Appendix EE

Transport and access report

Sydney Metro West

Parramatta Over and Adjacent Station Development Transport and Access Report

Appendix EE

October 2022

NSW GOVERNMENT

sydney METRO

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Glossary

Term	Definition
CBD	Central business district
Concept SSDA	A concept development application as defined in section 4.22 the EP&A Act, as a development application that sets out concept proposals for the development of a site, and for which detailed proposals for the site or for separate parts of the site are to be the subject of a subsequent development application or applications.
Council	City of Parramatta
CSSI	Critical State Significant Infrastructure
Concept and Stage 1 CSSI Approval	SSI-10038 (approved 11 March 2021), including all major civil construction works between Westmead and The Bays, including station excavation and tunnelling, associated with the Sydney Metro West line
Concept SSDA	A concept development application as defined in section 4.22 of the EP&A Act. It is a development application that sets out the concept for the development of a site, and for which detailed proposals for the site or for separate parts of the site are to be the subject of a subsequent development application or applications
DCP	Development control plan
DPE	NSW Department of Planning and Environment
EIS	Environmental impact statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	NSW Environment Protection Authority
ESD	Ecologically sustainable design
FSR	Floor space ratio
GANSW	NSW Government Architect's Office
GFA	Gross floor area
LEP	Local environmental plan
LGA	Local government area
LOS	Level of service
MAAS	Museum of Applied Arts and Sciences
MRV	Medium rigid vehicles
NLA	Net leasable area
PTPM	Public Transport Project Model
SCATS	Sydney Coordinated Adaptive Traffic System
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State environmental planning policy
SRD SEPP	State environmental planning policy (state and regional development) 2009
SRV	Small rigid vehicles
SSD	State significant development
SSDA	State significant development application

Stage 2 CSSI Application	Application SSI-19238057, including major civil construction works between The Bays and Hunter Street Station
Stage 3 CSSI Application	Application SSI-22765520, including rail infrastructure, stations, precincts and operation of the Sydney Metro West line
Sydney Metro West	Construction and operation of a metro rail line and associated stations between Westmead and the Sydney CBD as described in section 1.1
TCS	Traffic control signal
TfNSW	Transport for New South Wales

Executive summary

This Transport and Access Report supports a Concept State Significant Development Application (Concept SSDA) submitted to the Department of Planning and Environment (DPE) pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Concept SSDA is made under section 4.22 of the EP&A Act.

Sydney Metro is seeking to secure concept approval for an over station development (OSD) and adjacent station development (ASD) on the Parramatta metro station site (referred to as the 'proposed development'). The proposed development will comprise three new commercial office buildings (Buildings A, C, D), and one new residential building (Building B).

The Concept SSDA seeks consent for a building envelope and mixed-use purposes, maximum building height, a maximum gross floor area (GFA), pedestrian and vehicular access, circulation arrangements and associated car parking, and the strategies and design parameters for the future detailed design of the proposed development.

This technical paper provides an assessment of the potential transport impacts of the proposed development during both construction and operation and addresses the Secretary's Environmental Assessment Requirements (SEARs) and Scoping Report.

The scope of this technical paper includes the following:

- identification of the existing transport conditions in the study area
- assessment of potential transport impacts during construction of the proposed development
- assessment of the potential transport impacts resulting from the proposed development
- identification of recommendations and potential mitigation measures to avoid, minimise and manage impacts associated with the proposed development.

Assessment of the construction impacts indicates that the proposed development will have no major impact on the surrounding road network or parking and emergency services. All loading and unloading of trucks would occur within the proposed development construction sites, except for the construction of Buildings A, where materials handling would be on George Street. It is expected that a section of the kerb-side lane would be closed during construction of this building. Also, under Scenario 4, material handling during construction of Building C will be on Smith Street. Traffic modelling will be conducted during the Detailed SSDAs to review for any impacts on network performance.

There is a potential impact of the future proposed northbound bus stops on Smith Street when a section of the kerb-side lane is closed and utilised as a work zone during construction of Building C under Scenario 4. The impacted bus stops could be temporarily relocated, however that is to be agreed with TfNSW and relevant stakeholders before construction of Building C commences.

Assessment of the operation impacts of the proposed development indicates that the road network is expected to continue to operate at acceptable levels of service, with the traffic modelling indicating no change associated with the traffic generated by the proposed development at most intersections.

Also, the proposed provision of car parking is within the Parramatta Local Environmental Plan (LEP) maximum rates. The quantity of loading dock facilities provided in each basement are suitable for the estimated dock activity based on achieving a 95% service level, calculated using the TfNSW Freight Toolkit and current land use quantities.

A number of recommendations have been made to encourage uptake of bicycle use and to create a walkable and safe environment for pedestrians and cyclists. Further details are provided in section 8.

1 Introduction

1.1 Sydney Metro West

Sydney Metro West will double rail capacity between Greater Parramatta and the Sydney Central Business District (CBD), transforming Sydney for generations to come. The once in a century infrastructure investment will have a target travel time of about 20 minutes between Parramatta and the Sydney CBD, link new communities to rail services and support employment growth and housing supply.

Stations have been confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont, and Hunter Street (Sydney CBD).

Sydney Metro West station locations are shown in Figure 1-1.

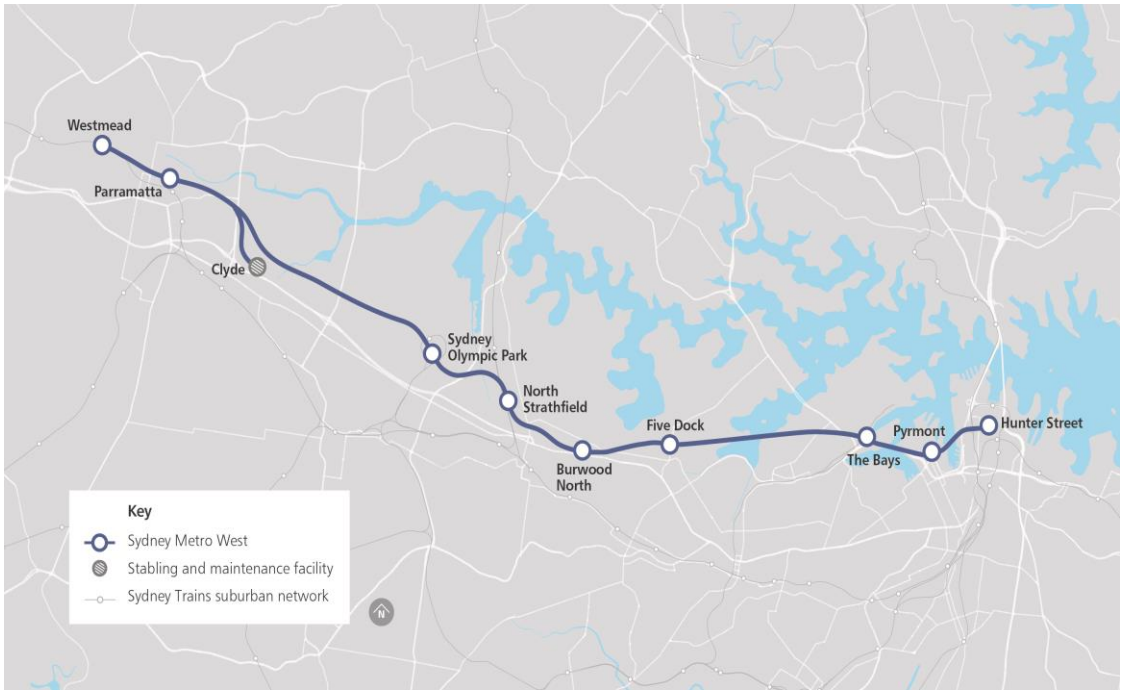


Figure 1-1 Sydney Metro West

1.2 Background and planning context

Sydney Metro is seeking to deliver Parramatta metro station under a two-part planning approval process. The station fit-out infrastructure is to be delivered under a Critical State Significant Infrastructure (CSSI) application subject to provisions under division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), whereas the over and adjacent station developments are to be delivered under a State Significant Development (SSD) subject to the provisions of part 4 of the EP&A Act.

1.2.1 Critical State Significant Infrastructure

The State Significant Infrastructure (SSI) planning approval process for the Sydney Metro West metro line, including delivery of station infrastructure, has been broken down into several planning application stages, comprising the following:

- Stage 1 CSSI Approval (SSI-10038) – All major civil construction works between Westmead and The Bays including station excavation, tunnelling and demolition of existing buildings (approved 11 March 2021)
- Stage 2 CSSI Application (SSI- 19238057) – All major civil construction works between The Bays and Sydney CBD (approved 24 August 2022)
- Stage 3 CSSI Application (SSI- 22765520) – Tunnel fit-out, construction of stations, ancillary facilities and station precincts between Westmead and the Sydney CBD, and operation and maintenance of the Sydney Metro West line (under assessment, lodged).

1.2.2 State Significant Development Application

The SSDA will be undertaken as a staged development with the subject Concept SSDA being consistent with the meaning under section 4.22 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and seeking conceptual approval for a building envelope, land uses, maximum building heights, a maximum gross floor area, pedestrian and vehicle access, vertical circulation arrangements and associated car parking. A subsequent Detailed SSD/s is to be prepared by a future development partner which will seek consent for detailed design and construction of the development.

1.3 Purpose and scope

This Transport and Access Report supports a Concept SSDA submitted to the Department of Planning and Environment (DPE) pursuant to part 4 of the EP&A Act. The Concept SSDA is made under section 4.22 of the EP&A Act.

This report provides an assessment of the potential transport impacts of the proposed development during both construction and operation.

This report has been prepared to specifically respond to the Secretary's Environmental Assessment Requirements (SEARs) issued for the Concept SSDA on 22 February 2022, which states that the environmental impact statement is to address the requirements:

Table 1-1 SEARs and where this is addressed in this report

Key issue	SEARs	Where addressed
Transport and Accessibility Impact Assessment	Provide a transport and accessibility impact assessment, which includes:	
	an analysis of the existing transport network, including the road hierarchy and any pedestrian, bicycle or public transport infrastructure, current daily and peak hour vehicle movements, and existing performance levels of nearby intersections.	Section 4
	details of the proposed OSD, including pedestrian and vehicular access arrangements (including swept path analysis of the largest vehicle and height clearances), parking arrangements and rates (including bicycle and end-of-trip facilities), drop-off/pick-up-zone(s) and bus bays (if applicable), and provisions for servicing and loading/unloading.	Section 5
	analysis of the impacts of the proposed OSD (including justification for the methodology used), including predicted modal split, a forecast of additional daily and peak hour multimodal network flows as a result of the development (using industry standard modelling), identification of potential traffic impacts on road capacity, intersection performance and road safety (including pedestrian and cyclist conflict) and any cumulative impact from surrounding approved developments.	Section 7
	measures to mitigate any traffic impacts, including details of any new or upgraded infrastructure to achieve acceptable performance and safety, and the timing, viability and mechanisms of delivery (including proposed arrangements with local councils or government agencies) of any infrastructure improvements in accordance with relevant standards.	Section 8
	proposals to promote sustainable travel choices for employees, residents, guests and visitors, such as connections into existing walking and cycling networks, minimising car parking provision, encouraging car share and public transport, providing adequate bicycle parking and high quality end-of-trip facilities, and implementing a Green Travel Plan.	Section 7 and Section 8
Construction Traffic Management Plan	Provide a Construction Traffic Management Plan detailing predicted construction vehicle movements, routes, access and parking arrangements, coordination with other construction occurring in the area, and how impacts on existing traffic, pedestrian and bicycle networks would be managed and mitigated.	Section 6 and Section 8

2 The site and proposal

2.1 Site location and description

The subject application is in the Parramatta CBD, in the City of Parramatta Local Government Area (LGA). It is within the city block bounded by George Street, Church Street, Smith Street, and Macquarie Street.

The site presents a 164m long frontage to Macquarie Street, 125m frontage to George Street, 48m frontage to Church Street, and 15.5m frontage to Smith Street (in the form of Macquarie Lane).

The site location is shown in Figure 2-1 and Table 2-1.

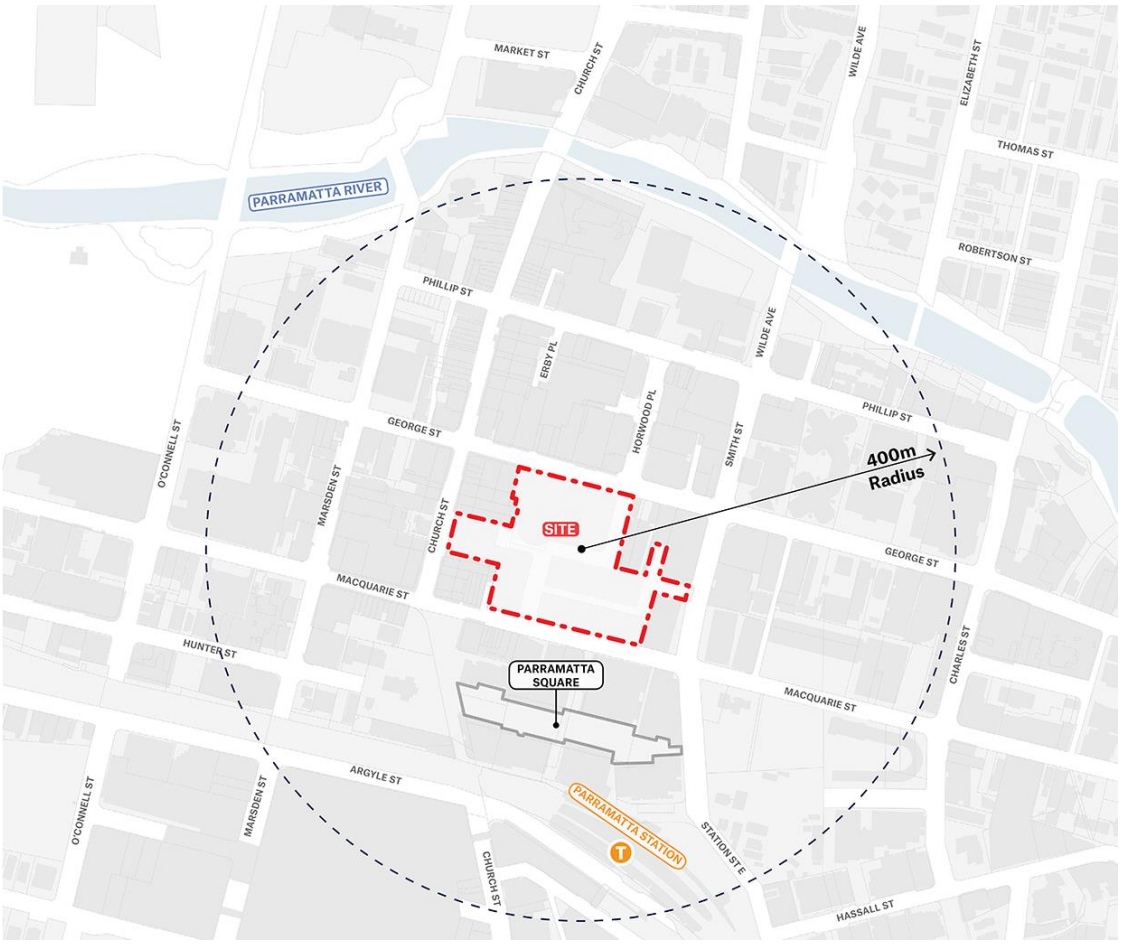


Figure 2-1 Parramatta Metro Station precinct location

As described in Table 2-1, the site comprises fourteen (14) different allotments of varying sizes. It is irregular in shape, with a total area of approximately 24,899m^2.

Table 2-1 Site legal description

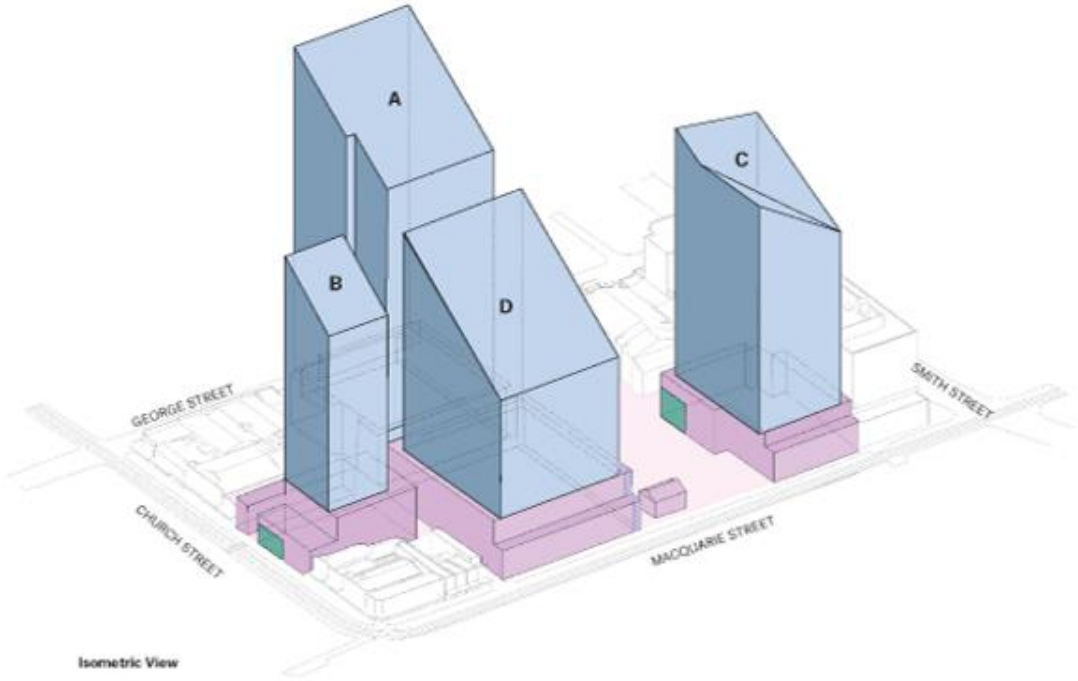
Street Address	Legal Description
41-59 George Street	Lot 10 in DP858392
45A George Street	Lot 2 in DP701456
61B George Street	Lot 1 in DP607181
71 George Street	Lot 100 in DP607789
220 Church Street	Lot 1 in DP1041242
222 Church Street	Lot 1 in DP702291
232 Church Street	Lot 1 in DP651992
236 Church Street	Lot 1 in DP128437
238 Church Street	Lot 2 in DP591454
48 Macquarie Street	Lot B in DP394050
58-60 Macquarie Street	Lot 1 in DP399104
62-64 Macquarie Street	Lot AY in DP400258
68 Macquarie Street	Lot 1 in DP711982
70 Macquarie Street	Lot E DP 402952
72 Macquarie Street	Lot 3 in DP218510
74 Macquarie Street	Lot H in DP405846

2.2 Overview of this proposal

The Concept SSDA will seek consent for four building envelopes as detailed in Table 2-2 and Figure 2-2 below.

Table 2-2 Parramatta proposed development overview

Item	Description
Building use	Building A: Commercial and retail Building B: Residential and retail Building C: Commercial Building D: Commercial and retail
Building Height (Number of storeys)	Building A: 38 storeys Building B: 33 storeys Building C: 26 storeys Building D: 25 storeys
Gross Floor Area (m²)	Building A: 78,700 Building B: 20,000 Building C: 35,950 Building D: 55,350 **TOTAL: 190,000**
Car parking spaces	455



Legend

- Parramatta Station CSSI Approval - Includes structure and building infrastructure and space for lift cores, access, parking, retail and building services for future OSD & ASD
- OSD & ASD Concept SSD Building Envelope - Includes OSD & ASD Areas inside the CSSI 'shell' below ground and in the podium levels
- Metro Station Entry and Box (Indicative)
- 3m Podium Articulation Zone - refer to Design Guidelines.
- Heritage Interface Zone - refer to Design Guidelines.

Figure 2-2 Proposed Concept SSDA development and CSSI scope

3 Methodology

3.1 Overview

This technical paper provides an assessment of the potential transport impacts of the proposed development during both end state and construction and addresses the relevant requirements of the SEARs and Scoping Report (see section 1.3).

The scope of this technical paper includes the following:

- identification of the existing transport conditions in the study area
- assessment of potential transport impacts during construction of the proposed development
- assessment of the potential transport impacts resulting from the operation of the proposed development
- identification of recommendations and potential mitigation measures to avoid, minimise and manage impacts associated with the proposed development.

The following sections detail the methodology and assumptions used for the assessment.

3.2 Review of existing conditions

This chapter describes the existing conditions at the proposed development site. It includes the existing land use context and parking arrangements as well as the current transport environment, including provision of active transport, public transport (suburban rail, light rail, bus and ferry) and the current performance of the road network. It also looks at the existing travel patterns for residents and workers in the vicinity of the site using Australian Bureau of Statistics census data from 2016.

Performance of the existing road network has been assessed through analysis of existing traffic volumes and patterns on the road network surrounding the proposed development. Traffic surveys that were conducted for the Concept and Stage 1 CSSI approval were adopted. Those counts were undertaken in March 2021.

To assess Covid-19 impacts, a comparison of data from Transport for NSW permanent traffic counter sites was undertaken. The monthly average difference in 8-9 AM and 5-6 PM peak hour flows between 2019 (pre Covid-19) and 2021 was calculated and is presented in Table 3-1 and Table 3-2. In the AM peak there was an average reduction of 3% in peak hour flows between 2019 and 2021, whereas in the PM peak there was an average reduction of 2.6% in peak hour flows.

Table 3-1 Monthly average difference in 8-9 AM peak hour flows between 2019 and 2021

Month	Hawkesbury Road	Centenary Drive	Western Distributor	Cahill Expressway	Average
March	-10%	-3%	7%	-7%	-3%

Table 3-2 Monthly average difference in 5-6 PM peak hour flows between 2019 and 2021

Month	Hawkesbury Road	Centenary Drive	Western Distributor	Cahill Expressway	Average
March	-0.5%	-2%	-4.4%	-3.5%	-2.6%

Assessment of existing intersection performance in the vicinity of the proposed development has been undertaken using SIDRA Intersection 9 software. Base year traffic models were developed to replicate existing traffic conditions for a morning and evening peak hour. No weekend (Saturday) SIDRA analysis has been undertaken as part of the assessment. Traffic modelling using SIDRA has not been undertaken for the construction assessment at this stage.

To account for Covid-19 impacts and the reduction in traffic levels on the road network due to the pandemic, observed traffic volumes were increased by an amount equivalent to the average monthly reductions identified in Table 3-1 and Table 3-2. The adjusted flows were used for purposes of the existing baseline assessment.

3.3 Review of potential construction impacts of the proposal

The proposed development including construction activities, construction sites, and construction vehicles have been considered in the anticipated construction plan. Haulage routes have been proposed and construction vehicle forecast estimated.

The impacts of the construction on the transport network have been assessed for each construction stage for the road network, active transport links and public transport.

Impacts on parking, property access and emergency vehicles during construction have also been assessed.

3.4 Review of provision of parking and access

The proposed provision of car, motorcycle and bicycle parking for the proposed development has been detailed and referenced against the requirements of the Parramatta Development Control Plan (DCP) 2011 and Parramatta Local Environmental Plan (LEP) 2011.

The proposed development is aiming to achieve a Green Star rating from the Green Building Council Australia. The Green Star Buildings Movement and Place Credit assessment tool has been used to calculate the quantities of bicycle parking and end of trip facilities and applied where it is more onerous than the Parramatta DCP.

Consultation with the Transport for NSW Freight Division and application of their Last Mile Toolkit forecasting tool has been undertaken to estimate the loading requirements for the proposed development. This tool is a bespoke application developed to provide guidance on the urban freight demands of developments and calculates the efficacy of proposed docking bays. In the context of urban freight, efficacy is a measurement of the effectiveness of the docking arrangement and its ability to meet demand. The tool is a guide based on recent research into demands generated by buildings in Metropolitan Sydney. The tool uses land use as an input and aims to achieve a service level performance of approximately 95%.

Access arrangements to the proposed development for pedestrians, cyclists and vehicles is also presented.

3.5 Review of potential transport impacts of the proposal

Integration of the proposed development with the precinct is discussed, including consideration of safe and efficient integration of the pedestrian network, cycle network, public transport network and surrounding road network. Impacts on access to adjacent properties to the proposed development have also been assessed.

The future mode share for the trips generated by the proposed development has been estimated based on existing travel patterns in the area and with consideration of the availability of additional modes (e.g. light-rail and metro) and the expectation that private vehicle use will decrease, or at a minimum be constrained by the amount of parking. A comparison of the predicted mode share across similar SSD developments was also carried out, including Pitt Street North Over Station Development, Martin Place South Tower Integrated Station Development and Victoria Cross Over Station Development.

The additional demand on the pedestrian network has been estimated with consideration of forecast mode share.

The number of vehicle trips in the AM and PM peak have been based on the RMS (now TfNSW) Guide to Traffic Generating Developments for residential trips by number of units and by first principles based on parking provision for commercial trips.

Consistent with the CSSI operational impact and accessibility assessment, and to inform the study, Public Transport Project Model (PTPM) 2036 future year model runs have been used to assess the potential impacts on the road network for a 'with proposed development' scenario. The traffic growth factor derived from PTPM model outputs was used to extrapolate 2021 traffic survey flows (adjusted to account for Covid-19 impacts) to future year 2036 traffic flows. The growth factor applied is 1.18.

SIDRA Intersection 9 has been used to test how the road network and key intersections surrounding the proposed development may operate in the forecast 2036 year. The future year traffic impact assessment considered two scenarios, including:

- 2036 future year with metro and without the proposed development
- 2036 future year with metro and with the proposed development.

To estimate the traffic flows for the 2036 future year scenario without the proposed development, the estimated traffic generation of the proposal was deducted from the traffic associated with the future scenario with the proposed development.

3.6 Data sources

The data in Table 3-3 was used to inform this transport assessment.

Table 3-3 Data sources

Data	Source
Current transport trends	Australian Bureau of Statistics 2016 Census
2021 AM and PM traffic and pedestrian flows	Traffic and Pedestrian Surveys commissioned by Sydney Metro and undertaken in March 2021
Precinct Global Traffic Statistics for (Link Traversal Volumes, SA2 Volumes, VHT, VKT) • 2017 AM peak hour • 2036 AM peak hour with Sydney Metro West and SSD development	PTPM
Freight and servicing requirements	Freight and Servicing Summary, 1 September 2021, Transport for NSW Urban Freight

3.7 Assumptions

Assessment of traffic and transport modelling scenarios was based on the following assumptions:

- Intersection geometries for intersections were based on available aerial photography and site observations. SIDRA modelling has been carried out for signalised intersections and un-signalised intersections where required
- Phasing and timings for signalised intersections were based on information from Traffic Control Signal (TCS) plans and Sydney Coordinated Adaptive Traffic System (SCATS) data provided by Transport for NSW
- Intersections were assessed using SIDRA Intersection 9 analysis software
- Existing base year modelling assumes observed pedestrian crossing volumes, while future year modelling assumes pedestrian volumes calculated by applying a growth factor derived from future land use projections to existing pedestrian volumes. The future year with the proposed development scenario assumes the future year background pedestrian volumes in addition to the proposed development pedestrians using Sydney Metro
- Calibration of existing base year models was completed based on available aerial photography, site observations and SCATS data. Queue length survey data, as well as on-site observations were used to validate the performance of the base models
- Traffic movements for the 2036 future year with the proposed development scenario were informed by outputs from PTPM traffic model runs
- The PTPM growth rate is assumed to include the traffic generated by the proposed development and was therefore used directly for the 2036 ‘with SSD’ modelling scenario

- The traffic generation for the proposed development was calculated in two ways using the RMS (now TfNSW) Guide to Traffic Generating Development and agreed first principles:
    - based on proposed land uses for residential use
    - based on the amount of parking provided for commercial use, which may act as a constraint to the traffic generated
    - for commercial trips, 80% of car parking spaces are assumed to generate one vehicle trip in the AM and PM peaks
    - retail staff trips are assumed to occur outside of the peak periods
    - access/egress splits were assumed to be as follows:
        - in the AM peak: 20% in, 80% out (residential), and 80% in, 20% out (commercial)
        - in the PM peak: 80% in, 20% out (residential), and 20% in, 80% out (commercial).
- ABS 2016 Journey to Work data was used to estimate 2036 mode share choice for residential (SA1) and commercial (DZN) trips. As this data did not include Sydney Metro or Parramatta Light Rail, modifications have been made by benchmarking against similar projects. The estimated future mode share for both inbound and outbound trips are listed in Table 3-4.

Table 3-4 Predicted future mode share splits (2036)

Mode	Inbound %	Outbound %
Train	35%	32%
Metro	32%	22%
Bus	15%	10%
Ferry	0%	0%
Light rail	5%	5%
Total public transport	87%	69%
Taxi	0%	0%
Car, as driver	5%	6%
Car, as passenger	0%	0%
Bicycle	1%	1%
Walked only	7%	24%
Total	100%	100%

Building trip generation was calculated using the assumptions listed in Table 3-5.

Table 3-5 Building generation assumptions

Land use	Assumption
Commercial	Employee to Space Ratio of 0.1
	GFA to NLA efficiency 85%
	Attendance 85%
	Arrival in AM 50%
	Final rate: 0.04 person trips per sqm of GFA
Residential	Based on Population to Dwelling Ratios from ABS data (SA2)
	Departures in AM 50%
	Final rate: 1.31 person trips per dwelling

- AM to PM conversion factor for pedestrian trip generation is assumed to be 0.94 which is consistent with the pedestrian modelling undertaken for the Sydney Metro West stations.
- The pedestrian distribution is based on the Travel Zone Projections 2019 (TZP19) for 2036, the NSW Government's publicly available land use forecasts. Each travel zone within 800m of the proposed development (approximated by the station entrances) has been assigned to footpaths approaching the proposed development, considering crossing opportunities, severance, and amenity. TZP19 is based on best available data available as at late 2019 and does not consider impacts from the Covid-19 pandemic. This distribution is an estimation and is provided as a guide only.
- Outgoing walk trips from the proposed development are proportioned to the jobs (EMP_2036) in each direction, while incoming walk trips are associated with residences (ERP_2036).
- The TfNSW Freight Toolkit was used to determine loading dock provisions. It is assumed that buildings which share a basement also share loading dock spaces and management.

3.8 Assessment criteria

Traffic performance has been assessed at an intersection level using SIDRA Intersection 9 analysis software. In line with Transport for NSW guidance (Guide to Traffic Generating Developments, October 2002), vehicle delay was used to categorise performance into level of service (LOS) categories ranging from A (good) to F (unsatisfactory). Table 3-6 shows the criteria that SIDRA Intersection adopts in assessing the LOS.

Table 3-6 SIDRA Intersection level of service criteria

Level of Service	Average Delay per Vehicle (sec/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	<14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Unsatisfactory with excessive queuing	Unsatisfactory with excessive queuing

Source: Roads and Traffic Authority (2002) Guide to Traffic Generating Developments

4 Existing conditions

This section describes the existing situation at the proposed development site, including the land use context, existing transport network and current usage trends.

4.1 Site location

The site for the proposed development is located within the City of Parramatta Local Government Area (LGA) in Parramatta's CBD, Sydney's Central River City. The precinct is positioned to the north of the existing Parramatta train station and is bounded by George Street to the north, Smith Street to the east, Macquarie Street to the south, and Church Street to the west, as shown in Figure 4-1.

