

Ascent Logistics Centre

Transport Assessment

520-530 Gardeners Road, Alexandria

18/03/2022

P1279

Document Control

Project No	P1279
Project	Ascent Logistics Centre
Client	Charter Hall
File Reference	1279r02v5 DA TA 520 - 530 Gardeners Road Alexandria.

Revision History

Revision No.	Date	Details	Author	Approved by
I	26/11/2021	Draft	E. Ye	D. Choi
II	09/12/2021	Updated Draft	E. Ye W. Zheng	D. Choi
III	14/12/2021	Issue	E. Ye	R. Butler-Madden
IIII	13/01/2022	Issue	E. Ye	R. Butler-Madden
V	18/03/2022	Issue	R. Butler-Madden	D. Choi

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APPENDICES

Appendix A. Swept Path Assessment

Appendix B. SIDRA Movement Summaries

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Appendix D. Framework Travel Plan

Glossary

Acronym	Description
AGRD	Austroads Guide to Road Design
AGTM	Austroads Guide to Traffic Management
CC	Construction Certificate
Council	City of Sydney Council
DA	Development Application
DCP	Development Control Plan
DOS	Degree of Saturation
DPIE	Department of Planning, Industry and Environment
FSR	Floor space ratio
GFA	Gross Floor Area
HRV	Heavy Rigid Vehicle (as defined by AS2890.2:2018)
LEP	Local Environmental Plan
LGA	Local Government Area
LOS	Level of Service
MOD	Section 4.55 Modification (also referred as a S4.55)
MRV	Medium Rigid Vehicle (as defined by AS2890.2:2018)
NHVR	National Heavy Vehicle Regulator
OC	Occupation Certificate
RMS Guide	Transport for NSW (formerly Roads and Traffic Authority), Guide to Traffic Generating Developments, 2002
S4.55	Section 4.55 Modification (also referenced as MOD)
SRV	Small Rigid Vehicle (as defined by AS2890.2:2018)
TDT 2013/04a	TfNSW Technical Direction, Guide to Traffic Generating Developments – Updated traffic surveys, August 2013
TfNSW	Transport for New South Wales
TIA	Transport Impact Assessment
TIS	Transport Impact Statement
veh/hr	Vehicle movements per hour (1 vehicle in & out = 2 movements)

1 Introduction

1.1 Overview

Ason Group has been engaged by Charter Hall to prepare a Transport Assessment (TA) to support the State Significant Development Application (SSD-32489140) for a proposed multi-deck warehouse at 520-530 Gardeners Road, Alexandria (the Site).

The Proposal relates to the development of a three-storey multi-deck industrial warehouse, which will comprise:

- A Warehouse building with a total of 21,952, inclusive of:
 - 20,144m² warehouse GFA composed of 4 tenancies distributed across Ground Level and Level 1; and
 - 1,808m² of ancillary uses
- 5,557m² office GFA composed of 7 offices across Mezzanine levels and Level 2
- 1,278m² service vehicle storage GFA located on Level 2
- 144 car parking spaces on Level 2 (inclusive of 7 accessible car parking spaces)
- 3 car share spaces.

During the course of the preparation of this transport assessment, consultation with TfNSW and the Council has taken place.

Pre-lodgement comments from TfNSW has been attached to **Appendix C**.

1.2 Transport Assessment Objectives

The key objectives of this TA are as follows:

- To establish that the development of the Site is compliant and consistent with the access, traffic and parking principles outlined in Council's Development Control Plan (DCP).
- To demonstrate that there is an appropriate and sustainable provision of car parking within the Site.
- To demonstrate that the proposed access driveways, internal roads, car parks and service facilities can provide a design compliant with the relevant Australian Standards.
- To establish that the trip generation of the proposal can appropriately be accommodated by completed/committed upgrades to the local road network.
- To demonstrate that the construction of the Site can be undertaken in an efficient and safe manner, and that construction vehicles can be appropriately accommodated by the local road network in the short term.

1.3 Response to Secretary's Environmental Assessment Report

Key traffic and transport related issues included in the industry-specific SEARs for warehouses and distribution centres, and Ason Group's responses are outlined in **Table 1**.

Further, as required by the SEARs the project team sought engagement with TfNSW on two separate occasions as summarised in **Table 2**.

TABLE 1 RESPONSE TO SEARS

No.	Comment	Ason Response
	Provide a transport and accessibility impact assessment, which includes:	
1	Details of all traffic types and volumes likely to be generated during construction and operation, including a description of key access and haul routes.	The proposed development is expected to generate 155 vehicle trips in the AM peak hour and 130 vehicle trips in the PM peak hour during operation (refer to Section 6.1). Access to the Site will be on Bourke Road and Gardeners Road as summarised in Sections 4.2 and 4.3. Construction traffic volumes are subject to the development of a detailed construction staging plan upon the appointment of a contractor. A potential haulage route has been identified in Section 8.15, however, this is subject to change
2	An assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections (using industry standard modelling).	SIDRA intersection modelling has been conducted, demonstrating that under the development scenario, nearby intersections continue to operate similar to existing conditions or operate at acceptable degrees of saturation and delays. Refer to Section 6.
3	Plans demonstrating how all vehicles likely to be generated during construction and operation and awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network.	Swept path assessment has been prepared (refer to Appendix A) demonstrating vehicles will be wholly contained within the Site during operations. During construction, it will be the responsibility of the contractor to ensure that vehicles do not queue onto the street network.
4	Details and plans of any proposed internal road network, loading dock provision and servicing, on-site parking provisions, and sufficient pedestrian and cyclist facilities, in accordance with the relevant Australian Standards.	A design review has been conducted of the plans with reference to AS2890.1:2004, AS2890.2:2018, AS2890.3:2015, and AS2890.6:2009. Details are provided in Section 7 and Appendix A which finds general compliance with the above Australian Standards. It is expected that compliance with the above Standards would be expected to form a standard

		Condition of Consent further to approval.
5	Swept path analysis for the largest vehicle requiring access to the development.	Swept path assessment has been prepared (refer to Appendix A) demonstrating suitability of access for the largest design vehicle, 26m B-double.
6	Details of road upgrades, infrastructure works, or new roads or access points required for the development if necessary.	The existing Bourke Road access will be replaced by two access points, one for entry/exit of vehicles up to 6.4m SRVs and the other for exit only for trucks. Refer to Section 4.2.
7	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.	A Preliminary Construction Traffic Management Plan (CTMP) has been provided (refer to Section 8) detailing general principles and likely traffic impacts during the construction period. The contractor, upon engagement, will prepare a detailed CTMP, referring specifically to the proposed construction details and programme.

TABLE 2 ENGAGEMENT SUMMARY

Stakeholder	How this group was consulted	Issues Discussed	Project Response
Transport for NSW	Virtual meeting on 24 September 2021 via Teams with TfNSW Development Assessment Team, Ason Group (traffic consultant) and Charter Hall.	Initial meeting to discuss the proposed access strategy and assessment requirements. TfNSW asked for further information to be provided in regards benefits of maintaining the access on Gardeners Road, which is a classified State road.	Ason Group undertook the relevant analysis, inclusive of preliminary SIDRA modelling analysis, to demonstrate the benefit to travel times and the performance of the overall network of maintaining the Gardeners Road access.
Transport for NSW	Virtual meeting on 17 November 2021 via Teams with TfNSW Development Assessment Team, Ason Group (traffic consultant), Project Strategy and Charter Hall.	Presentation of results of options testing the with and without scenarios for the Gardeners Road access.	Ason Group submitted results to TfNSW for review and comment. Formalised pre-lodgement comments received and summarised in Appendix C .

Responses to TfNSW's pre-lodgement comments received 1 December 2021 (provided as **Appendix C**) are outlined in **Table 3**.

TABLE 3 RESPONSE TO TFNSW PRE-LODGE MENT COMMENTS

No.	Comment	Ason Response
1	The signalized intersection of Bourke Road / Gardeners Road is a major intersection used by high volumes of traffic where network safety and efficiency are of great importance. The proposed development will directly impact on this intersection increasing delays and queues well beyond acceptable Levels of Service (LoS), with currently SIDRA modelling indicating that the proposed development will reduce intersection performance at this location from LoS 'C' to 'E'.	It is critical to note that the Proposal represents a significant decrease in traffic volumes when compared to the historical use of the Site as a Bunnings Warehouse. It is expected to remove flows altogether during the weekend peak period, whereas the previous Bunnings was recorded to generate some 636 vehicle trips during the Saturday peak hour. Further, during the critical afternoon peak the Bunnings development was recorded to generate some 391 vehicle trips. As such it is evident that the current Proposal would actually reduce the Site's impact on the road network when compared to its historical use. Regardless of the above, the preliminary SIDRA project case (i.e. with development scenario) modelling prepared for the pre-lodgement consultation adopted the <i>User-Given Cycle Time</i> timing option; which resulted in unrealistic durations in the order of 40 seconds for the diamond phase (Phase D) resulting in unrepresentative results. Upon refinement of the modelling for the SSDA submission, timing for the project case scenarios was modified to <i>User-Given Phase Times</i>; adopting the same phase sequence and timing as the base model. This has provided more representative results noting the small number of additional trips in the context of the overall intersection volume (increases of around 1% in the AM peak and less than 3% in the PM peak) which would not be expected to materially influence the phase times. It is note that, subsequent to the initial consultation with TfNSW, and following the easing of COVID-19 lockdown restrictions by the NSW Government on 25 October 2021, Ason Group commissioned further traffic surveys for the revised traffic modelling. Please refer to Section 6 for the finalised SIDRA modelling assessment outcomes.
2	Current practice is to limit the number of vehicular conflict points along the arterial road network to maintain network efficiency and road safety. This current practice is reflected in Section 6.2.1 of TfNSW current publication of the Guide to Traffic Generating Developments, which states 'access across the boundary with a major road is to be avoided wherever possible'. Motorists and freight vehicles leaving the proposed driveways in Bourke Street would interrupt the flow of traffic by attempting to access the right turn bays into Gardeners Road. The movement requires crossing multiple traffic lanes through often queued traffic, which is not acceptable to TfNSW, particularly considering the impact that the	As described above, when compared to the use of the Site as a Bunnings, the Proposal would actually decrease the traffic generation associated with the Site, including the movements from the Bourke Road access (the Bunnings TA 2017 recorded a total of 102 exit movements from this access in the PM peak whereas the Proposal is anticipated to generate 60 exit movements). Further to the above reduced exit movements, the truck access has been designed so interruptions in traffic flows are avoided, with the largest vehicles will exit into the second lane of Bourke Road (as permitted by AS2890.2:2018) during suitable gaps in traffic.

