative, commercial, historical, and religious premises along Macquarie Street. During construction there would be potential short-term disruptions of access to and from these properties. This may result in the loss of access to driveways for short periods, such as

during resurfacing works. Building occupiers would be notified in advance of all temporary closures, though access for emergency vehicles will be provided at all times. No permanent closure of any driveway is proposed.

In addition, there would be temporary loss of access to the shared path along Prince Albert Road and St James Road.

Road pavement works would be short term and temporary, and any road closures would be limited to the extent of work area required in any one location. Where possible, at least one lane would be kept open to allow for traffic movement under traffic controller supervision.

Local access impacts would be managed in accordance with the CTMP. As such construction traffic impacts are minor and short-term.

6.1.3 Potential operational impacts

6.1.3.1 Public transport

There would be no change to public transport services and access arising from the operational Proposal. Bus service (504, which utilises College Street) would continue to pass through the Proposal Area and there would be no change to its route, or access to bus stops. Bus services on Elizabeth Street (412, 40, 423, 431, 423X, 438N, 426, 438X, 428, 470, 428X), would not be altered as a result of the operational Proposal).

Access to St James Station would not change.

There are no formal taxi zones within the Proposal Area. However, informal taxi pick up and drop off may still occur within the Proposal Area.

6.1.3.2 Road and network traffic

The operational layout of the Macquarie Street/St James Road/Prince Albert Road intersection would be changed to accommodate the Proposal. These changes include:

- Removal of the through lane on Prince Albert Road
- Reduction of departure lanes from two to one at the intersection on St James Road and Macquarie Street
- Removal of one southbound right turn lane from Macquarie Street onto St James Road.

The proposed operational intersection layout, as modelled in SIDRA, is shown on Figure 6-4.

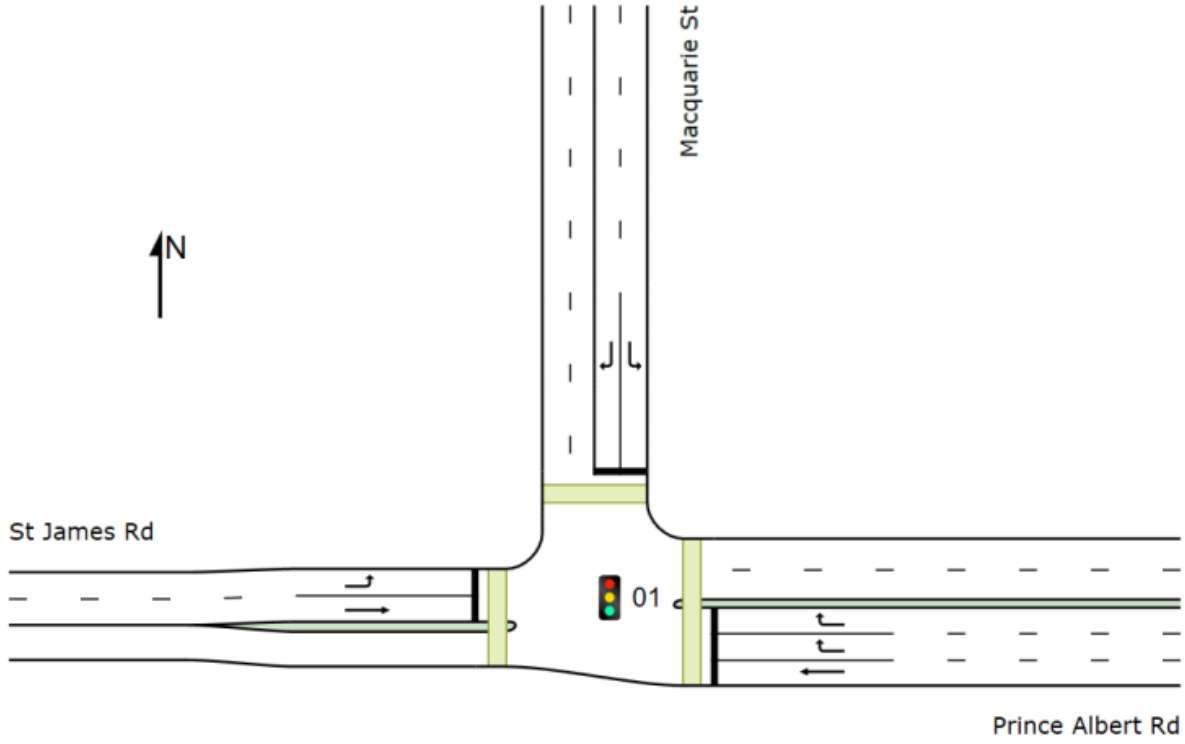

Figure 6-4: Proposed layout at the intersection

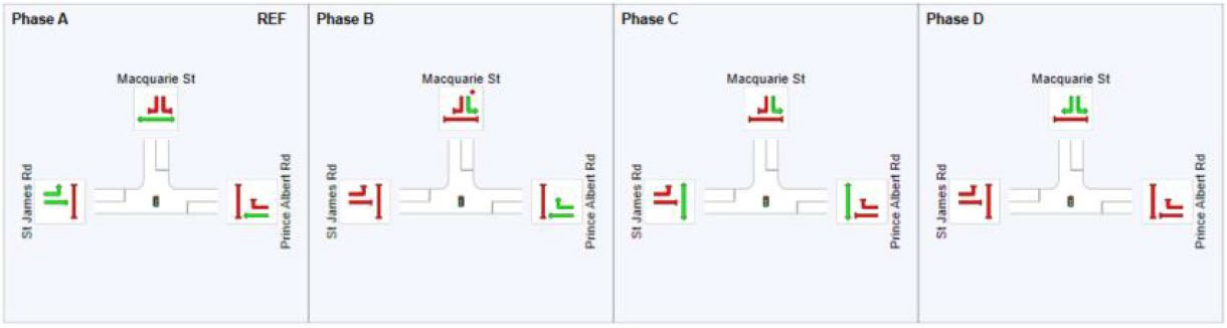

Figure 6-5: Proposed phase diagram at the intersection

Table 6-2 summarises the anticipated operation of the intersection with the Proposal. The through movement on St James Road is expected to experience an average delay of about 49 seconds, which is an increase of approximately 14 seconds compared to the existing scenario.

Overall, modelling indicates that with the Proposal, the intersection would continue operating satisfactorily at LoS C during AM peak hour. During PM peak hour, the overall average delay time is expected to increase from 37.6 seconds to 60 seconds compared to the existing scenario, which results in a LoS change from C to E.

It is noted that the reduction in trafficable lanes on St James Road, and the increased delay, may result in trip redistribution via alternative routes (e.g., via Park Street). This has not been assessed as part of the modelling but may result in reduced impacts at the intersection.

Table 6-2: Intersection operating conditions with the Proposal

Peak	Approach	Degree of saturation	Average delay (seconds)	95th percentile queue (metres)	LoS
AM	Prince Albert Road	0.845	39.9	109.4	LoS C
	Macquarie Street	0.884	30.4	89.7	LoS C
	St James Road	0.878	47.2	111.4	LoS D
	Overall	0.884	37.6	111.4	LoS C
PM	Prince Albert Road	0.988	61.5	143.9	LoS E
	Macquarie Street	0.977	60.3	196.7	LoS E
	St James Road	0.960	57.2	196.6	LoS E
	Overall	0.988	60.0	196.7	LoS E

6.1.3.3 Cycleways

The operational Proposal would result in new separated cycleways within the Proposal Area (the subject of this assessment).

Where the Proposal includes shared paths (i.e., through Queen's Square), the Proposal will incorporate pavement markings to make clear that pedestrians have priority.

A ramp would be provided on College Street near the intersection with St Marys Road to allow people on bikes to leave the cycleway and cross the intersection using a signalised pedestrian onto St Mary's Road.

Physical changes within Queen's Square will be minimal, being limited to line marking only.

6.1.3.4 Pedestrian areas

The Proposal would reprioritise the full width of the shared path around Hyde Park, adjacent to the Proposal, to a pedestrian only path. The proposal would remove the current linemarking indicating that it is a shared path, and cyclists would only be permitted within the dedicated cycleway to be constructed as part of the proposal.

6.1.3.5 Access

There would be no changes to access of nearby properties during operation of the Proposal. The driveway access to Hyde Park in front of the Major General Lachlan Macquarie Statue would be relocated about 0.5 m east of its current position. The proposed median separating the cycleway from the general traffic lanes on Prince Albert Road in front of the existing Hyde Park access driveway would be constructed low to allow continued vehicle access into Hyde Park.

6.1.3.6 Kerbside use

All roads within the Proposal Area are currently no stopping and remain so under the operational Proposal.

6.1.4 Mitigation measures

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

- A CTMP will be prepared and implemented, addressing but not limited to the following:
  - Haulage routes

  - Site-specific traffic control measures (including signage) to manage and regulate traffic movement
  - Measures to maintain pedestrian and cyclist access
  - Requirements and methods to consult and inform the local community of impacts on the local road network
  - Creating temporary parking bays within the Proposal Area for construction-related vehicles, machinery, or delivery of materials. Such bays should be identified prior to the construction of works
  - Encouraging the delivery of any large machinery, which would otherwise disrupt traffic or pose a risk to pedestrians, outside of peak periods. Peak periods, should be confirmed prior to the commencement of construction and following an observational analysis of traffic and pedestrian activity within the Proposal Area
  - Installing temporary barriers between any currently publicly accessible areas and the Proposal Area to avoid pedestrians and any vehicles entering the construction zone
  - A response plan for any construction traffic incident
  - Consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic
- Traffic Control mitigation measures would need to be undertaken in accordance with CoS's *Standard Requirements for Construction Traffic Management Plans* and approved by TfNSW prior to construction
- During construction, appropriate traffic mitigation measures, including temporary speed restrictions, precautionary signs, and provision of temporary barriers and markers to control the proposed work areas and minimise delays for vehicles, people on bikes and pedestrians, would need to be implemented and maintained throughout the construction period
- During construction, access to businesses and other commercial or residential premises along the construction zone would be maintained at all times where possible
- A communication strategy will be implemented that will include establishing information signs and maps to inform people on bikes of changes to cycleways. As part of the strategy, communication signs and material will be strategically located along major cycling routes to clearly communicate proposed and ongoing changes
- A Road Opening Permit will be obtained from CoS for any work within the public way. A Road Occupancy Licence will be obtained from Transport for NSW's Traffic Management Centre when working within 50 metres of an intersection or when advised by CoS when applying for the Road Opening Permit. Major CBD and city-wide events will be considered when scheduling construction activities and applying for a Road Opening Permit or Road Occupancy Licence
- TfNSW's Transport Management Centre will be advised of construction activities to reduce the potential for conflicts between construction activities and major events in the city
- Pavement markings will be used to make clear that pedestrians have priority on the shared path across Queen's Square.

6.2 Noise and vibration

6.2.1 Existing environment

The Proposal would involve construction works both within and outside standard working hours. For the purposes of this noise assessment working hours are defined as shown in Table 6-3, in line with the Interim Construction Noise Guideline (ICNG) (DECC NSW, 2009).

Table 6-3: Working hours

Timing	Hours
Standard working hours	• 7am to 6pm Monday to Friday • 8am to 1pm Saturdays • No work on Sundays or public holidays
Out of hours work (OOHW)	• All hours outside of standard working hours (refer to Section 3.1.2).

To calculate the predicted construction noise impacts, the TfNSW Construction and Maintenance Noise Estimator was used (Appendix I). This noise estimator is a common tool for measuring construction noise impacts for small projects in NSW.

As the Proposal is located within Sydney's CBD the existing street level noise environment is generally very noisy during the day and at night. The major noise sources include traffic (both local and distant), business operations, building air conditioning plant and construction sites. As such an R5 representative noise environment has been selected to represent the background noise levels that would be experienced within the Proposal Area. Background noise levels, and noise management levels are detailed in Table 6-4.

Table 6-4: Estimated background noise levels and noise management levels for an R5 noise environment

Noise area category		R5
RBL or LA_{90} Background level (dB(A))[1]	Day	55
	Evening	50
	Night	45
$LAeq_{(15minute)}$ Noise Management Level (dB(A))[2]	Day	65
	Evening	55
	Night	50
Scenario used to assess potential noise impacts		Paving and asphalting

1. L_{A90} = Background noise level
2. Noise management level for works

Sensitive receivers (to noise and vibration) near the Proposal include, but are not limited to:

- Sydney Hospital
- The Mint
- Hyde Park
- Hyde Park Barracks
- Mercure Sydney Martin Place
- St James Church
- St James Road Court
- Registrar-General's Building
- St Mary's Cathedral
- St James Road Court
- Law Courts Building
- King Street Courts.

6.2.2 Potential construction impacts

6.2.2.1 Vibration

There is the potential for vibration intensive equipment to impact heritage items within and near the Proposal Area. Refer to Section 6.4.2.4 for the detailed assessment, and Section 6.4 for appropriate mitigation measures.

6.2.2.2 Noise

- During standard working hours
  - Moderately intrusive noise within 20 m of the Proposal
  - Noticeable noise within 70 m of the Proposal
- During OOHW
  - Moderately intrusive noise within 20 m of the Proposal
  - Clearly audible noise within 70 m of the Proposal.

Construction noise impacts would be short-term and minor and would generally be carried out during standard working hours. Furthermore, where OOHW are considered necessary, they are unlikely to result in significant impacts to nearby sensitive receivers, such as administrative, retail, religious or office premises that surround the Proposal Area, as most of these premises are expected to be unoccupied outside of standard working hours.

Construction noise would be clearly audible within 70 m of the Proposal. There are no residential or hotel/motel premises within this distance, however, the Sydney Hospital is within 70 m of the Proposal, and so works may cause sleep disturbance.

The following mitigation measures are recommended by the noise estimator tool:

- Notification for receivers within 70 m of the Proposal
- Respite period 1 for receivers within 70 m of the Proposal. This measure requires that out of hours construction works be limited to no more than three consecutive evenings per week
- Duration respite for receivers within 70 m of the Proposal. This measure enables, where it can be strongly justified, increased work duration and number of evenings worked so that the construction works can be completed more quickly. With the implementation of the respite period 1 measure, it would not be considered necessary to also provide duration respite. Furthermore, the works are short term and would progress throughout the site (i.e. works would be generally only be clearly audible from the Sydney Hospital for works conducted in the northern section of the Proposal Area) and predicted noise levels would not be highly intrusive.

It is considered that with the implementation of the recommended noise mitigation measures provided below, potential noise impacts can be managed.

Table 6-5: Anticipated construction noise impacts

Noise catchment distances	Noise management level, dB(A)	Predicted noise levels, dB(A)	Recommended mitigation measure
Standard working hours (day)			
NCA1 (20 m) – moderately intrusive noise (in line of sight)	65	75	N/A during standard working hours
NCA2 (70 m) – Noticeable noise (in line of sight)	65	70	N/A during standard working hours

Noise catchment distances	Noise management level, dB(A)	Predicted noise levels, dB(A)	Recommended mitigation measure
OOHW			
NCA1 (20 m) – moderately intrusive noise (in line of sight)	60	75	Notification
NCA2 (70 m) – clearly audible noise (in line of sight)	60	65	Notification

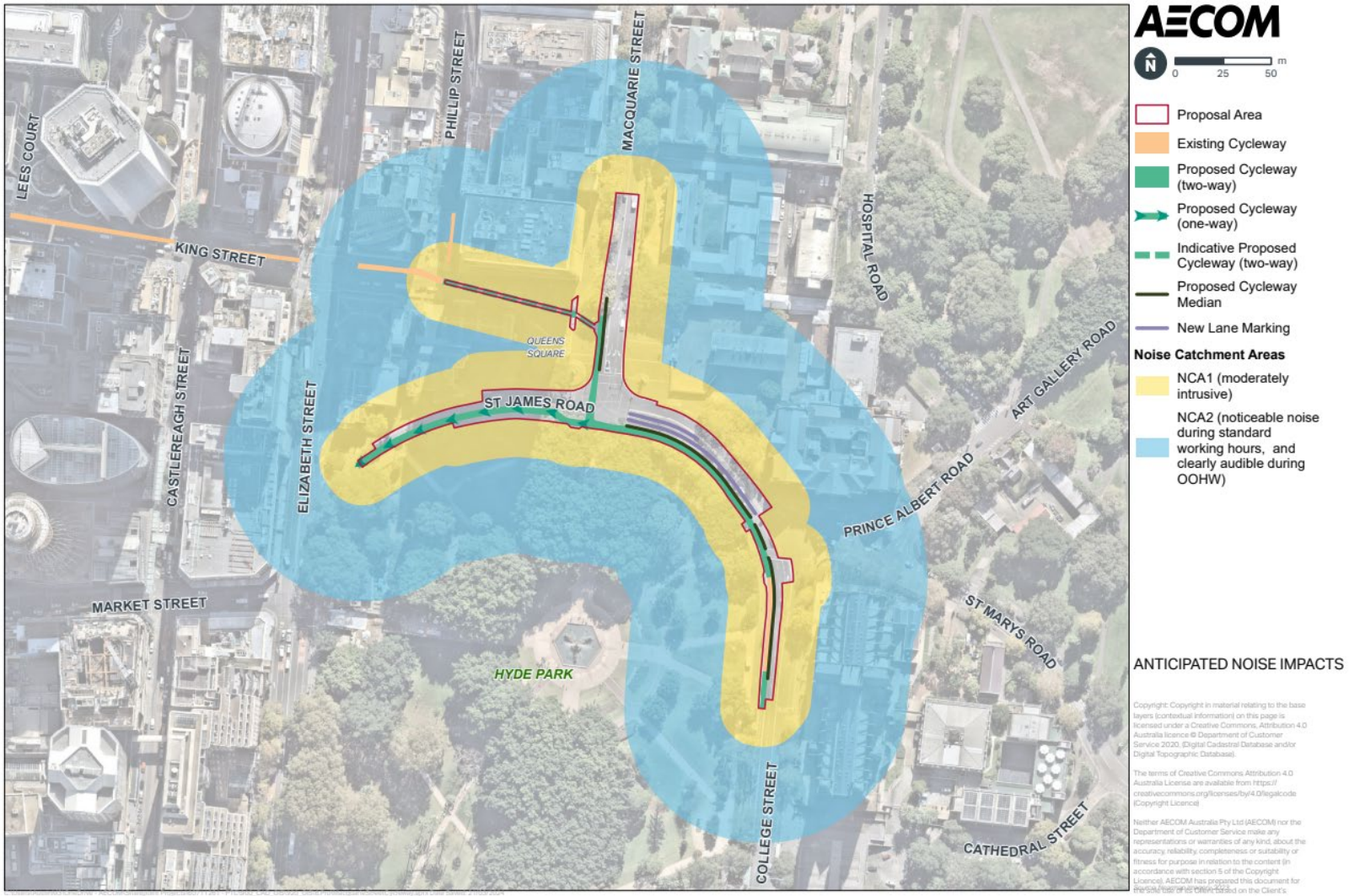

Figure 6-6: Anticipated noise impacts

6.2.3 Potential operational impacts

The Proposal is not anticipated to generate noise or vibration impacts during operation.

6.2.4 Mitigation measures

The following mitigation measures are recommended to minimise noise and vibration impacts:

- Notification for receivers within 70 m of the Proposal. The notification would include details of the Proposal, including its location, timing of construction works and a number to contact for any enquiries or complaints. The notification will be distributed to the community at least five working days before construction commencement
- There are to be no noisy works past 11pm
- Prepare a construction noise and vibration management plan (CNVMP). The CNVMP will be a sub-plan of the CEMP and as a minimum it will:
  - Map the sensitive receiver locations including residential properties
  - A work program developed in consultation with TfNSW that will manage OOHW impacts
  - Include mitigation measures to manage OOHW
  - Include an assessment to determine potential risk for activities likely to affect receivers, including for activities undertaken during and outside of standard working hours
  - Include a process for assessing the performance of the implemented mitigation measures
- Respite period 1 shall be implemented and out of hours construction works shall be limited to no more than three consecutive evening per week. Where work is planned to extend over more than three consecutive nights, potential sleep disturbance impacts should be considered. For the assessment of these potential impacts, the ICNG refers to the NSW Environmental Criteria for Road and Traffic Noise. A community complaints phone number will be established and advertised prior to works commencing and be available during work periods
- Where reasonable and feasible, rubber tracked or wheeled equipment will be used instead of standard, steel tracked plant
- Plant will be turned off when not in use
- The use of road plates will be avoided where reasonable and feasible. If their use is necessary, they will be properly installed and maintained
- The work site will be arranged to minimise the use of movement alarms on vehicles and mobile plant
- Where safety concerns can be adequately managed, the use of squawker, broadband or visual reversing alarms will be considered, rather than traditional beeper styles
- The use of equipment or methods that generate impulsive noise, particularly during OOHW, will be avoided. These include dropping materials from a height, loading/unloading of trucks and metal on metal contact
- A complaint handling procedure will be established and implemented. Where community complaints are received, the CNVMP would be reviewed and mitigation measures implemented to manage noise where feasible
- The construction program will be made available to the community and it would be routinely updated as works progress.

6.3 Visual amenity

Given the small scale of the Proposal, only a visual amenity impact assessment was deemed to be required. It is not anticipated that the Proposal would substantially alter the landscape during construction or operation.

6.3.1 Existing environment

The Proposal Area is located within a densely urbanised environment in Sydney's CBD. This includes Queen's Square and the existing road corridors of Macquarie Street, St James Road and Prince Albert Road.

Macquarie Street is a two-way, dual lane road flanked by consistent lighting schemes and street tree plantings. On the western side of Macquarie Street are the Law Courts Building, St James Church, and Queen's Square. Queen's Square is a paved public space. Prominent within the square is a statue to commemorate Queen Victoria. Queen's Square is bounded by St James Church and the Law Courts Building.

On the eastern side of Macquarie Street are The Mint, Hyde Park Barracks, and a statue of Prince Albert. These buildings provide historical and aesthetic visual amenity within the road corridor.

Prince Albert Road is a two-way dual lane road. To its southwest is Hyde Park, which offers high landscape and visual amenity, and contains consistent heritage lighting schemes, and elaborate plantings that can be viewed from the road carriageway. To the east of Prince Albert Road are the Hyde Park Barracks, Registrar General's Building and St Mary's Cathedral. These surrounding heritage items provide high visual amenity within the road corridor.

St James Road is a three-lane road in the westbound direction, and a two-lane road in the eastbound direction. To the southeast of the road is Hyde Park, which offers high landscape and visual amenity, as described above. A statue commemorating Major General Lachlan Macquarie is located adjacent to the entrance to Hyde Park and can be viewed from the Proposal area. To the north are the St James Road Court, St James Church, Queen's Square, and a statue commemorating Queen Victoria.

6.3.2 Potential construction impacts

The construction of the Proposal would temporarily change the appearance of Macquarie Street, St James Road, and Prince Albert Road, due to the introduction of:

- Construction materials
- Hoarding
- Removed sections of the road
- Operational plant and equipment.

Activities proposed within Queen's Square would be limited to line marking, painting, and relaying pavers on the step bordering the square to form a ramp.

The visual appearance of construction elements, which includes various barriers to restrict public access, would be obvious to both permanent (e.g., residents) and non-permanent (e.g., people working in the area or tourists) visual receivers. However, construction of the Proposal would not form a permanent visual component of the Proposal Area. Furthermore, the works would only partially block views of nearby heritage items and vegetation within Hyde Park.

Given the works would be small scale and temporary and suitable mitigation measures would be implemented, the impact of construction works upon the visual amenity of Macquarie Street, St James Road, and Prince Albert Road is minor.

In addition to the works outlined above, temporary lighting would be required for evening and night-time construction works. Lighting would be generated from lighting towers, as the existing street lighting would not provide the necessary light for works to be carried out safely and appropriately. Lighting towers have the potential to spill light into adjacent areas.

There are no residential buildings directly adjacent to the Proposal. Furthermore, Macquarie Street, St James Road, and Prince Albert Road feature lighting at night in the form of streetlights, traffic lights, and vehicle headlights. Therefore, construction lighting towers would not substantially alter existing conditions. As such, the overall impact of lighting towers is a minor impact.

6.3.3 Potential operational impacts

The visual appearance of the Proposal Area would be permanently changed as a result of:

- Provision of pavement markers or markings, and signage indicating the shared path across Queen's Square
- Conversion of existing trafficable lane on Macquarie Street, Prince Albert Road and St James Road into separated cycleways
- The installation of a new signalised cyclist crossing parallel to an existing pedestrian crossing at the intersection of St James Road and Macquarie Street
- Addition of low-level planting near the signalised cyclist crossing
- Removal and adjustment of existing median on St James Road and College Street with bluestone median
- The installation of a new traffic signal pole on the College Street median
- Extension of the kerb at the corner of St James Road and Macquarie Road junction.

Changes to the visual amenity of the Proposal Area are considered to have a negligible impact as the new elements would fit within the existing urban street environment and are not visually intrusive. Over time, the perceived newness of the Proposal would recede and blend more consistently with unchanged streetscape elements.

Since the cycleway will be at road level, it is considered that it will not cause any additional visual intrusion upon heritage items or their overall setting within or adjacent to the Proposal Area. See Section 6.4.2.1 for further details.

6.3.4 Mitigation measures

The following mitigation measures are recommended to minimise visual amenity impacts:

- Construction lighting would be positioned such that light spill on adjacent properties is minimised and that it is turned off when not in use and safe to do so
- A high level of housekeeping would be maintained by ensuring that the work site is kept in a clean and tidy condition, with appropriate areas designated for storage of waste materials
- Waste materials must be removed from site regularly.

6.4 Non-Indigenous heritage

6.4.1 Existing environment

6.4.1.1 Statement of Heritage Impacts

A SoHI was prepared in August 2023 to evaluate how the Proposal would affect identified heritage values within and adjacent to the Proposal Area (Appendix D). The SoHI was prepared in accordance with the former NSW Heritage Office and Department of Urban Affairs and Planning NSW Heritage Manual (1996) and the Heritage NSW Guidelines for preparing a SoHI (Heritage NSW, 2023). Potential impacts were assessed as being either direct, or indirect.

Direct impacts are those that cause a direct physical adverse impact to a heritage item, such as those caused by machinery or vehicles that damage the fabric of a heritage item or one of its features or elements within its curtilage. These may occur during general construction of road or ancillary elements within the curtilage of a heritage item, or by machinery and/or vehicles in proximity of a heritage item, for example including accidental damage.

Indirect impacts such as vibration, change in use, association or access of a heritage item, or visual impacts may cause an adverse impact to a heritage item.

Impacts are also assigned a level of impact, which is either negligible, minor, moderate, or major. The levels of impacts are described in Table 6-6.

Table 6-6: Level of impact as defined by the Statement of Heritage Impacts

Level of impact	Definition
Negligible	Direct or indirect impacts that do not alter or change the heritage item. No change to the heritage significance of the item.
Minor	Direct or indirect impacts are small or to a small area, or an alteration to a minor feature or element. No loss of significant fabric, changes may be temporary or reversible, overall heritage significance values are intact.
Moderate	Direct or indirect impacts result in a partial loss of an item's significant fabric or setting. Heritage significance of the item may be impacted.
Major	Direct or indirect impacts that result in a substantial loss of fabric of an item or to its setting. Loss is permanent and/or irreversible. Substantial or total loss of heritage significance.

6.4.1.2 Non-Indigenous historical context

Following European settlement, the land comprising the Proposal Area was largely a timbered area. However, the area was soon earmarked as a civic centre following the arrival of Governor Lachlan Macquarie in 1809. In his relatively short governorship, Macquarie worked to execute his vision for Sydney as a thriving town, not just as a penal colony.

By 1816, Macquarie laid out the street now known as Macquarie Street. It was the first straight road in the colony, purpose-built to convey building materials from Sydney Cove to the many building sites along Macquarie Street (Appendix D).

One of the earliest buildings constructed on Macquarie Street was the General Hospital (also known as the "Rum Hospital") (Figure 6-9). The north and south wings have survived and are now used for the NSW Parliament House and The Mint respectively. The central wing was demolished in 1879 and replaced with the current Sydney Hospital building (Appendix D).

As well as the Hospital, by 1821, the Hyde Park Barracks, the Law Courts and St James' Church had been built (all designed by Francis Greenway), and Hyde Park had been named and defined (Figure 6-8). The same year, Macquarie had also laid the foundation stone for a Catholic Chapel (later to become St Mary's Cathedral) on the southern edge of Hyde Park (Figure 6-8). The location of these buildings was important: they abutted the Governors' Domain at one end, and Hyde Park (a park dedicated specifically for the recreational use of the people) at the other.

6.4.1.3 Heritage significance

A site visit was undertaken by AECOM's Senior Heritage Consultant, Deborah Farina, on 3 August 2023, inspecting the Proposal Area and the heritage items.

6.4.1.3.1 Items within and adjacent to the Proposal Area

There are local (Figure 6-7), state (Figure 6-8), national (Figure 6-9) and world (Figure 6-10) heritage items within and adjacent to the Proposal Area. There are four heritage items within the Proposal Area, which are described in Table 6-7, and six items adjacent to the Proposal Area, which are described in Table 6-8.

Table 6-7: Heritage significance of non-Indigenous heritage items within the Proposal Area

Item name	Heritage significance
Governors' Domain and Civic Precinct	This item is listed on the National Heritage List. *The Precinct is of outstanding heritage value to the nation for its capacity to connect people to the early history of Australia including interactions between Indigenous people and British colonisers. Its ability to demonstrate the historic processes which shaped Australia's civic institutions, democratic progress and the physical character of our cities, which were set in train from the early colonial period in the Sydney colony, is outstanding. In particular, the Precinct's ensemble of buildings, parks and gardens tell us about important events in the establishment of early Parliamentary forms of*

Item name	Heritage significance
	government, the establishment of the Supreme Court and aspects of the history of suffrage (Commonwealth of Australia, 2021).
Hyde Park Barracks	Hyde Park Barracks is listed on the World, National, State and local heritage registers for its role in early accommodation of convicts and as part of Governor Lachlan Macquarie's early civic planning of colonial Sydney. *The property consists of eleven complementary sites. It constitutes an outstanding and large-scale example of the forced migration of convicts, who were condemned to transportation to distant colonies of the British Empire; the same method was also used by other colonial states.* *The site illustrates the different types of convict settlement organised to serve the colonial development project by means of buildings, ports, infrastructure, the extraction of resources, etc. They illustrate the living conditions of the convicts, who were condemned to transportation far from their homes, deprived of freedom, and subjected to forced labour* (UNESCO, 2010).
Queen's Square	Queen's Square is listed as an item of local heritage significance on the Sydney LEP 2012 for its historical and aesthetic significance. *The square is perhaps the earliest example of formal urban design in central Sydney. … Queen's Square is of historical significance as an open space terminating the Macquarie Street boulevard with views of Hyde Park, St James Church, Hyde Park Barracks, The Mint and the former Registrar Generals (Land Titles) Office* (Heritage NSW, 2011).
St James Railway Station Group	This item is listed on the State Heritage Register for its historical significance, its association with JJC Bradfield, its aesthetic and technical significance, its potential for social significance, research potential of the disused tunnels, rarity and representative of a low-scale public building constructed in the inter-War Classical style. *St James Station is of State significance because, along with the Museum, it was the first underground station in Australia and demonstrates the adaptation of the London tube-style station to the Australian situation. The station is well constructed, proportioned and detailed* (Heritage NSW, 2010).

Table 6-8: Heritage significance of non-Indigenous heritage items adjacent to the Proposal Area

Item name	Heritage significance
Hyde Park	Hyde Park is listed on the State Heritage Register *as public land that has influenced the development of Sydney's layout from as early as 1789, … it is Australia's oldest designated public parkland (1810) and has been continuously used from 1788 for public open space, recreation, remembrance, celebration and leisure. Hyde Park has contributed to the cultural development of the city as a recreational space encapsulating the principles of a Victorian parkland through the use of a hierarchy of pathways and the strategic siting of monuments, statues and built items …* (Heritage NSW, 2022).
The Mint Building	The Mint is listed on the State Heritage Register as a combined item with the adjacent Hyde Park Barracks. The complex is assessed as being of historical significance, of aesthetic significance, of social significance, having research potential and of rarity. *The Mint has been assessed as being of outstanding cultural significance to the state of NSW for its association with the formative phases of NSW history, including the development of the colony under Governor Macquarie and its*

Item name	Heritage significance
	increasing wealth and status as it moved towards independence from the mid-to-late nineteenth century… (GML Heritage Pty Ltd, 2017:165-167).
St James Church	This item is listed on both the State and local heritage registers for its historical significance, its association with Francis Greenway, Governor Lachlan Macquarie, Commissioner John Thomas Bigge and architect John Verge, the aesthetic and technical quality of its architecture, strong association with the broader Anglican community, archaeological potential and the unique form and construction of the crypt. *St James' Church is the oldest church building in the City of Sydney and has been in continuous use from its consecration on 11 February 1824 to the present. It is a prime example of the architectural work of the Macquarie period, designed by Francis Greenway and built by convict labour. Subsequent changes to the building and its contents exemplify the development of ecclesiastical thought and practice in the Australian context. The church has always formed a significant element within the city of Sydney, as a spiritual and intellectual stimulus and as a centre of musical excellence and community activity. While this contribution has been realised in various ways over its long history, the reality of its work and its essential characteristics have been maintained. The church has long been regarded as a prime element of Sydney's built environment and its conservation is an example of a long history of heritage concern in the community* (Heritage NSW, 1997).
St Mary's Catholic Cathedral and Chapter House	St Mary's Cathedral and Chapter House is listed on the State Heritage Register based on its historical significance, its association with important figures in the history of Catholics in Australia, its English Gothic architecture, its significance to Catholics in Sydney and the broader Catholic community, the rarity of English Gothic architecture and its representation of the broader Catholic community.
Banco Road Court, Sydney Supreme Court House	This early Supreme Court building is listed on the State Heritage Register based on its historic, aesthetic and social significance. *The Sydney Supreme Court building (Banco Court) located at the rear of the Old Registry building facing St James Road has historic significance as part of the Supreme Court complex. The building has aesthetic significance as a fine and largely intact example of an early twentieth century building in the Federation Free Style, and as the only courthouse in the city constructed in this style. The building makes an important contribution to the character of the immediate area, and with its small-town scale blends well with the older buildings in the complex. The building has historic and social significance as part of the site. The site is significant as the location chosen for Macquarie's first Georgian Public School which was modified during construction to accommodate the Supreme Court. Representative of the style as used in a courthouse building and the quality of the interior detailing is representative of the importance given to judicial buildings at the turn of the century* (Heritage NSW, 2001).
Land Titles Office	The Land Titles Office building is listed on the State Heritage Register for its historical significance and its aesthetic qualities. The item is *a well scaled civic building sensitively detailed to complement the adjoining older buildings such as St. Mary's Cathedral. Its carefully composed sandstone facade contributes to the streetscape and satisfactorily terminates the northern end of College Street. It provides a sympathetic component in the progression of civic historical buildings along College Street to Queen's Square. The building has long association with the registration of birth, death and marriages, as well as trademarks, bills of sale, business agents etc. The building stores valuable old registers and other land title documents* (Heritage NSW, 2021).

6.4.1.3.2 Archaeological potential

The SoHI identifies archaeological potential of all heritage items within or adjacent to the Proposal Area, except for the underground St James Railway Station Group. Previous archaeological investigations have been undertaken at The Mint, Hyde Park Barracks and St Mary's Cathedral, however all excavations and any archaeological potential relating to these items are confined to the curtilages of those items.

The national heritage listing for the Governors' Domain and Civic Precinct notes that it contains archaeological evidence of Indigenous occupation, the natural environment (including ecological evidence such as pollen and intact soil profiles relating to the pre-colonisation history of the land), and material culture associated with the first permanent European settlement.

It is noted that Macquarie Street was widened on the eastern side in 1909 and College Street widened in the 1920s (Appendix D). In relation to the widening of Macquarie Street, this would have altered the appearance of The Mint and Hyde Park Barracks in bringing them closer to the street, however, it does not appear to have encroached on their boundaries. It is therefore unlikely that any significant archaeological deposits would remain of either item beneath Macquarie Street. However, it is possible that tram tracks associated with the former tramways may still survive beneath Macquarie Street, or previous street surfaces.

In relation to College Street, it is noted that the widening in the 1920s "…*spoil(ed) the eastern boundary of Hyde Park*" (Appendix D). It is therefore possible that some archaeological deposits beneath College Street relating to the eastern boundary of Hyde Park.

There is no record of St James Road having been widened, but it is known that trams ran along the centre of St James Road and archaeological evidence of the former tram tracks or previous street surfaces may still survive (Appendix D).

Figure 6-7: Local heritage

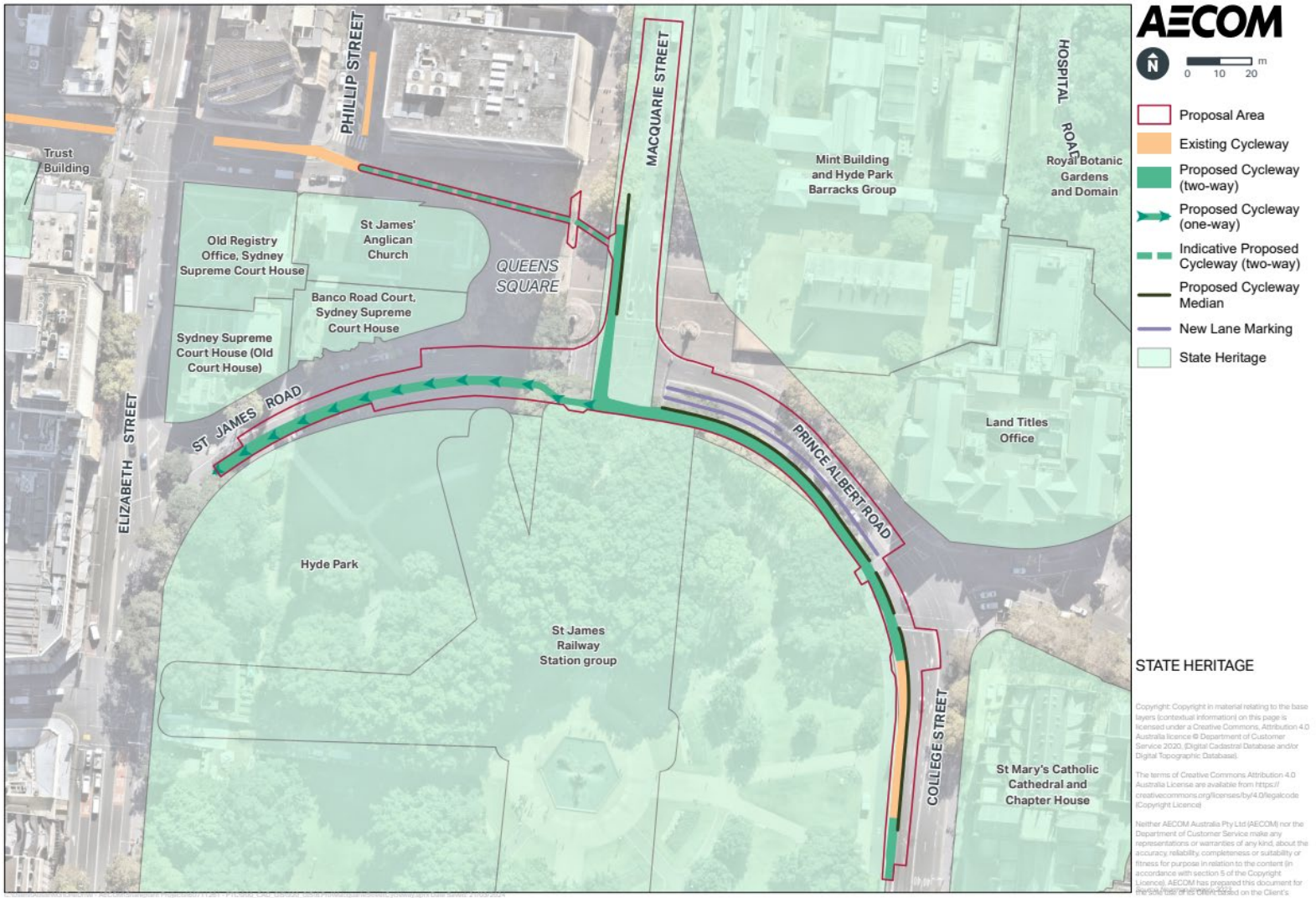

Figure 6-8: State heritage

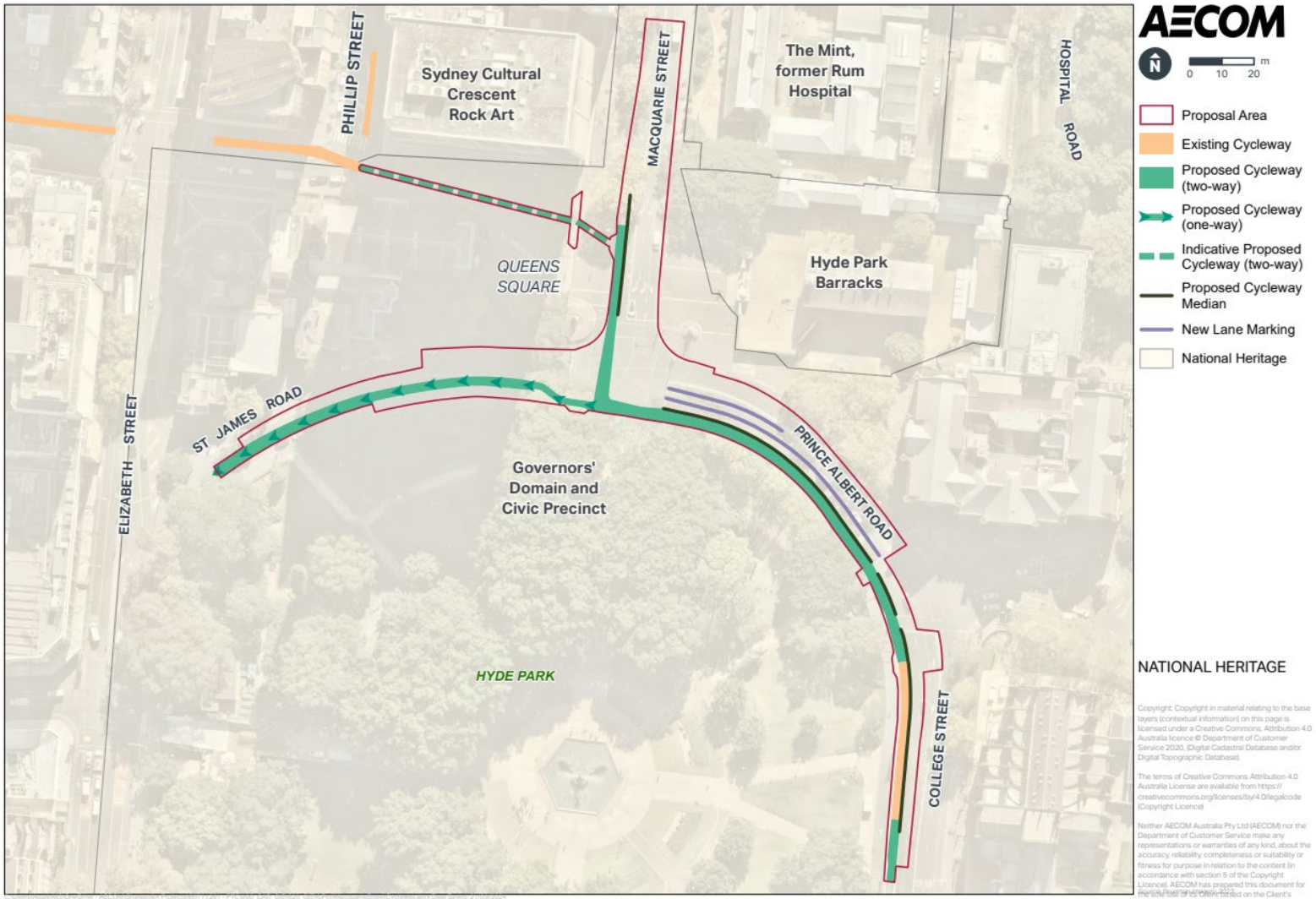

Figure 6-9: National heritage

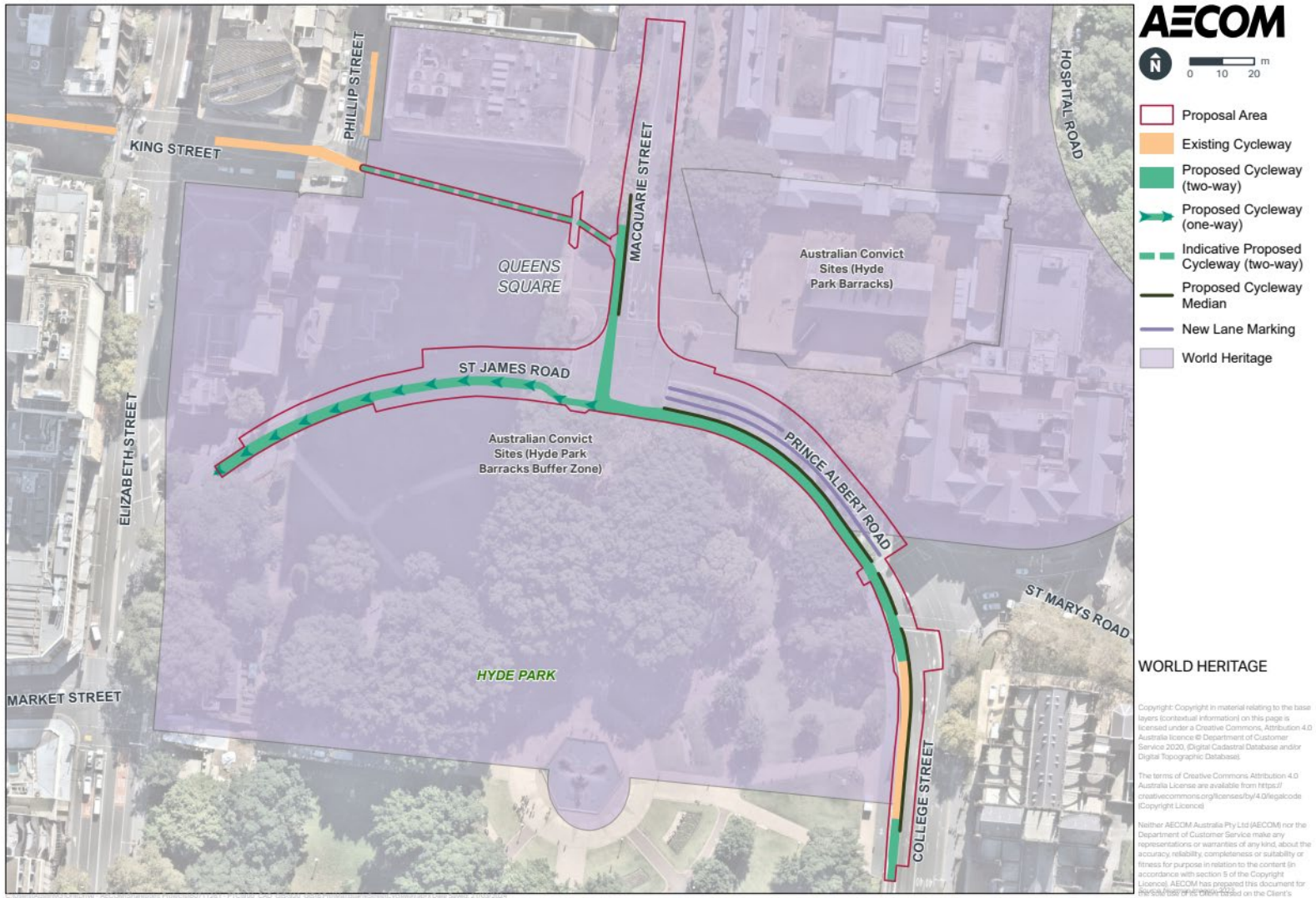

Figure 6-10: World heritage

6.4.2 Potential impacts

To assess potential impacts, the SoHI addressed heritage impact questions posed in the Heritage NSW, *Guidelines for preparing a statement of heritage impact* (Heritage NSW, 2023). The assessment, as guided by these questions, is summarised in Table 6-9.

Table 6-9: Heritage impact assessment

Heritage impact question	Comment
Demolition works	
Do the proposed works include removal of unsympathetic alterations and additions? If so, how does this benefit or impact the heritage item and its significance?	No.
Do the proposed works affect the setting of the heritage item, including views and vistas to and from the heritage item and/or a cultural landscape in which it is sited? Can the impacts be avoided and/or mitigated?	No. Most works are confined to the road corridor. Other ancillary works, such as ramps, would result in no visual impact.
Are the proposed works part of a broader scope of works? Does this proposal relate to any previous or future works? If so, what cumulative impact (positive and/or adverse) will these works have on the heritage significance of the item?	The Proposal is part of the broader Cycleway Program by the CoS. No.
Are the proposed works to a heritage item that is also significant for its Aboriginal cultural heritage values? If so, have experts in Aboriginal cultural heritage been consulted? Has the applicant checked if any other approvals or a separate process to evaluate the potential for impacts is required?	No. As most ground disturbance works will take place within the road corridor, it is unlikely that intact archaeological deposits will be disturbed. Consequently, no Aboriginal Heritage Impact Permit will be required.
Do the proposed works trigger a change of use classification under the National construction code that may result in prescriptive building requirements? If so, have options that avoid impact on the heritage values been investigated?	No.
If the proposed works are to a local heritage item, are the requirements of the development control plans or any local design guidelines that may apply to the site considered?	The Macquarie Street portion of the cycleway crosses through the curtilage of the local heritage listed Queen's Square. The Proposal Area falls within the Central Sydney area covered by Section 5 of the Sydney Development Control Plan 2012 (DCP), and the College Street/Hyde Park Special Character Area of that DCP. The activities associated with the cycleway, however, are not covered by the DCP. In relation to kerbing, the CoS's *Sydney Streets: Technical Specifications* (2019) states that all trachyte and sandstone kerbing must be left in place, "unless otherwise specified by the City's Representative", and all trachyte kerbs will remain the property of the CoS (Council of the City of Sydney, 2019:126). The kerbing within the Proposal area is mostly trachyte, interspersed sporadically with concrete curbs. There is potential for damage to the trachyte kerbing during construction of the ramps, however other

Heritage impact question	Comment
	than the kerb on the corner of Macquarie Street and St James Road, there is no anticipated removal of kerbing proposed. The kerb on that corner is trachyte and requires liaison with the Council of the City of Sydney. Should any other removal of trachyte kerbs be necessary, this should also be done in liaison with the CoS Council representative.
Will the proposed works result in adverse heritage impact? If so, how will this be avoided, minimised or mitigated?	There is no direct impact to any of the heritage items, other than the placement of the cycleway through the Queen's Square curtilage and the realignment of the kerb on the northwestern corner of Macquarie Street and St James Road. However, the significance of this item is historical as an example of an open space and aesthetic for its visual connection with Hyde Park, St James Church, Hyde Park Barracks, The Mint and the Land Titles Office. As the cycleway will not alter this historical open space or its visual connections, it is considered that the construction of the cycleway will not cause an adverse impact to the item. As any ground disturbance for construction of the cycleway will be shallow, it is considered that this will only penetrate modern fill and it is therefore unlikely that any archaeological material will be disturbed.
Works Adjacent to a heritage item or within a heritage conservation area	
Will the proposed work affect the heritage significance of the adjacent heritage items or the heritage conservation area?	No.
Will the proposed works affect views to, and from, the heritage item? If yes, how will the impact be mitigated?	No.
Will the proposed works impact on the integrity or the streetscape of the heritage conservation area	No.

6.4.2.1 Potential direct impacts

There are three items within the Proposal Area:

- Governors' Domain and Civic Centre
- The visual buffer of Hyde Park Barracks
- Queen's Square.

Of these items, only Queen's Square may be affected by direct impacts. Indirect impacts are considered in the sections below.

While the works will take place within the curtilage of the Governors' Domain and Civic Centre, the heritage values of these items relate to the history, archaeological potential, the landscape, and the association with significant individuals in the earliest years of early European colonial history. Given the minimal ground disturbance and the relatively unobtrusive nature of the Proposal, the construction of the cycleway would not impact any of these values.

In relation to Queen's Square, the Proposal works within or adjacent to this item are:

- Construction of the cycleway along Macquarie Street from Prince Albert Road to Queen's Square

- Realignment of the curb on the northwestern corner of Macquarie Street and St James Road
- Signage installation
- Relaying pavers on existing concrete step at the edge of Queen's Square, northwest of the St James Road and Macquarie Road junction, to form a ramp
- Painting and marking of lines.

There will be direct physical impacts to the existing paving surface of Queen's Square through the above activities. There are three main surfaces within Queen's Square. Within the Square, roughly bounded by the Law Courts Building, St James Church and the Macquarie Street entrance to St James Railway Station, the surface is a geometric pattern laid with rectangular "pebblecrete" tiles within larger squares marked with a with smooth stone. Along the western footpath of Macquarie Street, concrete pavers are laid in a herringbone pattern decorated with narrow, light coloured lines of stone every 10 m (Figure 6-11). However, it is noted the heritage values of Queen's Square relate to its historic and aesthetic significance. The physical impacts will therefore not adversely affect the existing heritage significance of Queen's Square. It is also noted that Queen's Square currently operates as a shared path and the Proposal intends to retain this as a shared path through the use of pavement markings and direct cyclists through this area.

Figure 6-11: Queen's Square looking south toward Hyde Park, showing western footpath of Macquarie Street and paving at right (AECOM, 2023)

6.4.2.2 Potential visual impacts

Many of the heritage items within the Proposal Area are of high aesthetic significance and have a high sensitivity to change, both individually and collectively. Many of the individual buildings have a historical connection with the Governors' Domain and Civic Precinct, and collectively make up the aesthetic and visual component of that item. All items have a visual connection with Hyde Park, which enhances the aesthetic significance and setting of each of the items.

In addition, the eastern curtilage of Queen's Square extends to the western curtilage of Hyde Park Barracks to preserve the visual context between the two. However, as the cycleway will be at road level, it is considered that it will not cause any additional visual intrusion and therefore will not cause a visual impact to any of the surrounding heritage items.

6.4.2.3 Potential impacts to archaeological deposits

Although the earthworks will cross through the heritage curtilages of the Governors Domain and Civic Precinct, Queen's Square, St James Railway Station and the visual buffer of The Mint, there is not likely to be any impact to significant archaeological deposits associated with these items.

There is low potential for former road surfaces to be uncovered by earthworks along Macquarie Street, Prince Albert Road, St James Road, College Street and Queen's Square. These surfaces may be either wooden or cobbled. Trams tracks may be present beneath the road surface, as it is known that these once crossed Macquarie Street from King Street.

There is low potential for archaeological deposits to remain in Queen's Square. Furthermore, as excavations are required for construction of the cycleway are shallow, it is likely that ground disturbance will be confined to modern fill and will not disturb any intact archaeological deposits.

6.4.2.4 Potential vibration impacts

Table 6-10 shows the minimum working distances from heritage and other sensitive structures for common construction equipment. It should be noted that these relate to structures and items such as the visual buffer of Hyde Park Barracks, Queen's Square and Hyde Park will not be impacted. However, some structures within Hyde Park, such as the statues and the Archibald Memorial Fountain may be impacted.

Of the equipment listed in Section 3.1.3, the following has the potential to cause damage to heritage items through vibration:

- Vibratory roller
- Jackhammer
- Wacker packer.

Vibratory roller

As shown in Table 6-10, the safe minimum working distances from heritage items for a vibratory roller is 14 m for a 1-2 tonne roller. Heritage items within 14 m of the Proposal Area include:

- Governors' Domain and Civic Centre
- Visual buffer of Hyde Park Barracks
- Queen's Square
- Banco Road Court, Sydney Supreme Court House
- St James Railway Station.

As noted in Section 6.4, the heritage values of the Governors' Domain and Civic Centre, the visual curtilage of Hyde Park Barracks and Queen's Square are not tied to its fabric. As vibration indirectly impacts the fabric of heritage items, it is considered that the use of a vibratory roller will not cause any adverse heritage impacts to these items through vibration.

However, in relation to Queens Square, while the fabric of the square is generally not of heritage significance, the statue of Queen Victoria is considered a contributory element to the aesthetic heritage values, and this may be impacted by vibration caused during construction. It is recommended that the mitigation measures outlined above be followed in the vicinity of the statue.

In relation to St James Railway Station, the depth of one of the underground tunnels beneath Macquarie Street is between 7.5 and 8.5 m below the current road surface. The use of the vibratory roller is therefore within the minimum safe working distance for this type of plant and its use has the potential to cause structural damage to the underground tunnel. In relation to structures within Hyde Park, a statue of Lachlan Macquarie at the Macquarie Street entrance to Hyde Park is within the 14 m buffer and may also be affected by vibration intensive machinery. It is recommended that the mitigation measures outlined below be followed in the vicinity of these heritage items.

In relation to Banco Road Court, Sydney Supreme Court House, this item is located approximately 11-13 m from vibration intensive machinery works. It is recommended that the mitigation measures outlined below be followed in the vicinity of this item.

In relation to the remaining adjacent built heritage items, these are located more than approximately 20 m from the proposed cycleway alignment. It is therefore recommended that a 1-2 tonne vibratory roller is the maximum size of vibratory roller used to maintain the minimum safe working distance from the heritage items.

Jackhammer and Wacker Packer

As noted in Table 6-10, the minimum safe working distance for jackhammers is 2 m. Given the similarity in percussive movements, the minimum safe working distance for Wacker Packers is assumed to be the same as jackhammers. Given the distance of the heritage items from the Proposal, it is considered that the use of the jackhammers and Wacker Packers will not cause any impacts through vibration.

Table 6-10: Recommended minimum working distances from heritage items

Plant item	Rating/Description Kilonewton (kN) kilograms (kg) tonnes (t) millimetres (mm)	Minimum working distance Cosmetic damage (DIN 4150) Heritage and other sensitive structures metres (m)
Vibratory Roller	< 50 kN (Typically 1-2 t)	14 m
	< 100 kN (Typically 2-4 t)	16 m
	< 200 kN (Typically 4-6 t)	33
	< 300 kN (Typically 7-13 t)	41
	> 300 kN (Typically 13-18 t)	54 m
	> 300 kN (> 18 t)	68 m
Small Hydraulic Hammer	(300 kg - 5 to 12 t excavator)	5 m
Medium Hydraulic Hammer	(900 kg – 12 to 18 t excavator)	19 m
Large Hydraulic Hammer	(1600 kg – 18 to 34 t excavator)	60 m
Vibratory Pile Driver	Sheet piles	50 m
Pile Boring	≤ 800 mm	4 m
Jackhammer	Hand-held	2 m

6.4.2.5 Conclusion

It is considered that, as the cycleway will require shallow excavations, it will result in negligible direct impacts to Queen's Square. In addition, the shallow excavations will likely be confined to modern fill and therefore have a low potential to impact archaeological deposits.

In relation to visual impacts, once constructed, the cycleways will be at grade with existing road and pavement surfaces, and therefore will not cause any adverse visual impacts to any of the surrounding heritage items.

As there is no physical or visual impact to Hyde Park Barracks or the Governors' Domain and Civic Centre, approval is not required despite the Proposal being within the visual buffer of the Hyde Park Barracks and within the Governors' Domain and Civic Centre.

In relation to State heritage, the Proposal Area is outside the curtilage of all State heritage items and will not result in significant impact to any items adjacent to the Proposal Area. However, as the works are located within the minimum safe working distance for vibratory rollers and other equipment for St James Station beneath Macquarie Street and the statue of Major General Lachlan Macquarie at the Macquarie Street entrance of Hyde Park, the mitigation measures outlined below should be implemented to minimise the potential for damage to these items. As such, the Proposal would be able to proceed with caution without a permit.

It is concluded that the Proposal will not cause any significant adverse impacts on any of the heritage items.

6.4.3 Mitigation measures

The following mitigation measures are recommended to minimise impacts to Non-Indigenous heritage:

- An Unexpected Finds Protocol should be developed and included in the CEMP for the Proposal. This should specify responses to finds of any wooden or cobbled former road surfaces if they are uncovered during construction. At a minimum, work should cease in the vicinity of the feature, a qualified archaeologist should be contacted to assess the significance of the feature and appropriate management undertaken before work recommences
- The removal of any trachyte kerbs should only be done in liaison with the CoS Council Representative
- For the Banco Road Court, Sydney Supreme Court House on St James Road, St James Railway Station Group, the statue of Queen Victoria in Queens Square and the statue of Major General Lachlan Macquarie at the Macquarie Street entrance to Hyde Park, it is recommended that measures be implemented to minimise impacts caused by vibration in the vicinity of these two items. These may include having rollers on static mode and selecting machinery with lower vibration levels
- The built elements of Hyde Park (including the paving, retaining walls, plantings, and the Major General Lachlan Macquarie Statue) should be fenced off to protect against accidental damage
- It is recommended that all contractors and subcontractors be informed during induction/toolbox of the potential for non-Indigenous heritage to be uncovered during works. All contractors and subcontractors should be made aware of the Unexpected Finds Protocol and their responsibility to follow it during works
- Comply with minimum working distances for vibration intensive plant
- If compliance with minimum working distances is not possible, then vibration monitoring will be undertaken. If readings are below vibration thresholds, then work will continue with caution
- If readings exceed vibration thresholds, then a change of process will be implemented to reduce vibration
- If vibration thresholds cannot be complied with, it is recommended that a structural engineer be engaged to provide advice.

6.5 Indigenous heritage

6.5.1 Existing environment

The Gadigal people of Eora Country are the Traditional Custodians of the Sydney metropolitan area where the Proposal is located. The Gadigal people are likely to have lived within the area for at least 60,000 years, actively managing and living throughout the area that is now called Sydney, conducting activities such as, but not limited to, agriculture, aquaculture, trade and passing on knowledge to new generations.

A basic search of the AHIMS website on 25 October 2023, indicated that there are no known or registered Indigenous heritage sites or items within or nearby the Proposal Area (see Appendix E).

The Proposal would be located within the Sydney Cultural Crescent Rock Art, which is an item of National Heritage Significance.

6.5.2 Potential construction impacts

The Proposal is not anticipated to impact Indigenous heritage during construction. There are no known or registered Indigenous heritage sites within or nearby the Proposal. The Proposal is within an existing and disturbed road corridor. The Proposal would only involve excavation to a depth of about 1 m, and so it is unlikely for archaeological items to be uncovered during construction. The AHIMS search did not identify any known or registered Indigenous heritage sites or items within the Proposal Area.

6.5.3 Potential operational impacts

The Proposal is not anticipated to affect Indigenous heritage during operation.

6.5.4 Mitigation measures

The following mitigation measures are recommended to minimise impacts to Indigenous heritage:

- All construction staff will undergo an induction in the recognition of Indigenous cultural heritage material. This training will include information such as the importance of Indigenous cultural heritage material and places to the Indigenous community, as well as the legal implications of removal, disturbance and damage to any Indigenous cultural heritage material and sites
- In the unlikely event that during works any objects are discovered that are suspected to be Indigenous objects, Heritage NSW must be notified under Section 89A of the NPW Act. Appropriate management and avoidance or approval under a Section 90 AHIP should then be sought if Indigenous objects are to be moved or harmed
- In the unlikely event that human remains are found, works should immediately cease, and the NSW Police should be contacted. If the remains are suspected to be Indigenous, Heritage NSW may also be contacted to assist in determining appropriate management.

6.6 Contamination, landform, geology, and soils

6.6.1 Existing environment

The Proposal is located within a highly disturbed and heavily urbanised area within Sydney. The Proposal Area consists of human-imported fill material, concrete and road base arising from the construction and maintenance of the road corridor. The underlying soil landscape is the Lucas Heights soil landscape, which is generalised as having low erosion potential, and high capability for urban development (Environment NSW, 2021; NSW Government, 2023).

A search of the Environment Protection Authority's (EPA) Contaminated land record of notices on 25 October 2023, did not indicate the presence of any registered contaminated sites within 1 km of the Proposal (Appendix F).

A search of the Central Resource for Sharing and Enabling Environmental Data in NSW (SEED) website on 25 October 2023 indicated Class 5 acid sulfate soils (ASS) within the Proposal Area (NSW Government, 2023). ASS and potential acid sulfate soils (PASS) are not typically found in Class 5 areas.

6.6.2 Potential construction impacts

6.6.2.1 Soil disturbance, erosion, and sedimentation

The Proposal would involve excavation of the existing road surface layer. If not adequately managed, these works could result in the following risks:

- Erosion of exposed soil and stockpiled materials
- Dust generation from excavation and vehicle movements over exposed soil
- Increase in sediment loads entering the stormwater system and/or local runoff.

The risk of the above impacts occurring is increased during high wind, rainfall events and on work situated on or adjacent to downward sloping surfaces. These risks have implications for other environmental factors including biodiversity, water quality and air quality. Where sediment loads in local waterways are increased because of erosion, it would alter the existing water quality conditions, which may result in adverse impacts upon aquatic flora and fauna.

Inadequately covered stockpiles that are not watered-down may result in increased dust in the local area during high wind events. Increased dust in the area surrounding the works may have nuisance impacts upon surrounding receivers.

With no mitigation measures in place, and in inclement weather conditions involving rain and/or high-velocity wind, the impact of those risks would be a temporary, moderate negative impact. However, through the implementation of the mitigation measures listed in Section 6.6.4, despite weather conditions, the risks associated with soil disturbance, erosion, and sedimentation at the Proposal Area would be low.

6.6.2.2 Acid sulfate soils

The Proposal Area has been mapped as containing Class 5 ASS, meaning that the presence of ASS/PASS is unlikely. The presence or otherwise of ASS/PASS within the Proposal Area has not been confirmed through field testing. Given the classification of Class 5 ASS, and the shallow depth of excavation, which is not expected to exceed about 1 m, the potential for exposure would be negligible.

6.6.2.3 Contamination

Excavation also has the potential to expose contaminants within the soil underlying the road surface, which if not appropriately managed, can present a health risk to construction workers and the community. The exposure of contaminants could also pose an environmental risk if they were to enter nearby waterways via stormwater infrastructure.

Potential contamination impacts may arise from the use of fuels, lubricants and chemicals for construction plant and equipment for the Proposal. Fuels, lubricants, and chemicals have the potential to be spilled during construction and transfer offsite to adjacent properties, and/or may contaminate the stormwater system.

The risk of impacts from contamination (if any) on human health and the receiving environment from construction activities would be reduced and managed through the mitigation measures identified below. Further, the extent of potential contamination is unlikely to be significant enough to preclude the Proposal from going ahead, as there would be no change to the existing land use post-development. Overall, the impact resulting from contamination within the Proposal Area would be low.

6.6.3 Potential operational impacts

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. During maintenance, there is potential for contamination to occur as a result of accidental fuel, oil or chemical spills. This potential impact would be mitigated through the implementation of appropriate measures as outlined below.

6.6.4 Mitigation measures

The following mitigation measures are recommended to minimise contamination, landform, geology, and soil impacts:

- Prior to commencement of works, a site-specific Erosion and Sediment Control Plan (ESCP) will be prepared in accordance with the ‘Blue Book’ Managing Urban Stormwater: Soils and Construction Guidelines (Landcom, 2004) and updated throughout construction so it remains relevant to the activities. The ESCP measures will be implemented prior to commencement of works and maintained throughout construction
- Erosion and sediment control measures will be established prior to any site establishment activities and will be maintained and regularly inspected (particularly following rainfall events) to ensure their ongoing functionality. These measures will be maintained in place until the works are complete, and areas are stabilised
- Vehicles and machinery will be properly maintained and routinely inspected to minimise the risk of fuel/oil leaks. Construction plant, vehicles and equipment will also be refuelled offsite, or in a designated refuelling area
- All fuels, chemicals and hazardous liquids will be stored within an impervious bunded area in accordance with Australian Standards and EPA Guidelines

- An appropriate Unexpected Finds Protocol, considering potential contaminants, will be included in the CEMP. Procedures for handling asbestos containing materials, including licensed contractor involvement as required, record keeping, site personnel awareness and waste disposal to be undertaken in accordance with SafeWork NSW requirements
- All spoil to be removed from site will be tested to confirm the presence of any contamination. Any contaminated spoil will be disposed of at an appropriately licensed facility
- All spoil and waste must be classified in accordance with the Waste Classification Guidelines Part 1: Classifying waste (EPA, 2014) prior to disposal
- Hydrocarbons and chemicals such as fuels, lubricants and oils will be stored on-site in dedicated facilities such as secure sheds, containers, storage tanks and proprietary hazardous substance cupboards, and in accordance with the applicable Safety Data Sheet
- In the event of a pollution incident, works will cease in the immediate vicinity and the Contractor will immediately notify the CoS Proposal Manager and the CoS Environmental Officer. The EPA will be notified by CoS if required, in accordance with Part 5.7 of the POEO Act
- Spill kits appropriate to products used on site must be readily available
- Spills of fuel, oil, chemicals, or the like will be cleaned immediately, and the site environmental manager will be notified of the location of the incident, extent of the incident and type of material spilled.

6.7 Air quality

6.7.1 Existing environment

The air quality of Sydney where the Proposal is located is relatively good compared to other urban cities overseas. Concentrations of air pollutants, including carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), Ozone (O_3), particulate matter (PM), and lead, are low and stable and consistently meet the national air quality standards, as of 25 October 2023 (DPE, 2023).

A search of the National Pollutant Inventory on 25 October 2023 indicated that there are no identified sources of pollution within 1 km of the Proposal (DCCEEW, 2023).

