WATERLOO METRO QUARTER OVERSTATION DEVELOPMENT

Environmental Impact Statement
Appendix J – Preliminary Construction Traffic and Pedestrian Management Plan

SSD 10437 – Southern Precinct

State Significant Development,
Development Application

Prepared for **WL Developer Pty Ltd**

30 September 2020

Reference	Description
Applicable SSD Applications	SSD 10437 - Southern Precinct
Author	**ptc.** Steve Wellman
Reviewed	Waterloo Developer Pty Ltd Perry Milledge Matt Rawlinson Jack Robertson Robert Le Lievre
Document Number	WMQ-BLD3-PTC-TF-RPT-002
Status	Final
Version	3
Date of Issue	31 July 2020

ptc.

Table of contents

List of Figures

List of Tables

1. Glossary and abbreviations

Reference	Description
ACHAR	Aboriginal Cultural Heritage Assessment Report
ADG	Apartment Design Guide
AHD	Australian height datum
AQIA	Air Quality Impact Assessment
BC Act	Biodiversity Conservation Act 2016
BCA	Building Code of Australia
BC Reg	Biodiversity Conservation Regulation 2017
BDAR	Biodiversity Development Assessment Report
CEEC	Critically Endangered Ecological Community
CIV	Capital Investment Value
CMP	Construction Management Plan
Concept DA	A concept DA is a staged application often referred to as a 'Stage 1' DA. The subject application constitutes a detailed subsequent stage application to an approved concept DA (SSD 9393) lodged under section 4.22 of the EP&A Act.
Council	City of Sydney Council
CPTED	Crime Prevention Through Environmental Design
CSSI approval	Critical State Significant Infrastructure Approval
CPTMP	Construction Pedestrian and Traffic Management Plan
DA	Development Application
DPIE	NSW Department of Planning, Industry and Environment
DRP	Design Review Panel
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	NSW Environment Protection Authority
EPA Regulation	Environmental Planning and Assessment Regulation 2000

EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ESD	Ecologically Sustainable Design
GANSW	NSW Government Architect's Office
GFA	Gross Floor Area
HIA	Heritage Impact Assessment
IAP	Interchange Access Plan
ISD	Integrated Station Development
LGA	Local Government Area
NCC	National Construction Code
OSD	Over Station Development
PIR	Preferred Infrastructure Report
POM	Plan of Management
PSI	Preliminary Site Investigation
RMS	Roads and Maritime Services
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SEPP 55	State Environmental Planning Policy No 55—Remediation of Land
SEPP 65	State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development
SRD SEPP	State Environmental Planning Policy (State and Regional Development) 2009
SREP Sydney Harbour	State Regional Environmental Plan (Sydney Harbour Catchment) 2005
SSD	State Significant Development
SSD DA	State Significant Development Application
STA	State Transit Authority
SLEP	Sydney Local Environmental Plan 2012
TfNSW	Transport for New South Wales

TIA	Traffic Impact Assessment
The proposal	The proposed development which is the subject of the detailed SSD DA
The site	The site which is the subject of the detailed SSD DA
VIA	Visual Impact Assessment
WMQ	Waterloo Metro Quarter
WMP	Waste Management Plan
WSUD	Water Sensitive Urban Design

2. Executive Summary

This preliminary Construction Pedestrian and Traffic Management Plan (CPTMP) has been prepared by **ptc.** in consultation with the development team to accompany a State significant development (SSD) development application (DA) for the Waterloo Metro Quarter over station development (OSD). As part of the SSD DA submission process, TfNSW and City of Sydney will review and comment on this report. Comments raised during this consultation process will be discussed and incorporated into the detailed CPTMP for the construction stage.

This preliminary report addresses the relevant Conditions of Consent (B16 and B21) for the original concept SSD 9393 approval, and the relevant SEARs requirements and details the mitigation and contingency measures for potential construction impacts due to heavy vehicle movements.

This report outlines the construction process associated with the Southern precinct within the Waterloo Metro Quarter, as well as the preliminary construction traffic management and mitigation measures to improve and regulate the safety of pedestrians, cyclists, motorists and workers within the vicinity of the construction site. Cumulative truck movements of concurrent stages have also been taken into consideration and discussed in this document.

It is envisaged that this document will be continually reviewed and amended if required, in the event of changes to design, the surrounding road network, or additional requirements of City of Sydney Council, TfNSW or any other authority.

3. Introduction

This preliminary CPTMP has been prepared to accompany a detailed State significant development (SSD) development application (DA) for the Southern Precinct over station development (OSD) at the Waterloo Metro Quarter site. The detailed SSD DA is consistent with the concept approval (SSD 9393) granted for the maximum building envelope on the site, as proposed to be modified.

The Minister of Planning, or their delegate, is the consent authority for the SSD DA and this application is lodged with the NSW Department of Planning, Industry and Environment (DPIE) for assessment.

The detailed SSD DA seeks development consent for the design, construction and operation of:

- 25-storey residential building (Building 3) comprising student accommodation, to be delivered as a mixture of studio and twin apartments with approximate capacity of 474 students
- 9-storey residential building (Building 4) above the southern station box to accommodate 70 social housing dwellings
- ground level retail tenancies including Makerspace and gymnasium lobby, and loading facilities
- level 1 and level 2 gymnasium and student accommodation communal facilities
- landscaping and private and communal open space at podium and roof top levels to support the residential accommodation
- new public open space including the delivery of the Cope Street Plaza, including vehicle access to the site via a shared way from Cope Street, expanded footpaths on Botany and Wellington streets and public domain upgrades
- signage zone locations
- utilities and service provision
- stratum subdivision (staged).

The proposed development includes the construction of the southern buildings (buildings 3 and 4). The main vehicular access to the site will be off Cope Street via Church Square, which will be a shared zone and will provide access to the basement car park. Access to the north and south loading dock entry will be via Botany Road. Also, the development will retain the existing Waterloo Congregational Church.

The proposed development is outlined in further detail in Section 6 and the location of the development site is shown in Figure 1.

Figure 1 – Southern Precinct (in the Waterloo Metro Quarter) Development Site

The Minister for Planning, or their delegate, is the consent authority for the SSD DA and this application is lodged with the NSW Department of Planning, Industry and Environment (DPIE) for assessment.

Separate detailed SSD DA (s) in addition to this subject SSD (i.e. Northern, Central & Basement Precincts) will be lodged concurrently for the detailed design, construction and operation of each building.

This report has been prepared in response to the requirements contained within the Conditions of Consent issued for the original concept SSD DA (SSD 9393) dated 10 December 2019 and the Secretary's Environmental Assessment Requirements (SEARs) dated 8 April 2020 and issued for the subject detailed SSD DA (SSD 10437).

Specifically, this report has been prepared to respond to the Conditions of Consent for SSD 9393 (see Table 1) and the SEARs requirements (see Table 2) summarised below.

Condition of Consent	Section reference (this report)
Traffic, Access and Parking Assessment B16. Future development applications shall include a Construction Traffic and Pedestrian Management Plan (CTMP) prepared in consultation with the Sydney Coordination Office and City of Sydney, and to the satisfaction of the relevant road authorities. The CTMP shall include, but not limited to:	
(a) Construction car parking strategy	See Section 10.4 and Section 11.3
(b) Haulage movement numbers / routes including contingency routes	See Section 8.7.2 and Section 8.7.3
(c) Detailed travel management strategy for construction vehicles including staff movements	See Section 11
(d) Maintaining property accesses	See Section 10.7 and Section 10.8
(e) Maintaining bus operations including routes and bus stops	See Section 8.5
(f) Maintaining pedestrian and cyclist links / routes	See Section 9.2 and Section 9.3
(g) Independent road safety audits on construction related traffic measures	See Section 10.10
(h) Measures to account for any cumulative activities / work zones operating simultaneously	See Section 8.2.3
Construction Impact Assessment B21. Future development applications shall provide analysis and assessment of the impacts of construction works and include:	
(a) Construction Traffic and Pedestrian Management Plan, as per Condition B9	See CPTMP

Table 1 – Conditions of Consent (SSD 9393)

SEARs	Section reference (this report)
8. Traffic, Parking and Access (Construction and Operation) **The EIS shall include a traffic, parking and access assessment that provides, but is not limited to, the following:**	
A draft Construction Pedestrian and Traffic Management Plan to demonstrate the proposed management of impact. This Plan needs to include:	
• Works zone location,	See Section 8.8
• Vehicle routes,	See Section 8.7.2
• Number of trucks,	See Section 8.7.4
• Hours of operation,	See Section 8.2.4
• Indicative construction program,	See Section 8.2.2
• Access arrangements and	See Section 8.4
• Traffic control measures for all demolition/construction vehicles	See Section10.2
10. Construction Impacts **The EIS shall include a Construction Environmental Management Plan, developed in consultation with TfNSW and Council, providing:**	
Assessment of the potential cumulative impacts (noise, vibration traffic, air quality etc) of the proposed development with regards to the works being carried out on site as part of the Sydney Metro Chatswood to Sydenham approval (CSSI 7400), any other stage of the Waterloo Metro Quarter Over Station development and other developments in proximity to the site during the construction phase.	See Section 8.2.3

Table 2 – SEARs requirements (SSD 10438)

4. The Site

The Waterloo Metro Quarter is located adjacent to Redfern Street Village (refer to Figure 2) in the City of Sydney LGA approximately 3.3 kilometres south of Sydney CBD, approximately 8 kilometres northeast of Sydney International Airport, 1 kilometre north of Green Square and less than 1 kilometre south of Redfern Station.

The Metro Quarter is less than 1km south-east of the Australian Technology Park (ATP), a technology micro-cluster that currently contains around 3,000 – 3,500 workers with a range of businesses in technology and creative industries; and a start-up/business incubator hub.

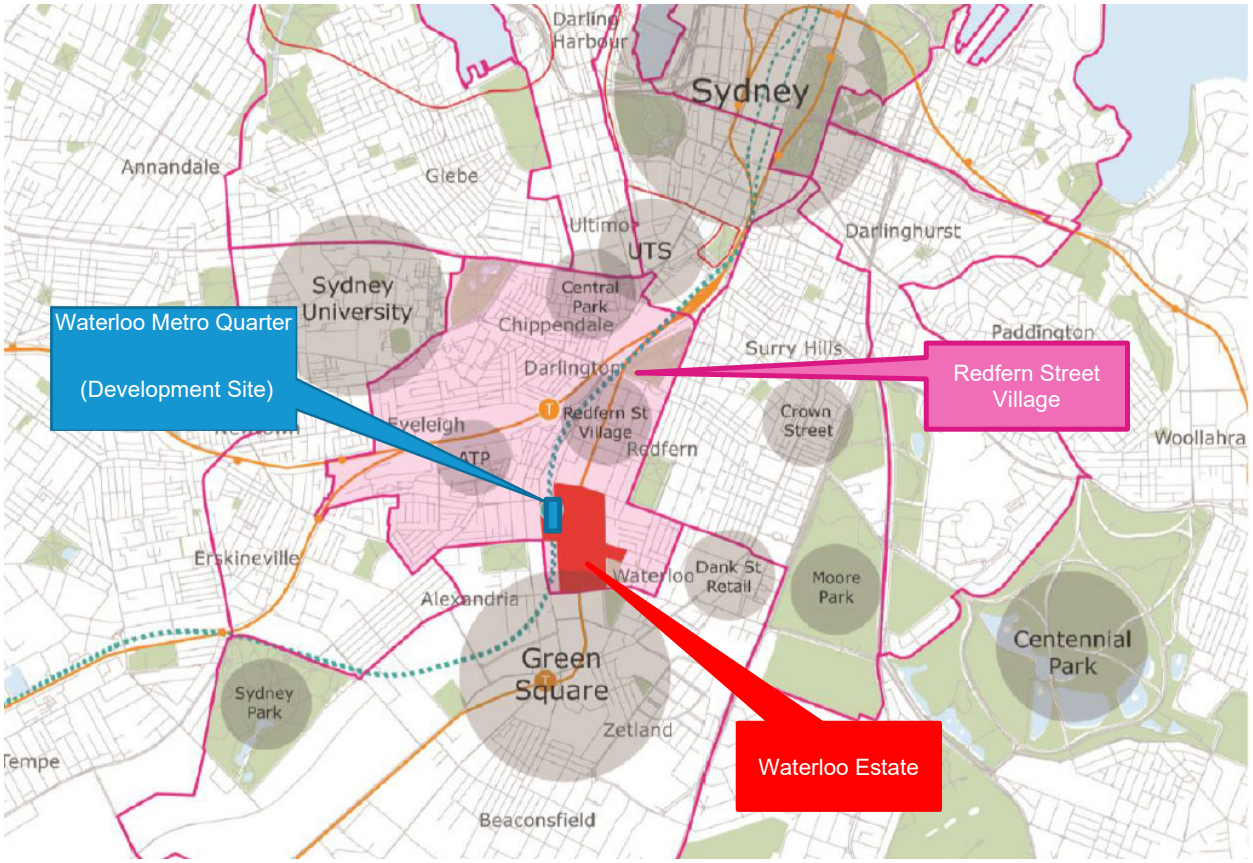


Figure 2 – Waterloo Metro Quarter Location Plan

The Waterloo Metro Quarter site comprises land to the west of Cope Street, east of Botany Road, south of Raglan Street and north of Wellington Street (refer to Figure 3). The heritage listed Waterloo Congregational Church located at 103–105 Botany Road is within this street block but does not form a part of the Waterloo Metro Quarter Site boundaries.

The Waterloo Metro Quarter site (the site) is a rectangular shaped allotment and an overall site area of approximately 1.287 hectares. The site is reasonably flat with a slight fall to the south.

Figure 3 – Waterloo Metro Quarter Site Plan

The Waterloo Metro Quarter site comprises the following allotments and legal description at the date of this report. Following consolidation by Sydney Metro (the Principal) the land will be set out in deposited plan DP1257150.

- 1368 Raglan Street (Lot 4 DP 215751)
- 59 Botany Road (Lot 5 DP 215751)
- 65 Botany Road (Lot 1 DP 814205)
- 67 Botany Road (Lot 1 DP 228641)
- 124–128 Cope Street (Lot 2 DP 228641)
- 69–83 Botany Road (Lot 1, DP 1084919)
- 130–134 Cope Street (Lot 12 DP 399757)
- 136–144 Cope Street (Lots A-E DP 108312)
- 85 Botany Road (Lot 1 DP 27454)
- 87 Botany Road (Lot 2 DP 27454)
- 89–91 Botany Road (Lot 1 DP 996765)
- 93–101 Botany Road (Lot 1 DP 433969 and Lot 1 DP 738891)
- 119 Botany Road (Lot 1 DP 205942 and Lot 1 DP 436831)
- 156–160 Cope Street (Lot 31 DP 805384)
- 107–117A Botany Road (Lot 32 DP 805384 and Lot A DP 408116)
- 170–174 Cope Street (Lot 2 DP 205942).

The detailed SSD DA applies to the Southern Precinct (the site) of the Waterloo Metro Quarter site. The site has an area of approximately 4,830sqm. The subject site comprises the following allotments and legal description at the date of this report.

- 130–134 Cope Street (Lot 12 DP 399757) (Part)
- 136–144 Cope Street (Lots A-E DP 108312) (Part)
- 93–101 Botany Road (Lot 1 DP 433969 and Lot 1 DP 738891) (Part)
- 156–160 Cope Street (Lot 31 DP 805384)
- 107–117A Botany Road (Lot 32 DP 805384 and Lot A DP 408116)
- 119 Botany Road (Lot 1 DP 205942 and Lot 1 DP 436831)
- 170–174 Cope Street (Lot 2 DP 205942).

The boundaries of the overall site are identified in Figure 4, and the subject site of the detailed SSD DA is identified in Figure 5 and Figure 6. The site is reasonably flat with the slight fall to the south.

The site previously included three to five storey commercial, light industrial and shop top housing buildings. All previous structures except for an office building at the corner of Botany Road and Wellington Street have been demolished to facilitate construction of the new Sydney Metro Waterloo station. As such the existing site is predominately vacant and being used as a construction site.

The buildings and structures on the site are now demolished and the Waterloo Metro Station is currently under construction.

Construction of the Sydney metro is currently underway on site in accordance with critical State significant infrastructure approval (CSSI 7400).

Figure 4 – Aerial image of the site
Source: Urbis

The area surrounding the site consists of commercial premises to the north, light industrial and mixed-use development to the south, residential development to the east and predominantly commercial and light industry uses to the west.

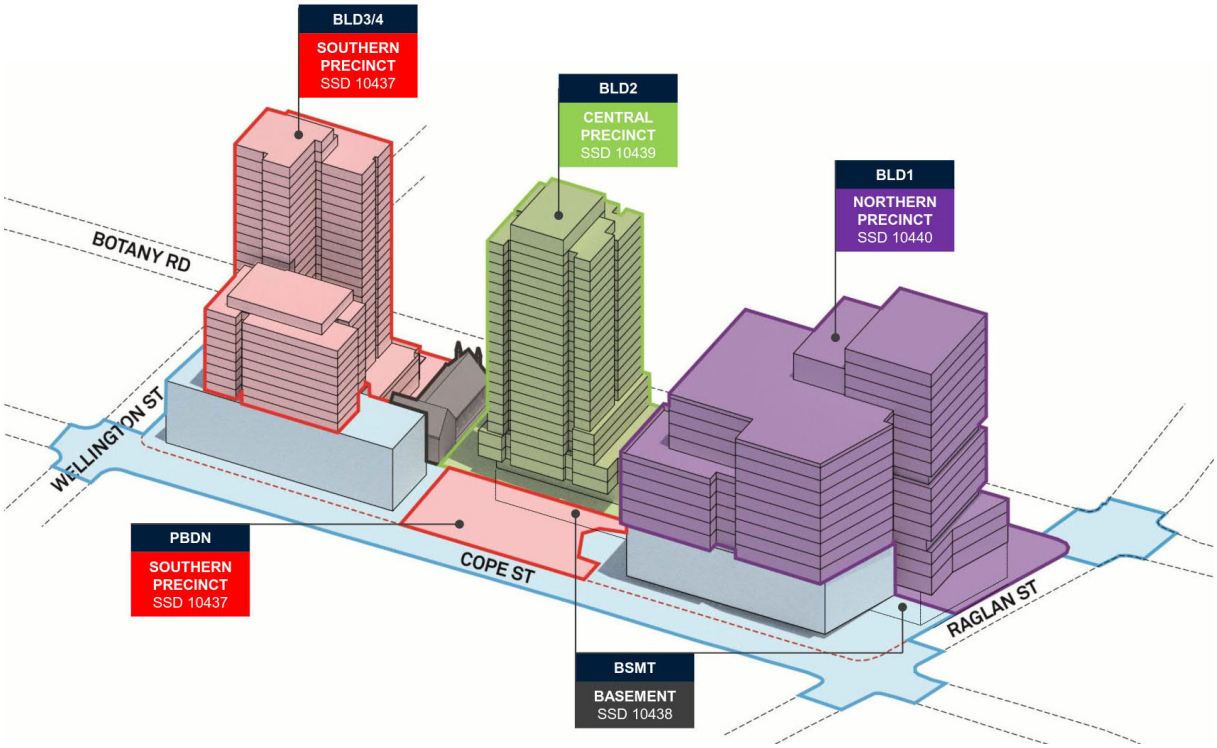


Figure 5 – Waterloo Metro Quarter site, with sub-precincts identified
Source: HASSELL

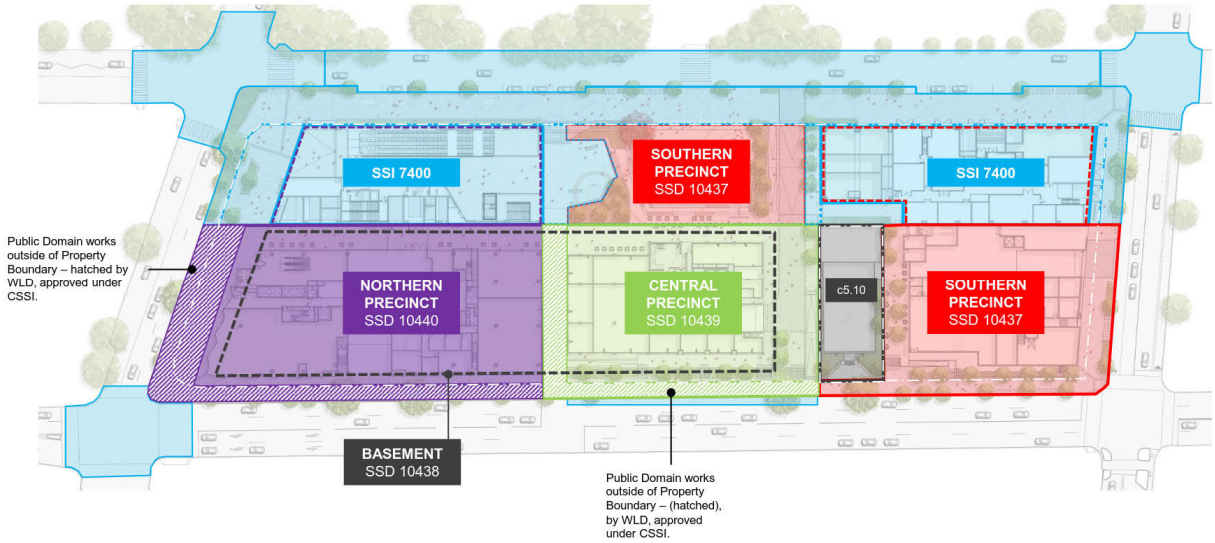


Figure 6 – Waterloo Metro Quarter site, with sub-precincts identified
Source: Waterloo Developer Pty Ltd

5. Background

5.1 About Sydney Metro

Sydney Metro is Australia's biggest public transport project. Services started in May 2019 in the city's North-west with a train every four minutes in the peak. A new standalone railway, this 21st century network will revolutionise the way Sydney travels. There are four core components:

5.1.1 Sydney Metro North West

This project is now complete and passenger services commenced in May 2019 between Rouse Hill and Chatswood, with a metro train every four minutes in the peak. The project was delivered on time and $1 billion under budget.

5.1.2 Sydney Metro City & Southwest

Sydney Metro City & Southwest project includes a new 30km metro line extending metro rail from the end of Metro Northwest at Chatswood, under Sydney Harbour, through new CBD stations and southwest to Bankstown. It is due to open in 2024 with the ultimate capacity to run a metro train every two minutes each way through the centre of Sydney.

Sydney Metro City & Southwest will deliver new metro stations at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street, Waterloo and new underground metro platforms at Central Station. In addition, it will upgrade and convert all 11 stations between Sydenham and Bankstown to metro standards.

5.1.3 Sydney Metro West

Sydney Metro West is a new underground railway connecting Greater Parramatta and the Sydney CBD. This once-in-a-century infrastructure investment will transform Sydney for generations to come, doubling rail capacity between these two areas, linking new communities to rail services and supporting employment growth and housing supply between the two CBDs.

The locations of seven proposed metro stations have been confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock and The Bays.

The NSW Government is assessing an optional station at Pyrmont and further planning is underway to determine the location of a new metro station in the Sydney CBD.

5.1.4 Sydney Metro Greater West

Metro rail will also service Greater Western Sydney and the new Western Sydney International (Nancy Bird Walton) Airport. The new railway line will become the transport spine for the Western Parkland City's growth for generations to come, connecting communities and travellers with the rest of Sydney's public transport system with a fast, safe and easy metro service. The Australian and NSW governments are equal partners in the delivery of this new railway.

The Sydney Metro project is illustrated in Figure 7.