	proposed development would have to the existing LoS of the intersection. As clause 101(2a) of State Environmental Planning Policy (Infrastructure) 2007, states: “The consent authority must not grant consent to development on land that has frontage to a classified road unless it is satisfied that: where practicable, vehicular access to the land is provided by a road other than the classified road”. With this in consideration, TfNSW notes that there is no alternative vehicle access via the local road network and that Gardeners Road (classified road) vehicular access would be considered by the agency.	Finally, the finalised modelling assessment demonstrates that the impact of the Proposal on the intersection would not be material (i.e. vehicles exiting onto Bourke Road would not materially impact the intersection operation). Note, with regards to access from Gardeners Road. The retention of the Gardeners Road access for truck access is considered essential given the lack of alternative routes to gain entry to the Site.
3	The Gardeners Road access is currently traffic signal controlled that was installed based on generations of a previous development. The proposed generations to the subject site need to meet a Warrant Assessment for the traffic signals to be retained, otherwise the signals would be required to be removed and the median closed to restrict access to left-in, left-out (LILO) arrangement. This work would be required to be undertaken by the Applicant at no cost to TfNSW. As Gardeners Road is a classified road with high movement function, any disruptions to through traffic by slow moving service vehicles turning left accessing site could have a detrimental impact to network safety and efficiency but also operations to the future development's operations. Therefore, TfNSW recommends consideration is given to the development providing a left turn deceleration lane into the site from Gardeners Road in accordance with Australian Standards, in particular AS 2890.1 and Austroads Guide to Road Design: Part 4A: Un-signalised and Signalised Intersections (Section 3 – Sight Distance). Vegetation and proposed landscaping/fencing must not hinder sight lines to and from road users.	Noting that the Gardeners Road access will be modified to a heavy vehicle entry access it is unlikely that the access would meet the warrants. However, it is critical to note that the warrants are specified as a guide only with the introduction of the Warrant Guide specifying “<i>It must be emphasised that these are only a guide... All traffic data should be analysed...to determine the optimum solution</i>”. As such, it is proposed to maintain the existing signals to provide all movements into the Site and reduce the need for re-routing of traffic around the network. This is particularly relevant to vehicles travelling from the east and south of the Site, which would alternatively have to reroute north along O’Riordan Street, past Green Square and south along Bourke Road. This is clearly not a desirable solution to unnecessarily force additional (heavy) vehicles past Green Square Train Station, which is subject to high pedestrian activity. With regards to the consideration to a left-turn deceleration lane, it is noted that the SIDRA assessment has demonstrated that the left-turn movement into the Site would have almost no impact to the through flows on Gardeners Road, noting that the movement is anticipated to be a peak of 5 vehicle movements per hour. As such it is evident that a deceleration is not warranted or required to mitigate the impact of the Proposal.
4	Consideration should also be given to the management of pedestrians along Gardeners Road frontage.	Noting that the current signalised access provides for a pedestrian crossing across the Site frontage, this provides additional benefit to retention of the signals.

1.4 Reference Documents

In preparing this assessment, Ason Group has reviewed (and referenced) the following documents:

- City of Sydney Local Environmental Plan 2012 (Sydney LEP).

- City of Sydney Development Control Plan 2012 (Sydney DCP).
- Bunnings Warehouse 520-530 Gardeners Road, Mascot Traffic assessment for revised access and car parking arrangements, 2017, ARUP (Bunnings TA 2017). Council reference: D/2017/250¹.
- Guide to Traffic Generating Developments 2002, Roads and Maritime Services (RMS Guide).
- Guide to Traffic Generating Developments – Updated Traffic Surveys 2013, RMS (RMS Guide Update).
- Traffic Signal Design Section 2 – Warrants, RMS (Warrant Guide).
- Australian Standard 2890.1:2004: Parking Facilities – Off-Street Car Parking (AS 2890.1).
- Australian Standard 2890.2:2018: Parking Facilities – Off-Street Commercial Vehicle Facilities (AS 2890.2).
- Australian Standard 2890.3:2015: Parking Facilities – Bicycle Parking (AS 2890.3).
- Australian Standard 2890.6:2009: Parking Facilities – Off-Street Parking for People with a Disability (AS 2890.6).

¹ Source: City of Sydney DA Tracker for D/2017/250,
<https://online2.cityofsydney.nsw.gov.au/DA/IndividualApplication?tpklapappl=1293748>

2 Strategic Context

2.1 Introduction

Reference has been made to the state, regional and local planning documents that are considered relevant to the context of the Site. These key, reference documents and policies are discussed in the following sections.

2.2 NSW State Strategies

2.2.1 Greater Sydney Region Plan (2018)

The Greater Sydney Region Plan: A metropolis of Three Cities – connecting people (2018) has been produced by the Greater Sydney Commission (GSC) and its key purpose is to:

“...rebalance growth and deliver its benefits more equally and equitably to residents across Greater Sydney. The plan aligns land use, transport and infrastructure planning to reshape greater Sydney as three unique cities”

Based on a vision of three connected cities – the Eastern Harbour City, the Central River City and the Western Parklands City – the Region Plan is structured around strategies for infrastructure, collaboration, liveability, productivity, sustainability and implementation across Greater Sydney. **Figure 1** identifies the key strategies to achieve the outcomes for the Eastern Harbour City, where the Site is located.

The Region Plan was prepared concurrently with the Future Transport Strategy 2056 and the State Infrastructure Strategy to ensure the alignment of land use, transport and infrastructure outcomes for Greater Sydney. It seeks to encourage residential development in close proximity to employment areas to deliver a series of 30-minute cities, providing better access to jobs, schools, and health within 30 minutes of people's homes.

Objective 14 of the Region Plan focuses on *“a well-connected city”* with a focus on *“integrated land use and transport”*. The Plan talks to delivering more efficient supply chains and reducing business costs by co-locating activities in metropolitan, strategic, and local centres. There is also focus on productivity, reducing the time people spend travelling, increasing access to jobs and business' access to workers.

Further, Objective 16 places emphasis on *“freight and logistics network is competitive and efficient”*. The Plan notes that Greater Sydney's freight task is forecast to almost double in the next 40 years, placing increased importance on 24/7 supply chain operations. The Plan refers to key trade gateways such as Port Botany and Sydney Airport.

The Site is ideally located to align with the aims of the Region Plan as it is located in close proximity to major freight corridors as well as inner-city end users, providing good interconnectivity and a transition point between large freight and smaller deliveries and services. The Site's location in relation to the CBD results in faster service times to customers, reduction in vehicle kilometres and travel time, and increased accessibility for employees to travel to/ from the Site via non-private car mode share – promoting active and public transport.

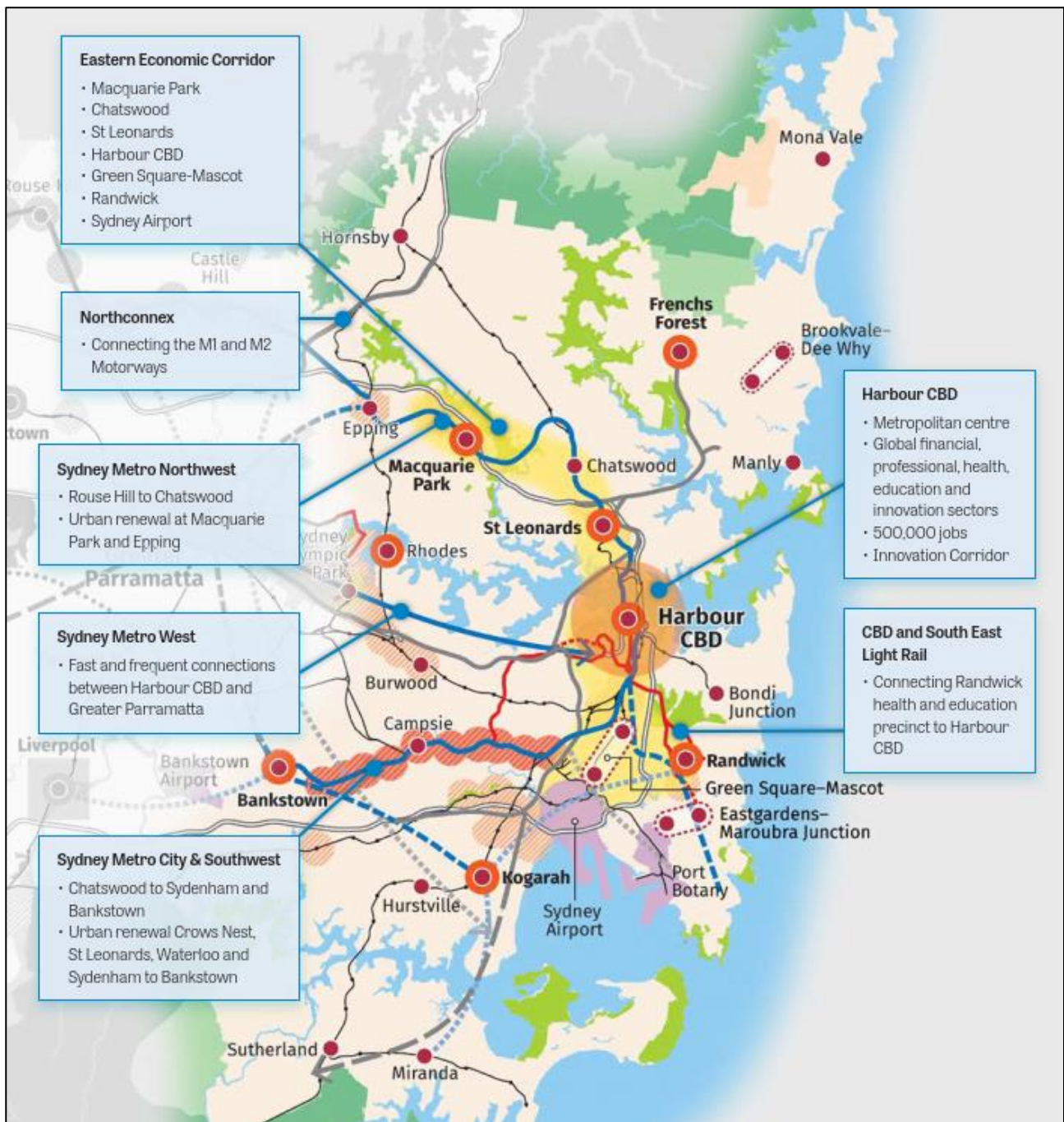


Figure 1: Eastern Harbour City – Key Strategies

2.2.2 A Plan for a Growing Sydney – Superseded Policy

Prior to implementation of the Future Transport Strategy and Greater Sydney Regional Plan, the NSW Government began implementing the vision for a 30-minute city through a Plan for a Growing Sydney.

