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City of Sydney Council
10 Mar 2021

Review of Environmental Factors

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

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Client: City of Sydney Council

ABN: N/A

Prepared by

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Abbreviations

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

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

1.0 Introduction

The City of Sydney propose to deliver a new priority cycleway along Bridge Street, Railway Parade and Henderson Road at Erskineville, Alexandria and Eveleigh as part of the broader Bike Network (the proposal). The new cycleway would comprise an arrangement of bi-directional separated cycleway, shared path, and cyclist priority shared road areas that provides a safer cycle network while maintaining vehicle and pedestrian access.

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

This REF has been prepared by AECOM Australia Pty Ltd (AECOM) on behalf of the City of Sydney for the proposal. The purpose of this REF is to describe the proposal, assesses the potential for the proposal to result in environmental impacts, and to inform the decision to proceed with the proposal. The proposal and associated environmental impacts have been described in the context of clause 228 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), fulfilling the requirements of Section 5.5 of the EP&A Act.

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

1.1 Overview of the proposal

1.1.1 Background

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

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

The aim of the Accelerated Bike Network Program (of which the proposal is a component of) is to action the priorities defined in the *Cycling Strategy and Action Plan,* which includes the delivery a series of projects that provide safe and functional cycling facilities, separated from general traffic and pedestrians. The proposal comprises one of five projects that would deliver separated cycleways throughout the City of Sydney Local Government Area (LGA). It is noted that the Accelerated Bike Network Program would also deliver the Green Square safe route to school connection.

As part of the Accelerated Bike Network Program, the City of Sydney intends to provide a bi-directional separated cycleway in addition to a shared path, and cyclist priority shared road areas along Bridge Street, Railway Parade and Henderson Road at Erskineville, Alexandria and Eveleigh. The proposal seeks to minimise additional infrastructure requirements whilst contributing positively to the safety, functionality and amenity of the streets for people on bikes, and without compromising essential motorised vehicle operations, pedestrian space and the legibility of the street as an urban place. This proposal is the subject of this REF.

1.1.2 Key features of the proposal

The core deliverable of the proposal would comprise the construction a new bi-directional, separated cycleway. The new cycleway would commence immediately north of the intersection of Bridge Street and Ashmore Street in Erskineville. It would travel up the western side of Bridge Street in a northerly direction to the intersection of Bridge Street and Swanson Street. It would then turn and continue along the western side of Railway Parade in a north easterly direction to the intersection with Park Street. From here the cycleway would continue along the northern side of Henderson Road in an eastern direction, terminating at the intersection with Davy Road/Mitchell Road. For the purpose of this report, the linear extent of the new bi-directional, separated cycleway is referred to as the alignment.

Other key features of the proposal that would facilitate or support the construction of the new bi-directional, separated cycleway would include:

- Road and pavement adjustments, including modifications to existing kerb-lines and gutters, footpaths and ramps, a pedestrian crossing and speed humps
- Adjustment of some drainage pits and stormwater pipelines in association with kerb and gutter realignments. All new drainage pits and grating would be 'bike-safe'
- Removal and relocation of parking spaces
- Installation of new or replacement roadside furniture and signage
- Removal of vegetation
- Landscaping
- Relocation or adjustment of utilities and street lighting to suit approved design alignment of the cycleway
- Provision of surface finish to the new cycleway in accordance with City of Sydney specifications
- New line marking on adjacent roads and on the cycleway
- Changed traffic light phasing to provide for cycle phases, where necessary.

1.2 Site analysis

1.2.1 Proposal location and context

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

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

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

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

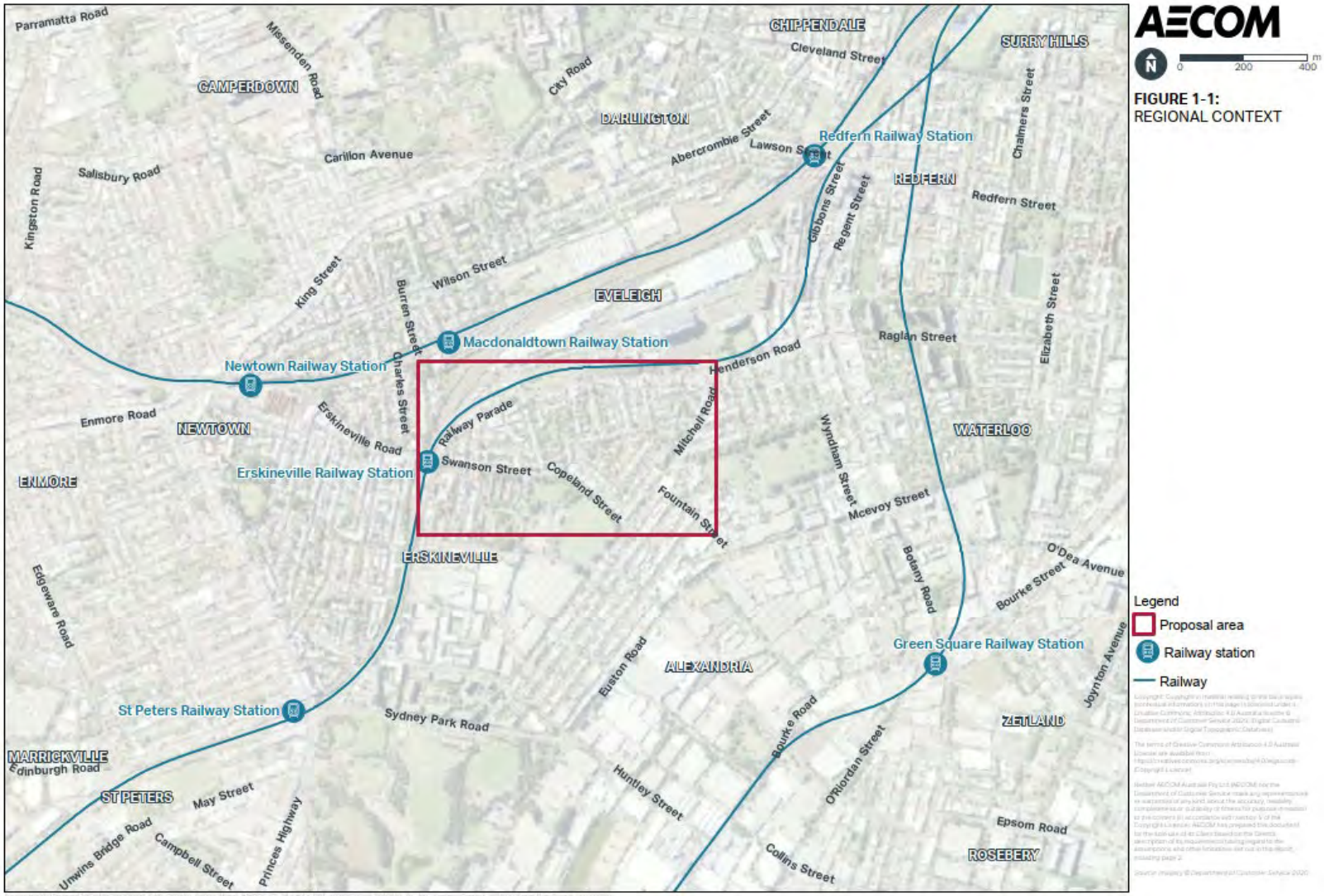

Figure 1-1 Regional context of the proposal

Figure 1-2 proposal footprint

1.2.2 Existing environment and surrounding land uses

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

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

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

Key existing infrastructure within the proposal footprint includes:

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

1.2.3 Existing zoning

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

Adjacent land zones to the proposal footprint comprise the following:

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

1.2.4 Land ownership

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

2.0 Need and options considered

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

2.1 Strategic justification

2.1.1 Overview

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

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

The proposal is part of the Accelerated Bike Network Program, which aligns with both the City's *Cycling Strategy and Action Plan 2018-2030* and the NSW Government's *Sydney City Centre Access Strategy* (discussed in more detail below). The proposal would contribute directly to these strategies by providing an extension of the City of Sydney cycleway network within the suburbs of Erskineville and Alexandria. This would provide safe access for people on bikes into the CBD for work, shopping or recreation.

2.1.2 Relevant policies and strategies

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

2.1.2.1 Sydney City Centre Access Strategy

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

2.1.2.2 Environmental Action 2016 – 2021: Strategy and Action Plan

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

2.1.2.3 Sustainable Sydney 2030 Vision

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

2.1.2.4 Cycling Strategy and Action Plan 2018-2030

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

- Completing the 11 regional bike routes, and substantially complete the local bike network
- Build the regional routes as separated cycleways where feasible and necessary
- Add local wayfinding signs
- Improve safety and access by including measures such as:
    - replacing bicycle shoulder lanes
    - adding new contra-flow provisions
    - lowering speeds and reducing traffic on local streets
    - installing kerb ramps at road closures
    - upgrading stormwater grates to be bike-safe
    - maintaining road surfaces and coordinating with utility authorities where required
    - ensuring regular asset inspections, street cleaning and maintenance of the bike network and associated signage
- Continue to provide bike parking in the public domain where needed and on request, including on-street bike parking corrals in suitable high demand locations, and continue to provide bike racks for public schools in our area
- Provide separated paths on, and alternative routes for, state roads where the City is not currently permitted to reallocate road space
- Investigate and respond to suggestions and comments from our community about the bike network to improve safety, access and comfort
- Advocate to the NSW Government to complete the Sydney City Centre Access Strategy bike network
- Advocate for TfNSW to fully fund their portion of the network and pursue multi-year funding agreements with TfNSW
- Consider all bike network users, including those on cargo bikes, e-bikes, trishaws and mobility scooters, in the design of infrastructure.

2.1.2.5 Sydney Metropolitan Strategy

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

2.1.2.6 Our Greater Sydney 2056, A metropolis of three cities

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

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

2.2 proposal objectives

The key objective of the proposal is to provide a facility for the safe movement of people on bikes through the alignment. A further objective is to also maintain essential traffic operations, pedestrian space and safety, and the legibility of the street as an urban place.

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

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

The proposal would be constructed within the existing road corridor between the existing kerb lines. The proposal would require minimal additional infrastructure and would result in a series of measures that enhance the safety, functionality and amenity of the street for people on bikes, whilst maintaining essential traffic operations, pedestrian space and the legibility of the street as an urban place.

2.3 Alternatives considered

2.3.1.1 Option 1 – 'Do Nothing'

Option 1 would involve no cycleway to be constructed along Bridge Street, Railway Parade and/or Henderson Road. This option would not achieve the proposal objectives, nor would it achieve the City of Sydney's strategic objectives. Therefore the 'Do Nothing' option is not the preferred option.

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

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

2.4 proposal benefits

The *Inner Sydney Regional Bicycle Network Demand Assessment and Economic Appraisal* (AECOM, 2010), found that the key benefit of separated cycleways is the perceived and actual safety they offer to people on bikes. The level of separation between people on bikes and motorists is a key driver in both actual and perceived safety, which in turn is a key driver of demand for cycling.

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

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

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

The proposal would also result in the following specific benefits:

- Improved access and journey time reliability for people on bikes
- Improved integration with public transport through reduced vehicle traffic congestion

- Public transport de-crowding
- Improved equity and accessibility outcomes
- Improved localised economic activity and potential for wider economic benefits beyond the transport sector
- Reduced energy dependence and transport emissions.

3.0 proposal description

Chapter 3.0 describes the proposal in detail and summarises key design features, construction method, timing and duration, site access, ancillary facilities and utility adjustments. The description of the proposal is based on the concept design and is subject to detailed design.

3.1 The proposal

As described in **Section 1.1.2**, the primary feature of the proposal involves the construction and operation of a bi-directional separated cycleway along Bridge Street, Railway Parade and Henderson Road in Erskineville and Alexandria.

The general layout of those elements are illustrated in **Figure 3-1**. To facilitate a more detailed description and assessment, the proposal has been divided into three sections, representing the three blocks through which the cycleway passes. These sections are:

- Bridge Street (between Ashmore Street and Swanson Street)
- Railway Parade (between Swanson Street and Park Street)
- Henderson Road (between Park Street and Mitchell Road).

Details of the works being undertaken in those sections are outlined in the following section. The design drawings are located in **Appendix C**.

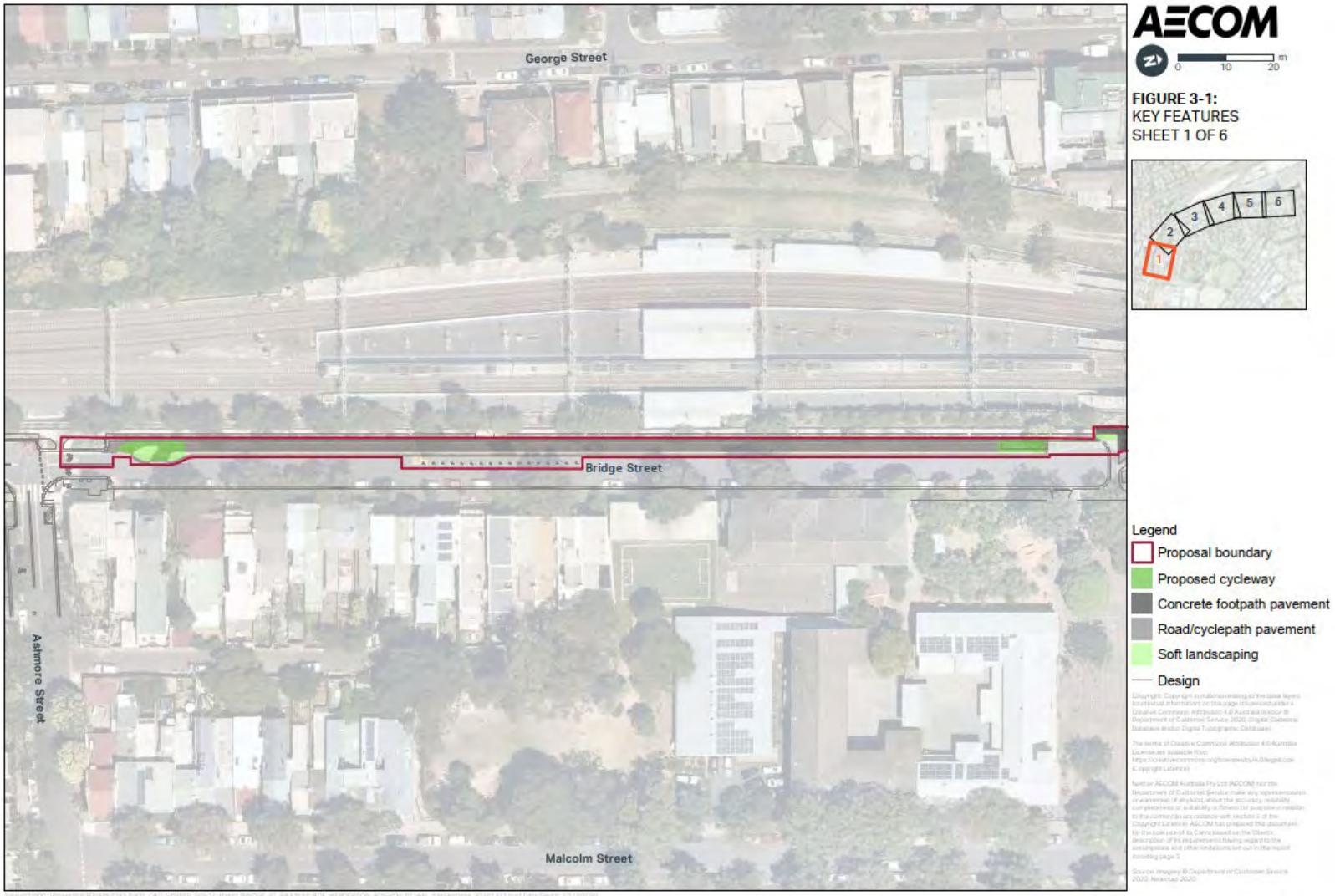

Figure 3-1 Proposed works over the proposal area


Charles Street
Burren Street
Railway Parade
Erskineville Railway Station
Bridge Street
Swanson Street
Sydney Street
Ada Street
Malcolm Street
Ada Lane
AECOM
0 10 20 m
FIGURE 3-1:
KEY FEATURES
SHEET 2 OF 6
1
2
3
4
5
6
Legend
Proposal boundary
Proposed cycleway
Concrete footpath pavement
Road/cyclepath pavement
Soft landscaping
Railway station
Design


AECOM
0
10
20
m
FIGURE 3-1:
KEY FEATURES
SHEET 3 OF 6
1
2
3
4
5
6
Railway Parade
Henderson Road
Clara Street
Ada Street
Park Street
Legend
Proposal boundary
Proposed cycleway
Concrete footpath pavement
Road/cyclepath pavement
Soft landscaping
Design


Explorer Street
Aurora Place
Rowley Street
Station Place
Progress Road
Henderson Road
Newton Street
Brandling Street
AECOM
N
0
10
20
m
FIGURE 3-1:
KEY FEATURES
SHEET 4 OF 6
1
2
3
4
5
6
Legend
Proposal boundary
Proposed cycleway
Road/cyclepath pavement
Soft landscaping
Design

AECOM

N

0 10 20 m

FIGURE 3-1:
KEY FEATURES
SHEET 5 OF 6

Legend

- Proposal boundary
- Proposed cycleway
- Road/cyclepath pavement
- Soft landscaping
- Design


AECOM
0
10
20
m
FIGURE 3-1:
KEY FEATURES
SHEET 6 OF 6
1
2
3
4
5
6
Davy Road
Henderson Road
Mitchell Road
Phillips Street
Lyne Street
Dadley Street
Legend
Proposal boundary
Proposed cycleway
Concrete footpath pavement
Road/cyclepath pavement
Design

3.1.1 Scope of works

Bridge Street (between Ashmore Street and Swanson Street)

Between Ashmore Street and Swanson Street, the following works would be undertaken:

- The removal and resurfacing of around 240 metres of existing road surface, kerb and kerb buildouts on the northern side of Railway Parade
- Potential removal/relocation of existing roadside furniture and streetlights
- Adjustment of underground utilities as necessary resulting from the removal of the above sections of the road surface
- Lane marking within the separated cycleway and lane marking changes throughout the existing road surface
- The removal of existing dragon's teeth and line marking on the road by water blasting
- Soft landscaping at the commencement of the proposed cycleway on Bridge Street
- Installation of honeycomb pavement at the intersection with Swanson Street to indicate a hazard area for vehicles turning within cyclist path of movement
- Removal of three trees at the intersection of Bridge Street and Swanson Street.

Railway Parade (between Swanson Street and Park Street)

Between Swanson Street and Park Street the following works would take place:

- The removal and resurfacing of around 350 metres of existing road surface, kerb and kerb buildouts on the northern side of Railway Parade
- Potential removal/relocation of existing roadside furniture and streetlights including raised platforms and median islands
- Adjustment of underground utilities as necessary resulting from the removal of the above sections of the road surface
- Lane marking within the separated cycleway and lane marking changes throughout the existing road surface
- Installation of speed cushions immediately west of Clara Street
- Soft landscaping along Railway Parade at its intersection with Sydney Lane, Sydney Street, west of Park Street and opposite Clara Street.

Henderson Road (between Park Street and Mitchell Road)

Between Park Street and Mitchell Road the following works would take place:

- The removal and resurfacing of around 600 metres of existing road surface, kerb and kerb buildouts on the northern side of Henderson Road
- Potential removal/relocation of existing roadside furniture and streetlights including kerb island gardens and median islands
- Adjustment of underground utilities as necessary resulting from the removal of the above sections of the road surface
- Lane marking within the separated cycleway and lane marking changes throughout the existing road surface
- Installation of speed cushions immediately west of Newtown Street and Alexander Street
- Construction of driveway layback, kerb-ramps and an informal pedestrian crossing at the intersection of Park Street
- Modifications to existing drainage inlet and grate to match the kerb and gutter level/alignment

- Soft landscaping at numerous locations along Henderson Road.

Figure 3-1 illustrates the scope of works along the Henderson Road section of the proposal.

Landscaping and tree protection

Three trees are anticipated to be removed as part of the proposed works. Roadside plants and groundcover would be removed for the construction of the proposal. Tree protection devices including fencing and trunk protection in the form of a hessian wrap and timber batters would be installed on trees that have been identified being close to the proposed works and at potential risk of damage. Existing sections of kerbs adjacent to any tree roots will not be removed without approval from the City Street Tree Coordinators removal of kerbs adjacent of mature street trees can cause trees to become unstable.

Four Prickly Paperbark (*Melaleuca styphelioides*) trees would be planted as part of the soft landscaping works. Other plant species to be planted as part of the landscaping include Mat Rush (*Lomandra longifolia "Nyalla"*), Star Jasmine (*Trachelospermum jasminoides*), Monkey Grass (*Liriope muscari "Amethyst"*) and Green Mat-Rush (*Lomandra hystrix*).

3.1.2 Construction timing and duration

Subject to approval, construction is anticipated to commence in mid-2021 and take about 3 months to complete. This REF is based on the concept design for the proposal, and refinement of the proposed construction methodology is anticipated to take place following the appointment of the construction contractor. Any future refinements would take place in consultation with the City of Sydney.

Construction staging would be dependent on the construction contractor's preferred methodology, program and sequencing of work. Should the construction contractor's methodology contain substantive departures from that outlined within the REF, further assessment would be undertaken to consider any new or altered environmental or amenity impacts.

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

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

While the majority of work is anticipated to be undertaken during standard approved construction hours, some out of hours works (OOHW) are likely to be required due to the safety concerns of works taking place on or immediately adjacent to major classified roads during daylight hours, such as where works that would be carried out within, or immediately adjacent to Swanson Street and Mitchell Road.

Both Swanson Street and Mitchell Road are classified as State Roads under the *Roads Act 1993*. As such, works in this location are likely to be subject to a road occupancy licence (ROL), and OOHW.

Where OOHW works would be required, they would be carried out Sunday to Thursday from 9:00 pm until 5:00 am.

Generally, the scheduling of noisier activities (such as concrete cutting) will take place around times of higher background noise, prior to 11pm. Additionally, 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.

Work would be carried out taking consideration Section 6 Work practices of the ICNG, work outside normal working 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 includes:

- Air compressor
- Backhoe
- Bobcat
- Concrete agitator
- Concrete saw
- Concrete truck
- Concrete vibrator
- Hand tools
- Water cart
- Jackhammer
- Line marking equipment
- Mini excavator
- Road planner
- Small tip truck
- Vacuum truck
- Vibratory roller
- Wacker packer.

3.1.4 Earthworks

Earthworks would be minor, resulting from removal of the surface layer of the pavement overlaying the proposed separated cycleway alignment, widening and realignment of pavement, bus shelter removal and reinstatement, as well as kerb reconstruction and realignment.

The level of excavation is likely to be limited to less than a metre in most locations, and associated with the installation of garden beds, footings, signage, and the bus shelter foundations. Trench excavations for stormwater drainage would be up to 1.5 metres deep. Small amounts of waste material would be generated from construction activities such as excavation for stormwater infrastructure, replacement of the existing road pavement and kerb and gutter adjustments.

All waste generated from excavation work would be taken to and disposed of at a licensed off-site disposal facility.

3.1.5 Source and quantity of materials

The source and quantity of materials would be determined during the detailed design phase of the proposal and 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

All proposed work sites have easy access to the local road network. Access to the site would therefore use the existing local road network such as Bridge Street, Railway Parade and Henderson Road.

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, and construction plant and equipment.

The traffic generated from the construction phase of the proposal is not anticipated to exceed 10 light vehicles and five heavy vehicles per day during peak construction periods. In addition to the generation of vehicles the proposal would also involve the operation of mobile plant and equipment.

During construction, the ordinary movement of vehicles, people on bikes and pedestrians would be altered. Partial lane closures and pedestrian/cyclist diversions would be in place at each work site. To minimise impacts as far as reasonably practicable, some works would be undertaken outside of peak traffic hours. In addition, traffic management and mitigation measures, as well as appropriately planned construction staging would seek to reduce impacts. Other nearby cycleway construction projects should be considered, and the proposed works should be carried out provided there are no cumulative access barriers created during the time of construction. These items are considered in the following potential impacts from potential traffic and transport access disruptions.

No roads would be completely closed as a result of the construction or operational phases of the proposal.

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

3.1.7 Ancillary facilities

Construction ancillary facilities such as construction compounds are not anticipated to be required for the proposal. Further, there is unlikely to be sufficient space in a location where access is practical for the works to support a full construction compound.

As an alternative, it is anticipated that sections of the proposal footprint would be progressively fenced off as works would take place along the alignment, and that the majority of works would take place behind the fence. An area of about 2 metres by 3 metres (about one parking space) on the side of the road may also be fenced off to accommodate storage of materials, plant and equipment, if required.

Detailed construction planning would be undertaken so that the vehicles, plant and equipment on site are those specifically required for the work that would be taking place on any given day. Where practicable to do so, materials, plant and equipment would be removed from the site following the completion of the workday

3.1.8 Public utility adjustment

The proposal footprint would be anticipated to include electrical transmission lines, telephone lines, water mains and other utility infrastructure. Some public utilities may need to be relocated during construction.

Consultation with public utility authorities would be carried out as part of the development of the detailed design to identify and locate existing utilities and incorporate utility authority requirements for relocations and/or adjustments.

3.1.9 Property acquisition

The proposal would not require the acquisition of any property.

4.0 Statutory and planning framework

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

4.1 Commonwealth legislation

4.1.1 *Environment Protection and Biodiversity Conservation Act 1999*

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

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

4.2 State legislation

4.2.1 *Environmental Planning and Assessment Act 1979*

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

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

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

4.2.2 Other key NSW legislation and regulations

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

Table 4-1 Other NSW legislation applicable to the proposal

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

Applicable legislation	Considerations
Operations Act 1997 **(POEO Act)**	However, in accordance with Part 5.7 of the POEO Act, City of Sydney would notify the EPA of any pollution incidents that occur onsite. This would be managed in the CEMP to be prepared and implemented by the construction contractor.
Roads Act 1993 **(Roads Act)**	The proposal would require works on Ashmore Bridge Street, Railway Parade and Henderson Road (local roads). Section 138 of the Roads Act requires consent from the relevant road authority for the carrying out of works in, on or over a public road. However, Clause 5(1) in Schedule 2 of the Roads Act states that public authorities do not require consent for works on unclassified roads other than a Crown road to exercise the public authority's functions over that road. On this basis, consent from the City of Sydney by way of a Road Occupancy Licence or other form of licence is not required. Notwithstanding, consultation would be carried out with Transport for NSW and the Sydney Transport Management Centre to avoid impacts to traffic flow as far as reasonably practicable.

4.2.3 State Environmental Planning Policy (Infrastructure) 2007

The *State Environmental Planning Policy (Infrastructure)* 2007 (Infrastructure SEPP) is the key environmental planning instrument (EPI) which determines the permissibility of a proposal and how it is assessed under the EP&A Act. Clause 94 of the Infrastructure SEPP allows for the development of 'roads and road infrastructure facilities' by or on behalf of a public authority without consent on any land.

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

Therefore, in accordance with Clause 94 of the Infrastructure SEPP, development consent is not required, and the proposal is designated as 'development without consent' under Division 5.1 of the EP&A Act.

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

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

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

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

The proposal would involve the removal of three trees. This is further discussed in **Section 6.9**.

4.2.5 Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005)

The *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005* (Sydney Harbour Catchment REP) provides a mechanism for protecting the catchment, foreshores, waterways and islands of Sydney Harbour. The Sydney Harbour Catchment REP intends to ensure that Sydney Harbour is a place that can achieve high quality ecological values and be a culturally rich and vibrant place for people. It seeks to balance natural environmental outcomes, with socio-economic objectives.

The key matters for consideration under the Sydney Harbour Catchment REP are:

- Biodiversity, ecology and environment protection.
- Public access to, and use of, foreshores and waterways.
- Interrelationship of waterway and foreshore uses.
- Foreshore and waterways scenic quality.
- Maintenance, protection and enhancement of views.
- Boat storage facilities.
- Floating boat platforms.
- Mooring pens.

The proposal is unlikely to directly affect any of the above key matters for consideration. The proposal may have positive indirect affects including increasing the provision of access for active transport around the City to access foreshores and waterways.

4.3 Local

4.3.1 Sydney Local Environmental Plan 2012

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

Provision description	Relevance to the proposal
Clause 2.3 – Zone objectives and Land Use Tables	The majority of works to be undertaken for the proposal would be carried out on land zoned as R1 General Residential, RE1 General Residential and B4 Mixed Use and is adjacent to an SP2 Infrastructure zone. The proposal is consistent with the objectives of the R1 and SP2 zoned land on which it is located. The proposal would not affect the land use objectives of those zones or surrounding land zones.
Clause 5.10 – Heritage conservation	Clause 5.10 of the Sydney LEP 2012 aims to: • conserve the environmental heritage of Sydney • conserve the heritage significance of heritage items and heritage • conservation areas, including associated fabric, setting and views • conserve archaeological sites • conserve Aboriginal objects and Aboriginal places of heritage significance. Bridge Street and part of Railway Parade is within heritage conservation area 'C24 Erskineville Malcolm Estate heritage conservation area' and 'C4 Malcolm Estate'. The remaining area of Railway Parade and Henderson Road is within heritage conservation area 'C3 Kingsclear Road'. A discussion of impacts to heritage is included in **Section 6.4**.
Clause 5.12 – Infrastructure development and use of existing buildings of the Crown	Clause 5.12 of the Sydney LEP 2012 does not restrict or prohibit the carrying out of any development, by or on behalf of a public authority, which is permitted to be carried out with or without development consent. The proposal would be undertaken by a public authority (City of Sydney) and is permitted without development consent.

4.3.2 Ecologically sustainable development

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

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

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

5.0 Consultation

Chapter 5.0 discusses the consultation undertaken to date for the proposal and the consultation proposed for the future. This chapter discusses the consultation strategy adopted for the proposal and the results of consultation with the community, relevant government agencies and stakeholders.

5.1 Consultation strategy

The consultation strategy for the proposal aims to encourage stakeholder and community involvement and foster interaction between stakeholders, the community and the project team. The consultation strategy has been developed to ensure the community is informed of the proposal and have the opportunity to provide input.

The objectives of the consultation strategy are to:

- Provide accurate and timely information about the proposal and REF process to relevant stakeholders
- Raise awareness of the various components of the proposal and the specialist environmental investigations
- Ensure that the directly affected community is aware of the REF and consulted where appropriate
- Provide opportunities for stakeholders and the community to express their view about the proposal
- Understand and access valuable local knowledge from the community and stakeholders
- Record the details and input from community engagement activities
- Build positive relations with identified community stakeholders
- Ensure a comprehensive and transparent approach.

5.2 Community consultation

As part of the scoping design development for the proposal, City of Sydney undertook consultation for the proposal. This consultation was undertaken for four proposals, including the proposal, all of which included consultation drawings.

The consultation period ran from 20 November − 18 December 2020. The Sydney Your Say web page received 1,461 page views during this period. Overall, 599 submitters provided feedback to the City of Sydney on all four proposals:

- 589 online surveys were completed
- 10 submissions in respondents' own formats.

In the online survey, respondents were asked to provide open-ended feedback on the connections all together, or by separate area.

Respondents to the proposal were primary comprised of residents (54%), bike riders (40%) and workers (19%), noting that some people were in more than one category.

Below is a summary of points made by respondents about all of the connections, grouped by their overall sentiment towards the proposal.

Supportive comments

- There were almost 300 comments made in support of the cycleways, which was the largest group of respondents.
- The largest group of supportive comments were general in nature, expressing enthusiastic support for the initiative(s).

- Cycleways were praised for improving safety and for enabling health and sustainability benefits for people and the environment and increased cycle use.
- Some respondents who supported the cycleways made specific suggestions for further improvements, particularly regarding routes and connectivity.

Unsupportive comments

- Just over 150 comments were made which were critical of, or which did not support the initiative(s).
- The impacts on vehicle traffic was the biggest focus of these comments, in particular, criticism of predicted increased congestion.
- Some made critical points that existing cycleways are not currently used, while others were critical of the visual appearance of the presence of cyclewears.
- Other criticisms included: cyclists don't follow road rules and commonly ride on roads rather than in cycleways that have been provided, on-street parking will be negatively impacted, road space narrowed causing safety risks and inconvenience, a variety of safety aspects that can be improved, cycleways are unnecessary and there is a need to consider pedestrian safety.

Mixed or qualified support

- Just over 100 respondents had qualified support for the cycleways, commonly making specific suggestions for how they could be improved.
- The most commonly made point was criticism over the narrowing of roads which was viewed as contributing to increased congestion.
- Route and design suggestions were also made which were commonly specific in nature and focused on a particular location or aspect. Other specific suggestions were regarding how particular streets are controlled in terms of closures or openings. The visual appearance of cycleways was also important to some respondents.
- Other specific improvement suggestions related to parking, cycleway and footpath widths, and improvements for pedestrians.

5.3 Consultation requirements under the Infrastructure SEPP

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

5.4 Public display

The REF display strategy adopts a range of consultation mechanisms, including:

- Public display of the REF at various locations
- Distribution of a project newsletter at the station, and to local community and rail customers, outlining the proposal and inviting feedback on the REF
- Advertisement of the REF public display in local newspapers with a link to the City of Sydney website that includes a summary of the proposal and information on how to provide feedback
- Consultation with TfNSW and other non-community stakeholders
- 'Pop-up' community information sessions.

Community consultation activities for the proposal would be undertaken during the public display of this REF. The display period of the REF would be advertised in the week that the public display commences. The REF would be displayed for a period of three weeks.

Following the consideration of feedback received during the public display period, City of Sydney would determine whether to proceed with the proposal and what conditions would be imposed on the project should it be determined to proceed.

5.5 Ongoing consultation

At the conclusion of the public display period for this REF, City of Sydney would acknowledge receipt of feedback from each respondent. The issues raised by the respondents would be considered by City of Sydney before determining whether to proceed with the proposal.

Should City of Sydney determine to proceed with the proposal, the Determination Report would be made available on the TfNSW website and would summarise the key impacts identified in this REF, demonstrate how City of Sydney considered issues raised during the public display period, and include a summary of mitigation measures proposed to minimise the impacts of the proposal.

Should City of Sydney determine to proceed with the proposal, the project 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.

6.0 Environmental Impact Assessment

Chapter 6.0 of this REF provides a detailed 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 the proposal would affect the existing environment.

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

6.1 Traffic and transport

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

6.1.1 Existing environment

6.1.1.1 Public transport

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

6.1.1.2 Road network and traffic

The proposal is located in an east-west corridor that connects Erskineville to Eveleigh. Within the proposal area, the main road is Bridge Street, Railway Parade and Henderson Road. Within the proposal area, Bridge Street is a north south road which consists of one lane in each direction although the lanes are not marked. On street parking is available in the southbound direction.

Railway Parade and Henderson Road are east-west roads which consists of one lane in each direction, although the lanes are not marked, and roadside parking lanes on both sides of the road.

6.1.1.3 Access

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

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

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

6.1.1.4 Kerbside use

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

Existing cycle networks are currently located along Bridge Street, Railway Parade and Henderson Road. These existing networks would be modified to suit the proposal described in Section 3.1.

6.1.2 Potential impacts

6.1.2.1 Construction

Road network and traffic

During construction, traffic flows along sections of Bridge Street, Railway Parade and Henderson Road would be temporarily disrupted 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 Bridge Street, Railway Parade and Henderson Road.

The impacts of these disruptions would be minimised through the implementation of traffic control measures during construction. Construction activities could potentially increase road congestion and interfere with the movements of pedestrians along footpaths due to temporary and intermittent closures of footpaths for construction activities. It is not anticipated that the complete closure of the footpath adjacent to the proposal would be necessary and therefore no substantial accessibility impacts are expected.

Construction of the proposal would be planned in coordination with TfNSW Transport Management Centre to ensure that these impacts are minimised. Emergency vehicle access would be maintained at all times during construction, as would rubbish truck access (as necessary).

Access

There are several properties that have driveway access directly from Bridge Street, Railway Parade and Henderson Road within the proposal area. During construction there would be potential short term disruptions for 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 closures of any driveways is proposed.

Local access impacts would be managed in accordance with the TMP, as discussed in **Section 6.1.3**. On this basis access impacts are considered to be minor and short term.

Kerbside use

The proposal would result in changes to the existing kerbside use along Bridge Street, Railway Parade and Henderson Road including on street parking. The existing cycle networks currently located along Bridge Street, Railway Parade and Henderson Road would be modified to suit the proposal described in **Section 3.1**.

The existing kerbside parking spaces along Bridge Street, Railway Parade and Henderson Road would be retained throughout the construction however disruptions to parking availability would occur. It should be noted that while parking spaces may be lost during the construction period of the proposal, these disruptions would be intermittent as works would progressively follow the proposed cycleway route along Bridge Street, Railway Parade and Henderson Road.

The proposal would result in temporary changes for pedestrians to the existing kerbside use along, Bridge Street, Railway Parade and Henderson Road during construction. Access for pedestrians crossing at Bridge Street and Swanson Street, Railway Parade and Park Street, Henderson Road and Progress Road, Henderson Road and Brandling Street and Henderson Road and Alexander Street would be diverted to allow for the construction of the footpath widening.

6.1.2.2 Operation

Road network and traffic

The proposed lane configurations along Bridge Street, Railway Parade and Henderson Road (with the cycleway in operation) have been designed to accommodate the additional traffic volumes associated with the implementation of the projects outlined in the Access Strategy. The proposal would continue to support the safe and functional use of Bridge Street, Railway Parade and Henderson Road as a key public transport priority corridor whilst achieving the proposal objectives of prioritising people on bikes and meeting current and future community needs.

It is noted that the construction of the pop-up cycleway required the restriction of Railway Parade to one-way only between Park Street and Swanson Street, with eastbound traffic being diverted. This

has resulted in increased demand on other roads within the local network, with traffic diverting to other local roads such as Swanson Street and Park Street. The City of Sydney is currently investigating additional treatments of roads in this area to mitigate the effect of this additional traffic and to improve local amenity generally.

Access

The proposal would provide a positive operational impact by connecting people on bikes directly to other existing parts of the cycleway network, as outlined in the Access Strategy.

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

Kerbside use

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

New signposting would advise motorists and other road users of the Bridge Street, Railway Parade and Henderson Road Cycleway. Furthermore, existing taxi and loading zones would be retained and impacts to these zones during the operation of the proposal are unlikely.

6.1.3 Mitigation measures

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

- During construction, appropriate traffic management measures would be implemented and maintained such as temporary speed restrictions, precautionary signs, illuminated warning devices, manual and/or electronic traffic controls.
- During construction, arrangements would be made to ensure access to businesses and other commercial or residential premises adjacent to construction areas would be maintained where possible.
- During construction, affected businesses and the occupants of other commercial and residential premises would be notified in relation to any temporary access restrictions or limitations.
- Business owners and residents would be informed of changes in kerbside use, including the permanent loss of or change in existing loading and on-street parking spaces.
- Road occupancy licences would be obtained from TfNSW Transport Management Centre for construction activities.
- A cyclist communication strategy would be implemented that would include establishing information signs and maps to inform people on bikes of changes to cycleways within the city centre.

6.2 Noise and vibration

A noise and vibration assessment were produced for the Bridge Street, Railway Parade and Henderson Road Cycleway using the RMS noise calculator tool.

6.2.1 Existing environment

The NSW DECC (2009) has prepared an Interim Construction Noise Guideline (ICNG) that has been developed to assist with the management of noise impacts, rather than to present strict numeric noise criteria for construction activities. **Table 6-1** is taken from the ICNG and presents noise management levels (NMLs) for noise at sensitive receivers and how they should be applied.

Table 6-1 Construction noise management levels – Residential receivers (from the ICNG)

Time of day	Construction noise management level $L_{Aeq,15min}$	How to apply
Recommended standard hours: • Monday to Friday 7am to 6pm • Saturday 8am to 1pm • No work on Sundays or public holidays	Noise affected RBL + 10 dB(A)	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured $L_{Aeq,15\ min}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. The proponent should also inform all potentially affected residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75 dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: • times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences • if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise affected RBL + 5 dB(A)	• A strong justification would typically be required for works outside the recommended standard hours • The proponent should apply all feasible and reasonable work practices to meet the noise affected level • Where all feasible and reasonable practices have been applied and noise is more than 5 dB(A) above the noise affected level, the proponent should negotiate with the community • For guidance on negotiating agreements see Section 7.2.2 of the ICNG.

Notes:

1 Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 metres above ground level. If the property boundary is more than 30 metres from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 metres of the residence. Noise levels may be higher at upper floors of the noise affected residence.

The recommended standard hours for construction works prescribed by the ICNG are as follows:

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

As discussed in Section 3.1.1; the proposal would involve work being carried out during standard hours. Some out of hours works (OOHW) is likely to be required due to the safety concerns of works taking place on or immediately adjacent to major classified roads during daylight hours.

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*. As the project is a road infrastructure project using standard construction equipment and methodologies, the RMS Construction Noise Estimator Tool was deemed appropriate for the assessment of noise impacts.

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

It should be noted that works during sensitive times would be intermittent, as works would progressively follow the proposed cycleway route along Bridge Street, Railway Parade, Henderson Road.

The following sensitive receivers have been identified in close proximity to the work and therefore would have the highest potential to be affected:

- Residential receivers on Bridge Street, Railway Parade and Henderson Road
- Commercial receivers on Railway Parade and Henderson Road
- Erskineville Public School - about 10 metres east of the proposed works on Bridge Street.

6.2.2 Potential impacts

6.2.2.1 Construction

A distance-based (scenario) assessment type was selected for this proposal to assess the construction noise impacts. The assessment is presented in **Appendix D**. As the nosiest activity in the proposal, the ‘paving and asphalting’ scenario, was used in the assessment to determine noise impacts. ‘R3’ background noise environment was selected based on the existing traffic volumes in this location.

The table below provides the background noise levels (also referred to as Rating Background Level (RBL)) and noise management levels.

Table 6-2 Noise Area Category Table

Noise Area Category		R3 (dB)
RBL or LA90[1] Background level (dB(A))	Day	50
	Evening	45
	Night	40
LAeq(15minute) Noise Management Level[2] (dB(A))	Day	60
	Day (OOHW)	55
	Evening	50
	Night	45

Based on the assessment, it has been determined that construction noise may be audible within a 180 metre radius of the proposed works. Within the assessment, two noise catchment areas (NCAs) were defined based on proximity to proposed works. NCA1 captures areas within a catchment of 35 metres to the proposal area, while NCA2 captures areas between 35 to 180 metres from the proposal area.

The results below show the noise management levels (NML, dB(A)) for day and evening works, which are based on noise background levels from a R3 background noise environment. These are presented

against predicted noise levels based on distance to the paving and asphalting equipment noise (dB(A)). The results of the construction noise assessment also propose certain mitigation measures to adopt.

The results of the construction noise assessment are summarised below.

Table 6-3 Catchment distances affected by construction noise

Catchment distances [Commercial receiver in square brackets]	Day		
	NML, dB(A)	Predicted noise levels, dB(A)	Recommended additional mitigation measures
NCA1 [Commercial] (20m) – in line of sight	60	75	**N**, PC, RO
NCA1 (20m) – in line of sight	60	75	**N**, PC, RO
NCA1 (35m) – in line of sight	60	70	**N**

Catchment distances [Commercial receiver in square brackets]	Night		
	NML, dB(A)	Predicted noise levels, dB(A)	Recommended additional mitigation measures
NCA1 (35m) – in line of sight	45	70	AA, **N**, PC, SN, R2, DR
NCA2 (35m) – behind rows of buildings	45	60	**N**, PC, SN, R2**,** DR
NCA2 (115m) – behind rows of buildings	45	50	**N**, R2, DR
NCA2 (180m) – behind rows of buildings	45	45	**N**

Not all additional mitigation methods have been applied to the proposal. Based on a review of additional mitigation measures and their application to the proposal, the additional mitigation measures 'N' (in bold text) are recommended to apply to this proposal. As described above, works during sensitive times would be intermittent and would progressively follow the proposed cycleway route along Bridge Street, Railway Parade and Henderson Road. Respite periods as recommended by the noise estimator tool would therefore be counterproductive for this proposal as sensitive receivers affected by construction works would change when works are required outside of standard hours.

These are defined below in **Section 6.2.3**.

6.2.2.2 Vibration

Sources of ground vibration associated with the proposal were expected to be minor. Some potential for ground vibration exists where vibration intensive equipment such as vibratory rollers, jackhammers or 'wacker packers' are required during demolition activities. However, the proposed equipment would be small in size and construction periods would be short.

Table 6-4 provides a guide for recommended safe working distances for typical vibration intensive plant and equipment. These safe working distances presented apply to cosmetic damage of typical buildings under typical geotechnical conditions.

Table 6-4 Recommended Safe Working Distances for Vibration Intensive Plant

Plant type	Specification	Safe working distance		
		Cosmetic Damage (BS 7385) (metres)	Cosmetic damage (DIN 4150) Heritage and other sensitive structures (metres)	Human Response (BS 6472) (metres)
Vibratory roller	1 – 2 tonnes	5	14	15 – 20
	2 – 4 tonnes	6	16	20
	4 – 6 tonnes	12	33	40
Small hydraulic hammer	5 – 12 tonne excavators	2	2	7
Jackhammer / 'Wacker Packer'	Hand held	1 (nominal)	-	Avoid contact

Source: TfNSW Construction Noise Strategy, 2012

Vibration effects would be dependent on the type of machinery used and proximity to certain types of buildings.

6.2.2.3 Operation

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

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

6.2.3 Mitigation measures

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

- 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:

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

- Specific additional mitigation measurements as identified in the noise assessment:
  - **Notification (N) -** Letterbox drops for receivers within a 180 m radius. Notifications should detail work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone number. Notification would be sent a minimum of 7 calendar days prior to the start of works
- Prepare a construction noise and vibration management plan (CNVMP). The CNVMP would:
  - map the sensitive receiver locations including residential properties.
  - a work program developed in consultation with TfNSW that would manage night noise impacts.
  - include safeguards and management measures to manage out of hours working.
  - 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 safeguards and management measures.

- Work is to be restricted to standard working hours and where possible, noisy work should be undertaken during less sensitive periods
- Affected receivers would be notified ahead of time of the likely activities, noise impacts and duration of this work.
- Nearby receivers would be notified of any work in advance of the start of construction. This is essential for residential receivers potentially affected by night time work.
- A community complaints phone number would be established and advertised prior to works commencing and be available during work periods. The community complaints line would be established for any complaints or queries regarding construction.
- Plant would be turned off when not in use.
- The work site would 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 would be considered, rather than traditional beeper styles.
- The use of equipment or methods that generate impulsive noise, particularly during night time hours would be avoided. These include dropping materials from a height, loading/unloading of trucks and metal on metal contact.
- Make the construction program available to the community and ensure it is routinely updated as works progress.

6.3 Landscape and visual

6.3.1 Existing environment

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

Changes to the existing visual landscape of the proposal area would be noticeable to a range of permanent and temporary receivers. Permanent receivers include occupants of the range of buildings flanking Bridge Street Railway Parade and Henderson Road, with occupants being residents, workers and frequent visitors of those buildings. Temporary receivers include pedestrians, occupants of vehicles, people on bikes, customers of the few food premises and businesses along Henderson Road and visitors to the area.

6.3.2 Potential impacts

6.3.2.1 Construction

The construction of the proposal would temporarily change the appearance of Bridge Street Railway Parade and Henderson Road as the works progress. This change would arise via the introduction of:

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

While there are properties along Bridge Street, Railway Parade and Henderson Road that are subject to construction works, construction activities are not a component of the street that are considered to contribute to its character and appearance. The sight of construction works, which includes various barriers to restrict public access would be obvious to both permanent and visual receivers. However, construction as a result of the proposal would not form a permanent visual component of the streetscape and is temporary in nature. Given the works would be temporary and suitable mitigation measures would be implemented, the impact of construction works upon the visual landscape of Bridge Street Railway Parade and Henderson Road is considered to be 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, particularly building uses closer to street levels. The light generated from those towers, although focused and directed to the ground level, would be visible from occupancies on higher levels of the buildings flanking Bridge Street, Railway Parade and Henderson Road. The effect of the lighting would reduce the higher the occupancy is located from the street. As Bridge Street, Railway Parade and Henderson Road already feature lighting at night in the form of streetlights, traffic lights, vehicle head lights and light spill from street-level premises the lighting towers would not substantially alter existing conditions. As such, the overall effect of the lighting towers is considered to be a minor, negative impact.

6.3.2.2 Operation

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

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

- Introduction of street trees and street furniture
- Widened footpaths.

The introduction of the cycleway and other street components would permanently change the visual appearance of the proposal area. Changes to the visual amenity of the proposal area are considered to have a negligible impact as the new road elements would generally fit within the existing urbanised street environment and are not visually intrusive. Over time, the perceived newness of the proposal would recede and blend more consistently with unchanged streetscape elements.

The proposal would also result in minor benefits to the visual environment. The lack of parked vehicles would reduce visual clutter within the streetscape and would provide extended sight lines for pedestrians, people on bikes and drivers. This would act to draw attention more to the built environment, including buildings and the street environment itself. The presence of the cycleway may also encourage a shift in transport modes used for works and residents in this area towards cycling. This would further reduce the number of vehicles and improve the overall streetscape.

Street trees provide environmental quality, enhance visual continuity and unity, and reinforce local identity and character. Further, street furniture and elements form an integral part of the public domain identity, reinforce the public domain character, provide important amenities for pedestrians and add functionality and vitality to the public realm.

The introduction of additional street trees and street furniture, as well as a potential reduction in vehicle volumes along Bridge Street, Railway Parade and Henderson Road is considered to have an overall minor, positive visual impact upon the proposal area.

6.3.3 Mitigation measures

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

- Construction lighting is to be positioned such that light spill on neighbouring properties is minimised and that it is turned off when not in use and safe to do so
- The layout, directional positioning and types of lighting selected to minimise impacts are to be specified by the construction contractor in the CEMP
- A high level of housekeeping will 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
- Groundcover disturbed during construction will be re-established as soon as practical
- Waste materials must be removed from site regularly
- Design of new elements will be designed in accordance with *Sydney Streets Code* (City of Sydney, 2013) as applicable.

6.4 Non-Indigenous heritage

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

6.4.1 Existing environment

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

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

Heritage items identified in Table 6-5 were found within a one kilometre buffer of the proposal area. The items are shown in Figure 6-1.

Table 6-5 Heritage items surrounding the proposal area

Item	Address	Listing	Significance	Location relative to the proposal
Greater Eveleigh Railway Precinct	Henderson Road	106189	National (Australian Heritage Database).	North of the proposal area where it connects to Davy Road.
Pressure Tunnel and Shafts	Item is located below ground across multiple locations between the suburbs of Potts Hill and Waterloo	01630	State	Under a section of Railway Parade, between Sydney Street and Clara Street
Enginemans Resthouse	39 Brandling Street, Alexandria	SHR 5001229 Sydney LEP Item No. I1846	State	65 metres south of the proposal area
Erskineville Public School	13 Swanson Street, Erskineville	S170 5065803 Sydney LEP Item No. I626	State (Section 170)	10 metres east of the proposal area
Erskineville Public School – Buildings B00B and B00C	13 Swanson Street, Erskineville	S170 5065779	State (Section 170)	10 metres east of the proposal area
Erskineville Railway Station Group	Swanson Street, Erskineville	S170 4801158 Sydney LEP Item No. I625	State (Section 170)	10 metres west of the proposal area
Alexandria Park heritage conservation area	Henderson Road (incl. no. 12), Wyndham St (incl. nos. 118-120),	Sydney LEP Item No. C1	Local	15 metres east from the proposal area

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

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

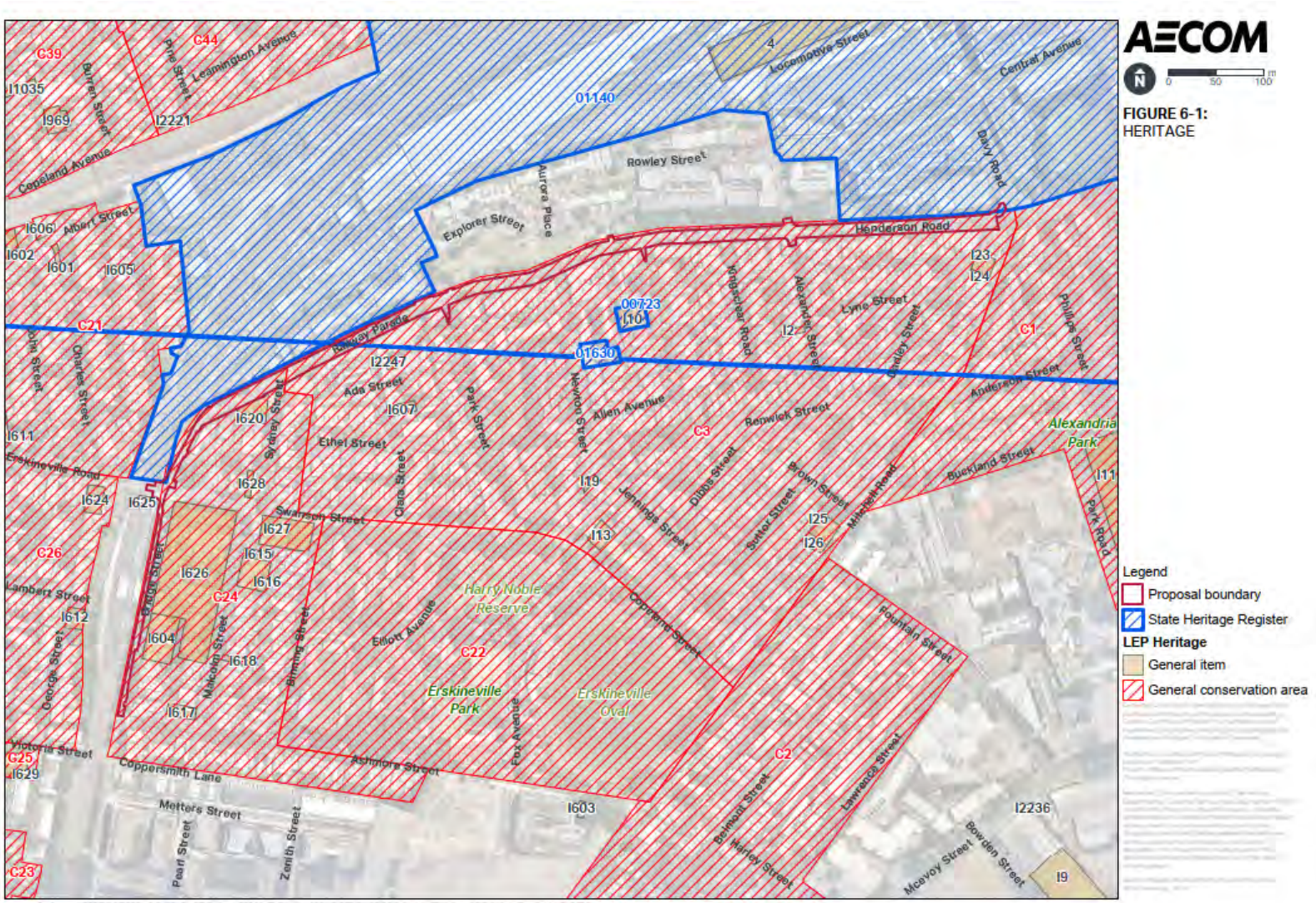

Figure 6-1 Non-Indigenous heritage items nearby the proposal area

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

6.4.2 Potential impacts

6.4.2.1 Construction

Heritage items located adjacent to the proposal area are likely to experience indirect impacts as a result of the proposed construction activities.

High rates of urbanisation and modification have resulted in both surface and building disturbance throughout the proposal area and has significantly reduced the potential for AAP to be present. It is not anticipated that there would be any significant impacts upon AAP.

The impacts to non-Indigenous heritage items are summarised in Table 6-7 and detailed in the following section.

For the purpose of this assessment, impacts on heritage are identified as either:

- Direct impacts – resulting in the demolition or alteration of fabric of heritage significance
- Indirect impacts – resulting in changes to the setting or curtilage of heritage items or places, historic streetscapes or views.

Specific terminology and corresponding definitions are used in this assessment to consistently identify the magnitude of the project's direct, indirect or potentially direct impacts on heritage items or archaeological remains. The terminology and definitions are based on those contained in guidelines produced by the International Council on Monuments and Sites (ICOMOS) and are shown in Table 6-6**.**

Table 6-6 Terminology for assessing the magnitude of heritage impact

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

Table 6-7 Potential construction impacts to heritage items as a result of the proposal

Heritage Item	Significance	Description	Heritage impact assessment
Greater Eveleigh Railway Precinct	National (Australian Heritage Database)	This place is important as it contains Australia's largest railway workshop which in part is still functioning after 120 years of continuous use. It is the place that produced Australia's first steam locomotive. The Eveleigh Railway Yards are some of the finest historic railway engineering workshops in the world and Eveleigh contains one of the most complete late 19th century and early 20th century forge installations, collection of cranes and power systems, in particular the hydraulic system. The place is of international significance and is one of Australia's finest industrial heritage items. The value of the place is increased by the fact that it is comprised of assemblages, collections and operational systems rather than individual items. Conversely, the significance has been reduced by its closure, relocation of some machinery and its disassociation from the operating rail network. The precinct contains all current and former railway land at Eveleigh, including Eveleigh Railway Workshops, Eveleigh Carriage Workshops, Alexandria Goods Yards, Macdonaldtown Carriage Sheds, Redfern Station and Main Western Line.	There would be no direct impacts to this heritage item as the significant items located within this Precinct would be outside of the proposal area. Indirect impacts to the heritage item are therefore anticipated to be minor. There is potential for the item to experience vibration levels above the cosmetic damage screening criteria as a result of construction activities including utility and road furniture relocation. Further condition assessment of the heritage item and vibration monitoring (if required) will be conducted. Furthermore, the works would be restricted to the kerbside of Henderson Road and Davy Road which have been previously disturbed and upgraded.

Heritage Item	Significance	Description	Heritage impact assessment
Pressure Tunnel and Shafts	State	Beginning at Potts Hill, the tunnel passes under the suburbs of Chullora, Bankstown, Enfield, Canterbury, Ashfield, Petersham, Marrickville, Erskineville, and Waterloo at a depth below ground level varying for 15m to 67m beneath high ground at Ashfield. Its maximum grade is 1 in 100, and its minimum is 1 in 2000. Its total length is approximately 16 kilometres.	This item is located under a section of Railway Parade, between Sydney Street and Clara Street. Direct and indirect impacts top this heritage item are unlikely as the tunnel would be about 15 m to 67 m below ground level and excavation depth for the proposal are expected to be at a maximum of 1.5 m below ground level.
Enginemans Resthouse	State	The Eveleigh workshops group, adjacent to this site had a major locomotive depot for the storage and servicing of running steam locomotives. For such depots it was normal practice to have a nearby "barracks" building to accommodate engine drivers between shifts. In 1902 the Railway Commissioners resumed land in Brandling Street and built a large two-storey building of an expanded domestic design with numerous bedrooms. The building has been used by the SRA's fire protection services in recent years, and remains little altered from its original appearance and layout. It is the largest of the few surviving railway barracks buildings in the State.	There would be no direct impacts to this heritage item as it is not located within the proposal area. Indirect impacts to the heritage item are anticipated to be minor. Indirect impacts to the heritage item are considered to be minor. There is potential for the item to experience vibration levels above the cosmetic damage screening criteria as a result of construction activities including utility and road furniture relocation. Further condition assessment of the heritage item and vibration monitoring (if required) will be conducted.

Heritage Item	Significance	Description	Heritage impact assessment
Erskineville Public School	State (Section 170)	Erskineville Public School has local historic, social and aesthetic significance. It has historical significance as one of the first large schools built as a result of the Public Instruction Act 1880 and an example of the large schools that were built in densely populated areas and designed to be an impressive expression of the status and value of government education. The 1880s building has significance as being a good example of a Victorian Free classical style school, which is a local landmark and as an important streetscape element along Erskineville Road / Swanson Street. It is an example of the work of C Blackmann and Varney Parkes.	There would be no direct impacts to this heritage item as it is not located within the proposal area. Indirect impacts to the heritage item are anticipated to be minor. Indirect impacts to the heritage item are considered to be minor. There is potential for the item to experience vibration levels above the cosmetic damage screening criteria as a result of construction activities including utility and road furniture relocation. Further condition assessment of the heritage item and vibration monitoring (if required) will be conducted.
Erskineville Public School – Buildings B00B and B00C	State (Section 170)	As above	There would be no direct impacts to this heritage item as it is not located within the proposal area. Indirect impacts to the heritage item are anticipated to be minor. Indirect impacts to the heritage item are considered to be minor. There is potential for the item to experience vibration levels above the cosmetic damage screening criteria as a result of construction activities including utility and road furniture relocation. Further condition assessment of the heritage item and vibration monitoring (if required) will be conducted.