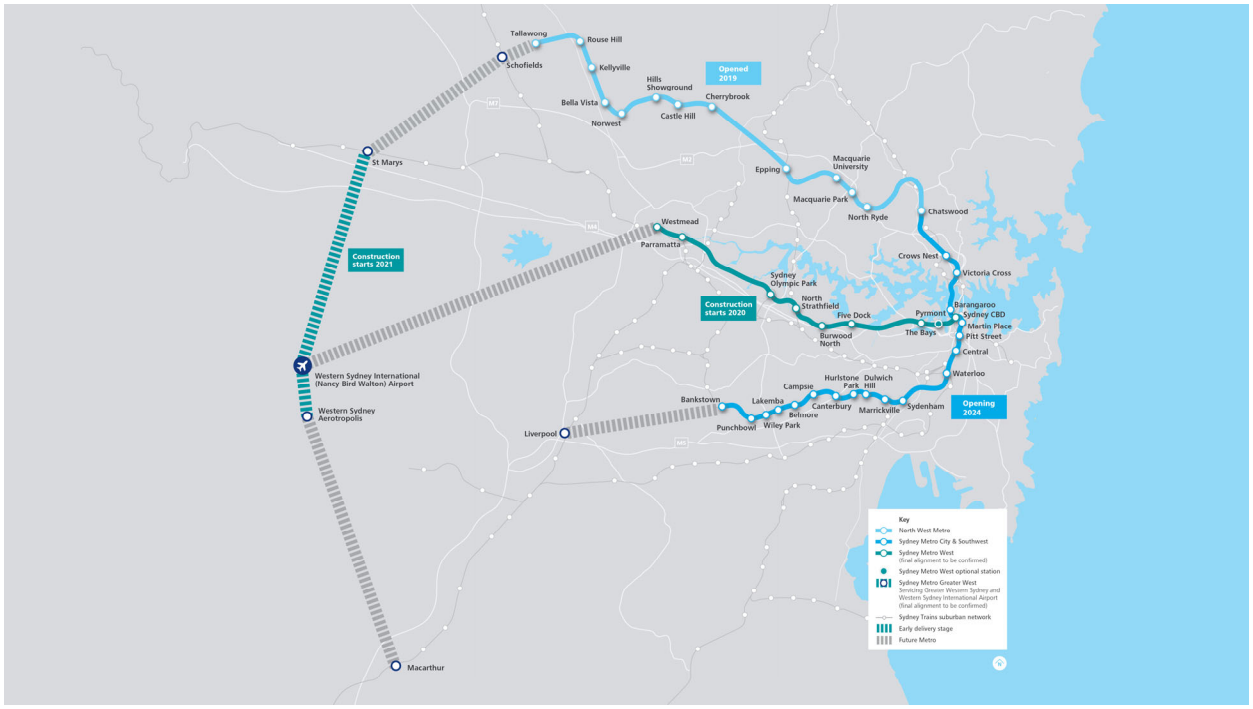


Figure 7 - Sydney Metro alignment map
Source: Sydney Metro

5.2 Sydney Metro CSSI Approval (SSI 7400)

On 9 January 2017, the Minister for Planning approved the Sydney Metro City & Southwest - Chatswood to Sydenham project as a critical State significant infrastructure (CSSI) project (reference SSI 7400) (CSSI approval). The terms of the CSSI approval includes all works required to construct the Sydney Metro Waterloo Station. The CSSI approval also includes the construction of below and above ground works within the metro station structure for appropriate integration with the OSD.

With regards to CSSI related works, any changes to the 'metro station box' envelope and public domain will be pursued in satisfaction of the CSSI conditions of approval and do not form part of the scope of the concept SSD DA or detailed SSD DA for the OSD.

Except to the extent described in the EIS or Preferred Infrastructure Report (PIR) submitted with the CSSI application, any OSD buildings and uses do not form part of the CSSI approval and will be subject to the relevant assessment pathway prescribed by the EP&A Act.

The delineation between the approved Sydney metro works, generally described as within the two 'metro station boxes' and surrounding public domain works, and the OSD elements are illustrated in Figure 8.

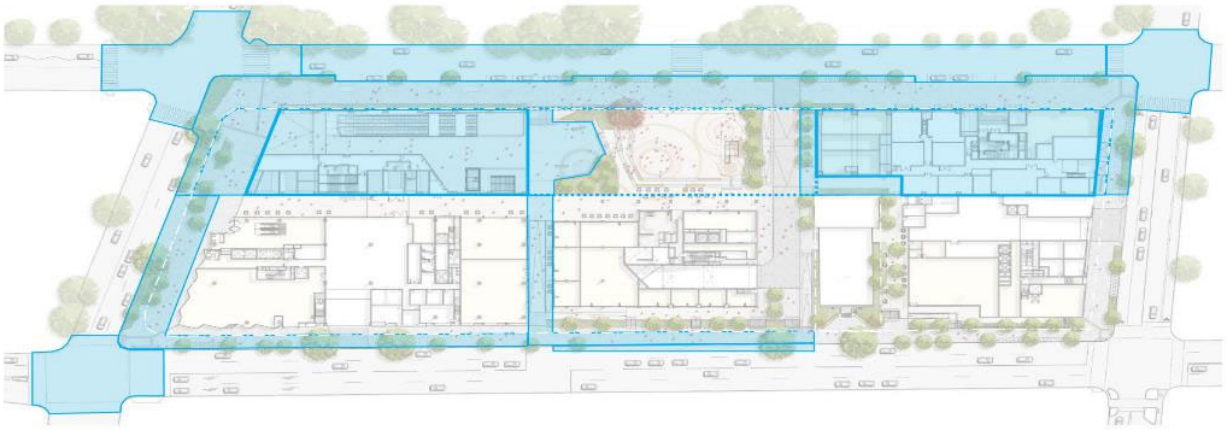


Figure 8 - CSSI Approval scope of works
Source: WL Developer Pty Ltd

5.3 Concept Approval (SSD 9393)

As per the requirements of clause 7.20 of the *Sydney Local Environmental Plan 2012* (SLEP), as the OSD exceeds a height of 25 metres above ground level (among other triggers), development consent is first required to be issued in a concept DA (formerly known as Stage 1 DA).

Development consent was granted on 10 December 2019 for the concept SSD DA (SSD 9393) for the Waterloo Metro Quarter OSD including:

- a maximum building envelope for podium, mid-rise and tower buildings
- a maximum gross floor area of 68,750sqm, excluding station floor space
- conceptual land use for non-residential and residential floor space
- minimum 12,000sqm of non-residential gross floor area including a minimum of 2,000sqm of community facilities
- minimum 5% residential gross floor area as affordable housing dwellings
- 70 social housing dwellings
- basement car parking, motorcycle parking, bicycle parking, and service vehicle spaces.

The detailed SSD DA seeks development consent for the OSD located within Southern Precinct of the site, consistent with the parameters of this concept approval. Separate SSD DAs have been prepared and will be submitted for the Central Precinct, Northern Precinct and Basement Car Park proposed across the Waterloo Metro Quarter site.

A concurrent amending concept SSD DA has been prepared and submitted to the DPIE which proposed to make modifications to the approved building envelopes at the northern precinct and central building. This amending concept SSD DA does not impact the proposed development within the southern precinct.

6. Proposed Development

6.1 Waterloo Metro Quarter Development

The Waterloo Metro Quarter OSD comprises four separate buildings, a basement carpark and public domain works adjacent to the Waterloo Metro station.

Separate SSD DAs will be submitted concurrently for the design, construction and operation of each building in the precinct;

- Southern precinct SSD-10437,
- Basement Car Park SSD-10438,
- Central precinct SSD-10439, and
- Northern precinct-SSD-10440.

An overview of the Development is included below for context. This detailed SSD DA seeks development consent for the design, construction and operation of the Southern Precinct:

6.1.1 Southern Precinct

The Southern Precinct comprises:

- 25-storey residential building (Building 3) comprising student accommodation, to be delivered as a mixture of studio and twin apartments with approximate capacity of 474 students
- 9 storey residential building (Building 4) above the southern station box to accommodate 70 social housing dwellings
- ground level retail tenancies including Makerspace and gymnasium lobby, and loading facilities
- level 1 and level 2 gymnasium and student accommodation communal facilities
- landscaping and private and communal open space at podium and roof top levels to support the residential accommodation
- new public open space including the delivery of the Cope Street Plaza, including vehicle access to the site via a shared way from Cope Street, expanded footpaths on Botany and Wellington Streets and public domain upgrades
- signage zone locations
- utilities and service provision
- stratum subdivision (staged).

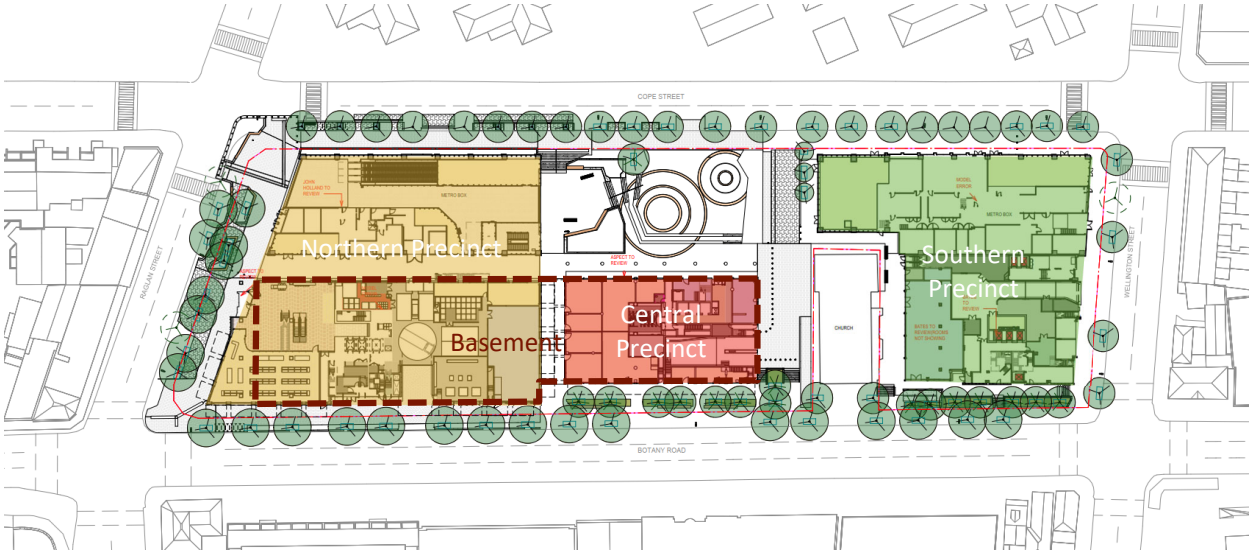


Figure 1 – Key Components of Separable Portions

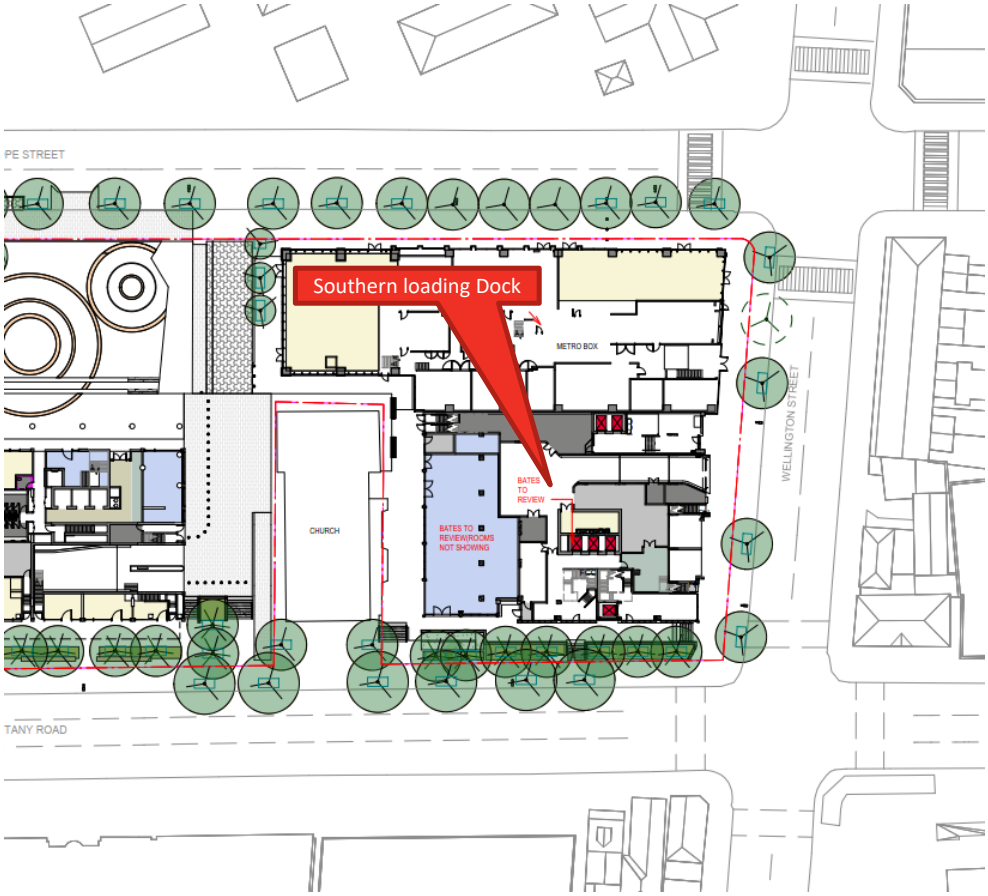


Figure 2 – Vehicular Access to Southern Loading Dock

7. Existing Transport Facilities

7.1 Road Hierarchy

The subject site is in the suburb of Waterloo and primarily serviced by Botany Road which is classified as a State Road. The road network servicing the area comprises a number of State Roads, making the site easily accessible from different regions of the metropolitan area. The road network in this area also comprises several local streets providing direct access to the surrounding retail, commercial and residential land-uses.

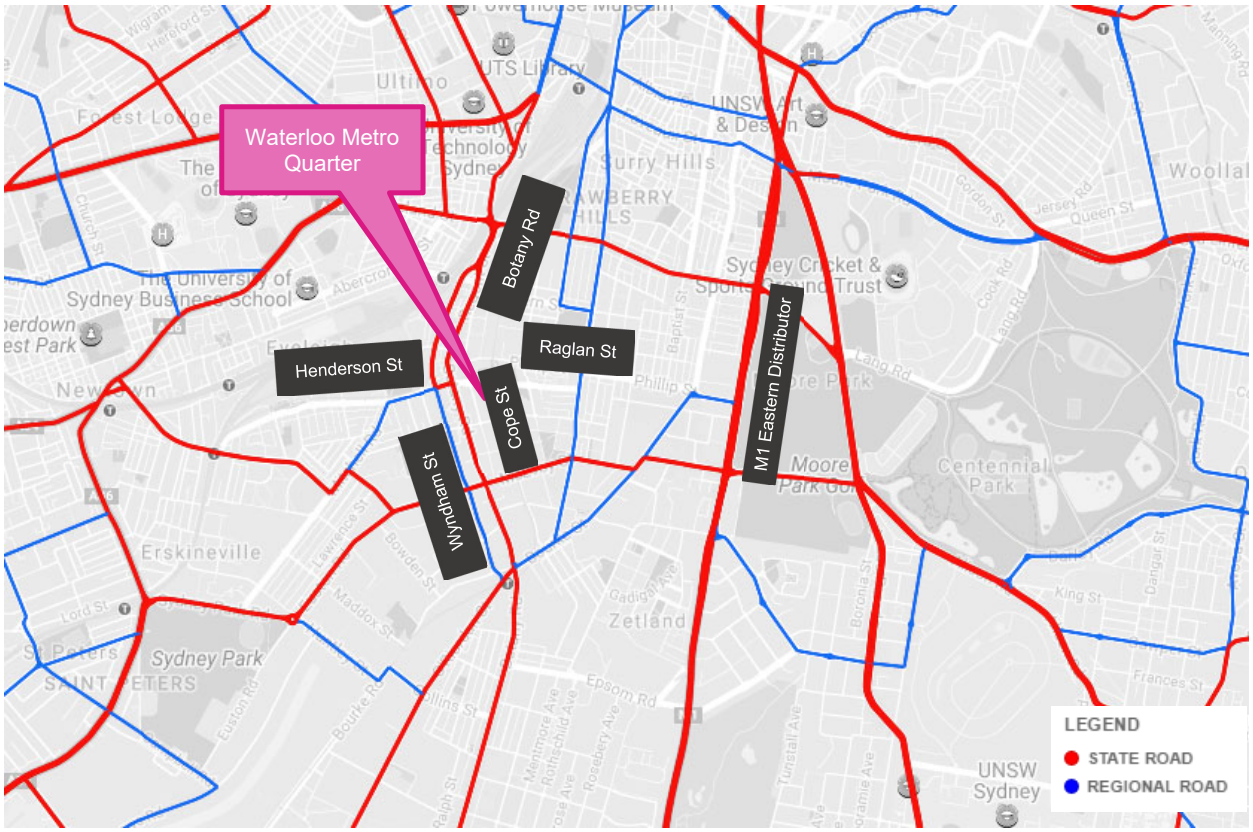


Figure 9 – TfNSW Road Hierarchy

The NSW administrative road hierarchy comprises the following road classifications, which align with the generic road hierarchy as follows:

- State Roads - Freeways and Primary Arterials (TfNSW managed)
- Regional Roads - Secondary or sub arterials (Council managed, partly funded by the State)
- Local Roads - Collector and local access roads (Council managed)

A summary of the existing road network is outlined as follows.

Botany Road	
Road Classification	State Road
Alignment	North – South
Number of Lanes	2 lanes in each direction
Carriageway Type	Undivided
Carriageway Width	12m (6m in each direction)
Speed Limit	50 km/hr
School Zone	Yes, north of the Botany Road / Bourke Street intersection
Parking Controls	Time restricted on-street parking, with clearways in operation during peak periods
Forms Site Frontage	Yes

Table 3 – Existing Road Network – Botany Road

Figure 10 – Botany Road (Southbound from Henderson Street Intersection)

Cope Street	
Road Classification	Local Road
Alignment	North - South
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	12m (6m in each direction)
Speed Limit	50 km/hr
School Zone	No
Parking Controls	Typically varies between 'No Stopping', 'Bus Zone' and unrestricted parking
Forms Site Frontage	Yes

Table 4 – Existing Road Network – Cope Street

Figure 11 – Cope Street (Southbound from Raglan Street Intersection)

Raglan Street	
Road Classification	Local Road
Alignment	East-west
Number of Lanes	2 lanes in each direction
Carriageway Type	Undivided
Carriageway Width	12m (6m in each direction)
Speed Limit	60km/hr
School Zone	No
Parking Controls	Typically varies between 'No Stopping', 'Loading Zone', and '1P' timed parking
Forms Site Frontage	Yes

Table 5 – Existing Road Network – Raglan Street

Figure 12 – Raglan Street (Westbound to Botany Road)

Wyndham Road	
Road Classification	Regional Road
Alignment	North-south
Number of Lanes	1 lane in each direction
Carriageway Type	Undivided
Carriageway Width	13m (6.5m in each direction)
Speed Limit	50 km/hr
School Zone	No
Parking Controls	Typically varies between unrestricted parking, 'No Stopping', and 'No Parking'.
Forms Site Frontage	No

Table 6 – Existing Road Network – Wyndham Road

Figure 13 – Wyndham Street (Southbound from Henderson Road Intersection)

Henderson Road	
Road Classification	Regional Road
Alignment	East - West
Number of Lanes	2 lanes in each direction
Carriageway Type	Divided
Carriageway Width	18m (6m eastbound, 12m westbound)
Speed Limit	50 km/hr
School Zone	No
Parking Controls	Typically varies between unrestricted parking, 'No Stopping', and 'No Parking'.
Forms Site Frontage	No

Table 7 – Existing Road Network – Henderson Road

Figure 14 – Henderson Road (Westbound from Botany Road Intersection)

Wellington Street	
Road Classification	Local Road
Alignment	East - West
Number of Lanes	1 lane in each direction
Carriageway Type	Divided
Carriageway Width	12m (6m in each direction)
Speed Limit	50 km/hr
School Zone	No
Parking Controls	Typically varies between unrestricted parking, '1P', and 'Loading Zone'.
Forms Site Frontage	Yes

Table 8 – Existing Road Network – Wellington Street

Figure 15 – Wellington Street (Westbound from Cope Street Intersection)

7.2 Public Transport

The subject site was assessed for its potential accessibility via modes of existing public transport likely to be utilised by prospective residents, employees and visitors of the proposed development. When defining accessibility, the NSW Planning Guidelines for Walking & Cycling (2004) suggests that 400m-800m is a comfortable walking distance.

7.2.1 Trains

The development site is located less than 650 metres walking distance from Redfern Station to the north and 900 metres from Green Square Station to the south.

The following services operate at these stations:

Line	Coverage	Station	Frequency
T1 – North Shore & Western Line	North Shore, Western and Richmond	Redfern	Approx. every 3-6 minutes during peak and every 4-15 minutes off-peak
T2 - Inner West & Leppington Line	City, Inner West and Leppington	Redfern	Approx. every 3-5 minutes during peak and every 3-10 minutes off peak
T3 – Bankstown Line	City, Liverpool and Lidcombe	Redfern	Approx. every 3-6 minutes during peak and every 3-15 minutes off peak
T4 – Eastern Suburbs & Illawarra Line	Eastern Suburbs, Illawarra and Cronulla	Redfern	Approx. every 3-4 minutes during peak and every 3-10 minutes off peak
T8 – Airport & South Line	City and South	Redfern Green Square	Approx. every 15 minutes during peak and no services off peak Approx. every 3-6 minutes during peak and every 7-8 minutes off peak
T9 – Northern Line	Gordon and Northern	Redfern	Approx. every 5-8 minutes during peak and every 15minutes off peak

Table 9 – Train Services Summary

Redfern Station is also served by regional lines including the Blue Mountains line, the Central Coast & Newcastle line and the South Coast line.

7.2.2 Sydney Metro

The subject development site will have access to the future Waterloo Station (Sydney Metro), which is currently under constructions.

With reference to Section 5.1, the Waterloo Metro Station is expected to commence operation in 2024 (post Southern Precinct construction works duration), which will provide a convenient public transport option for prospective residents, employees and visitors.

Once completed, Sydney Metro will have the ultimate capacity for a metro train every two minutes in each direction under the city, a level of service never seen before in Sydney.

7.2.3 Buses

A number of bus stops have been identified to be operating within walking distance of the proposed development as shown in Figure 16.

The routes servicing these stops are summarised in Table 10.

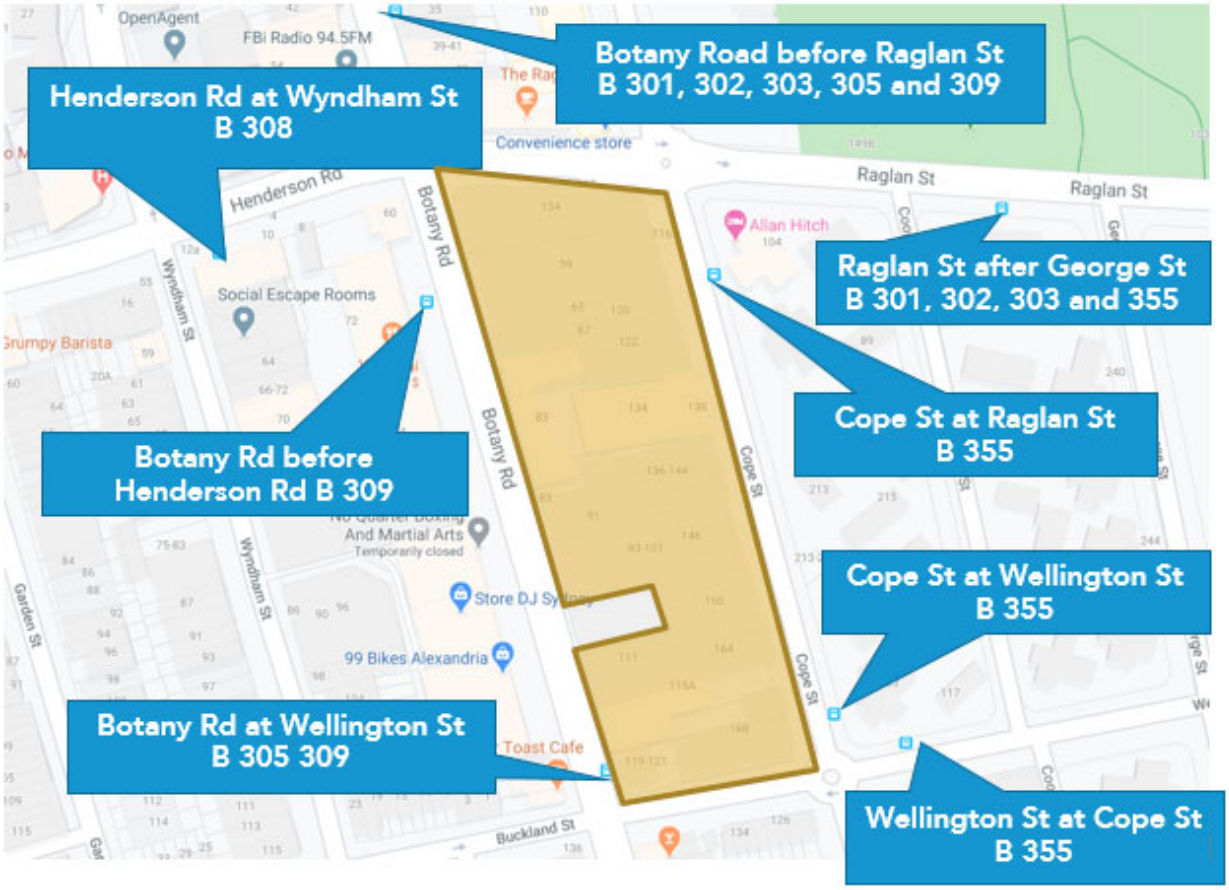


Figure 16 – Bus Stops near development site

Bus Route	Coverage	Operation
301	City to Eastgardens	Operates all week. 10-minute peak headway, 20-30minute off-peak headway.
302	City to Eastgardens	Operates all week. 60-minute headway.
303	City to Sans Souci	Operates all week. 5-10 minute peak headway, 20-30minute off-peak headway.
305	Railway Square to Mascot	Weekday-only service with a 20-minute headway in the peak direction.
308	Marrickville Metro to Central Eddy Ave via Redfern (Loop Service)	Operates all week. 15-minute peak headways.
309	Railway Square to Port Botany	Operates all week. 10-minute peak headways.
355	Bondi Junction to Marrickville Metro	Operates all week. Typical 30-minute headway.