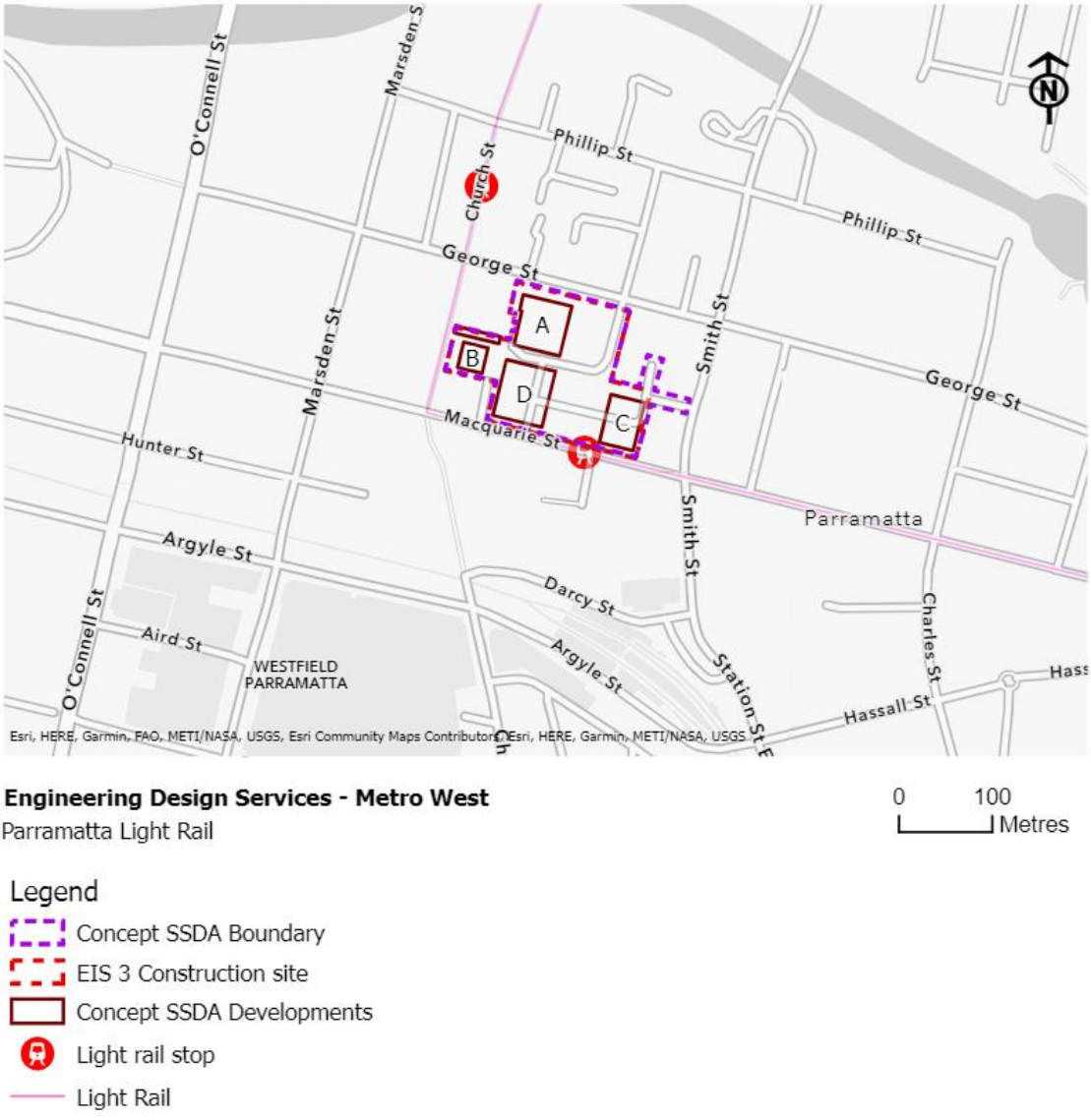


Figure 4-1 Proposed site location

4.2 Land use context

The land within the Parramatta CBD is predominantly zoned for commercial and mixed use, with high density residential areas located to the far east, and north-east of the CBD. The north and north-west of the CBD are bounded by extensive public recreational areas, including the recently revitalised Parramatta Riverbank Precinct and Parramatta Park, adjacent to the Bankwest Stadium. The land zoning in the vicinity of the proposed development site is shown in Figure 4-2 .

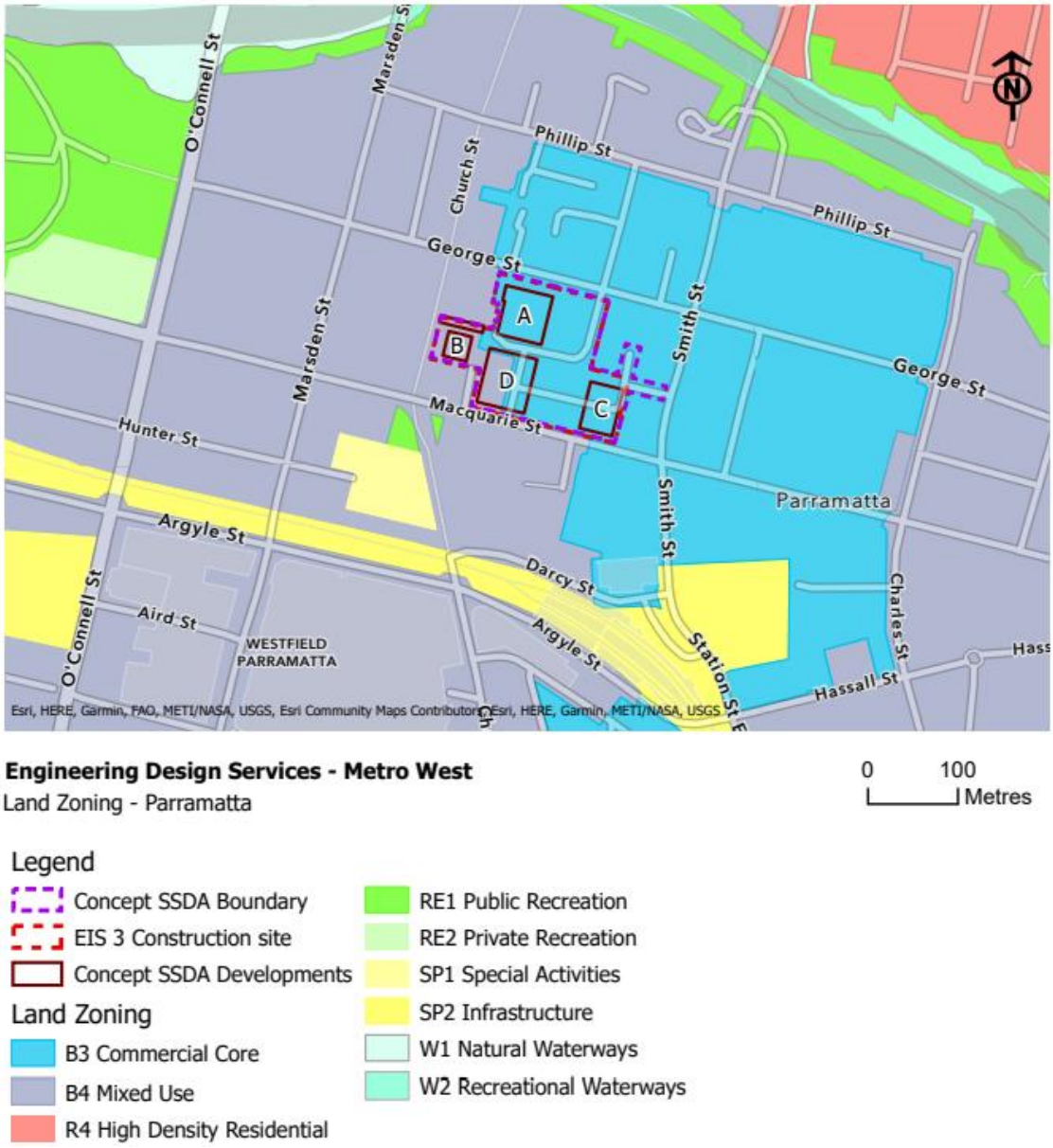


Figure 4-2 Land zoning map

The proposed development site is an amalgamation of multiple individual sites, which includes the following large sites and former buildings which have been demolished under the Concept and Stage 1 CSSI Approval:

- the City Centre Carpark at 1 Horwood Place
- the Parramatta Shopping Centre at 55-67 George Street
- 41-59 George Street and 220 Church Street, which both contain commercial and retail businesses.

The area within the vicinity of the proposed development site has the following current land uses and characteristics:

- a mixture of commercial, community and retail premises in addition to emerging high-density residential developments
- under construction or planned commercial and mixed-use developments that would increase the density and activity in the CBD
- Parramatta Square, a mixed-use development, is located to the south of the proposed development site and is currently under construction. The site is located over three hectares of land with the tallest building reaching 50 storeys in height, and is due for completion in 2022
- Church Street 'Eat Street' which is a retail, food and beverage, and recreation area is located to the west of the proposed development site. This road will include a pedestrianised zone when Parramatta Light Rail is operational and will be one of the key desired pedestrian links around the precinct
- Parramatta CBD is rich with European heritage, with several heritage items located within the same block as the proposed development site, including the Roxy Theatre, Kia Ora house, a Victorian Regency shop building, a horse parapet façade and convict drain
- world heritage listed Parramatta Park and the newly completed Bankwest Stadium is located to the west and north-west of the proposed site
- the Parramatta River which has recently been revitalised and provides amenities, recreation, and active transport connections to the CBD is located to the north of the CBD and proposed site
- a number of schools and educational institutes are located in the vicinity of the proposed site including, Western Sydney University, Sydney Technical Institute, Parramatta Public School, and Arthur Philip High School.

4.3 Transport network

Figure 4-3 shows the existing transport network surrounding the proposed development site and the following sections describe the existing transport provision.

Engineering Design Services - Metro West
Existing transport network - Parramatta

0 100 Metres

Legend

- Concept SSDA Boundary
- EIS 3 Construction site
- Concept SSDA Developments
- Bus stop
- Railway stop
- Ferry stop
- Cycle link
- Railway
- Light Rail
- Bus route

Figure 4-3 Existing transport network

4.3.1 Road network

The proposed SSD development site is bounded by the following roads:

- George Street to the north
- Macquarie Street to the south
- Smith Street to the east
- Church Street to the west.

George Street is a single carriageway street with two lanes in each direction and a posted speed limit of 40km/h. A local road, George Street runs east-west with the kerb-side lanes on each side used for parking. The road operated as one way (in the eastbound direction) till the end of 2019, when it was converted to two-way. The Parramatta free shuttle service stops near the corner of George Street and Church Street and has a frequency of 10 services during each of the AM and PM peak periods. When Parramatta Light Rail is operational in 2023, George Street will intersect with light rail operations running on Church Street.

Macquarie Street, a local road, operates as a one-way road (eastbound) between O'Connell Street and Pitt Street. It also operates as a one-way road (westbound) to the east of O'Connell Street with a posted speed of 50km/h. A section of the road is currently closed for general traffic due to Parramatta Light Rail construction, except for a small number of vehicles accessing surrounding developments and construction vehicles.

When Parramatta Light Rail is operational (expected to open in 2023), sections of Macquarie Street between Church and Smith Street will be a shared pedestrian and light rail zone. A westbound traffic lane will be maintained to provide access to surrounding developments west of Smith Street. Also, an eastbound traffic lane will be provided between Marsden Street and Horwood Place to provide access to surrounding developments, including Parramatta Square. Arrangements for very infrequent ceremonial vehicles east of Horwood Place will also be provided.

Smith Street is a single carriageway south of George Street and a dual carriage way to the north of George Street. A local road, it generally has two lanes in each direction with storage lanes for right turning vehicles and dedicated bus lanes on the kerb-side lane between Darcy Street and Victoria Road. The road has a posted speed limit of 40km/h and parking is not allowed along this road. The road is a major bus link with several bus stops provided on both sides and serving many bus routes.

Church Street is a north-south local road that has closed to traffic due to Parramatta Light Rail construction. When Parramatta Light Rail is operational, it is expected that Church Street will operate as an active street, that is referred to as "Eat Street". The road will be pedestrianised, except for light rail movements, with pedestrian crossings provided at intersections with George Street as part of the Sydney Metro West Stage 3 CSSI Application and Macquarie Street as part of the Parramatta Light Rail project.

In addition to the above roads, Horwood Place dissects the proposed development site, running north-south providing access to surrounding developments and off-street parking. It also provides on-street parking and acts as a cycling link connecting George Street and Macquarie Street; however, the southern end is currently closed due to Parramatta Light Rail construction. The section of Horwood Place between Macquarie and George streets is approved to be closed as part of the Sydney Metro West station excavation works.

Macquarie Lane is an access road that connects the precinct with Smith Street and the wider road network. It provides rear access to surrounding developments and off-street parking spaces and exit from the existing multi-storey car park which has been demolished under the Concept and Stage 1 CSSI Approval.

Table 4-1 provides AM and PM peak hour link volumes for major roads forming the precinct's road network based on traffic counts conducted in March 2021.

Table 4-1 Existing peak hour traffic volumes by direction (2021)

Road	Location	AM peak volume (vehicles per hour)		PM peak volume (vehicles per hour)	
		Light	Heavy[3]	Light	Heavy[3]
George Street	Eastbound- mid-block between Smith Street and Church Street	421	9	295	9
George Street	Westbound- mid-block between Smith Street and Church Street	237	16	308	10
Church Street	Northbound- mid-block between George Street and Macquarie Street	N/A[1]	N/A	N/A	N/A
Church Street	Southbound- mid-block between George Street and Macquarie Street	N/A[1]	N/A	N/A	N/A
Smith Street	Northbound- mid-block between George Street and Macquarie Street	350	65	271	69
Smith Street	Southbound- mid-block between George Street and Macquarie Street	300	79	207	69
Macquarie Street	Eastbound- mid-block between Horwood Pl and Marsden Street	N/A[2]	N/A	N/A	N/A
Macquarie Street	Westbound- mid-block between Horwood Pl and Marsden Street	N/A[2]	N/A	N/A	N/A
Macquarie Street	Eastbound- mid-block between Horwood Pl and Smith Street	4	0	13	0
Macquarie Street	Westbound- mid-block between Horwood Pl and Smith Street	24	9	18	2

Source: TfNSW Traffic surveys, March 2021

[1]Church Street is closed in both directions for Parramatta Light Rail construction.

[2]Maquarie Street is closed in both directions for Parramatta Light Rail construction except for maintained access to developments between Church Street and Marsden Street.

[3]Buses are included as heavy vehicles in the table

The observed traffic volumes for the baseline intersection performance assessment have been adjusted as described in section 3.2, to account for Covid-19 impacts. Baseline network performance for the AM and PM peak hours for key intersections in the vicinity of the proposed development are provided in Table 4-2. The SIDRA outputs are also provided in SIDRA outputs.

Table 4-2 Existing intersection performance (2021)

Intersection	AM peak		PM peak	
	Average delay (sec)	LOS	Average delay (sec)	LOS
George Street/Marsden Street	18	B	20	B
George Street/ Church Street[1]	11	A	10	A
George Street/Smith Street	38	C	36	C
Macquarie Street/Marsden Street[2]	11	A	13	A
Macquarie Street/Smith Street[3]	14	A	14	A
Smith Street/Macquarie Lane[4]	4	A	4	A
George Street/Horwood Place[4]	5	A	5	A
Macquarie Street/Horwood Place[4]	5	A	5	A

[1]Church Street north-south movements are closed.

[2]Marsden Street eastern approach movements are very low and negligible due to Parramatta Light Rail construction.

[3]Macquarie Street eastbound movements are closed. Westbound movement is limited to one lane used by local and construction traffic.

[4]The worst movement delay is reported as the overall delay for priority (un-signalised) intersections.

Modelled intersection performance indicates that all intersections perform at LOS C or better during the AM and PM peak hours. The current intersection layouts of several intersections will change when Parramatta Light Rail is operational, expected from 2023.

4.3.2 Parking arrangements

There is limited existing timed on-street parking around the proposed development site. On-street parking is provided on sections of George Street, particularly near Horwood Place. Parking is not allowed on Smith Street. There were some on-street parking spaces along Horwood Place, which have been removed as part of the station excavation works under the Sydney Metro West Stage 1 CSSI Approval.

In addition to on-street parking, there was until recently off-street parking facilities within the proposed development site at the former City Centre Car Park. This multi-storey car park included around 768 spaces. It is now closed and has been demolished as part of the station excavation works under the Sydney Metro West Stage 1 CSSI Approval.

Figure 4-4 shows the location of existing on-street parking areas immediately adjacent to the proposed development site.

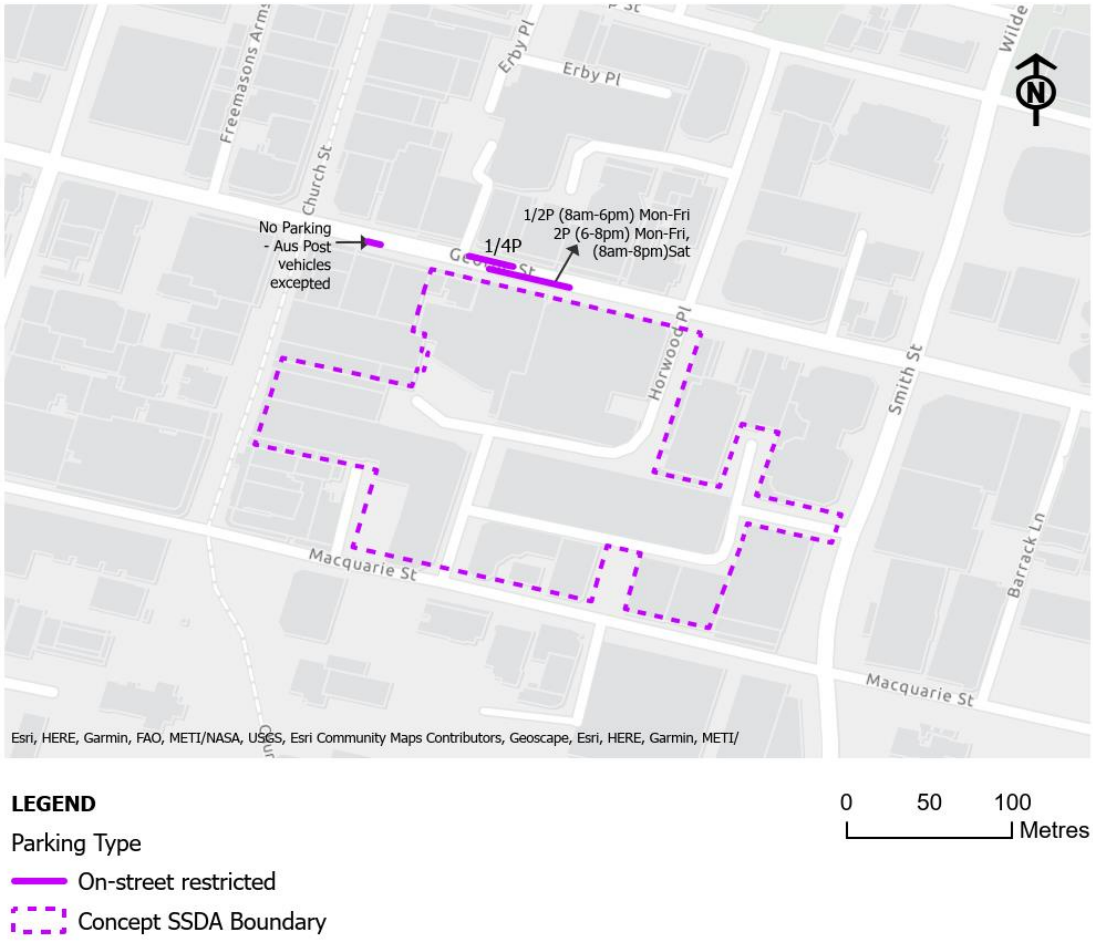


Figure 4-4 Existing parking provision

4.3.3 Public transport services

Bus services

The main existing bus interchange in Parramatta known as 'Parramatta Interchange' is located on Argyle Street near the existing Parramatta Station. It is a major transport hub allowing customers to easily transfer between the bus network, suburban rail network, intercity rail network, regional rail network and, once operational, the future Parramatta Light Rail. Bus stops are also located around the proposed development site on Smith Street and George Street, as shown in Figure 4-3. Dedicated bus lanes are provided on Smith Street in both directions.

There are 36 bus routes operating within the vicinity of the proposed development site, with peak services listed in Table 4-3. In addition to the below listed services, there are around 40 school bus services, and a number of night and off-peak services.

Table 4-3 Existing peak bus services

Route	Description	Frequency (number of weekday services)	
		AM 7:00 am – 9:00am	PM 4:00pm – 6:00pm
501	Central Pitt St to Parramatta via Victoria Rd	12	10
501	Parramatta to Central Pitt St via Victoria Rd	13	14
521	Eastwood to Parramatta	2	3
521	Parramatta to Eastwood	5	2
523	West Ryde to Parramatta	4	4
523	Parramatta to West Ryde	4	4
524	Ryde to Parramatta via West Ryde	4	5
524	Parramatta to Ryde via West Ryde	3	4
525	Strathfield to Parramatta via Sydney Olympic Park	4	5
525	Parramatta to Strathfield via Sydney Olympic Park	5	6
546	Epping to Parramatta via North Rocks & Oatlands	5	3
546	Parramatta to Epping via Oatlands & North Rocks	4	4
549	Epping to Parramatta via North Rocks	6	4
549	Parramatta to Epping via North Rocks	4	4
550	Macquarie Park to Parramatta via Epping	11	11
550	Parramatta to Macquarie Park via Epping	12	12
600	Hornsby to Parramatta	15	11
600	Parramatta to Hornsby	13	17
601	Rouse Hill Station to Parramatta via Hills Showground	7	8
601	Parramatta to Rouse Hill Station via Hills Showground	9	9
603	Rouse Hill Station to Parramatta via Glenhaven	5	3
603	Parramatta to Rouse Hill Station via Glenhaven	3	4
604	Dural to Parramatta via Castle Hill	3	4
604	Parramatta to Dural via Castle Hill	3	4
606	Winston Hills to Parramatta	7	4
606	Parramatta to Winston Hills	5	5
609	Parramatta to North Parramatta (Loop Service)	5	5
625	Pennant Hills to Parramatta	4	4
625	Parramatta to Pennant Hills	4	4
706	Blacktown to Parramatta via Winston Hills	2	1
706	Parramatta to Blacktown via Winston Hills	2	4
900	Parramatta Free Shuttle	10	10

Rail services

The existing Parramatta Station is located around 200 metres to the south of the proposed development site and is served by services listed in Table 4-4. The station is *Disability Discrimination Act 1995* compliant and includes facilities like bike racks, bike lockers, taxi zone and a kiss and ride stopping area.

Table 4-4 Existing Sydney Trains suburban rail network rail services and frequency

Line	Direction	Frequency (number of services)	
		Weekday AM 7:00 am – 9:00 am	Weekday PM 4:00 pm – 6:00pm
T1	Berowra to City via Gordon	19	26
	City to Berowra via Gordon	28	23
	Emu Plains or Richmond to City	24	38
	City to Emu Plains or Richmond	33	45
T2	Parramatta or Leppington to City	8	8
	City to Parramatta or Leppington	8	8
T5	Leppington to Richmond	5	4
	Richmond to Leppington	4	4

In addition to suburban rail, the proposed development site will be served by the future Parramatta Light Rail, expected to open in 2023. Once operational, high frequency 'turn up and go' services will run on Macquarie Street and Church Street seven days a week, departing approximately every 7.5 minutes in peak periods.

Ferry services

Parramatta ferry wharf is located around 600 metres north-east of the proposed development site and provides ferry services as part of the Parramatta River Line F3 that connects Parramatta with Circular Quay. Details of ferry services are provided in Table 4-5.

Table 4-5 F3 Parramatta River ferry services and frequency

Line/Direction	Weekday AM 7:00 am – 9:00 am	Weekday PM 4:00 pm – 6:00pm
Parramatta River to Circular Quay	2	2
Circular Quay to Parramatta River	2	2

4.3.4 Active transport network

Walking

The pedestrian network within the Parramatta CBD and around the site is well developed. Some roads, such as Church Street, Philip Street, Charles Street and Horwood Place are signposted as roads with high pedestrian activity.

According to City of Parramatta's Parramatta CBD Pedestrian Strategy (2017), 10% of residents walk to their place of employment. The strategy also highlights that the Parramatta CBD pedestrian volumes are heavy around the train station and the bus interchange in addition to active streets, such as Church Street (Eat Street).

Pedestrian counts were collected in March 2021 on footpaths and at signalised intersections in the vicinity of the Parramatta Station precinct. The results are summarised in Pedestrian counts for the AM and PM peaks.

Footpaths are provided along both sides of all roads around the proposed development site. At present, some footpath closures are in place on Church Street and Macquarie Street due to Parramatta Light Rail construction.

Signalised pedestrian crossings are provided at the intersections of Smith Street/ Macquarie Street, George Street/Smith Street, and Church Street/George Street. Current Parramatta Light Rail construction has restricted some of the footpath access in Macquarie Street and at the intersection with Church Street. Similarly, the mid-block signalised crossing on Macquarie Street west of United Lane is closed.

When Parramatta Light Rail is operational, it is expected that Church Street, being a major activity road, will act as a key north-south pedestrian link within the Parramatta CBD. Additionally, the future Civic Link will be a public space and cultural spine extending through four city blocks in the heart of the Parramatta CBD. A pedestrian and cycle route, this will pass through the proposed development site and connect Parramatta Square and the existing train station to Parramatta River.

Cycling

The existing formal cycling network near the proposed development site is limited to the existing routes:

- a shared path on O'Connell Street, north of Argyle Street
- an off-road cycling route along the Parramatta River.

The City of Parramatta Bike Plan (2017) and NSW Principal Bicycle Network have indicated proposed cycling routes on Civic Link, George Street, and Marsden Street.

Additional cycling routes exist, without formal infrastructure. The NSW cycleway finder highlights on-road cycleways with high difficulty on Philip Street and Macquarie Street, in addition to a moderate difficulty route on Horwood Place. The section of this cycleway between Macquarie Street and George Street would be closed as part of the station excavation works under the Concept and Stage CSSI Approval. Bicycle use would be discouraged on Macquarie Street when light rail testing commences in 2022 to avoid bicycle and light rail conflicts.

4.4 Current transport trends

Journey to Work (2016) census data has been analysed to establish primary modes of travel for inbound and outbound workers for travel zones within 800 metres of the proposed site. The current mode share is presented in Figure 4-4.

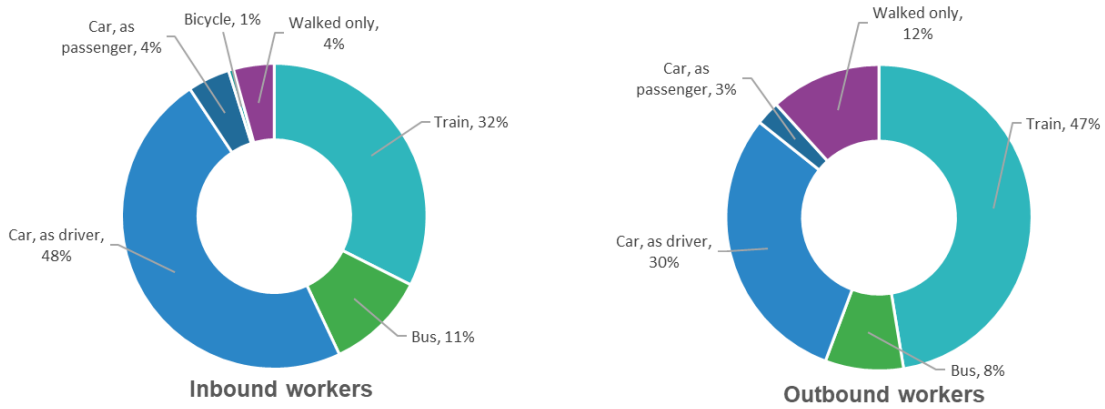


Figure 4-4 Existing mode share

The Journey to Work (2016) census data has also been interrogated to extract the top five origins and destinations for inbound and outbound trips associated with an 800m catchment around the Concept SSDA site. These are summarised in Table 4-6.

Table 4-6 Top five origins and destinations for inbound and outbound trips

Inbound - workers travelling to Parramatta for work	Outbound - residents leaving Parramatta for work
14% - Parramatta	27% - Sydney Inner City
8% - Merrylands - Guildford	21% - Parramatta
6% - Blacktown	5% - Auburn
6% - Baulkham Hills	5% - North Sydney - Mosman
6% - Blacktown - North	5% - Ryde - Hunters Hill

5 Indicative reference scheme

This section describes the indicative reference scheme for the proposed development, including the land uses, access and parking arrangements.

5.1 Land use and quantities

The concept for the proposed development is summarised in Table 5-1. Four buildings and two three-storey basements are proposed at the site, referred to as the 'northern' and 'southern' basements. Buildings A and B are served by the northern basement and buildings C and D are served by the southern basement.

Table 5-1 Proposed development land use and quantities

Land Use		Building and basement			
		A northern	B northern	C southern	D southern
Commercial	sqm GFA	74,360 m^2		35,190 m^2	51,690 m^2
Retail	sqm NLA	3,500 m^2	1,110 m^2		2,730 m^2
Total building	sqm GFA	77,860 m^2	19,360 m^2	35,190 m^2	54,420 m^2
Residential	1 bedroom		40 no.		
	2 bedroom		75 no.		
	3 bedroom		30 no.		
	Total units		145 no.		

5.2 Proposed access and parking

5.2.1 Pedestrian access

Pedestrian access to each of the buildings is illustrated in Figure 5-1 and described below.

- Building A can be accessed from George Street to the north, from Horwood Place to the east and a new east-west link to the south
- Building B can be accessed from Church Street
- Building C can be accessed from Macquarie Street and Civic Link
- Building D can be accessed from a new east-west link to the north, from Horwood Place to the east and Macquarie Street to the south.

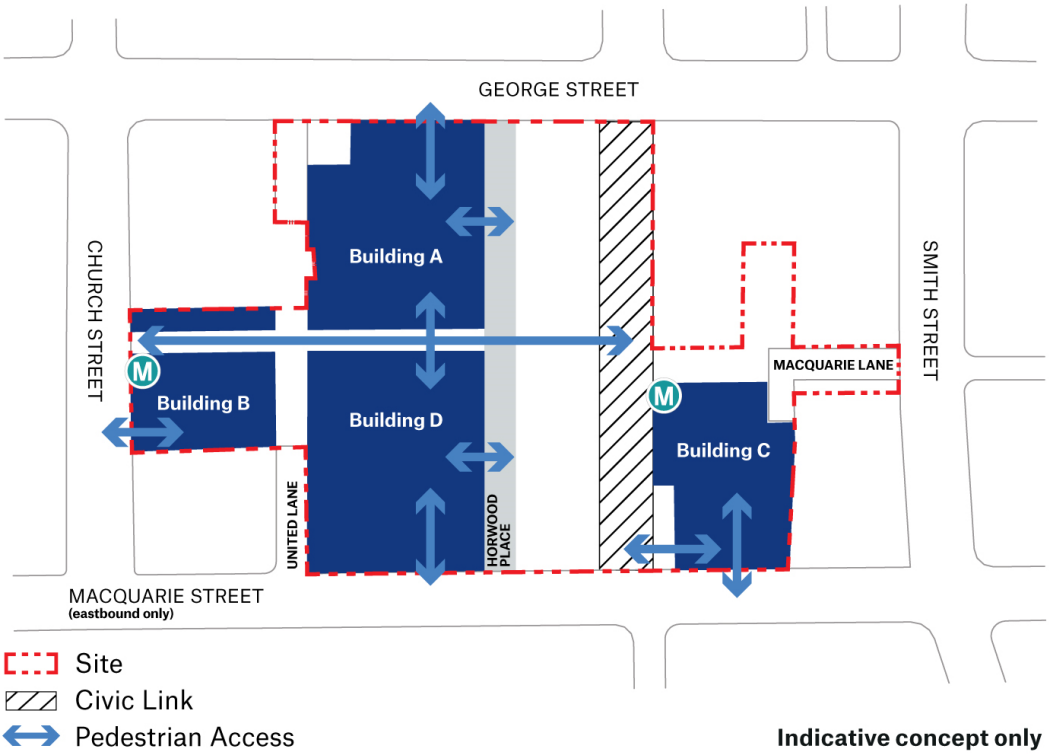


Figure 5-1 Pedestrian access to/from the site

5.2.2 Bicycle parking and end of trip facilities

Bicycle parking and end of trip facilities are provided in the basements serving the proposed development.

The commercial facilities are accessed via lifts or bicycle stairways (i.e. stairs with a wheeling ramp adjacent to the stair). The residential bicycle parking is accessed via a lift from the east-west laneway through the site. The proposed access locations are marked in Figure 5-2.

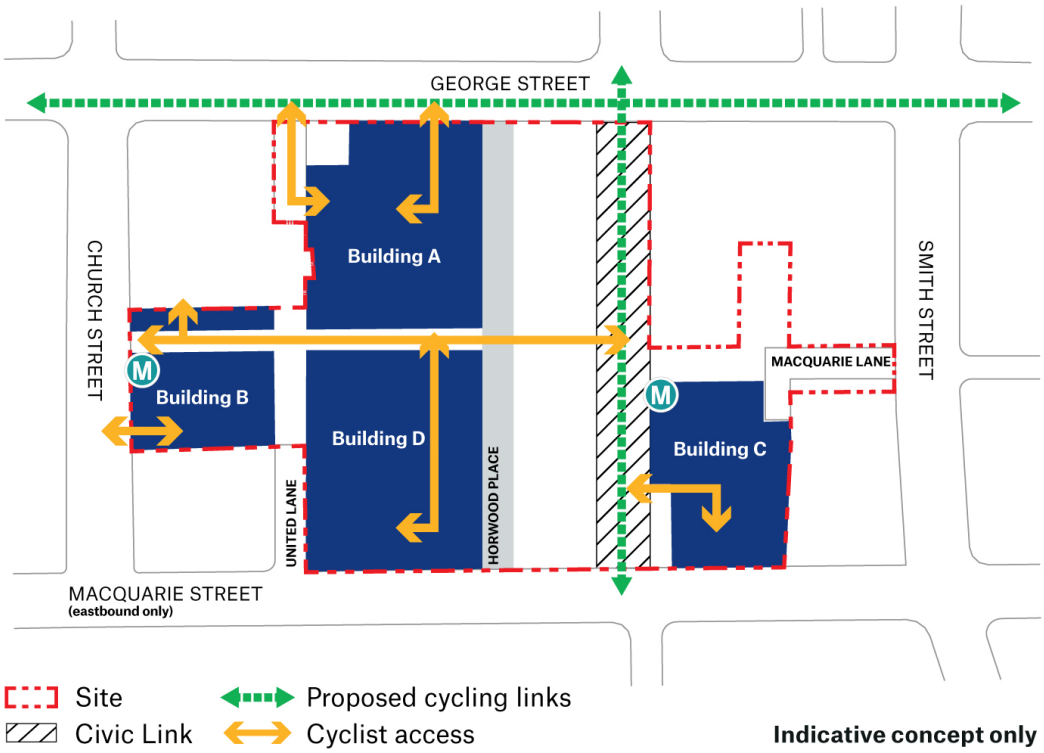


Figure 5-2 Access and egress routes for cyclists

The routes into the proposed development's commercial basement facilities for Buildings A, C and D will be accessible from the two planned new cycle links on George Street and Civic Link, which are not part of this Concept SSDA. For cyclists accessing the facilities in Building D, the last part of their journey through the east-west walkway will be shared with pedestrians and signage should be in place to ask cyclists to dismount. To access the bicycle stairway for Building A, cyclists will share the laneway off George Street with vehicles. Appropriate signage and speed restrictions should be installed to mitigate against potential conflicts.