Heritage Item	Significance	Description	Heritage impact assessment
Erskineville Railway Station Group	State (Section 170)	Erskineville Railway Station is of aesthetic significance as a cohesive group of standard Federation period railway station structures, the overhead booking office being particularly rare for its level of intactness. The footbridge was identified as an item of high heritage significance in the 2016 'Railway Footbridges Heritage Conservation Strategy'. The footbridge deck support and substructures are intact, as are the stair railings and newel posts to Platform 4. It is a good representative example of a standard RSJ footbridge design that contributes to Erskineville Station precinct. It is unusual that the footbridge is contemporary with the other station buildings and structures, as often footbridges were constructed sometime after the original station construction period. The Overhead Booking Office at Erskineville was identified as the best example of a Federation Queen Anne style OHBO in the 2014 'Railway OHBO Heritage Conservation Strategy' and of potential state significance. The overhead booking office has aesthetic significance as part of a cohesive group of standard Federation period railway station structures, representative of urban station design in the early twentieth century. The overhead booking office is particularly rare for its level of intactness.	There would be no direct impacts to this heritage item as it is not located within the proposal area. Indirect impacts to the heritage item are anticipated to be minor. There is potential for the construction of the new cycleway to cause vibration levels above the cosmetic damage criteria as a result of construction activities. Further condition assessment of the heritage item and vibration monitoring (if required) will be conducted.

Heritage Item	Significance	Description	Heritage impact assessment
Alexandria Park heritage conservation area	Local	The Alexandria Park Conservation Area is significant for its ability to demonstrate the growth of the municipality of Alexandria in the second half of the nineteenth century and the first half of the twentieth century. The area developed in association with the industrial growth of Waterloo and the establishment of the Eveleigh Railway and Goods Yards, providing housing for workers. The housing stock reflects successive subdivisions of the Coopers freeholds and Park View Estate. The industrial development illustrates a later overlay reflecting the growing importance of the area as an industrial centre in the early twentieth century. Alexandria Park provides a focus for the community.	There would be no direct impacts to this heritage conservation area as it is not located within the proposal area. Indirect impacts to the heritage item are anticipated to be minor. Indirect impacts to the heritage item are considered to be minor. There is potential for the item to experience vibration levels above the cosmetic damage screening criteria as a result of construction activities including utility and road furniture relocation. Further condition assessment of the heritage item and vibration monitoring (if required) will be conducted.
Kingsclear Road heritage conservation area	Local	The Kingsclear Road Heritage Conservation Area has historic significance as a Victorian small lot subdivision that developed in association with the Eveleigh Railway Yards. The area predominantly comprises a range of one and two storey working class housing of the Victorian period including terraces, cottages and shops, together with development of Federation and inter-war periods. The industrial development illustrates a later overlay reflecting the growing importance of the area as an industrial centre in the early twentieth century. It comprises a diverse range of development predominantly residential, reflecting the major stages of development, namely the original grants, the subdivision of various estates in the late nineteenth century, consolidation in the early twentieth century. The surviving Victorian building stock comprises predominantly one and two storey terrace houses,	The heritage value mainly pertains the area's Victorian and Federation architecture as well as Inter-war buildings including public housing, industrial buildings, a hotel and several public buildings near the railway station. There would be minor to negligible direct impacts to this heritage area as works are only limited to the footpath and kerbside structures. Works pertaining to the footpath located on the corner of Park and Swanson street would exercise caution in proximity to shop buildings and the Kurrajong Hotel. Indirect impacts to conservation area are considered to be minor. There is potential for nearby buildings to

Heritage Item	Significance	Description	Heritage impact assessment
		shops and cottages, with some later (Federation period) terraces and shops of a similar scale and form. Inter- war period development includes public housing, industrial buildings, a hotel and several public buildings near the station. The area includes a former nursery.	experience vibration levels above the cosmetic damage screening criteria as a result of construction activities including utility and road furniture relocation. Further condition assessment of the heritage item and vibration monitoring (if required) would be completed.
Terrace group including interiors and front fencing	Local	91-105 Railway Parade has local historic and aesthetic significance. It is a representative example of a Victorian terrace that makes a positive contribution to the streetscape.	There would be no direct impacts to this heritage item as it is not located within the proposal area. Indirect impacts to this heritage item are anticipated to be minor. The installation of new road furniture in close proximity to the buildings awning could result in indirect damage to the heritage item. The replacement of kerbs and the removal of a tree in close proximity to the heritage item could also cause some indirect impacts to the building. There is also potential for the construction of the new cycleway to cause vibration levels above the cosmetic damage criteria as a result of construction activities. Further condition assessment of the heritage item and vibration monitoring (if required) will be conducted.

Heritage Item	Significance	Description	Heritage impact assessment
Terrace group including interiors and front fencing	Local	The terraces at 1-5 Bridge Street and 7-10 Bridge Street are significant as a good examples of the Victorian Italianate style (matching those at 6-18 Malcolm Street), with some echoes of the Victorian Regency style, which have unusual and ornate detailing, particularly the arcaded verandas set behind the line of the front parapet. They were built in 1889 by the Imperial Land and Building Deposit Company possibly using the company architects William Martin or Frederick Moorehouse. The terrace at No 6 is a representative example of a single storey Federation period terrace. Collectively the terraces at 1-10 Bridge Street make a strong contribution to the streetscape.	There would be no direct impacts to this heritage item as it is not located within the proposal area. Indirect impacts to the heritage item are anticipated to be minor. Indirect impacts to the heritage item are considered to be minor. There is potential for the item to experience vibration levels above the cosmetic damage screening criteria as a result of construction activities including utility and road furniture relocation. Further condition assessment of the heritage item and vibration monitoring (if required) will be conducted.
Erskineville Estate heritage conservation area	Local	The Conservation Area is of local historical significance for being dedicated as Macdonald town Park in 1885 and for the later development of the western section of the park for the Erskineville Housing Scheme. The housing scheme was in response to the Housing Improvement Act of 1936 and 1937 and was an important precursor to work undertaken later by the NSW Housing Commission in the post World War II period. The housing scheme is rare example of public housing erected during the inter - war period and the only major scheme to have been built by the Housing Improvement Board. The Erskineville Housing Scheme has important associations with prominent and influenctial architects, and is a reflection of inter-war attitudes to social issues and concepts. Similarly, the Lady Gowrie Child Centre, which has close visual and historical connections with the	There would be no direct impacts to this heritage conservation area as it is not located within the proposal area. Indirect impacts to the heritage item are anticipated to be minor. Indirect impacts to the heritage item are considered to be minor. There is potential for the item to experience vibration levels above the cosmetic damage screening criteria as a result of construction activities including utility and road furniture relocation. Further condition assessment of the heritage item and vibration monitoring (if required) will be conducted.

Heritage Item	Significance	Description	Heritage impact assessment
		Erskineville Scheme, remains as Sydney's example of the six centres built in the Australia's six capitals in the 1930 and provides evidence of the attitudes towards the care of children in the inter-war period. Erskineville Park has high local aesthetic and social significance as an active and passive open space in the area and is integral to the surrounding streetscape. It also provides a civic focus.	
Erskineville Malcolm Estate heritage conservation area.	Local	The Malcolm Estate Heritage Conservation Area has historic significance as a substantially intact subdivision developed as a working class residential community in the late Victorian period. It contains a mix of mid to late Victorian and Federation terraces, semi-detached and freestanding houses, and a few shop buildings, of one and two storey scale (with few exceptions) and differing construction materials (rendered brick, face brick, the occasional weatherboard). The Victorian subdivision pattern is notable for the Erskineville area in possessing both rear lanes and generously wide streets. The area possesses a cohesive scale and character of high amenity that demonstrates the subdivision and working class development of residential estates in the Victorian Period, and includes within its heritage listed distinctive rows of grand Victorian Italianate terraces. Within the proposal area, on Bridge Street, the street is characterised by the railway on the west side and intact 2 storey largely intact Victorian terraces on the east side.	The heritage value mainly pertains the area's Victorian architecture as well as the railway corridor. There would be minor to negligible direct impacts to this heritage area as works are only limited to the footpath and kerbside structures. Indirect impacts to conservation area are considered to be minor. There is potential for nearby buildings to experience vibration levels above the cosmetic damage screening criteria as a result of construction activities including utility and road furniture relocation. Further condition assessment of the heritage item and vibration monitoring (if required) would be completed.

Heritage Item	Significance	Description	Heritage impact assessment
		On Railway Parade the street is characterised by the railway on the west side and intact 2 storey Victorian terraces on the east side.	

6.4.2.2 Operation

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

6.4.3 Mitigation measures

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

- If any inadvertent damage occurs to heritage items in the vicinity of the study area due to vibration or other works, the damage must be reported immediately to Manager and the relevant heritage specialists. Damage is to be made good in accordance with specialist heritage advice.
- In order to prevent inadvertent impacts to significant fabric during the proposed development, Protection Zones will be required in all areas where construction works abut a heritage item.
- All relevant construction staff, contractors and subcontractors must be made aware of their statutory obligations for heritage under the NSW *Heritage Act 1977* to ensure no archaeological remains or heritage fabric are affected during the proposed works without appropriate mitigation measures in place. This will be implemented through a heritage induction carried out prior to works commencing and throughout the works program.
- In the event that any unanticipated archaeological deposits are identified within the proposal area during construction, the unexpected find procedure will be followed and works within the vicinity of the find will cease immediately. The Construction Contractor will immediately notify the City of Sydney proposal Manager and the City of Sydney environmental officer so they can assist in co-ordinating the next steps which are likely to involve consultation with an archaeologist and DPIE. Where required, further archaeological work and/or consents will be obtained for any unanticipated archaeological deposits prior to works recommencing at the location.

6.5 Indigenous heritage

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

6.5.1 Existing environment

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

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

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

6.5.2 Potential impacts

6.5.2.1 Construction

Direct or indirect impacts to items of Indigenous cultural heritage are unlikely as a result of the proposal, as:

- No Aboriginal sites have been previously identified within the proposal area
- The proposal area has previously undergone extensive landscape modification and a high level of disturbance from urban development within and adjacent to Bridge Street, Railway Parade and Henderson Road.

The proposal area has been previously disturbed as a result of the original construction of Bridge Street, Railway Parade and Henderson Road, footpaths and surrounding residential and commercial developments. These previous developments have resulted in removal or disturbance to the upper layers of the natural soil profile which is where indigenous heritage items are likely to have been found. There is clear evidence that the proposal area has also been subject to past disturbance with the introduction of fill materials, levelling, installation of utilities and services (both subsurface and above ground) and roadside landscaping. Therefore, there is a low likelihood that the proposal would affect any previously unidentified culturally sensitive items within the proposal area.

The proposal may require some deeper excavations in localised areas along the corridor and in adjacent land for the relocation of road furniture and utilities. This has the potential to extend below previously modified areas. If potential Aboriginal objects are encountered during construction for the proposal, the Unexpected Finds Procedure would be implemented.

6.5.2.2 Operation

Once operational, the proposal would not affect Indigenous heritage.

6.5.3 Mitigation measures

The following mitigation measures would apply to the proposal:

- All construction staff would undergo an induction in the recognition of Indigenous cultural heritage material. This training would 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.
- If unforeseen Indigenous objects are uncovered during construction, the unexpected finds procedure would be followed and works within the vicinity of the find would cease immediately. The Construction Contractor would immediately notify the City of Sydney proposal Manager and City of Sydney environmental officer so they can assist in co-ordinating next steps which are likely

to involve consultation with an Aboriginal heritage consultant, the DPIE and the Local Aboriginal Land Council.

- If human remains are found, work would cease, the site secured and the NSW Police and the DPIE notified. Where required, further archaeological investigations and an Aboriginal Heritage Impact Permit would be obtained prior to works recommencing at the location.

6.6 Socioeconomic impacts

6.6.1 Existing environment

6.6.1.1 Population and growth

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

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

The Sydney LGA experienced a growth of about 23% between 2011 and 2016, which was slightly higher than the rate of growth of the suburb of Sydney which was about 20.5% for the same period. Compared to the population growth of 7.6% and 7% respectively between 2006 and 2011, there has been quite a significant increase in population in those five years. The provision of additional high-density residential buildings within the suburb of Sydney and within the Sydney LGA has likely increased the population in those areas since 2016.

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

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

6.6.1.2 Social infrastructure

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

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

Key social infrastructure located near the proposal includes:

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

- Cycle facilities, including (but not limited to) temporary cycleways on Railway Parade at Erskineville Station, and off-Road shared cycleways or low traffic Streets or bike lanes in the surrounding Streets on Copeland Street, Monks lane, Henderson lane. There are also some low traffic Street or bike lanes with wayfinding signage on Buckland Street, Bridge Street and Ashmore Street.
    - To meet the needs of the residents, the City of Sydney has committed to be green, global and connected. Relevantly, the City of Sydney intends to make the city easy to get around, with a local network for walking and cycling, connecting the city's villages, city centre and the rest of inner Sydney (City of Sydney, *Sustainable Sydney 2030 – Community Strategic Plan 2017 – 2021*).

6.6.2 Potential Impacts

6.6.2.1 Construction

During construction, impacts to the community would primarily include noise, visual amenity and dust generation and availability of kerbside parking. Impacts to visual amenity during construction include:

- Hoarding
- Temporary fencing around protected trees
- Removed sections of the road
- Stationing of operating machinery plant and equipment.

Impacts to air quality during construction would be temporary and localised. This impact includes minor increases in dust and emissions of carbon monoxide, sulphur dioxide, particulate matter, nitrous oxides, volatile organic compounds and other substances associated with excavation and the combustion of diesel fuel and petrol from construction plant and equipment. Construction noise is likely to affect nearby residential and other sensitive receivers as detailed in **Section 6.2**.

The impact of air quality, noise and visuals effect is likely to be minimal and temporary for the community. As the proposal is located in an urbanised inner city suburb environment, the majority of sensitive receivers nearby the proposal reside within townhouse buildings. Notwithstanding, other receivers, namely pedestrians and people on bikes, would also experience those impacts. The extent of those impacts have been outlined within this REF and mitigation measures detailed in **Chapter 7.0** aim to reduce their affect.

Where needed, temporary changes to local access associated with construction work would result in potential delays and disruption for motorists, people on bikes and pedestrians including:

- The partial and temporary closure of footpaths during construction of the Road and footpath, resulting in disruptions to pedestrian movements
- Changes to the traffic environment, due to some traffic lanes needing to be temporarily closed off during construction
- Potential temporary closure of parking spaces adjacent to proposal area footpaths

Some businesses located adjacent to the proposed cycleway infrastructure would be potentially affected through the installation or removal of infrastructure. In particular:

- During construction, there would be disruption to direct access for pedestrians and vehicles to some businesses.

Businesses reliant on the delivery of goods would be affected by changes to nearby parking.

6.6.2.2 Operation

The proposal would form part of an expanding cycling network within the City of Sydney LGA. It would support longer term modal shifts away from the use of private motor vehicles towards active transport, in response to the growing number of residents and workers who prefer the convenience, mobility and sustainability benefits that cycling provides. This would bring 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 enhanced and upgraded footpaths and street furniture throughout the proposal area.

The addition of four new trees and new Star Jasmine, Monkey Grass and Green Mat-Rush plants would benefit the public domain of Erskineville and Alexandria by:

- Providing a minor increase in biodiversity, including habitat for fauna
- Providing minor local air quality benefits
- Creating a sense of place, by contributing to the character of the area and being visually appealing.

6.6.3 Mitigation measures

A number of environmental safeguards would be implemented to minimise potential impacts on the community with a particular focus on keeping the community informed including:

- Mitigation measures in respect of potential impacts on amenity (e.g. noise, dust and visual) as listed in **Chapter 7.0** 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 project, where possible
- Feedback through the submissions process to facilitate opportunities for the community and stakeholders to have input into the project, where practicable
- Informing the community of construction progress, activities and impacts in accordance with the Community Liaison Management Plan.
- 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.

Refer to **Chapter 7.0** for a full list of proposed mitigation measures. All mitigation measures are to be incorporated into the CEMP.

6.7 Contamination, landform, geology and soils

6.7.1 Existing environment

6.7.1.1 Landform, geology and soils

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

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

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

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

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

6.7.1.2 Acid sulfate soils

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

6.7.1.3 Contamination

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

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

6.7.2 Potential Impacts

6.7.2.1 Construction

6.7.2.1.1 Soil disturbance, erosion and sedimentation

The proposal would involve excavation and other earthworks associated with the proposed cycleway. 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 upon other environmental factors including biodiversity, water quality and air quality. Where sediment loads in local waterways are increased as a result of erosion of materials, it would alter the existing water quality conditions, which may result in negative impacts upon aquatic flora and fauna.

Inadequately covered or 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 is considered to be a temporary, moderate negative impact. However, through the implementation of the mitigation measures listed in **Section 6.7.3**, despite weather conditions, the risks associated with soil disturbance, erosion and sedimentation at the proposal area is considered to be low.

6.7.2.1.2 Acid Sulfate Soils

It is likely that ASS would be encountered during the proposed works construction phase. The area has been previously disturbed as a heavily urbanised environment. The depth of excavation would be confined to a maximum of less than 1.5 metres associated with the installation of footings, signage, storm water drainage, and a bus shelter. According to the *Department of Planning, Industry and Environment's Environmental Planning Instrument – acid sulfate soils*, Class 3 ASS are likely to be found beyond 1 metre below the natural ground surface. Therefore, ASS may be encountered during the construction of the cycleway along bridge street. The presence of ASS within the proposal area has not been confirmed through field testing.

For the remaining areas of the proposal area located within the Class 5 zone, the presence of ASS is unlikely, however, it is located within 500 metres of land mapped as Class 3 ASS. The presence of ASS within the proposal area has not been confirmed through field testing, notwithstanding, given the classification of Class 5 ASS, the potential for exposure is low.

Should ASS be uncovered during excavation activities at the proposal area, the potential impact would be managed through the implementation of an acid sulfate soil management plan (ASSMP) as detailed in **Section 6.7.3**.

6.7.2.1.3 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 concern 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 also 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 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 in **Section 6.7.3**. 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 is considered to be low.

6.7.2.2 Operation

During the operational phase of the proposal, general, non-periodic maintenance is likely to be required to ensure the continued, efficient operation of the cycleway and the road generally. During maintenance, there is potential for contamination to occur as a result of accidental fuel, oil or chemical spills. This potential impact would be mitigated through the implementation of mitigation measures identified in **Section 6.7.3** and through following the appropriate protocols for those maintenance works.

6.7.3 Mitigation measures

The following mitigation measures would apply to the proposal:

- Prior to commencement of works, a site-specific Erosion and Sediment Control Plan would 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 Erosion and Sediment Control Plan measures would be implemented prior to commencement of works and maintained throughout construction.
- Erosion and sediment control measures would be established prior to any site establishment activities and would be maintained and regularly inspected (particularly following rainfall events) to ensure their ongoing functionality. These measures would be maintained and left in place until the works are complete and areas are stabilised.
- Vehicles and machinery would be properly maintained and routinely inspected to minimise the risk of fuel/oil leaks. Construction plant, vehicles and equipment would also be refuelled offsite, or in a designated refuelling area.
- All fuels, chemicals and hazardous liquids would be stored within an impervious bunded area in accordance with Australian Standards and EPA Guidelines.
- An appropriate Unexpected Finds Protocol, considering potential contaminants, would 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 would be tested to confirm the presence of any contamination. Any contaminated spoil would 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 would 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 (SDS).
- In the event of a pollution incident, works would cease in the immediate vicinity and the Contractor would immediately notify the City of Sydney proposal Manager and the City of Sydney Environmental Officer. The EPA would be notified by City of Sydney 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 would be cleaned immediately, and the site environmental manager would be notified of the location of the incident, extent of the incident and type of material spilled.
- An ASSMP is to be prepared. The ASSMP needs to detail the management requirements for ASS within the proposal area. This would be determined in consultation with the construction contractor.

6.8 Air quality

6.8.1 Existing environment

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

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

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

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

6.8.2 Potential impacts

6.8.2.1 Construction

Temporary air quality impacts that have the potential to occur during construction include minor increases in dust and emissions of carbon monoxide, sulphur dioxide, particulate matter, nitrous oxides, volatile organic compounds and other substances associated with excavation and the combustion of diesel fuel and petrol from construction plant and equipment.

Anticipated sources of dust and dust-generating activities include:

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

The air quality impact associated with the above activities would be localised and generally contained within the construction area. These impacts would be small scale, involving small numbers of machinery, vehicles and equipment. They would also be intermittent and temporary, being restricted to construction hours. Appropriate measures would be established to manage dust emissions from construction and demolition works. On this basis the overall significance of air quality impacts associated with the construction of the proposal is expected to be minor.

6.8.2.2 Operation

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

6.8.3 Mitigation

The following mitigation measures would apply to the proposal:

- Air quality management and monitoring for the proposal will be undertaken in accordance with relevant City of Sydney guidelines
- Methods for management of emissions will be incorporated into project inductions, training and pre-start/toolbox talks
- Plant and machinery will be regularly checked and maintained in a proper and efficient condition. Plant and machinery will be switched off when not in use, and not left idling
- Vehicle and machinery movements during construction will be restricted to designated areas and sealed/compacted surfaces where practicable
- 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. unpaved roads, 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 site 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.

6.9 Biodiversity

6.9.1 Existing environment

6.9.1.1 Landscape context

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

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

6.9.1.2 Database searches

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

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

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

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

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

6.9.1.3 Flora

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

6.9.1.4 Fauna

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

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

6.9.2 Potential impacts

6.9.2.1 Construction

6.9.2.2 Flora

Three *Elaeocarpus reticulatus* (Blueberry Ash) trees are to be removed as part of the works at the corner of Bridge Street and Swanson Avenue. These trees were planted for landscaping purposes along Bridge Street and the removal of these trees is unlikely of a scale to result in significant biodiversity impact. Tree protection devices including fencing and trunk protection in the form of a hessian wrap and timber batters would be installed on the remaining 63 trees that have been identified being close to the proposed works and at potential risk of damage. Specific management measures to manage impacts to local ecology including potential impacts to tree roots are provided in **Section 6.9.3**.

Soft landscaping would be established along Bridge Street, Railway Parade and Henderson Road including the establishment of Four Prickly Paperbark (*Melaleuca styphelioides*) trees would be planted as part of the soft landscaping works once construction has completed. Other plant species to be planted as part of the landscaping include Mat Rush (*Lomandra longifolia "Nyalla"*), Star Jasmine (*Trachelospermum jasminoides*), Monkey Grass (*Liriope muscari "Amethyst"*) and Green Mat-Rush (*Lomandra hystrix*).

6.9.2.3 Fauna

There would be a small degree of direct disturbance to fauna during the construction phase due to visual occupation of sites nearby trees and other habitats, as well as disturbance resulting from construction noise and other effects. Where the works are within close proximity to trees, tree protection is to be established.

6.9.2.4 Operation

The potential for further operational impacts to biodiversity as a result of the proposal is considered to be limited.

6.9.3 Mitigation measures

- All workers are to be provided with an environmental induction prior to commencing work onsite. This induction would include information on the protection measures to be implemented to protect vegetation, penalties for breaches and locations of areas of sensitivity.
- Disturbance of vegetation is to be limited to the minimum amount necessary to construct the proposal. three trees are planned to be removed. The remaining trees in the proposal area would be protected through temporary protection measures discussed below.
    - 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 50mm diameter are encountered. Approval must be sought from the City of Sydney street tree coordinator to cut any root greater than 50mm 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 50mm 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 City of Sydney 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 100mm 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 screw are to be used.
- Existing sections of kerbs adjacent to any street tree shall not be removed without the approval from the City of Sydney street tree coordinator. Removal of kerbs adjacent to mature trees can cause trees to become unstable and fail.
- In the event of any tree to be retained becoming damaged during construction, the Construction Contractor is to immediately notify the City of Sydney Project Manager and the City of Sydney environmental officer to coordinate the response which may include contacting an arborist to inspect and provide advice on remedial action, where possible.

Should the detailed design 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 City of Sydney Tree Removal Application Form and submit it to the City of Sydney for approval.

6.10 Hydrology and water quality

6.10.1 Existing environment

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

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

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

6.10.2 Assessment

6.10.2.1 Construction

The proposal would have a minor effect on an already modified landform. Changes would be limited to the road verge. The construction phase of the proposal has the potential to result in impacts to the surface water quality should construction 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 of the proposal would be similar to those experienced for other urban construction projects and are considered manageable with the application of mitigation measures.

The proposal area is not located in a flood planning area; however, construction flooding and drainage impacts could potentially arise as a result of:

- Drainage infrastructure may become blocked (e.g. by soil, vegetation, waste) or temporarily diverted due to construction activities. Temporary disruption to local drainage lines may result in localised flooding in parts of the proposal area
- Removal of existing pavement could divert flow away from designed drainage structures and into new receiving areas. Diverting drainage lines may also create localised areas of flooding and scour unless managed appropriately.

Utility relocation is not likely to change existing flow patterns or the flooding regime. It is proposed that the contractor would ensure that all existing drainage would remain operational until the new drainage for the proposal has been constructed.

6.10.2.2 Operation

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

6.10.3 Mitigation measures

The following mitigation measures are recommended to minimise the potential impacts on hydrology and water quality management:

- 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
- Disturbed surfaces will be compacted and stabilised in anticipation of a rain event to reduce the potential for erosion
- Any material deposited onto pavements will be swept and removed at the end of each working shift and prior to rainfall
- Fuels, oils and other chemicals will not be stored in the vicinity of the construction site wherever possible
- Emergency wet and dry spill kits will be kept on site at all times and all staff will be made aware of the location of the spill kit and trained in its use.

6.11 Climate change and greenhouse gas emissions

6.11.1 Climate change

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

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

Climate change could lead to an increase in average temperatures as well as additional extreme heat days over 40°C and increased heatwaves (three consecutive days over 40°C). Impacts associated with extreme heat include compromising the structural integrity of road and access path surfaces, causing heat stress in users of the cycleway and heat stress to landscaped vegetation. Measures such as the provision of landscaping to increase shade should be reviewed for feasibility during detailed design to help reduce impacts from extreme heat.

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

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

6.11.2 Greenhouse gas emissions

An increase in greenhouse gas emissions, primarily carbon dioxide, 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 kept to a minimum through the implementation of the standard mitigation measures detailed in **Chapter 7.0**.

It is anticipated that, 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 commuters travelling around the city. This modal shift in transport usage could result in a reduction in fuel consumption by private vehicles and therefore a corresponding relative reduction in associated greenhouse gas emissions in the local area.

6.12 Waste

6.12.1 Existing environment

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

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

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

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

6.12.2 Potential impacts

6.12.2.1 Construction

Waste generating activities

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

- Demolition of existing road infrastructure including kerbs, verges, medians, footpaths and roadways
- Relocation and/or installation of utilities and services
- Removal and installation of stormwater drainage pipelines and associated kerb and gutter adjustments.

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, widening and realignment of road lanes as well as kerb reconstruction and realignment.

6.12.2.2 Waste streams

Waste material anticipated to accumulate during construction is classified as ‘general solid waste (non-putrescible)’.

Waste streams likely to be generated during the construction stage include:

- Construction and demolition waste from removal of existing road surface and utility relocation (soil, bitumen, concrete, asphalt, metal)
- Excess construction materials
- Excess spoil from excavations which is unsuitable for reuse
- Roadside materials (such as signage and fencing)
- Green waste from vegetation removal
- Roadside materials such as signage and fencing

- Waste water from wash down areas
- Paper and packaging wastes from materials brought to site
- Redundant erosion and sediment controls
- General and domestic waste from the construction ancillary facility and laydown areas.

In relation to the proposal, there would be few opportunities for reuse of materials given the nature of the activities proposed. Spoil and topsoil generated from earthworks could potentially be re-used in some locations if it meets the appropriate soil quality and classification standards for re-use.

Materials and spoil declared unsuitable to be reused would be classified in accordance with the *Waste Classification Guidelines* (EPA 2014) and disposed of at a licensed recycling or waste disposal facility.

6.12.2.3 Resource use

The materials required during the proposed construction works are not currently restricted resources 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 be conducted.

6.12.3 Operation

The operation of the proposal would not result in increased waste generation.

6.12.4 Mitigation

- A Waste Management Plan (WMP) would be prepared and implemented as part of the CEMP. The WMP would 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 would be prepared taking into account the WARR Act and *Waste Classification Guidelines* (EPA, 2014).
- A far as practicable, construction materials shall be sourced within the Sydney region so as to reduce transport costs, including fuel usage.
- Hierarchy of waste management shall be implemented via:
  - separation of general wastes, recyclable/reusable materials, and hazardous wastes to avoid mixing with other materials/wastes.
  - regular housekeeping and servicing of waste storages.
  - general waste and recycling receptacles would be provided onsite. Waste would be transported to an appropriately licensed waste disposal and/or recycling facility.
  - wastes (including green waste) shall not be burnt.
  - weed removal activities including removal of weeds prior to tree removal works to allow non-weed infested mulched material to be reused on site.
  - potential for mulching and reuse of cleared vegetation would be balanced against presence of noxious weeds and compliance with necessary weed control measures.

- Waste disposed of offsite shall be taken to a waste facility that is licenced under the POEO Act to receive wastes of that type.
- Work areas would be kept free of rubbish, with appropriate receptacles provided for waste management and recycling.
- Trees proposed to be removed would be reused as millable timber wherever practicable. Weed species, or vegetation not considered appropriate for re-use on-site, would be removed and disposed of to an appropriately licenced facility.
- Contractors would recycle waste in accordance with the City of Sydney's *Leave nothing to waste: Waste strategy and action plan 2017-2030*.

6.13 Cumulative impacts

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

6.13.1 Coinciding projects

Cycleways Projects

This project is one of multiple cycleways projects occurring in the Sydney LGA as part of their *Sustainable Sydney 2030, City of Sydney Cycle Strategy and Action Plan 2018-2030,* and *NSW Bike Plan* and other incentivising cycling strategies. It is acknowledged that similar cycleway projects are being proposed surrounding suburbs. There is potential to block off roads if proposals are constructed at similar timeframes. A nearby cycleway project on Swanson Street and Mitchell Road may interfere with access to the southern section of Mitchell Road, where the proposal is located.

6.13.2 Potential impacts

6.13.2.1 Construction

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, including increased pedestrian journey times
- Amenity impacts resulting from the implementation of traffic management controls across the city centre
- Cumulative changes to water quality of nearby waterways or groundwater from multiple construction sites.

To address these issues, Council would coordinate between cycleway projects and work with other developers to minimise associated impacts on the local area, especially to existing businesses affected by the proposal. This would include direct consultation with the developers of any large nearby developments.

6.13.2.2 Operation

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

overall health benefits from improved air quality and a greater number of individuals participating in active transport.

6.13.3 Mitigation measures

The following mitigation measures are recommended to minimise the potential cumulative impacts:

- Consult with TfNSW to obtain information about project timeframes and impacts. Identify and implement appropriate safeguards 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 Occupancy Licenses would be prepared in consultation with the Transport Management Centre taking into consideration the traffic cumulative 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.

7.0 Environmental management

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

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

7.1 Construction environmental management plans

A Construction Environmental Management Plan (CEMP) would be prepared in accordance with the requirements of Council's 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.

7.2 Safeguards and mitigation measures

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

Table 7-1 Environmental safeguards and mitigation measures

No.	Impact	Environmental safeguards	Timing
TT1	Traffic management	Appropriate traffic management measures will be implemented and maintained such as temporary speed restrictions, precautionary signs, illuminated warning devices, manual and/or electronic traffic controls.	Construction
TT2	Access	During construction, arrangements will be made to ensure access to businesses and other commercial or residential premises adjacent to construction areas will be maintained where possible.	Construction
TT3	Notification regarding access	During construction affected businesses and the occupants of other commercial and residential premises will be notified in relation to any temporary access restrictions or limitations.	Construction
TT4	Consultation with business owners and residents regarding parking	Business owners and residents will be informed of changes in kerbside use, including the permanent loss of or change in existing loading and on-street parking spaces.	Pre-Construction
TT5	Business impacts	Road occupancy licences will be obtained from TfNSW Transport Management Centre for all construction activities.	Pre-Construction
TT6	Licences	A cyclist communication strategy will be implemented that would include establishing information signs and maps to inform people on bikes of changes to cycleways within the city centre	Pre-Construction
NV1	Construction noise and vibration management plan	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.	Pre-Construction

No.	Impact	Environmental safeguards	Timing
		• a work program developed in consultation with TfNSW that will manage night noise impacts. • include safeguards and management measures to manage out of hours working. • 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 safeguards and management measures.	
NV2	Noise management plan for works outside normal hours	Work is to be restricted to standard working hours and where possible, noisy work should be undertaken during less sensitive periods	Pre-Construction
NV4	Notification to affected receivers	Affected receivers will be notified ahead of time of the likely activities, noise impacts and duration of this work.	Pre-Construction
NV5	Notification to nearby receivers	Nearby receivers will be notified of any work in advance of the start of construction. This is essential for residential receivers potentially affected by night time work	Pre-Construction
NV6	Noise complaints management	A community complaints phone number will be established and advertised prior to works commencing and be available during work periods. The community complaints line will be established for any complaints or queries regarding construction.	Pre-Construction
NV7	Noisy plant	Plant will be turned off when not in use.	Construction
NV8	Work site arrangements	The work site will be arranged to minimise the use of movement alarms on vehicles and mobile plant.	Construction
NV9	Reverse beepers	Where safety concerns can be adequately managed, the use of squawker, broadband or visual reversing alarms will be considered, rather than traditional beeper styles.	Construction
NV10	Night time noise during night time hours	The use of equipment or methods that generate impulsive noise, particularly during night time hours will be avoided. These include dropping materials from a height, loading/unloading of trucks and metal on metal contact.	Construction
NV11	Construction program	Make the construction program available to the community and ensure it is routinely updated as works progress.	Construction
LAN1	Construction lighting	Construction lighting is to be positioned such that light spill on neighbouring properties is minimised and that it is turned off when not in use and safe to do so.	Construction

No.	Impact	Environmental safeguards	Timing
LAN2	Construction lighting	The layout, directional positioning and types of lighting selected to minimise impacts are to be specified by the construction contractor in the CEMP.	Pre-Construction
LAN3	Work sites	A high level of housekeeping will 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.	Construction
LAN4	Disturbed groundcover	Groundcover disturbed during construction will be re-established as soon as practical.	Construction
LAN5	Waste materials	Waste materials must be removed from site regularly.	Construction
LAN6	Trachyte and bluestone kerbs	Removed kerbs will be replaced with the same material where possible. If that material is not available, the kerb will be replaced with a stone material consistent with streetscapes around the City of Sydney in accordance with the *Sydney Streets Code* (City of Sydney, 2013).	Construction
LAN7	Design of new elements	Design of new elements will be designed in accordance with *Sydney Streets Code* (City of Sydney, 2013) as applicable.	Design
HER3	Damage to heritage items	If any inadvertent damage occurs to heritage items in the vicinity of the study area due to vibration or other works, the damage must be reported immediately to the proposal Manager and the relevant heritage specialists. Damage is to be made good in accordance with specialist heritage advice.	Construction
HER4	Damage to heritage items – Protection Zones	In order to prevent inadvertent impacts to significant fabric during the proposed development, Protection Zones will be required in all areas where construction works abut a heritage item.	Construction
HER5	Heritage induction	All relevant construction staff, contractors and subcontractors must be made aware of their statutory obligations for heritage under the *NSW Heritage Act 1977* and to ensure no archaeological remains or heritage fabric are affected during the proposed works without appropriate mitigation measures in place. This will be implemented through a heritage induction carried out prior to works commencing and throughout the works program.	Construction
HER6	Unanticipated archaeological deposits	In the event that any unanticipated archaeological deposits are identified within the proposal area during construction, the unexpected find procedure will be followed and works within the vicinity of the find will cease immediately. The Construction Contractor will immediately notify the City of Sydney proposal Manager and the City of Sydney environmental officer so they can assist in co-ordinating the next steps which are likely to involve consultation with an archaeologist and DPIE. Where required, further archaeological work and/or consents will be obtained for any unanticipated archaeological deposits prior to works recommencing at the location.	Construction

No.	Impact	Environmental safeguards	Timing
IH1	Heritage induction	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.	Construction
IH2	Unanticipated Indigenous objects	If unforeseen Indigenous objects are uncovered during construction, the unexpected finds procedure would be followed and works within the vicinity of the find would cease immediately. The Construction Contractor will immediately notify the City of Sydney proposal Manager and City of Sydney environmental officer so they can assist in co-ordinating next steps which are likely to involve consultation with an Aboriginal heritage consultant, the DPIE and the Local Aboriginal Land Council.	Construction
IH3	Human remains uncovered	If human remains are found, work will cease, the site secured and the NSW Police and the DPIE notified. Where required, further archaeological investigations and an Aboriginal Heritage Impact Permit will be obtained prior to works recommencing at the location.	Construction
SE1	Socio-economic	Mitigation measures in respect of potential impacts on amenity (e.g. noise, dust and visual) as listed in this section.	Construction
SE2	Sustainability criteria	Establishment of sustainability criteria for the proposal to encourage construction personnel to purchase goods and services locally to support the local community.	Pre-Construction
SE3	Community Liaison Management Plan	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 project, where possible.	Pre-Construction
SE4	Feedback through the submissions process	Feedback through the submissions process to facilitate opportunities for the community and stakeholders to have input into the project, where practicable.	Pre-Construction
SE5	Community Liaison Management Plan	Informing the community of construction progress, activities and impacts in accordance with the Community Liaison Management Plan.	Pre-Construction
SE6	Community Liaison Management Plan	Ongoing consultation with local businesses potentially affected by the proposal will be undertaken.	Pre-Construction and Construction
CLGS1	Site-specific Erosion and	Prior to commencement of works, a site-specific Erosion and Sediment Control Plan will be prepared in accordance with the ‘Blue Book’ *Managing Urban*	Pre-Construction

No.	Impact	Environmental safeguards	Timing
	Sediment Control Plan	*Stormwater: Soils and Construction Guidelines* (Landcom, 2004) and updated throughout construction so it remains relevant to the activities. The Erosion and Sediment Control Plan measures will be implemented prior to commencement of works and maintained throughout construction.	
CLGS2	Erosion and sediment control	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 and left in place until the works are complete and areas are stabilised.	Pre-Construction
CLGS3	Vehicles and machinery maintenance	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.	Construction
CLGS4	Storage of fuels, chemicals and hazardous liquids	All fuels, chemicals and hazardous liquids will be stored within an impervious bunded area in accordance with Australian Standards and EPA Guidelines.	Construction
CLGS6	Unexpected Finds Protocol	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.	Pre-Construction and Construction
CLGS7	Testing potential contaminated spoil	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.	Construction
CLGS8	Classifying waste and spoil	All spoil and waste must be classified in accordance with the *Waste Classification Guidelines Part 1: Classifying waste* (EPA, 2014) prior to disposal.	Construction
CLGS9	Dedicated storage facilities for hydrocarbons and chemicals	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 (SDS).	Construction
CLGS10	Pollution incident	In the event of a pollution incident, works will cease in the immediate vicinity and the Contractor will immediately notify the City of Sydney proposal Manager and the City of Sydney Environmental Officer. The EPA will be notified by City of Sydney if required, in accordance with Part 5.7 of the POEO Act.	Construction
CLGS11	Spill kits	Spill kits appropriate to products used on site must be readily available.	Construction

No.	Impact	Environmental safeguards	Timing
CLGS12	Spills of fuel, oil, chemicals	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.	Construction
CLGS13	Acid sulfate soil management plan	An ASSMP is to be prepared. The ASSMP needs to detail the management requirements for ASS within the proposal area. This will be determined in consultation with the construction contractor.	Pre-Construction
AQ1	Air quality management and monitoring	Air quality management and monitoring for the proposal will be undertaken in accordance with relevant City of Sydney guidelines.	Construction
AQ2	management of emissions	Methods for management of emissions will be incorporated into project inductions, training and pre-start/toolbox talks.	Pre-Construction
AQ3	Vehicles and machinery maintenance	Plant and machinery will be regularly checked and maintained in a proper and efficient condition. Plant and machinery will be switched off when not in use, and not left idling.	Construction
AQ4	Designated areas for vehicle and machinery movements	Vehicle and machinery movements during construction will be restricted to designated areas and sealed/compacted surfaces where practicable.	Construction
AQ5	Generation of dust	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. unpaved roads, 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 site 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.	Construction
BIO1	Biodiversity induction	All workers are to be provided with an environmental induction prior to commencing work onsite. This induction will include information on the protection measures to be implemented to protect vegetation, penalties for breaches and locations of areas of sensitivity.	Pre-Construction
BIO2	Disturbance of vegetation	• Disturbance of vegetation is to be limited to the minimum amount necessary to construct the proposal. No trees are planned to be removed. Trees in the proposal area would be protected through temporary protection measures discussed below. - 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).	Construction

No.	Impact	Environmental safeguards	Timing
		- During any trenching or excavation works, the use of mechanical equipment must stop if tree roots greater than 50mm diameter are encountered. Approval must be sought from the City of Sydney street tree coordinator to cut any root greater than 50mm 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 50mm 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 City of Sydney 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 100mm 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 screw are to be used. - Existing sections of kerbs adjacent to any street tree shall not be removed without the approval from the City of Sydney street tree coordinator. Removal of kerbs adjacent to mature trees can cause trees to become unstable and fail. - in the event of any tree to be retained becoming damaged during construction, the Construction Contractor is to immediately notify the City of Sydney Project Manager and the City of Sydney environmental officer to coordinate the response which may include contacting an arborist to inspect and provide advice on remedial action, where possible.	
BIO3	City of Sydney Tree Removal Application Form to remove additional trees	Should the detailed design 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 City of Sydney Tree Removal Application Form and submit it to the City of Sydney for approval.	Pre-Construction
HWQ1	Erosion and Sedimentation Control Plan	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.	Pre-Construction

No.	Impact	Environmental safeguards	Timing
HWQ2	Disturbed surfaces	Disturbed surfaces will be compacted and stabilised in anticipation of a rain event to reduce the potential for erosion.	Construction
HWQ3	Removal of material deposited	Any material deposited onto pavements will be swept and removed at the end of each working shift and prior to rainfall.	Construction
HWQ4	Storage of fuels, oils and other chemicals	Fuels, oils and other chemicals will not be stored in the vicinity of the construction site wherever possible.	Construction
HWQ5	Emergency wet and dry spill kits	Emergency wet and dry spill kits will be kept on site at all times and all staff will be made aware of the location of the spill kit and trained in its use.	Construction
W1	Waste Management Plan	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 taking into account the WARR Act and *Waste Classification Guidelines* (EPA, 2014).	Pre-Construction
W2	Source of construction materials	A far as practicable, construction materials shall be sourced within the Sydney region so as to reduce transport costs, including fuel usage.	Construction
W3	Waste management	Hierarchy of waste management shall be implemented via: • separation of general wastes, recyclable/reusable materials, and hazardous wastes to avoid mixing with other materials/wastes. • regular housekeeping and servicing of waste storages. • general waste and recycling receptacles will be provided onsite. Waste will be transported to an appropriately licensed waste disposal and/or recycling facility. • wastes (including green waste) shall not be burnt. • weed removal activities including removal of weeds prior to tree removal works to allow non-weed infested mulched material to be reused on site.	Construction

No.	Impact	Environmental safeguards	Timing
		• potential for mulching and reuse of cleared vegetation will be balanced against presence of noxious weeds and compliance with necessary weed control measures.	
W4	Waste facility licenced under the POEO Act	Waste disposed of offsite shall be taken to a waste facility that is licenced under the POEO Act to receive wastes of that type.	Construction
W5	Work areas	Work areas will be kept free of rubbish, with appropriate receptacles provided for waste management and recycling.	Construction
W6	Re-use of vegetation	Trees proposed to be removed will be reused as millable timber wherever practicable. Weed species, or vegetation not considered appropriate for re-use on-site, will be removed and disposed of to an appropriately licenced facility.	Construction
W7	Waste management	Contractors would recycle waste in accordance with the City of Sydney's *Leave nothing to waste: Waste strategy and action plan 2017-2030*.	Construction
CU1	Cumulative impacts	Consult with TfNSW to obtain information about project timeframes and impacts. Identify and implement appropriate safeguards and management measures to minimise cumulative impacts of construction if any of the projects are constructed at the same time as the proposal.	Pre-Construction

7.3 Licensing and approvals

The licenses and approvals listed below are required for the delivery of the proposal:

- Road Occupancy Licence from TfNSW and/or City of Sydney Council.

8.0 Conclusion and certification

8.1 Conclusion

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

- Improved journey time reliability for people on bikes
- Improved integration with public transport
- Potential public transport de-crowding
- Improved equity and accessibility outcomes
- Potential for wider economic benefits beyond the transport sector
- Improved localised economic activity
- Reduced energy dependence.

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

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

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

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

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

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

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

8.2 Certification

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

Jamie McMahon

Environmental Scientist - Associate Director

AECOM

Date: 10 March 2021

9.0 References

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Landcom, 2004, *Managing Urban Stormwater: Soils and Construction Guidelines*

NSW Government, 2015, *A Plan for Growing Sydney*

http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=town%3Develeigh%3Bkeyword_PD%3Don%3Bkeyword_SS%3Don%3Bkeyword_PH%3Don%3Blatitude_1dir%3DS%3Blongitude_1dir%3DE%3Blongitude_2dir%3DE%3Blatitude_2dir%3DS%3Bin_region%3Dpart;place_id=106189

Appendix A

Consideration of Matters of National Environmental Significance

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

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

Appendix B

Consideration of Clause 228

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

Factor	Impacts
(a) Any environmental impact on a community? The proposal is located within a significantly modified urban area and would not result in any environmental impact on a community. The proposal would involve public domain and additional street tree planting the provide a positive contribution to the environment.	Minor
(b) Any transformation of a locality? The proposal would transform **Bridge Street, Railway Parade and Henderson Road**. The change comes through the provision of active transport infrastructure and upgraded pedestrian facilities. The transformation is considered to be positive.	Minor
(c) Any environmental impact on the ecosystem of the locality? The proposal exists in a significantly modified urban area with limited natural environmental areas or values. There are no identified threatened species or habitats and no affected heritage items within the proposed proposal area.	Minor
(d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality? The proposal would result in a short-term reduction of the aesthetic of Bridge Street, Railway Parade and Henderson Road. The proposal area has been significantly modified by previous and current development and lacks any distinctive aesthetic, recreational and scientific value or other environmental quality. There are no identified threatened species or habitats and no affected heritage items within the proposed proposal area.	Minor

Factor	Impacts
(e) Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations? The proposal would have minor, indirect impacts upon items of heritage significance. In addition, the proposal would have a minor positive impact on Bridge Street, Railway Parade and Henderson Road for future generations through the provision of needed active transport infrastructure.	Minor
(f) Any impact on the habitat of protected fauna (within the meaning of the *National Parks and Wildlife Act 1974*)? The proposal exists in a significantly modified urban environment that is unlikely to contain any habitat of protected fauna.	Minor
(g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air? The proposal exists in a significantly modified urban environment that is unlikely to contain any habitat of protected fauna. Proposed tree planting along the proposed proposal route has the potential for additional foraging habitat for flying species.	Minor
(h) Any long-term effects on the environment? The proposal is proposed as a transport solution to improve access in the area and active transport networks. The proposal is aimed at encouraging a modal shift of transport to active transport, reducing the volume of vehicles within the City, thereby reducing vehicle emissions.	Minor
(i) Any degradation of the quality of the environment? The proposal would not degrade the quality of the environment amongst its heavily urbanised setting.	Minor
(j) Any risk to the safety of the environment? Construction of the proposal poses risks to the safety of the environment, where works are unmitigated. This REF has proposed a number of mitigation measures aimed at reducing any risks to the environment.	Minor
(k) Any reduction in the range of beneficial uses of the environment? The proposal would provide for an increase in sustainable transport use and public domain enhancements would provide increased value to the area. The proposal would ensure long term access improvements in the area.	Minor

Factor	Impacts
(l) Any pollution of the environment? The proposal would result in a minor increase in air pollution during the construction stage.	Minor
(m) Any environmental problems associated with the disposal of waste? A Waste Management Plan would be prepared to properly document and dispose of waste generated during the construction stage. Once operational the proposal would not generate significant waste.	Minor
(n) Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply? The proposal is unlikely to increase demand on resources (natural or otherwise) that are, or are likely to become, in short supply.	Minor
(o) Any cumulative environmental effect with other existing or likely future activities? Construction of the proposal would coincide with the construction of a number of other proposals in the Sydney city centre. Cumulative impacts as a result of concurrent development would be managed according to the measures outlined in **Section 6.13.3.**	Minor
(p) Any impact on coastal processes and coastal hazards, including those under Proposed climate change conditions? The proposal is located approximately 5km from the coastline and is unlikely to impact on coastal processes.	Minor

Appendix C

Design Drawings

ACCELERATED BIKE NETWORK PROGRAM
RAILWAY PDE, HENDERSON

GENERAL PLANS

60620833-2B-SHT-1000-CI-0001	COVER SHEET AND DRAWING LIST
60620833-2B-SHT-1000-CI-0011	GENERAL NOTES - SHEET 1
60620833-2B-SHT-1000-CI-0012	GENERAL NOTES - SHEET 2

SITE CLEARANCE PLANS

60620833-2B-SHT-1000-CI-0051	DEMOLITION PLAN - SHEET 1
60620833-2B-SHT-1000-CI-0052	DEMOLITION PLAN - SHEET 2
60620833-2B-SHT-1000-CI-0053	DEMOLITION PLAN - SHEET 3
60620833-2B-SHT-1000-CI-0054	DEMOLITION PLAN - SHEET 4
60620833-2B-SHT-1000-CI-0055	DEMOLITION PLAN - SHEET 5
60620833-2B-SHT-1000-CI-0056	DEMOLITION PLAN - SHEET 6
60620833-2B-SHT-1000-CI-0057	DEMOLITION PLAN - SHEET 7

PUBLIC DOMAIN PLANS

60620833-2B-SHT-1000-CI-0101	GENERAL ARRANGEMENT PLAN - SHEET 1
60620833-2B-SHT-1000-CI-0102	GENERAL ARRANGEMENT PLAN - SHEET 2
60620833-2B-SHT-1000-CI-0103	GENERAL ARRANGEMENT PLAN - SHEET 3
60620833-2B-SHT-1000-CI-0104	GENERAL ARRANGEMENT PLAN - SHEET 4
60620833-2B-SHT-1000-CI-0105	GENERAL ARRANGEMENT PLAN - SHEET 5
60620833-2B-SHT-1000-CI-0106	GENERAL ARRANGEMENT PLAN - SHEET 6
60620833-2B-SHT-1000-CI-0107	GENERAL ARRANGEMENT PLAN - SHEET 7

TYPICAL SITE SECTIONS

60620833-2B-SHT-1000-CI-0141	TYPICAL SITE SECTIONS - SHEET 1
60620833-2B-SHT-1000-CI-0142	TYPICAL SITE SECTIONS - SHEET 2

TREE MANAGEMENT AND LANDSCAPE PLANS

60620833-2B-SHT-1000-CI-0151	LANDSCAPE PLANTING PLAN - SHEET 1
60620833-2B-SHT-1000-CI-0152	LANDSCAPE PLANTING PLAN - SHEET 2
60620833-2B-SHT-1000-CI-0153	LANDSCAPE PLANTING PLAN - SHEET 3
60620833-2B-SHT-1000-CI-0154	LANDSCAPE PLANTING PLAN - SHEET 4
60620833-2B-SHT-1000-CI-0155	LANDSCAPE PLANTING PLAN - SHEET 5
60620833-2B-SHT-1000-CI-0156	LANDSCAPE PLANTING PLAN - SHEET 6
60620833-2B-SHT-1000-CI-0157	LANDSCAPE PLANTING PLAN - SHEET 7

PAVEMENT PLANS

60620833-2B-SHT-1000-CI-0201	PAVEMENT PLAN - SHEET 1
60620833-2B-SHT-1000-CI-0202	PAVEMENT PLAN - SHEET 2
60620833-2B-SHT-1000-CI-0203	PAVEMENT PLAN - SHEET 3
60620833-2B-SHT-1000-CI-0204	PAVEMENT PLAN - SHEET 4
60620833-2B-SHT-1000-CI-0205	PAVEMENT PLAN - SHEET 5
60620833-2B-SHT-1000-CI-0206	PAVEMENT PLAN - SHEET 6
60620833-2B-SHT-1000-CI-0207	PAVEMENT PLAN - SHEET 7

LINES AND SIGNS PLANS

60620833-2B-SHT-1000-CI-0251	LINES AND SIGNS PLAN - SHEET 1
60620833-2B-SHT-1000-CI-0252	LINES AND SIGNS PLAN - SHEET 2
60620833-2B-SHT-1000-CI-0253	LINES AND SIGNS PLAN - SHEET 3
60620833-2B-SHT-1000-CI-0254	LINES AND SIGNS PLAN - SHEET 4
60620833-2B-SHT-1000-CI-0255	LINES AND SIGNS PLAN - SHEET 5
60620833-2B-SHT-1000-CI-0256	LINES AND SIGNS PLAN - SHEET 6
60620833-2B-SHT-1000-CI-0257	LINES AND SIGNS PLAN - SHEET 7

ROAD PLANS

60620833-2B-SHT-1000-CI-0301	ROAD CONTROL STRING PLAN - SHEET 1
60620833-2B-SHT-1000-CI-0302	ROAD CONTROL STRING PLAN - SHEET 2
60620833-2B-SHT-1000-CI-0303	ROAD CONTROL STRING PLAN - SHEET 3
60620833-2B-SHT-1000-CI-0304	ROAD CONTROL STRING PLAN - SHEET 4
60620833-2B-SHT-1000-CI-0305	ROAD CONTROL STRING PLAN - SHEET 5
60620833-2B-SHT-1000-CI-0306	ROAD CONTROL STRING PLAN - SHEET 6
60620833-2B-SHT-1000-CI-0307	ROAD CONTROL STRING PLAN - SHEET 7

MISCELLANEOUS CONTROL STRING PLANS

60620833-2B-SHT-1000-CI-0501	MISCELLANEOUS CONTROL STRING PLAN - SHEET 1
60620833-2B-SHT-1000-CI-0502	MISCELLANEOUS CONTROL STRING PLAN - SHEET 2
60620833-2B-SHT-1000-CI-0503	MISCELLANEOUS CONTROL STRING PLAN - SHEET 3
60620833-2B-SHT-1000-CI-0504	MISCELLANEOUS CONTROL STRING PLAN - SHEET 4
60620833-2B-SHT-1000-CI-0505	MISCELLANEOUS CONTROL STRING PLAN - SHEET 5
60620833-2B-SHT-1000-CI-0506	MISCELLANEOUS CONTROL STRING PLAN - SHEET 6
60620833-2B-SHT-1000-CI-0507	MISCELLANEOUS CONTROL STRING PLAN - SHEET 7

COMBINED SERVICES PLANS

60620833-2B-SHT-1000-CI-0701	EXISTING COMBINED SERVICES PLAN - SHEET 1
60620833-2B-SHT-1000-CI-0702	EXISTING COMBINED SERVICES PLAN - SHEET 2
60620833-2B-SHT-1000-CI-0703	EXISTING COMBINED SERVICES PLAN - SHEET 3
60620833-2B-SHT-1000-CI-0704	EXISTING COMBINED SERVICES PLAN - SHEET 4
60620833-2B-SHT-1000-CI-0705	EXISTING COMBINED SERVICES PLAN - SHEET 5
60620833-2B-SHT-1000-CI-0706	EXISTING COMBINED SERVICES PLAN - SHEET 6
60620833-2B-SHT-1000-CI-0707	EXISTING COMBINED SERVICES PLAN - SHEET 7

VEHICLE TRACKING PLANS

60620833-2B-SHT-1000-CI-0801	VEHICLE TRACKING PLAN - SHEET 1
60620833-2B-SHT-1000-CI-0802	VEHICLE TRACKING PLAN - SHEET 2
60620833-2B-SHT-1000-CI-0803	VEHICLE TRACKING PLAN - SHEET 3
60620833-2B-SHT-1000-CI-0804	VEHICLE TRACKING PLAN - SHEET 4
60620833-2B-SHT-1000-CI-0805	VEHICLE TRACKING PLAN - SHEET 5
60620833-2B-SHT-1000-CI-0806	VEHICLE TRACKING PLAN - SHEET 6
60620833-2B-SHT-1000-CI-0807	VEHICLE TRACKING PLAN - SHEET 7

KERB AND PAVEMENT DETAILS

60620833-2B-SHT-1000-CI-0901	KERB AND PAVEMENT DETAILS - SHEET 1
60620833-2B-SHT-1000-CI-0902	KERB AND PAVEMENT DETAILS - SHEET 2
60620833-2B-SHT-1000-CI-0903	KERB AND PAVEMENT DETAILS - SHEET 3

DRAINAGE DETAILS

60620833-2B-SHT-1000-CI-0921	DRAINAGE DETAILS - SHEET 1

LINES AND SIGNS DETAILS

60620833-2B-SHT-1000-CI-0941	LINES AND SIGNS DETAILS - SHEET 1

SERVICES DETAILS

60620833-2B-SHT-1000-CI-0951	SERVICES DETAILS - SHEET 1

LANDSCAPING DETAILS

60620833-2B-SHT-1000-CI-0961	LANDSCAPING DETAILS - SHEET 1

AECOM

CONSULTANT

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

PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

KEY PLAN

SCALE BAR

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

COVER SHEET AND DRAWING LIST

SHEET NUMBER

60620833-2B-SHT-1000-CI-0001

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, THE 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 PRECEDING 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 RMS QA SPECIFICATION R116
7 ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH RMS 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 RMS 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 RMS 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, RMS 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 THE CONTRACTOR IS TO ARRANGE A PRE-CONSTRUCTION MEETING WITH CoS SOIL CONSERVATION CONSULTANT AND THE SUPERINTENDENT.
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 ACCEPTABLE RECEPTORS WILL BE PROVIDED 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.
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:
- 1A: 'CASTLEREAGH, YOUNG, BLIGH, LIVERPOOL STREET PLAN OF FEATURES' BY AAM DATED 25.12.2013 (REF. 254597) AS RECEIVED FROM CoS
- 1B: 'SHOWING SELECTED LEVELS AND DETAIL OVER FITZROY STREET, SURRY HILLS' BY HILL & BLUME SURVEYORS DATED 20.11.2019 (REF. 61815) AS RECEIVED FROM CoS
- 1C: 'PLAN SHOWING DETAIL AND LEVELS OVER THE DANK STREET PRECINCT' BY RYGATE SURVEYORS DATED 10.03.2019 (REF. 78869) AS RECEIVED FROM CoS
- 2A: 'SITE PLAN SHOWING SELECTED LEVELS AND DETAIL OVER ASHMORE STREET AND HARLEY STREET, ALEXANDRIA' BY HILL & BLUME SURVEYORS DATED 02.12.2019 ISSUE 'C' (REF. 61747) AS RECEIVED FROM CoS
- 2B: 'SHOWING SELECTED LEVELS AND PARTIAL DETAIL OVER BRIDGE STREET, ERSKINEVILLE' BY HILL & BLUME SURVEYORS DATED 09.12.2019 (REF. 61743) AS RECEIVED FROM CoS 'SITE PLAN SHOWING SELECTED LEVELS AND DETAIL OVER RAILWAY PARADE AND HENDERSON ROAD, ALEXANDRIA' BY HILL & BLUME SURVEYORS DATED 20.11.2019 ISSUE 'B' (REF. 61746) AS RECEIVED FROM CoS
- 2C: 'SHOWING SELECTED LEVELS AND DETAIL OVER HUNTLEY STREET & MITCHELL ROAD, ERSKINEVILLE' BY HILL & BLUME SURVEYORS DATED 19.11.2019 (REF. 61744) AS RECEIVED FROM CoS
- 2D: 'SHOWING SELECTED LEVELS AND DETAIL OVER MITCHELL ROAD & BUCKLAND STREET, ALEXANDRIA' BY HILL & BLUME SURVEYORS DATED 07.11.2019 (REF. 61745) AS RECEIVED FROM CoS
- 2E: 'SHOWING PARTIAL LEVELS AND DETAIL OVER SWANSON STREET, ERSKINEVILLE' BY HILL & BLUME SURVEYORS DATED 27.11.2019 (REF. 61812) 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.

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
- RMS 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.