A Plan for Growing Sydney sets out the NSW Government strategic plan for the Greater Sydney Metropolitan Area. The strategy contains several sub-regional strategies, with the Site and more generally, Green Square, located within the Central Subregion. Specific goals for the site locality are as follows:

- Direction 1.5: Enhance capacity at Sydney's gateways and freight networks
 - Develop and implement a strategy for the Sydney airport and port botany precincts to support their operation, taking into account land uses and the proposed road transport investments
 - Identify strategically located sites that support freight activity and movements around Sydney Airport and Port Botany
 - protect strategically located sites that support the freight network, commencing with areas most affected by aircraft noise

The Central Subregion extends from Sydney Harbour in the north, Rhodes in the west to Port Botany in the south, as presented in **Figure 2** below.

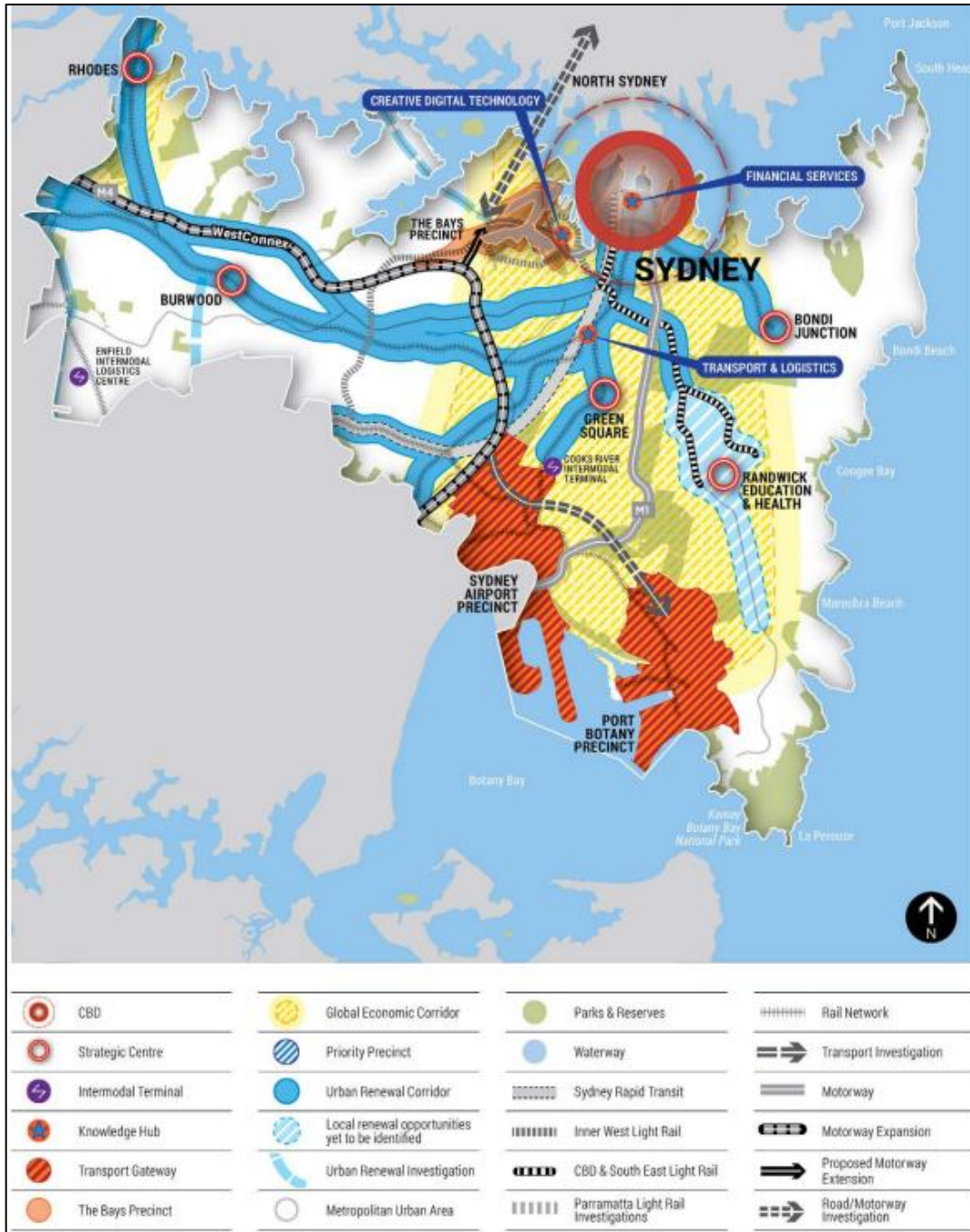


Figure 2: A Plan for Growing Sydney - Central Subregion

2.3 Council Plans

2.3.1 Sustainable Sydney 2030

Sustainable Sydney 2030 (SS2030) outlines a number of objectives in relation to sustainable transport modes to ensure that Sydney becomes a city that is Green, Global and Connected. It is noted that Council is in the process of reviewing the 2030 plan (with the intent of providing an updated plan; Sustainable Sydney 2050) to assess the progress undertaken over the last 10 years under the 2030 plan.

Under the 2030 plan, greenhouse gas emissions reduced by 20% from the 2006 baseline. This is a result, in part due to Council's *Walking Strategy and Action Plan* and *Cycle Strategy and Action Plan* 2007-2017, which identified the following numerical targets in relation to walking and cycling:

- Walking to account for 33% of commuter trips and 60% of all local trips
- 10% of all journeys within the City of Sydney by bicycle, and
- 20% of all City of Sydney trips between 2-20km by cycling

The Site's location and close proximity to high-frequency rail and bus services aligns with the strategy to increase walking and cycling trips.

2.3.2 City Plan 2036

City Plan 2036 (CP2036) is Council's local strategic planning statement (LSPS). LSPS are developed by Councils across Sydney and are guided by the Greater Sydney Region Plan. These strategic plans will manage Greater Sydney's growth and change across the themes of infrastructure, liveability, productivity and sustainability.

The planning statement sets 13 priorities and a series of actions to achieve the vision and guide future changes to the City's planning controls. The priorities relevant to this Site include:

- Priority 1: Movement for walkable neighbourhoods and a connected city
- Priority 2: Align development and growth with supporting infrastructure
- Priority 7: Growing a stronger, more competitive Central Sydney
- Priority 8: Developing innovative and diverse business clusters in the city fringe
- Priority 9: Protecting industrial and urban services in the southern enterprise area and evolving businesses in the Green Square-Mascot strategic centre
- Priority 11: Creating better buildings and places to reduce emissions.

3 Existing Conditions

3.1 Site Context

The Site is located within the City of Sydney LGA, with a street address of 520 – 530 Gardeners Road, Alexandria. Located around 6 kilometres South of the Sydney CBD, the Site has an area of approximately 19,000m² with a 170-metre frontage on Bourke Road and 100-metre frontage on Gardeners Road.

The Site is shown in its local context in **Figure 3**.



Figure 3: Site Location

3.2 Existing Land Use

The Site is currently zoned IN1 General Industrial under the Sydney LEP 2012 and is surrounded by IN 1 General Industrial zoning to the west, B6 Enterprise Corridor zoning to the north and east, and B4 Mixed Use zoning to the south.

The Site previously operated as a Bunnings hardware store until 2019.

Figure 4 shows the land zoning within the vicinity of the Site.