Residents will be able to access the lift to the basement parking from Church Street, which will be operating as a shared pedestrian and light-rail zone, or through the pedestrianised east-west laneway from Civic Link. In both cases, cyclists would be required to dismount and walk the final leg of the route, including on Church Street as current regulation does not allow cycling in tramways.

The Parramatta DCP requires the following number of bicycle parking spaces:

- one bicycle space per two residential dwellings
- one bicycle space per 200m^2 of commercial or retail floor space.

Bicycle parking is to be in the form of Class 2 compounds (bicycle cages) and adequate showers and lockers are to be provided to service the number of bicycle parking spaces.

The proposed development is aiming to achieve a Green Star rating from the Green Building Council Australia. The Green Star Buildings Movement and Place Credit assessment tool has been used to calculate the quantities of end of trip facilities and is found to be more onerous than the Parramatta DCP in most areas. The number of bicycle facilities required for the proposed development are therefore set out in Table 5-2. Note that this is subject to change as land use quantities are refined.

Table 5-2 Required bicycle parking and EOT facilities

Building	Use type	Required bicycle racks (no.)	Recommended bicycle racks (no.)	Required showers (no.)	Required lockers (no.)
Building A	Commercial	370	380	40	925
	Retail	18	20	5	44
Building B	Residential	73	80	Exempt	Exempt
	Retail	6	10	4	14
Building C	Commercial	188	190	22	469
Building D	Commercial	286	290	32	713
	Retail	19	20	5	47

Note: bicycle racks are based on DCP requirements and showers and lockers are based on achieving a Green Star rating

Bicycle access and the location and layout of end of trip facilities are to be confirmed as part of the Detailed SSDA. To encourage uptake of bicycle use, the following recommendations are made, based on the Australian Standard Parking facilities, Part 3: Bicycle Parking and Austroads Bicycle Parking Facilities: Guidelines for Design and Installation:

- easy access should be provided to the bicycle parking facility with minimal distances to travel while dismounted. The Austroads Bicycle Parking Facilities: Guidelines for Design and Installation gives 0-5m as an effective distance for cyclists to be asked to dismount and walk bicycles to parking facilities, with 5-30m considered acceptable and over 30m compromising the use of the facilities.
- where bicycle stairways are provided, these should not form the only point of access as not all bicycles are able to use them (e.g., cargo bicycles or some electric bicycles). The wheel channel should be spaced approximately 400mm from the wall to prevent pedals or handlebars from catching and the gradient should not exceed 30 degrees and should ideally be less than 25 degrees. Switchbacks or turns are hazardous and should be avoided.
- bicycle parking should be located as close as possible to the main access point to the proposed development (i.e., near the lifts).
- changing rooms with showers and lockers should be close to and easily accessible from the bicycle parking.

5.2.3 Vehicular access

Proposed vehicle access to the basement level parking areas and loading docks is via George Street for the northern basement and Smith Street and Macquarie Lane for the southern basement, as shown in Figure 5-3.

The George Street access is proposed to operate as left-in, left-out given the road has two lanes in each direction as well as its proximity to the George Street and Church Street intersection. The Smith Street access is expected to continue to operate in its current configuration of left-in, left-out only.

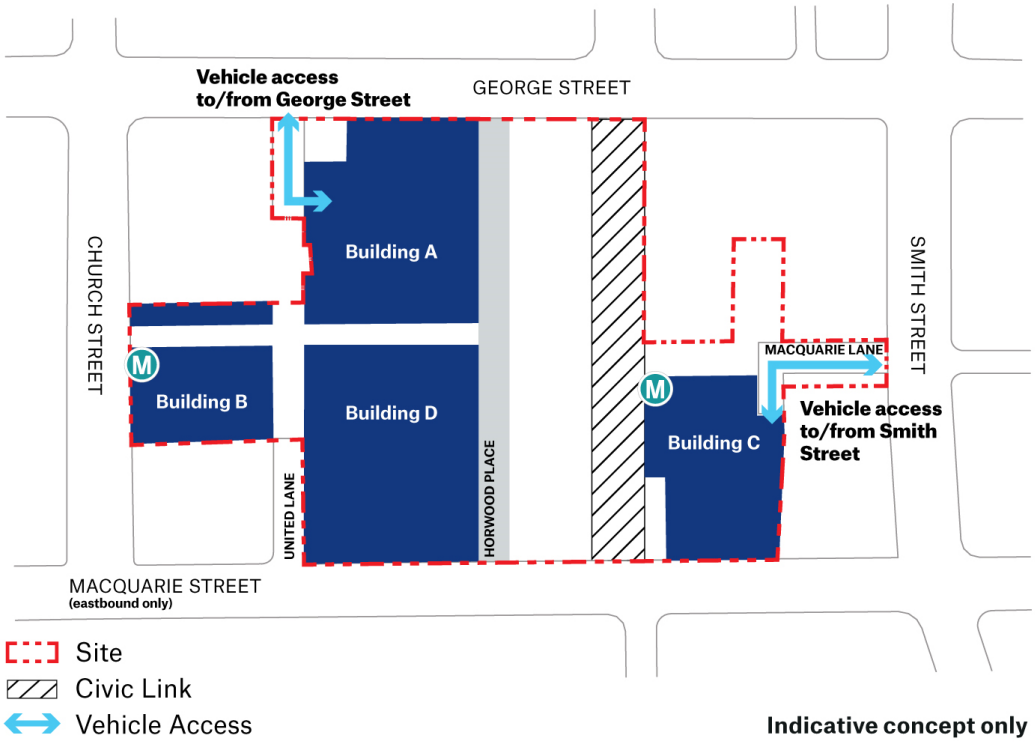


Figure 5-3 Vehicular access to/from the site

5.2.4 Car parking

The proposed development is subject to the parking requirements stipulated in the Parramatta DCP, which in turn references the Parramatta LEP. This gives maximum rates which are not to be exceeded.

Table 5-3 summarises the LEP maximum parking rates and spaces based on the proposed development's land use yields for each building. This is subject to minor changes during subsequent submissions, as the land use quantities are refined.

Table 5-3 Maximum car parking spaces per building

Land use	LEP Parking Rates (maximum)	Maximum permissible spaces per building			
		A	C	D	B
Commercial	FSR > 3.5:1 Max. parking = (GxA)/(50xT)	230	104	161	3
Residential	0.3 per 1 bed dwelling				12
	0.7 per 2 bed dwelling				53
	1 per 3 bed dwelling				30
Total		230	104	161	98

Note: FSR is the floor space ratio, *G* is the gross floor area of all business and office premises in the building in square metres, *A* is the site area in square metres, and *T* is the total gross floor area of all buildings on the site in square metres

Building A and B share the northern basement, and Building C and D share the southern basement. Table 5-4 sets out the maximum permissible parking spaces, as

well as the proposed provision of car parking spaces, per basement. It should be noted that all non-residential parking has been designated as commercial for the purposes of this assessment for conservatism in the road network modelling.

Table 5-4 Maximum car parking spaces per basement and proposed provision

Land use	LEP Parking Rates (maximum)	Maximum permissible spaces			Proposed parking spaces		
		Northern	Southern	**Total**	Northern	Southern	Total
Commercial	FSR > 3.5:1 Max. parking = (GxA)/(50xT)	230	265	495	156	226	382
Residential	See Table 5-3	98		98	73	0	73
Total		328	265	593	229	226	455

The proposed provision of parking is within the LEP maximum rates. Given the proximity of the proposed development to a range of public transport links, the reduction in the number of spaces compared to the existing site is appropriate. By providing a lower number of parking spaces per residential dwelling than the Draft LEP maximum, residents will be discouraged from owning and using private vehicles catalysing a shift to sustainable transport modes and reducing impacts on the broader road network.

The Parramatta DCP also specifies that 1-2% of parking spaces should be accessible. The proposed development includes six accessible spaces, which is 1.3% of the total parking spaces. Two spaces are proposed to be provided in the northern basement serving Building A and four in the southern basement, with two serving Building C and two serving Building D. Given the lack of permeability between the basements, an additional accessible space in the northern basement has been recommended for future design iterations.

The proposed development has more than 50 residential units or 5,000m^2 of floor space and is within 800m of a railway station, and under Parramatta DCP is therefore required to provide at least one car share parking space. As the Parramatta DCP does not have any further specific guidance on number of car share parking spaces, the 2012 guide and 2014 amendment is used as reference, which gives the following rates in the Sydney CBD:

- 1 car share space per 50 residential car spaces
- 1 car share space per 30 commercial or retail car spaces.

A summary of the recommended number of car share spaces for each basement is presented in Table 5-5.

Table 5-5 Recommended number of car share spaces for the proposed SSD development

Basement	Proposed parking spaces		Recommended car share spaces
	Commercial	Residential	Total
Northern	156	73	7
Southern	226	0	8

The allocation and locations of the car share spaces are to be confirmed as the design develops.

5.2.5 Motorcycle

The Parramatta DCP specifies that separate parking for motorcycles should be provided, with a minimum area of one car parking space for every 50 car parking spaces provided.

The allocation and location of the motorcycle parking is to be confirmed for the proposed development as the design develops.

5.2.6 Loading docks

The number of loading docks calculated as required for a 95% service level and the provision in each basement for medium rigid vehicles (MRV), small rigid vehicles (SRV) and B99 vehicles are provided in Table 5-6. Note the requirements are subject to change as the land use quantities are refined.

Table 5-6 Proposed Parramatta development loading dock provision

Loading Docks	B99	SRV	MRV
Calculated requirements			
Northern basement (A + B)	12	5	3
Southern basement (C + D)	10	4	2
Parramatta Metro Station	1	-	1
Total Requirement	23	9	6
Provision			
Northern basement	9	10	4
Southern basement	10	8	4
Total Provision	19	18	8
Difference	-4	+9	+2

Swept path analysis should be undertaken as part of the Detailed SSDA to review the manoeuvrability of vehicles with dimensions as per the AS/NZS 2890.1 and 2809.2 and detailed in Table 5-7.

Table 5-7 Assumed service vehicle dimensions

Vehicle type	Overall length (m)	Design width (m)	Wheel base (m)
B99	5.20	1.94	3.05
SRV	6.40	2.30	3.80
MRV	8.80	2.50	5.00

Source: AS/NZS 2890.1:2004 and 2809.2:2018

The following minimum clearance heights in basements apply, as per the AS/NZS 2890 standard:

- 2.2m clearance height for B99 vehicles
- 2.5m clearance height above dedicated accessible spaces and adjacent shared area (2.2m is sufficient for travel between the car park entrance and the accessible parking space)

- 3.5m clearance height for SRV vehicles
- 4.5m clearance height for MRV vehicles

The proposed development has 4.5m clearance heights in basement levels 01, which are proposed for use by MRVs and SRVs, and 2.2m clearance heights in basement levels 02 and 03, proposed for use by B99 vehicles. Signage should be in place to warn drivers of the change in height. As the layout of the basements are developed in the Detailed SSDA, it will need to be ensured that accessible spaces and adjacent shared area have 2.5m of clearance height.

6 Construction impact assessment

This chapter reviews the impacts associated with the construction of the proposed development, including providing preliminary details of the construction plan and assessment of the potential impact on the transport network.

6.1 Construction details

6.1.1 Worksite location and access

The proposed development construction site is approximately 20,000m^2. The proposed development consists of four mixed use developments. Prior to the proposed development construction work proceeding, the site will have been cleared of all buildings and all major utility diversions will have occurred under the Concept and Stage 1 CSSI Approval. It must also be noted that the excavation and structure for the northern and southern basements would be delivered under Stage 3 CSSI Approval, and this report mainly relates to above ground construction activities.

The primary site access point for material deliveries and heavy vehicles will be from George Street during the construction of Buildings A, B, and D with Horwood Place being a secondary route. During the construction of Building C, Smith Street will be the main access point for heavy vehicles.

Hoardings will have been installed to the perimeter of site being George Street, Church Street, Macquarie Street and Smith Street. These hoardings will be adjusted subject to the staging of construction.

All hoardings will be designed, installed, and maintained to ensure segregation of pedestrians, construction works, vehicles and workers providing overhead protection in accordance with relevant standards. The location of hoardings will need to be considered in conjunction with the required footpath widths to allow for functional pedestrian movements and queuing at bus stops and crossings.

6.1.2 Construction activities

The proposed major worksite construction activities proposed to be carried out across the site are:

- site establishment
- construction of building structure
- installation of building facade
- installation and commissioning of building services
- connection to utility services
- internal fit out of building.

6.1.3 Construction staging

Four possible staging scenarios have been identified for the delivery of the integrated station development:

- Scenario 1 – the station, OSD and ASD are constructed concurrently by constructing the transfer slab first and then building in both directions. The station, OSD and ASD would be completed in 2030. This scenario is considered unlikely due to the amount of commercial floor space that will become available within the Parramatta CBD and market demand factors.

- Scenario 2 – the station, the basements and the OSDs are constructed concurrently and substantially completed by 2030. Some construction works on the OSDs may be completed after the metro station opens, such as internal fit-out. The construction of the ASD (Building A) would commence after the metro station opens with the timing determined by a future developer.
- Scenario 3 – the station, the southern basement and the OSDs are commenced concurrently. Building C would be substantially completed by 2030 to avoid using Smith Street and Macquarie Lane for construction access. Building B and D would only be partially completed when the metro opens, and construction of Building A and the northern basement would have yet to commence.
- Scenario 4 – only the station and the OSD enabling works would be completed when the metro opens. Buildings A, B, C and D would be constructed at a later stage with the timing yet to be determined. This would create two distinct construction periods, one for the station and one for the OSD/ASD with a gap or period of demobilisation in between.

The developer awarded the proposed SSD development rights will determine the time frame of the proposed development construction and communicate these in a Construction Traffic Management Plan (CTMP). Further details confirming the construction methodology and associated impact assessment and mitigation measures will be provided in the future detailed SSD Application.

6.1.4 Construction vehicles

The proposed construction vehicles type and size for the construction site are listed in Table 6-1. Truck types are based on factors such as site accessibility (including constraints on the local road network), materials required to be delivered to sites, material removals and construction activities. This table identifies construction vehicle types which may be used.

Table 6-1 Indicative construction vehicles for proposed SSD development site

Site	Truck Type	Capacity	Maximum Length (m)
Parramatta	Semi-trailer & low loaders	10-30 tonne	13-19m
	Truck and dog	20 m^3	19m
	Concrete agitator	23–28 tonne	8.5m
	Heavy rigid vehicle	15-26 tonne	12.5m
	Medium rigid vehicle	12 tonne	12.5m
	Light rigid vehicle	5-8 tonne	8.5m
	Delivery vans	5–7m^3	4m

6.1.5 Plant and equipment

The construction will involve significant plant requirements across a range of general and specialist construction equipment. The demand for specific plant is likely to vary over time depending on the specific stage of construction.

An indicative list of major plant and equipment to be utilised on the proposed development site are:

- tower cranes
- material hoists

- elevated work platforms
- telescopic forklifts
- forklifts
- concrete pumps
- concrete trucks
- excavators
- road sweepers
- water carts
- semi-trailer & low loaders
- ‘truck and dogs’
- heavy rigid vehicles
- light rigid vehicles
- deliveries vans.

6.1.6 Oversize deliveries

For safety reasons the delivery of oversized plant and materials may be required to take place outside of site working hours. This would require relevant approvals from local Council, NSW Police or other authorities (including Transport for NSW) prior to these deliveries occurring.

6.1.7 Parking access during construction

The proposed development site will be treated like a typical CBD construction site with no specific construction worker parking on site. The site is well serviced by rail, light rail and bus services immediately adjacent to the site and it is expected that construction workers will use these services to access the site.

6.1.8 Proposed haulage routes

The proposed construction haulage routes are shown in Figure 6-1 and those would apply to the proposed development construction subject to the preparation of a CMS and consultation with the relevant road authorities. Vehicles accessing the construction site for the CSSI would do so using temporary signals that would be established fronting the Civic Link. For the construction of the SSD proposed development, the following potential access points would be used:

1. Under Scenario 1, when the proposed SSD is built concurrently with the Station, the same haulage routes for the CSSI would be used with the primary access via George Street using the temporary signals fronting the Civic Link
2. Under Scenario 2, the haulage routes for Scenario one would apply, except for when construction of Building A commences. At that stage, vehicles would utilise George Street and an on-street loading area would be established for that purpose on the westbound kerb-side lane fronting Site A
3. Under Scenario 3, Building C and the southern basement will be constructed with the Station, and access to the construction site would be via George Street in consistency with the CSSI haulage access points. Construction of the northern basement and Buildings B, D, and A will commence after that. At that stage,

construction sites would be accessed via Building A site during construction of Buildings B and D, and on street during construction of Building A

4. Under Scenario 4, when all buildings are built after the Station is complete, vehicles can access site B and D the Building A site, which is expected to be developed last. During the construction of Building C, vehicles would utilise Smith Street and an on-street loading area would be established for that purpose on the northbound kerb-side lane. It is expected that Macquarie Lane would only be able to accommodate small delivery trucks and therefore would be utilised for that purpose only. When Building A is being constructed, vehicles would utilise George Street and an on-street loading area would be established for that purpose on the westbound kerb-side lane fronting Site A.

Access to each of the development sites for construction haulage routes and material handling work zones will differ dependant on the time and coordination of each of the developments.

Figure 6-2 shows proposed site establishment and materials handling plan considering potential deliver routes, work zones locations and hoarding placements to safely manage each of the development sites delivered over an operating metro station.

Figure 6-1 Parramatta Concept SSDA proposed construction haulage routes

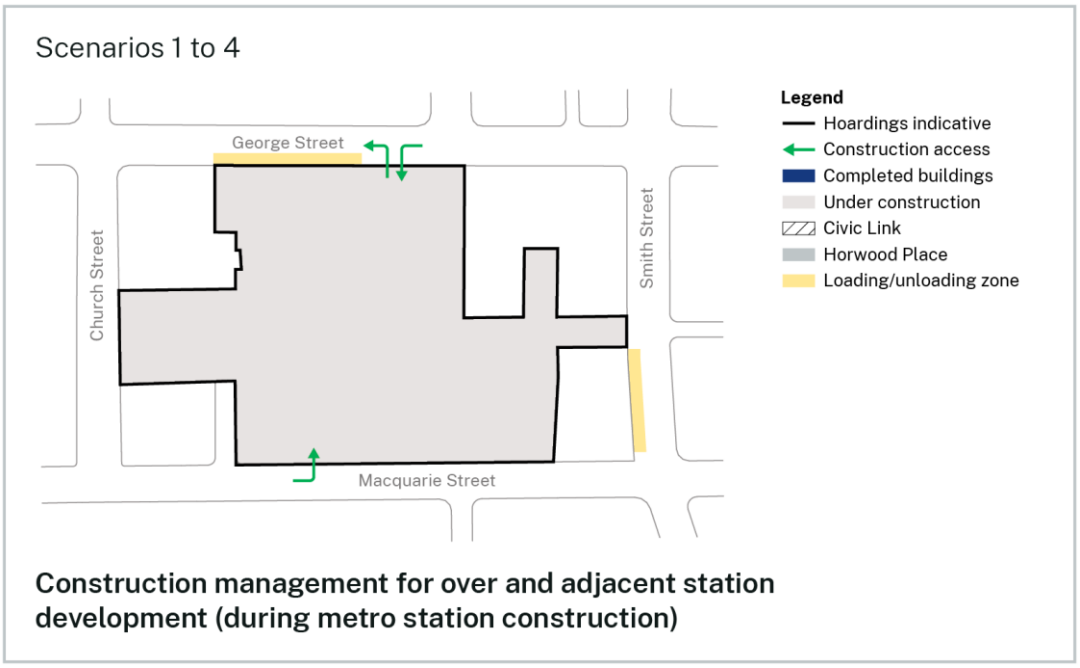


Figure 6-2 Proposed site materials handling demarcation plan during metro construction

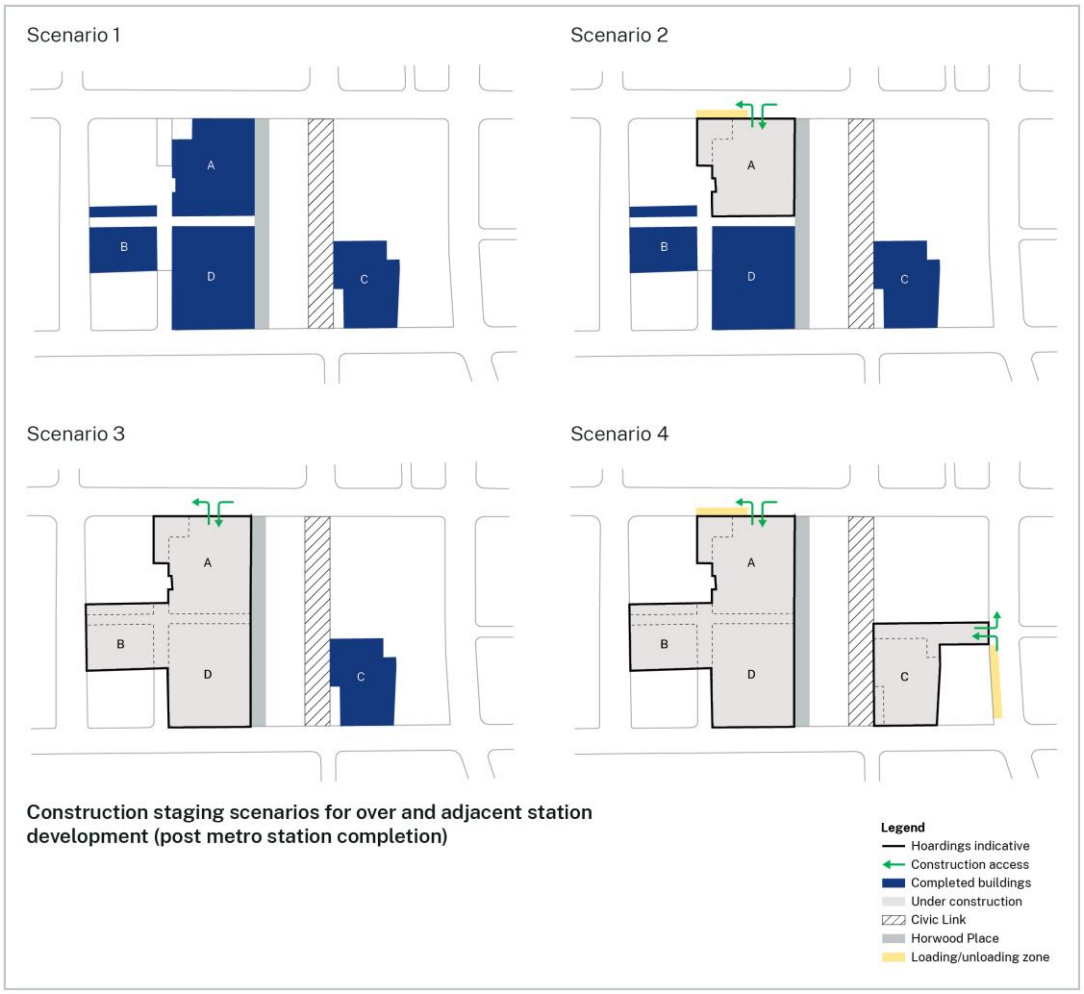


Figure 6-3 Proposed site materials handling demarcation plan post metro station completion

6.1.9 Construction vehicle movement forecast

Indicative estimates of traffic generation associated with the proposed development construction works are provided below in Table 6-2. The trips are associated with the construction scenario 4 outlined in section 1.1.9 which represents the worst case for indicative construction traffic generation when all buildings are constructed after the Station is built.

Table 6-2 Indicative construction traffic generation estimates

Period / Vehicle Type												
	Peak Hour[1]			Non-Peak Hour[2]			Evening[3]			Night[4]		
	Light	HV	Total	Light	HV	Total	Light	HV	Total	Light	HV	Total
Building A	3	3	6	6	6	12	2	3	6	-	-	-
Building B	3	3	6	6	6	12	2	3	6	-	-	-
Building C	3	3	6	6	6	12	2	3	6	-	-	-
Building D	3	3	6	6	6	12	2	3	6	-	-	-
Total	12	12	24	24	24	48	8	12	24	-	-	-

Notes:

All figures are per hour; maximum condition
1. AM peak hour and PM peak hour (7-8am / 5-6pm)
2. 9-hour period (8am-5pm)
3. 4-hour period (6pm-10pm)
4. 9-hour period (10pm-7am), subject to specific permits

During AM and PM peak hours, it is expected that up to 12 light vehicles and 12 heavy vehicles will access the proposed development construction site during the construction

During non-peak hours, the maximum number of construction vehicles would be up to 24 light and 24 heavy vehicles for construction of the proposed buildings.

The numbers represent the worst-case scenario when all buildings A, B, C, and D are constructed concurrently which is unlikely to occur.

6.2 Construction impact assessment

6.2.1 Impact on road network

During the construction of Building C under Scenarios 1, 2 and 3, the site will be accessed via George Street. However, under Scenario 4 when Building C is built afer the Station, materials handling is proposed to be on Smith Street. During that stage, a section of the kerb-side lane on Smith Street would be utilised for that purpose under a work zone permit with no impacts to the adjacent lane (second lane). It is unlikely that Macquarie Lane would be able to accommodate large heavy vehicles and therefore will only be used for small deliveries.

During the construction of buildings B and D, the construction sites would be located at the future Building A site location. Vehicular access would be from George Street. In case of Building A being constructed concurrently with Buildings B and D or before,

vehicles will access construction sites for Buildings B and D via Horwood Place and the future east-west link as a secondary route.

When Building A is being constructed, materials handling is proposed to be on George Street. During that stage, a section of the kerb-side lane on George Street would be utilised for that purpose under a work zone permit with no impacts to the adjacent lane (second lane).

Traffic modelling would be undertaken at future stages of the proposed development as part of Detailed SSDAs to ensure that changes to traffic arrangements would not result in significant impact on network performance.

Construction vehicles movement forecasts indicates that a maximum of 12 light vehicles and 12 heavy vehicle movements (one way) would be expected during the peak hours under the scenario when all four buildings are built concurrently. The estimated trips would have a minor impact on the adjacent road network.

Utilising Smith Street for loading during construction of Building C would impact the proposed bus stops south of Macquarie lanes. That is discussed in the next section.

The largest construction vehicles anticipated to travel to the proposed development construction site via the proposed haul routes would be a 19m semi-trailer truck and 19m truck and dog.

A swept path analysis of access and egress movements at the indicative construction site location has been undertaken for the 8.5m medium rigid vehicle and 19m semi-trailer. The swept path analysis indicates that turning movements for these vehicles could be adequately accommodated. Swept path plans have been included in Construction of this report.

6.2.2 Impact on public transport

Roads forming part of the construction haulage routes that are also used by buses include Smith Street, Great Western Highway, Pitt Street, O'Connell Street and George Street.

The major bus interchange around the proposed development construction site would be the proposed Smith Street interchange, however this proposed interchange would not be operational before the Station. During construction of Building C under Scenario 4, it is possible that the station would be operational, and a work zone is established on the kerb-side lane of Smith Street, impacting the bus stops south of Macquarie Lane. There could be a need to temporarily relocate those proposed bus stops to avoid disruption of services. This is to be agreed with TfNSW and relevant stakeholders before the construction of Building C starts. In addition to impacts to those northbound stops, there would be a potential minor increase in travel time due to the additional construction vehicles on the road network.

It is advised that for the construction of Buildings A, B and D, Smith Street is not designated as a haulage route to minimise impact on the bus interchange and the bus transfers from and to the station.

Light rail stops would be provided along Church Street and Macquarie Street as part of Parramatta Light Rail. Construction vehicles would interface with the light rail network at the George Street / Church Street intersection in addition to Macquarie Street. Impacts to the light rail network would be minor and limited to a potential increase in travel time due to additional construction vehicles on the road network.

No impacts to the rail and ferry networks are anticipated during construction.

6.2.3 Impact on active transport

Cycling

When the Civic Link is open after the public domain and station works are complete under the Concept and Stage 1 CSSI Approval, it is envisaged that the Civic Link would be utilised as a cycling and pedestrian link connecting George Street with Macquarie Street.

George Street is a proposed east-west cycling route by City of Parramatta Council. It is expected that cyclist movements on George Street would be disrupted during the construction of Building A when a section of the kerb-side lane on George Street is utilised for materials handling, introducing changes to the kerbs and cycling infrastructure. Alternative routes could be used during construction of Building A, such as Philip Street and the Civic Link.

During construction of Buildings B and D under scenarios 3 and 4, cyclists would be able to utilise the Civic Link to access the station.

Walking

When the future Civic Link is constructed, and the Parramatta Station is operational, the future Civic Link would be a major pedestrian link providing connection to George Street, Macquarie Street, and the bus interchange on Smith Street through Macquarie Lane. Also, a number of temporary pedestrian links would be established during the construction of each of the proposed development buildings to provide overhead protection for pedestrians. Those are indicated in Figure 6.2.

In addition, the proposed east-west active transport link between Horwood Place and Church Street would be established when the station is in operation.

During the construction of Building A, when the kerbside lane on George Street is utilised for material handling, it is expected that westbound footpath would be impacted disrupting pedestrian movements in that area. Alternative routes could be utilised including the east-west link, in addition to Macquarie Street and the Civic Link.

Similarly, during the construction of Building C under Scenario 4, when the kerbside lane on Smith Street is utilised for material handling, it is expected that a section of the northbound footpath would be impacted disrupting pedestrian movements in that area. Alternative routes could be utilised including the Church Street and the Civic Link.

During construction of Building B under Scenarios 3 and 4, there is a possibility that the east-west active transport link is utilised by construction vehicles disrupting pedestrian and cyclist movements along this link. Alternative links could be utilised including Macquarie Street, and George Street.

Pedestrians would continue to use Church Street as north-south links, as well as Macquarie Street as an east-west link under all scenarios.

The Construction and Traffic Management Plan (CTMP) will further address and mitigate possible impacts for all staging scenarios. These may include:

- pedestrian activity on Macquarie Street, Church Street, George Street and Smith Street
- pedestrian and cyclist safety
- impact on bus stops and bus operations
- impact of heavy vehicle movements on sensitive receivers (residents, schools)
- business and residential access
- cumulative construction traffic from other developments.
- the CTMP will also need to address the contractor's approach to the management of active transport activities and the general public.

6.2.4 Impact on parking and property access

No additional parking impacts are expected during the construction of the proposed developments in addition to what has been approved for the CSSI construction work.

Access to properties fronting Smith Street and Macquarie Lane would be retained via Macquarie Lane throughout construction. However, access to 25 Smith Street at the corner of Smith Street and Macquarie Street might be impacted under Scenario 4 when a loading zone is established on Smith Street.

Access to properties at the corner of Church Street and Macquarie Street will be via United Lane.

Building B basement access will be maintained during construction of Building A, and its entry ramps will be separated from construction works by construction hoardings.

No other adjustments to property access have been deemed necessary as part of the construction.

6.2.5 Impact on emergency access and special events

It is not anticipated that there will be any major impacts on emergency services within the area as no road closures are planned as part of construction of any of the proposed development's buildings. Relevant services will be notified of the works as part of the Construction Traffic Management Plan (CTMP) approval process of the final haulage routes.

Several major special events are held in Parramatta throughout the year by the City of Parramatta. Some of these are sporting events that are held at CommBank Stadium and often require temporary road closures, including sections of O'Connell Street, Ross Street and Victoria Road, to allow crowds to leave the precinct safely. The current recommended route to Commbank Stadium from Parramatta Station is along Church Street, which would not be impacted by construction of the proposed development. Once open, the future Civic Link would provide an additional access route between the proposed bus interchange on Smith Street and the operational station to the stadium.