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

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

KEY PLAN

SCALE BAR

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

GENERAL NOTES

SHEET 1

SHEET NUMBER

60620833-2B-SHT-1000-CI-0011

LEGEND/ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
HORIZ	HORIZONTAL	N/S	NEAR SIDE
VERT	VERTICAL	F/S	FAR SIDE
CENTRAL	CENTRALLY PLACED	B/S	BOTH SIDES
CRS or C/C	CENTRES	U/S	UNDER SIDE
T or TOP	TOP or TOP FACE	L	LENGTH/LONG
B or BTM	BOTTOM or BOTTOM FACE	W	WIDTH/WIDE
T&B	TOP & BOTTOM	H	HEIGHT/HIGH
NF	NEAR FACE	D	DEPTH/DEEP
FF	FAR FACE	NOM	NOMINAL
INTF	INTERNAL FACE	REQ'D	REQUIRED
EXTF	EXTERNAL FACE	REINF	REINFORCEMENT
EF	EACH FACE	OPP	OPPOSITE
EW	EACH WAY	SIM	SIMILAR
EQ	EQUAL	GA	GENERAL ARRANGEMENT
NSOP	NOT SHOWN ON PLAN	PT	POST TENSION
NSOE	NOT SHOWN ON ELEVATION	DRG	DRAWINGS
UNO	UNLESS NOTED OTHERWISE	NTS	NOT TO SCALE
TYP	TYPICAL	LV	LENGTH VARIES
CL	CENTRE LINE	ABR	ALTERNATE BAR REVERSED
PL	PLATE	MAX	MAXIMUM
SV	SIZE VARIES	MIN	MINIMUM
STG	STAGGERED	CONT	CONTINUOUS

FOUNDATION NOTES

1 PAD AND STRIP FOOTINGS HAVE BEEN DESIGNED FOR AN ALLOWABLE BEARING PRESSURE OF 150 kPa OR AS SHOWN ON THE FOOTING DRAWINGS, FOUNDED ON NATURAL RESIDUAL SOIL/ENGINEERED FILL. THE CONTRACTOR SHALL ENGAGE A GEOTECHNICAL ENGINEER TO INSPECT AND VERIFY THAT THE GROUND AT EACH FOOTING IS CAPABLE OF CARRYING THIS PRESSURE.
2 ALL FOOTING EXCAVATIONS SHALL BE CLEANED OF LOOSE MATERIAL AND WATER PRIOR TO CASTING FOUNDATIONS.
3 UNLESS OTHERWISE NOTED ON THE DRAWINGS, LOCATE ALL PIPES, RETAINING WALLS AND EXCAVATIONS OUTSIDE A ZONE OF INFLUENCE FROM THE BOTTOM EDGE OF THE FOOTING.
4 WHERE VERIFIED FOUNDATION MATERIAL IS LOWER THAN THE UNDERSIDE OF FOOTINGS AS DETAILED, BACKFILL ADDITIONAL EXCAVATION WITH 10 MPa MASS CONCRETE.
5 FOOTINGS SHALL BE LOCATED CENTRALLY UNDER WALLS AND COLUMNS UNLESS NOTED OTHERWISE.
6 FOOTINGS TO BE CONSTRUCTED AND BACKFILLED AS SOON AS POSSIBLE FOLLOWING EXCAVATION TO AVOID SOFTENING OR DRYING OUT BY EXPOSURE. IF SOFTENING OR DRYING OF FOOTING BASE OCCURS DUE TO CONSTRUCTION DELAY, FOOTINGS ARE TO BE RE-EXCAVATED AND OVER EXCAVATION BACKFILLED WITH 10 MPa MASS CONCRETE FOLLOWING INSPECTION BY CONTRACT ADMINISTRATOR.
7 THE CONTRACTOR IS TO ALLOW FOR COST OF GEOTECHNICAL INSPECTIONS.
8 DRILL 50mm VERTICAL TEST HOLE ON THE CENTRE LINE OF EACH FOOTING TO A MINIMUM DEPTH OF 1.5 TIMES THE MINIMUM PLAN DIMENSION. THESE HOLES ARE TO BE DRILLED BELOW THE LEVEL AT WHICH SUITABLE FOUNDING MATERIAL IS REACHED, AND SHALL BE CHECKED BY THE GEOTECHNICAL ENGINEER PRIOR TO CONCRETING. IF DEEPENING OF THE EXCAVATION IS NECESSARY, THE TEST HOLE WILL BE REDRILLED.
9 STRIP ALL TOPSOIL FROM THE CONSTRUCTION AREA AS REQUIRED. ALL STRIPPED TOPSOIL IS TO BE REMOVED FROM SITE UNLESS DIRECTED OTHERWISE BY THE CONTRACT ADMINISTRATOR.

PILING NOTES

1 ALL PILING IS TO BE IN ACCORDANCE WITH SAI PILING CODE AS2159.
2 PILING IS TO BE DESIGNED, CONSTRUCTED AND CERTIFIED IN ACCORDANCE WITH THE SPECIFICATION AND REQUIREMENTS SET OUT ON THE DRAWINGS. DETAILS OF EACH PILE TYPE AND CAPACITY ARE TO BE SUBMITTED TO THE CONTRACT ADMINISTRATOR FOR REVIEW BEFORE ANY PILING IS COMMENCED.
3 PILES ARE TO BE DESIGNED FOR 100 YEAR STRUCTURAL LIFE AND CERTIFIED BY MANUFACTURER UNO.
4 SPLICES SHALL BE CAPABLE OF TRANSMISSION OF FULL MOMENT AND AXIAL CAPACITY OF PILE BETWEEN SECTIONS. SPLICES SHALL BE CONSTRUCTED TO MANUFACTURERS DETAIL AND REFERENCED IN MANUFACTURER SUPPLIED CERTIFICATION.
5 PILES ARE TO BE FOUNDED IN FILL MATERIAL WITH A MINIMUM ALLOWABLE BEARING PRESSURE OF 150 kPa U.N.O. THE CONTRACTOR SHALL ENGAGE A GEOTECHNICAL ENGINEER TO CONFIRM PILE FOUNDATION REQUIREMENTS ARE ACHIEVED PRIOR TO POURING.
6 LENGTH OF PILES TO BE CONFIRMED BY MANUFACTURER'S DESIGN AND THE GEOTECHNICAL ENGINEER BEFORE POURING.
7 EACH PILE IS TO BE CONSTRUCTED WITHIN A TOLERANCE OF 75mm OF THE LOCATION SHOWN ON THE PLAN, AND WITHIN 1 IN 100 FOR VERTICALLY OR BETTER.

EXCAVATION & SHORING NOTES

1 ALL NECESSARY APPROVALS FROM AUTHORITIES AND ADJACENT PROPERTY OWNERS MUST BE OBTAINED BEFORE COMMENCEMENT OF WORK.
2 IDENTIFY AND VERIFY THE LOCATION OF EXISTING ADJACENT SERVICES AND CONFIRM DETAILS WITH THE ENGINEER PRIOR TO EXCAVATION.
3 THE GEOTECHNICAL ENGINEER IS TO MONITOR THE EXCAVATION AS IT PROCEEDS AND SHALL BE CONSULTED AT ALL TIMES REGARDING STABILITY OF ROCK FACES AND CONFIRMATION OF,OR CHANGES TO, THE REQUIREMENTS FOR THE ROCK BOLTS, DOWELS, ROCK ANCHORS, CONCRETE PANELS, SOLDIERS, WALERS, AND DRAIN HOLES.
4 ALL SOLDIER PILING IS TO BE IN ACCORDANCE WITH SAI PILING CODE AS 21259+
5 SOLDIER PILE AND SHOTCRETE SHORING IS TO BE DESIGNED, CONSTRUCTED AND CERTIFIED IN ACCORDANCE WITH THE SPECIFICATION AND REQUIREMENTS SET OUT ON THE DRAWINGS. DETAILS OF EACH PILE TYPE AND CAPACITY ARE TO BE SUBMITTED TO THE SUPERINTENDENT AS REQUIRED BY THE SPECIFICATION BEFORE ANY PILING HAS COMMENCED.
6 SPLICES SHALL BE CAPABLE OF TRANSMISSION OF FULL MOMENT AND AXIAL CAPACITY OF PILE BETWEEN SECTIONS. SPLICES SHALL BE CONSTRUCTED TO MANUFACTURER'S DETAIL AND REFERENCED IN MANUFACTURER SUPPLIED CERTIFICATION.

FORMWORK NOTES

1 FORMWORK SHALL COMPLY WITH AS3610.
2 THE DESIGN, CONSTRUCTION AND PERFORMANCE OF THE FORMWORK, FALSEWORK AND BACK-PROPPING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL ENGAGE A STRUCTURAL ENGINEER TO RPEQ CERTIFY ALL FORMWORK, FALSEWORK AND BACKPROPPING DESIGN. THE CONTRACTOR SHALL SUBMIT PROPOSALS FOR FORMWORK, FALSEWORK AND BACK-PROPPING AND REMOVAL OF FORMWORK TO THE CONTRACT ADMINISTRATOR FOR COMMENT AT COMMENCEMENT OF JOB.
3 RESHORING IS NOT PERMITTED UNLESS PROPOSAL SUBMITTED AND APPROVED BY THE SUPERINTENDENT PRIOR TO CARRYING OUT WORKS.
4 STRIPPING OF FORMWORK SHALL COMPLY WITH SECTION 17.6 OF AS3600.
5 FORMED CONCRETE SURFACES SHALL HAVE FINISHES IN ACCORDANCE WITH AS3610 AS REFERENCED IN CONCRETE NOTES.
6 ALL HOLES LEFT BY FORM TIE BOLTS SHALL BE FILLED WITH MORTAR MATCHING THE SURFACE COLOUR OF THE FINISHED SURFACE.
7 FORMWORK MY BE STRIPPED AFTER 7 DAYS, BUT BEAMS AND SLABS MUST REMAIN PROPPED FOR 21 DAYS U.N.O.

REINFORCEMENT NOTES

1 SYMBOLS ON DRAWINGS FOR GRADE AND STRENGTH OF REINFORCEMENT ARE:
- N DENOTES GRADE D500N HOT-ROLLED DEFORMED REINFORCEMENT BAR TO AS/NZS 4671.
- SL DENOTES GRADE 500L WELDED WIRE REINFORCEMENT MESH TO AS/NZS 4671.
- L DENOTES GRADE D500L STEEL REINFORCEMENT TO AS/NZS 4671.
- R DENOTES GRADE 250R PLAIN ROUND BAR REINFORCEMENT TO AS1302.
- TM DENOTES HARD DRAWN STEEL TRENCH MESH, GRADE 500L TO AS/NZS 4671.

ALL STEEL REINFORCEMENT IS TO BE MANUFACTURED FROM 100% RECYCLED STEEL.

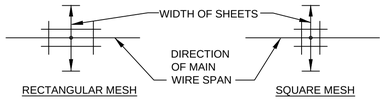
2 BAR NOTATION GIVES THE FOLLOWING INFORMATION IN THIS ORDER:

NO OF BARS; GRADE; BAR SIZE (mm); SPACING (mm, IF REQUIRED); PLACING INFORMATION
EG, 20-N16-200-BTM.

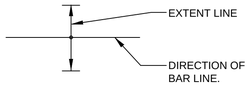
3 MESH NOTATION GIVES THE FOLLOWING INFORMATION IN THIS ORDER:

SL OR RL SYMBOL; AS REFERENCE NUMBER IF STANDARD MESH OR SPECIAL CODE IF NON-STANDARD MESH; PLACING INFORMATION.
EG, RL918 TOP.

4 MAIN WIRES OF MESH AND COVERAGE OF SHEETS SHOWN IN PLAN-VIEW AND ELEVATION THUS:



5 EXTENT OF BARS AND MESH SHOWN THUS:



6 REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION.
7 REINFORCEMENT DIMENSIONS SHALL NOT BE SCALED.
8 SPLICE REINFORCEMENT ONLY AT LOCATIONS SHOWN IN THE DRAWINGS. LAP LENGTH SHALL COMPLY WITH AS3600.
REINFORCEMENT SHALL NOT BE SPLICED EXCEPT WHERE SHOWN IN THE DRAWINGS. IF SPLICES ARE NOT INDICATED IN THE DRAWINGS, SUITABLE LOCATIONS SHALL BE PROPOSED FOR WRITTEN APPROVAL BY THE CONTRACT ADMINISTRATOR.
THE SPLICED LENGTH OF BARS IN SLABS, BEAMS AND WALLS SHALL BE AS GIVEN IN THE FOLLOWING TABLE, EXCEPT WHERE OTHER DIMENSIONS ARE STATED ON THE ACTUAL DETAIL:

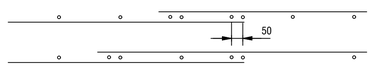
TYPE OF MEMBER	TENSILE LAP LENGTH (mm) FOR GRADE 500N DEFORMED BARS.							
	N10	N12	N16	N20	N24	N28	N32	N36
SLAB OR WALL (WITH 300mm OR LESS DEPTH OF CONCRETE BELOW THE BAR)	350	450	700	950	1200	1500	1800	2200
OTHER MAIN BARS	450	600	900	1200	1550	1950	2350	2800

EMBEDMENT LENGTHS FOR STARTER BARS AND SPLICE LENGTHS FOR COLUMN BARS SHALL BE AS GIVEN IN THE FOLLOWING TABLE, EXCEPT WHERE OTHER DIMENSIONS ARE STATED ON THE ACTUAL DETAIL. THE DIMENSIONS IN THE TABLE ALSO INDICATE OVERALL ANCHORAGE (DEVELOPMENT) LENGTHS FOR STARTER / DOWEL BARS. ANY COGS USED SHALL BE DETAILED AS PER AS3600.

BAR SIZE (mm)	SPLICE LENGTH (mm)	NUMBER OF FITMENTS AT COLUMN BAR CRANK
N12	500	1-R10
N16	650	1-R10
N20	800	2-R10
N24	1000	1-N12
N28	1150	2-N12
N32	1300	3-N12
N36	1450	3-N12

BARS IN ELEMENTS UNDER AXIAL TENSION SHALL BE CONNECTED USING MECHANICAL SPLICES DEVELOPING FULL BAR TENSIONS.

9 REINFORCEMENT SHALL BE BENT COLD IN ACCORDANCE WITH AS3600 EXCEPT WHERE APPROVED BY THE CONTRACT ADMINISTRATOR. NO REBENDING SHALL BE PERMITTED UNLESS APPROVED BY THE CONTRACT ADMINISTRATOR.
10 WHERE LAP IS SPECIFIED, MESH SHALL BE LAPPED SUCH THAT THE TWO OUTERMOST WIRES LAP WITH THOSE OF THE OTHER SHEET AS SHOWN:



ALL LAPS ARE TO BE WIRED TOGETHER AT 1000 CRS.

11 ALL REINFORCEMENT IS TO BE ACCURATELY POSITIONED, ADEQUATELY SUPPORTED, AND THEN INSPECTED BY THE CONTRACT ADMINISTRATOR BEFORE ANY CONCRETE IS PLACED.
12 WELDING OF REINFORCEMENT INCLUDING TACK-WELDING FOR FIXING PURPOSES SHALL COMPLY WITH AS3600 AND AS1554.3. WELDING IS PERMITTED ONLY WHERE SHOWN IN THE DRAWINGS OR WHERE OTHERWISE APPROVED BY THE CONTRACT ADMINISTRATOR.
13 WHERE NO REINFORCEMENT IS SHOWN ON THE DRAWINGS AT RIGHT ANGLES TO THE MAIN REINFORCEMENT, PLACE N12-300 TRANSVERSE TO THE REINFORCEMENT SHOWN TO SUIT THE BAR LAYING SEQUENCE.
14 FIRST SLAB BAR IS TO BE POSITIONED MAX. 100mm FROM FACE OF BEAMS, R.C. WALLS AND SLAB THICKENINGS PARALLEL TO BAR. FIRST TIE TO BE PLACED MAX. 50mm FROM FACE OF COLUMN OR SUPPORTING WALL UNDER.
15 FIX 2-N16 TRIMMER BARS AROUND OPENINGS IN EACH (TOP/BOTTOM) FACE OF MEMBER AND EXTENDING 1000mm BEYOND THEIR CROSS-OVER POINT.

REINFORCEMENT NOTES CONTINUED

16 REINFORCEMENT SHALL NOT BE CUT, BENT OR HEATED ON SITE WITHOUT THE CONTRACT ADMINISTRATOR'S PRIOR APPROVAL. DO NOT CUT REINFORCEMENT ON SITE TO CLEAR PENETRATIONS. DISPLACE REINFORCEMENT SLIGHTLY AS NECESSARY. MAINTAIN COVER DURING POUR.
17 ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON PLASTIC OR CONCRETE CHAIRS UNLESS NOTED OTHERWISE MAXIMUM CENTRES OF SUPPORTING CHAIRS SHALL BE 600mm FOR FABRIC, 600mm FOR BARS UP TO 12mm DIAMETER, 900mm FOR BARS 16mm AND GREATER. REINFORCEMENT SHALL BE SECURELY TIED WITH GALVANISED WIRE TIES AND ALL TIE ENDS SHALL BE TURNED INTO THE MEMBER CLEAR OF THE COVER ZONE.
18 REFER TO THE CONCRETE NOTES FOR THE COVER TO REINFORCEMENT NEAREST THE CONCRETE SURFACE. UNLESS NOTED OTHERWISE ON DRAWINGS.
19 THE REQUIRED COVER SHALL BE MAINTAINED TO ALL PIPES, CONDUITS, REGLETS, DRIP GROOVES ETC.
20 UNLESS NOTED OTHERWISE SLAB REINFORCEMENT AT SUPPORTING WALLS AND SLAB REINFORCEMENT BARS SHALL EXTEND 100mm ONTO SUPPORTING WALLS, WITH 50% OF BOTTOM BARS COGGED TO ACHIEVE ANCHORAGE AT SIMPLY SUPPORTS ENDS. MESH IN SLABS SHALL EXTEND 100mm ONTO SUPPORTING WALLS AND INCLUDE AT LEAST ONE CROSS WIRE.

CONCRETE NOTES

1 ALL CONCRETE WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600, AS2870 AND THE SPECIFICATION.
2 CONCRETE QUALITY, AND REQUIRED PROPERTIES OF CONCRETE SHALL BE IN ACCORDANCE TO AS1379.
3 SURFACE FINISH, FORMWORK IS TO BE IN ACCORDANCE WITH THE ARCHITECT'S SPECIFICATIONS
4 CONCRETE REQUIREMENTS AS SHOWN IN TABLE BELOW UNLESS NOTED OTHERWISE ON THE DRAWINGS. NO "BRECCIA" TYPE AGGREGATE IS TO BE USED.

MEMBER LOCATION	EXPOSURE CLASSIFICATION	CONCRETE STRENGTH f'c (MPa) AT 28 DAYS	CONCRETE CLASS	SLUMP AT SITE +/- 15mm	Nom. MAX. AGGREGATE SIZE (mm)	MAX. 56 DAY SHRINKAGE x10-6	REQUIRED COVER (mm)
PILES AND FOOTING	A2	40	N	80	20	-	30
WALLS	B1	40	N	80	10	-	40
*							

*CONCRETE FOR KERBS, CONCRETE PAVEMENT AND STORMWATER PITS SHALL BE IN ACCORDANCE WITH THE DRAWINGS AND RELEVANT SECTIONS OF THE SPECIFICATION.
PILES, FOOTINGS AND WALLS FOR WHICH THE CONCRETE REQUIREMENTS ABOVE APPLY ARE SHOWN ON DRAWINGS

5 NORMAL CLASS CONCRETE SHALL HAVE CEMENT OF TYPE GENERAL PURPOSE BLENDED CEMENT(GB)
6 THE CONTRACTOR IS TO SEEK APPROVAL FROM THE STRUCTURAL ENGINEER IN WRITING IF ANY ADMIXTURES TO BE USED IN THE CONCRETE MIX. CALCIUM CHLORIDE WILL NOT BE PERMITTED AND SHALL NOT BE USED WITHOUT THE EXPRESS PERMISSION FROM THE SUPERINTENDENT.
7 ALL CONCRETE SHALL BE SUBJECT TO PROJECT ASSESSMENT AND TESTING TO AS1379.
8 MECHANICALLY VIBRATE CONCRETE IN THE FORM TO GIVE MAXIMUM COMPACTION WITHOUT SEGREGATION OF THE CONCRETE.
9 CURE CONCRETE AS REQUIRED BY SECTION 17 OF AS3600 AND AS SET OUT IN THE SPECIFICATION.
10 IN THE DRAWINGS, THE BEAM DEPTH IS WRITTEN FIRST AND INCLUDES SLAB THICKNESS IF ANY.
11 STRIP FOOTING DEPTHS ARE WRITTEN FIRST FOLLOWED BY WIDTH.
12 UNLESS SHOWN ON THE DRAWINGS, THE LOCATION OF ALL CONSTRUCTION JOINTS SHALL BE SUBMITTED TO THE CONTRACT ADMINISTRATOR FOR REVIEW.
13 NO CHASES, HOLES GREATER THAN 150mm DIAMETER, OR EMBEDMENT OF PIPES GREATER THAN 40mm DIAMETER OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN THE CONCRETE SLABS. FOR ALL OTHER CONCRETE MEMBERS, NO PENETRATIONS, CHASES OR EMBEDMENTS SHALL BE MADE WITHOUT PRIOR APPROVAL BY THE STRUCTURAL ENGINEER.
14 EXACT SIZE AND LOCATION OF PENETRATIONS ARE TO BE OBTAINED FROM WORKSHOP DRAWINGS PRIOR TO SCHEDULING OF REINFORCEMENT, AND ARE NOT TO EXCEED DIMENSIONS WHERE SHOWN ON THE STRUCTURAL DRAWINGS. LIAISE WITH ALL TRADES FOR FINAL PENETRATION SETOUT.
15 DO NOT PLACE CONDUITS, PIPES AND THE LIKE WITHIN COVER CONCRETE. CONDUITS CAST INTO CONCRETE MEMBERS SHALL BE SPACED AT MAXIMUM DISTANCE POSSIBLE AND UNDER NO CIRCUMSTANCES CLOSER THAN A CLEAR SPACING OF TWICE THE LARGER CONDUIT DIAMETER FROM PARALLEL REINFORCEMENT OR ANY OTHER CONDUIT.
16 SLURRY USED TO LUBRICATE CONCRETE PUMP LINES IS NOT TO BE USED IN ANY STRUCTURAL MEMBERS.
17 CONCRETE SIZES AS DRAWN ARE MINIMUM AND DO NOT INCLUDE APPLIED FINISHES.
18 UNLESS NOTED OTHERWISE, ALL SLABS CAST ON GROUND REQUIRE 50mm THICK COMPACTED FREE DRAINING SAND BEDDING WITH A 0.2mm POLYTHENE MEMBRANE.
19 ALL FORMED EXPOSED EDGES AND RE-ENTRANT CORNERS SHALL BE CHAMFERED OR FILLETED 15mm UNLESS NOTED OTHERWISE ON THE ARCHITECTURAL OR STRUCTURAL DRAWINGS. REFER TO ARCHITECTS DRAWINGS AND SPECIFICATION FOR ALL FALLS IN SLAB, REGLETS AND CHAMFERS ETC. PROVIDE DRIP GROOVES AT ALL EXPOSED EDGES, COVER TO BE MAINTAINED.
20 THE FACE OF ALL CONCRETE WHICH HAS REINFORCEMENT PROJECTING FROM IT AND AGAINST WHICH NEW CONCRETE IS TO BE CAST, IS TO BE THOROUGHLY MECHANICALLY SCABBLED, FULLY EXPOSING THE AGGREGATE MATRIX CLEANED OF DUST AND LOOSE CONCRETE.

AECOM

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PROJECT
Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

KEY PLAN

SCALE BAR

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

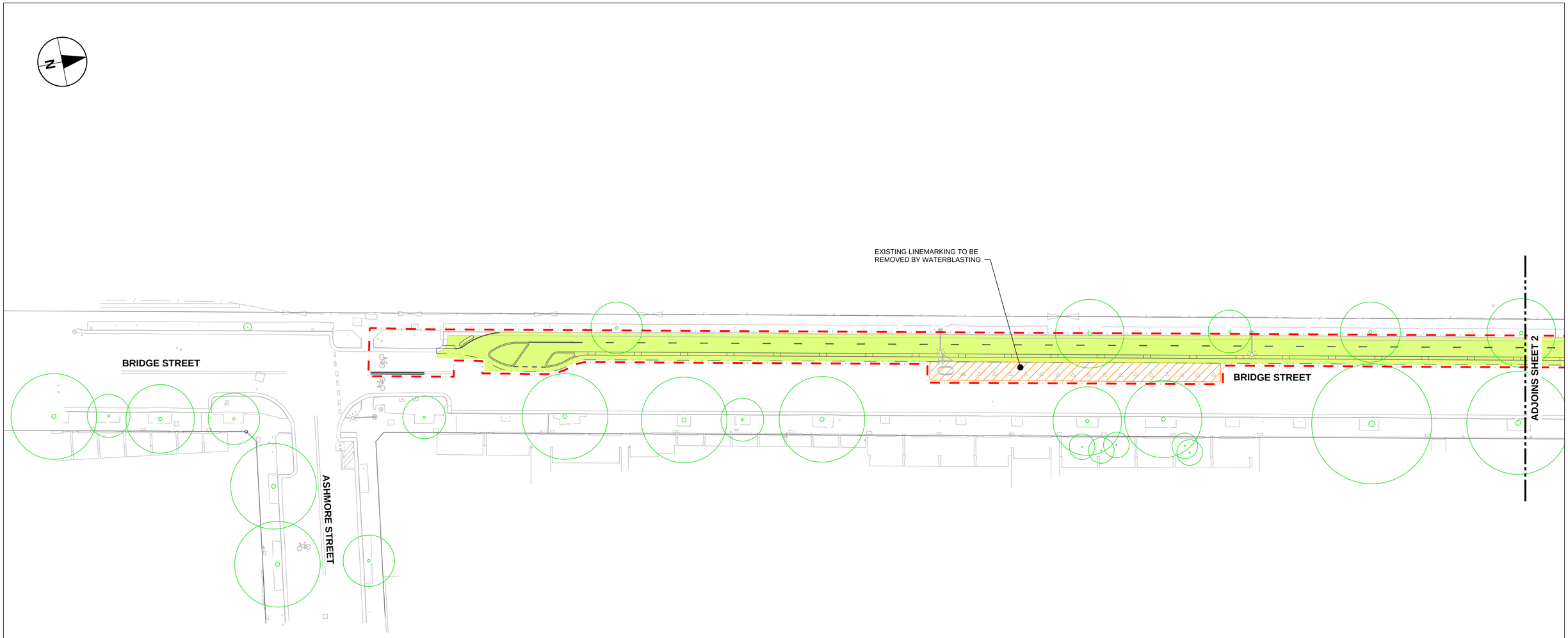
I/R	DATE	DESCRIPTION
01	17.08.2020	80% DETAILED DESIGN

PROJECT NUMBER
60620833

SHEET TITLE
GENERAL NOTES

SHEET 2

SHEET NUMBER
60620833-2B-SHT-1000-CI-0012



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
- PAVEMENT/KERB TO BE DEMOLISHED
- LINEMARKING TO BE REMOVED BY WATERBLASTING
- ROAD PAVEMENT (MILL AND RE-SHEET)
- KERB TO BE REMOVED
- EXISTING STREET LIGHTING / TRAFFIC POLE TO BE REMOVED OR RELOCATED
- EXISTING STREET TREE TO BE RETAINED AND PROTECTED. REFER TO TREE MANAGEMENT PLANS FOR DETAILS

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4. CHECK THE BEARING CAPACITY OF THE GROUND BELOW THE SLAB FOR ADEQUACY TO SUPPORT THE FOOTWAY AND CYCLEWAY PROPOSED AT THE PARTICUALR LOCATION

AECOM

CONSULTANT

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

PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

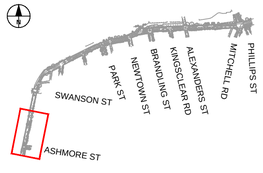
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

- ☐ NO
- ☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

DEMOLITION PLAN SHEET 1

SHEET NUMBER

60620833-2B-SHT-1000-CI-0051

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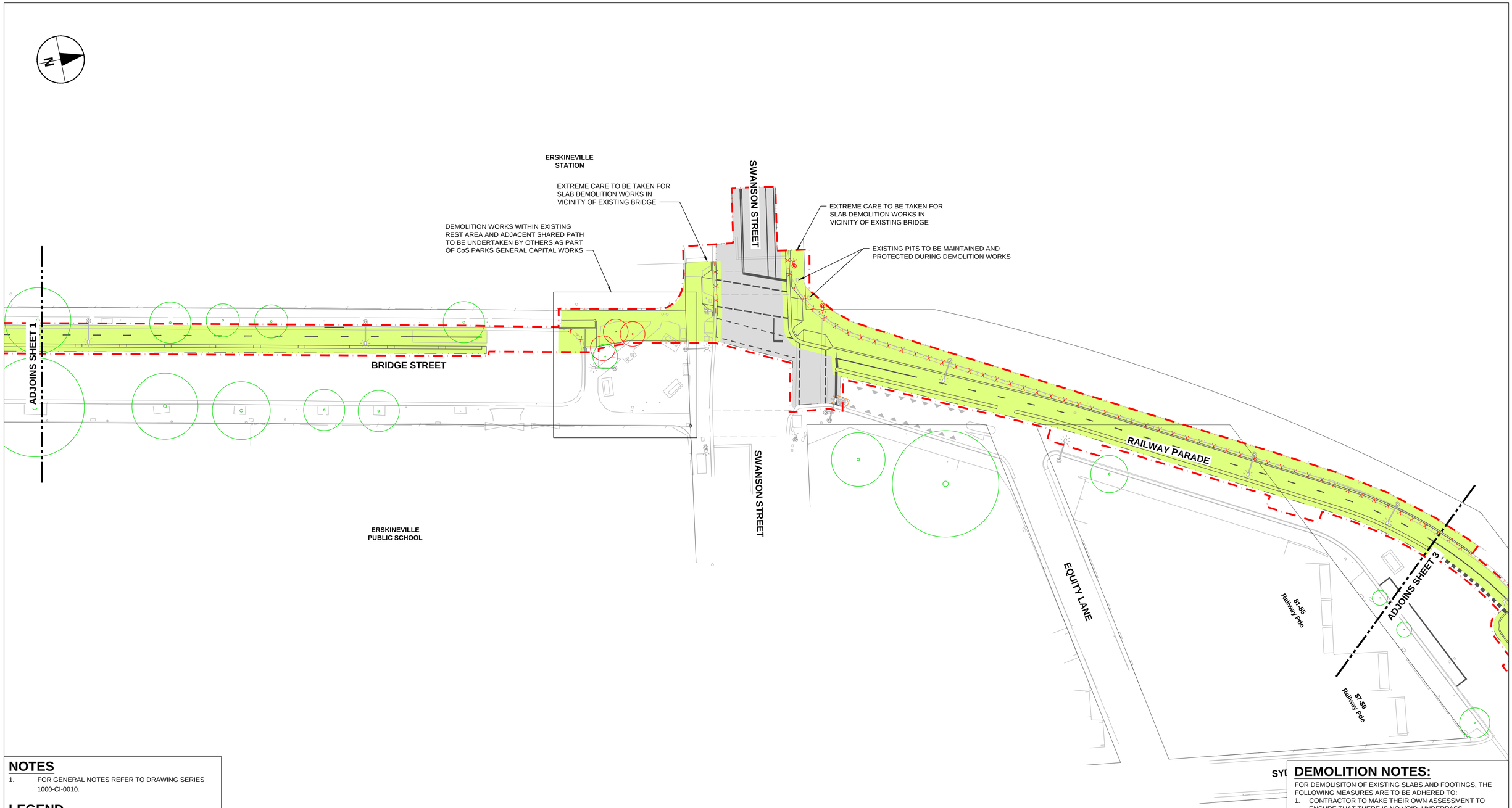

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

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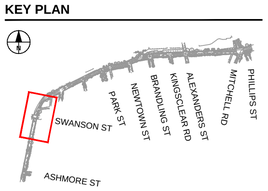
- ☐ NO
- ☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

DEMOLITION PLAN SHEET 2

SHEET NUMBER

60620833-2B-SHT-1000-CI-0052

Last saved by: TOWNSENDSW(2020-08-13) Last Plotted: 2020-08-17
Filename: C:_PROCESS\PW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0052.DWG

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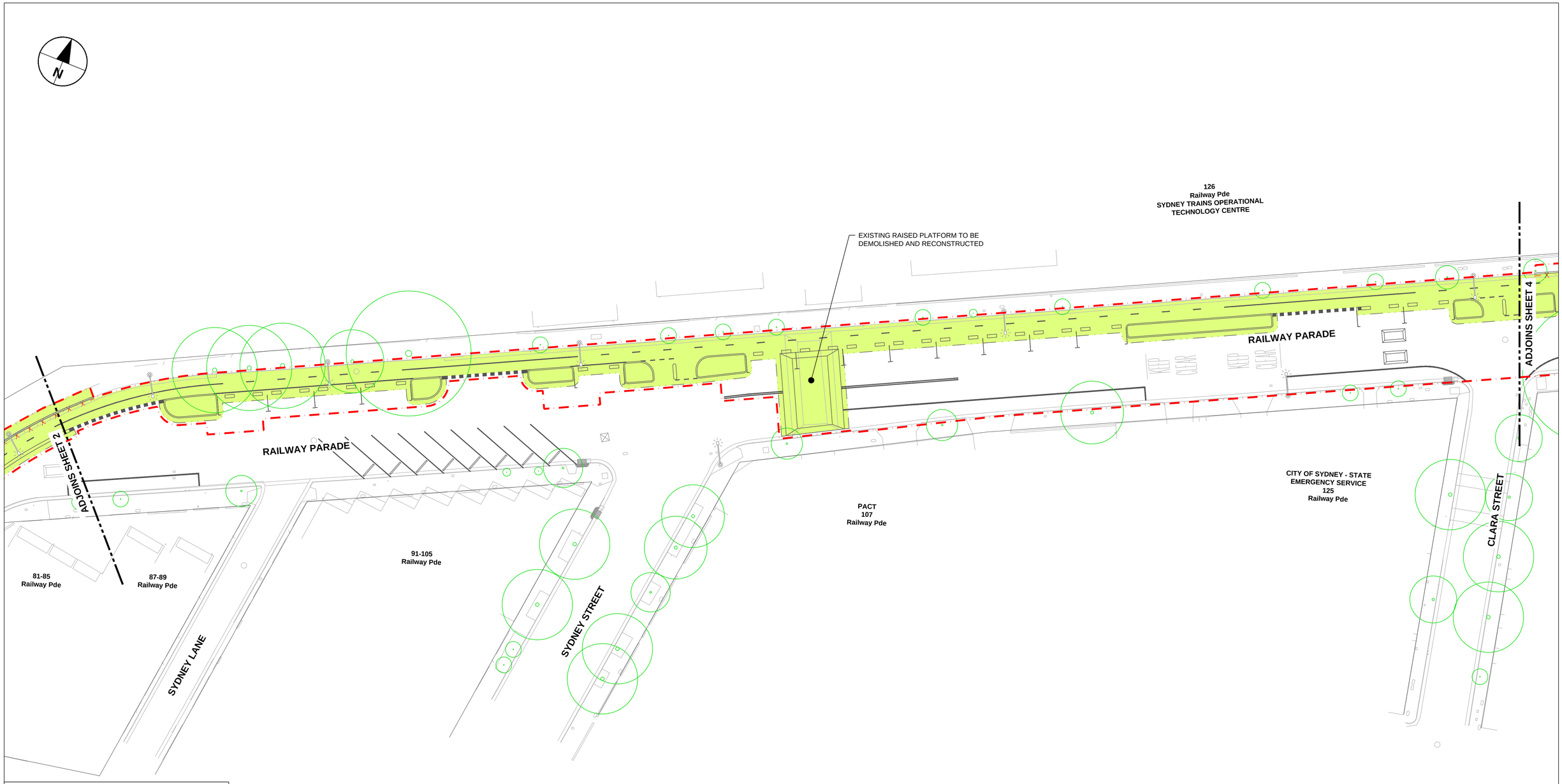

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
- PAVEMENT/KERB TO BE DEMOLISHED
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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

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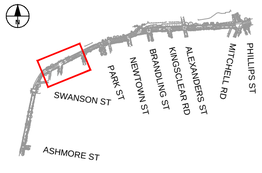
- ☐ NO
- ☐ YES

KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

DEMOLITION PLAN SHEET 3

SHEET NUMBER

60620833-2B-SHT-1000-CI-0053

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
Filename: C:_PROCESSPW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0053.DWG

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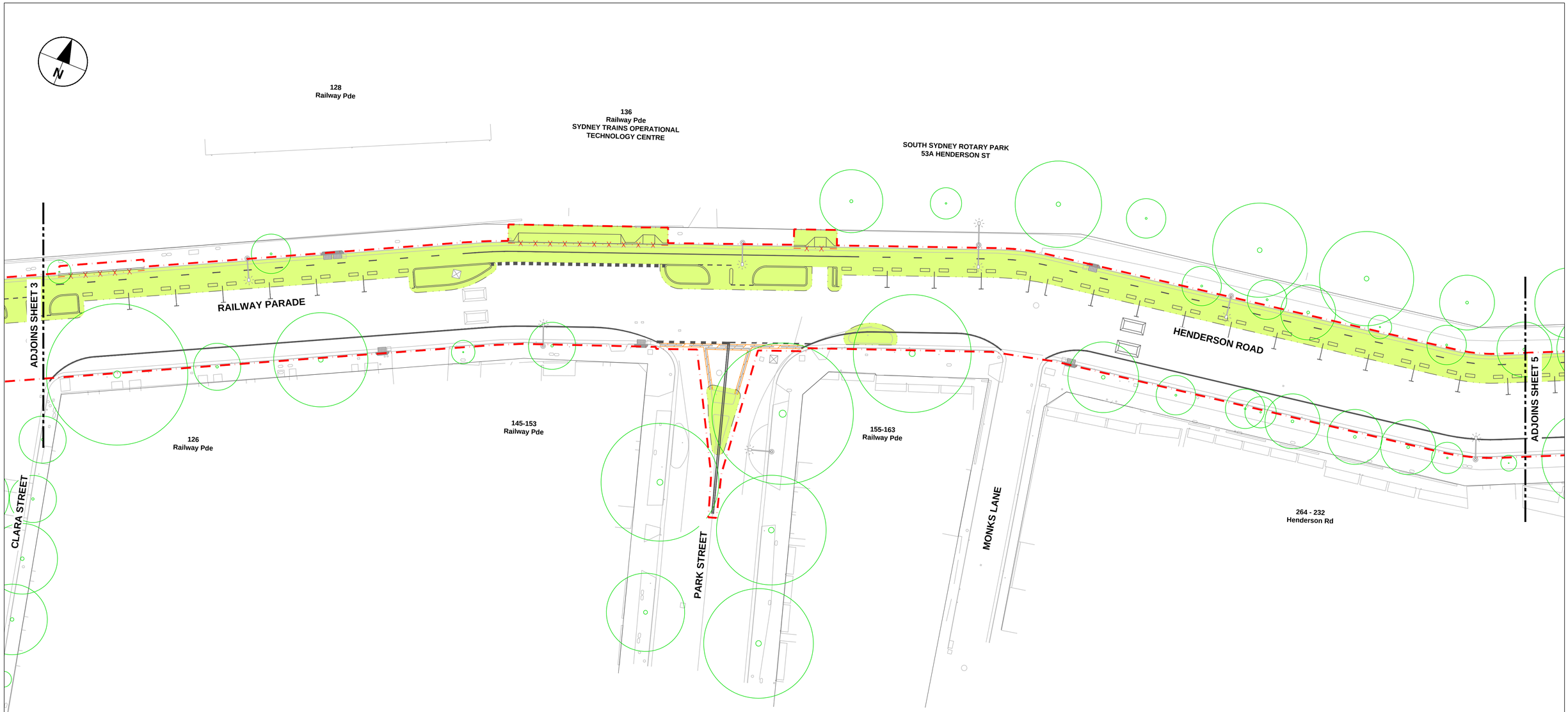

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

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- PAVEMENT/KERB TO BE DEMOLISHED
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CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

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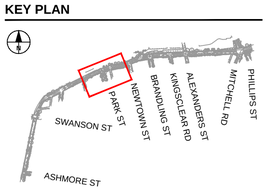
- ☐ NO
- ☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

DEMOLITION PLAN SHEET 4

SHEET NUMBER

60620833-2B-SHT-1000-CI-0054

Last saved by: TOWNSENDSW(2020-08-17) Last Plotted: 2020-08-17
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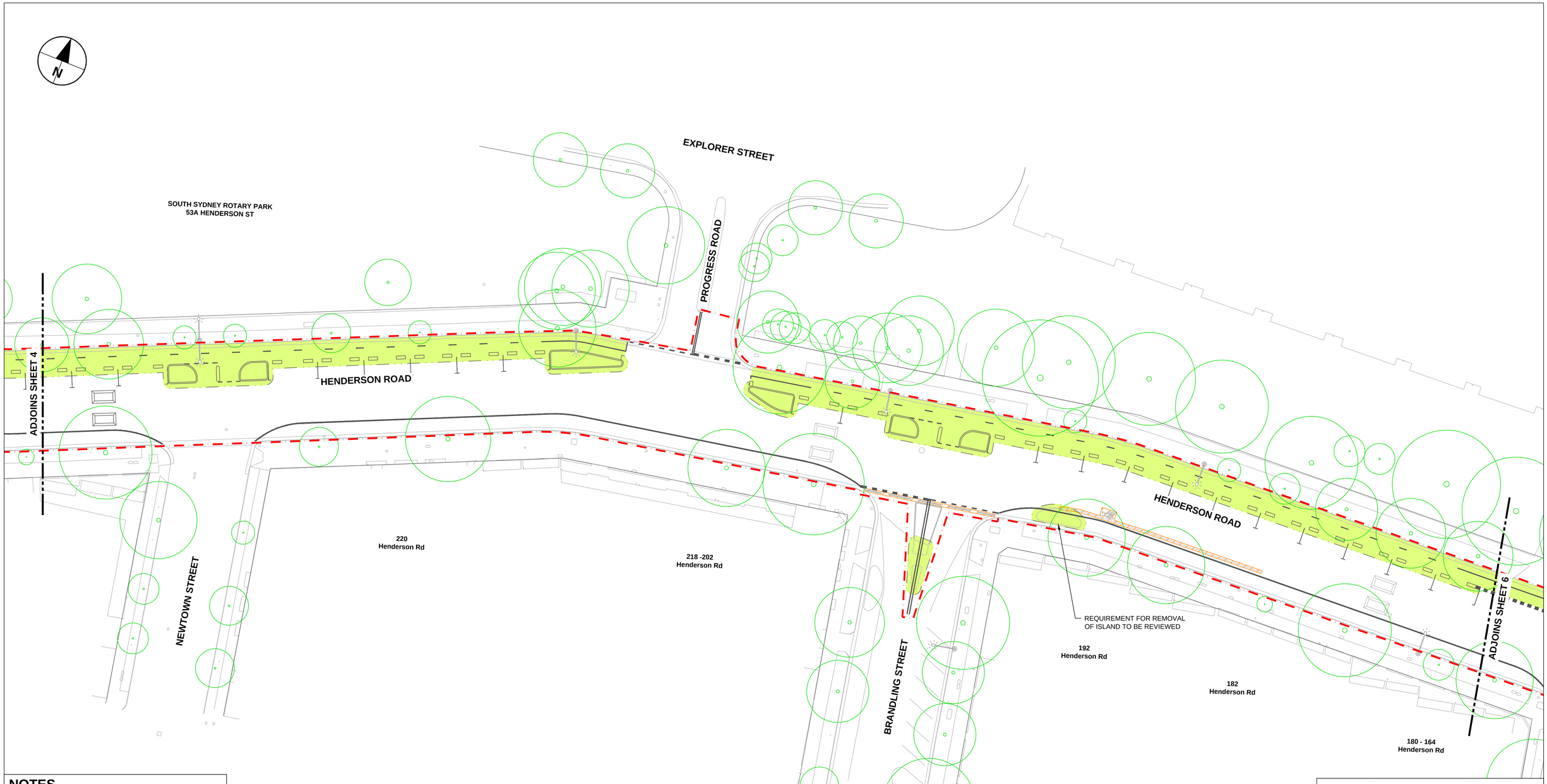

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

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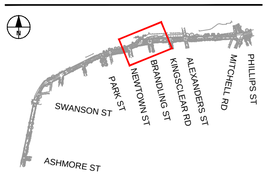
KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

DEMOLITION PLAN SHEET 5

SHEET NUMBER

60620833-2B-SHT-1000-CI-0055

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
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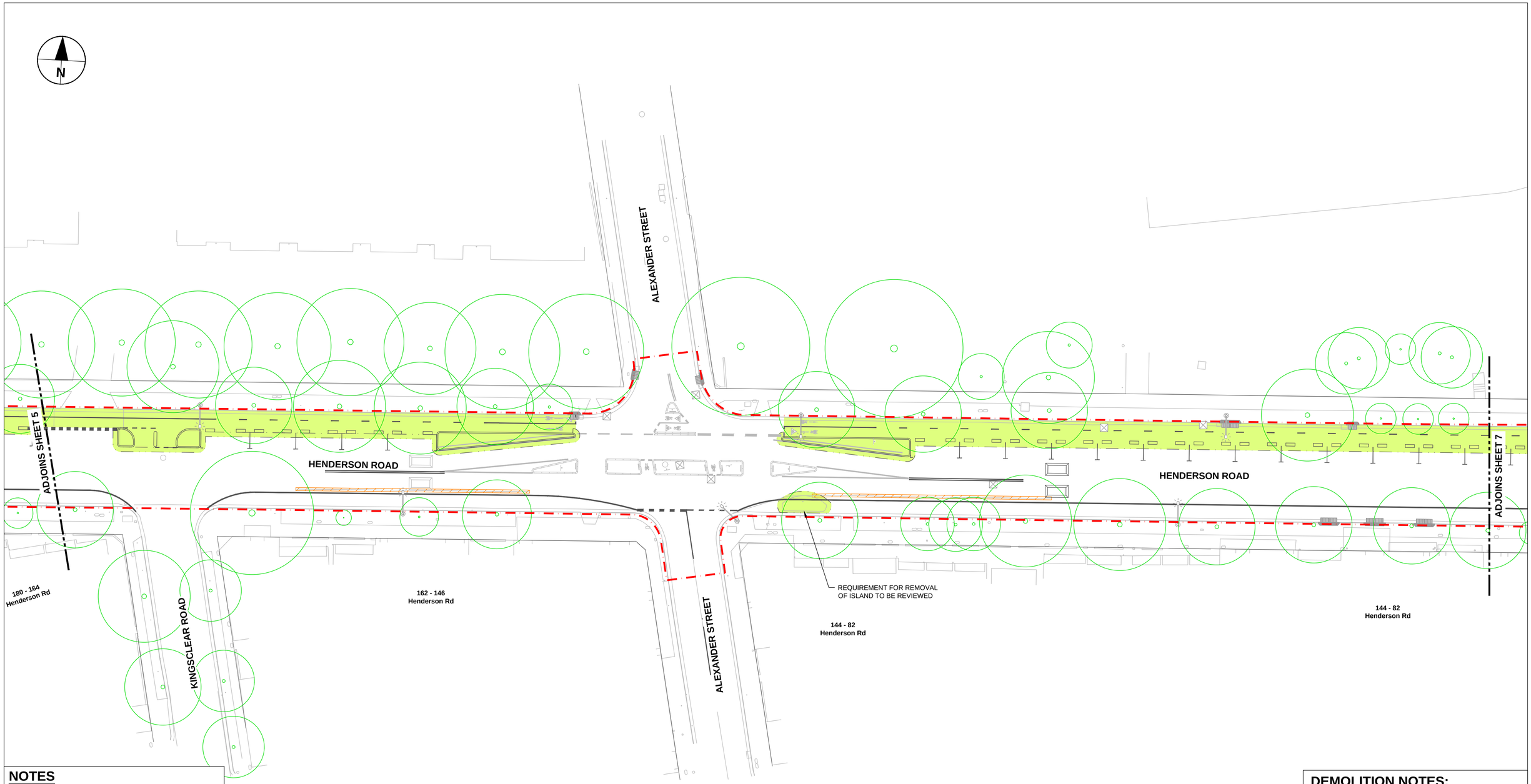

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
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CLIENT

CITY OF SYDNEY

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- ☐ NO
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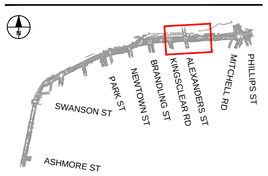
KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

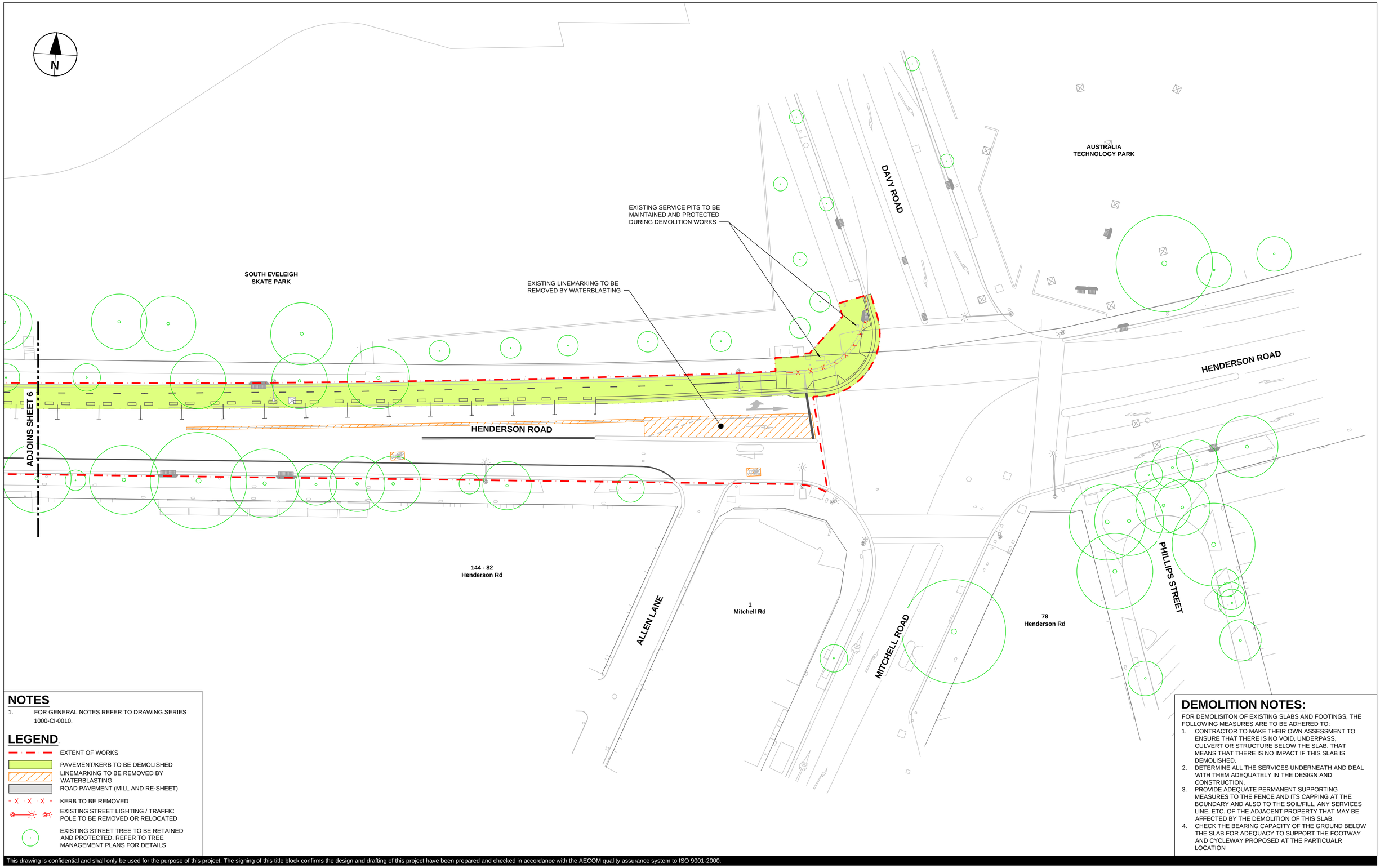
SHEET TITLE

DEMOLITION PLAN SHEET 6

SHEET NUMBER

60620833-2B-SHT-1000-CI-0056

ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

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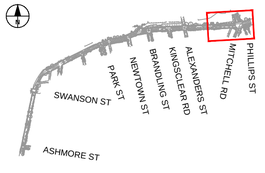
- ☐ NO
- ☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

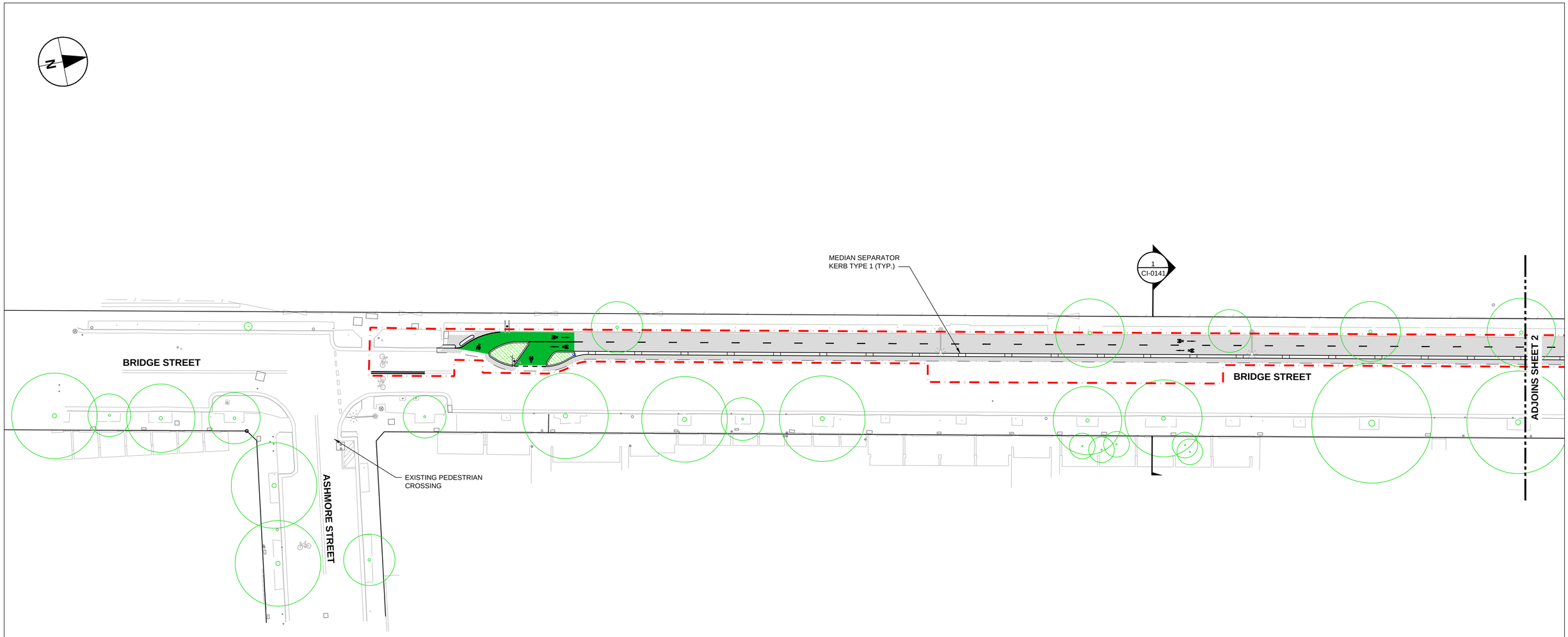
SHEET TITLE

DEMOLITION PLAN SHEET 7

SHEET NUMBER

60620833-2B-SHT-1000-CI-0057

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
Filename: C:_PROCESS\PW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0057.DWG



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.
2. FOR LANDSCAPING AND STREET FURNITURE REQUIREMENTS, REFER TO DRAWING SERIES 1000-CI-0150
3. FOR PAVEMENT TYPES AND EXTENTS, REFER TO DRAWING SERIES 1000-CI-0200
4. FOR LINES AND SIGNAGE REQUIREMENTS AND SETOUT, REFER TO DRAWING SERIES 1000-CI-0250

LEGEND

- EXTENT OF WORKS
- CONCRETE FOOTPATH PAVEMENT
- ROAD/CYCLEPATH PAVEMENT
- SOFT LANDSCAPING
- EXISTING LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED DRAINAGE PITS
- EXISTING DRAINAGE PITS
- PROPOSED TREE AND TREE PIT
- EXISTING TREE TO BE RETAINED AND PROTECTED

CONSULTANT

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SAFETY IN DESIGN INFORMATION

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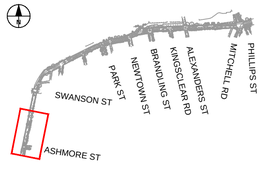
- ☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

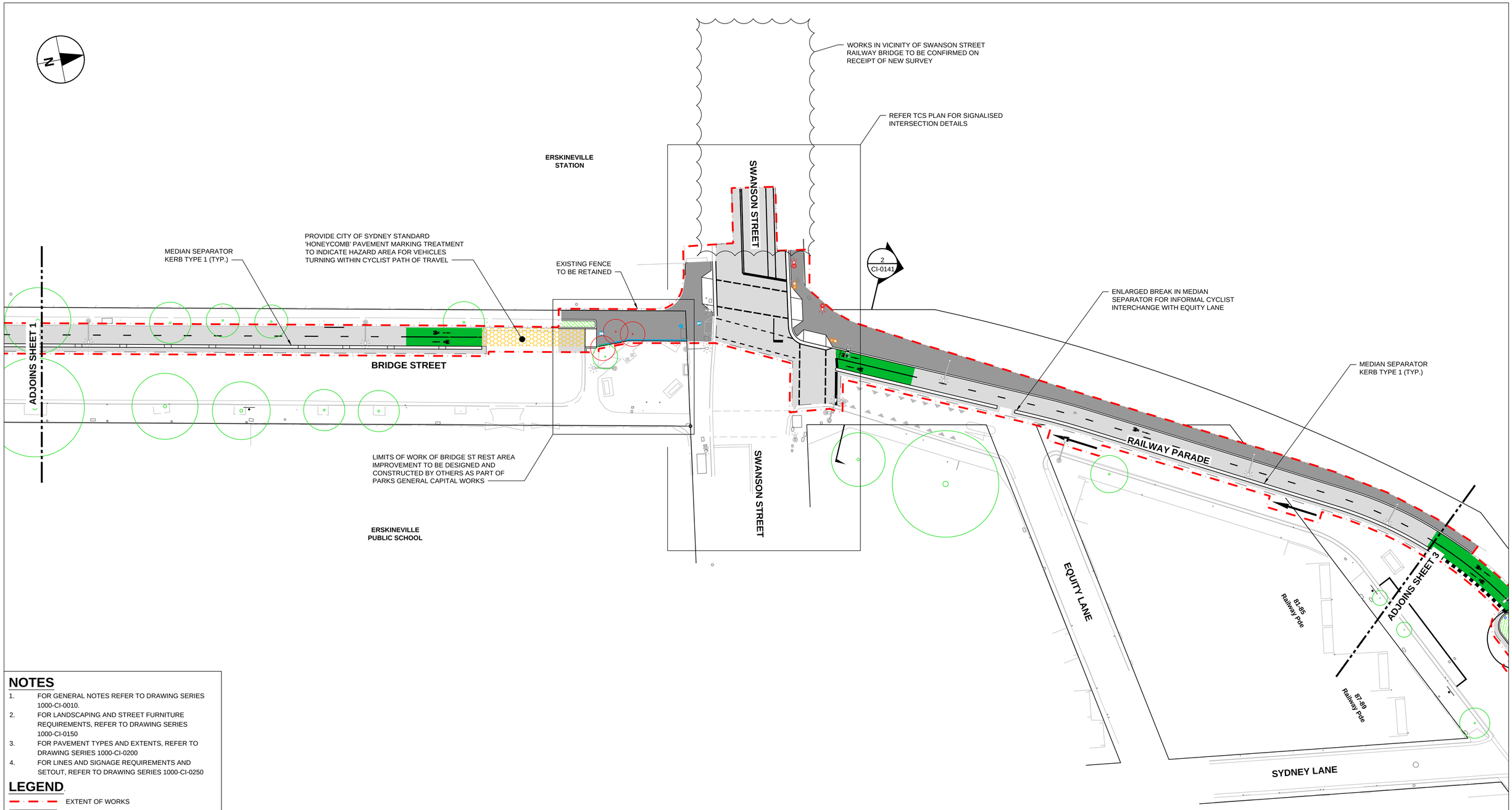
SHEET TITLE

GENERAL ARRANGEMENT PLAN
SHEET 1

SHEET NUMBER

60620833-2B-SHT-1000-CI-0101

ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.
2. FOR LANDSCAPING AND STREET FURNITURE REQUIREMENTS, REFER TO DRAWING SERIES 1000-CI-0150
3. FOR PAVEMENT TYPES AND EXTENTS, REFER TO DRAWING SERIES 1000-CI-0200
4. FOR LINES AND SIGNAGE REQUIREMENTS AND SETOUT, REFER TO DRAWING SERIES 1000-CI-0250