Internal combustion engine road traffic would be the main contributor towards local air pollution within the Proposal Area.

Potentially affected receivers within the vicinity of the Proposal Area include places of worship, government buildings, educational facilities and pedestrians and people on bikes.

6.7.2 Potential construction impacts

Temporary air quality impacts that have the potential to occur during construction include minor increases in dust and emissions of CO_2, NO_2, particulate matter, volatile organic compounds and other substances associated with the combustion of diesel fuel and petrol by construction plant and equipment.

Anticipated sources of dust and emissions would come from activities including:

- Removal of existing road surfaces
- Loading and transfer of material from trucks
- Other general construction activities.

The air quality impacts associated with the above activities would be small scale, involving small numbers of machinery, vehicles, and equipment. The area of impact is relatively small, and ground disturbance would be limited to milling and resheeting of the road surface layer. Furthermore, it is not anticipated that the required vehicles, plant, and machinery would generate significant volumes of exhaust emissions, compared to daily traffic flow within and around the Proposal Area. Appropriate mitigation measures would be implemented to manage dust and exhaust emissions associated with construction works.

On this basis the overall significance of air quality impacts associated with the construction of the Proposal is expected to be minor.

6.7.3 Potential operational impacts

The Proposal is not anticipated to have any additional impact on air quality during operation.

6.7.4 Mitigation measures

The following mitigation measures are recommended to minimise air quality impacts:

- Methods for management of emissions will be incorporated into project inductions, training and pre-start/toolbox talks
- All plant, machinery and vehicles will be regularly checked and maintained in a proper and efficient condition and will be turned off when not in use, and not left idling
- Where possible, all construction plant and machinery should be fitted with emission control devices complying with Australian Design standards
- To minimise the generation of dust from construction activities, the following measures will be implemented:
    - Apply water (or alternate measures) to exposed surfaces (e.g., stockpiles, hardstand areas and other exposed surfaces)
    - Cover stockpiles when not in use
    - Appropriately cover loads on trucks transporting material to and from the construction area and securely fix tailgates of road transport trucks prior to loading and immediately after unloading
    - Prevent mud and dirt being tracked onto sealed road surfaces.
    - Stop any dust generating works during periods of high wind.

6.8 Biodiversity

6.8.1 Existing environment

The Proposal is located within Sydney's CBD, which is heavily urbanised and dominated by high-density urban development. The Proposal Area is mostly paved. There are two street trees adjacent to the Proposal Area on Macquarie Street, in front of the southwestern corner of the Law Courts Building. There are also two Moreton Bay Figs (*Ficus macrophylla*) located in front of the Hyde Park Barracks, outside of the Proposal Area, which are listed as State Significant for their group significance in terms of their visual, aesthetic, and historic values.

The Proposal Area on St James Road and Prince Albert Road is also adjacent to the northern boundary of Hyde Park. Trees within Hyde Park are significant trees under the State Heritage Register, and include:

- Hills Weeping Fig (*Ficus microcarpa* var*. hillii*)
- Moreton Bay Fig (*Ficus macrophylla*)
- Port Jackson Fig (*Ficus rubiginosa*)
- Hoop Pine (*Araucaria cunninghamii*)
- Cook Pine (*Araucaria columnaris*)
- Queensland Kauri Pine (*Agathis robusta*)
- Indian Chir Pine (*Pine roxburghii*).

Desktop searches of the NSW SEED database on 25 October 2023 indicated that there are no native Plant Community Types (PCTs) or Threatened Ecological Communities (TECs) within the Proposal Area (NSW Government, 2023).

A search of the NSW BioNet database was undertaken on 25 October 2023 (Appendix J). The search returned 3,221 records for 79 species listed under the BC Act and/or the EPBC Act. The closest species identified near the Proposal Area (within 200 m) are summarised in Table 6-11.

Table 6-11: BioNet results closest to the Proposal

Scientific name	Common name	BC Act listing	EPBC Act listing
Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	Not listed
Ninox strenua	Powerful Owl	Vulnerable	Not listed
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Vulnerable
Haliaeetus leucogaster	White-bellied Sea Eagle	Vulnerable	Not listed
Myotis macropus	Southern Myotis	Vulnerable	Not listed
Phascolarctos cinereus	Koala (2011/2012)	Endangered	Endangered

The Large Bent-winged Bat primarily roosts in caves, but can also use storm-water tunnels, buildings, and other man-made structures (DPE, 2019a). There is the potential for areas adjacent to the Proposal Area to support the Large Bent-winged Bat, given the presence of buildings. Furthermore, various bat species are known to have adapted to urban environments.

It is highly unlikely that the Powerful Owl would inhabit the Proposal Area or be in proximity to the Proposal Area. The Powerful Owl usually inhabits woodlands and forests, and prey on small marsupials (DPE, 2022a). The Proposal are does not support the general habitat requirements of this species.

The Grey-headed Flying-fox usually inhabits rainforests, woodlands, heaths, and swamps (DPE, 2020a). Roosting camps are commonly found in gullies, close to water, and in vegetation with a dense canopy. The Grey-headed Flying-fox and other fauna that are adapted to urban environments may utilise street trees within the Proposal Area.

The White-bellied Sea Eagle is generally found in areas near open water (DPE, 2019b). Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest. Its breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Whilst the Proposal Area is near the Sydney Harbour and its coastline, the Proposal Area itself does not support relevant foraging or breeding habitat for this species.

The Southern Myotis is known to roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage (DPE, 2020b). There is the potential for areas adjacent to the Proposal Area to support the Southern Myotis, given the presence of buildings, and trees within Hyde Park.

The Koala inhabits eucalypt forests and woodlands (DPE, 2022b). Their diet is predominantly made up of native *Eucalypt* species. It is extremely unlikely that the Proposal Area or surrounding area would support the habitat requirements of the Koala.

6.8.2 Potential construction impacts

Construction of the Proposal would be limited to within an existing road corridor and would not require the removal of trees or any other vegetation. Furthermore, excavation would be shallow and limited to removing the surface layer of the road surface, so it is unlikely that tree roots would be encountered or damaged. Therefore, construction of the Proposal would not directly affect native flora or ecological communities.

Noise and light impacts associated with construction of the Proposal may cause low level temporary disturbance to fauna inhabiting vegetation adjacent to the Proposal Area. However, as discussed in Sections 6.2 and 6.3, noise and lighting impacts would be minimal, temporary and would not be substantially different to the existing surrounding environment.

6.8.3 Potential operational impacts

The Proposal is not anticipated to result in further impacts to biodiversity during operation.

6.8.4 Mitigation measures

The following mitigation measures are recommended to minimise biodiversity impacts:

- Trees adjacent to the Proposal Area will be protected through the following protection mitigation measures:
  - Tree protection would be undertaken in line with *AS 4970-2009 Protection of Trees on Development Sites* and would include exclusion fencing of tree protection zones (TPZs)
  - During any trenching or excavation works, the use of mechanical equipment must stop if tree roots greater than 50 mm diameter are encountered. Approval must be sought from the CoS street tree coordinator to cut any root greater than 50 mm diameter. Excavation would be done by hand, or other approved non-destructive methods in any area known to, or suspected of having roots larger than 50 mm diameter
  - Fencing should be erected before any machinery or materials are brought onto the site and before commencement of works. Once erected, the protective fencing should not be removed or altered without approval from the CoS street tree coordinator
  - Each tree trunk and any major branches within the work area is to be wrapped with hessian or similar material to limit damage, then space planks at 100 mm intervals, and fixed against the trunk with tie wire, or strapping. The truck protection shall not be fixed to the tree in any instance, or in any fashion, for example, no nails or screws are to be used
  - Where it is determined that existing kerb may be damaged by the proposed works, and they are adjacent to any street tree, they will not be removed without the approval from the CoS street tree coordinator
  - In the event of any tree to be retained becoming damaged during construction, the Construction Contractor is to immediately notify the CoS Project Manager and the CoS Environmental Officer to coordinate the response which may include contacting an arborist to inspect and provide advice on remedial action, where possible
- The CEMP should include an Unexpected Finds Protocol that outlines the roles and responsibilities where unexpected threatened flora or fauna is identified during any works within the Proposal Area
- Should the design refinements or onsite works determine the need to remove or trim any additional trees, which have not been identified in the REF, the Construction Contractor is required to complete a CoS Tree Removal Application Form and submit it to CoS for approval.

6.9 Hydrology and water quality

6.9.1 Existing environment

6.9.1.1 Hydrology

The Proposal Area is located within the Sydney Harbour catchment and is in an area where soils have been heavily modified by urban development. The Sydney Harbour catchment is highly urbanised and contains a high proportion of impervious surfaces.

Parts of the Proposal Area (Macquarie Street and the intersection of Macquarie Street and Prince Albert Road) are located within the CoS floodplain catchment (CoS, 2016). Flood modelling indicates that the Proposal Area within the floodplain may be subject to:

- A low hazard risk of flooding during probable maximum flood (PMF) events
- A low hazard risk of flooding during 1% annual exceedance probability (AEP) flood events.

6.9.1.2 Water quality

The quality of runoff that drains to Sydney Harbour is generally poor, and is exacerbated by increasing coverage of impervious surfaces. Stormwater from the urban catchment is generally not treated (except for gross pollutants in some locations). Common urban stormwater pollutants within the CBD include

gross pollutants, sediments and suspended solids, nutrients, toxic organics, heavy metals, and hydrocarbons.

6.9.2 Potential construction impacts

6.9.2.1 Hydrology

Part of the Proposal Area is located within the CoS floodplain catchment. Modelling indicates that there is a low hazard risk of the Proposal experiencing flooding during PMF and 1% AEP flood events. Construction of the Proposal would not occur during heavy rain events and is anticipated to be short term. The risk of flooding to construction activities, and erosion and sedimentation impacts associated with flooding, are anticipated to be minor.

6.9.2.2 Water quality

Construction has the potential to result in impacts to surface water quality should excavated materials enter a local stormwater system. Impacts may include:

- Accidental spills of fuels, oils or other chemicals from construction vehicles or equipment
- Sediment from excavated and disturbed areas and stockpiles, generated during rainfall events
- Release of hazardous materials due to wind or water erosion of contaminated spoil/fill materials.

Spills and leaks would be managed by maintaining equipment and conducting activities with the potential to cause a spill in a safe manner. Potential impacts on surface water quality during construction would be similar to those experienced for other urban construction projects and are considered manageable with the application of mitigation measures.

6.9.3 Potential operational impacts

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

6.9.4 Mitigation measures

The following mitigation measures are recommended to minimise hydrology and water quality impacts:

- Temporary drainage or drainage diversions will be installed so that stormwater function is not impeded during construction
- An Erosion and Sedimentation Control Plan (ESCP) will be prepared in accordance with the Landcom *Managing Urban Stormwater, Soils and Construction Guidelines* (the Blue Book) prior to construction
- Any material deposited onto pavements would be swept and removed at the end of each working shift and prior to rainfall
- Fuels, oils, and other chemicals would not be stored in the vicinity of the construction site wherever possible
- Emergency wet and dry spill kits would be kept on site at all times and all staff would be made aware of the location of the spill kit and trained in its use
- Disturbed surfaces would be compacted and stabilised in anticipation of any heavy rain events to reduce the potential for erosion
- Works are not to be carried out during heavy rain events.

Relevant mitigation measures are also provided in Section 6.6.

6.10 Climate change and greenhouse gas emissions

6.10.1 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.

Sydney may be affected in the 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.

Impacts associated with extreme heat include compromising the structural integrity of road and pavement surfaces, which may cause heat stress to pedestrians, people on bikes and landscaped vegetation.

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.

6.10.2 Greenhouse gas emissions

An increase in greenhouse gas emissions, primarily CO_2, would be expected during construction of the Proposal from exhaust emissions from construction machinery and vehicles transporting materials and personnel.

Due to the small scale of the Proposal and the short-term temporary nature of the individual construction works, it is considered that greenhouse gas emissions resulting from the construction of the Proposal would be minimal. Furthermore, greenhouse gas emissions generated during construction would be managed through the implementation of the mitigation measures detailed in Section 6.7.

Once operational, the Proposal may result in an increase in use of active transport and a relative decrease in use of private motor vehicles by people travelling around the city. This modal shift in transport usage may result in a reduction in fuel consumption by vehicles and therefore a corresponding relative reduction in associated greenhouse gas emissions. This change would be small, though through the contribution of the Project towards the wider Sydney cycling network, may encourage further uptake of sustainable transport options.

6.11 Waste

6.11.1 Existing environment

The waste regulatory framework is administered under the POEO Act and the WARR Act as outlined in Section 4.2.4. These acts seek 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 (i.e., 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, CoS encourages the most efficient use of resources and reduction in cost and environmental harm in accordance with the principles of ecologically sustainable development.

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

6.11.2 Potential construction impacts

6.11.2.1 Waste generating activities

There is the potential for waste generation during Proposal construction, arising primarily from the following activities:

- Milling of the existing road surface where the cycleway is proposed

- Removal of the existing median on St James Road, and College Street.

As outlined in Section 3.1.4, earthworks would be minor, and generated from works including the removal of the surface layer of the road overlaying the proposed cycleway alignment.

6.11.2.2 Waste streams

The quantities of waste generated during construction are likely to be minor, based on the nature of the works described in Section 3.1.1. Waste material anticipated to accumulate during construction is classified as 'general solid waste- non-putrescible' (waste that is not susceptible to decomposition).

Waste streams likely to be generated during construction of the Proposal:

- Construction and demolition waste from removal of existing road surface (soil, bitumen, concrete, asphalt)
- Excess construction materials
- Wastewater from wash down areas
- Paper and packaging wastes from materials brought to site
- Redundant erosion and sediment controls.

In relation to the Proposal, there would be few opportunities for reuse of materials given the nature of the activities proposed.

Materials declared unsuitable to be reused would be classified in accordance with the Waste Classification Guidelines (EPA, 2014) and disposed of at an approved recycling or waste disposal facility depending on whether they can be reused or not.

6.11.2.3 Resource use

The materials required during the proposed construction works are not currently in limited supply, although materials such as metals and fuels are considered non-renewable and should be used conservatively. Road pavement materials would be sourced from appropriately licenced facilities and from local suppliers, where practical. Where possible, the reuse of existing materials and the recycling of materials would occur.

It is considered that with the implementation of the proposed mitigation measures that the construction of the Proposal would pose a minimal impact regarding the generation and disposal of waste.

6.11.3 Potential operational impacts

The Proposal is not anticipated to result in a significant change or increase in waste generation during operation.

6.11.4 Mitigation measures

The following mitigation measures are recommended to minimise waste impacts:

- A Waste Management Plan (WMP) will be prepared and implemented as part of the CEMP. The WMP will include but not be limited to:
    - Measures to avoid and minimise waste associated with the Proposal
    - Classification of wastes and management options (re-use, recycle, stockpile, disposal) in accordance with the Waste Classification Guidelines (EPA, 2014) and NSW legislative requirements
    - Statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions
    - Procedures for storage, transport, and disposal
    - Monitoring, record keeping and reporting
- The WMP will be prepared considering the WARR Act and Waste Classification Guidelines (EPA, 2014)

- All areas of the construction site would be kept free of rubbish and cleaned at the end of each workday
- Contractors would recycle waste in accordance with the COS's *Leave nothing to waste: Waste strategy and action plan 2017-2030*
- Waste disposed of offsite shall be taken to a waste facility that is licenced under the POEO Act to receive wastes of that type
- The resource management hierarchy principles of the WARR Act would be adopted as follows:
  - Avoid unnecessary resource consumption as a priority
  - Resource recovery (including reuse of materials, reprocessing, recycling, and energy recovery)
  - Disposal is undertaken as a last resort.

6.12 Socio-economic impact

6.12.1 Existing environment

Population and growth

The Proposal is located within the suburb of Sydney. In 2021, the estimated resident population of the suburb of Sydney was 16,667. The population is relatively young, with the median age being 32 years old. According to the Australian Bureau of Statistics (ABS), approximately 58.6% of residents had no registered vehicles, and 32.6% had one. Around 17.7% of the population walked to work, and 8.7% travelled to work by car or as a passenger.

The population is highly educated, with 49.1% having attended some kind of tertiary education. About 40% of people worked from home in 2021. It is likely that the COVID-19 pandemic influenced the high percentage of people working from home.

The population is diverse, with 92.7% of the population identifying as an ethnicity other than Australia (ABS, 2021).

Social infrastructure

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

The suburb of Sydney provides a wide range of community services and facilities catering for residents and commercial and industrial uses. Surrounding land uses retail and commercial centres, places of worship, education facilities, transport facilities, parks, entertainment precincts, and other services.

Key social infrastructure located near the Proposal Area includes (but is not limited to):

- St James Station
- Hyde Park
- Educational facilities, including St Mary's Cathedral College and Sydney Grammar School
- Recreation and leisure facilities, Cook and Phillip Park, Hyde Park, and The Mint
- Government buildings, including local, and state law courts
- Places of worship, including St Mary's Cathedral and St James Church.

6.12.2 Potential construction impacts

During construction, impacts to the community would be mainly those around traffic (Section 6.1), noise (Section 6.2), visual (Section 6.3) and air quality (Section 6.7). It is considered that the implementation

of the relevant mitigation measures listed in respective sections would be sufficient in managing potential impacts on these matters.

6.12.3 Potential operational impacts

The Proposal would have long-term impacts on the traffic network. Traffic modelling indicates that there would be slight delays at intersections as a result of the Proposal. It is anticipated that the Proposal would have beneficial impacts for cycling and increase the average number of people on bikes within the Proposal Area, during the AM peak.

The Proposal would form part of an expanding cycling network within CoS. It would support a longer-term modal shift 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 would bring with it improvements in air quality, noise, the streetscape, and equality in transport access. Increases in active transport would also bring broader (and more subtle) public health benefits.

The Proposal would also provide benefits for pedestrians, with priority ensured for pedestrians within shared zones in the Proposal Area. These improvements would be particularly important in this area given 17.7% of people walk to work.

6.12.4 Mitigation measures

The following mitigation measures are recommended to minimise socio-economic impacts:

- A designated ‘Community Liaison Officer’ (the CoS’s Project Manager or representative) should be contactable and available to respond to enquiries and address complaints or other issues during the works period
- Development of a Community Liaison Management Plan (CLMP) (by the Construction Contractor prior to construction) which will identify potential stakeholders and methods for consultation with these groups during construction. The plan will also encourage feedback and facilitate opportunities for the community and stakeholders to have input into the Proposal, where possible
- Feedback through the submissions process to facilitate opportunities for the community and stakeholders to have input into the Proposal, where practicable
- Further consultation with local businesses and residents will be undertaken.

Other relevant mitigation measures are listed in Sections 6.1.4, 6.2.4, 6.3.4, and 6.7.4.

6.13 Cumulative environmental impacts

6.13.1 Coinciding projects

The Proposal is one of several projects occurring at the same time across the suburb of Sydney. A search of the CoS project website on 26 July 2023, for proposals across Sydney, and the CoS Development Application portal on 31 of July indicated that seven CoS construction projects and 20 construction projects by other developers are proposed near the Proposal Area (CoS, 2023c; 2023d). A summary of coinciding projects is provided in Table 6-12.

Table 6-12: Coinciding projects

Project	Proposed works	Considered in cumulative impact assessment
CoS projects		
Upgrading the lighting in Hyde Park	• Replace old lighting with new fixtures and warm light LEDs to reduce energy consumption • Simplify the lighting in the lawn areas with a reduced number of mast lights providing a wash of light for safety and night-time events • Allow better metering, monitoring and managing the Hyde Park lighting network	Yes

Project	Proposed works	Considered in cumulative impact assessment
	• Upgrade the power supply in Hyde Park and add new meters.	
New city centre playground Proposal	This Proposal includes a new playground in Cook and Phillip Park. It will include slides, climbing nets, balance beams, steppingstones, swings, a dry creek bed and cubby houses. There will also be plants, an open lawn, shaded areas, and seating.	Yes
Improving Loftus Street, Customs House Lane and Reiby Place, Sydney	• Timed closure of Loftus Street (north of Reiby Place) and Customs House Lane from 11am to 12am (midnight) 7 days a week – outside of these hours, Loftus Street (north of Reiby Place) and Customs House Lane will be open as a 10 km /h shared zone to provide access for servicing and deliveries • A continuous footpath treatment in Reiby Place at its intersections with Loftus Street and Pitt Street • Planting street trees in the new shared zone in Loftus Street.	No, considerable distance from the Proposal
Sydney Town Hall restoration	The building façade is currently being polished, repaired and replaced with local Sydney sandstone during this 2-year project. Conservation work is also being carried out on the historic stained-glass windows.	No, considerable distance from the Proposal
Planning works of Sydney Harbour Bridge cycleway	The project would upgrade access at the northern end of the Sydney Harbour Bridge Cycleway by providing a bike ramp and upgraded cycle path along Alfred Street South, Milsons Point	No, considerable distance from the Proposal
Other developers		
D/2023/564 127-131 Liverpool Street SYDNEY NSW 2000	Alterations to use premises as educational establishment.	No, project is limited to internal fit-out and refurbishment
D/2023/555 429-481 George Street SYDNEY NSW 2000	Alterations including signage to retail premises shop 33 on the lower ground level of the Queen Victoria Building.	No, project is limited to inside the Queen Victoria Building
D/2023/576 429-481 George Street SYDNEY NSW 2000	Fit out of Shop 82 on the Lower Ground Floor of the Queen Victoria Building as a retail premises (Star Phones) with associated business identification signage.	No, project is limited to inside the Queen Victoria Building
D/2023/592 429-481 George Street SYDNEY NSW 2000	Alterations to Shop 14 Lower Ground Level fit out of fashion retail Cloud BLVD.	No, project is limited to inside the Queen Victoria Building
D/2023/646 429-481 George Street SYDNEY NSW 2000	Fit out of Shop 28 on Level 1 of the Queen Victoria Building as retail premises (clothing) and associated business identification signage.	No, project is limited to inside the Queen Victoria Building

Project	Proposed works	Considered in cumulative impact assessment
D/2023/543 188 Pitt Street SYDNEY NSW 2000	Alterations to shop 3016 in Westfield Sydney Shopping Centre including new shopfront and signage to Market Street elevation for “Yves Saint Laurent”.	Yes
D/2023/636 188 Pitt Street SYDNEY NSW 2000	Alterations to Tenancy 2026A for Swarovski and signage.	No, limited to changing the use of a building premise
D/2023/563 76-80 Clarence Street SYDNEY NSW 2000	Change of use of Level 1 SE 102 to recreation facility.	No, limited to changing the use of a building premise
D/2023/492 138 Sussex Street SYDNEY NSW 2000	Use of premises for an educational establishment.	No, limited to changing the use of a building premise
D/2023/505 201-203 Clarence Street SYDNEY NSW 2000	Alterations to use basement as a small bar.	No, limited to changing the use of a building premise
D/2023/573 423-427 George Street SYDNEY NSW 2000	Alterations and additions to the Commonwealth Bank of Australia. The Proposal involves removing a current currency exchange booth with glazing.	No, scope is minor in scale
D/2023/644 412-414A George Street SYDNEY NSW 2000	Alterations to use shop 18 as retail premises.	No, limited to internal fit out, and installation of external signage
D/2023/533 5060 King Street SYDNEY NSW 2000	Relocate street furniture digital advertising panel P1027 to the northeastern corner of King Street and George Street.	No, scope is minor in scale
D/2023/579 86-88 Pitt Street SYDNEY NSW 2000	Alterations to use premises basement level Lot 1 as small bar and signage.	No, limited to internal fit out, and installation of external signage
D/2023/509 9-13 Castlereagh Street SYDNEY NSW 2000	Construction of proposed End of Trip Facilities to Basement Level 1 (B1) and internal alterations to existing End of Trip Facilities on Basement Level 2 (B2).	No, limited to changing the use of a building premise
D/2023/596 4-6 Bligh Street SYDNEY NSW 2000	Alterations to commercial premises including the installation of mechanical ventilation, and air intake and exhaust panels.	No, limited to internal building works
D/2023/607 101-115 William Street DARLINGHURST NSW 2010	Alterations to office premises for use as office and for story telling events.	No, limited to changing the use of a building premise

Project	Proposed works	Considered in cumulative impact assessment
D/2023/146 169 Palmer Street DARLINGHURST NSW 2010	Alterations and additions to residential development including laneway structure.	No, considerable distance from the Proposal
Western Harbour Tunnel	The Western Harbour Tunnel and Warringah Freeway Upgrade would create a western bypass of the Sydney CBD, the Western Harbour Tunnel.	No, considerable distance from the Proposal
Warringah Freeway	The project includes: • Upgrading 4 km of the Warringah Freeway between North Sydney and Naremburn • Improving interchanges with Falcon Street, including a new northbound on ramp at High Street • Improved public transport links, with a continuous southbound bus lane from Miller Street to the Sydney Harbour Bridge • Around 2.5 km of new and upgraded cycleways and pedestrian paths, integrated with public transport networks.	No, considerable distance from the Proposal

6.13.2 Potential construction impacts

Potential temporary construction cumulative impacts include:

- Cumulative increases in construction vehicle traffic on public roads causing congestion and delays
- Cumulative noise and vibration impacts associated with multiple construction work, particularly at night
- Disruption to public transport services
- Disruption to pedestrian amenity and capacity due to footpath restrictions during construction
- Amenity impacts resulting from the implementation of traffic mitigation measures across the CBD
- Cumulative changes to water quality of nearby waterways or groundwater from multiple construction sites
- Construction fatigue from exposure to multiple construction projects over a long period of time.

Management and mitigation measures are identified below to manage potential construction impacts.

6.13.3 Potential operational impacts

The Proposal is one of many proposed cycleway projects under the CoS *Cycle Strategy and Action Plan 2018-2030.* The operational Proposal would connect the existing King Street and College Street cycleways, providing people on bikes with a safer, continuous cycleways within Sydney's CBD. Together with other proposed cycleway projects across the Sydney CBD, the Proposal would contribute towards a modal shift to cycling from private vehicle use. The Proposal and other cycleway projects would support more sustainable methods of travel, promote physical activity, and alleviate traffic issues within the CBD.

6.13.4 Mitigation measures

The following mitigation measures are recommended to minimise cumulative impacts:

- Identify and implement appropriate mitigation measures and management measures to minimise cumulative impacts of construction if any of the projects are constructed at the same time as the Proposal

- The CTMP including Road Opening Permits and Road Occupancy Licenses would be prepared in consultation with CoS and with TfNSW's Transport Management Centre, taking into consideration the cumulative traffic impact of projects on the Sydney road network
- The CEMP would be revised to consider potential cumulative impacts from surrounding development activities as they become known. This would include a process to review and update mitigation measures as new works begin or if complaints are received.

Other relevant mitigation measures are provided in Sections 6.1, 6.2, 6.7, 6.9, and 6.12.

7.0 Environmental management

This Chapter describes how the Proposal would be managed through a CEMP and specific mitigation measures, to reduce the potential environmental impacts throughout detailed design, construction, and operation.

7.1 Construction environmental management plan

A CEMP would be prepared in accordance with the requirements of the CoS Environmental Management System for the construction phase of the Proposal. The CEMP provides a mechanism through which all potential environmental impacts relevant to the Proposal would be controlled and outlines a framework of procedures and controls for managing environmental impacts during construction.

The CEMP would also incorporate several sub-plans, including a:

- CTMP
- CNVMP
- HMP
- ESCP
- WMP
- CLMP.

7.2 Mitigation measures

Environmental mitigation measures proposed are summarised in Table 7-1. These mitigation measures would minimise the potential adverse engineering, environmental and planning impacts of the Proposal described in Chapter 6.0.

Table 7-1: Environmental mitigation measures

Impact	Environmental mitigation measures
Traffic and transport	• A CTMP will be prepared and implemented, addressing but not limited to the following: - Haulage routes - Site-specific traffic control measures (including signage) to manage and regulate traffic movement - Measures to maintain pedestrian and cyclist access - Requirements and methods to consult and inform the local community of impacts on the local road network - Creating temporary parking bays within the Proposal Area for construction-related vehicles, machinery, or delivery of materials. Such bays should be identified prior to the construction of works - Encouraging the delivery of any large machinery, which would otherwise disrupt traffic or pose a risk to pedestrians, outside of peak periods. Peak periods, should be confirmed prior to the commencement of construction and following an observational analysis of traffic and pedestrian activity within the Proposal Area - Installing temporary barriers between any currently publicly accessible areas and the Proposal Area to avoid pedestrians and any vehicles entering the construction zone - A response plan for any construction traffic incident - Consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic

Impact	Environmental mitigation measures
	• Traffic Control mitigation measures would need to be undertaken in accordance with CoS's *Standard Requirements for Construction Traffic Management Plans* and approved by TfNSW prior to construction • During construction, appropriate traffic mitigation measures, including temporary speed restrictions, precautionary signs, and provision of temporary barriers and markers to control the proposed work areas and minimise delays for vehicles, people on bikes and pedestrians, would need to be implemented and maintained throughout the construction period • During construction, access to businesses and other commercial or residential premises along the construction zone would be maintained at all times where possible • A communication strategy will be implemented that will include establishing information signs and maps to inform people on bikes of changes to cycleways. As part of the strategy, communication signs and material will be strategically located along major cycling routes to clearly communicate proposed and ongoing changes • A Road Opening Permit is to be obtained from CoS prior to the commencement of any work within the road corridor • Lead times to make such applications are to be managed by the Service Provider so that any delays from this process are minimised. • Any activities and restoration shall comply with *Part B12: Road Opening and Restoration* of the Sydney Street Technical Specifications (CoS, 2023b). TfNSW's Transport Management Centre will be advised of construction activities to reduce the potential for conflicts between construction activities and major events in the city • Pavement markings will be used to make clear that pedestrians have priority on the shared path across Queen's Square.
Noise and vibration	• Notification for receivers within 70 m of the Proposal. The notification would include details of the Proposal, including its location, timing of construction works and a number to contact for any enquiries or complaints. The notification will be distributed to the community at least five working days before construction commencement • There are to be no noisy works past 11pm • Prepare a construction noise and vibration management plan (CNVMP). The CNVMP will be a sub-plan of the CEMP and as a minimum it will: - Map the sensitive receiver locations including residential properties - A work program developed in consultation with TfNSW that will manage OOHW impacts - Include mitigation measures to manage OOHW - Include an assessment to determine potential risk for activities likely to affect receivers, including for activities undertaken during and outside of standard working hours - Include a process for assessing the performance of the implemented mitigation measures • Respite period 1 shall be implemented and out of hours construction works shall be limited to no more than three consecutive evening per week. Where work is planned to extend over more than three consecutive nights, potential sleep disturbance impacts should be considered. For the assessment of these potential impacts, the ICNG refers to the NSW

Impact	Environmental mitigation measures
	Environmental Criteria for Road and Traffic Noise. A community complaints phone number will be established and advertised prior to works commencing and be available during work periods • Where reasonable and feasible, rubber tracked or wheeled equipment will be used instead of standard, steel tracked plant • Plant will be turned off when not in use • The use of road plates will be avoided where reasonable and feasible. If their use is necessary, they will be properly installed and maintained • The work site will be arranged to minimise the use of movement alarms on vehicles and mobile plant • Where safety concerns can be adequately managed, the use of squawker, broadband or visual reversing alarms will be considered, rather than traditional beeper styles • The use of equipment or methods that generate impulsive noise, particularly during OOHW, will be avoided. These include dropping materials from a height, loading/unloading of trucks and metal on metal contact • A complaint handling procedure will be established and implemented. Where community complaints are received, the CNVMP would be reviewed and mitigation measures implemented to manage noise where feasible • The construction program will be made available to the community and it would be routinely updated as works progress.
Visual amenity	• Construction lighting is to be positioned such that light spill on adjacent properties is minimised and that it is turned off when not in use and safe to do so • A high level of housekeeping would be maintained by ensuring that the work site is kept in a clean and tidy condition, with appropriate areas designated for storage of waste materials • Waste materials must be removed from site regularly
Non-Indigenous heritage	• An Unexpected Finds Protocol should be developed and included in the CEMP for the Proposal. This should specify responses to finds of any wooden or cobbled former road surfaces if they are uncovered during construction. At a minimum, work should cease in the vicinity of the feature, a qualified archaeologist should be contacted to assess the significance of the feature and appropriate management undertaken before work recommences • The removal of any trachyte kerbs should only be done in liaison with the CoS Council Representative • For the Banco Road Court, Sydney Supreme Court House on St James Road, St James Railway Station Group, the statue of Queen Victoria in Queens Square and the statue of Major General Lachlan Macquarie at the Macquarie Street entrance to Hyde Park, it is recommended that measures be implemented to minimise impacts caused by vibration in the vicinity of these two items. These may include having rollers on static mode and selecting machinery with lower vibration levels • The built elements of Hyde Park (including the paving, retaining walls, plantings, and the Major General Lachlan Macquarie Statue) should be fenced off to protect against accidental damage

Impact	Environmental mitigation measures
	• It is recommended that all contractors and subcontractors be informed during induction/toolbox of the potential for non-Indigenous heritage to be uncovered during works. All contractors and subcontractors should be made aware of the Unexpected Finds Protocol and their responsibility to follow it during works • Comply with minimum working distances for vibration intensive plant • If compliance with minimum working distances is not possible, then vibration monitoring will be undertaken. If readings are below vibration thresholds, then work will continue with caution • If readings exceed vibration thresholds, then a change of process will be implemented to reduce vibration • If vibration thresholds cannot be complied with, it is recommended that a structural engineer be engaged to provide advice.
Indigenous heritage	• All construction staff will undergo an induction in the recognition of Indigenous cultural heritage material. This training will include information such as the importance of Indigenous cultural heritage material and places to the Indigenous community, as well as the legal implications of removal, disturbance and damage to any Indigenous cultural heritage material and sites • In the unlikely event that during works any objects are discovered that are suspected to be Indigenous objects, Heritage NSW must be notified under Section 89A of the NPW Act. Appropriate management and avoidance or approval under a Section 90 AHIP should then be sought if Indigenous objects are to be moved or harmed • In the unlikely event that human remains are found, works should immediately cease, and the NSW Police should be contacted. If the remains are suspected to be Indigenous, Heritage NSW may also be contacted to assist in determining appropriate management.
Contamination, landform, geology, and soils	• Prior to commencement of works, a site-specific ESCP will be prepared in accordance with the 'Blue Book' Managing Urban Stormwater: Soils and Construction Guidelines (Landcom, 2004) and updated throughout construction so it remains relevant to the activities. The ESCP measures will be implemented prior to commencement of works and maintained throughout construction • Erosion and sediment control measures will be established prior to any site establishment activities and will be maintained and regularly inspected (particularly following rainfall events) to ensure their ongoing functionality. These measures will be maintained in place until the works are complete, and areas are stabilised • Vehicles and machinery will be properly maintained and routinely inspected to minimise the risk of fuel/oil leaks. Construction plant, vehicles and equipment will also be refuelled offsite, or in a designated refuelling area • All fuels, chemicals and hazardous liquids will be stored within an impervious bunded area in accordance with Australian Standards and EPA Guidelines • An appropriate Unexpected Finds Protocol, considering potential contaminants, will be included in the CEMP. Procedures for handling asbestos containing materials, including licensed contractor involvement as required, record keeping, site personnel awareness and waste disposal to be undertaken in accordance with SafeWork NSW requirements • All spoil to be removed from site will be tested to confirm the presence of any contamination. Any contaminated spoil will be disposed of at an appropriately licensed facility

Impact	Environmental mitigation measures
	• All spoil and waste must be classified in accordance with the Waste Classification Guidelines Part 1: Classifying waste (EPA, 2014) prior to disposal • Hydrocarbons and chemicals such as fuels, lubricants and oils will be stored on-site in dedicated facilities such as secure sheds, containers, storage tanks and proprietary hazardous substance cupboards, and in accordance with the applicable Safety Data Sheet • In the event of a pollution incident, works will cease in the immediate vicinity and the Contractor will immediately notify the CoS Proposal Manager and the CoS Environmental Officer. The EPA will be notified by CoS if required, in accordance with Part 5.7 of the POEO Act • Spill kits appropriate to products used on site must be readily available • Spills of fuel, oil, chemicals, or the like will be cleaned immediately, and the site environmental manager will be notified of the location of the incident, extent of the incident and type of material spilled.
Air quality	• Methods for management of emissions will be incorporated into project inductions, training and pre-start/toolbox talks • All plant, machinery and vehicles will be regularly checked and maintained in a proper and efficient condition and will be turned off when not in use, and not left idling • Where possible, all construction plant and machinery should be fitted with emission control devices complying with Australian Design standards • To minimise the generation of dust from construction activities, the following measures will be implemented: - Apply water (or alternate measures) to exposed surfaces (e.g., stockpiles, hardstand areas and other exposed surfaces) - Cover stockpiles when not in use - Appropriately cover loads on trucks transporting material to and from the construction area and securely fix tailgates of road transport trucks prior to loading and immediately after unloading - Prevent mud and dirt being tracked onto sealed road surfaces. - Stop any dust generating works during periods of high wind.
Biodiversity	• Trees adjacent to the Proposal Area will be protected through the following protection mitigation measures: - Tree protection would be undertaken in line with *AS 4970-2009 Protection of Trees on Development Sites* and would include exclusion fencing of TPZs - During any trenching or excavation works, the use of mechanical equipment must stop if tree roots greater than 50 mm diameter are encountered. Approval must be sought from the CoS street tree coordinator to cut any root greater than 50 mm diameter. Excavation would be done by hand, or other approved non-destructive methods in any area known to, or suspected of having roots larger than 50 mm diameter - Fencing should be erected before any machinery or materials are brought onto the site and before commencement of works. Once erected, the protective fencing should not be removed or altered without approval from the CoS street tree coordinator - Each tree trunk and any major branches within the work area is to be wrapped with hessian or similar material to limit damage, then space planks at 100 mm intervals, and fixed against the trunk with tie wire, or strapping. The truck protection shall not be fixed to the tree in any instance, or in any fashion, for example, no nails or screws are to be used

Impact	Environmental mitigation measures
	- Where it is determined that existing kerb may be damaged by the proposed works, and they are adjacent to any street tree, they will not be removed without the approval from the CoS street tree coordinator - In the event of any tree to be retained becoming damaged during construction, the Construction Contractor is to immediately notify the CoS Project Manager and the CoS Environmental Officer to coordinate the response which may include contacting an arborist to inspect and provide advice on remedial action, where possible • The CEMP should include an Unexpected Finds Protocol that outlines the roles and responsibilities where unexpected threatened flora or fauna is identified during any works within the Proposal Area • Should the design refinements or onsite works determine the need to remove or trim any additional trees, which have not been identified in the REF, the Construction Contractor is required to complete a CoS Tree Removal Application Form and submit it to the CoS for approval.
Hydrology and flooding	• Temporary drainage or drainage diversions will be installed so that stormwater function is not impeded during construction. • An ESCP will be prepared in accordance with the *Landcom Managing Urban Stormwater, Soils and Construction Guidelines* (the Blue Book) prior to construction • Any material deposited onto pavements would be swept and removed at the end of each working shift and prior to rainfall • Fuels, oils, and other chemicals would not be stored in the vicinity of the construction site wherever possible • Emergency wet and dry spill kits would be kept on site at all times and all staff would be made aware of the location of the spill kit and trained in its use • Disturbed surfaces would be compacted and stabilised in anticipation of a rain event to reduce the potential for erosion • Works are not to be carried out during heavy rain events. Relevant mitigation measures are also provided in Section 6.6.
Waste	• A WMP will be prepared and implemented as part of the CEMP. The WMP will include but not be limited to: - Measures to avoid and minimise waste associated with the Proposal - Classification of wastes and management options (re-use, recycle, stockpile, disposal) in accordance with the Waste Classification Guidelines (EPA, 2014) and NSW legislative requirements - Statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions - Procedures for storage, transport, and disposal - Monitoring, record keeping and reporting - The WMP will be prepared considering the WARR Act and Waste Classification Guidelines (EPA, 2014) • All areas of the construction site would be kept free of rubbish and cleaned at the end of each workday • Contractors would recycle waste in accordance with the *City of Sydney's Leave nothing to waste: Waste strategy and action plan 2017-2030* • Waste disposed of offsite shall be taken to a waste facility that is licenced under the POEO Act to receive wastes of that type • The resource management hierarchy principles of the WARR Act would be adopted as follows: - Avoid unnecessary resource consumption as a priority

Impact	Environmental mitigation measures
	- Resource recovery (including reuse of materials, reprocessing, recycling, and energy recovery) - Disposal is undertaken as a last resort.
Socio-economic impact	• A designated 'Community Liaison Officer' (the CoS's Project Manager or representative) should be contactable and available to respond to enquiries and address complaints or other issues during the works period • Development of a Community Liaison Management Plan (by the Construction Contractor prior to construction) which will identify potential stakeholders and the best-practice methods for consultation with these groups during construction. The plan will also encourage feedback and facilitate opportunities for the community and stakeholders to have input into the Proposal, where possible • Feedback through the submissions process to facilitate opportunities for the community and stakeholders to have input into the Proposal, where practicable • Further consultation with local businesses and residents will be undertaken. Specific issues relating to parking and loading zones will be addressed within individuals that are most affected. Other relevant mitigation measures are listed in Sections 6.1, 6.2, 6.3, and 6.7.
Cumulative environmental impacts	• Consult with TfNSW to obtain information about project timeframes and impacts. Identify and implement appropriate mitigation measures and management measures to minimise cumulative impacts of construction if any of the projects are constructed at the same time as the Proposal • The Traffic Management Plan including Road Opening Permits and Road Occupancy Licenses would be prepared in consultation with CoS and with TfNSW's Transport Management Centre taking into consideration the cumulative traffic impact of projects on the Sydney road network • The CEMP would be revised to consider potential cumulative impacts from surrounding development activities as they become known. This would include a process to review and update mitigation measures as new works begin or if complaints are received. Other relevant mitigation measures are provided in Sections 6.1, 6.2, 6.7, and 6.12.

7.3 Licencing and approvals

A Road Opening Permit is to be obtained by the Service Provider from CoS prior to the commencement of any work within the road corridor.

8.0 Conclusion and certification

8.1 Conclusion

This REF has been prepared to assess the environmental impacts of the proposed Phillip Street to College Street cycleway. The Proposal would generate benefits including:

- Improved connections within the regional cycling network
- Improved safety for people on bikes
- Encourage cycling within the CBD
- Improved access and journey time reliability for people on bikes
- Contribute towards reducing vehicle traffic congestion.

This REF has been prepared in accordance with Part 5 of the EP&A Act and has assessed those matters listed in Section 171 of the EP&A Regulation.

The Proposal is consistent with relevant state and local planning strategies and policies, specifically the CoS's *Cycling Strategy and Action Plan 2018-2030.* The Proposal would complete a section of regional cycleway under the Plan, and would meet the key priorities of the Plan, including connecting the network, and supporting people to ride bikes.

CoS would continue to work with affected landowners to minimise impacts during construction and operation of the Proposal and would obtain necessary permits and approvals by working together with stakeholders, including TfNSW.

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

Mitigation measures are summarised in Section 7.2 and would be implemented to avoid and minimise potential environmental impacts during construction and operation of the Proposal. This includes the preparation and implementation of a CEMP.

It is considered that the implementation of the suggested mitigation measures would effectively manage potential environmental impacts. In this regard, a significant impact is not likely, and the preparation of an Environmental Impact Statement is not required.

8.2 Certification

This REF 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.

I certify that I have reviewed and endorsed the contents of this REF document, and, to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation and the Guidelines approved under Clause 170 of the EP&A Regulation, and the information it contains is neither false nor misleading.

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Jamie McMahon, CEnvP IA + REAP

Technical Director - Environment

AECOM

[placeholder for date]

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Appendix A

Consideration of Section 171

Appendix A Consideration of Section 171

The table below demonstrates CoS's consideration of the specific factors of Section 171 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?	Minor The Proposal is located within a significantly modified urban environment and would result in short term and minor impacts on the community during construction, such as traffic, noise, visual amenity, and air quality impacts. During operation, the Proposal would deliver a cycleway, that would encourage sustainable transport, and provide a safer cycling network and minimise conflicts with pedestrians within Queen's Square and is anticipated to provide benefit to the community.
(b) Any transformation of a locality?	Minor The Proposal would transform one lane within an existing roadway into a dedicated two-way cycleway. The road corridor would continue to allow for the passage of vehicles, however, would also provide for a dedicated cycleway. This transformation is considered positive, and it is expected that the community would adjust to the transformation over time.
(c) Any environmental impact on the ecosystem of the locality?	Minor The Proposal is within an urban environment. Existing vegetation is limited to planted and exotic street trees and do not constitute a functional biological ecosystem.
(d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?	Minor The Proposal would result in minor, short-term reduction of aesthetic values within the Proposal Area due to the presence of construction materials and equipment. The Proposal Area has distinct aesthetic features, in particular heritage items adjacent to the Proposal Area, such as the Hyde Park Barracks, Queen's Square and Hyde Park. The impacts of construction on the aesthetic value of the Proposal Area are anticipated to be minor, given the short-term nature of the works.
(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?	Minor It is concluded that the Proposal will not cause any adverse impacts on any heritage items. There is potential to damage trachyte kerbing located in the Proposal Area through construction of the ramps, however these are anticipated to be sufficiently managed by the proposed mitigation measures.
(f) Any impact on the habitat of protected fauna (within the meaning of the *National Parks and Wildlife Act 1974*)?	Minor Protected habitats were not identified as being present within the Proposal Area.

Factor	Impacts
(g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?	Minor Desktop searches, and the context of the Proposal Area does indicate that it would be likely for endangered species to be present within or near the Proposal.
(h) Any long-term effects on the environment?	Minor The Proposal is anticipated to have positive long-term impacts on access and health and a reduction in greenhouse gases. The Proposal is one of many cycleway projects, that cumulatively would provide a safer cycling network throughout the Sydney CBD. The Proposal would contribute towards better active travel access throughout the CBD, as well as support the shift to more sustainable modes of transport, whilst providing additional health and wellbeing benefits for the community.
(i) Any degradation of the quality of the environment?	Minor The Proposal is anticipated to have a negligible impact on the quality of the environment, given that the existing environment is already highly disturbed and urbanised.
(j) Any risk to the safety of the environment?	Minor It is anticipated that construction of the Proposal would pose minor risk to the safety of the environment if works were to occur unmitigated. This REF has proposed a number of mitigation measures aimed at reducing risks to the environment.
(k) Any reduction in the range of beneficial uses of the environment?	Minor The Proposal is anticipated to have a positive impact on the environment by providing for an increase in sustainable transport and improved cyclist access in the Proposal Area.
(l) Any pollution of the environment?	Minor The Proposal would have negligible pollution impacts to the environment. The Proposal would require a minimal number of construction vehicles and machinery that would emit pollution associated with exhaust fumes. Furthermore, the Proposal would introduce a limited number of vehicles and would not contribute significantly to exhaust fumes compared to daily traffic flow within the Proposal Area.
(m) Any environmental problems associated with the disposal of waste?	Minor A Waste Management Plan would be prepared to document and dispose of waste generated during construction of the Proposal. Once operational the Proposal would not generate significant amounts of waste.

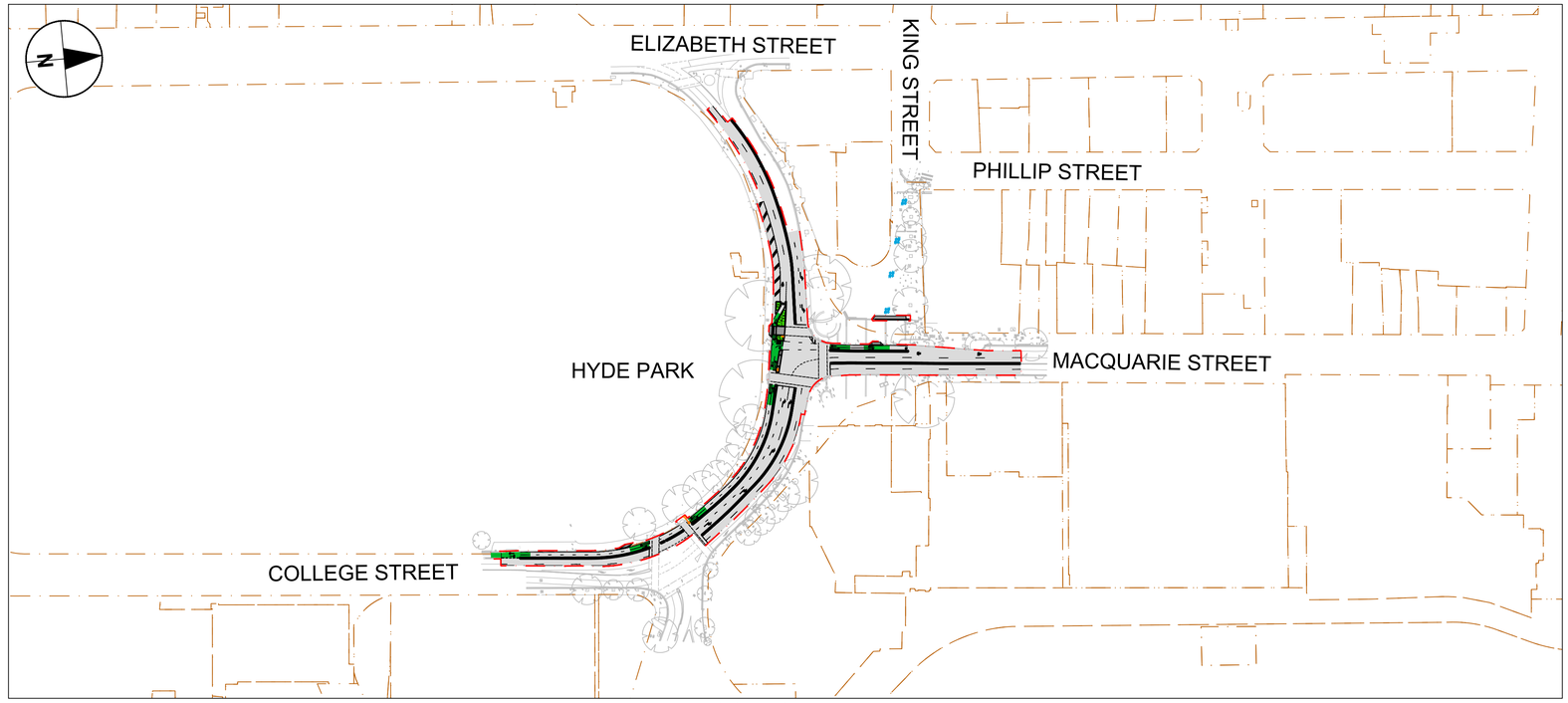
Factor	Impacts
(n) Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?	Minor The Proposal is unlikely to increase demand on resources that are, or are likely to become, in short supply.
(o) Any cumulative environmental effect with other existing or likely future activities?	Minor Construction of the Proposal would coincide with the construction of a number of other Proposals in the Sydney CBD, which may result in cumulative environmental impacts, such as with traffic, noise, air quality and socio-economic impacts. The operational Proposal would have a beneficial cumulative impact with other cycleway projects throughout Sydney CBD.
(p) Any impact on coastal processes and coastal hazards, including those under Proposed climate change conditions?	Minor The Proposal is located about 6.5 km from the coastline and is unlikely to impact on coastal processes.
(q) applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1	Applicable planning documents have been considered in Chapter 4.0. The Proposal would be generally consistent with all relevant requirements.
(r) other relevant environmental factors	Relevant environmental factors have been considered in Chapter 6.0.

Appendix B

100% Design Drawings

CITY OF SYDNEY CYCLEWAYS
PHILLIP TO COLLEGE STREET

CIVIL SERVICES



LOCATION PLAN
SCALE 1:1500

DRAWING LIST

DRAWING NUMBER	DRAWING TITLE
Civil - General/Site Preparation	
60711261-SHT-00-1000-CI-0001	COVER SHEET AND DRAWING INDEX
60711261-SHT-00-1000-CI-0005	GENERAL NOTES
60711261-SHT-00-1000-CI-0011	OVERALL KEY PLAN
60711261-SHT-00-1000-CI-0051	DEMOLITION PLAN
60711261-SHT-00-1000-CI-0052	DEMOLITION PLAN
60711261-SHT-00-1000-CI-0053	DEMOLITION PLAN
Civil - Arrangements	
60711261-SHT-00-1000-CI-0101	GENERAL ARRANGEMENT PLAN
60711261-SHT-00-1000-CI-0102	GENERAL ARRANGEMENT PLAN
60711261-SHT-00-1000-CI-0103	GENERAL ARRANGEMENT PLAN
60711261-SHT-00-1000-CI-0141	TYPICAL SITE SECTIONS
60711261-SHT-00-1000-CI-0142	TYPICAL SITE SECTIONS
60711261-SHT-00-1000-CI-0161	SIGNAGE AND LINEMARKING PLAN
60711261-SHT-00-1000-CI-0162	SIGNAGE AND LINEMARKING PLAN
60711261-SHT-00-1000-CI-0163	SIGNAGE AND LINEMARKING PLAN

DRAWING LIST

DRAWING NUMBER	DRAWING TITLE
Civil - Alignments	
60711261-SHT-00-1000-CI-0301	ROAD, KERB & MISC. ALIGNMENT AND PAVEMENT PLAN
60711261-SHT-00-1000-CI-0302	ROAD, KERB & MISC. ALIGNMENT AND PAVEMENT PLAN
60711261-SHT-00-1000-CI-0303	ROAD, KERB & MISC. ALIGNMENT AND PAVEMENT PLAN
60711261-SHT-00-1000-CI-0321	ROAD, KERB & MISC. ALIGNMENT SET-OUT TABLES
60711261-SHT-00-1000-CI-0341	ROAD ALIGNMENT LONGITUDINAL SECTIONS
60711261-SHT-00-1000-CI-0342	ROAD ALIGNMENT LONGITUDINAL SECTIONS
60711261-SHT-00-1000-CI-0343	ROAD ALIGNMENT LONGITUDINAL SECTIONS
60711261-SHT-00-1000-CI-0371	ROAD ALIGNMENT CROSS SECTIONS MC1A01
60711261-SHT-00-1000-CI-0372	ROAD ALIGNMENT CROSS SECTIONS MC1A01
60711261-SHT-00-1000-CI-0373	ROAD ALIGNMENT CROSS SECTIONS MC1A01
60711261-SHT-00-1000-CI-0374	ROAD ALIGNMENT CROSS SECTIONS MC1A01
60711261-SHT-00-1000-CI-0381	ROAD ALIGNMENT CROSS SECTIONS MC1B01
60711261-SHT-00-1000-CI-0382	ROAD ALIGNMENT CROSS SECTIONS MC1B01
60711261-SHT-00-1000-CI-0541	MISC. ALIGNMENT LONGITUDINAL SECTIONS
60711261-SHT-00-1000-CI-0542	MISC. ALIGNMENT LONGITUDINAL SECTIONS
60711261-SHT-00-1000-CI-0543	MISC. ALIGNMENT LONGITUDINAL SECTIONS

DRAWING LIST

DRAWING NUMBER	DRAWING TITLE
Civil - Combined Services	
60711261-SHT-00-1000-CI-0601	COMBINED SERVICES PLAN
60711261-SHT-00-1000-CI-0602	COMBINED SERVICES PLAN
60711261-SHT-00-1000-CI-0603	COMBINED SERVICES PLAN
Civil - Details	
60711261-SHT-00-1000-CI-0911	DETAILS KERB AND PAVEMENT
60711261-SHT-00-1000-CI-0912	DETAILS KERB AND PAVEMENT
60711261-SHT-00-1000-CI-0913	DETAILS KERB AND PAVEMENT
60711261-SHT-00-1000-CI-0914	DETAILS KERB AND PAVEMENT
60711261-SHT-00-1000-CI-0921	DETAILS STREET FURNITURE AND LANDSCAPING
60711261-SHT-00-1000-CI-0931	DETAILS SIGNAGE AND LINEMARKING
Civil - Vehicle Tracking	
60711261-SHT-00-1000-CI-0971	VEHICLE TURNPATH PLAN
60711261-SHT-00-1000-CI-0972	VEHICLE TURNPATH PLAN

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PROJECT

CoS Cycleways

CLIENT

CITY OF SYDNEY

SCALE BAR

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

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ISSUE/REVISION

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FOR INFORMATION ONLY

PROJECT NUMBER

60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET
COVER SHEET AND
DRAWING INDEX

SHEET NUMBER

60711261-SHT-00-1000-CI-0001

ISO A1 594mm x 841mm

GENERAL

1 THE INFORMATION CONTAINED IN THESE DRAWINGS PRODUCED BY AECOM IS SOLELY FOR THE USE OF CITY OF SYDNEY (CoS) FOR THE PURPOSE FOR WHICH IT HAS BEEN PREPARED. AECOM AUSTRALIA PTY LTD UNDERTAKES NO DUTY TO OR ACCEPTS NO RESPONSIBILITY TO ANY THIRD PARTY WHO MAY RELY UPON THIS DOCUMENT.
2 THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER ENGINEERING AND PUBLIC DOMAIN DRAWINGS, CoS SPECIFICATION, CoS STANDARD DRAWINGS, AND WITH SUCH OTHER WRITTEN INSTRUCTIONS, AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT.
3 ANY DISCREPANCIES BETWEEN THESE NOTES AND DRAWINGS, AND CoS SPECIFICATIONS AND DETAILS, THE DRAWINGS WILL TAKE PRECEDENCE.
4 ANY DISCREPANCIES OR OMISSIONS FROM THESE DOCUMENTS SHALL BE REFERRED TO THE SUPERINTENDENT FOR A DECISION BEFORE PROCEDING WITH THE WORK.
5 ALL WORKMANSHIP AND MATERIALS TO COMPLY WITH THE BUILDING CODE OF AUSTRALIA AS AMENDED AND THE APPROPRIATE AND CURRENT AUSTRALIAN STANDARDS OR LOCAL STATUTORY AUTHORITY GUIDELINES.
6 ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL CHAINAGES AND LEVELS ARE IN METRES UNLESS NOTED OTHERWISE.
7 ALL DIMENSIONS RELEVANT TO SETTING OUT OR OFF-SITE WORK SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION AND FABRICATION HAS COMMENCED.
8 DO NOT SCALE FROM DRAWINGS.
9 ORIGIN OF LEVELS - AHD
COORDINATES TO MGA - MAP GRID AUSTRALIA.
10 WHERE NOTED ON DRAWINGS THAT WORKS ARE TO BE CARRIED OUT BY OTHERS, THE CONTRACTOR WILL BE RESPONSIBLE FOR THE COORDINATION OF THESE WORKS AND THIS WORK WILL NOT QUALIFY FOR DELAY CLAIMS.
11 WHERE A PROPRIETARY ITEM (OR EQUIVALENT) IS SPECIFIED, AND AN EQUIVALENT ITEM IS PROPOSED, THE CONTRACTOR SHALL PROVIDE MANUFACTURERS SPECIFICATIONS FOR BOTH PRODUCTS TO THE SUPERINTENDENT FOR APPROVAL, AND DEMONSTRATE THAT THE PRODUCT PERFORMANCE IS EQUIVALENT OR BETTER, PRIOR TO USE.
12 ALL PROPRIETARY PRODUCTS ARE TO BE INSTALLED FIXED AND TESTED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
13 DURING CONSTRUCTION, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT THE STRUCTURES AND EXCAVATIONS ARE MAINTAINED IN A SAFE AND STABLE CONDITION AT ALL TIME AND NO PART IS TO BE OVERSTRESSED. THE CONTRACTOR SHALL DEVELOP WORK METHOD STATEMENTS FOR ALL ERECTION OF STRUCTURAL STEEL/FORMWORK/ DEMOLITION/EXCAVATION/TILT PANELS ETC. AND PROVIDE TEMPORARY WORKS SUCH AS BRACING, PROPPING AND SHORING ETC. TO KEEP THE WORKS AND EXCAVATIONS STABLE AND FREE FROM WATER AT ALL TIMES. THE CONTRACTOR IS TO ENGAGE A STRUCTURAL ENGINEER TO DESIGN AND CERTIFY THE TEMPORARY WORKS.

SITEWORKS AND EARTHWORKS

1 THE CONTRACTOR TO MAKE SMOOTH CONNECTION TO ANY EXISTING WORKS.
2 ON COMPLETION OF THE WORKS, THE CONTRACTOR MUST RESTORE OR REINSTATE ANY AREAS, STRUCTURES, PAVEMENTS OR UTILITY SERVICES DAMAGED OR DIRTIED DURING THE CONSTRUCTION, TO THE SATISFACTION OF THE SUPERINTENDENT OR THE ASSET OWNER.
3 ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL, OR AS REQUIRED IN THESE DRAWINGS AND THE SPECIFICATION.
4 ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED IN ACCORDANCE WITH CoS STANDARD DRAWINGS AND SPECIFICATION UNO.
5 PROVIDE EXPANSION/ISOLATION JOINTS BETWEEN BUILDINGS AND ALL CONCRETE AND UNIT PAVEMENTS.
6 ASPHALTIC CONCRETE SHALL CONFORM TO TfNSW QA SPECIFICATION R116
7 ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH TfNSW QA SPECIFICATION 3051 - GRANULAR BASE AND SUB-BASE MATERIALS FOR SURFACED ROAD PAVEMENTS. COMPACTION REQUIREMENTS AND TESTING FREQUENCY SHALL BE AS PER THE SPECIFICATION.
8 ALL SUB-BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH TfNSW QA SPECIFICATION 3051 - GRANULAR BASE AND SUB-BASE MATERIALS FOR SURFACED ROAD PAVEMENTS. COMPACTION REQUIREMENTS AND TESTING FREQUENCY SHALL BE AS PER THE SPECIFICATION.
9 THE USE OF RECYCLED MATERIALS IS ENCOURAGED BY CoS. IF THE CONTRACTOR INTENDS TO USE RECYCLED MATERIALS, A RECYCLED MATERIAL COMPLYING WITH TfNSW QA SPECIFICATION 3051 - GRANULAR BASE AND SUB-BASE MATERIALS FOR SURFACED ROAD PAVEMENTS WILL BE CONSIDERED, SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF THE PRINCIPAL'S REPRESENTATIVE.
10 THE CONTRACTOR IS TO CONTINUE TO PROVIDE CERTIFICATION FOR ALL RECYCLED MATERIALS DURING THE COURSE OF CONSTRUCTION, AND WHERE MATERIAL THAT DOES NOT COMPLY, THE CONTRACTOR WILL BE RESPONSIBLE FOR REMOVAL AND REPLACEMENT WITH A SUITABLY COMPLIANT MATERIAL AT THEIR OWN COST.
11 SHOULD THE CONTRACTOR WISH TO USE A RECYCLED PRODUCT, THE INTENT SHALL BE CLEARLY INDICATED IN THEIR TENDER AND THE PRICE DIFFERENCE BETWEEN AN IGNEOUS PRODUCT AND A RECYCLED PRODUCT SHALL BE CLEARLY NOTED.
12 THE CONTRACTOR MUST FAMILIARISE THEMSELVES WITH THE RECOMMENDATIONS OF ALL GEOTECHNICAL AND CONTAMINATION REPORTS ASSOCIATED WITH THIS PROJECT
13 THE CONTRACTOR WILL BE RESPONSIBLE FOR THE SAFE EXCAVATION, CONTAMINATION MANAGEMENT AND DISPOSAL OF ALL CONTAMINATED MATERIALS FOUND WITHIN ANY EXCAVATION.
14 MATERIALS USED IN FILL MUST BE CLEAN IMPORTED GRANULAR VENM UNLESS CONFIRMED OTHERWISE BY THE SUPERINTENDENT.
15 COMPACTION, TESTING, FILLING, STANDARD DRY DENSITIES AND MOISTURE CONTENT TO BE IN ACCORDANCE WITH THE SPECIFICATION.
16 ALL EXPOSED EARTHWORKS AREAS SHALL BE ROLLED EACH EVENING TO RESTRICT THE INGRESS FROM POTENTIAL WATER INGRESS.

EROSION AND SEDIMENT CONTROLS - GENERAL INSTRUCTIONS

1 THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE AND TAKE ALL STEPS NECESSARY TO PROTECT THE ENVIRONMENT DURING THE COURSE OF THEIR CONTRACT AND IN PARTICULAR IMPLEMENT THE NECESSARY MEASURES FOR THE CONTROL OF EROSION AND SEDIMENTATION TO THE SATISFACTION OF ALL ADMINISTERING BODIES INCLUDING CITY OF SYDNEY, NSW OFFICE OF WATER, SYDNEY WATER, TfNSW AND NSW ENVIRONMENT AND HERITAGE.
2 THE EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE DRAWINGS SHALL ONLY BE USED AS A GUIDE BY THE CONTRACTOR AND SHALL REPRESENT THE MINIMUM REQUIREMENT ONLY.
3 EROSION AND SEDIMENTATION MEASURES ARE TO BE PROVIDED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS, ADJUSTED TO SUIT STAGING AND MAINTAINED FOR THE LIFE OF THE CONTRACT.
4 ALL MEASURES ARE TO BE DESIGNED AND IMPLEMENTED IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE "BLUE BOOK" - SOILS AND CONSTRUCTION AND CoS DCP, AND CONFIRMED AS A PART OF THEIR CONSTRUCTION MANAGEMENT OR QUALITY PLAN FOR THE SITE.
5 NOTE DELETED.
6 ALL MEASURES INCLUDING DIVERSION BANKS, CATCH AND DIVERSION DRAINS AND SILT FENCES SHALL BE COMPLETED PRIOR TO COMMENCEMENT OF CONTRACT WORKS
7 DURING WINDY WEATHER, LARGE UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRAYING WITH CLEAN WATER TO CONTROL DUST
8 ALL STOCKPILES MUST NOT BE LOCATED IN AREAS SUBJECT TO LIKELY CONCENTRATIONS OF OVERLAND FLOWS, AND HAVE MEASURES APPLIED, SUCH AS SILT FENCING, TO PREVENT EROSION OF THE STOCKPILE.
9 CLEAN WATER IS TO BE DIVERTED AWAY FROM DISTURBED GROUND AND INTO THE DRAINAGE SYSTEM. ANY WATER ENTERING THE DRAINAGE SYSTEM MUST BE SEDIMENT FREE.

OTHER ENVIRONMENTAL NOTES

10 CONTRACTOR TO PROVIDE ACCEPTABLE RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHING, LIGHT WEIGHT MATERIALS AND LITTER.

STORMWATER DRAINAGE

1 PIPES 375mm DIA AND LARGER TO BE REINFORCED CONCRETE CLASS'4', 10/20 COVER, APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS U.N.O. ALL PIPEWORK IS TO BE LAID WITH THE SOCKET FACING UPSTREAM. ALL WORKS ARE TO COMMENCE AT THE OUTLET END OF EACH LINE.
2 PIPES TO BE INSTALLED TO TYPE HS3 SUPPORT UNDER ROADS, PATHS AND DRIVEWAYS, AND TO TYPE HS2 ELSEWHERE, IN ACCORDANCE WITH AS3725. BACKFILLING AND MATERIALS IS TO BE IN ACCORDANCE WITH THE SPECIFICATION AND CoS STANDARD DRAWINGS.
3 PITS TO BE CONSTRUCTED IN ACCORDANCE WITH CoS STANDARD DETAILS. PRECAST PITS WILL NOT BE ACCEPTED UNLESS THROUGH EXPRESSED PERMISSION OF CoS.
4 CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
5 GRATES AND COVERS SHALL CONFORM TO CITY OF SYDNEY SPECIFICATION (B10).
6 AT ALL TIMES DURING CONSTRUCTION, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO PREVENT PERSONNEL FROM FALLING INTO PITS AND OPEN TRENCHES.
7 ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN, ARE TO BE INSPECTED AND CLEANED, AND ANY PART OF THAT SYSTEM IDENTIFIED AS WARRANTING REPAIR, SHALL BE REPORTED TO THE SUPERINTENDENT FOR FURTHER DIRECTION.
8 CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT PIPES FROM DAMAGE DUE TO HEAVY CONSTRUCTION LOADING. CONTRACTOR TO UNDERTAKE PRE AND POST CONSTRUCTION CCTV INSPECTIONS FOR ALL PIPE LINES IMPACTED BY THE WORKS, TO BE PROVIDED TO CITY OF SYDNEY FOR ACCEPTANCE PRIOR TO HAND-OVER.
9 THE CONTRACTOR IS TO MANAGE AND STAGE CONSTRUCTION WORKS, INCLUDING PROVIDING TEMPORARY DIVERSION WORKS IF NECESSARY, TO ENSURE ANY EXISTING DRAINAGE SYSTEM IS ABLE TO PERFORM TO ITS CURRENT STANDARD.
10 THE CONTRACTOR SHALL PROTECT THE WORKS IN PROGRESS. ANY DAMAGE TO THE WORKS IN PROGRESS, INCLUDING FROM STORMWATER FLOWS OR FLOODING, IS AT THE CONTRACTOR'S RISK.