Events are also often hosted in Parramatta Park, Centenary Square, Prince Alfred Square, and Parramatta River Foreshore. Pedestrian access along major pedestrian desire lines to and from event venues identified above, and Parramatta interchange major streets such as Church Street, Phillip Street, George Street, Macquarie Street and Argyle Street would be maintained during construction.

7 Operation impact assessment

This chapter reviews the traffic and transport impacts of the proposed development, including consideration of the road network, public transport, active transport and adjacent properties.

7.1 Predicted future modal split

Table 7-1 presents the predicted future mode share and volume of trips by mode during the AM peak hour for the proposed development, with the existing mode share presented for comparison. The predicted future mode share for 2036 is illustrated in Table 7-1. Explanation for how this was derived is provided in section 3.

The proposed development will be located at the heart of a major transport interchange hub in Parramatta CBD, within the same block as the future Parramatta metro station and within a short walking distance to the future Parramatta Light Rail, existing Parramatta Station and a proposed bus interchange on Smith Street. It is estimated that the proportion of car trips will significantly reduce given the improved public transport and active transport links (e.g. Civic Link). The proportion of public transport trips is expected to significantly increase to become the primary form of travel to and from the proposed development.

Table 7-1 Existing and predicted future mode share

Mode	Inbound			Outbound		
	Existing[1]	Proposed	no.	Existing[1]	Proposed	no.
Train	32%	35%	1,644	47%	32%	421
Metro	-	31%	1,456	-	22%	290
Bus	11%	15%	705	8%	10%	132
Ferry	0%	0%	0	0%	0%	0
Light rail	-	5%	235	-	5%	66
Total public transport	43%	86%	4,040	55%	69%	909
Taxi	0%	0%	0	0%	0%	0
Car, as driver	48%	6%	282	30%	6%	79
Car, as passenger	4%	0%	0	3%	0%	0
Bicycle	1%	1%	47	0%	1%	13
Walked only	4%	7%	329	12%	24%	316
Total	100%	100%	4,698	100%	100%	1,317
Total Trips Generated by Concept SSDA				6,015		

[1]Source: Australian Bureau of Statistics, Journey to Work 2016. Mode share aggregated across DZNs or SA1s within an 800m radius of the site.

The predicted future mode share given in Table 7-1 is illustrated in Figure 7-1.

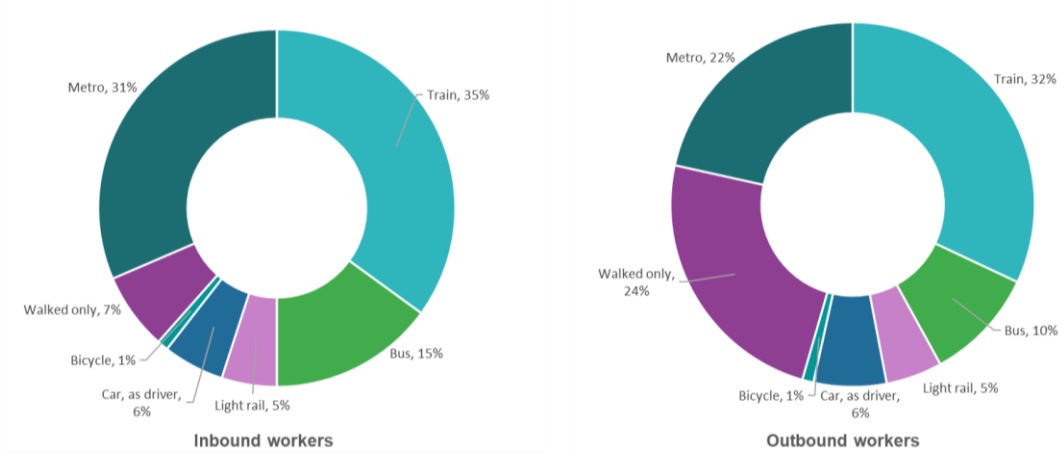


Figure 7-1 Predicted future mode share

7.2 Impacts on road network

7.2.1 Traffic generation

The traffic generated by the proposed development will be constrained by the number of parking spaces provided. There are 455 parking spaces proposed within the two basements in the current design. A rate of 0.5 spaces per residential unit has been applied. As retail trips are likely to take place outside of the peak periods, to be conservative for the purposes of this assessment, the remainder of spaces are assumed to be for commercial use. The resulting provision of parking is given in Table 7-2.

Table 7-2 Proposed parking provision

Development basement	Proposed number of parking spaces		
	Residential	Commercial	Total
Northern	73	156	229
Southern	0	226	226

The *Guide to Traffic Generating Developments* provides vehicle trip generation rates for high density residential dwellings based on the number of units (0.19), bedrooms (0.09) and car spaces (0.15). A comparison of the resulting number of vehicle trips generated for each approach is given in Table 7-3. As the only building with residential uses, this is applicable to Building B, which utilises the northern basement. The number of trips generated by unit has been used in the assessment. As the number of trips generated by unit is lower than the parking provision this is considered to be appropriate and conservative.

Table 7-3 Residential traffic trips generated in the AM and PM peak hours based on the number of units, bedrooms and parking spaces

Residential provision	Yield	AM peak vehicle trips by:			PM peak vehicle trips by:		
		unit	bedroom	spaces	unit	bedroom	spaces
1 bedroom units	40	8	4	0	6	3	0
2 bedroom units	75	14	14	0	11	11	0
3 bedroom units	30	6	8	0	5	6	0
Parking spaces	73	0	0	11	0	0	9
	Total	28	26	11	22	20	9

When the *Guide to Traffic Generating Developments* was used to calculate the number of commercial vehicle trips, the result was well in excess of the number of parking spaces provided. A first principles approach has therefore been taken based on the number of available spaces and the assumptions discussed in section 3.7.

The traffic generation estimates are provided in Table 7-4 for the AM and PM peak period.

Table 7-4 Estimated AM and PM peak hour vehicle trips per basement

Location	AM peak vehicle trips			PM peak vehicle trips		
	Inbound	Outbound	Total	Inbound	Outbound	Total
Northern basement	107	47	154	43	106	149
Southern basement	147	37	184	37	147	184
Total	254	84	338	80	253	333

7.2.2 Intersection modelling

The road network performance has been modelled for the future year 2036. The traffic demand has been based on 2021 counts with an agreed growth factor applied, calculated using outputs extracted from the PTPM model, which includes future growth planned under the Parramatta LEP Amendment including uplift on the proposed development site. An additional scenario, with Parramatta Station but without the proposed development was also assessed, by subtracting the traffic generation provided in section 7.2.1.

Modelled network performance for 2036 during the AM and PM peak hours for key intersections in the vicinity of the proposed development site are provided in Table 7-5. The SIDRA outputs are also provided in SIDRA outputs.

Table 7-5 Future intersection modelled performance (2036)

Intersection	AM Peak				PM Peak			
	Without SSD		With SSD		Without SSD		With SSD	
	Average delay (s)	LOS	Average delay (s)	LOS	Average delay (s)	LOS	Average delay (s)	LOS
George St/Marsden St	20	B	21	B	22	B	28	B
George St/Church St	10	A	10	A	10	A	13	A
George St/North Access[1]	NA	NA	4	A	NA	NA	4	A
George St/Horwood Place (S) [1]	5	A	5	A	5	A	5	A
George St/Horwood Place (N) [1]	5	A	5	A	5	A	5	A
George St/Smith St	38	C	39	C	37	C	38	C
Smith St/Macquarie Lane[1]	4	A	4	A	4	A	4	A
Macquarie St/Marsden St	17	B	18	B	15	B	16	B
Macquarie St/Church St	21	B	21	B	23	B	23	B
Macquarie St/Horwood Place[1]	5	A	5	A	5	A	5	A
Macquarie St/Smith St	31	C	45	D	26	B	29	C

[1]The worst movement delay is reported as the overall delay for priority (un-signalised) intersections.

The traffic modelling undertaken shows a degradation in the level of service at the Macquarie Street/Smith Street intersection during the AM peak period with the traffic generated by the proposed development included. It is shown to operate just within the LOS D category, which is considered acceptable but nearing capacity. At all other intersections the modelling indicates that with the proposed development's external road network will continue to operate at acceptable levels of service with no notable change associated with the traffic generated purely by the development. Therefore, the proposed development is not anticipated to have a significant detrimental effect on the surrounding road network operation.

7.3 Public transport

The proposed development is considered to offer very high levels of public transport accessibility and connectivity for future workers and residents.

7.3.1 Rail

The future Parramatta Station and existing suburban rail station in Parramatta will provide a high level of accessibility to the proposed development site by train. Based on the estimated mode share, approximately 65% of arrivals to the proposed development will be utilising these rail services and will benefit from their immediate proximity.

As outlined in Table 7-1, the proposed development site is expected to generate approximately 4,000 additional train and metro trips in the peak hour. The introduction of Sydney Metro will double the rail capacity between the Parramatta CBD and Sydney CBD. Considering this significant increase in capacity, the impact on the rail operations of the additional demand is expected to be acceptable.

The proposed development will also be served by the future Parramatta Light Rail expected to open in 2023. Once operational, services will run on Macquarie Street and Church Street. The closest stops to the proposed development site will be "Parramatta Square", on Macquarie Street, and "Eat Street", on Church Street (currently both under construction). Approximately 5% of trips are expected to arrive at the proposed development site by light rail.

7.3.2 Bus

A bus interchange will be provided on Smith Street under a City of Parramatta project, between Macquarie Street and George Street and directly east of the proposed development. The existing bus stops on George Street and further north on Smith Street are expected to remain. Around 15% of trips are estimated to arrive to the proposed development by bus.

Residents and workers of the proposed development would be able to use existing crossings to access the bus stops, including:

- pedestrian crossings at signalised intersections, including the intersections of George Street / Smith Street and Macquarie Street / Smith Street
- footpaths along Macquarie Lane and each side of Smith Street.

The potential for improved pedestrian connectivity across Smith Street is being investigated in consultation with City of Parramatta and Transport for NSW as part of the Parramatta metro station.

7.3.3 Ferry

Parramatta Wharf is located around 600m from the proposed development site, and connects to Sydney Olympic Park, Barangaroo and Circular Quay. However, given the service is tidal and slow in comparison to rail, this is unlikely to be a popular mode choice during the peak periods, as reflected in the current and predicted future modal splits given in Table 7-1.

7.4 Active transport

7.4.1 Walking

The existing and proposed pedestrian network in the vicinity of the proposed development will provide good connectivity across the precinct, with pedestrian access, green space and public domain prioritised.

The future Civic Link delivered under the CSSI application/s will extend through the heart of the proposed development, adjacent to a public plaza area. As described in City of Parramatta's Draft Parramatta Integrated Transport Plan (April 2021), the Civic Link will be a green, shared pedestrian cyclist spine, a public space and cultural spine that connects public life from the heart of Parramatta CBD to the Parramatta River. This will provide a primary pedestrian connection from the proposed development south to Parramatta Square and the existing train station and north to River Square, the MAAS and the broader foreshore precinct.

An east-west pedestrianised laneway through the proposed development will provide walking access between Church Street and Smith Street. There are ongoing discussions with City of Parramatta Council and other stakeholders with regards to the final form and function of Horwood Place, which forms part of the Sydney Metro West Stage 3 CSSI Application.

Both Macquarie Lane and United Lane would also be designed to prioritise pedestrians, while allowing access for vehicles accessing surrounding developments.

Church Street and sections of Macquarie Street are to be pedestrianised as part of the Parramatta Light Rail project, which would provide a pedestrian friendly link for people utilising light rail and suburban rail. Macquarie Street is also expected to be the main pedestrian link for pedestrians walking to/from Parramatta Square and other developments to the south.

Signalised pedestrian crossings would be maintained at all surrounding signalised intersections including:

- the intersection of Macquarie Street / Smith Street
- the intersection of George Street / Smith Street
- the intersections of Church Street / George Street
- the intersection of Church Street / Macquarie Street.

As part of the CSSI application/s, a mid-block crossing of George Street at Civic Link is being considered. The potential for improved pedestrian connectivity across Smith Street (in the vicinity of the proposed bus stops) is also under investigation as part of this CSSI applications.

As outlined in Table 7-1, the proposed development is expected to generate approximately 6,321 trips during the AM peak hour. Of these trips, 330 are predicted to be by car and 1,885 by metro, which would have none to minimal impacts on the existing footpaths surrounding the proposed development.

The distribution of AM trips to and from the proposed development has been estimated and is provided in Figure 7-2. This figure shows that Building A is expected to generate the most trips in the AM peak hour, followed in order by Building D, C and then B. The impact on surrounding footpaths from people only walking is expected to be minimal once the distribution across the network is considered. Major movements are between public transport and the proposed development, particularly from the metro and suburban rail line. People accessing the metro will not need to cross any roads. People accessing the suburban rail station will be able to do so through the future Civic Link.

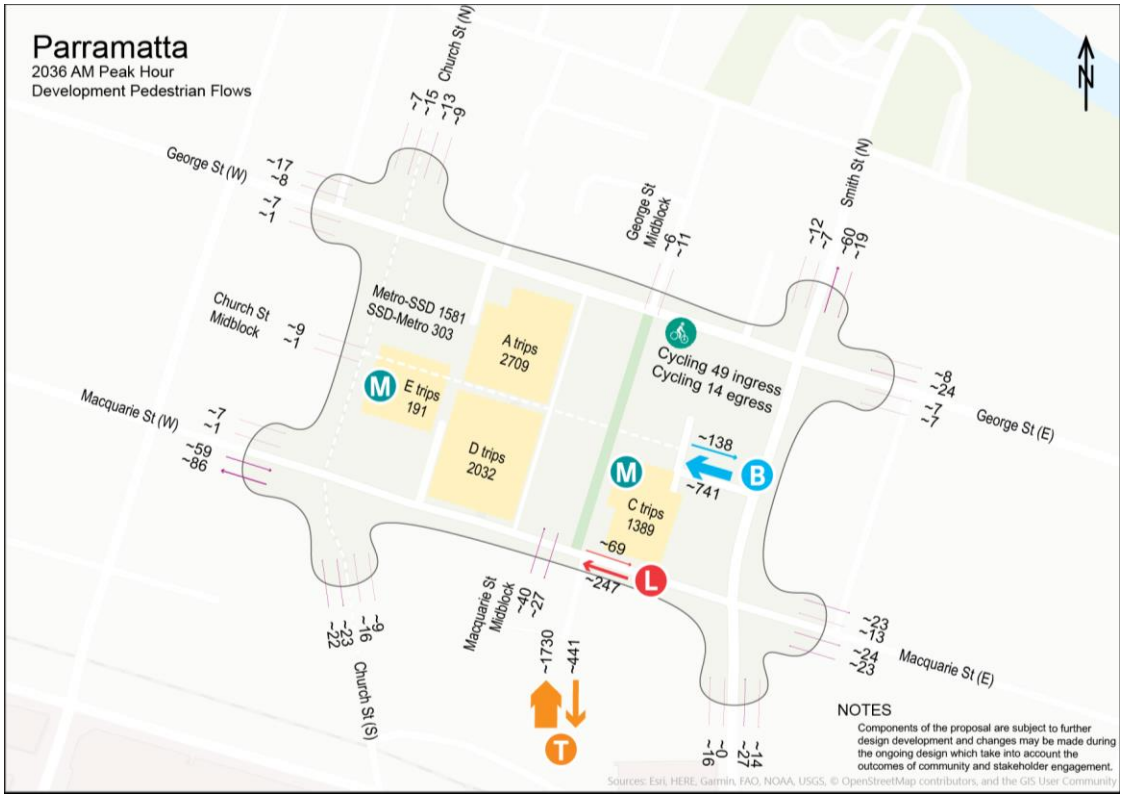


Figure 7-2 Distribution of AM peak hour passenger trips to/from the proposed SSD development

7.4.2 Cycling

Around 1% of the people accessing and egressing the proposed development are estimated to travel by bicycle, which equates to an estimated 63 cyclists in the AM peak hour. Both the City of Parramatta Bike Plan and the NSW Principal Bicycle Network show future cycling links on Civic Link, George Street, and Marsden Street.

The existing cycle link at Horwood Place would be closed for the proposed development, with the road being realigned and operated as a one-way road. However, a north-south active transport link would be provided as part of the Civic Link delivered under the CSSI application/s. The proposed Civic Link is expected to provide linkage to the existing cycling route along the Parramatta River to the north and to Parramatta Square and surrounding developments to the south, in addition to the future planned east-west link at George Street.

It is essential that safe crossing points are provided for cyclists to provide protection from other road users. Cyclists would be able to cross safely at signalised intersections including:

- existing intersection of George Street/ Church Street
- existing intersection of George Street/ Smith Street
- existing intersection of Macquarie Street/ Smith Street
- existing intersection of Macquarie Street/ Church Street
- proposed signalised mid-block crossing of George Street at the Civic Link.

7.5 Adjacent property impacts

Access to adjacent properties to the proposed development is illustrated in Figure 7-3 and described below:

- properties on the north-east (NE) corner of the block continue to be accessed through an extension of the existing Macquarie Lane from Smith Street.
- access to 25 Smith Street on the south-east (SE) corner of the block is maintained through the existing Macquarie Lane from Smith Street.
- properties on the south-west (SW) corner of the block continue to be accessed through United Lane from Macquarie Street. Macquarie Street will be operating as eastbound only, so on exiting United Lane, vehicles will re-join the road network via Horwood Place, which will operate one-way northbound.
- Vehicle access to the properties on the north-west corner of George Street and Church Street would be retained, the form and nature of which would be subject to further investigation

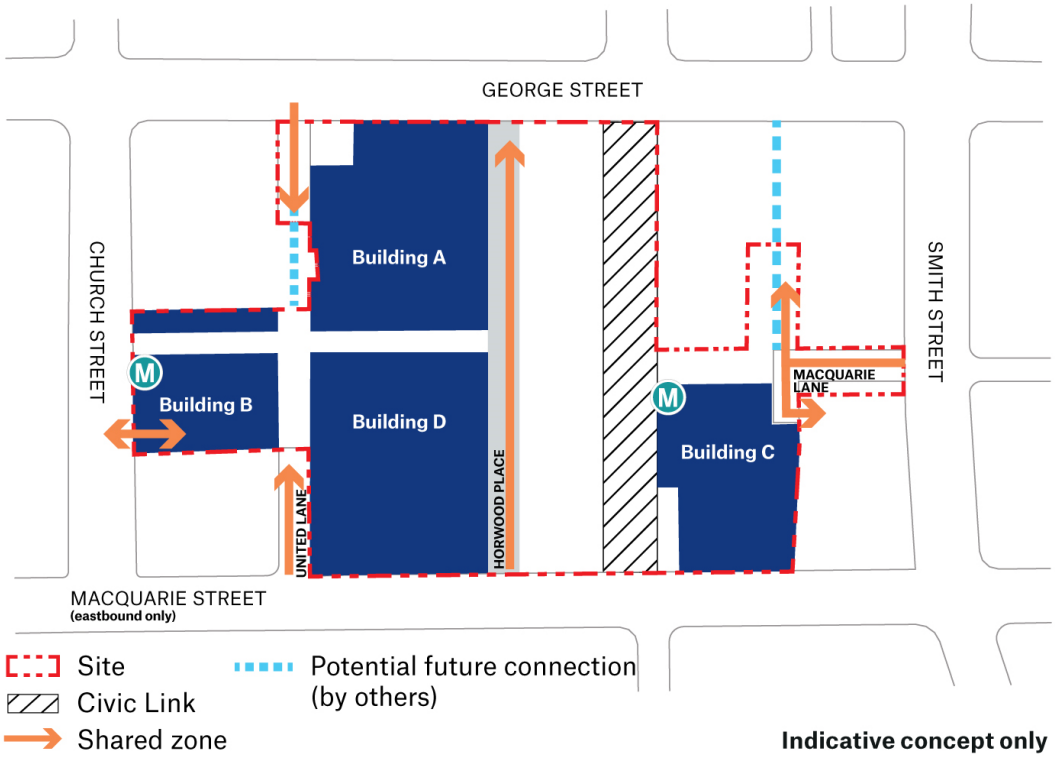


Figure 7-3 Adjacent property access

7.6 Cumulative impacts

Background growth has been included in the future growth factors that were extracted from the PTPM and used in the analysis.

Aside from the general background growth, there are currently no known developments or credible proposals within the vicinity of the site that need to be assessed in terms of cumulative impacts.

8 Management and mitigation measures

The following mitigation measures and recommendations are proposed for the Concept SSDA.

- Appropriate signage and speed restrictions should be installed in the shared bicycle/vehicle access to the northern basement off George Street to mitigate against potential conflicts. The purpose is to create a walkable and safe environment in line with the Transport for NSW Road User Space Allocation Policy.
- Bicycle parking in the form of Class 2 compounds (bicycle cages) or better and shower and lockers should be provided. A quantity of bicycle parking which conforms to the Green Star or Parramatta DCP recommendations (whichever is higher) should be provided. This would preferably be located on ground or first floors of basements, with primary access for any level change by a ramp (max grade 1:12) or lift.
- To encourage uptake of bicycle use, recommendations are made, based on the Australian Standard Parking facilities, Part 3: Bicycle Parking and Austroads Bicycle Parking Facilities: Guidelines for Design and Installation, including provision of easy access to the bicycle parking facility. Refer to section 5.2.2 for further details.
- Provision of motorcycle parking in basements should conform to the Parramatta DCP.
- Car share spaces in basements should be provided to reduce the need for individual car ownership and conform to the Parramatta DCP.
- Given the proximity of the proposed development to a range of public transport links, a lower number of parking spaces than the Parramatta LEP maximum is recommended. This may discourage residents and workers from owning and using private vehicles, catalysing a shift to sustainable transport modes and reducing impacts on the broader road network.
- At least 1-2% parking spaces should be accessible, with 2.5m clearance heights, and located to minimise walking distances, such as near lifts. The current provision includes two accessible spaces in the northern basement serving Building A and four accessible spaces in the southern basement, with two serving Building C and two serving Building D. Given the lack of permeability between the basements, an additional accessible space in the northern basement is recommended for future design iterations.
- The proposed clearance heights meet the AS/NZS 2890 standard, with MRVs and SRVs operating on basement level 01 (with clearance height 4.5m) only. Signage should be in place to warn drivers of the change in height for basement levels 02 and 03 (clearance height of 2.2m).
- A detailed Construction Traffic Management Plan for adoption during the construction phase should be prepared as part of the future Detailed SSDA.
- A Travel Plan should be created as part of the future Detailed SSDA to reduce car trips and encourage the use of sustainable transport.

9 Conclusion

This report presents the results of a transport and accessibility impact assessment for the for the proposed development. It has been prepared to outline the anticipated impacts to the transport network, access and parking during construction and operation of the proposed development in response to the SEARs and Scoping Report.

Construction impact assessment key findings

The key findings of the assessment of the construction of the proposed development are that:

- Construction vehicles movement forecasts indicates that a maximum of 12 light vehicles and 12 heavy vehicle movements (one way) would be expected during the peak hours under both Scenarios 1 and 2. These trips would have a minor impact on the adjacent road network. Traffic modelling will be conducted as part of the Detailed SSDAs.
- On-site car parking will not be provided for construction staff. The construction sites will be well served by public transport including metro, light rail, train, and buses. Staff are therefore expected to travel using public transport.
- During construction of Building C under Scenario 4, it is possible that the station would be operational and with a work zone established on the kerb-side lane of Smith Street, the proposed bus stops south of Macquarie Lane would be impacted. There could be a need to temporarily relocate those proposed bus stops to avoid disruption of services. This is to be agreed with TfNSW and relevant stakeholders before the construction of Building C starts. In addition to impacts to those northbound stops, there would be a potential minor increase in travel time due to the additional construction vehicles on the road network.
- All loading and unloading of trucks shall occur within the proposed construction sites, except for the construction of Buildings A and C, where materials handling will be on George Street and Smith Street respectively. It is expected that a section of the kerb-side lane will be closed during construction of both buildings under a work zone permit with no impacts to the adjacent lane (second lane). This would also impact pedestrian movements on each of Smith Street and George Street in addition to cyclist movements on George Street. Alternative links could be utilised in both cases. Traffic modelling will be conducted during the Detailed SSDAs to review for any impacts on network performance.
- No major impacts to emergency services are expected within the area as no road closures are planned as part of construction of the proposed development.
- Truck drivers would be instructed to use the nominated haul routes to/from the proposed development site and shall conform to this.

Transport impact assessment key findings

The key findings of the assessment of the operation of the proposed development are that:

- The proposed provision of car parking is within the Parramatta LEP maximum rates.
- The proposed maximum number of car parking spaces (455 spaces) is an overall reduction in parking on the site when compared to the former multi-storey car park (768 spaces) which has since been demolished. This is considered to be appropriate given the proximity of the proposed development to a range of existing and future public transport links and active transport enhancements.
- The quantity of loading dock facilities provided in each basement are suitable for the estimated dock activity based on achieving a 95% service level, calculated using the TfNSW Freight Toolkit and current land use quantities.
- The road network is estimated to continue to operate at acceptable levels of service, with the traffic modelling indicating no change associated with the traffic generated by the proposed development at most intersections.
- Excellent connectivity and accessibility of public transport is provided at the proposed development with it being at the heart of a major transport interchange, including the future Paramatta Light Rail, and the bus interchange on Smith Street.
- Cyclists will benefit from a proposed new cycleway on Civic Link and potential future cycleways highlighted in the City of Parramatta Bike Plan on George Street and Marsden Street. Bicycle parking will be provided for residents of Building B and cyclists using the commercial buildings will benefit from end of trip facilities including bicycle parking and changing facilities.
- Pedestrianised areas will surround the proposed development, including the future Civic Link which will provide a primary pedestrian connection from the proposed development south to Parramatta Square and the existing train station and north to River Square, the MAAS and the broader foreshore precinct. Church Street and sections of Macquarie Street are also to be pedestrianised as part of the Parramatta Light Rail project.
- The impact on surrounding footpaths from people only walking is expected to be minimal once the distribution across the network is considered. Major movements are between public transport and the proposed development, particularly from the metro and suburban rail line. People accessing the metro will not need to cross any roads. People accessing the suburban rail station will be able to do so through the Civic Link.
- Access to adjacent properties will be generally maintained as per the current situation.

10 References

Australian Standards 2004, AS2890.1 Parking facilities Part 1: Off-street car parking

Australian Standards 2018, AS2890.2 Parking facilities Part 2: Off-street commercial vehicle facilities

Australian Standards 2015, AS2890.3 Parking facilities Part 3: Bicycle parking

Australian Standards 2009, AS2890.6 Parking facilities Part 6: Off-street parking for people with disabilities

Austroads Research Report AP-R527-16, Bicycle Parking Facilities: Guidelines for Design and Installation

City of Sydney 2012/2014, Sydney Development Control Plan 2012 and Attachment B Minor Policy and Housekeeping Amendments 2014

City of Parramatta May 2017, Parramatta Bike Plan

City of Parramatta 2017, Parramatta CBD Pedestrian Strategy

City of Parramatta Council October 2011, Parramatta Development Control Plan 2011

City of Parramatta Council April 2021, Draft Parramatta Integrated Transport Plan

City of Parramatta Council May 2022, Parramatta Local Environmental Plan 2011

Lendlease Building Pty Ltd August 2019, OSD Detailed SSD DA- Traffic and Transport Impact Assessment, Victoria Cross Over Station Development

Macquarie Corporate Holdings Pty Ltd September 2018, Sydney Metro Martin Place integrated station development, South Tower, SSD DA Stage 2: Transport, Traffic, Pedestrian and Parking Report

Pitt Street Developer North Pty Ltd June 2020, Sydney Metro State Significant Development, Development Application (SSD DA), Pitt Street North Over Station Development, Appendix V1 – Transport and Accessibility Impact Assessment

Roads and Maritime Services 2002/2013, Guide to Traffic Generating Developments Version 2.2 (2002) and Updated Traffic Surveys, amendment TDT 2013/04a (2013)

Roads and Maritime Services 2016, Technical Direction Design and implementation of shared zones including provision for parking (TTD 2016/001)

Roads and Maritime Services 2019, Cycleway Finder, available online: http://www.rms.nsw.gov.au/maps/cycleway_finder

Transport for NSW 2018, Future Transport Strategy 2056

Transport for NSW November 2020, Freight and Servicing Last Mile Toolkit, A guide to planning the urban freight task

Transport for NSW July 2021, Parramatta Light Rail Stage 1 and 2 Factsheet

Transport for NSW January 2021 Road User Space Allocation Policy CP21000

Appendix A Pedestrian counts

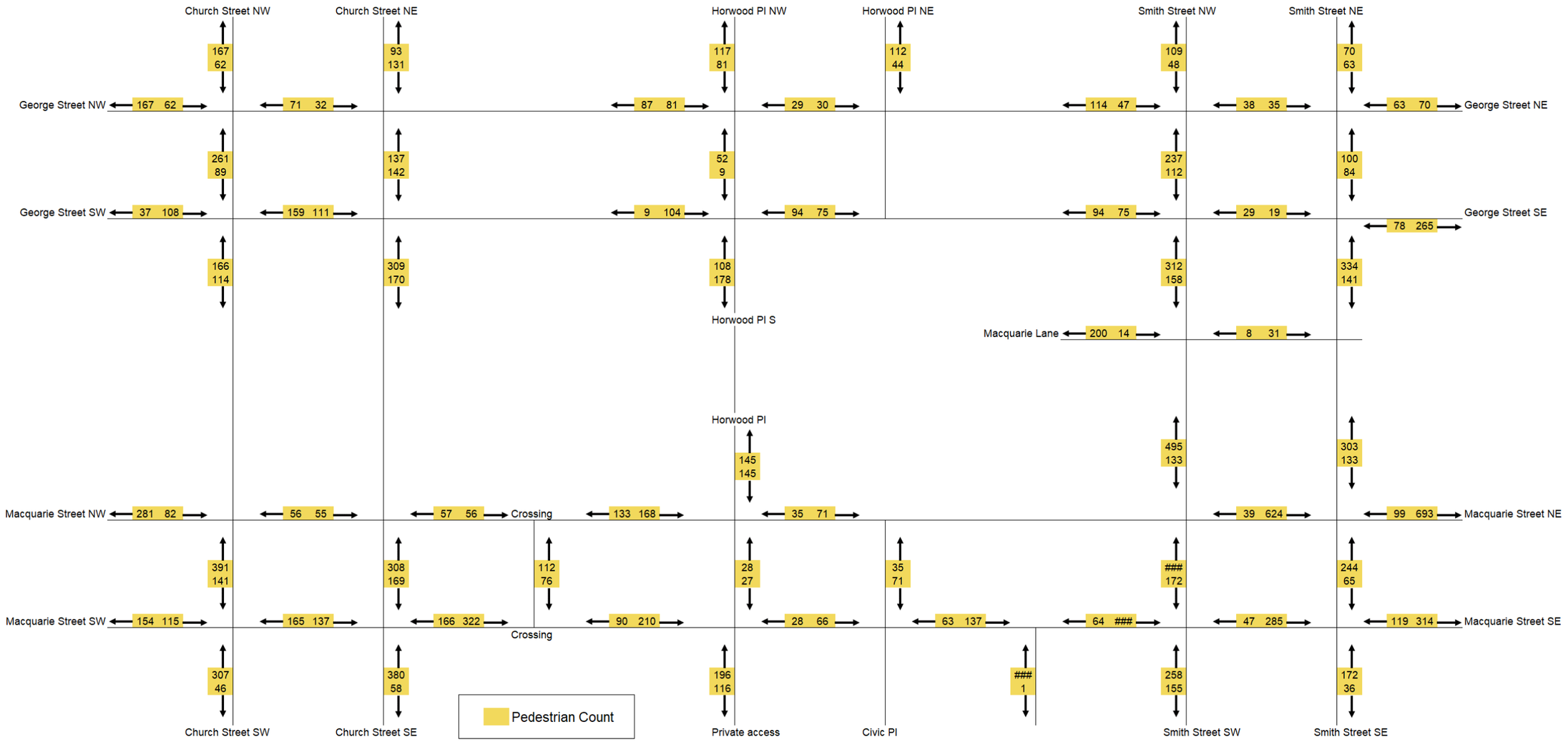


Figure A-1 Existing AM peak hour pedestrian counts (2021)