LEGEND

- EXTENT OF WORKS
- CONCRETE FOOTPATH PAVEMENT
- ROAD/CYCLEPATH PAVEMENT
- SOFT LANDSCAPING
- EXISTING LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED DRAINAGE PITS
- EXISTING DRAINAGE PITS
- PROPOSED TREE AND TREE PIT
- EXISTING TREE TO BE RETAINED AND PROTECTED

AECOM

CONSULTANT

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

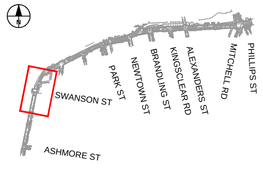
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

- ☐ NO
- ☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

GENERAL ARRANGEMENT PLAN
SHEET 2

SHEET NUMBER

60620833-2B-SHT-1000-CI-0102

Last saved by: TOWNSENDSW(2020-08-17) Last Plotted: 2020-08-17
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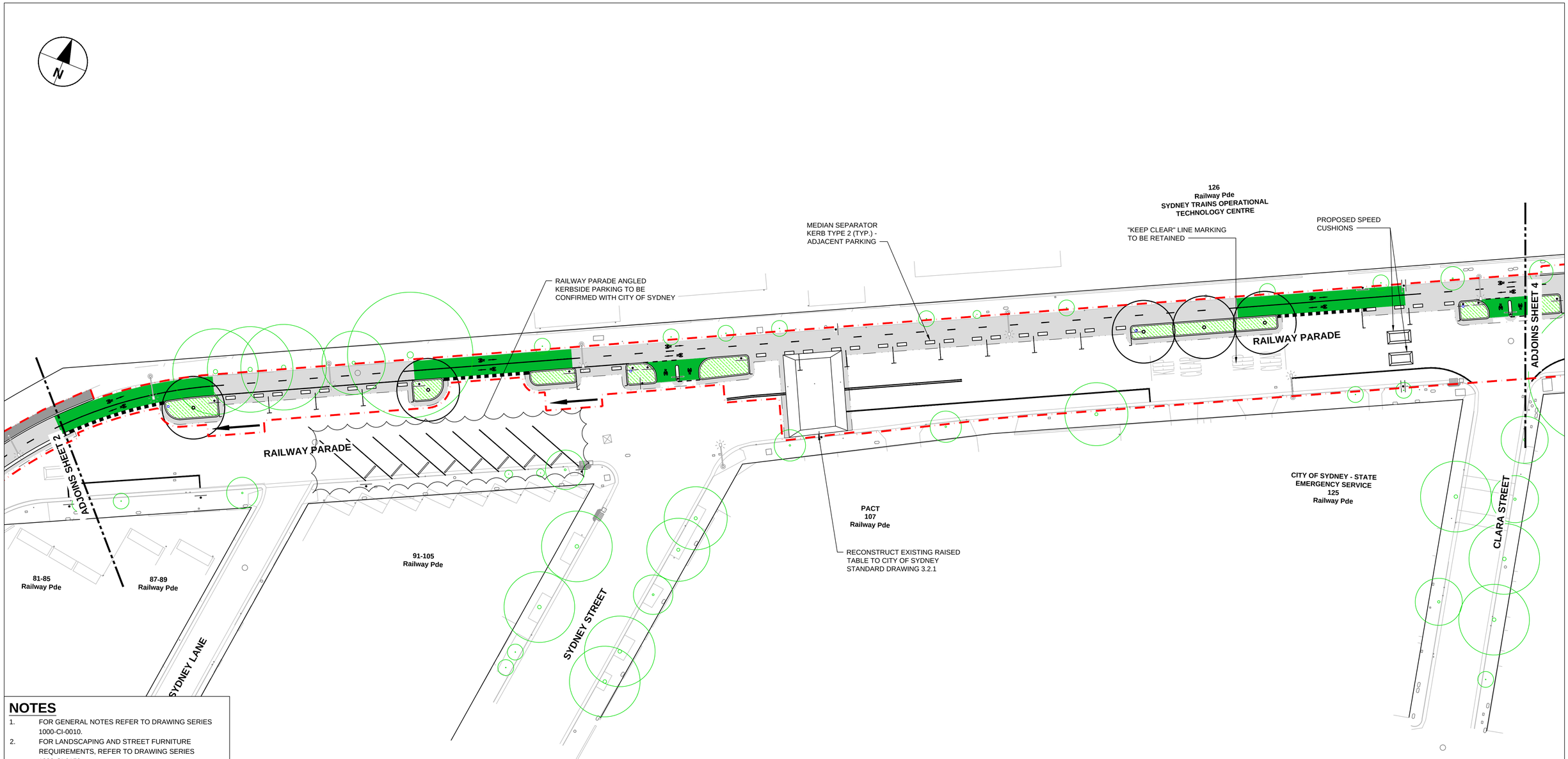

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.
2. FOR LANDSCAPING AND STREET FURNITURE REQUIREMENTS, REFER TO DRAWING SERIES 1000-CI-0150
3. FOR PAVEMENT TYPES AND EXTENTS, REFER TO DRAWING SERIES 1000-CI-0200
4. FOR LINES AND SIGNAGE REQUIREMENTS AND SETOUT, REFER TO DRAWING SERIES 1000-CI-0250

LEGEND

- EXTENT OF WORKS
- CONCRETE FOOTPATH PAVEMENT
- ROAD/CYCLEPATH PAVEMENT
- SOFT LANDSCAPING
- EXISTING LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED DRAINAGE PITS
- EXISTING DRAINAGE PITS
- PROPOSED TREE AND TREE PIT
- EXISTING TREE TO BE RETAINED AND PROTECTED

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

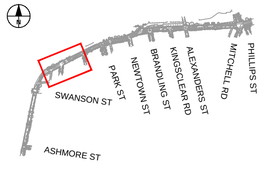
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

- ☐ NO
- ☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

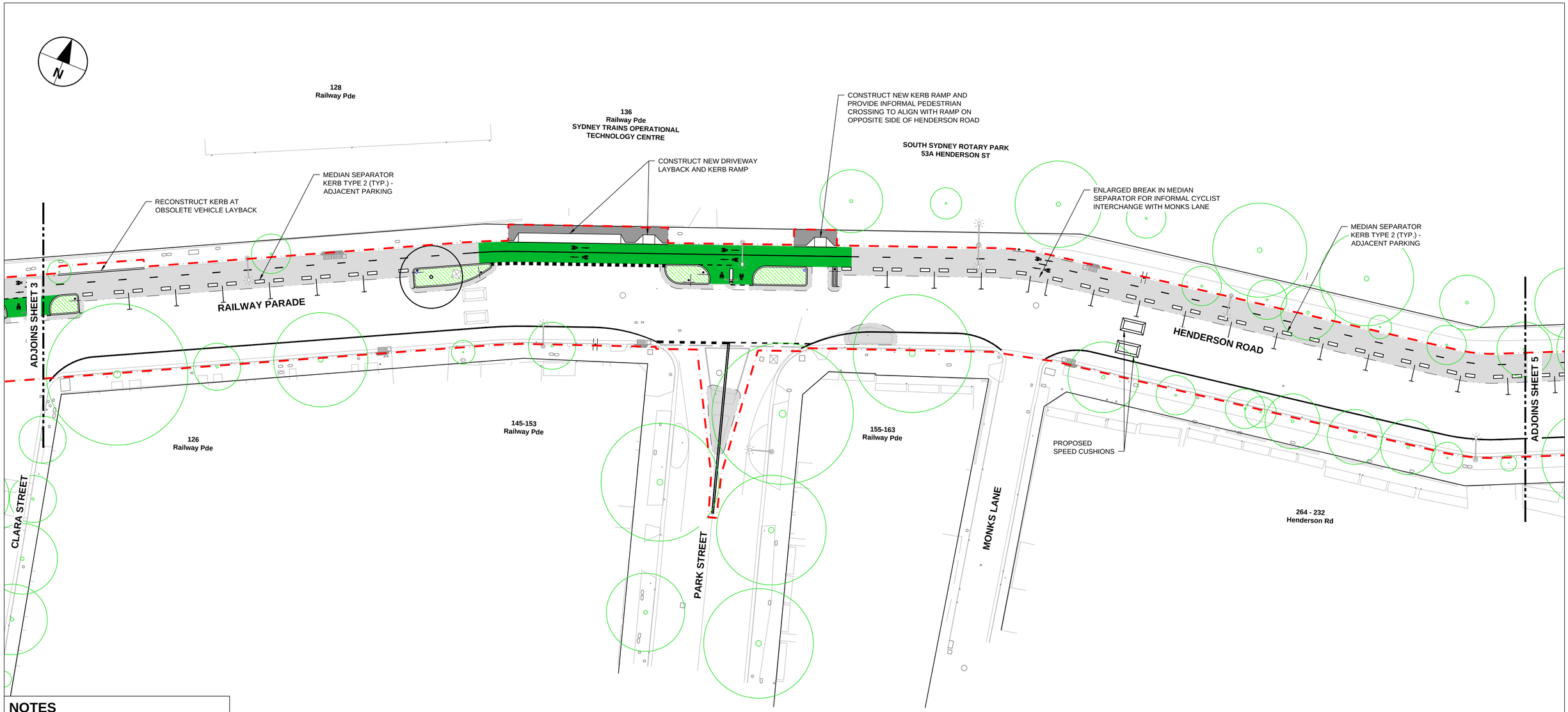
SHEET TITLE

GENERAL ARRANGEMENT PLAN
SHEET 3

SHEET NUMBER

60620833-2B-SHT-1000-CI-0103

ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.
2. FOR LANDSCAPING AND STREET FURNITURE REQUIREMENTS, REFER TO DRAWING SERIES 1000-CI-0150
3. FOR PAVEMENT TYPES AND EXTENTS, REFER TO DRAWING SERIES 1000-CI-0200
4. FOR LINES AND SIGNAGE REQUIREMENTS AND SETOUT, REFER TO DRAWING SERIES 1000-CI-0250

LEGEND

- EXTENT OF WORKS
- CONCRETE FOOTPATH PAVEMENT
- ROAD/CYCLEPATH PAVEMENT
- SOFT LANDSCAPING
- EXISTING LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED DRAINAGE PITS
- EXISTING DRAINAGE PITS
- PROPOSED TREE AND TREE PIT
- EXISTING TREE TO BE RETAINED AND PROTECTED

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CLIENT

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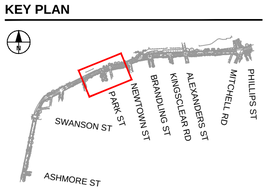
SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

- ☐ NO
- ☐ YES

KEY PLAN



SCALE BAR

0 6.25 12.5 m

1:250

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

GENERAL ARRANGEMENT PLAN
SHEET 4

SHEET NUMBER

60620833-2B-SHT-1000-CI-0104

Last saved by: HAMMONDW(2020-08-17) Last Plotted: 2020-08-17
Filename: C:_PROCESSIPW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0104.DWG

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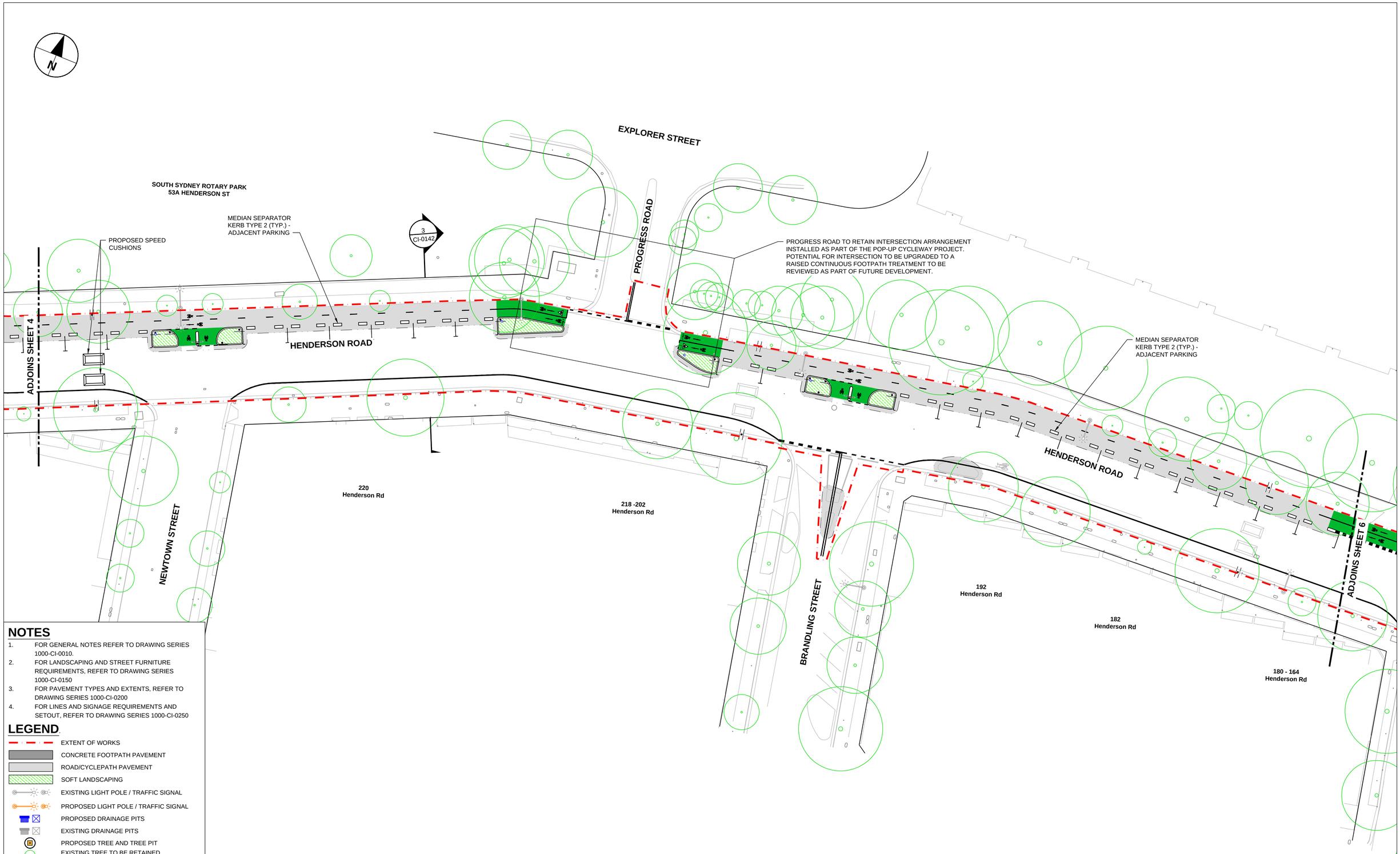

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.
2. FOR LANDSCAPING AND STREET FURNITURE REQUIREMENTS, REFER TO DRAWING SERIES 1000-CI-0150
3. FOR PAVEMENT TYPES AND EXTENTS, REFER TO DRAWING SERIES 1000-CI-0200
4. FOR LINES AND SIGNAGE REQUIREMENTS AND SETOUT, REFER TO DRAWING SERIES 1000-CI-0250

LEGEND

- EXTENT OF WORKS
- CONCRETE FOOTPATH PAVEMENT
- ROAD/CYCLEPATH PAVEMENT
- SOFT LANDSCAPING
- EXISTING LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED DRAINAGE PITS
- EXISTING DRAINAGE PITS
- PROPOSED TREE AND TREE PIT
- EXISTING TREE TO BE RETAINED AND PROTECTED

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PROJECT

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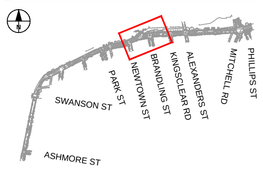
SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

KEY PLAN



SCALE BAR

0 6.25 12.5 m

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

GENERAL ARRANGEMENT PLAN
SHEET 5

SHEET NUMBER

60620833-2B-SHT-1000-CI-0105

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
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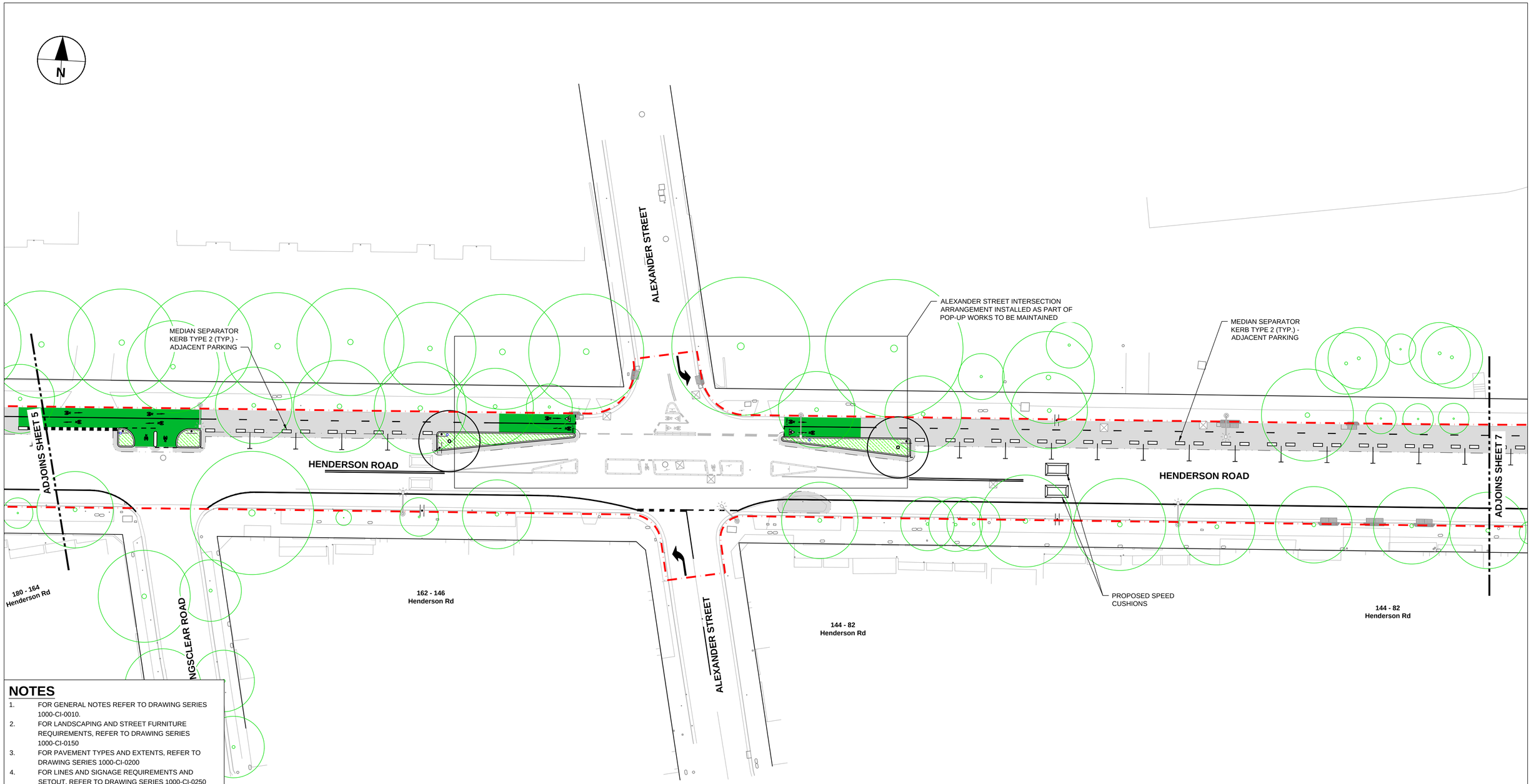

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.
2. FOR LANDSCAPING AND STREET FURNITURE REQUIREMENTS, REFER TO DRAWING SERIES 1000-CI-0150
3. FOR PAVEMENT TYPES AND EXTENTS, REFER TO DRAWING SERIES 1000-CI-0200
4. FOR LINES AND SIGNAGE REQUIREMENTS AND SETOUT, REFER TO DRAWING SERIES 1000-CI-0250

LEGEND

- EXTENT OF WORKS
- CONCRETE FOOTPATH PAVEMENT
- ROAD/CYCLEPATH PAVEMENT
- SOFT LANDSCAPING
- EXISTING LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED DRAINAGE PITS
- EXISTING DRAINAGE PITS
- PROPOSED TREE AND TREE PIT
- EXISTING TREE TO BE RETAINED AND PROTECTED

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PROJECT

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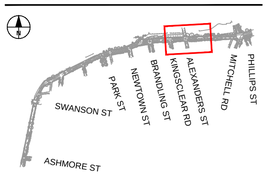
SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

- ☐ NO
- ☐ YES

KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

GENERAL ARRANGEMENT PLAN
SHEET 6

SHEET NUMBER

60620833-2B-SHT-1000-CI-0106

Last saved by: CHENJH (2020-08-12) Last Plotted: 2020-08-17
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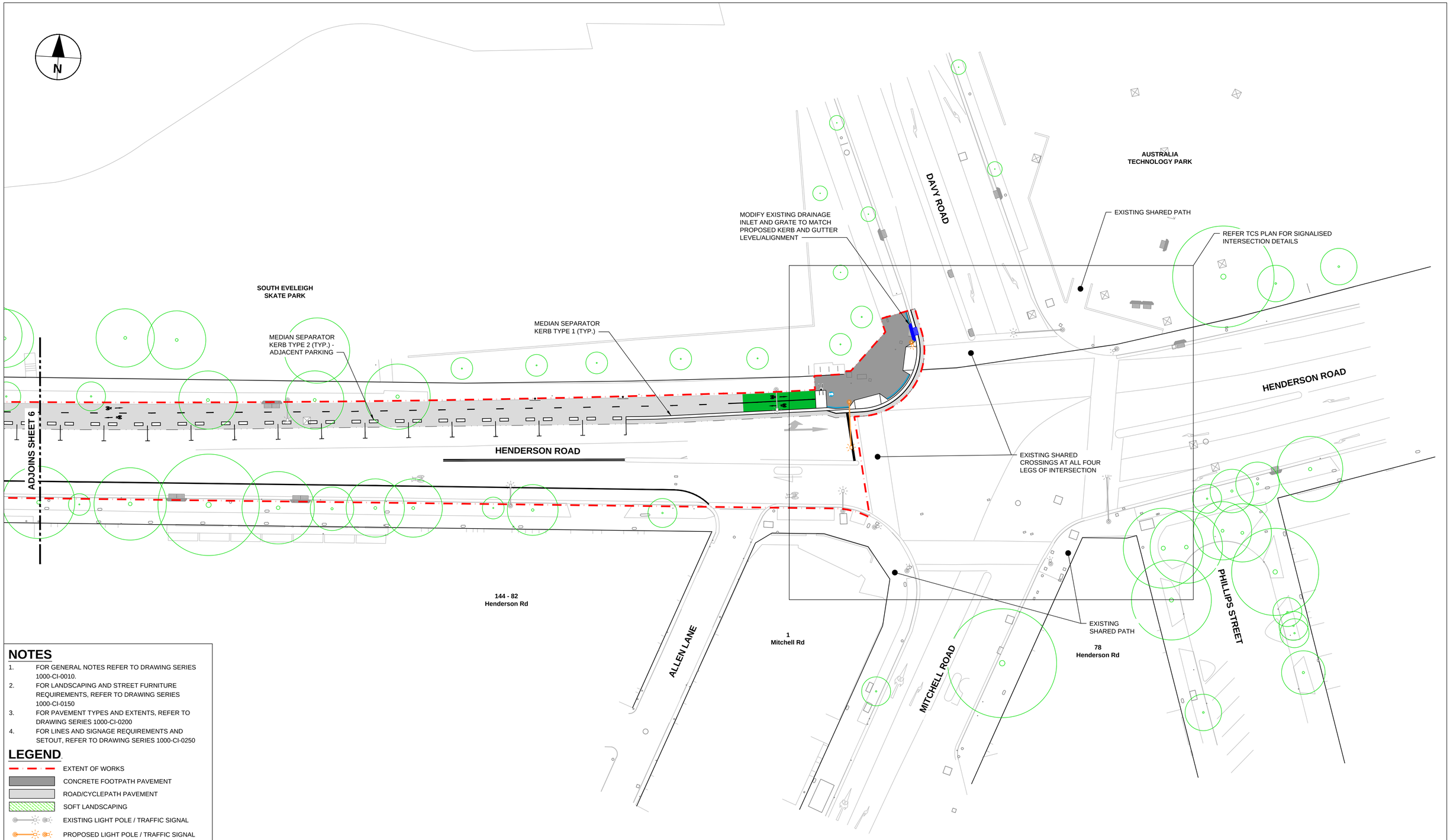

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.
2. FOR LANDSCAPING AND STREET FURNITURE REQUIREMENTS, REFER TO DRAWING SERIES 1000-CI-0150
3. FOR PAVEMENT TYPES AND EXTENTS, REFER TO DRAWING SERIES 1000-CI-0200
4. FOR LINES AND SIGNAGE REQUIREMENTS AND SETOUT, REFER TO DRAWING SERIES 1000-CI-0250

LEGEND

- EXTENT OF WORKS
- CONCRETE FOOTPATH PAVEMENT
- ROAD/CYCLEPATH PAVEMENT
- SOFT LANDSCAPING
- EXISTING LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED DRAINAGE PITS
- EXISTING DRAINAGE PITS
- PROPOSED TREE AND TREE PIT
- EXISTING TREE TO BE RETAINED AND PROTECTED

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PROJECT

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CLIENT

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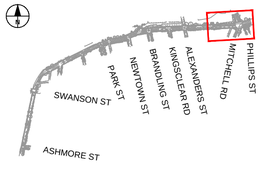
SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

- ☐ NO
- ☐ YES

KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

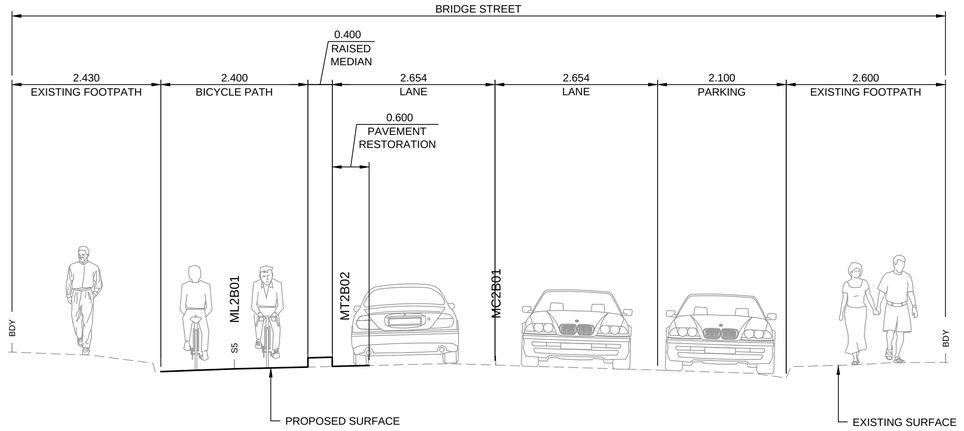
60620833

SHEET TITLE

GENERAL ARRANGEMENT PLAN
SHEET 7

SHEET NUMBER

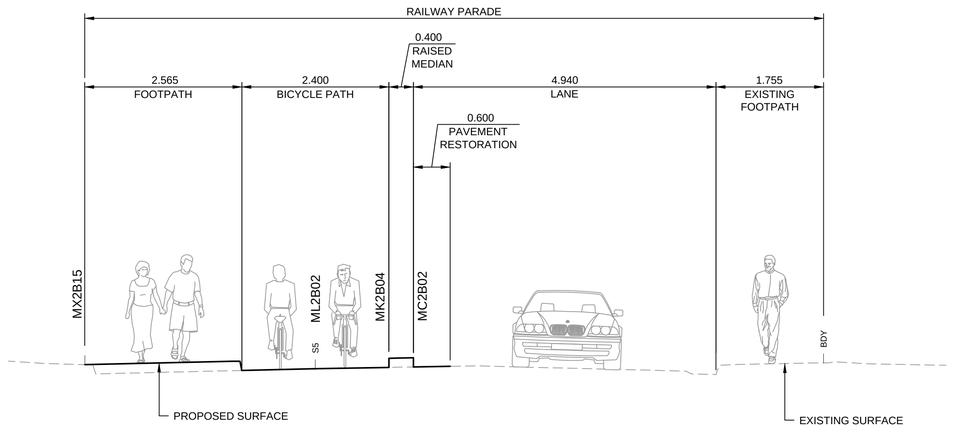
60620833-2B-SHT-1000-CI-0107



1 TYPICAL SECTION

CI-0101

SCALE 1:50



2 TYPICAL SECTION

CI-0102

SCALE 1:50

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

KEY PLAN

SCALE BAR

0 1.25 2.5 m

1:50

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

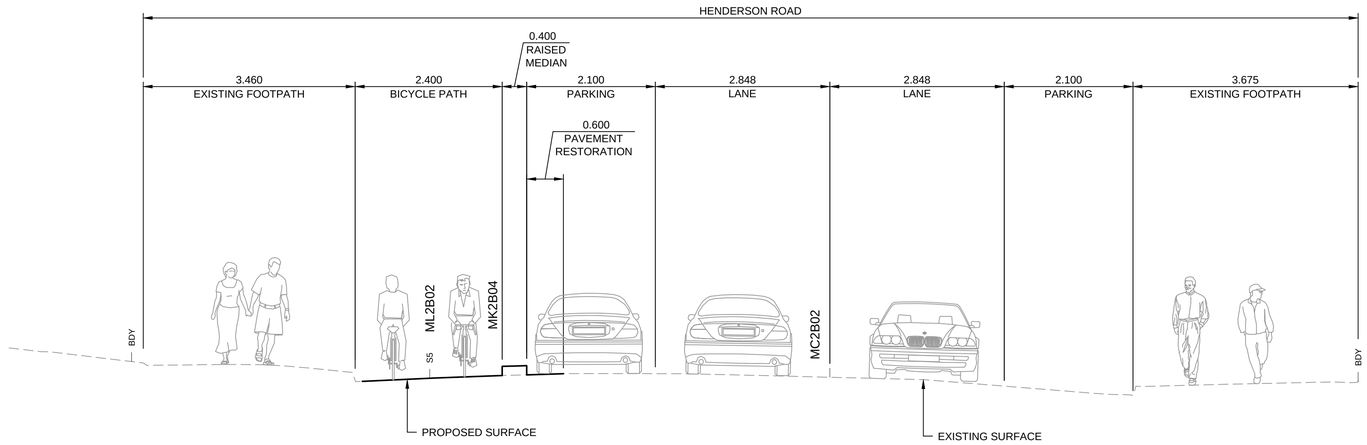
SHEET TITLE

TYPICAL SITE SECTIONS

SHEET 1

SHEET NUMBER

60620833-2B-SHT-1000-CI-0141



3 TYPICAL SECTION

CI-0105

SCALE 1:50

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

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SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

KEY PLAN

SCALE BAR

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1:50

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

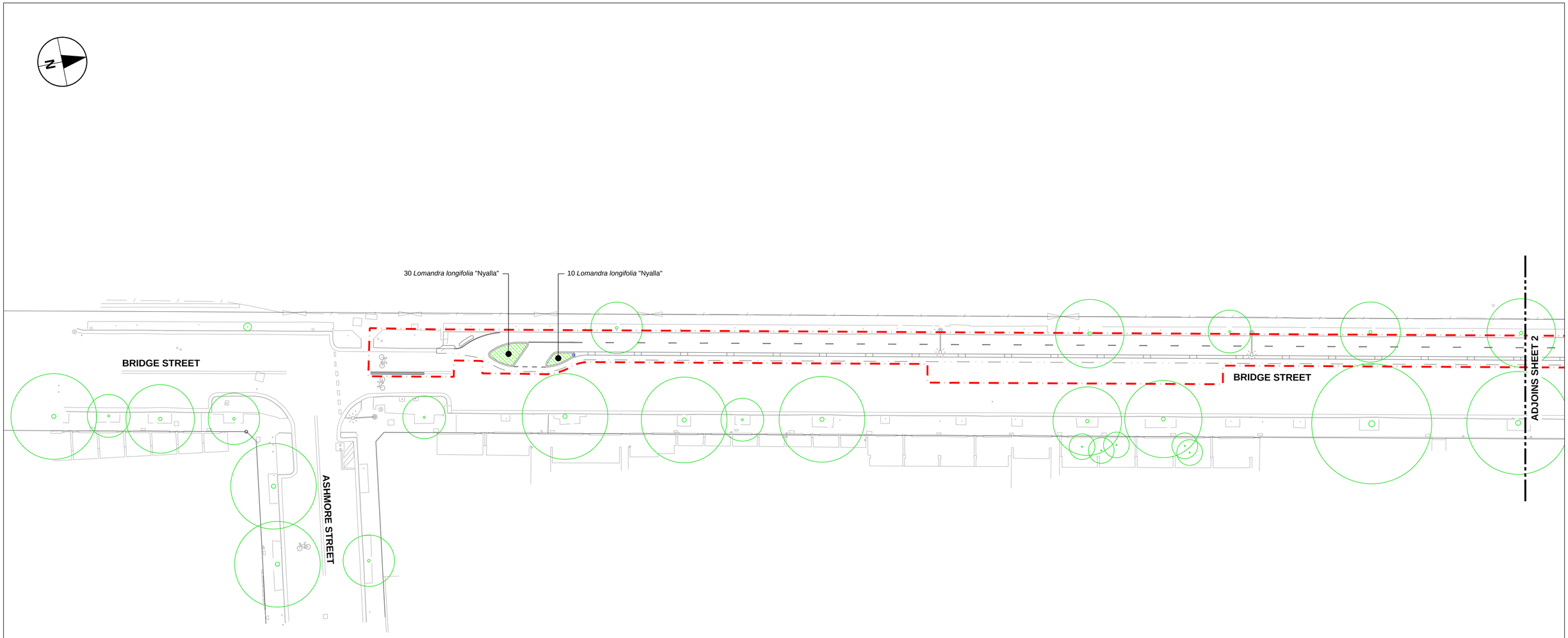
TYPICAL SITE SECTIONS

SHEET 2

SHEET NUMBER

60620833-2B-SHT-1000-CI-0142

ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
- TREE PROTECTION FENCE. INSTALL 1.8m HIGH TREE PROTECTION FENCE. REFER TO GENERAL NOTES.
- TRUNK PROTECTION. TIMBER BATTENS STRAPPED TO TRUNK AND ANY POTENTIAL BRANCHES. REFER TO GENERAL NOTES AND DETAIL.
- EXISTING STREET TREE TO BE RETAINED AND PROTECTED UNDER THIS CONTRACT REFER TO EXISTING TREE SCHEDULE ON SHEET CI-0156
- EXISTING STREET TREE TO BE REMOVED
- 01 EXISTING TREE NUMBER
- PROPOSED MASS PLANTING REFER TO PLANTING SCHEDULE FOR DENSITY AND QUANTITIES
- PROPOSED STREET TREE
- PROPOSED STREET FURNITURE

GENERAL NOTES

ALL STAFF WORKING ON THE CONTRACT SHALL BE ADEQUATELY INDUCTED TO ENSURE THEY ARE AWARE OF THE FOLLOWING TREE PROTECTION REQUIREMENTS.

HAND EXCAVATION OR TRENCHING NEAR EXISTING STREET TREES:
DURING ANY TRENCHING OR EXCAVATION WORKS, THE USE OF MECHANICAL EQUIPMENT MUST STOP IF TREE ROOTS GREATER THAN 50MM DIAMETER ARE ENCOUNTERED. APPROVAL MUST BE SOUGHT FROM THE CITY OF SYDNEY STREET TREE COORDINATOR TO CUT ANY ROOT GREATER THAN 50MM DIAMETER. EXCAVATION SHALL BE DONE BY HAND, OR OTHER APPROVED NON-DESTRUCTIVE METHOD, IN ANY AREA KNOWN TO, OR SUSPECTED OF HAVING ROOTS LARGER THAN 50MM DIAMETER.

TREE PROTECTION FENCING:
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 REMOVED OR ALTERED WITHOUT APPROVAL FROM THE CITY OF SYDNEY STREET TREE COORDINATOR.

TRUNK PROTECTION:
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 100MM INTERVALS, AND FIXED AGAINST THE TRUNK WITH TIE WIRE, OR STRAPPING. THE TRUNK PROTECTION SHALL NOT BE FIXED TO THE TREE IN ANY INSTANCE, OR IN ANY FASHION, E.G., NO NAILS OR SCREWS ARE TO BE USED.

KERB REMOVAL ADJACENT TO TREES:
EXISTING SECTIONS OF KERBS ADJACENT TO ANY STREET TREE SHALL NOT BE REMOVED WITHOUT APPROVAL FROM THE CITY OF SYDNEY STREET TREE COORDINATOR. REMOVAL OF KERBS ADJACENT TO MATURE TREES CAN CAUSE TREES TO BECOME UNSTABLE AND FAIL.

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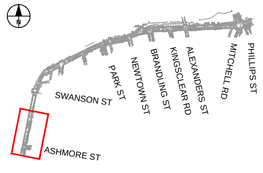
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

KEY PLAN



SCALE BAR
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1:250

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

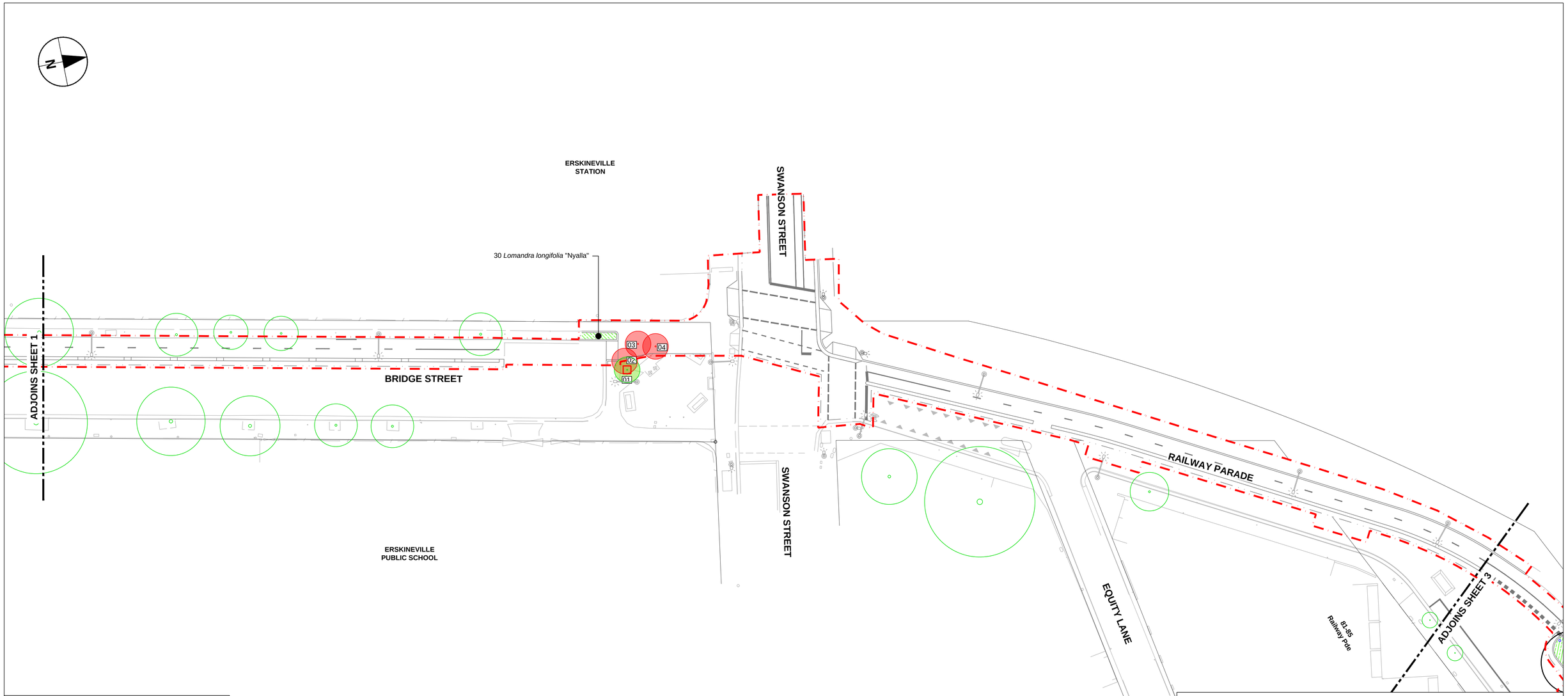
PROJECT NUMBER
60620833

SHEET TITLE
TREE MANAGEMENT AND LANDSCAPE PLAN
SHEET 1

SHEET NUMBER
60620833-2B-SHT-1000-CI-0151

Last saved by: TOWNSENDSW(2020-08-17) Last Plotted: 2020-08-17
Filename: C:_PROCESSIPW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0151.DWG

ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
- TREE PROTECTION FENCE. INSTALL 1.8m HIGH TREE PROTECTION FENCE. REFER TO GENERAL NOTES.
- TRUNK PROTECTION. TIMBER BATTENS STRAPPED TO TRUNK AND ANY POTENTIAL BRANCHES. REFER TO GENERAL NOTES AND DETAIL.
- EXISTING STREET TREE TO BE RETAINED AND PROTECTED UNDER THIS CONTRACT REFER TO EXISTING TREE SCHEDULE ON SHEET CI-0156
- EXISTING STREET TREE TO BE REMOVED
- 01 EXISTING TREE NUMBER
- PROPOSED MASS PLANTING REFER TO PLANTING SCHEDULE FOR DENSITY AND QUANTITIES
- PROPOSED STREET TREE
- PROPOSED STREET FURNITURE

GENERAL NOTES

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TRUNK PROTECTION:
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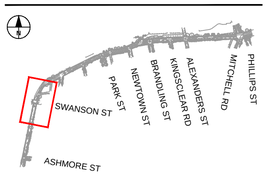
CONSULTANT
AECOM Australia Pty Ltd
A.B.N 20 093 846 925
www.aecom.com

PROJECT
Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

KEY PLAN


SCALE BAR
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1:250

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER
60620833

SHEET TITLE
TREE MANAGEMENT AND LANDSCAPE PLAN SHEET 2

SHEET NUMBER
60620833-2B-SHT-1000-CI-0152

Last saved by: CHENJH (2020-08-17) Last Plotted: 2020-08-17
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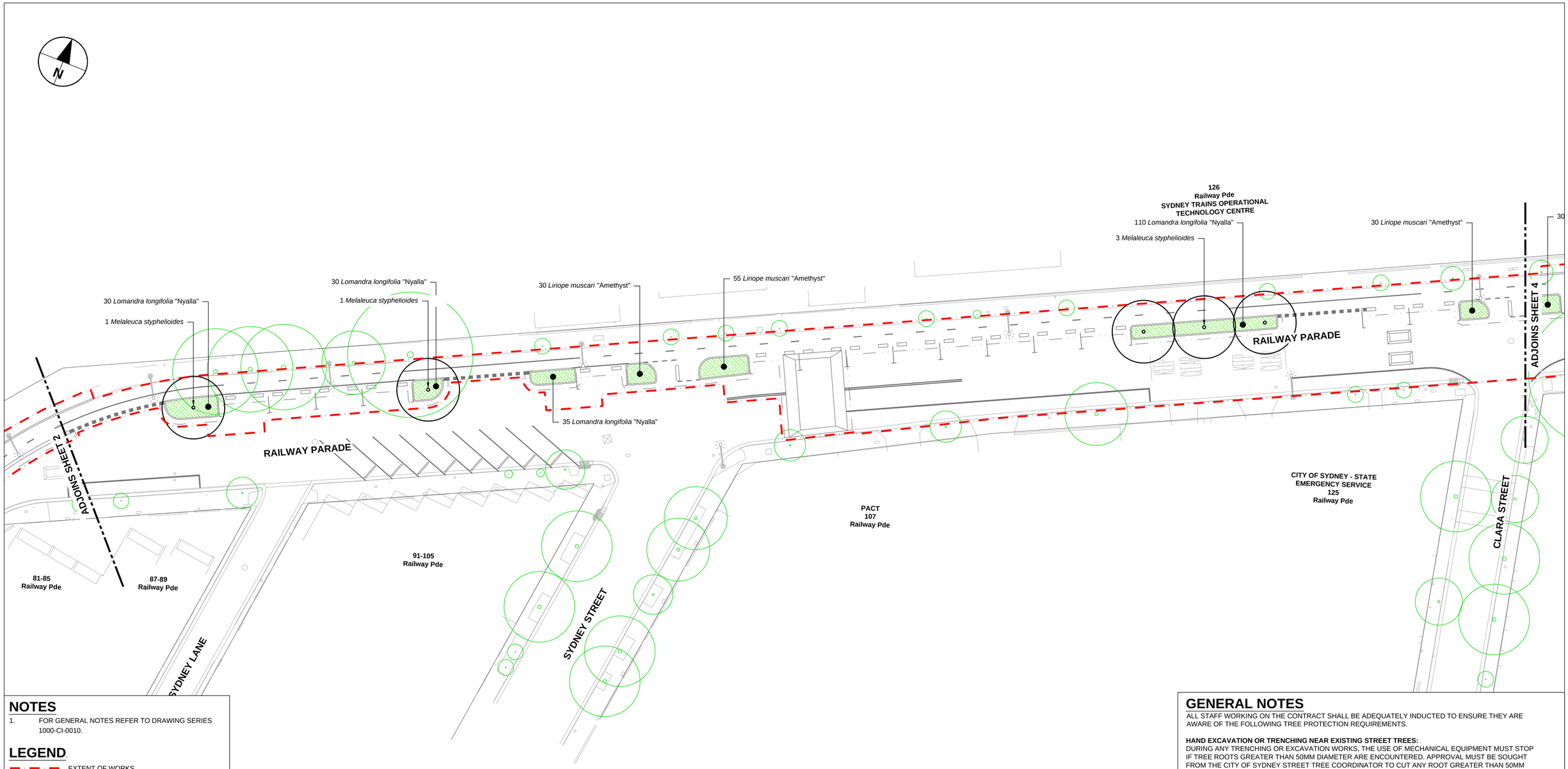

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
- TREE PROTECTION FENCE. INSTALL 1.8m HIGH TREE PROTECTION FENCE. REFER TO GENERAL NOTES.
- TRUNK PROTECTION. TIMBER BATTENS STRAPPED TO TRUNK AND ANY POTENTIAL BRANCHES. REFER TO GENERAL NOTES AND DETAIL.
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- EXISTING STREET TREE TO BE REMOVED
- 01 EXISTING TREE NUMBER
- PROPOSED MASS PLANTING REFER TO PLANTING SCHEDULE FOR DENSITY AND QUANTITIES
- PROPOSED STREET TREE
- PROPOSED STREET FURNITURE

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AECOM

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

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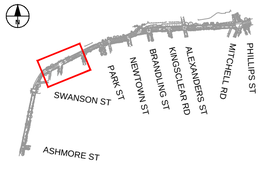
- ☐ NO
- ☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

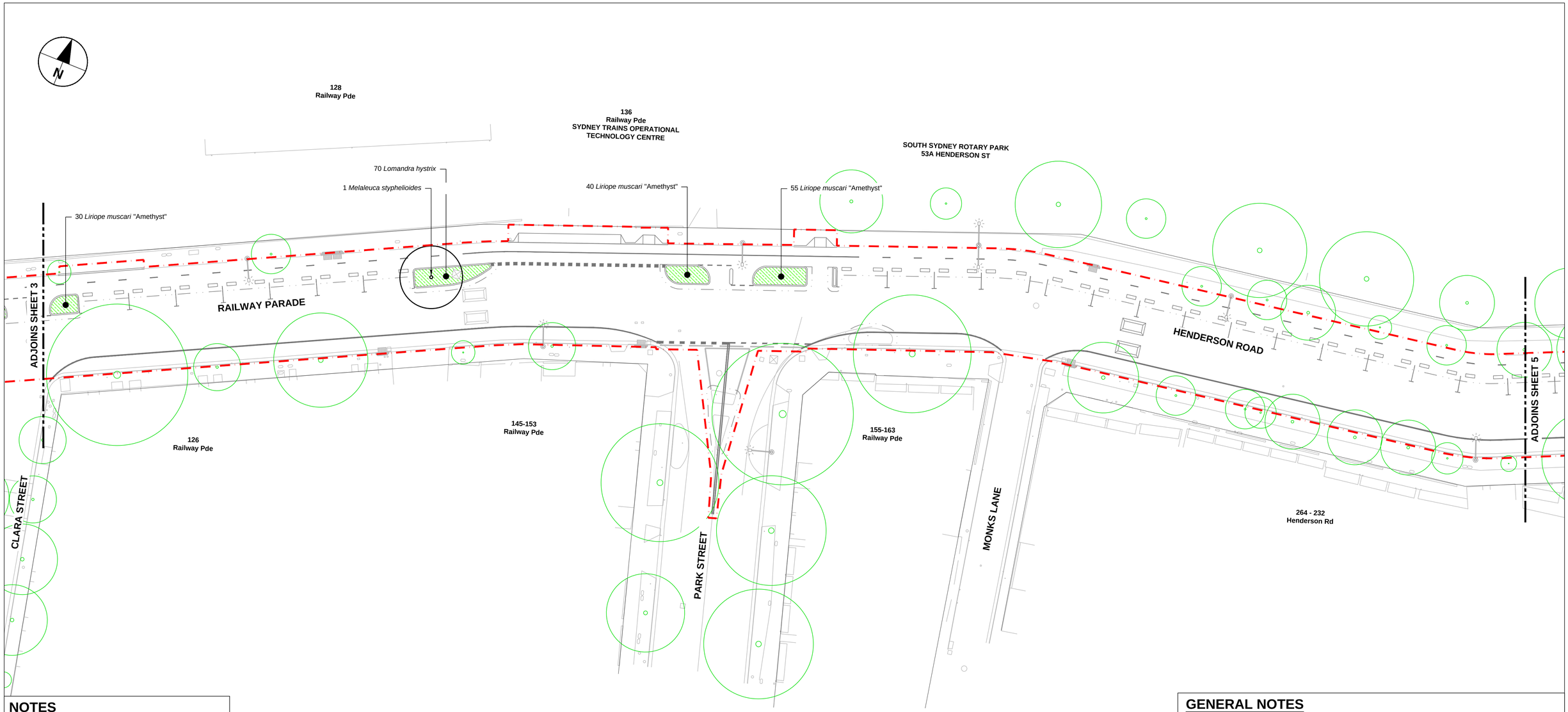
60620833

SHEET TITLE

TREE MANAGEMENT AND LANDSCAPE PLAN
SHEET 3

SHEET NUMBER

60620833-2B-SHT-1000-CI-0153



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
- TREE PROTECTION FENCE. INSTALL 1.8m HIGH TREE PROTECTION FENCE. REFER TO GENERAL NOTES.
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CLIENT
CITY OF SYDNEY

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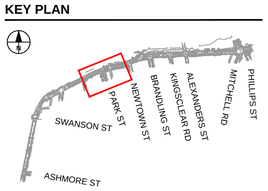
☐ YES

KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

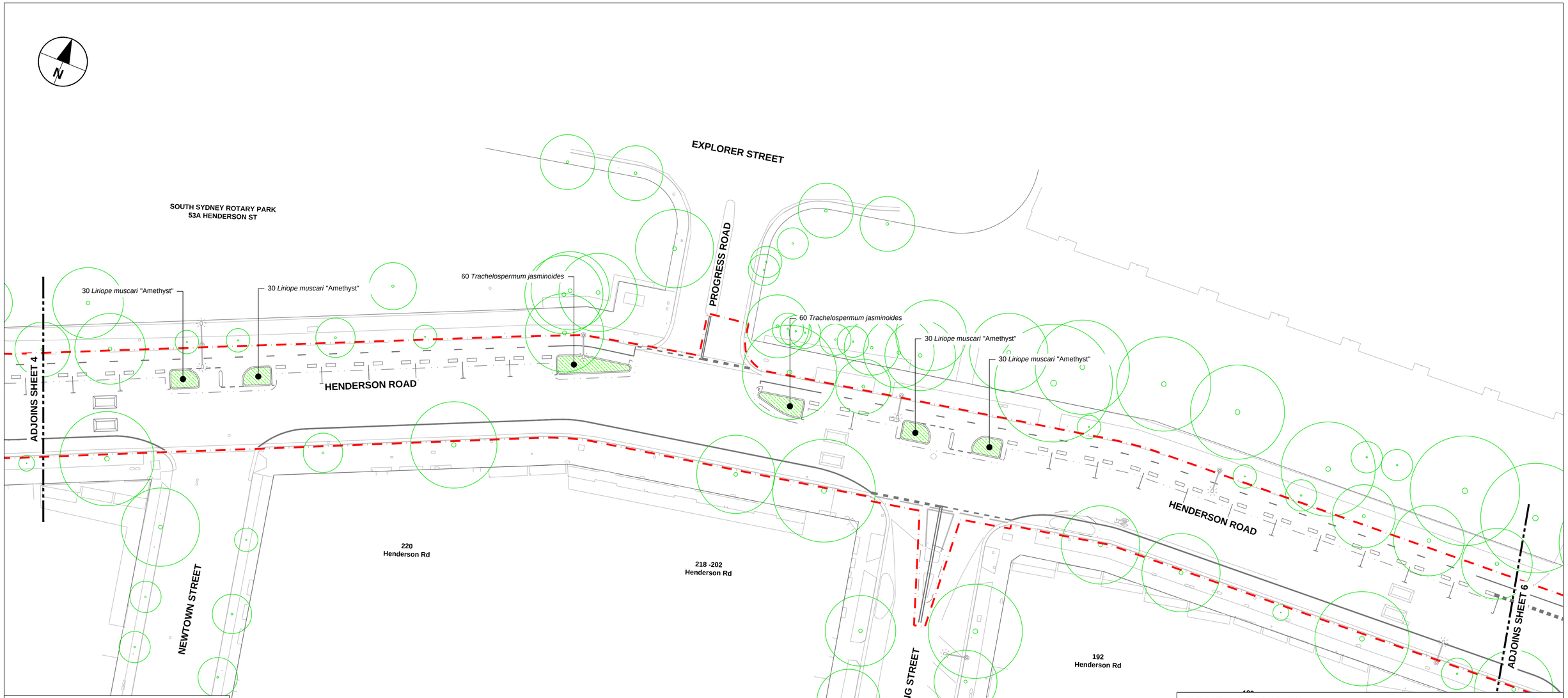
ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER
60620833

SHEET TITLE
TREE MANAGEMENT AND LANDSCAPE PLAN
SHEET 4

SHEET NUMBER
60620833-2B-SHT-1000-CI-0154



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

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AECOM

CONSULTANT

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

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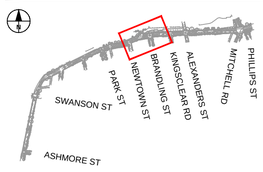
☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

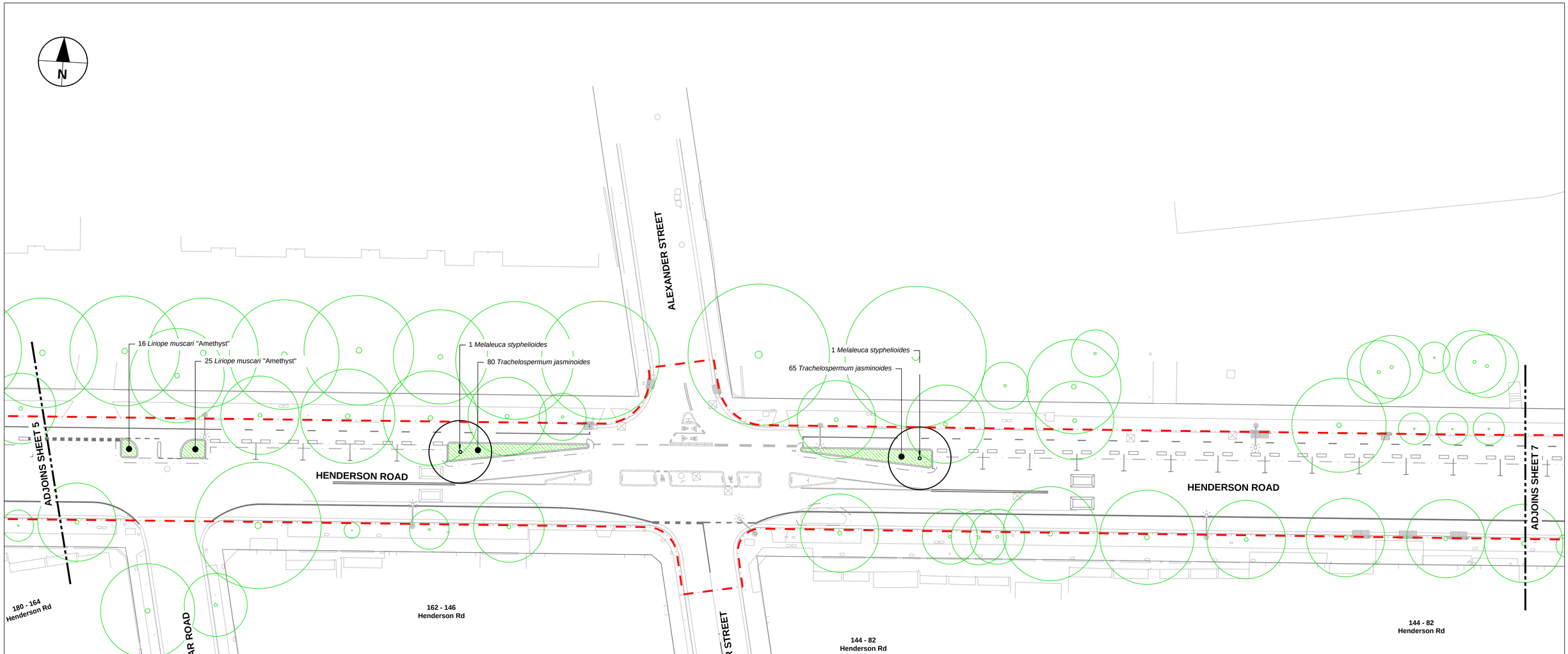
60620833

SHEET TITLE

TREE MANAGEMENT AND LANDSCAPE PLAN SHEET 5

SHEET NUMBER

60620833-2B-SHT-1000-CI-0155



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

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PROJECT
Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT
CITY OF SYDNEY

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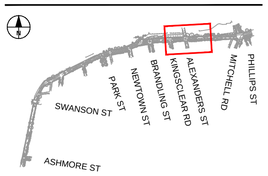
KEY PLAN


SCALE BAR
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1:250

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER
60620833

SHEET TITLE
TREE MANAGEMENT AND LANDSCAPE PLAN
SHEET 6

SHEET NUMBER
60620833-2B-SHT-1000-CI-0156

ISO A1 594mm x 841mm

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

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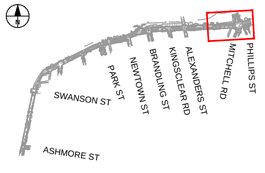

SCALE BAR
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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
01	17.08.2020	80% DETAILED DESIGN

PROJECT NUMBER
60620833

SHEET TITLE
TREE MANAGEMENT AND LANDSCAPE PLAN
SHEET 7

SHEET NUMBER
60620833-2B-SHT-1000-CI-0157

Last saved by: CHENJH(2020-08-17) Last Plotted: 2020-08-17
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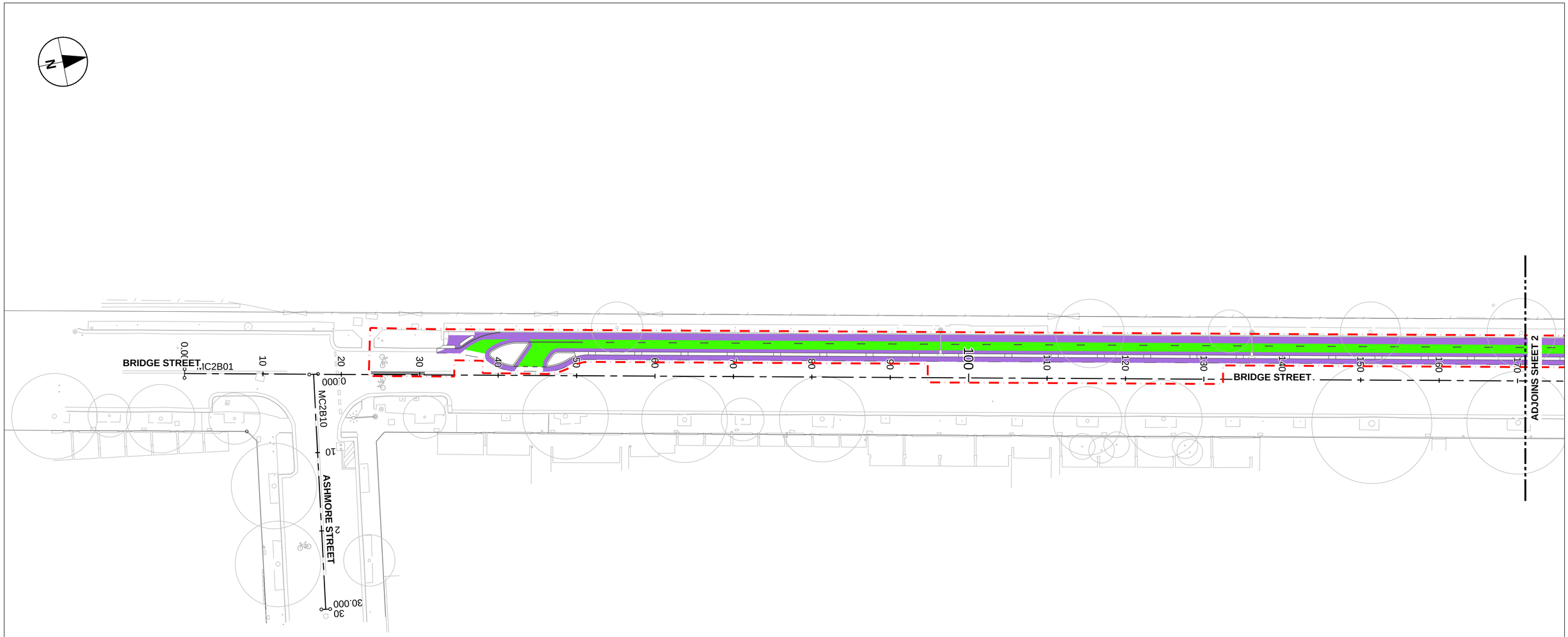


NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

	EXTENT OF WORKS
P2	CONCRETE FOOTPATH PAVEMENT
R1	ROAD PAVEMENT (MILL AND RE-SHEET)
R2	ROAD PAVEMENT (OVERLAY)
R3	CYCLEPATH PAVEMENT (OVERLAY)
R4	ROAD/ISLAND PAVERS
R5	RESTORATION PAVEMENT
P1-V	VEHICLE CROSSING PAVEMENT

CONSULTANT

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

PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

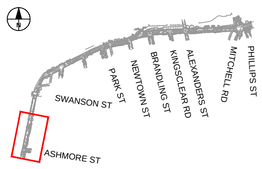
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

- ☐ NO
- ☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

PAVEMENT PLAN SHEET 1

SHEET NUMBER

60620833-2B-SHT-1000-CI-0201

Last saved by: TOWNSENDSW(2020-08-17) Last Plotted: 2020-08-17
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ISO A1 594mm x 841mm

Last saved by: TOWNSENDSW(2020-08-17) Last Plotted: 2020-08-17
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NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
- P2 CONCRETE FOOTPATH PAVEMENT
- R1 ROAD PAVEMENT (MILL AND RE-SHEET)
- R2 ROAD PAVEMENT (OVERLAY)
- R3 CYCLEPATH PAVEMENT (OVERLAY)
- R4 ROAD/ISLAND PAVERS
- R5 RESTORATION PAVEMENT
- R1-V VEHICLE CROSSING PAVEMENT

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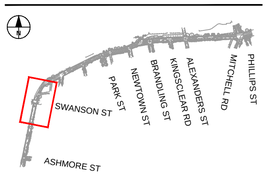
KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

PAVEMENT PLAN SHEET 2

SHEET NUMBER

60620833-2B-SHT-1000-CI-0202

ISO A1 594mm x 841mm

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
- P2 — CONCRETE FOOTPATH PAVEMENT
- R1 — ROAD PAVEMENT (MILL AND RE-SHEET)
- R2 — ROAD PAVEMENT (OVERLAY)
- R3 — CYCLEPATH PAVEMENT (OVERLAY)
- R4 — ROAD/ISLAND PAVERS
- R5 — RESTORATION PAVEMENT
- P1-V — VEHICLE CROSSING PAVEMENT

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PROJECT

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CLIENT

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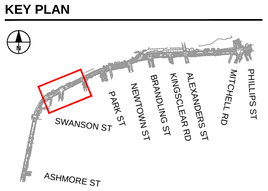
- ☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

PAVEMENT
PLAN
SHEET 3

SHEET NUMBER

60620833-2B-SHT-1000-CI-0203

Last saved by: TOWNSENDSW(2020-08-17) Last Plotted: 2020-08-17
Filename: C:_PROCESSIPW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0203.DWG

ISO A1 594mm x 841mm

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
- P2 CONCRETE FOOTPATH PAVEMENT
- R1 ROAD PAVEMENT (MILL AND RE-SHEET)
- R2 ROAD PAVEMENT (OVERLAY)
- R3 CYCLEPATH PAVEMENT (OVERLAY)
- R4 ROAD/ISLAND PAVERS
- R5 RESTORATION PAVEMENT
- PLV VEHICLE CROSSING PAVEMENT

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

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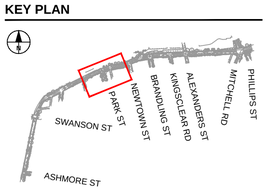
- ☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

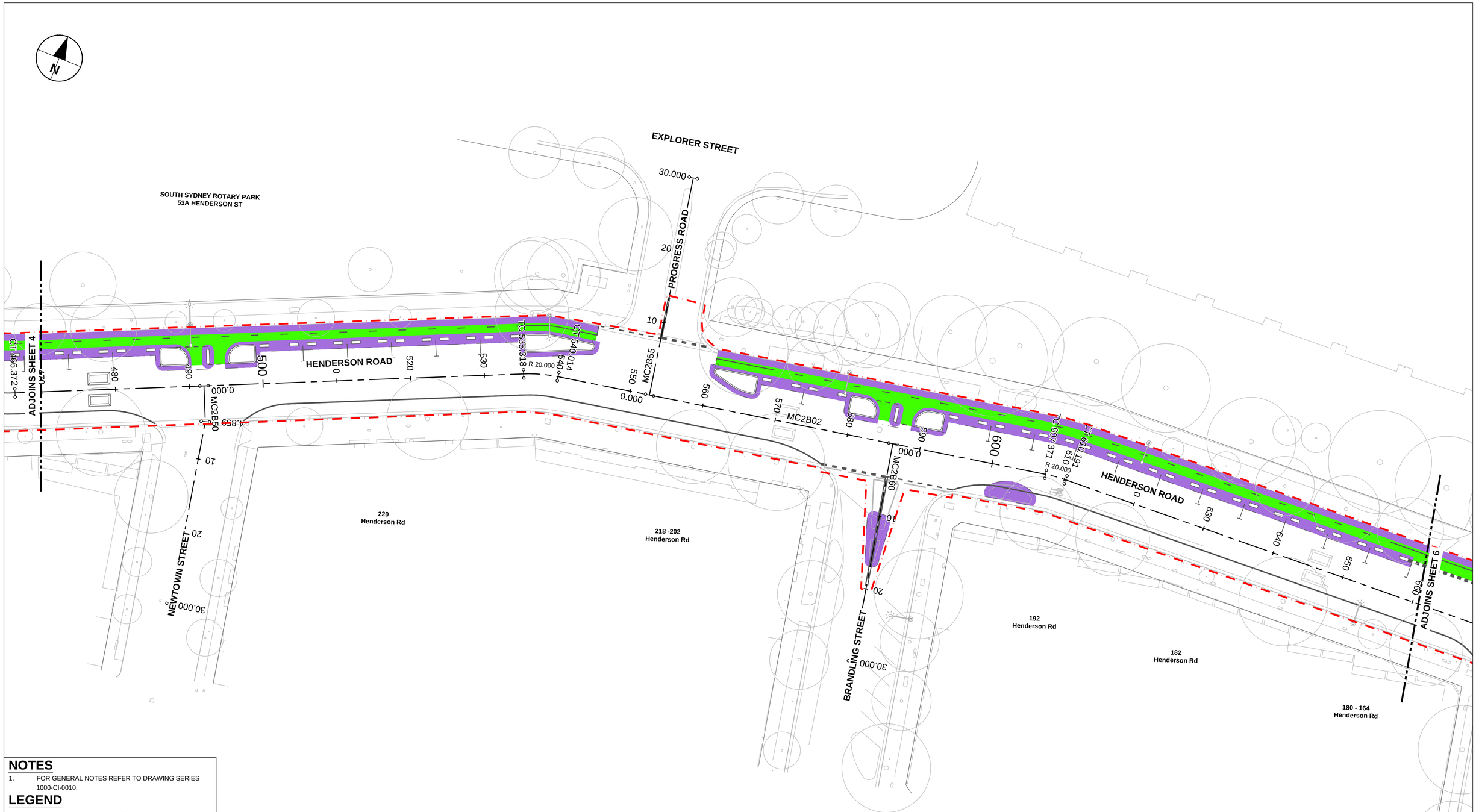
PAVEMENT PLAN SHEET 4

SHEET NUMBER

60620833-2B-SHT-1000-CI-0204

Last saved by: TOWNSENDSW(2020-08-17) Last Plotted: 2020-08-17
Filename: C:_PROCESSIPW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0204.DWG

ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

	EXTENT OF WORKS
P2	CONCRETE FOOTPATH PAVEMENT
R1	ROAD PAVEMENT (MILL AND RE-SHEET)
R2	ROAD PAVEMENT (OVERLAY)
R3	CYCLEPATH PAVEMENT (OVERLAY)
R4	ROAD/ISLAND PAVERS
R5	RESTORATION PAVEMENT
P1.V	VEHICLE CROSSING PAVEMENT

CONSULTANT

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

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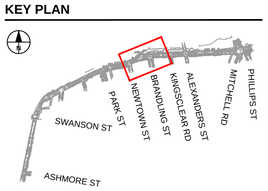
- ☐ NO
- ☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

PAVEMENT PLAN SHEET 5

SHEET NUMBER

60620833-2B-SHT-1000-CI-0205

Last saved by: CHENJH(2020-08-17) Last Plotted: 2020-08-17
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ISO A1 594mm x 841mm

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

	EXTENT OF WORKS
P2	CONCRETE FOOTPATH PAVEMENT
R1	ROAD PAVEMENT (MILL AND RE-SHEET)
R2	ROAD PAVEMENT (OVERLAY)
R3	CYCLEPATH PAVEMENT (OVERLAY)
R4	ROAD/ISLAND PAVERS
R5	RESTORATION PAVEMENT
PAV	VEHICLE CROSSING PAVEMENT

AECOM

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CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

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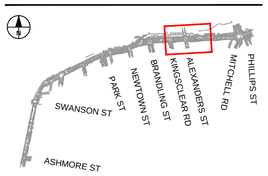
- ☐ NO
- ☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

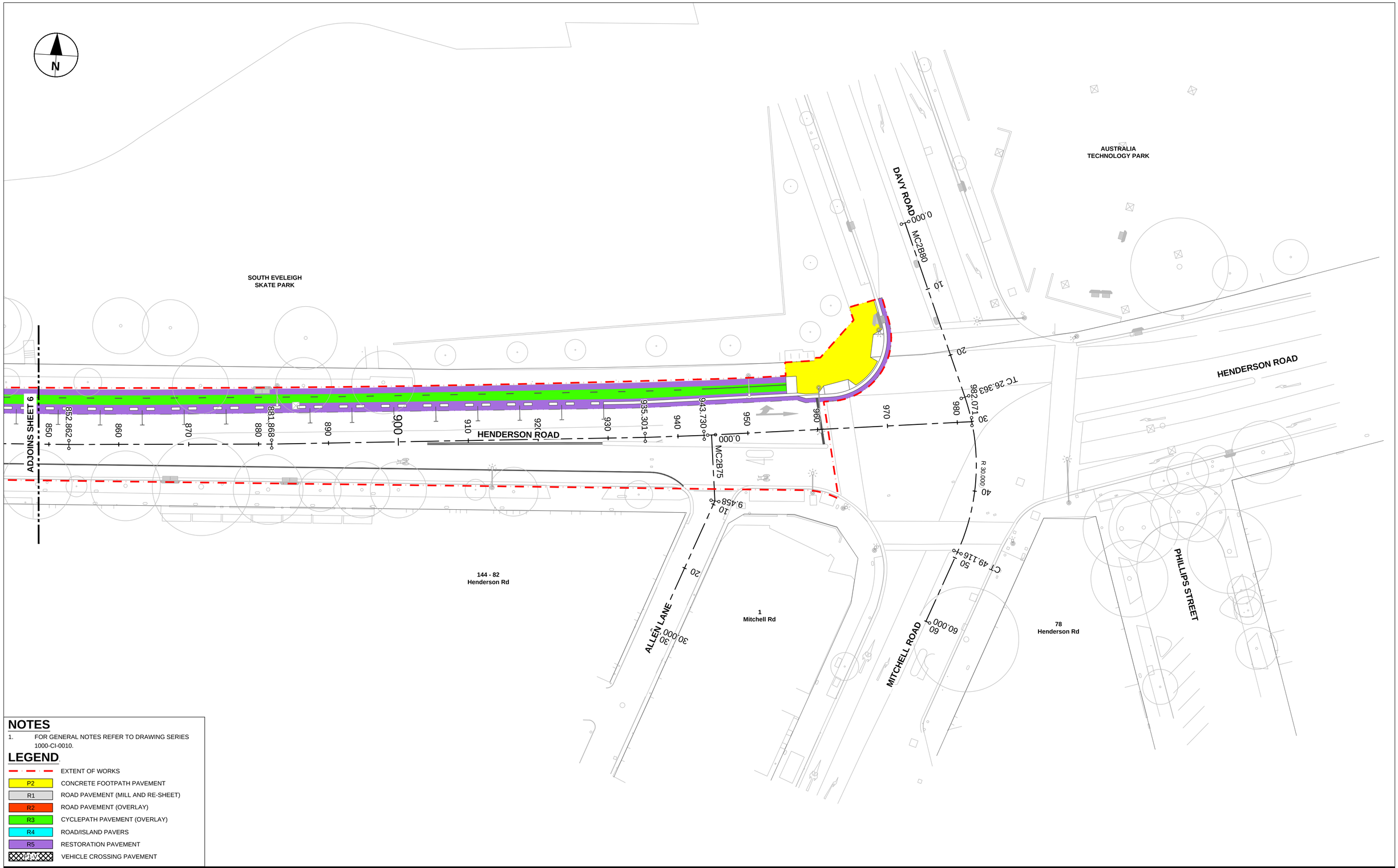
PAVEMENT PLAN SHEET 6

SHEET NUMBER

60620833-2B-SHT-1000-CI-0206

Last saved by: CHENJH(2020-08-17) Last Plotted: 2020-08-17
Filename: C:_PROCESSIPW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0206.DWG

ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

	EXTENT OF WORKS
P2	CONCRETE FOOTPATH PAVEMENT
R1	ROAD PAVEMENT (MILL AND RE-SHEET)
R2	ROAD PAVEMENT (OVERLAY)
R3	CYCLEPATH PAVEMENT (OVERLAY)
R4	ROAD/ISLAND PAVERS
R5	RESTORATION PAVEMENT
P1-V	VEHICLE CROSSING PAVEMENT

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

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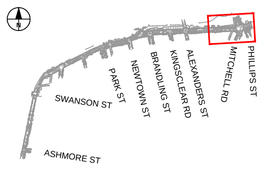
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

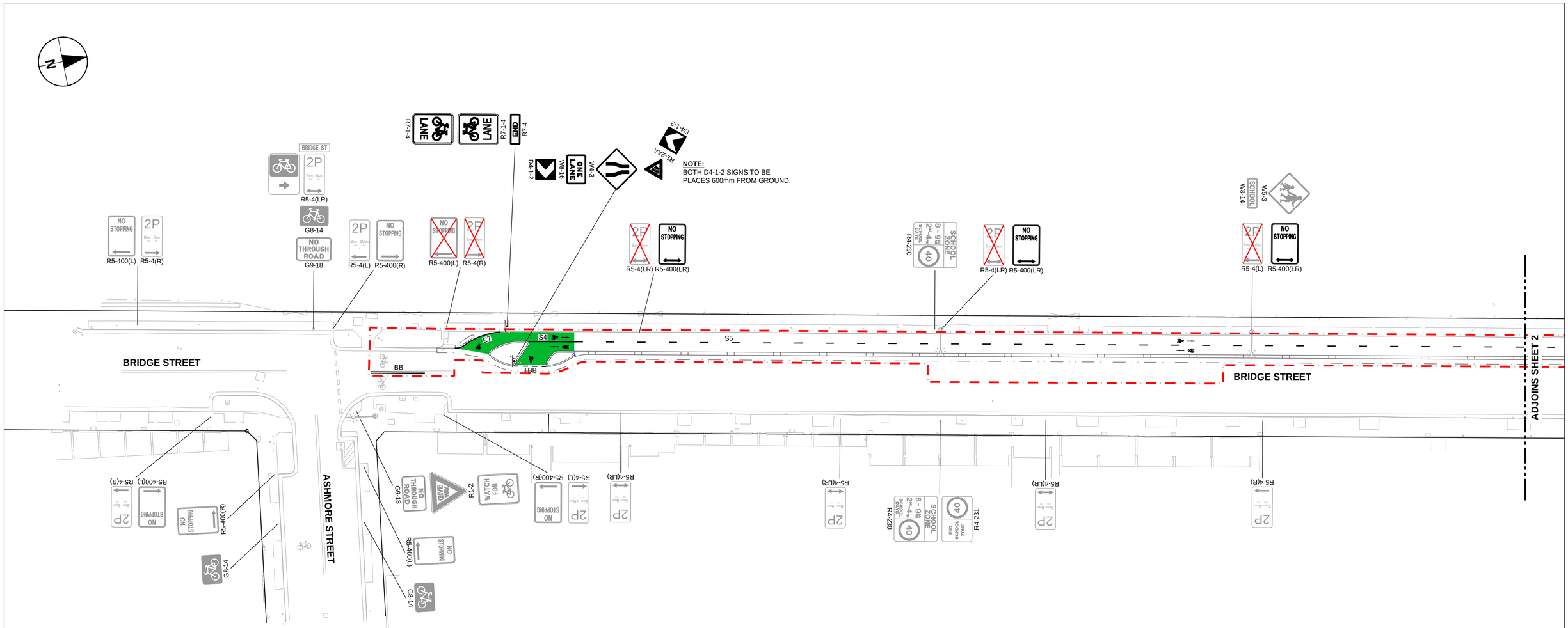
SHEET TITLE

PAVEMENT PLAN SHEET 7

SHEET NUMBER

60620833-2B-SHT-1000-CI-0207

Last saved by: CHENJH(2020-08-17) Last Plotted: 2020-08-17
Filename: C:_PROCESSIPW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0207.DWG



NOTE:
BOTH D4-1-2 SIGNS TO BE PLACES 600mm FROM GROUND.

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.
2. ALL SHARED PATH LINEMARKING TO BE IN ACCORDANCE WITH CITY OF SYDNEY SHARED PATHWAYS - PAVEMENT MARKINGS GUIDE

LEGEND

- EXTENT OF WORKS
- SIGN POST
- BIKE LANE PAINT MARKING
- HONEYCOMB PAVEMENT MARKING
- SHARED PATH LINEMARKING
- EXISTING SIGNS (TO BE RETAINED)
- EXISTING SIGNS (TO BE REMOVED)
- PROPOSED SIGNS

CONSULTANT
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PROJECT
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CLIENT
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ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
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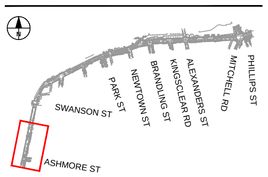
☐ YES

KEY PLAN


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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

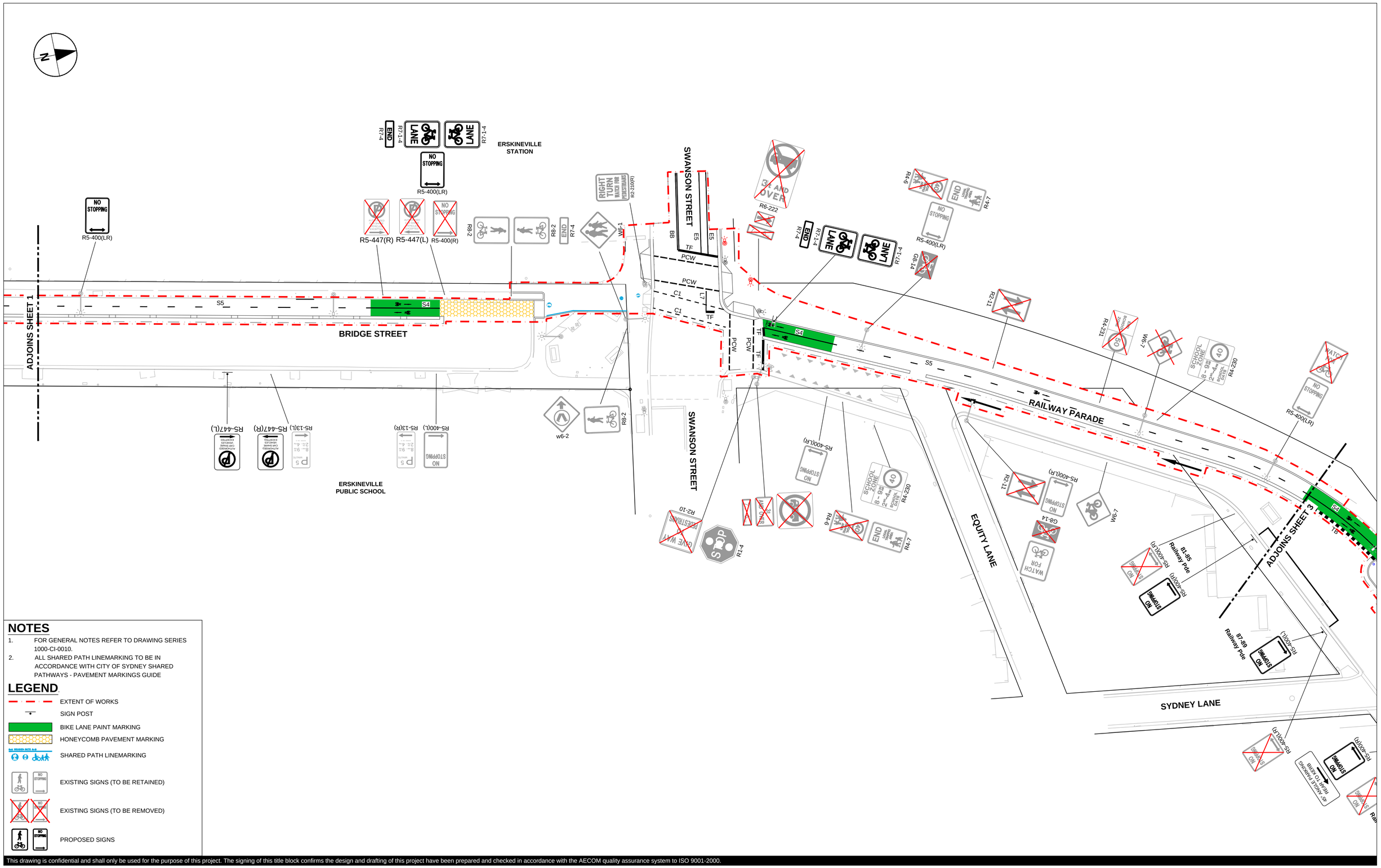
01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER
60620833

SHEET TITLE
LINES AND SIGNS
PLAN
SHEET 1

SHEET NUMBER
60620833-2B-SHT-1000-CI-0251

ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.
2. ALL SHARED PATH LINEMARKING TO BE IN ACCORDANCE WITH CITY OF SYDNEY SHARED PATHWAYS - PAVEMENT MARKINGS GUIDE

LEGEND

- EXTENT OF WORKS
- SIGN POST
- BIKE LANE PAINT MARKING
- HONEYCOMB PAVEMENT MARKING
- SHARED PATH LINEMARKING
- EXISTING SIGNS (TO BE RETAINED)
- EXISTING SIGNS (TO BE REMOVED)
- PROPOSED SIGNS

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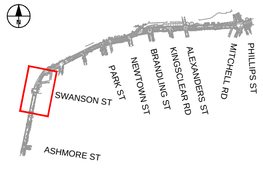
KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

LINES AND SIGNS
PLAN
SHEET 2

SHEET NUMBER

60620833-2B-SHT-1000-CI-0252

Last saved by: CHENJH(2020-08-14) Last Plotted: 2020-09-17
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ISO A1 594mm x 841mm

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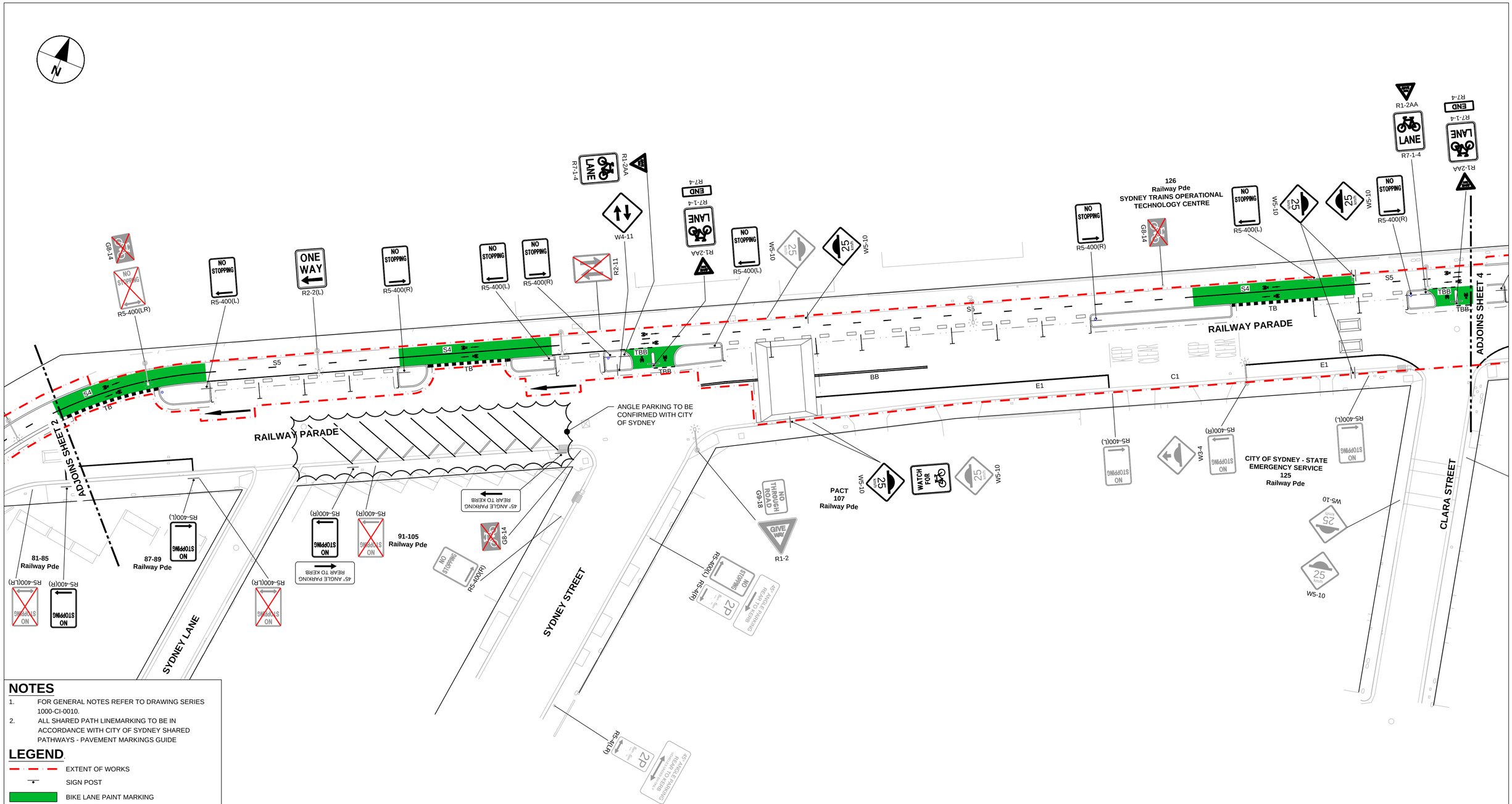

NOTES

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LEGEND

- EXTENT OF WORKS
- SIGN POST
- BIKE LANE PAINT MARKING
- HONEYCOMB PAVEMENT MARKING
- SHARED PATH LINEMARKING
- EXISTING SIGNS (TO BE RETAINED)
- EXISTING SIGNS (TO BE REMOVED)
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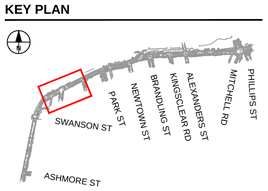
KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

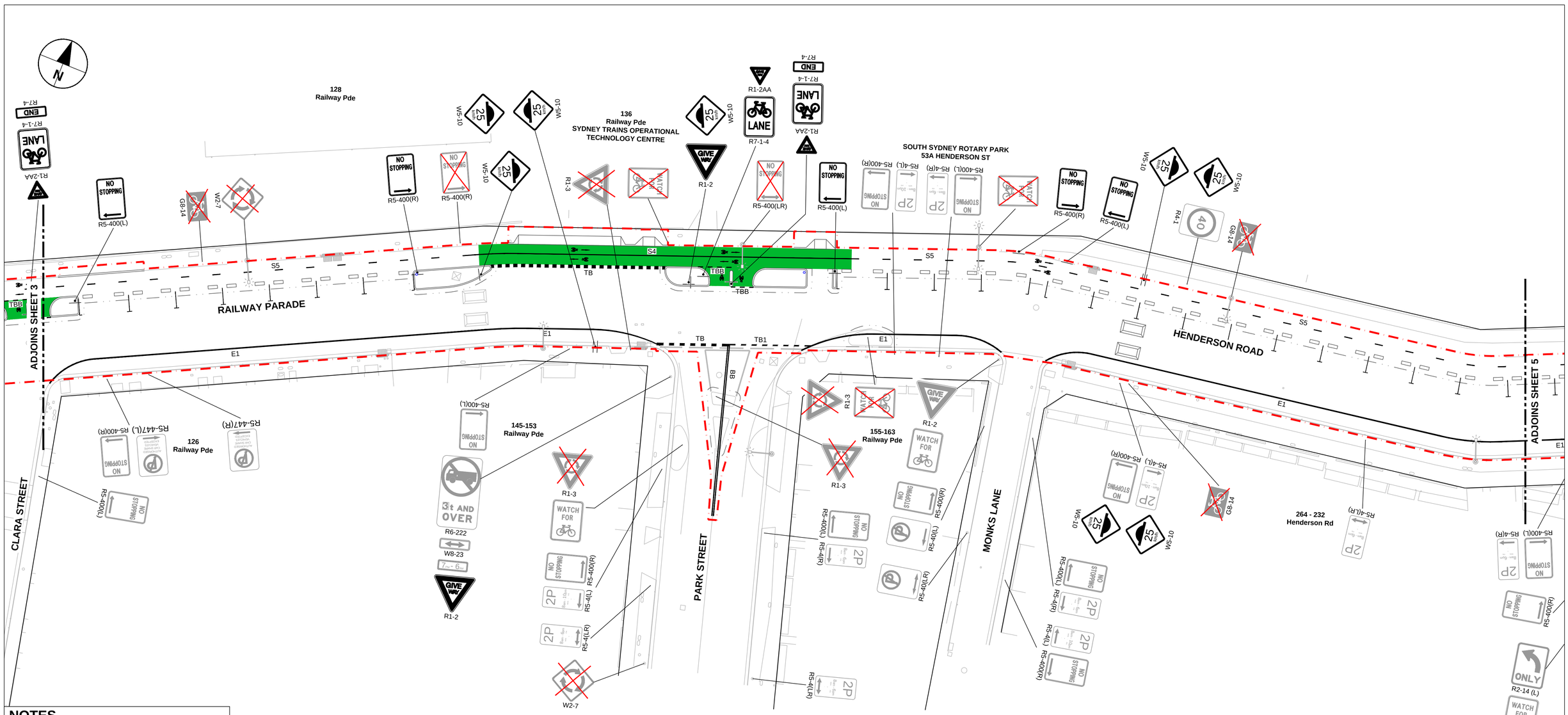
LINES AND SIGNS
PLAN
SHEET 3

SHEET NUMBER

60620833-2B-SHT-1000-CI-0253

ISO A1 594mm x 841mm

Last saved by: CHENJH(2020-09-14) Last Plotted: 2020-09-17
Filename: C:_PROCESSIPW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0254.DWG



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.
2. ALL SHARED PATH LINEMARKING TO BE IN ACCORDANCE WITH CITY OF SYDNEY SHARED PATHWAYS - PAVEMENT MARKINGS GUIDE

LEGEND

- EXTENT OF WORKS
- SIGN POST
- BIKE LANE PAINT MARKING
- HONEYCOMB PAVEMENT MARKING
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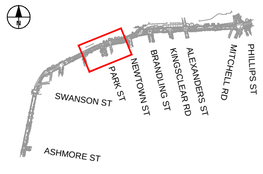
KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

LINES AND SIGNS
PLAN
SHEET 4

SHEET NUMBER

60620833-2B-SHT-1000-CI-0254

ISO A1 594mm x 841mm

Last saved by: CHENJH(2020-08-14) Last Plotted: 2020-08-17
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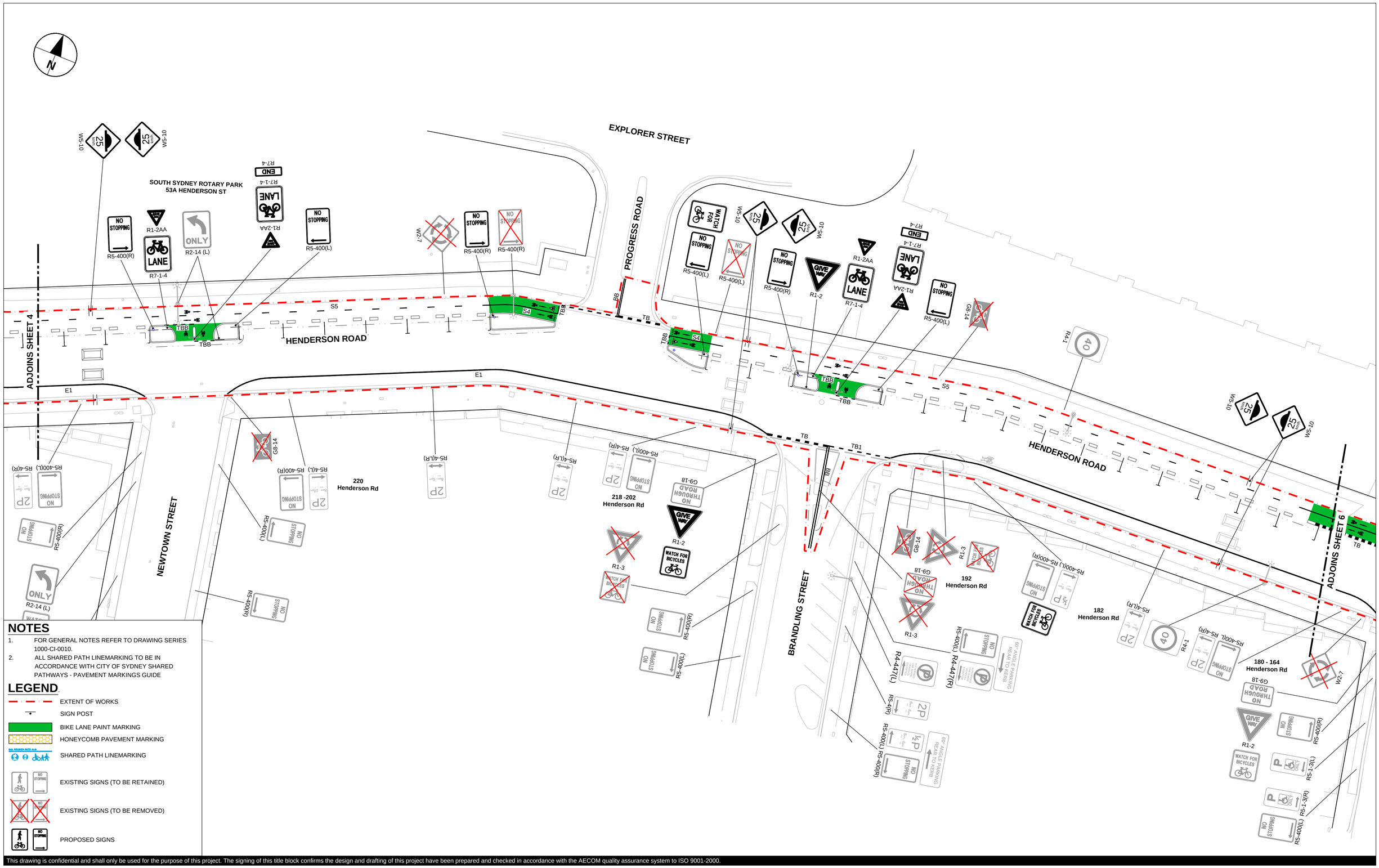


NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.
2. ALL SHARED PATH LINEMARKING TO BE IN ACCORDANCE WITH CITY OF SYDNEY SHARED PATHWAYS - PAVEMENT MARKINGS GUIDE

LEGEND

- EXTENT OF WORKS
- SIGN POST
- BIKE LANE PAINT MARKING
- HONEYCOMB PAVEMENT MARKING
- SHARED PATH LINEMARKING
- EXISTING SIGNS (TO BE RETAINED)
- EXISTING SIGNS (TO BE REMOVED)
- PROPOSED SIGNS

CONSULTANT

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

PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

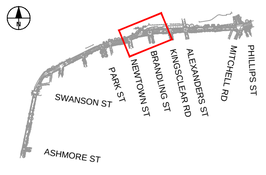
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

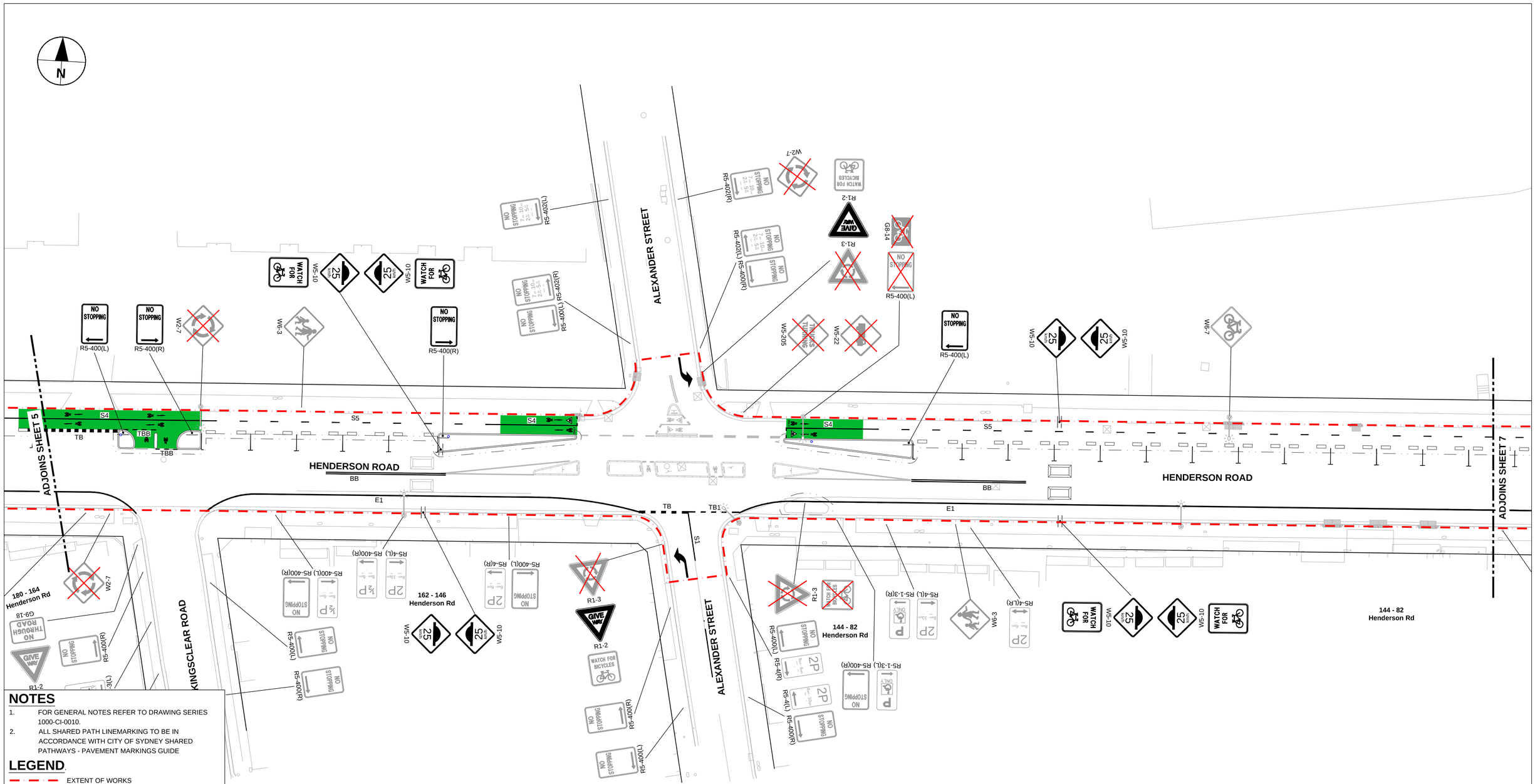
60620833

SHEET TITLE

LINES AND SIGNS PLAN SHEET 5

SHEET NUMBER

60620833-2B-SHT-1000-CI-0255



NOTES

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- SIGN POST
- BIKE LANE PAINT MARKING
- HONEYCOMB PAVEMENT MARKING
- SHARED PATH LINEMARKING
- EXISTING SIGNS (TO BE RETAINED)
- EXISTING SIGNS (TO BE REMOVED)
- PROPOSED SIGNS

AECOM

CONSULTANT

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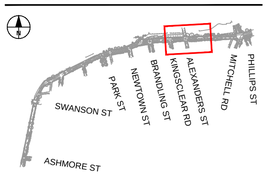
- ☐ NO
- ☐ YES

KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

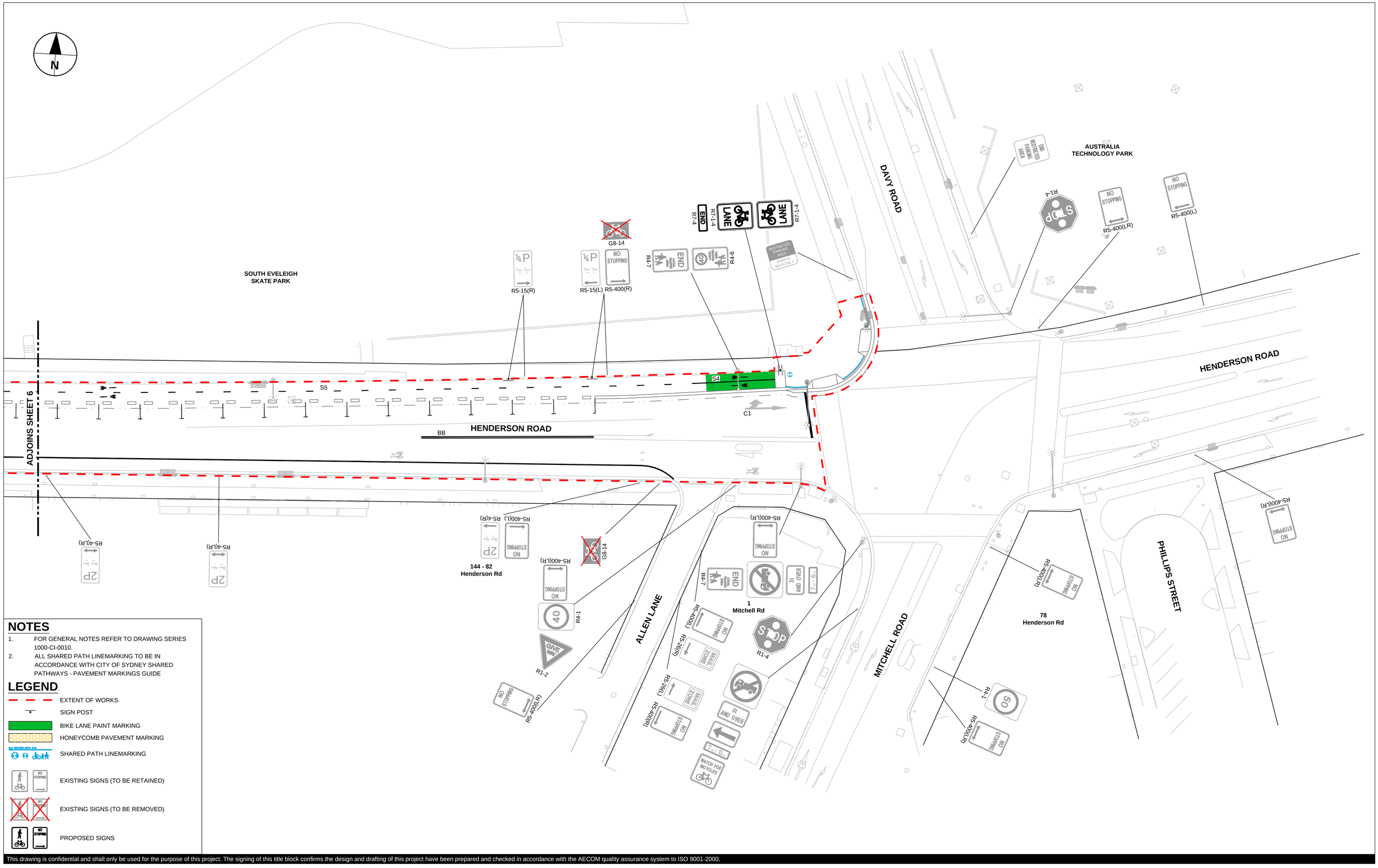
SHEET TITLE

LINES AND SIGNS PLAN SHEET 6

SHEET NUMBER

60620833-2B-SHT-1000-CI-0256

ISO A1 594mm x 841mm



NOTES

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- SIGN POST
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- HONEYCOMB PAVEMENT MARKING
- SHARED PATH LINEMARKING
- EXISTING SIGNS (TO BE RETAINED)
- EXISTING SIGNS (TO BE REMOVED)
- PROPOSED SIGNS

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CONSULTANT

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

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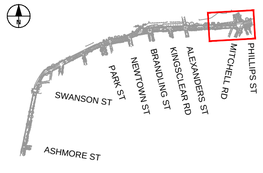
- ☐ YES

KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

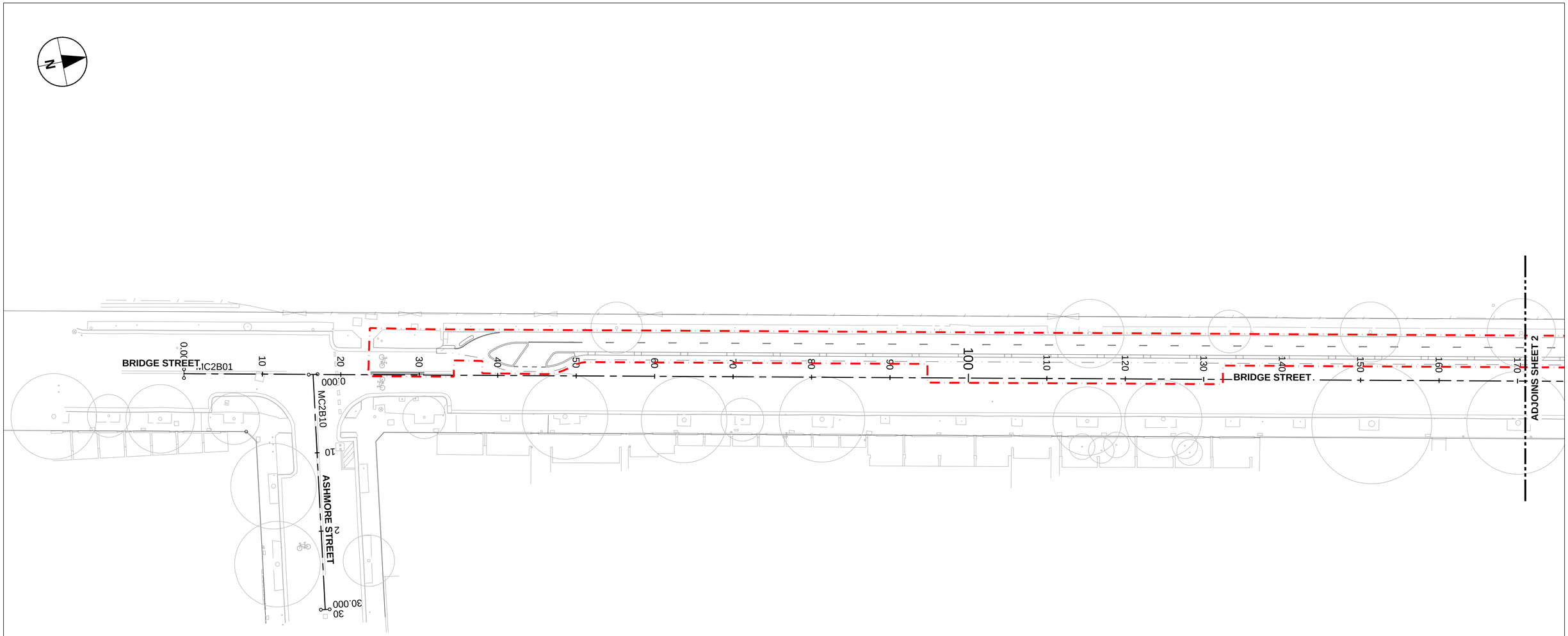
60620833

SHEET TITLE

LINES AND SIGNS PLAN SHEET 7

SHEET NUMBER

60620833-2B-SHT-1000-CI-0257



NOTES

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LEGEND

EXTENT OF WORKS

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PROJECT

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☐ NO
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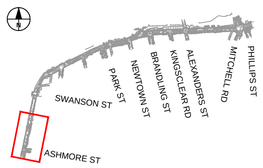
KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

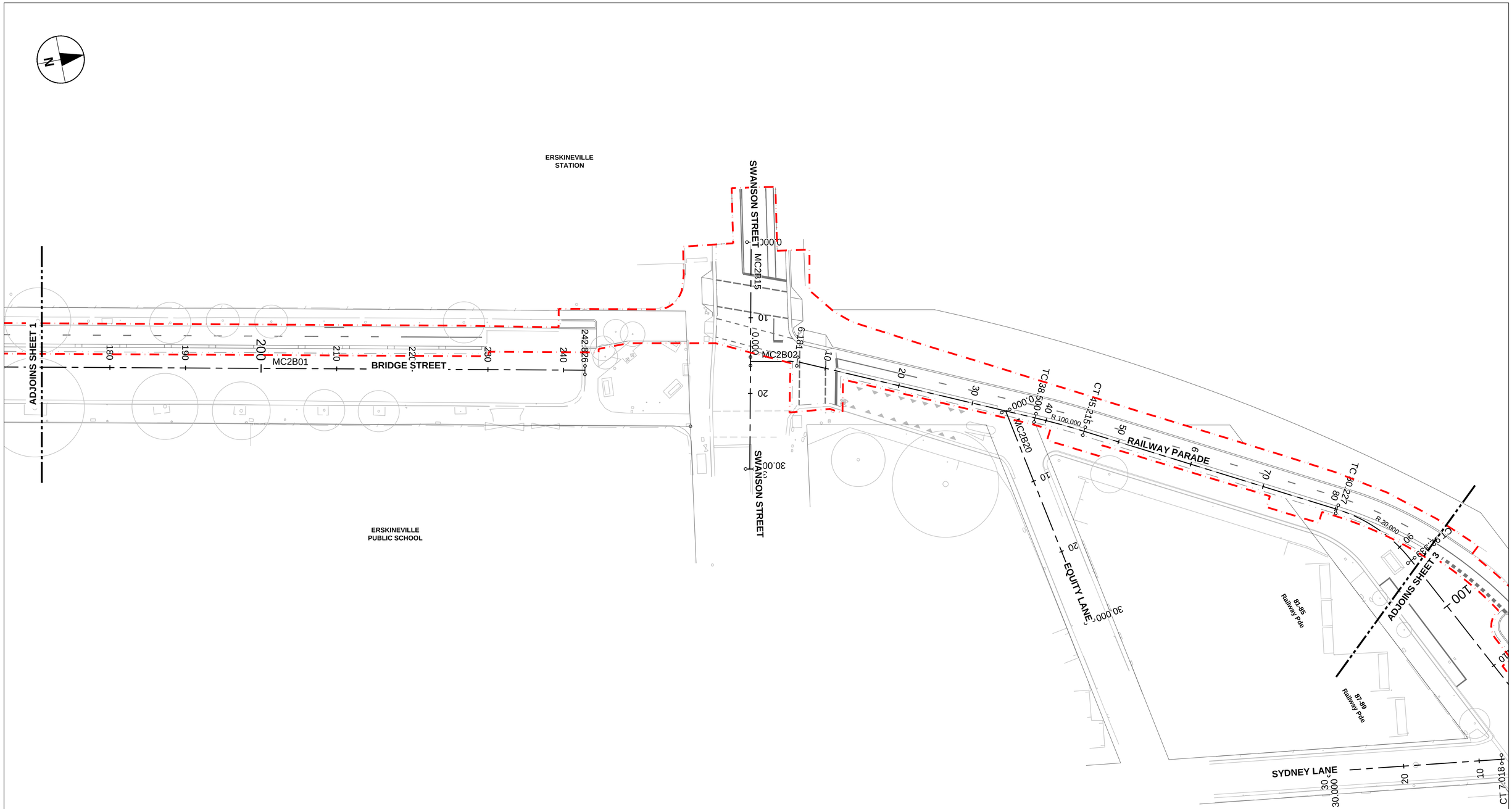
SHEET TITLE

ROAD CONTROL STRING PLAN
SHEET 1

SHEET NUMBER

60620833-2B-SHT-1000-CI-0301

ISO A1 594mm x 841mm



NOTES

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LEGEND

EXTENT OF WORKS

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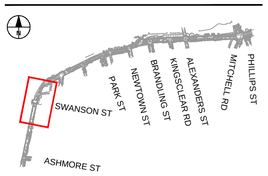
KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

ROAD CONTROL STRING PLAN
SHEET 2

SHEET NUMBER

60620833-2B-SHT-1000-CI-0302

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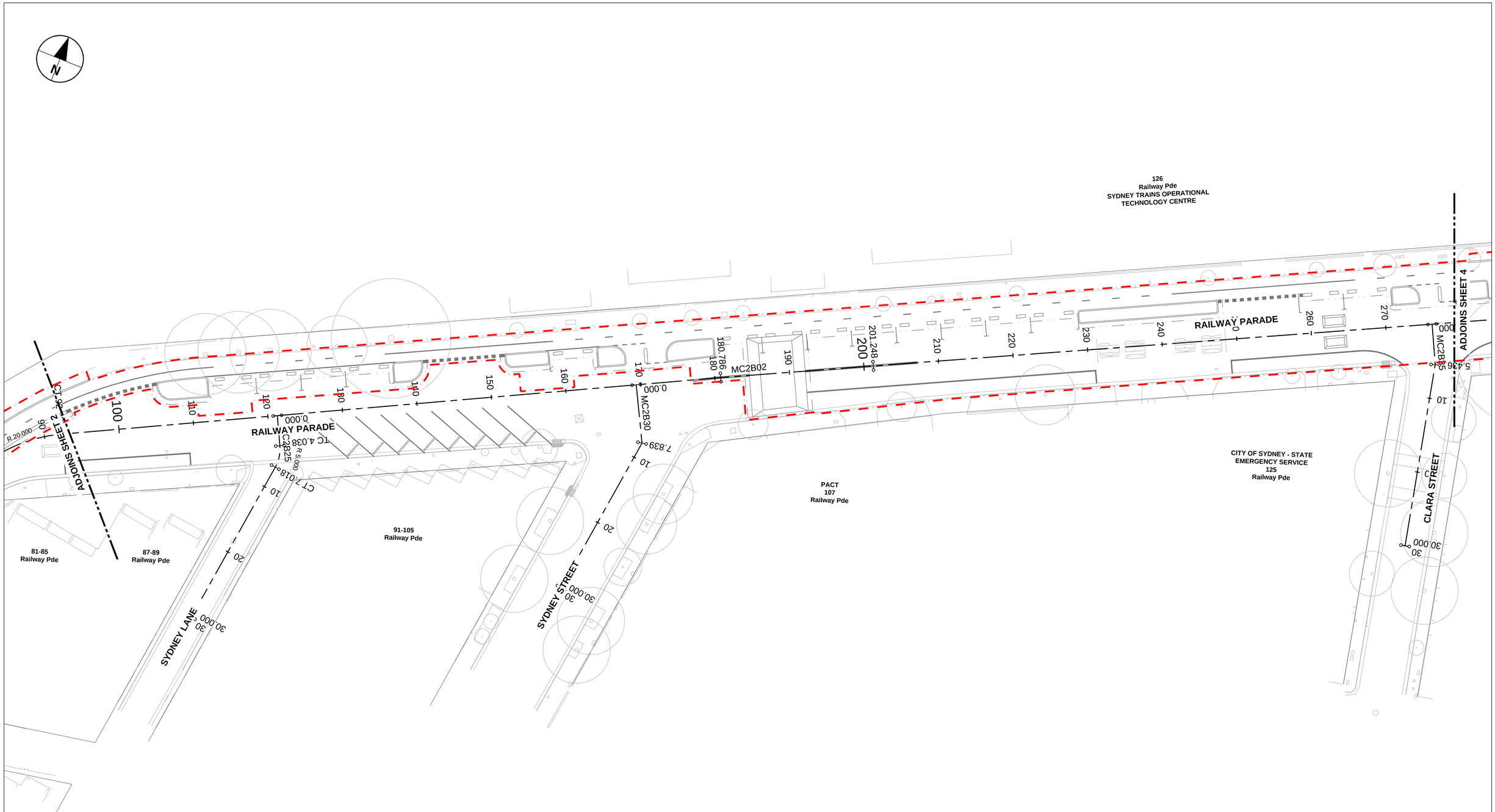

NOTES

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LEGEND

EXTENT OF WORKS

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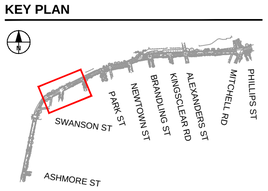
KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

ROAD CONTROL STRING PLAN
SHEET 3

SHEET NUMBER

60620833-2B-SHT-1000-CI-0303

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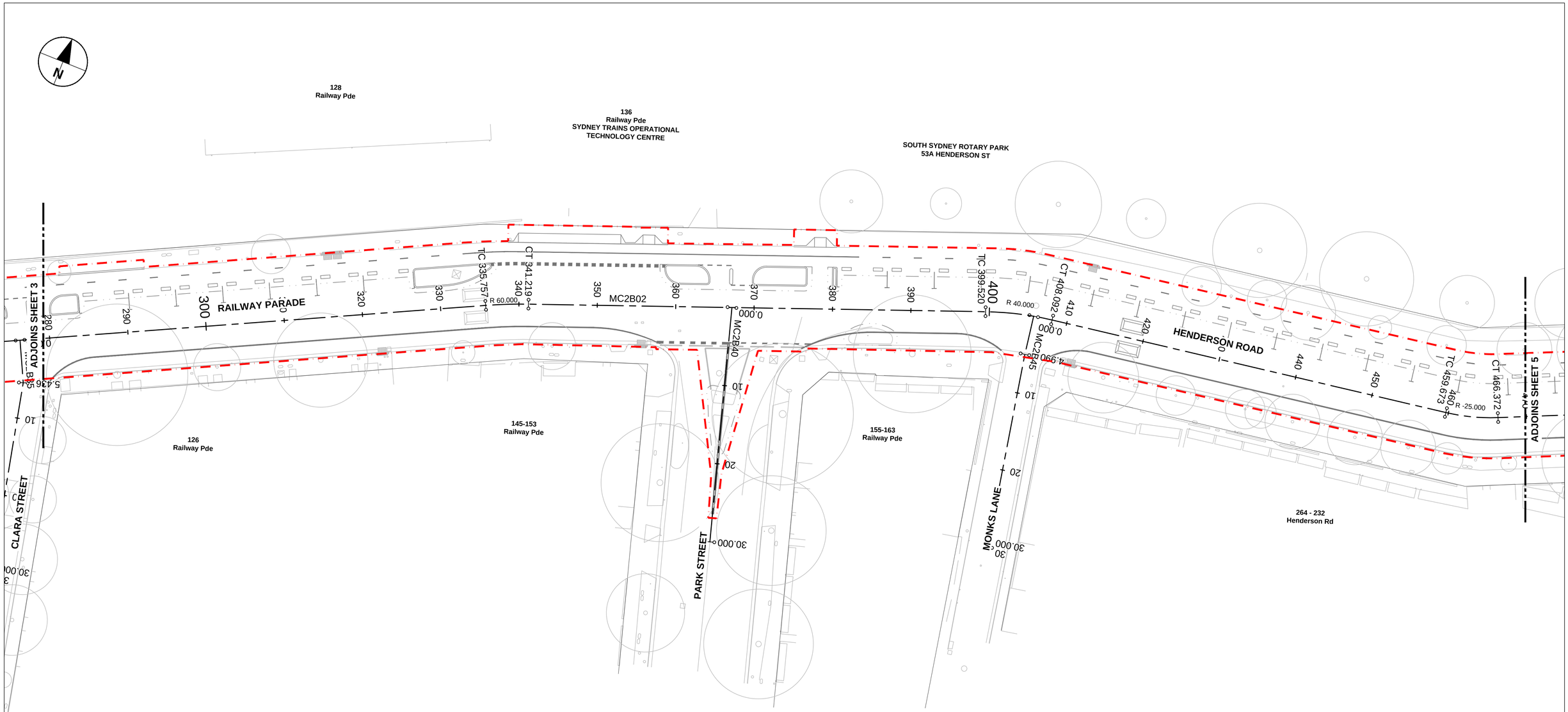
ISO A1 594mm x 841mm