SURVEY NOTES

1. UNLESS NOTED OTHERWISE ON THE DRAWINGS THE EXISTING SITE CONDITIONS SHOWN ON THE DRAWINGS IS AS PRESENTED IN THE TOPOGRAPHICAL SURVEY INFORMATION AS NOTED BELOW:
   - AU213008265-DT-002-A: CAMPBELL ST PLAN OF FEATURES BY RPS DATED 06.04.2023 AS RECEIVED FROM CoS

   THIS SURVEY INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN ONLY. AECOM DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT THE SUPERINTENDENT.
2 SOME AREAS OF SURVEY INDICATED ON THE DRAWINGS HAVE BEEN ASSUMED AND HAVE BEEN USED AS A BASIS FOR DESIGN ONLY. CONTRACTOR IS TO CONDUCT THEIR OWN DETAILED TOPOGRAPHICAL SURVEY AND CONFIRM ALL LEVELS AND TIE-INS PRIOR TO PROCEEDING WITH ANY WORKS.
3 PERMANENT SURVEY MARKS DEFINING THE POSITION OF STREET ALIGNMENTS ARE NOT TO BE REMOVED OR DAMAGED WITHOUT THE SPECIFIC PERMISSION OF THE CITY'S SURVEYORS. IF A MARK CANNOT BE RETAINED OR IS IN DANGER OF BEING DISTURBED, A MINIMUM OF TWO WEEKS' NOTICE MUST BE GIVEN IN WRITING TO THE SENIOR SURVEYOR PRIOR TO THE COMMENCEMENT OF WORKS. REFER TO SYDNEY STREET TECHNICAL SPECIFICATION - PART B11.2.2

UTILITY SERVICES

1 THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL PUBLIC OR PRIVATE SERVICE PROVIDER DRAWINGS AND/OR REQUIREMENTS, THIS MAY INCLUDE (BUT IS NOT LIMITED TO) THE FOLLOWING:
   - JEMENA DRAWINGS
   - AUSGRID DRAWINGS
   - NBN DRAWINGS
   - SYDNEY WATER DRAWINGS
   - TfNSW SIGNAL PLAN DRAWINGS
2 EXISTING UTILITIES SHOWN ON DRAWINGS ARE INDICATIVE ONLY AND MAY NOT INCLUDE ALL SERVICES PRESENT. AECOM TAKES NO RESPONSIBILITY FOR THE UTILITY INFORMATION AS SHOWN ON THESE DRAWINGS.
3 IT IS THE CONTRACTORS RESPONSIBILITY TO LIAISE WITH EACH UTILITY SERVICE PROVIDER ON SITE, TO LOCATE AND IDENTIFY THE SIZE, POSITION, LINE AND LEVEL OF ALL UTILITY SERVICES IN BOTH PUBLIC AND PRIVATE LAND, PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.
4 THE CONTRACTOR MUST TAKE EVERY PRECAUTION TO PROTECT EXISTING AND NEW UTILITY SERVICES THROUGH THE COURSE OF THE CONTRACT.
5 THE EXECUTION OF ALL WORKS INVOLVING UTILITY SERVICES, EITHER NEW OR EXISTING, IS THE RESPONSIBILITY OF THE CONTRACTOR AND FORM PART OF THE CONTRACT PRICE, UNLESS SPECIFICALLY NOTED OTHERWISE.
6 ALL WORKS INVOLVING UTILITY SERVICES TO BE UNDERTAKEN TO THE SATISFACTION OF THE UTILITY SERVICE PROVIDER. THE CONTRACTOR WILL BE RESPONSIBLE FOR ENGAGING WITH THE UTILITY SERVICE PROVIDER, THE EXECUTION OF THE WORK TO THEIR REQUIREMENTS AND PROCUREMENT OF APPROVALS FOR WORKS UNDERTAKEN.
7 ALL WORKS INVOLVING UTILITY SERVICES MUST ONLY BE UNDERTAKEN USING PLANS APPROVED BY THE UTILITY SERVICE PROVIDER.
8 THE CONTRACTOR IS TO COORDINATE THE INSTALLATION AND/OR ADJUSTMENT OF ELECTRICITY, GAS AND TELECOMMUNICATIONS SERVICES (INCLUDING PITS, MANHOLES AND COVERS). ELECTRICITY, GAS AND TELECOMMUNICATIONS SERVICES ARE TO BE LAID FOLLOWING THE INSTALLATION OF STORMWATER, SEWER AND WATER SERVICES, AND KERB AND GUTTER (IF APPLICABLE).
9 ALL SERVICE PIT COVERS AND MARKERS ARE TO BE PLACED IN ACCORDANCE WITH THE LOCATIONS AS SHOWN ON THE PUBLIC DOMAIN DRAWINGS, AND IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATION.
10 ALL SERVICE PIT COVERS TO BE PLACED AT FINISHED SURFACE LEVELS TO MATCH THE PROPOSED LONGITUDINAL AND CROSS FALL GRADES OF THE FOOTPATH OR ROADWAY IT IS CONTAINED WITHIN.
11 NO PIPE OR TRENCH SHALL BE LOCATED WITHIN THE ZONE OF INFLUENCE (1V:2H) OF A FOOTING.
12 MINIMUM CLEARANCES BETWEEN SERVICES TO BE PROVIDED UNLESS DIRECTED BY THE SUPERINTENDENT.
13 "WORKS AS CONSTRUCTED" SURVEY ON ALL UTILITY WORK SHALL BE RECORDED PRIOR TO ANY BACKFILLING.
14 MAJOR OPTUS CABLES MAY BE PRESENT WITHIN THE SITE - OPTUS REPRESENTATIVE SHALL BE ON SITE WHEN EXCAVATION IS WITHIN 3m OF OPTUS CABLES.

TELSTRA DUTY OF CARE

TELSTRA'S PLANS SHOW ONLY THE PRESENCE OF CABLES AND PLANT. THEY ONLY SHOW THEIR POSITION RELATIVE TO ROAD BOUNDARIES, PROPERTY FENCES ETC. AT THE TIME OF INSTALLATION AND TELSTRA DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME. DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY. THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR TELSTRA CABLES AND PLANT. BEFORE USING MACHINE EXCAVATORS, TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POTHOLING TO IDENTIFY IT'S LOCATION. TELSTRA WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO IT'S PROPERTY AND LOSSES CAUSED TO TELSTRA AND IT'S CUSTOMERS

KERB NOTES

1 ALL CONCRETE FOR KERBS TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 25 MPa U.N.O. IN THE DRAWINGS.
2 ALL KERBS, GUTTERS AND CROSSINGS TO BE CONSTRUCTED ON 150mm (DGB20), COMPACTED TO MINIMUM 98% STANDARD MDD (AS1289 5.2.1)
3 EXPANSION JOINTS (E.J.) TO BE FORMED FROM 15mm COMPRESSIBLE CORK FILLER BOARD FOR THE FULL DEPTH OF SECTION AND CUT TO PROFILE. EXPANSION JOINTS TO BE LOCATED AT PITS, ON TANGENT POINTS OF CURVES, AND ELSEWHERE AT 12m CENTRES, EXCEPT FOR INTEGRAL KERBS WHERE THE EXPANSION JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLABS.
4 WEAKENED PLANE JOINTS TO BE 5mm WIDE AND LOCATED AT 3m CENTRES, EXCEPT FOR INTEGRAL KERBS WHERE THE WEAKENED PLANE JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLABS.
5 BROOMED FINISH TO ALL RAMPED AND VEHICULAR CROSSINGS. ALL OTHER KERBING OR DISH DRAINS TO BE STEEL FLOAT FINISH.
6 IN REPLACEMENT OF KERB AND GUTTER, THE EXISTING ROAD PAVEMENT IS TO BE SAWCUT AND REINSTATED IN ACCORDANCE WITH THE STANDARD DETAIL IN THESE DRAWINGS.
7 PRAM RAMPS SHALL BE IN ACCORDANCE WITH STANDARD DETAIL IN THESE DRAWINGS AND ALL LOCATIONS ARE TO BE VERIFIED ON SITE WITH THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
8 CONTRACTOR TO ALLOW 30% OF ALL 150mm GUTTER CUTTING TO BE REMOVED AND REPLACED DUE TO POOR STRUCTURAL CONDITION. SPECIFIC LOCATIONS TO BE IN CONSULTATION WITH CoS COUNCIL.

SAFETY

1 THE CONTRACTOR IS RESPONSIBLE FOR SAFETY ONSITE.
2 THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL EXCAVATION WORKS IN A STABLE CONDITION, AND ENSURING NO PART SHALL BE OVERSTRESSED DURING CONSTRUCTION ACTIVITIES. PROVISION OF TEMPORARY BRACING, SHORING AND BATTERING IS BY THE CONTRACTOR AS REQUIRED TO PROVIDE A SAFE WORKING ENVIRONMENT.
3 THE CONTRACTOR MUST MAKE PROVISION FOR THE SAFETY OF NORMAL VEHICULAR TRAFFIC AND PEDESTRIANS, AND OTHERS INCLUDING UNAUTHORISED INTRUDERS.
4 ALL PITS, MANHOLES, PUMPSTATIONS AND OTHER CONFINED SPACES MUST BE FITTED WITH A CONFINED SPACE WARNING SIGN TO THE APPROVAL OF THE SUPERINTENDENT.
5 ALL CONDITIONS OF WITH THE ENVIRONMENTAL ASSESSMENT MUST BE MET.

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PROJECT

CoS Cycleways

CLIENT

CITY OF SYDNEY

SCALE BAR

KEY PLAN

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PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

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02	13.03.2024	100% DD ISSUE
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FOR INFORMATION ONLY

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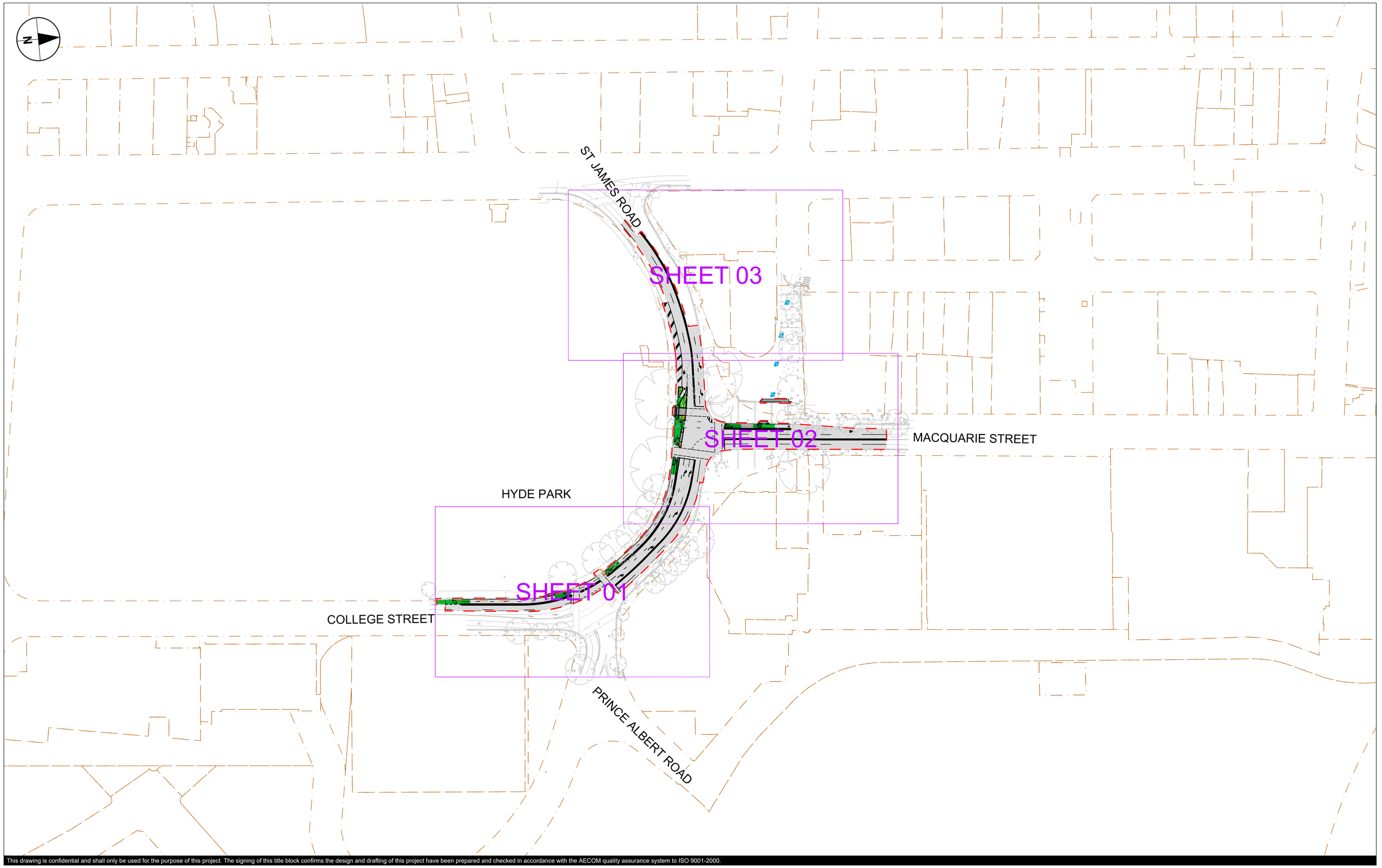
SHEET TITLE

PHILLIP TO COLLEGE STREET
GENERAL NOTES

SHEET NUMBER

60711261-SHT-00-1000-CI-0005

ISO A1 594mm x 841mm



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PROJECT

CoS Cycleways

CLIENT

CITY OF SYDNEY

SCALE BAR

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KEY PLAN

REGISTRATION

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DESIGNER	CHECKED	APPROVED

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I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET
OVERALL KEY PLAN

SHEET NUMBER

60711261-SHT-00-1000-CI-0011

Last saved by: JOSE.CARVAJALINO(2024-03-13) Last Plotted: 2024-03-13
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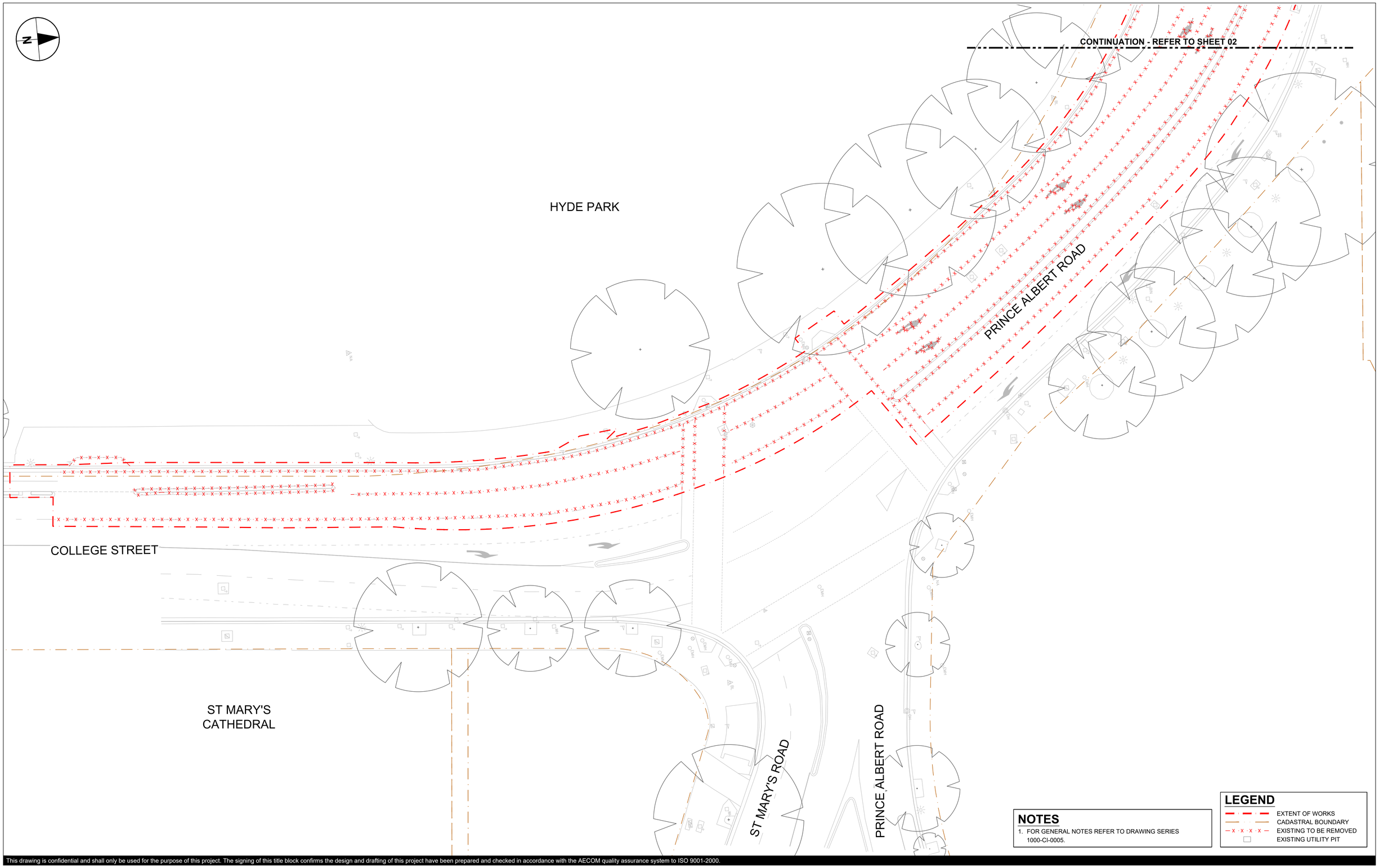


NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0005.

LEGEND

- EXTENT OF WORKS
- CADASTRAL BOUNDARY
- EXISTING TO BE REMOVED
- EXISTING UTILITY PIT

CONSULTANT

AECOM Australia Pty Ltd
A.B.N 20 093 846 925
www.aecom.com

PROJECT

CoS Cycleways

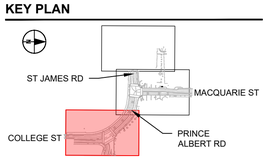
CLIENT

CITY OF SYDNEY

SCALE BAR

0 5 10 m
1:200

KEY PLAN



REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

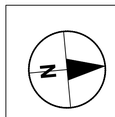
SHEET TITLE

PHILLIP TO COLLEGE STREET
DEMOLITION PLAN
SHEET 01

SHEET NUMBER

60711261-SHT-00-1000-CI-0051

CONTINUATION - REFER TO SHEET 03



ST JAMES ROAD

QUEEN'S SQUARE

EXISTING CONCRETE BASE TO BE REMOVED BENEATH PROPOSED PLANTING BEDS

HYDE PARK

MACQUARIE STREET

PRINCE ALBERT ROAD

HYDE PARK BARRACKS

CONTINUATION - REFER TO SHEET 01

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0005.

LEGEND

- EXTENT OF WORKS
- CADASTRAL BOUNDARY
- EXISTING TO BE REMOVED
- EXISTING UTILITY PIT

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CONSULTANT

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PROJECT

CoS Cycleways

CLIENT

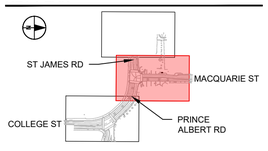
CITY OF SYDNEY

SCALE BAR

0 5 10 m

1:200

KEY PLAN



REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET DEMOLITION PLAN SHEET 02

SHEET NUMBER

60711261-SHT-00-1000-CI-0052

ISO A1 594mm x 841mm

Last saved by: JOSE.CARVAJALINO (2024-03-13) Last Plotted: 2024-03-13
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NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0005.

LEGEND

- EXTENT OF WORKS
- CADASTRAL BOUNDARY
- EXISTING TO BE REMOVED
- EXISTING UTILITY PIT

KING STREET

PHILLIP STREET

HYDE PARK

ST JAMES ROAD

CONTINUATION - REFER TO SHEET 02

CONSULTANT

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PROJECT

CoS Cycleways

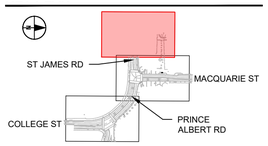
CLIENT

CITY OF SYDNEY

SCALE BAR

0 5 10 m
1:200

KEY PLAN



REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

I/R	DATE	DESCRIPTION
02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

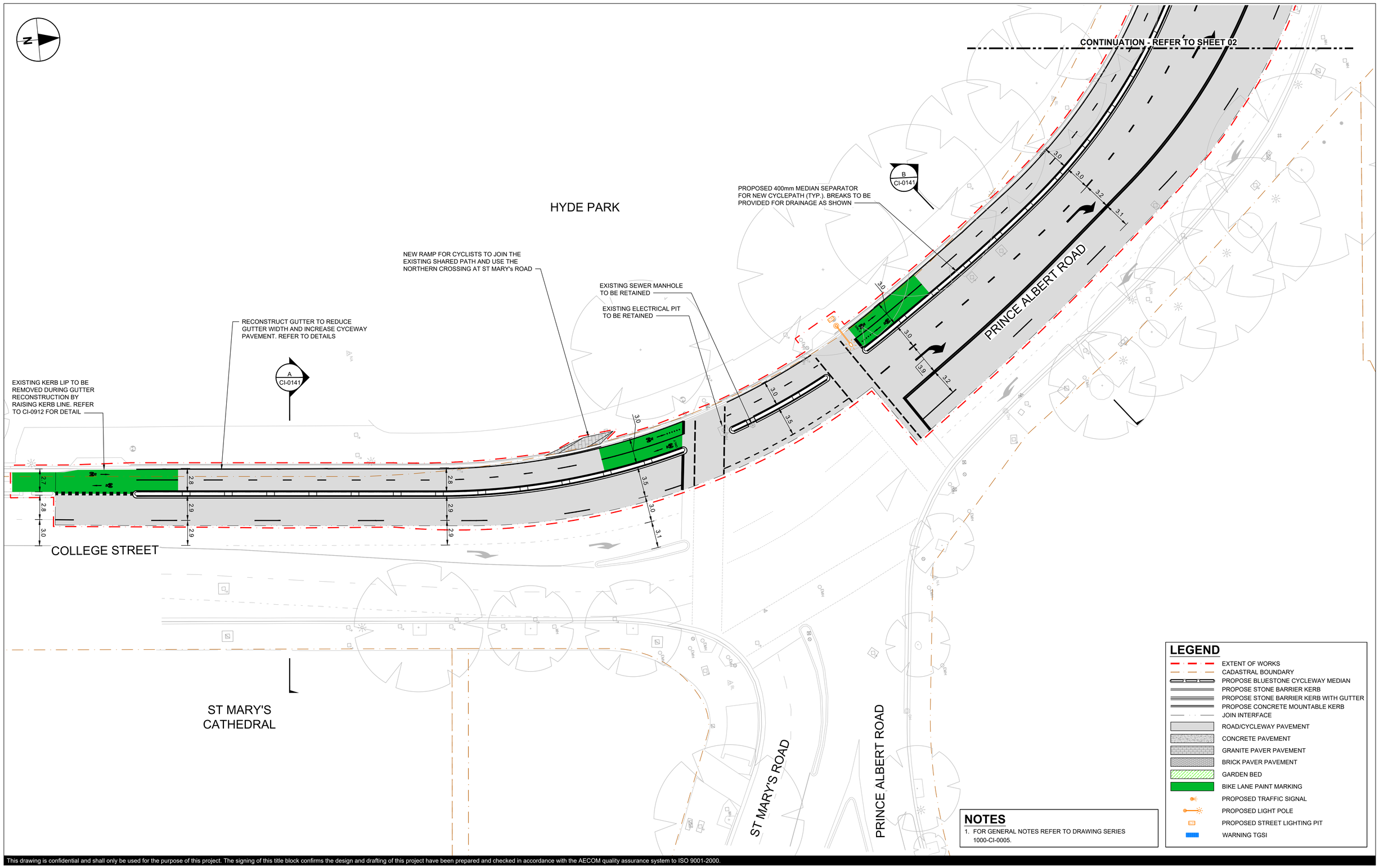
SHEET TITLE

PHILLIP TO COLLEGE STREET
DEMOLITION PLAN
SHEET 03

SHEET NUMBER

60711261-SHT-00-1000-CI-0053

ISO A1 594mm x 841mm



LEGEND

- EXTENT OF WORKS
- CADASTRAL BOUNDARY
- PROPOSE BLUESTONE CYCLEWAY MEDIAN
- PROPOSE STONE BARRIER KERB
- PROPOSE STONE BARRIER KERB WITH GUTTER
- PROPOSE CONCRETE MOUNTABLE KERB
- JOIN INTERFACE
- ROAD/CYCLEWAY PAVEMENT
- CONCRETE PAVEMENT
- GRANITE PAVER PAVEMENT
- BRICK PAVER PAVEMENT
- GARDEN BED
- BIKE LANE PAINT MARKING
- PROPOSED TRAFFIC SIGNAL
- PROPOSED LIGHT POLE
- PROPOSED STREET LIGHTING PIT
- WARNING TGSI

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0005.

AECOM

CONSULTANT

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PROJECT

CoS Cycleways

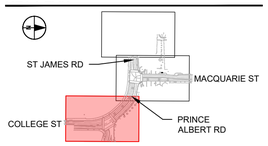
CLIENT

CITY OF SYDNEY

SCALE BAR

0 5 10 m
1:200

KEY PLAN



REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

I/R	DATE	DESCRIPTION
04	13.03.2024	100% DD ISSUE
03	20.12.2023	80% DD ISSUE
02	27.10.2023	100% CD ISSUE
01	21.07.2023	80% CD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

SHEET TITLE

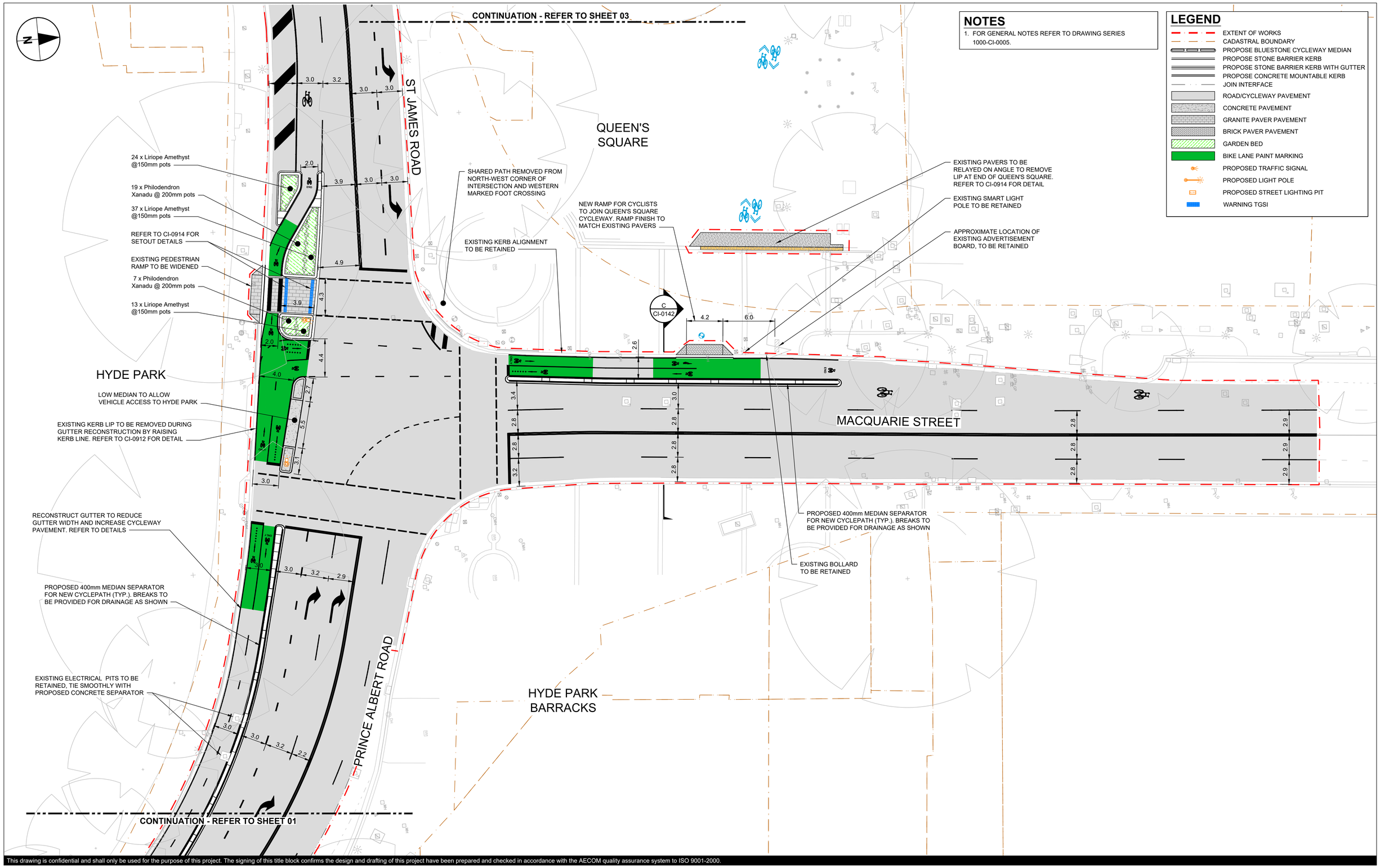
PHILLIP TO COLLEGE STREET GENERAL ARRANGEMENT PLAN SHEET 01

SHEET NUMBER

60711261-SHT-00-1000-CI-0101

Last saved by: JOSE.CARVAJALINO(2024-03-13) Last Plotted: 2024-03-13
Filename: C:\PWWORKING\AECOM_DS13_AU\JOSE.CARVAJALINO@AECOM.COM\D015519560711261-SHT-00-1000-CI-0101.DWG

ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0005.

LEGEND

- EXTENT OF WORKS
- CADASTRAL BOUNDARY
- PROPOSE BLUESTONE CYCLEWAY MEDIAN
- PROPOSE STONE BARRIER KERB
- PROPOSE STONE BARRIER KERB WITH GUTTER
- PROPOSE CONCRETE MOUNTABLE KERB
- JOIN INTERFACE
- ROAD/CYCLEWAY PAVEMENT
- CONCRETE PAVEMENT
- GRANITE PAVER PAVEMENT
- BRICK PAVER PAVEMENT
- GARDEN BED
- BIKE LANE PAINT MARKING
- PROPOSED TRAFFIC SIGNAL
- PROPOSED LIGHT POLE
- PROPOSED STREET LIGHTING PIT
- WARNING TGSI

CONSULTANT
AECOM Australia Pty Ltd
A.B.N 20 093 846 925
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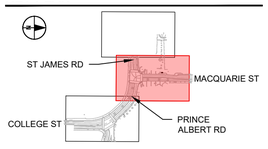
PROJECT
CoS Cycleways

CLIENT
CITY OF SYDNEY

SCALE BAR
0 5 10 m
1:200

KEY PLAN


REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

04	13.03.2024	100% DD ISSUE
03	20.12.2023	80% DD ISSUE
02	27.10.2023	100% CD ISSUE
01	21.07.2023	80% CD ISSUE
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER
60711261

SHEET TITLE
PHILLIP TO COLLEGE STREET GENERAL ARRANGEMENT PLAN SHEET 02

SHEET NUMBER
60711261-SHT-00-1000-CI-0102

Last saved by: JOSE.CARVAJALINO(2024-03-13) Last Plotted: 2024-03-13
Filename: C:\PWWORKING\AECOM_DS13_AU\JOSE.CARVAJALINO@AECOM.COM\D0155195\60711261-SHT-00-1000-CI-0102.DWG

ISO A1 594mm x 841mm

LEGEND

- EXTENT OF WORKS
- CADASTRAL BOUNDARY
- PROPOSE BLUESTONE CYCLEWAY MEDIAN
- PROPOSE STONE BARRIER KERB
- PROPOSE STONE BARRIER KERB WITH GUTTER
- PROPOSE CONCRETE MOUNTABLE KERB
- JOIN INTERFACE
- ROAD/CYCLEWAY PAVEMENT
- CONCRETE PAVEMENT
- GRANITE PAVER PAVEMENT
- BRICK PAVER PAVEMENT
- GARDEN BED
- BIKE LANE PAINT MARKING
- PROPOSED TRAFFIC SIGNAL
- PROPOSED LIGHT POLE
- PROPOSED STREET LIGHTING PIT
- WARNING TGSI

AECOM

CONSULTANT

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PROJECT

CoS Cycleways

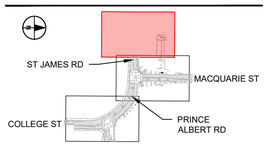
CLIENT

CITY OF SYDNEY

SCALE BAR

0 5 10 m
1:200

KEY PLAN



REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

I/R	DATE	DESCRIPTION
03	13.03.2024	100% DD ISSUE
02	20.12.2023	80% DD ISSUE
01	27.10.2023	100% CD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER

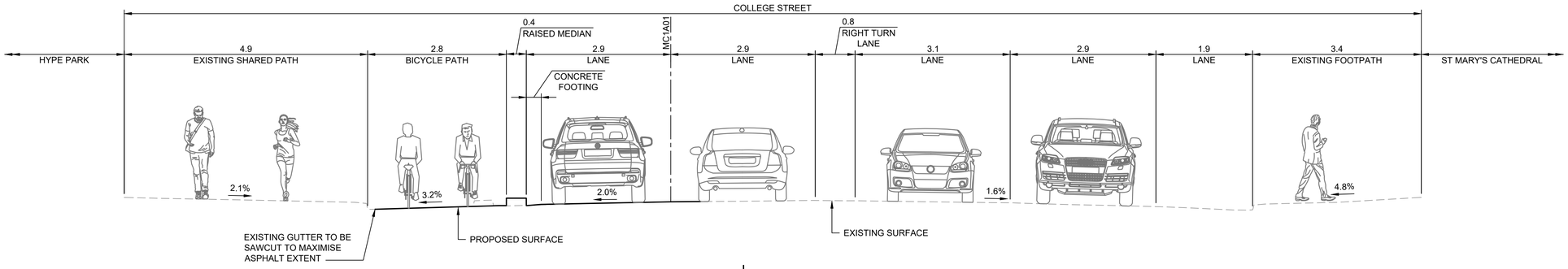
60711261

SHEET TITLE

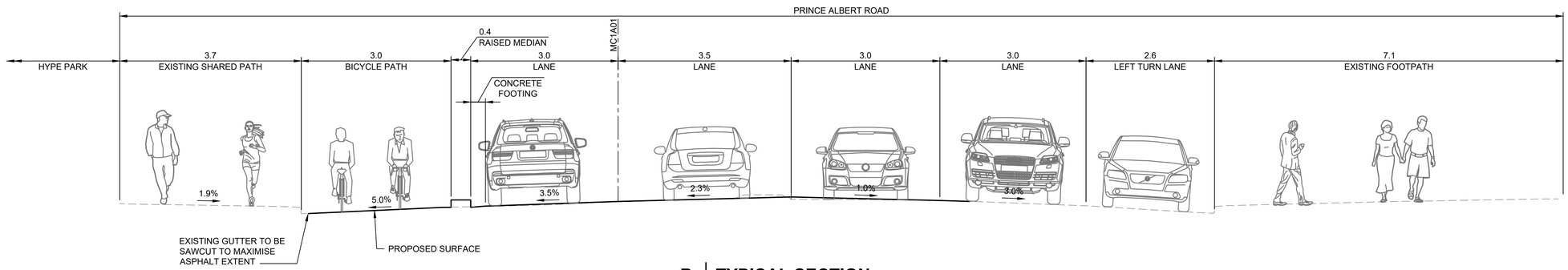
PHILLIP TO COLLEGE STREET
GENERAL ARRANGEMENT PLAN
SHEET 03

SHEET NUMBER

60711261-SHT-00-1000-CI-0103



A | TYPICAL SECTION
CI-0101 — Scale 1:50



B | TYPICAL SECTION
CI-0101 — Scale 1:50

AECOM

CONSULTANT

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A.B.N 20 093 846 925
www.aecom.com

PROJECT
CoS Cycleways

CLIENT
CITY OF SYDNEY

SCALE BAR
0 1.25 2.5 m
1:50

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

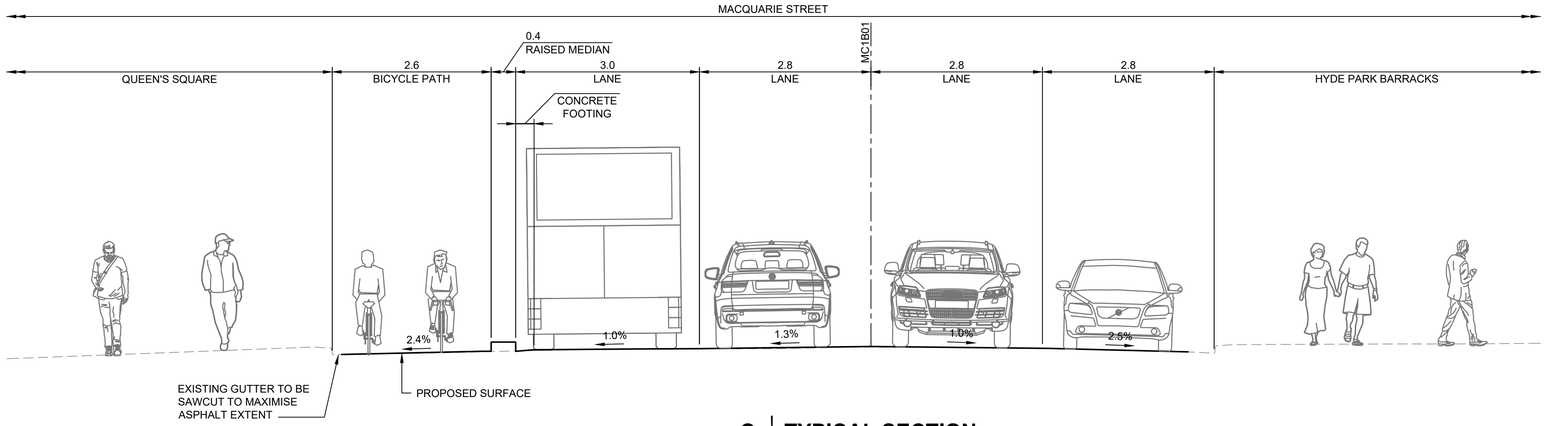
04	13.03.2024	100% DD ISSUE
03	20.12.2023	80% DD ISSUE
02	27.10.2023	100% CD ISSUE
01	21.07.2023	80% CD ISSUE
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER
60711261

SHEET TITLE
PHILLIP TO COLLEGE STREET
TYPICAL SITE SECTIONS
SHEET 01

SHEET NUMBER
60711261-SHT-00-1000-CI-0141



C | TYPICAL SECTION

CI-0102

Scale 1:50

AECOM

CONSULTANT

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A.B.N 20 093 846 925
www.aecom.com

PROJECT

CoS Cycleways

CLIENT

CITY OF SYDNEY

SCALE BAR

0 1.25 2.5 m
1:50

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

04	13.03.2024	100% DD ISSUE
03	20.12.2023	80% DD ISSUE
02	27.10.2023	100% CD ISSUE
01	21.07.2023	80% CD ISSUE
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

SHEET TITLE

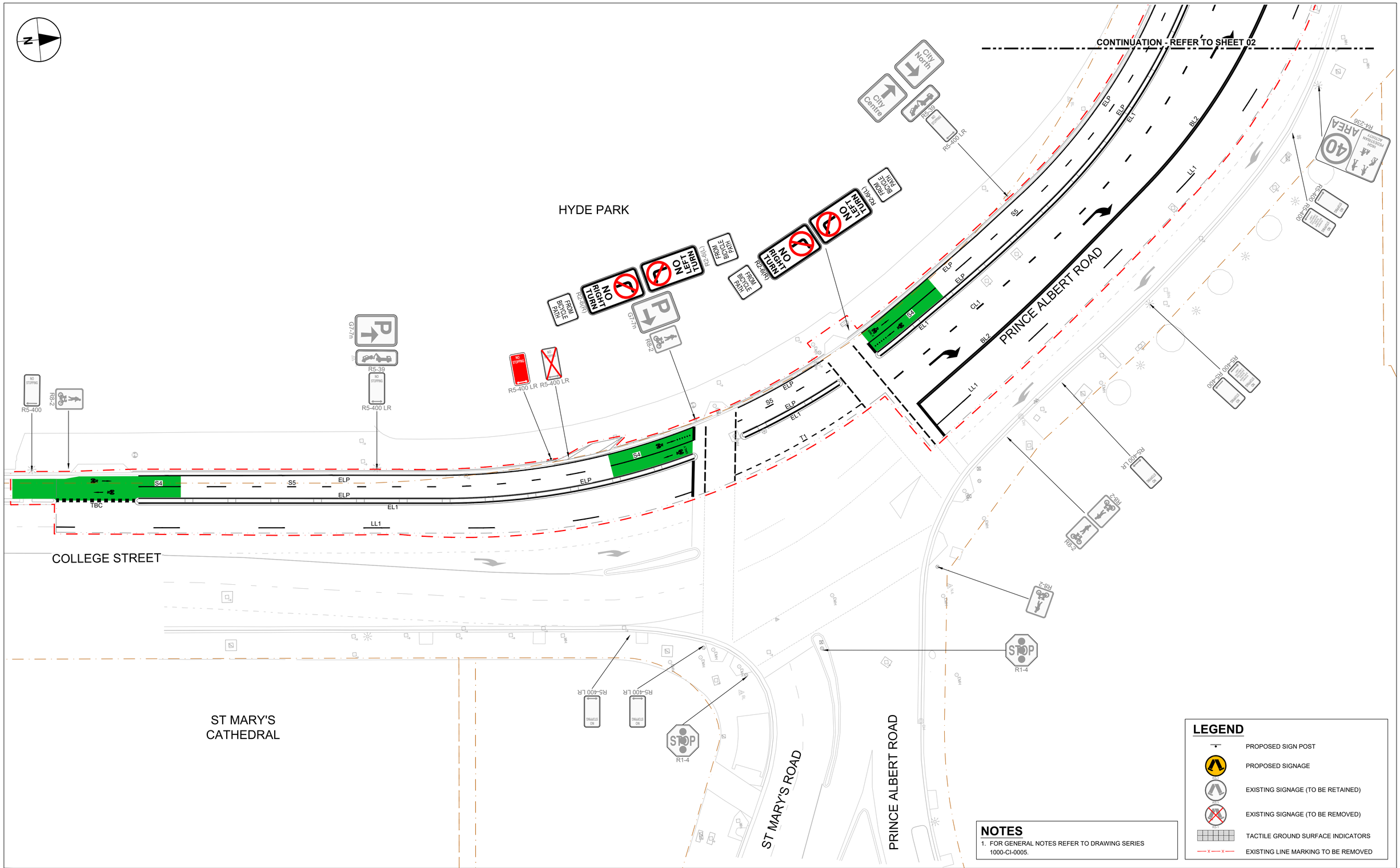
PHILLIP TO COLLEGE STREET
TYPICAL SITE SECTIONS
SHEET 02

SHEET NUMBER

60711261-SHT-00-1000-CI-0142

ISO A1 594mm x 841mm

Last saved by: JOSE.CARVAJALINO(2024-03-13) Last Plotted: 2024-03-13
Filename: C:\PWWORKING\AECOM_DS13_AU\JOSE.CARVAJALINO@AECOM.COM\D0155195\60711261-SHT-00-1000-CI-0161.DWG



LEGEND

- PROPOSED SIGN POST
- PROPOSED SIGNAGE
- EXISTING SIGNAGE (TO BE RETAINED)
- EXISTING SIGNAGE (TO BE REMOVED)
- TACTILE GROUND SURFACE INDICATORS
- EXISTING LINE MARKING TO BE REMOVED

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0005.

CONSULTANT

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PROJECT

CoS Cycleways

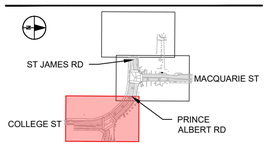
CLIENT

CITY OF SYDNEY

SCALE BAR

0 5 10 m
1:200

KEY PLAN



REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

I/R	DATE	DESCRIPTION
02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET SIGNAGE AND LINEMARKING PLAN SHEET 01

SHEET NUMBER

60711261-SHT-00-1000-CI-0161

ISO A1 594mm x 841mm

CONTINUATION - REFER TO SHEET 03

ST JAMES ROAD

QUEEN'S SQUARE

Macquaire St

E 334581.035
N 6250889.587

E 334598.580
N 6250885.809

EXISTING SHARED PATH STAMP TO BE REMOVED

EXISTING SHARED PATH STAMP TO BE REMOVED

MACQUARIE STREET

HYDE PARK

St James Road

City Centre

Prince Albert Rd

HYDE PARK BARRACKS

PRINCE ALBERT ROAD

CONTINUATION - REFER TO SHEET 01

LEGEND

- PROPOSED SIGN POST
- PROPOSED SIGNAGE
- EXISTING SIGNAGE (TO BE RETAINED)
- EXISTING SIGNAGE (TO BE REMOVED)
- TACTILE GROUND SURFACE INDICATORS
- EXISTING LINE MARKING TO BE REMOVED

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0005.

CONSULTANT

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PROJECT

CoS Cycleways

CLIENT

CITY OF SYDNEY

SCALE BAR

0 5 10 m
1:200

KEY PLAN

ST JAMES RD
MACQUARIE ST
COLLEGE ST
PRINCE ALBERT RD

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET SIGNAGE AND LINEMARKING PLAN
SHEET 02

SHEET NUMBER

60711261-SHT-00-1000-CI-0162

Last saved by: JOSE.CARVAJALINO(2024-03-13) Last Plotted: 2024-03-13
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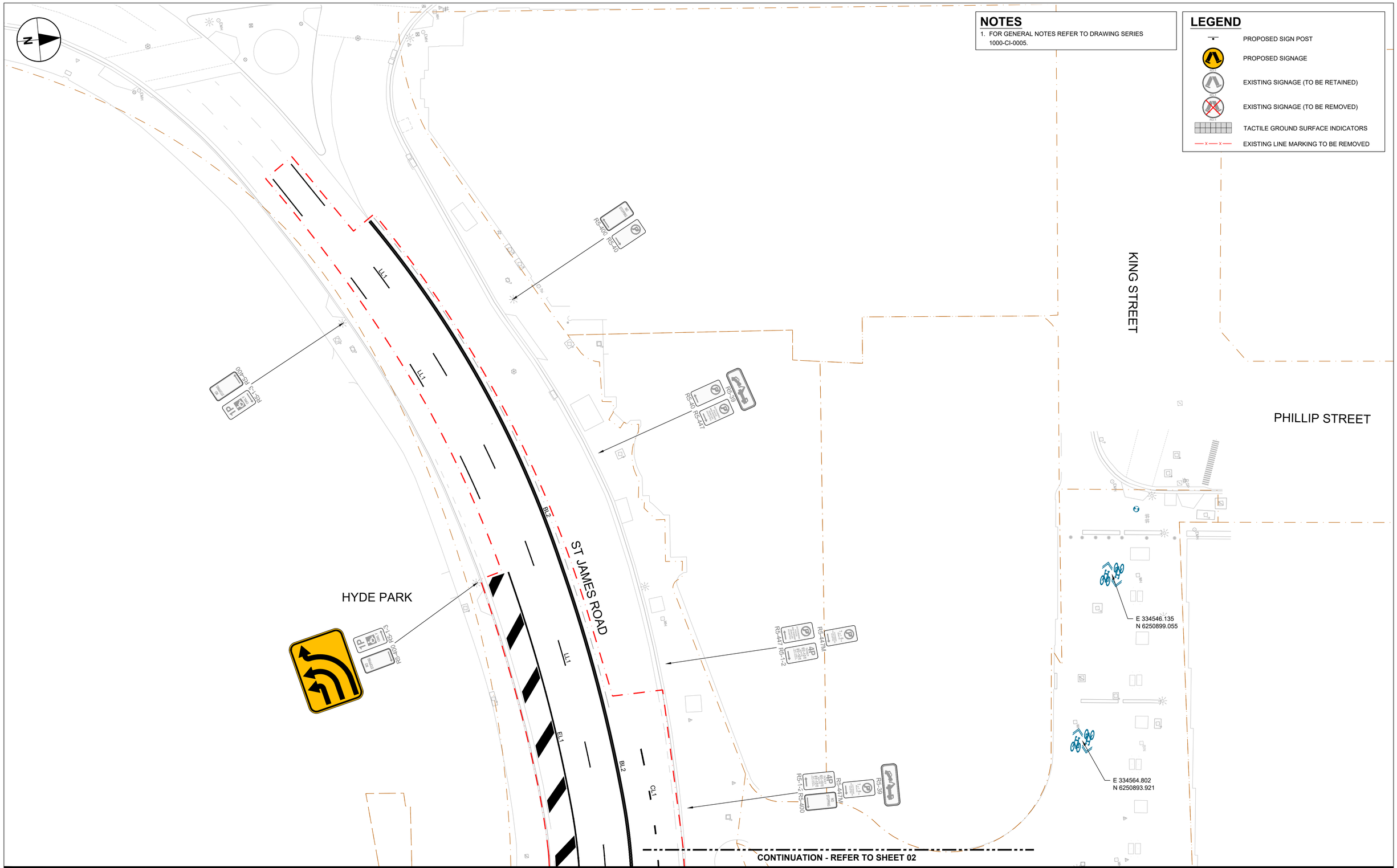
ISO A1 594mm x 841mm

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0005.

LEGEND

- PROPOSED SIGN POST
- PROPOSED SIGNAGE
- EXISTING SIGNAGE (TO BE RETAINED)
- EXISTING SIGNAGE (TO BE REMOVED)
- TACTILE GROUND SURFACE INDICATORS
- EXISTING LINE MARKING TO BE REMOVED



CONSULTANT

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www.aecom.com

PROJECT

CoS Cycleways

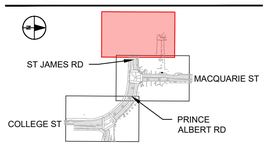
CLIENT

CITY OF SYDNEY

SCALE BAR

0 5 10 m
1:200

KEY PLAN



REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

I/R	DATE	DESCRIPTION
02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET SIGNAGE AND LINEMARKING PLAN SHEET 03

SHEET NUMBER

60711261-SHT-00-1000-CI-0163

Last saved by: JOSE.CARVAJALINO(2024-03-13) Last Plotted: 2024-03-13
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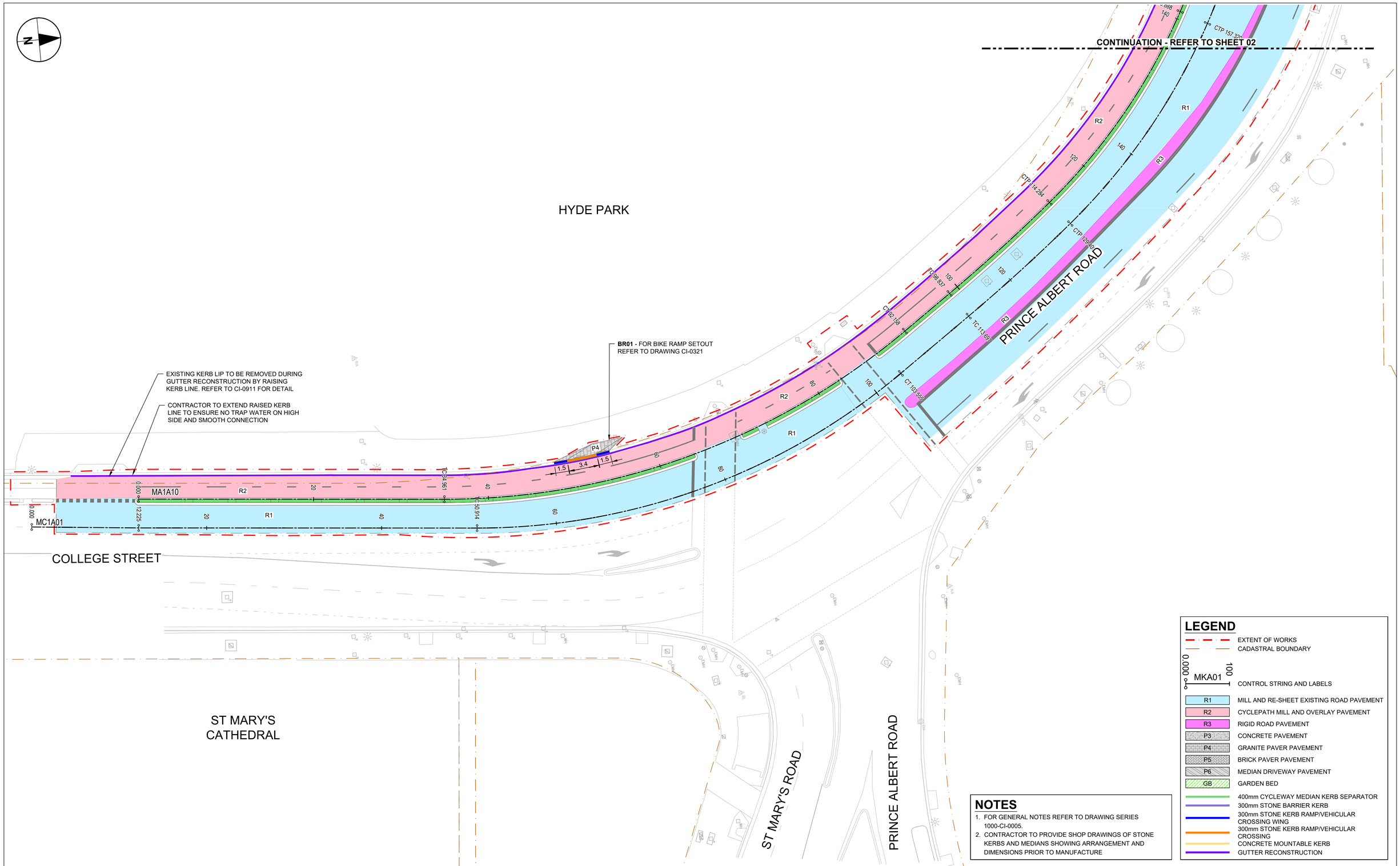
ISO A1 594mm x 841mm



LEGEND

- EXTENT OF WORKS
- CADASTRAL BOUNDARY
- MKA01 (0.000 / 100) — CONTROL STRING AND LABELS
- R1 — MILL AND RE-SHEET EXISTING ROAD PAVEMENT
- R2 — CYCLEPATH MILL AND OVERLAY PAVEMENT
- R3 — RIGID ROAD PAVEMENT
- P3 — CONCRETE PAVEMENT
- P4 — GRANITE PAVER PAVEMENT
- P5 — BRICK PAVER PAVEMENT
- P6 — MEDIAN DRIVEWAY PAVEMENT
- GB — GARDEN BED
- 400mm CYCLEWAY MEDIAN KERB SEPARATOR
- 300mm STONE BARRIER KERB
- 300mm STONE KERB RAMP/VEHICULAR CROSSING WING
- 300mm STONE KERB RAMP/VEHICULAR CROSSING
- CONCRETE MOUNTABLE KERB
- GUTTER RECONSTRUCTION

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0005.
2. CONTRACTOR TO PROVIDE SHOP DRAWINGS OF STONE KERBS AND MEDIANS SHOWING ARRANGEMENT AND DIMENSIONS PRIOR TO MANUFACTURE

AECOM

CONSULTANT

AECOM Australia Pty Ltd
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PROJECT

CoS Cycleways

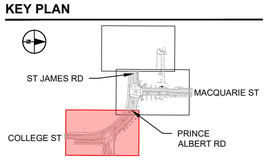
CLIENT

CITY OF SYDNEY

SCALE BAR

0 5 10 m
1:200

KEY PLAN



REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

I/R	DATE	DESCRIPTION
02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET ROAD, KERB & MISC. ALIGNMENT AND PAVEMENT PLAN SHEET 01

SHEET NUMBER

60711261-SHT-00-1000-CI-0301

Last saved by: JOSE.CARVAJALINO(2024-03-13) Last Plotted: 2024-03-13
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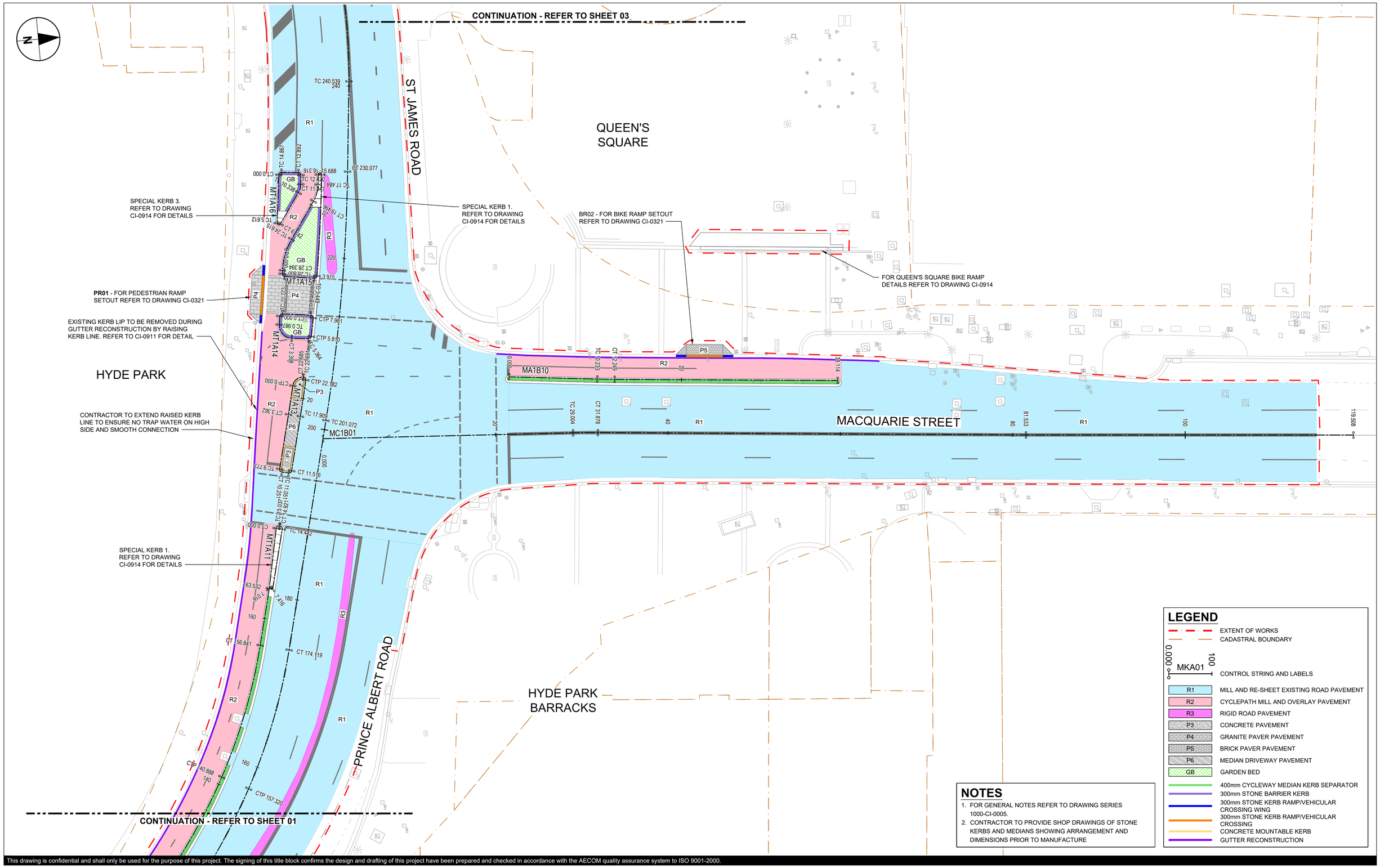
ISO A1 594mm x 841mm



LEGEND

- EXTENT OF WORKS
- CADASTRAL BOUNDARY
- MKA01 — CONTROL STRING AND LABELS
- R1 — MILL AND RE-SHEET EXISTING ROAD PAVEMENT
- R2 — CYCLEPATH MILL AND OVERLAY PAVEMENT
- R3 — RIGID ROAD PAVEMENT
- P3 — CONCRETE PAVEMENT
- P4 — GRANITE PAVER PAVEMENT
- P5 — BRICK PAVER PAVEMENT
- P6 — MEDIAN DRIVEWAY PAVEMENT
- GB — GARDEN BED
- 400mm CYCLEWAY MEDIAN KERB SEPARATOR
- 300mm STONE BARRIER KERB
- 300mm STONE KERB RAMP/VEHICULAR CROSSING WING
- 300mm STONE KERB RAMP/VEHICULAR CROSSING
- CONCRETE MOUNTABLE KERB
- GUTTER RECONSTRUCTION

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0005.
2. CONTRACTOR TO PROVIDE SHOP DRAWINGS OF STONE KERBS AND MEDIANS SHOWING ARRANGEMENT AND DIMENSIONS PRIOR TO MANUFACTURE

CONSULTANT
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PROJECT
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CLIENT
CITY OF SYDNEY

SCALE BAR
0 5 10 m
1:200

KEY PLAN
ST JAMES RD
MACQUARIE ST
COLLEGE ST
PRINCE ALBERT RD

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

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FOR INFORMATION ONLY

PROJECT NUMBER
60711261

SHEET TITLE
PHILLIP TO COLLEGE STREET ROAD, KERB & MISC. ALIGNMENT AND PAVEMENT PLAN SHEET 02

SHEET NUMBER
60711261-SHT-00-1000-CI-0302

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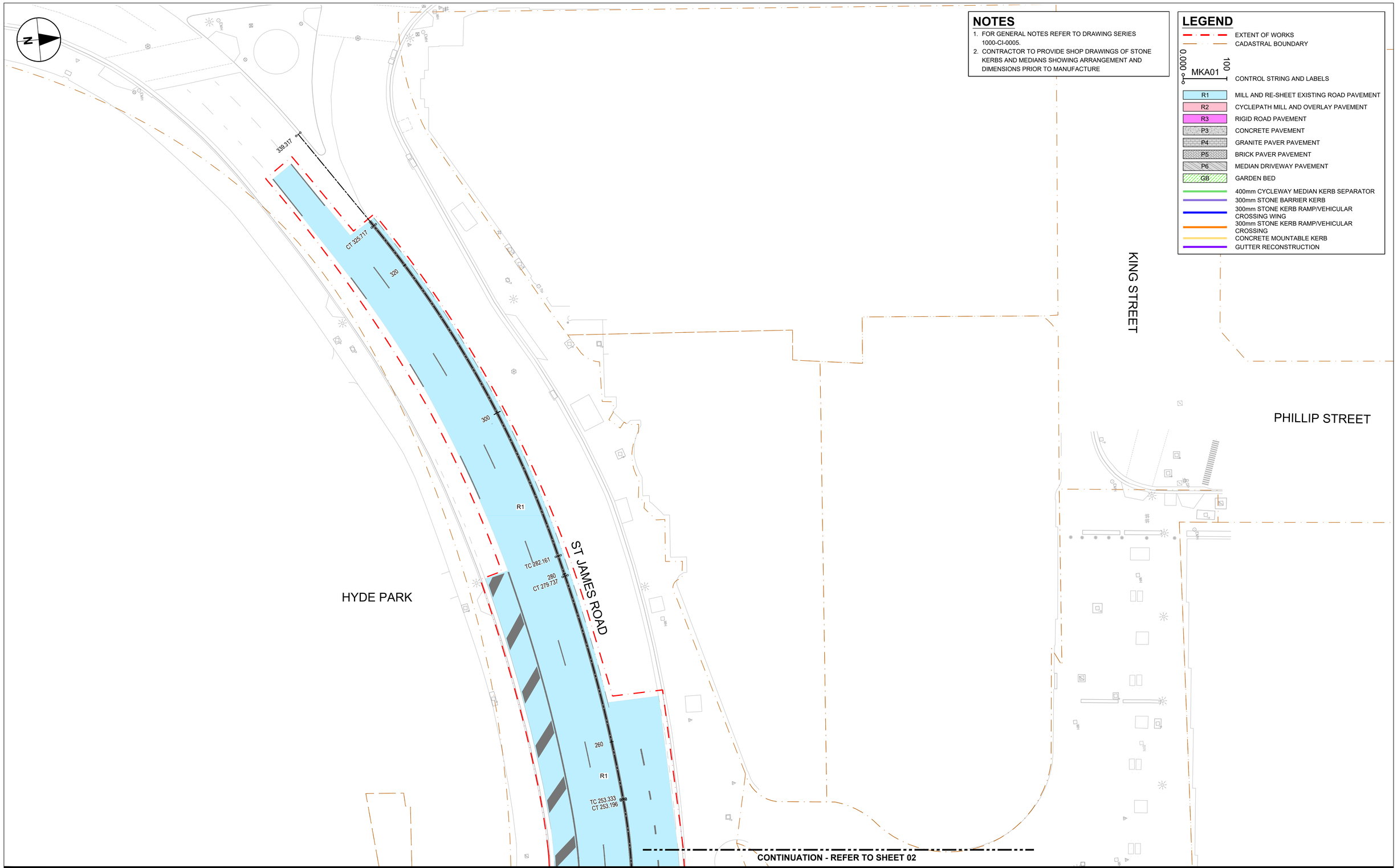
ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0005.
2. CONTRACTOR TO PROVIDE SHOP DRAWINGS OF STONE KERBS AND MEDIANS SHOWING ARRANGEMENT AND DIMENSIONS PRIOR TO MANUFACTURE

LEGEND

- EXTENT OF WORKS
- CADASTRAL BOUNDARY
- 0.000 MKA01 100 — CONTROL STRING AND LABELS
- R1 — MILL AND RE-SHEET EXISTING ROAD PAVEMENT
- R2 — CYCLEPATH MILL AND OVERLAY PAVEMENT
- R3 — RIGID ROAD PAVEMENT
- P3 — CONCRETE PAVEMENT
- P4 — GRANITE PAVER PAVEMENT
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- 300mm STONE KERB RAMP/VEHICULAR CROSSING
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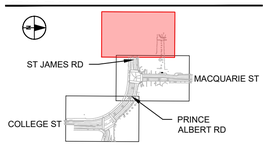
SCALE BAR

0 5 10 m
1:200

KEY PLAN



REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

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01	20.12.2023	80% DD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET ROAD, KERB & MISC. ALIGNMENT AND PAVEMENT PLAN SHEET 03

SHEET NUMBER

60711261-SHT-00-1000-CI-0303

Last saved by: JOSE.CARVAJALINO (2024-03-13) Last Plotted: 2024-03-13
Filename: C:\PWWORKING\AECOM_DS13_AUJOSE.CARVAJALINO@AECOM.COM\D0155195\60711261-SHT-00-1000-CI-0303.DWG

ISO A1 594mm x 841mm

CONTROL 1000 CIV MASTER->MC1A01 HORIZONTAL IPS							
PT	CHAINAGE	EASTING	NORTHING	HEIGHT	RADIUS	A.LENGTH	DEFL.ANGLE
IP 1	0.000	334704.873	6250682.528	27.636			
IP 2	12.225	334706.107	6250694.690	28.037			
IP 3	77.234	334712.234	6250760.549	29.864	-75.100	52.641	40°09'39.54"
IP 4	121.551	334686.263	6250797.853	30.732	-205.300	15.708	4°23'01.47"
IP 5	143.362	334672.356	6250814.887	31.022	-72.401	27.915	22°05'27.05"
IP 6	165.719	334652.549	6250825.721	31.158	-67.500	16.800	14°15'35.49"
IP 7	215.575	334604.198	6250838.154	30.465	-200.000	29.005	8°18'33.63"
IP 8	246.867	334573.038	6250841.490	29.344	-65.000	12.657	11°09'25.07"
IP 9	266.535	334553.402	6250839.756	28.452	-177.000	26.404	8°32'49.66"
IP 10	303.939	334516.790	6250830.902	26.702	-121.000	43.556	20°37'27.69"
IP 11	339.317	334487.339	6250810.874	25.172			

CONTROL 1000 CIV MASTER->MC1B01 HORIZONTAL IPS							
PT	CHAINAGE	EASTING	NORTHING	HEIGHT	RADIUS	A.LENGTH	DEFL.ANGLE
IP 1	0.000	334620.334	6250834.005	30.696			
IP 2	30.441	334622.433	6250864.373	31.548	100.000	2.874	1°38'47.99"
IP 3	81.533	334627.418	6250915.222	31.892			
IP 4	119.508	334630.928	6250953.034	32.276			

CONTROL 1000 CIV MEDIANS->MA1A10 HORIZONTAL IPS							
PT	CHAINAGE	EASTING	NORTHING	HEIGHT	RADIUS	A.LENGTH	DEFL.ANGLE
IP 1	0.000	334702.820	6250694.987	27.969			
IP 2	0.023	334702.823	6250695.010	27.970			
IP 3	63.560	334708.822	6250759.499	29.737	-81.600	57.197	40°09'39.54"
IP 4	106.560	334683.547	6250795.803	30.611	-201.900	15.448	4°23'01.47"
IP 5	127.586	334670.142	6250812.222	30.886	-69.001	26.604	22°05'27.05"
IP 6	148.865	334651.291	6250822.534	31.018	-64.100	15.953	14°15'35.49"
IP 7	163.532	334637.045	6250826.197	30.819			

CONTROL 1000 CIV MEDIANS->MA1B10 HORIZONTAL IPS							
PT	CHAINAGE	EASTING	NORTHING	HEIGHT	RADIUS	A.LENGTH	DEFL.ANGLE
IP 1	0.000	334615.170	6250856.152	31.259			
IP 2	11.241	334616.491	6250867.315	31.474	-100.200	2.016	1°09'09.11"
IP 3	38.114	334619.113	6250894.060	31.731			

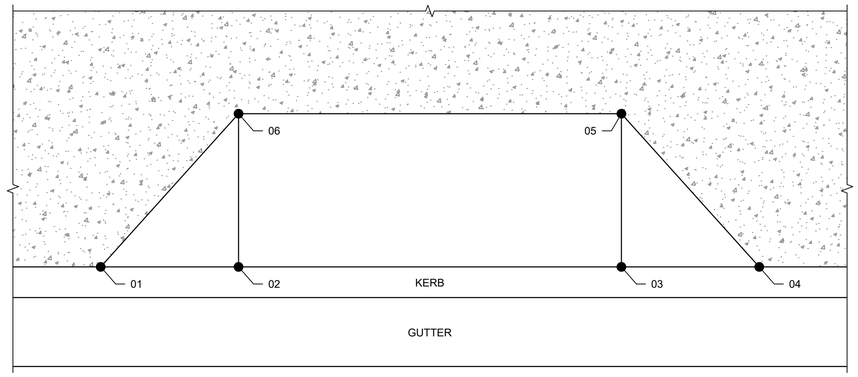
CONTROL 1000 CIV ISLANDS->MT1A11 HORIZONTAL IPS (CLOSED)							
PT	CHAINAGE	EASTING	NORTHING	HEIGHT	RADIUS	A.LENGTH	DEFL.ANGLE
IP 1	0.000	334630.179	6250827.637	30.649			
IP 2	7.016	334637.045	6250826.197	30.819			
IP 3	7.416	334637.145	6250826.585	30.840			
IP 4	14.682	334630.042	6250828.411	30.679	-0.300	0.480	91°34'49.85"
IP 5	15.276	334629.880	6250827.700	30.647	-0.300	0.476	90°59'47.83"

CONTROL 1000 CIV ISLANDS->MT1A13 HORIZONTAL IPS (CLOSED)							
PT	CHAINAGE	EASTING	NORTHING	HEIGHT	RADIUS	A.LENGTH	DEFL.ANGLE
IP 1	0.000	334613.909	6250831.084	30.358			
IP 2	1.681	334615.544	6250830.693	30.382	195.600	3.362	0°59'05.29"
IP 3	10.012	334623.679	6250828.602	30.497	-0.300	0.478	91°15'45.19"
IP 4	11.283	334623.997	6250829.965	30.557	-0.300	0.465	88°44'14.81"
IP 5	20.046	334615.452	6250832.162	30.470	-197.000	4.273	1°14'33.59"
IP 6	22.433	334613.047	6250832.726	30.430	-0.300	0.503	96°03'07.36"
IP 7	23.560	334612.873	6250831.331	30.370	-1.190	1.738	83°41'24.34"

CONTROL 1000 CIV ISLANDS->MT1A14 HORIZONTAL IPS (CLOSED)							
PT	CHAINAGE	EASTING	NORTHING	HEIGHT	RADIUS	A.LENGTH	DEFL.ANGLE
IP 1	0.000	334605.717	6250830.309	30.076			
IP 2	2.193	334608.229	6250829.918	30.160	-1.500	2.410	92°04'19.81"
IP 3	5.587	334608.677	6250833.689	30.376	-0.300	0.445	85°04'24.62"
IP 4	6.895	334607.344	6250833.965	30.357	-197.000	2.171	0°37'53.16"
IP 5	8.225	334605.968	6250834.234	30.313	-0.300	0.487	93°05'34.65"
IP 6	12.007	334605.425	6250830.354	30.081	-0.300	0.467	89°07'47.75"

CONTROL 1000 CIV ISLANDS->MT1A15 HORIZONTAL IPS (CLOSED)							
PT	CHAINAGE	EASTING	NORTHING	HEIGHT	RADIUS	A.LENGTH	DEFL.ANGLE
IP 1	0.000	334601.197	6250831.301	30.011			
IP 2	3.682	334601.765	6250835.002	30.261	-0.300	0.466	89°04'50.05"
IP 3	3.915	334601.474	6250835.051	30.266			
IP 4	9.801	334595.670	6250836.038	30.135	-197.000	11.772	3°25'25.93"
IP 5	15.688	334589.816	6250836.676	29.982			
IP 6	15.845	334589.618	6250836.698	29.979	-0.200	0.314	90°00'00.00"
IP 7	16.159	334589.574	6250836.300	29.974	-0.200	0.314	90°00'00.00"
IP 8	16.316	334589.772	6250836.278	29.973			
IP 9	18.490	334591.955	6250836.034	30.008	4.000	2.012	28°49'05.27"
IP 10	26.504	334598.550	6250831.380	29.940	-8.000	3.780	27°04'09.73"
IP 11	29.034	334601.152	6250831.007	29.999	-0.300	0.468	89°24'54.39"

CONTROL 1000 CIV ISLANDS->MT1A16 HORIZONTAL IPS (CLOSED)							
PT	CHAINAGE	EASTING	NORTHING	HEIGHT	RADIUS	A.LENGTH	DEFL.ANGLE
IP 1	0.000	334589.372	6250831.719	29.615			
IP 2	5.744	334595.095	6250831.000	29.773	-0.200	0.265	75°56'13.96"
IP 3	6.009	334595.208	6250831.291	29.790	-0.200	0.265	75°56'13.96"
IP 4	10.842	334591.235	6250834.103	29.916	-2.000	1.010	28°55'27.36"
IP 5	12.656	334589.358	6250834.312	29.892	-0.300	0.472	90°09'09.68"
IP 6	15.100	334589.079	6250831.756	29.626	-0.300	0.466	89°02'55.04"



PEDESTRIAN, BIKE AND DRIVEWAY RAMP PLAN (PR##, BR## AND DW##)
SCALE N.T.S.