Table 10 - Bus Service Summary

7.3 Active Travel

In addition to public transport, the encouragement of active travel is another key factor in reducing car travel.

7.3.1 Existing walking & cycling infrastructure

The City of Sydney contains an extensive cycle network that provides access to several key destinations in the vicinity of the WMQ, such as Redfern Station, Carriageworks, University of Sydney (USYD), Sydney CBD, Moore Park and Newtown.

However, due to constraints by the heavy rail infrastructure facilitating public transport, the east-west cycling connectivity is limited via Lawson Street at Redfern Station. This connection facilitates further connection north of the precinct (i.e. the other side of the rail line).

Figure 17 illustrates the existing cycling infrastructure in the vicinity of the site, including separated off-road cycleways, off-road shared paths and low traffic street / bike lanes.

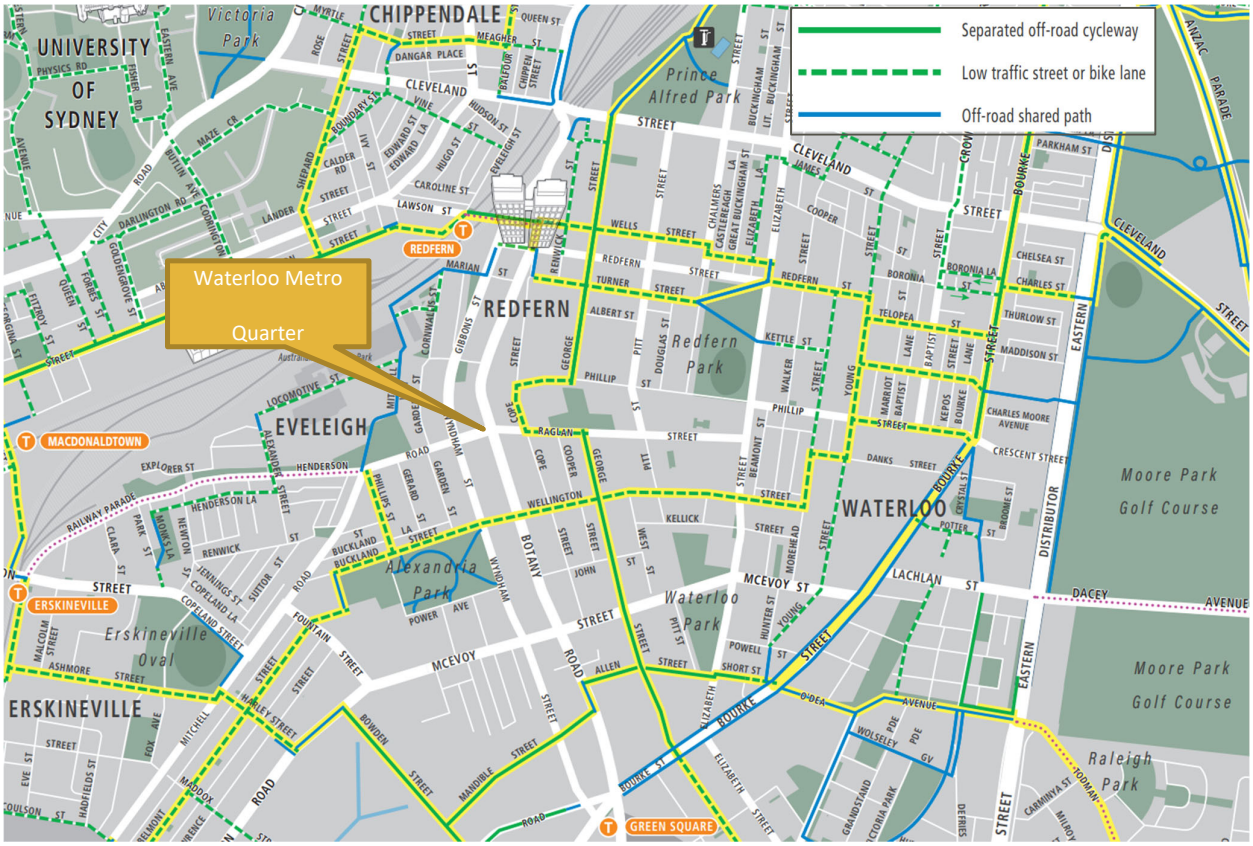


Figure 17 - City of Sydney Cycling Guide and Map April 2020 (Source: City of Sydney, 2020)

The following existing pedestrian facilities are available in the vicinity of the WMQ precinct:

- Signalised pedestrian crossings on all approaches of the intersection of Botany Road / Raglan Street / Henderson Road;
- Signalised pedestrian crossings on all approaches of the intersection of Botany Road / Wellington Street / Buckland Street;
- Marked pedestrian crossing on the north approach of Cope Street / Raglan Street roundabout with refuge islands on all other approaches; and
- Refuge islands on all approaches of Cope Street / Wellington Street roundabout to allow staged pedestrian crossing movements.

8. Construction Traffic Management Plan

8.1 Objective

The traffic management plan associated with the construction activity of the project aims to ensure the safety of all workers and road users within the vicinity of the construction site, with the following primary objectives:

- To minimise the impact of the construction vehicle traffic on the overall operation of the road network;
- To ensure continuous, safe and efficient movement of traffic (pedestrian and vehicular) for both the general public and construction workers;
- Installation of appropriate advance warning signs to inform users of the changed traffic conditions;
- To provide a description of the construction vehicles and the volume of these construction vehicles accessing the construction site; and
- To provide information regarding the changed access arrangements and a description of the proposed external routes for construction vehicles accessing and exiting the site.

8.2 Construction Activities & Program

8.2.1 General Construction Activity

- Construction vehicles will access the site via gates within the frontages to Botany Road, Cope Street and Wellington Street. This will be outlined in Section 8.4.
- Temporary removal of on-street parking in some areas may be required to facilitate construction vehicle access and egress (refer to Section 8.4.2).
- Temporary local closures of footpaths maybe required for infrastructure works to be undertaken (e.g. kerb ramps) and further details of these will be provided at the Construction Stage.
- Work zones are proposed for the construction duration to allow for loading and unloading of materials. This is discussed in Section 8.8.

8.2.2 Construction Phasing

A summary of the anticipated construction time frame for the works is outlined in Table 11. It is noted that the construction stage only applies to the Southern precinct (buildings 3 & 4), whereby various stages of the construction activities associated with other buildings of the OSD may coincide with these periods and activities (refer to individual SSD DA CPTMPs for further details).

Construction Period	Construction Activity	Construction Contractor
Current – September 20221	Waterloo Integrated Station Development	JHG
November 2021 – October 2022	Civil Works	JHG
July 2022 – January 2023	Basement Construction	JHG
November 2022 – September 2024	Building 1 (North)	Mirvac
November 2022 – November 2024	Building 2 (Central)	Mirvac
January 2022 – November 2023	Building 3 & 4 (South)	JHG

Table 11 - Construction Phasing Summary

[1] As identified within the Draft Construction Pedestrian and Traffic Management Plan prepared by John Holland for the Waterloo Integrated Station Development (dated 12/05/2020)

8.2.3 Cumulative Construction Impacts and Mitigation

Cumulative construction activities or Works Zones operating simultaneously between all individual precincts have been considered. Construction for the Southern precinct, other precincts (basement, northern and central) and the Waterloo Integrated Station Development (ISD) will occur simultaneously at one point (i.e. November 2022) despite differing commencement times (refer to SSD 10441 Concept DA Modification CPTMP for details).

The peak truck volumes for the Waterloo ISD is anticipated to occur in June 2021, however this does not coincide with any of the subject OSD construction works.

For the worst-case scenario, peak truck movements associated with the Waterloo ISD, Civil Works and Southern Precinct construction (around January 2022) are:

- Waterloo ISD – 54[2] average daily truck movements
- Civil Works – 20 peak daily truck movements
- Southern Precinct – 66 peak daily truck movements

In light of the above, 140 total daily truck movements are anticipated across the three construction works which equate to approximately 12-13 trucks per hour (or 1 truck per 5 minutes) based on the typical weekly construction hours or work of 11 hours.

Coordination will be undertaken between the two concurrent OSD (Southern Precinct and Basement Car Park) developments to ensure that high construction traffic volume activities (e.g. concrete pours) are undertaken on separate days to reduce the impact on the external road network.

There are no other major developments within 250m of the development site. However, the works are likely to overlap with Waterloo Metro Station development, which is expected to be completed in 2024.

Refer to Section 8.7.4 for further details on the construction traffic generation for all construction stages in the subject OSD SSD DAs and Section 8.8 for all required Works Zones.

8.2.4 Hours of Work

All works, associated with the project will be restricted to the time periods by the SSD Conditions of Consent. It is anticipated that the standard construction hours will likely apply as outlined below (**noting that these times may be subject to change in accordance with the SSD Consent Conditions, as typical City of Sydney construction hours are 7:30am – 3:30pm on Saturdays**):

- Monday to Friday 7:00am – 6:00pm
- Saturdays 7:00am – 3:30pm

[2] Average daily truck movements in the period that coincides with the OSD, as the daily peak movements do not coincide with the subject OSD works

• Sunday or public holidays	No works to be undertaken without prior approval

8.3 General Requirements

In accordance with TfNSW requirements, all vehicles transporting loose materials will have the entire load covered and/or secured to prevent any items, excess dust or dirt particles depositing onto the roadway during travel to and from the site. All subcontractors shall undergo induction by the lead contractor to ensure all procedures are met for all construction vehicles entering and exiting the construction site. The lead contractors will monitor the roads leading to and from the site and undertake all necessary steps to rectify any road deposits caused by construction activity.

Vehicles operating to, from and within the site shall do so in a manner, which does not create unreasonable or unnecessary noise or vibration. No tracked vehicles are required nor permitted on any paved roads. Public roads and access points will not be obstructed by any materials, vehicles, refuse skips or the like, under any circumstances.

The applicant/contractor is required to follow and abide the specific standard requirements for construction management as set out within the City of Sydney Standard Requirements for a Construction Pedestrian and Traffic Management Plan (CPTMP) (refer to Section 11).

8.4 Construction Site Arrangement & Access

The following subsections outline the proposed site layout and access arrangements. It should be noted that the location of structural elements is to be taken into consideration for all truck ingress/egress routes and manoeuvres throughout the site (i.e. column locations in the site and concrete separators in the Wellington Street cycle lane).

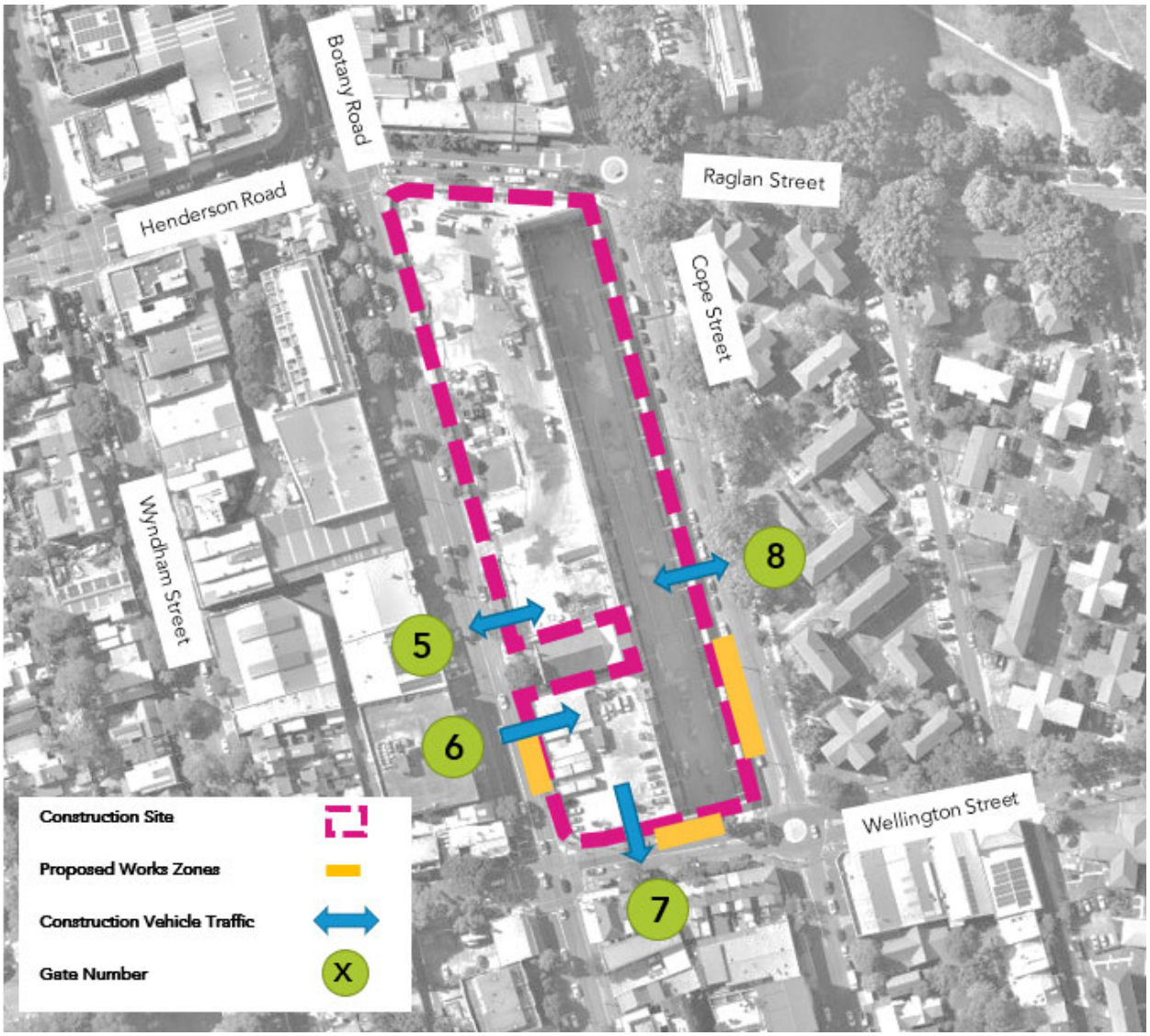
8.4.1 Site Layout and Access Arrangement

Construction vehicles will access the site via gates situated within the frontages to Botany Road, Cope Street and Wellington Street as shown in Figure 18.

Ingress/egress driveways are provided on the three frontages (Botany Road, Cope Street and Wellington Street).

Works Zones are proposed on the Botany Road, Wellington Street and Cope Street frontages as indicated.

Refer to Section 8.8 for further details for each Works Zone.



Note: Site arrangement plan is indicative only and subject to change

Figure 18 – Site Arrangement (Southern DA - JHG)

All vehicles must enter and exit the construction site in a forward direction (unless specific approval for a one-off occasion is obtained from the City's Construction Regulation Unit) as per City of Sydney's standard CPTMP requirements.

Due to the driveway width restriction of a maximum 10m width (comprising a 6m wide crossover plus 2m wings either side), new proposed driveways (i.e. gates 5, 6, 7 & 8) must operate as unidirectional flow at any one time, but able to be utilised for both access and egress.

Considering the above, a swept path assessment has been undertaken for numerous construction vehicles to identify the largest feasible vehicle that can access each gate outlined in Figure 18.

Various route options have also been assessed to demonstrate access and egress. This section should be read in conjunction with the swept path drawings provided in Appendix 14.1 for further information.

Construction traffic and deliveries will need to be appropriately managed on-site to ensure that vehicles enter and exit using the correct gate. Deliveries are to be scheduled to ensure construction vehicles are not marshalled on a public road.

8.4.2 Temporary Removal of On-street Parking

The swept path assessment indicates that in order to facilitate some access or egress manoeuvres (driveway locations and Works Zones), on-street parking would need to be temporarily removed and converted to 'No Stopping' zones to provide adequate manoeuvring area for construction vehicles.

The indicative locations where this is required is summarised in Table 12 and illustrated in Figure 19.

Location	Side of Carriageway	Approx. Loss of On-Street Spaces[3]
Botany Road (between Chapel & Wellington Street)	East	5
Cope Street (between Raglan Street & Wellington Street)	West	3
Cope Street (between Raglan Street & Wellington Street)	East	3
Wellington Street (east of Gate 7)	North	5
Wellington Street (west of Wellington Street/Cope Street roundabout)	South	3

Table 12 – Temporary Removal of On-street Parking Summary

[3] Figures listed in this table are indicative only and may be subject to change. Figures include parking lost due to construction of new construction gates/driveways or proposed Works Zones.

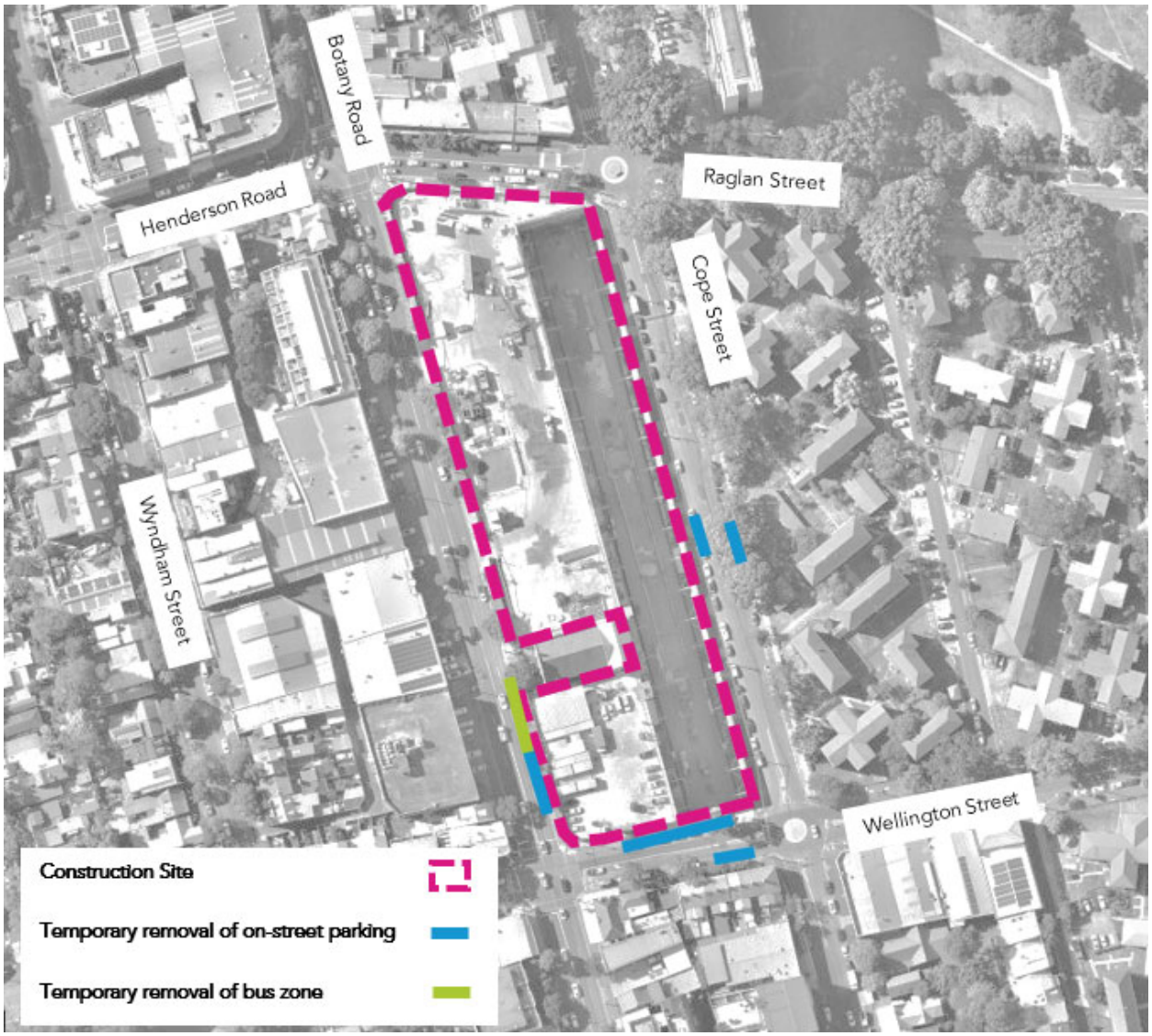


Figure 19 - Temporary Loss of On-street Parking

8.5 Temporary Removal / Relocation of Bus Stop

It is understood that the existing bus stop 'Botany Road at Wellington Street' (Stop ID: 201712) will be removed to facilitate signal works for the development of the Waterloo Integrated Station Development4 and a temporary bus stop replacement will be utilised. A new permanent bus stop location will follow post OSD construction works.

Details will be provided in the detailed CPTMP for the construction stage post consultation (subject SSD DA submission) with TfNSW and STA, containing timing and temporary bus stop location.

No other bus stops will be affected by the subject OSD works. As such, the proposed arrangements in this report will assume this area can be accessible by vehicles during the period of construction.

8.6 Future Intersection Upgrades

It is understood that the existing intersections of Cope Street/Raglan Street and Cope Street/Wellington Street will be upgraded in the future by the Waterloo Station contractor as follows:

- Cope Street/Raglan Street – Existing roundabout will be upgraded to a signalised four-arm intersection; and
- Cope Street/Wellington Street – Existing roundabout will be converted into a four-arm, priority-controlled intersection with Wellington Street being the major road.

In light of these intersection upgrades, the swept path assessment has been undertaken to address the pre-upgrade road configuration as well as the post-upgrade road configuration as outlined in the following sections.

It is understood these upgrade works will occur concurrently with the Basement construction works and be complete prior to North and Central Precinct construction commencement.

[4] As identified within the Draft Construction Pedestrian and Traffic Management Plan prepared by John Holland for the Waterloo Integrated Station Development (dated 12/05/2020)

8.6.1 Pre-Upgrade Road Configuration

The Southern Precinct construction works will coincide with the road upgrade works and remain in progress after the completion of the intersection upgrades.

Prior to the upgrade of the Cope Street intersections, the swept path assessment has identified that augmentation of some refuge islands and roundabouts is required to facilitate access and egress by construction vehicles. Refer to Figure 20 for details of intersections which require modification.

It is understood that the existing bus stop 'Botany Road at Wellington Street' (Stop ID: 201712) will be removed to facilitate signal works for the development of the Waterloo Integrated Station Development[5]. As such, the proposed arrangements in this report will assume this area can be accessible by vehicles during the period of construction.

A dilapidation report may be required to be prepared and submitted to Council prior to commencement of any construction works on-site (refer to commentary Figure 20).