NOTES

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LEGEND

EXTENT OF WORKS

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

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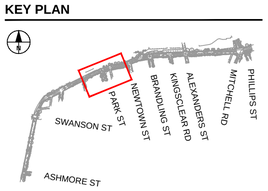
- ☐ NO
- ☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

ROAD CONTROL STRING PLAN
SHEET 4

SHEET NUMBER

60620833-2B-SHT-1000-CI-0304

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
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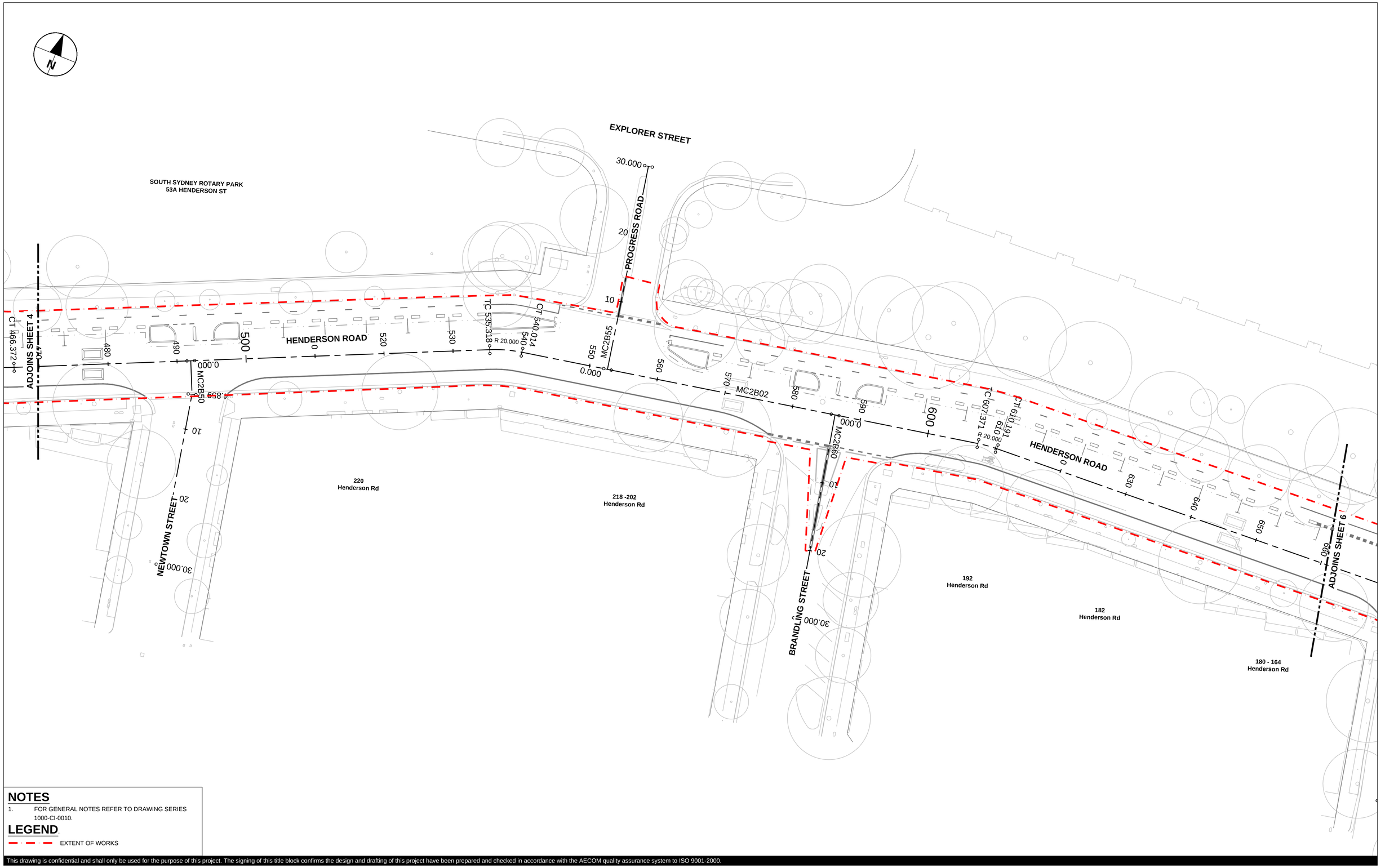

NOTES

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LEGEND

EXTENT OF WORKS

CONSULTANT

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

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SAFETY IN DESIGN INFORMATION

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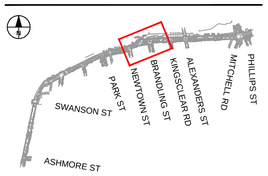
☐ NO
☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

ROAD CONTROL STRING PLAN
SHEET 5

SHEET NUMBER

60620833-2B-SHT-1000-CI-0305

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
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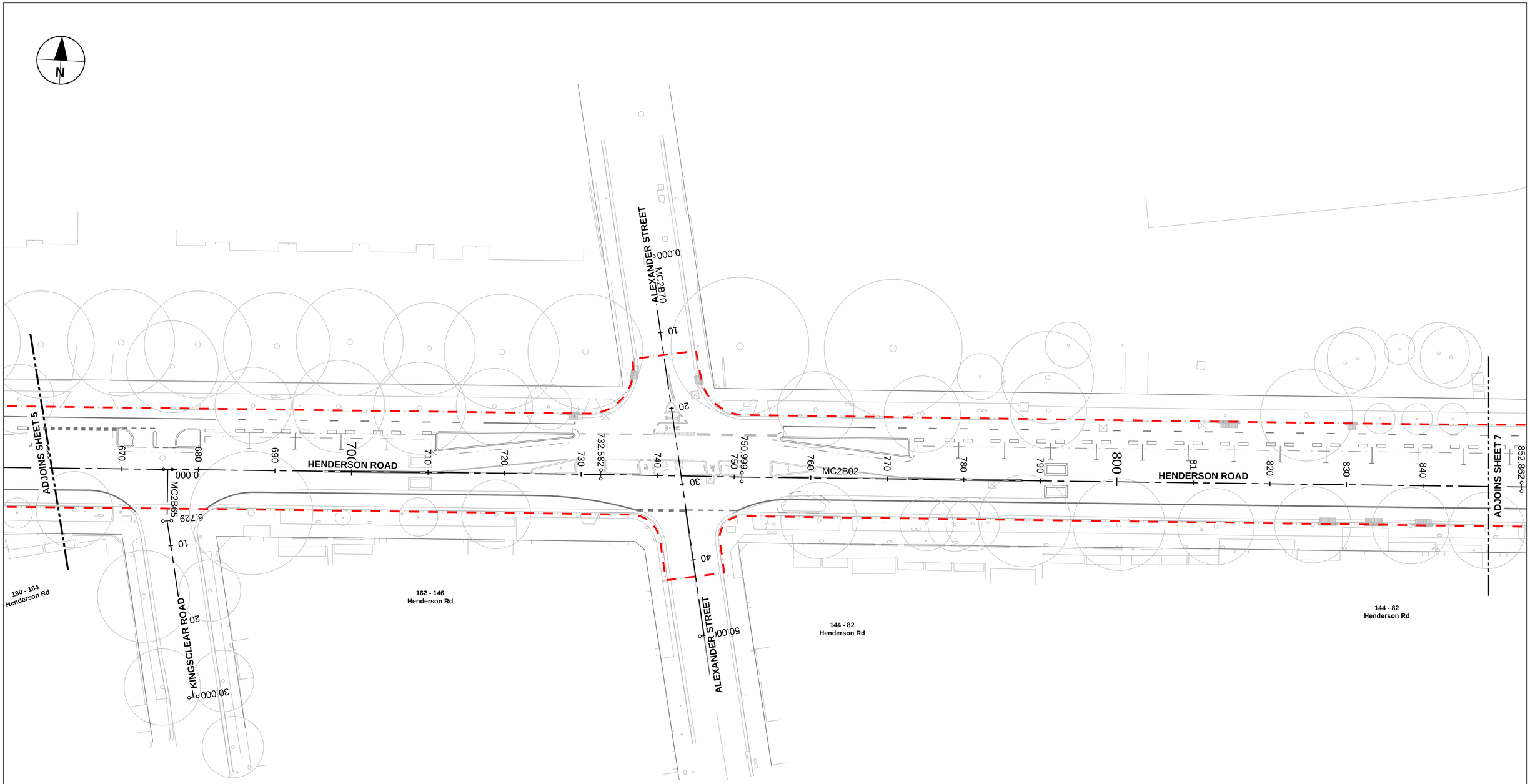

NOTES

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LEGEND

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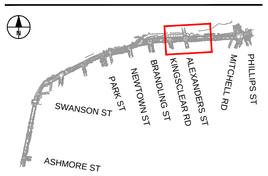
KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

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PROJECT NUMBER

60620833

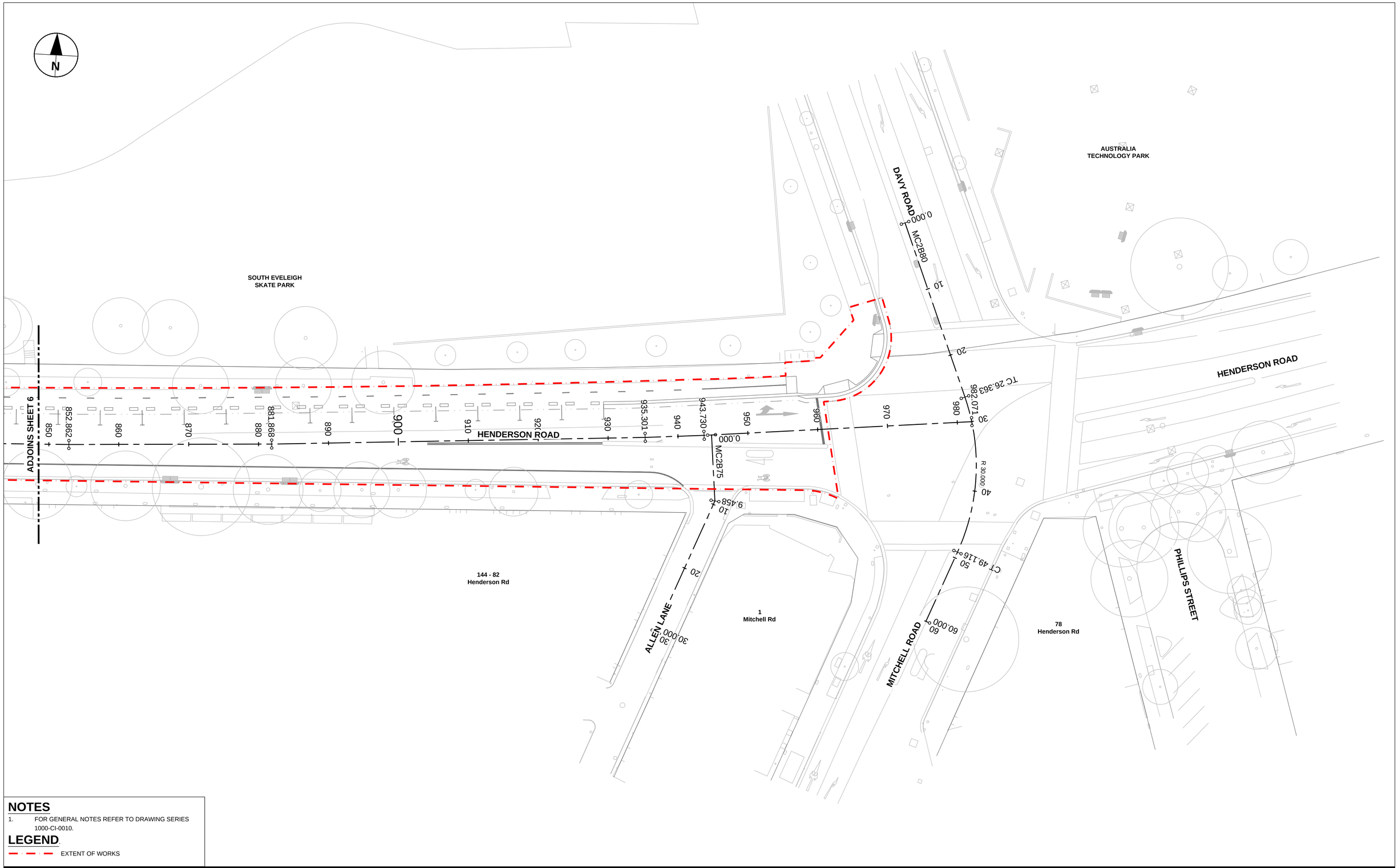
SHEET TITLE

ROAD CONTROL STRING PLAN
SHEET 6

SHEET NUMBER

60620833-2B-SHT-1000-CI-0306

ISO A1 594mm x 841mm



NOTES

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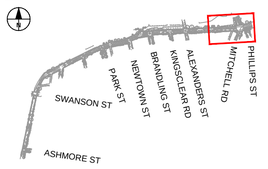

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

ROAD CONTROL STRING PLAN
SHEET 7

SHEET NUMBER

60620833-2B-SHT-1000-CI-0307

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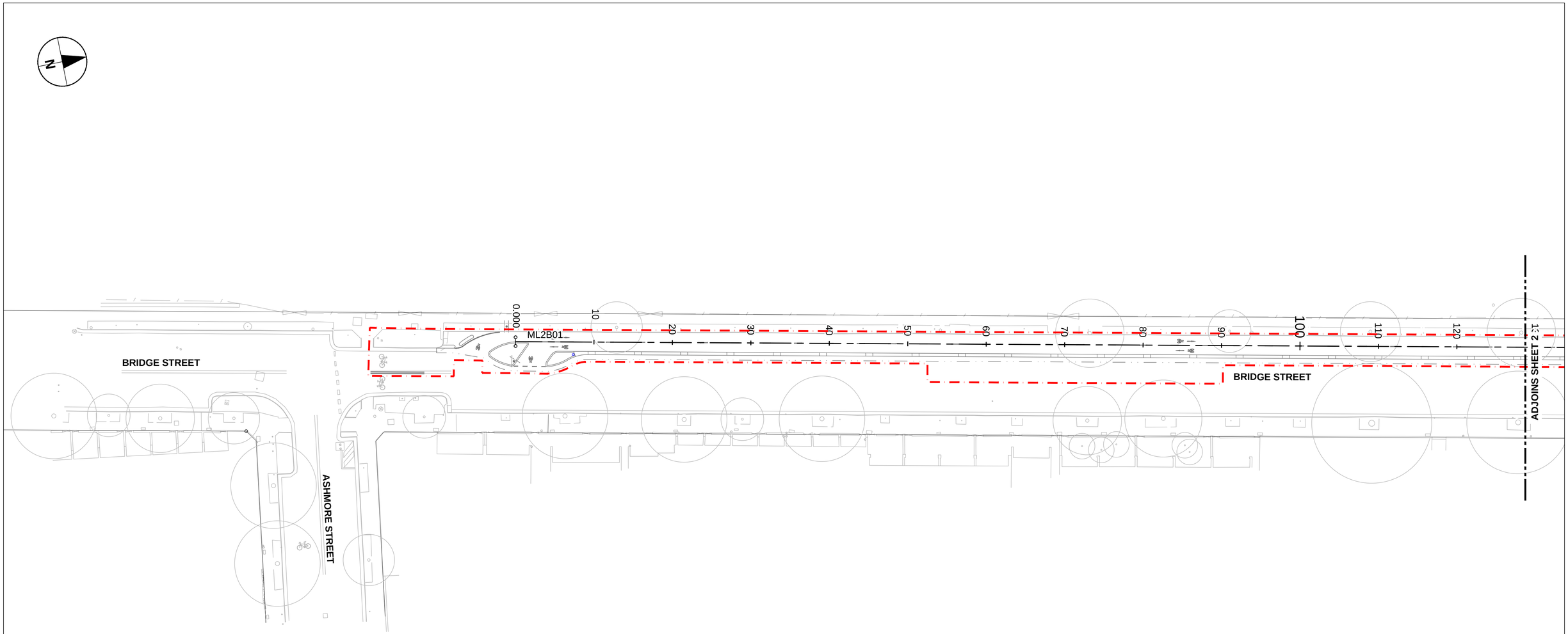

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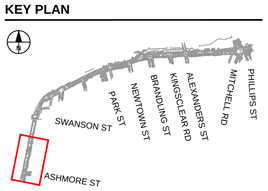
☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
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PROJECT NUMBER

60620833

SHEET TITLE

MISCELLANEOUS CONTROL STRING PLAN
SHEET 1

SHEET NUMBER

60620833-2B-SHT-1000-CI-0501

ISO A1 594mm x 841mm

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
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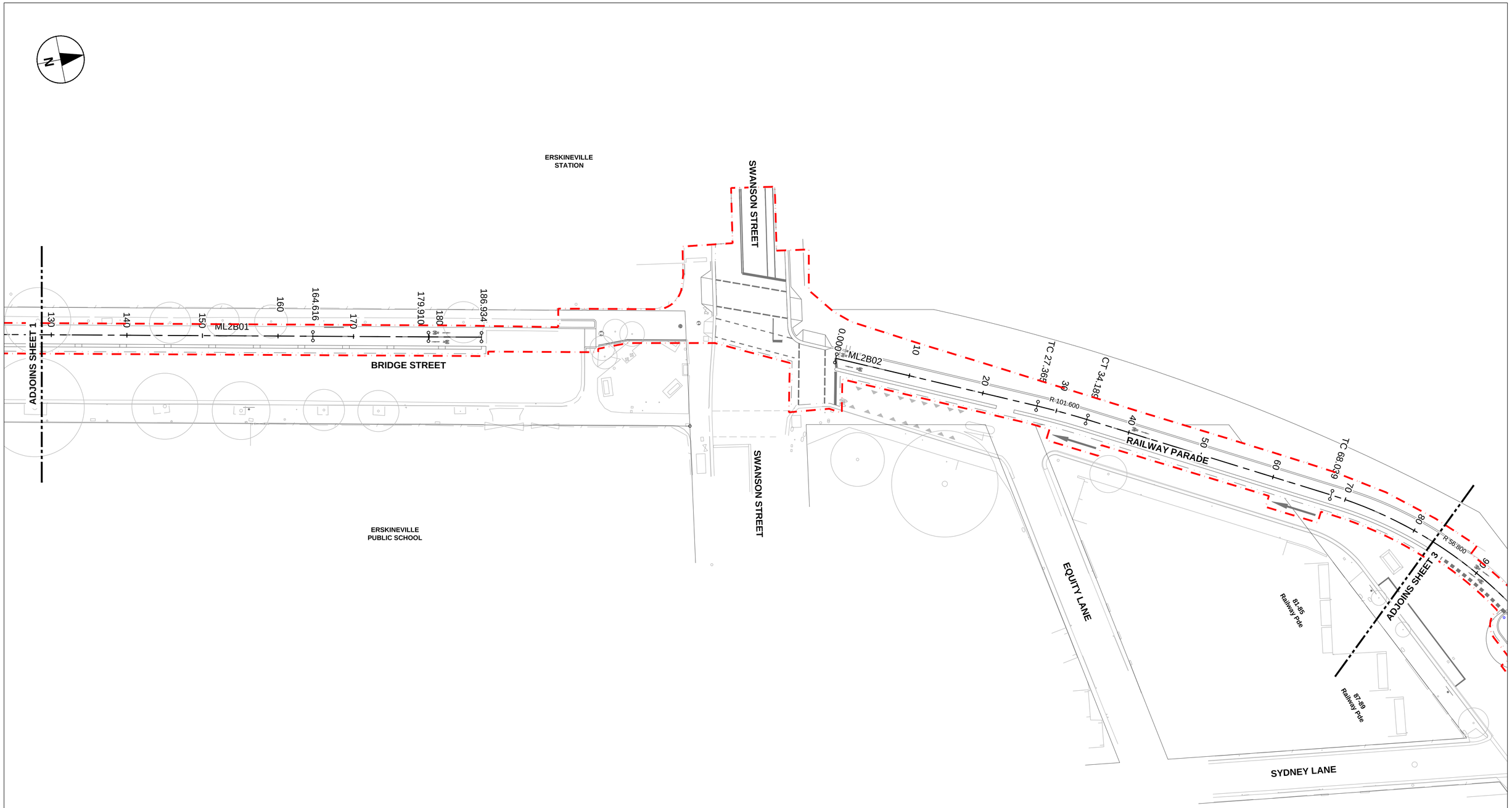

NOTES

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LEGEND

EXTENT OF WORKS

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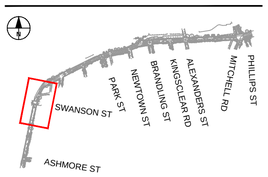
☐ NO
☐ YES

KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

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PROJECT NUMBER

60620833

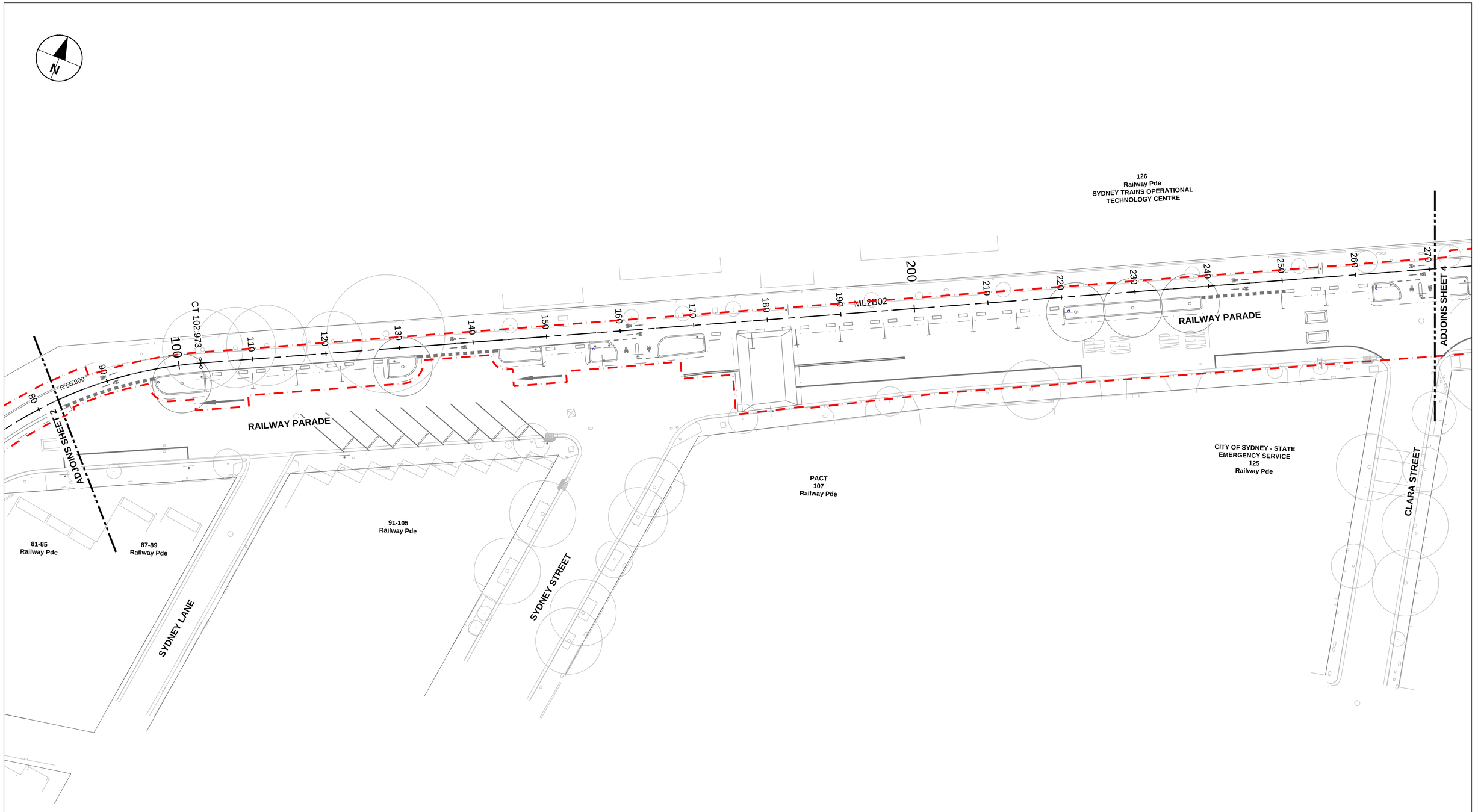
SHEET TITLE

MISCELLANEOUS CONTROL STRING PLAN
SHEET 2

SHEET NUMBER

60620833-2B-SHT-1000-CI-0502

ISO A1 594mm x 841mm



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LEGEND

EXTENT OF WORKS

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

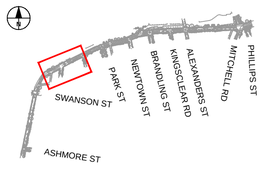
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

- ☐ NO
- ☐ YES

KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

MISCELLANEOUS CONTROL STRING PLAN
SHEET 3

SHEET NUMBER

60620833-2B-SHT-1000-CI-0503

Last saved by: CHENJH (2020-08-12) Last Plotted: 2020-08-17
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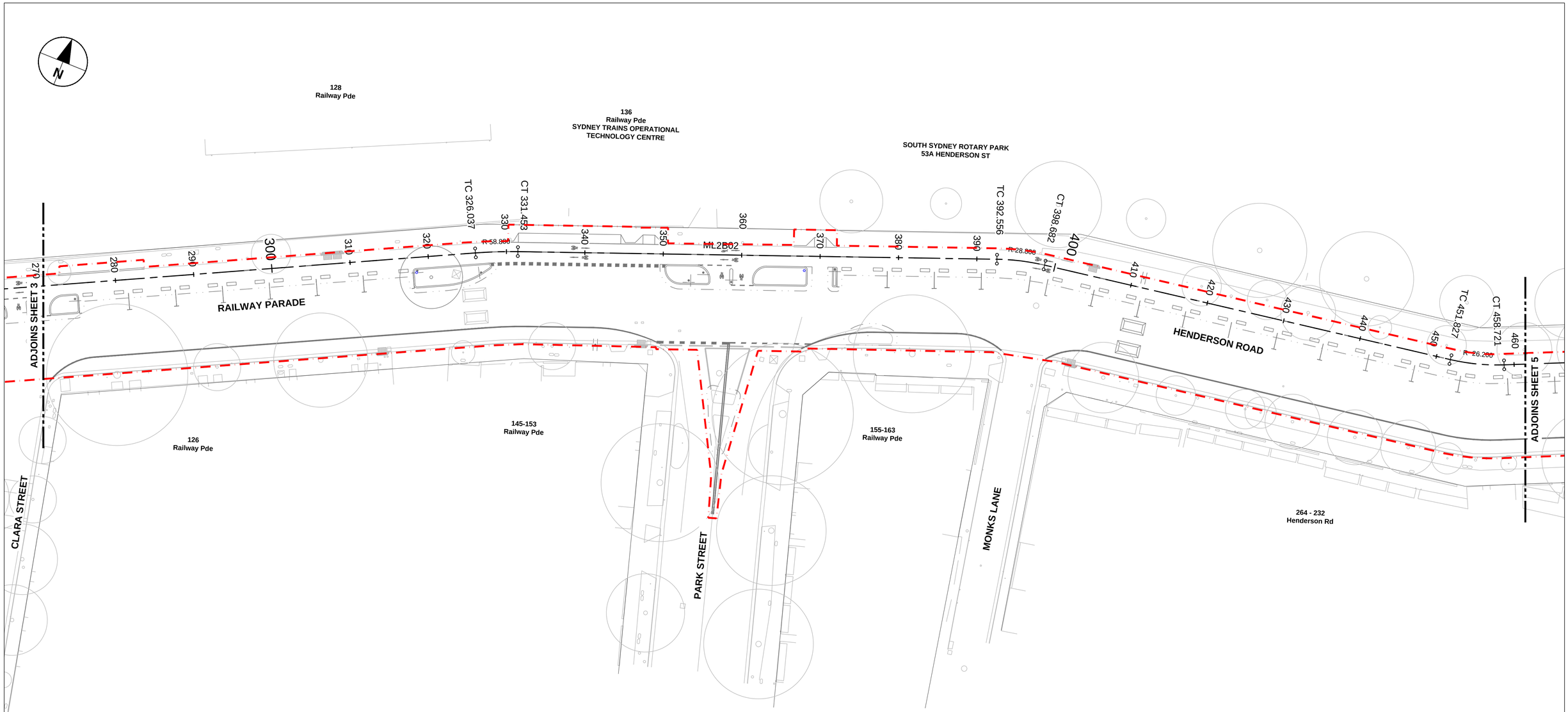
ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

EXTENT OF WORKS

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

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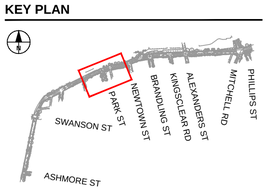
- ☐ NO
- ☐ YES

KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

MISCELLANEOUS CONTROL STRING PLAN
SHEET 4

SHEET NUMBER

60620833-2B-SHT-1000-CI-0504

Last saved by: CHENJH (2020-08-12) Last Plotted: 2020-08-17
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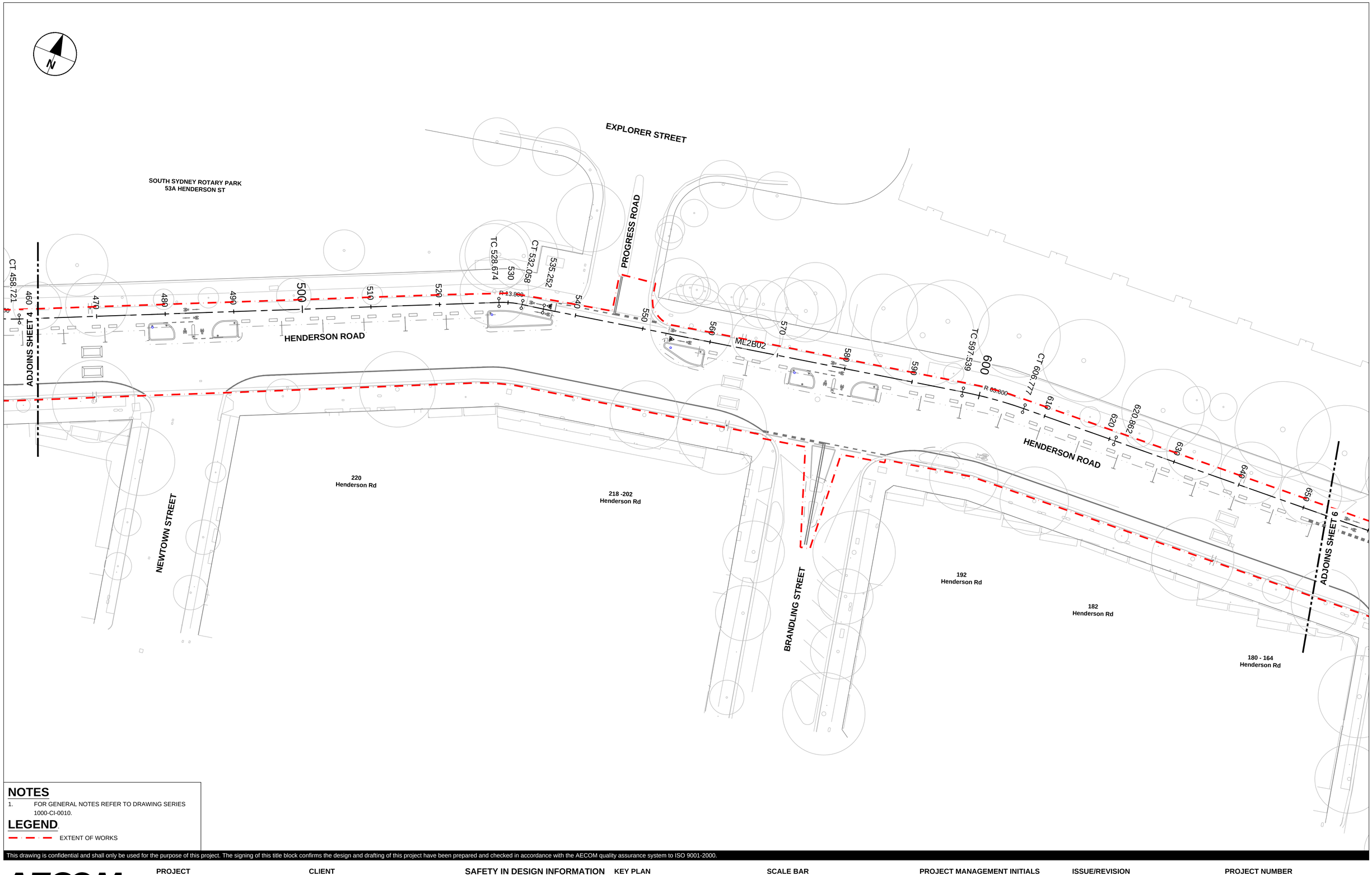

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

EXTENT OF WORKS

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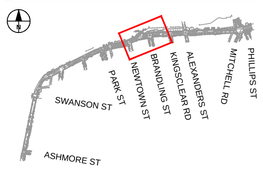
☐ YES

KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

MISCELLANEOUS CONTROL STRING PLAN
SHEET 5

SHEET NUMBER

60620833-2B-SHT-1000-CI-0505

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
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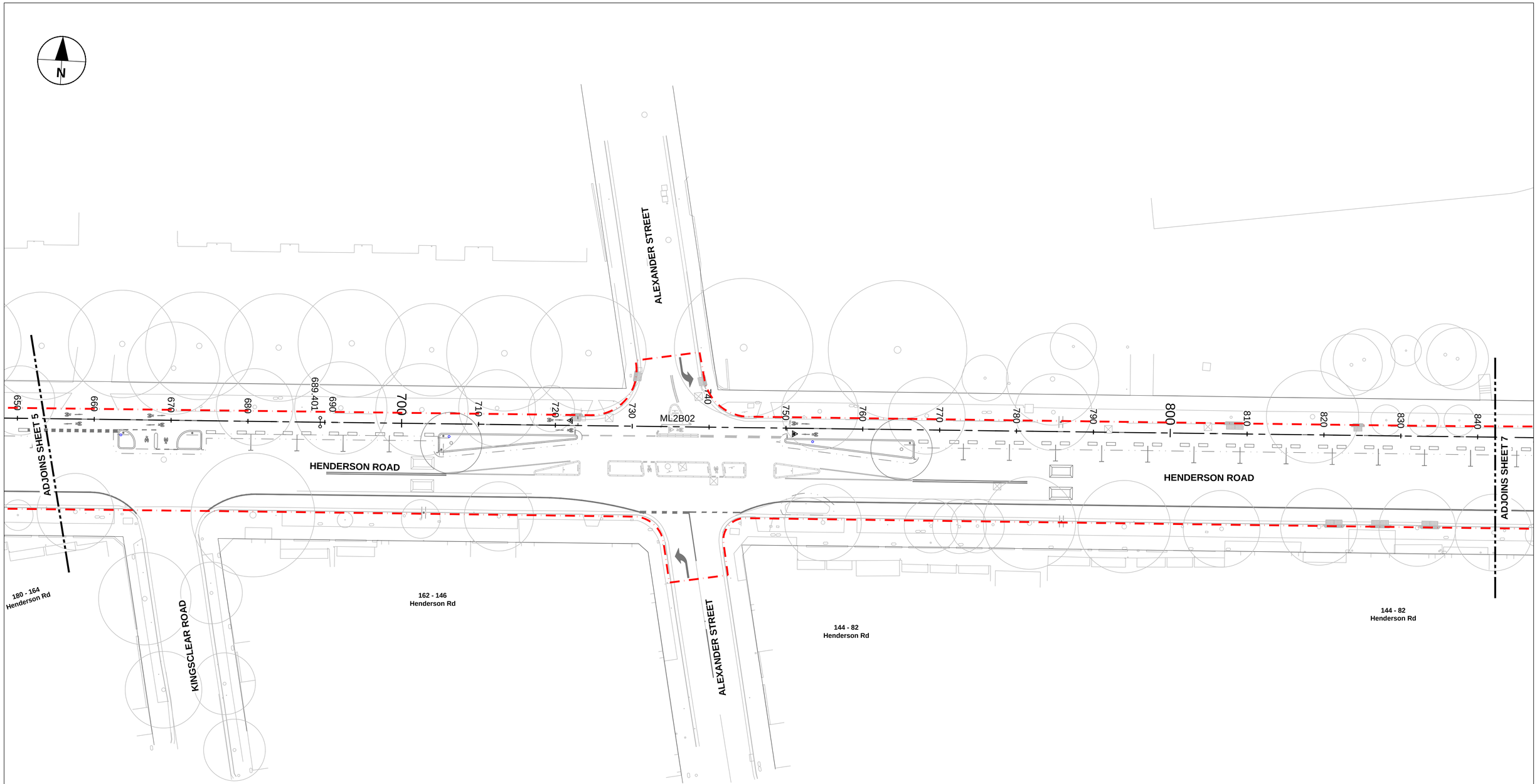

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

EXTENT OF WORKS

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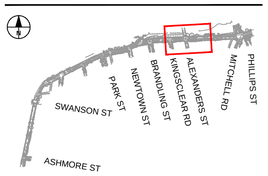
KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

MISCELLANEOUS CONTROL STRING PLAN
SHEET 6

SHEET NUMBER

60620833-2B-SHT-1000-CI-0506

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
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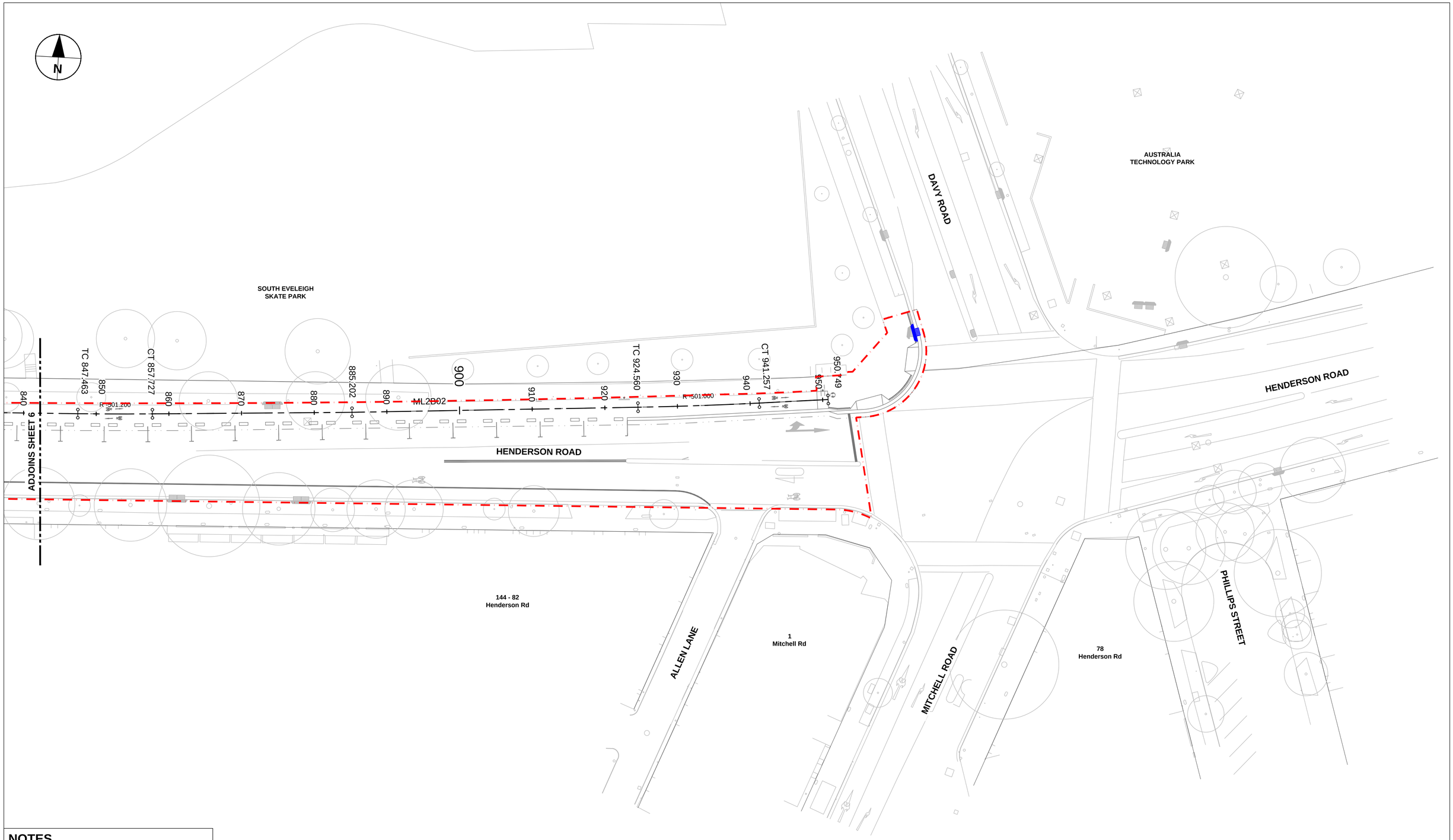

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

EXTENT OF WORKS

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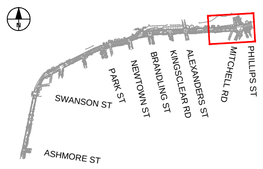
☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

MISCELLANEOUS CONTROL STRING PLAN
SHEET 7

SHEET NUMBER

60620833-2B-SHT-1000-CI-0507

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
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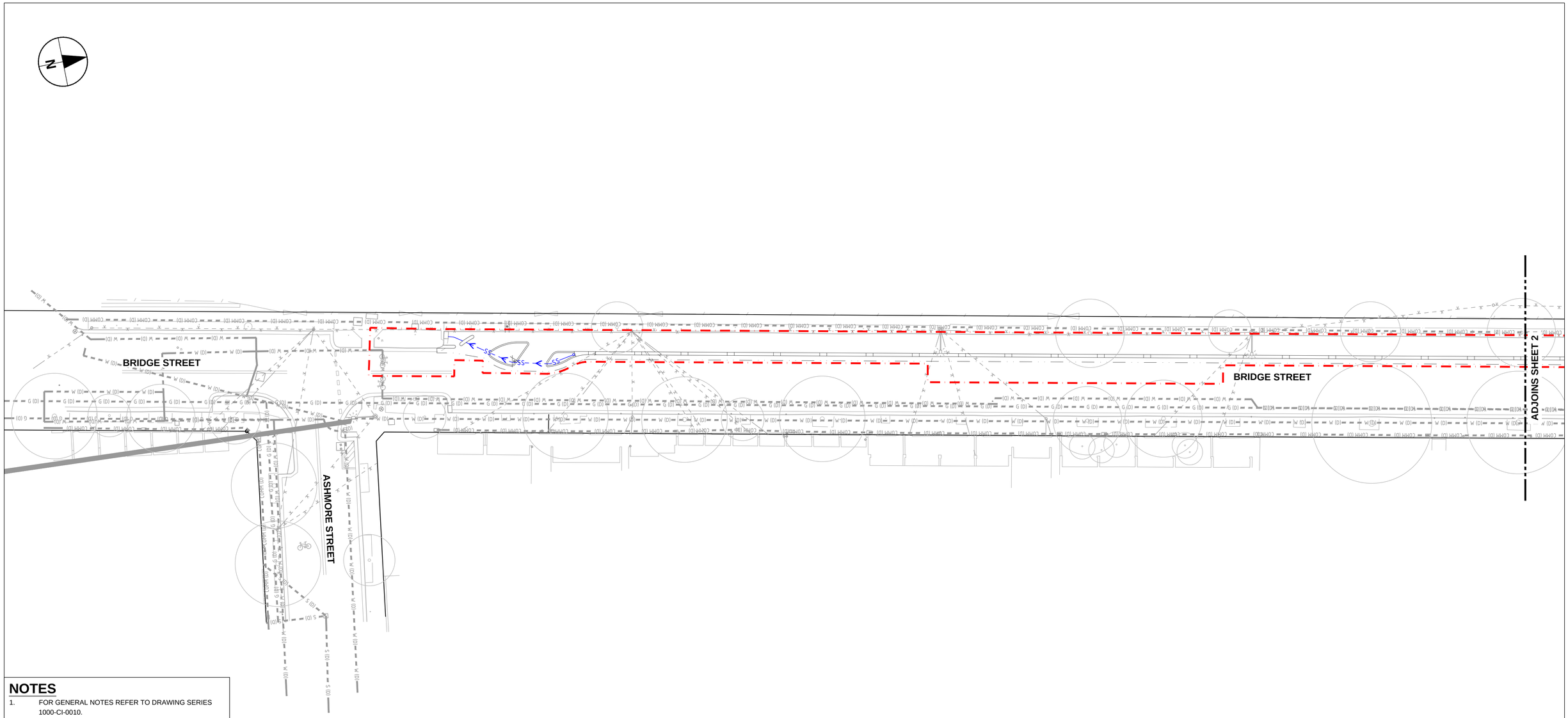
ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
- EXISTING COMMS
- EXISTING GAS
- EXISTING SEWER
- EXISTING DRAINAGE
- EXISTING WATER
- EXISTING ELECTRICAL
- EXISTING HV
- EXISTING LV
- EXISTING DRAINAGE PITS
- EXISTING UTILITY PIT
- EXISTING LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED LIGHT POLE / TRAFFIC SIGNAL
- REMOVED / RELOCATED LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED DRAINAGE
- PROPOSED SUBSOIL DRAINAGE
- PROPOSED DRAINAGE PITS

Last saved by: TOWNSENDSW(2020-08-17) Last Plotted: 2020-08-17
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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

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SAFETY IN DESIGN INFORMATION

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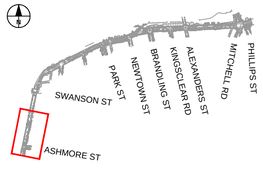
- ☐ YES

KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC	-	-
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01		
I/R	DATE	DESCRIPTION

FOR INFORMATION ONLY

PROJECT NUMBER

60620833

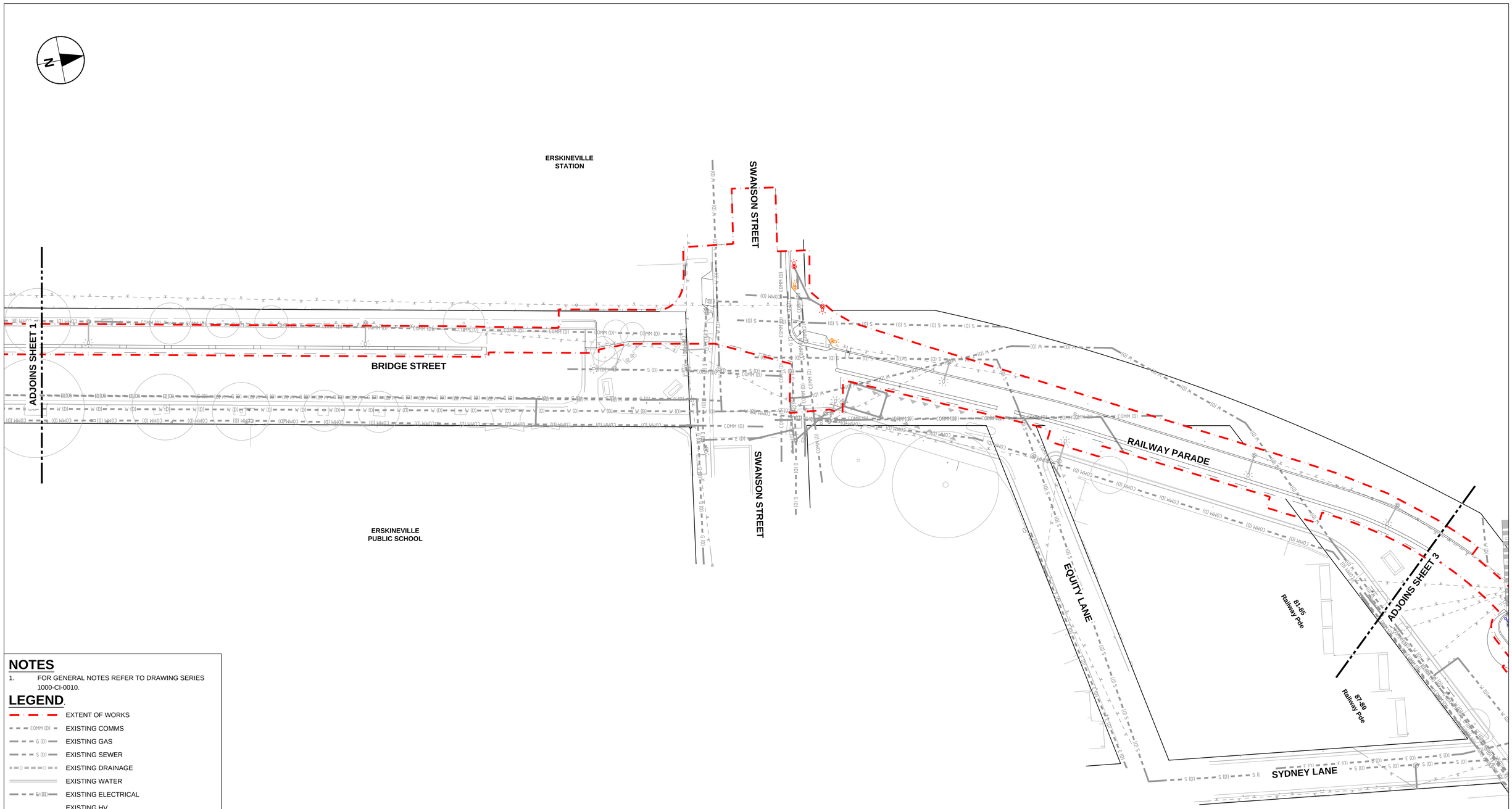
SHEET TITLE

COMBINED SERVICES PLAN
SHEET 1

SHEET NUMBER

60620833-2B-SHT-1000-CI-0701

ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
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- EXISTING GAS
- EXISTING SEWER
- EXISTING DRAINAGE
- EXISTING WATER
- EXISTING ELECTRICAL
- EXISTING HV
- EXISTING LV
- EXISTING DRAINAGE PITS
- EXISTING UTILITY PIT
- EXISTING LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED LIGHT POLE / TRAFFIC SIGNAL
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- PROPOSED DRAINAGE PITS

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- ☐ NO
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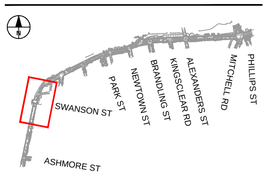
KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

COMBINED SERVICES PLAN
SHEET 2

SHEET NUMBER

60620833-2B-SHT-1000-CI-0702

Last saved by: CHENJH (2020-08-12) Last Plotted: 2020-08-17
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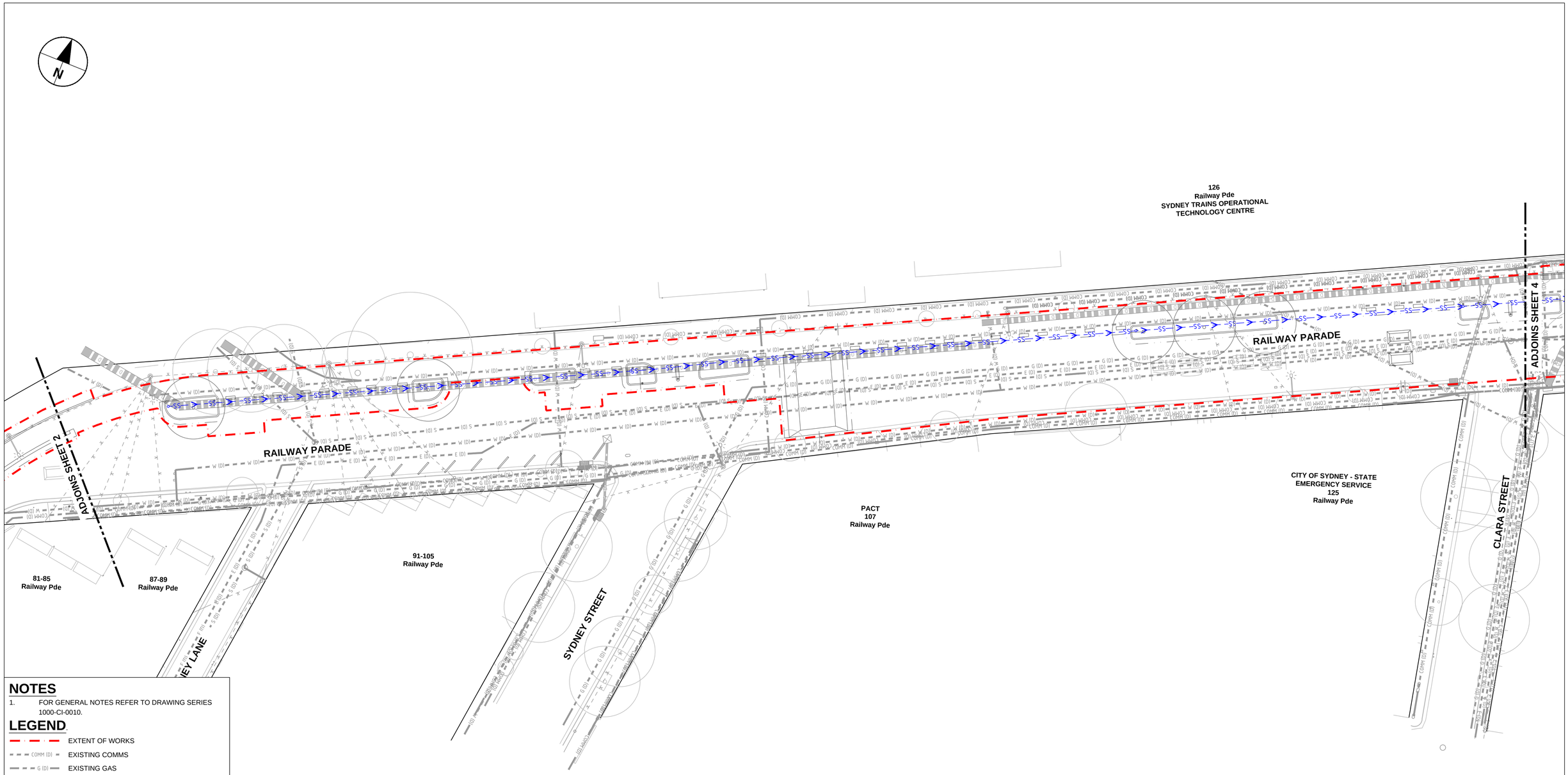
ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
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- EXISTING GAS
- EXISTING SEWER
- EXISTING DRAINAGE
- EXISTING WATER
- EXISTING ELECTRICAL
- EXISTING HV
- EXISTING LV
- EXISTING DRAINAGE PITS
- EXISTING UTILITY PIT
- EXISTING LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED LIGHT POLE / TRAFFIC SIGNAL
- REMOVED / RELOCATED LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED DRAINAGE
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- PROPOSED DRAINAGE PITS

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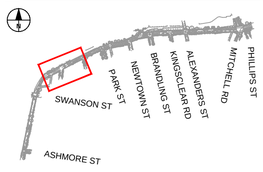
KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

COMBINED SERVICES PLAN
SHEET 3

SHEET NUMBER

60620833-2B-SHT-1000-CI-0703

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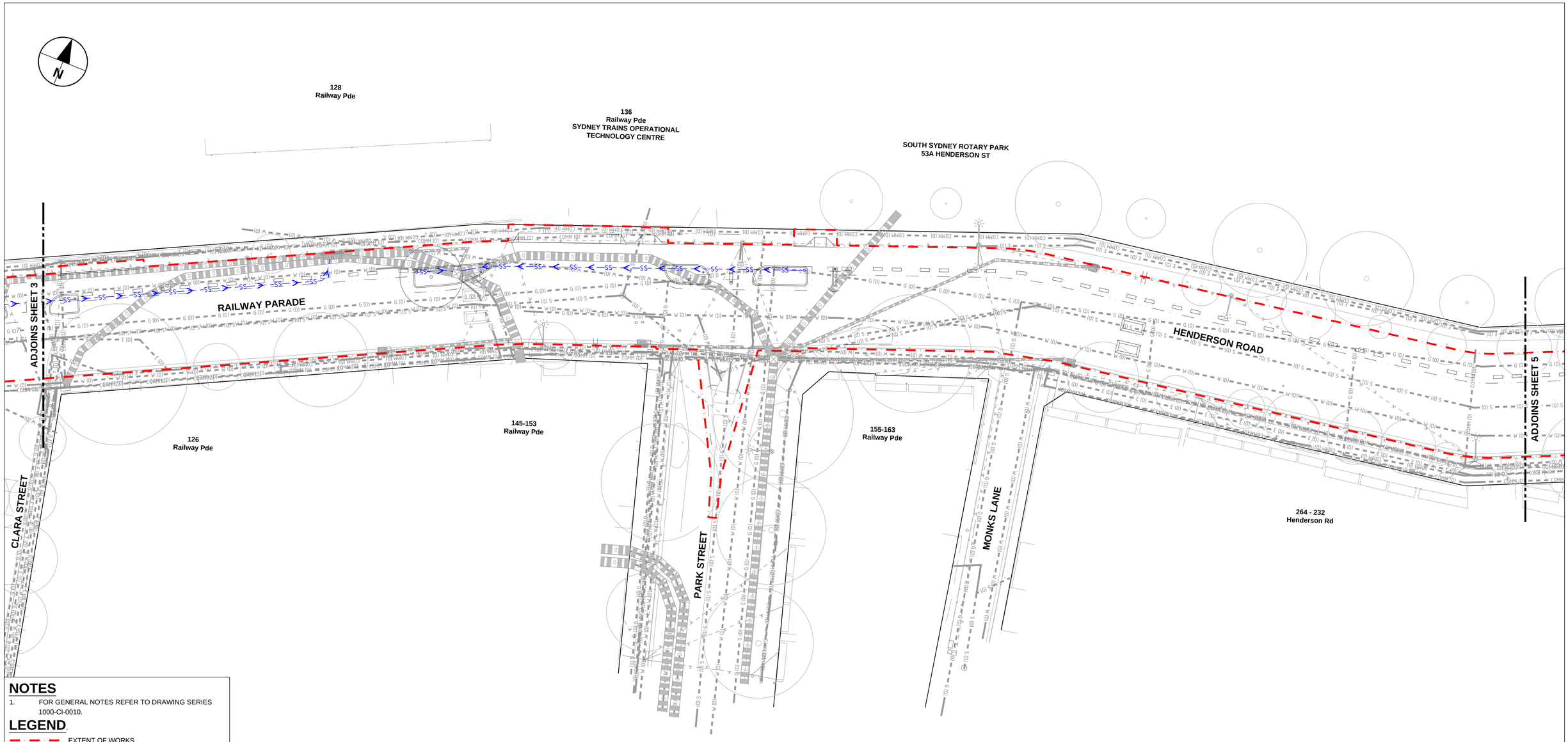

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
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- EXISTING GAS
- EXISTING SEWER
- EXISTING DRAINAGE
- EXISTING WATER
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- EXISTING HV
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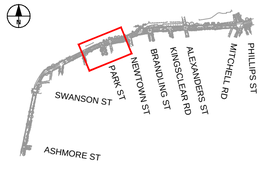