PEDESTRIAN, BIKE AND DRIVEWAY RAMP SETOUT POINTS				
RAMP NUMBER	VERTEX	EASTING	NORTHING	R.L.
PR01	1	334606.264	6250827.895	30.103
PR01	2	334605.342	6250828.037	29.980
PR01	3	334600.814	6250828.735	29.870
PR01	4	334599.645	6250828.901	29.922
PR01	5	334600.638	6250827.560	30.007
PR01	6	334605.163	6250826.877	30.099
BR01	1	334702.967	6250742.666	29.393
BR01	2	334702.860	6250744.178	29.344
BR01	3	334702.478	6250747.589	29.438
BR01	4	334702.234	6250749.087	29.571
BR01	5	334700.892	6250750.719	29.644
BR01	6	334701.312	6250747.236	29.564
BR02	1	334614.407	6250875.673	31.678
BR02	2	334614.525	6250876.871	31.578
BR02	3	334614.931	6250881.062	31.615
BR02	4	334615.045	6250882.262	31.731
BR02	5	334613.737	6250881.179	31.681
BR02	6	334613.323	6250876.979	31.636

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PROJECT
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SCALE BAR

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

I/R	DATE	DESCRIPTION
02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER
60711261

SHEET TITLE
PHILLIP TO COLLEGE STREET ROAD, KERB & MISC. ALIGNMENT SET-OUT TABLES

SHEET NUMBER
60711261-SHT-00-1000-CI-0321

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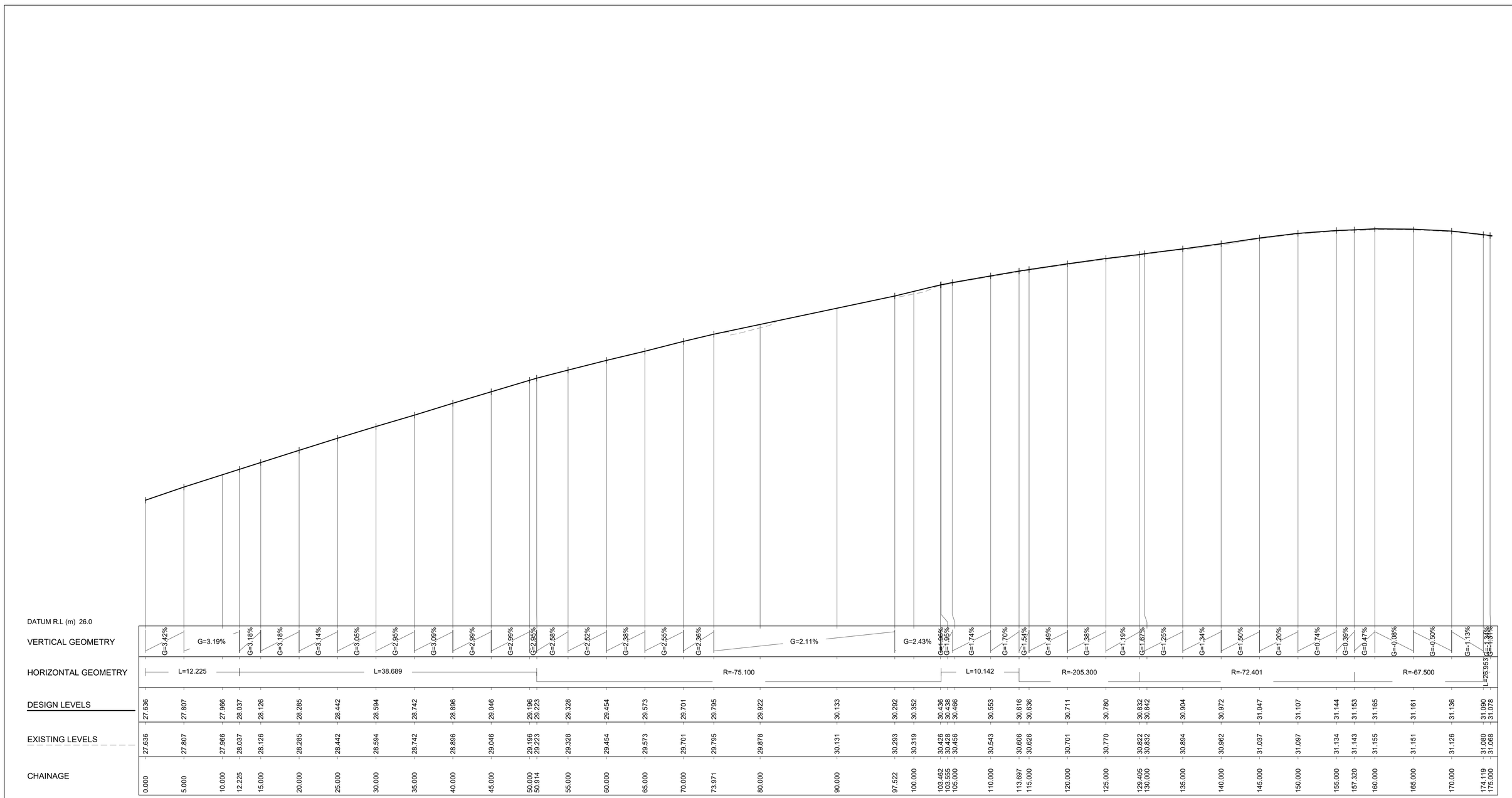

LONGITUDINAL SECTION - MC1A01

A1 VERTICAL SCALE 1:25
A1 HORIZONTAL SCALE 1:250

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PROJECT
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CITY OF SYDNEY

SCALE BAR
0 6.25 12.5 m H=1:250
0 0.625 1.25 V=1:25

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

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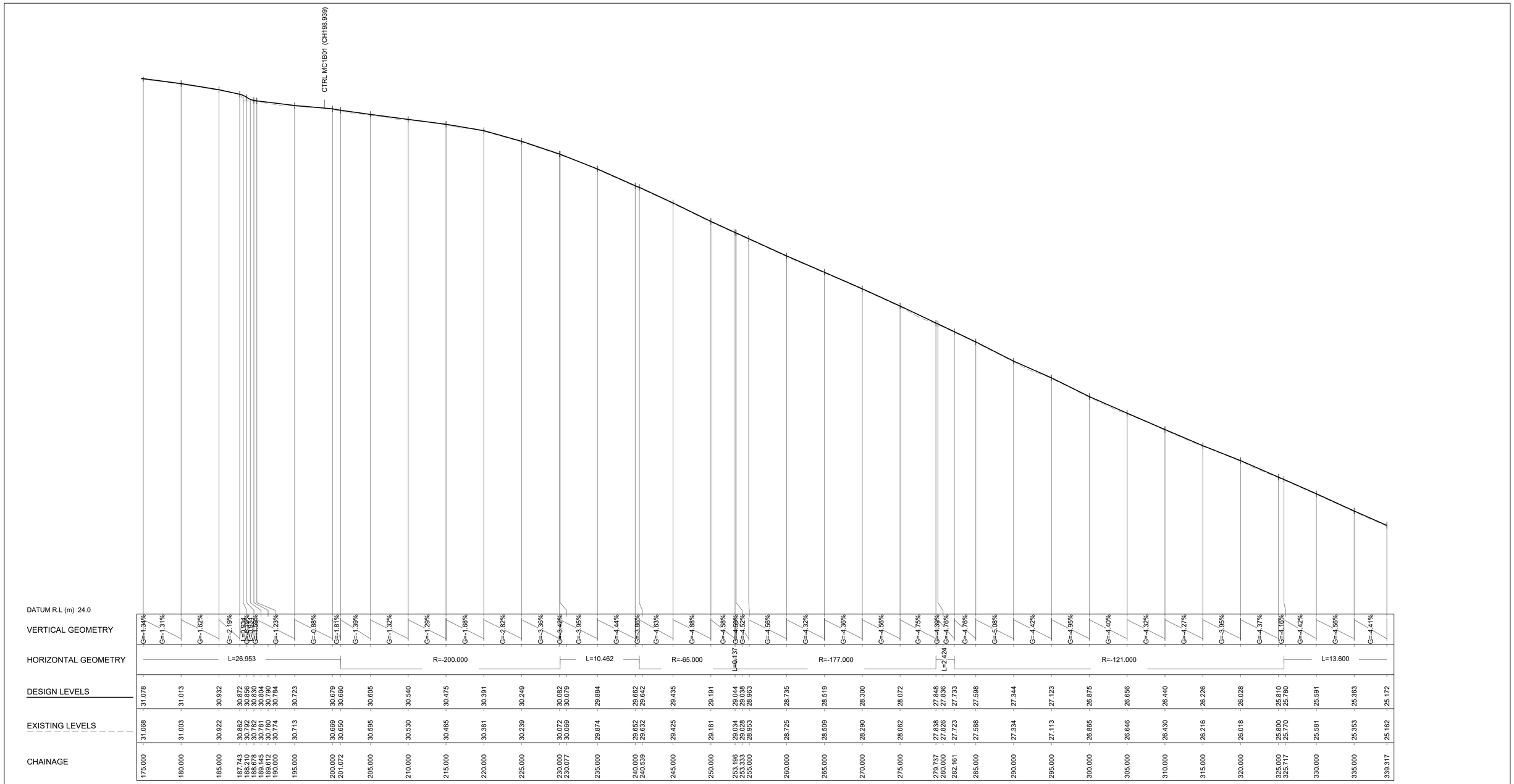
FOR INFORMATION ONLY

PROJECT NUMBER
60711261

SHEET TITLE
PHILLIP TO COLLEGE STREET ROAD ALIGNMENT
LONGITUDINAL SECTIONS
SHEET 01

SHEET NUMBER
60711261-SHT-00-1000-CI-0341

ISO A1 594mm x 841mm



LONGITUDINAL SECTION - MC1A01

A1 VERTICAL SCALE 1:25
A1 HORIZONTAL SCALE 1:250

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SCALE BAR

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0 0.625 1.25
H=1:250
V=1:25

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

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PROJECT NUMBER

60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET ROAD ALIGNMENT LONGITUDINAL SECTIONS SHEET 02

SHEET NUMBER

60711261-SHT-00-1000-CI-0342

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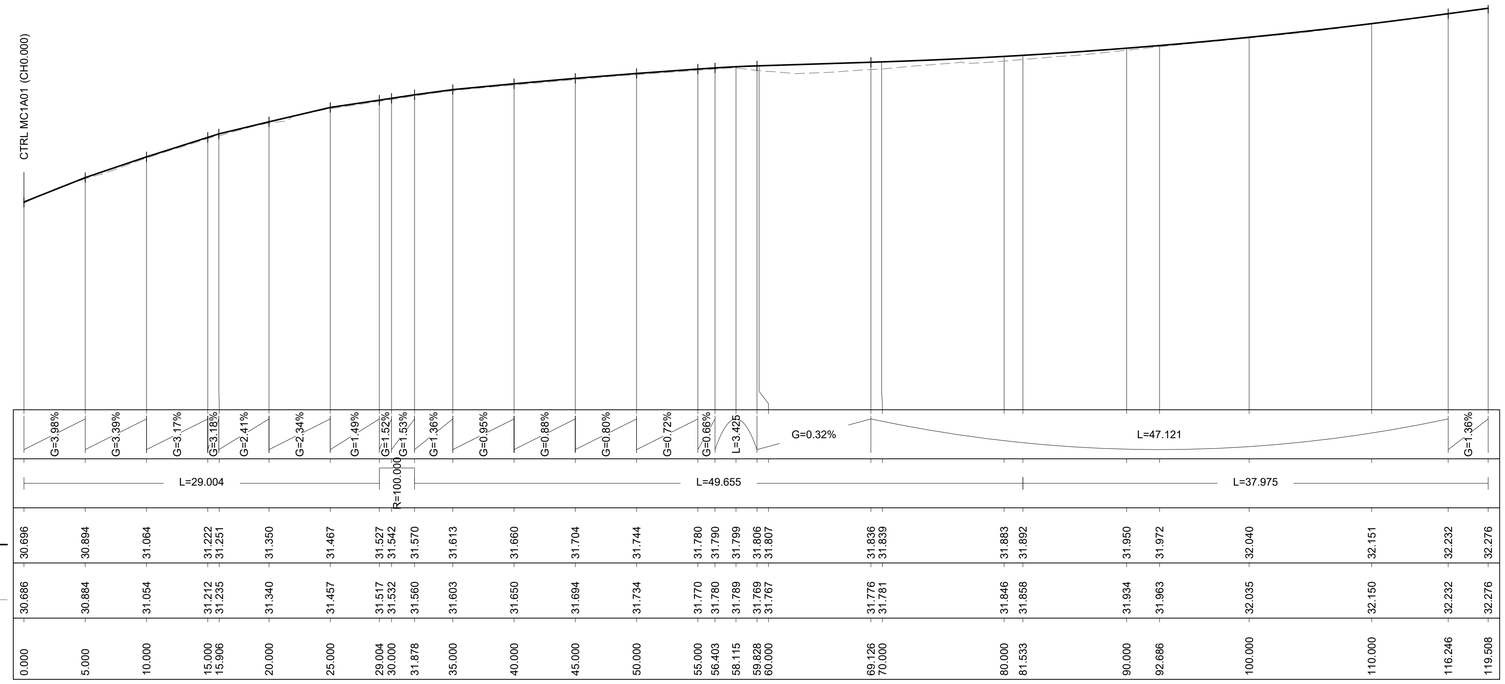

LONGITUDINAL SECTION - MC1B01

A1 VERTICAL SCALE 1:25
A1 HORIZONTAL SCALE 1:250

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PROJECT

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SCALE BAR

0 6.25 12.5 m H=1:250
0 0.625 1.25 V=1:25

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

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FOR INFORMATION ONLY

PROJECT NUMBER

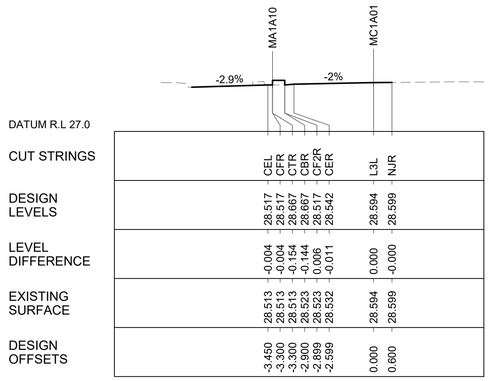
60711261

SHEET TITLE

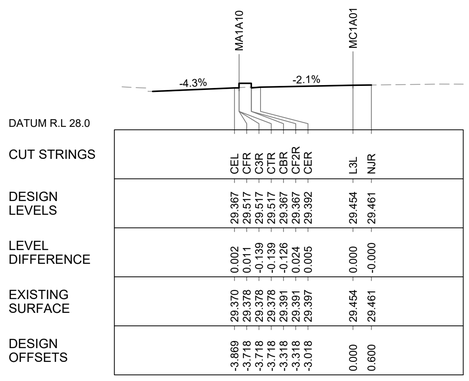
PHILLIP TO COLLEGE STREET
ROAD ALIGNMENT
LONGITUDINAL SECTIONS
SHEET 03

SHEET NUMBER

60711261-SHT-00-1000-CI-0343



CH 30.000



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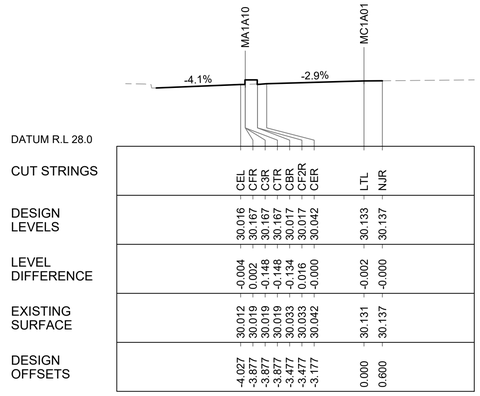
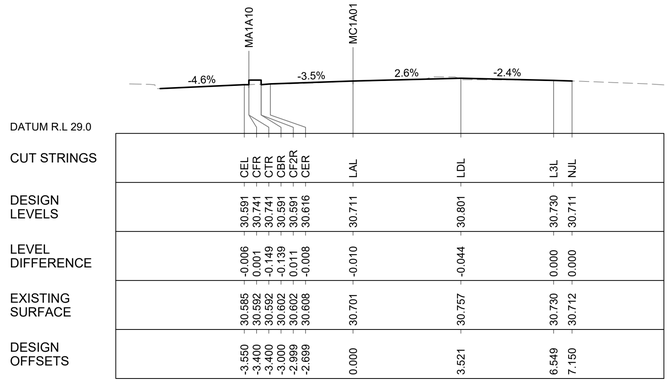


CH 90.000



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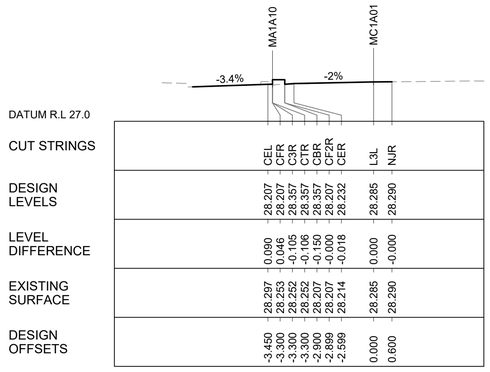
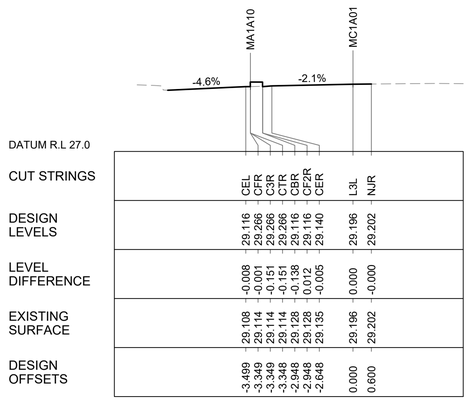
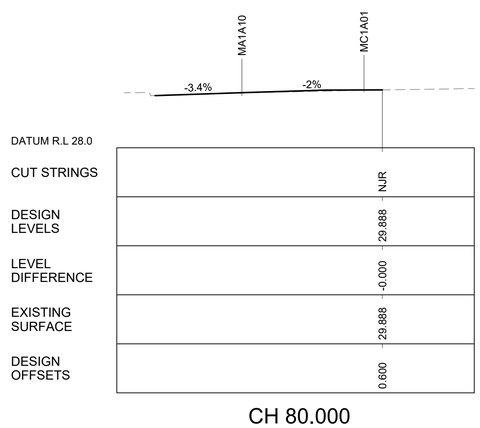


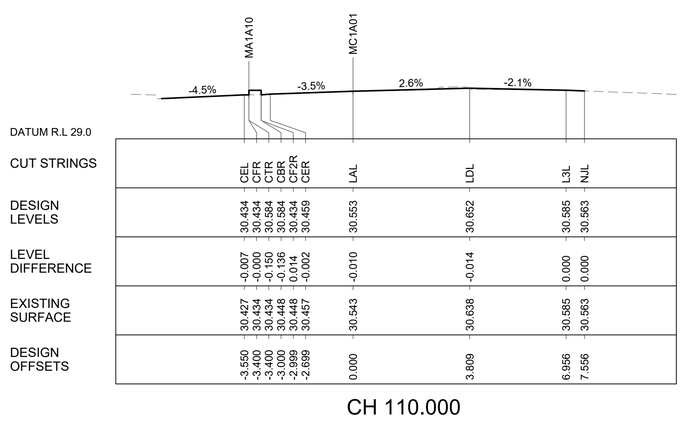
CH 20.000



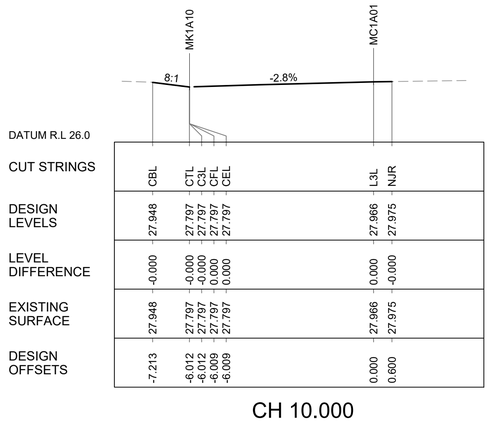
CH 50.000



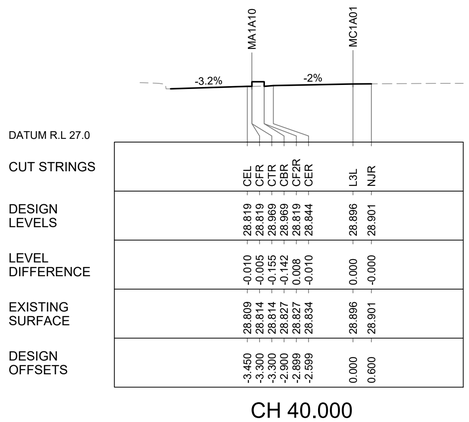
CH 80.000



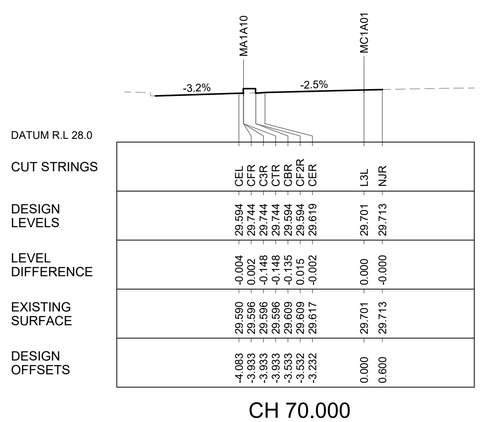
CH 110.000



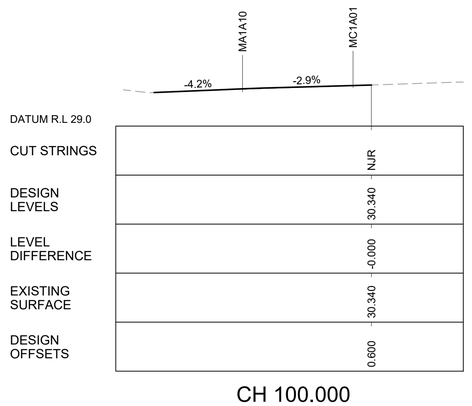
CH 10.000



CH 40.000



CH 70.000



CH 100.000

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SCALE BAR

0 2.5 5 m
1:100

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

I/R	DATE	DESCRIPTION
02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER

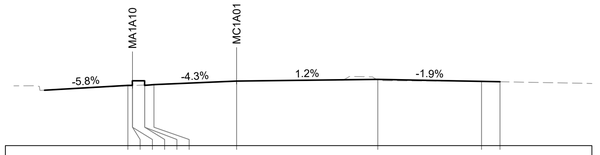
60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET ROAD ALIGNMENT
CROSS SECTIONS - MC1A01
SHEET 01

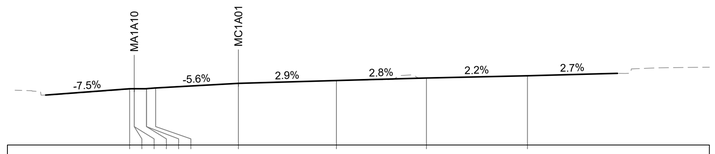
SHEET NUMBER

60711261-SHT-00-1000-CI-0371



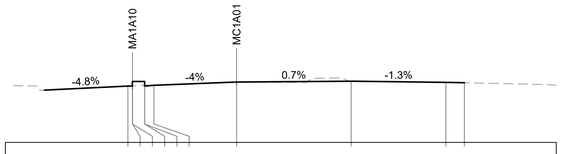
	CEL	CFR	CTR	CBR	CF2R	CER	LAL	LDL	L3L	NJL
DESIGN LEVELS	30.967	31.117	31.117	30.967	30.967	30.992	31.107	31.162	31.097	31.086
LEVEL DIFFERENCE	-0.016	-0.008	-0.158	-0.137	0.013	0.003	-0.010	-0.027	0.000	0.000
EXISTING SURFACE	30.951	30.958	30.958	30.979	30.979	30.995	31.097	31.135	31.097	31.086
DESIGN OFFSETS	-3.550	-3.400	-3.400	-3.000	-2.999	-2.699	0.000	4.610	7.996	8.599

CH 150.000



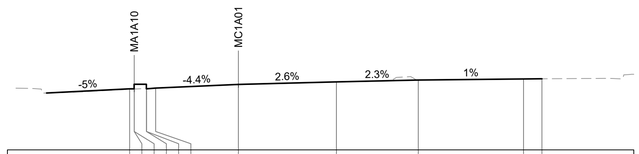
	CEL	CFR	CTR	CBR	CF2R	CER	LAL	L3R	LDL	L3L
DESIGN LEVELS	30.836	30.836	30.836	30.838	30.838	30.862	31.013	31.105	31.187	31.259
LEVEL DIFFERENCE	-0.017	-0.006	-0.006	0.014	0.014	0.007	-0.010	-0.003	-0.008	0.000
EXISTING SURFACE	30.819	30.829	30.829	30.852	30.852	30.869	31.003	31.102	31.179	31.259
DESIGN OFFSETS	-3.550	-3.400	-3.400	-3.000	-2.999	-2.699	0.000	3.200	6.140	9.438

CH 180.000



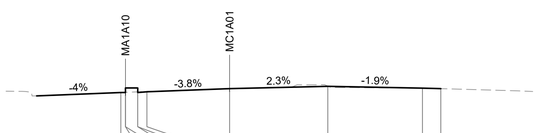
	CEL	CFR	CTR	CBR	CF2R	CER	LAL	LDL	L3L	NJL
DESIGN LEVELS	30.839	30.989	30.989	30.840	30.840	30.865	30.972	30.999	30.960	30.949
LEVEL DIFFERENCE	0.001	0.008	-0.142	-0.124	0.026	0.010	-0.010	-0.008	0.000	0.000
EXISTING SURFACE	30.840	30.848	30.848	30.865	30.865	30.875	30.962	30.990	30.960	30.949
DESIGN OFFSETS	-3.550	-3.400	-3.400	-3.000	-2.999	-2.699	0.000	3.741	6.832	7.436

CH 140.000



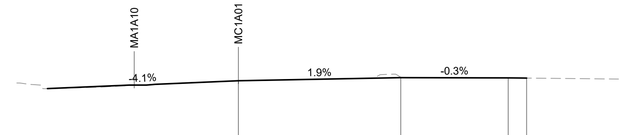
	CEL	CFR	CTR	CBR	CF2R	CER	LAL	L3R	LDL	L3L	NJL
DESIGN LEVELS	30.992	31.142	31.142	30.993	30.993	31.017	31.136	31.219	31.279	31.314	31.321
LEVEL DIFFERENCE	-0.014	-0.007	-0.157	-0.139	0.011	0.000	-0.010	-0.005	0.000	0.000	0.000
EXISTING SURFACE	30.979	30.985	30.985	31.004	31.004	31.017	31.126	31.214	31.279	31.315	31.321
DESIGN OFFSETS	-3.550	-3.400	-3.400	-3.000	-2.999	-2.699	0.000	3.200	5.874	9.311	9.911

CH 170.000



	CEL	CFR	CTR	CBR	CF2R	CER	LAL	LDL	L3L	NJL
DESIGN LEVELS	30.715	30.715	30.865	30.865	30.715	30.740	30.842	30.917	30.858	30.842
LEVEL DIFFERENCE	0.000	0.006	-0.144	-0.127	0.023	0.010	-0.010	0.008	0.000	-0.000
EXISTING SURFACE	30.715	30.721	30.721	30.738	30.738	30.750	30.832	30.925	30.858	30.842
DESIGN OFFSETS	-3.551	-3.400	-3.400	-3.000	-3.000	-2.700	0.000	3.206	6.296	6.896

CH 130.000



	LAL	LDL	L3L	NJL
DESIGN LEVELS	31.165	31.267	31.258	31.252
LEVEL DIFFERENCE	-0.010	0.014	0.000	0.000
EXISTING SURFACE	31.155	31.281	31.258	31.252
DESIGN OFFSETS	0.000	5.303	8.810	9.411

CH 160.000

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SCALE BAR
0 2.5 5 m
1:100

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

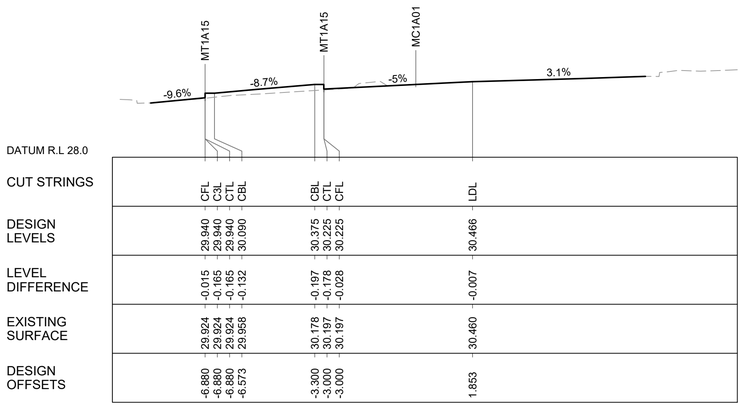
02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

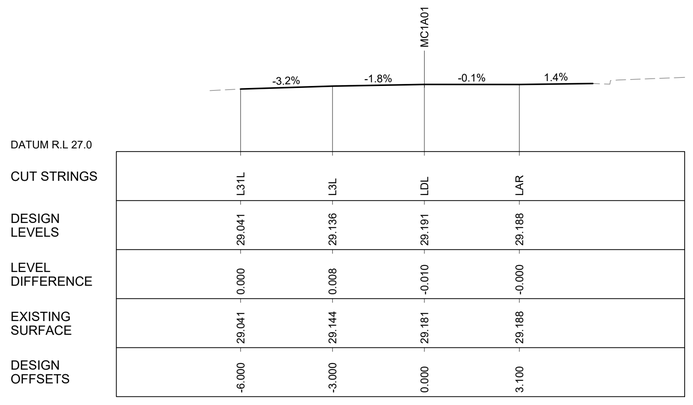
PROJECT NUMBER
60711261

SHEET TITLE
PHILLIP TO COLLEGE STREET ROAD ALIGNMENT
CROSS SECTIONS - MC1A01
SHEET 02

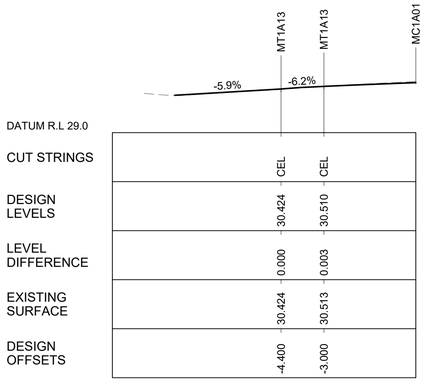
SHEET NUMBER
60711261-SHT-00-1000-CI-0372



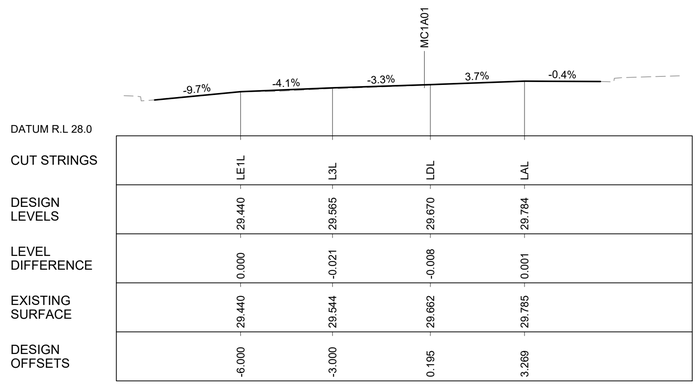
CH 220.000



CH 250.000



CH 200.000



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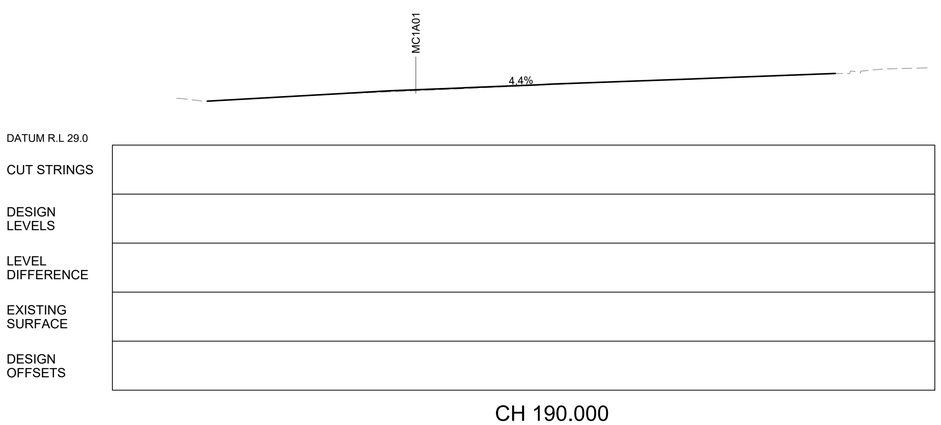
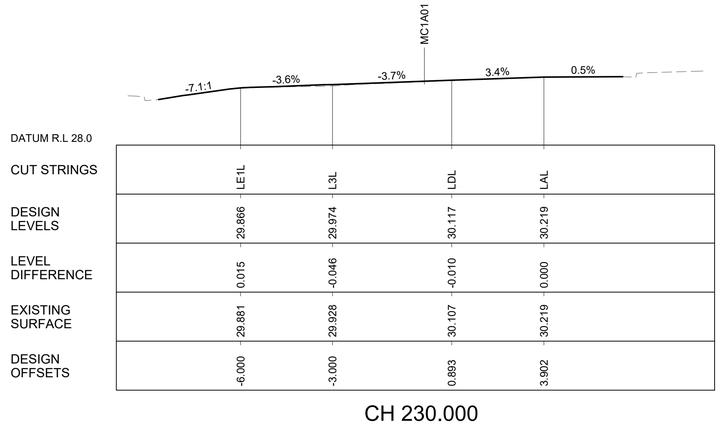


CH 190.000



CH 230.000

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PROJECT

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SCALE BAR

0 2.5 5 m
1:100

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER

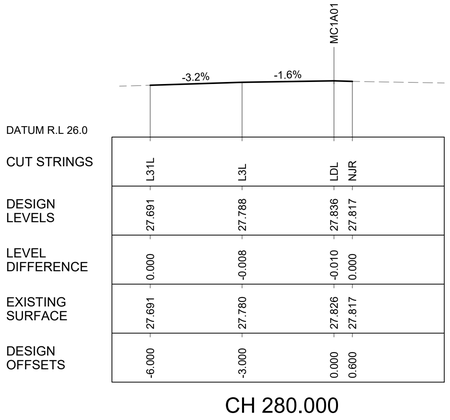
60711261

SHEET TITLE

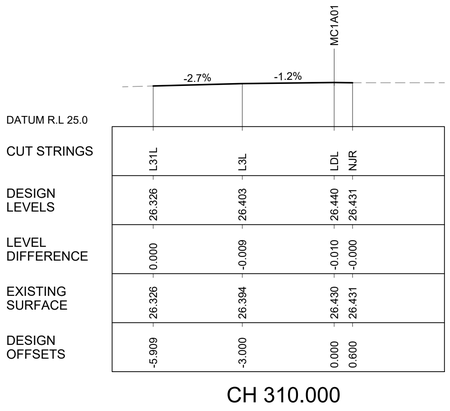
PHILLIP TO COLLEGE STREET
ROAD ALIGNMENT
CROSS SECTIONS - MC1A01
SHEET 03

SHEET NUMBER

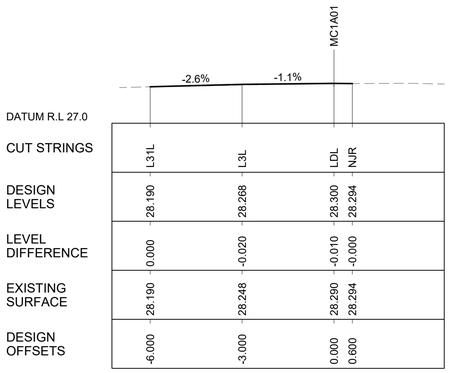
60711261-SHT-00-1000-CI-0373



CH 280.000



CH 310.000



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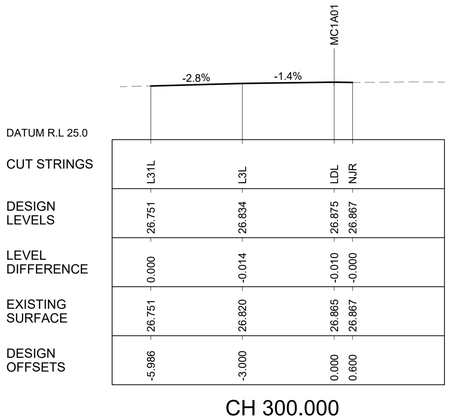
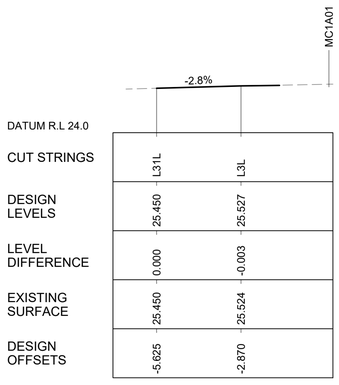
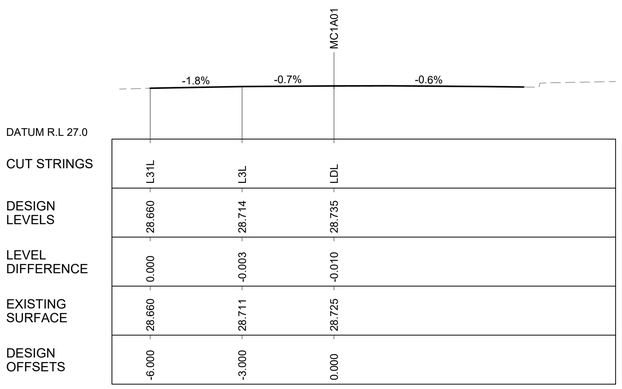


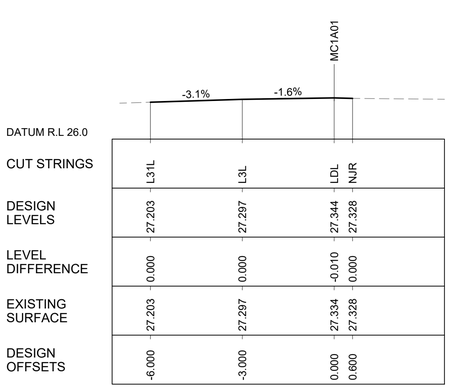
CH 300.000



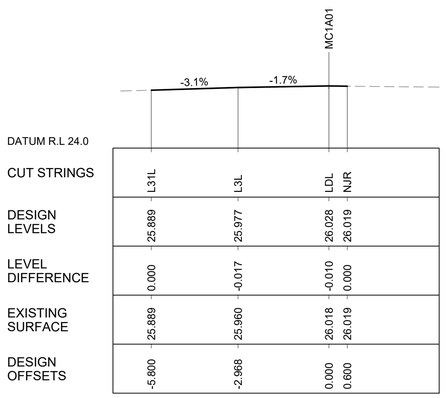
CH 330.000



CH 260.000



CH 290.000



CH 320.000

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PROJECT

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CITY OF SYDNEY

SCALE BAR

0 2.5 5 m
1:100

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

I/R	DATE	DESCRIPTION
02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER

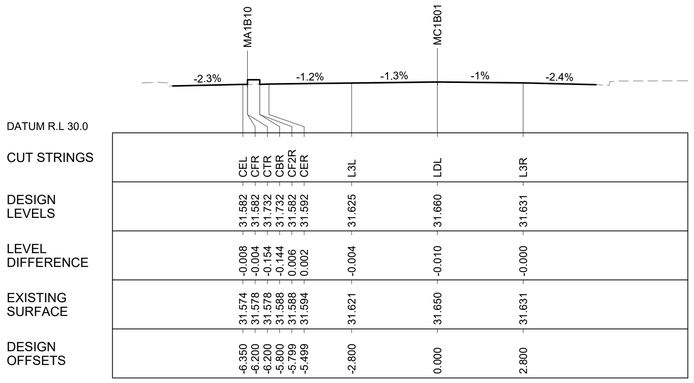
60711261

SHEET TITLE

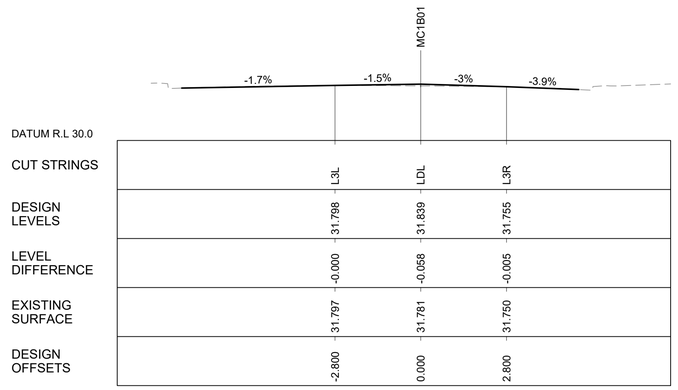
PHILLIP TO COLLEGE STREET ROAD ALIGNMENT
CROSS SECTIONS - MC1A01
SHEET 04

SHEET NUMBER

60711261-SHT-00-1000-CI-0374



CH 40.000



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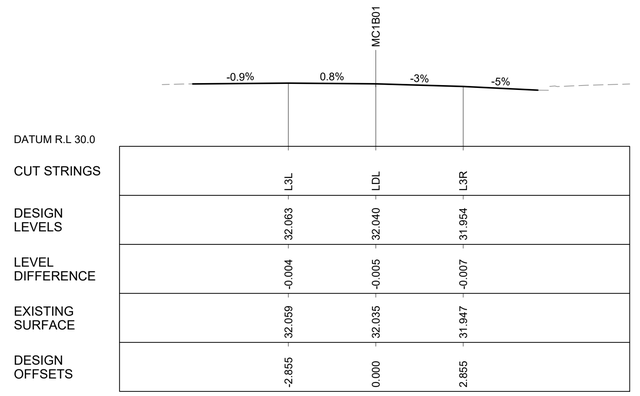
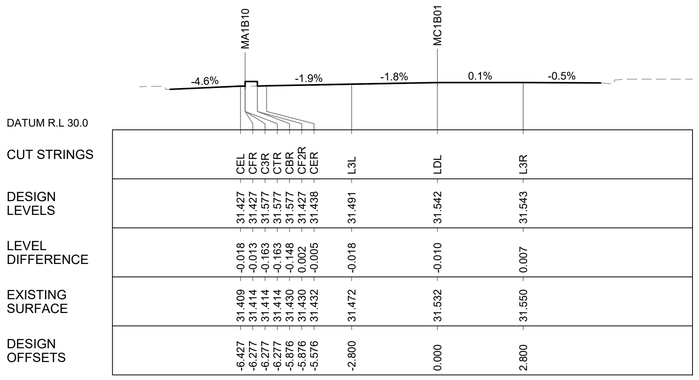
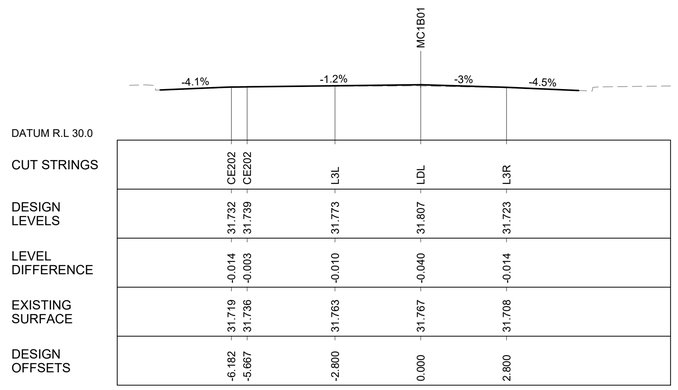


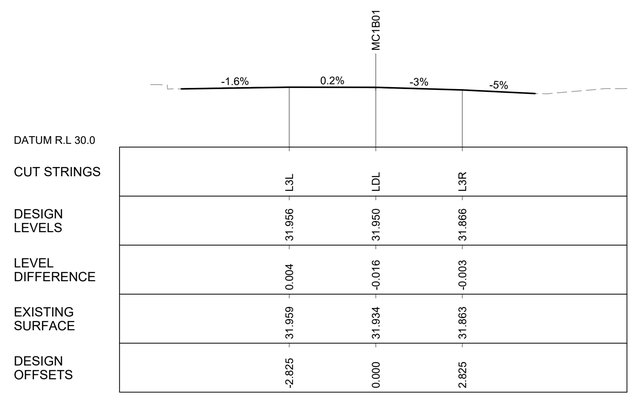
CH 100.000



CH 30.000



CH 60.000



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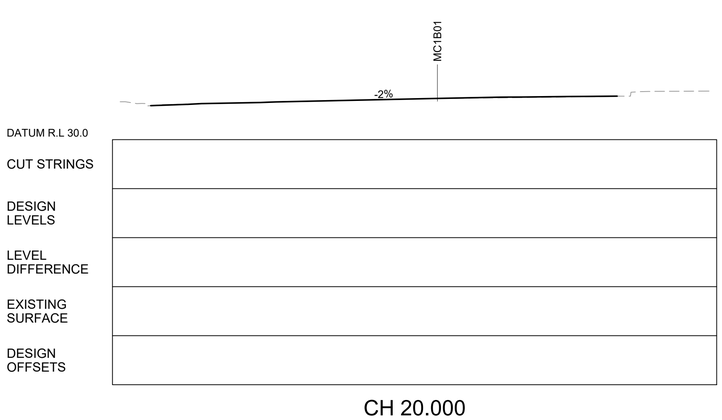
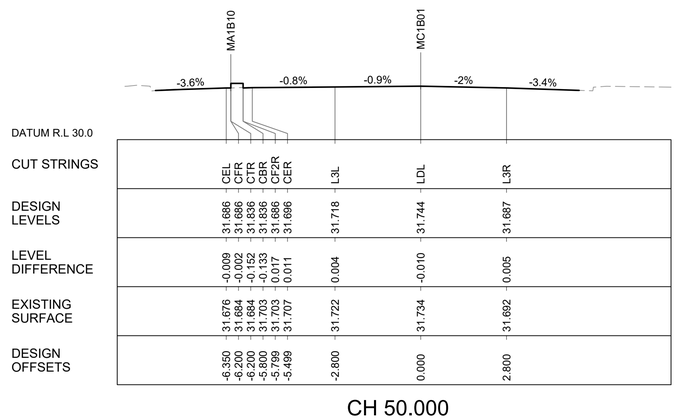
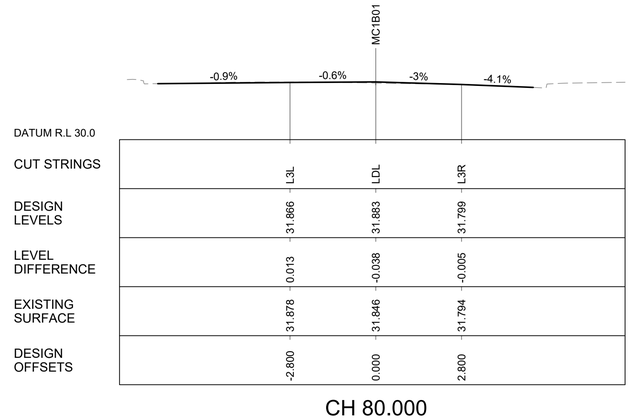


CH 20.000



CH 50.000



CH 80.000

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PROJECT

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CITY OF SYDNEY

SCALE BAR

0 2.5 5 m
1:100

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

I/R	DATE	DESCRIPTION
02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER

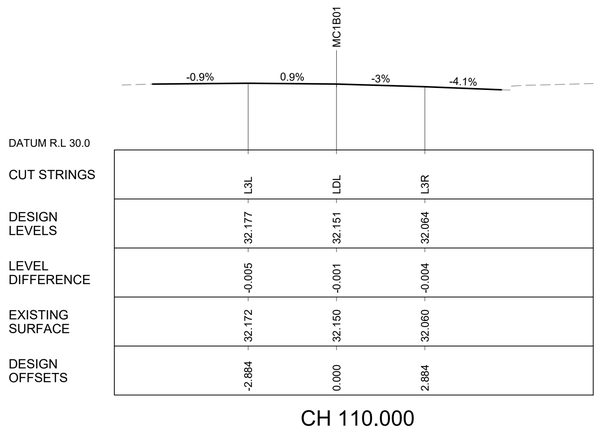
60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET ROAD ALIGNMENT
CROSS SECTIONS - MC1B01
SHEET 01

SHEET NUMBER

60711261-SHT-00-1000-CI-0381



CH 110.000

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PROJECT

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SCALE BAR

0 2.5 5 m
1:100

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

I/R	DATE	DESCRIPTION
02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

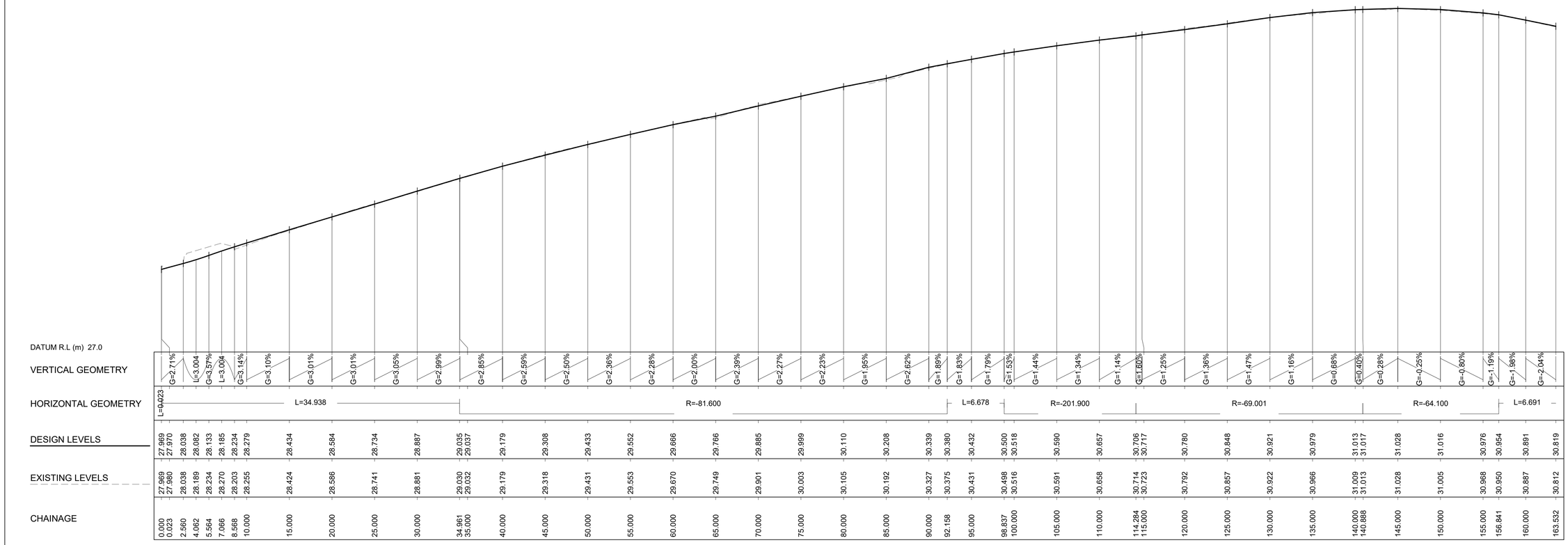
SHEET TITLE

PHILLIP TO COLLEGE STREET ROAD ALIGNMENT
CROSS SECTIONS - MC1B01
SHEET 02

SHEET NUMBER

60711261-SHT-00-1000-CI-0382

ISO A1 594mm x 841mm



LONGITUDINAL SECTION - MA1A10

A1 VERTICAL SCALE 1:25
A1 HORIZONTAL SCALE 1:250

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SCALE BAR

0 6.25 12.5 m
0 0.625 1.25
H=1:250
V=1:25

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

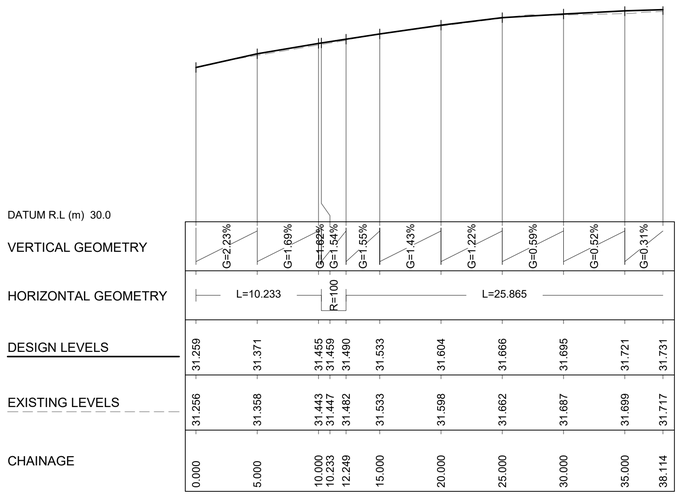
SHEET TITLE

PHILLIP TO COLLEGE STREET
MISC. ALIGNMENT
LONGITUDINAL SECTIONS
SHEET 01

SHEET NUMBER

60711261-SHT-00-1000-CI-0541

ISO A1 594mm x 841mm



LONGITUDINAL SECTION - MA1B10

A1 VERTICAL SCALE 1:25
A1 HORIZONTAL SCALE 1:250

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PROJECT

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CLIENT

CITY OF SYDNEY

SCALE BAR

0 6.25 12.5 m H=1:250 V=1:25
0 0.625 1.25

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER

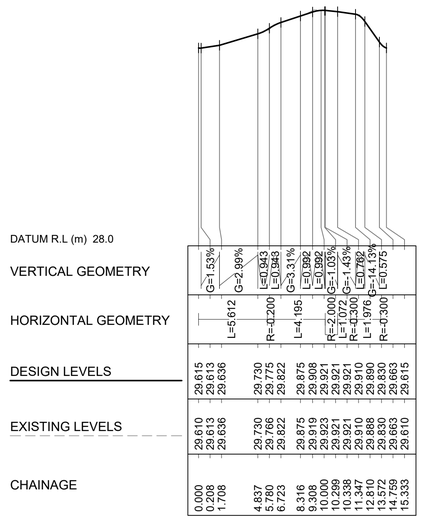
60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET
MISC. ALIGNMENT
LONGITUDINAL SECTIONS
SHEET 02

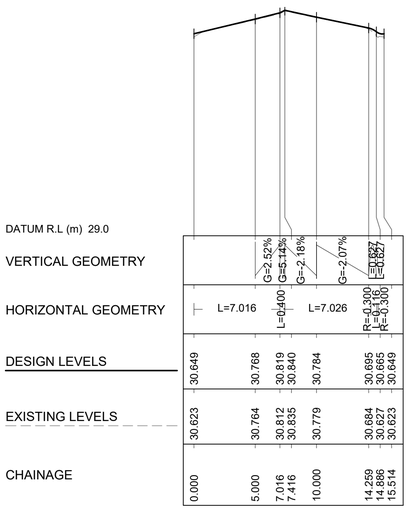
SHEET NUMBER

60711261-SHT-00-1000-CI-0542



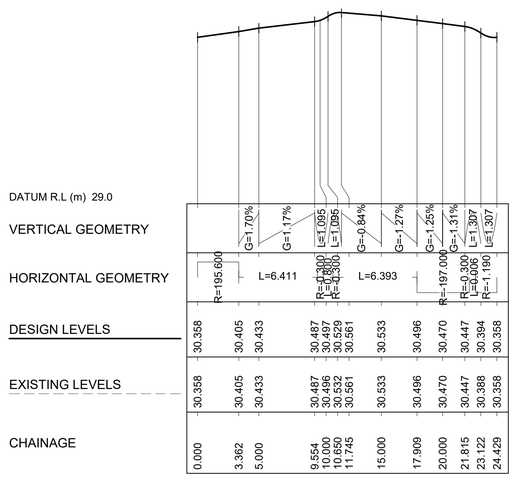
LONGITUDINAL SECTION - MT1A16

A1 VERTICAL SCALE 1:25
A1 HORIZONTAL SCALE 1:250



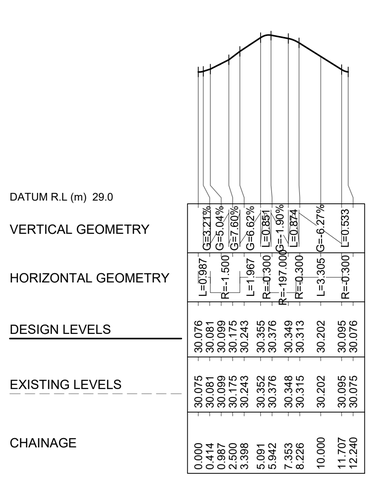
LONGITUDINAL SECTION - MT1A11

A1 VERTICAL SCALE 1:25
A1 HORIZONTAL SCALE 1:250



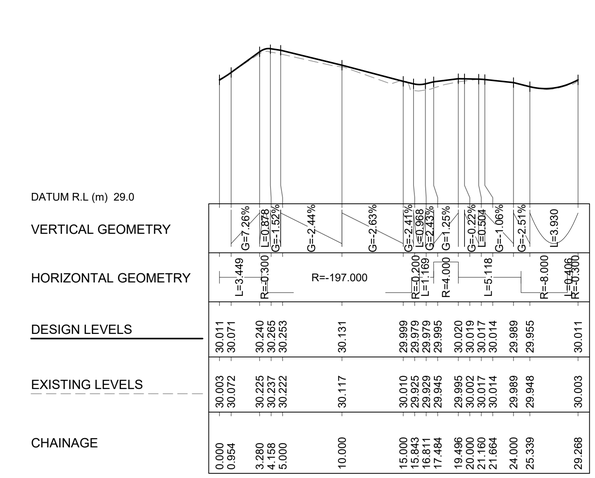
LONGITUDINAL SECTION - MT1A13

A1 VERTICAL SCALE 1:25
A1 HORIZONTAL SCALE 1:250



LONGITUDINAL SECTION - MT1A14

A1 VERTICAL SCALE 1:25
A1 HORIZONTAL SCALE 1:250



LONGITUDINAL SECTION - MT1A15

A1 VERTICAL SCALE 1:25
A1 HORIZONTAL SCALE 1:250

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SCALE BAR

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0 0.625 1.25
H=1:250
V=1:25

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

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FOR INFORMATION ONLY

PROJECT NUMBER

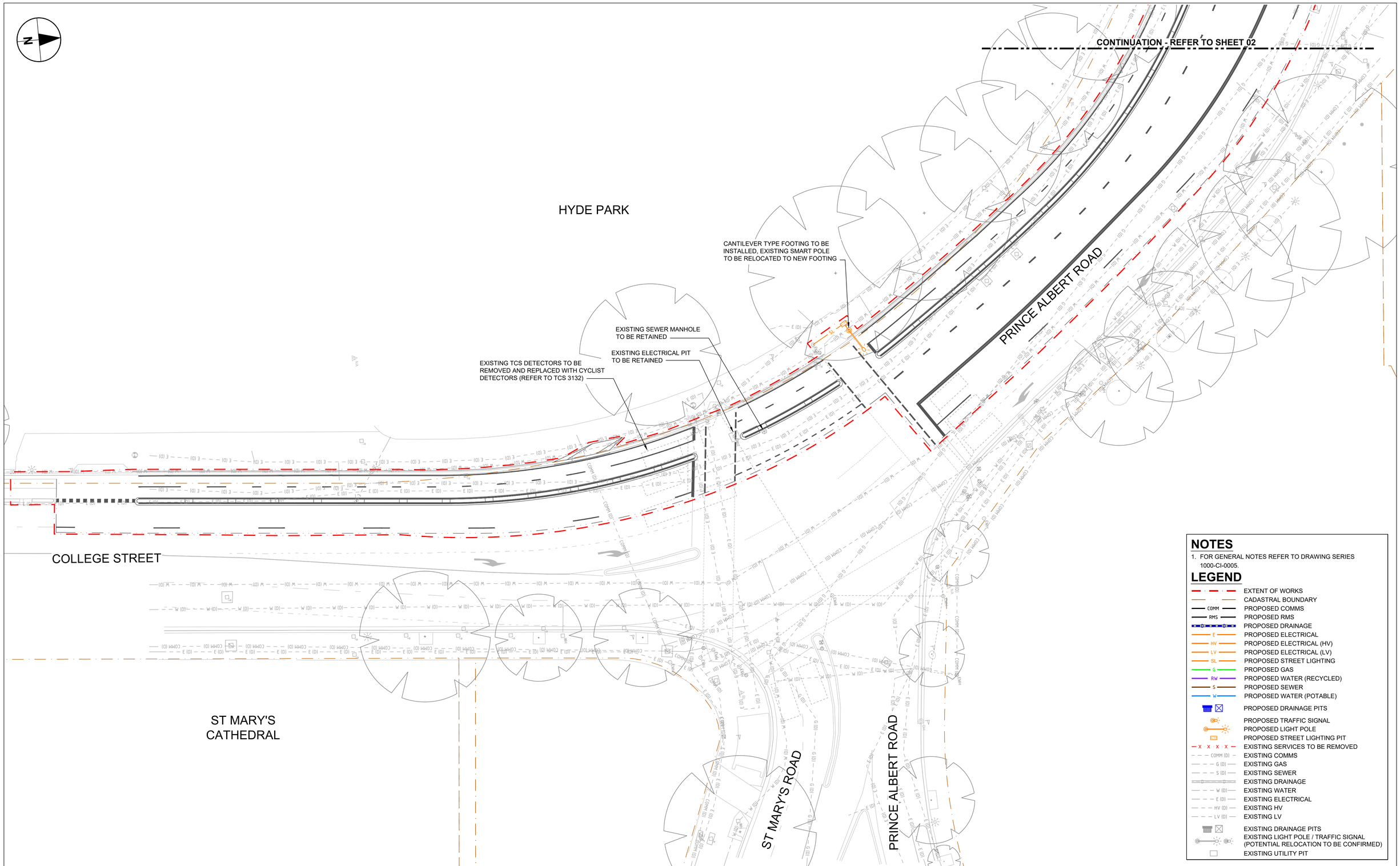
60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET
MISC. ALIGNMENT
LONGITUDINAL SECTIONS
SHEET 03

SHEET NUMBER

60711261-SHT-00-1000-CI-0543



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0005.

LEGEND

- EXTENT OF WORKS
- CADASTRAL BOUNDARY
- PROPOSED COMMS
- PROPOSED RMS
- PROPOSED DRAINAGE
- PROPOSED ELECTRICAL
- PROPOSED ELECTRICAL (HV)
- PROPOSED ELECTRICAL (LV)
- PROPOSED STREET LIGHTING
- PROPOSED GAS
- PROPOSED WATER (RECYCLED)
- PROPOSED SEWER
- PROPOSED WATER (POTABLE)
- PROPOSED DRAINAGE PITS
- PROPOSED TRAFFIC SIGNAL
- PROPOSED LIGHT POLE
- PROPOSED STREET LIGHTING PIT
- EXISTING SERVICES TO BE REMOVED
- EXISTING COMMS
- EXISTING GAS
- EXISTING SEWER
- EXISTING DRAINAGE
- EXISTING WATER
- EXISTING ELECTRICAL
- EXISTING HV
- EXISTING LV
- EXISTING DRAINAGE PITS
- EXISTING LIGHT POLE / TRAFFIC SIGNAL (POTENTIAL RELOCATION TO BE CONFIRMED)
- EXISTING UTILITY PIT

CONSULTANT
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PROJECT
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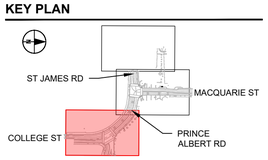
CLIENT
CITY OF SYDNEY

SCALE BAR
0 5 10 m
1:200

KEY PLAN


REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

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03	20.12.2023	80% DD ISSUE
02	27.10.2023	100% CD ISSUE
01	21.07.2023	80% CD ISSUE
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER
60711261

SHEET TITLE
PHILLIP TO COLLEGE STREET COMBINED SERVICES PLAN SHEET 01

SHEET NUMBER
60711261-SHT-00-1000-CI-0601

ISO A1 594mm x 841mm

CONTINUATION - REFER TO SHEET 03

ST JAMES ROAD

QUEEN'S SQUARE

EXISTING TCS DETECTORS TO BE REMOVED AND REPLACED (REFER TO TCS 276)

EXISTING TCS DETECTORS TO BE REMOVED

EXISTING TCS DETECTORS TO BE REMOVED

EXISTING UNKNWON SERVICES PLATE TO BE ADJUSTED

TCS PIT LID TO BE ADJUSTED

ADJUSTMENTS TO TCS CABLING/DUCTING AND PITS TO BE CONFIRMED BY TCS CONTRACTOR

HYDE PARK

ADJUSTMENTS TO TCS CABLING/DUCTING AND PITS TO BE CONFIRMED BY TCS CONTRACTOR

MACQUARIE STREET

EXISTING TCS DETECTORS TO BE REMOVED AND REPLACED WITH CYCLIST DETECTORS (REFER TO TCS 276)

EXISTING TCS DETECTORS TO BE REMOVED AND REPLACED (REFER TO TCS 276)

EXISTING TCS DETECTORS TO BE REMOVED AND REPLACED (REFER TO TCS 276)

EXISTING ELECTRICAL PIT TO BE RETAINED - KERB SEPARATOR TO BE COORDINATED TO STOP EACH SIDE

PRINCE ALBERT ROAD

HYDE PARK BARRACKS

CONTINUATION - REFER TO SHEET 01

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0005.