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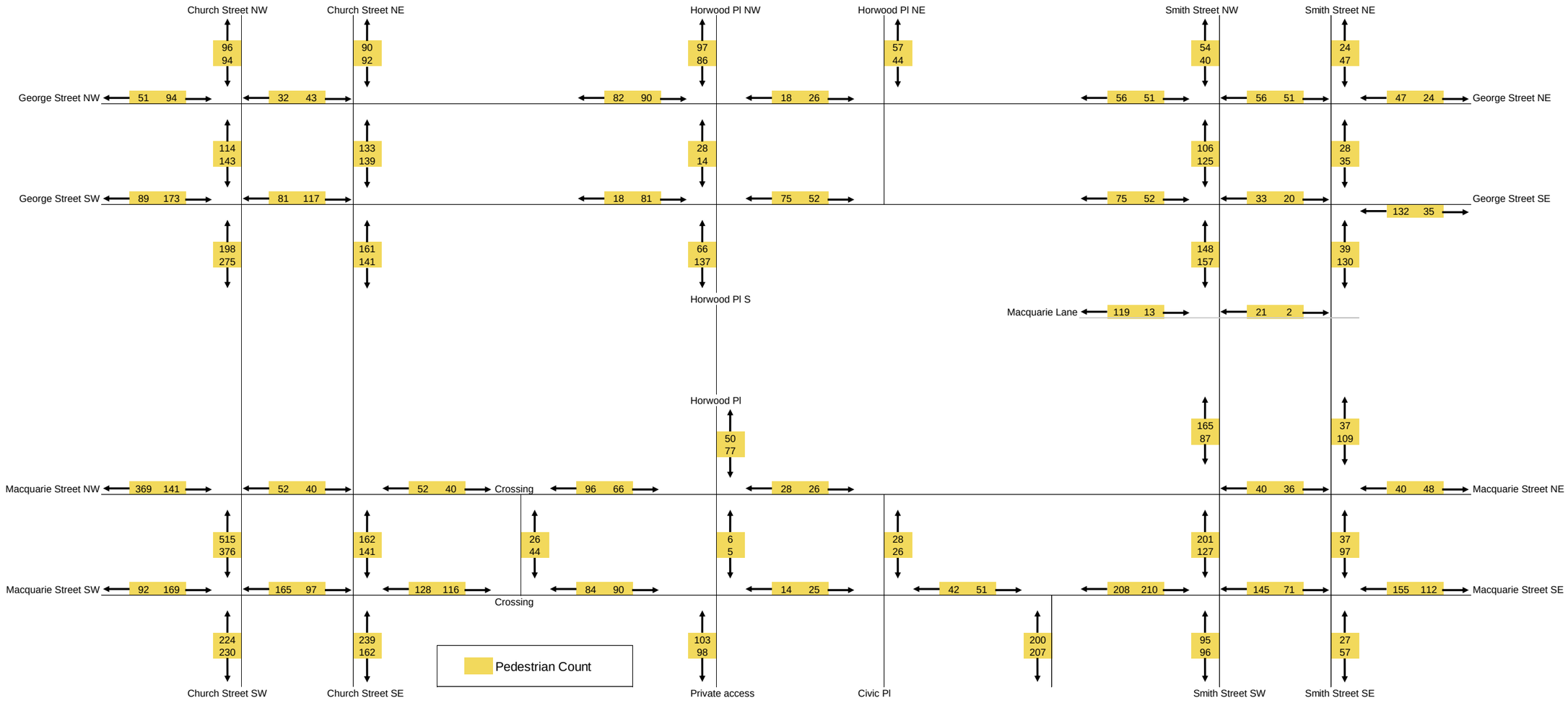


Figure A-2 Existing PM peak hour pedestrian counts (2021)

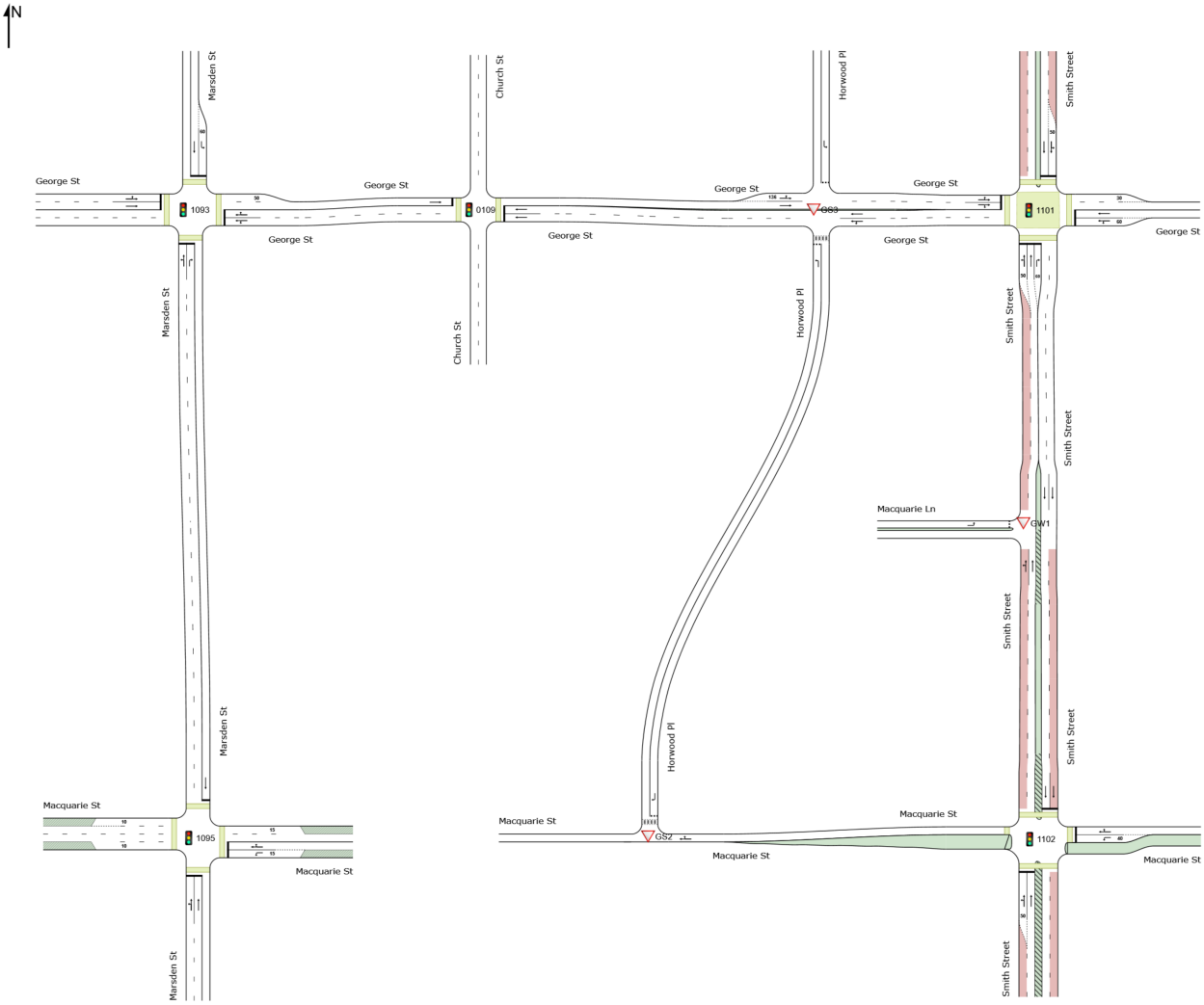
Appendix B SIDRA outputs

NETWORK LAYOUT

Network: N101 [Base_PM (Network Folder: Base)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
1093	NA	Marsden_George_PM
0109	NA	Chruch St_George_PM
GS3	NA	Goerge St/Horwood Pl_PM
1101	NA	George St/Smith St_PM
GW1	NA	Macquarie Ln/Smith St_PM
1095	NA	Marsden_Macquarie_PM
GS2	NA	Macquarie St/Horwood Pl_PM
1102	NA	Maquarie St/Smith St_PM

MOVEMENT SUMMARY

Site: GS2 [Macquarie St/Horwood Pl AM (Site Folder: 2021_Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Macquarie St														
5	T1	7	4	7	57.1	0.024	0.3	LOS A	0.1	0.9	0.22	0.45	0.22	45.3
6	R2	27	5	28	18.5	0.024	5.4	LOS A	0.1	0.9	0.22	0.45	0.22	39.6
Approach		34	9	36	26.5	0.024	4.4	NA	0.1	0.9	0.22	0.45	0.22	41.2
North: Horwood Pl														
9	R2	1	0	1	0.0	0.001	5.2	LOS A	0.0	0.0	0.20	0.54	0.20	44.0
Approach		1	0	1	0.0	0.001	5.2	LOS A	0.0	0.0	0.20	0.54	0.20	44.0
All Vehicles		35	9	37	25.7	0.024	4.4	NA	0.1	0.9	0.22	0.45	0.22	41.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1093 [Marsden_George_AM (Site Folder: 2021_Existing)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden St														
1	L2	46	0	48	0.0	0.583	13.1	LOS A	9.7	69.2	0.76	0.68	0.76	38.9
2	T1	481	10	506	2.1	0.583	9.7	LOS A	9.7	69.2	0.76	0.68	0.76	29.8
3	R2	217	3	228	1.4	* 0.588	21.1	LOS B	4.8	33.9	0.94	0.81	0.97	22.9
Approach		744	13	783	1.7	0.588	13.2	LOS A	9.7	69.2	0.81	0.71	0.82	28.6
East: George St														
4	L2	59	4	62	6.8	0.303	19.3	LOS B	2.9	21.7	0.83	0.71	0.83	23.2
5	T1	109	13	115	11.9	0.303	18.1	LOS B	2.9	21.7	0.86	0.71	0.86	34.0
6	R2	31	6	33	19.4	0.303	26.1	LOS B	1.6	12.6	0.94	0.73	0.94	19.9
Approach		199	23	209	11.6	0.303	19.7	LOS B	2.9	21.7	0.86	0.71	0.86	29.7
North: Marsden St														
7	L2	45	6	47	13.3	0.182	25.6	LOS B	1.1	8.3	0.90	0.72	0.90	20.7
8	T1	399	13	420	3.3	* 0.794	22.3	LOS B	11.1	79.6	0.98	1.02	1.22	22.6
Approach		444	19	467	4.3	0.794	22.7	LOS B	11.1	79.6	0.98	0.99	1.18	22.4
West: George St														
10	L2	57	0	60	0.0	0.269	27.8	LOS B	1.4	10.1	0.95	0.74	0.95	31.4
11	T1	221	3	233	1.4	* 0.504	18.5	LOS B	5.1	36.4	0.91	0.75	0.91	35.1
Approach		278	3	293	1.1	0.504	20.4	LOS B	5.1	36.4	0.92	0.75	0.92	34.2
All Vehicles		1665	58	1753	3.5	0.794	17.7	LOS B	11.1	79.6	0.88	0.79	0.94	28.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Marsden St												
P1	Full	195	205	19.5	LOS B	0.3	0.3	0.89	0.89	196.1	211.9	1.08
East: George St												
P2	Full	134	141	19.5	LOS B	0.2	0.2	0.89	0.89	198.8	215.2	1.08
North: Marsden St												
P3	Full	206	217	19.5	LOS B	0.3	0.3	0.89	0.89	196.1	211.9	1.08
West: George St												
P4	Full	211	222	19.5	LOS B	0.3	0.3	0.89	0.89	198.9	215.2	1.08

All Pedestrians	746	785	19.5	LOS B	0.3	0.3	0.89	0.89	197.4	213.4	1.08

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 0109 [Church St_George_AM (Site Folder: 2021_Existing)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 40 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: George St														
5	T1	203	21	214	10.3	0.161	9.4	LOS A	1.4	10.9	0.70	0.56	0.70	31.0
Approach		203	21	214	10.3	0.161	9.4	LOS A	1.4	10.9	0.70	0.56	0.70	31.0
West: George St														
11	T1	448	11	472	2.5	* 0.661	12.2	LOS A	8.2	58.7	0.88	0.79	0.93	30.5
Approach		448	11	472	2.5	0.661	12.2	LOS A	8.2	58.7	0.88	0.79	0.93	30.5
All Vehicles		651	32	685	4.9	0.661	11.3	LOS A	8.2	58.7	0.83	0.72	0.86	30.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: George St												
P2	Full	279	294	14.6	LOS B	0.3	0.3	0.86	0.86	191.2	211.9	1.11
West: George St												
P4	Full	350	368	14.7	LOS B	0.4	0.4	0.86	0.86	191.3	211.9	1.11
All Pedestrians		629	662	14.7	LOS B	0.4	0.4	0.86	0.86	191.2	211.9	1.11

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: GS3 [George St/Horwood Pl AM (Site Folder: 2021_Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Horwood Pl														
1	L2	30	6	32	20.0	0.033	5.7	LOS A	0.1	0.9	0.30	0.54	0.30	40.1
Approach		30	6	32	20.0	0.033	5.7	LOS A	0.1	0.9	0.30	0.54	0.30	40.1
East: George St														
4	L2	84	2	88	2.4	0.085	5.3	LOS A	0.4	2.9	0.28	0.44	0.28	39.7
5	T1	176	14	185	8.0	0.085	0.1	LOS A	0.4	2.9	0.04	0.05	0.04	48.4
Approach		260	16	274	6.2	0.085	1.8	NA	0.4	2.9	0.12	0.18	0.12	44.7
North: Horwood Pl														
7	L2	63	1	66	1.6	0.056	5.0	LOS A	0.2	1.4	0.21	0.51	0.21	43.7
Approach		63	1	66	1.6	0.056	5.0	LOS A	0.2	1.4	0.21	0.51	0.21	43.7
West: George St														
10	L2	112	3	118	2.7	0.124	4.6	LOS A	0.0	0.0	0.00	0.28	0.00	46.9
11	T1	331	7	348	2.1	0.124	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	48.0
Approach		443	10	466	2.3	0.124	1.2	NA	0.0	0.0	0.00	0.14	0.00	47.5
All Vehicles		796	33	838	4.1	0.124	1.8	NA	0.4	2.9	0.07	0.20	0.07	45.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1101 [George St/Smith St AM (Site Folder: 2021_Existing)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street														
1	L2	85	7	89	8.2	0.349	39.1	LOS C	4.1	33.6	0.90	0.77	0.90	11.8
2	T1	181	52	191	28.7	0.349	26.1	LOS B	6.0	50.0	0.82	0.68	0.82	18.9
3	R2	94	13	99	13.8	* 0.493	42.5	LOS D	4.2	32.5	0.97	0.77	0.97	17.7
Approach		360	72	379	20.0	0.493	33.5	LOS C	6.0	50.0	0.88	0.72	0.88	16.8
East: George St														
4	L2	25	6	26	24.0	0.281	32.5	LOS C	3.4	26.0	0.87	0.75	0.87	20.5
5	T1	180	11	189	6.1	0.281	31.1	LOS C	4.1	30.2	0.88	0.72	0.88	20.3
Approach		205	17	216	8.3	0.281	31.3	LOS C	4.1	30.2	0.88	0.72	0.88	20.3
North: Smith Street														
7	L2	116	4	122	3.4	0.698	45.2	LOS D	6.2	56.6	0.99	0.88	1.09	19.1
8	T1	319	69	336	21.6	* 0.772	41.0	LOS C	12.4	89.6	1.00	0.92	1.13	13.9
Approach		435	73	458	16.8	0.772	42.1	LOS C	12.4	89.6	0.99	0.91	1.12	15.6
West: George St														
10	L2	87	2	92	2.3	0.243	35.8	LOS C	3.4	24.3	0.87	0.74	0.87	14.9
11	T1	204	4	215	2.0	0.781	41.4	LOS C	12.1	87.0	1.00	0.96	1.16	17.4
12	R2	47	4	49	8.5	* 0.781	44.8	LOS D	12.1	87.0	1.00	0.96	1.16	10.8
Approach		338	10	356	3.0	0.781	40.4	LOS C	12.1	87.0	0.97	0.91	1.09	16.1
All Vehicles		1338	172	1408	12.9	0.781	37.7	LOS C	12.4	89.6	0.94	0.83	1.01	16.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Smith Street												
P1	Full	48	51	39.3	LOS D	0.1	0.1	0.94	0.94	220.8	217.8	0.99
East: George St												
P2	Full	184	194	39.5	LOS D	0.5	0.5	0.94	0.94	218.9	215.2	0.98
North: Smith Street												
P3	Full	73	77	39.3	LOS D	0.2	0.2	0.94	0.94	220.3	217.2	0.99
West: George St												

P4	Full	349	367	39.8	LOS D	0.9	0.9	0.95	0.95	218.6	214.6	0.98
Pedestrian Movements (Diagonal)												
PD	Diagonal	324	341	39.8	LOS D	0.4	0.4	0.95	0.95	227.4	225.2	0.99
All Pedestrians		978	1029	39.7	LOS D	0.9	0.9	0.94	0.94	221.8	218.6	0.99

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: GW1 [Macquarie Ln/Smith St AM (Site Folder: 2021_Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street														
1	L2	81	0	85	0.0	0.112	4.1	LOS A	0.0	0.0	0.00	0.30	0.00	42.0
2	T1	346	67	364	19.4	0.160	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	48.3
Approach		427	67	449	15.7	0.160	0.8	NA	0.0	0.0	0.00	0.10	0.00	46.2
North: Smith Street														
8	T1	390	81	411	20.8	0.180	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		390	81	411	20.8	0.180	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
West: Macquarie Ln														
10	L2	22	0	23	0.0	0.019	3.5	LOS A	0.1	0.5	0.18	0.44	0.18	29.3
Approach		22	0	23	0.0	0.019	3.5	LOS A	0.1	0.5	0.18	0.44	0.18	29.3
All Vehicles		839	148	883	17.6	0.180	0.5	NA	0.1	0.5	0.00	0.06	0.00	47.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1102 [Macquarie St/Smith St AM (Site Folder: 2021_Existing)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street														
1	L2	24	4	25	16.7	0.257	19.3	LOS B	1.7	20.1	0.76	0.65	0.76	33.2
2	T1	350	67	368	19.1	0.411	12.8	LOS A	5.5	39.1	0.78	0.66	0.78	31.9
Approach		374	71	394	19.0	0.411	13.2	LOS A	5.5	39.1	0.77	0.66	0.77	32.0
East: Macquarie St														
4	L2	61	0	64	0.0	0.133	21.3	LOS B	1.2	8.7	0.80	0.73	0.80	26.1
5	T1	8	2	8	25.0	* 0.199	15.3	LOS B	1.8	13.1	0.80	0.74	0.80	26.4
6	R2	80	3	84	3.8	0.199	20.8	LOS B	1.8	13.1	0.80	0.74	0.80	18.1
Approach		149	5	157	3.4	0.199	20.7	LOS B	1.8	13.1	0.80	0.73	0.80	22.2
North: Smith Street														
8	T1	360	78	379	21.7	* 0.435	12.6	LOS A	5.8	41.8	0.77	0.65	0.77	32.4
Approach		360	78	379	21.7	0.435	12.6	LOS A	5.8	41.8	0.77	0.65	0.77	32.4
All Vehicles		883	154	929	17.4	0.435	14.2	LOS A	5.8	41.8	0.78	0.66	0.78	30.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Smith Street												
P1	Full	332	349	19.6	LOS B	0.4	0.4	0.89	0.89	201.5	218.2	1.08
East: Macquarie St												
P2	Full	309	325	19.6	LOS B	0.4	0.4	0.89	0.89	197.4	213.3	1.08
North: Smith Street												
P3	Full	663	698	19.9	LOS B	0.9	0.9	0.91	0.91	201.8	218.2	1.08
West: Macquarie St												
P4	Full	1292	1360	20.5	LOS C	1.8	1.8	0.93	0.93	196.6	211.3	1.07
All Pedestrians		2596	2733	20.2	LOS C	1.8	1.8	0.92	0.92	198.6	214.2	1.08

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1095 [Marsden_Macquarie_AM (Site Folder: 2021_Existing)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden St														
1	L2	234	4	246	1.7	* 0.598	15.8	LOS B	8.9	63.2	0.83	0.76	0.83	26.2
2	T1	745	13	784	1.7	0.598	10.5	LOS A	10.2	72.2	0.78	0.70	0.78	26.8
Approach		979	17	1031	1.7	0.598	11.8	LOS A	10.2	72.2	0.79	0.71	0.79	26.7
East: Macquarie St														
4	L2	1	0	1	0.0	0.004	23.8	LOS B	0.0	0.2	0.88	0.57	0.88	16.7
5	T1	2	1	2	50.0	0.008	15.0	LOS B	0.1	0.5	0.76	0.53	0.76	25.6
6	R2	1	0	1	0.0	0.008	18.5	LOS B	0.1	0.5	0.76	0.53	0.76	23.1
Approach		4	1	4	25.0	0.008	18.1	LOS B	0.1	0.5	0.79	0.54	0.79	22.6
North: Marsden St														
8	T1	459	17	483	3.7	0.514	9.2	LOS A	8.1	58.4	0.72	0.63	0.72	28.3
Approach		459	17	483	3.7	0.514	9.2	LOS A	8.1	58.4	0.72	0.63	0.72	28.3
All Vehicles		1442	35	1518	2.4	0.598	11.0	LOS A	10.2	72.2	0.77	0.69	0.77	27.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Marsden St												
P1	Full	331	348	19.6	LOS B	0.4	0.4	0.89	0.89	196.2	211.9	1.08
East: Macquarie St												
P2	Full	230	242	19.6	LOS B	0.3	0.3	0.89	0.89	198.9	215.2	1.08
North: Marsden St												
P3	Full	161	169	19.5	LOS B	0.2	0.2	0.89	0.89	196.1	211.9	1.08
West: Macquarie St												
P4	Full	335	353	19.6	LOS B	0.4	0.4	0.89	0.89	199.0	215.2	1.08
All Pedestrians		1057	1113	19.6	LOS B	0.4	0.4	0.89	0.89	197.7	213.7	1.08

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1102 [Macquarie St/Smith St_PM (Site Folder: 2021_Existing)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street														
1	L2	14	0	15	0.0	0.217	17.4	LOS B	1.5	17.5	0.71	0.60	0.71	35.3
2	T1	315	67	332	21.3	0.337	11.5	LOS A	4.5	31.8	0.73	0.61	0.73	33.4
Approach		329	67	346	20.4	0.337	11.8	LOS A	4.5	31.8	0.73	0.61	0.73	33.5
East: Macquarie St														
4	L2	42	1	44	2.4	0.102	22.0	LOS B	0.9	6.2	0.81	0.71	0.81	25.5
5	T1	13	1	14	7.7	* 0.248	16.4	LOS B	2.2	16.0	0.83	0.75	0.83	25.8
6	R2	93	1	98	1.1	0.248	21.9	LOS B	2.2	16.0	0.83	0.75	0.83	17.7
Approach		148	3	156	2.0	0.248	21.4	LOS B	2.2	16.0	0.82	0.74	0.82	21.0
North: Smith Street														
8	T1	334	61	352	18.3	* 0.385	11.6	LOS A	5.2	37.1	0.74	0.62	0.74	33.6
Approach		334	61	352	18.3	0.385	11.6	LOS A	5.2	37.1	0.74	0.62	0.74	33.6
All Vehicles		811	131	854	16.2	0.385	13.5	LOS A	5.2	37.1	0.75	0.64	0.75	30.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Smith Street												
P1	Full	216	227	19.5	LOS B	0.3	0.3	0.89	0.89	201.4	218.2	1.08
East: Macquarie St												
P2	Full	50	53	19.4	LOS B	0.1	0.1	0.88	0.88	197.2	213.3	1.08
North: Smith Street												
P3	Full	76	80	19.4	LOS B	0.1	0.1	0.88	0.88	201.3	218.2	1.08
West: Macquarie St												
P4	Full	328	345	19.6	LOS B	0.4	0.4	0.89	0.89	195.7	211.3	1.08
All Pedestrians		670	705	19.6	LOS B	0.4	0.4	0.89	0.89	198.3	214.5	1.08

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1093 [Marsden_George_PM (Site Folder: 2021_Existing)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden St														
1	L2	23	1	24	4.3	0.471	10.3	LOS A	10.0	70.9	0.55	0.50	0.55	40.8
2	T1	521	8	548	1.5	0.471	6.9	LOS A	10.0	70.9	0.55	0.50	0.55	32.2
3	R2	137	2	144	1.5	* 0.395	23.0	LOS B	3.8	27.2	0.86	0.78	0.86	21.9
Approach		681	11	717	1.6	0.471	10.2	LOS A	10.0	70.9	0.61	0.56	0.61	30.3
East: George St														
4	L2	126	0	133	0.0	0.738	34.1	LOS C	10.0	71.4	0.99	0.92	1.12	17.0
5	T1	276	11	291	4.0	* 0.738	32.8	LOS C	10.0	71.4	0.99	0.93	1.16	27.8
6	R2	37	2	39	5.4	0.738	38.5	LOS C	6.4	46.2	1.00	0.93	1.20	15.9
Approach		439	13	462	3.0	0.738	33.7	LOS C	10.0	71.4	0.99	0.93	1.15	24.5
North: Marsden St														
7	L2	40	0	42	0.0	0.059	19.1	LOS B	0.9	6.3	0.66	0.68	0.66	24.4
8	T1	618	7	651	1.1	* 0.726	16.4	LOS B	18.1	128.1	0.86	0.78	0.87	25.5
Approach		658	7	693	1.1	0.726	16.6	LOS B	18.1	128.1	0.85	0.77	0.86	25.4
West: George St														
10	L2	68	0	72	0.0	0.385	38.5	LOS C	2.4	17.1	0.97	0.75	0.97	27.5
11	T1	140	3	147	2.1	0.416	28.1	LOS B	4.6	32.9	0.93	0.74	0.93	30.5
Approach		208	3	219	1.4	0.416	31.5	LOS C	4.6	32.9	0.94	0.75	0.94	29.4
All Vehicles		1986	34	2091	1.7	0.738	19.7	LOS B	18.1	128.1	0.81	0.73	0.85	27.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Marsden St												
P1	Full	350	368	29.7	LOS C	0.7	0.7	0.93	0.93	206.3	211.9	1.03
East: George St												
P2	Full	350	368	29.7	LOS C	0.7	0.7	0.93	0.93	209.0	215.2	1.03
North: Marsden St												
P3	Full	350	368	29.7	LOS C	0.7	0.7	0.93	0.93	206.3	211.9	1.03
West: George St												
P4	Full	350	368	29.7	LOS C	0.7	0.7	0.93	0.93	209.0	215.2	1.03

All Pedestrians	1400	1474	29.7	LOS C	0.7	0.7	0.93	0.93	207.7	213.6	1.03

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 0109 [Church St_George_PM (Site Folder: 2021_Existing)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 40 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: George St														
5	T1	419	12	441	2.9	0.310	9.9	LOS A	3.2	22.6	0.75	0.62	0.75	30.3
Approach		419	12	441	2.9	0.310	9.9	LOS A	3.2	22.6	0.75	0.62	0.75	30.3
West: George St														
11	T1	317	3	334	0.9	* 0.461	10.6	LOS A	5.1	36.1	0.80	0.68	0.80	32.2
Approach		317	3	334	0.9	0.461	10.6	LOS A	5.1	36.1	0.80	0.68	0.80	32.2
All Vehicles		736	15	775	2.0	0.461	10.2	LOS A	5.1	36.1	0.77	0.64	0.77	31.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: George St												
P2	Full	350	368	14.7	LOS B	0.4	0.4	0.86	0.86	191.3	211.9	1.11
West: George St												
P4	Full	350	368	14.7	LOS B	0.4	0.4	0.86	0.86	191.3	211.9	1.11
All Pedestrians		700	737	14.7	LOS B	0.4	0.4	0.86	0.86	191.3	211.9	1.11

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: GS3 [George St/Horwood Pl_PM (Site Folder: 2021_Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Horwood Pl														
1	L2	93	5	98	5.4	0.100	5.9	LOS A	0.4	2.7	0.36	0.59	0.36	40.3
Approach		93	5	98	5.4	0.100	5.9	LOS A	0.4	2.7	0.36	0.59	0.36	40.3
East: George St														
4	L2	43	0	45	0.0	0.109	5.1	LOS A	0.3	2.4	0.13	0.14	0.13	45.0
5	T1	331	10	348	3.0	0.109	0.1	LOS A	0.3	2.4	0.05	0.05	0.05	48.1
Approach		374	10	394	2.7	0.109	0.7	NA	0.3	2.4	0.06	0.06	0.06	47.7
North: Horwood Pl														
7	L2	61	1	64	1.6	0.052	4.9	LOS A	0.2	1.3	0.17	0.51	0.17	43.8
Approach		61	1	64	1.6	0.052	4.9	LOS A	0.2	1.3	0.17	0.51	0.17	43.8
West: George St														
10	L2	74	0	78	0.0	0.084	4.6	LOS A	0.0	0.0	0.00	0.27	0.00	47.1
11	T1	230	4	242	1.7	0.084	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	48.0
Approach		304	4	320	1.3	0.084	1.1	NA	0.0	0.0	0.00	0.13	0.00	47.5
All Vehicles		832	20	876	2.4	0.109	1.7	NA	0.4	2.7	0.08	0.18	0.08	46.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1101 [George St/Smith St_PM (Site Folder: 2021_Existing)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street														
1	L2	134	3	141	2.2	0.624	42.2	LOS C	5.6	39.8	0.99	0.83	1.05	11.1
2	T1	285	57	300	20.0	0.624	26.6	LOS B	10.3	84.7	0.92	0.78	0.92	18.7
3	R2	147	8	155	5.4	* 0.608	40.3	LOS C	5.7	41.6	0.98	0.88	1.01	18.1
Approach		566	68	596	12.0	0.624	33.8	LOS C	10.3	84.7	0.95	0.82	0.97	16.6
East: George St														
4	L2	41	6	43	14.6	0.417	30.3	LOS C	4.5	33.3	0.92	0.78	0.92	21.2
5	T1	242	6	255	2.5	0.417	29.7	LOS C	5.3	37.8	0.92	0.76	0.92	20.7
Approach		283	12	298	4.2	0.417	29.8	LOS C	5.3	37.8	0.92	0.76	0.92	20.8
North: Smith Street														
7	L2	62	0	65	0.0	0.687	45.6	LOS D	4.8	45.7	1.00	0.88	1.16	19.1
8	T1	236	51	248	21.6	* 0.833	43.1	LOS D	8.7	61.9	1.00	0.97	1.30	13.4
Approach		298	51	314	17.1	0.833	43.6	LOS D	8.7	61.9	1.00	0.96	1.27	14.8
West: George St														
10	L2	86	1	91	1.2	0.267	34.2	LOS C	3.1	22.0	0.90	0.75	0.90	15.3
11	T1	174	3	183	1.7	0.809	40.5	LOS C	9.9	70.2	1.00	1.02	1.26	17.6
12	R2	45	1	47	2.2	* 0.809	43.9	LOS D	9.9	70.2	1.00	1.02	1.26	10.9
Approach		305	5	321	1.6	0.809	39.2	LOS C	9.9	70.2	0.97	0.94	1.16	16.2
All Vehicles		1452	136	1528	9.4	0.833	36.2	LOS C	10.3	84.7	0.96	0.86	1.06	17.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Smith Street												
P1	Full	53	56	34.3	LOS D	0.1	0.1	0.93	0.93	215.8	217.8	1.01
East: George St												
P2	Full	63	66	34.3	LOS D	0.1	0.1	0.93	0.93	213.7	215.2	1.01
North: Smith Street												
P3	Full	107	113	34.4	LOS D	0.2	0.2	0.93	0.93	215.4	217.2	1.01
West: George St												

P4	Full	231	243	34.6	LOS D	0.5	0.5	0.93	0.93	213.4	214.6	1.01
Pedestrian Movements (Diagonal)												
PD	Diagonal	154	162	34.5	LOS D	0.2	0.2	0.93	0.93	222.1	225.2	1.01
All Pedestrians		608	640	34.5	LOS D	0.5	0.5	0.93	0.93	216.2	218.1	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: GW1 [Macquarie Ln/Smith St_PM (Site Folder: 2021_Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street														
1	L2	28	0	29	0.0	0.086	4.1	LOS A	0.0	0.0	0.00	0.16	0.00	44.5
2	T1	380	66	400	17.4	0.173	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.0
Approach		408	66	429	16.2	0.173	0.3	NA	0.0	0.0	0.00	0.04	0.00	48.4
North: Smith Street														
8	T1	335	59	353	17.6	0.154	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		335	59	353	17.6	0.154	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
West: Macquarie Ln														
10	L2	144	0	152	0.0	0.125	3.6	LOS A	0.5	3.4	0.21	0.46	0.21	29.1
Approach		144	0	152	0.0	0.125	3.6	LOS A	0.5	3.4	0.21	0.46	0.21	29.1
All Vehicles		887	125	934	14.1	0.173	0.7	NA	0.5	3.4	0.03	0.09	0.03	44.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1095 [Marsden_Macquarie_PM (Site Folder: 2021_Existing)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden St														
1	L2	228	2	240	0.9	0.544	15.5	LOS B	7.8	55.1	0.80	0.75	0.80	26.4
2	T1	663	8	698	1.2	0.544	10.1	LOS A	8.9	63.2	0.75	0.67	0.75	27.2
Approach		891	10	938	1.1	0.544	11.4	LOS A	8.9	63.2	0.76	0.69	0.76	27.0
East: Macquarie St														
4	L2	1	0	1	0.0	0.004	23.8	LOS B	0.0	0.2	0.88	0.57	0.88	16.7
5	T1	2	1	2	50.0	0.008	15.0	LOS B	0.1	0.5	0.76	0.53	0.76	25.6
6	R2	1	0	1	0.0	0.008	18.5	LOS B	0.1	0.5	0.76	0.53	0.76	23.1
Approach		4	1	4	25.0	0.008	18.1	LOS B	0.1	0.5	0.79	0.54	0.79	22.6
North: Marsden St														
8	T1	741	5	780	0.7	* 0.805	15.4	LOS B	18.8	132.0	0.90	0.92	1.05	23.7
Approach		741	5	780	0.7	0.805	15.4	LOS B	18.8	132.0	0.90	0.92	1.05	23.7
All Vehicles		1636	16	1722	1.0	0.805	13.2	LOS A	18.8	132.0	0.83	0.79	0.89	25.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Marsden St												
P1	Full	350	368	19.7	LOS B	0.5	0.5	0.89	0.89	196.2	211.9	1.08
East: Macquarie St												
P2	Full	350	368	19.7	LOS B	0.5	0.5	0.89	0.89	199.0	215.2	1.08
North: Marsden St												
P3	Full	350	368	19.7	LOS B	0.5	0.5	0.89	0.89	196.2	211.9	1.08
West: Macquarie St												
P4	Full	350	368	19.7	LOS B	0.5	0.5	0.89	0.89	199.0	215.2	1.08
All Pedestrians		1400	1474	19.7	LOS B	0.5	0.5	0.89	0.89	197.6	213.6	1.08