[5] As identified within the Draft Construction Pedestrian and Traffic Management Plan for the Waterloo Integrated Station Development (dated 12/05/2020)

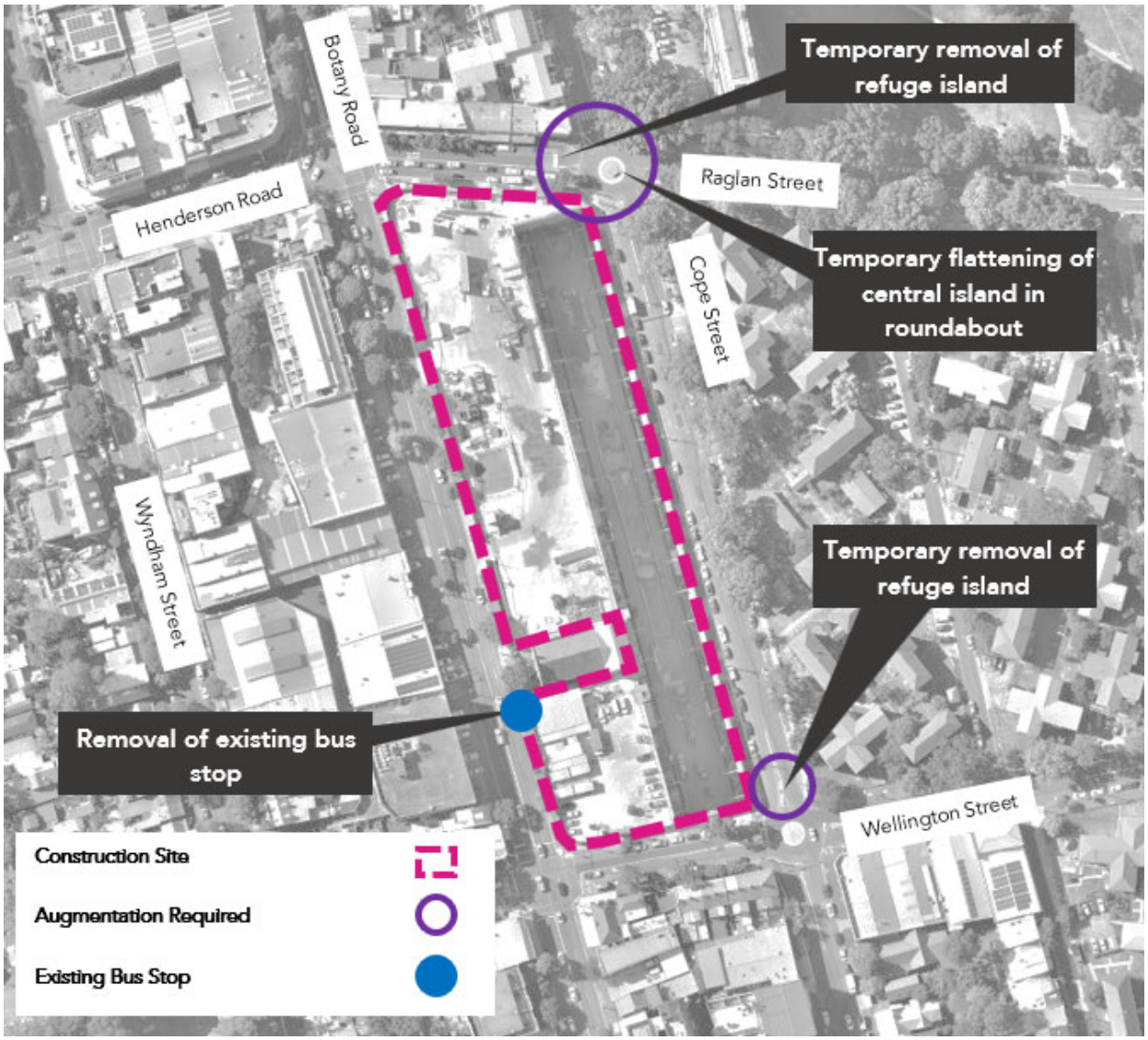


Figure 20 - Temporary Augmentation of Intersections to facilitate Construction Vehicle Access/Egress for southern construction

8.6.2 Post-Upgrade Road Configuration

The Southern Precinct (subject SSD DA) construction works will coincide with the road upgrade works and remain in progress after the completion of the intersection upgrades.

Upon upgrade of the Cope Street intersections, the roadway width will be reduced along Cope Street as part of the Metro development. The swept paths demonstrate that TfNSW accredited traffic controllers will be required by the Waterloo Metro Station contractor to facilitate access and egress of vehicles as vehicles require the full width of the road to perform turning manoeuvres. The traffic controllers will be required to coordinate traffic

movements along Cope Street, Raglan Street and Wellington Street to ensure that non-construction traffic is managed appropriately.

Traffic control plans (TCP) in accordance with the RMS Technical Manual Traffic Control at Work Sites will be prepared to support the traffic access arrangements to advise motorists of any changed traffic conditions within the vicinity of the construction site. These will be prepared as part of the Construction Stage CPTMP detailing the mitigation measures and signage to support the pedestrian and traffic access arrangements.

The approximate/assumed location of the traffic controllers is illustrated in Appendix 14.1.

8.7 Construction Traffic

8.7.1 Construction Vehicle Types

The construction stage of the development proposal will involve the use of a range of construction vehicles including 8.97m concrete agitators, 12.5m Heavy Rigid Vehicles (HRVs), 19m Truck & Dogs and 19m Articulated Vehicles (AVs). The largest anticipated vehicle will be an AV with an overall length of 19m. A swept path assessment has been undertaken to confirm accessibility of construction vehicles to the site (see Appendix 14.1).

Should there be any oversized vehicles required to travel to the construction site, a separate submission shall be submitted to City of Sydney prior to any permitted oversized vehicle activity.

The largest permissible vehicle able to access each gate (excluding Works Zone ingress/egress movements) is summarised in Table 13. It is noted that the vehicle restrictions outlined refer to turning manoeuvres in and out of the access gate (i.e. left-turn access for southbound approach along Botany Road and right-turn access for northbound approach along Botany Road), wherever permitted.

Gate Number	Stage	Largest Vehicle Permissible	
		Left Turn (In / Out)	Right Turn (In / Out)
2	All DAs	Up to 19m Truck & Dog	Up to 19m AV
4	All DAs	Up to 19m Truck & Dog OUTBOUND	Up to 19m AV OUTBOUND
5-	All DAs	Up to 12.5m HRV	Up to 19m AV
6-	Southern DA	Up to 12.5m HRV INBOUND Up to 8.97m Concrete Agitator OUTBOUND	Up to 12.5m HRV
7-	Southern DA	Up to 8.97m Concrete Agitator	Up to 8.97m Concrete Agitator
8-	All DAs	Up to 12.5m HRV*	Up to 19m Truck & Dog INBOUND Up to 12.5m HRV* OUTBOUND

**Requires traffic controllers*

-New access driveway (with maximum 10m width restrictions)

Table 13 – Largest Permissible Vehicle for each access gate

8.7.2 Construction Vehicle Routes

The proposed construction vehicle routes have regard for the surrounding local road network within the vicinity of the construction site.

No queuing or marshalling of trucks is permitted on any public road. The construction vehicle access and egress routes are illustrated in Figure 21 (refer to Appendix 14.1 for further details).

As the construction for the Southern Precinct (subject SSD DA) and the other precincts (Central Precinct, Northern Precinct and Basement Car Park) occur at different stages (i.e. staggered), the cumulative construction vehicle movements will be coordinated to ensure that volume activities (e.g. concrete pours) are undertaken on separate days to reduce impacts on the road network (refer to Section 8.2.3 for further details).

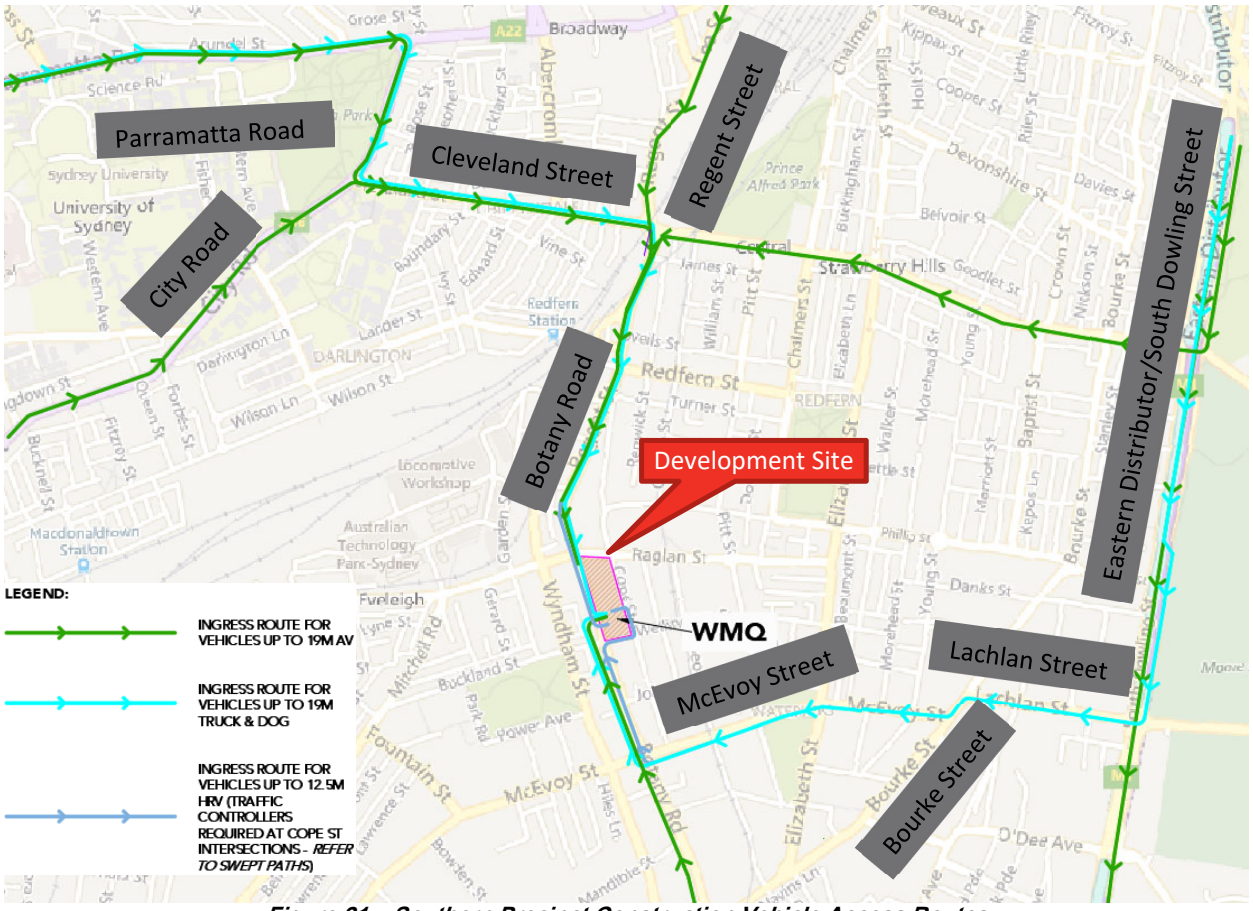


Figure 21 – Southern Precinct Construction Vehicle Access Routes

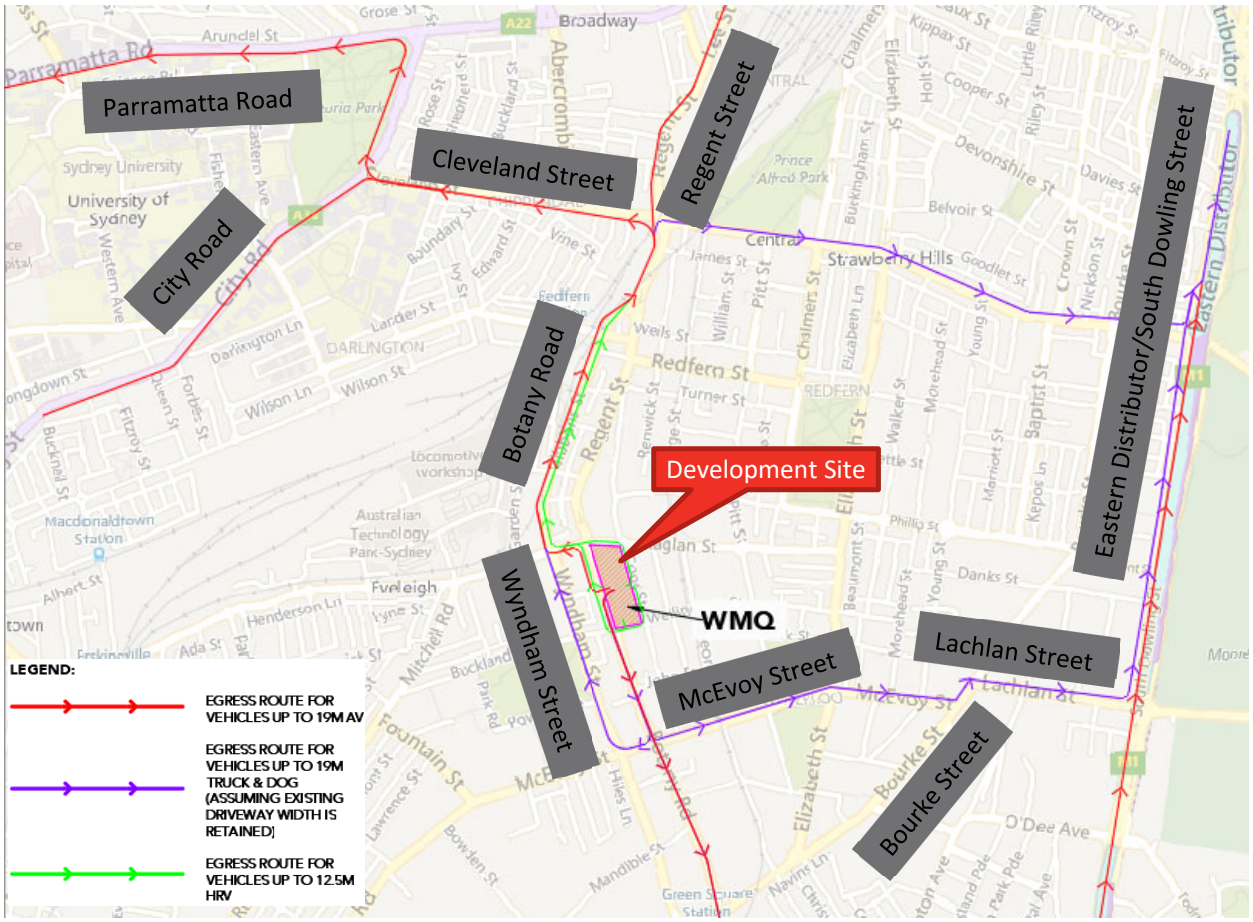


Figure 22 – Southern Precinct Construction Vehicle Egress Routes

It is highlighted that the 19m AV left-turn egress route from the site onto Botany Road (via driveway 4) illustrated in Figure 21 is only feasible if the existing driveway 4 width for construction vehicle access are maintained and are not limited to 10m (inclusive of a 6m crossover and 2m wings either side).

8.7.3 Contingency Routes

In the event that primary access routes outlined in the previous section become unavailable (see Figure 21 and Figure 22), contingency routes have been provided for alternative access to and from the site. The contingency (secondary) routes for construction vehicles originating from the north, south, east and west are summarised in Table 14.

Origin	Ingress Route		Egress Route	
	Primary	Secondary	Primary	Secondary
North	Via Regent St, Botany Rd	Via South Dowling St, Cleveland St, Botany Rd	Via Botany Rd, Henderson Rd, Gibbons St, Regent St	*Via Botany Rd, Wentworth Ave, Southern Cross Dr, ED
South	Via City Rd, Cleveland St, Regent St, Botany Rd	*Via ED, Southern Cross Dr, Wentworth Ave, Botany Rd	Via Botany Rd	Via Botany Rd, McEvoy St, Lachlan St, South Dowling St
East	Via ED, Lachlan St, Bourke St, McEvoy St, Botany Rd	*Via ED, Southern Cross Dr, Wentworth Ave, Botany Rd	Via Botany Rd, McEvoy St, Lachlan St, South Dowling St, ED	*Via Botany Rd, Wentworth Ave, Southern Cross Dr, ED
West	Via Parramatta Rd, City Rd, Cleveland St, Regent St, Botany Rd	Via Anzac Bridge/Western Distributor/A4, Cross City Tunnel, M1, ED, Lachlan St, McEvoy St, Botany Rd	Via Botany Rd, Henderson Rd, Gibbons St, Cleveland St, City Rd, Parramatta Rd	Via Botany Rd, Henderson Rd, Gibbons St, Cleveland St, South Dowling St, ED, Cross City Tunnel, Anzac Bridge

** Limited to outside of School Zone hours only*

Table 14 - Contingency Construction Vehicle Access & Egress Routes

It should be noted that some limitations (i.e. largest truck size permissible on each route) are present for some of the routes as previously mentioned in Section 8.7.2 (refer to Appendix 14.1 for further details).

8.7.3.1 Northbound ingress

Works Zone access on the frontages of Raglan Street and Wellington Street are limited to northbound ingress along Botany Road (via right-turn from Botany Road to Wellington Street, and left-turn onto Cope Street then left-turn onto Raglan Street) for vehicles up to the size of a 12.5m HRV only. It is noted that traffic controllers are required for left-turn vehicles from Wellington Street onto Cope Street (refer to Appendix 14.1 for indicative traffic controller locations where required).

Driveway access into the site on Botany Road permit vehicles up to the size of a 19m AV (right-turn ingress), which is the only possible access route for 19m AVs to enter the site (left-turn southbound ingress cannot be accommodated due to driveway/gate width constraints). It is noted that there is a broken centreline on Botany Road directly outside the driveway locations that require AV movements (i.e. gates 2 and 4).

Driveway access into the site on Wellington Street permit vehicles up to the size of a 12.5m HRV (left-turn ingress).

Driveway access into the site on Cope Street permit vehicles up to the size of a 12.5m HRV (left-turn ingress via Wellington Street). It is noted that traffic controllers are required to facilitate this when the works for the upgraded road layout of Cope Street/Wellington Street intersection is completed.

8.7.3.2 Southbound ingress

Works Zone access on the Botany Road frontage are limited to southbound ingress along Botany Road only, permitting vehicles up to the size of a 19m AV.

Driveway access into the site on Botany Road permit vehicles up to the size of a 19m Truck & Dog vehicle (left-turn ingress), assuming that the driveway widths of the existing gates (2 and 4) are retained.
Driveway access into the site on Cope Street permit vehicles up to the size of a 19m Truck & Dog vehicle (right-turn ingress via Raglan Street only, as left-turn at Wellington Street is not achievable).

Driveway access into the site on Wellington Street will occur via northbound routes.

8.7.4 Construction Traffic Generation

The delivery of materials to and from the site will result in some generated traffic activity associated with the construction works. The estimated construction traffic volumes (incoming from all directions) for the key stages are outlined in Table 15. The final expected truck volumes are to be confirmed in the construction stage by JHG.

SSD	Construction Stage	Longest Vehicle Types	Average no. of Trucks per day	Peak no. of Trucks per day
Southern Precinct	Excavation & Civil Works	N/A	N/A	N/A
	Construction	Up to 19m AV (Works Zone) Up to 19m Truck & Dog (site access)	33	66
	Services & Finishes	Up to 12.5m Heavy Rigid Vehicles (HRV)	20	40
Total			53	106

Table 15 – Estimated Southern Precinct Construction Traffic Volumes

The cumulative truck volumes in conjunction with other SSDs of the OSD have also been taken into consideration and summarised in *Table 16*.

Construction Stage	SSD	Average no. of Trucks per day	Peak no. of Trucks per day
Excavation & Civil Works	Northern Precinct	N/A	N/A
	Central Precinct	N/A	N/A
	Basement Car Park	15	20
	Southern Precinct	N/A	N/A
Subtotal		**15**	**20**
Construction	Northern Precinct	33	66
	Central Precinct	33	66
	Basement Car Park	33	66
	Southern Precinct	33	66
Subtotal		**132**	**264**
Services & Finishes	Northern Precinct	20	40
	Central Precinct	20	40
	Basement Car Park	20	30
	Southern Precinct	20	40
Subtotal		**80**	**150**

Table 16 – Estimated Cumulative Construction Traffic Volumes (per Construction Stage)

It is noted that construction for each SSD will occur at different time periods, with the worst-case scenario being the Basement Car Park and Southern (subject SSD DA) Precinct construction occurring concurrently and followed by the Northern Precinct and Central Precinct Construction.

The Waterloo ISD works also coincide with the Civil Works and Southern Precinct construction works, however, the total truck volumes anticipated are lower than the worst-case scenario (refer to Section 8.2.2 for further details).

In light of this, the worst-case scenario would be during the construction stage when the peak daily truck volumes estimate to be 132 trips. This results in 12 truck movements per hour (or 1 truck every 5 minutes) assuming the typical hours of work for weekdays being 11 hours (refer to Section 8.7.2), which will not necessarily arrive via the same

route as trucks will be arriving via the north, south, east or west (refer to Section 8.7.2 for truck routes).

As such, it is not anticipated that the daily truck volumes for the concurrent construction stages will have any adverse impacts on the road network.

8.8 Works Zones

The following subsections outline the proposed locations of the Works Zones on Botany Road, Cope Street and Wellington Street. A swept path assessment has been undertaken to demonstrate the manoeuvring for the largest vehicle in and out of the proposed Works Zones (refer to Appendix 14.1).

The proposed locations of the Works Zones will be accommodated by the proposed removal / relocation of street furniture (e.g. lighting poles, trees etc.) as part of the public domain/infrastructure upgrade works which will occur simultaneously with the subject construction works.

Refer to Section 9.2 for the recommended pedestrian management measures.

8.8.1 Building 3 and 4 (Southern) Construction Works

The following outlines the proposed Works Zone options which are proposed for the southern construction works associated with the southern buildings (Buildings 3 and 4).

As the Works Zone will be occupying the footpaths, appropriate pedestrian diversion measures will be required to be implemented in accordance with the RMS Traffic Control to Work Sites Technical Manual.

8.8.1.1 Botany Road (Option 1 – Works Zones occupying kerbside lane)

Works Zones is proposed on Botany Road between Gate 6 and Wellington Street (for vehicles up to 12.5m HRVs). The Works Zones will occupy the kerbside lane on the eastern side of Botany Road and is approximately 23m long.

Due to the existing Clearways which are imposed along Botany Road, the permitted operating times of the Works Zone will be restricted to the standard City of Sydney construction hours and periods outside the existing Clearway times being:

- Mondays to Fridays 10am – 3pm; and
- Saturdays 7:30am – 3:30pm.

8.8.1.2 Botany Road (Option 2 – Works Zones occupying footpath)

The alternative option for the Botany Road Works Zone is to occupy the footpath along the eastern side of Botany Road between Gate 5 and Gate 6 (for vehicles up to 12.5m HRV). The length of the proposed Works Zone is 17m. This option will require consultation between construction contractors, the Waterloo Congregational Church and Council to arrange a suitable alternative pedestrian access arrangement for patrons.

As the Works Zone will be occupying the footpath, appropriate pedestrian diversion (i.e. partially within the site via under the building or out onto the roadway with temporary partial lane closure) measures will be required to be implemented in accordance with the RMS Traffic Control to Work Sites Technical Manual.

8.8.1.3 Wellington Street

Due to the constraints of the narrow roadway on Wellington Street, a feasible option for the Works Zone is to occupy the footpath between Gate 7 and Cope Street, while maintaining the required No Stopping zone on approach to the Wellington Street/Cope Street intersection. The Works Zone is proposed to be approximately 27m in length and can accommodate vehicles up to 12.5m HRVs.

As the Works Zone will be occupying the footpath, appropriate pedestrian diversion measures will be required to be implemented in accordance with the RMS Traffic Control to Work Sites Technical Manual.

It is highlighted that an existing power pole adjacent to Gate 7 will be required to be relocated in order to accommodate the Works Zone within the footpath.

8.8.1.4 Cope Street

A Works Zone is proposed on the western side of Cope Street between Wellington Street and Gate 8 (for vehicles up to 12.5m HRV). The length of the proposed Works Zone is approximately 49m, remaining clear of the No Stopping zone at the corner of Cope and Wellington Streets.

As the Works Zone will also be occupying the footpath, appropriate pedestrian diversion measures will be required in accordance with the RMS Traffic Control to Work Sites Technical Manual.

9. Pedestrian Management Plan

9.1 Objective

The pedestrian management plan associated with the construction activity of the project aims to establish a safe pedestrian and cyclist environment in the vicinity of the construction site with the following objectives:

- To minimise the impact of the construction works on pedestrian and cyclist activity in the local network;
- To ensure continuous, safe and efficient movement of pedestrian and cyclists for both the general public and workers;
- Installation of appropriate advance warning signs to inform pedestrians and cyclists of the changed footpath conditions; and
- To provide information regarding dedicated pedestrian thoroughfare during the construction of the footpaths along the site frontage.

9.2 Pedestrian Management

During the construction of the development, Works Zones are required on Botany Road, Cope Street and Wellington Street frontages to facilitate loading and unloading of materials for construction vehicles (refer to Section 8.8 for further details of the proposed Works Zones).

For mitigation measures on impacts to pedestrian safety, partial closures of the footpath and/or diversion of pedestrians will be required and are outlined in the following subsections.

Traffic control plans (TCP) in accordance with the RMS Technical Manual Traffic Control at Work Sites will be prepared as part of the Construction Stage CPTMP detailing the mitigation measures and signage to support the pedestrian access arrangements.

The proposed alternative pedestrian access routes during construction are illustrated in Figure 23 (refer to Appendix 14.2.