LEGEND

- EXTENT OF WORKS
- CADASTRAL BOUNDARY
- COMM — PROPOSED COMMS
- RMS — PROPOSED RMS
- PROPOSED DRAINAGE
- E — PROPOSED ELECTRICAL
- HV — PROPOSED ELECTRICAL (HV)
- LV — PROPOSED ELECTRICAL (LV)
- SL — PROPOSED STREET LIGHTING
- G — PROPOSED GAS
- RW — PROPOSED WATER (RECYCLED)
- S — PROPOSED SEWER
- W — PROPOSED WATER (POTABLE)
- PROPOSED DRAINAGE PITS
- PROPOSED TRAFFIC SIGNAL
- PROPOSED LIGHT POLE
- PROPOSED STREET LIGHTING PIT
- X X X X — EXISTING SERVICES TO BE REMOVED
- COMM (D) — EXISTING COMMS
- G (D) — EXISTING GAS
- S (D) — EXISTING SEWER
- EXISTING DRAINAGE
- W (D) — EXISTING WATER
- E (D) — EXISTING ELECTRICAL
- HV (D) — EXISTING HV
- LV (D) — EXISTING LV
- EXISTING DRAINAGE PITS
- EXISTING LIGHT POLE / TRAFFIC SIGNAL (POTENTIAL RELOCATION TO BE CONFIRMED)
- EXISTING UTILITY PIT

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PROJECT

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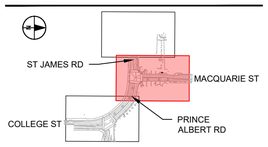
SCALE BAR

0 5 10 m
1:200

KEY PLAN



REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

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02	27.10.2023	100% CD ISSUE
01	21.07.2023	80% CD ISSUE
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET
COMBINED SERVICES PLAN
SHEET 02

SHEET NUMBER

60711261-SHT-00-1000-CI-0602

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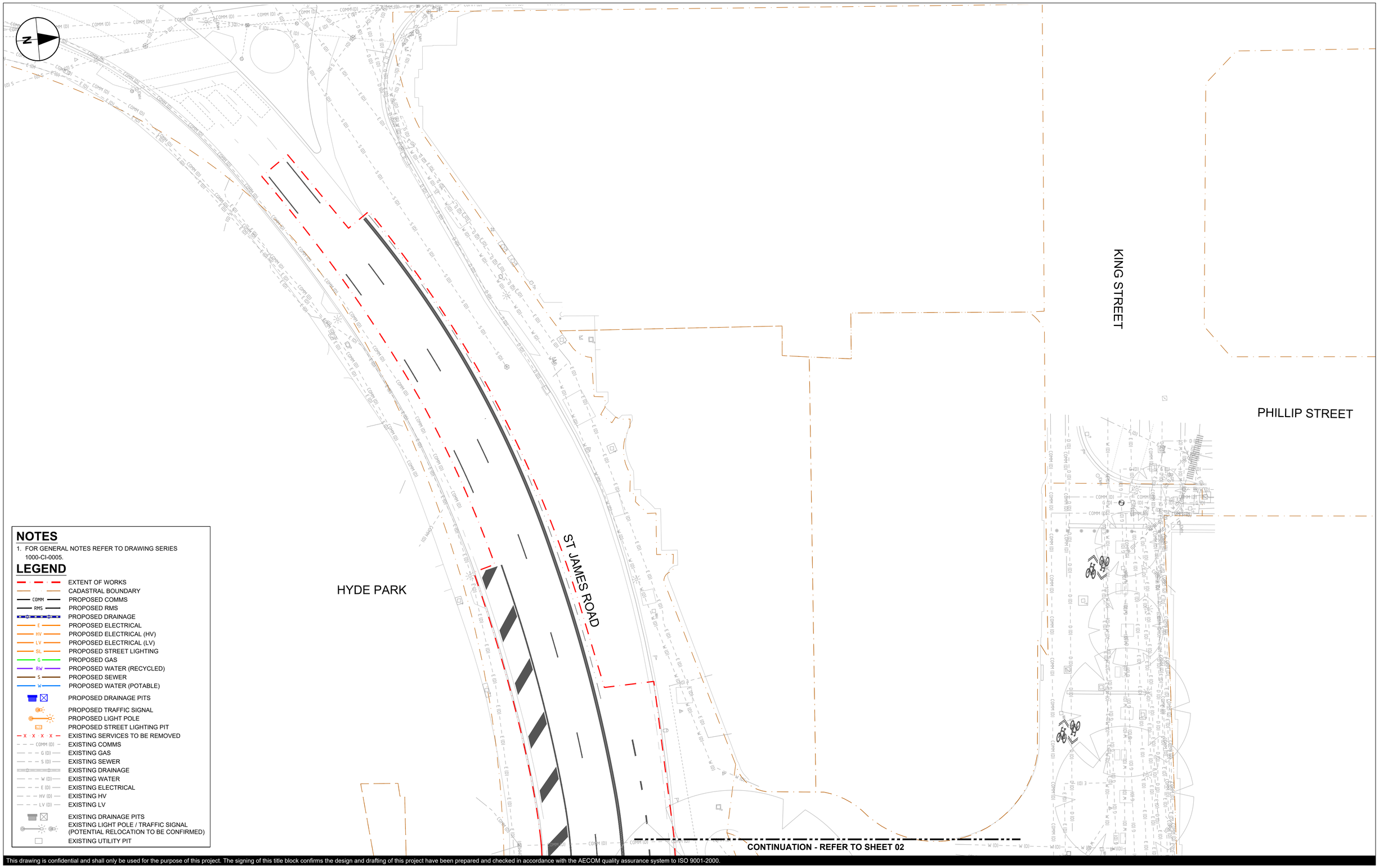
ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0005.

LEGEND

- EXTENT OF WORKS
- CADASTRAL BOUNDARY
- COMM — PROPOSED COMMS
- RMS — PROPOSED RMS
- PROPOSED DRAINAGE
- E — PROPOSED ELECTRICAL
- HV — PROPOSED ELECTRICAL (HV)
- LV — PROPOSED ELECTRICAL (LV)
- SL — PROPOSED STREET LIGHTING
- G — PROPOSED GAS
- RW — PROPOSED WATER (RECYCLED)
- S — PROPOSED SEWER
- W — PROPOSED WATER (POTABLE)
- PROPOSED DRAINAGE PITS
- PROPOSED TRAFFIC SIGNAL
- PROPOSED LIGHT POLE
- PROPOSED STREET LIGHTING PIT
- EXISTING SERVICES TO BE REMOVED
- COMM (D) — EXISTING COMMS
- G (D) — EXISTING GAS
- S (D) — EXISTING SEWER
- EXISTING DRAINAGE
- W (D) — EXISTING WATER
- E (D) — EXISTING ELECTRICAL
- HV (D) — EXISTING HV
- LV (D) — EXISTING LV
- EXISTING DRAINAGE PITS
- EXISTING LIGHT POLE / TRAFFIC SIGNAL (POTENTIAL RELOCATION TO BE CONFIRMED)
- EXISTING UTILITY PIT

CONSULTANT

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PROJECT

CoS Cycleways

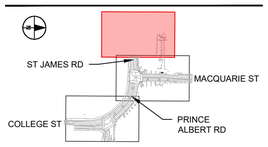
CLIENT

CITY OF SYDNEY

SCALE BAR

0 5 10 m
1:200

KEY PLAN



REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

I/R	DATE	DESCRIPTION
03	13.03.2024	100% DD ISSUE
02	20.12.2023	80% DD ISSUE
01	27.10.2023	100% CD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET
COMBINED SERVICES PLAN
SHEET 03

SHEET NUMBER

60711261-SHT-00-1000-CI-0603

Last saved by: JOSE.CARVAJALINO(2024-03-13) Last Plotted: 2024-03-13
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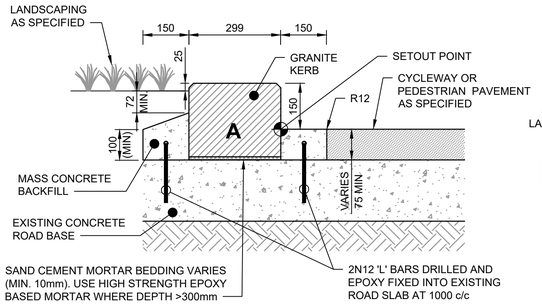
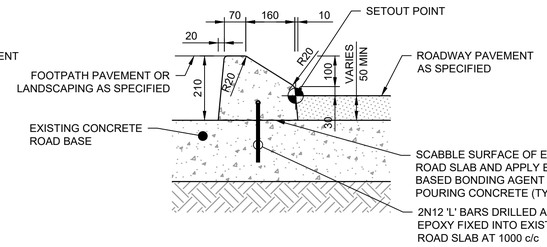


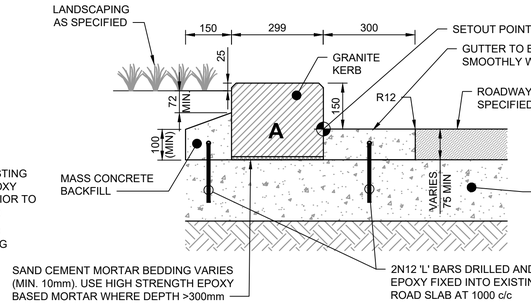
STONE KERB ADJACENT TO CYCLEWAY OR PEDESTRIAN PAVEMENT

SCALE 1:10



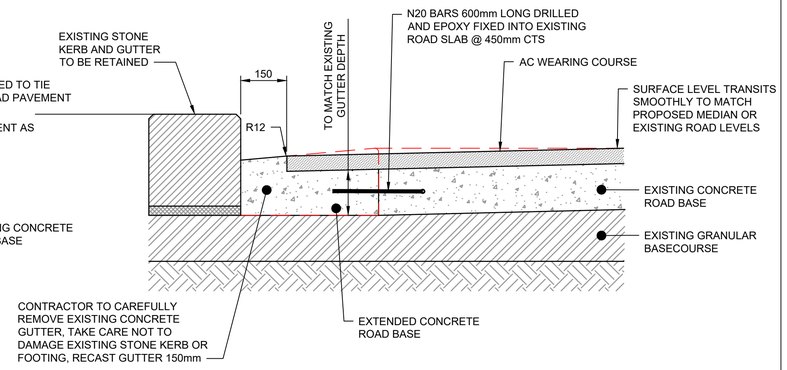
MOUNTABLE KERB ON CONCRETE BASE

SCALE 1:10



STONE KERB AT RAISED GARDEN BEDS ADJACENT TO ROAD PAVEMENT

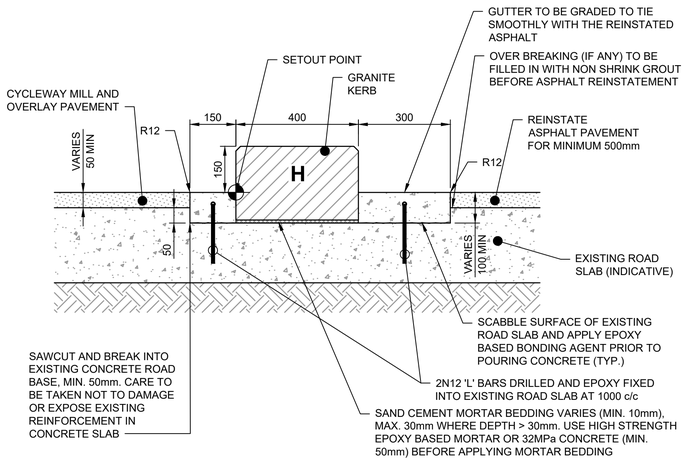
SCALE 1:10



ROAD RESTORATION ADJACENT EXISTING KERB

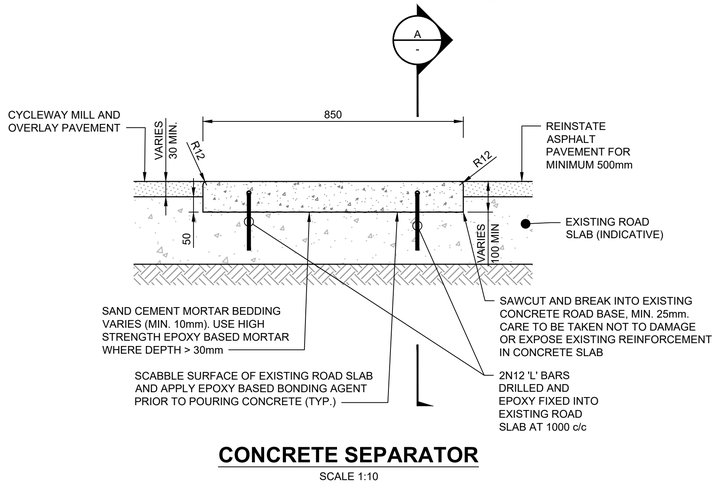
SCALE 1:10

NOTE: THE DETAIL ABOVE IS BASED ON SITE OBSERVATIONS AND STANDARD DRAWING DETAILS, CONTRACTOR TO INFORM PRINCIPAL IF THE EXISTING KERB DETAIL DEVIATES FROM THIS ASSUMPTIONS.



STONE KERB MEDIAN CYCLEPATH SEPARATOR

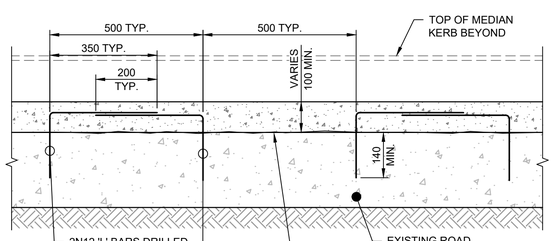
SCALE 1:10



CONCRETE SEPARATOR

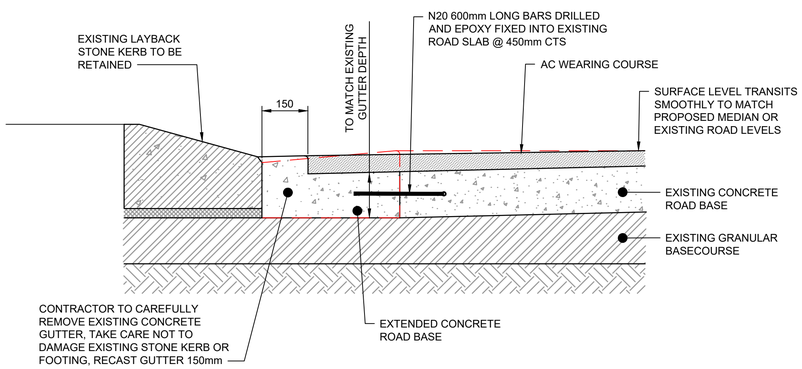
SCALE 1:10

NOTE: DEPTH TO BE INCREASE TO 100mm 32MPa, PROVIDE SL82 MIN. COVER 40mm AT VEHICLE CROSSING AT MACQUARIE STREET INTERSECTION FOR HYDE PARK DRIVEWAY



A - CONCRETE HAUNCH SECTION

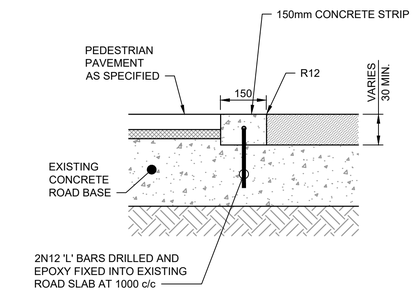
SCALE 1:10



GUTTER LIP REMOVAL AT EXISTING DRIVEWAY

SCALE 1:10

NOTE: THE DETAIL ABOVE IS BASED ON SITE OBSERVATIONS AND STANDARD DRAWING DETAILS, CONTRACTOR TO INFORM PRINCIPAL IF THE EXISTING KERB DETAIL DEVIATES FROM THIS ASSUMPTIONS.



150mm CONCRETE STRIP ADJACENT TO CYCLEWAY AND PEDESTRIAN PAVEMENT

SCALE 1:10

NOTE:

1. CONCRETE USED IN GUTTERS AND MEDIAN SEPARATOR WITH 'L' BARS TO BE MINIMUM 32MPa.

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PROJECT

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SCALE BAR

0 0.25 0.5 m
1:10

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

02	13.03.2024	100% DD ISSUE
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I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

SHEET TITLE

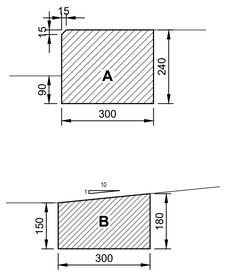
PHILLIP TO COLLEGE STREET DETAILS
KERB AND PAVEMENT
SHEET 01

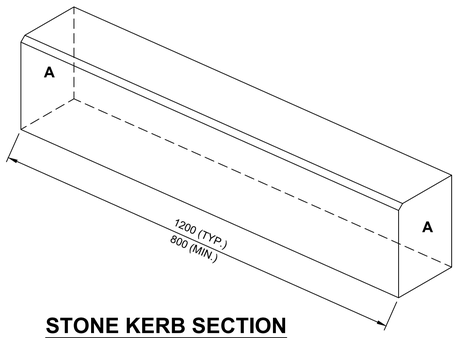
SHEET NUMBER

60711261-SHT-00-1000-CI-0911

300mm WIDE KERB - PROFILES

SCALE 1:10



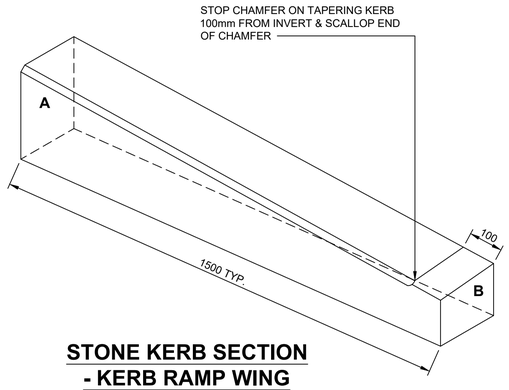


STONE KERB SECTION - BARRIER KERB

SCALE 1:10

KERB PROFILE:

- TYPE K(F) - FULL HEIGHT
- TYPE K(FR) - FULL HEIGHT/ TO KERB RADIUS (SIMILAR)

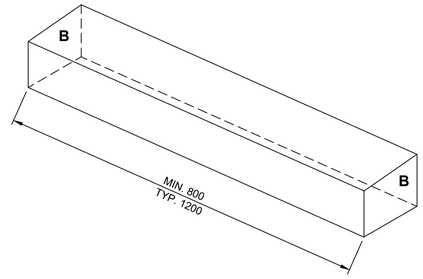


STONE KERB SECTION - KERB RAMP WING

SCALE 1:10

KERB PROFILE:

- TYPE K(KRF) - PEDESTRIAN CHAMFERED TO FALL
- TYPE K(KRFR) - PEDESTRIAN CHAMFERED TO FALL/TO KERB RADIUS (SIMILAR)

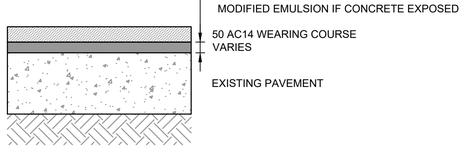


STONE KERB SECTION - KERB RAMP

SCALE 1:10

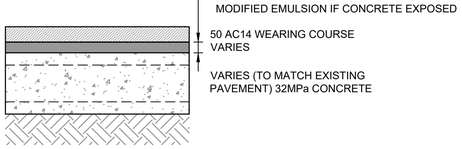
KERB PROFILE:

- TYPE K(KR) - PEDESTRIAN CROSSOVER TYPE
- TYPE K(KRR) - PEDESTRIAN CROSSOVER TYPE/TO RADIUS (SIMILAR)



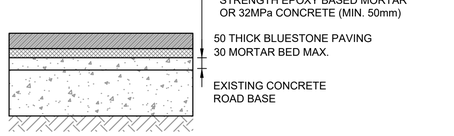
R1 **MILL AND RE-SHEET EXISTING ROAD PAVEMENT**

SCALE 1:10



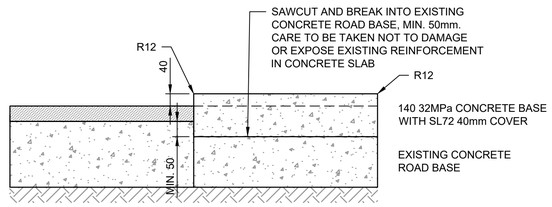
R3 **RIGID ROAD PAVEMENT**

SCALE 1:10



P4 **GRANITE PAVER PAVEMENT**

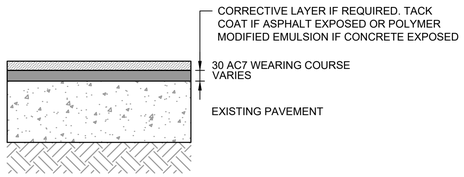
SCALE 1:10



P6 **MEDIAN DRIVEWAY PAVEMENT**

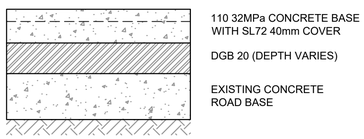
SCALE 1:10

NOTE:
1. JOINTS: SPACING TO BE AS FOLLOWS:
   CEJ - MAX 5400 CENTRES
   CCJ - MAX 1800 CENTRES
   SC - MAX 500 CENTRES



R2 **CYCLEPATH MILL AND OVERLAY PAVEMENT**

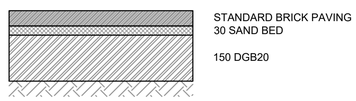
SCALE 1:10



P3 **CONCRETE PAVEMENT**

SCALE 1:10

NOTE:
1. JOINTS: SPACING TO BE AS FOLLOWS:
   CEJ - MAX 5400 CENTRES
   CCJ - MAX 1800 CENTRES
   SC - MAX 500 CENTRES



P5 **BRICK PAVER PAVEMENT**

SCALE 1:10

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PROJECT

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SCALE BAR

0 0.25 0.5 m
1:10

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

I/R	DATE	DESCRIPTION
02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER

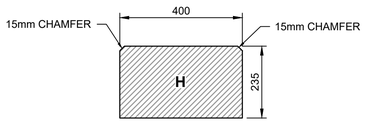
60711261

SHEET TITLE

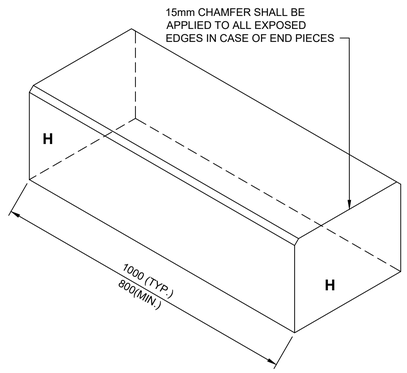
PHILLIP TO COLLEGE STREET
DETAILS
KERB AND PAVEMENT
SHEET 02

SHEET NUMBER

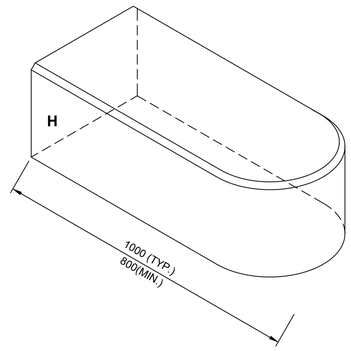
60711261-SHT-00-1000-CI-0912



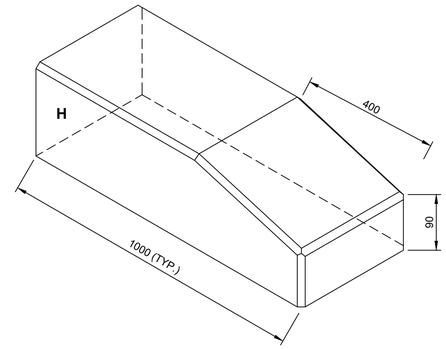
MEDIAN KERB (MK2)
SCALE 1:10



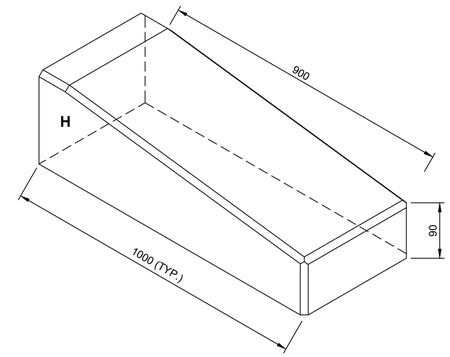
MEDIAN KERB (MK2)
SCALE 1:10



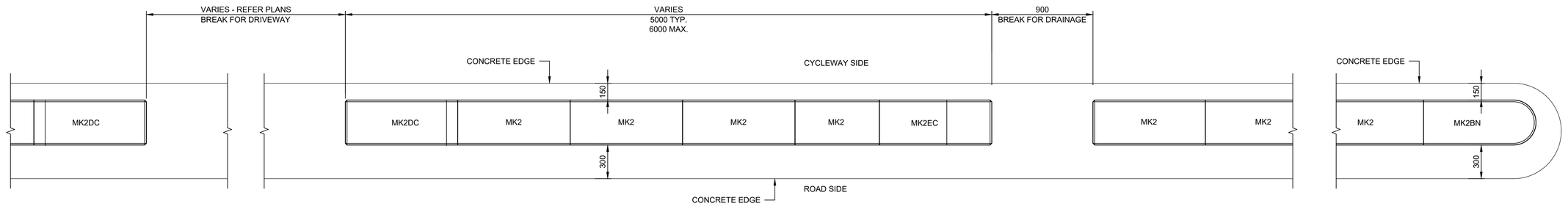
MEDIAN KERB WITH BULLNOSE (MK2BN)
SCALE 1:10



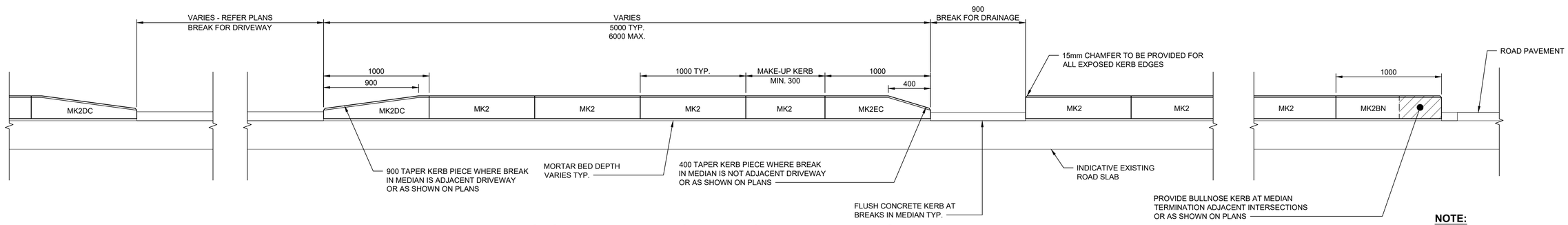
MEDIAN KERB END CHANFER (MK2EC)
SCALE 1:10



MEDIAN KERB DRIVEWAY CHAMBER (MK2DC)
SCALE 1:10



CYCLEWAY MEDIAN SEPARATOR KERB PLAN
SCALE 1:20



CYCLEWAY MEDIAN SEPARATOR KERB ELEVATION
SCALE 1:20

NOTE:
1. CONTRACTOR TO PROVIDE SHOP DRAWINGS OF STONE KERBS AND MEDIANS SHOWING ARRANGEMENT AND DIMENSIONS PRIOR TO MANUFACTURE

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SCALE BAR
0 0.25 0.5 m
1:10
0 0.5 1 m
1:20

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

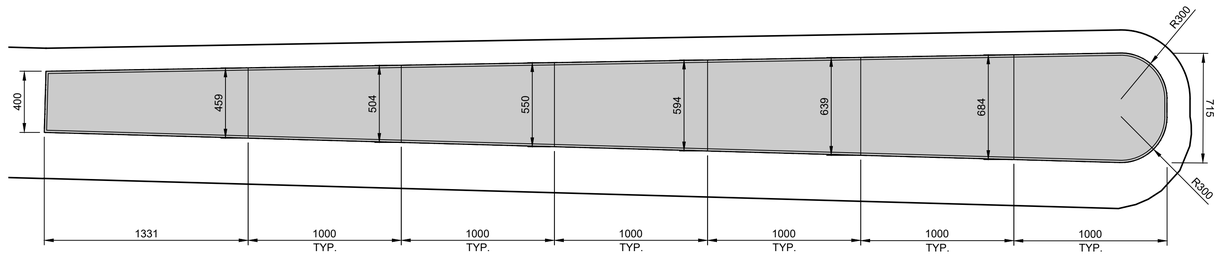
I/R	DATE	DESCRIPTION
02	13.03.2024	100% DD ISSUE
01	20.12.2023	80% DD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER
60711261

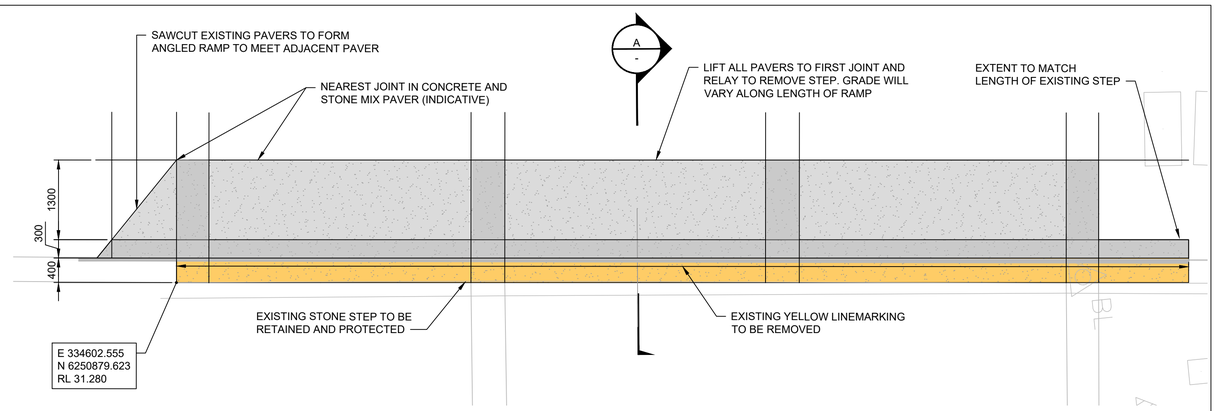
SHEET TITLE
PHILLIP TO COLLEGE STREET
DETAILS
KERB AND PAVEMENT
SHEET 03

SHEET NUMBER
60711261-SHT-00-1000-CI-0913



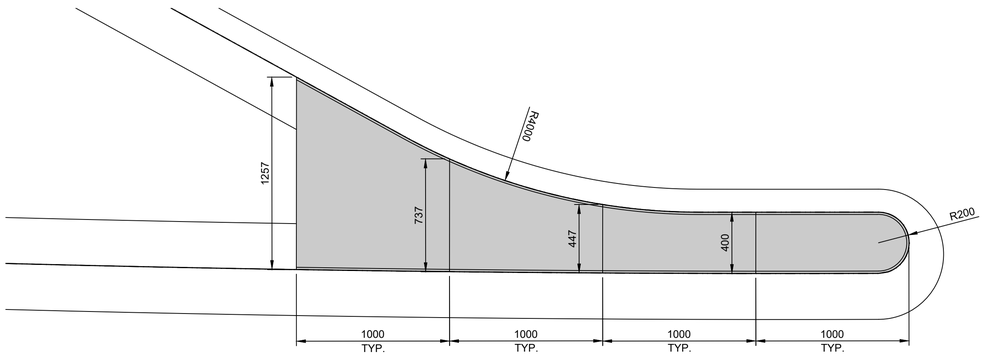
SPECIAL STONE KERB 1
(REFER TO CI-0300 SERIES)

SCALE: 1:20



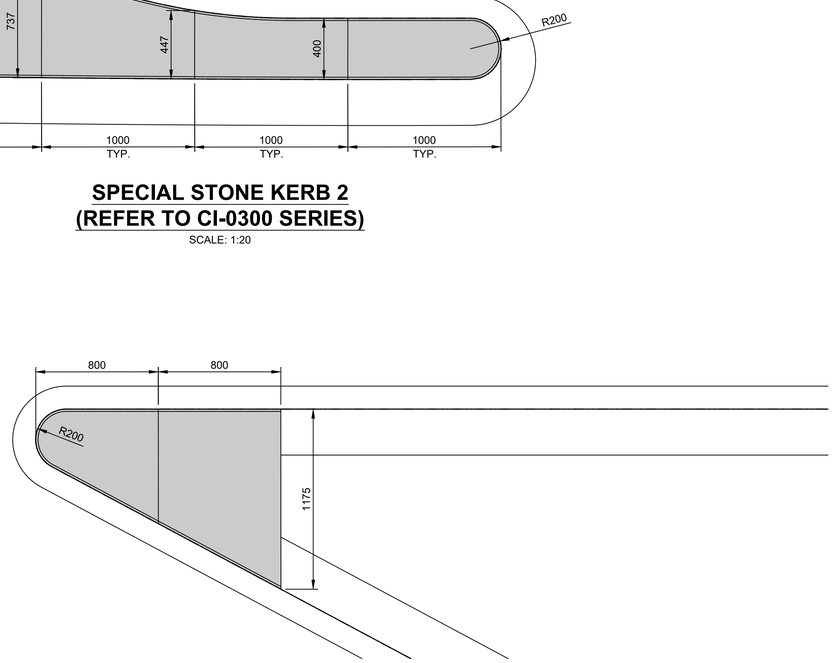
QUEEN'S SQUARE CYCLEWAY RAMP
PLAN VIEW

SCALE: 1:50



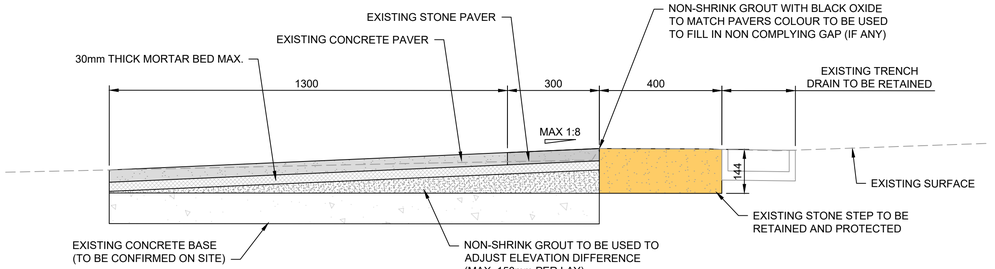
SPECIAL STONE KERB 2
(REFER TO CI-0300 SERIES)

SCALE: 1:20



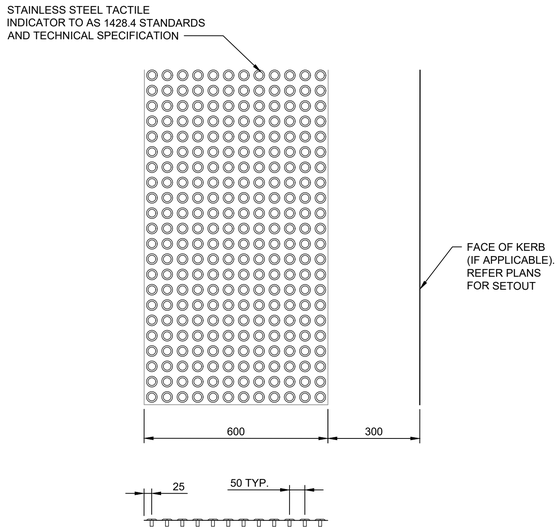
SPECIAL STONE KERB 3
(REFER TO CI-0300 SERIES)

SCALE: 1:20



A | SECTION

Scale 1:10



DETAILS - TACTILE GROUND SURFACE INDICATORS (TGSI1)

SCALE 1:10

NOTE:

1. CONTRACTOR TO PROVIDE SHOP DRAWINGS OF STONE KERBS AND MEDIANS SHOWING ARRANGEMENT AND DIMENSIONS PRIOR TO MANUFACTURE

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SCALE BAR

0 0.5 1 m
1:20

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

01	13.03.2024	100% DD ISSUE
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER

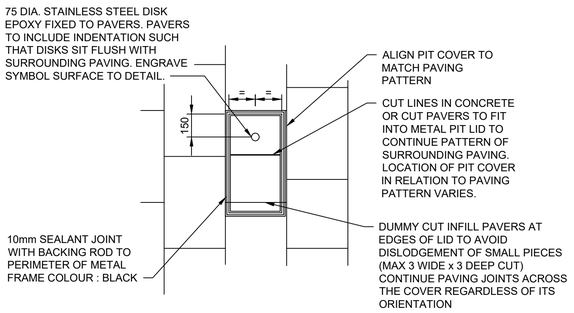
60711261

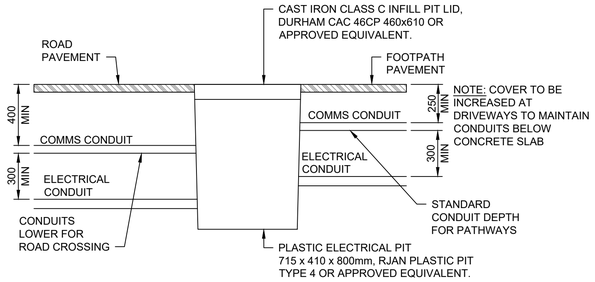
SHEET TITLE

PHILLIP TO COLLEGE STREET
DETAILS
KERB AND PAVEMENT
SHEET 04

SHEET NUMBER

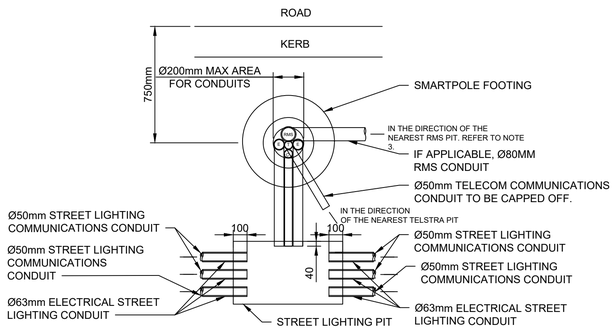
60711261-SHT-00-1000-CI-0914

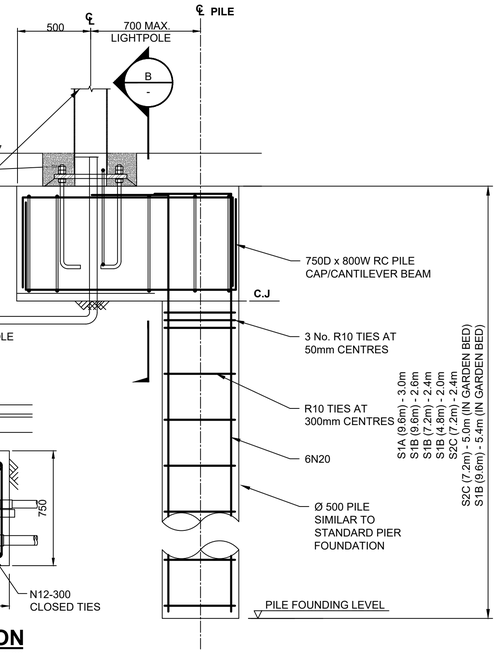




STREET LIGHTING PIT COVER PLAN

SCALE 1:20





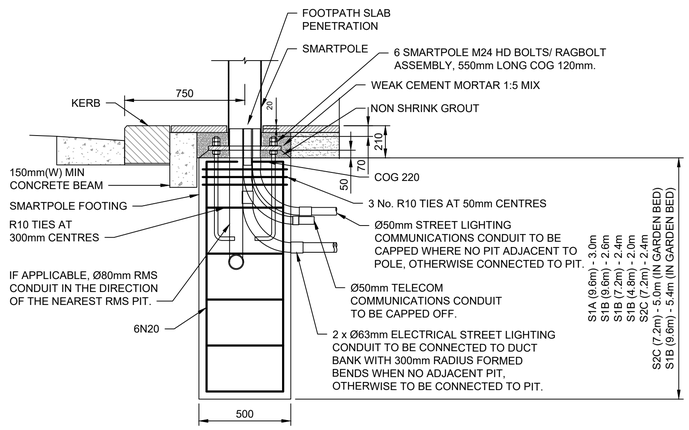
B | SECTION

-

SCALE 1:20

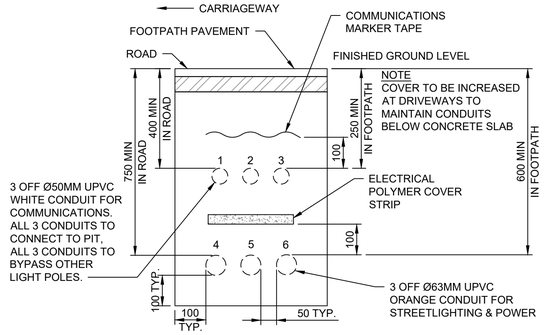
SMART POLE FOUNDATION DETAILS - CANTILEVER

SCALE 1:20



SMART POLE PIER FOUNDATION DETAIL

SCALE 1:20



STREET LIGHTING CONDUIT ARRANGEMENT TYPE 1

N.T.S.

NOTE
WHERE CONDUITS ARE LOCATED WITHIN TREE PIT OR LINK TRENCH, ARRANGEMENT TO BE WRAPPED IN ROOT BARRIER.

SMART POLE FOUNDATION NOTES

GENERAL:

1. COVER TO REINF. TO BE 80 FOR PILES, 50 FOR PILE CAPS. CONCRETE TO BE 32MPa
2. LIGHT POLE FOOTINGS HAVE BEEN DESIGNED FOR THE ULTIMATE BASE REACTIONS GIVEN BELOW:

POLE TYPE	TYPE S1A	TYPE S1B
AXIAL P (kN)	10	5
SHEAR V (kN)	15	11
TORQUE T (kNm)	27	2
MOMENT M (kNm)	96	58

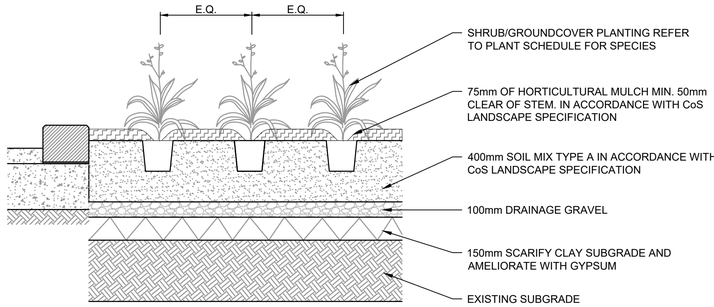
3. ALL STEELWORK, BOLTS, NUTS, WASHERS AND PLATES TO BE HOT-DIPPED GALVANISED.
4. ALL REINFORCEMENT TO BE DEFORMED BARS GRADE D500N TO AS/NZS 4671

FOUNDATIONS:

1. FOUNDATIONS HAVE BEEN DESIGNED FOR :
   Ka = 0.4
   Kp = 2.0
   DENSITY OF SOIL = 20kN/m³
   Cu = 40kPa
   PADS/SHALLOW FOUNDATIONS: 150 kPa ALLOWABLE BEARING CAPACITY
   PILES: 500 kPa ULTIMATE END BEARING CAPACITY
2. FOUNDATION MATERIAL IS TO BE INSPECTED AND APPROVED BY A GEOTECHINICAL ENGINEER ENGAGED BY THE CONTRACTOR AS CONFORMING TO THE DESIGN PARAMETERS ABOVE BEFORE CASTING FOUNDATIONS.
3. FOOTINGS TO BE CONSTRUCTED AND BACKFILLED AS SOON AS POSSIBLE FOLLOWING EXCAVATION TO AVOID SOFTENING OR DRYING OUT BY EXPOSURE.
4. CONTRACTOR IS TO ALLOW FOR COST OF GEOTECHNICAL INSPECTIONS.

PILING:

1. DURING INSTALLATION OF FOUNDATIONS AN INDEPENDENT GEOTECHNICAL ENGINEER MUST BE PRESENT TO SATISFY THEMSELVES THAT THE REQUIRED END BEARING HAS BEEN ACHIEVED AND PROVIDE WRITTEN CONFIRMATION.
2. TEMPORARY CASINGS SHALL BE USED, WHERE REQUIRED, AT THE CONTRACTORS EXPENSE.
3. BORE HOLES SHALL BE CLEANED OF ANY LOOSE MATERIAL PRIOR TO PLACING CONCRETE OR REINFORCEMENT.
4. WHEN CASTING THE PILES A TREMIE OR CONCRETE PUMP HOSE SHALL BE USED TO LIMIT THE FREE FALL OF CONCRETE TO 1.0 METRE MAX.
5. ANY GROUND WATER PRESENT SHOULD BE PUMPED OUT PRIOR TO PLACEMENT OF CONCRETE.
6. THE CONTRACTOR IS TO COORDINATE THE LOCATION OF ALL UNDERGROUND SERVICES AND TO BE RESPONSIBLE FOR ENSURING THAT THESE ARE EITHER AVOIDED OR RELOCATED AS APPROPRIATE.
7. WHERE REQUIRED BEARING CAPACITY IS NOT ACHIEVABLE ON SITE, CONSULT NOVATED CONSULTANT FOR ALTERNATE DESIGN.



TYPICAL MASS PLANTING BED

SCALE 1:20

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SCALE BAR

0 0.5 1 m
1:20

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

01	13.03.2024	100% DD ISSUE
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER

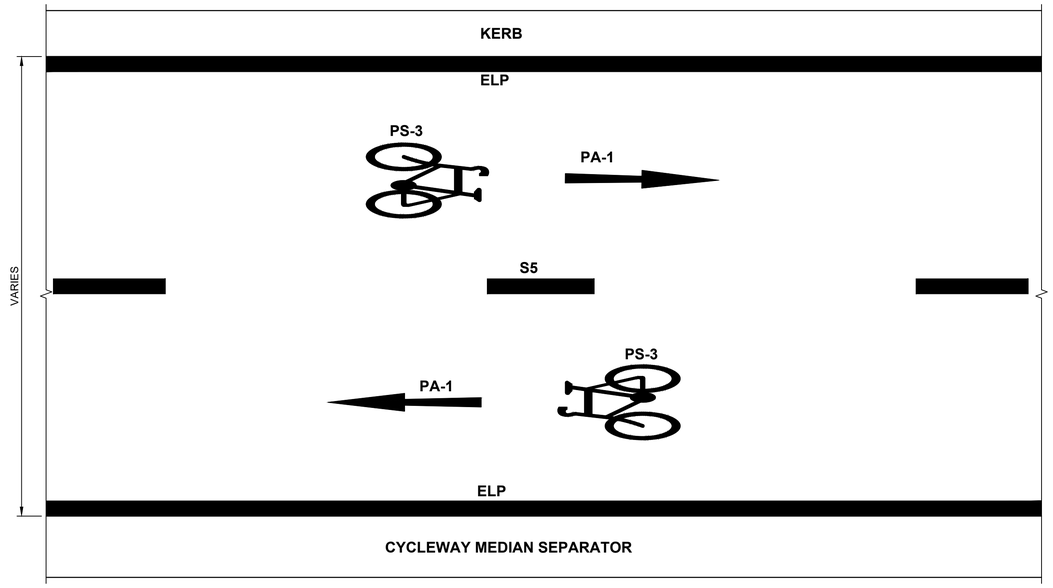
60711261

SHEET TITLE

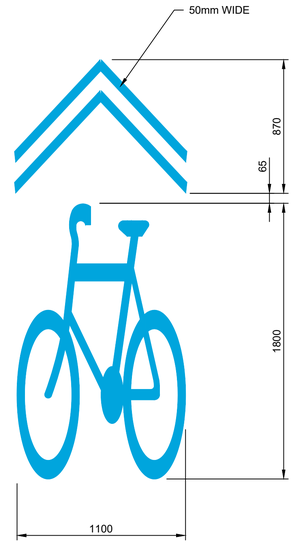
PHILLIP TO COLLEGE STREET DETAILS
STREET FURNITURE AND LANDSCAPING

SHEET NUMBER

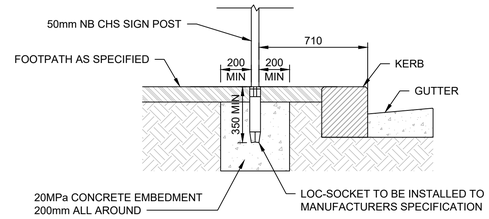
60711261-SHT-00-1000-CI-0921



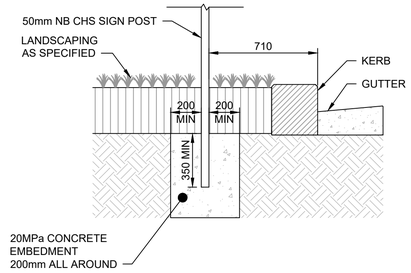
CYCLEPATH LINEMARKING DETAIL 1
SCALE 1:20



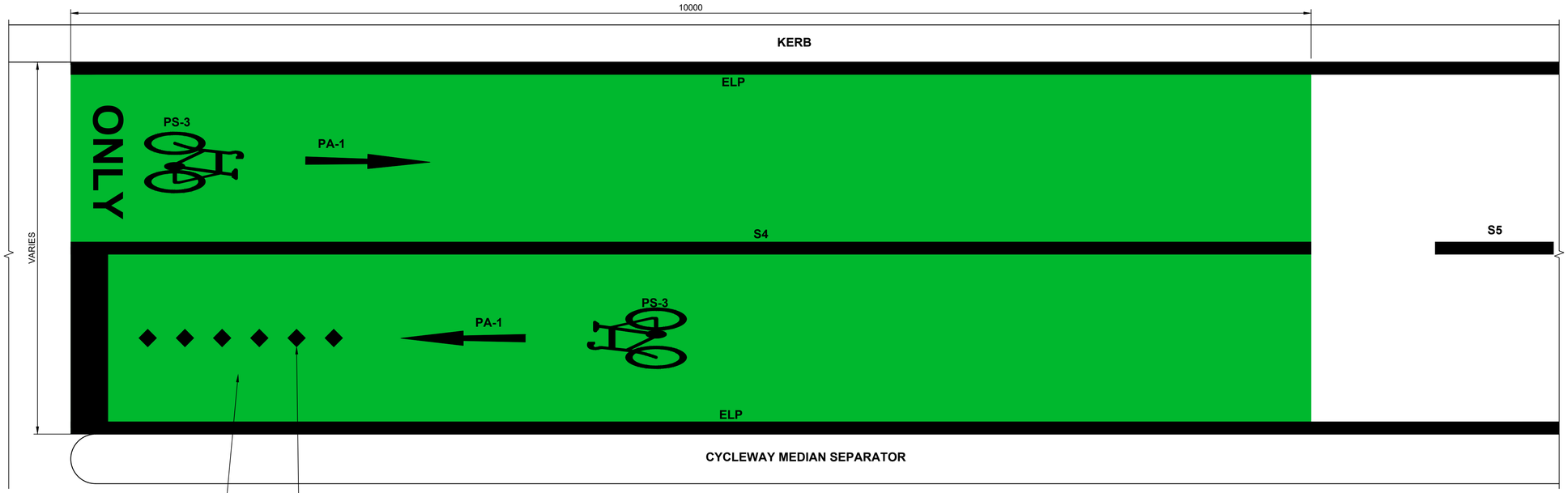
QUEEN'S SQUARE BICYCLE SYMBOL
SCALE 1:20



TYPICAL SIGN POST INSTALLATION - IN PAVING
SCALE 1:20



TYPICAL SIGN POST INSTALLATION - IN LANDSCAPE
SCALE 1:20



CYCLEPATH LINEMARKING DETAIL 2 - (TYPICAL BI-DIRECTIONAL INTERSECTION)
SCALE 1:20

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SCALE BAR
0 0.5 1 m
1:20

KEY PLAN

REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

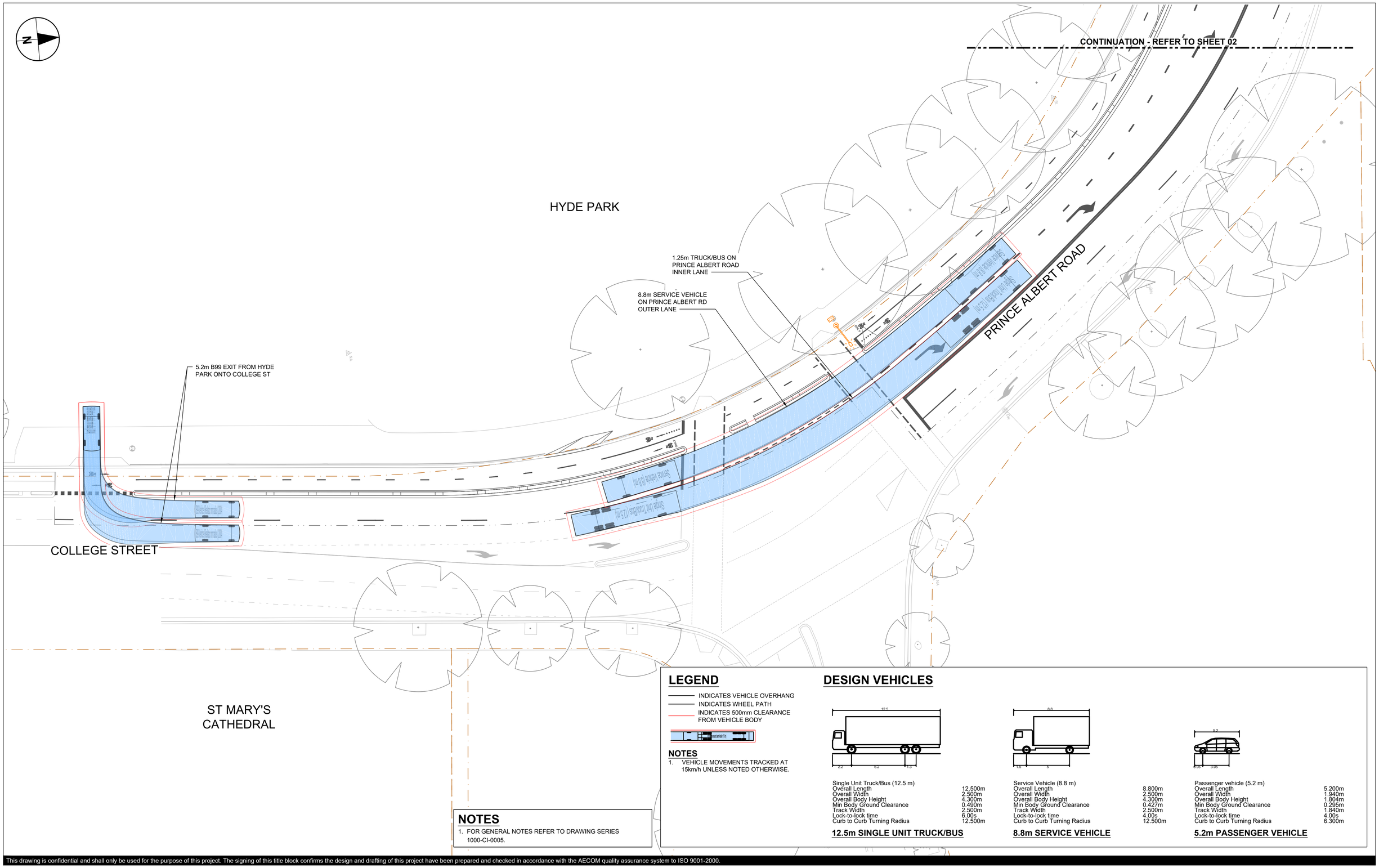
I/R	DATE	DESCRIPTION
01	13.03.2024	100% DD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER
60711261

SHEET TITLE
PHILLIP TO COLLEGE STREET DETAILS
SIGNAGE AND LINEMARKING

SHEET NUMBER
60711261-SHT-00-1000-CI-0931



LEGEND

- INDICATES VEHICLE OVERHANG
- INDICATES WHEEL PATH
- INDICATES 500mm CLEARANCE FROM VEHICLE BODY

NOTES

1. VEHICLE MOVEMENTS TRACKED AT 15km/h UNLESS NOTED OTHERWISE.

DESIGN VEHICLES

Single Unit Truck/Bus (12.5 m)

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.490m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

12.5m SINGLE UNIT TRUCK/BUS

Service Vehicle (8.8 m)

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	12.500m

8.8m SERVICE VEHICLE

Passenger vehicle (5.2 m)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.300m

5.2m PASSENGER VEHICLE

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0005.

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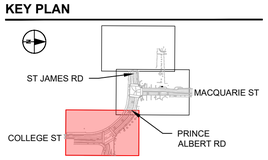
SCALE BAR

0 5 10 m
1:200

KEY PLAN



REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

04	13.03.2024	100% DD ISSUE
03	20.12.2023	80% DD ISSUE
02	27.10.2023	100% CD ISSUE
01	21.07.2023	80% CD ISSUE
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

SHEET TITLE

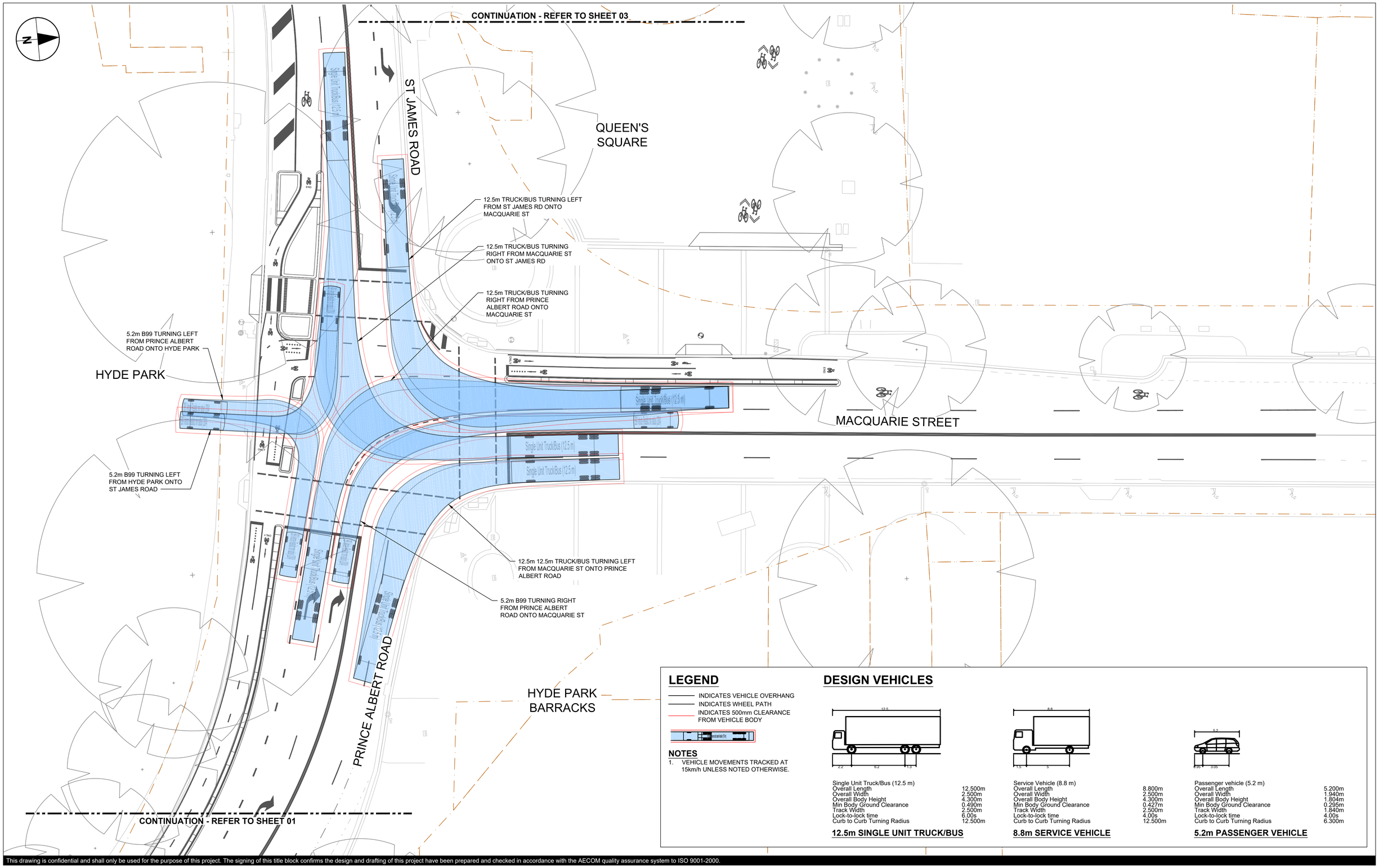
PHILLIP TO COLLEGE STREET
VEHICLE TURNPATH PLAN
SHEET 01

SHEET NUMBER

60711261-SHT-00-1000-CI-0971

ISO A1 594mm x 841mm

CONTINUATION - REFER TO SHEET 03



CONTINUATION - REFER TO SHEET 01

LEGEND

- INDICATES VEHICLE OVERHANG
- INDICATES WHEEL PATH
- INDICATES 500mm CLEARANCE FROM VEHICLE BODY

NOTES

1. VEHICLE MOVEMENTS TRACKED AT 15km/h UNLESS NOTED OTHERWISE.

DESIGN VEHICLES

Single Unit Truck/Bus (12.5 m)	
Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.490m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

12.5m SINGLE UNIT TRUCK/BUS

Service Vehicle (8.8 m)	
Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	12.500m

8.8m SERVICE VEHICLE

Passenger vehicle (5.2 m)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.300m

5.2m PASSENGER VEHICLE

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PROJECT

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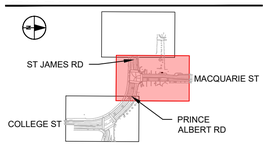
SCALE BAR

0 5 10 m
1:200

KEY PLAN



REGISTRATION

PROJECT MANAGEMENT INITIALS

CR	EC	RM
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM	GDA2020	SURVEY	MGA56

ISSUE/REVISION

I/R	DATE	DESCRIPTION
04	13.03.2024	100% DD ISSUE
03	20.12.2023	80% DD ISSUE
02	27.10.2023	100% CD ISSUE
01	21.07.2023	80% CD ISSUE

FOR INFORMATION ONLY

PROJECT NUMBER

60711261

SHEET TITLE

PHILLIP TO COLLEGE STREET
VEHICLE TURNPATH PLAN
SHEET 02

SHEET NUMBER

60711261-SHT-00-1000-CI-0972

Last saved by: JOSE.CARVAJALINO(2024-03-13) Last Plotted: 2024-03-13
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Appendix C

Consideration of Matters of National Environmental Significance

Appendix C Consideration of Matters of National Environmental Significance

The table below demonstrates the CoS's consideration of the MNES under the EPBC Act to be considered in order to determine whether the Proposal should be referred to the Commonwealth Department of Environment, Energy, Climate Change and Water. A Protected Matters Search was conducted on 3 July 2023, with a 200 m of the Proposal (Appendix K).

MNES	Impacts
Any impact on a World Heritage property?	Nil, there is no physical or visual impact to Hyde Park Barracks, approval is not required despite the Proposal being within the visual buffer of the Hyde Park Barracks.
Any impact on a National Heritage place?	Nil, there is no physical or visual impact to the Governors' Domain and Civic Centre, approval is not required despite the Proposal being within the visual buffer of the Hyde Park Barracks and within the Governors' Domain and Civic Centre.
Any impact on a wetland of international importance?	Nil Wetlands of international importance were not identified within the search area.
Any impact on a listed threatened species or communities?	Nil Threatened ecological communities are not present within the Proposal Area. Given the urban environment of the Proposal Area, it is highly unlikely that threatened species would be present within or nearby the Proposal Area. Furthermore, given the minor nature of the Proposal, impacts to threatened species, if present, are not anticipated.
Any impacts on listed migratory species?	Nil It is unlikely that the Proposal Area would support migratory species, and the limited scope of works are unlikely to impact migratory species.
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 D

Statement of Heritage Impacts

Prepared for
Council of the City of Sydney
ABN: 29 143 862 138

Phillip Street Cycleway

Statement of Heritage Impact

13-May-2024
Cycleways Project

Phillip Street Cycleway

Statement of Heritage Impact

Client: Council of the City of Sydney

ABN: 29 143 862 138

13-May-2024

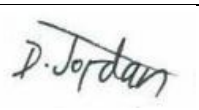
Job No.: 60711261

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 and ISO45001.

Quality Information

Document	Phillip Street Cycleway
Ref	60711261
Date	13-May-2024
Originator	Deborah Farina
Checker/s	Dr Darran Jordan
Verifier/s	

Revision History

Rev	Revision Date	Details	Approved	
			Name/Position	Signature
A	31-Oct-2023	Draft Statement of Heritage Impact for client review	Dr Darran Jordan ANZ Heritage Technical Group Leader	
B	7-Nov-2023	Draft Statement of Heritage Impact for client review	Dr Darran Jordan ANZ Heritage Technical Group Leader	
C	22-Mar-2024	Updates to address minor changes to the REF	Shani Walton Principal Environmental Consultant	
D	13 May 2024	Draft Statement of Heritage Impact for client review	Dr Darran Jordan ANZ Heritage Technical Group Leader	

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Executive Summary

The City of Sydney (CoS) propose to deliver a priority cycleway that would connect the existing Phillip Street/King Street and College Street cycleways (the Proposal). The Proposal would include a new designated two-way cycleway on the west side of Macquarie Street that would continue across the intersection and bend east onto the southern side of Prince Albert Road. The Proposal would also provide a one-way bicycle path departure from the two-way bicycle path, leading westward on the southern side of St James Road, and a realignment of the curb on the northwestern corner of Macquarie Street and St James Road. The Proposal would also convert the western most traffic lanes of Macquarie Street into dedicated cycleways and reduce the St James Road departure lanes from two to one at the intersection.

As this proposed route runs through and adjacent to numerous heritage items, the purpose of this assessment is to consider the impacts that the construction of the cycleway may have on these items. This assessment will inform and support a Review of Environmental Factors (REF) for the Proposal.

The Proposal is located within the Sydney Local Government Area (LGA), within the heart of the Sydney Central Business District (CBD). The area surrounding the Proposal can be generally described as a highly developed modern urban environment, characterised by high density retail, commercial and residential development. From a heritage perspective, it should be noted that many of the buildings in and around the Proposal are of high heritage significance owing to their historical connection with the earliest years of the colony, demonstrating the early planning of a civic centre by Governor Lachlan Macquarie.

There are 10 heritage items in this vicinity, four within the Proposal area and six immediately adjacent to it. Of the heritage items, one is of World heritage significance, two are of National heritage significance, one is of local heritage significance and the remainder are of State heritage significance.

The four items within the Proposal area are the visual buffer of Hyde Park Barracks (World heritage), Governors' Domain and Civic Centre (National heritage), St James Railway Station Group (State heritage) and Queen's Square (local heritage). The proposed cycleway will pass through the heritage curtilages of all four of these items, and all but St James Railway Station Group also have significant views and vistas. In addition, all items were assessed as having archaeological potential in the Central Sydney Archaeological Zoning Plan (see Section 4.3.1).

Following an assessment of the heritage values of the Proposal area and impacts proposed, it is concluded that the Proposal will not cause any adverse impacts on any of the heritage items. There is potential to damage the trachyte kerb located in the Proposal area through the construction of the ramps and the realignment of the curb on the northwestern corner of Macquarie Street and St James Road, however these can be managed as per the recommendations below.

The Proposal is within the curtilage of items identified as having archaeological potential, however all ground disturbance will be within road corridors or the former road corridor of King Street between Phillip Street and Macquarie Street (now Queen's Square). All ground disturbance associated with the construction of the cycleway is expected to be shallow and as these are likely to remain within the modern fill beneath current surfaces, the potential to disturb archaeological deposits is assessed as low. These deposits are likely to be related to former road surfaces and/or tram tracks, however other remains associated with former building footprints are also possible. Any archaeological deposits uncovered should be managed by the recommendations below relating to unexpected finds.