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: GS2 [Macquarie St/Horwood Pl_PM (Site Folder: 2021_Existing)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Macquarie St														
5	T1	1	1	1	100.0	0.013	0.2	LOS A	0.1	0.4	0.14	0.52	0.14	45.2
6	R2	19	1	20	5.3	0.013	5.1	LOS A	0.1	0.4	0.14	0.52	0.14	40.0
Approach		20	2	21	10.0	0.013	4.8	NA	0.1	0.4	0.14	0.52	0.14	40.4
North: Horwood Pl														
9	R2	1	0	1	0.0	0.001	5.0	LOS A	0.0	0.0	0.13	0.55	0.13	44.2
Approach		1	0	1	0.0	0.001	5.0	LOS A	0.0	0.0	0.13	0.55	0.13	44.2
All Vehicles		21	2	22	9.5	0.013	4.9	NA	0.1	0.4	0.14	0.53	0.14	40.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: GS2 [Macquarie St/Horwood Pl AM (Site Folder: 2036_wo SSD_AM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Macquarie St														
5	T1	9	9	9	100.0	0.012	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		9	9	9	100.0	0.012	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Macquarie St														
10	L2	201	6	212	3.0	0.118	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	39.0
11	T1	9	9	9	100.0	0.012	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		210	15	221	7.1	0.118	4.4	NA	0.0	0.0	0.00	0.50	0.00	39.4
All Vehicles		219	24	231	11.0	0.118	4.2	NA	0.0	0.0	0.00	0.48	0.00	39.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

CCG MOVEMENT SUMMARY

Common Control Group: 1102 [Macq_Smith_carpak]

Network: N101 [2036_ Metro without SSD_AM (Network Folder: 2036_without SSD)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (CCG Practical Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1102b [Macquarie St/Smith St AM]														
South: Smith Street														
1	L2	4	0.0	4	0.0	0.441	40.8	LOS C	2.6	33.0	0.94	0.75	0.94	14.8
2	T1	331	22.0	331	22.0	* 0.867	42.6	LOS D	12.0	86.2	0.99	0.97	1.29	12.9
3	R2	4	0.0	4	0.0	* 0.012	20.8	LOS B	0.1	0.6	0.78	0.63	0.78	25.7
Approach		339	21.4	339	21.4	0.867	42.3	LOS C	12.0	86.2	0.99	0.97	1.28	13.0
East: Macquarie St														
5	T1	9	100.0	9	100.0	0.051	26.5	LOS B	0.3	9.9	0.80	0.57	0.80	12.8
Approach		9	100.0	9	100.0	0.051	26.5	LOS B	0.3	9.9	0.80	0.57	0.80	12.8
North: Smith Street														
7	L2	6	0.0	6	0.0	0.237	27.0	LOS B	2.2	27.3	0.78	0.64	0.78	13.0
8	T1	322	22.9	322	22.9	0.432	23.6	LOS B	8.0	57.7	0.83	0.69	0.83	23.2
9	R2	95	3.3	95	3.3	0.194	19.5	LOS B	2.1	15.4	0.81	0.74	0.81	10.4
Approach		423	18.2	423	18.2	0.432	22.7	LOS B	8.0	57.7	0.83	0.70	0.83	21.1
West: Macquarie St														
10	L2	17	6.3	17	6.3	0.220	19.9	LOS B	0.7	9.9	0.82	0.67	0.82	7.7
11	T1	9	100.0	9	100.0	0.220	16.9	LOS B	0.7	9.9	0.82	0.67	0.82	19.0
12	R2	8	0.0	8	0.0	* 0.220	20.0	LOS B	0.7	9.9	0.82	0.67	0.82	23.8
Approach		35	30.3	35	30.3	0.220	19.1	LOS B	0.7	9.9	0.82	0.67	0.82	16.0
All Vehicles		806	21.0	806	21.0	0.867	30.8	LOS C	12.0	86.2	0.89	0.81	1.02	16.6
Site: 1102a [Macquarie St _ Car Park_AM]														
South: Car Park														
3	R2	25	0.0	25	0.0	* 0.091	22.6	LOS B	0.6	4.0	0.89	0.69	0.89	31.0
Approach		25	0.0	25	0.0	0.091	22.6	LOS B	0.6	4.0	0.89	0.69	0.89	31.0
East: Macquarie St														
4	L2	99	0.0	99	0.0	0.128	5.9	LOS A	0.7	6.5	0.21	0.53	0.21	43.0
5	T1	9	100.0	9	100.0	0.128	3.0	LOS A	0.7	6.5	0.21	0.53	0.21	18.2
Approach		108	8.7	108	8.7	0.128	5.7	LOS A	0.7	6.5	0.21	0.53	0.21	42.5
West: Macquarie St														
11	T1	9	100.0	9	100.0	0.051	26.5	LOS B	0.3	9.9	0.80	0.57	0.80	13.0
Approach		9	100.0	9	100.0	0.051	26.5	LOS B	0.3	9.9	0.80	0.57	0.80	13.0
All Vehicles		143	13.2	143	13.2	0.128	10.0	LOS A	0.7	9.9	0.37	0.56	0.37	38.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		ped	m			sec	m	m/sec
Site: 1102b [Macquarie St/Smith St AM]											
South: Smith Street											
P1	Full	818	35.4	LOS D	1.8	1.8	0.96	0.96	217.5	218.5	1.00
East: Macquarie St											
P2	Full	1147	35.9	LOS D	2.5	2.5	0.97	0.97	212.5	211.9	1.00
North: Smith Street											
P3	Full	1633	36.7	LOS D	3.7	3.7	0.99	0.99	218.8	218.5	1.00
West: Macquarie St											
P4	Full	4041	36.7	LOS D	3.6	3.6	0.99	0.99	210.5	208.6	0.99
All Pedestrians		7639	36.5	LOS D	3.7	3.7	0.99	0.99	213.3	212.3	0.99
Site: 1102a [Macquarie St _ Car Park_AM]											
South: Car Park											
P1	Full	493	34.9	LOS D	1.1	1.1	0.94	0.94	208.8	208.6	1.00
All Pedestrians		493	34.9	LOS D	1.1	1.1	0.94	0.94	208.8	208.6	1.00

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1093 [Marsden_George_AM (Site Folder: 2036_wo SSD_AM)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden St														
1	L2	53	0	56	0.0	0.590	12.6	LOS A	12.2	86.9	0.70	0.64	0.70	39.2
2	T1	551	12	580	2.2	0.590	9.2	LOS A	12.2	86.9	0.70	0.64	0.70	30.2
3	R2	249	3	262	1.2	* 0.568	23.9	LOS B	6.3	44.5	0.92	0.85	0.92	21.5
Approach		853	15	898	1.8	0.590	13.7	LOS A	12.2	86.9	0.76	0.70	0.76	28.3
East: George St														
4	L2	68	5	72	7.4	0.399	24.4	LOS B	4.3	32.4	0.88	0.74	0.88	20.6
5	T1	125	15	132	12.0	0.399	23.3	LOS B	4.3	32.4	0.90	0.74	0.90	31.5
6	R2	35	7	37	20.0	0.399	32.3	LOS C	2.1	17.0	0.97	0.75	0.97	17.6
Approach		228	27	240	11.8	0.399	25.0	LOS B	4.3	32.4	0.90	0.74	0.90	27.1
North: Marsden St														
7	L2	52	7	55	13.5	0.156	26.1	LOS B	1.3	10.5	0.85	0.72	0.85	20.5
8	T1	458	15	482	3.3	* 0.806	25.0	LOS B	14.9	107.4	0.98	1.00	1.17	21.4
Approach		510	22	537	4.3	0.806	25.1	LOS B	14.9	107.4	0.97	0.97	1.14	21.4
West: George St														
10	L2	77	0	81	0.0	0.374	32.8	LOS C	2.3	16.4	0.96	0.76	0.96	29.5
11	T1	254	4	267	1.6	* 0.643	24.5	LOS B	7.6	53.6	0.96	0.83	1.01	32.1
Approach		331	4	348	1.2	0.643	26.4	LOS B	7.6	53.6	0.96	0.81	1.00	31.4
All Vehicles		1922	68	2023	3.5	0.806	20.3	LOS B	14.9	107.4	0.87	0.80	0.92	27.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Marsden St												
P1	Full	390	411	24.7	LOS C	0.6	0.6	0.92	0.92	201.3	211.9	1.05
East: George St												
P2	Full	180	189	24.5	LOS C	0.3	0.3	0.91	0.91	203.8	215.2	1.06
North: Marsden St												
P3	Full	607	639	25.0	LOS C	1.0	1.0	0.92	0.92	201.5	211.9	1.05
West: George St												

P4 Full	283	298	24.6	LOS C	0.5	0.5	0.91	0.91	203.9	215.2	1.06
All Pedestrians	1460	1537	24.8	LOS C	1.0	1.0	0.92	0.92	202.2	212.9	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 0109 [Church St_George_AM (Site Folder: 2036_wo SSD_AM)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 40 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Church St														
2	T1	9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
Approach		9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
East: George St														
5	T1	234	25	246	10.7	0.329	8.7	LOS A	3.3	25.4	0.71	0.60	0.71	27.6
Approach		234	25	246	10.7	0.329	8.7	LOS A	3.3	25.4	0.71	0.60	0.71	27.6
North: Church St														
8	T1	9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
Approach		9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
West: George St														
11	T1	514	13	541	2.5	* 0.669	10.9	LOS A	9.1	65.0	0.86	0.78	0.90	25.5
Approach		514	13	541	2.5	0.669	10.9	LOS A	9.1	65.0	0.86	0.78	0.90	25.5
All Vehicles		766	56	806	7.3	0.669	10.2	LOS A	9.1	65.0	0.81	0.72	0.84	26.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Church St												
P1	Full	844	888	15.0	LOS B	0.9	0.9	0.88	0.88	188.8	208.6	1.10
East: George St												
P2	Full	750	789	14.9	LOS B	0.8	0.8	0.88	0.88	188.8	208.6	1.11
North: Church St												
P3	Full	241	254	14.6	LOS B	0.2	0.2	0.86	0.86	188.4	208.6	1.11
West: George St												
P4	Full	980	1032	15.1	LOS B	1.0	1.0	0.89	0.89	188.9	208.6	1.10
All Pedestrians		2815	2963	15.0	LOS B	1.0	1.0	0.88	0.88	188.8	208.6	1.10

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: GS3 [George St/Horwood Pl (S) AM (Site Folder: 2036_wo SSD_AM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Horwood Pl														
1	L2	32	7	34	21.9	0.029	4.9	LOS A	0.1	0.9	0.11	0.50	0.11	34.2
Approach		32	7	34	21.9	0.029	4.9	LOS A	0.1	0.9	0.11	0.50	0.11	34.2
East: George St														
5	T1	186	15	196	8.1	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		186	15	196	8.1	0.090	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: George St														
11	T1	414	13	436	3.1	0.192	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		414	13	436	3.1	0.192	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles		632	35	665	5.5	0.192	0.3	NA	0.1	0.9	0.01	0.03	0.01	47.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: GS3 [George St/Horwood Pl (N) AM (Site Folder: 2036_wo SSD_AM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: George St														
5	T1	186	15	196	8.1	0.089	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		186	15	196	8.1	0.089	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
North: Horwood Pl														
7	L2	66	1	69	1.5	0.059	5.0	LOS A	0.2	1.5	0.22	0.52	0.22	43.9
Approach		66	1	69	1.5	0.059	5.0	LOS A	0.2	1.5	0.22	0.52	0.22	43.9
West: George St														
10	L2	118	3	124	2.5	0.131	4.3	LOS A	0.0	0.0	0.00	0.27	0.00	46.6
11	T1	351	8	369	2.3	0.131	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	47.3
Approach		469	11	494	2.3	0.131	1.1	NA	0.0	0.0	0.00	0.13	0.00	46.9
All Vehicles		721	27	759	3.7	0.131	1.2	NA	0.2	1.5	0.02	0.13	0.02	46.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1101 [George St/Smith St AM (Site Folder: 2036_wo SSD_AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street														
1	L2	91	8	96	8.8	0.286	28.8	LOS C	4.4	39.9	0.78	0.72	0.78	16.2
2	T1	191	55	201	28.8	0.286	24.0	LOS B	5.3	41.1	0.78	0.66	0.78	19.7
3	R2	100	14	105	14.0	* 0.501	42.8	LOS D	4.4	34.6	0.97	0.77	0.97	17.6
Approach		382	77	402	20.2	0.501	30.1	LOS C	5.3	41.1	0.83	0.70	0.83	18.2
East: George St														
4	L2	27	7	28	25.9	0.185	20.9	LOS B	1.4	11.2	0.85	0.68	0.85	24.9
5	T1	99	8	104	8.1	0.185	27.3	LOS B	2.5	18.6	0.86	0.67	0.86	22.2
Approach		126	15	133	11.9	0.185	25.9	LOS B	2.5	18.6	0.86	0.67	0.86	22.7
North: Smith Street														
7	L2	123	4	129	3.3	0.736	46.5	LOS D	6.4	58.5	1.00	0.91	1.14	18.8
8	T1	338	73	356	21.6	* 0.828	43.7	LOS D	13.8	100.0	1.00	0.98	1.21	13.2
Approach		461	77	485	16.7	0.828	44.5	LOS D	13.8	100.0	1.00	0.96	1.19	15.0
West: George St														
10	L2	92	2	97	2.2	0.271	36.9	LOS C	3.7	26.2	0.89	0.75	0.89	15.6
11	T1	215	4	226	1.9	0.836	45.0	LOS D	13.5	97.0	1.00	1.04	1.26	17.2
12	R2	50	4	53	8.0	* 0.836	48.4	LOS D	13.5	97.0	1.00	1.04	1.26	11.2
Approach		357	10	376	2.8	0.836	43.4	LOS D	13.5	97.0	0.97	0.96	1.16	16.1
All Vehicles		1326	179	1396	13.5	0.836	38.3	LOS C	13.8	100.0	0.93	0.86	1.05	16.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Smith Street												
P1	Full	241	254	39.6	LOS D	0.6	0.6	0.94	0.94	221.1	217.8	0.98
East: George St												
P2	Full	431	454	40.0	LOS D	1.1	1.1	0.95	0.95	219.3	215.2	0.98
North: Smith Street												
P3	Full	444	467	40.0	LOS D	1.1	1.1	0.95	0.95	221.0	217.2	0.98
West: George St												

P4	Full	1222	1286	41.4	LOS E	3.2	3.2	0.99	0.99	220.3	214.6	0.97
Pedestrian Movements (Diagonal)												
PD	Diagonal	758	798	40.5	LOS E	1.0	1.0	0.97	0.97	228.2	225.2	0.99
All Pedestrians		3096	3259	40.7	LOS E	3.2	3.2	0.97	0.97	222.2	217.9	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: GW1 [Macquarie Ln/Smith St AM (Site Folder: 2036_wo SSD_AM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street														
1	L2	96	0	101	0.0	0.117	4.1	LOS A	0.0	0.0	0.00	0.33	0.00	22.3
2	T1	271	64	285	23.6	0.120	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	47.8
Approach		367	64	386	17.4	0.120	1.1	NA	0.0	0.0	0.00	0.14	0.00	38.2
North: Smith Street														
8	T1	373	78	393	20.9	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		373	78	393	20.9	0.172	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
West: Macquarie Ln														
10	L2	26	0	27	0.0	0.022	3.5	LOS A	0.1	0.6	0.18	0.44	0.18	29.3
Approach		26	0	27	0.0	0.022	3.5	LOS A	0.1	0.6	0.18	0.44	0.18	29.3
All Vehicles		766	142	806	18.5	0.172	0.6	NA	0.1	0.6	0.01	0.08	0.01	42.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1095 [Marsden_Macquarie_AM (Site Folder: 2036_wo SSD_AM)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden St														
2	T1	580	25	611	4.3	0.709	15.0	LOS B	12.0	87.4	0.89	0.83	0.96	23.7
3	R2	151	5	159	3.3	0.709	27.1	LOS B	5.5	39.5	0.97	0.92	1.17	15.8
Approach		731	30	769	4.1	0.709	17.5	LOS B	12.0	87.4	0.91	0.85	1.00	21.9
North: Marsden St														
7	L2	2	0	2	0.0	*0.637	17.3	LOS B	9.9	71.9	0.85	0.74	0.85	26.4
8	T1	473	19	498	4.0	0.637	12.7	LOS A	9.9	71.9	0.85	0.74	0.85	25.4
Approach		475	19	500	4.0	0.637	12.7	LOS A	9.9	71.9	0.85	0.74	0.85	25.4
West: Macquarie St														
10	L2	238	7	251	2.9	*0.633	25.2	LOS B	6.0	42.9	0.96	0.84	1.02	32.4
11	T1	44	1	46	2.3	0.071	12.2	LOS A	0.8	5.5	0.70	0.53	0.70	39.0
12	R2	70	2	74	2.9	0.186	22.4	LOS B	1.5	10.9	0.85	0.74	0.85	32.1
Approach		352	10	371	2.8	0.633	23.0	LOS B	6.0	42.9	0.90	0.78	0.95	33.0
All Vehicles		1558	59	1640	3.8	0.709	17.3	LOS B	12.0	87.4	0.89	0.80	0.94	26.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Marsden St												
P1	Full	1262	1328	20.5	LOS C	1.8	1.8	0.93	0.93	197.1	211.9	1.08
East: Macquarie St												
P2	Full	308	324	19.6	LOS B	0.4	0.4	0.89	0.89	190.7	205.3	1.08
North: Marsden St												
P3	Full	924	973	20.2	LOS C	1.3	1.3	0.92	0.92	196.8	211.9	1.08
West: Macquarie St												
P4	Full	449	473	19.7	LOS B	0.6	0.6	0.90	0.90	196.3	211.9	1.08
All Pedestrians		2943	3098	20.2	LOS C	1.8	1.8	0.92	0.92	196.2	211.2	1.08

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 0184 [Macquarie St/Church St AM (Site Folder: 2036_wo SSD_AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Macquarie St														
6	R2	9	9	9	100.0	* 0.110	30.1	LOS C	0.2	7.8	0.92	0.68	0.92	18.2
Approach		9	9	9	100.0	0.110	30.1	LOS C	0.2	7.8	0.92	0.68	0.92	18.2
North: Church Street														
7	L2	9	9	9	100.0	0.110	30.0	LOS C	0.2	7.8	0.92	0.68	0.92	18.5
Approach		9	9	9	100.0	0.110	30.0	LOS C	0.2	7.8	0.92	0.68	0.92	18.5
West: Macquarie St														
11	T1	201	6	212	3.0	* 0.568	20.7	LOS B	5.0	35.6	0.95	0.78	0.96	18.9
Approach		201	6	212	3.0	0.568	20.7	LOS B	5.0	35.6	0.95	0.78	0.96	18.9
All Vehicles		219	24	231	11.0	0.568	21.4	LOS B	5.0	35.6	0.95	0.77	0.96	18.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Macquarie St												
P2	Full	1251	1317	20.5	LOS C	1.7	1.7	0.93	0.93	197.1	211.9	1.08
North: Church Street												
P3	Full	1215	1279	20.4	LOS C	1.7	1.7	0.93	0.93	194.3	208.6	1.07
West: Macquarie St												
P4	Full	2125	2237	21.3	LOS C	3.1	3.1	0.97	0.97	192.2	205.0	1.07
All Pedestrians		4591	4833	20.9	LOS C	3.1	3.1	0.95	0.95	194.1	207.8	1.07

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: GS2 [Macquarie St/Horwood Pl PM (Site Folder: 2036_wo SSD_PM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Macquarie St														
5	T1	9	9	9	100.0	0.012	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		9	9	9	100.0	0.012	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Macquarie St														
10	L2	100	3	105	3.0	0.059	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	39.1
11	T1	9	9	9	100.0	0.012	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		109	12	115	11.0	0.059	4.2	NA	0.0	0.0	0.00	0.48	0.00	39.7
All Vehicles		118	21	124	17.8	0.059	3.9	NA	0.0	0.0	0.00	0.45	0.00	40.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

CCG MOVEMENT SUMMARY

Common Control Group: 1102 [Macq_Smith_carpak]

Network: N101 [2036_ Metro without SSD_PM (Network Folder: 2036_without SSD)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (CCG Practical Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1102b [Macquarie St/Smith St PM]														
South: Smith Street														
1	L2	5	0.0	5	0.0	0.333	36.2	LOS C	3.1	39.2	0.86	0.69	0.86	16.3
2	T1	312	27.4	312	27.4	0.484	31.0	LOS C	8.9	63.7	0.89	0.74	0.89	16.3
3	R2	14	0.0	14	0.0	* 0.045	21.6	LOS B	0.3	2.1	0.80	0.67	0.80	25.2
Approach		331	25.8	331	25.8	0.484	30.7	LOS C	8.9	63.7	0.88	0.73	0.88	16.7
East: Macquarie St														
5	T1	9	100.0	9	100.0	0.058	31.9	LOS C	0.3	11.5	0.83	0.59	0.83	11.0
Approach		9	100.0	9	100.0	0.058	31.9	LOS C	0.3	11.5	0.83	0.59	0.83	11.0
North: Smith Street														
7	L2	12	0.0	12	0.0	0.199	24.8	LOS B	2.3	28.5	0.71	0.60	0.71	13.5
8	T1	573	14.2	573	14.2	* 0.748	25.4	LOS B	12.5	89.8	0.87	0.79	0.90	22.2
9	R2	78	2.7	78	2.7	0.139	17.4	LOS B	1.7	12.5	0.71	0.72	0.71	11.4
Approach		662	12.6	662	12.6	0.748	24.4	LOS B	12.5	89.8	0.85	0.78	0.88	21.3
West: Macquarie St														
10	L2	38	5.6	38	5.6	0.525	21.1	LOS B	1.9	19.5	0.83	0.71	0.83	7.1
11	T1	9	100.0	9	100.0	0.525	18.0	LOS B	1.9	19.5	0.83	0.71	0.83	17.9
12	R2	29	3.6	29	3.6	* 0.525	21.2	LOS B	1.9	19.5	0.83	0.71	0.83	22.4
Approach		77	16.4	77	16.4	0.525	20.8	LOS B	1.9	19.5	0.83	0.71	0.83	15.8
All Vehicles		1079	17.7	1079	17.7	0.748	26.2	LOS B	12.5	89.8	0.86	0.76	0.88	19.3
Site: 1102a [Macquarie St _ Car Park_PM]														
South: Car Park														
3	R2	99	0.0	99	0.0	0.400	25.7	LOS B	2.4	16.7	0.96	0.76	0.96	29.4
Approach		99	0.0	99	0.0	0.400	25.7	LOS B	2.4	16.7	0.96	0.76	0.96	29.4
East: Macquarie St														
4	L2	83	0.0	83	0.0	0.102	6.4	LOS A	0.7	6.4	0.20	0.52	0.20	42.6
5	T1	9	100.0	9	100.0	0.102	3.4	LOS A	0.7	6.4	0.20	0.52	0.20	17.5
Approach		93	10.2	93	10.2	0.102	6.1	LOS A	0.7	6.4	0.20	0.52	0.20	42.1
West: Macquarie St														
11	T1	9	100.0	9	100.0	0.058	31.9	LOS C	0.3	11.5	0.83	0.59	0.83	11.3
Approach		9	100.0	9	100.0	0.058	31.9	LOS C	0.3	11.5	0.83	0.59	0.83	11.3
All Vehicles		201	9.4	201	9.4	0.400	16.9	LOS B	2.4	16.7	0.60	0.64	0.60	33.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: 1102b [Macquarie St/Smith St PM]											
South: Smith Street											
P1	Full	532	40.1	LOS E	1.3	1.3	0.95	0.95	222.2	218.5	0.98
East: Macquarie St											
P2	Full	694	40.4	LOS E	1.7	1.7	0.96	0.96	217.0	211.9	0.98
North: Smith Street											
P3	Full	187	39.5	LOS D	0.5	0.5	0.94	0.94	221.6	218.5	0.99
West: Macquarie St											
P4	Full	1615	40.3	LOS E	1.6	1.6	0.96	0.96	214.1	208.6	0.97
All Pedestrians		3027	40.2	LOS E	1.7	1.7	0.96	0.96	216.6	211.7	0.98
Site: 1102a [Macquarie St _ Car Park_PM]											
South: Car Park											
P1	Full	97	39.4	LOS D	0.2	0.2	0.94	0.94	213.2	208.6	0.98
All Pedestrians		97	39.4	LOS D	0.2	0.2	0.94	0.94	213.2	208.6	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1093 [Marsden_George_PM (Site Folder: 2036_wo SSD_PM)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden St														
1	L2	24	0	25	0.0	0.518	10.6	LOS A	11.5	81.7	0.58	0.53	0.58	40.7
2	T1	576	9	606	1.6	0.518	7.2	LOS A	11.5	81.7	0.58	0.53	0.58	31.9
3	R2	152	2	160	1.3	* 0.484	26.7	LOS B	4.7	33.3	0.93	0.80	0.93	20.1
Approach		752	11	792	1.5	0.518	11.3	LOS A	11.5	81.7	0.65	0.58	0.65	29.5
East: George St														
4	L2	139	0	146	0.0	0.818	37.5	LOS C	11.9	85.1	1.00	1.02	1.25	16.0
5	T1	304	12	320	3.9	* 0.818	36.0	LOS C	11.9	85.1	1.00	1.02	1.30	26.7
6	R2	41	2	43	4.9	0.818	41.5	LOS C	7.4	53.3	1.00	1.03	1.35	15.1
Approach		484	14	509	2.9	0.818	36.9	LOS C	11.9	85.1	1.00	1.02	1.29	23.4
North: Marsden St														
7	L2	44	0	46	0.0	0.065	19.2	LOS B	1.0	7.0	0.66	0.68	0.66	24.4
8	T1	683	8	719	1.2	* 0.810	20.8	LOS B	23.2	164.3	0.91	0.90	1.01	23.2
Approach		727	8	765	1.1	0.810	20.7	LOS B	23.2	164.3	0.89	0.88	0.99	23.3
West: George St														
10	L2	75	0	79	0.0	0.425	38.7	LOS C	2.7	19.0	0.98	0.76	0.98	27.5
11	T1	154	2	162	1.3	0.453	28.4	LOS B	5.1	36.2	0.94	0.75	0.94	30.4
Approach		229	2	241	0.9	0.453	31.7	LOS C	5.1	36.2	0.95	0.76	0.95	29.3
All Vehicles		2192	35	2307	1.6	0.818	22.2	LOS B	23.2	164.3	0.84	0.80	0.93	25.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Marsden St												
P1	Full	688	724	30.2	LOS D	1.4	1.4	0.94	0.94	206.8	211.9	1.02
East: George St												
P2	Full	42	44	29.3	LOS C	0.1	0.1	0.92	0.92	208.6	215.2	1.03
North: Marsden St												
P3	Full	406	427	29.8	LOS C	0.8	0.8	0.93	0.93	206.4	211.9	1.03
West: George St												

P4	Full	80	84	29.4	LOS C	0.2	0.2	0.92	0.92	208.7	215.2	1.03
All Pedestrians		1216	1280	30.0	LOS C	1.4	1.4	0.94	0.94	206.8	212.2	1.03

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 0109 [Church St_George_PM (Site Folder: 2036_wo SSD_PM)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 40 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Church St														
2	T1	9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
Approach		9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
East: George St														
5	T1	464	14	488	3.0	* 0.607	10.0	LOS A	7.7	55.0	0.83	0.72	0.83	25.8
Approach		464	14	488	3.0	0.607	10.0	LOS A	7.7	55.0	0.83	0.72	0.83	25.8
North: Church St														
8	T1	9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
Approach		9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
West: George St														
11	T1	350	3	368	0.9	0.448	9.1	LOS A	5.3	37.2	0.75	0.64	0.75	27.7
Approach		350	3	368	0.9	0.448	9.1	LOS A	5.3	37.2	0.75	0.64	0.75	27.7
All Vehicles		832	35	876	4.2	0.607	9.7	LOS A	7.7	55.0	0.79	0.68	0.79	26.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Church St												
P1	Full	664	699	14.9	LOS B	0.7	0.7	0.88	0.88	188.7	208.6	1.11
East: George St												
P2	Full	727	765	14.9	LOS B	0.8	0.8	0.88	0.88	188.8	208.6	1.11
North: Church St												
P3	Full	176	185	14.6	LOS B	0.2	0.2	0.86	0.86	188.4	208.6	1.11
West: George St												
P4	Full	753	793	14.9	LOS B	0.8	0.8	0.88	0.88	188.8	208.6	1.11
All Pedestrians		2320	2442	14.9	LOS B	0.8	0.8	0.88	0.88	188.7	208.6	1.11

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: GS3 [George St/Horwood Pl (S) PM (Site Folder: 2036_wo SSD_PM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Horwood Pl														
1	L2	99	5	104	5.1	0.085	4.9	LOS A	0.3	2.3	0.15	0.51	0.15	34.1
Approach		99	5	104	5.1	0.085	4.9	LOS A	0.3	2.3	0.15	0.51	0.15	34.1
East: George St														
5	T1	353	11	372	3.1	0.164	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		353	11	372	3.1	0.164	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
West: George St														
11	T1	350	3	368	0.9	0.159	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		350	3	368	0.9	0.159	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles		802	19	844	2.4	0.164	0.6	NA	0.3	2.3	0.02	0.06	0.02	45.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: GS3 [George St/Horwood Pl (N) PM (Site Folder: 2036_wo SSD_PM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: George St														
5	T1	353	11	372	3.1	0.161	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		353	11	372	3.1	0.161	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
North: Horwood Pl														
7	L2	64	1	67	1.6	0.055	4.9	LOS A	0.2	1.4	0.18	0.51	0.18	44.0
Approach		64	1	67	1.6	0.055	4.9	LOS A	0.2	1.4	0.18	0.51	0.18	44.0
West: George St														
10	L2	79	0	83	0.0	0.089	4.3	LOS A	0.0	0.0	0.00	0.27	0.00	46.7
11	T1	244	4	257	1.6	0.089	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	47.3
Approach		323	4	340	1.2	0.089	1.1	NA	0.0	0.0	0.00	0.13	0.00	47.0
All Vehicles		740	16	779	2.2	0.161	0.9	NA	0.2	1.4	0.02	0.10	0.02	47.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1101 [George St/Smith St PM (Site Folder: 2036_wo SSD_PM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street														
1	L2	143	3	151	2.1	0.453	31.9	LOS C	6.0	52.4	0.85	0.77	0.85	15.2
2	T1	303	61	319	20.1	0.453	27.0	LOS B	9.3	66.9	0.85	0.73	0.85	18.3
3	R2	156	9	164	5.8	* 0.612	44.6	LOS D	6.7	49.6	0.98	0.92	1.00	17.1
Approach		602	73	634	12.1	0.612	32.7	LOS C	9.3	66.9	0.88	0.79	0.89	17.2
East: George St														
4	L2	44	7	46	15.9	0.321	28.3	LOS B	4.0	29.8	0.87	0.75	0.87	21.8
5	T1	211	6	222	2.8	0.321	29.3	LOS C	5.1	36.2	0.88	0.73	0.88	21.5
Approach		255	13	268	5.1	0.321	29.1	LOS C	5.1	36.2	0.88	0.73	0.88	21.6
North: Smith Street														
7	L2	66	0	69	0.0	0.685	49.4	LOS D	5.2	50.1	1.00	0.88	1.13	18.2
8	T1	251	54	264	21.5	* 0.830	47.0	LOS D	10.2	72.8	1.00	0.97	1.26	12.6
Approach		317	54	334	17.0	0.830	47.5	LOS D	10.2	72.8	1.00	0.95	1.23	14.0
West: George St														
10	L2	104	2	109	1.9	0.275	35.2	LOS C	4.1	28.9	0.87	0.75	0.87	16.0
11	T1	192	2	202	1.0	0.796	41.9	LOS C	12.4	87.9	1.00	0.98	1.19	17.9
12	R2	62	1	65	1.6	* 0.796	45.2	LOS D	12.4	87.9	1.00	0.98	1.19	11.7
Approach		358	5	377	1.4	0.796	40.5	LOS C	12.4	87.9	0.96	0.92	1.10	16.5
All Vehicles		1532	145	1613	9.5	0.830	37.0	LOS C	12.4	87.9	0.92	0.84	1.01	17.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Smith Street												
P1	Full	246	259	39.6	LOS D	0.6	0.6	0.94	0.94	221.1	217.8	0.98
East: George St												
P2	Full	148	156	39.5	LOS D	0.4	0.4	0.94	0.94	218.8	215.2	0.98
North: Smith Street												
P3	Full	507	534	40.1	LOS E	1.3	1.3	0.95	0.95	221.1	217.2	0.98
West: George St												