Figure 23 - Pedestrian diversion routes

9.2.1 Botany Road

Due to the required Works Zones and multiple vehicular access and egress gates on the eastern side of Botany Road, it is proposed to close the footpath between Raglan Street and the Waterloo Congregational Chapel to eliminate the interaction between heavy vehicle movements, vehicle unloading activities and pedestrians. As such, this will require partial closure of the footpath along the western frontage of the construction site between Raglan Street and the Waterloo Congregational Chapel. Appropriate pedestrian diversion measures will be implemented to safely guide pedestrians across Botany Road to maintain pedestrian safety.

Pedestrians will require guidance (via appropriate signage) to the nearest pedestrian crossings. The nearest pedestrian crossing facilities on Botany Road are at the traffic signals located at the intersections of Botany Road/Raglan Street and Botany Road/Wellington Street. As such, pedestrians are able to be safely redirected to the footpath on the western side of Botany Road by using the signalised pedestrian crossings. Alternatively, pedestrians can utilise the pedestrian facilities on Cope Street.

Pedestrian access to the Waterloo Congregational Chapel and the bus stop will be maintained with the footpath between the chapel and Wellington Street remaining open or locally diverted. As such, no Works Zone will occupy the Botany Road frontage directly outside the Waterloo Congregational Chapel to minimise impacts to parking for the chapel and pedestrian access.

It should be noted however, that there is a Works Zone (approximately 23m long, accommodating up to 12.5m HRVs) required on Botany road between Gate 6 and

Wellington Street. This will either occupy the kerbside (option 1) or kerbside lane, whilst ensuring pedestrian access to the chapel is retained and facilitated safely.

9.2.2 Raglan Street

No Works Zones are required on Raglan Street as part of this (Southern) SSD DA, however it is recommended for pedestrian diversion measures to be implemented to separate pedestrian and heavy vehicle interactions related to the Basement/Northern/Central SSD DAs (refer to SSD 10438, SSD 10439 & SSD 10440 CPTMPs for details).

Pedestrians will require guidance (via appropriate signage) to the nearest pedestrian crossings. The nearest pedestrian crossing facilities are located at the traffic signals located at the intersections of Botany Road/Raglan Street and Cope Street/Raglan Street. As such, pedestrians are able to be safely redirected to the footpath on the northern side of Raglan Street by using the signalised pedestrian crossings.

9.2.3 Wellington Street

The proposed Works Zone on Wellington Street will occupy the footpath on the northern side of the carriageway. As such, this will require the closure of the northern footpath on Wellington Street and pedestrian diversion measures will need to be implemented (to be further detailed in the Construction CPTMP) to guide pedestrians to use the alternate footpath on the southern side of Wellington Street.

Pedestrians will require guidance (via appropriate signage) to the nearest pedestrian crossings. The nearest pedestrian crossing facilities are located at the signalised intersection of Botany Road/Wellington Street and the priority intersection of Wellington Street/Cope Street. As such, pedestrians are able to be safely redirected to the footpath on the southern side of Wellington Street.

9.2.4 Cope Street

The proposed Works Zone on Cope Street will occupy the footpath on the western side of the carriageway. As such, this will require the closure of the western footpath on Cope Street to separate pedestrian movements from the Cope Street frontage of the construction site as a method of eliminating the pedestrian and heavy vehicle interaction at Gate 8.

Pedestrians will be diverted to the eastern side of Cope Street via the pedestrian crossings provided at the intersections of Raglan Street/Cope Street and Wellington Street/Cope Street.

9.3 Cyclist Management

The existing cycling infrastructure in the development site vicinity is predominantly in the form of on-road environments (shared with other users) with a partial cycle lane commencing on the southern side of Wellington Street connecting to Buckland Street.

A Works Zone is proposed on the northern side of Wellington Street which will occupy the footpath. As there are no existing cycleways on the northern side, it is anticipated there will be minimal impacts to the existing cycle network in the site vicinity.

As such, there are no closures of any existing cyclist links for the proposed OSD construction works required. Should this subject to change, temporary replacement/diversion facilities are to be provided to provide comparable level of safety and convenience.

For mitigation measures, all staff and subcontractors engaged on site are required to undergo a site induction, which will include the need to exercise due care with regard for pedestrian and cyclist safety in the site vicinity during site access/egress manoeuvres (see Section 10.6 for further details).

10. Other Considerations

10.1 Stakeholders

Stakeholders shall be identified and informed of the proposed works upon commencement of construction activities. Stakeholders identified as listed as the following:

- City of Sydney Council;
- Transport for NSW (TfNSW – formerly RMS); and
- Local residents and employees.

10.2 Traffic Control Measures

For all events requiring traffic control measures, a Traffic Control Plan (TCP) will be prepared and finalised by the traffic management contractor and submitted separately. All TCPs shall be developed in accordance with relevant Australian standards and the RMS Traffic Control at Work Sites Guidelines.

It is noted that all traffic controllers engaged are required to be accredited by TfNSW, and to act in accordance with TfNSW and City of Sydney conditions, such as:

- No stopping of traffic on public roads;
- No stopping of pedestrians on footpaths; and
- No marshalling or queuing of trucks shall be permitted on public roads.

Based on a high-level assessment of the vehicular access arrangements, traffic controllers are required at the following locations to coordinate traffic movements:

- Cope Street/Raglan Street;
- Cope Street/Wellington Street; and
- Gate 8 driveway for left-turn truck ingress (if required).

Details of the approximate traffic controller locations are illustrated in Appendix 14.1.

Traffic Controllers are to be provided by the Contractor completing the road/footpath works and/or whose activities are reducing normal operations of the road network.

Traffic control plans (TCP) in accordance with the RMS Technical Manual Traffic Control at Work Sites will be prepared to support the traffic access arrangements to advise motorists of any changed traffic conditions within the vicinity of the construction site. These will be prepared as part of the Construction Stage CPTMP detailing the mitigation measures and signage to support the pedestrian and traffic access arrangements.

10.3 Special Deliveries

Any oversized vehicle (including mobile cranes) that are required to travel to the site will be dealt with separately, with the submission of required permits to and subsequent approval by Council prior to any delivery. Requests shall be submitted 28 days prior to the scheduled date of use of an oversized vehicle.

10.4 Construction Staff Parking Strategy

Due to site constraints, there will be limited parking available for staff. All site personnel are advised to not park on street parking within the vicinity of the development site. To minimise parking demand, all construction workers and contractors are encouraged to carpool (wherever practical) or to travel to the construction site via public transport. Personnel will be informed of the bus and train services readily available, connecting neighbouring suburbs to the site vicinity.

10.5 Work Site Security

The works site shall be fully bounded with barriers to restrict unauthorised pedestrian access. When not in use, the site shall be appropriately secured outside of work hours.

10.6 Induction

All staff and subcontractors engaged on site will be required to undergo a site induction. The induction will include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, OH&S, driver protocols and emergency procedures. Staff and subcontractors are to exercise due care in the vicinity of the site in relation to other road users (i.e. pedestrians and cyclists). Additionally, the lead contractor will advise workers of public transport and car-pooling opportunities.

10.7 Emergency Vehicle Access

Any proposed road closures will require approval from Council and shall retain access for emergency vehicles. Appropriate traffic management measures (such as traffic controllers) are to be implemented to ensure access is maintained to closed roads in the event of an emergency.

10.8 Access to Adjoining Properties

Access to all adjoining properties is to be maintained throughout the works. The adjacent land owners will be notified of works via letter box distribution and road signage to advised of anticipated truck movements in operation with access to adjoining properties being maintained at all times.

10.9 Occupational Health & Safety

Any workers required to undertake works or traffic control within the public domain shall be suitably trained and will be covered by adequate and appropriate insurances. All traffic control personnel will be required to hold TfNSW accreditation in accordance with Section 8 of Traffic Control at Worksites.

10.10 Independent Road Safety Audits

Independent road safety audits will be conducted by a suitably qualified consultant in due course when required in further design development involving road operations and traffic issues, cognisant of all road users.

10.11 Contact Details for On-Site Enquiries & Site Access

On-site enquiries and requests for site access may be directed to the following site personnel:

Contact name	Role & Company	Contact Number
Robert Le Lievre	Project Manager John Holland Group	0451 044 876

11. Green Travel Plan

The purpose of this section of the preliminary CPTMP is to outline the transport options and arrangements associated with the construction workforce, which seek to reduce the use of vehicles travelling to and from the site.

The preliminary CPTMP forms part of the consultation process with the Sydney Coordination Office (SCO), City of Sydney and TfNSW via the DA submission. This Green Travel Plan indicates that public transport for construction workers is encouraged and details the measures in place to monitor and manage the uptake of sustainable travel options. It is envisaged that this Plan will be reviewed and amended accordingly in the detailed CPTMP to address comments raised during this consultation process.

Workers who require a vehicle to transport tools and equipment will also be managed and detailed in this section.

11.1 Staff Induction

All staff and subcontractors engaged on site will be required to undergo a site induction. The induction will include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, OH&S, driver protocols and emergency procedures. Additionally, the lead contractor will advise workers of public transport and car-pooling opportunities.

11.2 Public Transport

This section outlines public transport accessibility to the site, which may be utilised by construction staff over the project duration. Staff inductions (see above) will include information on the available travel options that staff may take to access the site.

The locality has been assessed in relation to the available public transport options that may serve the various users of the development site. This assessment considered the NSW Planning Guidelines for Walking and Cycling (2004), which suggests that a distance of 400-800m is a walkable catchment and 1,500m is a cycling catchment when the development is within proximity to public transport.

The various public transport options include:

- Bus services – Directly outside the site along Botany Road or Cope Street
- Train services – approximately 650 metres from the site
- Metro services (from 2024) – Waterloo Station below the site
- Cycling – existing on-road cycling conditions in the immediate site vicinity

11.2.1 Trains

The site is located within 650 metres (8-minute walk) from Redfern Station (to the north) and 900 metres (12-minute walk) from Green Square Station (to the south).

Redfern is a major transport interchange servicing the Sydney Metropolitan area providing frequent train services seven days a week. Services operating from Redfern and Green Square stations offer the following railway line coverage:

- T1 – North Shore & Western Line
- T2 – Inner West & Leppington Line
- T3 – Bankstown Line
- T4 – Eastern Suburbs & Illawarra Line
- T8 – Airport & South Line
- T9 – Northern Line

Refer to Section 7.2.1 for further details.

11.2.2 Metro

Waterloo Metro Station is expected to commence operation in 2024, which will provide a convenient public transport option for construction workers attending the construction site. It is noted that this is unlikely to be an option for Southern Precinct construction workers, given that the station will be not be in operation until 2024 (Southern Precinct construction works are anticipated to be completed by 2023).

Refer to Section 7.2.2 for further details.

11.2.3 Bus

A number of bus routes operate in the vicinity of the development site, including a bus stop on the eastern side (southbound) of Botany Road directly outside the site frontage (Stop ID 201712: Botany Road at Wellington Street) and a bus stop on the western side (northbound) of Botany Road across the road (Stop ID 201529: Botany Road before Henderson Road).

Alternatively, there are two bus stops located on the eastern side of Cope Street at Raglan Street (Stop ID 201772) and at Wellington Street (Stop ID 201773).

Refer to Section 7.2.3 for further details.

11.2.4 Cycling and Walking

Existing cycling infrastructure in the development site vicinity is predominantly in the form of on-road environments (shared with other users) with a partial cycle lane commencing on the southern side of Wellington Street connecting through to the southern side of Buckland Street (westbound across Botany Road).

Pedestrian facilities providing amenity is available in the vicinity of the development site including:

- Signalised pedestrian crossings on all approaches of the intersection of Botany Road / Raglan Street / Henderson Road;
- Signalised pedestrian crossings on all approaches of the intersection of Botany Road / Wellington Street / Buckland Street;
- Marked pedestrian crossing on the north approach of Cope Street / Raglan Street roundabout with refuge islands on all other approaches; and
- Refuge islands on all approaches of Cope Street / Wellington Street roundabout to allow staged pedestrian crossing movements.

Refer to Section 7.3.1 for further details.

11.3 Staff Parking

Due to site constraints, there will be limited parking available for staff on-site. All site personnel are advised to not park on street parking within the vicinity of the development site. To minimise parking demand, all construction workers and contractors are encouraged to carpool (wherever practical) or to travel to the construction site via public transport. Personnel will be informed of the bus and train services readily available, connecting neighbouring suburbs to the site vicinity.

12. Council CPTMP Requirements

The applicant or contractor undertakes to follow and abide by the following requirements at all times during the demolition, excavation and construction works at the Waterloo Metro Quarter.

Refer to Section 8.3

1 Details of roads that may be excluded from use by construction traffic i.e. roads with load limits, quiet residential streets or access/turn restricted streets – site specific.

Refer to Section 8.7.2

2 The approved truck route plan shall form part of the contract and must be distributed to all truck drivers.

Refer to Section 8.7.2

3 All vehicles must enter and exit the site in a forward direction (unless specific approval for a one-off occasion is obtained from the City's Construction Regulation Unit).

4 Trucks are not allowed to reverse into the site from the road (unless specific approval for a one-off occasion is obtained from the City's Construction Regulation Unit).

Refer to Section 8.4.1 & Section 8.7.1

5 The Applicant must provide the City with details of the largest truck that will be used during the demolition, excavation and construction.

Refer to Section 8.7.1

6 Oversize and over-mass vehicles are not allowed to travel on Local Roads (unless approval for a one-off occasion is obtained from the City's Traffic Operations Unit). Requests to use these vehicles must be submitted to the City 28 days prior to the vehicle's scheduled travel date. For more information please contact the National Heavy Vehicle Regulator (NHVR) on 1300 696 487 or www.nhvr.gov.au.

Refer to Section 8.7.1

7 No queuing or marshalling of trucks is permitted on any public road.

Refer to Section 10.2

8 Any temporary adjustment to Bus Stops or Traffic Signals will require the Applicant to obtain approval from the STA and RMS respectively prior to commencement of works.

Refer to Section 8.5

9 All vehicles associated with the development shall be parked wholly within the site. All site staff related with the works are to park in a designated off-street area or be encouraged to use public transport and not park on the public road.

Refer to Section 10.4 and Section 11.3

10 All loading and unloading must be within the development site or at an approved "Works Zone".

Refer to Section 8.4 and 8.8

11 The Applicant must apply to the RMS TMC to organise appropriate approvals for Work Zones and road closures.

Refer to Section 8.8

12 The Applicant must apply to the City's Construction Regulations Unit to organise appropriate approvals for partial road closures.

13 The Applicant must apply to the Transport for NSW's Transport Management Centre for approval of any road works on State Roads or within 100m of Traffic Signals and receive an approved Road Occupancy Licence (ROL). A copy of the ROL must be provided to the City.

14 The Applicant must apply to the City's Construction Regulations Unit to organise appropriate approvals for temporary driveways, cranes and barricades etc.

Refer to Section 8.4

15 The Applicant must comply with development consent for hours of construction.

Refer to Section 8.2.4

16 All Traffic Control Plans associated with the CPTMP must comply with the Australian Standards and Roads and Maritime Services (RMS) Traffic Control at Work Sites Guidelines.

Refer to Section 10.2

17 Traffic Controllers are NOT to stop traffic on the public street(s) to allow trucks to enter or leave the site. They MUST wait until a suitable gap in traffic allows them to assist trucks to enter or exit the site. The Roads Act does not give any special treatment to trucks leaving a construction site - the vehicles already on the road have right-of-way.

Refer to Section 10.2

18 Pedestrians may be held only for very short periods to ensure safety when trucks are leaving or entering BUT you must NOT stop pedestrians in anticipation i.e. at all times the pedestrians have right-of-way on the footpath not the trucks.

Refer to Section 10.2

19 Physical barriers to control pedestrian or traffic movements need to be determined by the City's Construction Regulations Unit prior to commencement of work.

20 The Applicant must obtain a permit from the City's Construction Regulation Unit regarding the placing of any plant/equipment on public ways.

21 The Applicant must apply to the City's Building Compliance Unit to organise appropriate approvals for hoarding prior to commencement of works.

Refer to Section 10.5

22 The CPTMP is for the excavation, demolition and construction of building works, not for road works (if required) associated with the development. Any road works will require the Applicant or the contractor to separately seek approval from the City and/or RMS for consideration. Also WorkCover requires that Traffic Control Plans must comply with Australian Standards 1742.3 and must be prepared by a Certified Traffic Controller (under RMS regulations).

23 Please note that the provision of any information in this CPTMP will not exempt the Applicant from correctly fulfilling all other conditions relevant to the development consent for the above site.

13. Summary

This preliminary CPTMP has been prepared for the construction of the subject development site within the Waterloo Metro Quarter. This report outlines the construction process associated with the DA application, as well as the construction traffic management and mitigation measures to improve and regulate the safety of pedestrians, cyclists, motorists and workers within the vicinity of the construction site.

This preliminary report addresses the relevant Conditions of Consent (B16 and B21) for the original concept SSD 9393 approval, and the relevant SEARs requirements and details the mitigation and contingency measures for potential construction impacts due to heavy vehicle movements. Cumulative truck movements of concurrent stages have also been taken into consideration and discussed in this document.

It is envisaged that this document will be continually reviewed and amended if required, in the event of changes to design, the surrounding road network, or additional requirements of City of Sydney Council, TfNSW or any other authority.

14. Appendices

14.1 Swept Path Assessments

comments

A3

LEGEND:

INGRESS ROUTE FOR VEHICLES UP TO 19M AV

INGRESS ROUTE FOR VEHICLES UP TO 19M TRUCK & DOG

INGRESS ROUTE FOR VEHICLES UP TO 12.5M HRV

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

ptc.

Suite 502, 1 James Place
North Sydney NSW 2060

t +61 2 8920 0800

ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	09/07/20	FOR INFORMATION	SC	SW
3	-	NOT ISSUED	-	-
2	-	NOT ISSUED	-	-
1	-	NOT ISSUED	-	-

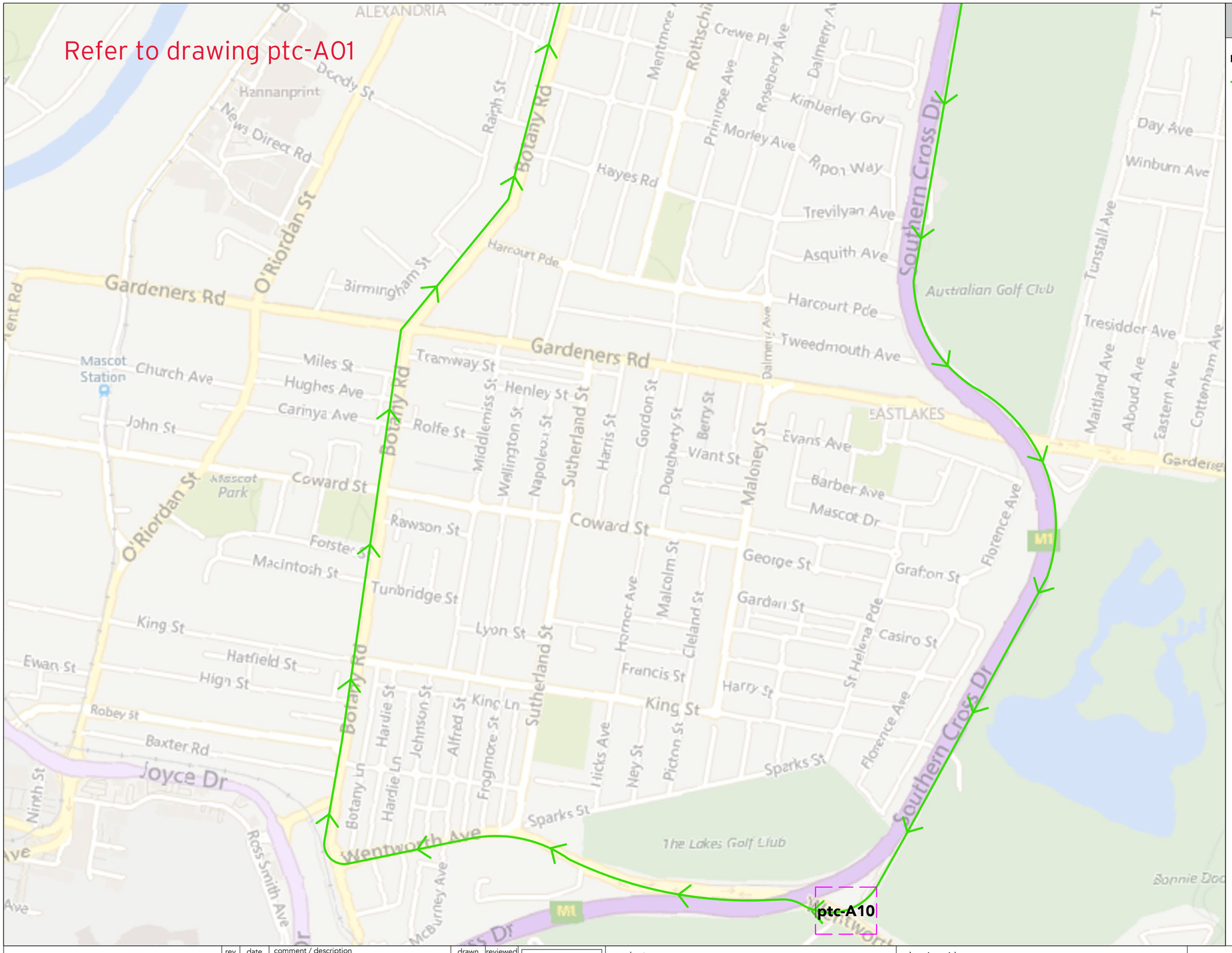
project
WATERLOO METRO QUARTER

drawing title
OVERALL TRUCK ROUTE DIAGRAM
INGRESS ROUTES

client	MIRVAC
drawing #	ptc-A00
project #	2789A
scale	1 : 10000

rev 5

Refer to drawing ptc-A01



comments

A3

LEGEND:

INGRESS ROUTE FOR VEHICLES UP TO 19M AV

NOTE:
INGRESS/EGRESS ROUTE VIA WENTWORTH PARADE/BOTANY ROAD SHALL OCCUR OUTSIDE OF SCHOOL ZONE HOURS - MULTIPLE SCHOOLS LOCATED ALONG BOTANY ROAD.

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	09/07/20	FOR INFORMATION	SC	SW
3	-	NOT ISSUED	-	-
2	-	NOT ISSUED	-	-
1	-	NOT ISSUED	-	-

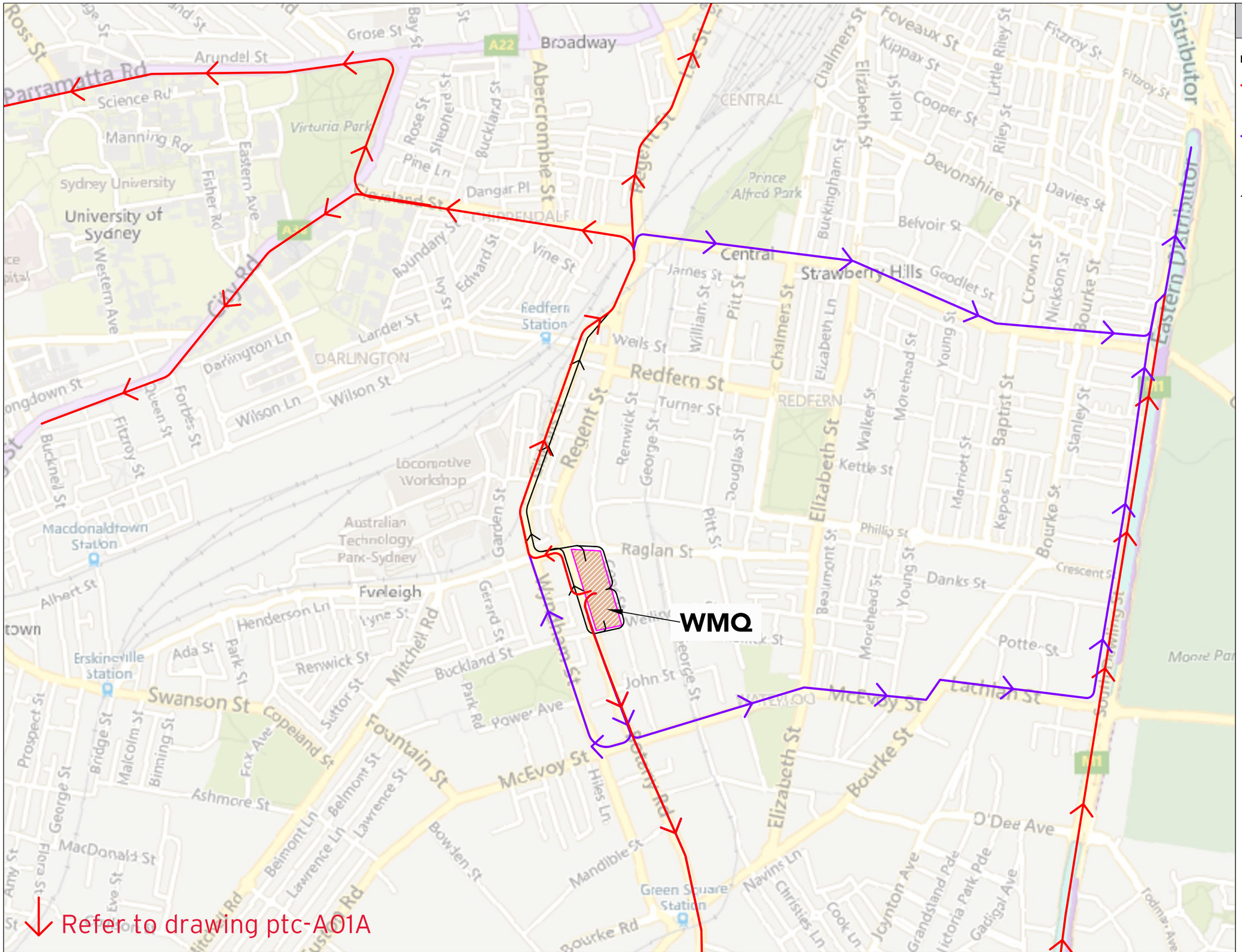
project
WATERLOO METRO QUARTER

drawing title
OVERALL TRUCK ROUTE DIAGRAM

INGRESS ROUTES

client	MIRVAC
drawing #	ptc-A00A
project #	2789A
scale	1 : 10000

rev 5



comments

A3

LEGEND:

- EGRESS ROUTE FOR VEHICLES UP TO 19M AV
- EGRESS ROUTE FOR VEHICLES UP TO 19M TRUCK & DOG
- EGRESS ROUTE FOR VEHICLES UP TO 12.5M HRV

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	09/07/20	FOR INFORMATION	SC	SW
3	18/06/20	FOR INFORMATION	SC/HL	SW
2	09/06/20	FOR INFORMATION	SC/HL	SW
1	29/05/20	FOR INFORMATION	HL	SW

project
WATERLOO METRO QUARTER

drawing title
OVERALL TRUCK ROUTE DIAGRAM

EGRESS ROUTES

client	MIRVAC
drawing #	ptc-A01
project #	2789A
scale	1 : 10000

rev 5

Refer to drawing ptc-A01

comments

A3

LEGEND:

EGRESS ROUTE FOR VEHICLES UP TO 19M AV

NOTE:
INGRESS/EGRESS ROUTE VIA WENTWORTH PARADE/BOTANY ROAD SHALL OCCUR OUTSIDE OF SCHOOL ZONE HOURS - MULTIPLE SCHOOLS LOCATED ALONG BOTANY ROAD.