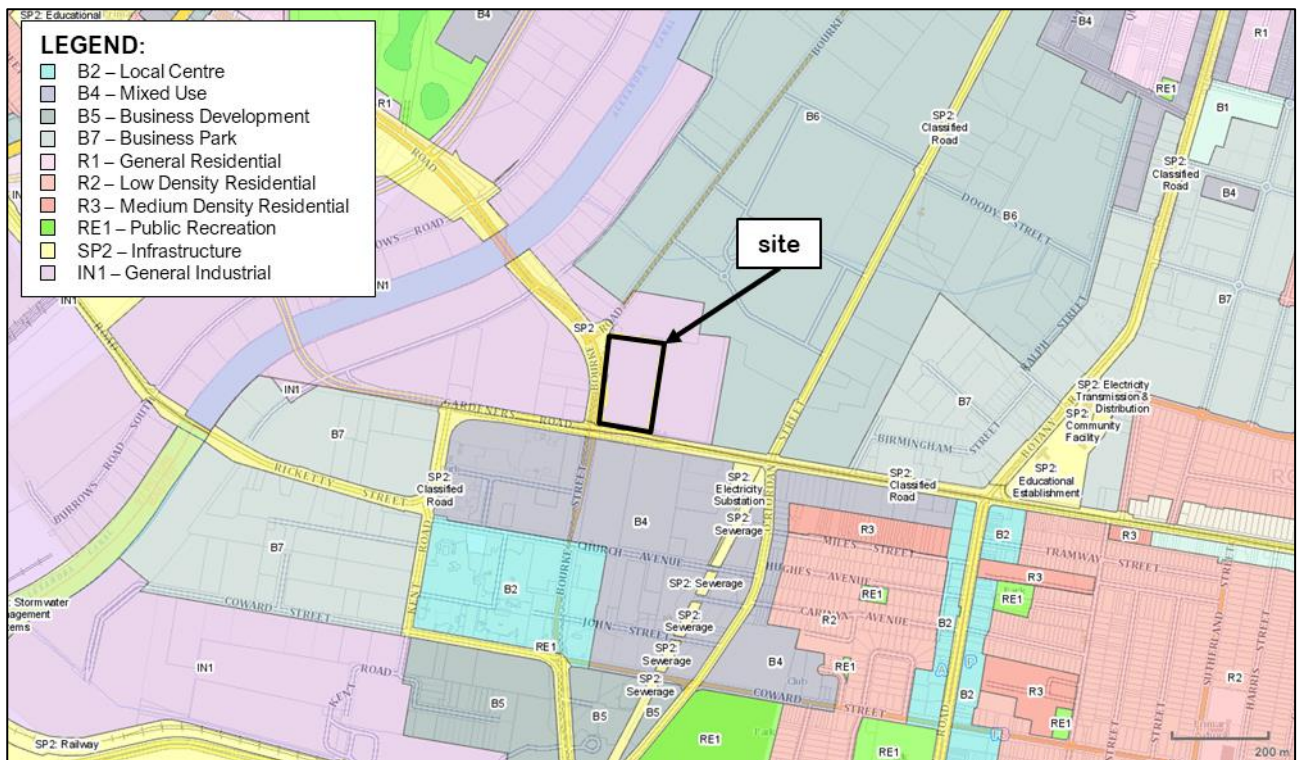


Figure 4: Surrounding Land Zoning

3.3 Road Network

The road network surrounding the Site includes a mix of state, regional and local roads. Key roads and intersections within the study area are shown in **Figure 5**, and **Table 4**.



Figure 5: Site and Road Network

TABLE 4 KEY ROADS

Road	Classification	Description	Speed limit
Campbell Road (west of Bourke Road)	Local Road	Campbell Road (west of Bourke Road) is a Local Road north of the site that runs generally in a north-west to south-east direction, providing access over the Alexandra Canal. Campbell Road has two lanes in each direction, increasing to 4 lanes at the intersection with Bourke Road. No on-street parking is permitted.	60km/h
Campbell Road (east of Bourke Road)	Private Road	Campbell Road (east of Bourke Road) is a private road that provides access to the data centre located north of the subject site. This road has one lane in each direction and presents on-street parking some 30m in from the intersection.	5km/h
Bourke Road	Local Road	Bourke Road is a Local Road, oriented north-south, forming the western frontage of the site. Bourke Road has two lanes in each direction, increasing to 4 lanes at the intersection with Campbell Road. South of the site between Church Ave and John St, Bourke Road provides limited P5 – 1P on-street parking.	60km/h (N) of Gardeners Rd 50km/h (S) of Gardeners Rd
Gardeners Road	State Road	Gardeners Road is classified as a State Road and is oriented east-west, forming the southern frontage of the site. Gardeners Road has 3 lanes in each direction. No on-street parking is permitted.	60km/h
O’Riordan Street	State Road	O’Riordan Street is State Road oriented north-south, located to the East of the site. O’Riordan Street has 2 lanes in each direction, with dedicated right-turn lanes at the intersection with Gardeners Road on both sides. No on-street parking is permitted.	50km/h
Doody Street	Local Road	Doody Street is a Local Road located further north of the Site oriented north-west to south-east. Doody Street has 1 lane in each direction. Unrestricted parking is predominately presented on both sides of the street with small pockets of shorter term parking and loading zones.	50km/h

3.4 Existing Site Accesses

Access to the Site is currently available at two locations, on Bourke Road north of Gardeners Road, and Gardeners Road east of Bourke Road. The Bourke Road access is a left-in/ left-out priority-controlled intersection. The Gardeners Road access is a signalised intersection that permits left and right inbound movements and left-out only outbound movements. This signalised intersection was previously inactive after Bunnings had vacated the Site.

3.5 Crash Data Analysis

A crash data analysis within the study area has been conducted to identify common crash types, crash severity, year by year trends, 'road user movement' (RUM) and type of location. Crash data for this study (data and shapefile) was provided by TfNSW on 6 October 2021. The data covers crashes reported to the police and records injuries in 4 categories i.e. fatal, serious, moderate and minor.

The analysis indicates the majority of recorded crashes within the vicinity of the Site occurred at the Gardeners Road/ Bourke Road intersection. It is also noted that 12 of the 19 crashes occurred during the Gardeners Road/ Bourke Road intersection upgrade construction works period (approximately May/ June 2017 to August/ September 2020). After the intersection upgrade there was only 1 recorded crash within the vicinity of the Site, at the Bourke Street /Church Avenue intersection, further south.

The data is illustrated in **Figure 6** and summarised in **Table 5**.



Figure 6: Crash data from 2016 to 2020

TABLE 5 CRASH STATISTICS

Date	Crash ID	Lighting	Description	Degree of Crash	Location
30/01/16	1093015	Daylight	Rear end	Minor/Other Injury	Gardeners Road/ Bourke Road
04/08/16	1110309	Daylight	Off rd left => obj	Non-casualty (towaway)	Gardeners Road
06/08/16	1116936	Daylight	Off left/rt bnd=>obj	Serious Injury	Gardeners Road
15/10/16	1116847	Daylight	Emerging from drive	Non-casualty (towaway)	Gardeners Road
23/11/16	1123063	Daylight	Rear end	Minor/Other Injury	Gardeners Road/ Bourke Road
10/12/16	1122923	Darkness	Rear end	Minor/Other Injury	Gardeners Road
12/07/17	1144051	Daylight	Right through	Minor/Other Injury	Bourke Road
29/01/18	1162153	Darkness	Lane change left	Non-casualty (towaway)	Gardeners Road
28/02/18	1168442	Daylight	From footpath	Serious Injury	Gardeners Road/ Bourke Road
27/08/18	1186525	Daylight	Vehicle door	Minor/Other Injury	Bourke Street
19/10/18	1188541	Darkness	Right through	Serious Injury	Gardeners Road/ Bourke Road
10/11/18	1192519	Darkness	Cross traffic	Minor/Other Injury	Bourke Street / Church Avenue
15/08/19	1215077	Daylight	Rear end	Moderate Injury	Gardeners Road/ Bourke Road
10/09/19	1215032	Daylight	Rear end	Moderate Injury	Gardeners Road/ Bourke Road
04/11/19	1221001	Dusk	Emerging from drive	Serious Injury	Gardeners Road
13/01/20	1222260	Daylight	Other opposing	Non-casualty (towaway)	Gardeners Road
20/02/20	1226654	Daylight	Lane change left	Non-casualty (towaway)	Gardeners Road
23/07/20	1236893	Daylight	Rear end	Non-casualty (towaway)	Gardeners Road/ Bourke Road
06/09/20	1260509	Daylight	Rear end	Uncategorised Injury	Bourke Street / Church Avenue

Note: Crashes that occurred during the Gardeners Road/ Bourke Road intersection upgrade construction works period highlighted in green.

3.6 Public Transport

The Site is well serviced by local public transport infrastructure. The key train and bus services local to the Site are presented in **Figure 7** and summarised in the following sections.

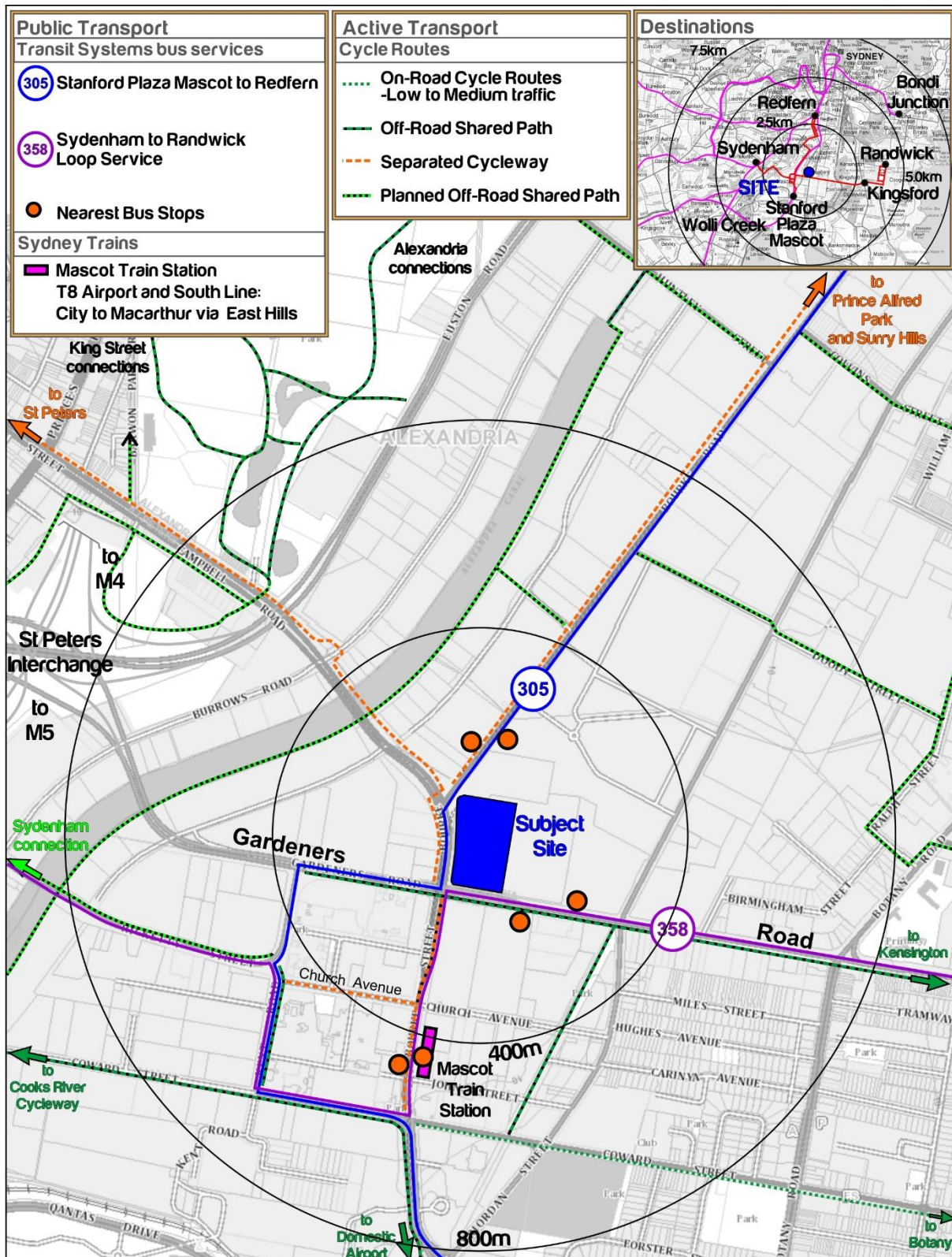


Figure 7: Nearby Public Transport Services

3.6.1 Train Services

The Site is located within 400 metres (straight line distance) of Mascot Station, which provides services along the T8 Airport & South Line between Central Station and Macarthur Station. In the direction of Central Station, rail services operate every 3 – 6 minutes during morning commuter peak periods, 7 – 8 minutes during afternoon peak hour and every 7 – 8 minutes outside of these peak periods. In the other direction towards Macarthur Station, rail services operate every 6 – 9 minutes during morning commuter peak periods, 3 – 9 minutes during afternoon peak hour and every 6 – 9 minutes outside of these peak periods.