As noted in Section 2.1.1, approval is required for an activity that will cause a significant impact to World or National heritage. As there is no physical or visual impact to Hyde Park Barracks or the Governors' Domain and Civic Centre, approval is not required, despite the Proposal being within the visual buffer of the Hyde Park Barracks and within the Governors' Domain and Civic Centre.

In relation to State heritage, a permit under Section 60 (s60) is required if proposed works take place within the curtilage of an item listed on the New South Wales (NSW) State Heritage Register (SHR) and does not meet one of the standard exemptions under Section 57 (s57)(1). Based on the understanding that the tunnel is between 7.5 and 8.5 metres below the surface, there are no items of State heritage within the Proposal area and the works will not cause any significant impact to any items adjacent to the Proposal area. As such, the works can proceed with caution without a permit.

However, the Banco Road Court, Sydney Supreme Court House on St James Road, St James Railway Station Group, the Queen Victoria statue in Queens Square and the statue of Lachlan Macquarie at the Macquarie Street entrance to Hyde Park are all within the minimum safe working distances for vibration-intensive plant and machinery. These should be managed by minimising the vibration by plant and machinery used in the vicinity of these items. Other general management measures for vibration-intensive machinery are also recommended. The full recommendations relating to the Proposal are listed below.

Recommendation 1 – Unexpected Finds Procedure

An Unexpected Finds Procedure should be developed and included in the Construction Environmental Management Plan (CEMP) for the Proposal. This should specify responses to finds of any wooden or cobbled former road surfaces if they are uncovered during construction. At a minimum, work should cease in the vicinity of the feature, a qualified archaeologist should be contacted to assess the significance of the feature and appropriate management undertaken before work recommences.

Recommendation 2 – Trachyte kerbs

The trachyte kerb on the corner of Macquarie Street and St James Road requires removal. As all trachyte kerbs remain the property of the Council of the City of Sydney, the removal of any trachyte kerb as part of this project should only be done in liaison with the CoS Council Representative.

Recommendation 3 – Management of vibration impacts

For the Banco Road Court and Sydney Supreme Court House on St James Road and St James Railway Station Group, the Queen Victoria statute in Queens Square and the statue of Lachlan Macquarie at the Macquarie Street entrance to Hyde Park, it is recommended that measures be implemented to minimise impacts caused by vibration in the vicinity of these items. These may include having rollers on static mode and selecting machinery with lower vibration levels.

For all heritage items in the vicinity of the Proposal area it is recommended further that management measures for the use of vibration-intensive plant and machinery be employed, such as:

- Comply with minimum working distances for vibration intensive plant (see Table 6-3)
- If compliance with minimum working distances is not possible, then vibration monitoring will be undertaken. If readings are below vibration thresholds, then work will continue with caution
- If readings exceed vibration thresholds, then a change of process will be implemented to reduce vibration
- If vibration thresholds cannot be complied with, it is recommended that a structural engineer be engaged to provide advice.

Recommendation 5 – Contractors and subcontractors made aware of heritage obligations

It is recommended that all contractors and subcontractors be informed during induction/toolbox of the potential for non-Aboriginal heritage to be uncovered during works. All contractors and subcontractors should be made aware of the Unexpected Finds Procedure and their responsibility to follow it during works.

1.0 Introduction

1.1 Background

The City of Sydney (CoS) propose to deliver a priority cycleway that would connect the existing Phillip Street/King Street and College Street cycleways (the Proposal). The Proposal would include a new designated two-way cycleway on the west side of Macquarie Street that would continue across the intersection and bend east onto the southern side of Prince Albert Road. The Proposal would also provide a one-way bicycle path departure from the two-way bicycle path, leading westward on the southern side of St James Road, and a realignment of the kerb on the northwestern corner of Macquarie Street and St James Road. The Proposal would convert the western most traffic lanes of Macquarie Street into dedicated cycleways and reduce the St James Road departure lanes from two to one at the intersection.

AECOM Australia Pty Ltd (AECOM) has been commissioned to provide a heritage assessment for a proposed cycleway that will run through the centre of Sydney, between College and King Streets, Sydney. As this proposed route runs through and adjacent to numerous heritage items, the purpose of this assessment is to consider the impacts that the construction of the cycleway may have on these items. This assessment will inform and support a Review of Environmental Factors (REF) for the Proposal.

1.2 Proposal area

The Proposal is located within the Sydney Local Government Area (LGA), within the heart of the Sydney Central Business District (CBD). The location of the Proposal in a regional context is shown on Figure 1-1. The area surrounding the Proposal can be generally described as a highly developed modern urban environment, characterised by high density retail, commercial and residential development. From a heritage perspective, it should be noted that many of the buildings in and around the Proposal are of high heritage significance owing to their historical connection with the earliest years of the colony and demonstration of the early planning of a civic centre by Governor Lachlan Macquarie.

For the purposes of this assessment, the extent of the works are shown on Figure 1-2 (defined by a red dashed line that is referred to as the Proposal area). The Proposal includes all locations where works would be undertaken, including temporary construction laydown areas.

1.3 The Proposal

As part of the Phillip Street to College Street cycleway, a new two-way bicycle path is proposed to connect the existing College Street cycleway and King Street cycleway. This proposed cycleway aims to bridge the gap between the two cycleways, starting from College Street south of Prince Albert Road, following the southern side of Prince Albert Road, ascending the western side of Macquarie Street, and ultimately joining the King Street cycleway at Phillip Street through Queens Square.

The intersection of Prince Albert Road, St James Road, and Macquarie Street is proposed to be modified as part of these works and will interface with the proposed Macquarie Street road upgrades delivered as part of the Macquarie Street East Precinct transformation. Key features of the Proposal include:

- A new separated two-way cycleway from the current northern end of the College Street cycleway, continuing along Prince Albert Road for about 250 m and then turning north into Macquarie Street. The cycleway would then turn east, crossing Queen's Square to connect to the intersection of King Street and Phillip Street (see Figure 1-2)
- A bluestone 400 millimetre (mm) median to separate the cycleway on Macquarie Street and Prince Albert Road to separate the proposed cycleway from the road carriageway
- Reconstruction of gutters adjacent the proposed cycleway on Prince Albert Road to reduce gutter width and increase cycleway pavement

- A new single-direction 130 m section of cycleway within the southern kerbside lane of St James Road. There would be no median separating the cycleway on St James Road from the road carriageway
- Provision of a signalised crossing for people on bikes to cross the St James Road/Macquarie Street intersection
- Provision of a new traffic signal on the existing median at the Prince Albert Street and College Street intersection to improve road safety sight lines for vehicles approaching from the south
- The proposed cycleway would displace the following lanes currently available to general traffic:
  - One westbound lane on Prince Albert Road and St James Road
  - One northbound lane on the western side of Macquarie Street.
- Changes to Queen's Square including:
  - Extension of the kerb at the corner of St James Road and Macquarie Road junction to provide additional space for pedestrians
  - Provision of a new kerb ramp on Macquarie Street for people on bikes to move from the proposed on-road cycleway onto the existing shared path through Queen's Square
  - Provision of pavement marking through Queen's Square, to guide cyclists through the square
  - A new ramp access to Queen's Square, northwest of the St James Road and Macquarie Road junction, formed by relaying existing pavers, as shown on Figure 1-2. This ramp access is proposed to join the existing King Street Cycleway and the proposed College Street Cycleway to provide a continuous path for cyclists
- Provision of pavement markers or markings, and signage, indicating the pedestrian only area at the intersection of St James Road and Macquarie Street near the Queen Victoria statue
- Provision of a new kerb ramp on College Street near the intersection with St Mary's Road for people on bikes to leave the cycleway and use the signalised pedestrian crossing to cross College Street and access the eastern side of St Marys Road
- Provision of low-level plantings adjacent to the signalised cyclist crossing at St James Road
- Removal of existing painted median on St James Road between the intersections with St Marys Road and Macquarie Street to allow the general traffic lanes to be reconfigured around the provision of the cycleway within the southern kerbside lane
- Adjustment of the existing centre median on St James Road west of Macquarie Street intersection to allow the general traffic lanes to be reconfigured around the provision of the cycleway within the southern kerbside lane
- Removal of the existing cycleway median on College Street where the Proposal would connect to the College Street cycleway
- Relocation of traffic control signal pole on the western side of Prince Albert Road, at the St Marys Road intersection with Prince Albert Road, to north of the existing pedestrian ramp
- Changes to intersection movements for general traffic, including:
  - Removal of a right turn lane from the southbound direction of Macquarie Street turning onto St James Road
  - Conversion of one of the two existing southbound left turn lanes on Macquarie Street into a right turn lane
  - Reduction of St James Road departure lanes from two to one at the intersection on St James Road and Macquarie Street
  - The Proposal would not require the removal of any trees or parking spaces. The existing kerb alignment of within the Proposal Area would be retained.

The Proposal would not require the removal of any trees or parking spaces. The existing kerb alignment within the Proposal area would be retained.

1.4 Assumptions and limitations

This assessment has been based on project information provided by CoS. Any deviations, amendments or modifications to the Proposal may require additional heritage assessment.

1.5 Authorship

This assessment has been undertaken by Senior Heritage Consultant, Deborah Farina. A technical and quality review has been undertaken by Dr Darran Jordan, ANZ Heritage Practice Group Leader.

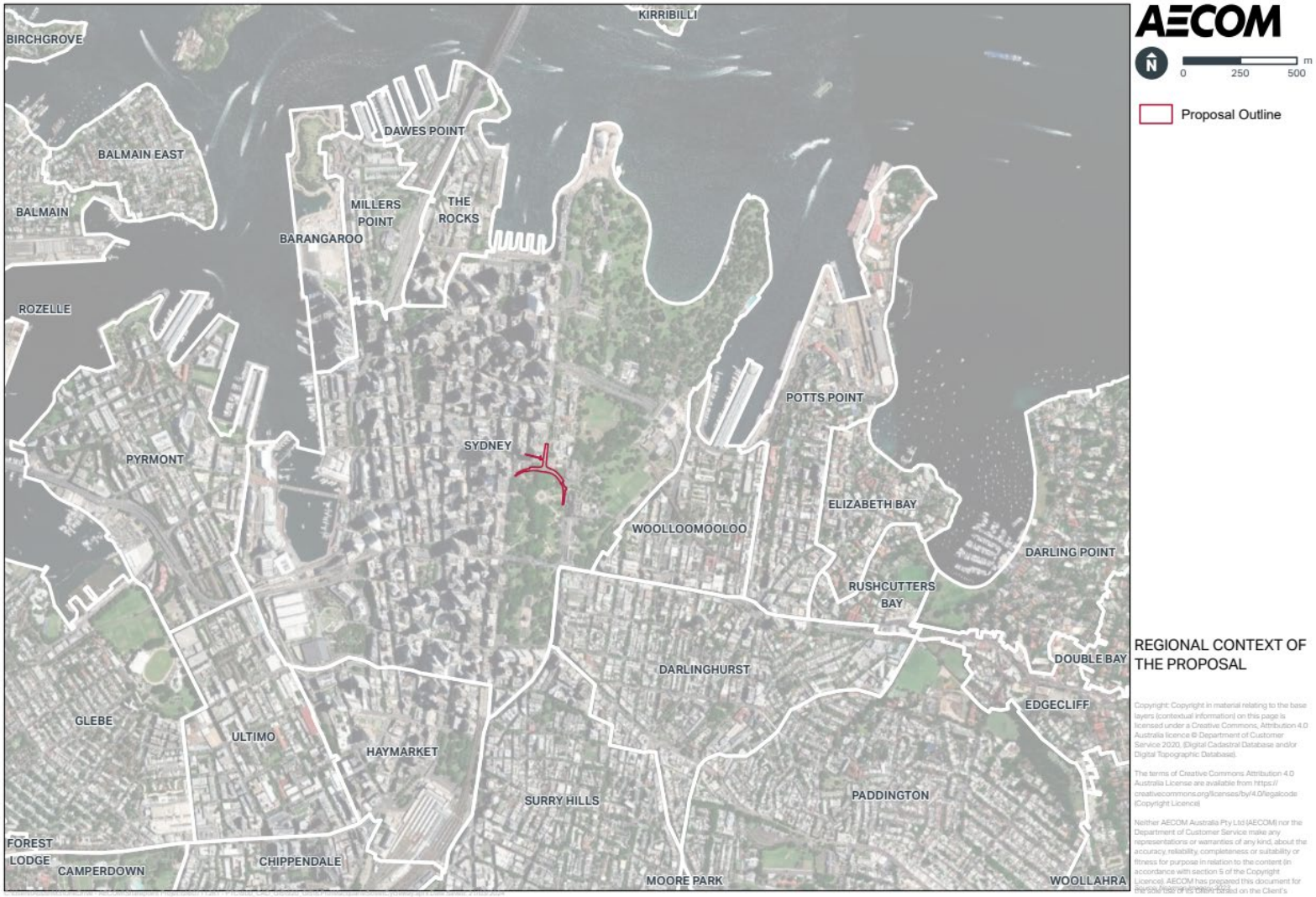

Figure 1-1: Regional area (Proposal area shown in red)

Figure 1-2: Extent of works

2.0 Legislative context

2.1 Commonwealth legislation

2.1.1 *Environmental Planning & Biodiversity Conservation Act 1999* (EPBC Act)

The EPBC Act defines 'environment' as both natural and cultural environments and therefore includes Aboriginal and non-Aboriginal historical cultural heritage items. Under the Act protected heritage items are listed on the National Heritage List (items of significance to the nation) or the Commonwealth Heritage List (items belonging to the Commonwealth or its agencies). These two lists replaced the Register of the National Estate (RNE). The RNE has been suspended and is no longer a statutory list; however, it remains as an archive.

In addition to these, the EPBC Act covers items that are listed on the UNESCO World Heritage List. These are items that are considered to be significant to world heritage.

Under Part 9 of the EPBC Act, any action that is likely to have a significant impact on a matter of National Environmental Significance (known as a controlled action under the Act), may only progress with approval of the Commonwealth Minister for the Department of the Environment. An action is defined as a project, development, undertaking, activity (or series of activities), or alteration. An action will also require approval if:

- It is undertaken on Commonwealth land and will have or is likely to have a significant impact on the environment on Commonwealth land
- It is undertaken by the Commonwealth and will have or is likely to have a significant impact.

2.2 State

2.2.1 *Heritage Act 1977*

The *Heritage Act 1977* was enacted to conserve the environmental heritage of New South Wales (NSW). Under Section 32, places, buildings, works, relics, moveable objects, or precincts of heritage significance are protected by means of either Interim Heritage Orders (IHO) or by listing on the NSW State Heritage Register (SHR). Items that are assessed as having State heritage significance can be listed on the SHR by the Minister on the recommendation of the NSW Heritage Council.

Proposals to alter, damage, move or destroy places, buildings, works, relics, moveable objects or precincts protected by an IHO or listed on the SHR require an approval under Section 60 (s60). There are standard exemptions to the requirement for a s60 permit under Section 57 (s57)(1) of the Act (see below).

Under Section 170 (s170) of the *Heritage Act 1977*, NSW Government agencies are required to maintain a register of heritage assets. The Register places obligations on the agencies, but not on non-government proponents, beyond their responsibility to assess the impact on surrounding heritage items.

Standard Exemptions

Under s57(1) of the *Heritage Act 1977,* the Minister may from time to time publish exemptions to the requirement for a permit under s60 of the *Heritage Act 1977*. Such exemptions were gazetted on 13 November 2020 (NSW Gazette, 2020). These exemptions are generally for minor, non-invasive works that allow owners to perform general repair and maintenance to a heritage item.

General conditions for the standard exemptions are:

- Standard exemptions do not permit the removal of any fabric. Significant fabric means all the physical material of the place/item including elements, fixtures, landscape features, contents, relics and objects which contributes to the item's heritage significance (author's emphasis)
- Activities/works that do not fit strictly within the exemptions require approval by way of an application under s60 of the Heritage Act 1977

- Standard exemptions are self-assessed. It is the responsibility of the proponent to ensure that the proposed activities/works fall within the standard exemptions
- Proponents must keep records of any activities/works for auditing and compliance purposes by the Heritage Council. Where advice of a suitably qualified and experienced professional has been sought, a record of that advice must be kept. Records must be kept in a current, readable electronic file or hard copy for a reasonable time
- It is an offence to do any of the things listed in Section 57(1) without a valid exemption or approval. A person guilty of an offence against the *Heritage Act 1977* shall be liable to a penalty or imprisonment or both under Section 157 (s157) of the *Heritage Act 1977*
- Authorised persons under the *Heritage Act 1977* carry out inspections for compliance
- The standard exemptions under the *Heritage Act 1977* are not authorisations, approvals or exemptions for the activities/works under any other legislation.

Permits/Approvals under Heritage Act 1977

Fast Track Section 60 permits

For minor works that do not fall within the standard exemptions, a “fast-track” s60 permit may be applicable. Eligible activities/works for the fast-track s60 permit are:

- Minor in nature
- Costs less than $150,000.

Relevant examples of such works include:

- Repair (such as refixing and patching) of damaged or deteriorated significant fabric
- Replacement of missing, damaged or deteriorated significant fabric
- Investigating condition of significant fabric, such as minor works involving small penetrations into significant fabric to determine condition and plan conservation works
- Temporary structures (construction/installation) not permitted under standard exemptions.

A fast-track s60 permit must be submitted to Heritage NSW together with supporting documentation, such as a Heritage Impact Assessment, and the applicable fee.

Fast track s60 permits are processed within 21 days. It is noted, however, that once a fast-track s60 permit has been granted, they are unable to be modified under s65A (see below under “Section 60 Permits”). Should the scope of the Proposal change, a new permit must be sought.

Section 60 Permits

If the works do not comply with the standards exemptions, site-specific exemptions or are not “minor works” that fall within the “fast-track” s60 permit pathway, or have costs higher than $150,000, a standard s60 permit is required.

While the assessment of s60 permits take longer to assess than the fast-track s60 permit pathway, they do allow for modifications should the scope of the Proposal be amended. Such modifications are supported by s65A of the *Heritage Act 1977*, provided that the approval body is satisfied that the modified approval is substantially the same as the scope authorised by the original approval (s65A (1)(a)).

As part of the standard s60 permit application process, if a proposal may have a major impact on the heritage significance of an item, or is in the public interest, Heritage NSW will advertise the application. The standard timeframe for assessment of the applications is 40 days for those that are not advertised, and 60 days for those that are. It should be noted that if Heritage NSW require additional information or clarification of details within the application, the “clock’ is stopped until the proponent provides that additional information/clarification to Heritage NSW.

2.2.2 State Environment Planning Policy (Transport and Infrastructure) 2021

The *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP) allows for simplified planning and effective delivery of transport and infrastructure projects for NSW Government departments. Division 15 of the Transport and Infrastructure SEPP covers railway and rail infrastructure projects.

Clause 2.92 of the Transport and Infrastructure SEPP provides that development for the purpose of a railway or rail infrastructure facility may be carried out on or on behalf of a public authority without consent on any land. This includes construction works, emergency or routine maintenance works and the development for car parking or markets.

However, impacts to State and local heritage items must be no greater than minimal to be considered exempt.

2.3 Local

2.3.1 City of Sydney Local Environmental Plan 2012

Part 5 Section 5.10 of the CoS Local Environmental Plan (LEP) 2012 deals with heritage conservation within the area covered by this LEP. All heritage items listed on the LEP are included in Schedule 5 of the document. The LEP states:

(1) Objectives The objectives of this clause are as follows—

(a) to conserve the environmental heritage of Sydney LGA,

(b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,

(c) to conserve archaeological sites,

(d) to conserve Aboriginal objects and Aboriginal places of heritage significance.

(2) Requirement for consent Development consent is required for any of the following—

(a) demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance)—

(i) a heritage item,

(ii) an Aboriginal object,

(iii) a building, work, relic or tree within a heritage conservation area,

(b) altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item,

(c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,

(d) disturbing or excavating an Aboriginal place of heritage significance,

(e) erecting a building on land—

(i) on which a heritage item is located or that is within a heritage conservation area, or

(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,

(f) subdividing land—

(i) on which a heritage item is located or that is within a heritage conservation area, or

(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.

2.4 Heritage database searches

The following heritage items are within or adjacent to the Proposal (see Figure 2-1 to Figure 2-5).

Table 2-1: Statutory heritage listings

Item Name	Address	
World heritage		
Australian Convict Sites (Hyde Park Barracks)	Various (Macquarie Street Sydney)	
National		
Governors' Domain and Civic Precinct	Macquarie Street, Sydney	
Hyde Park Barracks	Macquarie Street, Sydney	
State		
Mint Building and Hyde Park Barracks Group	Macquarie Street, Sydney	
Land Titles Office	Prince Albert Road, Sydney	
St James Railway Station Group	City Circle Railway, Sydney	
Banco Road Court, Sydney Supreme Court House	St James Road, Sydney	
Hyde Park	110-120 Elizabeth, Park, Liverpool, College Streets Sydney	
St Mary's Catholic Cathedral and Chapter House	College Street, Sydney	
Local		
Item Name	**Address**	**Item No.**
Former Hyde Park Barracks including forecourt, wall and gatehouses, interiors grounds, former District Courts and offices and archaeology	12 Macquarie Street, Sydney	I1867
Former Royal Mint Building including interior, forecourt, courtyards, cartway, entrance gates, fence and archaeology, former Police Station building	10 Macquarie Street, Sydney	I1866
Queen's Square	Macquarie Street, Sydney	I1882
St James Church including interior, courtyards, perimeter walls and fences	173 King Street, Sydney	I1847
Supreme Court and Old Registry Office Building Group Including Interiors, Fences and Grounds	102 Elizabeth Street, St James Road and King Street, Sydney	I1739
Former Registrar General's Department building, including interior	1 Prince Albert Road, Sydney	I1946

Frazer Memorial Fountain	Prince Albert Road, corner St Mary's Road, Sydney	I1947
St Mary's Cathedral and Chapter House group including interiors, grounds and fences	2 St Mary's Road, Sydney	I1951
Hyde Park including north and south park reserves, Archibald Memorial Fountain, Anzac Memorial, Pool of Remembrance, stone perimeter wall and steps, St James Station, Museum Station, Dalley Statue, Oddfellows Memorial, Captain Cook Statue, Frazer Fountain, Fort Macquarie Cannon, Emden Gun, Thornton Obelisk, Sundial, former public toilets, Busby's Bore Fountain, Sandringham Gardens including memorial gates/pergola, Nagoya Gardens, Chess Board, F J Walker Fountain, John Baptist fountain, Busby's Bore and archaeology	110-120 Elizabeth Street, Sydney	I1654

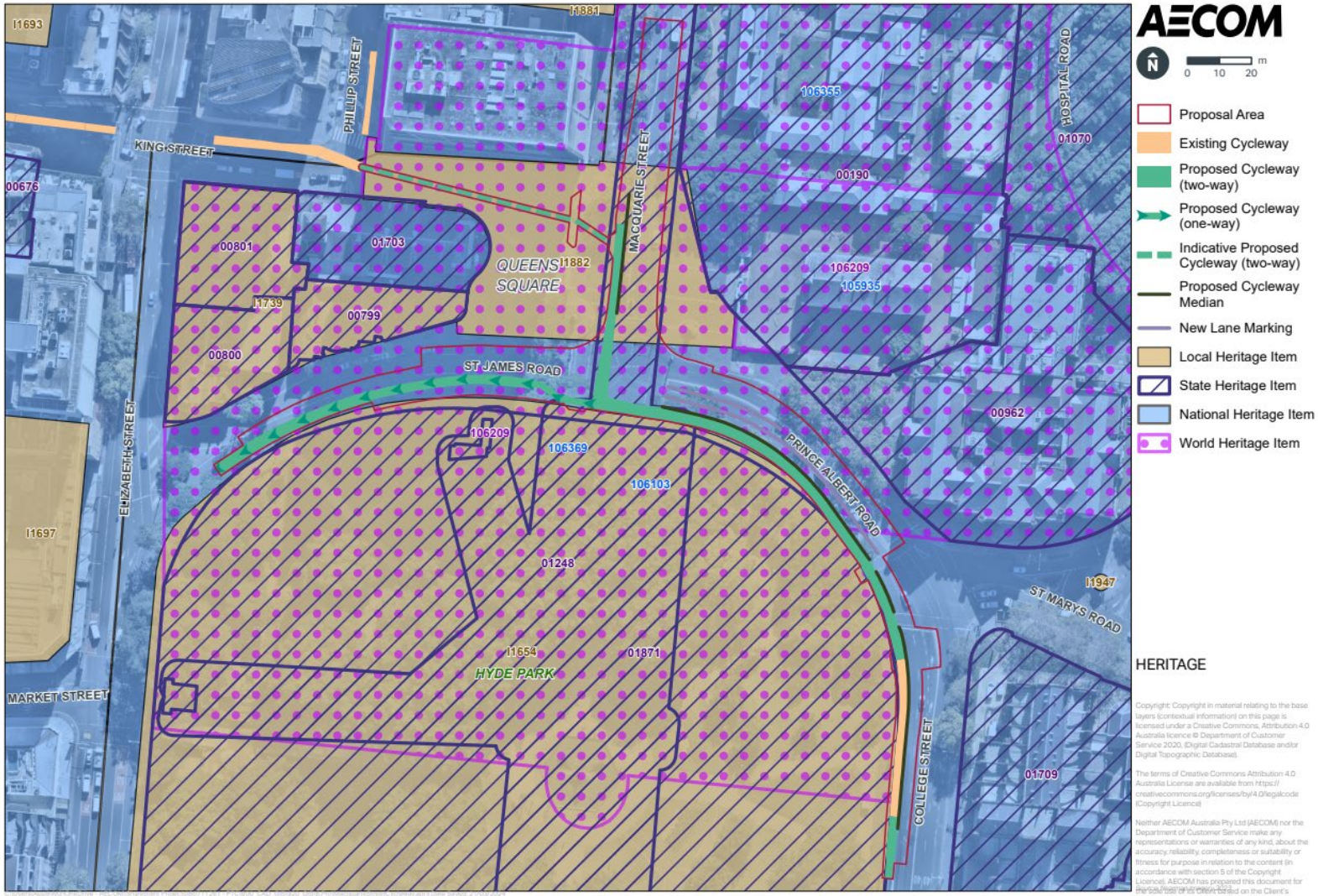

Figure 2-1: Location of heritage items within or adjacent to the Proposal

Figure 2-2: Local heritage

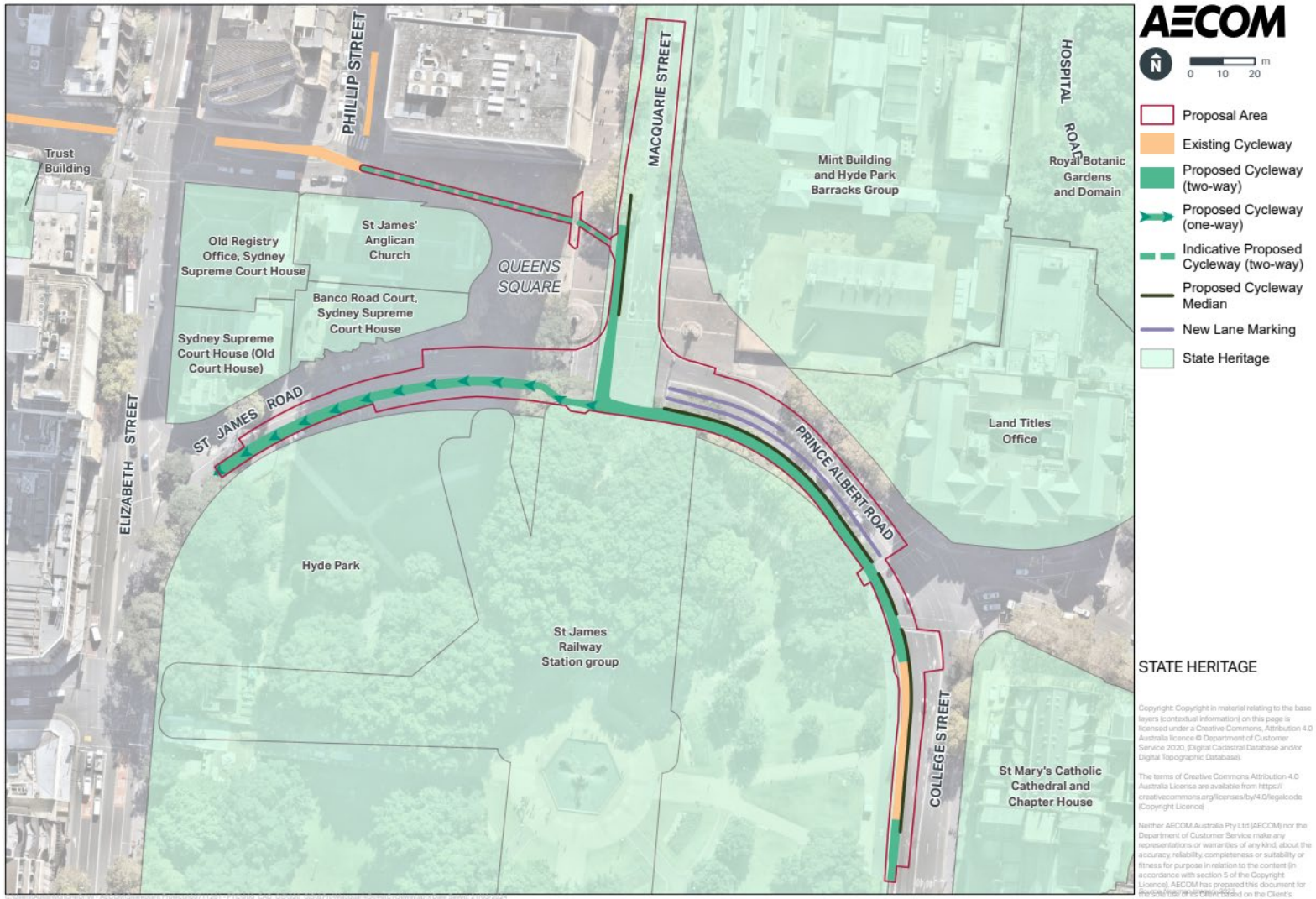

Figure 2-3: State heritage

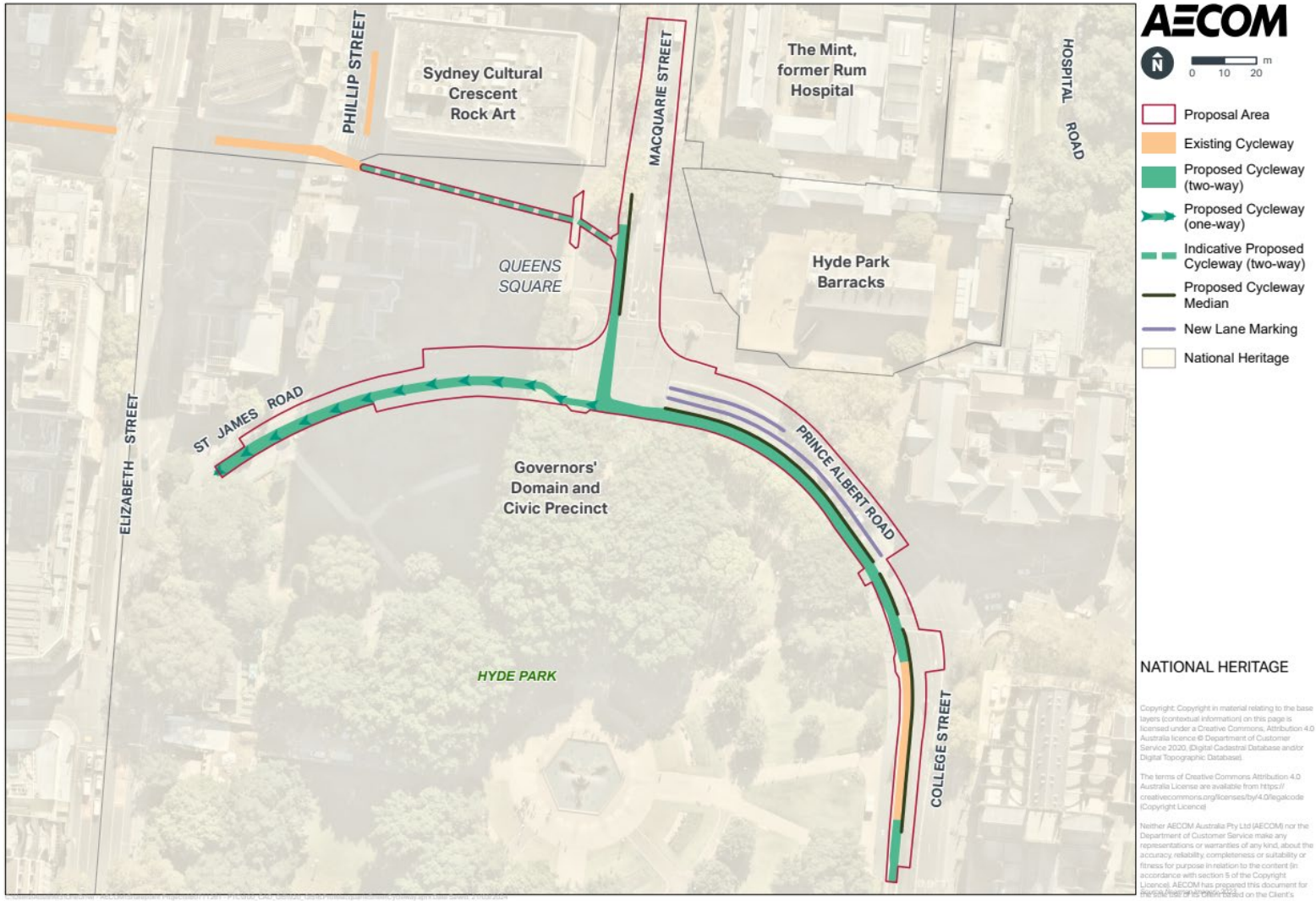

Figure 2-4: National heritage

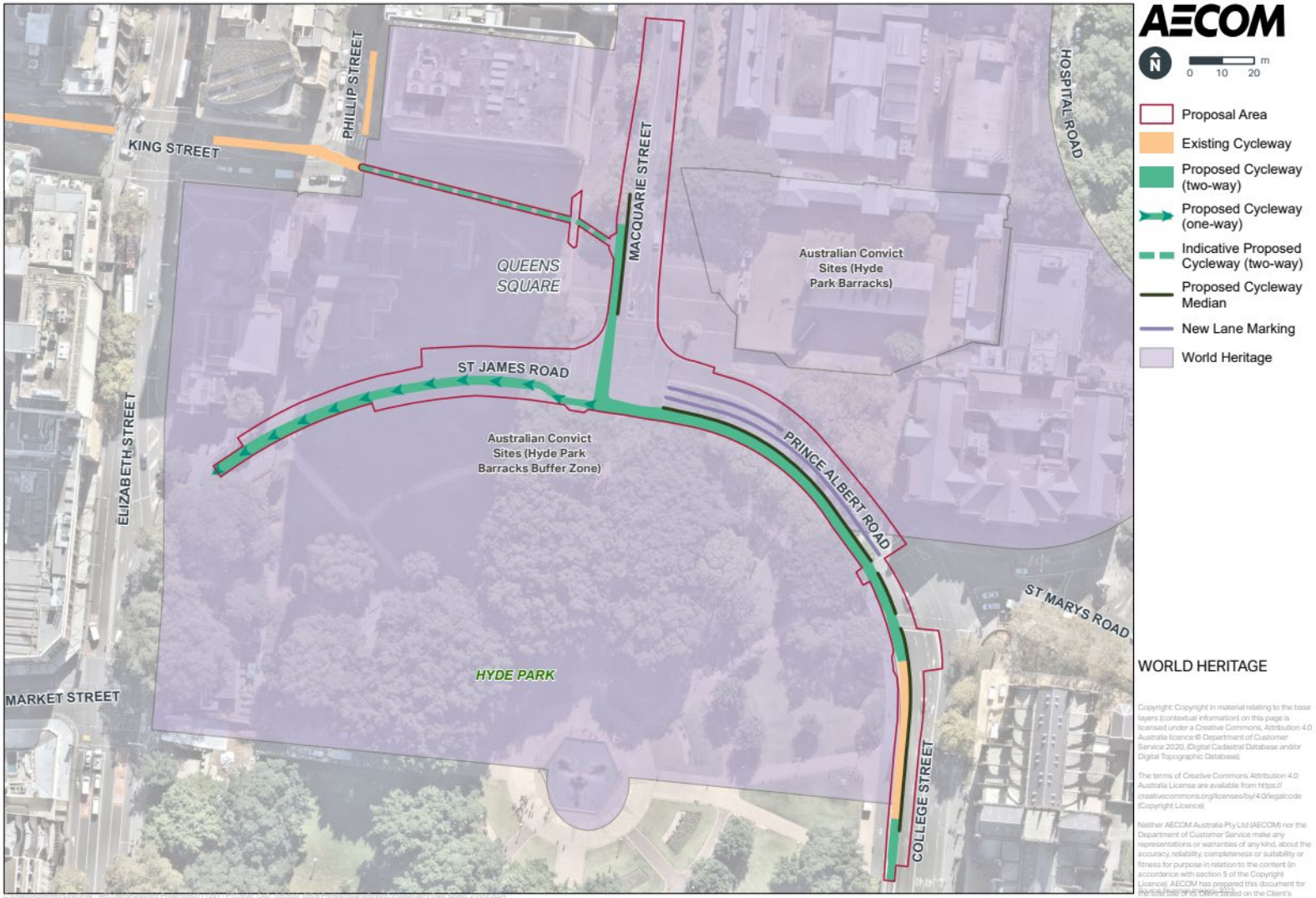

Figure 2-5: World heritage and buffer

3.0 Historical context

3.1 Brief historical chronology

Table 3-1: Chronology of the Proposal area

Date	Event
1788	First fleet arrives at Farm Cove
1809	Governor Lachlan Macquarie arrives in Sydney, with his tenure starting on 1 January 1810
1816	General Hospital (the Rum Hospital) constructed
1817	Hyde Park Barracks constructed
1821	St Mary's Chapel (Cathedral) foundation stone laid by Macquarie
1822	St James Church opened
1829	Roof put on St Mary's Cathedral
1831	Park Street constructed, bisecting Hyde Park
1832	College Street formed, creating eastern boundary of Hyde Park
1840	Cessation of transportation of convicts to NSW
1848	Remaining convicts removed from Hyde Park Barracks Dispensary handed over to Sydney Hospital
1853	Remodelling of south wing of the former Rum Hospital for use as a Mint
1855	Mint begins production
1865	St Mary's Cathedral destroyed by fire
1868	Foundation stone for new St Mary's Cathedral laid
1882	First stage of construction for St Mary's Cathedral completed
1895	Banco Road Court constructed
1900	Official opening of St Mary's Cathedral
1905	Consecration of St Mary's Cathedral
1909	Construction begins on Registrar-General's building (Land Titles Office)
1913	Registrar-General's Office completed
1922	Construction begins on the City Circle Railway Line, including St James and Museum Stations
1926	City Circle/St James Station/Museum Station opened

3.2 Historical land use

Following European settlement, the land comprising the Proposal area was largely a timbered area, but in sporadic use for activities such as timber-getting by the early settlers. However, the area was soon earmarked as a civic centre following the arrival of Governor Lachlan Macquarie in 1809. In his relatively short governorship, Macquarie worked to execute his vision for Sydney as a thriving town, not just as a penal colony. With convict architect, Francis Greenway, many of the early civic buildings were located in, or near to, the Proposal area.

By 1816, Macquarie laid out the street now known as Macquarie Street. It was the first straight road in the colony, purpose-built to convey building materials from Sydney Cove to the many building sites along Macquarie Street (Stockwell, 2008).

One of the earliest buildings constructed on Macquarie Street was the General Hospital (also known as the "Rum Hospital"). Originally comprising three wings (see Figure 3-1), only the north and south wings survive and are now used for the NSW Parliament House and Mint respectively. The central wing was demolished in 1879 and replaced with the current Sydney Hospital building (Ellmoos, 2008).

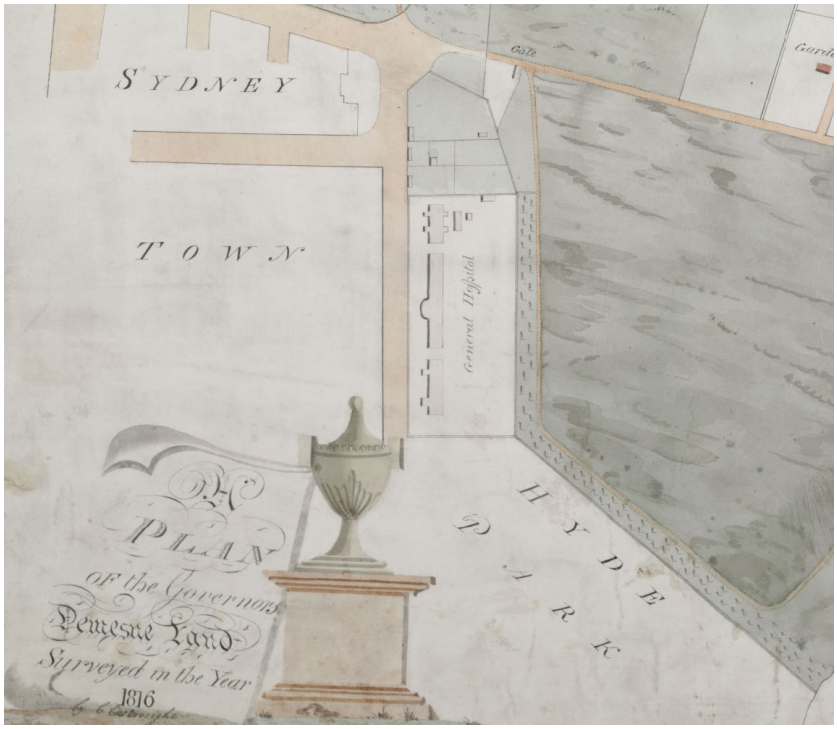

Figure 3-1: Detail of "A Plan of Governors Demesne Land", 1816, by C. Cartwright, showing the outline of the General Hospital (Source: State Library of New South Wales, Call Number Z/M3 811.172/1816/1)

As well as the Hospital, by 1821, the Hyde Park Barracks, the Law Courts and St James' church had been built (all designed by Francis Greenway) and Hyde Park had been named and defined (Figure 3-2 shows a racecourse). The same year, Macquarie had also laid the foundation stone for a Catholic Chapel (later to become St Mary's Cathedral) on the southern edge of Hyde Park (Figure 3-2).

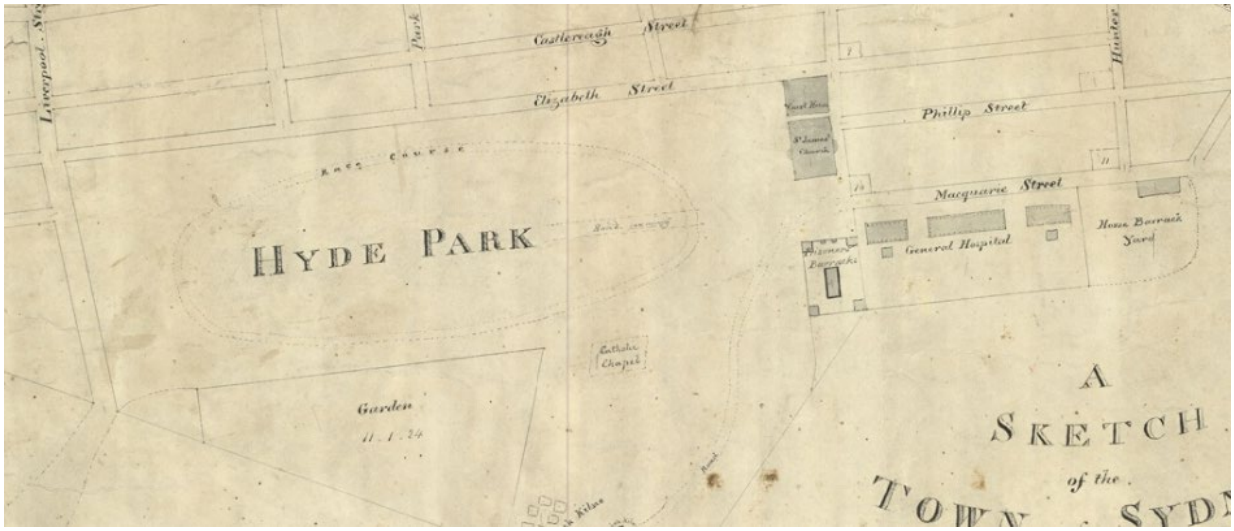

Figure 3-2: Detail of "A Sketch of the Town of Sydney", c. 1821 showing the principal buildings (Source: State Library of New South Wales, Call Number Z/M4 811.16/1821/1)

The location of these buildings was important: they abutted the Governors' Domain at one end, and Hyde Park (a park dedicated specifically for the recreational use of the people) at the other.

3.2.1 Hyde Park

Hyde Park was named by Governor Lachlan Macquarie in 1810 after the grand park in London. Formerly a 23-hectares common, reserved by Governor Phillip in 1796, it was later used by settlers to graze their stock and its brush and trees were exploited for firewood (Heritage NSW, 2022).

As well as grazing, as a public common it was also used for recreation and was variously known as the "Exercising Ground", "the Race Course" (see Figure 3-2) and "the Cricket Ground" (see Figure 3-5) (Sydney Living Museums, 2018:1-21).

As an open green space, buildings such as St James, the Supreme Court, Hyde Park Barracks and the Catholic Chapel (later St Mary's Cathedral) all fronted the park. In the 1820s, contemporary images show it as a great, open expanse, suitable for its purpose at the time as a grazing area and occasional racecourse (Figure 3-3).

In 1827, work commenced on supplementing the town's water supply with water drawn from the Lachlan Swamps (now Centennial Park) following the pollution of the Tank Stream, Sydney's first water source. John Busby was commissioned to construct a tunnel from Lachlan Swamps to Hyde Park, where water carts would then ferry water to Sydney. The tunnel began producing water from 1830, but was not completed until 1837 (Dictionary of Sydney, 2008). The tunnel terminated at Hyde Park south, near the College Street/Oxford Street intersection, however water was carried in pipes supported by trestles until 1844, when pipes were laid from the tunnel to various parts of Sydney (Figure 3-4).

Figure 3-3: Lithograph by J Carmichael, c. 1829: "Sydney from Hyde Park". St James Church is shown, as is Hyde Park Barracks and at left, the Catholic chapel (now St Mary's Cathedral) (Source: National Library of Australia, Call number PIC Drawer 2316 #S2786)

Figure 3-4: "Busby's Bore", c.1845, C H Woolcott (Source: State Library of New South Wales, Call Number SSV1/Wat/1)

By the 1830s, Governor Darling had proposed selling the land comprising Hyde Park for housing. However his tenure as governor terminated and his successor, Governor Bourke, reaffirmed it as a place of public recreation (Context Pty Ltd, 2011:64).

Park Street was constructed in 1831, effectively creating the north and south precincts. College Street was constructed in 1832, providing an eastern boundary. In 1833, town surveyor Mortimer Lewis, proposed an avenue that ran north-south through the park, with a view to visually extending Macquarie Street. As the Sydney Monitor noted in 1829, Hyde Park was in its early years a large, cleared space. The first plantings for the avenue didn't come until 1837, when the superintendent of The Botanic Gardens, Allan Cunningham, ordered 500 trees for Hyde Park and the Domain. The avenue, originally called "Bourke's Avenue", was noted one contemporary report as:

> *"…the first attempt at ornamental planting for the public and a large and expensive scale, which has taken place since the foundation of the colony".*
>
> (The Sydney Monitor, 1837:3)

Figure 3-5: "The Old Days of Merry Cricket Club Matches", c. 1870 by Thomas Harvey Lewis, depicting a cricket match in Hyde Park. Note Hyde Park Barracks and St James Church in the background, and "Bourke's Avenue" at right (Source: State Library of New South Wales, Call number DG XV*/Cri/1)

However, this avenue does not appear to have survived. In 1854, the Hyde Park Improvement Committee was established, and the cricket ground moved to the Domain. Under the committee, the park was formalised with plants and paths, with civil monuments also erected. The first monument was the obelisk facing Bathurst Street in Hyde Park south (actually a sewer vent), erected in 1857; a bronze statue of Prince Albert was erected in 1866 (later moved to the Botanic Gardens in 1922 and finally outside Hyde Park Barracks in 1987). A statue of James Cook was erected in 1879 and the Frazer Fountain, one of two donated by merchant and Member of Legislative Council (MLC) John Frazer, was originally installed in the park in 1881 and now located on Prince Albert Road (Whitaker, 2016).

The park was handed over to the Council of the CoS in 1904 and upgrades were planned, however all of this work ceased with the construction of the City Circle railway line in the 1920s. The underground stations of St James and Museum were located within the park and most of the park was dug up to construct the rail lines (Figure 3-6).

Figure 3-6: Excavation during construction of the City Circle line, St James NSW, c. 1925. Note St Mary's Cathedral, Land Titles Office and Hyde Park Barracks (Source: NSW State Archives and Records, Item ID: 17420-2-27-855/123)

Following the opening of the City Circle line, a competition to redesign Hyde Park was held, with Norman Weekes, an engineer, winning the competition. His design was heavily modified however the plan largely survives today. Two major monuments were constructed during the redesign, being the Archibald Fountain in Hyde Park north (1932) and the Anzac Memorial in Hyde Park south and reflection pool (1934) (Whitaker, 2016).

Figure 3-7: Redesigned and upgraded Hyde Park following construction of City Circle line, looking south from Queen's Square, c. 1930, prior to the construction of the ANZAC memorial and Archibald Fountain (Source: CoS Archives, Unique ID A-00014763)

3.2.2 Royal Mint Building

Once part of the General Hospital, the Mint Building was one of Macquarie's earliest buildings, dating from c. 1816, and is now the oldest surviving public building in Sydney's CBD. It is believed that the design of the hospital was inspired by Macquarie's time in India, however, it is constructed to the standard institutional army plan of the time (Heritage NSW, 2007).

Constructed by convict labour from 1811 to 1816, it was located on the ridge of Macquarie Street to capture healthful breezes from Sydney Harbour. The north and south wings were originally planned as accommodation for doctors and staff, with the centre wing being the main ward of the Sydney Infirmary.

The north and south wings, however, were surplus to needs and used for other purposes (Murray, 2016). The south wing (the Mint) was initially used for the treatment of convict patients and also housed the medical store and the assistant surgeons. From 1843-1848 the building housed the Dispensary, which was essentially an outpatient clinic for the poor. In 1848 the function was given over to the Sydney Hospital (Heritage NSW, 2007).

The building does not appear to have been used for any permanent purpose from 1848 until 1853, when preparations were made for the building to become the first British Mint outside of Britain. Designed by the Deputy Mint Master, Captain F C Ward, the Mint building was retained as accommodation and offices, with other buildings, such as the carpenter and fitting shops, the superintendent's Office, the coining and rolling rooms, the engine and boiler rooms and the melting house built around the Mint building to form a quadrangle at its rear (Figure 3-8). The mint began operations in 1855 and operated until 1927.

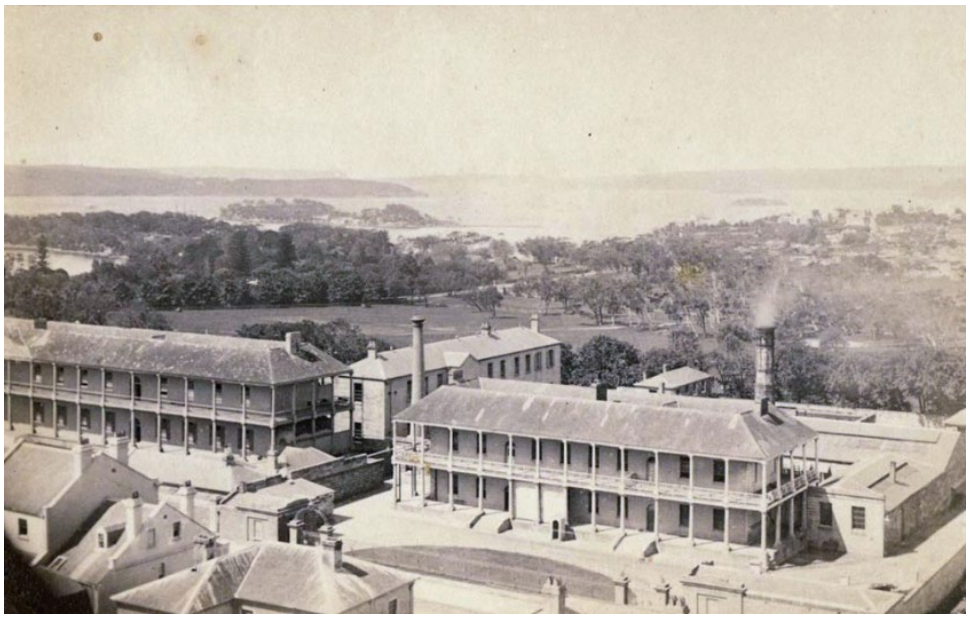

Figure 3-8: Panoramic view of Infirmary (left) and the Mint (right), c. 1870 (Source: State Library of NSW, Call Number SPF/321)

Following the Mint's closure, the building was used for various government and judicial purposes. Many of the rear buildings were demolished in the 1960s to create a car park. With a view to establishing the Mint as a museum, restoration works were undertaken in the 1970s, and handed over to the Museum of Applied Arts and Sciences in 1982, then after further restorations, to the Historic Houses Trust in 1998 (Heritage NSW, 2007).

3.2.3 Hyde Park Barracks

Construction of the Barracks started in 1817 as part of Macquarie's building program. Macquarie first proposed a mass accommodation building for convicts in 1814, partially as a method of control, and also to remove them from temptation at night (Sydney Living Museums, 2018:1-22).

Designed by Francis Greenway, the building is likely to have been sited adjacent to the General Hospital owing to practical reasons. Sick convicts were frequently transferred from the barracks to the hospital and back again. Hospital staff were required to attend floggings at the barracks and the

assigned convict staff for the hospital were drawn from the barracks. Hyde Park Barracks were one of a number of other barracks built in Sydney and Parramatta at the same time, including Carter's Barracks for convict men and boys near present-day Central Station (opened 1819), Macquarie Barracks for men at Parramatta (1820) and the Parramatta Female Factory convict women (1821) (Sydney Living Museums, 2018:1-21).

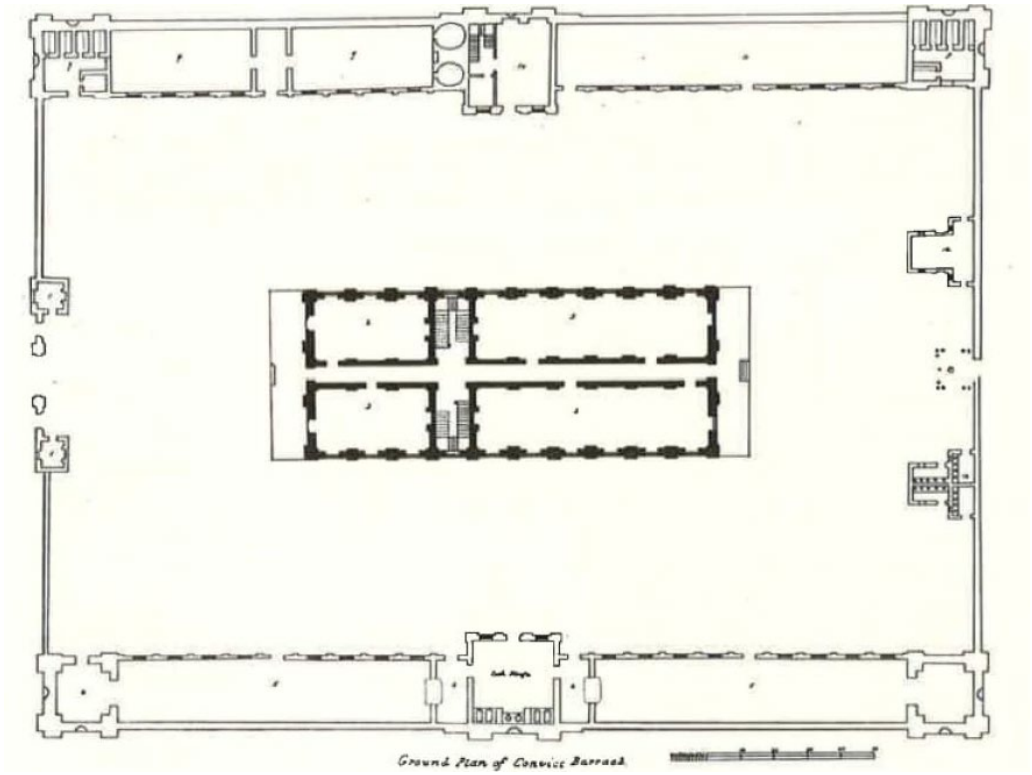

Figure 3-9: Earliest known plan of Hyde Park Barracks, dated 1817 and attributed to Francis Greenway (Source: State Library of NSW in Sydney Living Museums, 2018:1-24)

Figure 3-10: "Convict Barrack", c. 1820, attributed to G W Evans (Source: State Library of New South Wales, PX*D 41)

It is estimated that approximately 50,000 convicts passed through Hyde Park Barracks during its operation (1819-1848). A decision was made in 1840 to end transportation to NSW, and convict numbers steadily dwindled as those still in the barracks finished their sentences. In 1848, the few still remaining were transferred to Cockatoo Island and the barracks repurposed. From 1848 until 1887, it was used as a female immigration depot, providing temporary housing for newly arrived single, female

immigrants. From 1849 until 1855, it also housed the wives and children of convicts brought to the colony at the government's expense to be reunited with their husbands and fathers. An estimated 40,000 women were temporarily housed at the barracks during 1848-1887 (Sydney Living Museums, 2018:1.42-1.43).

As with the adjacent Mint building, the barracks were used for various government purposes from 1848, including various Courts and tribunals. During its use for these various purposes, the site acquired numerous additional buildings, resulting in the courtyard being populated with a jumble of building sizes and styles. Its judicial use and proximity to the Courts opposite led to it forming part of a precinct that was first called "Chancery Square", and later renamed "Queen's Square", possibly because of the statue of Queen Victoria opposite the barracks (Sydney Living Museums, 2018:1-46-1-56).

Despite periodic calls for its demolition in the 1930s, petitions to save the building were successful and in 1947, the Sydney City Council "…resolved that Hyde Park Barracks should be preserved in any re-modelling scheme for Macquarie Street" (State Planning Authority, 1965 in Sydney Living Museums, 2018:1-59). In 1984, the Museum of Applied Arts & Sciences opened the Barracks to the public as a museum, and unsympathetic additions acquired during its use as courts and other government functions were removed. In 2010, Hyde Park Barracks was listed on the World Heritage List (WHL) as part of the "Australian Convict Sites".

3.2.4 St James Anglican Church

As part of his building plans for a civic centre, Macquarie had Greenway design a Courthouse at what is now Queen's Square. However, the plan was changed in 1820 by Commissioner John Thomas Bigge, who, for reasons of economy, recommended that the construction of St Andrews on George Street be stopped, and that the proposed courthouse be repurposed as a church. To accommodate the building's new purpose, Greenway added a square tower and steeple at the western end of the building, and it became St James Anglican church. Bigge added further changes, mainly centred around some of the more elaborate elements of Greenway and Macquarie's vision. The consecration of the building was celebrated by Reverend Samuel Marsden in February 1822 (Dunn, 2008a).

Figure 3-11: St James Church, c. 1836 by Robert Russell (Courtesy: National Library of Australia, Call Number PIC Drawer 62 #S200)

Additions were made in 1832, including the addition of a vestry and two small porches at the eastern end of the church. These were designed by John Verge, who drew on Greenway's original designs. In 1880, a wooden panelled ceiling replaced the original plaster ceiling, and in 1894 further repairs were made. The King Street portico was demolished at this time and rebuilt as an open portico, along with the re-roofing and re-slating of the nave and the steeple rebuilt. In 1901, architect J H Buckeridge remodelled the interior with only the western gallery and marble memorials preserved (Dunn, 2008a).

More recently, the crypt was restored in 1977 and in 1988 Greenway's southern portico was demolished (Dunn, 2008a).

In 1819, Principal Surgeon and Superintendent of Police D'Arcy Wentworth was granted a small parcel of land opposite St James Church, on what is now the corner of King Street and Macquarie Street. In fulfilment of the terms of the grant, he built a two-storey stone house on the block, However, as he sold the house to the Government the following year, it is unlikely that he ever lived in the house. It was transferred to John Oxley, the Surveyor-General, who used the house when business took him to Sydney. It became known as the Surveyor-General's Office. In 1837, the bishop of Australia, Dr Broughton, took up use of two rooms of the house, and by 1845 became the Parsonage of St James (Figure 4-19). However, the upkeep of the Parsonage became increasingly burdensome, and by 1887 the rector had moved to a new home and permission was granted for the building to be demolished. The Sydney Permanent Freehold Land and Building Society erected a building on the site and was used as rooms for barristers and solicitors (see Figure 3-14). The Law Courts Building, constructed in 1977, stands in its place (Rowland, 1951).

3.2.5 St Mary's Cathedral and Chapter House

The foundation stone for St Mary's Chapel (also known contemporaneously as "the Catholic chapel" and "Hyde Park Chapel") was ceremonially laid in 1821, and attended by the Governor, Lachlan Macquarie. After the great fanfare of this ceremony, however, the construction of the chapel became protracted and expensive. Through government assistance, the roof was finally installed in 1829, with a temporary structure constructed adjacent used for regular worship in the interim.

Figure 3-12: "Catholic Chapel, Front View, 1836" by Robert Russell (Source: National Library of Australia, Call number PIC Drawer 62 #U374 NK707/5)

A number of additions were made to the Cathedral over the next decades. A belltower designed by Augusts Pugin was erected in 1853, and a chapter hall, also by Pugin, in 1844. The Chapter Hall remains the oldest building on the site. A cloister, a chapel of St Felician, a sacristy, offices, apartments, a library and reading rooms were all added. After two additional land grants adjoining the chapel, a new Pugin façade and bell tower on the College Street frontage was constructed. (Dunn, 2008b).

However, in 1865 a fire destroyed the original cathedral, leaving only the façade, belltower and part of the north-east transept (Figure 3-13). William Wardell was engaged to design a new, grander cathedral, and the foundation stone was laid in 1868. The cathedral was built in sections from then until 1928, with timber buildings (later brick) serving in the interim (Dunn, 2008b).

The first section was consecrated in 1882 and the official opening of the Cathedral in 1900 (consecrated in 1905). Most of the money for construction was raised through donations, leading the Archbishop, Cardinal Patrick Moran, describing the Cathedral as “a gift from the poor”. The final southern section was consecrated in 1928. The timber and brick temporary church buildings were demolished for use as a school (Dunn, 2008b).

St Mary’s Cathedral remains the largest ecclesiastical building in the English Gothic style in the world (Dunn, 2008b)

Figure 3-13: St Mary’s Cathedral, shortly after the fire in 1865 (Source: State Library of NSW, Call Number SPF/1067)

3.2.6 Queen’s Square

Queen’s Square, formerly known as “Chancery Square”, was formed in the early 19th century by the construction of the Greenway Buildings of the Law Courts, St James Church and Hyde Park Barracks, and Hyde Park itself. King Street ran east-west through Queen’s Square until c.1960s-1970s, when King Street was terminated at Phillip Street and the block between Phillip and Macquarie Street became a pedestrian square outside of the Supreme Court Building (built 1977). The statue of Queen Victoria was placed in 1888, and until its closure to road traffic, acted as a vehicular roundabout (Heritage NSW, 2011) (Figure 3-14).

Figure 3-14: Queen's Square, c. 1930, looking north-west with St James' Church in the centre and Hyde Park on the left. Note trams turning from King Street into Macquarie Street/Prince Albert Road (Source: Council of the CoS Archives)

Figure 3-15: Queens Square, looking northwest, c. 1969 (Source: Council of the City of Sydney Archives, Unique ID A-00051654)

The statue of Queen Victoria has been in Queens Square since 1888, It was moved in 1908, with the original location being to the north (Figure 3 15). Following the removal of the trams in 1960 and the completion of the Supreme Court building in 1977, the statue was once again moved west to its current position. The steps surrounding the statue were constructed in 1987.

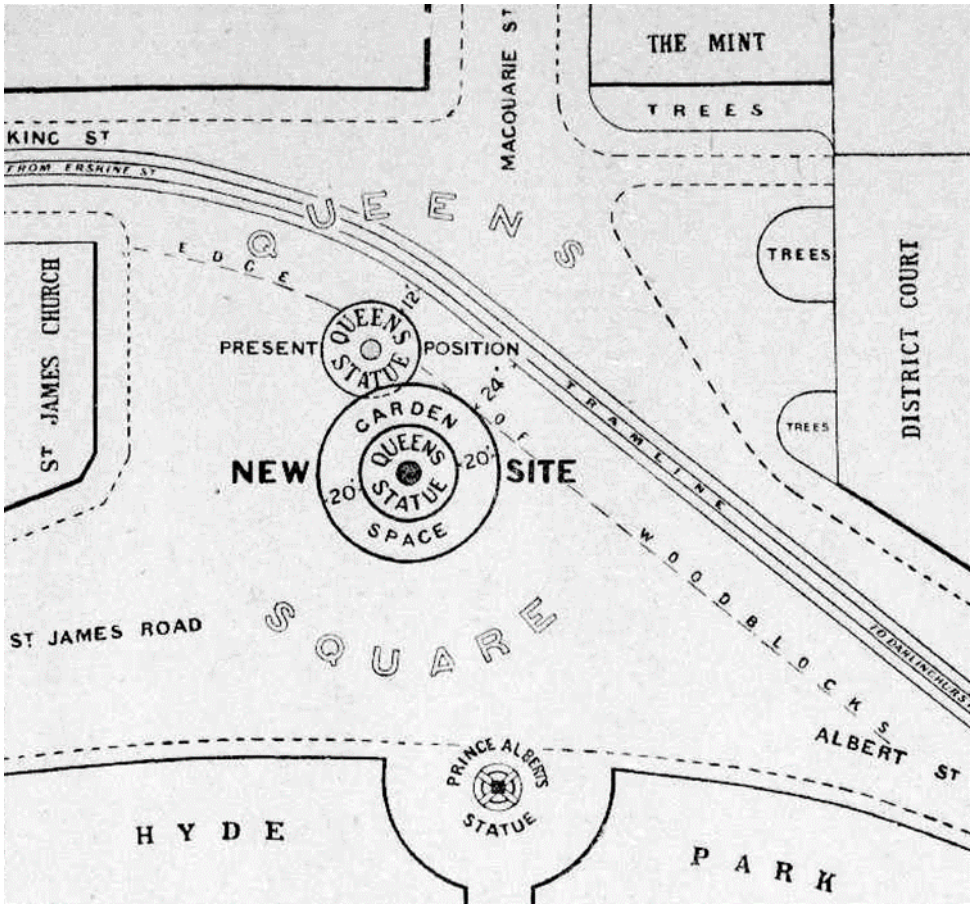

Figure 3-16: Original location and new location of Queen Victoria statue, 1980. Note "edge of woodblocks" on diagram (Source: The Daily Telegraph, 1908:10)

Figure 3-17: Construction of the steps surrounding the Queen Victoria statue, 1987 (Source: Council of the City of Sydney Archives, Unique ID A-00059827)

3.2.7 Banco Road Court, Sydney, Supreme Court House

Also known as the St James Road Court, the Banco Road Court building forms part of the Supreme Court House Group, or King Street Courts. Designed in 1895 by Walter Liberty Vernon, it exemplifies the Federation Free style and included chambers for the Chief Justice overlooking a small garden, traditional with the English Inns of Court (Betteridge, 2011).

Located to the south of St James Church and to the east of the Old Supreme Courthouse, it faces St James Road and Hyde Park.

Figure 3-18: Judge's entrance, Supreme Court on St James Road, 1911. Note the spire of St James and the southern elevation of St James Church at right (Source: NSW State Archives and Records, Item NRS-4481-3-[7/15883]-M2440]

3.2.8 Land Titles Office

Also known as the Registrar-General's Building, it's siting was owed to the Courts buildings at Hyde Park Barracks (adjacent), Queen's Square (opposite) and the nearby Mint building. Until its construction, the Registrar-General's Office was on Elizabeth Street. It was responsible for registering the births, deaths and marriages in the State, as well as being a repository for all land title deeds for the State (Heritage NSW, 2021).

Designed by Walter Vernon (who also designed the Banco Road Court opposite), construction commenced in 1909 and was constructed in stages. The first building was a Gothic sandstone building completed in 1913 (Heritage NSW, 2021). Its Gothic design was to harmonise with St Mary's Cathedral, located opposite on Prince Albert Road (The Sun, 1912:3).

Figure 3-19: Land Titles Office (Registrar-General's Office), looking north-east from Hyde Park c.1913-1917 (Source: Powerhouse Museum, Object No. 85/1284-1821)

3.2.9 St James Railway Station

The City Circle railway line was modelled after the London Underground, with its first two stations being St James and Museum stations, both located in Hyde Park. St James was located in Hyde Park north, with its main station entrance on Elizabeth Street facing Market Street. It was initially planned to be an interchange station, with four platforms: two for the city circle line and two for a planned east-west suburban line. All four platforms were constructed and the City Circle line, linking St James Station with Central Station, was opened in 1926 (Figure 3-20). However, the east-west line did not eventuate, despite the partial construction of the tunnel linking St James with the proposed east-west line. One end of the tunnel terminated in the Domain, and the other end near the ANZAC memorial in Hyde Park south. Part of this disused tunnel was used during World War II as an air raid shelter (Logue, 2022:12).