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

COMBINED SERVICES PLAN
SHEET 4

SHEET NUMBER

60620833-2B-SHT-1000-CI-0704

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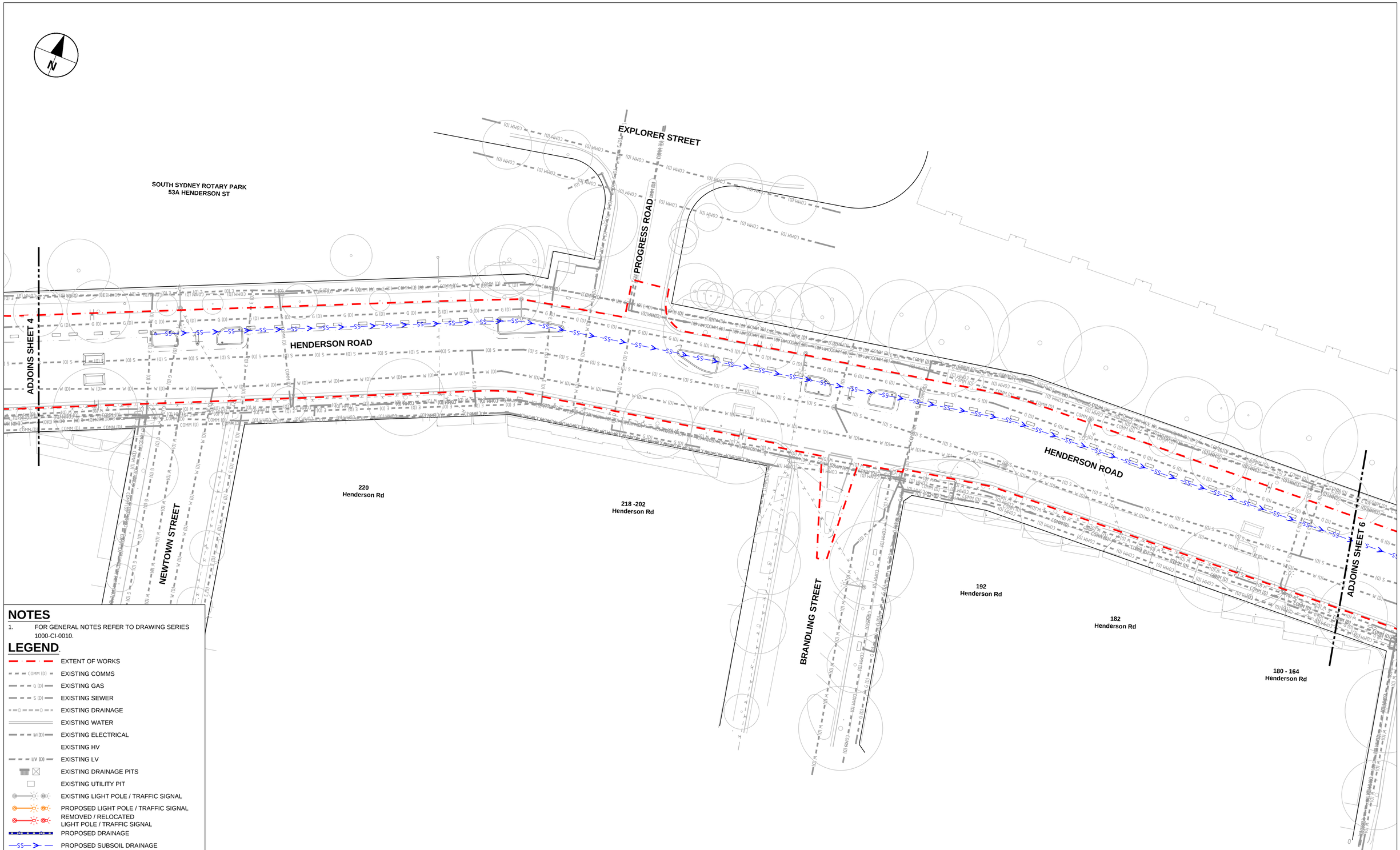

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
- EXISTING COMMS
- EXISTING GAS
- EXISTING SEWER
- EXISTING DRAINAGE
- EXISTING WATER
- EXISTING ELECTRICAL
- EXISTING HV
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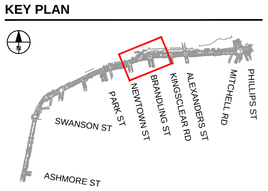
KEY PLAN



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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

COMBINED SERVICES PLAN
SHEET 5

SHEET NUMBER

60620833-2B-SHT-1000-CI-0705

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
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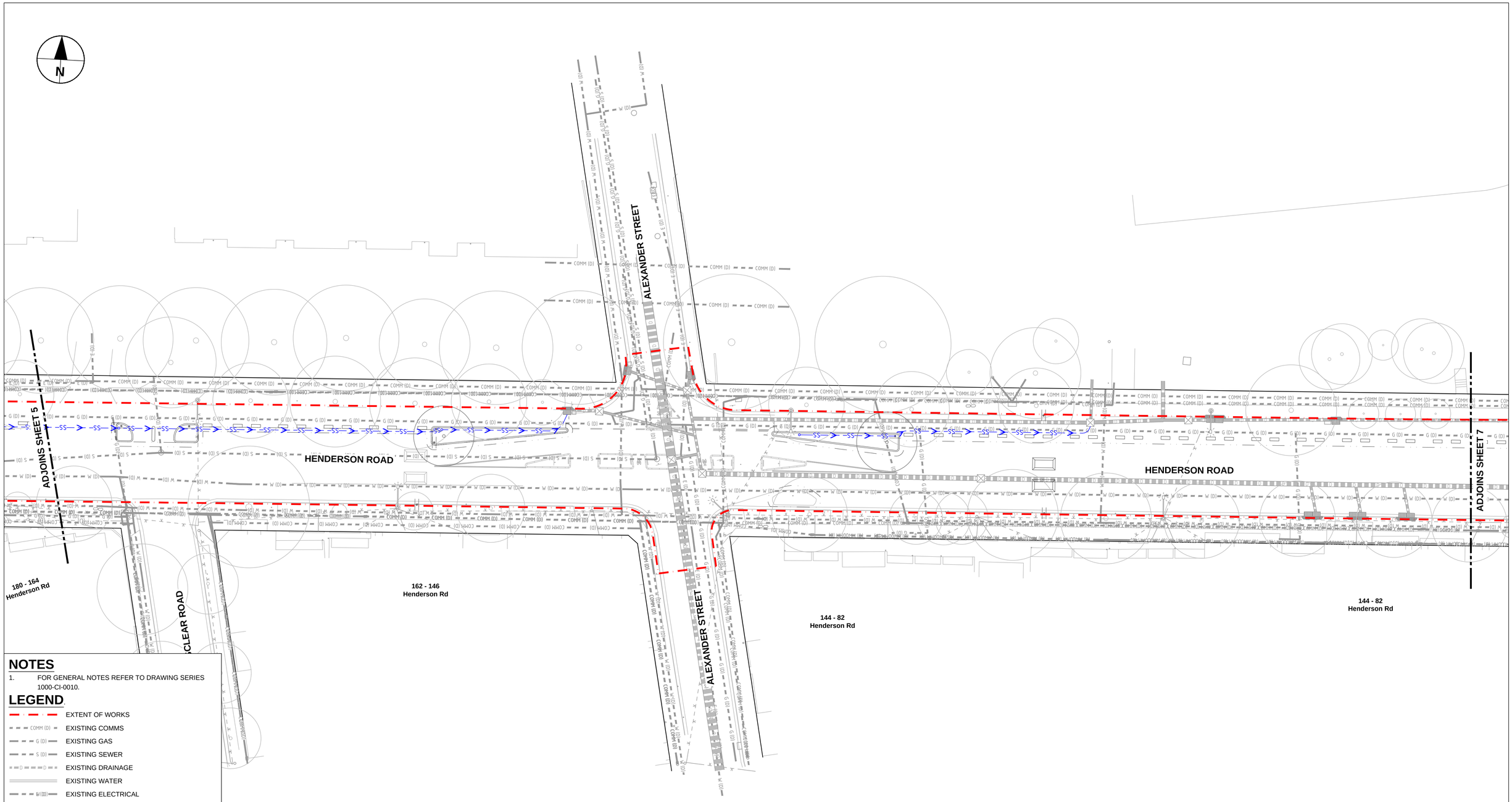
ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
- EXISTING COMMS
- EXISTING GAS
- EXISTING SEWER
- EXISTING DRAINAGE
- EXISTING WATER
- EXISTING ELECTRICAL
- EXISTING HV
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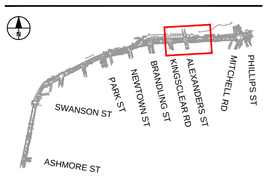
- ☐ YES

KEY PLAN



SCALE BAR

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1:250

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

I/R	DATE	DESCRIPTION
01	17.08.2020	80% DETAILED DESIGN

PROJECT NUMBER

60620833

SHEET TITLE

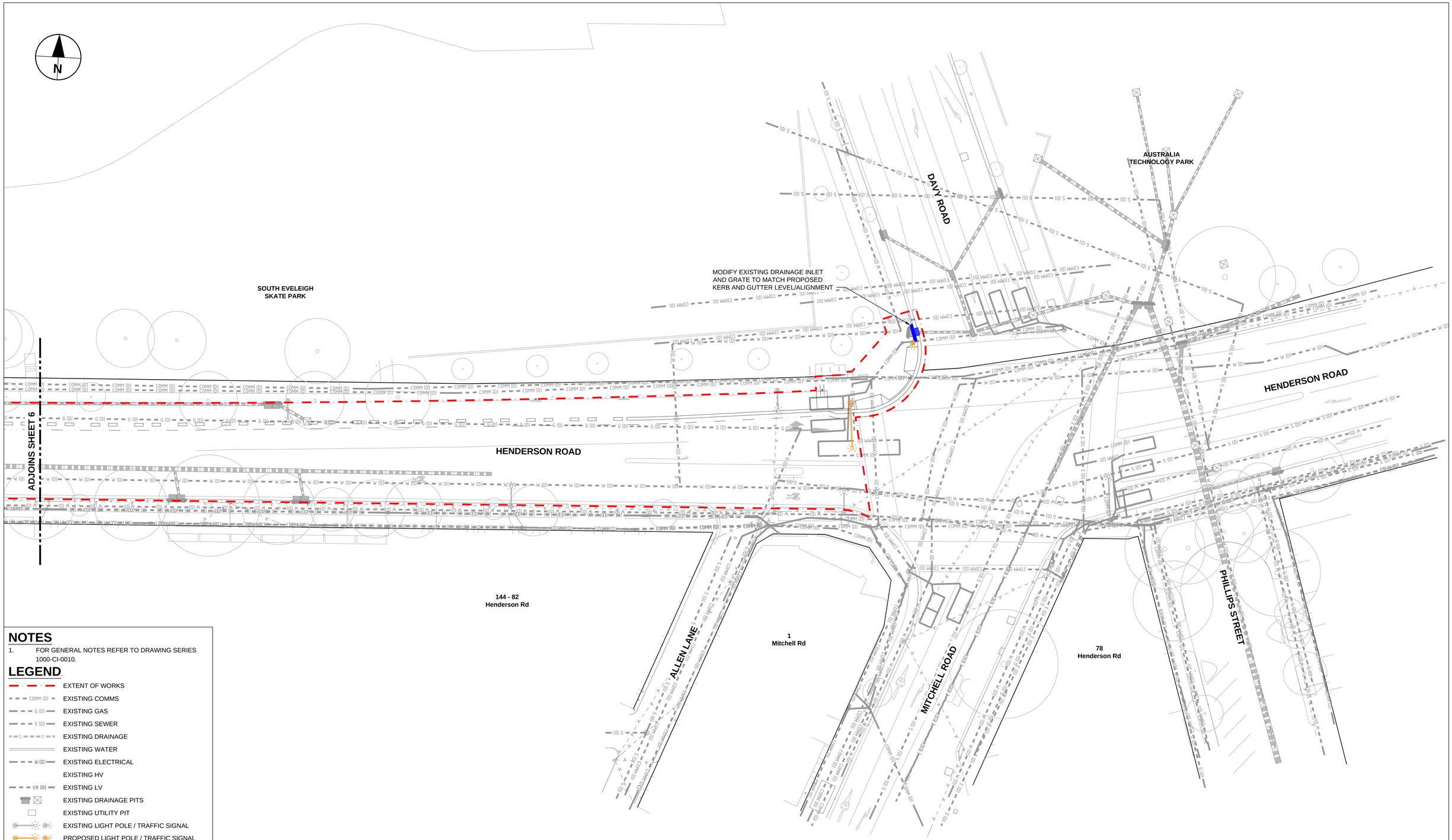
COMBINED SERVICES PLAN
SHEET 6

SHEET NUMBER

60620833-2B-SHT-1000-CI-0706

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
Filename: C:_PROCESS\PW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0706.DWG

ISO A1 594mm x 841mm



NOTES

1. FOR GENERAL NOTES REFER TO DRAWING SERIES 1000-CI-0010.

LEGEND

- EXTENT OF WORKS
- EXISTING COMMS
- EXISTING GAS
- EXISTING SEWER
- EXISTING DRAINAGE
- EXISTING WATER
- EXISTING ELECTRICAL
- EXISTING HV
- EXISTING LV
- EXISTING DRAINAGE PITS
- EXISTING UTILITY PIT
- EXISTING LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED LIGHT POLE / TRAFFIC SIGNAL
- REMOVED / RELOCATED LIGHT POLE / TRAFFIC SIGNAL
- PROPOSED DRAINAGE
- PROPOSED SUBSOIL DRAINAGE
- PROPOSED DRAINAGE PITS

CONSULTANT

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

PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

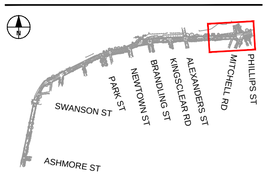
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

- ☐ NO
- ☐ YES

KEY PLAN



SCALE BAR

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PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

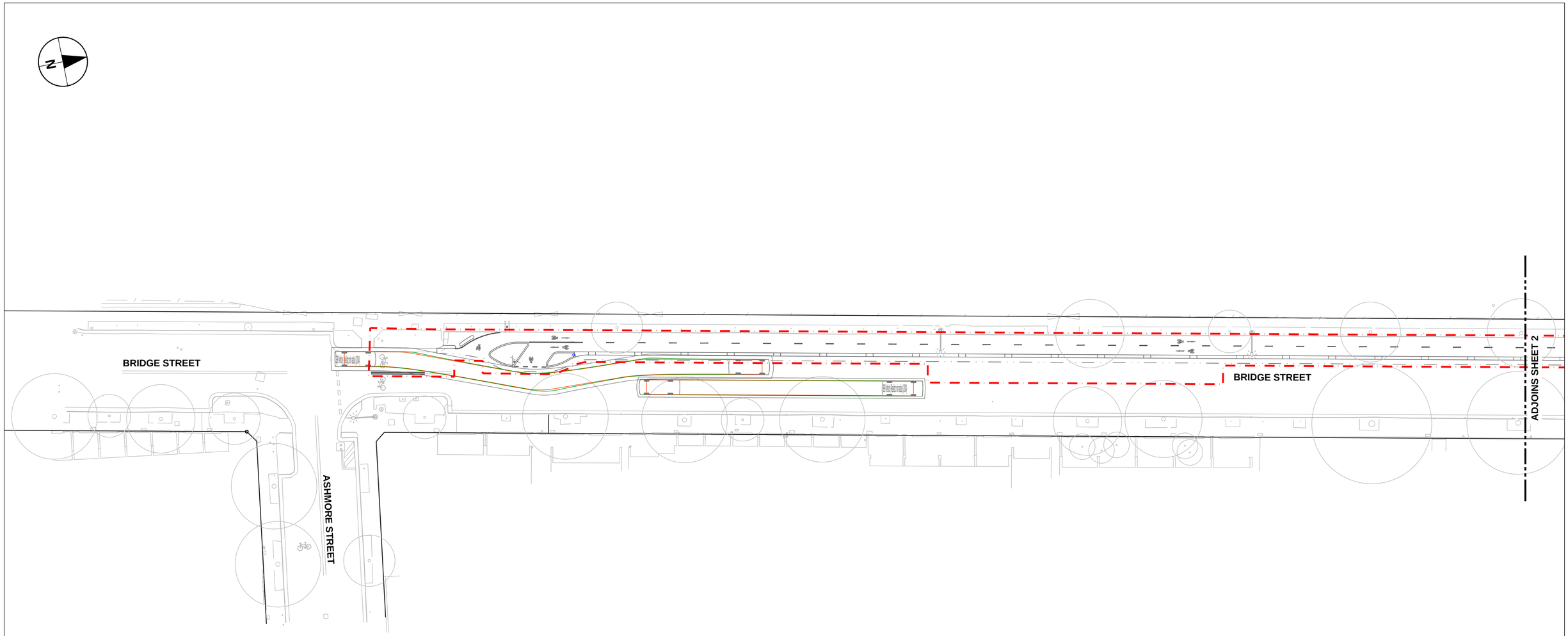
COMBINED SERVICES PLAN SHEET 7

SHEET NUMBER

60620833-2B-SHT-1000-CI-0707

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
Filename: C:_PROCESS\PW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0707.DWG

ISO A1 594mm x 841mm



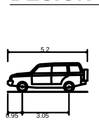
LEGEND

- INDICATES VEHICLE OVERHANG
- INDICATES WHEEL PATH
- INDICATES 300/500mm CLEARANCE FROM VEHICLE BODY

NOTES

1. DRIVEWAY MOVEMENTS TRACKED AT 10km/h.
2. STRAIGHT MOVEMENTS ON ROADWAY TRACKED AT 40km/h.
3. INTERSECTION MOVEMENTS TRACKED AT 15km/h.
4. INTERSECTION MOVEMENTS ONLY CHECKED WHERE CHANGE EXISTING CONDITION.

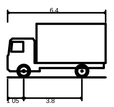
DESIGN VEHICLES



B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock t me	4.00s
Curb to Curb Turning Radius	6.250m

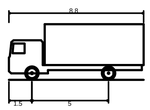
B99 VEHICLE
(DRIVEWAY MOVEMENTS AND STRAIGHT MOVEMENT CLEARANCE CHECK)



SRV - Small Rigid Vehicle

Overall Length	6.400m
Overall Width	2.330m
Overall Body Height	3.500m
Min Body Ground Clearance	0.398m
Track Width	2.330m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	7.100m

SRV - SMALL RIGID VEHICLE
(DRIVEWAY MOVEMENTS)



MRV - Medium Rigid Vehicle

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.000m

MRV - MEDIUM RIGID VEHICLE
(DRIVEWAY MOVEMENTS)

AECOM

CONSULTANT

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www.aecom.com

PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

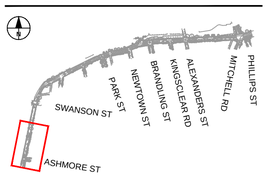
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

KEY PLAN



SCALE BAR

0 6.25 12.5 m
1:250

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

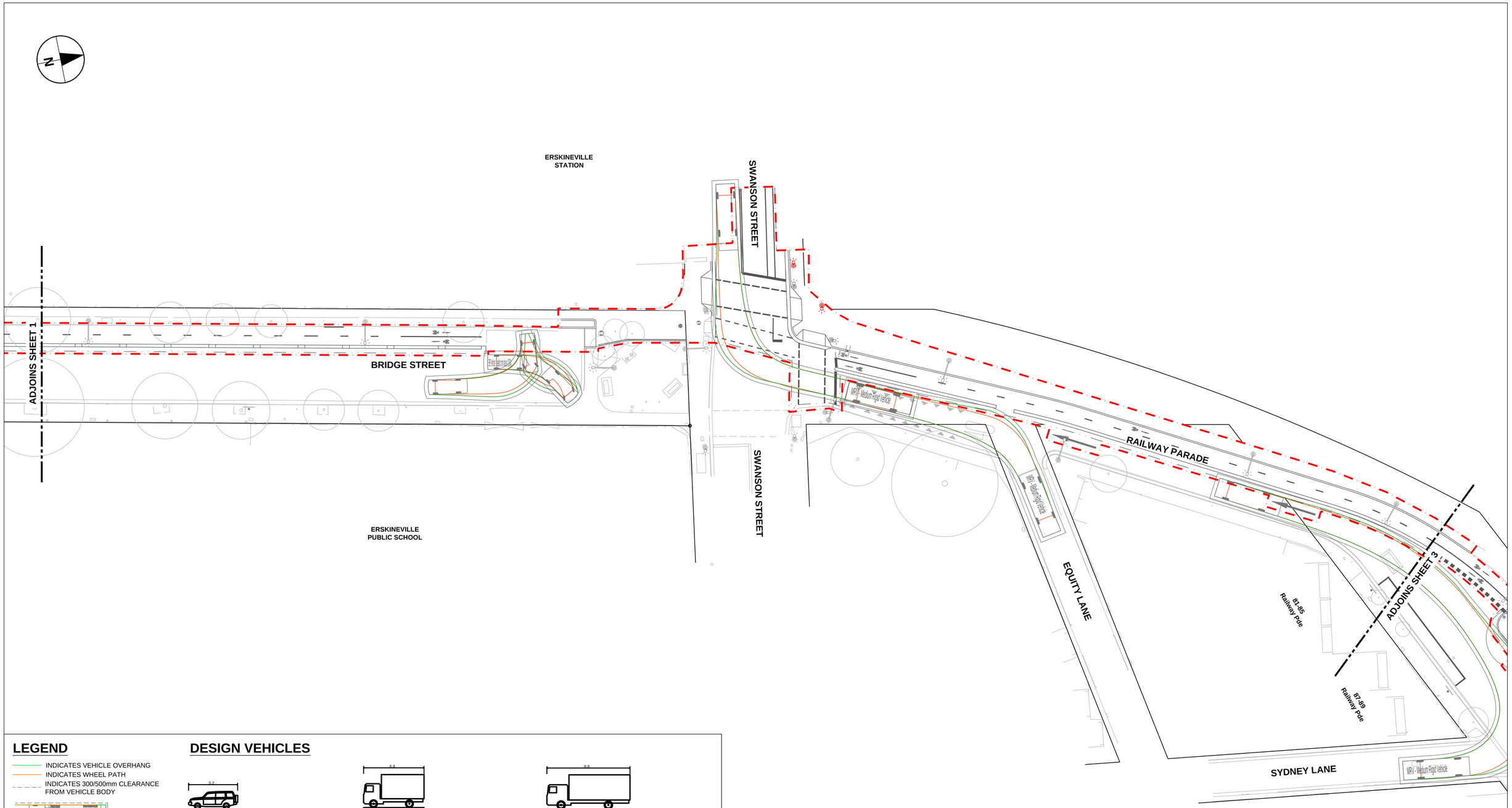
VEHICLE TRACKING PLAN
SHEET 1

SHEET NUMBER

60620833-2B-SHT-1000-CI-0801

Last saved by: TOWNSENDSW(2020-08-17) Last Plotted: 2020-08-17
Filename: C:_PROCESSIPW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0801.DWG

ISO A1 594mm x 841mm



LEGEND

- INDICATES VEHICLE OVERHANG
- INDICATES WHEEL PATH
- INDICATES 300/500mm CLEARANCE FROM VEHICLE BODY

NOTES

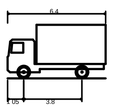
1. DRIVEWAY MOVEMENTS TRACKED AT 10km/h.
2. STRAIGHT MOVEMENTS ON ROADWAY TRACKED AT 40km/h.
3. INTERSECTION MOVEMENTS TRACKED AT 15km/h.
4. INTERSECTION MOVEMENTS ONLY CHECKED WHERE CHANGE EXISTING CONDITION.

DESIGN VEHICLES

B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock t me	4.00s
Curb to Curb Turning Radius	6.250m

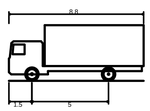
B99 VEHICLE
(DRIVEWAY MOVEMENTS AND STRAIGHT MOVEMENT CLEARANCE CHECK)



SRV - Small Rigid Vehicle

Overall Length	6.400m
Overall Width	2.330m
Overall Body Height	3.500m
Min Body Ground Clearance	0.398m
Track Width	2.330m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	7.100m

SRV - SMALL RIGID VEHICLE
(DRIVEWAY MOVEMENTS)



MRV - Medium Rigid Vehicle

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.000m

MRV - MEDIUM RIGID VEHICLE
(DRIVEWAY MOVEMENTS)

AECOM

CONSULTANT

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

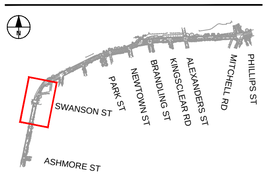
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

KEY PLAN



SCALE BAR

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1:250

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

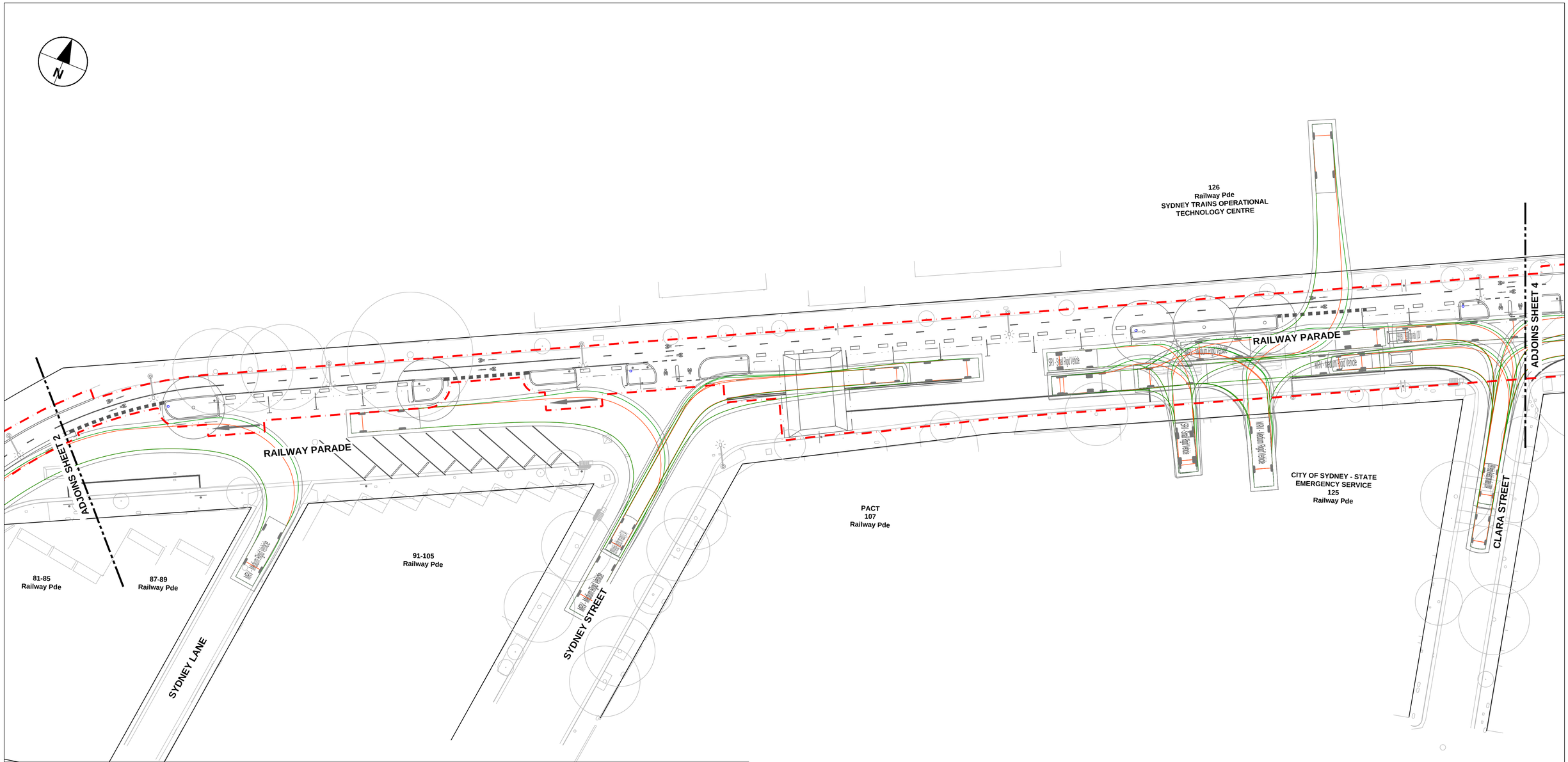
VEHICLE TRACKING PLAN SHEET 2

SHEET NUMBER

60620833-2B-SHT-1000-CI-0802

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
Filename: C:_PROCESSIPW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0802.DWG

ISO A1 594mm x 841mm



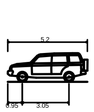
LEGEND

- INDICATES VEHICLE OVERHANG
- INDICATES WHEEL PATH
- INDICATES 300/500mm CLEARANCE FROM VEHICLE BODY

NOTES

1. DRIVEWAY MOVEMENTS TRACKED AT 10km/h.
2. STRAIGHT MOVEMENTS ON ROADWAY TRACKED AT 40km/h.
3. INTERSECTION MOVEMENTS TRACKED AT 15km/h.
4. INTERSECTION MOVEMENTS ONLY CHECKED WHERE CHANGE EXISTING CONDITION.

DESIGN VEHICLES

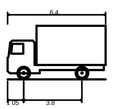


B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock t me	4.00s
Curb to Curb Turning Radius	6.250m

B99 VEHICLE

(DRIVEWAY MOVEMENTS AND STRAIGHT MOVEMENT CLEARANCE CHECK)

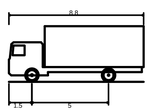


SRV - Small Rigid Vehicle

Overall Length	6.400m
Overall Width	2.330m
Overall Body Height	3.500m
Min Body Ground Clearance	0.398m
Track Width	2.330m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	7.100m

SRV - SMALL RIGID VEHICLE

(DRIVEWAY MOVEMENTS)



MRV - Medium Rigid Vehicle

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.000m

MRV - MEDIUM RIGID VEHICLE

(DRIVEWAY MOVEMENTS)

CONSULTANT

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

PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

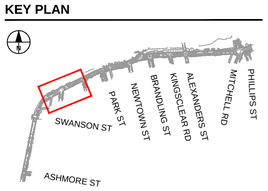
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

KEY PLAN



SCALE BAR

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1:250

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

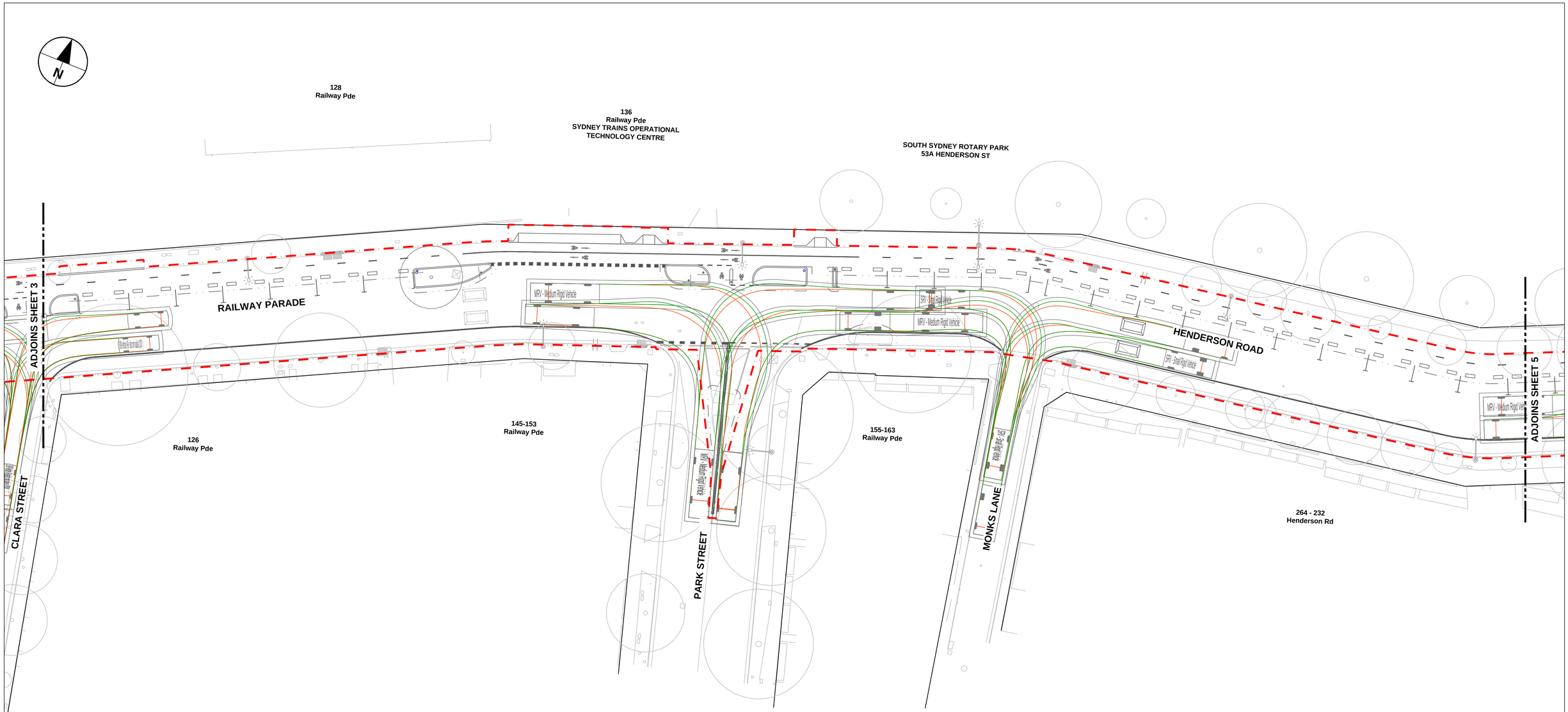
VEHICLE TRACKING PLAN SHEET 3

SHEET NUMBER

60620833-2B-SHT-1000-CI-0803

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
Filename: C:_PROCESSIPW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0803.DWG

ISO A1 594mm x 841mm



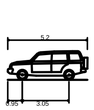
LEGEND

- INDICATES VEHICLE OVERHANG
- INDICATES WHEEL PATH
- INDICATES 300/500mm CLEARANCE FROM VEHICLE BODY

NOTES

1. DRIVEWAY MOVEMENTS TRACKED AT 10km/h.
2. STRAIGHT MOVEMENTS ON ROADWAY TRACKED AT 40km/h.
3. INTERSECTION MOVEMENTS TRACKED AT 15km/h.
4. INTERSECTION MOVEMENTS ONLY CHECKED WHERE CHANGE EXISTING CONDITION.

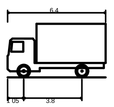
DESIGN VEHICLES



B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock t me	4.00s
Curb to Curb Turning Radius	6.250m

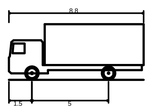
B99 VEHICLE
(DRIVEWAY MOVEMENTS AND STRAIGHT MOVEMENT CLEARANCE CHECK)



SRV - Small Rigid Vehicle

Overall Length	6.400m
Overall Width	2.330m
Overall Body Height	3.500m
Min Body Ground Clearance	0.398m
Track Width	2.330m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	7.100m

SRV - SMALL RIGID VEHICLE
(DRIVEWAY MOVEMENTS)



MRV - Medium Rigid Vehicle

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.000m

MRV - MEDIUM RIGID VEHICLE
(DRIVEWAY MOVEMENTS)

AECOM

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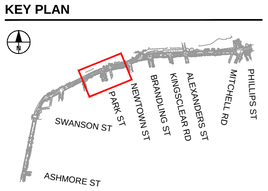
☐ NO
☐ YES

KEY PLAN



SCALE BAR

0 6.25 12.5 m
1:250

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

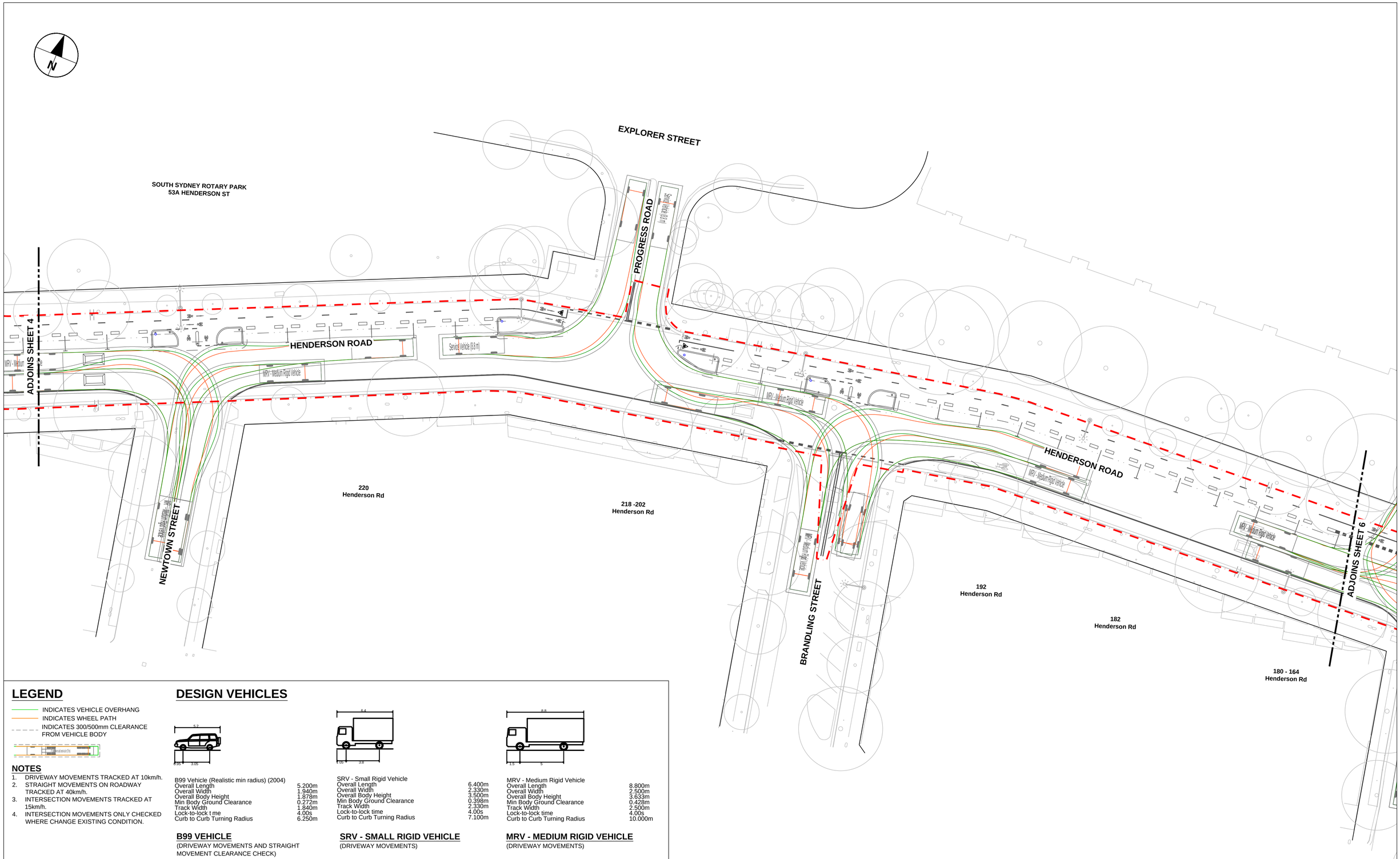
VEHICLE TRACKING PLAN
SHEET 4

SHEET NUMBER

60620833-2B-SHT-1000-CI-0804

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
Filename: C:_PROCESS\PW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0804.DWG

ISO A1 594mm x 841mm



LEGEND

- INDICATES VEHICLE OVERHANG
- INDICATES WHEEL PATH
- INDICATES 300/500mm CLEARANCE FROM VEHICLE BODY

NOTES

1. DRIVEWAY MOVEMENTS TRACKED AT 10km/h.
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4. INTERSECTION MOVEMENTS ONLY CHECKED WHERE CHANGE EXISTING CONDITION.

DESIGN VEHICLES

B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock t me	4.00s
Curb to Curb Turning Radius	6.250m

B99 VEHICLE

(DRIVEWAY MOVEMENTS AND STRAIGHT MOVEMENT CLEARANCE CHECK)

SRV - Small Rigid Vehicle

Overall Length	6.400m
Overall Width	2.330m
Overall Body Height	3.500m
Min Body Ground Clearance	0.398m
Track Width	2.330m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	7.100m

SRV - SMALL RIGID VEHICLE

(DRIVEWAY MOVEMENTS)

MRV - Medium Rigid Vehicle

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.000m

MRV - MEDIUM RIGID VEHICLE

(DRIVEWAY MOVEMENTS)

AECOM

CONSULTANT

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PROJECT

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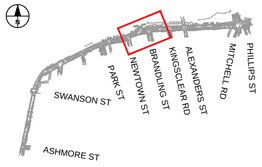
☐ NO
☐ YES

KEY PLAN



SCALE BAR

0 6.25 12.5 m

1:250

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
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PROJECT NUMBER

60620833

SHEET TITLE

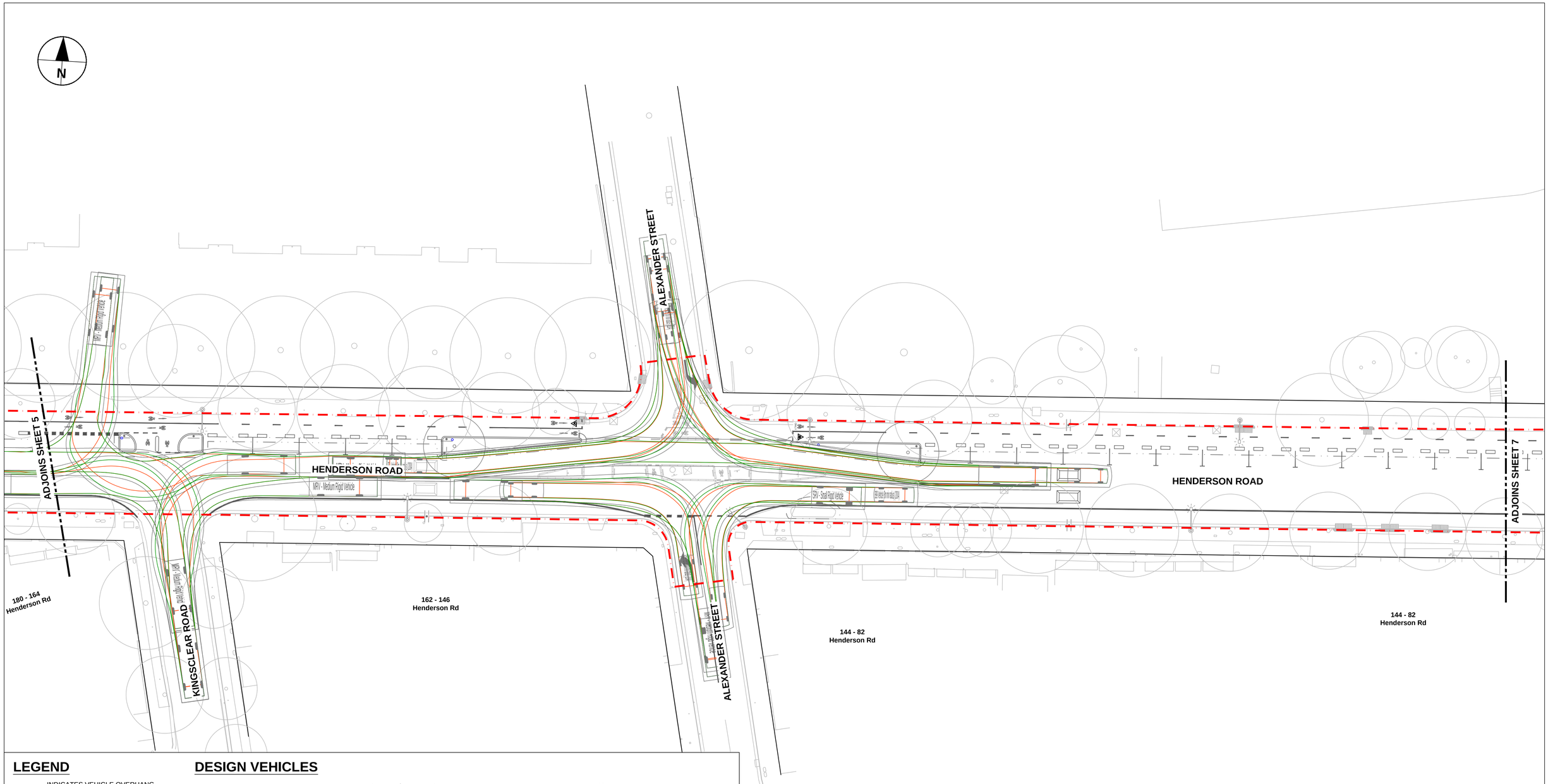
VEHICLE TRACKING PLAN
SHEET 5

SHEET NUMBER

60620833-2B-SHT-1000-CI-0805

Last saved by: CHENJH (2020-08-12) Last Plotted: 2020-08-17
Filename: C:_PROCESSPW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0805.DWG

ISO A1 594mm x 841mm



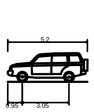
LEGEND

- INDICATES VEHICLE OVERHANG
- INDICATES WHEEL PATH
- INDICATES 300/500mm CLEARANCE FROM VEHICLE BODY

NOTES

1. DRIVEWAY MOVEMENTS TRACKED AT 10km/h.
2. STRAIGHT MOVEMENTS ON ROADWAY TRACKED AT 40km/h.
3. INTERSECTION MOVEMENTS TRACKED AT 15km/h.
4. INTERSECTION MOVEMENTS ONLY CHECKED WHERE CHANGE EXISTING CONDITION.

DESIGN VEHICLES

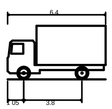


B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock t me	4.00s
Curb to Curb Turning Radius	6.250m

B99 VEHICLE

(DRIVEWAY MOVEMENTS AND STRAIGHT MOVEMENT CLEARANCE CHECK)

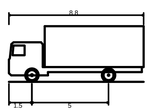


SRV - Small Rigid Vehicle

Overall Length	6.400m
Overall Width	2.330m
Overall Body Height	3.500m
Min Body Ground Clearance	0.398m
Track Width	2.330m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	7.100m

SRV - SMALL RIGID VEHICLE

(DRIVEWAY MOVEMENTS)



MRV - Medium Rigid Vehicle

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.000m

MRV - MEDIUM RIGID VEHICLE

(DRIVEWAY MOVEMENTS)

CONSULTANT

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

PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

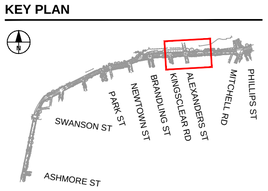
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

KEY PLAN



SCALE BAR

0 6.25 12.5 m

1:250

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60620833

SHEET TITLE

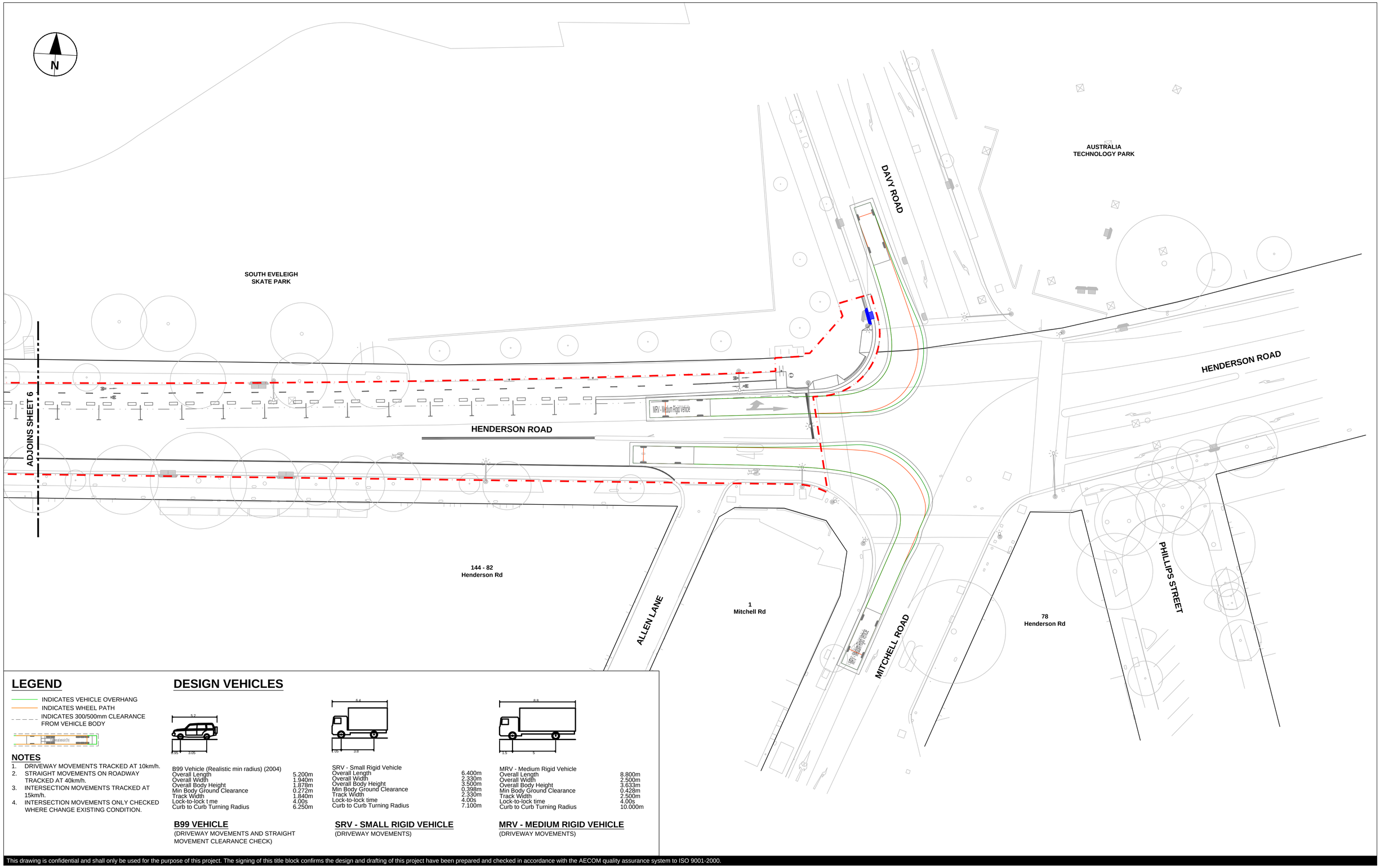
VEHICLE TRACKING PLAN SHEET 6

SHEET NUMBER

60620833-2B-SHT-1000-CI-0806

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
Filename: C:_PROCESSIPW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0806.DWG

ISO A1 594mm x 841mm



LEGEND

- INDICATES VEHICLE OVERHANG
- INDICATES WHEEL PATH
- INDICATES 300/500mm CLEARANCE FROM VEHICLE BODY

NOTES

1. DRIVEWAY MOVEMENTS TRACKED AT 10km/h.
2. STRAIGHT MOVEMENTS ON ROADWAY TRACKED AT 40km/h.
3. INTERSECTION MOVEMENTS TRACKED AT 15km/h.
4. INTERSECTION MOVEMENTS ONLY CHECKED WHERE CHANGE EXISTING CONDITION.

DESIGN VEHICLES

B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock t me	4.00s
Curb to Curb Turning Radius	6.250m

B99 VEHICLE
(DRIVEWAY MOVEMENTS AND STRAIGHT MOVEMENT CLEARANCE CHECK)

SRV - Small Rigid Vehicle

Overall Length	6.400m
Overall Width	2.330m
Overall Body Height	3.500m
Min Body Ground Clearance	0.398m
Track Width	2.330m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	7.100m

SRV - SMALL RIGID VEHICLE
(DRIVEWAY MOVEMENTS)

MRV - Medium Rigid Vehicle

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.000m

MRV - MEDIUM RIGID VEHICLE
(DRIVEWAY MOVEMENTS)

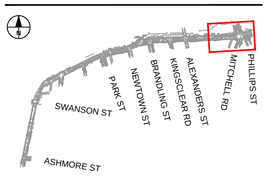
CONSULTANT
AECOM Australia Pty Ltd
A.B.N 20 093 846 925
www.aecom.com

PROJECT
Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

KEY PLAN



SCALE BAR
0 6.25 12.5 m
1:250

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

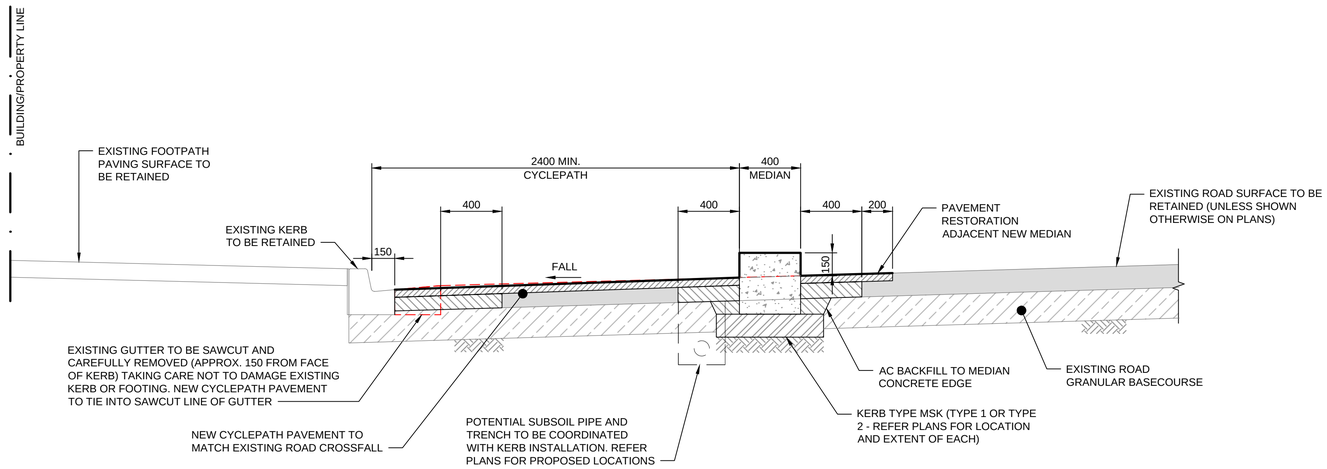
01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER
60620833

SHEET TITLE
VEHICLE TRACKING PLAN
SHEET 7

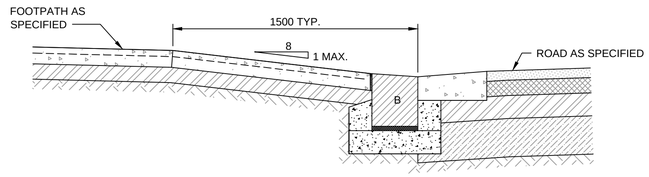
SHEET NUMBER
60620833-2B-SHT-1000-CI-0807

Last saved by: CHENJH(2020-08-12) Last Plotted: 2020-08-17
Filename: C:_PROCESSPW EXPORT\60620833-ACCELERATED_BIKE_NETWORK_PROGRAM\2B_BRIDGE\60620833-2B-SHT-1000-CI-0807.DWG



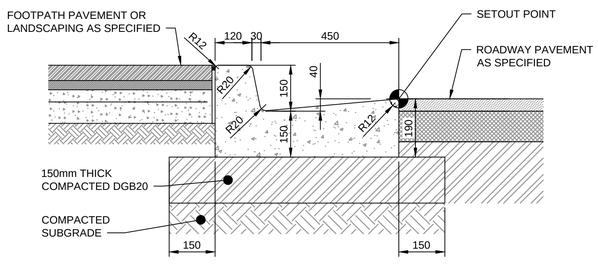
CYCLEPATH TYPICAL DETAIL SECTION

SCALE 1:20



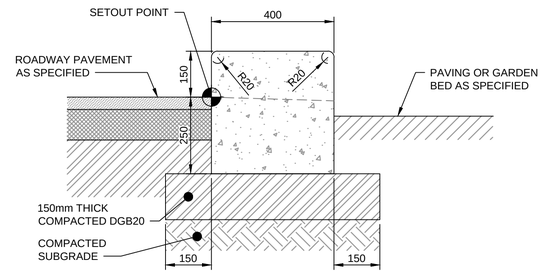
CONCRETE PAVING - PEDESTRIAN RAMP

SCALE 1:20



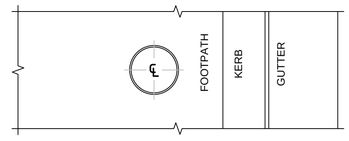
CONCRETE BARRIER KERB AND GUTTER (K+G)

SCALE 1:10



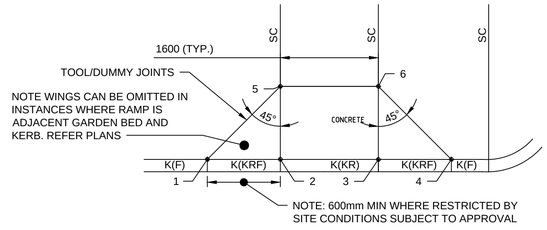
CONCRETE MEDIAN SEPARATOR KERB (MSK)

SCALE 1:10



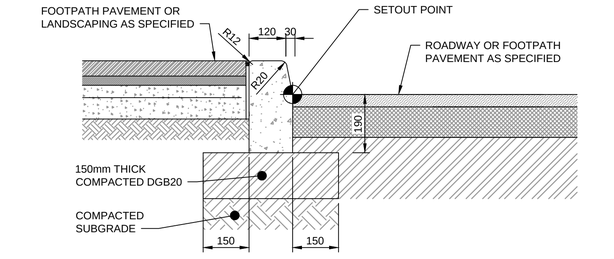
CONCRETE PAVING AROUND POLES - PLAN

SCALE 1:20



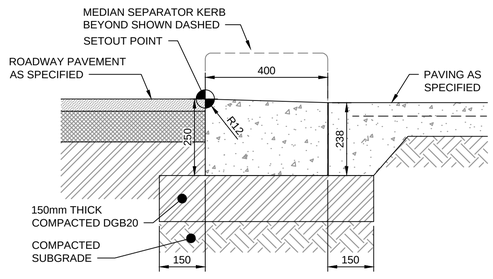
CONCRETE PAVING - PEDESTRIAN RAMP PLAN

SCALE 1:50



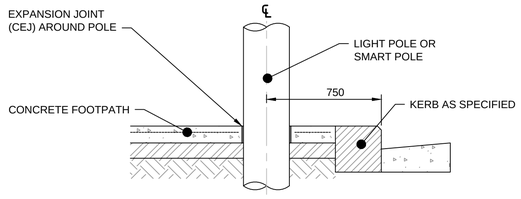
CONCRETE KERB ONLY (KO)

SCALE 1:10



CONCRETE FLUSH MEDIAN SEPARATOR KERB - ADJACENT PAVING (FMSK)

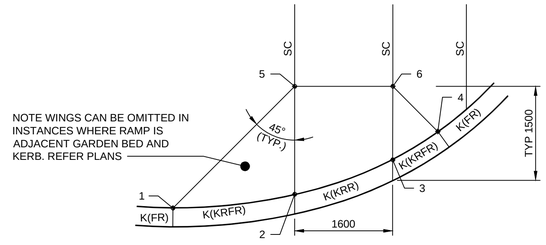
SCALE 1:10



CONCRETE PAVING AROUND POLES - SECTION

SCALE 1:20

NOTE:
PAVEMENT PANEL AROUND POLE TO BE POURED FOLLOWING INSTALLATION OF POLE TO AVOID ADDITIONAL JOINTS



CONCRETE UNIT PAVING PEDESTRIAN RAMP PLAN (ON CURVE)