TABLE 6 TRAIN SERVICE & FREQUENCY

Line	Destination	Number of services		
		AM (8am – 9am)	Midday (12pm – 1pm)	PM (5pm – 6pm)
T8 Airport & South Line	To Macarthur Station	8	8	11
	To Central Station	10	8	8

3.6.2 Bus Services

The Site is located around 400m walking distance of several bus stops located along Gardeners Road and Bourke Road. The following details the bus services that operate at these bus stops:

- Bus Route 357: This bus service operates from Bondi Junction to Mascot via Randwick and Kingsford with a weekday peak frequency of 15 – 25 minutes a service.
- Bus Route 305: This bus service operates from Redfern to Mascot Stamford Hotel with only 2 services in the AM and PM peaks with a service frequency of approximately 30 – 40 minutes.

TABLE 7 BUS SERVICE & FREQUENCY

Bus Route No.	Route Description	Number of services		
		AM (8am – 9am)	Midday (12pm – 1pm)	PM (5pm – 6pm)
357	Mascot to Bondi Junction (EB)	3	2	3
	Bondi Junction to Mascot (WB)	3	2	3
305	Mascot to Redfern (EB)	0	0	2
	Redfern to Mascot (WB)	2	0	0

3.7 Active Transport

3.7.1 Existing Pedestrian Accessibility

The Site is well serviced by an extensive pedestrian network, with the key features outlined as follows:

- Approximately 550 metre walk (approximately 7 minutes) from Mascot Station to the Site via Bourke Road

- Footpaths along both sides of all adjacent streets
- Signalised pedestrian crossings at the Bourke Road / Gardeners Road intersection
- Signalised pedestrian crossings at the Bourke Road / Campbell Road / Campbell Road intersection
- Signalised pedestrian crossings at the Doody Street / O’Riordan Street intersection

3.7.2 Existing Cycle Routes

There is a well-connected mixture of recreational, sub-regional and local bicycle routes surrounding the Site within the City of Sydney Council LGA and Bayside Council LGA as seen in **Figure 7**.

As identified in the *City of Sydney Cycling Strategy and Action Plan* (Bike Plan), an extensive network of cycle routes connecting the Site to the city northbound is shown in **Figure 8**. An overview of the cycle network is as follows:

- Off-road cycleways to Alexandria and St Peters via Campbell Road
- Access to recreational routes within Sydney Park via Campbell Road
- Separated and on-road cycleways towards Green Square via Bourke Road
- On-road cycle lanes to Eastlakes via Coward Street on both street sides
- Separated and on-road cycleways to Zetland via Dunning Avenue and Gardeners Road
- Limited bicycle-friendly roads connecting Kensington and Eastern Suburbs via Epsom Road and Tunstall Avenue

Additionally, as outlined in the *Bayside Bike Plan: Bayside Cycleways* in **Figure 9**, a mixture of on-road and off-road shared paths heading south connecting Botany and Wolli Creek are provided as follows:

- Links to Wolli Creek via on-road cycle lanes in Cowards St connecting to off-road shared paths on Airport Drive
- On-road cycle lanes leading towards Botany via Cowards St connecting to off-road shared paths on Wentworth Avenue

The Site is generally well-serviced with cycle routes within the City of Sydney and Bayside Council LGAs. However, strategies to better link south-eastern suburbs including Kensington, Randwick and Kingsford will ensure alternative travel accessibility to the Site is increased.

3.7.3 Framework Travel Plan

A Framework Travel Plan has been prepared and appended in Appendix D outlining the overarching requirements for a future Sustainable / Green Travel Plan package to be delivered in future occupier-specific Plans.

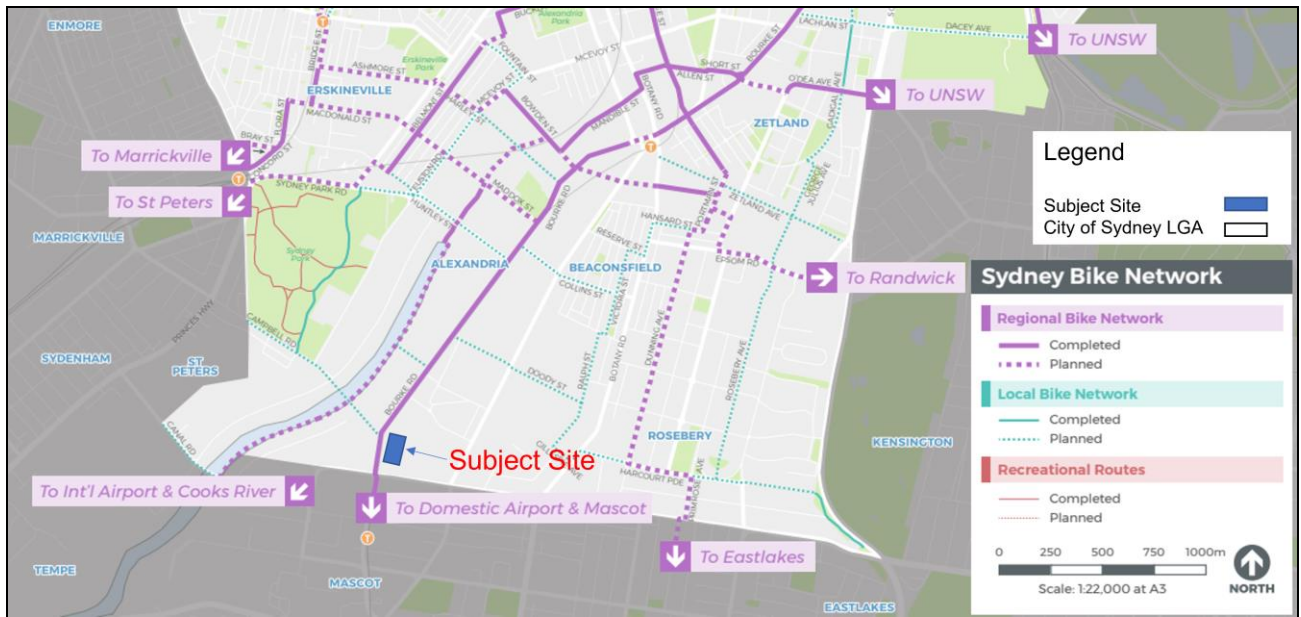


Figure 8 Bike Plan: City of Sydney

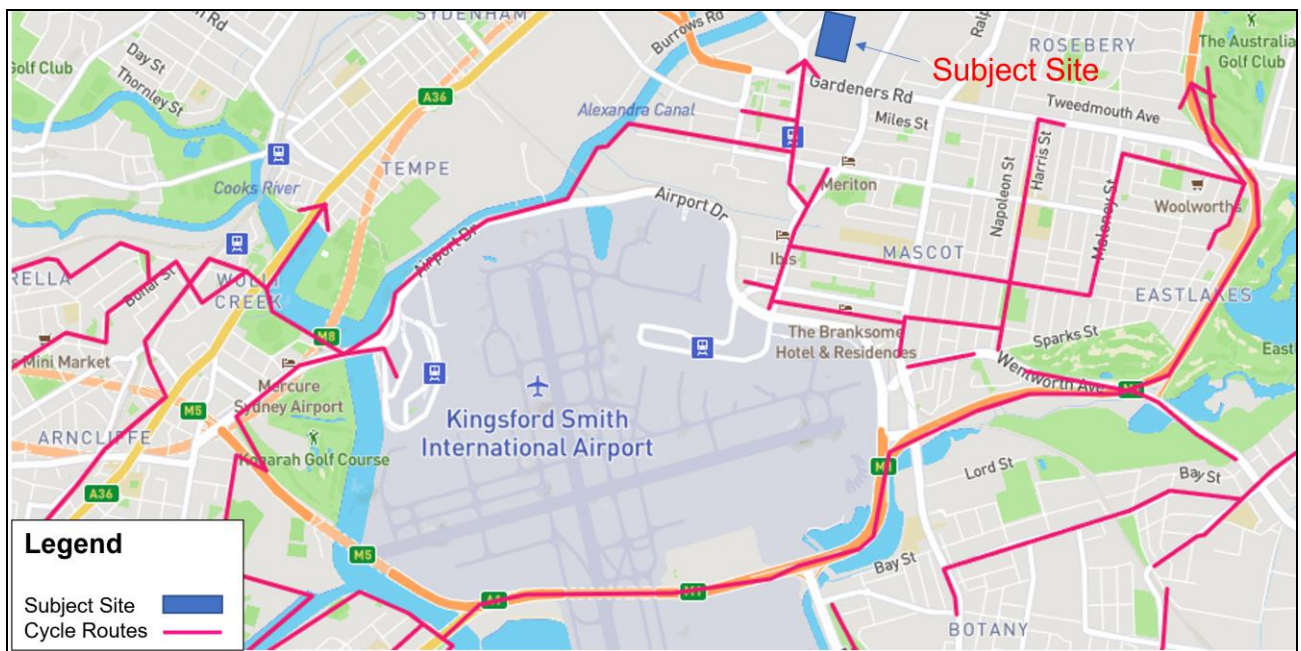


Figure 9 Cycle Routes Bayside Council

3.8 SIDRA Intersection Performance – Base Case

3.8.1 SIDRA Performance Assessment Criteria

The performance of the existing road network is largely dependent on the operating performance of key intersections, which are critical capacity control points on the road network. SIDRA Intersection 9 modelling software was used to assess the proposed peak hour operating performance of intersections on the surrounding road network at key intersections within proximity of the Site.