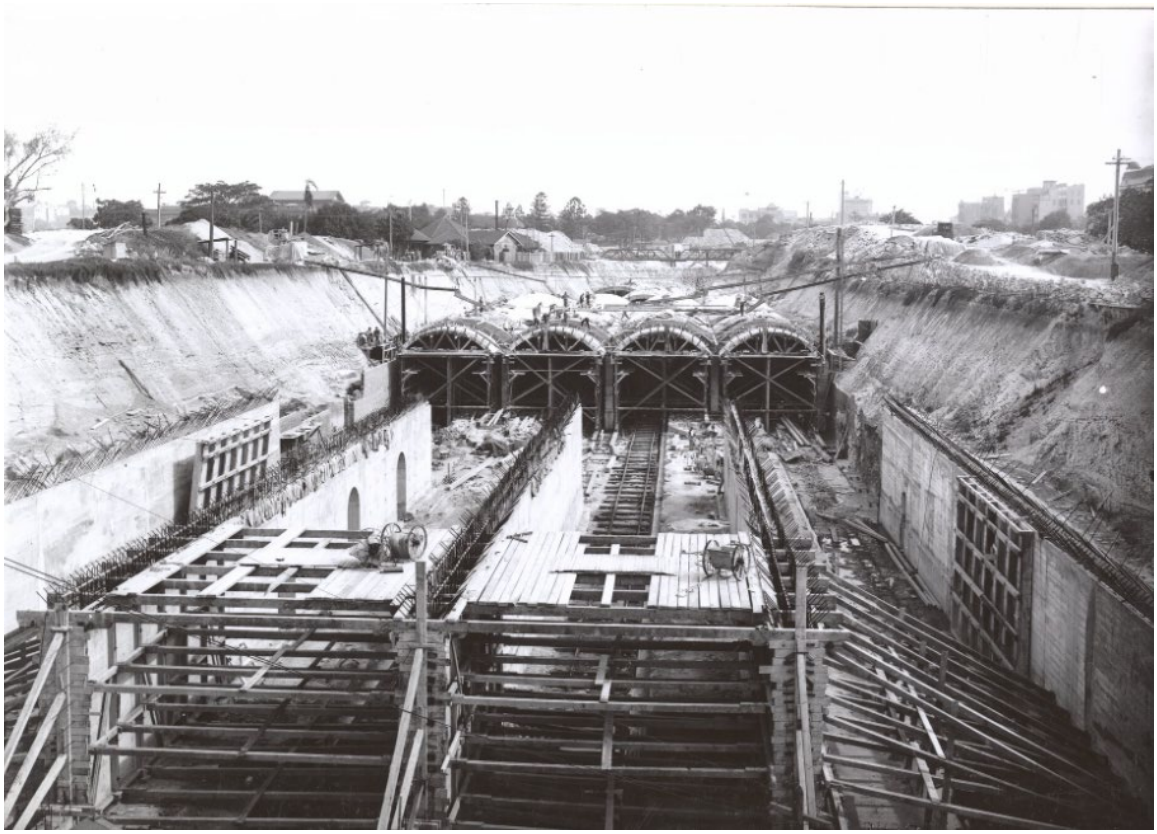

Figure 3-20: Excavation for the construction of tunnels and station, City Circle, St James NSW, c.1922. Note the four tunnels (Source: NSW State Archives & Records, Item NRS-17420-2-27-855/103)

4.0 Physical evidence

There are five heritage items within the alignment of the Proposal and five heritage items adjacent. A site visit was undertaken by Senior Heritage Consultant, Deborah Farina, on 3 August 2023, inspecting the Proposal area and the heritage items.

Figure 4-1: Proposal area with Queen's Square at right, Macquarie Street and Hyde Park in Centre, St Mary's Cathedral on College Street in centre above treeline, and Hyde Park Barracks/The Mint at left (AECOM, 2023)

4.1 Items within the Proposal area

4.1.1 Governors' Domain and Civic Precinct

The Governors' Domain and Civic Precinct is wholly within the Proposal area. This item is bounded by Woolloomooloo Bay, Sir John Young crescent, Yurong Parkway and Yurong Street to the east, Stanley Street and Liverpool Street to the south, Elizabeth Street, Macquarie Street and Macquarie Place to the west and Farm Cove to the north. The item is of heritage significance because of the cluster of early civic and ecclesiastical buildings dating from the earliest days of the colony and because of the early planning of the area as a civic precinct. Relevant buildings located within the precinct include The Supreme Court of NSW complex, St James Church, Hyde Park Barracks, the Land Titles Office, St Mary's Cathedral, grounds and school and Hyde Park.

Figure 4-2: Within the Governors' Domain and Civic Precinct, looking north along Macquarie Street. Queen's Square is at left and the forecourt of Hyde Park Barracks at right (AECOM, 2023)

4.1.2 Hyde Park Barracks

Hyde Park Barracks is the oldest example of a walled penal institution in Australia. As built, it comprised a three-storey dormitory block, set in a compound surrounded by a perimeter wall, which incorporated four corner pavilions, two detailed as cells and with guard houses either side of the wooden gates. A range of buildings were constructed on the inner face of the perimeter wall. The dormitory block and perimeter wall still survive today (Historic Houses Trust, 2010:21).

In addition to the buildings and yard, Hyde Park Barracks has a buffer zone designed to retain and enhance its unique character, ensure development has regard to fabric, character, scale, proportions, materials and finishes in the area, protect the heritage items and maintain and enhance views and vistas (Commonwealth of Australia, 2008:140). This buffer includes the immediate surrounds of the barracks, Queen's Square, the streetscape through to Elizabeth Street and the northern part of Hyde Park (see Figure 2-1). The Proposal is partially within this buffer.

Figure 4-3: Hyde Park Barracks from main gates on Macquarie Street, opposite Queen's Square (AECOM, 2023)

Figure 4-4: Perimeter wall of Hyde Park Barracks looking south towards Hyde Park and the visual buffer of Hyde Park Barracks. The statue at right is of Prince Albert and is facing a statue of Queen Victoria in Queen's Square on the opposite side of Macquarie Street (AECOM, 2023)

Figure 4-5: St James Church and Queen's Square looking west from Hyde Park Barracks. King Street is to the right of St James Church (AECOM, 2023)

4.1.3 Queen's Square

The item of Queen's Square is partially within the Proposal area in Macquarie Street. Its curtilage extends east to the western perimeter fence of Hyde Park Barracks, the section of Macquarie Street between Queen's Square and Hyde Park Barracks is therefore included in the heritage listing.

Figure 4-6: Queen's Square looking north-west, with St James Church at left and the 1977 Law Courts Building at right (AECOM, 2023)

Figure 4-7: Hyde Park Barracks as seen from Queen's Square. The curtilage for Queen's Square extends to the western curtilage of Hyde Park Barracks (AECOM, 2023)

Figure 4-8: Queen's Square looking south-west, with the King Street/Phillip Street intersection at right

4.2 Items Adjacent to the Proposal area

4.2.1 St James Railway Station Group

St James Railway Station is an underground railway station located on the City Circle Railway line between Circular Quay and Museum Railway Stations. The main entrance to the station is in Hyde Park on Elizabeth Street, opposite the intersection with Market Street in Sydney's CBD. Another entrance is on Macquarie Street. Both entrances are connected to the station below via a series of subway tunnels. The curtilage of the item includes five metres surrounding all underground elements. One of the tunnels

extends beneath the Proposal area in Macquarie Street, approximately 7.5 – 8.5 metres beneath the road's surface (Pers. comm. from C. Ward to S. Walton, 11 August 2023). The Proposal area is therefore adjacent but outside the curtilage of this item.

Figure 4-9: St James Railway Station entrance, Elizabeth Street with Hyde Park in the background (AECOM, 2023)

4.2.2 Hyde Park

Hyde Park is one of Sydney's city parks and bounded by Elizabeth Street in the west, St James Road, Prince Albert Road and Macquarie Street in the north, College Street in the east and Liverpool Street in the south. It is bisected by Park Street, which creates the north and south precincts of Hyde Park.

Figure 4-10: Looking south along the former "Bourke's Avenue" at the northern entrance of Hyde Park (AECOM, 2023)

Figure 4-11: Macquarie Street entrance to Hyde Park looking south, with Macquarie Street intersection with Prince Albert Road at left, statue of Lachlan Macquarie in centre and statue of Prince Albert at right (AECOM, 2023)

4.2.3 The Mint

Located adjacent and to the north of Hyde Park Barracks and diagonally opposite Queen's Square, this building is one of the two surviving wings of the former Rum Hospital. It is located on the eastern side of Macquarie Street.

Figure 4-12: The Mint Building, looking north-east (AECOM, 2023)

4.2.4 St James Church

Located adjacent to the Banco Road Court, Sydney Supreme Court House and fronting Macquarie Street, King Street and Queen's Square, St James Church retains many of its Georgian features and is an important visual element in the area.

Figure 4-13: Eastern elevation of St James Church (AECOM, 2023)

4.2.5 St Mary's Catholic Cathedral and Chapter House

St Mary's Catholic Cathedral and Chapter House is located on the eastern side of College Street, opposite Hyde Park, and south of Prince Albert Road, opposite the Land Titles Office (see Figure 2-1). The cathedral is a cruciform building with a bell tower above the crossing, and two bell towers at the southern end of the building facing William Street and the Australian Museum. It is built in the Gothic Revival style in sandstone, with a slate roof. The physical description on the SHR notes that there is significant archaeological material present on the site.

Figure 4-14: St Mary's Cathedral, College Street elevation, looking south-east. Note the end of the existing cycleway at right (AECOM, 2023)

4.2.6 Banco Road Court, Sydney Supreme Court House

This Courthouse is located on the St James Road frontage opposite Hyde Park and adjacent to St James Church and Queen's Square.

Figure 4-15: St James Road frontage of Banco Road Court, Sydney Supreme Court, looking north (AECOM, 2023)

4.2.7 Land Titles Office

Located between Hyde Park Barracks and St Mary's Cathedral, and opposite Queen's Square and Hyde Park. Its ornate sandstone facades are visually imposing and complement the surrounding buildings.

Figure 4-16: Land Titles Office looking north-east from Hyde Park. The southern elevation of the dormitory building of Hyde Park Barracks can be seen to the left of the Land Titles Office (AECOM, 2023)

Figure 4-17: Looking east along Prince Albert Road, with Land Titles Office at left and the northern elevation of St Mary's Cathedral at right (AECOM, 2023)

4.3 Archaeological Potential

4.3.1 Central Sydney Archaeological Zoning Plan, 1997

This archaeological zoning plan (AZP) was prepared for the Council of the CoS to set out the archaeological potential of areas within the CoS. The whole of the Proposal area is within the study area of this AZP.

The AZP was prepared by archaeologists Siobhan Lavelle and Dana Mider to determine, following site inspections, whether existing development had removed any potential for archaeological deposits to remain. Each area was then assigned a category of archaeological potential, as shown in Table 4-1.

Table 4-1: Categories of archaeological potential

Code	Meaning
Areas with Archaeological Potential	
AAP	Area of Archaeological potential – high area of archaeological potential due to limited physical disturbance
AAP-PD	Area of archaeological potential, partially disturbed – this category indicates that while there was still a high area of archaeological potential, development had likely partially disturbed potential remains
AAP-DSF	Area of archaeological potential – deeper subsurface features only – this category indicates that the most recent building development would have significantly disturbed or destroyed shallow sub-surface features or remains, but where potential for deeper remains exist, these may still be intact
Area of Little or No Archaeological Potential	
BS	Building shadow – where evidence of the form of a demolished or partly demolished building remains on another structure
RS	Remnant structure – an above-ground structure or built feature which has survived in part by being modified and incorporated into

	subsequent buildings or has been partially but not totally demolished
MR/D	Movable Relic/Deposit – portable relics or archaeological deposits located in or attached to buildings

The following table details the results of the AZP for relevant items within the Proposal area.

Table 4-2: AZP Categories for items within the Proposal area

Item	AZP category
Hyde Park	AAP-PD
Royal Mint Building	AAP
Hyde Park Barracks	AAP/RS/BS
St James Church	AAP
St Mary's Cathedral and Chapter House	AAP
Queen's Square	AAP
Banco Road Court, Sydney Supreme Court	AAP (as part of the Old Supreme Court buildings)
Land Titles Office	AAP
St James Railway Station	N/A (as an underground item, this was not assessed)

It should be noted that this AZP is a general guide and was prepared over 25 years ago. Subsequent development will have changed these assigned categories of potential. However, as all of the items within the Proposal area have had limited development since the preparation of the AZP, it is concluded that the assigned categories are useful baselines for the items' current archaeological potential.

4.3.2 Previous Archaeological Excavations

The Mint and Hyde Park Barracks

A series of excavations were undertaken at the Mint and Hyde Park Barracks sites in the early 1980s when they were being prepared for use as a museum. Under the Museum of Applied Arts and Science, it appears that multiple excavations were conducted concurrently, which has resulted in some uncertainties of which artefacts were uncovered where (Wilson, 1985). This has been exacerbated by the methodologies employed by multiple archaeologists who have conducted the excavations and assessed the assemblages over the years, and the results of these excavations are therefore inconsistent in descriptions, terminology and assessment (Crook *et al.*, 2003).

Many of the finds of the excavations in the yard of the Hyde Park Barracks related to the former judicial and government buildings constructed between the closure of the barracks for convicts and its latest phase as a museum (see Figure 4-18). However, the excavations yielded a wide range of artefacts, including ceramics, glass, gun flints, fabric fragments, building materials, bone and personal items such as clay pipe stems, knives and buttons.

Figure 4-18: Hyde Park Barracks c. 1872 showing additional judicial and government buildings to the north of the main dormitory building (State Library of NSW in Sydney Living Museums, 2018:1-92)

St Mary's Cathedral

In 2006, AHMS conducted archaeological excavations beneath the floor of the St Mary's Chapter Hall (c.1842-1843) ahead of proposed digging works to provide flooring support and underfloor ventilation. The purpose of the excavations was to investigate the potential for remains of a former school building (c.1820s) within the current footprint of the Chapter Hall.

The archaeological excavations uncovered no evidence of the former school building, but evidence of at least two phases of wooden flooring. It was interpreted that the remains of the former school building were removed during construction of the Chapter Hall (AHMS Pty Ltd, 2006).

4.3.3 Potential archaeological deposits

The AZP found archaeological potential at all of the heritage within or adjacent to the Proposal area, with the exception of the underground St James Railway Station Group. Previous archaeological investigations have been undertaken at the Mint, Hyde Park Barracks and St Mary's Cathedral, however all excavations and any archaeological potential relating to these items are confined to the curtilages of those items.

The NHL listing for the Governors' Domain and Civic Precinct notes that it contains archaeological evidence of Aboriginal occupation, the natural environment (including ecological evidence such as pollen and intact soil profiles relating to the pre-colonisation history of the land), and material culture associated with the first permanent European settlement.

Figure 4-19: Macquarie Street 1888, looking south-west. Note Queen Victoria Statue at left, St James Parsonage shortly before its demolition in centre and spire of St James at upper right ("Eight Hour Procession" by Robert Hunt, Source: State Library of NSW, File number FL9004546)

It is noted that Macquarie Street was widened on the eastern side in 1909 (Public Works Department, 1983:7) and College Street widened in the 1920s (Public Works Department, 1983:9). In relation to the widening of Macquarie Street, this would have altered the appearance of the Mint and Hyde Park Barracks in bringing them closer to the street, however, it does not appear to have encroached on their boundaries. It is therefore unlikely that any significant archaeological deposits would remain of either item beneath Macquarie Street. However, it is possible that tram tracks associated with the former tramways may still survive beneath Macquarie Street (see Figure 3-14), or previous street surfaces, such as woodblocks (see Figure 3-16 and Figure 4-20).

In relation to College Street, it is noted that the widening in the 1920s "…spoil(ed) the eastern boundary of Hyde Park" (Public Works Department, 1983:9). It is therefore possible that some archaeological deposits beneath College Street relating to the eastern boundary of Hyde Park.

There is no record of St James Road having been widened, but it is known that trams ran along the centre of St James Road (Figure 4-20) and archaeological evidence of the former tram tracks or previous street surfaces (Figure 4-21) may still survive.

Figure 4-20: St James Road looking west from intersection with Macquarie Street, c. 1954 (Source: City of Sydney Archives & History Resources, Unique ID A-00058051)

Figure 4-21: Judges' entrance, Supreme Court, St James Road, Sydney, c.1911. Note various road surfaces on St James Road (Source: NSW State Archives and Records, NRS-4481-3-[7/15883]-M2440)

5.0 Significance Assessment

5.1 Introduction – heritage significance

In order to understand how a development would impact on a heritage item, it is essential to understand why an item is significant. An assessment of significance is undertaken to explain why a particular item is important and to enable the appropriate site management and curtilage to be determined. Cultural significance is defined in *The Australia ICOMOS Charter for Places of Cultural Significance 2013* (Australia ICOMOS, 2013) as meaning "aesthetic, historic, scientific, social or spiritual value for past, present or future generations" (Article 1.2). Cultural significance may be derived from a place's fabric, association with a person or event, or for its research potential. The significance of a place is not permanently fixed, what is considered significant now may change as similar items are located, more historical research is undertaken, and community values change.

Each of the heritage lists identified in Section 2.4 has their own significance criteria, which can all be found at Appendix 1. Below are the Statements of Significance for each of the 10 items, which are summaries of these assessments.

5.2 Statements of significance

5.2.1 Hyde Park

This item was listed on the SHR in 2011, satisfying all criteria.

Statement of Significance SHR

> *Hyde Park has State significance as public land (the Australian colony's first common) that has influenced the development of Sydney's layout from as early as 1789, occupying approximately the same site since that time. Proclaimed by Governor Macquarie, it is Australia's oldest designated public parkland (1810) and has been continuously used from 1788 for public open space, recreation, remembrance, celebration and leisure. Hyde Park has contributed to the cultural development of the city as a recreational space encapsulating the principles of a Victorian parkland through the use of a hierarchy of pathways and the strategic siting of monuments, statues and built items. It is of State significance as a demonstration of the international spread of the English public parks movement originating in the mid-19th century. It provides evidence of the influence of transport infrastructure on urbanisation by its upheaval and re-creation after construction of the city underground railway in the 1920s. It was site of some of Australia's first sporting events and remains the prime open space in Sydney for special events, protests and festivals as it has been since 1810. The Park contains a collection of monuments and sculptures which mark key events and personalities in the history of the State including war memorials and significant artistic works.*
>
> (Heritage NSW, 2022)

5.2.2 Governors' Domain and Civic Precinct

This item was listed on the NHL in 2021, satisfying criteria A (Events, processes), B (Rarity), C (Research), F (Creative or technical achievement) and H (significant people).

Statement of Significance, NHL

> *The Governors' Domain and Civic Precinct is located in the City of Sydney, near the place of arrival of the First Fleet in Warrane, the Indigenous name recorded in historic journals for Sydney Cove.*
>
> *The Precinct is of outstanding heritage value to the nation for its capacity to connect people to the early history of Australia including interactions between Indigenous people and British colonisers. Its ability to demonstrate the historic processes which shaped Australia's civic institutions, democratic progress and the physical character of our cities, which were set in train from the early colonial period in the Sydney colony, is outstanding. In particular, the Precinct's ensemble of buildings, parks and gardens tell us about important events in the establishment of early Parliamentary forms of government, the establishment of the Supreme Court and aspects of the history of suffrage.*

The archaeological material found near or associated with many of its historic places is rare and has an exceptional research value capable of informing Australians about aspects of British colonisation and the first interactions British colonists had with Indigenous people living in and around the place we now call Sydney.

The Precinct is also outstanding for its collection of buildings and open spaces, which as an ensemble, demonstrates the transition of the early, isolated penal settlement into a more substantial permanent town. Early British Governors and in particular Governor Macquarie, worked to create improvements in civic amenity and fostered the establishment of civic institutions like Australia's first hospital, public parks, a mint and places of worship. Later civic, legal and government institutions continued to be developed which helped to foster greater independence from Britain.

The Precinct and its buildings are also of outstanding heritage value to the nation for their association with a number of important Australians including Governor Macquarie, Elizabeth Macquarie, Governor Phillip, Governor Bligh, Bennelong and Francis Greenway. Their significant contributions in the course of Australia's history are well demonstrated within the precinct.

(Commonwealth of Australia, 2021)

5.2.3 The Mint

The Mint is listed on the SHR as a combined item with the adjacent Hyde Park Barracks. The complex is assessed as being of historical significance (criterion a), of aesthetic significance (criterion c) of social significance (criterion d), having research potential (criterion e) and of rarity (criterion f). The following Statement of Significance on the SHR listing relates solely to the Mint:

The Mint has been assessed as being of outstanding cultural significance to the state of New South Wales for its association with the formative phases of NSW history, including the development of the colony under Governor Macquarie and its increasing wealth and status as it moved towards independence from the mid-to-late nineteenth century.

First established as a direct response to the harshness of the convict regime, the site stands as witness to a violent colonial history of discipline, punishment and incarceration, closely linking it to Hyde Park Barracks and the group of Australian UNESCO World Heritage listed convict sites. Along with Hyde Park Barracks, the Rum Hospital complex, part of which occupies the site, formed part of an administrative and institutional hub for the penal colony of NSW in its expansion and consolidation years under Lachlan Macquarie. As one of the earliest efforts to provide healthcare and medical attention for the poor, the site has gone on to play a part in the development and rollout of numerous Government initiatives including accessible quality health care, social welfare programs and the distribution of housing. Over its 200 years of public use the site has played host to thousands of people who throughout the phases of its development have lived, worked, trained and convalesced onsite, exhibiting a diversity of use and associations which add to its social value.

The Rum Hospital Building has exceptional significance as part of Governor Macquarie's grand design for the colony in the 1810s.In its form and detailing the building reflects both the vision of Governor Macquarie for the character of the new colony and the variety of architectural influences available to the new colony. The Rum Hospital Building contains highly significant interiors that feature very high-quality nineteenth century finishes, reflecting the significance of the building and its function as the public face of the Royal Mint, a place of substantial importance within the colony, and arguably the British Empire. As one of the oldest surviving colonial buildings in central Sydney the Rum Hospital building provides important and rare evidence of building forms and techniques from the convict period of Sydney's history.

The site provides important evidence of early architecture and building techniques from both the early colonial period and mid-to-late nineteenth century and demonstrates the adaptation and use in Australia of architectural forms from late eighteenth century.

The Royal Mint's role as a coining factory and gold processing site held important implications for the economic and commercial development of NSW, as well as for the colony's perception of its own value, identity and role within the empire. Both the main building and remains of the coining factory structures are exceptionally significant as the first branch of the Royal Mint outside

London and reflect the importance and wealth of the colony in the mid-nineteenth century as it moved towards independence. The coining factory buildings also provide uncommon evidence within the city centre of a manufacturing activity from the mid-nineteenth century as it moved towards independence. The coining factory buildings also provide uncommon evidence within the city centre of a manufacturing activity from the mid-nineteenth century, as well as providing early examples of the use of cast iron as a structural material.

The site, and the main rum Hospital building in particular, is a major and enduring element in the streetscape of Macquarie Street precinct and has important visual and symbolic relationships with adjacent public buildings. As a host to multiple NSW Government agencies and departments over its 200 years of establishment, the Mint is closely associated with government administration and operations both directly and indirectly.

The architectural qualities of the site, both contemporary and historic, constitute a considerable creative achievement and make a valuable contribution to the cultural life of the state. The pursuit of both architectural and conservation excellence by the Historic Houses Trust (now Sydney Living Museums) and the efforts made to reveal and understand the multiple layers of significance and meaning at the site have secured the importance of the place within the urban fabric of Sydney.

(GML Heritage Pty Ltd, 2017:165-167)

5.2.4 Hyde Park Barracks

As noted above, Hyde Park Barracks is listed on the World, National, State and local heritage registers for its role in early accommodation of convicts and as part of Governor Lachlan Macquarie's early civic planning of colonial Sydney. The following Statement of Significance is taken from the UNESCO listing, in recognition of the World heritage values of the Australian Convict Sites, which Hyde Park Barracks forms part.

Statement of Outstanding Universal Value – Australian Convicts Sites, UNESCO

The property consists of eleven complementary sites. It constitutes an outstanding and large-scale example of the forced migration of convicts, who were condemned to transportation to distant colonies of the British Empire; the same method was also used by other colonial states.

The site illustrates the different types of convict settlement organised to serve the colonial development project by means of buildings, ports, infrastructure, the extraction of resources, etc. They illustrate the living conditions of the convicts, who were condemned to transportation far from their homes, deprived of freedom, and subjected to forced labour.

This transportation and associated forced labour were implemented on a large scale both for criminals and for people convicted for relatively minor offences, as well as for expressing certain opinions or being political opponents. The penalty of transportation to Australia also applied to women and children from the age of nine. The convict stations are testimony to a legal form of punishment that dominated in the 18th and 19th centuries in the large European colonial states, at the same time as and after the abolition of slavery.

The property shows the various forms that the convict settlements took, closely reflecting the discussions and beliefs about the punishment of crime in 18th and 19th century Europe, both in terms of its exemplarity and the harshness of the punishment used as a deterrent, and of the aim of social rehabilitation through labour and discipline. They influenced the emergence of a penal model in Europe and America.

Within the colonial system established in Australia, the convict settlements simultaneously led to the Aboriginal population being forced back into the less fertile hinterland, and to the creation of a significant source of population of European origin.

(UNESCO, 2010)

5.2.5 St James Anglican Church

St James Church was one of the first churches built in Sydney, although it was initially planned as a Courthouse. It is listed on both the State and local heritage registers for its historical significance (criterion a), its association with Francis Greenway, Governor Lachlan Macquarie, Commissioner John

Thomas Bigge and architect John Verge (criterion b), the aesthetic and technical quality of its architecture (criterion c), strong association with the broader Anglican community (criterion d), archaeological potential (criterion e) and the unique form and construction of the crypt (criterion f).

Statement of Significance

> *St James' Church is the oldest church building in the City of Sydney and has been in continuous use from its consecration on 11 February 1824 to the present. It is a prime example of the architectural work of the Macquarie period, designed by Francis Greenway and built by convict labour. Subsequent changes to the building and its contents exemplify the development of ecclesiastical thought and practice in the Australian context. The church has always formed a significant element within the City of Sydney, as a spiritual and intellectual stimulus and as a centre of musical excellence and community activity. While this contribution has been realised in various ways over its long history, the reality of its work and its essential characteristics have been maintained. The church has long been regarded as a prime element of Sydney's built environment and its conservation is an example of a long history of heritage concern in the community.*
>
> *The church contains a rare collection of 19th century marble memorials, its painted Children's Chapel is unique in Australia and it includes amongst its collections and contents rare items of movable heritage.*
>
> *St James' Church is an integral part of the most extensive surviving group of Macquarie period buildings in Australia, Macquarie's construction of official Sydney in the eastern part of the city, which includes the former Hyde Park Barracks, Supreme Court, General Hospital and Government House stables. The church is the only building of this group that retains its original function.*
>
> (Heritage NSW, 1997)

5.2.6 St Mary's Cathedral and Chapter House

St Mary's Cathedral and Chapter House is assessed as being of State heritage significance based on its historical significance (criterion a), its association with important figures in the history of Catholics in Australia (criterion b), its English Gothic architecture (criterion c), its significance to Catholics in Sydney and the broader Catholic community (criterion d), the rarity of English Gothic architecture (criterion F) and its representation of the broader Catholic community (criterion G).

The following Statement of Significance comes from the SHR listing.

> *The Cathedral site is the oldest place maintaining its use as a place of worship for the Catholic community in Australia. It is the site of the original St Mary's Cathedral, the first Catholic church in Australia and is the first land granted to the Catholic church in Australia. It also the oldest permanent place of residence of Catholic clergy and can be said to be the birthplace of Catholicism in Australia.*
>
> *The cathedral is associated with significant figures in the history of the Catholic Church in Australia notably with Father Therry, Archbishops Polding and Vaughan, Cardinal Moran and Archbishop Kelly. It is also associated with important persons of the 19th and 20th centuries including Governors Macquarie and Bourke and the architects Greenway, Pugin, Wardell and Hennessy. The Cathedral is the seat of the Bishop of Sydney and the mother diocese of Australia.*
>
> *The Cathedral is of major architectural significance as the largest 19th century ecclesiastical building in the English Gothic style anywhere in the world. The Cathedral Chapter Hall located to the east is significant as the oldest building extant on the site, possibly the oldest surviving Catholic School building in Australia and evidence to suggest an important direct involvement in its design by Pugin (State Projects, 1995).*
>
> (Heritage NSW, 2003)

5.2.7 Queen's Square

Queen's Square is listed as an item of local heritage significance on the Sydney LEP 2012 for its historical (criterion a) and aesthetic significance (criterion c).

Statement of Significance

The square is perhaps the earliest example of formal urban design in central Sydney. It is of historic, aesthetic, and cultural significance. Queen's Square is listed on the Heritage Streetscape Map and Schedule 8 Part 3 of the Sydney LEP 2005. Queen's Square is of historical significance as an open space terminating the Macquarie Street boulevard with views of Hyde Park, St James Church, Hyde Park Barracks, the Mint and the former Registrar Generals (Land Titles) Office.

(Heritage NSW, 2011)

5.2.8 Banco Road Court, Sydney Supreme Court House

This early Supreme Court building is listed on the SHR based on its historic (criterion a), aesthetic (criterion c) and social significance (criterion d).

Statement of Significance

The Sydney Supreme Court building (Banco Court) located at the rear of the Old Registry building facing St James Road has historic significance as part of the Supreme Court complex. The building has aesthetic significance as a fine and largely intact example of an early twentieth century building in the Federation Free Style, and as the only courthouse in the city constructed in this style. The building makes an important contribution to the character of the immediate area, and with its small-town scale blends well with the older buildings in the complex. The building has historic and social significance as part of the site. The site is significant as the location chosen for Macquarie's first Georgian Public School which was modified during construction to accommodate the Supreme Court. Representative of the style as used in a courthouse building and the quality of the interior detailing is representative of the importance given to judicial buildings at the turn of the century.

(Heritage NSW, 2001)

5.2.9 Land Titles Office

The Land Titles Office building is listed on the SHR for its historical significance (criterion a) and its aesthetic qualities (criterion c).

Statement of significance, SHR

A well scaled civic building sensitively detailed to complement the adjoining older buildings such as St. Mary's Cathedral. Its carefully composed sandstone facade contributes to the streetscape and satisfactorily terminates the northern end of College Street. It provides a sympathetic component in the progression of civic historical buildings along College Street to Queen's Square. The building has long association with the registration of birth, death and marriages, as well as trademarks, bills of sale, business agents etc. The building stores valuable old registers and other land title documents.

(Heritage NSW, 2021)

5.2.10 St James Railway Station Group

Along with Museum Station, this station was one of the first underground passenger railway station in Australia. It is listed on the SHR for its historical significance (criterion a), its association with JJC Bradfield (criterion b), its aesthetic and technical significance (criterion c), its potential for social significance (criterion d), research potential of the disused tunnels (criterion e), rarity and representative of a low-scale public building constructed in the inter-War Classical style (criterion g).

Statement of significance

St James Station is of State significance because, along with Museum, it was the first underground station in Australia and demonstrates the adaptation of the London tube-style station to the Australian situation. The station is well constructed, proportioned and detailed.

The station complex is an important part of the larger Sydney Harbour Bridge and the electrified City Underground Railway scheme and has associations with prominent persons such as JJC Bradfield, chief engineer and designer of the Sydney Harbour Bridge and city underground and organisations such as the Department of Railways and represents the culmination of many years of political lobbying for a city railway system. The construction of the city underground and position of St James Station encouraged the retail and commercial development of the Sydney CBD in the late 1920s and 1930s, with large department stores constructed around the stations.

The St James Station entry building is a fine and largely intact example of a small-scale Inter-War Stripped Classical style building which adds to the general character of the immediate area. It has significance as one of two buildings of its type and style remaining in the city railway system (the other being Museum Station entrance) and is a rare example of this type of station building.

The underground platforms and concourse retain many original features and provide one of the most ornate station interiors in the NSW railway system. Disused platforms demonstrate the grand plans of the 1930s railway network of Bradfield, while the air raid shelter areas in the southern tunnels are rare surviving elements of Sydney's World War II defences.

Individual elements, such as the tiling, ornate stairs, lights and clocks add to the ambience of the station, while the Chateau Tanunda neon advertising sign at the Elizabeth Street entrance is a rare surviving example of a 1930s neon sign in Sydney.

(Heritage NSW, 2010)

6.0 Impact Assessment

6.1 Introduction

The objective of a Statement of Heritage Impact (SoHI) is to evaluate and explain how the proposed development, rehabilitation or land use change will affect the heritage value of the site and/or place. A SoHI should also address how the heritage value of the site/place can be conserved or maintained, or preferably enhanced by the proposed works. This report has been prepared in accordance with the former NSW Heritage Office & Department of Urban Affairs and Planning NSW Heritage Manual (1996) and the Heritage NSW Guidelines to preparing a Statement of Heritage Impact (Heritage NSW, 2023b). The guidelines pose a series of questions as prompts to aid in the consideration of impacts due to the proposed upgrade (Table 6 1).

Table 6-1: Matters for consideration when preparing a SoHI (Heritage NSW, 2023b:7-8)

Matters for consideration	Questions
Demolition Fabric and spatial arrangements Settings, views and vistas Archaeology	Do the proposed works include removal of unsympathetic alterations and additions? How does this benefit or impact the heritage item and its significance?
	Do the proposed works affect the setting of the heritage item, including views and vistas to and from the heritage item and/or a cultural landscape in which it is sited? Can the impacts be avoided and/or mitigated?
	Are the proposed works part of a broader scope of works? Does this Proposal relate to any previous or future works? If so, what cumulative impact (positive and/or adverse) will these works have on the heritage significance of the item?
	Are the proposed works to a heritage item that is also significant for its Aboriginal cultural heritage values? If so, have experts in Aboriginal cultural heritage been consulted? Has the applicant checked if any other approvals or a separate process to evaluate the potential for impacts is required?
	Do the proposed works trigger a change of use classification under the *National construction code* that may result in prescriptive building requirements? If so, have options that avoid impact on the heritage values been investigated?
	If the proposed works are to a local heritage item, are the requirements of the development control plans or any local design guidelines that may apply to the site considered?
	Will the proposed works result in adverse heritage impact? If so, how will this be avoided, minimised or mitigated?

6.2 Proposal

As noted in Section 1.3, the key deliverable of the Proposal is a cycleway along parts of College Street and Macquarie Street. The key features of the Proposal that may cause impact are:

- Construction of the cycleway
- Construction of ramps.

6.3 Impacts

Impacts to heritage may be direct or indirect impacts and the level of impact may be negligible, minor, moderate or major.

Table 6-2: Gradings of impact

Level of impact	Definition
Negligible	Direct or indirect impacts that do not alter or change the heritage item. No change to the heritage significance of the item.
Minor	Direct or indirect impacts are small or to a small area, or an alteration to a minor feature or element. No loss of significant fabric, changes may be temporary or reversible, overall heritage significance values are intact.
Moderate	Direct or indirect impacts result in a partial loss of an item's significant fabric or setting. Heritage significance of the item may be impacted.
Major	Direct or indirect impacts that result in a substantial loss of fabric of an item or to its setting. Loss is permanent and/or irreversible. Substantial or total loss of heritage significance.

6.3.1 Direct impacts

Direct impacts are those that cause a direct physical adverse impact to a heritage item, such as those caused by machinery or vehicles that damage the fabric of a heritage item or one of its features or elements within its curtilage. These may occur during general construction of road or ancillary elements within the curtilage of a heritage item, or by machinery and/or vehicles in close proximity to a heritage item, for example including accidental damage.

6.3.2 Indirect impacts

Indirect impacts are activities which indirectly cause an adverse impact to a heritage item. Examples of these activities are addressed below.

Vibration

Impact from vibration can arise from the use of a single machine or multiple machines concurrently in the vicinity of a heritage item.

Change in use, association or access

Any change to the use of a heritage item, its association with other nearby heritage items and/or landscapes or access to the heritage item is considered an indirect impact. There are no heritage items identified that would be impacted by a change of use, association or access as a result of this project.

Visual impacts

Any change to significant views or vistas.

6.4 Impact Assessment

6.4.1 Direct impacts

There are three items within the Proposal area:

- Governors' Domain and Civic Centre
- The visual buffer of Hyde Park Barracks
- Queen's Square.

Of these items, only Queen's Square may be impacted by direct impacts. Indirect impacts on all three items and the adjacent seven items are assessed at Sections 6.5 and 6.6.

While the works will take place within the curtilage of the Governors' Domain and Civic Centre, the heritage values of this item relate to the history, archaeological potential, the landscape, and the association with significant individuals in the earliest years of the colony. Given the minimal ground disturbance and the relatively unobtrusive nature of the Proposal, the construction of the cycleway will not impact any of these values.

Similarly, the visual buffer surrounding the Hyde Park Barracks is to ensure that the setting of the Hyde Park Barracks is not compromised. This is addressed further in Section 6.6 below, and there is no direct impact within the curtilage of the visual buffer.

In relation to Queen's Square, the Proposal works within this item are:

- Construction of the cycleway along Macquarie Street from Prince Albert Road to Queen's Square
- Realignment of the curb on the northwestern corner of Macquarie Street and St James Road
- Signage installation
- Painting and marking of lines.

There will be direct physical impacts to the existing paving surface of Queen's Square through the installation of signage and painting/marking of lines and regrading of a concrete step at the northwest corner of the St James Roade and Macquarie Road into a ramp. There are three main surfaces within Queen's Square: within the square roughly bounded by the Law Courts Building, St James Church and the Macquarie Street entrance to St James Railway Station, the surface is a geometric pattern laid with rectangular "pebblecrete" tiles within larger squares marked with a with smooth stone. Along the western footpath of Macquarie Street at Queen's Square, concrete pavers are laid in a herringbone pattern decorated narrow, light coloured lines of stone every ten metres (Figure 6-1). However, it is noted the heritage values of Queen's Square relate to its historic and aesthetic significance. The physical impacts will therefore not adversely affect the existing heritage significance of Queen's Square.

Figure 6-1: Queen's Square looking south toward Hyde Park, showing western footpath on Macquarie Street and paving at right (AECOM, 2023)

Figure 6-2: Mix of trachyte and concrete kerb, western kerb of Macquarie Street (AECOM, 2023)

Figure 6-3: Mostly trachyte kerb along Prince Albert Road, looking east towards the Land Titles Building and the intersection with College Street (AECOM, 2023)

6.5 Vibration impact

In relation to vibration impacts, Table 6-3 shows the minimum working distances from heritage and other sensitive structures for common construction equipment. It should be noted that these relate to structures and items such as the visual buffer of Hyde Park Barracks, Queen's Square and Hyde Park will not be impacted. However, some structures within Hyde Park, such as the statues and the Archibald Fountain may be impacted.

Table 6-3: Recommended minimum working distances from heritage items

Plant item	Rating/Description Kilonewton (kN) kilograms (kg) tonnes (t) millimetres (mm)	Minimum working distance Cosmetic damage (DIN 4150) Heritage and other sensitive structures metres (m)
Vibratory Roller	< 50 kN (Typically 1-2 t)	14 m
	< 100 kN (Typically 2-4 t)	16 m
	< 200 kN (Typically 4-6 t)	33
	< 300 kN (Typically 7-13 t)	41
	> 300 kN (Typically 13-18 t)	54 m
	> 300 kN (> 18 t)	68 m
Small Hydraulic Hammer	(300 kg - 5 to 12 t excavator)	5 m
Medium Hydraulic Hammer	(900 kg – 12 to 18 t excavator)	19 m
Large Hydraulic Hammer	(1600 kg – 18 to 34 t excavator)	60 m
Vibratory Pile Driver	Sheet piles	50 m
Pile Boring	≤ 800 mm	4 m
Jackhammer	Hand-held	2 m

The equipment proposed for the works on the cycleway and in Queen's Square include:

Table 6-4: Proposed equipment

Proposal works area	Equipment
Cycleway	Hand tools Line-Marking equipment Water cart Road planner Vibratory roller Air compressor Backhoe Bobcat Concrete agitator Concrete saw Concrete truck Jackhammer Excavator Tip Truck Vacuum truck Wacker Packer Ute Forklift
Queen's Square	Hand tools Line-marking equipment Backhoe

	Concrete agitator Concrete saw Concrete truck Jackhammer Tip truck Wacker Packer Ute

Of the equipment in Table 6-4, the following equipment has the potential to cause damage to heritage items through vibration:

- Vibratory roller
- Jackhammer
- Wacker packer.

Mitigation measures can be employed to minimise impacts caused by vibration, such as having rollers on static mode near heritage items and selection of machinery with lower vibration levels. Other general mitigation measures for the use of vibration-intensive plant and machinery include:

- Comply with minimum working distances for vibration intensive plant (see Table 1)
- If compliance with minimum working distances is not possible, then vibration monitoring will be undertaken. If readings are below vibration thresholds, then work will continue with caution
- If readings exceed vibration thresholds, then a change of process will be implemented to reduce vibration
- If vibration thresholds cannot be complied with, it is recommended that a structural engineer be engaged to provide advice.

Vibratory roller

As can be seen from Table 6-3, the safe minimum working distances from heritage items for vibratory roller is 14 metres for a 1-2 tonne roller. Heritage items within 14 metres of the Proposal area are:

- Governors' Domain and Civic Centre
- Visual buffer of Hyde Park Barracks
- Queen's Square
- Banco Road Court, Sydney Supreme Court House
- St James Railway Station.

As noted in Section 6.4.1, the heritage values of the Governors' Domain, the visual curtilage of Hyde Park Barracks and Queen's Square are not tied to its fabric. As vibration indirectly impacts the fabric of heritage items, it is considered that the use of a vibratory roller will not cause any adverse heritage impacts to these items through vibration.

However, in relation to Queens Square, while the fabric of the square is generally not of heritage significance, the statue of Queen Victoria is considered a contributory element to the aesthetic heritage values, and this may be impacted by vibration caused during construction. It is recommended that the mitigation measures outlined above be followed in the vicinity of the statue.

In relation to St James Railway Station, as noted in Section 4.2.1, the depth of one of the underground tunnels beneath Macquarie Street is between 7.5 and 8.5 metres below the current road surface. The use of the vibratory roller is therefore within the minimum safe working distance for this type of plant and its use has the potential to cause structural damage to the underground tunnel. In relation to structures within Hyde Park, a statue of Lachlan Macquarie at the Macquarie Street entrance to Hyde Park is within the 14 metre buffer and may also be impacted by vibration intensive machinery. It is recommended that the mitigation measures outlined above be followed in the vicinity of these heritage items.

In relation to Banco Road Court, Sydney Supreme Court House, this item is located approximately 11-13 metres from vibration intensive machinery works. It is recommended that the mitigation measures outlined above be followed in the vicinity of this item.

In relation to the remaining adjacent built heritage items, these are located approximately 20 metres from the proposed cycleway alignment. It is therefore recommended that a 1-2 tonne vibratory roller is the maximum size of vibratory roller used to maintain the minimum safe working distance from the heritage items.

Jackhammer and Wacker Packer

As noted in Table 6-3, the minimum safe working distance for jackhammers is two metres. Given the similarity in percussive movements, the minimum safe working distance for Wacker Packers is assumed to be the same as jackhammers. Given the distance of the heritage items from the Proposal, it is considered that the use of the jackhammers and Wacker Packers will not cause any impacts through vibration.

6.6 Visual impact

Many of the heritage items within the Proposal area are of high aesthetic significance and have a high sensitivity to change, both individually and collectively. Many of the individual buildings have a historical connection with the Governors' Domain and Civic Precinct, and collectively make up the aesthetic and visual component of that item. All items have a visual connection with Hyde Park, which enhances the aesthetic significance and setting of each of the items.

In relation to the significant views and visual buffer of Hyde Park Barracks, the CMP notes:

> *The southern elevation of the complex was obviously considered important as perceived from Hyde Park. The formal layout of the perimeter wall, pavilions and the main building would have been strongly apparent from the Park. This view has been largely lost today due to the demolition of the southern wall, the introduction of the Registrar General's Building at the eastern end and the thick foliage of the park's trees. Regardless the western portion of the complex and the west and south elevations of the main building remain visually prominent when viewed from the northern end of Hyde Park…*
>
> *The World Heritage buffer zone for the Hyde Park Barracks provides an appropriate setting for the place, encompassing as it does the principal visual catchment of the place, defined by both clear, direct views as well as glimpse views of the main barrack building within the broader urban context. The buffer zone also encompasses those pieces of land that were originally part of Hyde Park Barracks, i.e., the location of the original south perimeter range…*
>
> (Sydney Living Museums, 2018:1-82 - 1-84)

In relation to Queen's Square, its aesthetic significance relates to its views of Hyde Park, St James Church, Hyde Park Barracks and St Marys Cathedral. However, it is considered that neither the new cycleway or the addition of new signage and painting will cause any visual impact to the item.

6.7 Impact to potential archaeological deposits

The significant impact by the construction of the cycleway relates to the possible earthworks associated with the cycleway's construction. Although the earthworks will cross through the heritage curtilages of the Governor's Domain and Civic Precinct, Queen's Square, St James Railway Station and the visual buffer of the Mint, there is not likely to be any impact to significant archaeological deposits associated with these items.

Heritage elements that may be located within the road corridor include (Council of the City of Sydney, 2019:321):

- Footpaths with the names of streets or local features
- Footpaths and kerbs constructed from brick
- Kerb stones made of sandstone, trachyte or bluestone

- Kerb stones with street names
- Brick barrel pipe drains
- Sandstone retaining walls
- Brick retaining walls
- Plaques, memorials and public art
- Timber pavements.

There is low to moderate potential for former road surfaces to be uncovered by earthworks along Macquarie Street, College Street, St James Road and Queen's Square . These surfaces may be either wooden or cobbled. Tram tracks are also possible, as it is known that these once crossed Macquarie Street from King Street (see Figure 3-14) and St James Road (see Figure 4-20). Should any of these heritage features or former road surfaces (or suspected former road surfaces) be uncovered, unexpected finds procedures should be followed. At a minimum, work should cease in the vicinity of the feature, a qualified archaeologist contacted to assess the significance of the feature and a management plan developed before work can recommence.

There is also low potential for archaeological deposits to remain in Queen's Square. As noted in Section 4.3.1, Queen's Square is assessed as having the potential intact archaeological deposits. However, as excavations required for construction of the cycleway are shallow, it is likely that ground disturbance will be confined to modern fill and will not disturb any intact archaeological deposits.

It is noted that mapping shows the State heritage curtilage of St James Railway Station extending through the study area along Macquarie Street. However, it should be noted that the boundary description of the item states:

> *…includes the whole of the **underground railway system under Hyde Park**, including the pedestrian subways and exits to Elizabeth Street and Macquarie Street… **The curtilage includes a radius of five metres in all directions around the underground structure.***
>
> (Heritage NSW, 2010, author's emphasis)

6.8 Summary

The following table summarises heritage impact questions posed in the Heritage NSW, *Guidelines for preparing a statement of heritage impact* (Heritage NSW, 2023b).

Table 6-5: Summary heritage impact assessment

Heritage impact question	Comment
Demolition works	
Do the proposed works include removal of unsympathetic alterations and additions? How does this benefit or impact the heritage item and its significance?	No.
Do the proposed works affect the setting of the heritage item, including views and vistas to and from the heritage item and/or a cultural landscape in which it is sited? Can the impacts be avoided and/or mitigated?	No. Most works are confined to the road corridor. Other ancillary works, such as ramps, will modify existing kerbs resulting in no visual impact.

Are the proposed works part of a broader scope of works? Does this Proposal relate to any previous or future works? If so, what cumulative impact (positive and/or adverse) will these works have on the heritage significance of the item?	No. No.
Are the proposed works to a heritage item that is also significant for its Aboriginal cultural heritage values? If so, have experts in Aboriginal cultural heritage been consulted? Has the applicant checked if any other approvals or a separate process to evaluate the potential for impacts is required?	No. As most ground disturbance works will take place within the road corridor it is unlikely that intact archaeological deposits will be disturbed. Consequently, no Aboriginal Heritage Impact Permit will be required.
Do the proposed works trigger a change of use classification under the *National construction code* that may result in prescriptive building requirements? If so, have options that avoid impact on the heritage values been investigated?	No.
If the proposed works are to a local heritage item, are the requirements of the development control plans or any local design guidelines that may apply to the site considered?	The Macquarie Street portion of the cycleway crosses through the curtilage of the local heritage listed Queen's Square. The Proposal area falls within the Central Sydney area covered by Section 5 of the Sydney Development Control Plan 2012 (DCP), and the College Street/Hyde Park Special Character Area of that DCP. The activities associated with the cycleway, however, are not covered by the DCP. In relation to kerbing, the CoS's *Sydney Streets: Technical Specifications* (2019) states that all trachyte and sandstone kerbing must be left in place, "unless otherwise specified by the City's Representative", and all trachyte kerbs will remain the property of the CoS (Council of the City of Sydney, 2019:126). The kerbing within the Proposal area is mostly trachyte, interspersed sporadically with concrete curbs (see Figure 6-2). There is potential for damage to the trachyte kerbing during construction of the ramps, however other than the kerb on the corner of Macquarie Street and St James Road, there is no anticipated removal of kerbing proposed. The kerb on that corner is trachyte and requires liaison with the Council of the City of Sydney. Should any other removal of trachyte kerbs be necessary, this should also be done in liaison with the CoS Council representative.
Will the proposed works result in adverse heritage impact? If	There is no direct impact to any of the heritage items, other than the cycleway the through Queen's Square curtilage and the

so, how will this be avoided, minimised or mitigated?	realignment of the kerb on the northwestern corner of Macquarie Street and St James Road. However, its significance is historical as an example of an open space and aesthetic for its visual connection with Hyde Park, St James, Hyde Park Barracks, the Mint and the Land Titles Office. As the cycleway will not alter this historical open space or its visual connections, it is considered that the construction of the cycleway will not cause an adverse impact to the item (for further visual impact assessment, see Section 6.5 below). As any ground disturbance for construction of the cycleway will be shallow, it is considered that this will only penetrate modern fill and it is therefore unlikely that any archaeological material will be disturbed.
Works Adjacent to a heritage item or within a heritage conservation area	
Will the proposed work affect the heritage significance of the adjacent heritage items or the heritage conservation area?	No.
Will the proposed works affect views to, and from, the heritage item? If yes, how will the impact be mitigated?	No.
Will the proposed works impact on the integrity or the streetscape of the heritage conservation area	No.

It is considered that there will be no direct impacts to any of the heritage items within the Proposal area. As the cycleway will only require shallow excavations to construct, these will likely be confined to modern fill and therefore have a low potential to impact archaeological deposits.

In constructing the ramps, some trachyte kerbing may require removal. Although not specifically heritage listed, they are considered to be heritage elements in the CoS. This removal should therefore be undertaken in consultation with the CoS Council representative.

In relation to visual impacts, once constructed the cycleways and ramps will be at grade with existing road and pavement surfaces, and therefore will not cause any adverse visual impacts to any of the surrounding heritage items.

7.0 Conclusions and Recommendations

7.1 Conclusions

Following an assessment of the heritage values of the Proposal area and impacts proposed, it is concluded that the Proposal will not cause any adverse impacts on any of the heritage items. There is potential to damage the trachyte kerb located in the Proposal area through construction of the ramps, however as these can be managed as per the recommendations below.

The Proposal is within the curtilage of items identified to be of archaeological potential, however all ground disturbance will be within road corridors or the former road corridor of King Street between Phillip Street and Macquarie Street (now Queen's Square). All ground disturbance associated with the construction of the cycleway is expected to be shallow and as these are likely to remain within the modern fill beneath current surfaces, the potential to disturb archaeological deposits is assessed as low. These deposits are likely to be related to former road surfaces and/or tram tracks, however other remains associated with former building footprints are also possible. Any archaeological deposits uncovered should be managed by the recommendations below relating to unexpected finds.

As noted in Section 2.1.1, approval is required for an activity that will cause a significant impact to World or National heritage. As there is no physical or visual impact to Hyde Park Barracks or the Governors' Domain and Civic Centre, approval is not required despite the Proposal being within the visual buffer of the Hyde Park Barracks and within the Governors' Domain and Civic Centre.

In relation to State heritage, a permit under s60 is required if proposed works take place within the curtilage of an item listed on the SHR and does not meet one of the standard exemptions under s57(1). Based on the understanding that the tunnel is greater than five metres below the surface, there are no items of State heritage within the Proposal area and the works will not cause any significant impact to any items adjacent to the Proposal area. As such, the works can proceed with caution without a permit.

However, St James Railway Station Group, the statue of Queen Victoria in Queens Square, a statue of Lachlan Macquarie at the Macquarie Street entrance to Hyde Park and the Banco Road Court, Sydney Supreme Court House on St James Road are all within the minimum safe working distances for vibration-intensive plant and machinery. These should be managed by minimising the vibration by plant and machinery used in the vicinity of these items. Other general management measures for vibration-intensive machinery are also recommended.

7.2 Recommendations

The following recommendations are made for the Proposal.

Recommendation 1 – Unexpected Finds Procedure

An Unexpected Finds Procedure should be developed and included in the Construction Environmental Management Plan (CEMP) for the Proposal. This should specify responses to finds of any wooden or cobbled former road surfaces if they are uncovered during construction. At a minimum, work should cease in the vicinity of the feature, a qualified archaeologist should be contacted to assess the significance of the feature and appropriate management undertaken before work recommences.

Recommendation 2 – Trachyte kerb

The trachyte kerb on the corner of Macquarie Street and St James Road requires removal. As all trachyte kerbs remain the property of the Council of the City of Sydney, the removal of any trachyte kerb as part of this project should only be done in liaison with the CoS Council Representative.

Recommendation 3 – Management of vibration impacts

For the Banco Court Road, Sydney Supreme Court House on St James Road, St James Railway Station Group, the statue of Queen Victoria in Queens Square and the statue of Lachlan Macquarie at the Macquarie Street entrance to Hyde Park, it is recommended that measures be implemented to minimise impacts caused by vibration in the vicinity of these items. These may include having rollers on static mode and selecting machinery with lower vibration levels.

For all heritage items in the vicinity of the Proposal area it is recommended further that management measures for the use of vibration-intensive plant and machinery be employed, such as:

- Comply with minimum working distances for vibration intensive plant (see Table 6-3)
- If compliance with minimum working distances is not possible, then vibration monitoring will be undertaken. If readings are below vibration thresholds, then work will continue with caution
- If readings exceed vibration thresholds, then a change of process will be implemented to reduce vibration
- If vibration thresholds cannot be complied with, it is recommended that a structural engineer be engaged to provide advice.

Recommendation 5 – Contractors and subcontractors made aware of heritage obligations

It is recommended that all contractors and subcontractors be informed during induction/toolbox of the potential for non-Aboriginal heritage to be uncovered during works. All contractors and subcontractors should be made aware of the Unexpected Finds Procedure and their responsibility to follow it during works.

8.0 References

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Appendix 1 – SIGNIFICANCE ASSESSMENT CRITERIA

WORLD HERITAGE

The Burra Charter values are reflected in the selection criteria for the WHL (UNESCO, 2014). The standard for selection is for natural or cultural sites of outstanding universal value and meet at least one of the following criteria.

Table 8-1: World heritage significance criteria

Criterion	Detail
(i)	to represent a masterpiece of human creative genius
(ii)	to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design
(iii)	to bear a unique or at least exceptional testimony to a cultural tradition or to a civilisation which is living or has disappeared
(iv)	to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history
(v)	to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment, especially when it has become vulnerable under the impact of irreversible change
(vi)	to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria)
(vii)	to contain superlative natural phenomenon or areas of exceptional natural beauty and aesthetic importance
(viii)	To be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features
(ix)	To be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals
(x)	to contain the most important and significant natural habitats for *in situ* conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation

NATIONAL HERITAGE

In relation to National Heritage, a place may be included on the National Heritage List (NHL) after an assessment against the National Heritage Criteria (Australian Heritage Commission, 2009). The standard is that a natural or cultural place must be of outstanding heritage value that meets at least one of the following criteria:

Table 8-2: National heritage significance criteria

Criterion	Detail
A	The place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history
B	The place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history
C	The place has outstanding heritage value to the nation because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history
D	The place has outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of: (i) a class of Australia's natural or cultural places, or (ii) a class of Australia's natural or cultural environments
E	The place has outstanding heritage value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group
F	The place has outstanding heritage value to the nation because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period
G	The place has outstanding heritage value to the nation because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons
H	The place has outstanding heritage value to the nation because of the place's special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history
I	The place has outstanding heritage value to the nation because of the place's importance as part of indigenous tradition

STATE HERITAGE

For State heritage, the process of assessment of an item's significance has been developed through the NSW Heritage Management System and is outlined in the guideline *Assessing Heritage Significance* (Heritage NSW, 2023a). The *Assessing Heritage Significance* guidelines establish seven evaluation criteria (which reflect four categories of significance and whether a place is rare or representative) under which a place can be evaluated in the context of State or local historical themes. Similarly, a heritage item can be significant at a local level (i.e., to the people living in the vicinity of the site), at a State level (i.e., to all people living within NSW) or be significant to the country as a whole and be of National or Commonwealth significance.

In accordance with the guideline *Assessing Heritage Significance*, an item would be considered to be of State significance if it meets two or more criteria at a State level, or of local heritage significance if it meets one or more of the criteria outlined in Table 8-3. The Heritage Council requires the summation of the significance assessment into a succinct paragraph, known as a Statement of Significance. The Statement of Significance is the foundation for future management and impact assessment.

Table 8-3: NSW State heritage significance criteria

Criterion	Inclusions/Exclusions
Criterion (a) *– an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area).*	**Historical significance** – A place or object is important in the course or pattern of an area's history if it: • Is the product of • Is an example of • Was influenced by • Has influenced • Is associated with • Has a symbolic association with Something that has made a strong contribution to the course or pattern of development of our cultural society or environment. •
Criterion (b) *– an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local to area).*	**Associative significance** – A place or object has special associational value if it is associated with a person, organization or group of people who have made an important or notable contribution to the course, pattern and development of our cultural and/or physical environment. In this context, a special association may relate not only to the 'great' and well-known, but also to the influential, the exemplary and the innovative.
Criterion (c) *– an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area).*	**Aesthetic, creative or technical significance** - a place or object is important because of its aesthetic significance if that place or object exhibits sensual qualities that can be judged to be of significance against various ideals including beauty, picturesqueness, evocativeness, expressiveness, landmark presence, streetscape contribution, symbolist or some other quality of nature or human endeavour. Alternatively, a place is important in demonstrating a high degree of creative or technical achievement at a particular period if that place illustrates artistic or technical excellence, innovation, accomplishment, extension or creative adaptation in a variety of fields of human endeavour including but not exclusive to art, engineering, architecture, industrial or scientific design, landscape design, construction, manufacture and craftsmanship or some other technical field.
Criterion (d) *– an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons.*	**Social significance** - A place or object is important for its strong or special association with a particular community or cultural group. This could be for social, cultural or spiritual reasons that have a perceived meaning or symbolic, spiritual or moral value that is important to them and which generates a strong sense of attachment. Alternatively, a place is important when the community exhibits strong or special feelings or attaches community identity to it, or the community gathers especially for spiritual reasons, recreation or resort. The place may be Aboriginal or non-Aboriginal or a natural environment. The natural place or object does not have to be a built/constructed/modified (culturally created) place and could be in an unmodified, natural form or format.

Criterion	Inclusions/Exclusions
Criterion (e) *– an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area). Significance under this criterion must have the potential to yield new or further substantial information.*	**Research potential** – A place or object has potential to yield information that will contribute to an understanding of an area's history if it can be demonstrated that with further examination or research, it may reveal information that will contribute to our understanding of the past. The potential to contribute to our understanding of the past may be found in archaeological deposits, complexes, buildings and structures, gardens and plantings.
Criterion (f) *– an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).*	**Rarity** – A place or object demonstrates rare, uncommon or endangered aspects of an area's cultural or natural heritage. The place or object illustrates past human activities or achievements that are at risk of being lost, and/or are of exceptional interest. Past human activities and achievements can include a way of life, custom, process, function, land use, design or some other activity or achievement that is no longer practiced.
Criterion (g) *– an item is important in demonstrating the principal characteristics of a class of NSW's (or local area's):* • *cultural or natural places cultural or natural environments.*	**Representativeness** – A place or object is important in demonstrating the principal characteristics of a particular class of cultural or natural places or objects if it displays: • the defining features, qualities or attributes of a type • variation within a type • evolution of a type • transition of a type and where the type or class of cultural or natural places illustrates a range of human or environmental activities including: • a way of life • a custom • an ideology or philosophy • a process, land use, function, form, design, style or technique • some other activity or achievement

LOCAL HERITAGE

For inclusion on a Local Government Areas (LGA's) local heritage register, an item is assessed against the SHR and meets the significance threshold of being of heritage significance to the local area (Heritage NSW, 2023:23). These items are generally listed within the Schedule 5 of the LGA's Local Environmental Plan (LEP).

Appendix E

AHIMS Search

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Phillip

Client Service ID : 832646

Raeychale Cloutman

Date: 25 October 2023

3 Karri Street
O'Connor Australian Capital Territory 2602

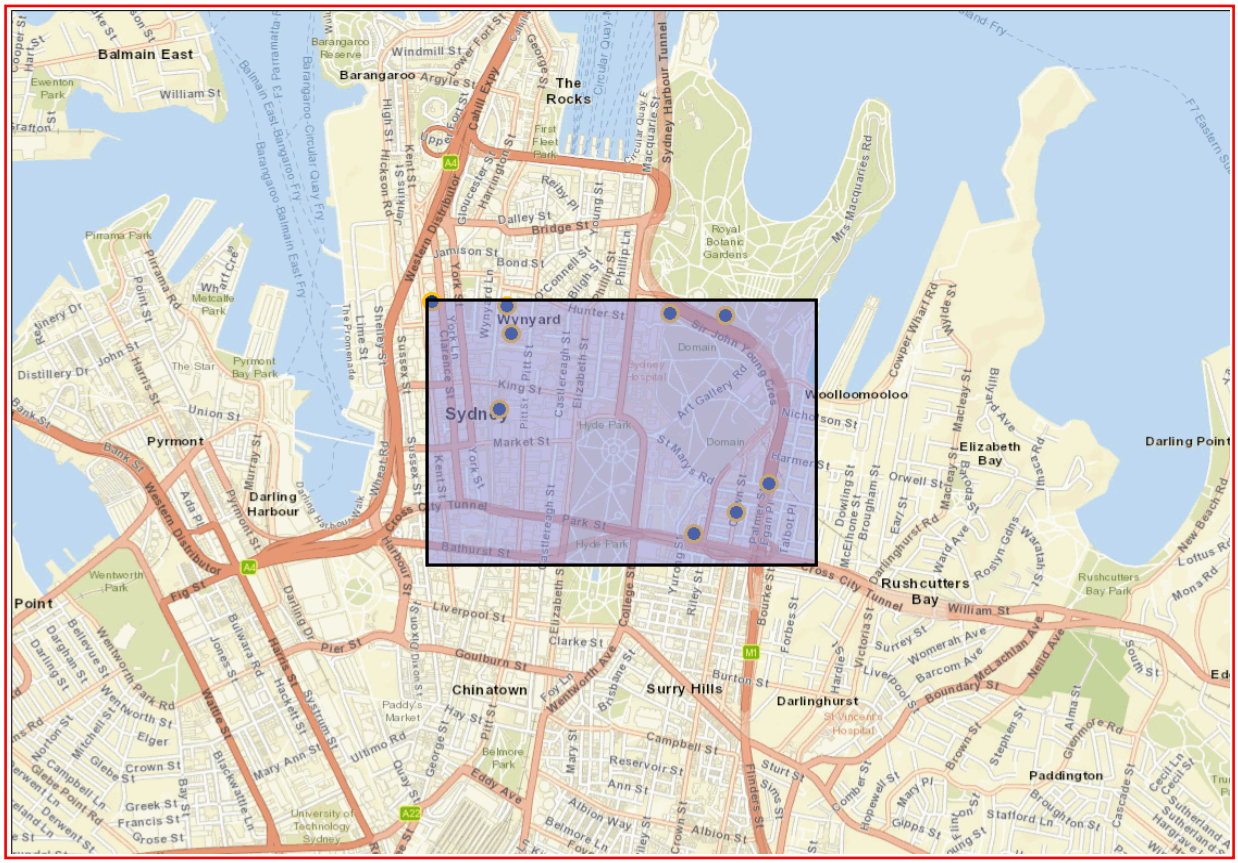
Attention: Raeychale Cloutman

Email: raeychale.cloutman@aecom.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -33.8748, 151.2044 - Lat, Long To : -33.8659, 151.2198, conducted by Raeychale Cloutman on 25 October 2023.

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 Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

9	**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 (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW 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 Heritage NSW 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.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

Appendix F

Contaminated Land Record of Notices Search

Home Public registers Contaminated land record of notices

Search results

Your search for:LGA: COUNCIL OF THE CITY OF SYDNEY

Matched 68 notices relating to 14 sites.

Search Again

Refine Search

Suburb	Address	Site Name	Notices related to this site
ALEXANDRIA	Off Huntley STREET	Alexandra Canal Sediments	2 current
ALEXANDRIA	10-24 Ralph STREET	Australia Post	2 former
ALEXANDRIA	49-59 O'Riordan STREET	Former Cadbury Schweppes	1 former
ALEXANDRIA	10-20 Botany ROAD	Formerly Gas N Go Alexandria (fully redeveloped into residential apartment as of September 2016)	3 former
ALEXANDRIA	Sydney Park ROAD	Sydney Park	6 current
CHIPPENDALE	Wellington STREET	Cnr Regent Street & Wellington Street, Chippendale	3 current and 7 former
EVELEIGH	Burren STREET	Macdonaldtown Triangle	2 former
MILLERS POINT	Berths 5, 6 and 7 (already demolished) and part Hickson ROAD	Former AGL Gasworks	12 former
MILLERS POINT	36 Hickson ROAD	Former AGL Gasworks 36 Hickson Road	2 former
NEWTOWN	79 Wilson STREET	Adjacent to Former Service Station	3 former
NEWTOWN	81 Wilson STREET	Former Service Station	4 former
PADDINGTON	59 Oxford STREET	7-Eleven Service Station	2 current and 2 former
PYRMONT	Pyrmont ROAD	Pyrmont Power Station	7 former
WATERLOO	887-893 Bourke STREET	Lawrence Dry Cleaners	9 current and 3 former

Page 1 of 1

25 October 2023

Appendix G

Consultation Report

CITY OF SYDNEY

Engagement report – Cycling connection between King and College Streets

Engagement report – King to College cycling connection
March 2023

Green Global Connected

Contents

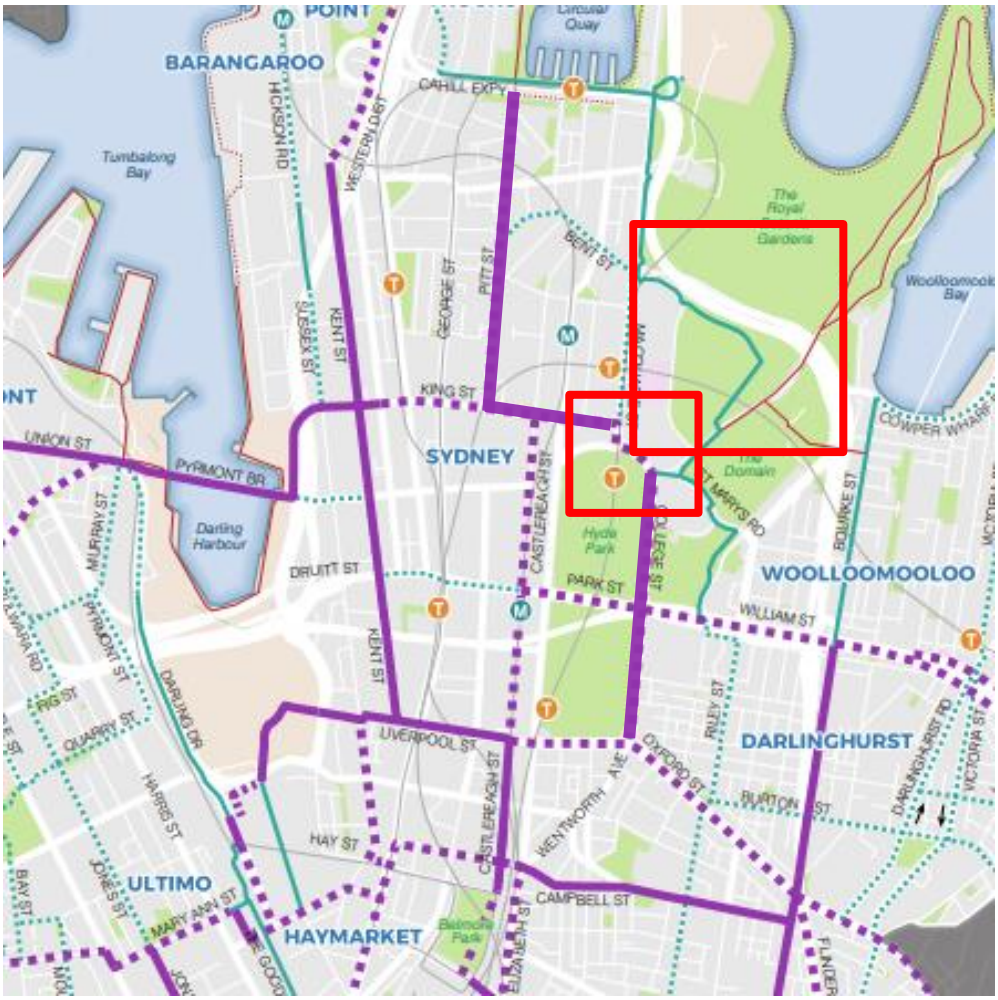
Background

The City plans to connect two newly opened cycleways in the city centre:

- King Street, between Pitt and Phillip streets opened last year and connects to the Pitt Street cycleway. The last section of cycleway on King Street, between Clarence and Pitt streets will be completed by Transport for NSW.