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	09/07/20	FOR INFORMATION	SC	SW
3	-	NOT ISSUED	-	-
2	-	NOT ISSUED	-	-
1	-	NOT ISSUED	-	-

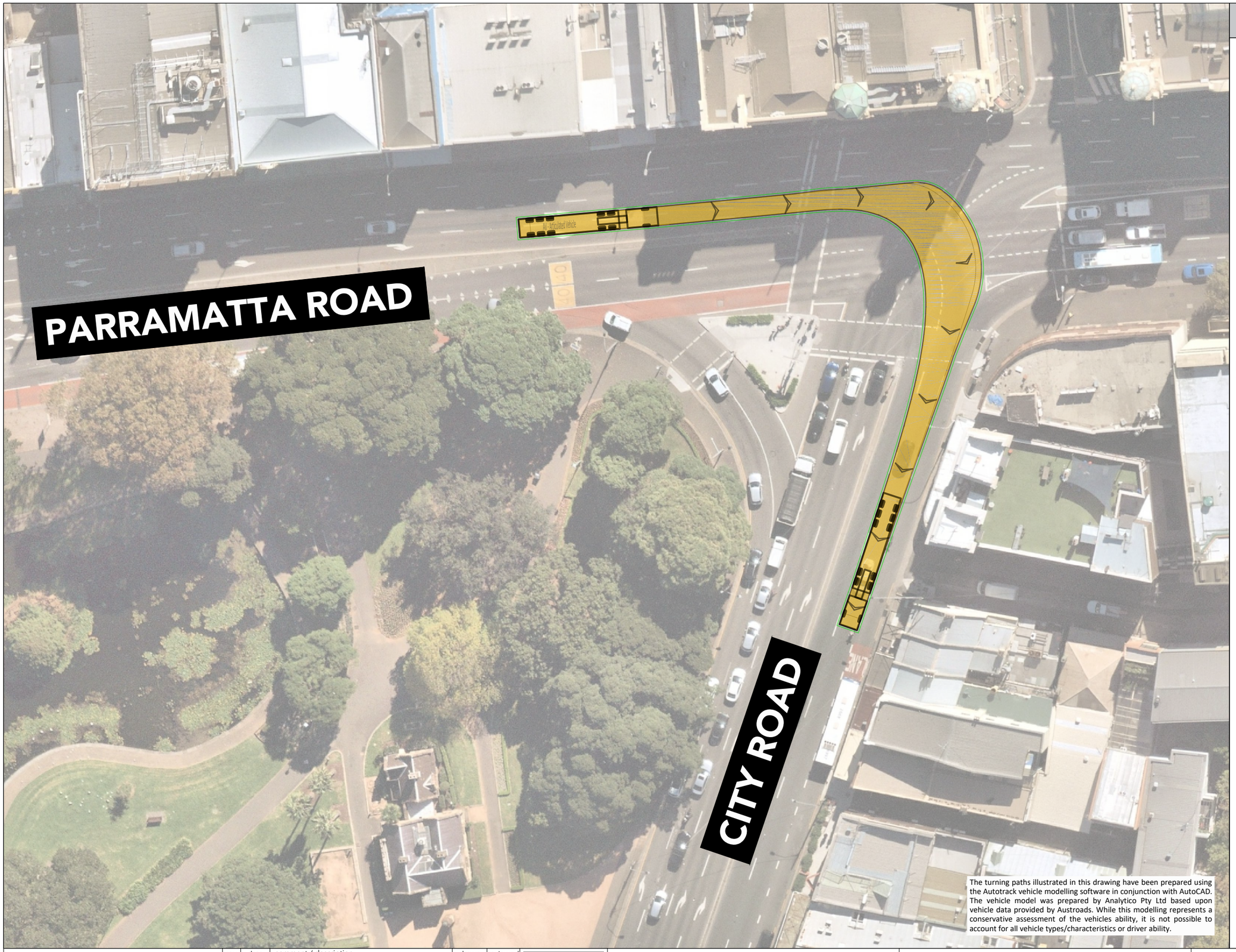
project
WATERLOO METRO QUARTER

drawing title
OVERALL TRUCK ROUTE DIAGRAM

EGRESS ROUTES

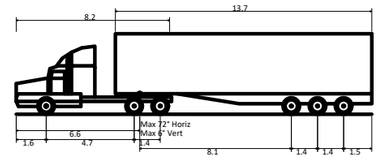
client	MIRVAC
drawing #	ptc-A01A
project #	2789A
scale	1 : 10000

rev 5



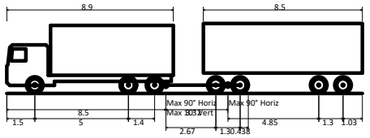
comments

A3



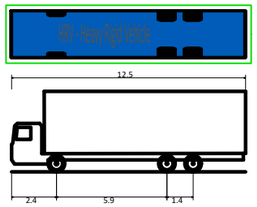
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



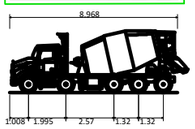
19M TRUCK AND DOG

Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



Mack 10x4 Concrete Agitator

Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	09/07/20	FOR INFORMATION	SC	SW
3	18/06/20	FOR INFORMATION	HL/SC	SW
2	09/06/20	FOR INFORMATION	HL/SC	SW
1	29/05/20	FOR INFORMATION	HL	SW

project
WATERLOO METRO QUARTER

drawing title
TRUCK ROUTE DIAGRAM
INTERSECTION OF PARRAMATTA ROAD / CITY ROAD
19M ARTICULATED VEHICLE ACCESS ROUTE

client	MIRVAC & JOHN HOLLAND
drawing #	ptc-A02
project #	2789A
scale	1 : 500

rev 5

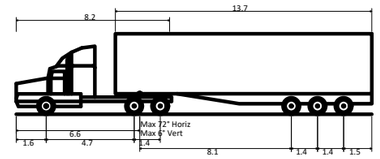
CITY ROAD

CLEVELAND STREET

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

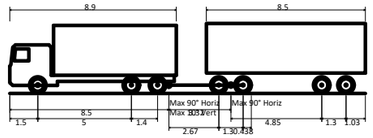
comments

A3



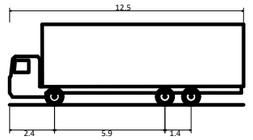
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



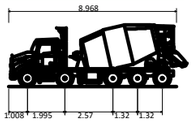
19M TRUCK AND DOG

Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



Mack 10x4 Concrete Agitator

Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.

Suite 502, 1 James Place
North Sydney NSW 2060

t +61 2 8920 0800

ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	09/07/20	FOR INFORMATION	SC	SW
3	18/06/20	FOR INFORMATION	HL/SC	SW
2	09/06/20	FOR INFORMATION	HL/SC	SW
1	29/05/20	FOR INFORMATION	HL	SW

project

WATERLOO METRO QUARTER

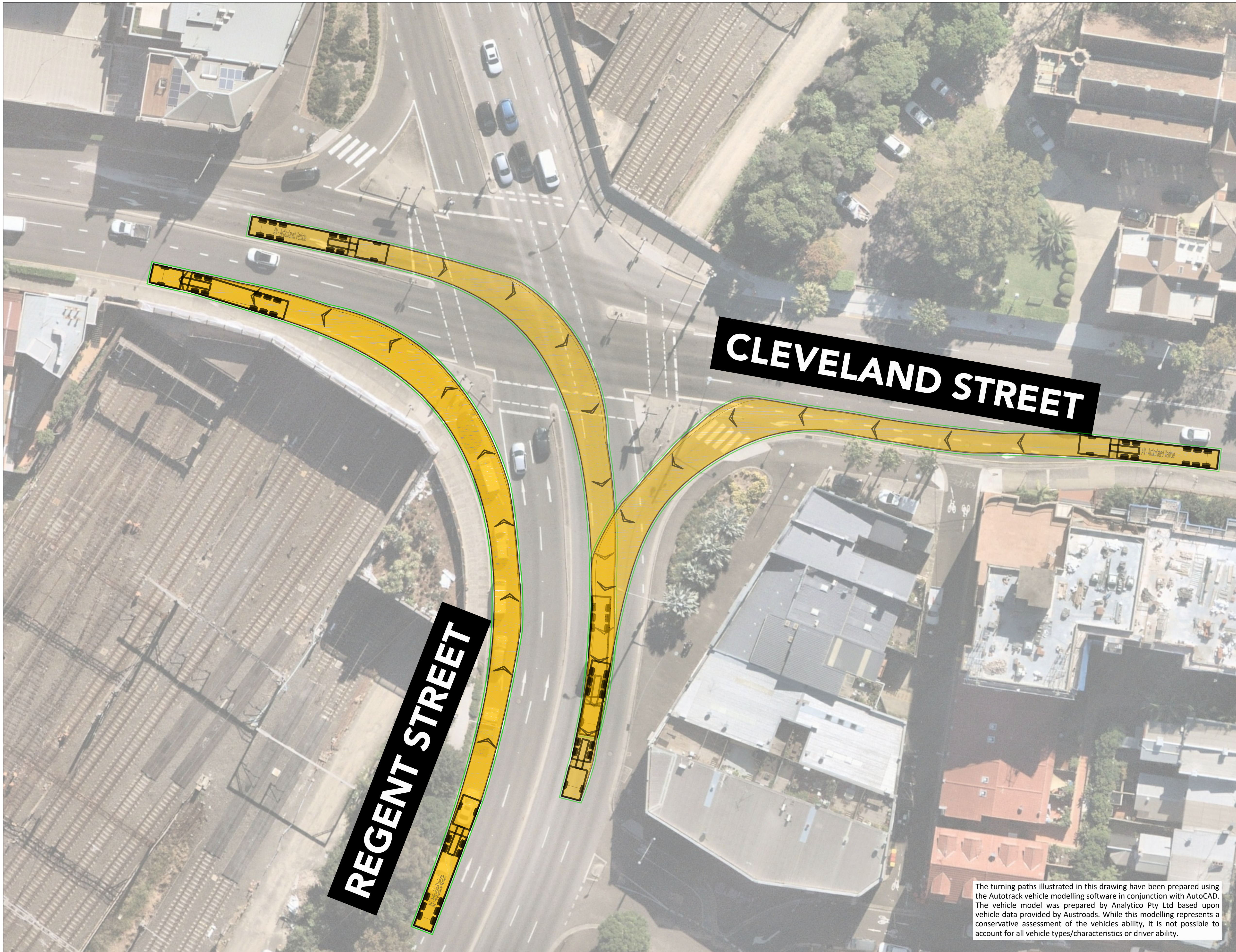
drawing title

TRUCK ROUTE DIAGRAM

INTERSECTION OF CITY RD / CLEVELAND ST
19M ARTICULATED VEHICLE ACCESS ROUTE

client	MIRVAC & JOHN HOLLAND
drawing #	ptc-A03
project #	2789A
scale	1 : 500

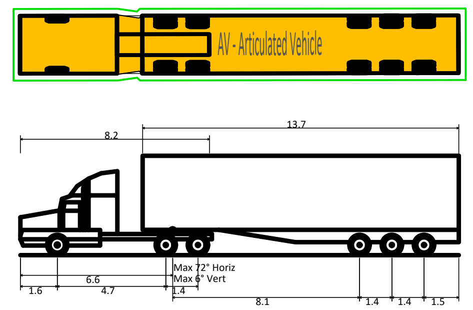
rev 5



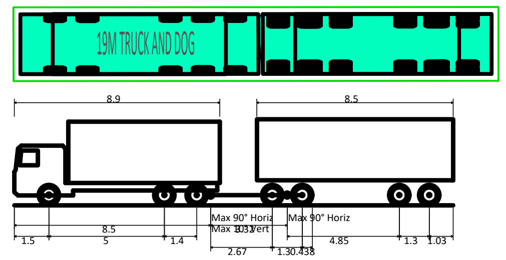
The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

comments

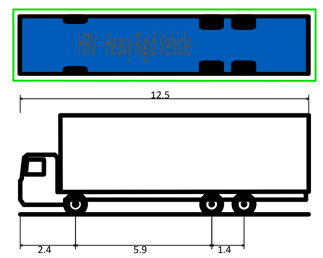
A3



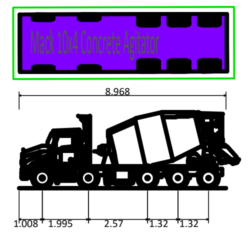
AV - Articulated Vehicle	
Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



19M TRUCK AND DOG	
Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle	
Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



Mack 10x4 Concrete Agitator	
Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.

Suite 502, 1 James Place
North Sydney NSW 2060

t +61 2 8920 0800

ptcconsultants.co

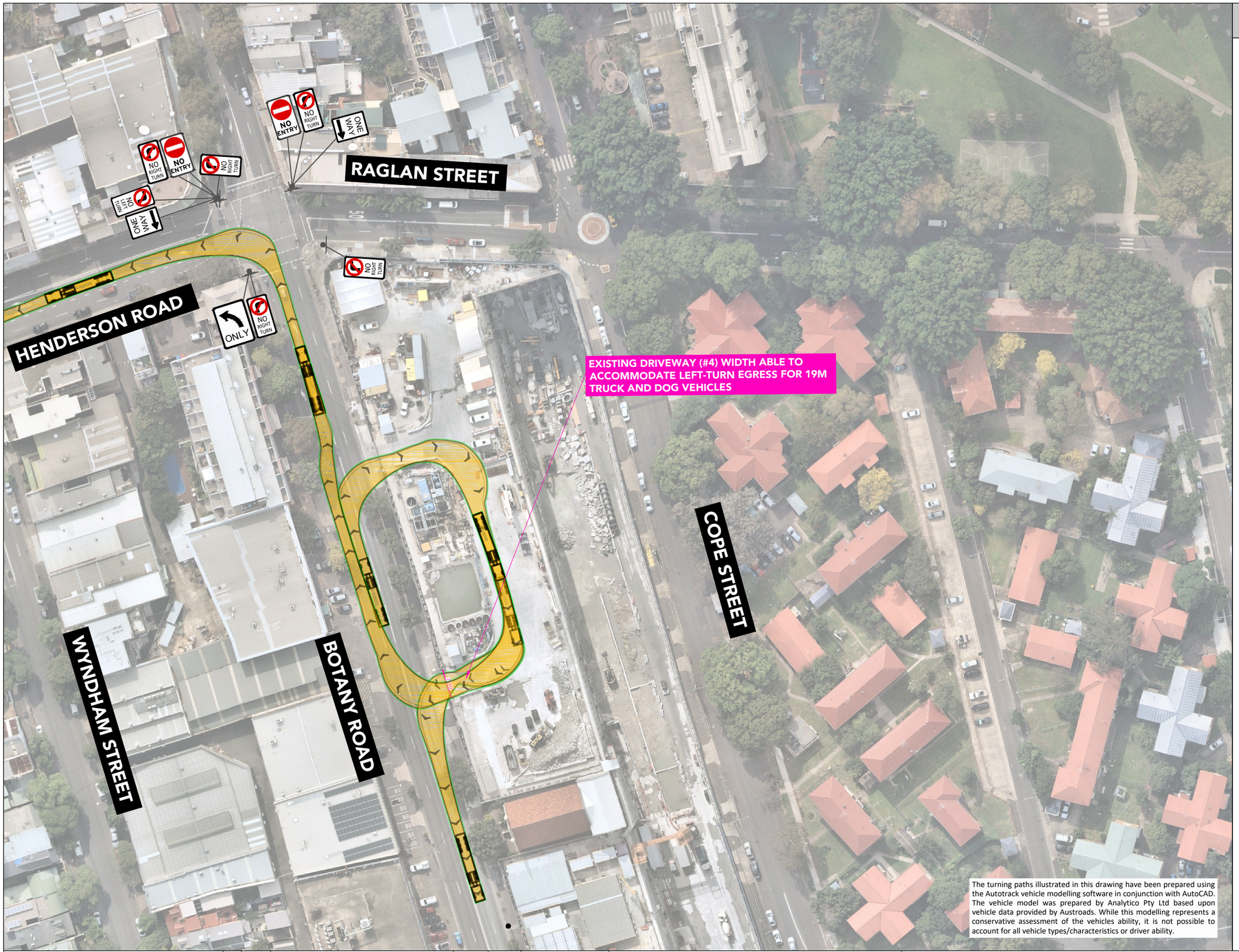
rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	09/07/20	FOR INFORMATION	SC	SW
3	18/06/20	FOR INFORMATION	HL/SC	SW
2	09/06/20	FOR INFORMATION	HL/SC	SW
1	29/05/20	FOR INFORMATION	HL	SW

project
WATERLOO METRO QUARTER

drawing title
TRUCK ROUTE DIAGRAM
INTERSECTION OF CLEVELAND STREET / REGENT STREET
19M ARTICULATED VEHICLE INGRESS & EGRESS ROUTES

client	MIRVAC & JOHN HOLLAND
drawing #	ptc-A04
project #	2789A
scale	1 : 500

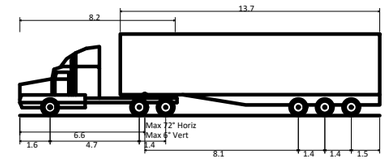
rev 5



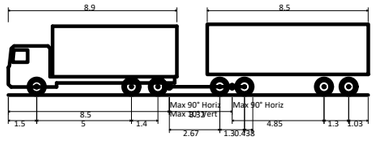
The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

comments

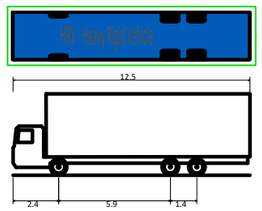
A3



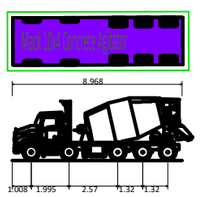
AV - Articulated Vehicle	
Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



19M TRUCK AND DOG	
Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle	
Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



Mack 10x4 Concrete Agitator	
Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

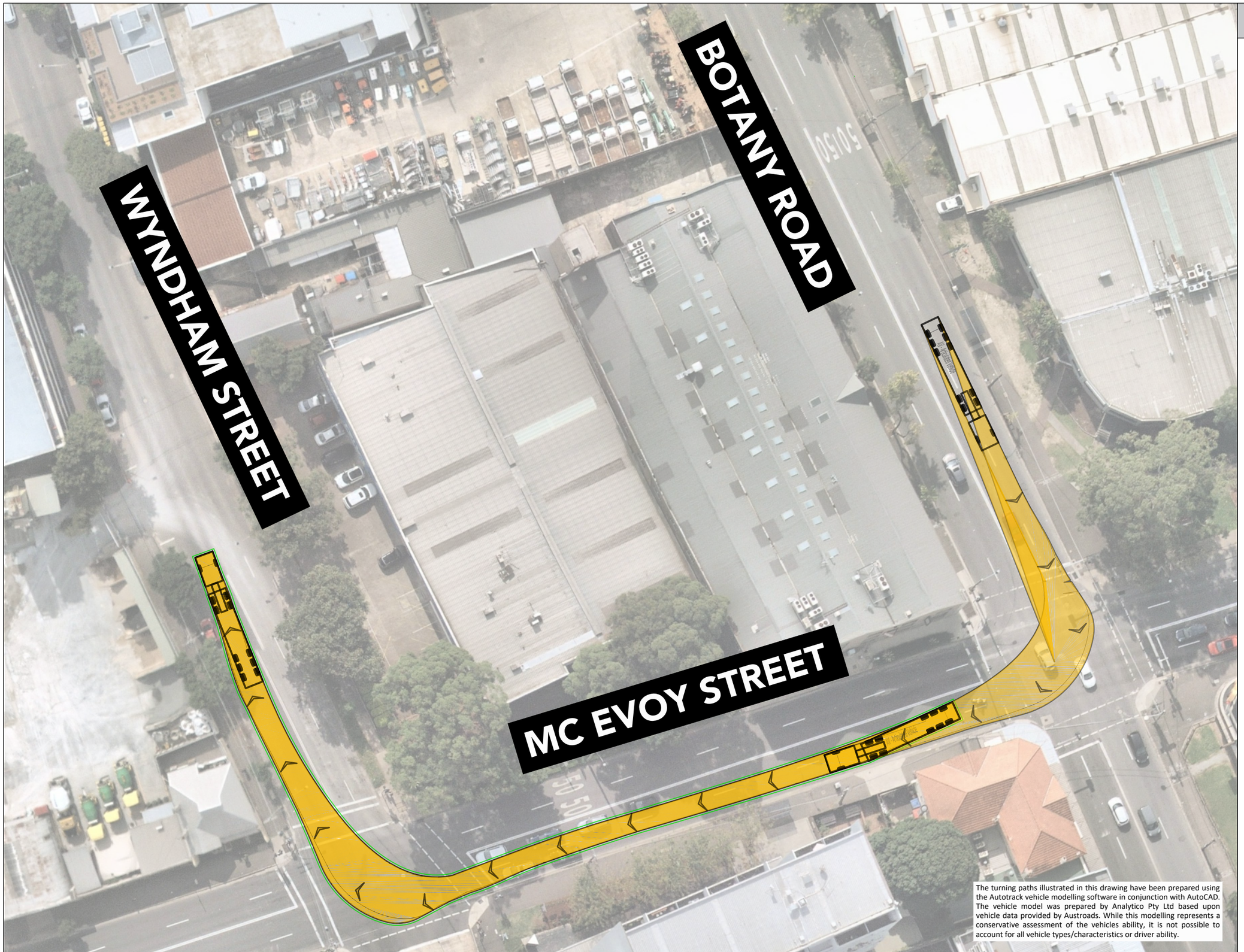
rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	09/07/20	FOR INFORMATION	SC	SW
3	18/06/20	FOR INFORMATION	HL/SC	SW
2	09/06/20	FOR INFORMATION	HL/SC	SW
1	29/05/20	FOR INFORMATION	HL	SW

project
WATERLOO METRO QUARTER

drawing title
SWEPT PATH ASSESSMENT
BOTANY ROAD ACCESS/EGRESS
19M ARTICULATED VEHICLE
(NORTHBOUND INGRESS - EXISTING GATES)

client	MIRVAC & JOHN HOLLAND
drawing #	ptc-A05
project #	2789A
scale	1 : 1000

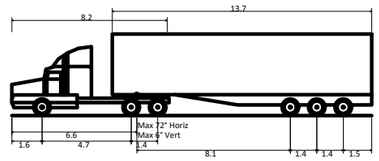
rev 5



The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

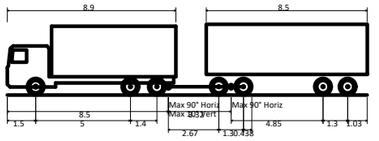
comments

A3



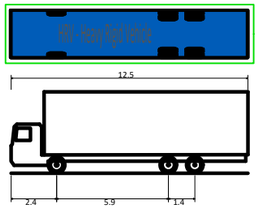
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