In accordance with RMS (now TfNSW) *Guide to Traffic Generating Developments V2.2* (2002) (RMS Guide), the Levels of Service (LOS) relevant to local roads is used to evaluate the operational performance of intersections.

According to the RMS guidelines, roads operating at LOS D or better are generally considered to have acceptable flow conditions because they are below capacity. Roads operating at LOS E or worse are generally considered to have unacceptable flow conditions because they are at or above capacity.

In this regard, the operating performance of the key intersections has been analysed using the SIDRA Intersection 9 software. SIDRA modelling outputs a range of performance measures, in particular:

- **Level of Service (LOS)** – The LOS is a qualitative measure used to relate the quality of motor vehicle traffic service. LOS is used to analyse roadways and intersections by categorizing traffic flow and assigning quality levels of traffic based on performance measure like vehicle speed, density, congestion.
- **Average Vehicle Delay (AVD)** – The AVD (or average delay per vehicle in seconds) for intersections also provides a measure of the operational performance of an intersection and is used to determine an intersection's Level of Service (see below). For signalised intersections, the AVD reported relates to the average of all vehicle movements through the intersection. For priority (Give Way, Stop & Roundabout controlled) intersections, the AVD reported is that for the movement with the highest AVD.
- **Degree of Saturation (DOS)** – The DOS of an intersection (typically under traffic signal control) or a link measures the demand relative to the total capacity. A DOS value of 100% means that demand and capacity are equal and no further traffic is able to progress through the junction.

The SIDRA recommended criteria for the assessment of intersections as referenced by the RMS Guide is outlined in **Table 8**.

When applying the below criteria, it is recommended that for traffic signals, the LOS should be calculated based on the average vehicle delay at the whole intersection, whereas for roundabouts and priority-controlled intersections, the critical measure of LOS is determined by the movement with the highest delay.

TABLE 8 SIDRA LEVEL OF SERVICE CRITERIA

Level of Service	Average Delay per Vehicle (sec/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 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	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment

3.8.2 Baseline Volumes

Due to impacts of the NSW COVID lockdown during the initial data collection period, SCATS detector volumes from Thursday 29 April 2021 (pre-lockdown) was sourced to provide a measure of the typical traffic volumes in the surrounding road network. This was further refined on the basis of survey data collected on Thursday 28 October 2021 (post-lockdown) to derive turning movement proportions where it is not readily apparent from the detector volumes (e.g. lanes permitting multiple turning movements). The light vehicle to heavy vehicle proportion recorded in the survey data was used as a proxy for the heavy vehicle proportions.

Detector counts were used to determine the intersection volumes at each of the nominated signalised intersections and the peak periods were identified to be:

- AM Peak: 8:00am-9:00am
- PM Peak: 4:45pm-5:45pm

On the detector count data collection day (29 April 2021), the 520 Gardeners Road Site was not operational, hence it has been assumed that there were zero trips in and out of the Site.

For the signalised intersections, the *User-Given Phase Times* timing option was used, informed by the recorded SCATS average phase times during the peak periods. Slight adjustments to these phase times were made to reduce the Degree of Saturation below 1.

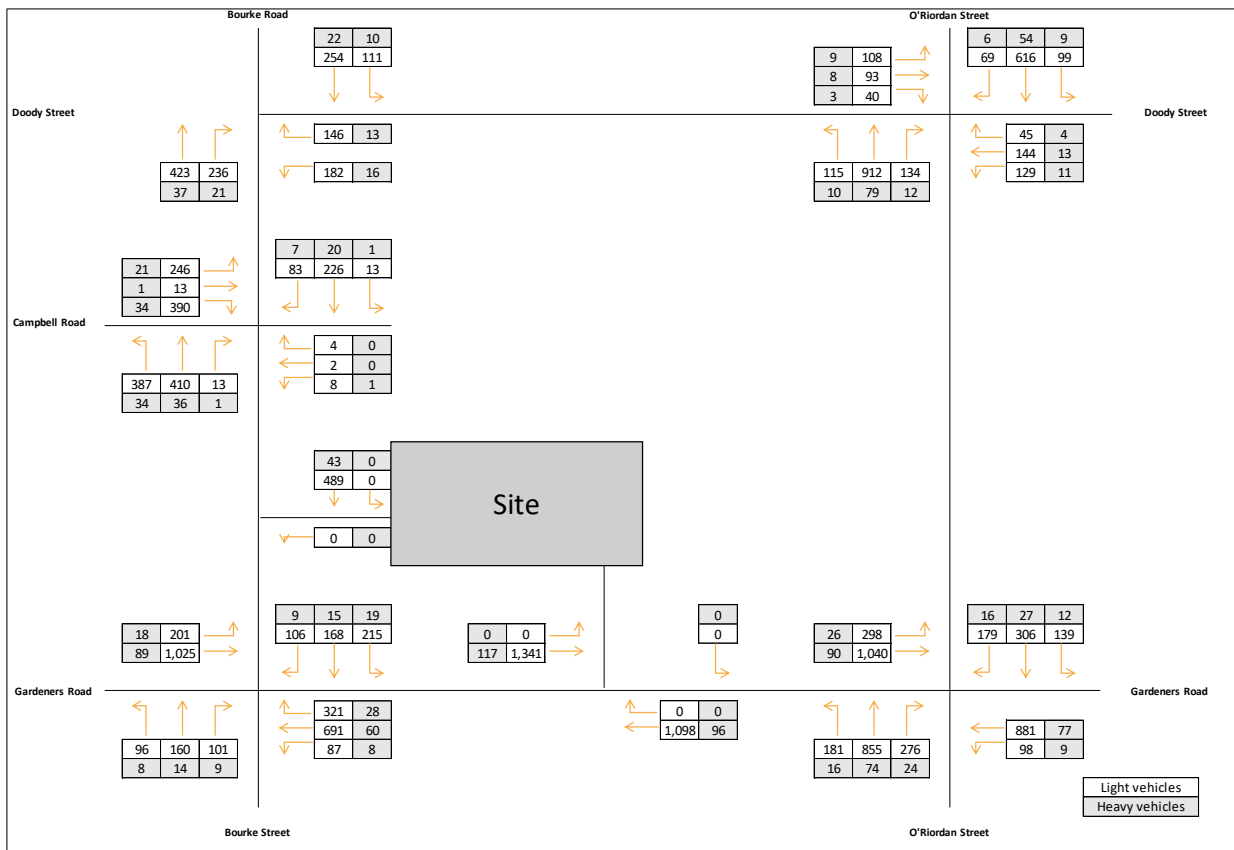


Figure 10: Baseline Volumes – AM Peak

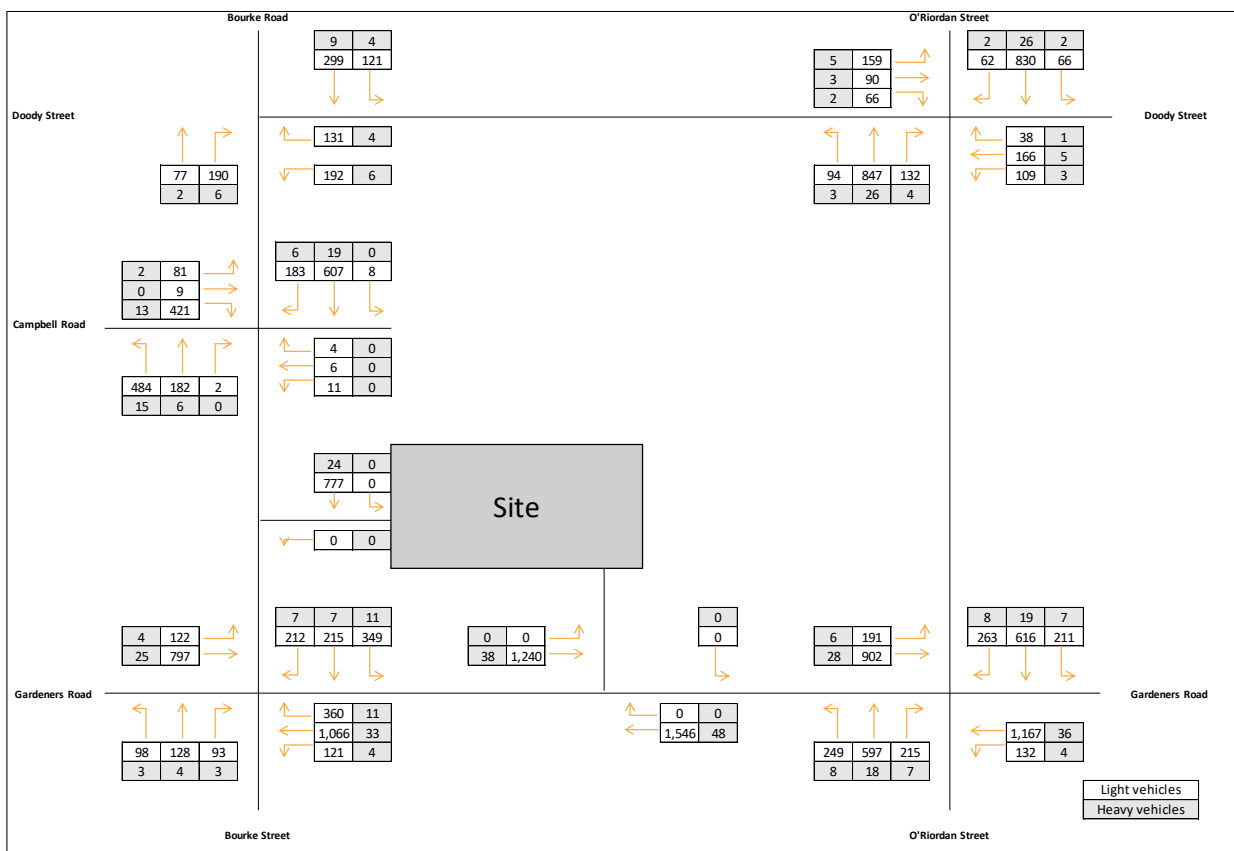


Figure 11: Baseline Volumes – PM Peak

3.8.3 SIDRA Parameter Adjustment

Some adjustments were made in SIDRA input parameters to resolve obvious errors or to produce a more representative outcome. These are summarised as follows:

- Increased heavy vehicle passenger car units (PCU) from the SIDRA default of 1.65 to 2.00. PCU values for heavy vehicles have been sourced from National Transport Commission, as shown below.