  King Street will also connect to the Castlereagh Street cycleway which is estimated to start construction mid 2023.

- College Street, between Oxford Street and St Mary's Road opened this year and is an improvement of the cycleway removed by Transport for NSW to facilitate the construction of light rail. This cycleway will connect to cycleways on Liverpool and Oxford streets which is estimated to start construction at the end of 2023.



The project includes:

- improving the existing shared space in Queen's Square by providing an on-road cycleway as an alternative to the narrow footpath pinch point at the statue of Queen Victoria
- a new section of separated cycleway on the western lane of Macquarie Street alongside Queen's Square

- a new cycleway in the western lane of Prince Albert Road connecting to the College Street cycleway.

This project will not remove any trees or parking spaces and all existing traffic movements will be retained.

Engagement summary

We asked the community for feedback on the concept design

Consultation on the plan ran between 20 February and 21 March 2023 and provided an opportunity for stakeholders and the community to review and comment on the proposed design.

Consultation activities included an online survey and interactive map, two information sessions at Queen's Square, a letter to residents and businesses and a targeted email to businesses.

This report outlines the community engagement activities that took place to support the consultation and summarises the key findings from the consultation.

Purpose of the engagement

The purpose of the engagement was to:

- Get feedback on walking and cycling improvements
- Find out about access to properties and how people currently use the area
- Determine if anything had been missed by calling on local knowledge

Engagement activities

Sydney Your Say webpage

A Sydney Your Say webpage was created. The page included an interactive map of the proposed design. People could insert their feedback directly onto the map and up-vote and down-vote ideas.

Interactive map

The Sydney Your Say page included a link to an interactive map of the proposed design. The community and stakeholders could insert their feedback directly onto the map and up-vote and down-vote ideas.

Consultation letter

A letter was posted to residents, inviting them to give feedback on the proposal. **1050 letters** were distributed.

Targeted business stakeholder email

An email was sent to approximately 430 businesses in the surrounding streets.

Information sessions

Two information sessions were held at Queen's Square where project team were available to discuss the project on-site.

- Tuesday 28 February 4:30pm to 6pm

- Thursday 1 March 8am to 9:30am

Approximately 90 people attended the sessions

Outcomes from the engagement

Feedback was received through the interactive map, an online survey and via email. Two information sessions were held in Queen's Square.

- The Sydney Your Say page was visited 675 times during the consultation period.
- 60 people left a total of 95 comments on our interactive map
- 23 email submissions were received
- 90 people (approx.) attended the information sessions in Queen's Square

All feedback received on the interactive map was supportive (85%) or neutral (15%)

60% of email submissions were supportive of the project.

Subjects/issues raised in submissions

Issues and suggestions raised in email submissions

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Issues and suggestions raised on the interactive map

Location	Comment	CoS Response	Count	Up	Down
All	Support		27	337	2
Queen's Square	Physical separation between people walking and riding is needed	The section through Queens Square will remain as a shared path area, with new pavement markings to make clear that pedestrians have priority.	25	1	0
Queen's Square	Please address the steps/lip of the stairs.	An upgrade to Queen's Plaza is not part of the project scope, however pavement marking will be considered where needed.	6	89	0
College Street south of Prince Albert Road	Provide gap in the barrier for people riding to continue into Prince Albert Road	This will be resolved during design development.	3	27	0
Macquarie Street	Allow for people riding north to join Macquarie Street traffic lanes	This will be resolved during design development.	3	14	0
Queen's Square	Have separation between people walking and riding at the same grade. Example in Bondi Junction	The section through Queens Square will remain as a shared path area, with new pavement markings to make clear that pedestrians have priority.	3	33	1
Macquarie Street	Extend the cycleway up Macquarie Street	A cycleway to Macquarie Street north is not part of the project scope.	2	33	1
Macquarie Street at Hyde Park	Make sure the barrier extends all the way to the traffic lights	This will be reviewed during design development.	2	44	0
Macquarie Street at Hyde Park	Use green paint throughout	The design will use green cycleway paint on on-road sections at vehicle conflict points, as specified in guidelines and as on other cycleways.	2	35	0

Location	Comment	CoS Response	Count	Up	Down
Macquarie Street	Place additional censors to trigger bike signal prior to the intersection so as avoid missing their turn	This will be reviewed during design development.	2	9	1
College Street at Prince Albert Road	Have a turning lane into Prince Albert Road and start the 30km/h area at the intersection	This will be reviewed during design development.	2	30	0
All	Make sure there is a fair traffic light phasing for people walking and riding	This will be reviewed during design development.	2	33	0
Queen's Square	The shared area is good as it is, does not need green paint. Work needs to be done on the lip/steps	A public domain upgrade to Queen's Plaza planned in future. There will not be green paint in Queens Square – it will remain shared path. Markings will be considered where there are lip/step.	2	3	0
Macquarie Street at Hyde Park	Make the intersection raised and continuous to ensure priority for people walking and riding. Eg Greenknowe and Macleay	A full intersection upgrade is not part of the project scope.	1	18	0
Macquarie Street at Hyde Park	Build out the footpath at the intersection on the northern edge of Hyde Park	A footpath upgrade in that area is not part of the project scope.	1	31	2
St James Road	Realign the lanes on St James Road	Realignment of travel lanes is only considered where needed	1	11	0
Macquarie Street at Hyde Park	Ensure easy access from the park on to the cycleway at both St James Road and Prince Albert Road	This will be reviewed during design development.	1	21	0
College Street at Prince Albert Road	Provide waiting space for people riding to cross and join Prince Albert Road	This will be reviewed during design development.	1	17	0
College Street at Prince Albert Road	Continue barriers but retain a gap for people to cross	This will be reviewed during design development.	1	14	0
Phillip Street	Make the crossing raised	A crossing upgrade in that area is not part of the project scope.	1	2	0
Macquarie Street	Automate bike signals	Bike signals at intersections are triggered via sensors on the cycleway and, in the CBD, automatic during daytimes during the week.	1	2	0

Location	Comment	CoS Response	Count	Up	Down
Macquarie Street	it would be safer for the curb not to have a sharper corner to limit potential confusion for left-turning motorists	This will be reviewed during design development.	1	18	0
Hyde Park	Remove redundant shared zones and clearly demarcate which paths inside the park are shared zones and which aren't	All paths in Hyde Park are shared paths to enable people to reach the various parts of the park.	1	9	9
Queen's Square	Provide shared path signage and direct people riding to dismount if there is a lot of people walking	When a place if very crowded, many people riding find it easier to walk their bike, but this might not be suitable for people with disabilities, mobility difficulties or children.	1	2	10
Queen's Square	Provide shared path signage	The project will include shared path signage and pavement markings.	1	36	2
All	Make sure that cycleway access is safe and entry/exit is not too sharp	This will be reviewed during design development.	1	12	0
All	Retain the existing shared paths even adjacent to the cycleway	This will be reviewed during design development.	1	17	0
Queen's Square	Avoid the use of bollards to demarcate the shared area	This will be reviewed during design development.	1	1	0
Queen's Square	Connection through the square should avoid any existing bollards or poles	This will be reviewed during design development.	1	1	0
Macquarie Street at Hyde Park	Configure traffic lights so that people riding southbound have two opportunities to cross. First, green light for southbound cyclists turning east along the cycle path. Second, green light for southbound cyclists continuing south into Hyde Park	This will be reviewed during design development.	1	2	0
Art Gallery Road	Suggest traffic treatments outside of the Gallery	Art Gallery Road is not part of the project scope.	1	0	0
Macquarie Street at Hyde Park	Make the intersection scatter crossing and provide more time for people walking and riding to cross	This will be reviewed during design development.	1	1	0

Location	Comment	CoS Response	Count	Up	Down
All	Open sections as soon as they are complete, don't wait for full completion like College Street	The cycleway will be open once it is completed and safe to do so (sometimes there is a delay waiting for the signals to be changed).	1	5	0
Prince Albert Road	Extend the shared path on the north side of Prince Albert Road	Prince Albert Road north is not part of the project scope	1	7	0
Queen's Square	Widen the footpath next to the statue for people walking	The project will provide a separated cycleway beside this location, so that the footpath near the statue is only used by people walking.	1	6	0

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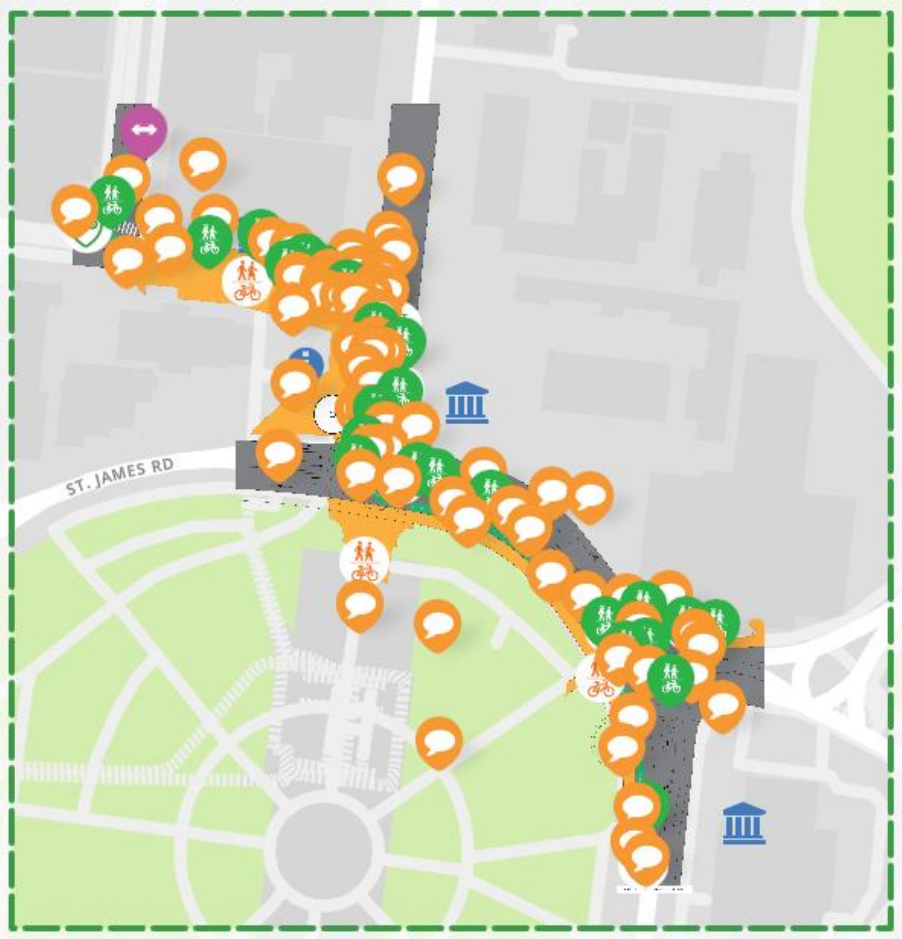
Appendix

Appendix A: feedback left on interactive map



Appendix B: letter to community

CITY OF SYDNEY

City of Sydney
Gadigal Country
456 Kent Street
Sydney NSW 2000

+61 2 9265 9333
council@cityofsydney.nsw.gov.au
GPO Box 1591 Sydney NSW 2001
cityofsydney.nsw.gov.au

20 February 2023

Your feedback on a cycling link between King and College streets

We invite your feedback on the proposed cycling connection between King and College streets.

This cycling connection will form an important part of our bike network and will make getting around safer for people walking and riding.

The project includes:

- improving the existing shared space in Queens Square by removing the pinch point at the statue of Queen Victoria
- a new section of separated cycleway on the western lane of Macquarie Street alongside Queens Square
- a new cycleway in the western lane of Prince Albert Road connecting to the College Street cycleway.

This project will not remove any trees or parking spaces.

All existing traffic movements will be retained.

How to give feedback

You can view the documents and comment by 5pm on Monday 20 March at sydneyyoursay.com.au

You are also invited to attend an information session at Queens Square:

- Tuesday 28 February 4:30pm to 6pm
- Thursday 1 March 8am to 9:30am

These events are subject to weather conditions.

For more information, contact the project team on 02 9265 9333 or email sydneycycleways@cityofsydney.nsw.gov.au.

Yours sincerely

Kim Woodbury
Chief Operating Officer

The City of Sydney acknowledges the Gadigal of the Eora Nation as the Traditional Custodians of our local area.

Appendix C: information session

Appendix H

Traffic Modelling Report

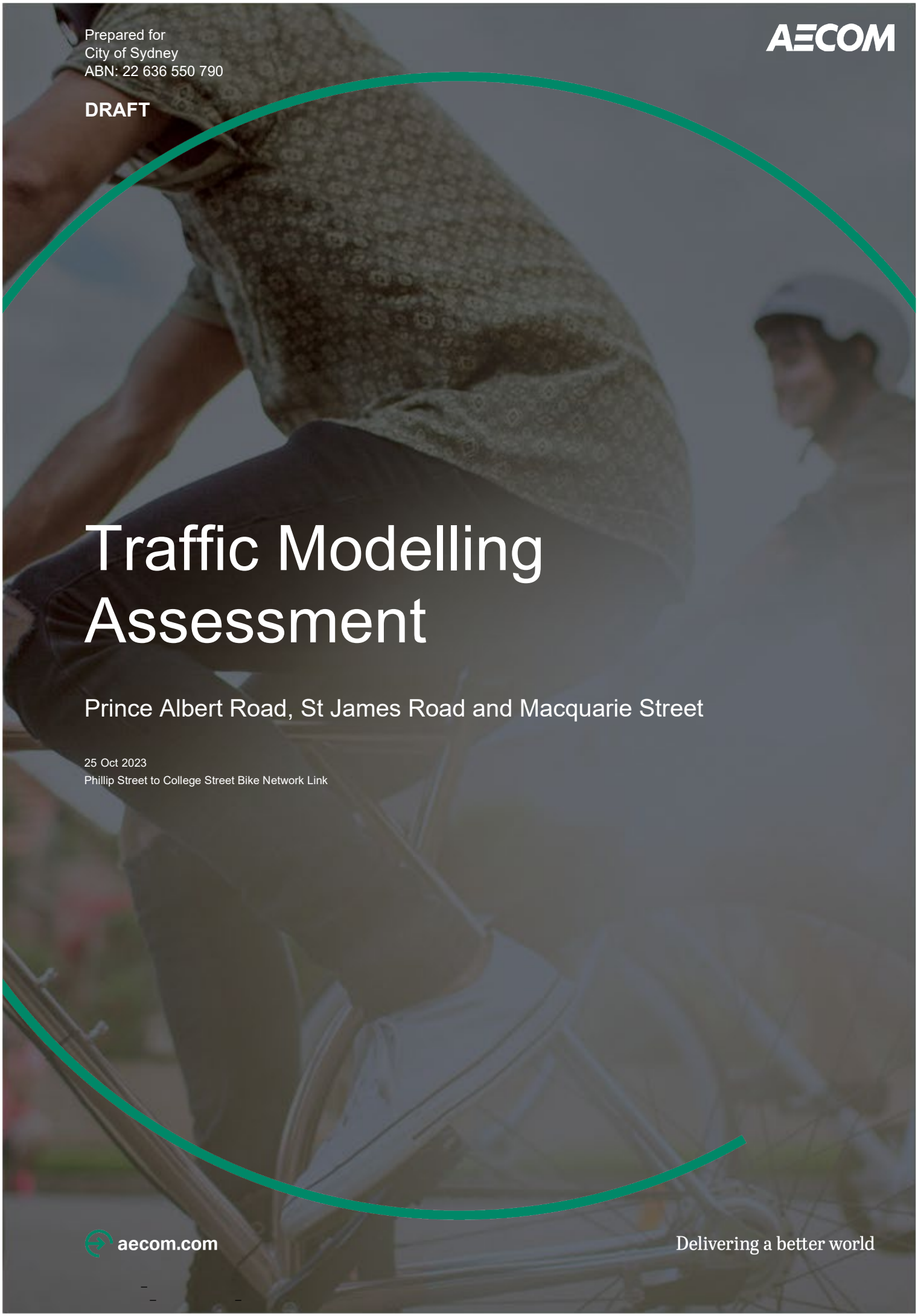
Prepared for
City of Sydney
ABN: 22 636 550 790

DRAFT

Traffic Modelling Assessment

Prince Albert Road, St James Road and Macquarie Street

25 Oct 2023
Phillip Street to College Street Bike Network Link



D R A F T

Traffic Modelling Assessment

Prince Albert Road, St James Road and Macquarie Street

Client: City of Sydney

ABN: 22 636 550 790

Prepared by

AECOM Australia Pty Ltd
Gadigal Country, Level 21, 420 George Street, Sydney NSW 2000, PO Box Q410, QVB Post Office NSW 1230, Australia
T +61 2 8008 1700 www.aecom.com
ABN 20 093 846 925

25-Oct-2023

Job No.: 60711081

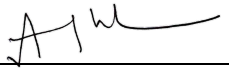
AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 and ISO45001.

D R A F T

Quality Information

Document	Traffic Modelling Assessment
Ref	60711081
Date	25-Oct-2023
Originator	Mark Yeung
Checker/s	Sara Hu
Verifier/s	Cameron Ward

Revision History

Rev	Revision Date	Details	Approved	
			Name/Position	Signature
A	25-Oct-2023	Draft	Anoop Sridhar Associate Director	

D R A F T

Table of Contents

D R A F T

1.0 Introduction and proposal

As part of the Phillip Street to College Street Bike Network Link, a new two-way bicycle path is proposed to connect the existing College Street Cycleway and King Street Cycleway. This proposed bicycle path aims to bridge the gap between the two cycleways, starting from College Street south of Prince Albert Road, following the southern side of Prince Albert Road, ascending the western side of Macquarie Street, and ultimately joining the King Street Cycleway at Phillip Street through Queens Square.

The intersection of Prince Albert Road, St James Road and Macquarie Street (the intersection) is proposed to be modified as part of these works and will interface with the proposed Macquarie Street road upgrades delivered as part of the Macquarie Street East Precinct transformation. The modification to the intersection includes:

- the introduction of a two-way bicycle path on the southern side of Prince Albert Road and western side of Macquarie Street
- removal of the existing short through lane on Prince Albert Road
- removal of the existing short right turn lane on Macquarie Street
- reduction of the St James Road departure lanes from two to one at the intersection
- implementation of a one-way bicycle path departure from the two-way bicycle path, leading westward on the southern side of St James Road.

The proposed design would separate cyclists from the general traffic where possible. Cyclist movements would operate independently of the intersection's signalisation, except when crossing St James Road in parallel with pedestrian crossing movements.

This report has been prepared to assess the performance of the intersection and summarise the likely traffic impacts associated with the introduction of the two-way bicycle path between Phillip Street and College Street at this intersection.

D R A F T

2.0 Existing conditions

2.1 Overview

Traffic modelling for the intersection was previously undertaken by Mott MacDonald. These models were forwarded onto AECOM Australia Pty Ltd (AECOM) by the City of Sydney on Wednesday 12 July 2023. The models were reviewed, and updates were made to reflect the existing intersection operation.

2.2 Traffic volumes

The movement volumes used in this assessment were adopted from the Mott MacDonald models. It is noted that the volumes were surveyed in 2022. Based on these models, the AM and PM road network peak hours occurred between 8:15am to 9:15am and between 5:00pm to 6:00pm, respectively.

Figure 1 and Figure 2 summarise the adopted traffic volumes for the AM and PM peak hours, respectively, whereby each code refers to the corresponding vehicle class:

- LV – Light vehicle
- HV – Heavy vehicle
- B – Bus
- C – Cyclist
- U1 – Taxi
- P – Pedestrian.

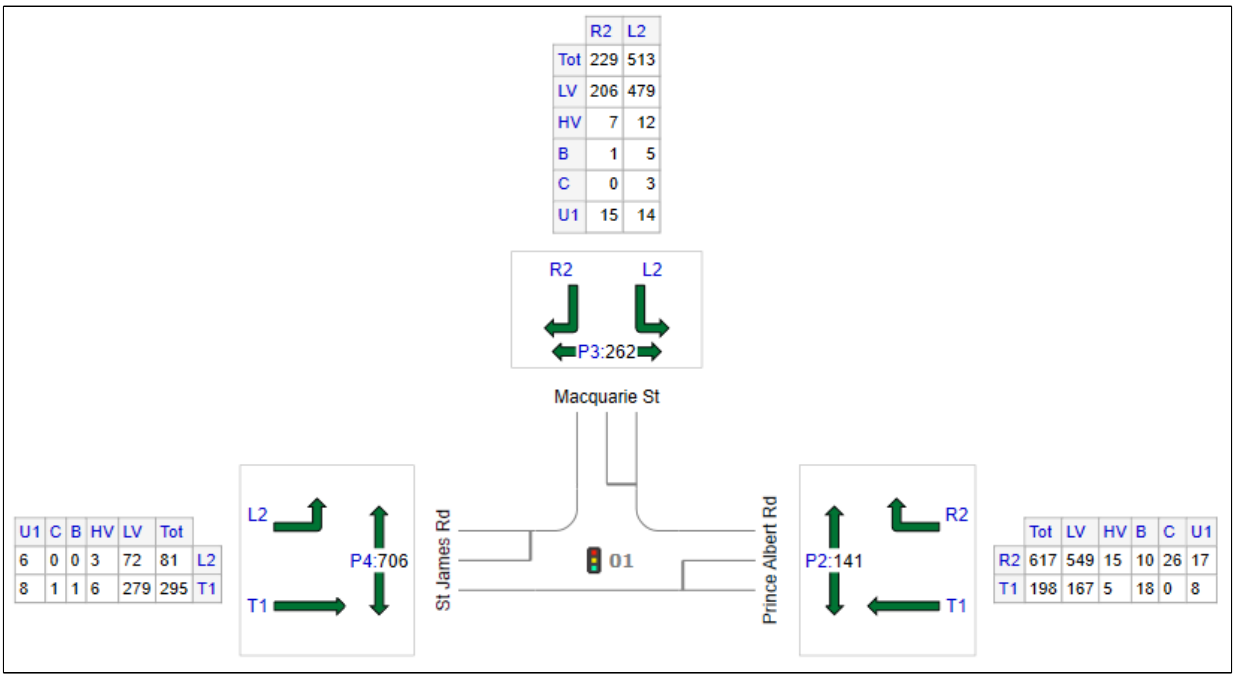


Figure 1: Existing AM peak hour traffic volumes

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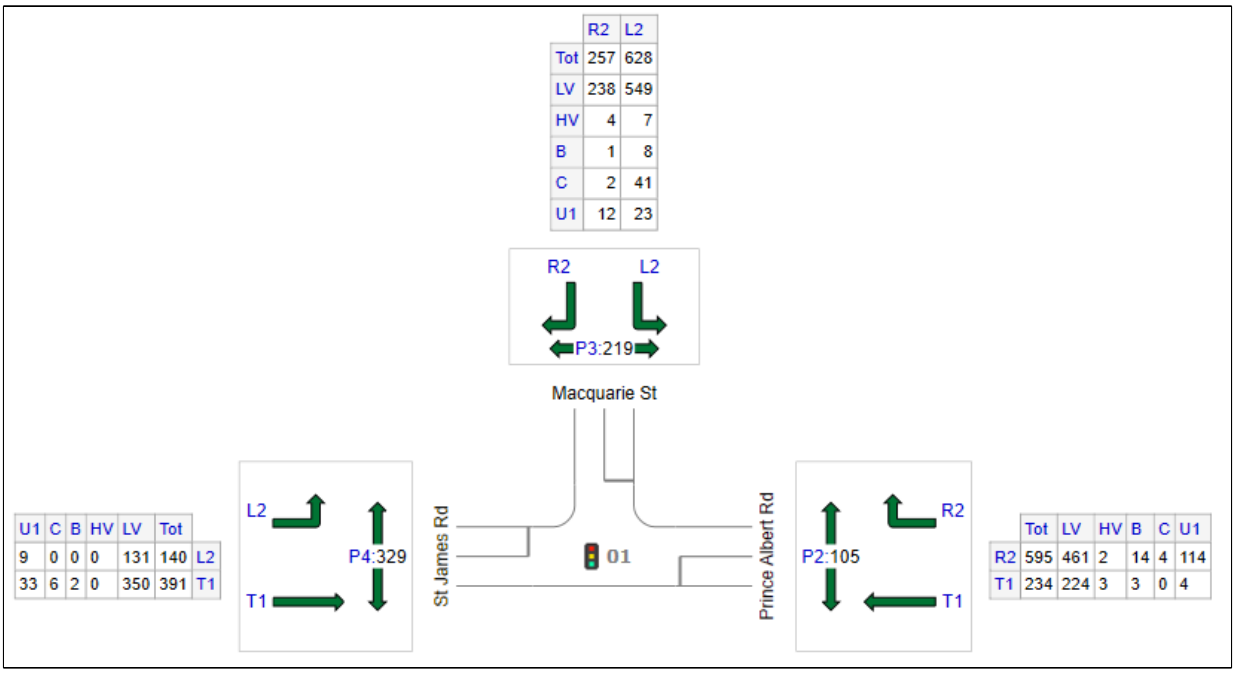


Figure 2: Existing PM peak hour traffic volumes

2.3 Intersection phasing

Traffic Control Signal (TCS) plan indicates that the intersection is planned to operate under a four-phase arrangement, with the following movements operating in:

- Phase A – St James Road through and left turn movements, Prince Albert Road through movement, and pedestrian crossing on Macquarie Street
- Phase B – Prince Albert Road through and right turn movements, and Macquarie Street left turn movement
- Phase C – Macquarie Street left and right turn movements and both pedestrian crossings on St James Road and Prince Albert Road
- Phase D – repeat Phase B with pedestrian crossing on St James Road.

However, based on site observation, the intersection generally operates under a three-phase arrangement, including Phase A, Phase B and Phase C.

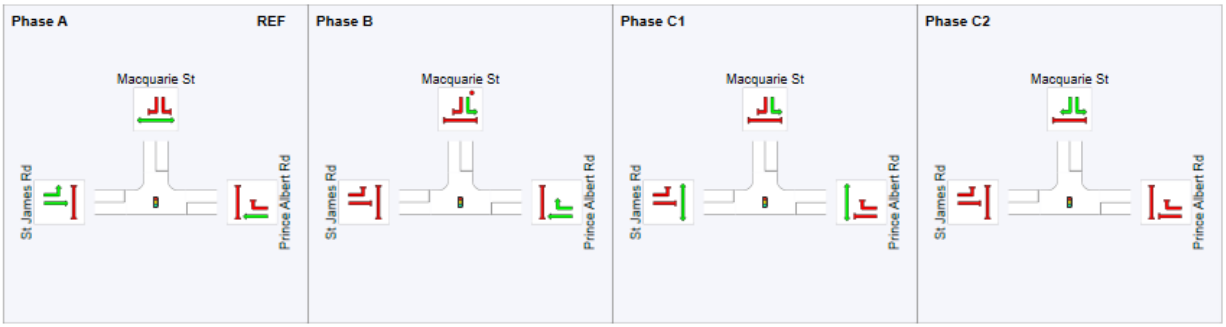
To simplify the modelling process to account for the long late starts observed in Phase C, Phase C was modelled as two separate phases, with no intergreen timing applied to the first phase (C1):

- Phase C1 – Macquarie Street left turn and both pedestrian crossings on St James Road and Prince Albert Road
- Phase C2 – Macquarie Street left and right turn movements.

The intersection phase sequence as modelled is shown in Figure 3.

The average phase times applied to the model are based on site observations collected at the intersection.

D R A F T



REF: Reference Phase
VAR: Variable Phase

Figure 3 Existing phase diagram at the intersection

2.4 Intersection operation

The operation of the intersection has been assessed using SIDRA INTERSECTION 9.1, a computer-based modelling package which calculates intersection performance.

The commonly used measure of intersection performance, as defined by the Transport for NSW (TfNSW), is vehicle delay. SIDRA determines the average delay that vehicles encounter and provides a measure of the level of service (LoS).

Table 1 shows the criteria that SIDRA adopts in assessing the level of service. Common practice suggests that when intersection performance falls below LoS E, investigations should be initiated to determine if suitable remediation can be provided.

Table 1: SIDRA level of service criteria

LoS	Average delay per vehicle (seconds per vehicle)	Traffic signals and roundabout	Give way and stop sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity, at signals incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	At capacity, requires other control mode

Source: TfNSW Guide to Traffic Generating Developments 2002

Table 2 presents a summary of the existing operation of the intersection.

D R A F T

Table 2: Existing (2022) intersection operating conditions

Peak	Approach	Degree of saturation (DoS)	Average delay (seconds)	95th percentile queue (metres)	Level of service
AM	Prince Albert Road	0.858	40.3	112.5	LoS C
	Macquarie Street	0.798	28.9	94.7	LoS C
	St James Road	0.413	36.5	43.4	LoS C
	Overall	**0.858**	**35.2**	**112.5**	**LoS C**
PM	Prince Albert Road	0.882	41.5	113.6	LoS C
	Macquarie Street	0.928	38.1	161.1	LoS C
	St James Road	0.611	38.1	57.8	LoS C
	Overall	**0.928**	**39.4**	**161.1**	**LoS C**

Modelling indicates that the intersection currently operates satisfactorily at LoS C during both the AM and PM peak hours. The right turn movement on Prince Albert Road is expected to experience the longest average delay, approximately 50 seconds, in both the AM and PM peak hours.

D R A F T

3.0 Traffic impact of the proposal

3.1 Intersection changes

3.1.1 Layout

The proposal will introduce a two-way bicycle path on the southern side of Prince Albert Road and western side of Macquarie Street, between College Street and Phillip Street. In addition, a one-way exit will be provided on the southern side of St James Road. Cyclist movements would be removed from the general traffic lanes and act independently. Cyclists journeying between Macquarie Street and Prince Albert Road would do so on the cycleway, in tandem with pedestrian crossing movements on St James Road. As such, for the purpose of modelling, the cycleway was not modelled.

The intersection layout would also change to accommodate room for the cycleway. The following changes are proposed on:

- Prince Albert Road
  - removal of the short through lane.
- St James Road
  - removal of the inner through lane
  - reduction of departure lanes from two to one at the intersection
- Macquarie Street
  - removal of the short right turn lane.

Figure 4 depicts the proposed intersection layout as modelled in SIDRA.

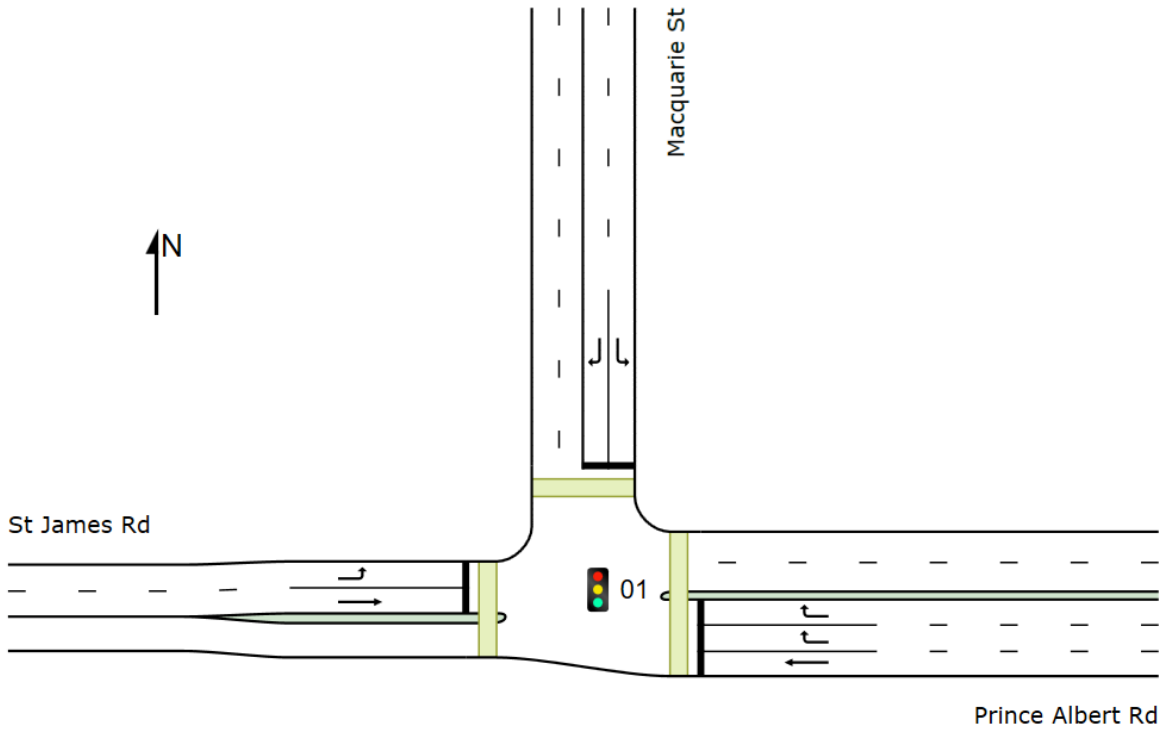


Figure 4 Proposed layout at the intersection

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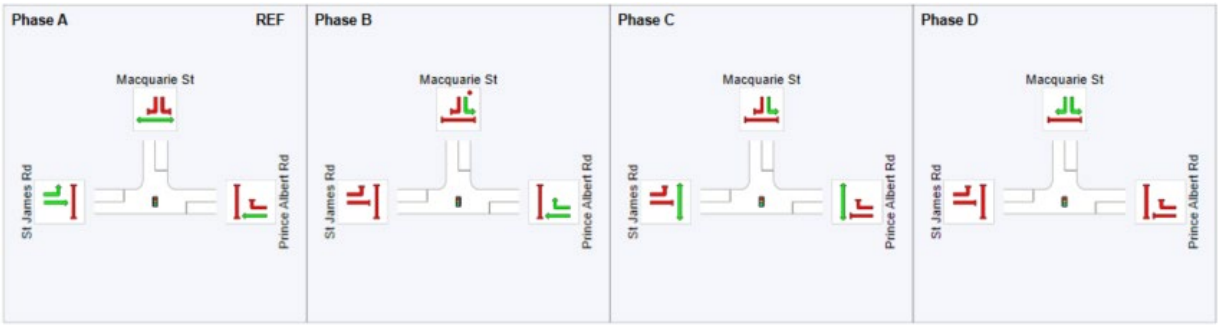
3.1.2 Intersection phasing

The proposed intersection phasing would not change and continue to run as a three-phase arrangement as discussed in Section 2.3. Bicycle movements along St James Road would be given red signal to give way to pedestrian movements crossing Prince Albert Road east approach. For bicycle movements crossing St James Road, they would operate in parallel with the pedestrian crossing at St James Road west approach and, as such, was not modelled as a separate vehicle movement.

Figure 5 outlines the proposed phase timings as modelled in SIDRA to accommodate proposed changes in the operation of the intersection. A reference 90 second cycle time was used for this assessment.



REF: Reference Phase
VAR: Variable Phase

Figure 5 Proposed phase diagram at the intersection

3.1.3 Traffic distribution and assignment

The proposal will result in the reduction of one traffic lane from each approach. As such, the proposal may lead to the reduction of traffic demands at the intersection or may potentially result in marginal changes to traffic flows.

For the purpose of this assessment, existing traffic volumes have been used to assess the impacts of the introduction of the cycleway at the intersection. This is considered a worst-case scenario given traffic flows are expected to reduce or change marginally.

3.2 Traffic impacts

Table 3 summarises the anticipated operation of the intersection with the proposal.

Table 3: Intersection operating conditions with proposal

Peak	Approach	Degree of saturation (DoS)	Average delay (seconds)	95th percentile queue (metres)	Level of service
AM	Prince Albert Road	0.845	39.9	109.4	LoS C
	Macquarie Street	0.884	30.4	89.7	LoS C
	St James Road	0.878	47.2	111.4	LoS D
	Overall	**0.884**	**37.6**	**111.4**	**LoS C**
PM	Prince Albert Road	0.988	61.5	143.9	LoS E
	Macquarie Street	0.977	60.3	196.7	LoS E
	St James Road	0.960	57.2	169.6	LoS E
	Overall	**0.988**	**60.0**	**196.7**	**LoS E**

D R A F T

Modelling indicates that with the proposal, the intersection would continue operating satisfactorily at LoS C during AM peak hour. The through movement on St James Road is expected to experience an average delay of approximately 49 seconds, which is an increase of approximately 14 seconds comparing to the existing scenario. The largest increase on queue length at the intersection is anticipated to also occur at this movement (from 43 metres to 111 metres). This queuing would be extending to the intersection of St James Road and Elizabeth Street under the proposed scenario.

During PM peak hour, the overall average delay time is expected to increase from 37.6 seconds to 60 seconds at the intersection comparing to the existing scenario, which results in an LoS change from C to E. With the proposal, queuing at all approaches of the intersection are anticipated to extend to the adjacent intersections, while only queuing at the Prince Albert Road are extending to the intersection of College Street and Prince Albert Road under the existing scenario.

It is noted that he reduction in lanes n St James Road, and increased delay, may result in trip redistribution via alternative routes (i.e. via Park Street). This has not been assessed as part of this modelling but may result in reduced impacts at this intersection.

D R A F T

4.0 Conclusion

The proposal involves modifications to the intersection of Prince Albert Road, St James Road and Macquarie Street to introduce a two-way bicycle path on the southern side of Prince Albert Road and western side of Macquarie Street, as well as a one-way exit on the southern side of St James Road.

SIDRA modelling has been completed at the intersection for without and with the proposal scenarios based on the traffic volumes adopted from the Mott MacDonald models. The SIDRA modelling results demonstrate that the implementation of the proposal would have minor impact on the operation of the intersection during the AM peak hour with the intersection performance remaining similar at LoS C. During the PM peak hour, despite SIDRA modelling results indicate that the proposal would result in increases on vehicle average delay time and queue lengths, the intersection would still operate below capacity. It should also be noted that the proposal will significantly improve safety, accessibility and connectivity for cyclists as the vulnerable road users. This proposal would contribute to an improved overall operation at the intersection for all road users.

Appendix A

SIDRA Outputs

MOVEMENT SUMMARY

Site: 01 [Macquarie St/St James Rd/Prince Albert Rd EX AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

AM Peak - TCS 0276
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Prince Albert Rd															
5	T1	All MCs	208	11.6	208	11.6	0.127	13.9	LOS A	2.5	19.4	0.59	0.47	0.59	24.2
6	R2	All MCs	649	4.1	649	4.1	* 0.858	48.8	LOS D	16.3	112.5	1.00	1.02	1.26	13.9
Approach			858	5.9	858	5.9	0.858	40.3	LOS C	16.3	112.5	0.90	0.89	1.09	15.2
North: Macquarie St															
7	L2	All MCs	540	3.3	540	3.3	* 0.798	20.7	LOS B	13.2	94.7	0.95	0.90	1.03	22.0
9	R2	All MCs	241	3.5	241	3.5	0.622	47.3	LOS D	5.4	38.9	1.00	0.82	1.06	15.4
Approach			781	3.4	781	3.4	0.798	28.9	LOS C	13.2	94.7	0.97	0.88	1.04	19.2
West: St James Rd															
10	L2	All MCs	85	3.7	85	3.7	0.368	43.3	LOS D	3.6	25.7	0.95	0.76	0.95	18.3
11	T1	All MCs	311	2.4	311	2.4	* 0.413	34.6	LOS C	6.1	43.4	0.92	0.74	0.92	18.1
Approach			396	2.7	396	2.7	0.413	36.5	LOS C	6.1	43.4	0.93	0.75	0.93	18.1
All Vehicles			2035	4.3	2035	4.3	0.858	35.2	LOS C	16.3	112.5	0.93	0.86	1.04	17.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Prince Albert Rd												
P2	Full	141	148	39.4	LOS D	0.4	0.4	0.94	0.94	206.1	200.0	0.97
North: Macquarie St												
P3	Full	262	276	39.7	LOS D	0.7	0.7	0.94	0.94	206.3	200.0	0.97
West: St James Rd												
P4	Full	706	743	40.5	LOS E	1.8	1.8	0.96	0.96	207.1	200.0	0.97
All Pedestrians		1109	1167	40.1	LOS E	1.8	1.8	0.96	0.96	206.8	200.0	0.97

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 01 [Macquarie St/St James Rd/Prince Albert Rd EX PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

AM Peak - TCS 0276
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Prince Albert Rd															
5	T1	All MCs	246	2.6	246	2.6	0.142	14.6	LOS B	3.1	21.9	0.60	0.49	0.60	23.8
6	R2	All MCs	626	2.7	626	2.7	0.882	52.1	LOS D	16.0	113.6	1.00	1.06	1.32	13.4
Approach			873	2.7	873	2.7	0.882	41.5	LOS C	16.0	113.6	0.89	0.90	1.12	15.0
North: Macquarie St															
7	L2	All MCs	661	2.4	661	2.4	* 0.928	36.4	LOS C	23.5	161.1	1.00	1.06	1.31	16.4
9	R2	All MCs	271	1.9	271	1.9	0.488	42.2	LOS C	5.7	39.9	0.96	0.79	0.96	16.5
Approach			932	2.3	932	2.3	0.928	38.1	LOS C	23.5	161.1	0.99	0.98	1.21	16.4
West: St James Rd															
10	L2	All MCs	147	0.0	147	0.0	0.611	45.1	LOS D	6.4	45.0	0.99	0.81	1.02	17.9
11	T1	All MCs	412	0.5	412	0.5	* 0.533	35.6	LOS C	8.4	57.8	0.95	0.78	0.95	17.8
Approach			559	0.4	559	0.4	0.611	38.1	LOS C	8.4	57.8	0.96	0.79	0.96	17.8
All Vehicles			2363	2.0	2363	2.0	0.928	39.4	LOS C	23.5	161.1	0.94	0.91	1.12	16.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Prince Albert Rd												
P2	Full	105	111	39.4	LOS D	0.3	0.3	0.94	0.94	206.0	200.0	0.97
North: Macquarie St												
P3	Full	219	231	39.6	LOS D	0.6	0.6	0.94	0.94	206.2	200.0	0.97
West: St James Rd												
P4	Full	329	346	39.8	LOS D	0.8	0.8	0.95	0.95	206.4	200.0	0.97
All Pedestrians		653	687	39.6	LOS D	0.8	0.8	0.94	0.94	206.3	200.0	0.97

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 01 [Macquarie St/St James Rd/Prince Albert Rd PR AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

AM Peak - TCS 0276
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Prince Albert Rd															
5	T1	All MCs	208	11.6	208	11.6	0.262	15.6	LOS B	5.5	42.7	0.65	0.54	0.65	23.0
6	R2	All MCs	622	4.2	622	4.2	* 0.845	48.0	LOS D	15.1	109.4	1.00	1.00	1.24	14.1
Approach			831	6.1	831	6.1	0.845	39.9	LOS C	15.1	109.4	0.91	0.89	1.09	15.3
North: Macquarie St															
7	L2	All MCs	537	3.3	537	3.3	0.782	19.5	LOS B	12.5	89.7	0.94	0.88	1.00	22.6
9	R2	All MCs	241	3.5	241	3.5	* 0.884	54.9	LOS D	12.4	89.1	1.00	1.07	1.38	14.0
Approach			778	3.4	778	3.4	0.884	30.4	LOS C	12.5	89.7	0.96	0.94	1.12	18.7
West: St James Rd															
10	L2	All MCs	85	3.7	85	3.7	0.336	42.1	LOS C	3.5	25.2	0.94	0.76	0.94	18.6
11	T1	All MCs	309	2.4	309	2.4	* 0.878	48.6	LOS D	15.6	111.4	1.00	1.12	1.31	14.7
Approach			395	2.7	395	2.7	0.878	47.2	LOS D	15.6	111.4	0.99	1.04	1.23	15.6
All Vehicles			2003	4.4	2003	4.4	0.884	37.6	LOS C	15.6	111.4	0.94	0.94	1.13	16.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Prince Albert Rd												
P2	Full	141	148	39.4	LOS D	0.4	0.4	0.94	0.94	206.1	200.0	0.97
North: Macquarie St												
P3	Full	262	276	39.7	LOS D	0.7	0.7	0.94	0.94	206.3	200.0	0.97
West: St James Rd												
P4	Full	706	743	40.5	LOS E	1.8	1.8	0.96	0.96	207.1	200.0	0.97
All Pedestrians		1109	1167	40.1	LOS E	1.8	1.8	0.96	0.96	206.8	200.0	0.97

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 01 [Macquarie St/St James Rd/Prince Albert Rd PR PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

AM Peak - TCS 0276
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Prince Albert Rd															
5	T1	All MCs	246	2.6	246	2.6	0.285	15.8	LOS B	6.6	47.3	0.65	0.55	0.65	22.9
6	R2	All MCs	622	2.7	622	2.7	0.988	79.6	LOS F	20.1	143.9	1.00	1.30	1.71	9.9
Approach			868	2.7	868	2.7	0.988	61.5	LOS E	20.1	143.9	0.90	1.09	1.41	11.5
North: Macquarie St															
7	L2	All MCs	618	2.6	618	2.6	* 0.977	55.0	LOS D	27.5	196.7	1.00	1.18	1.52	12.9
9	R2	All MCs	268	2.0	268	2.0	* 0.969	72.5	LOS F	16.3	115.7	1.00	1.25	1.65	11.6
Approach			886	2.4	886	2.4	0.977	60.3	LOS E	27.5	196.7	1.00	1.20	1.56	12.4
West: St James Rd															
10	L2	All MCs	147	0.0	147	0.0	0.453	40.1	LOS C	6.0	41.7	0.94	0.79	0.94	19.0
11	T1	All MCs	405	0.5	405	0.5	* 0.960	63.4	LOS E	24.1	169.6	1.00	1.32	1.53	12.4
Approach			553	0.4	553	0.4	0.960	57.2	LOS E	24.1	169.6	0.98	1.18	1.37	13.9
All Vehicles			2307	2.0	2307	2.0	0.988	60.0	LOS E	27.5	196.7	0.96	1.15	1.46	12.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Prince Albert Rd												
P2	Full	105	111	39.4	LOS D	0.3	0.3	0.94	0.94	206.0	200.0	0.97
North: Macquarie St												
P3	Full	219	231	39.6	LOS D	0.6	0.6	0.94	0.94	206.2	200.0	0.97
West: St James Rd												
P4	Full	329	346	39.8	LOS D	0.8	0.8	0.95	0.95	206.4	200.0	0.97
All Pedestrians		653	687	39.6	LOS D	0.8	0.8	0.94	0.94	206.3	200.0	0.97

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Appendix I

Noise Assessment

Distanced Based Assessment (Construction Scenario)

Please pick from drop-down list in orange cells

Noise area category		R4
RBL or L_{A90} Background level (dB(A))	**Day**	55
	Evening	50
	Night	45
$L_{Aeq(15minute)}$ Noise Mangement Level (dB(A))	**Day**	65
	Day (OOHW)	60
	Evening	55
	Night	50
Scenario		Paving / asphalting
Is there line of sight to receiver?		Yes

Steps for Screening Assessment:

1. Schedule noisy works to occur in standard hours where possible or before 11pm and implement Standard Measures.
2. Select the representative noise area category. The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
3. Select the scenario. If not found in drop-down list, refer to 'Source List' and select a representative scenario with similar plant combination.
4. Is there line of sight to receiver? Select the appropriate scenario from the drop down list .

Identify and implement standard mitigation measures where feasible and reasonable. Include any shielding implemented as part of the standard mitigation measures by changing the selection in the 'Is there line of sight to receiver' drop-down list. Solid barrier can be in the form of road cutting, solid construction hoarding, acoustic curtain, timber lapped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier and any gaps would compromise the acoustic integrity of the solid barrier.

6. Determine if there are any receivers (both residential and non-residential receivers) within the affected distance for each relevant time period . Consider background noise measurements to check assumption in Step #2 if:

(a) there are many affected receivers and the impact duration at any one receiver is more than 3 weeks; or

(b) there are a few affected receivers and the impact duration at any one receiver is more than 6 weeks.

Note that consideration need to be given to the construction staging plan when determining impact duration.

7. Identify if there are any receivers within the additional mitigation measures distances and identify feasible and reasonable measures at each receiver
8. Where night works are involved, identify sleep disturbance affected distance.
9. Document the outcomes of these steps.

(Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction and Maintenance Noise Estimator should be investigated on a project-by-project

Abbreviation	Measure
N	Notification
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification

Note that spot check verification of noise levels and individual briefings are not required for projects with less than 3 weeks impact duration

Residential receiver

			$L_{Aeq(15minute)}$ noise level above background (L_{A90})											$L_{Aeq(15minute)}$ 75 dB(A) or greater (Highly affected)			Sleep disutrbance L_{Amax} 65 dB(A)
			5 to 10 dB(A)			10 to 20 dB(A)			20 to 30 dB(A)			> 30 dB(A)					
			Noticeable			Clearly audible			Moderately intrusive			Highly intrusive					
		Affected distance (m)	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Affected distance (m)
Undeveloped green fields, rural areas with isolated dwellings	**Day**	55							N, PC, RO	20	75	N, PC, RO	20	75	N, PC, RO	20	75	
	Day (OOHW)	105				N, R1, DR	55	65	N, R1, DR	20	75	N, R1, DR, PC, SN	10	80	N, PC, RO	20	75	
	Evening	155				N, R1, DR	105	60	N, R1, DR	30	70	N, R1, DR, PC, SN	10	80	N, PC, RO	20	75	
	Night	230	N	230	50	N, R2, DR	155	55	N, PC, SN, R2, DR	55	65	AA, N, PC, SN, R2, DR	20	75	N, PC, RO	20	75	270
	Highly Affected	20													N, PC, RO	20	75	
Developed settlements (urban and suburban)	**Day**	70							N, PC, RO	20	75	N, PC, RO	20	75	N, PC, RO	20	75	
	Day (OOHW)	115				N, R1, DR	70	65	N, R1, DR	20	75	N, R1, DR, PC, SN	5	85	N, PC, RO	20	75	
	Evening	180				N, R1, DR	115	60	N, R1, DR	35	70	N, R1, DR, PC, SN	10	80	N, PC, RO	20	75	
	Night	280	N	280	50	N, R2, DR	180	55	N, PC, SN, R2, DR	70	65	AA, N, PC, SN, R2, DR	20	75	N, PC, RO	20	75	330
	Highly Affected	20													N, PC, RO	20	75	

Appendix J

Biodiversity Desktop Search

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are
inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data P
^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry an
Records of Threatened (listed on BC Act 2016) or Commonwealth listed Entities in selected area [N
returned a total of 3,221 records of 79 species.
Report generated on 25/10/2023 4:45 PM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic
Animalia	Amphibia	Myobatrachidae	3116	*Pseudophryne australis*	
Animalia	Amphibia	Hylidae	3166	*Litoria aurea*	
Animalia	Reptilia	Cheloniidae	2004	*Caretta caretta*	
Animalia	Reptilia	Dermochelyidae	2013	*Dermochelys coriacea*	
Animalia	Reptilia	Elapidae	2675	*Hoplocephalus bitorquatus*	
Animalia	Aves	Anseranatidae	0199	*Anseranas semipalmata*	
Animalia	Aves	Columbidae	0021	*Ptilinopus regina*	
Animalia	Aves	Columbidae	0023	*Ptilinopus superbus*	
Animalia	Aves	Apodidae	0334	*Hirundapus caudacutus*	
Animalia	Aves	Diomedeidae	0086	*Diomedea exulans*	
Animalia	Aves	Procellariidae	8684	*Pterodroma leucoptera leucoptera*	
Animalia	Aves	Ardeidae	0197	*Botaurus poiciloptilus*	
Animalia	Aves	Ardeidae	0196	*Ixobrychus flavicollis*	
Animalia	Aves	Accipitridae	0223	*^Erythrotriorchis radiatus*	
Animalia	Aves	Accipitridae	0226	*Haliaeetus leucogaster*	
Animalia	Aves	Accipitridae	0225	*Hieraaetus morphnoides*	
Animalia	Aves	Accipitridae	0230	*^^Lophoictinia isura*	
Animalia	Aves	Accipitridae	8739	*^^Pandion cristatus*	
Animalia	Aves	Burhinidae	0174	*Burhinus grallarius*	
Animalia	Aves	Haematopodidae	0130	*Haematopus longirostris*	
Animalia	Aves	Scolopacidae	0161	*Calidris ferruginea*	
Animalia	Aves	Laridae	0120	*Onychoprion fuscata*	
Animalia	Aves	Laridae	0117	*Sternula albifrons*	
Animalia	Aves	Cacatuidae	8862	*^Calyptorhynchus lathami lathami*	
Animalia	Aves	Psittacidae	0260	*Glossopsitta pusilla*	
Animalia	Aves	Psittacidae	0309	*Lathamus discolor*	
Animalia	Aves	Strigidae	0246	*^^Ninox connivens*	
Animalia	Aves	Strigidae	0248	*^^Ninox strenua*	
Animalia	Aves	Tytonidae	0250	*^^Tyto novaehollandiae*	
Animalia	Aves	Tytonidae	9924	*^^Tyto tenebricosa*	
Animalia	Aves	Meliphagidae	0603	*^Anthochaera phrygia*	
Animalia	Aves	Meliphagidae	0448	*Epthianura albifrons*	

Animalia	Aves	Meliphagidae	0448	*Epthianura albifrons*
Animalia	Aves	Neosittidae	0549	*Daphoenositta chrysoptera*
Animalia	Aves	Artamidae	8519	*Artamus cyanopterus cyanopterus*
Animalia	Aves	Estrildidae	0652	*Stagonopleura guttata*
Animalia	Mammalia	Dasyuridae	1008	*Dasyurus maculatus*
Animalia	Mammalia	Phascolarctidae	1162	*Phascolarctos cinereus*
Animalia	Mammalia	Burramyidae	1150	*Cercartetus nanus*
Animalia	Mammalia	Petauridae	1137	*Petaurus norfolcensis*
Animalia	Mammalia	Pteropodidae	1280	*Pteropus poliocephalus*
Animalia	Mammalia	Emballonuridae	1321	*Saccolaimus flaviventris*
Animalia	Mammalia	Molossidae	1329	*Micronomus norfolkensis*
Animalia	Mammalia	Vespertilionidae	1353	*Chalinolobus dwyeri*
Animalia	Mammalia	Vespertilionidae	1372	*Falsistrellus tasmaniensis*
Animalia	Mammalia	Vespertilionidae	1357	*Myotis macropus*
Animalia	Mammalia	Vespertilionidae	1361	*Scoteanax rueppellii*
Animalia	Mammalia	Miniopteridae	1346	*Miniopterus australis*
Animalia	Mammalia	Miniopteridae	3330	*Miniopterus orianae oceanensis*
Animalia	Mammalia	Otariidae	1543	*Arctocephalus forsteri*
Animalia	Mammalia	Otariidae	1882	*Arctocephalus pusillus doriferus*
Animalia	Mammalia	Balaenidae	1561	*Eubalaena australis*
Animalia	Insecta	Petaluridae	I007	*Petalura gigantea*
Plantae	Flora	Casuarinaceae	8321	*^^Allocasuarina portuensis*
Plantae	Flora	Dilleniaceae	11422	*Hibbertia puberula*
Plantae	Flora	Doryanthaceae	1020	*Doryanthes palmeri*
Plantae	Flora	Elaeocarpaceae	6205	*Tetratheca glandulosa*
Plantae	Flora	Elaeocarpaceae	6206	*Tetratheca juncea*
Plantae	Flora	Euphorbiaceae	9501	*Amperea xiphoclada var. pedicellata*
Plantae	Flora	Fabaceae (Mimosoideae)	15210	*Acacia terminalis subsp. Eastern Sydney*
Fungi	Flora	Hygrophoraceae	F006	*Camarophyllopsis kearneyi*
Fungi	Flora	Hygrophoraceae	F004	*Hygrocybe aurantipes*
Fungi	Flora	Hygrophoraceae	F001	*Hygrocybe austropratensis*
Fungi	Flora	Hygrophoraceae	F007	*Hygrocybe collucera*

Fungi	Flora	Hygrophoraceae	F008	*Hygrocybe griseoramosa*
Fungi	Flora	Hygrophoraceae	F005	*Hygrocybe lanecovensis*
Fungi	Flora	Hygrophoraceae	F002	*Hygrocybe reesiae*
Plantae	Flora	Lamiaceae	3418	^^*Prostanthera marifolia*
Plantae	Flora	Myrtaceae	4067	*Eucalyptus camfieldii*
Plantae	Flora	Myrtaceae	4134	*Eucalyptus nicholii*
Plantae	Flora	Myrtaceae	4163	*Eucalyptus pulverulenta*
Plantae	Flora	Myrtaceae	8907	*Eucalyptus scoparia*
Plantae	Flora	Myrtaceae	6809	*Melaleuca biconvexa*
Plantae	Flora	Myrtaceae	4248	*Melaleuca deanei*
Plantae	Flora	Myrtaceae	4283	*Rhodamnia rubescens*
Plantae	Flora	Myrtaceae	4293	*Syzygium paniculatum*
Plantae	Flora	Poaceae	4895	*Dichanthium setosum*
Plantae	Flora	Proteaceae	9680	*Macadamia integrifolia*
Plantae	Flora	Proteaceae	5458	^^*Persoonia hirsuta*

e only indicative and cannot be considered a comprehensive
Policy may have their locations denatured (^ rounded to 0.1°C;
d Environment. Search criteria : Public Report of all Valid
lorth: -33.82 West: 151.16 East: 151.26 South: -33.92]

Common Name	NSW status	Comm. status	Records	Info
Red-crowned Toadlet	V,P		81	
Green and Golden Bell Frog	E1,P	V	9	
Loggerhead Turtle	E1,P	E	9	
Leatherback Turtle	E1,P	E	2	
Pale-headed Snake	V,P		1	
Magpie Goose	V,P		10	
Rose-crowned Fruit-Dove	V,P		4	
Superb Fruit-Dove	V,P		10	
White-throated Needletail	P	V,C,J,K	4	
Wandering Albatross	E1,P	E	1	
Gould's Petrel	V,P	E	1	
Australasian Bittern	E1,P	E	2	
Black Bittern	V,P		2	
Red Goshawk	E4A,P,2	V	1	
White-bellied Sea-Eagle	V,P		38	
Little Eagle	V,P		3	
Square-tailed Kite	V,P,3		1	
Eastern Osprey	V,P,3		1	
Bush Stone-curlew	E1,P		3	
Pied Oystercatcher	E1,P		3	
Curlew Sandpiper	E1,P	CE,C,J,K	8	
Sooty Tern	V,P		1	
Little Tern	E1,P	C,J,K	3	
South-eastern Glossy Black-Cockatoo	V,P,2	V	4	
Little Lorikeet	V,P		7	
Swift Parrot	E1,P	CE	9	
Barking Owl	V,P,3		2	
Powerful Owl	V,P,3		292	
Masked Owl	V,P,3		3	
Sooty Owl	V,P,3		1	
Regent Honeyeater	E4A,P,2	CE	1	
White-fronted Chat	V,P		1	

White-fronted Chat population in the Sydney Metropolitan Catchment Management Area	E2,V,P		1	
Varied Sittella	V,P		1	
Dusky Woodswallow	V,P		3	
Diamond Firetail	V,P		1	
Spotted-tailed Quoll	V,P	E	7	
Koala	E1,P	E	12	
Eastern Pygmy-possum	V,P		2	
Squirrel Glider	V,P		1	
Grey-headed Flying-fox	V,P	V	1921	
Yellow-bellied Sheathtail-bat	V,P		8	
Eastern Coastal Free-tailed Bat	V,P		11	
Large-eared Pied Bat	V,P	V	3	
Eastern False Pipistrelle	V,P		5	
Southern Myotis	V,P		50	
Greater Broad-nosed Bat	V,P		2	
Little Bent-winged Bat	V,P		25	
Large Bent-winged Bat	V,P		101	
New Zealand Fur-seal	V,P		29	
Australian Fur-seal	V,P		9	
Southern Right Whale	E1,P	E	4	
Giant Dragonfly	E1		1	
Nielsen Park She-oak	E1,3	E	11	
	E1		1	
Giant Spear Lily	V,P		2	
	V		1	
Black-eyed Susan	V	V	2	
	E4	X	1	
Sunshine wattle	E1	E	337	
	E1		1	
	V		1	
	E1		1	
	E1		1	

	E1		1	
	E1		29	
	V		3	
Seaforth Mintbush	E4A,3	CE	4	
Camfield's Stringybark	V	V	4	
Narrow-leaved Black Peppermint	V	V	6	
Silver-leafed Gum	V	V	1	
Wallangarra White Gum	E1	V	1	
Biconvex Paperbark	V	V	1	
Deane's Paperbark	V	V	4	
Scrub Turpentine	E4A	CE	1	
Magenta Lilly Pilly	E1	V	83	
Bluegrass	V	V	1	
Macadamia Nut		V	3	
Hairy Geebung	E1,P,3	E	5	

Appendix K

Protected Matters Search

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. Please see the caveat for interpretation of information provided here.

Report created: 25-Oct-2023

Summary

Matters of National Environment 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:	1
National Heritage Places:	4
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	86
Listed Migratory Species:	68

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 https://www.dcceew.gov.au/parks-heritage/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 Lands:	27
Commonwealth Heritage Places:	3
Listed Marine Species:	94
Whales and Other Cetaceans:	9
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	16
Key Ecological Features (Marine):	None
Biologically Important Areas:	2
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Legal Status
Australian Convict Sites (Hyde Park Barracks)	NSW	Declared property

National Heritage Places		[Resource Information]
Name	State	Legal Status
Historic		
First Government House Site	NSW	Listed place
Governors' Domain and Civic Precinct	NSW	Listed place
Hyde Park Barracks	NSW	Listed place
Indigenous		
Cyprus Hellene Club - Australian Hall	NSW	Listed place

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.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community may occur within area
Coastal Upland Swamps in the Sydney Basin Bioregion	Endangered	Community may occur within area
Eastern Suburbs Banksia Scrub of the Sydney Region	Critically Endangered	Community may occur within area
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community likely to occur within area
Western Sydney Dry Rainforest and Moist Woodland on Shale	Critically Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
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 known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat likely to occur within area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area

Scientific Name	Threatened Category	Presence Text
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
FISH		
Epinephelus daemelii Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat likely to occur within area
Seriolella brama Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area
FROG		
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat likely to occur within area
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area
MAMMAL		

Scientific Name	Threatened Category	Presence Text
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat may occur within area
[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
[Eubalaena australis](#) Southern Right Whale [40]	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
[Notamacropus parma](#) Parma Wallaby [89289]	Vulnerable	Species or species habitat may occur within area
[Petauroides volans](#) Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area
[Petaurus australis australis](#) Yellow-bellied Glider (south-eastern) [87600]	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]	Endangered	Species or species habitat known to occur within area
[Pseudomys novaehollandiae](#) New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
[Pteropus poliocephalus](#) Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
PLANT		

Scientific Name	Threatened Category	Presence Text
Acacia terminalis subsp. Eastern Sydney (G.P.Phillips 126) listed as Acacia terminalis subsp. terminalis MS		
Sunshine Wattle (Sydney region) [91564]	Endangered	Species or species habitat likely to occur within area
Asterolasia elegans [56780]	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 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 Orchid [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
Pimelea curviflora var. curviflora [4182]	Vulnerable	Species or species habitat may occur within area
Prostanthera densa Villous Mintbush [12233]	Vulnerable	Species or species habitat may occur within area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat likely to occur within area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Syzygium paniculatum](#) Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat likely to occur within area
[Thesium australe](#) Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
SHARK		
[Carcharias taurus (east coast population)](#) Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
[Galeorhinus galeus](#) School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes		
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea		
Sooty Shearwater [82651]		Species or species habitat likely to occur within area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat known to occur within area
Diomedea antipodensis		
Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora		
Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans		
Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi		
Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat known to occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Migratory Marine Species		
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may 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

Scientific Name	Threatened Category	Presence Text
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to 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 known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [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.

Commonwealth Land Name	State
Australian National University	
Commonwealth Land - Australian National University [13156]	NSW
Commonwealth Bank of Australia	
Commonwealth Land - Commonwealth Bank of Australia [13158]	NSW
Commonwealth Land - Commonwealth Bank of Australia [14331]	NSW
Commonwealth Trading Bank of Australia	
Commonwealth Land - Commonwealth Trading Bank of Australia [14337]	NSW
Communications, Information Technology and the Arts - Australian Postal Corporation	
Commonwealth Land - Australian Postal Commission [14338]	NSW
Commonwealth Land - Australian Postal Corporation [16021]	NSW
Communications, Information Technology and the Arts - Telstra Corporation Limited	
Commonwealth Land - Australian & Overseas Telecommunications Corporation [13155]	NSW

Commonwealth Land Name	State
Commonwealth Land - Australian Telecommunications Commission [13162]	NSW
Commonwealth Land - Australian Telecommunications Commission [13154]	NSW
Commonwealth Land - Australian Telecommunications Commission [13157]	NSW
Commonwealth Land - Telstra Corporation Limited [14332]	NSW
Defence	
Defence - DEFENCE PLAZA SYDNEY [11179]	NSW
Defence - OXFORD ST SYDNEY [11165]	NSW
Defence - OXFORD ST SYDNEY [11164]	NSW
Defence - OXFORD ST SYDNEY [11167]	NSW
Defence - OXFORD ST SYDNEY [11166]	NSW
Defence - OXFORD ST SYDNEY [11169]	NSW
Defence - OXFORD ST SYDNEY [11168]	NSW
Defence - PARKVIEW BUILDING - SYDNEY [11170]	NSW
Treasury - Reserve Bank of Australia	
Commonwealth Land - Reserve Bank of Australia [13159]	NSW
Commonwealth Land - Reserve Bank of Australia [13160]	NSW
Commonwealth Land - Reserve Bank of Australia [16499]	NSW
Unknown	
Commonwealth Land - [13163]	NSW
Commonwealth Land - [13161]	NSW
Commonwealth Land - [14335]	NSW
Commonwealth Land - [14336]	NSW
Commonwealth Land - [14334]	NSW

Commonwealth Heritage Places		[Resource Information]
Name	State	Status
Historic		
General Post Office	NSW	Listed place
Reserve Bank	NSW	Listed place

Name	State	Status
Sydney Customs House (former)	NSW	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]		Species or species habitat likely to occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea antipodensis gibsoni as Diomedea gibsoni		
Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora		
Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans		
Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi		
Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Himantopus himantopus		
Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area
Hirundapus caudacutus		
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area overfly marine area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat known to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area overfly marine area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area overfly marine area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Rostratula australis as Rostratula benghalensis (sensu lato)		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sterna striata		
White-fronted Tern [799]		Migration route may occur within area
Sternula albifrons as Sterna albifrons		
Little Tern [82849]		Species or species habitat may occur within area
Symposiachrus trivirgatus as Monarcha trivirgatus		
Spectacled Monarch [83946]		Species or species habitat may occur within area overfly marine area
Thalassarche bulleri		
Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri platei as Thalassarche sp. nov.		
Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta		
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche eremita		
Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area overfly marine area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area overfly marine area
Fish		
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Solenostomus paradoxus Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Mammal		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area
Reptile		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Relocation of Grey-Headed Flying-Fox Colony	2008/4646	Controlled Action	Post-Approval
Not controlled action			
Fitout works, 4th Floor, Sydney Customs House, 31 Alfred Street	2004/1449	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Internal Modifications to Reserve Bank of Australia	2008/4431	Not Controlled Action	Completed
Noxious weed removal and controlled burn	2003/1272	Not Controlled Action	Completed
Rabbit Control Anzac Rifle Range	2005/1940	Not Controlled Action	Completed
RBA HOWP 65 Martin Place, NSW	2020/8870	Not Controlled Action	Completed
Redevelopment 60 Martin Place, Sydney, NSW	2015/7490	Not Controlled Action	Completed
Rehabilitation works of the Coogee Sewer Diversion Submain - Maxwell Avenue, Mar	2004/1683	Not Controlled Action	Completed
Supply of a gigabit ethernet connection with associated trenching, boring and ha	2007/3637	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Undertake a controlled burn of the Eastern Suburbs Banksia Scrub at Byrne Cresce	2004/1728	Not Controlled Action	Completed
Not controlled action (particular manner)			
Hyde Park Barracks Proposed New Passenger Lift	2017/7933	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
Breeding program for Grey Nurse Sharks	2007/3245	Referral Decision	Completed
Relocation of Grey-Headed Flying-Fox Colony	2008/4568	Referral Decision	Completed

Biologically Important Areas

Scientific Name	Behaviour	Presence
Dolphins		
Tursiops aduncus		
Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur
Sharks		
Carcharias taurus		
Grey Nurse Shark [64469]	Foraging	Known to occur

Bioregional Assessments

SubRegion	BioRegion	Website
Sydney	Sydney Basin	BA website

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and 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

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

Where little information is available for a 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 detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

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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Please feel free to provide feedback via the Contact us page.

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