P4	Full	922	971	40.9	LOS E	2.4	2.4	0.97	0.97	219.7	214.6	0.98
Pedestrian Movements (Diagonal)												
PD	Diagonal	500	526	40.1	LOS E	0.6	0.6	0.95	0.95	227.7	225.2	0.99
All Pedestrians		2323	2445	40.3	LOS E	2.4	2.4	0.96	0.96	221.8	217.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: GW1 [Macquarie Ln/Smith St PM (Site Folder: 2036_wo SSD_PM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street														
1	L2	33	0	35	0.0	0.093	4.1	LOS A	0.0	0.0	0.00	0.17	0.00	23.8
2	T1	385	70	405	18.2	0.174	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	48.9
Approach		418	70	440	16.7	0.174	0.3	NA	0.0	0.0	0.00	0.04	0.00	45.8
North: Smith Street														
8	T1	378	67	398	17.7	0.174	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		378	67	398	17.7	0.174	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
West: Macquarie Ln														
10	L2	170	0	179	0.0	0.148	3.6	LOS A	0.6	4.1	0.22	0.46	0.22	29.0
Approach		170	0	179	0.0	0.148	3.6	LOS A	0.6	4.1	0.22	0.46	0.22	29.0
All Vehicles		966	137	1017	14.2	0.174	0.8	NA	0.6	4.1	0.04	0.10	0.04	43.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1095 [Marsden_Macquarie_PM (Site Folder: 2036_wo SSD_PM)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden St														
2	T1	686	26	722	3.8	0.501	11.7	LOS A	9.4	68.2	0.73	0.64	0.73	26.0
3	R2	53	2	56	3.8	0.501	21.2	LOS B	6.5	46.8	0.82	0.72	0.82	19.5
Approach		739	28	778	3.8	0.501	12.4	LOS A	9.4	68.2	0.73	0.64	0.73	25.5
North: Marsden St														
7	L2	23	1	24	4.3	* 0.733	17.0	LOS B	17.1	122.6	0.83	0.77	0.85	26.4
8	T1	670	20	705	3.0	0.733	12.4	LOS A	17.1	122.6	0.83	0.77	0.85	25.5
Approach		693	21	729	3.0	0.733	12.6	LOS A	17.1	122.6	0.83	0.77	0.85	25.6
West: Macquarie St														
10	L2	83	2	87	2.4	0.290	29.4	LOS C	2.4	16.8	0.91	0.75	0.91	30.7
11	T1	22	1	23	4.5	0.047	17.8	LOS B	0.5	3.7	0.77	0.56	0.77	35.5
12	R2	166	5	175	3.0	0.583	31.1	LOS C	5.0	36.2	0.97	0.81	1.00	28.4
Approach		271	8	285	3.0	0.583	29.5	LOS C	5.0	36.2	0.94	0.77	0.95	29.6
All Vehicles		1703	57	1793	3.3	0.733	15.2	LOS B	17.1	122.6	0.80	0.71	0.82	26.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Marsden St												
P1	Full	1224	1288	25.7	LOS C	2.1	2.1	0.95	0.95	202.3	211.9	1.05
East: Macquarie St												
P2	Full	220	232	24.5	LOS C	0.4	0.4	0.91	0.91	195.6	205.3	1.05
North: Marsden St												
P3	Full	1263	1329	25.7	LOS C	2.2	2.2	0.95	0.95	202.3	211.9	1.05
West: Macquarie St												
P4	Full	63	66	24.4	LOS C	0.1	0.1	0.90	0.90	201.0	211.9	1.05
All Pedestrians		2770	2916	25.6	LOS C	2.2	2.2	0.95	0.95	201.7	211.4	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 0184 [Macquarie St/Church St PM (Site Folder: 2036_wo SSD_PM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Macquarie St														
6	R2	9	9	9	100.0	* 0.110	30.1	LOS C	0.2	7.8	0.92	0.68	0.92	18.2
Approach		9	9	9	100.0	0.110	30.1	LOS C	0.2	7.8	0.92	0.68	0.92	18.2
North: Church Street														
7	L2	9	9	9	100.0	0.110	30.0	LOS C	0.2	7.8	0.92	0.68	0.92	18.5
Approach		9	9	9	100.0	0.110	30.0	LOS C	0.2	7.8	0.92	0.68	0.92	18.5
West: Macquarie St														
11	T1	100	3	105	3.0	* 0.353	21.5	LOS B	2.4	17.5	0.93	0.73	0.93	18.5
Approach		100	3	105	3.0	0.353	21.5	LOS B	2.4	17.5	0.93	0.73	0.93	18.5
All Vehicles		118	21	124	17.8	0.353	22.8	LOS B	2.4	17.5	0.93	0.72	0.93	18.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Macquarie St												
P2	Full	836	880	20.1	LOS C	1.1	1.1	0.91	0.91	196.7	211.9	1.08
North: Church Street												
P3	Full	1114	1173	20.4	LOS C	1.5	1.5	0.93	0.93	194.2	208.6	1.07
West: Macquarie St												
P4	Full	2912	3065	22.2	LOS C	4.4	4.4	1.01	1.01	193.0	205.0	1.06
All Pedestrians		4862	5118	21.4	LOS C	4.4	4.4	0.97	0.97	193.9	207.0	1.07

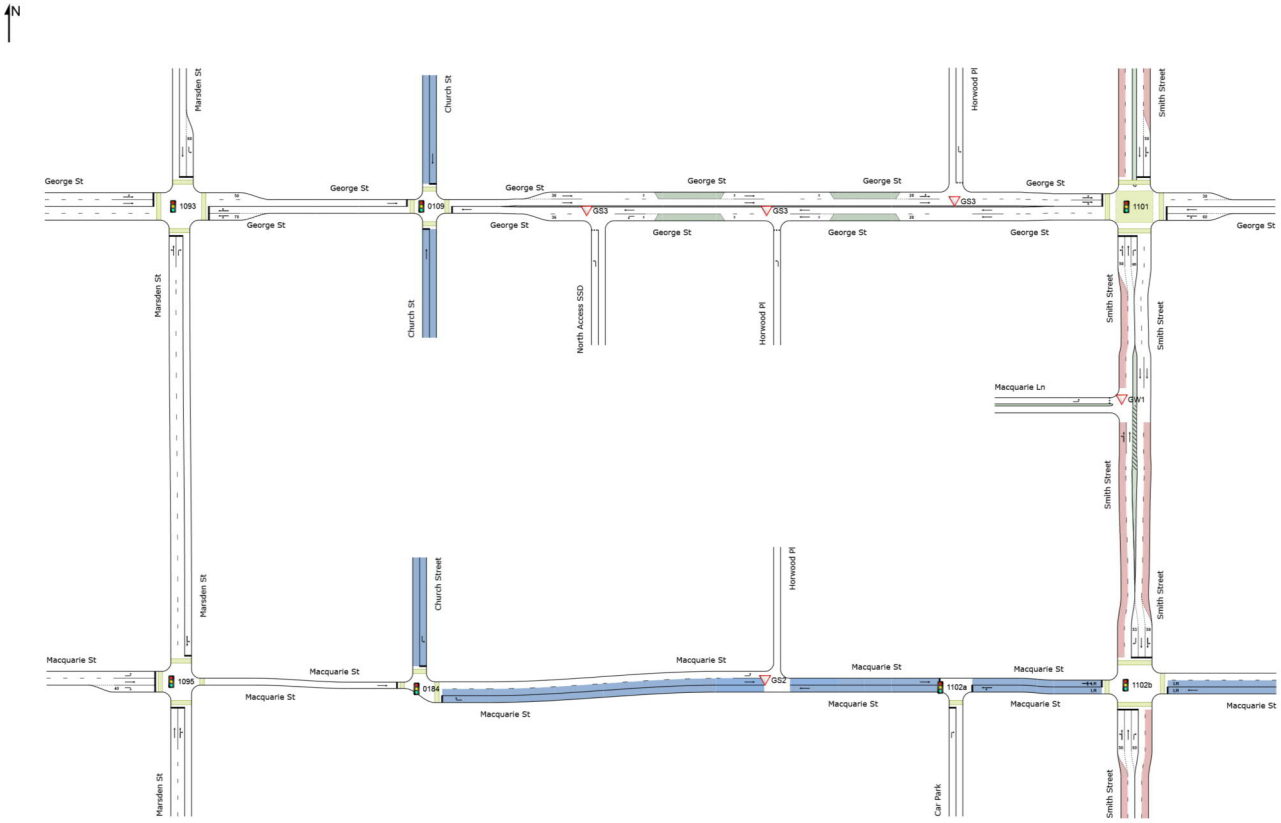
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

NETWORK LAYOUT

Network: N101 [2036_ Metro with SSD_AM (Network Folder: 2036_with SSD)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
1093	NA	Marsden_George_AM
0109	NA	Chruch St_George_AM
GS3	NA	Goerge St/North SSD AM
GS3	NA	Goerge St/Horwood Pl (S) AM
GS3	NA	Goerge St/Horwood Pl (N) AM
1101	NA	George St/Smith St AM
GW1	NA	Macquarie Ln/Smith St AM
1102b	1102	Maquarie St/Smith St AM
1102a	1102	Macquarie St _ Car Park_AM
1095	NA	Marsden_Macquarie_AM
0184	NA	Macquarie St/Church St AM
GS2	NA	Macquarie St/Horwood Pl AM

MOVEMENT SUMMARY

Site: GS2 [Macquarie St/Horwood Pl AM (Site Folder: 2036_with SSD_AM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Macquarie St														
5	T1	9	9	9	100.0	0.012	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		9	9	9	100.0	0.012	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Macquarie St														
10	L2	201	6	212	3.0	0.118	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	39.0
11	T1	9	9	9	100.0	0.012	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		210	15	221	7.1	0.118	4.4	NA	0.0	0.0	0.00	0.50	0.00	39.4
All Vehicles		219	24	231	11.0	0.118	4.2	NA	0.0	0.0	0.00	0.48	0.00	39.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

CCG MOVEMENT SUMMARY

Common Control Group: 1102 [Macq_Smith_carpak]

Network: N101 [2036_ Metro with SSD_AM (Network Folder: 2036_with SSD)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (CCG Practical Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1102b [Macquarie St/Smith St AM]														
South: Smith Street														
1	L2	4	0.0	4	0.0	0.280	39.3	LOS C	2.8	35.3	0.85	0.68	0.85	15.2
2	T1	521	13.9	521	13.9	* 0.958	63.5	LOS E	30.0	213.6	0.98	1.15	1.42	9.6
3	R2	4	0.0	4	0.0	* 0.010	21.9	LOS B	0.1	0.8	0.71	0.63	0.71	25.0
Approach		529	13.7	529	13.7	0.958	63.0	LOS E	30.0	213.6	0.98	1.14	1.41	9.4
East: Macquarie St														
5	T1	9	100.0	9	100.0	0.045	29.8	LOS C	0.4	11.6	0.76	0.55	0.76	11.6
Approach		9	100.0	9	100.0	0.045	29.8	LOS C	0.4	11.6	0.76	0.55	0.76	11.6
North: Smith Street														
7	L2	6	0.0	6	0.0	0.198	27.6	LOS B	2.5	30.6	0.72	0.59	0.72	12.8
8	T1	322	22.9	322	22.9	0.365	24.4	LOS B	9.1	65.1	0.76	0.64	0.76	22.7
9	R2	95	3.3	95	3.3	0.243	24.4	LOS B	2.5	18.3	0.87	0.74	0.87	8.6
Approach		423	18.2	423	18.2	0.365	24.4	LOS B	9.1	65.1	0.79	0.66	0.79	20.1
West: Macquarie St														
10	L2	16	0.0	16	0.0	0.267	23.7	LOS B	0.8	11.7	0.80	0.66	0.80	6.6
11	T1	9	100.0	9	100.0	0.267	20.6	LOS B	0.8	11.7	0.80	0.66	0.80	16.7
12	R2	8	0.0	8	0.0	* 0.267	23.7	LOS B	0.8	11.7	0.80	0.66	0.80	21.5
Approach		34	28.1	34	28.1	0.267	22.8	LOS B	0.8	11.7	0.80	0.66	0.80	14.2
All Vehicles		996	16.9	996	16.9	0.958	45.0	LOS D	30.0	213.6	0.89	0.92	1.12	12.4
Site: 1102a [Macquarie St _ Car Park_AM]														
South: Car Park														
3	R2	25	0.0	25	0.0	* 0.113	27.7	LOS B	0.7	4.8	0.92	0.70	0.92	28.5
Approach		25	0.0	25	0.0	0.113	27.7	LOS B	0.7	4.8	0.92	0.70	0.92	28.5
East: Macquarie St														
4	L2	99	0.0	99	0.0	0.123	6.4	LOS A	0.8	7.7	0.19	0.52	0.19	42.6
5	T1	9	100.0	9	100.0	0.123	3.4	LOS A	0.8	7.7	0.19	0.52	0.19	17.3
Approach		108	8.7	108	8.7	0.123	6.1	LOS A	0.8	7.7	0.19	0.52	0.19	42.1
West: Macquarie St														
11	T1	9	100.0	9	100.0	0.045	29.8	LOS C	0.4	11.6	0.76	0.55	0.76	11.9
Approach		9	100.0	9	100.0	0.045	29.8	LOS C	0.4	11.6	0.76	0.55	0.76	11.9
All Vehicles		143	13.2	143	13.2	0.123	11.5	LOS A	0.8	11.6	0.36	0.56	0.36	37.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: 1102b [Macquarie St/Smith St AM]											
South: Smith Street											
P1	Full	818	45.7	LOS E	2.3	2.3	0.97	0.97	227.8	218.5	0.96
East: Macquarie St											
P2	Full	1147	46.4	LOS E	3.2	3.2	0.99	0.99	223.0	211.9	0.95
North: Smith Street											
P3	Full	1633	47.4	LOS E	4.7	4.7	1.01	1.01	229.5	218.5	0.95
West: Macquarie St											
P4	Full	4041	47.4	LOS E	4.6	4.6	1.01	1.01	221.2	208.6	0.94
All Pedestrians		7639	47.1	LOS E	4.7	4.7	1.00	1.00	224.0	212.3	0.95
Site: 1102a [Macquarie St _ Car Park_AM]											
South: Car Park											
P1	Full	493	45.1	LOS E	1.3	1.3	0.96	0.96	218.9	208.6	0.95
All Pedestrians		493	45.1	LOS E	1.3	1.3	0.96	0.96	218.9	208.6	0.95

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1093 [Marsden_George_AM (Site Folder: 2036_with SSD_AM)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden St														
1	L2	53	0	56	0.0	0.590	12.6	LOS A	12.2	86.9	0.70	0.64	0.70	39.2
2	T1	551	12	580	2.2	0.590	9.2	LOS A	12.2	86.9	0.70	0.64	0.70	30.2
3	R2	249	3	262	1.2	* 0.568	23.9	LOS B	6.3	44.5	0.92	0.85	0.92	21.5
Approach		853	15	898	1.8	0.590	13.7	LOS A	12.2	86.9	0.76	0.70	0.76	28.3
East: George St														
4	L2	85	5	89	5.9	0.498	25.1	LOS B	5.5	41.5	0.90	0.77	0.90	20.3
5	T1	157	15	165	9.6	0.498	23.7	LOS B	5.5	41.5	0.92	0.77	0.92	31.3
6	R2	45	7	47	15.6	0.498	32.7	LOS C	2.7	20.9	0.98	0.76	0.98	17.4
Approach		287	27	302	9.4	0.498	25.5	LOS B	5.5	41.5	0.93	0.77	0.93	26.8
North: Marsden St														
7	L2	52	7	55	13.5	0.156	26.1	LOS B	1.3	10.5	0.85	0.72	0.85	20.5
8	T1	458	15	482	3.3	* 0.806	25.0	LOS B	14.9	107.4	0.98	1.00	1.17	21.4
Approach		510	22	537	4.3	0.806	25.1	LOS B	14.9	107.4	0.97	0.97	1.14	21.4
West: George St														
10	L2	77	0	81	0.0	0.374	32.8	LOS C	2.3	16.4	0.96	0.76	0.96	29.5
11	T1	254	4	267	1.6	* 0.643	24.5	LOS B	7.6	53.6	0.96	0.83	1.01	32.1
Approach		331	4	348	1.2	0.643	26.4	LOS B	7.6	53.6	0.96	0.81	1.00	31.4
All Vehicles		1981	68	2085	3.4	0.806	20.5	LOS B	14.9	107.4	0.87	0.80	0.92	26.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Marsden St												
P1	Full	390	411	24.7	LOS C	0.6	0.6	0.92	0.92	201.3	211.9	1.05
East: George St												
P2	Full	180	189	24.5	LOS C	0.3	0.3	0.91	0.91	203.8	215.2	1.06
North: Marsden St												
P3	Full	607	639	25.0	LOS C	1.0	1.0	0.92	0.92	201.5	211.9	1.05
West: George St												

P4 Full	283	298	24.6	LOS C	0.5	0.5	0.91	0.91	203.9	215.2	1.06
All Pedestrians	1460	1537	24.8	LOS C	1.0	1.0	0.92	0.92	202.2	212.9	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 0109 [Church St_George_AM (Site Folder: 2036_with SSD_AM)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 40 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Church St														
2	T1	9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
Approach		9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
East: George St														
5	T1	293	25	308	8.5	0.404	9.0	LOS A	4.3	32.5	0.74	0.63	0.74	27.1
Approach		293	25	308	8.5	0.404	9.0	LOS A	4.3	32.5	0.74	0.63	0.74	27.1
North: Church St														
8	T1	9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
Approach		9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
West: George St														
11	T1	514	13	541	2.5	* 0.669	10.9	LOS A	9.1	65.0	0.86	0.78	0.90	25.5
Approach		514	13	541	2.5	0.669	10.9	LOS A	9.1	65.0	0.86	0.78	0.90	25.5
All Vehicles		825	56	868	6.8	0.669	10.2	LOS A	9.1	65.0	0.81	0.72	0.84	26.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Church St												
P1	Full	844	888	15.0	LOS B	0.9	0.9	0.88	0.88	188.8	208.6	1.10
East: George St												
P2	Full	750	789	14.9	LOS B	0.8	0.8	0.88	0.88	188.8	208.6	1.11
North: Church St												
P3	Full	241	254	14.6	LOS B	0.2	0.2	0.86	0.86	188.4	208.6	1.11
West: George St												
P4	Full	980	1032	15.1	LOS B	1.0	1.0	0.89	0.89	188.9	208.6	1.10
All Pedestrians		2815	2963	15.0	LOS B	1.0	1.0	0.88	0.88	188.8	208.6	1.10

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: GS3 [George St/North SSD AM (Site Folder: 2036_with SSD_AM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: North Access SSD														
1	L2	52	0	55	0.0	0.041	3.9	LOS A	0.0	0.0	0.00	0.52	0.00	29.9
Approach		52	0	55	0.0	0.041	3.9	LOS A	0.0	0.0	0.00	0.52	0.00	29.9
East: George St														
4	L2	125	0	132	0.0	0.071	3.2	LOS A	0.0	0.0	0.00	0.50	0.00	29.5
5	T1	223	23	235	10.3	0.133	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		348	23	366	6.6	0.133	1.2	NA	0.0	0.0	0.00	0.18	0.00	39.8
West: George St														
11	T1	514	13	541	2.5	0.237	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		514	13	541	2.5	0.237	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles		914	36	962	3.9	0.237	0.7	NA	0.0	0.0	0.00	0.10	0.00	43.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: GS3 [George St/Horwood Pl (S) AM (Site Folder: 2036_with SSD_AM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Horwood Pl														
1	L2	32	7	34	21.9	0.030	5.0	LOS A	0.1	0.9	0.14	0.50	0.14	34.0
Approach		32	7	34	21.9	0.030	5.0	LOS A	0.1	0.9	0.14	0.50	0.14	34.0
East: George St														
5	T1	318	15	335	4.7	0.150	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		318	15	335	4.7	0.150	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
West: George St														
11	T1	514	13	541	2.5	0.237	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		514	13	541	2.5	0.237	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles		864	35	909	4.1	0.237	0.2	NA	0.1	0.9	0.01	0.02	0.01	48.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: GS3 [George St/Horwood Pl (N) AM (Site Folder: 2036_with SSD_AM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: George St														
5	T1	318	15	335	4.7	0.147	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		318	15	335	4.7	0.147	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
North: Horwood Pl														
7	L2	66	1	69	1.5	0.059	5.0	LOS A	0.2	1.5	0.22	0.52	0.22	43.9
Approach		66	1	69	1.5	0.059	5.0	LOS A	0.2	1.5	0.22	0.52	0.22	43.9
West: George St														
10	L2	118	3	124	2.5	0.131	4.3	LOS A	0.0	0.0	0.00	0.27	0.00	46.6
11	T1	351	8	369	2.3	0.131	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	47.3
Approach		469	11	494	2.3	0.131	1.1	NA	0.0	0.0	0.00	0.13	0.00	46.9
All Vehicles		853	27	898	3.2	0.147	1.0	NA	0.2	1.5	0.02	0.11	0.02	47.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1101 [George St/Smith St AM (Site Folder: 2036_with SSD_AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street														
1	L2	157	8	165	5.1	0.356	29.3	LOS C	6.0	47.9	0.80	0.76	0.80	15.8
2	T1	207	55	218	26.6	0.356	24.7	LOS B	6.5	52.3	0.80	0.68	0.80	19.4
3	R2	108	14	114	13.0	* 0.537	43.4	LOS D	4.8	37.1	0.97	0.80	0.97	17.4
Approach		472	77	497	16.3	0.537	30.5	LOS C	6.5	52.3	0.84	0.73	0.84	17.7
East: George St														
4	L2	27	7	28	25.9	0.276	31.0	LOS C	3.0	23.3	0.88	0.74	0.88	20.9
5	T1	165	8	174	4.8	0.276	31.0	LOS C	3.9	28.4	0.88	0.72	0.88	21.0
Approach		192	15	202	7.8	0.276	31.0	LOS C	3.9	28.4	0.88	0.72	0.88	21.0
North: Smith Street														
7	L2	123	4	129	3.3	0.736	46.5	LOS D	6.4	58.5	1.00	0.91	1.14	18.8
8	T1	338	73	356	21.6	* 0.828	43.7	LOS D	13.8	100.0	1.00	0.98	1.21	13.2
Approach		461	77	485	16.7	0.828	44.5	LOS D	13.8	100.0	1.00	0.96	1.19	15.0
West: George St														
10	L2	92	2	97	2.2	0.271	36.9	LOS C	3.7	26.2	0.89	0.75	0.89	15.6
11	T1	215	4	226	1.9	0.865	48.1	LOS D	14.0	100.6	1.00	1.09	1.33	16.6
12	R2	50	4	53	8.0	* 0.865	51.5	LOS D	14.0	100.6	1.00	1.09	1.33	10.7
Approach		357	10	376	2.8	0.865	45.7	LOS D	14.0	100.6	0.97	1.00	1.22	15.6
All Vehicles		1482	179	1560	12.1	0.865	38.6	LOS C	14.0	100.6	0.93	0.87	1.05	16.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Smith Street												
P1	Full	241	254	39.6	LOS D	0.6	0.6	0.94	0.94	221.1	217.8	0.98
East: George St												
P2	Full	431	454	40.0	LOS D	1.1	1.1	0.95	0.95	219.3	215.2	0.98
North: Smith Street												
P3	Full	444	467	40.0	LOS D	1.1	1.1	0.95	0.95	221.0	217.2	0.98
West: George St												

P4	Full	1222	1286	41.4	LOS E	3.2	3.2	0.99	0.99	220.3	214.6	0.97
Pedestrian Movements (Diagonal)												
PD	Diagonal	758	798	40.5	LOS E	1.0	1.0	0.97	0.97	228.2	225.2	0.99
All Pedestrians		3096	3259	40.7	LOS E	3.2	3.2	0.97	0.97	222.2	217.9	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: GW1 [Macquarie Ln/Smith St AM (Site Folder: 2036_with SSD_AM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street														
1	L2	122	0	128	0.0	0.132	4.1	LOS A	0.0	0.0	0.00	0.36	0.00	22.1
2	T1	330	64	347	19.4	0.152	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	48.1
Approach		452	64	476	14.2	0.152	1.1	NA	0.0	0.0	0.00	0.14	0.00	37.9
North: Smith Street														
8	T1	373	78	393	20.9	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		373	78	393	20.9	0.172	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
West: Macquarie Ln														
10	L2	31	0	33	0.0	0.027	3.5	LOS A	0.1	0.7	0.18	0.44	0.18	29.3
Approach		31	0	33	0.0	0.027	3.5	LOS A	0.1	0.7	0.18	0.44	0.18	29.3
All Vehicles		856	142	901	16.6	0.172	0.7	NA	0.1	0.7	0.01	0.09	0.01	42.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1095 [Marsden_Macquarie_AM (Site Folder: 2036_with SSD_AM)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden St														
2	T1	580	25	611	4.3	0.722	15.3	LOS B	12.5	90.8	0.90	0.84	0.98	23.5
3	R2	151	5	159	3.3	0.722	28.2	LOS B	5.3	38.3	0.98	0.93	1.21	15.4
Approach		731	30	769	4.1	0.722	17.9	LOS B	12.5	90.8	0.91	0.86	1.03	21.7
North: Marsden St														
7	L2	2	0	2	0.0	*0.660	17.6	LOS B	10.5	76.2	0.86	0.76	0.87	26.2
8	T1	491	19	517	3.9	0.660	13.1	LOS A	10.5	76.2	0.86	0.76	0.87	25.1
Approach		493	19	519	3.9	0.660	13.1	LOS A	10.5	76.2	0.86	0.76	0.87	25.1
West: Macquarie St														
10	L2	238	7	251	2.9	*0.633	25.2	LOS B	6.0	42.9	0.96	0.84	1.02	32.4
11	T1	44	1	46	2.3	0.071	12.2	LOS A	0.8	5.5	0.70	0.53	0.70	39.0
12	R2	70	2	74	2.9	0.186	22.4	LOS B	1.5	10.9	0.85	0.74	0.85	32.1
Approach		352	10	371	2.8	0.633	23.0	LOS B	6.0	42.9	0.90	0.78	0.95	33.0
All Vehicles		1576	59	1659	3.7	0.722	17.5	LOS B	12.5	90.8	0.89	0.81	0.96	26.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Marsden St												
P1	Full	1262	1328	20.5	LOS C	1.8	1.8	0.93	0.93	197.1	211.9	1.08
East: Macquarie St												
P2	Full	308	324	19.6	LOS B	0.4	0.4	0.89	0.89	190.7	205.3	1.08
North: Marsden St												
P3	Full	924	973	20.2	LOS C	1.3	1.3	0.92	0.92	196.8	211.9	1.08
West: Macquarie St												
P4	Full	449	473	19.7	LOS B	0.6	0.6	0.90	0.90	196.3	211.9	1.08
All Pedestrians		2943	3098	20.2	LOS C	1.8	1.8	0.92	0.92	196.2	211.2	1.08

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 0184 [Macquarie St/Church St AM (Site Folder: 2036_with SSD_AM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Macquarie St														
6	R2	9	9	9	100.0	* 0.110	30.1	LOS C	0.2	7.8	0.92	0.68	0.92	18.2
Approach		9	9	9	100.0	0.110	30.1	LOS C	0.2	7.8	0.92	0.68	0.92	18.2
North: Church Street														
7	L2	9	9	9	100.0	0.110	30.0	LOS C	0.2	7.8	0.92	0.68	0.92	18.5
Approach		9	9	9	100.0	0.110	30.0	LOS C	0.2	7.8	0.92	0.68	0.92	18.5
West: Macquarie St														
11	T1	201	6	212	3.0	* 0.568	20.7	LOS B	5.0	35.6	0.95	0.78	0.96	18.9
Approach		201	6	212	3.0	0.568	20.7	LOS B	5.0	35.6	0.95	0.78	0.96	18.9
All Vehicles		219	24	231	11.0	0.568	21.4	LOS B	5.0	35.6	0.95	0.77	0.96	18.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Macquarie St												
P2	Full	1251	1317	20.5	LOS C	1.7	1.7	0.93	0.93	197.1	211.9	1.08
North: Church Street												
P3	Full	1215	1279	20.4	LOS C	1.7	1.7	0.93	0.93	194.3	208.6	1.07
West: Macquarie St												
P4	Full	2125	2237	21.3	LOS C	3.1	3.1	0.97	0.97	192.2	205.0	1.07
All Pedestrians		4591	4833	20.9	LOS C	3.1	3.1	0.95	0.95	194.1	207.8	1.07

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: GS2 [Macquarie St/Horwood Pl PM (Site Folder: 2036_with SSD_PM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Macquarie St														
5	T1	9	9	9	100.0	0.012	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		9	9	9	100.0	0.012	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Macquarie St														
10	L2	100	3	105	3.0	0.059	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	39.1
11	T1	9	9	9	100.0	0.012	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		109	12	115	11.0	0.059	4.2	NA	0.0	0.0	0.00	0.48	0.00	39.7
All Vehicles		118	21	124	17.8	0.059	3.9	NA	0.0	0.0	0.00	0.45	0.00	40.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

CCG MOVEMENT SUMMARY

Common Control Group: 1102 [Macq_Smith_carpak]