SCALE 1:50

AECOM

CONSULTANT

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www.aecom.com

PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

KEY PLAN

SCALE BAR

0 250 500 mm
1:10
0 500 1000 mm
1:20
0 1250 2500 mm
1:50

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

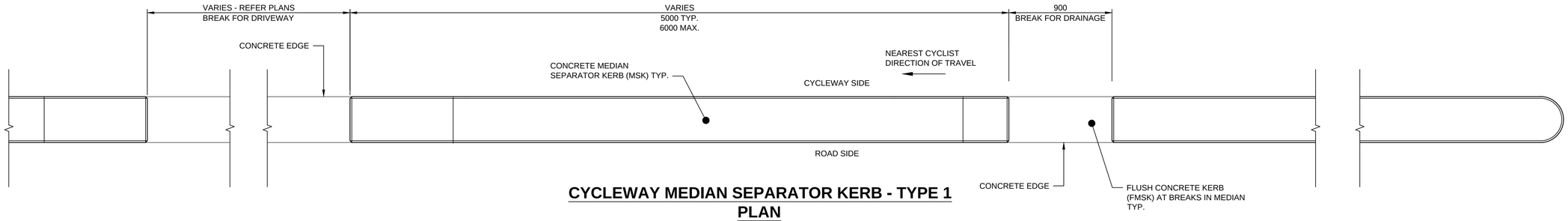
60620833

SHEET TITLE

KERB AND PAVEMENT DETAILS SHEET 1

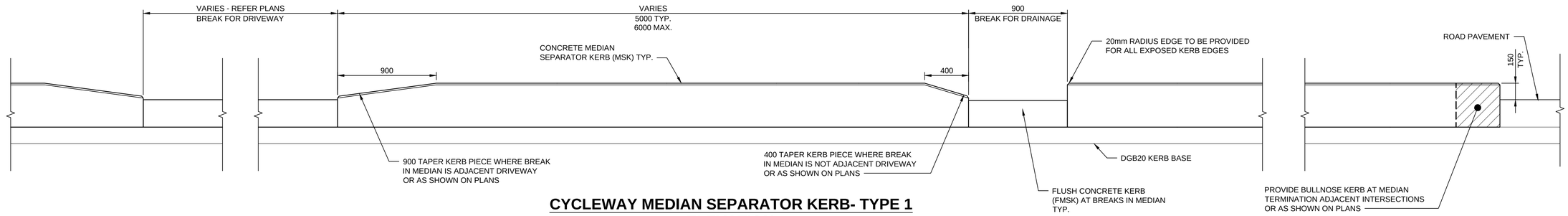
SHEET NUMBER

60620833-2B-SHT-1000-CI-0901



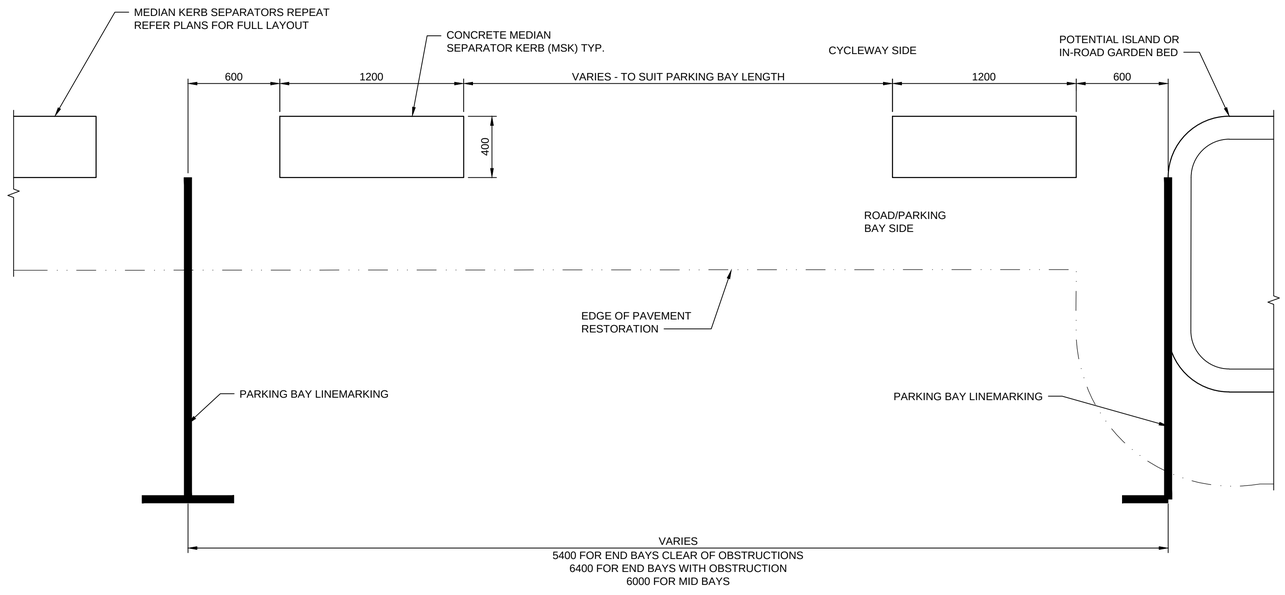
CYCLEWAY MEDIAN SEPARATOR KERB - TYPE 1
PLAN

SCALE 1:20



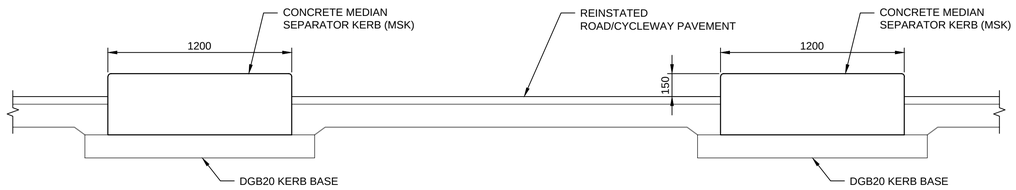
CYCLEWAY MEDIAN SEPARATOR KERB- TYPE 1
ELEVATION

SCALE 1:20



CYCLEWAY MEDIAN SEPARATOR KERB - TYPE 2
PLAN

SCALE 1:20



CYCLEWAY MEDIAN SEPARATOR KERB - TYPE 2
ELEVATION

SCALE 1:20

AECOM

CONSULTANT

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

KEY PLAN

SCALE BAR

0 500 1000 mm
1:20

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

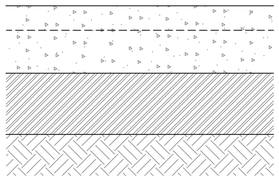
60620833

SHEET TITLE

KERB AND PAVEMENT DETAILS SHEET 2

SHEET NUMBER

60620833-2B-SHT-1000-CI-0902

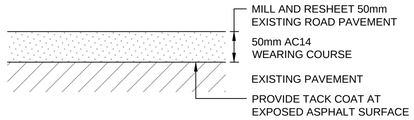


CONCRETE PAVING (P1)

SCALE 1:5

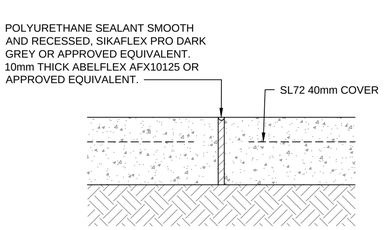
NOTE:

1. PAVEMENT TO BE INCREASED TO 250mm 32MPa, 2 LAYERS SL82 MIN. COVER 50mm WHERE LOCATED IN DRIVEWAY, REFER (P1-V) ON PLANS.
2. JOINTS;
   - TRANSVERSE EXPANSION JOINTS TO BE PLACED AT TYP. 4,500mm CENTRES (5,400mm MAX.)
   - TRANSVERSE CONTRACTION JOINTS TO BE PLACED AT TYP. 1,500mm CENTRES (1,800mm MAX.)
   - LONGITUDINAL EXPANSION JOINTS TO BE PLACED AT MAX. 5,000mm CENTRES
   - JOINT LAYOUT TO AVOID ELONGATED OR IRREGULAR SHAPED SLABS, LAYOUT TO BE AGREED PRIOR TO POURING CONCRETE



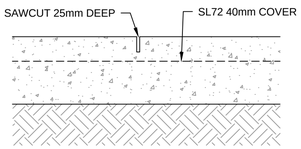
MILL AND RE-SHEET EXISTING ROAD PAVEMENT (R1)

SCALE 1:5



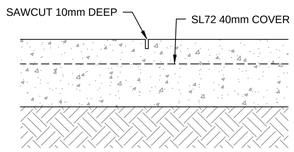
CONCRETE PAVING - EXPANSION JOINT (CEJ)

SCALE 1:5



CONCRETE PAVING - CONTRACTION JOINT (CCJ)

SCALE 1:5



CONCRETE PAVING - SAW CUT (SC)

SCALE 1:5

AECOM

CONSULTANT

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

PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

KEY PLAN

SCALE BAR

0 125 250 mm

1:5

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

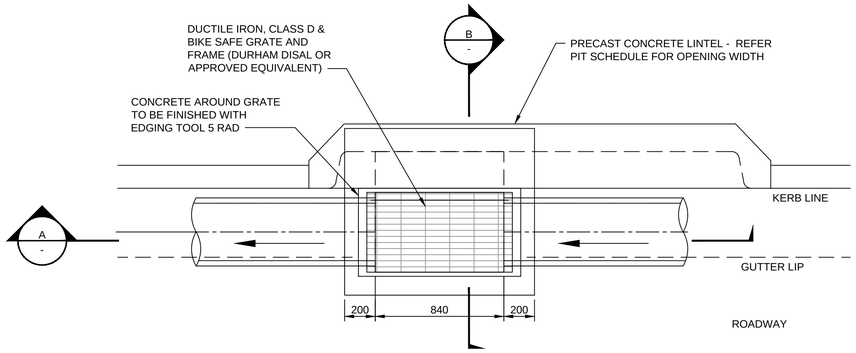
60620833

SHEET TITLE

KERB AND PAVEMENT DETAILS SHEET 3

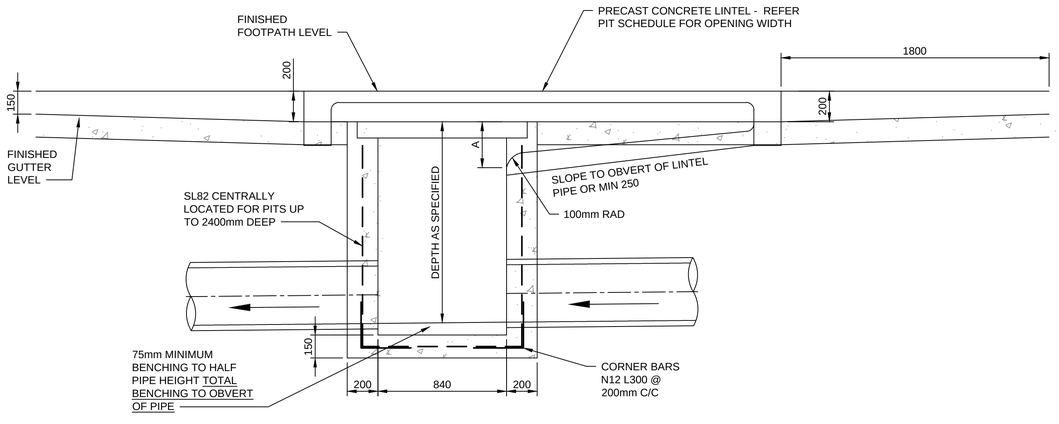
SHEET NUMBER

60620833-2B-SHT-1000-CI-0903



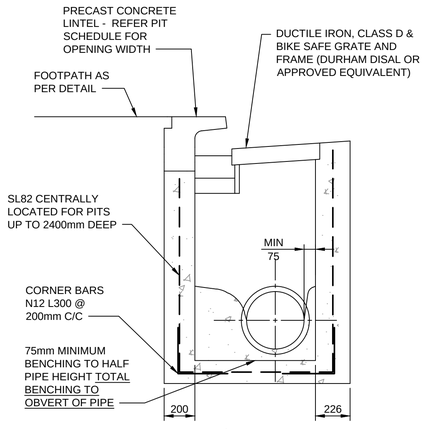
STANDARD GULLY PIT WITH EXTENDED KERB INLET - 1.8m LINTEL (PIT 1)

SCALE 1:20



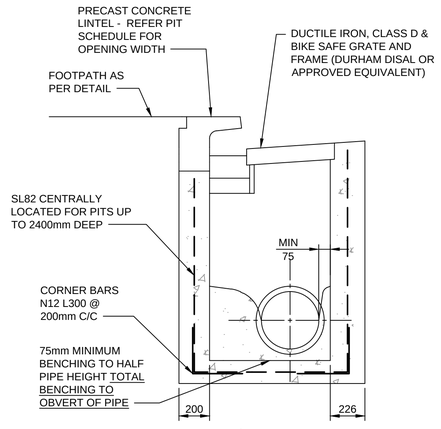
A | SECTION

\- | SCALE 1:20



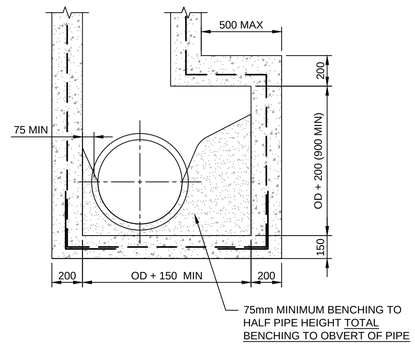
B | SECTION

\- | SCALE 1:20



D | SECTION

\- | SCALE 1:20



LARGER PIPES SECTION

SCALE 1:20

AECOM

CONSULTANT

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

PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

KEY PLAN

SCALE BAR

0 0.5 1 m
1:20

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

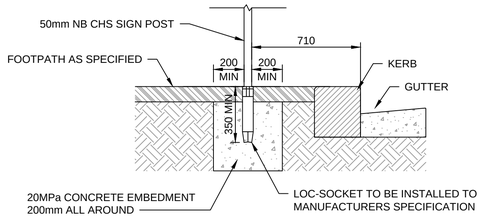
60620833

SHEET TITLE

DRAINAGE DETAILS SHEET 1

SHEET NUMBER

60620833-2B-SHT-1000-CI-0921



TYPICAL SIGN POST INSTALLATION - IN PAVING

SCALE 1:20

CONSULTANT

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

PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

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☐ NO
☐ YES

KEY PLAN

SCALE BAR

0 0.5 1 m
1:20

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER

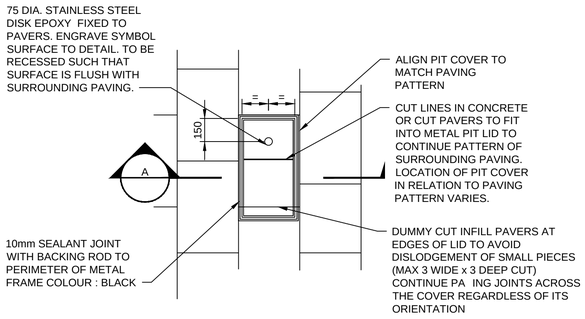
60620833

SHEET TITLE

LINES AND SIGNS
DETAILS
SHEET 1

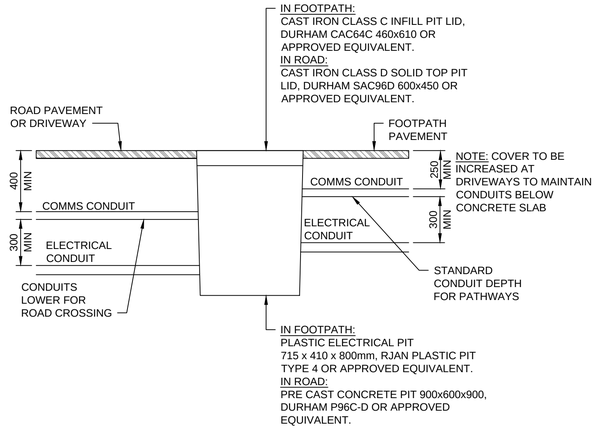
SHEET NUMBER

60620833-2B-SHT-1000-CI-0941



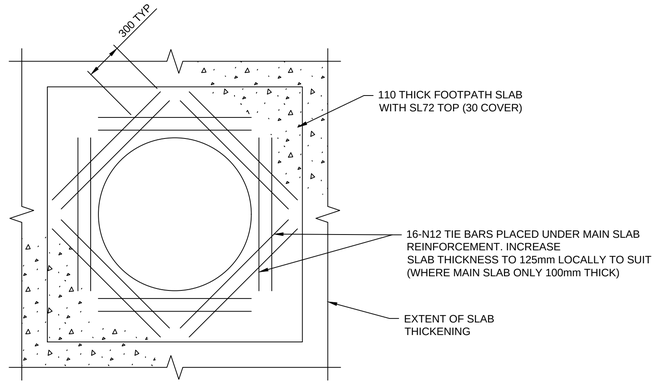
STREET LIGHTING PIT COVER PLAN IN FOOTPATH

SCALE 1:20



STREET LIGHTING PIT ARRANGEMENT

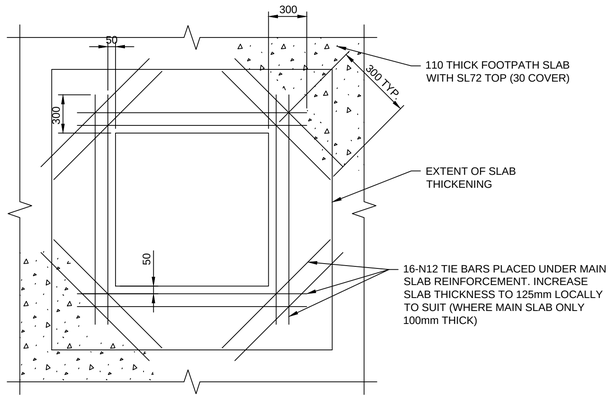
SCALE 1:20



FOOTPATH BASE SLAB REINFORCEMENT DETAIL OF CIRCULAR PENETRATION

SCALE 1:20

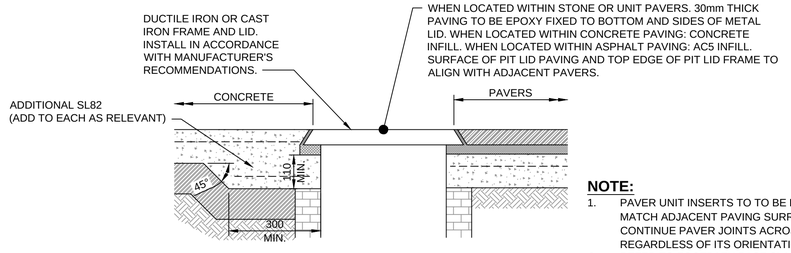
NOTE:
APPLIES TO PAVING P1, P2, P3 AND RS3.



FOOTPATH BASE SLAB REINFORCEMENT DETAIL OF SQUARE PENETRATION

SCALE 1:20

NOTE:
APPLIES TO PAVING P1, P2, P3 AND RS3.

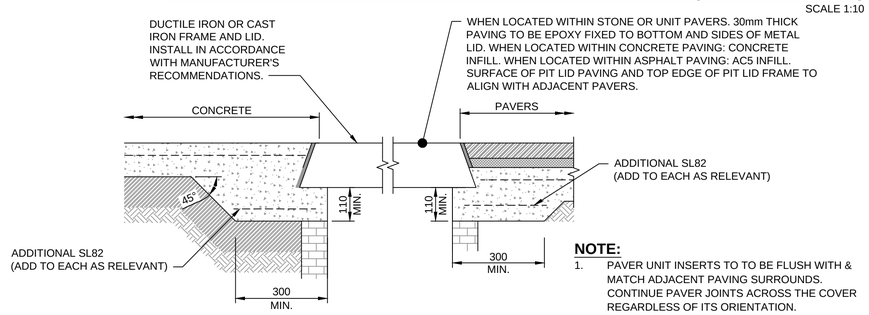


NOTE:

1. PAVER UNIT INSERTS TO TO BE FLUSH WITH & MATCH ADJACENT PAVING SURROUNDS. CONTINUE PAVER JOINTS ACROSS THE COVER REGARDLESS OF ITS ORIENTATION.
2. REFER TO FOOTPATH BASE SLAB REINFORCEMENT DETAILS FOR FURTHER DETAILS OF BASE SLAB REINFORCEMENT AT SERVICE COVER PENETRATIONS.

TYPICAL SERVICES COVER IN FOOTPATH DETAIL (DEPTH ≤ 80mm)

SCALE 1:10



NOTE:

1. PAVER UNIT INSERTS TO TO BE FLUSH WITH & MATCH ADJACENT PAVING SURROUNDS. CONTINUE PAVER JOINTS ACROSS THE COVER REGARDLESS OF ITS ORIENTATION.
2. REFER TO FOOTPATH BASE SLAB REINFORCEMENT DETAILS FOR FURTHER DETAILS OF BASE SLAB REINFORCEMENT AT SERVICE COVER PENETRATIONS.

TYPICAL SERVICES COVER IN FOOTPATH DETAIL (DEPTH >80mm)

SCALE 1:10

AUTHORITY SURFACE FEATURE SCHEDULE

Authority	Feature	Authority Standard Detail Reference	Dimensions (internal)			Cover Class	Cover Material	Cover Specficiation	Comments
			Width	Length	Diameter				
Ausgrid	Pillar	NS110, NS127	380	380	-	-	-	-	Dimensions are approximate
Sydney Water	Manhole	SEW-1300-V, SEW-1308-V, SEW-1309-V	-	-	610	D	DI	Durham WA60DS	Apply detail for Trafficable Covers
	Maintenance Shaft	SEW-1350-S and SEW-1317	-	-	410	B	DI	Durham WA40BS	Apply detail for Trafficable Covers for areas of Concrete Unit Pavers
	Rodding Point	SEW-1350-S	-	-	300	B	DI	Durham WA30BS	-
	Hydrant	WAT-1305-V and WAT 1306-V	222	194	-	B	DI	Pentair - MHGNSWH	Apply detail for Asphaltic Concrete Pavement to areas of Concrete Unit Pavers
	Sluice Valve	WAT-1303-V and WAT 1304-V	125	125	-	B	DI	Pentair - MVGNSWSV	Apply detail for Asphaltic Concrete Pavement to areas of Concrete Unit Pavers
NBN Co.	P5 Pit	New Developments: Deployment of the NBN Co Conduit and Pit Network - Guidelines for Developers	290	510	-	B	CI	BVCI - 32199198	Cover to be black cast iron
	P8 Pit	New Developments: Deployment of the NBN Co Conduit and Pit Network - Guidelines for Developers	390	1130	-	B	CI	BVCI - 32199071	Cover to be black cast iron
Telstra	P5 Pit	By Telstra	460	650	-	B	Infill	By Telstra	Dimensions approximate, cover to be adjusted to suit new surface level and be replaecd by infill type
	P6 Pit	By Telstra	500	1300	-	B	Infill	By Telstra	Dimensions approximate, cover to be adjusted to suit new surface level and be replaecd by infill type
	4 Part Cover Manhole	By Telstra	1200	1200	-	B	Infill	By Telstra	Dimensions approximate, cover to be adjusted to suit new surface level and be replaecd by infill type
	6 Part Cover Manhole	By Telstra	1800	1200				By Telstra	Dimensions approximate, cover to be adjusted to suit new surface level and be replaecd by infill type
RMS	Signal Pit	RMS QA Specification R155	450	450	-	D	DI	ACO - DIS44D - 89268	-
	Signal Controller	RMS QA Specification R155	550	850	-	-	-	-	Dimensions indicated are for foundation

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

PROJECT
Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT
CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
☐ NO
☐ YES

KEY PLAN

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

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
DESIGNER	CHECKED	APPROVED

PROJECT DATA

DATUM		SURVEY	

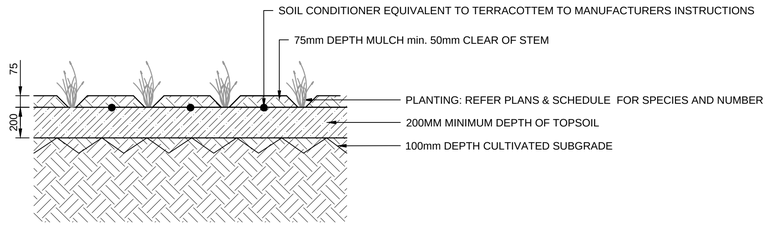
ISSUE/REVISION

01	17.08.2020	80% DETAILED DESIGN
I/R	DATE	DESCRIPTION

PROJECT NUMBER
60620833

SHEET TITLE
SERVICES
DETAILS
SHEET 1

SHEET NUMBER
60620833-2B-SHT-1000-CI-0951



TYPICAL MASS PLANTING

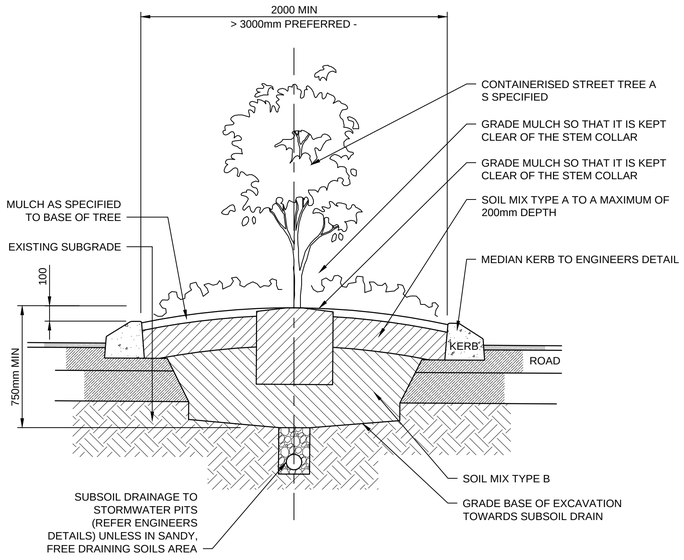
SCALE 1:20

PLANTING SCHEDULE

BOTANIC NAME	COMMON NAME	POT SIZE	DENSITY	MATURE HEIGHT	MATURE WIDTH	QUANTITY
TREES						
Melaleuca styphelioides	Prickly Leaved Paperbark	200 Litre	As shown	10.0m	8.0m	8
GRASSES AND GROUNDCOVERS						
Liriope muscari 'Amethyst'	Lilyturf	140mm	4 / m²	0.5m	0.5m	400
Lomandra hystrix	Creek Matrush	140mm	4 / m²	1.0m	1.0m	70
Lomandra longifolia 'Nyalla'	Matrush	140mm	4 / m²	0.75m	0.75m	285
Trachelospermum jasminoides	Star Jasmine	140mm	4 / m²	0.3m	1.0m	240

TREE MANAGEMENT SCHEDULE

TREE No.	BOTANICAL NAME	COMMON NAME	AGE CLASS	HEIGHT (m)	SPREAD (m)	DIAMETER AT CHEST HEIGHT (mm)	DIAMETER AT ROOT PLATE (mm)	DESCRIPTION
1	Eleaocarpus Reticulatus	Blueberry Ash	Mature	6	5	130	230	Poor Condition, 2 split trunks at 1.2m height.
2	Eleaocarpus Reticulatus	Blueberry Ash	Mature					Dead tree to be removed.
3	Eleaocarpus Reticulatus	Blueberry Ash	Mature	5	5	200	220	Poor condition with sparse canopy - to be removed.
4	Eleaocarpus Reticulatus	Blueberry Ash	Mature					Dead tree to be removed.



INDICATIVE DETAIL - IN ROAD MEDIAN PLANTING

SCALE 1:20

AECOM

CONSULTANT

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PROJECT

Accelerated Bike Network Program: Bridge St North, Railway Pde, Henderson

CLIENT

CITY OF SYDNEY

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☐ NO
☐ YES

KEY PLAN

SCALE BAR

0 0.5 1 m
1:20

PROJECT MANAGEMENT INITIALS

JC/WH	FC	DF
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PROJECT DATA

DATUM		SURVEY	

ISSUE/REVISION

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PROJECT NUMBER

60620833

SHEET TITLE

LANDSCAPING
DETAILS
SHEET 1

SHEET NUMBER

60620833-2B-SHT-1000-CI-0961

Appendix D

Noise estimator tool

Distanced Based Assessment (Construction Scenario)

Please pick from drop-down list in orange cells

Noise area category		R3
RBL or L_{A90} Background level (dB(A))	Day	50
	Evening	45
	Night	40
$L_{Aeq(15minute)}$ Noise Mangement Level (dB(A))	Day	60
	Day (OOHW)	55
	Evening	50
	Night	45
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 sim lar plant combination.
4. Is there ine 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 m tigation 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 so id 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. Ident fy if there are any receivers within the additional mitigation measures distances and identify feas ble and reasonable measures at each receiver
8. Where night works are involved, ident fy 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 Noise Estimator should be investigated on a project-by-project basis. Please contact a

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

			$L_{Aeq(15minu e)}$ 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) Noticeable			10 to 20 dB(A) Clearly audible			20 to 30 dB(A) Moderately intrusive			> 30 dB(A) 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	105							N	30	70							
	Day (OOHW)	155				N R1 DR	105	60	N R1 DR	30	70	N R1 DR PC SN	10	80	N PC RO	20	75	
	Evening	230				N, R1, DR	155	55	N, R1, DR	55	65	N, R1, DR, PC, SN	20	75	N, PC, RO	20	75	
	Night	335	N	335	45	N, R2, DR	230	50	N, PC, SN, R2, DR	105	60	AA, N, PC, SN, R2, DR	30	70	N, PC, RO	20	75	270
	Highly Affected	20													N, PC, RO	20	75	
Developed settlements (urban and suburban)	Day	115							N	35	70	N PC RO	20	75	N PC RO	20	75	
	Day (OOHW)	180				N R1 DR	115	60	N R1 DR	35	70	N R1 DR PC SN	10	80	N PC RO	20	75	
	Evening	280				N, R1, DR	180	55	N, R1, DR	70	65	N, R1, DR, PC, SN	20	75	N, PC, RO	20	75	
	Night	425	N	425	45	N, R2, DR	280	50	N, PC, SN, R2, DR	115	60	AA, N, PC, SN, R2, DR	35	70	N, PC, RO	20	75	330
	Highly Affected	20													N PC RO	20	75	
Propagation across a valley / over water	Day	140							N	40	70	N PC RO	20	75	N PC RO	20	75	
	Day (OOHW)	230				N, R1, DR	140	60	N, R1, DR	40	70	N, R1, DR, PC, SN	10	80	N, PC, RO	20	75	
	Evening	365				N, R1, DR	230	55	N, R1, DR	80	65	N, R1, DR, PC, SN	20	75	N, PC, RO	20	75	
	Night	575	N	575	45	N, R2, DR	365	50	N, PC, SN, R2, DR	140	60	AA, N, PC, SN, R2, DR	40	70	N, PC, RO	20	75	440
	Highly Affected	20													N PC RO	20	75	

Non residential receiver
Undeveloped green fields, rural areas w th isolated dwe lings

				$L_{Aeq(15minute)}$ noise level above NML						LAeq(15minute) 75 dB(A) or greater (Highly affected)		
	Standard hours			<10 dB(A)			10 to 20 dB(A)					
	Period	NML	Affected distance (m)	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))
Classroom at schools and other educational institutions	Day	55	155				N	55	65	N PC RO	20	75
Hospital wards and operating theatres	Day	65	55							N, PC, RO	20	75
Place of worship	Day	55	155				N	55	65	N, PC, RO	20	75
Active recreation	Day	65	55							N, PC, RO	20	75
Passive recreation	Day	60	105				N	30	70	N PC RO	20	75
Industrial premise	Day	75	20							N, PC, RO	20	75
Offices, retail outlets	Day	70	30							N, PC, RO	20	75

				$L_{Aeq(15minute)}$ noise level above NML											
	OOHW			< 5 dB(A)			5 to 15 dB(A)			15 to 25 dB(A)			> 25 dB(A)		
	Period	NML	Affected distance (m)	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))
Hospital wards and operating theatres	Evening	65	55				N R1 DR	30	70	N R1 DR	11	80	N R1 DR PC SN	4	90
	Night	65	55	N	55	65	N, R2, NR	30	70	N, PC, SN, R2, DR	11	80	AA, N, PC, SN, R2, DR	4	90
Place of worship	Evening	55	155				N, R1, DR	105	60	N, R1, DR	30	70	N, R1, DR, PC, SN	11	80
	Night	55	155	N	155	55	N, R2, NR	105	60	N, PC, SN, R2, DR	30	70	AA, N, PC, SN, R2, DR	11	80
Active recreation	Evening	65	55				N, R1, DR	30	70	N, R1, DR	11	80	N, R1, DR, PC, SN	4	90
Passive recreation	Evening	60	105				N, R1, DR	55	65	N, R1, DR	20	75	N, R1, DR, PC, SN	6	85
Industrial premise	Evening	75	20				N, R1, DR	11	80	N, R1, DR	4	90	N, R1, DR, PC, SN	1	100
	Night	75	20	N	20	75	N R2 NR	11	80	N PC SN R2 DR	4	90	AA N PC SN R2 DR	1	100
Offices, retail outlets	Evening	70	30				N, R1, DR	20	75	N, R1, DR	6	85	N, R1, DR, PC, SN	2	95
	Night	70	30	N	30	70	N, R2, NR	20	75	N, PC, SN, R2, DR	6	85	AA, N, PC, SN, R2, DR	2	95

Non residential receiver
Developed settlements (urban and suburban)

				$L_{Aeq(15minute)}$ noise level above NML						LAeq(15minute) 75 dB(A) or greater (Highly affected)		
	Standard hours			<10 dB(A)			10 to 20 dB(A)					
	Period	NML	Affected distance (m)	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))
Classroom at schools and other educational institutions	Day	55	180				N	70	65	N, PC, RO	20	75
Hospital wards and operating theatres	Day	65	70							N, PC, RO	20	75
Place of worship	Day	55	180				N	70	65	N, PC, RO	20	75
Active recreation	Day	65	70							N PC RO	20	75

Passive recreation	Day	60	115				N	35	70	N, PC, RO	20	75
Industrial premise	Day	75	20							N, PC, RO	20	75
Offices, retail outlets	Day	70	35							N, PC, RO	20	75

				$L_{Aeq\ 15m\ note}$ noise level above NML											
	OOHW			< 5 dB(A)			5 to 15 dB(A)			15 to 25 dB(A)			> 25 dB(A)		
	Period	NML	Affected distance (m)	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))
Hospital wards and operating theatres	Evening	65	70				N R1 DR	35	70	N R1 DR	11	80	N R1 DR PC SN	4	90
	Night	65	70	N	70	65	N, R2, NR	35	70	N, PC, SN, R2, DR	11	80	AA, N, PC, SN, R2, DR	4	90
Place of worship	Evening	55	180				N, R1, DR	115	60	N, R1, DR	35	70	N, R1, DR, PC, SN	11	80
	Night	55	180	N	180	55	N R2 NR	115	60	N PC SN R2 DR	35	70	AA N PC SN R2 DR	11	80
Active recreation	Evening	65	70				N, R1, DR	35	70	N, R1, DR	11	80	N, R1, DR, PC, SN	4	90
Passive recreation	Evening	60	115				N, R1, DR	70	65	N, R1, DR	20	75	N, R1, DR, PC, SN	6	85
Industrial premise	Evening	75	20				N, R1, DR	11	80	N, R1, DR	4	90	N, R1, DR, PC, SN	1	100
	Night	75	20	N	20	75	N R2 NR	11	80	N PC SN R2 DR	4	90	AA N PC SN R2 DR	1	100
Offices, retail outlets	Evening	70	35				N, R1, DR	20	75	N, R1, DR	6	85	N, R1, DR, PC, SN	2	95
	Night	70	35	N	35	70	N, R2, NR	20	75	N, PC, SN, R2, DR	6	85	AA, N, PC, SN, R2, DR	2	95

Non residential receiver
Propagation across a valley / over water

				$L_{Aeq(15minute)}$ noise level above NML						LAeq(15minute) 75 dB(A) or greater (Highly affected)		
	Standard hours			<10 dB(A)			10 to 20 dB(A)					
	Period	NML	Affected distance (m)	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))
Classroom at schools and other educational institutions	Day	55	230				N	70	65	N, PC, RO	20	75
Hospital wards and operating theatres	Day	65	80							N, PC, RO	20	75
Place of worship	Day	55	230				N	70	65	N, PC, RO	20	75
Active recreation	Day	65	80							N PC RO	20	75
Passive recreation	Day	60	140				N	35	70	N, PC, RO	20	75
Industrial premise	Day	75	20							N, PC, RO	20	75
Offices, retail outlets	Day	70	40							N PC RO	20	75

				$L_{Aeq\ 15m\ note}$ noise level above NML											
	OOHW			< 5 dB(A)			5 to 15 dB(A)			15 to 25 dB(A)			> 25 dB(A)		
	Period	NML	Affected distance (m)	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))
Hospital wards and operating theatres	Evening	65	80				N, R1, DR	40	70	N, R1, DR	11	80	N, R1, DR, PC, SN	4	90
	Night	65	80	N	80	65	N, R2, NR	40	70	N, PC, SN, R2, DR	11	80	AA, N, PC, SN, R2, DR	4	90
Place of worship	Evening	55	230				N, R1, DR	140	60	N, R1, DR	35	70	N, R1, DR, PC, SN	11	80
	Night	55	230	N	230	55	N R2 NR	140	60	N PC SN R2 DR	35	70	AA N PC SN R2 DR	11	80
Active recreation	Evening	65	80				N, R1, DR	40	70	N, R1, DR	11	80	N, R1, DR, PC, SN	4	90
Passive recreation	Evening	60	140				N, R1, DR	80	65	N, R1, DR	20	75	N, R1, DR, PC, SN	6	85
Industrial premise	Evening	75	20				N, R1, DR	10	80	N, R1, DR	4	90	N, R1, DR, PC, SN	1	100
	Night	75	20	N	20	75	N R2 NR	10	80	N PC SN R2 DR	4	90	AA N PC SN R2 DR	1	100
Offices, retail outlets	Evening	70	40				N, R1, DR	20	75	N, R1, DR	6	85	N, R1, DR, PC, SN	2	95
	Night	70	40	N	40	70	N, R2, NR	20	75	N, PC, SN, R2, DR	6	85	AA, N, PC, SN, R2, DR	2	95

Distanced Based Assessment (Noisiest Plant)

Please pick from drop-down list in orange cells

Noise area category		R3
RBL or L_{A90} Background level (dB(A))	Day	50
	Evening	45
	Night	40
$L_{Aeq(15minute)}$ Noise Mangement Level (dB(A))	Day	60
	Day (OOHW)	55
	Evening	50
	Night	45
Noisiest plant		Jack hammer
Is there line of sight to receiver?		No (behind substantial solid barrier)

Steps for Assessment:

1. Schedule noisy works to occur in standard hours where poss ble 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 noisiest plant. If not found in drop-down list, refer to 'Source List' and select a representative plant with equivalent sound power level.
4. Is there line of sight to receiver? Select the appropriate scenario from the drop down ist .

   Identify and implement standard mitigation measures where feasible and reasonable. Include any shielding implemented as part of the standard mitigation measures by changing he selection in the 'Is there line of sightoiaw to receiver' drop-down list. Solid barriers can be in the form of road cutting, timber lapped and capped fence, shipping container, site office, etc. Substantial solid barriers are barriers greater than 5 metres in height or multiple rows of houses or a sound barrier spec fically designed to mitigate construction noise. Please note that vegetation and trees are not considered to be a form of solid barrier and any gaps would compromise the acoustic integr ty of the solid barrier.
5. Determine if here are any receivers (both residential and non-residential receivers) within the affected distance for each relevant time period . Consider background LA90 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 han 6 weeks.

   Note that consideration need to be given to the construction staging plan when determining impact duration.
7. Identify f here are any receivers wi hin the additional mi igation measures distances and ident fy 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-sens tive businesses not ident fied in the Construction Noise Es imator should be investigated on a project-by-project basis. Please contact a Roads and Mar time noise speciliast for more information)

Abbreviation	Measure
N	Notification
SN	Specific not fications
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

			$L_{Aeq(15minu e)}$ 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	45							N	20	70	N, PC, RO	15	75	N, PC, RO	15	75	
	Day (OOHW)	75				N, R1, DR	45	60	N, R1, DR	20	70	N, R1, DR, PC, SN	10	80	N, PC, RO	15	75	
	Evening	120				N R1 DR	75	55	N R1 DR	25	65	N R1 DR PC SN	15	75	N PC RO	15	75	
	Night	175	N	175	45	N, R2, DR	120	50	N, PC, SN, R2, DR	45	60	AA, N, PC, SN, R2, DR	20	70	N, PC, RO	15	75	75
	Highly Affected	15													N, PC, RO	15	75	
Developed settlements (urban and suburban)	Day	50							N	20	70	N, PC, RO	15	75	N, PC, RO	15	75	
	Day (OOHW)	85				N R1 DR	50	60	N R1 DR	20	70	N R1 DR PC SN	10	80	N PC RO	15	75	
	Evening	135				N, R1, DR	85	55	N, R1, DR	30	65	N, R1, DR, PC, SN	15	75	N, PC, RO	15	75	
	Night	200	N	200	45	N, R2, DR	135	50	N, PC, SN, R2, DR	50	60	AA, N, PC, SN, R2, DR	20	70	N, PC, RO	15	75	85
	Highly Affected	15													N PC RO	15	75	
Propagation across a valley / over water	Day	60							N	20	70	N, PC, RO	15	75	N, PC, RO	15	75	
	Day (OOHW)	95				N, R1, DR	60	60	N, R1, DR	20	70	N, R1, DR, PC, SN	10	80	N, PC, RO	15	75	
	Evening	160				N, R1, DR	95	55	N, R1, DR	35	65	N, R1, DR, PC, SN	15	75	N, PC, RO	15	75	
	Night	255	N	255	45	N R2 DR	160	50	N PC SN R2 DR	60	60	AA N PC SN R2 DR	20	70	N PC RO	15	75	95
	Highly Affected	15													N, PC, RO	15	75	

Non residential receiver
Undeveloped green fields, rural areas w th isolated dwe lings

				$L_{Aeq(15minute)}$ noise level above NML						LAeq(15minute) 75 dB(A) or greater (Highly affected)		
	Standard hours			<10 dB(A)			10 to 20 dB(A)					
	Period	NML	Affected distance (m)	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))
Classroom at schools and other educational institutions	Day	55	75				N	25	65	N, PC, RO	15	75
Hospital wards and operating theatres	Day	65	25							N PC RO	15	75
Place of worship	Day	55	75				N	25	65	N, PC, RO	15	75
Active recreation	Day	65	25							N, PC, RO	15	75
Passive recreation	Day	60	45				N	20	70	N, PC, RO	15	75
Industrial premise	Day	75	15							N PC RO	15	75
Offices, retail outlets	Day	70	20							N, PC, RO	15	75

				$L_{Aeq(15minute)}$ noise level above NML											
	OOHW			< 5 dB(A)			5 to 15 dB(A)			15 to 25 dB(A)			> 25 dB(A)		
	Period	NML	Affected distance (m)	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))
Hospital wards and operating theatres	Evening	65	25				N, R1, DR	20	70	N, R1, DR	8	80	N, R1, DR, PC, SN	3	90
	Night	65	25	N	25	65	N R2 NR	20	70	N PC SN R2 DR	8	80	AA N PC SN R2 DR	3	90
Place of worship	Evening	55	75				N, R1, DR	45	60	N, R1, DR	20	70	N, R1, DR, PC, SN	8	80
	Night	55	75	N	75	55	N, R2, NR	45	60	N, PC, SN, R2, DR	20	70	AA, N, PC, SN, R2, DR	8	80
Active recreation	Evening	65	25				N, R1, DR	20	70	N, R1, DR	8	80	N, R1, DR, PC, SN	3	90
Passive recreation	Evening	60	45				N, R1, DR	25	65	N, R1, DR	15	75	N, R1, DR, PC, SN	5	85
Industrial premise	Evening	75	15				N, R1, DR	8	80	N, R1, DR	3	90	N, R1, DR, PC, SN	1	100
	Night	75	15	N	15	75	N, R2, NR	8	80	N, PC, SN, R2, DR	3	90	AA, N, PC, SN, R2, DR	1	100
Offices, retail outlets	Evening	70	20				N R1 DR	15	75	N R1 DR	5	85	N R1 DR PC SN	2	95
	Night	70	20	N	20	70	N, R2, NR	15	75	N, PC, SN, R2, DR	5	85	AA, N, PC, SN, R2, DR	2	95

Non residential receiver
Developed settlements (urban and suburban)

				$L_{Aeq(15minute)}$ noise level above NML						LAeq(15minute) 75 dB(A) or greater (Highly affected)		
	Standard hours			<10 dB(A)			10 to 20 dB(A)					
	Period	NML	Affected distance (m)	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))
Classroom at schools and other educational institutions	Day	55	85				N	30	65	N PC RO	15	75
Hospital wards and operating theatres	Day	65	30							N, PC, RO	15	75
Place of worship	Day	55	85				N	30	65	N, PC, RO	15	75

Active recreation	**Day**	65	30						N, PC, RO	15	75
Passive recreation	**Day**	60	50				N	20	70	N, PC, RO	15	75
Industrial premise	**Day**	75	15							N, PC, RO	15	75
Offices, retail outlets	**Day**	70	20							N PC RO	15	75

				$L_{Aeq\ 15m\ note}$ noise level above NML											
	OOHW			**< 5 dB(A)**			**5 to 15 dB(A)**			**15 to 25 dB(A)**			**> 25 dB(A)**		
	Period	**NML**	**Affected distance (m)**	**Measure**	**Within distance (m)**	**Mitigation level (dB(A))**	**Measure**	**Within distance (m)**	**Mitigation level (dB(A))**	**Measure**	**Within distance (m)**	**Mitigation level (dB(A))**	**Measure**	**Within distance (m)**	**Mitigation level (dB(A))**
Hospital wards and operating theatres	**Evening**	65	30				N, R1, DR	20	70	N, R1, DR	8	80	N, R1, DR, PC, SN	3	90
	Night	65	30	N	30	65	N, R2, NR	20	70	N, PC, SN, R2, DR	8	80	AA, N, PC, SN, R2, DR	3	90
Place of worship	**Evening**	55	85				N R1 DR	50	60	N R1 DR	20	70	N R1 DR PC SN	8	80
	Night	55	85	N	85	55	N, R2, NR	50	60	N, PC, SN, R2, DR	20	70	AA, N, PC, SN, R2, DR	8	80
Active recreation	**Evening**	65	30				N, R1, DR	20	70	N, R1, DR	8	80	N, R1, DR, PC, SN	3	90
Passive recreation	**Evening**	60	50				N, R1, DR	30	65	N, R1, DR	15	75	N, R1, DR, PC, SN	5	85
Industrial premise	**Evening**	75	15				N R1 DR	8	80	N R1 DR	3	90	N R1 DR PC SN	1	100
	Night	75	15	N	15	75	N, R2, NR	8	80	N, PC, SN, R2, DR	3	90	AA, N, PC, SN, R2, DR	1	100
Offices, retail outlets	**Evening**	70	20				N, R1, DR	15	75	N, R1, DR	5	85	N, R1, DR, PC, SN	2	95
	Night	70	20	N	20	70	N R2 NR	15	75	N PC SN R2 DR	5	85	AA N PC SN R2 DR	2	95

Non residential receiver
Propagation across a valley / over water

				$L_{Aeq(15minute)}$ noise level above NML						LAeq(15minute) 75 dB(A) or greater (Highly affected)		
	Standard hours			**<10 dB(A)**			**10 to 20 dB(A)**					
	Period	**NML**	**Affected distance (m)**	**Measure**	**Within distance (m)**	**Mitigation level (dB(A))**	**Measure**	**Within distance (m)**	**Mitigation level (dB(A))**	**Measure**	**Within distance (m)**	**Mitigation level (dB(A))**
Classroom at schools and other educational institutions	**Day**	55	95				N	35	65	N, PC, RO	15	75
Hospital wards and operating theatres	**Day**	65	35							N, PC, RO	15	75
Place of worship	**Day**	55	95				N	35	65	N PC RO	15	75
Active recreation	**Day**	65	35							N, PC, RO	15	75
Passive recreation	**Day**	60	60				N	20	70	N, PC, RO	15	75
Industrial premise	**Day**	75	15							N PC RO	15	75
Offices, retail outlets	**Day**	70	20							N, PC, RO	15	75

				$L_{Aeq\ 15m\ note}$ noise level above NML											
	OOHW			**< 5 dB(A)**			**5 to 15 dB(A)**			**15 to 25 dB(A)**			**> 25 dB(A)**		
	Period	**NML**	**Affected distance (m)**	**Measure**	**Within distance (m)**	**Mitigation level (dB(A))**	**Measure**	**Within distance (m)**	**Mitigation level (dB(A))**	**Measure**	**Within distance (m)**	**Mitigation level (dB(A))**	**Measure**	**Within distance (m)**	**Mitigation level (dB(A))**
Hospital wards and operating theatres	**Evening**	65	35				N, R1, DR	20	70	N, R1, DR	10	80	N, R1, DR, PC, SN	3	90
	Night	65	35	N	35	65	N, R2, NR	20	70	N, PC, SN, R2, DR	10	80	AA, N, PC, SN, R2, DR	3	90
Place of worship	**Evening**	55	95				N R1 DR	60	60	N R1 DR	20	70	N R1 DR PC SN	10	80
	Night	55	95	N	95	55	N, R2, NR	60	60	N, PC, SN, R2, DR	20	70	AA, N, PC, SN, R2, DR	10	80
Active recreation	**Evening**	65	35				N, R1, DR	20	70	N, R1, DR	10	80	N, R1, DR, PC, SN	3	90
Passive recreation	**Evening**	60	60				N, R1, DR	35	65	N, R1, DR	15	75	N, R1, DR, PC, SN	5	85
Industrial premise	**Evening**	75	15				N R1 DR	10	80	N R1 DR	3	90	N R1 DR PC SN	1	100
	Night	75	15	N	15	75	N, R2, NR	10	80	N, PC, SN, R2, DR	3	90	AA, N, PC, SN, R2, DR	1	100
Offices, retail outlets	**Evening**	70	20				N, R1, DR	15	75	N, R1, DR	5	85	N, R1, DR, PC, SN	2	95
	Night	70	20	N	20	70	N R2 NR	15	75	N PC SN R2 DR	5	85	AA N PC SN R2 DR	2	95

Distance Based Assessment Summary for Night Works

Please pick from drop-down list in orange cells
Please input nformation into yellow cells

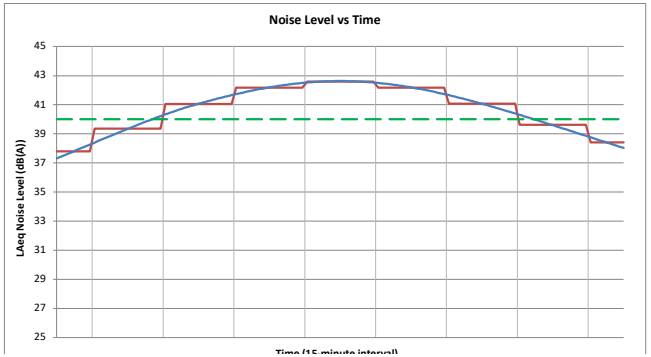
Distanced Base (Noisiest Plant)

Noise area category	R3
Night time RBL (dB(A))	40
Night time NML (dB(A))	45
Propagation Type	Rural Undeveloped Areas
Noisiest plant	Jack hammer
Is there line of sight to receiver?	No (behind substantial solid barrier)
Shortest distance to the worst affected receiver (m)	260
$L_{Aeq(15minute)}$ noise level at the worst affected receiver (dB(A)) [stationary source]	40
Level above RBL at the worst affected receiver [stationary source]	0
Rate of production (m/min) [moving source]	5
$L_{Aeq(15minute)}$ noise level at the worst affected receiver (dB(A)) [moving source]	43
Level above RBL at the worst affected receiver [moving source]	3
Have all standard mitigation measures been implemented where feasible and reasonable?	No

Please revise work method statement and implement standard measures (e g. schedule works to a less sensitive time period use quieter equipment shield equipment with acoustic curtains on mobile/modular framing etc.) where feasible and reasonable.

	Additional mitigation measures for consideration where feasible and reasonable	Mitigation level (dB(A))	Within mitigation distance (m)
5-10 dB(A) over RBL	N	45	175
10-20 dB(A) over RBL	N R2 DR	50 (55)	120 (75)
20-30 dB(A) over RBL	N PC SN R2 DR	60	45
>30 dB(A) over RBL	AA N PC SN R2 DR	70	20

Note:
(1) Notification (N) in the 5-10 dB(A) band is not considered reasonable if receivers are shielded by at least three rows of double storey houses or a row of multi-storey buildings or a sound barrier specifically design to mitigate construction noise
(2) Notification (N) in the form of letterbox drop at mitigation distances where level is less than 15 dB(A) above the RBL is not considered reasonable where Respite Period 2 (R2) is implemented. See alternate mitigation level and mitigation distance in () for letterbox drop.



Distanced Based (Scenario)

Noise area category	R3
Night time RBL (dB(A))	40
Night time NML (dB(A))	45
Propagation Type	Rural Undeveloped Areas
Scenario	Paving / asphalting
Is there line of sight to receiver?	Yes
Distance to the worst affected receiver (m) [greater than 5m]	260
$L_{Aeq\ 15m\ nute)}$ noise level at the worst affected receiver (dB(A))	49
Level above RBL at the worst affected receiver	9
Have all standard mitigation measures been implemented where feasible and reasonable?	Yes

Please proceed with consideration given to the fo lowing additional mitigation measures

	Additional mitigation measures for consideration where feasible and reasonable	Mitigation level (dB(A))	Within mitigation distance (m)
5-10 dB(A) over RBL	N	45	335
10-20 dB(A) over RBL	N R2 DR	50 (55)	230 (155)
20-30 dB(A) over RBL	N PC SN R2 DR	60	105
>30 dB(A) over RBL	AA N PC SN R2 DR	70	30

Note:
(1) Notification (N) in the 5-10 dB(A) band is not considered reasonable if receivers are shielded by at least three rows of double storey houses or a row of multi-storey buildings or a sound barrier specifically design to mitigate construction noise
(2) Notification (N) in the form of letterbox drop at mitigation distances where level is less than 15 dB(A) above the RBL is not considered reasonable where Respite Period 2 (R2) is implemented. See alternate mitigation level and mitigation distance in () for letterbox drop.

Populate summary table

	Additional mitigation measures for consideration where feasible and reasonable	Mitigation level (dB(A))	Within Mitigation Distance (m)		
			LoS	No LoS (behind solid barrier)	No LoS (behind substantial solid barrier)
5-10 dB(A) over RBL	N	40	-	-	-
10-20 dB(A) over RBL	N R2 DR	45 (50)	-	-	200 (135)
20-30 dB(A) over RBL	N PC SN R2 DR	55	-	-	85
>30 dB(A) over RBL	AA N PC SN R2 DR	65	-	-	0

Ground vibration - minimum working distances from sensitive receivers

As a guide, minimum working distances from sensi ive receivers for typical items of vibration intensive plant are listed in the table below. The minimum distances are quoted for both “cosmetic” damage (refer BS 7385). The minimum working distances for cosmetic damage must be complied with at all times, unless otherwise approved by Roads and Maritime or under the environmental license as relevant. DIN 4150 has criteria of par icular reference for heritage structures.

Plant item	Rating / Description	Minimum working distance
		Cosmetic damage (BS 7385)
Vibratory Roller	< 50 kN (Typically 1-2 tonnes)	5 m
	< 100 kN (Typically 2-4 tonnes)	6 m
	< 200 kN (Typically 4-6 tonnes)	12 m
	< 300 kN (Typically 7-13 tonnes)	15 m
	> 300 kN (Typically 13-18 tonnes)	20 m
	> 300 kN (> 18 tonnes)	25 m
Small Hydraulic Hammer	(300 kg - 5 to 12t excavator)	2 m
Medium Hydraulic Hammer	(900 kg – 12 to 18t excavator)	7 m
Large Hydraulic Hammer	(1600 kg – 18 to 34t excavator)	22 m
Vibratory Pile Driver	Sheet piles	2 m to 20 m
Pile Boring	≤ 800 mm	2 m (nominal)
Jackhammer	Hand held	1 m (nominal)
Profiler	Wirtgen W210	4 m
Asphalt Paver	Vogele Super 1800-3	1 m
Steel Drum Roller	Hamm HD70 (Oscillating Mode)	2 m
Steel Drum Roller	Hamm HD70 (Static Mode)	1 m

Note: More stringent conditions may apply to heritage or other sensitive structures

The minimum working distances are indicative and will vary depending on he particular item of plant and local geotechnical conditions. They apply to cosmetic damage of typical buildings under typical geotechnical conditions. Vibration monitoring is recommended to confirm the minimum working distances at specific sites.

Appendix E

AHIMS Search – 200m Buffer

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : Bridge/Railway

Client Service ID : 556517

Nicholas Woodard

17 Warabrook Boulevard
Warabrook New South Wales 2304

Attention: Nicholas Woodard

Email: nicholas.woodard@aecom.com

Date: 10 December 2020

Dear Sir or Madam:

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

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

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

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

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

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

Important information about your AHIMS search

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

3 Marist Place, Parramatta NSW 2150
Locked Bag 5020 Parramatta NSW 2220
Tel: (02) 9585 6380 Fax: (02) 9873 8599

ABN 30 841 387 271
Email: ahims@environment.nsw.gov.au
Web: www.environment nsw.gov.au

Appendix F

BioNet Atlas and Protected Matters Search Tool

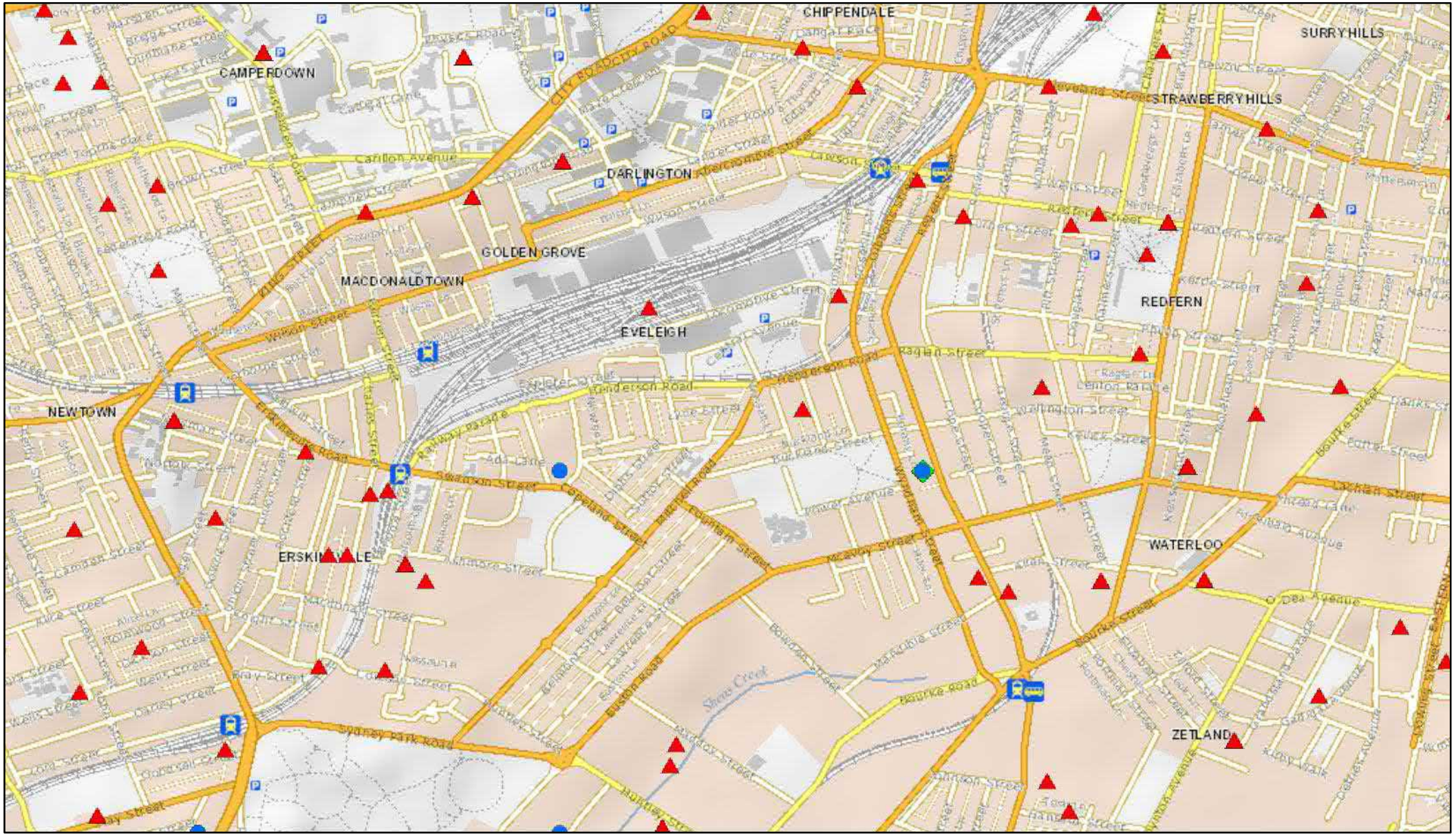
Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded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

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

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

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

BioNet Atlas Map



December 18, 2020

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Australian Government

Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

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

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

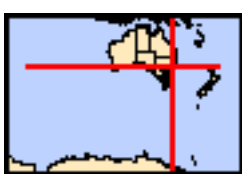
Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 11/12/20 11:09:58

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

Coordinates

Buffer: 1.0Km



Summary

Matters of National Environmental Significance

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

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

Other Matters Protected by the EPBC Act

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

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

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

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

Extra Information

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

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

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

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

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

Listed Threatened Species [Resource Information]

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

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

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

Listed Migratory Species [Resource Information]

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

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

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

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

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

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

Listed Marine Species [Resource Information]

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

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

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

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

Extra Information

Invasive Species [Resource Information]

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

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

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

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

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

Caveat

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

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-33.90005 151.19071

Acknowledgements

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-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
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-CSIRO
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-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
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-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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