Table 3 PCU values for AUSTROADS classes		
AUSTROADS VEHICLE TYPE	AUSTROADS Class	PCU VALUE
Medium (short + trailer or Rigid) 5.5m – 14.5m	2-5	2
Long (articulated) 11.5m – 19m	6-9	3
Medium Combination 17.5m - 36.5m	10-11	4
Road Trains > 33m	12	5
Tram (Bombardier Flexity)		4

Reference: National Transport Commission (NTC) Third Heavy Vehicle Road Pricing Determination: Technical Report – Appendix B Table 47, October 2005, Melbourne, Australia.

Figure 12: Heavy Vehicle PCU

- Extra bunching factors applied in accordance with Table 14.1 of the RMS *Traffic Modelling Guidelines* 2013
 - To account for platooning of vehicles from nearby signalised intersections
- Phase transitions added for various phases
 - To account for the red phase transition for certain movements where a new pedestrian movement is introduced
- Minimum walk time and minimum clearance time for pedestrians reduced from the SIDRA default of 5 seconds to 3 seconds at the southern approach of the Bourke Road/ Campbell Road intersection in the PM peak
 - To resolve pedestrian minimum green time SIDRA error message for the intersection
- Dummy phase added to the A phase of the Gardeners Road/ Bourke Road intersection
 - To resolve no movement starting in phase A SIDRA error message, as advised by SIDRA support team.
- Pedestrian actuation for signalised crossings changed from Program to 50% Ped Call
 - Approximation based on site observations in lieu of detailed pedestrian volumes from SCATS data
- The arrival factor was adjusted from Program to 4 for the through and right turn movements on all four approaches to the O'Riordan Street/ Doody Street intersection
 - This is to reflect the observed platooned arrival across each approach and increased tendency for drivers to accept smaller gaps when turning right (as observed on site)
- Speed limits were input based on existing posted speed limits along each road

3.8.4 Existing Intersection Performance

SIDRA models were developed for the key intersections around the Site with existing geometry, peak hour traffic demand, SCATS signal data. The models were calibrated to represent the existing conditions observed during the site visit. **Table 9** presents the SIDRA assessment results of the existing key intersections under the existing conditions.

TABLE 9 SIDRA RESULTS – BASE CASE

Intersection	Control Type	Period	Degree of Saturation	Average Delay (sec)	Level of Service
Bourke Road / Doody Street	Priority	AM Peak	0.74	36	C
		PM Peak	0.27	11	A
O’Riordan Street / Doody Street	Signalised	AM Peak	0.88	26	B
		PM Peak	0.91	26	B
Bourke Road / Campbell Road	Signalised	AM Peak	0.59	27	B
		PM Peak	0.92	31	C
Gardeners Road / Bourke Road	Signalised	AM Peak	0.89	41	C
		PM Peak	0.76	40	C
Gardeners Road / O’Riordan Street	Signalised	AM Peak	0.98	68	E
		PM Peak	1.00	78	F

The key findings of SIDRA intersection modelling for the Existing Conditions 2021 scenario are:

- All intersections operate with acceptable delays (LOS C or better) during both peaks, except Gardeners Road / O’Riordan Street which operates at LOS F.
- In terms of degree of saturation, the Gardeners Road / O’Riordan Street, O’Riordan Street / Doody Street and Bourke Road / Campbell Road are operating close to capacity (DOS > 0.9).
- At the O’Riordan Street/ Doody Street intersection, the O’Riordan Street approaches generally operated well. However, the Doody Street approaches were heavily constrained. Due to limited green time for filtered right turns and adverse intersection geometry, drivers turning right tended to be slightly aggressive (i.e. choose reduced gaps or enter the intersection well after the yellow phase).
- The Gardeners Road/ Bourke Road intersection generally operated well. On the northern approach, lane 1 (left turn lane) tended to experience high levels of queuing with the queues infrequently reaching the upstream intersection (Bourke Road/ Campbell Road). It was observed that these queues generally dissipated as the arriving upstream vehicle platoon arrived, resulting in minimal queue spillback beyond the Bourke Road/ Campbell Road intersection.
- The Bourke Road/ Doody Street and Bourke Road/ Campbell Road intersections generally operated well with low levels of queuing and delay.
- As the Site was not operational on the 29 April 2021 (when SCATS data is collected for the base model), the site accesses on Bourke Road and Gardeners Road are not included in the base model.

4 Development Proposal

4.1 Description

A detailed description of the proposed development is included in the Statement of Environmental Effects, prepared separately. In summary, the application relates to the development of a two-storey warehouse and distribution centre comprising approximately 27,509m² GFA, which will comprise:

- A Warehouse building with a total of 21,952, inclusive of:
 - 20,144m² warehouse GFA composed of 4 tenancies distributed across Ground Level and Level 1; and
 - 1,808m² of ancillary uses.
- 5,557m² office GFA composed of 7 offices across Mezzanine levels and Level 2;
- 1,062m² of ancillary space (inclusive of end of trip, Gym and café);
- 1,278m² service vehicle storage GFA located on Level 2;
- Operation 24 hours per day seven days per week;
- 144 car parking spaces on Level 2 (inclusive of 7 accessible car parking spaces); and
- 3 car share spaces.

Reference should be made to the plans prepared by Nettleton Tribe, which are submitted separately. A reduced copy of the relevant plans are reproduced at a reduced scale for context below.

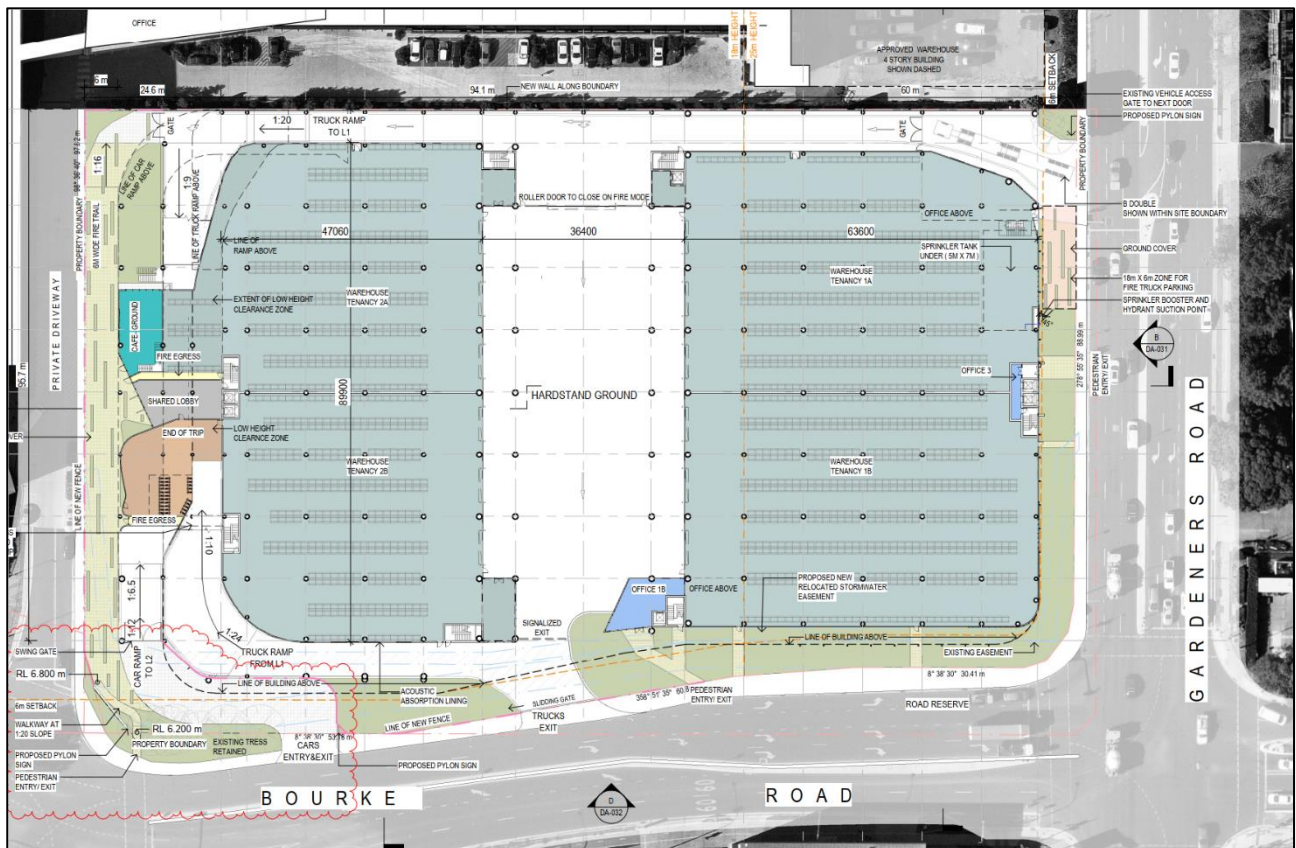


Figure 13: Ground Floor Layout



Figure 14: Level 2 and Car Park Layout

4.2 Access Arrangements

4.2.1 Existing Arrangement

Access to the Site is currently available at two locations, on Bourke Road north of Gardeners Road, and Gardeners Road east of Bourke Road. The Bourke Road access is a left-in/ left-out priority-controlled intersection. The Gardeners Road access is a signalised intersection that permits left and right inbound movements and left-out only outbound movements. This signalised intersection was previously inactive after Bunnings had vacated the Site.