Network: N101 [2036_ Metro with SSD_PM (Network Folder: 2036_with SSD)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (CCG Practical Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1102b [Macquarie St/Smith St PM]														
South: Smith Street														
1	L2	5	0.0	5	0.0	0.366	38.3	LOS C	3.2	40.6	0.88	0.71	0.88	15.6
2	T1	364	23.4	364	23.4	0.645	33.9	LOS C	11.6	82.9	0.94	0.79	0.94	15.3
3	R2	14	0.0	14	0.0	* 0.048	22.7	LOS B	0.3	2.2	0.82	0.68	0.82	24.5
Approach		383	22.3	383	22.3	0.645	33.6	LOS C	11.6	82.9	0.94	0.78	0.94	15.6
East: Macquarie St														
5	T1	9	100.0	9	100.0	0.058	31.9	LOS C	0.3	11.5	0.83	0.59	0.83	11.0
Approach		9	100.0	9	100.0	0.058	31.9	LOS C	0.3	11.5	0.83	0.59	0.83	11.0
North: Smith Street														
7	L2	12	0.0	12	0.0	0.206	26.3	LOS B	2.4	28.6	0.73	0.61	0.73	13.1
8	T1	571	13.8	571	13.8	* 0.791	29.1	LOS C	12.5	89.8	0.90	0.85	0.98	20.4
9	R2	78	2.7	78	2.7	0.154	19.2	LOS B	1.8	13.1	0.77	0.73	0.77	10.6
Approach		660	12.3	660	12.3	0.791	27.8	LOS B	12.5	89.8	0.89	0.83	0.95	19.5
West: Macquarie St														
10	L2	69	3.0	69	3.0	0.499	19.3	LOS B	2.4	23.0	0.81	0.73	0.81	7.6
11	T1	9	100.0	9	100.0	0.499	16.3	LOS B	2.4	23.0	0.81	0.73	0.81	18.9
12	R2	29	3.6	29	3.6	* 0.499	19.4	LOS B	2.4	23.0	0.81	0.73	0.81	23.5
Approach		108	11.7	108	11.7	0.499	19.1	LOS B	2.4	23.0	0.81	0.73	0.81	14.5
All Vehicles		1161	16.2	1161	16.2	0.791	28.9	LOS C	12.5	89.8	0.89	0.80	0.93	17.7
Site: 1102a [Macquarie St _ Car Park_PM]														
South: Car Park														
3	R2	99	0.0	99	0.0	0.343	24.6	LOS B	2.4	16.7	0.93	0.76	0.93	30.0
Approach		99	0.0	99	0.0	0.343	24.6	LOS B	2.4	16.7	0.93	0.76	0.93	30.0
East: Macquarie St														
4	L2	83	0.0	83	0.0	0.104	6.0	LOS A	0.7	6.5	0.20	0.52	0.20	43.0
5	T1	9	100.0	9	100.0	0.104	3.0	LOS A	0.7	6.5	0.20	0.52	0.20	18.1
Approach		93	10.2	93	10.2	0.104	5.7	LOS A	0.7	6.5	0.20	0.52	0.20	42.4
West: Macquarie St														
11	T1	9	100.0	9	100.0	0.058	31.9	LOS C	0.3	11.5	0.83	0.59	0.83	11.3
Approach		9	100.0	9	100.0	0.058	31.9	LOS C	0.3	11.5	0.83	0.59	0.83	11.3
All Vehicles		201	9.4	201	9.4	0.343	16.2	LOS B	2.4	16.7	0.59	0.64	0.59	33.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: 1102b [Macquarie St/Smith St PM]											
South: Smith Street											
P1	Full	532	40.1	LOS E	1.3	1.3	0.95	0.95	222.2	218.5	0.98
East: Macquarie St											
P2	Full	694	40.4	LOS E	1.7	1.7	0.96	0.96	217.0	211.9	0.98
North: Smith Street											
P3	Full	187	39.5	LOS D	0.5	0.5	0.94	0.94	221.6	218.5	0.99
West: Macquarie St											
P4	Full	1615	40.3	LOS E	1.6	1.6	0.96	0.96	214.1	208.6	0.97
All Pedestrians		3027	40.2	LOS E	1.7	1.7	0.96	0.96	216.6	211.7	0.98
Site: 1102a [Macquarie St _ Car Park_PM]											
South: Car Park											
P1	Full	97	39.4	LOS D	0.2	0.2	0.94	0.94	213.2	208.6	0.98
All Pedestrians		97	39.4	LOS D	0.2	0.2	0.94	0.94	213.2	208.6	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1093 [Marsden_George_PM (Site Folder: 2036_with SSD_PM)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden St														
1	L2	24	0	25	0.0	0.532	12.4	LOS A	13.8	97.6	0.61	0.55	0.61	39.4
2	T1	576	9	606	1.6	0.532	9.0	LOS A	13.8	97.6	0.61	0.55	0.61	30.4
3	R2	152	2	160	1.3	* 0.489	31.8	LOS C	5.6	39.5	0.94	0.80	0.94	18.1
Approach		752	11	792	1.5	0.532	13.8	LOS A	13.8	97.6	0.67	0.60	0.67	27.7
East: George St														
4	L2	183	0	193	0.0	0.873	44.4	LOS D	18.2	129.2	1.00	1.07	1.31	14.3
5	T1	400	12	421	3.0	0.873	43.1	LOS D	18.2	129.2	1.00	1.10	1.35	24.6
6	R2	53	2	56	3.8	* 0.873	48.4	LOS D	12.1	87.3	1.00	1.12	1.40	13.6
Approach		636	14	669	2.2	0.873	43.9	LOS D	18.2	129.2	1.00	1.09	1.35	21.4
North: Marsden St														
7	L2	44	0	46	0.0	0.067	21.8	LOS B	1.2	8.1	0.67	0.68	0.67	22.9
8	T1	683	8	719	1.2	* 0.855	28.2	LOS B	29.0	204.7	0.94	0.97	1.10	20.2
Approach		727	8	765	1.1	0.855	27.8	LOS B	29.0	204.7	0.93	0.96	1.08	20.4
West: George St														
10	L2	75	0	79	0.0	0.283	38.3	LOS C	2.8	19.9	0.93	0.75	0.93	27.6
11	T1	154	2	162	1.3	0.374	28.9	LOS C	5.5	38.8	0.89	0.72	0.89	30.1
Approach		229	2	241	0.9	0.374	32.0	LOS C	5.5	38.8	0.90	0.73	0.90	29.2
All Vehicles		2344	35	2467	1.5	0.873	28.1	LOS B	29.0	204.7	0.86	0.86	1.00	23.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Marsden St												
P1	Full	688	724	35.3	LOS D	1.6	1.6	0.95	0.95	211.9	211.9	1.00
East: George St												
P2	Full	42	44	34.3	LOS D	0.1	0.1	0.93	0.93	213.6	215.2	1.01
North: Marsden St												
P3	Full	406	427	34.8	LOS D	0.9	0.9	0.94	0.94	211.4	211.9	1.00
West: George St												

P4	Full	80	84	34.3	LOS D	0.2	0.2	0.93	0.93	213.7	215.2	1.01
All Pedestrians		1216	1280	35.0	LOS D	1.6	1.6	0.95	0.95	211.9	212.2	1.00

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 0109 [Church St_George_PM (Site Folder: 2036_with SSD_PM)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 40 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Church St														
2	T1	9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
Approach		9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
East: George St														
5	T1	617	14	649	2.3	* 0.801	15.1	LOS B	13.5	96.0	0.93	1.00	1.15	20.9
Approach		617	14	649	2.3	0.801	15.1	LOS B	13.5	96.0	0.93	1.00	1.15	20.9
North: Church St														
8	T1	9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
Approach		9	9	9	100.0	0.044	12.4	LOS A	0.1	4.9	0.76	0.53	0.76	32.5
West: George St														
11	T1	350	3	368	0.9	0.448	9.1	LOS A	5.3	37.2	0.75	0.64	0.75	27.7
Approach		350	3	368	0.9	0.448	9.1	LOS A	5.3	37.2	0.75	0.64	0.75	27.7
All Vehicles		985	35	1037	3.6	0.801	12.9	LOS A	13.5	96.0	0.87	0.86	1.00	23.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Church St												
P1	Full	664	699	14.9	LOS B	0.7	0.7	0.88	0.88	188.7	208.6	1.11
East: George St												
P2	Full	727	765	14.9	LOS B	0.8	0.8	0.88	0.88	188.8	208.6	1.11
North: Church St												
P3	Full	176	185	14.6	LOS B	0.2	0.2	0.86	0.86	188.4	208.6	1.11
West: George St												
P4	Full	753	793	14.9	LOS B	0.8	0.8	0.88	0.88	188.8	208.6	1.11
All Pedestrians		2320	2442	14.9	LOS B	0.8	0.8	0.88	0.88	188.7	208.6	1.11

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: GS3 [George St/North SSD PM (Site Folder: 2036_with SSD_PM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: North Access SSD														
1	L2	124	0	131	0.0	0.098	3.9	LOS A	0.0	0.0	0.00	0.52	0.00	29.9
Approach		124	0	131	0.0	0.098	3.9	LOS A	0.0	0.0	0.00	0.52	0.00	29.9
East: George St														
4	L2	47	0	49	0.0	0.027	3.2	LOS A	0.0	0.0	0.00	0.50	0.00	29.5
5	T1	475	13	500	2.7	0.263	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		522	13	549	2.5	0.263	0.3	NA	0.0	0.0	0.00	0.05	0.00	46.9
West: George St														
11	T1	350	3	368	0.9	0.159	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		350	3	368	0.9	0.159	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles		996	16	1048	1.6	0.263	0.6	NA	0.0	0.0	0.00	0.09	0.00	44.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: GS3 [George St/Horwood Pl (S) PM (Site Folder: 2036_with SSD_PM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Horwood Pl														
1	L2	99	5	104	5.1	0.086	4.9	LOS A	0.3	2.3	0.17	0.51	0.17	34.0
Approach		99	5	104	5.1	0.086	4.9	LOS A	0.3	2.3	0.17	0.51	0.17	34.0
East: George St														
5	T1	429	11	452	2.6	0.198	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		429	11	452	2.6	0.198	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
West: George St														
11	T1	350	3	368	0.9	0.159	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		350	3	368	0.9	0.159	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Vehicles		878	19	924	2.2	0.198	0.6	NA	0.3	2.3	0.02	0.06	0.02	45.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: GS3 [George St/Horwood Pl (N) PM (Site Folder: 2036_with SSD_PM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: George St														
5	T1	429	11	452	2.6	0.195	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		429	11	452	2.6	0.195	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
North: Horwood Pl														
7	L2	64	1	67	1.6	0.055	4.9	LOS A	0.2	1.4	0.18	0.51	0.18	44.0
Approach		64	1	67	1.6	0.055	4.9	LOS A	0.2	1.4	0.18	0.51	0.18	44.0
West: George St														
10	L2	79	0	83	0.0	0.089	4.3	LOS A	0.0	0.0	0.00	0.27	0.00	46.7
11	T1	244	4	257	1.6	0.089	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	47.3
Approach		323	4	340	1.2	0.089	1.1	NA	0.0	0.0	0.00	0.13	0.00	47.0
All Vehicles		816	16	859	2.0	0.195	0.8	NA	0.2	1.4	0.01	0.09	0.01	47.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1101 [George St/Smith St PM (Site Folder: 2036_with SSD_PM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street														
1	L2	191	3	201	1.6	0.532	31.9	LOS C	6.5	55.3	0.87	0.79	0.87	15.1
2	T1	365	61	384	16.7	0.532	27.1	LOS B	11.8	83.3	0.87	0.75	0.87	18.3
3	R2	188	9	198	4.8	* 0.683	45.6	LOS D	8.2	59.5	0.99	0.98	1.06	16.8
Approach		744	73	783	9.8	0.683	33.0	LOS C	11.8	83.3	0.90	0.82	0.92	17.0
East: George St														
4	L2	44	7	46	15.9	0.373	31.5	LOS C	4.8	35.7	0.89	0.78	0.89	20.7
5	T1	239	6	252	2.5	0.373	31.2	LOS C	5.8	41.1	0.90	0.75	0.90	20.9
Approach		283	13	298	4.6	0.373	31.3	LOS C	5.8	41.1	0.90	0.75	0.90	20.9
North: Smith Street														
7	L2	66	0	69	0.0	0.685	49.5	LOS D	5.2	50.1	1.00	0.88	1.13	18.2
8	T1	251	54	264	21.5	* 0.830	47.0	LOS D	10.2	72.8	1.00	0.97	1.26	12.6
Approach		317	54	334	17.0	0.830	47.6	LOS D	10.2	72.8	1.00	0.95	1.23	14.0
West: George St														
10	L2	104	2	109	1.9	0.290	36.2	LOS C	4.1	29.3	0.88	0.76	0.88	15.8
11	T1	192	2	202	1.0	0.866	48.6	LOS D	13.5	95.6	1.00	1.10	1.34	16.5
12	R2	62	1	65	1.6	* 0.866	52.0	LOS D	13.5	95.6	1.00	1.10	1.34	10.6
Approach		358	5	377	1.4	0.866	45.6	LOS D	13.5	95.6	0.97	1.00	1.21	15.4
All Vehicles		1702	145	1792	8.5	0.866	38.1	LOS C	13.5	95.6	0.93	0.87	1.03	16.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Smith Street												
P1	Full	246	259	39.6	LOS D	0.6	0.6	0.94	0.94	221.1	217.8	0.98
East: George St												
P2	Full	148	156	39.5	LOS D	0.4	0.4	0.94	0.94	218.8	215.2	0.98
North: Smith Street												
P3	Full	507	534	40.1	LOS E	1.3	1.3	0.95	0.95	221.1	217.2	0.98
West: George St												

P4	Full	922	971	40.9	LOS E	2.4	2.4	0.97	0.97	219.7	214.6	0.98
Pedestrian Movements (Diagonal)												
PD	Diagonal	500	526	40.1	LOS E	0.6	0.6	0.95	0.95	227.7	225.2	0.99
All Pedestrians		2323	2445	40.3	LOS E	2.4	2.4	0.96	0.96	221.8	217.8	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: GW1 [Macquarie Ln/Smith St PM (Site Folder: 2036_with SSD_PM)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street														
1	L2	31	0	33	0.0	0.092	4.1	LOS A	0.0	0.0	0.00	0.17	0.00	23.9
2	T1	404	70	425	17.3	0.184	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.0
Approach		435	70	458	16.1	0.184	0.3	NA	0.0	0.0	0.00	0.04	0.00	46.2
North: Smith Street														
8	T1	378	67	398	17.7	0.174	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		378	67	398	17.7	0.174	0.0	NA	0.0	0.0	0.00	0.00	0.00	49.9
West: Macquarie Ln														
10	L2	122	0	128	0.0	0.106	3.6	LOS A	0.4	2.8	0.21	0.46	0.21	29.1
Approach		122	0	128	0.0	0.106	3.6	LOS A	0.4	2.8	0.21	0.46	0.21	29.1
All Vehicles		935	137	984	14.7	0.184	0.6	NA	0.4	2.8	0.03	0.08	0.03	44.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1095 [Marsden_Macquarie_PM (Site Folder: 2036_with SSD_PM)]

8-9am
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden St														
2	T1	686	26	722	3.8	0.520	12.1	LOS A	9.9	71.9	0.74	0.65	0.74	25.7
3	R2	53	2	56	3.8	0.520	22.9	LOS B	6.3	45.4	0.86	0.74	0.86	18.6
Approach		739	28	778	3.8	0.520	12.9	LOS A	9.9	71.9	0.75	0.65	0.75	25.2
North: Marsden St														
7	L2	23	1	24	4.3	* 0.777	19.0	LOS B	19.9	142.7	0.86	0.83	0.93	25.0
8	T1	714	20	752	2.8	0.777	14.4	LOS A	19.9	142.7	0.86	0.83	0.93	24.2
Approach		737	21	776	2.8	0.777	14.6	LOS B	19.9	142.7	0.86	0.83	0.93	24.2
West: Macquarie St														
10	L2	83	2	87	2.4	0.290	29.4	LOS C	2.4	16.8	0.91	0.75	0.91	30.7
11	T1	22	1	23	4.5	0.047	17.8	LOS B	0.5	3.7	0.77	0.56	0.77	35.5
12	R2	166	5	175	3.0	0.583	31.1	LOS C	5.0	36.2	0.97	0.81	1.00	28.4
Approach		271	8	285	3.0	0.583	29.5	LOS C	5.0	36.2	0.94	0.77	0.95	29.6
All Vehicles		1747	57	1839	3.3	0.777	16.2	LOS B	19.9	142.7	0.82	0.75	0.86	26.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Marsden St												
P1	Full	1224	1288	25.7	LOS C	2.1	2.1	0.95	0.95	202.3	211.9	1.05
East: Macquarie St												
P2	Full	220	232	24.5	LOS C	0.4	0.4	0.91	0.91	195.6	205.3	1.05
North: Marsden St												
P3	Full	1263	1329	25.7	LOS C	2.2	2.2	0.95	0.95	202.3	211.9	1.05
West: Macquarie St												
P4	Full	63	66	24.4	LOS C	0.1	0.1	0.90	0.90	201.0	211.9	1.05
All Pedestrians		2770	2916	25.6	LOS C	2.2	2.2	0.95	0.95	201.7	211.4	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 0184 [Macquarie St/Church St PM (Site Folder: 2036_with SSD_PM)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Macquarie St														
6	R2	9	9	9	100.0	* 0.110	30.1	LOS C	0.2	7.8	0.92	0.68	0.92	18.2
Approach		9	9	9	100.0	0.110	30.1	LOS C	0.2	7.8	0.92	0.68	0.92	18.2
North: Church Street														
7	L2	9	9	9	100.0	0.110	30.0	LOS C	0.2	7.8	0.92	0.68	0.92	18.5
Approach		9	9	9	100.0	0.110	30.0	LOS C	0.2	7.8	0.92	0.68	0.92	18.5
West: Macquarie St														
11	T1	100	3	105	3.0	* 0.353	21.5	LOS B	2.4	17.5	0.93	0.73	0.93	18.5
Approach		100	3	105	3.0	0.353	21.5	LOS B	2.4	17.5	0.93	0.73	0.93	18.5
All Vehicles		118	21	124	17.8	0.353	22.8	LOS B	2.4	17.5	0.93	0.72	0.93	18.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

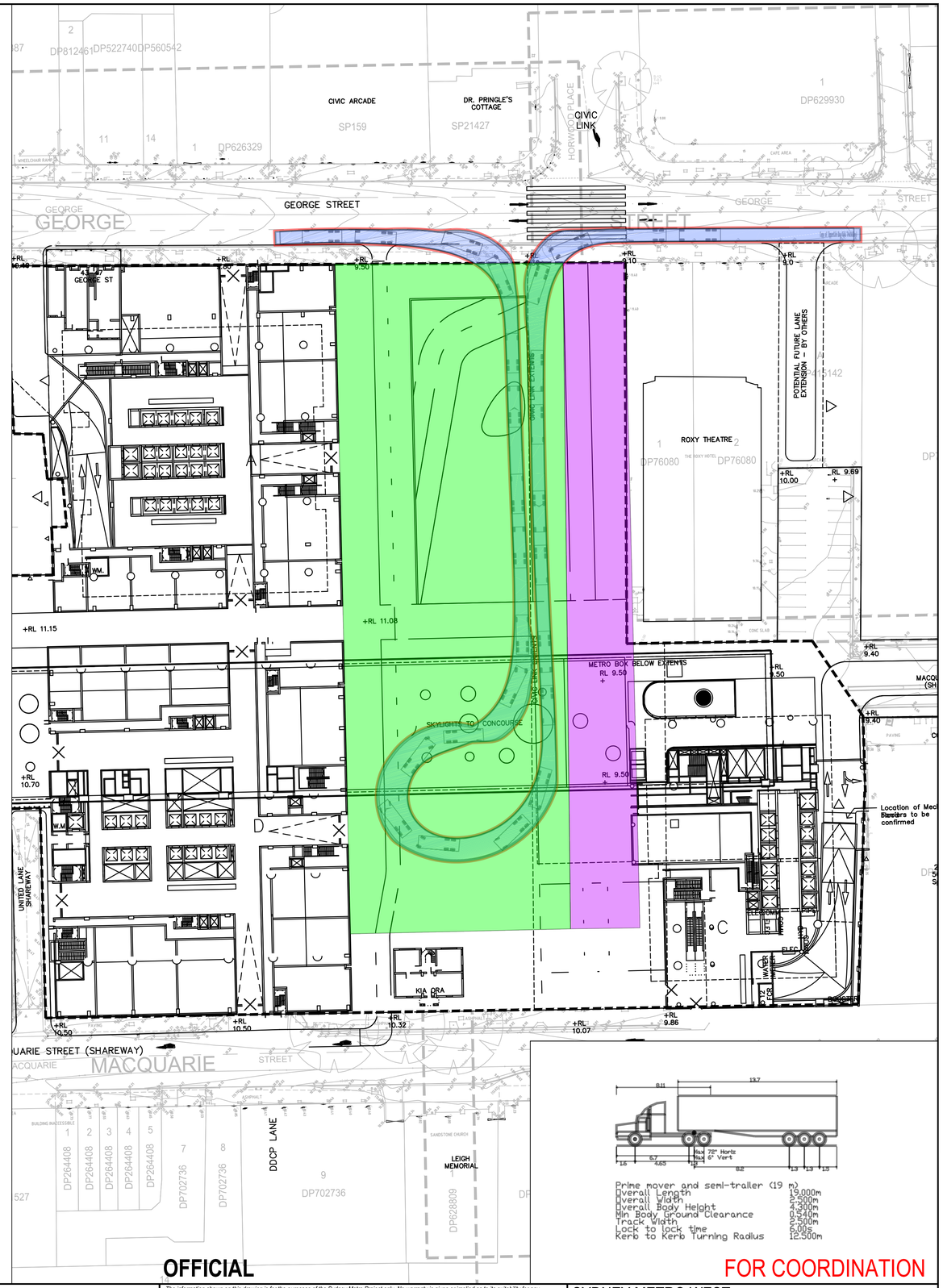
* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
East: Macquarie St												
P2	Full	836	880	20.1	LOS C	1.1	1.1	0.91	0.91	196.7	211.9	1.08
North: Church Street												
P3	Full	1114	1173	20.4	LOS C	1.5	1.5	0.93	0.93	194.2	208.6	1.07
West: Macquarie St												
P4	Full	2912	3065	22.2	LOS C	4.4	4.4	1.01	1.01	193.0	205.0	1.06
All Pedestrians		4862	5118	21.4	LOS C	4.4	4.4	0.97	0.97	193.9	207.0	1.07

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Appendix C Construction vehicle access and egress swept path plans



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REV.	AMENDMENT DESCRIPTION	Design by	Verified by	Approved by	Date
A.1	REVISION IN PROGRESS	BT			

SCALE: 1:500

CLIENT: NSW GOVERNMENT | sydney METRO

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DRAWN	B.TOWNSEND	03.05.2022
DESIGNED	B.TOWNSEND	03.05.2022
DRG CHECK		
DESIGN CHECK		
APPROVED		

SYDNEY METRO WEST

STATION - PARRAMATTA

CIVIL

CONSTRUCTION SWEPT PATHS

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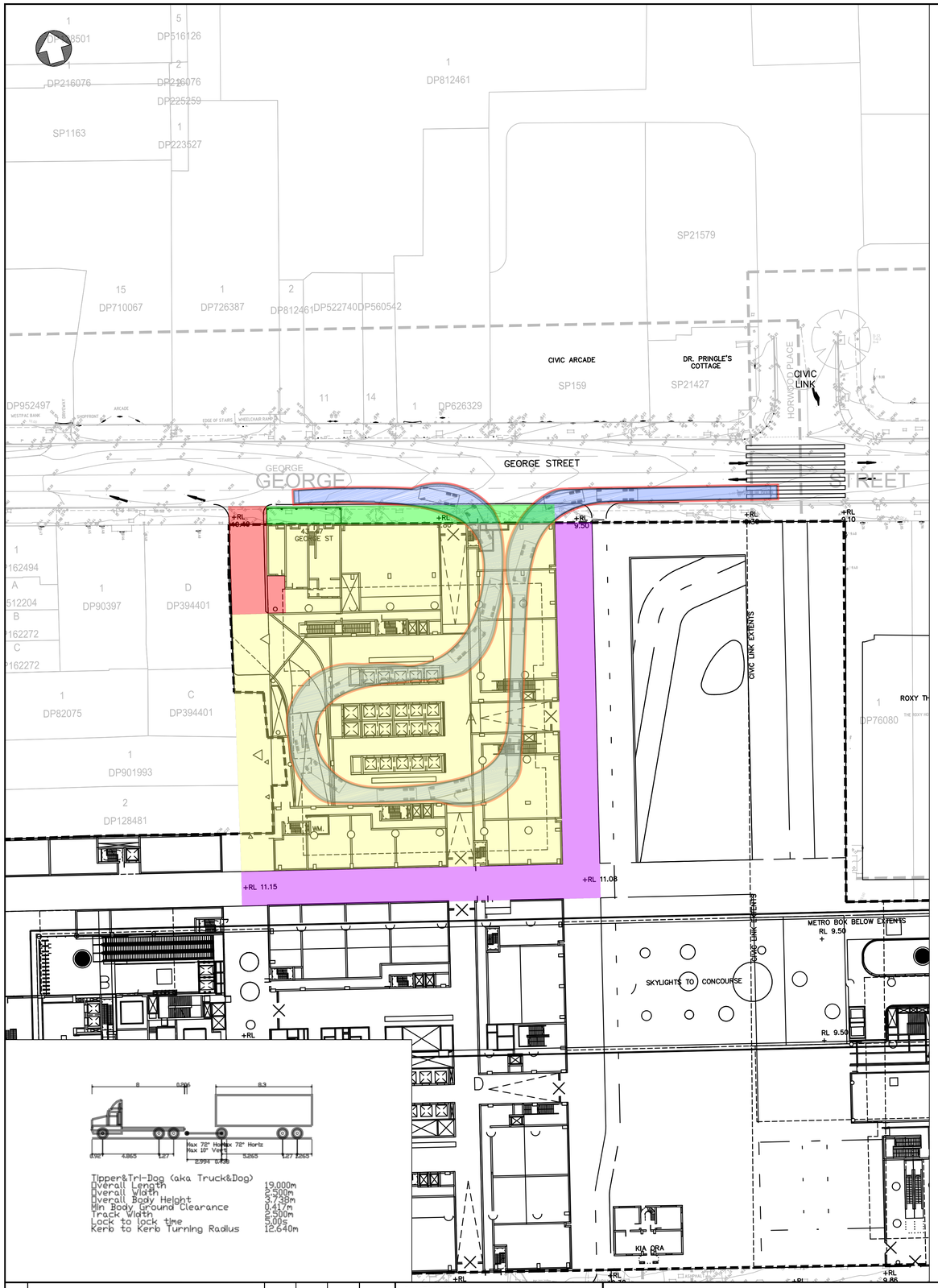

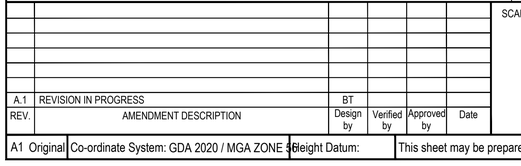

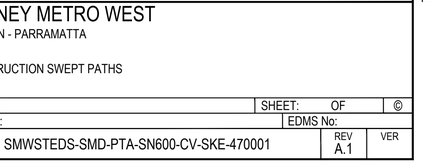

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A.1	REVISION IN PROGRESS	BT			

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DESIGN CHECK		
APPROVED		

SYDNEY METRO WEST

STATION - PARRAMATTA

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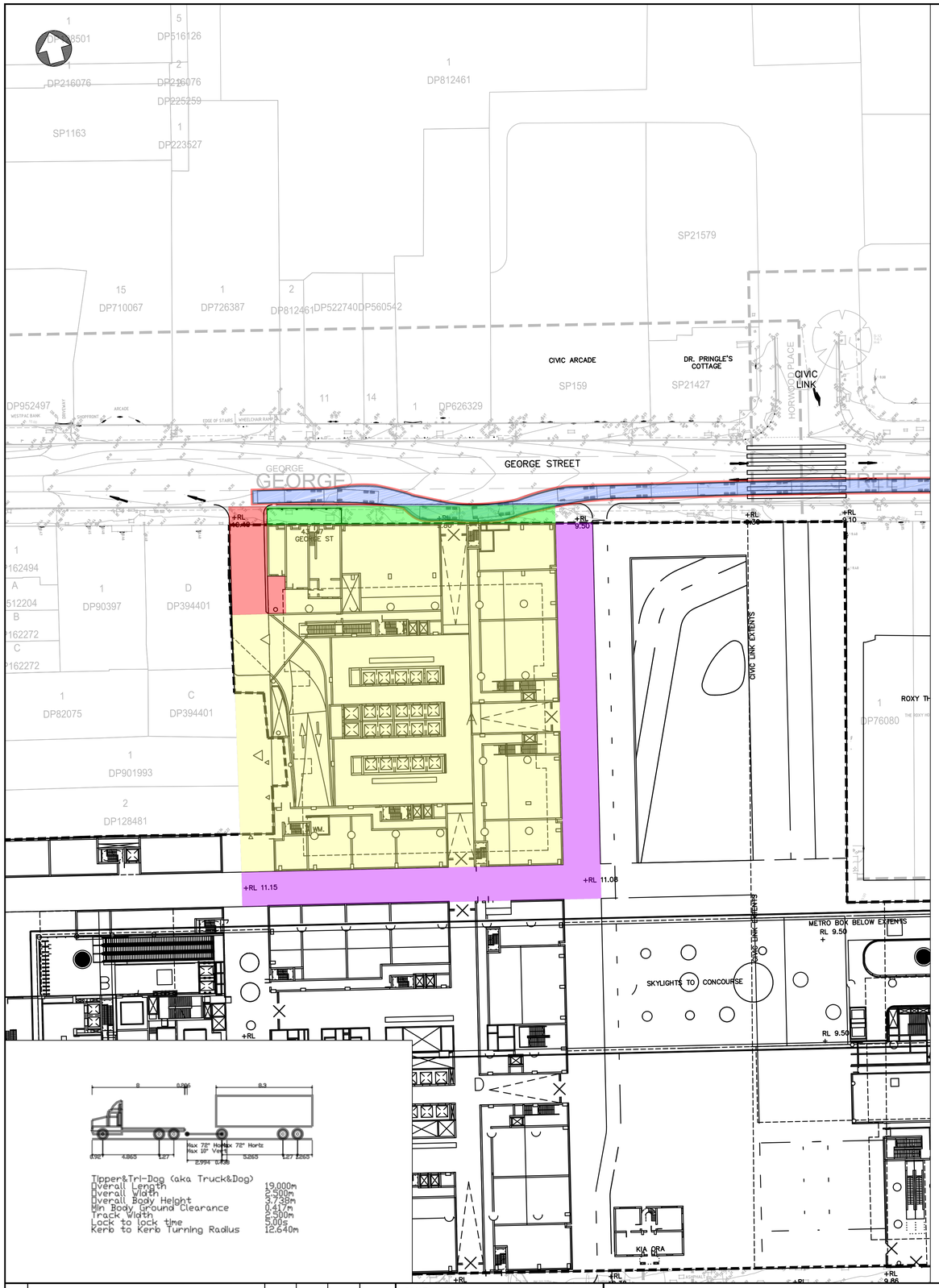

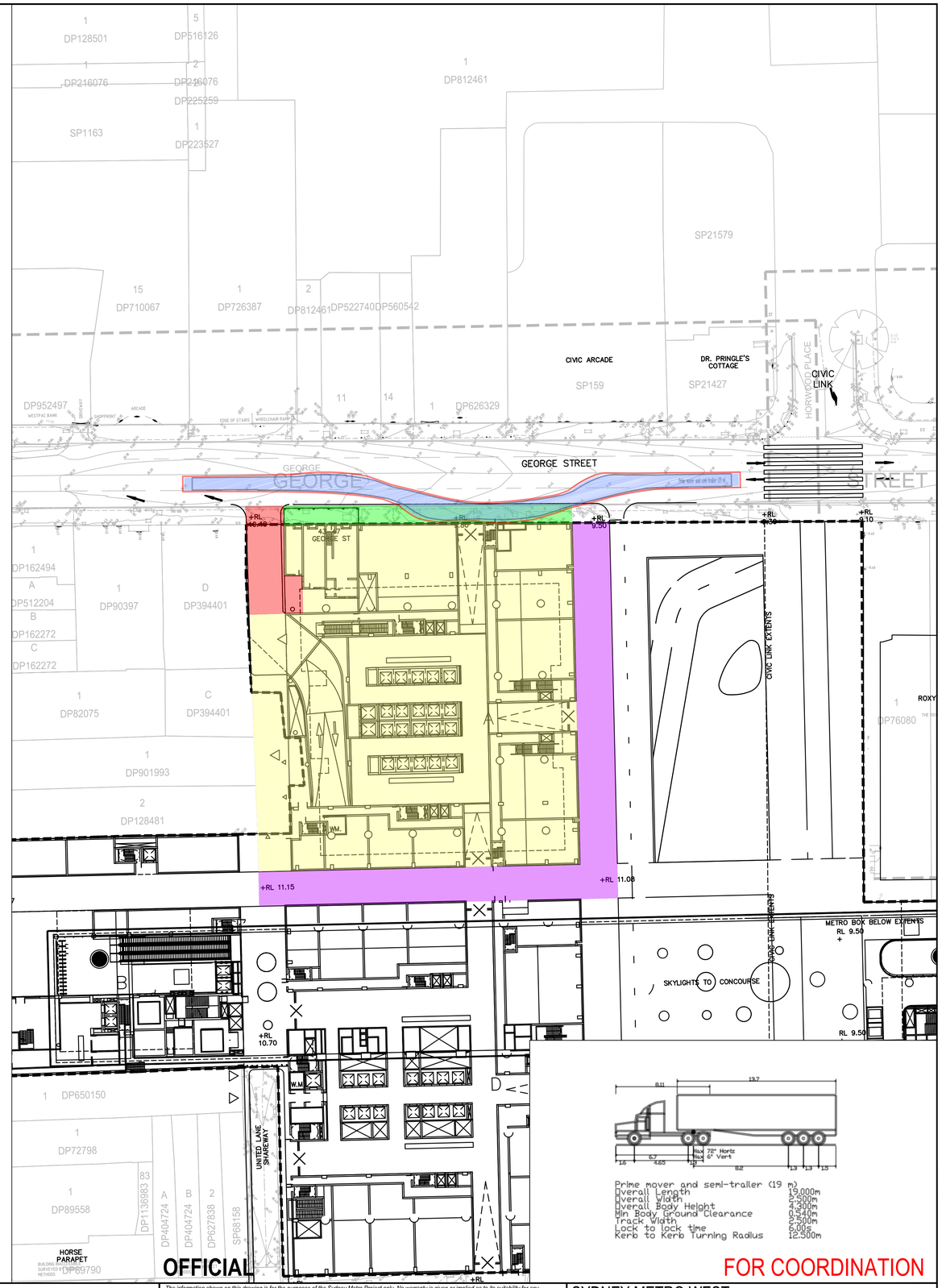

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DESIGN CHECK		
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SYDNEY METRO WEST

STATION - PARRAMATTA

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