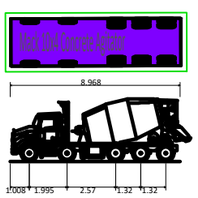
19M TRUCK AND DOG

Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



Mack 10x4 Concrete Agitator

Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	09/07/20	FOR INFORMATION	SC	SW
3	18/06/20	FOR INFORMATION	HL/SC	SW
2	09/06/20	FOR INFORMATION	HL/SC	SW
1	29/05/20	FOR INFORMATION	HL	SW

project
WATERLOO METRO QUARTER

drawing title
SWEPT PATH ASSESSMENT
BOTANY RD/McEVOY ST & McEVOY ST/WYNDHAM ST INTERSECTIONS
19M ARTICULATED VEHICLE EGRESS ROUTE

client	MIRVAC & JOHN HOLLAND
drawing #	ptc-A06
project #	2789A
scale	1 : 1000

rev 5

WYNDHAM STREET

HENDERSON ROAD

NO ENTRY

NO RIGHT TURN

NO ENTRY

NO RIGHT TURN

NO LEFT TURN

ONE WAY

ONLY

NO RIGHT TURN

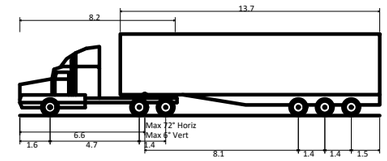
AV - Articulated Vehicle

HRV - Heavy Rigid Vehicle

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

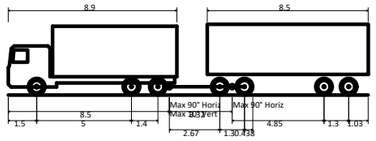
comments

A3



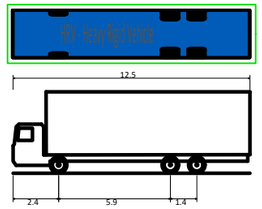
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



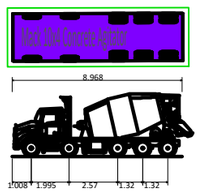
19M TRUCK AND DOG

Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



Mack 10x4 Concrete Agitator

Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

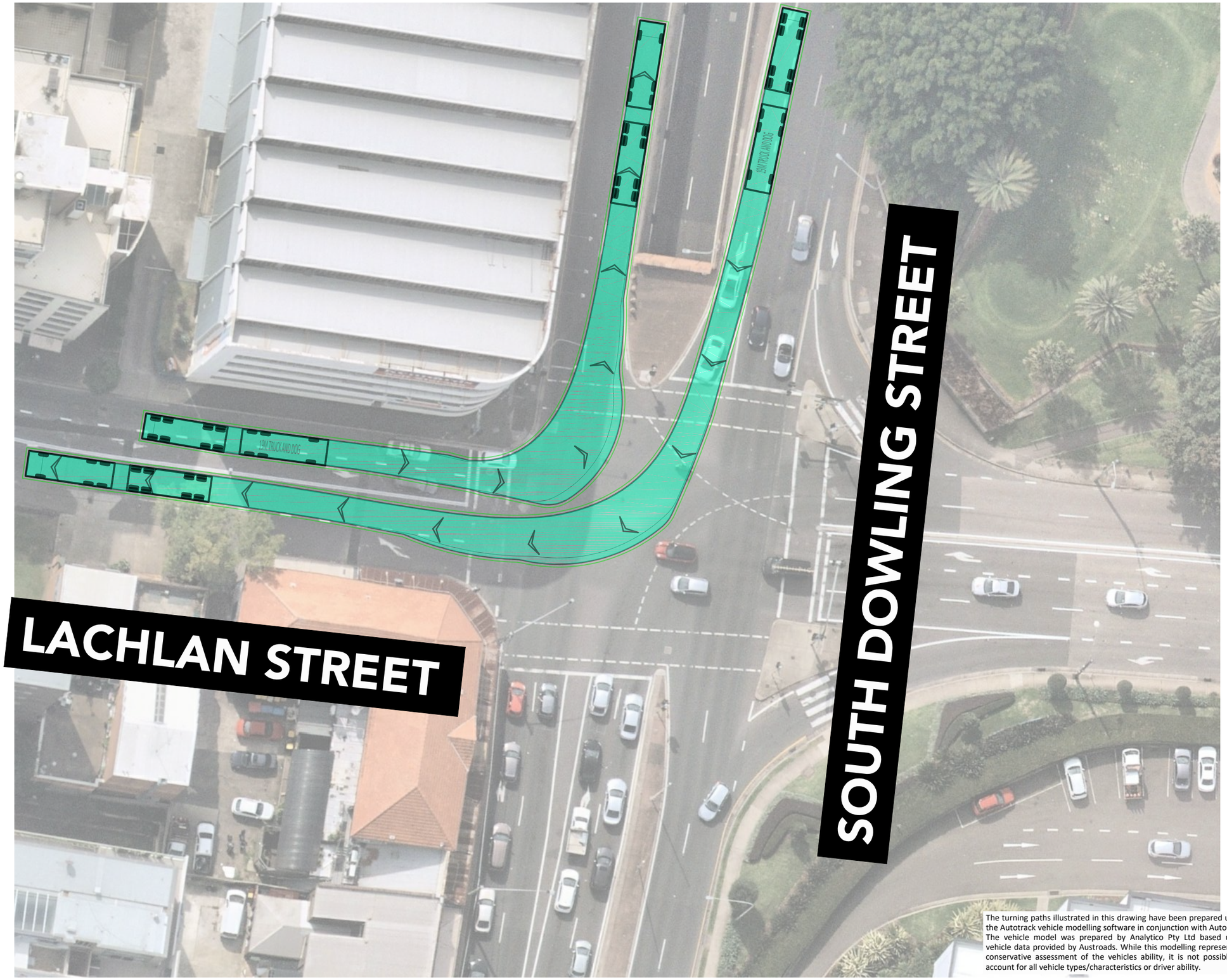
rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	09/07/20	FOR INFORMATION	SC	SW
3	18/06/20	FOR INFORMATION	HL/SC	SW
2	09/06/20	FOR INFORMATION	HL/SC	SW
1	29/05/20	FOR INFORMATION	HL	SW

project
WATERLOO METRO QUARTER

drawing title
SWEPT PATH ASSESSMENT
CLEVELAND ST/REGENT ST INTERSECTION
19M ARTICULATED + TRUCK & DOG VEHICLE
EGRESS ROUTE

client	MIRVAC & JOHN HOLLAND
drawing #	ptc-A07
project #	2789A
scale	1 : 500

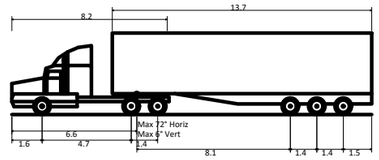
rev 5



The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

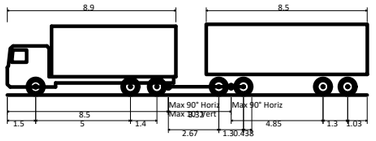
comments

A3



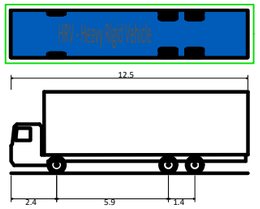
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



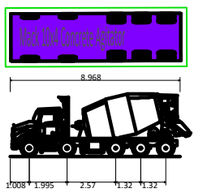
19M TRUCK AND DOG

Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



Mack 10x4 Concrete Agitator

Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

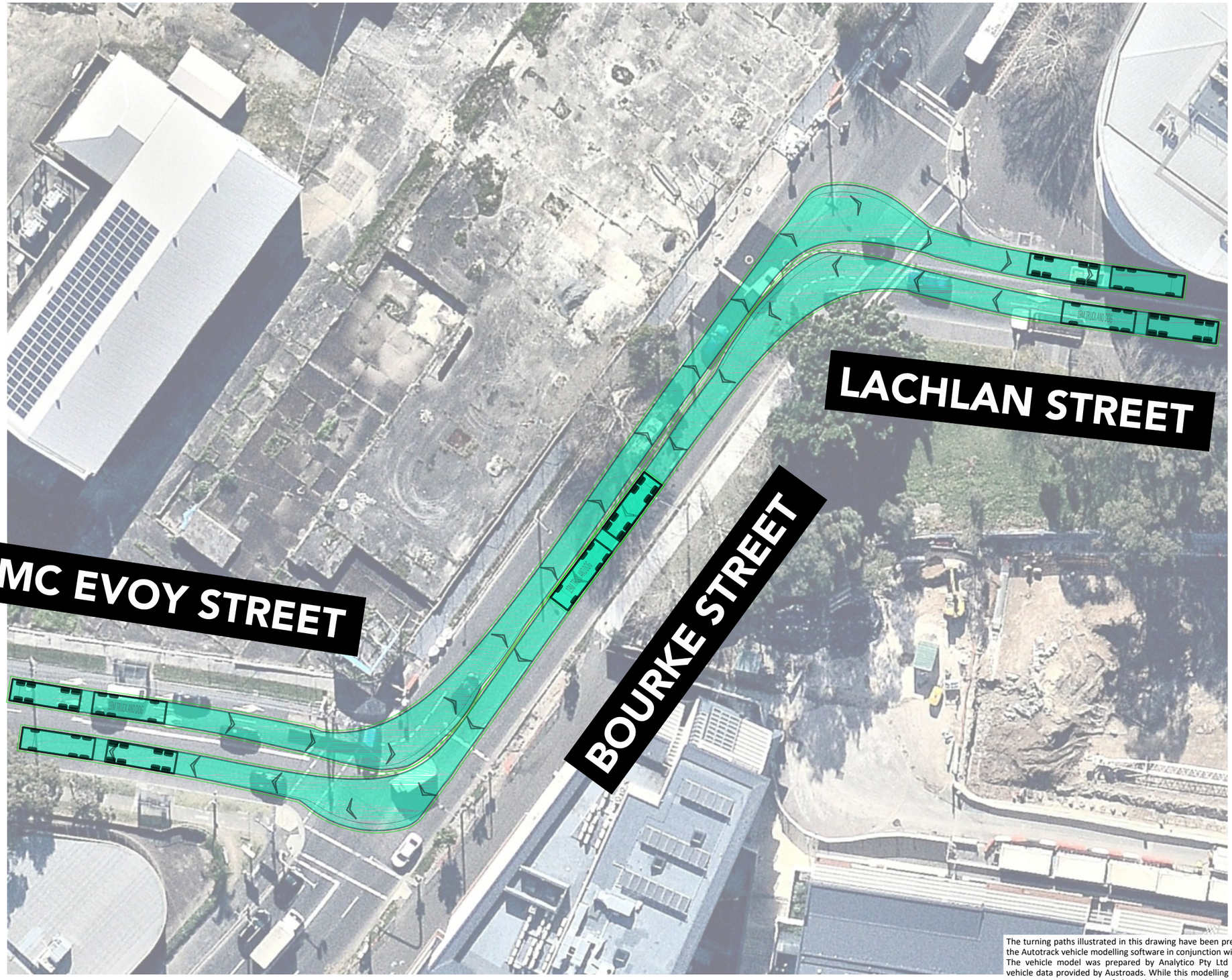
rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	09/07/20	FOR INFORMATION	SC	SW
3	-	NOT ISSUED	-	-
2	-	NOT ISSUED	-	-
1	-	NOT ISSUED	-	-

project
WATERLOO METRO QUARTER

drawing title
SWEPT PATH ASSESSMENT
SOUTH DOWLING ST/LACHLAN ST INTERSECTION
TRUCK & DOG VEHICLE INGRESS/EGRESS

client	MIRVAC & JOHN HOLLAND
drawing #	ptc-A08
project #	2789A
scale	1 : 400

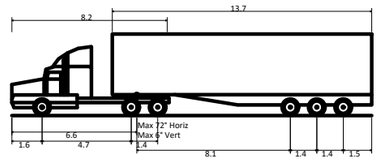
rev 5



The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

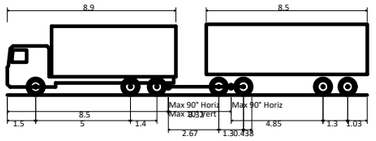
comments

A3



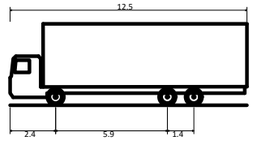
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



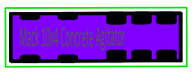
19M TRUCK AND DOG

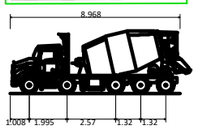
Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m





Mack 10x4 Concrete Agitator

Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

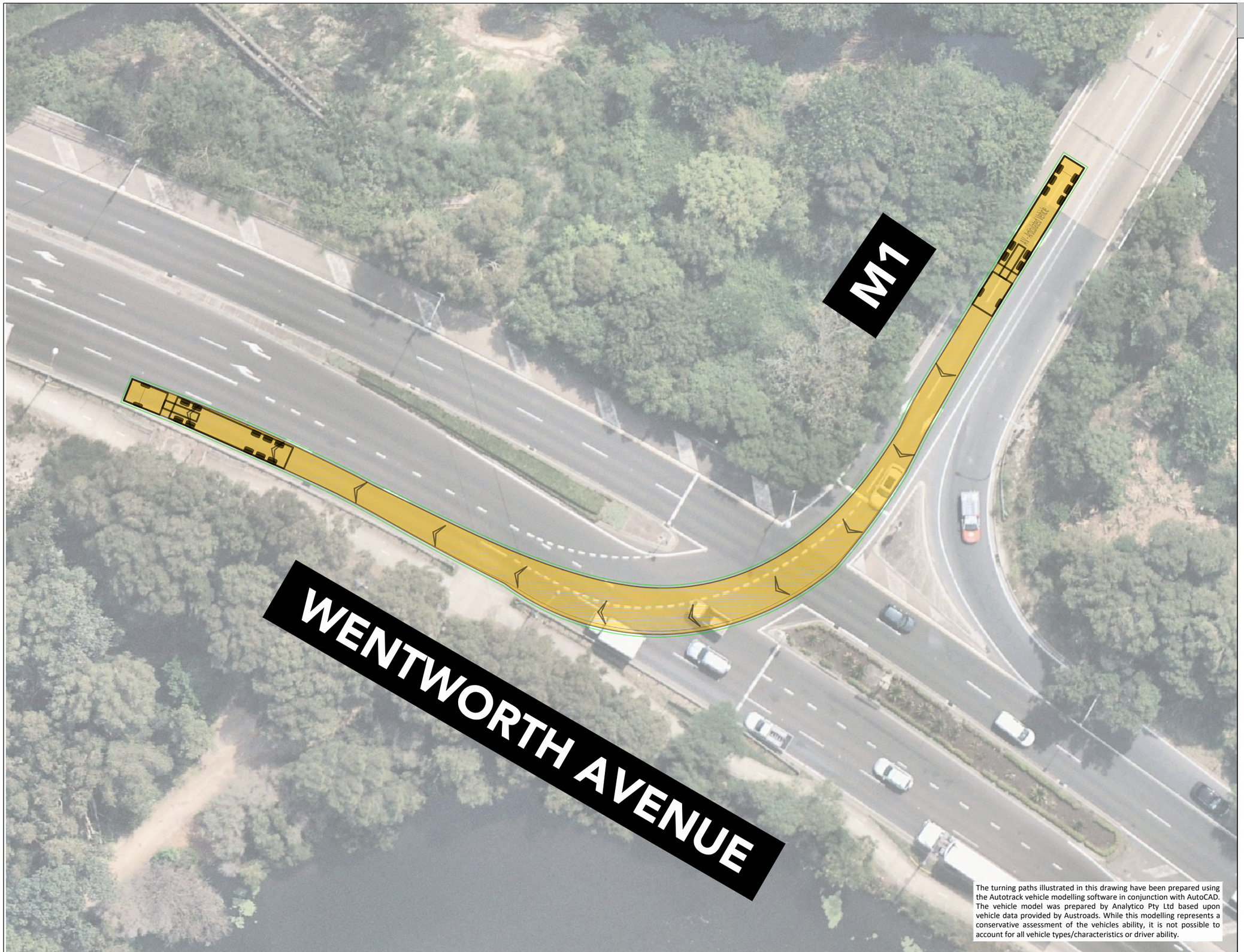
rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	09/07/20	FOR INFORMATION	SC	SW
3	-	NOT ISSUED	-	-
2	-	NOT ISSUED	-	-
1	-	NOT ISSUED	-	-

project
WATERLOO METRO QUARTER

drawing title
SWEPT PATH ASSESSMENT
LACHLAN ST/BOURKE ST/MCEVOY ST INTERSECTION
TRUCK & DOG VEHICLE INGRESS/EGRESS

client	MIRVAC & JOHN HOLLAND
drawing #	ptc-A09
project #	2789A
scale	1 : 500

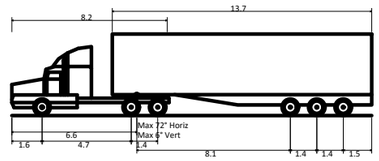
rev 5



The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

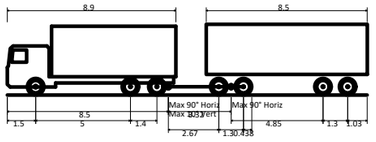
comments

A3



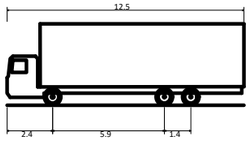
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



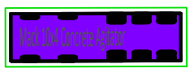
19M TRUCK AND DOG

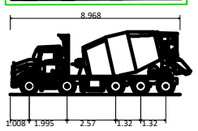
Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m





Mack 10x4 Concrete Agitator

Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

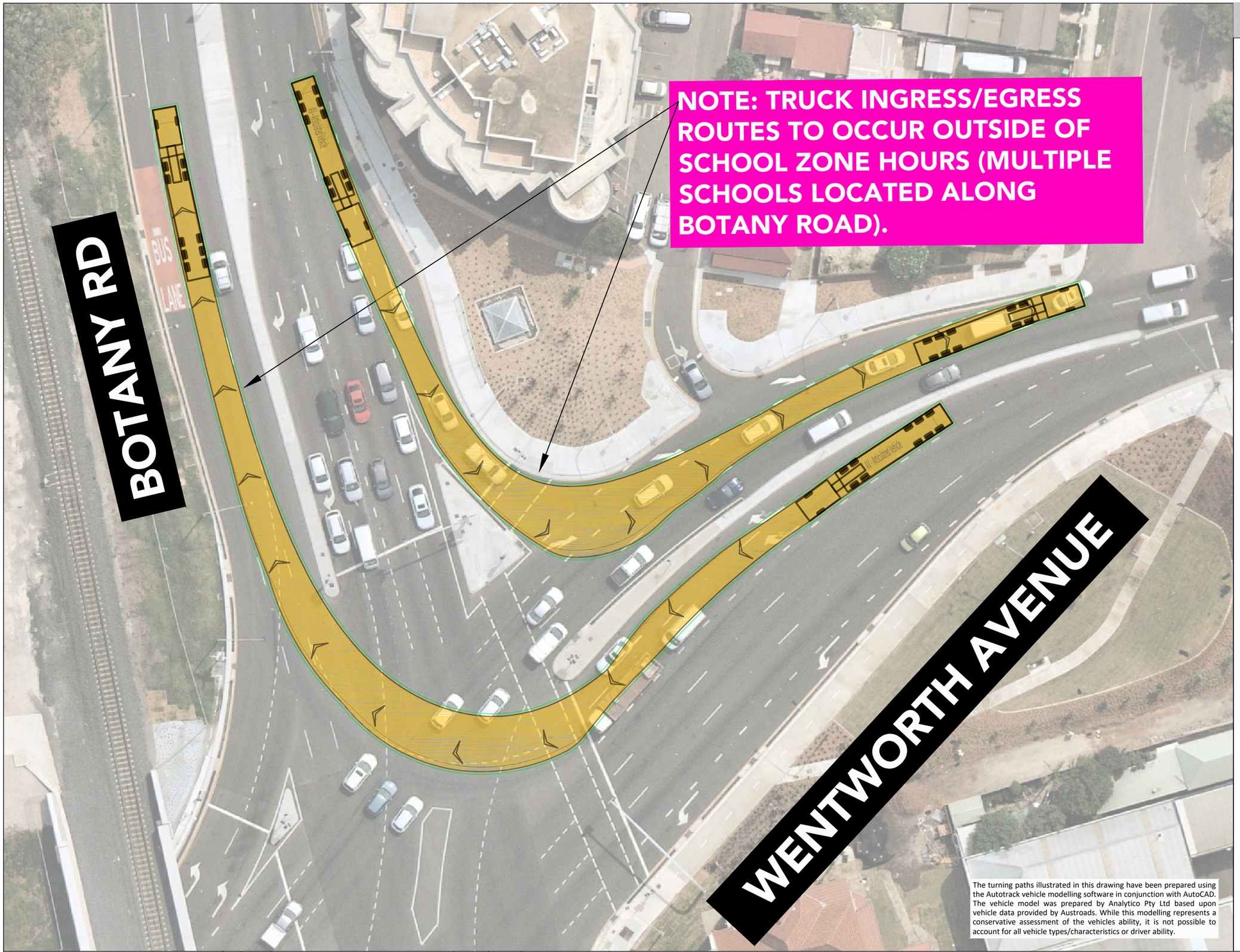
rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	09/07/20	FOR INFORMATION	SC	SW
3	-	NOT ISSUED	-	-
2	-	NOT ISSUED	-	-
1	-	NOT ISSUED	-	-

project
WATERLOO METRO QUARTER

drawing title
SWEPT PATH ASSESSMENT
M1 MOTORWAY/WENTWORTH PDE INTERSECTION
ARTICULATED VEHICLE INGRESS

client	MIRVAC & JOHN HOLLAND
drawing #	ptc-A10
project #	2789A
scale	1 : 400

rev 5

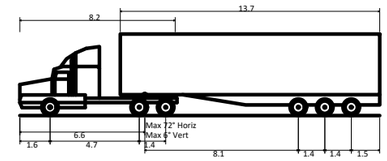


NOTE: TRUCK INGRESS/EGRESS ROUTES TO OCCUR OUTSIDE OF SCHOOL ZONE HOURS (MULTIPLE SCHOOLS LOCATED ALONG BOTANY ROAD).

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

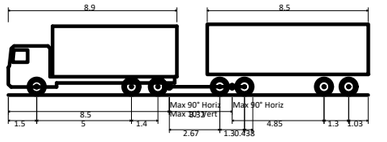
comments

A3



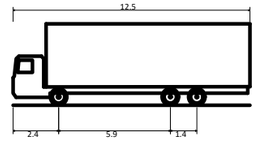
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



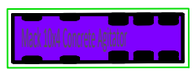
19M TRUCK AND DOG

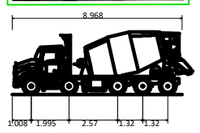
Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m





Mack 10x4 Concrete Agitator

Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

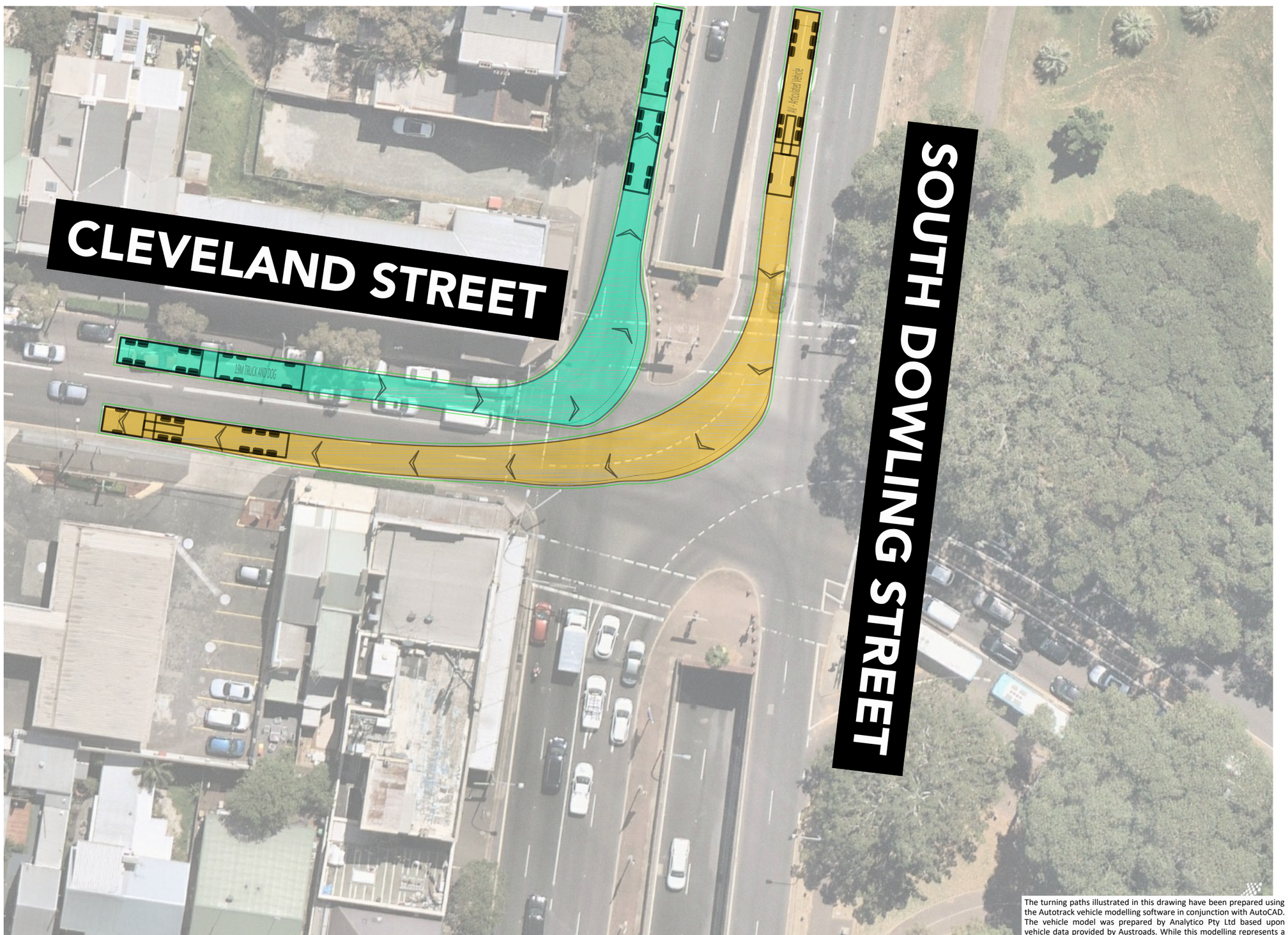
rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	09/07/20	FOR INFORMATION	SC	SW
3	-	NOT ISSUED	-	-
2	-	NOT ISSUED	-	-
1	-	NOT ISSUED	-	-

project
WATERLOO METRO QUARTER

drawing title
SWEPT PATH ASSESSMENT
WENTWORTH PDE/BOTANY RD
INTERSECTION
ARTICULATED VEHICLE INGRESS/EGRESS

client	MIRVAC & JOHN HOLLAND
drawing #	ptc-A11
project #	2789A
scale	1 : 500

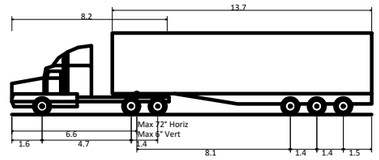
rev 5



The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

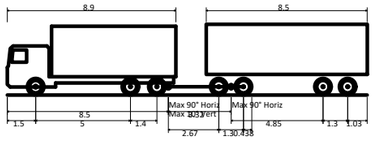
comments

A3



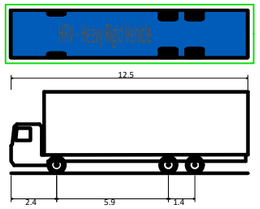
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



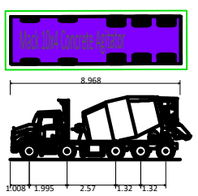
19M TRUCK AND DOG

Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



Mack 10x4 Concrete Agitator

Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	-	NOT ISSUED	-	-
3	-	NOT ISSUED	-	-
2	-	NOT ISSUED	-	-
1	-	NOT ISSUED	-	-

project
WATERLOO METRO QUARTER

drawing title
SWEPT PATH ASSESSMENT
SOUTH DOWLING ST / CLEVELAND ST INTERSECTION
ARTICULATED VEHICLE INGRESS/EGRESS

client	MIRVAC & JOHN HOLLAND
drawing #	ptc-A12
project #	2789A
scale	1 : 400

rev 5

COPE STREET

RAGLAN STREET

WELLINGTON STREET

BOTANY ROAD

HENDERSON ROAD

WYNDHAM STREET

EXISTING DRIVEWAY (#2 & #4) WIDTHS ABLE TO ACCOMMODATE LEFT-TURN INGRESS/EGRESS19M TRUCK AND DOG VEHICLES

ONE WAY

NO RIGHT TURN

NO ENTRY

NO RIGHT TURN ON

NO RIGHT TURN ONLY

NO LEFT TURN

ONE WAY

NO ENTRY

NO RIGHT TURN ON

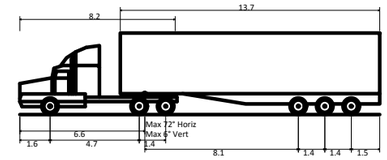
NO U TURN

ONE WAY

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

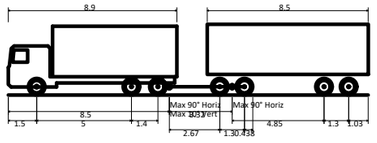
comments

A3



AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

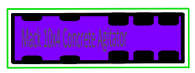


19M TRUCK AND DOG

Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m

HRV - Heavy Rigid Vehicle

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



Mack 10x4 Concrete Agitator

Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	21/07/20	FOR INFORMATION	SC	SW
4	09/07/20	FOR INFORMATION	SC	SW
3	18/06/20	FOR INFORMATION	HL/SC	SW
2	09/06/20	FOR INFORMATION	HL/SC	SW
1	29/05/20	FOR INFORMATION	HL	SW

project
WATERLOO METRO QUARTER

drawing title
SWEPT PATH ASSESSMENT

BOTANY ROAD ACCESS/EGRESS
19M TRUCK & DOG VEHICLE (EXISTING GATES)

client	MIRVAC & JOHN HOLLAND
drawing #	ptc-B01
project #	2789A
scale	1 : 1000

rev 5

NOTE: COLUMN LOCATIONS TO BE TAKEN INTO CONSIDERATION DURING CONSTRUCTION

10M 'NO STOPPING' RESTRICTION AT UNSIGNALISED INTERSECTIONS.

12.5M HRV LEFT TURN FROM WELLINGTON STREET INTO COPE STREET REQUIRES TEMPORARY REMOVAL OF REFUGE ISLAND

COPE STREET

RAGLAN STREET

WELLINGTON STREET

BOTANY ROAD

HENDERSON ROAD

WYNDHAM STREET

M STREET

ONE WAY

NO RIGHT TURN

NO ENTRY

NO LEFT TURN

ONLY

EXISTING DRIVEWAY

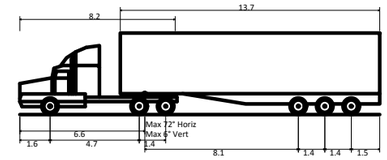
PROPOSED DRIVEWAY

NOTE: UNFILLED (OUTLINE ONLY) SWEPT PATHS DEMONSTRATE TURNS THAT ARE NOT FEASIBLE.

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

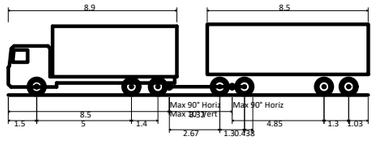
comments

A3



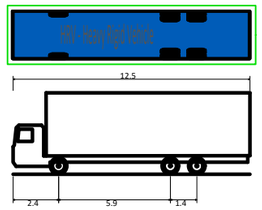
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



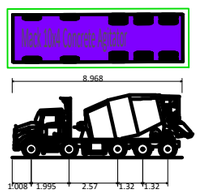
19M TRUCK AND DOG

Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



Mack 10x4 Concrete Agitator

Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
3	21/07/20	FOR INFORMATION	SC	SW
2	09/06/20	FOR INFORMATION	HL/SC	SW
1	29/05/20	FOR INFORMATION	HL	SW

project
WATERLOO METRO QUARTER

drawing title
SWEPT PATH ASSESSMENT (PRE-ROAD UPGRADES)
BUILDING 3 & 4 (OPTION 1)
12.5M HRV

client	MIRVAC & JOHN HOLLAND
drawing #	ptc-301
project #	2789A
scale	1 : 1000

rev 3

NOTE: COLUMN LOCATIONS TO BE TAKEN INTO CONSIDERATION DURING CONSTRUCTION

19M TRUCK AND DOG ABLE TO MAKE RIGHT TURN FROM RAGLAN STREET INTO COPE STREET BUT WILL REQUIRE AUGMENTATION OF ROUNDABOUT

10M 'NO STOPPING' RESTRICTION AT UNSIGNALISED INTERSECTIONS.

COPE STREET

RAGLAN STREET

WELLINGTON STREET

BOTANY ROAD

HENDERSON ROAD

WYNDHAM STREET

EXISTING DRIVEWAY

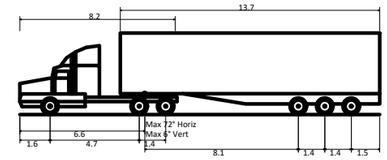
PROPOSED DRIVEWAY

NOTE: UNFILLED (OUTLINE ONLY) SWEPT PATHS DEMONSTRATE TURNS THAT ARE NOT FEASIBLE.

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

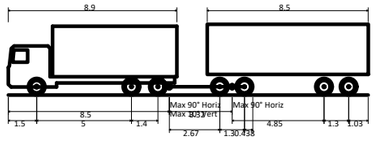
comments

A3



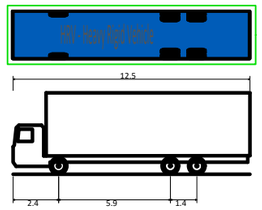
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



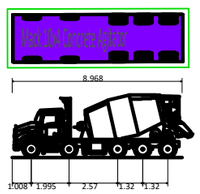
19M TRUCK AND DOG

Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



Mack 10x4 Concrete Agitator

Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
3	21/07/20	FOR INFORMATION	SC	SW
2	09/06/20	FOR INFORMATION	HL/SC	SW
1	29/05/20	FOR INFORMATION	HL	SW

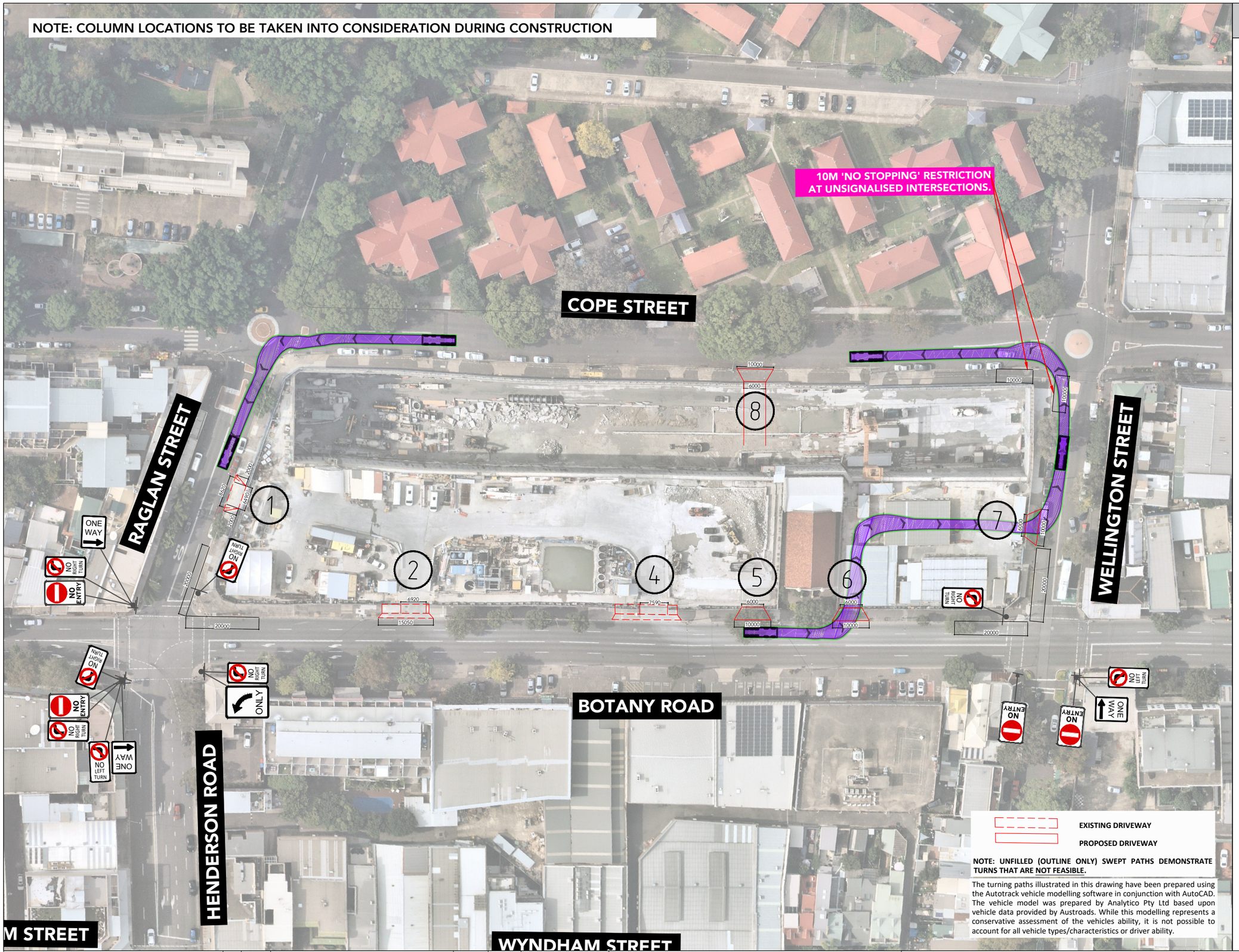
project
WATERLOO METRO QUARTER

drawing title
SWEPT PATH ASSESSMENT (PRE-ROAD UPGRADES)
BUILDING 3 & 4 (OPTION 2)
19M TRUCK & DOG

client	MIRVAC & JOHN HOLLAND
drawing #	ptc-302
project #	2789A
scale	1 : 1000

rev 3

NOTE: COLUMN LOCATIONS TO BE TAKEN INTO CONSIDERATION DURING CONSTRUCTION

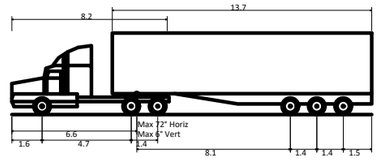


NOTE: UNFILLED (OUTLINE ONLY) SWEPT PATHS DEMONSTRATE TURNS THAT ARE NOT FEASIBLE.

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

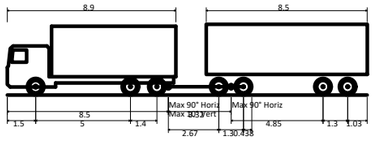
comments

A3



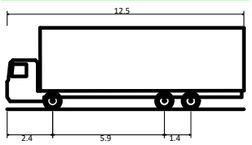
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



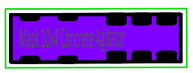
19M TRUCK AND DOG

Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



Mack 10x4 Concrete Agitator

Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
3	21/07/20	FOR INFORMATION	SC	SW
2	09/06/20	FOR INFORMATION	HL/SC	SW
1	29/05/20	FOR INFORMATION	HL	SW

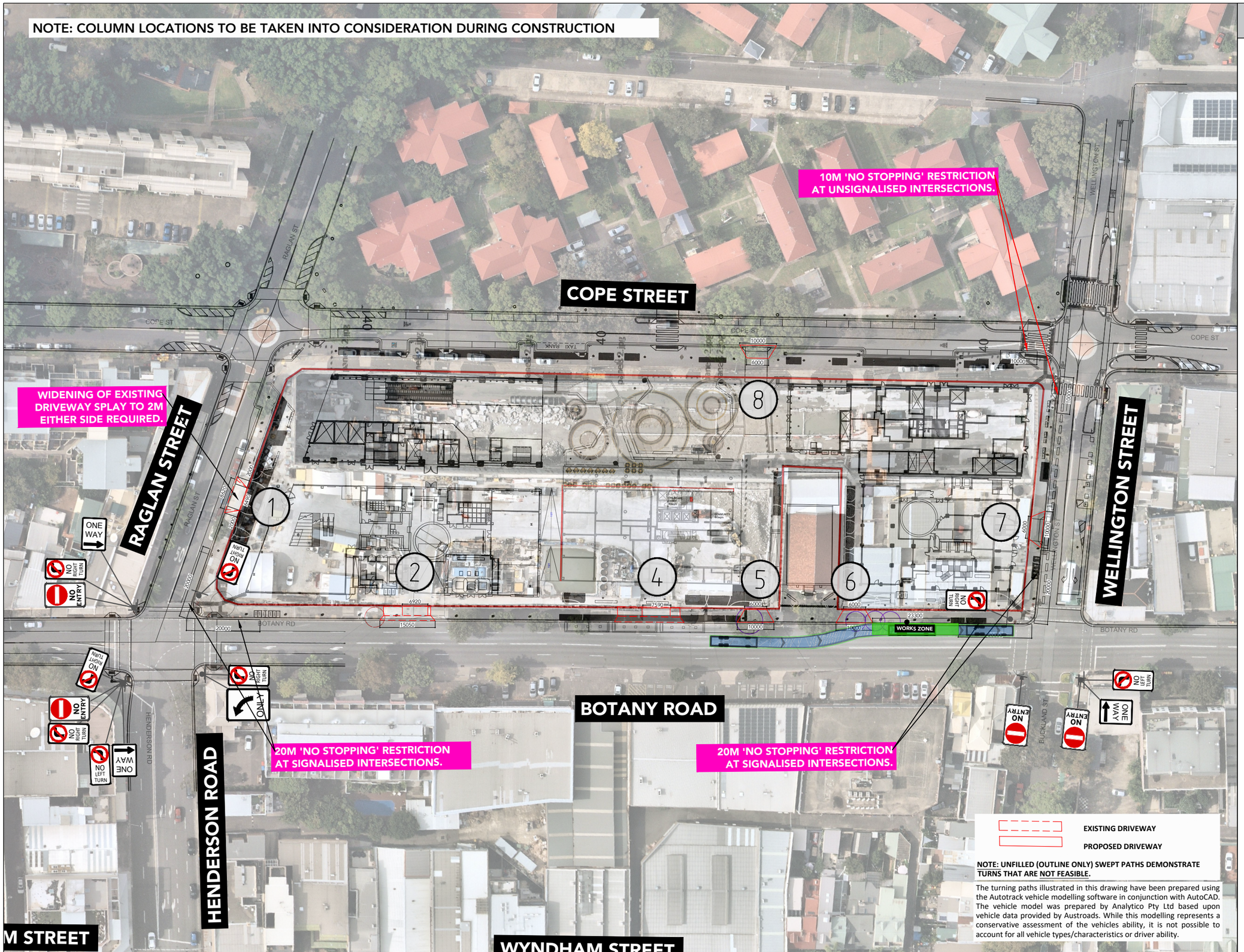
project
WATERLOO METRO QUARTER

drawing title
SWEPT PATH ASSESSMENT (PRE-ROAD UPGRADES)
BUILDING 3 & 4 (OPTION 3)
8.97M CONCRETE AGITATOR

client	MIRVAC & JOHN HOLLAND
drawing #	ptc-303
project #	2789A
scale	1 : 1000

rev 3

NOTE: COLUMN LOCATIONS TO BE TAKEN INTO CONSIDERATION DURING CONSTRUCTION

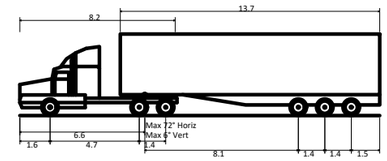


NOTE: UNFILLED (OUTLINE ONLY) SWEPT PATHS DEMONSTRATE TURNS THAT ARE NOT FEASIBLE.

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

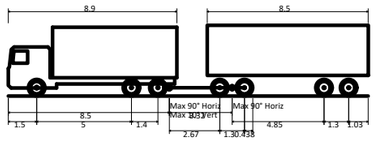
comments

A3



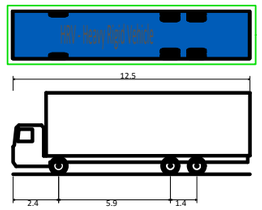
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



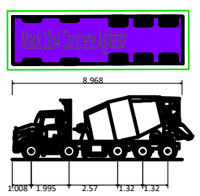
19M TRUCK AND DOG

Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



Mack 10x4 Concrete Agitator

Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
4	21/07/20	FOR INFORMATION	SC	SW
3	10/07/20	FOR INFORMATION	SC	SW
2	25/06/20	FOR INFORMATION	HL/SC	SW
1	19/06/20	FOR INFORMATION	HL/SC	SW

project
WATERLOO METRO QUARTER

drawing title
WORKS ZONES (POST-ROAD UPGRADES)
SOUTHERN DA - BOTANY ROAD
LARGEST VEHICLES - KERBSIDE OPTION

client	MIRVAC & JOHN HOLLAND
drawing #	SDA-001A
project #	2789A
scale	1 : 1000

rev 4

NOTE: COLUMN LOCATIONS TO BE TAKEN INTO CONSIDERATION DURING CONSTRUCTION

TRAFFIC CONTROLLER REQUIRED FOR TRUCK LEFT-TURN FROM COPE ST TO RAGLAN ST (ENCROACHMENT INTO ONCOMING LANE DUE TO NARROW ROADWAY).

10M 'NO STOPPING' RESTRICTION AT UNSIGNALISED INTERSECTIONS.

TRAFFIC CONTROLLERS REQUIRED FOR TRUCK LEFT-TURN FROM WELLINGTON ST TO COPE ST (ENCROACHMENT INTO ONCOMING LANE DUE TO NARROW ROADWAY).

WIDENING OF EXISTING DRIVEWAY SPLAY TO 2M EITHER SIDE REQUIRED.

WORKS ZONE ON WELLINGTON STREET CAN ONLY OCCUPY THE FOOTPATH TO ALLOW MINIMUM 3M ROADWAY FOR PASSING TRAFFIC.

20M 'NO STOPPING' RESTRICTION AT SIGNALISED INTERSECTIONS.

20M 'NO STOPPING' RESTRICTION AT SIGNALISED INTERSECTIONS.

12.5M HRV EGRESS ROUTE VIA HENDERSON ROAD (CANNOT LEFT TURN FROM RAGLAN STREET ONTO BOTANY ROAD).

EXISTING DRIVEWAY

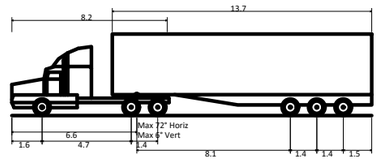
PROPOSED DRIVEWAY

NOTE: UNFILLED (OUTLINE ONLY) SWEPT PATHS DEMONSTRATE TURNS THAT ARE NOT FEASIBLE.

The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

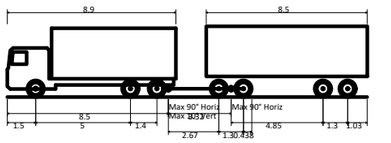
comments

A3



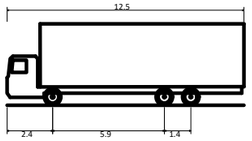
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



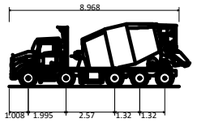
19M TRUCK AND DOG

Overall Length	19.000m
Overall Width	2.600m
Overall Body Height	3.738m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	12.000m



HRV - Heavy Rigid Vehicle

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



Mack 10x4 Concrete Agitator

Overall Length	8.968m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.166m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.850m

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
4	21/07/20	FOR INFORMATION	SC	SW
3	10/07/20	FOR INFORMATION	SC	SW
2	25/06/20	FOR INFORMATION	HL/SC	SW
1	19/06/20	FOR INFORMATION	HL/SC	SW

project
WATERLOO METRO QUARTER

drawing title
WORKS ZONES (POST-ROAD UPGRADES)
SOUTHERN DA
BOTANY RD/WELLINGTON & COPE ST
LARGEST VEHICLES - FOOTPATH OPTION

client	MIRVAC & JOHN HOLLAND
drawing #	SDA-001B
project #	2789A
scale	1 : 1000

rev 4