4.2.2 Proposed Arrangement

The Proposal involves modification of the existing Bourke Road access to provide for two new accesses. One for left-in/ left-out for vehicles up to 6.4 metre long Small Rigid Vehicles (SRV) and the other for left-out truck egress only. The former access will be located some 5 metres north of the existing Bourke Road access. The latter access will be located around 40 metres south of the existing Bourke Road access.

The Proposal also involves the conversion of the existing Gardeners Road access from an entry/ exit access to an entry-only access, accommodating vehicles up to 26 metre B-Doubles. This will involve widening of the access width to accommodate heavy vehicle movements from the left-most lane into the site (i.e. no requirement for straddling of lanes 1 and 2 to enter the site).

A summary of the proposed access arrangement modifications is presented in **Figure 15** and **Table 10**.

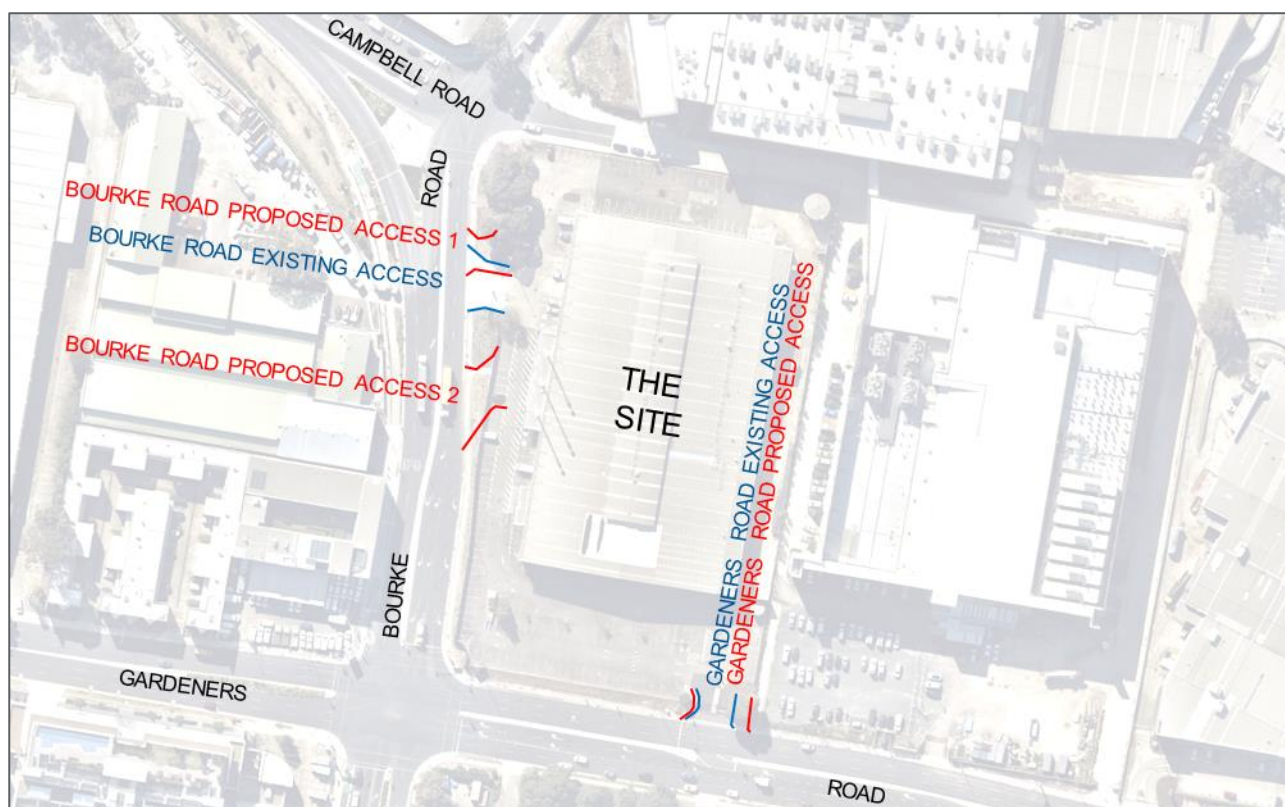


Figure 15: Proposed Access Arrangement Modifications

TABLE 10 ACCESS ARRANGEMENT COMPARISON		
	Existing	Proposed
Bourke Road Access 1		
Control	Priority	Priority
Permitted movements	Left-in, left-out	Left-in/ left-out (vehicles up to 6.4m SRV)
Width (at face of kerb)	23m	12.5m
Distance to Campbell Road / Bourke Road signalised intersection	30m	25m
Distance to Bourke Road/ Gardeners Road signalised intersection	110m	125m
Bourke Road Access 2		
Control	N/A	Priority
Permitted movements		Left-out only (trucks only)
Width (at face of kerb)		25m
Distance to Campbell Road / Bourke Road signalised intersection		70m
Distance to Bourke Road/ Gardeners Road signalised intersection		70m
Gardeners Road Access		
Control	Signalised	Priority

Permitted movements	Left-in, right-in, left-out	Left-in, right-in
Width (at face of kerb)	15m	23m
Distance to Bourke Road/ Gardeners Road signalised intersection	80m	72m
Distance to O’Riordan Street/ Gardeners Road signalised intersection	240m	235m

The northern proposed access on Bourke Road (Access 1) will be the only access point for light vehicles. A set of gate is proposed at the base of the ramp, set back approximately 38 metres from the property boundary along Bourke Road frontage of the site. The gate will remain open during core operational hours of the tenancies within the site. This is not dissimilar to the previous arrangement presented by the former Bunnings development which saw 91%-94% of inbound movements entering via Bourke Road². All light vehicle egress movements will also be from this access. Although, percentagewise, this is a greater proportion of light vehicle egress via Bourke Road compared to the previous Bunnings Development, the lower traffic generation of this development results in a net decrease of trips exiting onto Bourke Road in the peak period compared to the previous Bunnings development (see Section 6).

The southern proposed access on Bourke Road (Access 2) will cater for all heavy vehicle egress for the site. As this is an egress only, any potential queuing at this access will be contained within the site and not impact the external road network.

The proposed widened access on Gardeners Road will be converted from a left-in/ right-in/ left-out access to a left-in/ right-in access only and will be limited to heavy vehicle access. The reduction in permissible movements at this access is expected to improve operating conditions compared to the previous Bunnings development as there will be no longer be red phases presented to the eastbound Gardener Road movements as a result of egress from the southern access of the site. That is, the B phase will be triggered only by the right-turn movement from Gardeners Road (east) to the site, see **Figure 16**.

² Based on analysis of survey volumes from Bunnings Warehouse 520-530 Gardeners Road, Mascot – Traffic assessment for revised access and car parking arrangements, dated 28/02/2017, by Arup

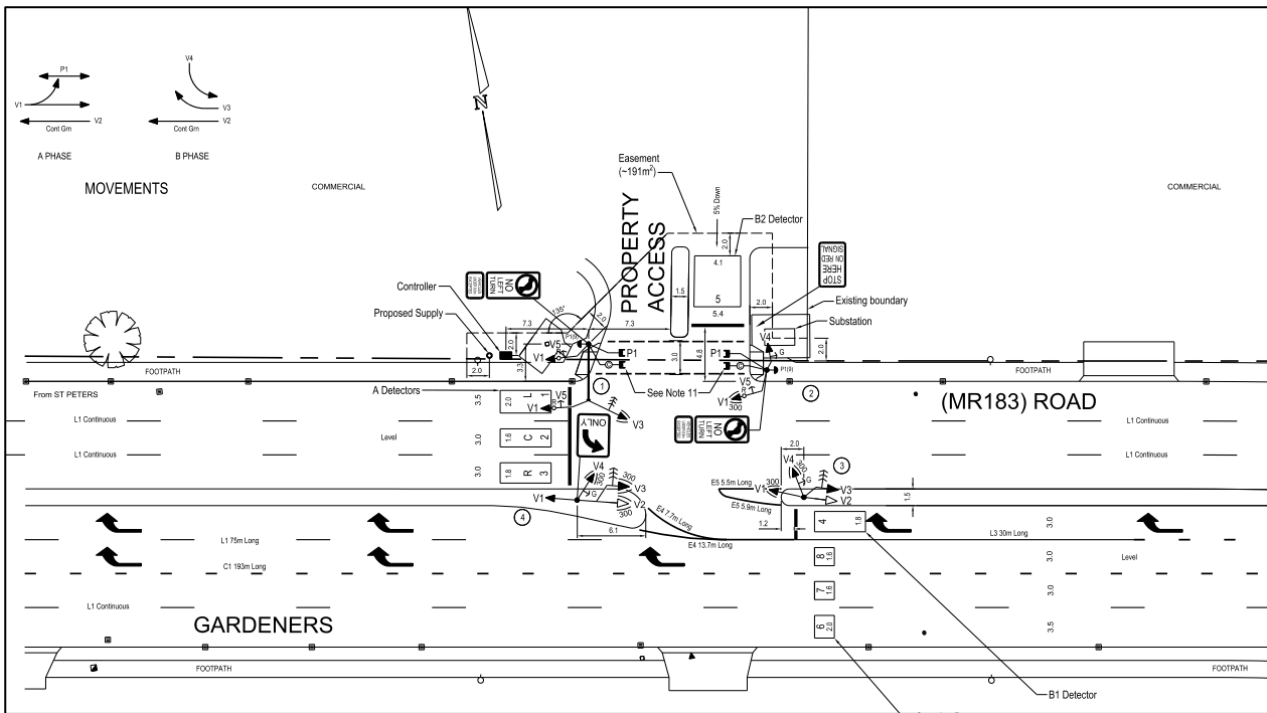


Figure 16: Gardeners Road and Site Access TCS Diagram (TCS 4944)

4.3 Gardeners Road Access

During early consultation, TfNSW expressed a desire to close the existing Gardeners Road access. To review the impact of this, an assessment has been conducted to illustrate the potential impacts to heavy vehicle re-routing and subsequent impacts on the road network. The existing approved 19m/ 23m B-double routes from the NSW Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) Map is replicated in **Figure 17**.

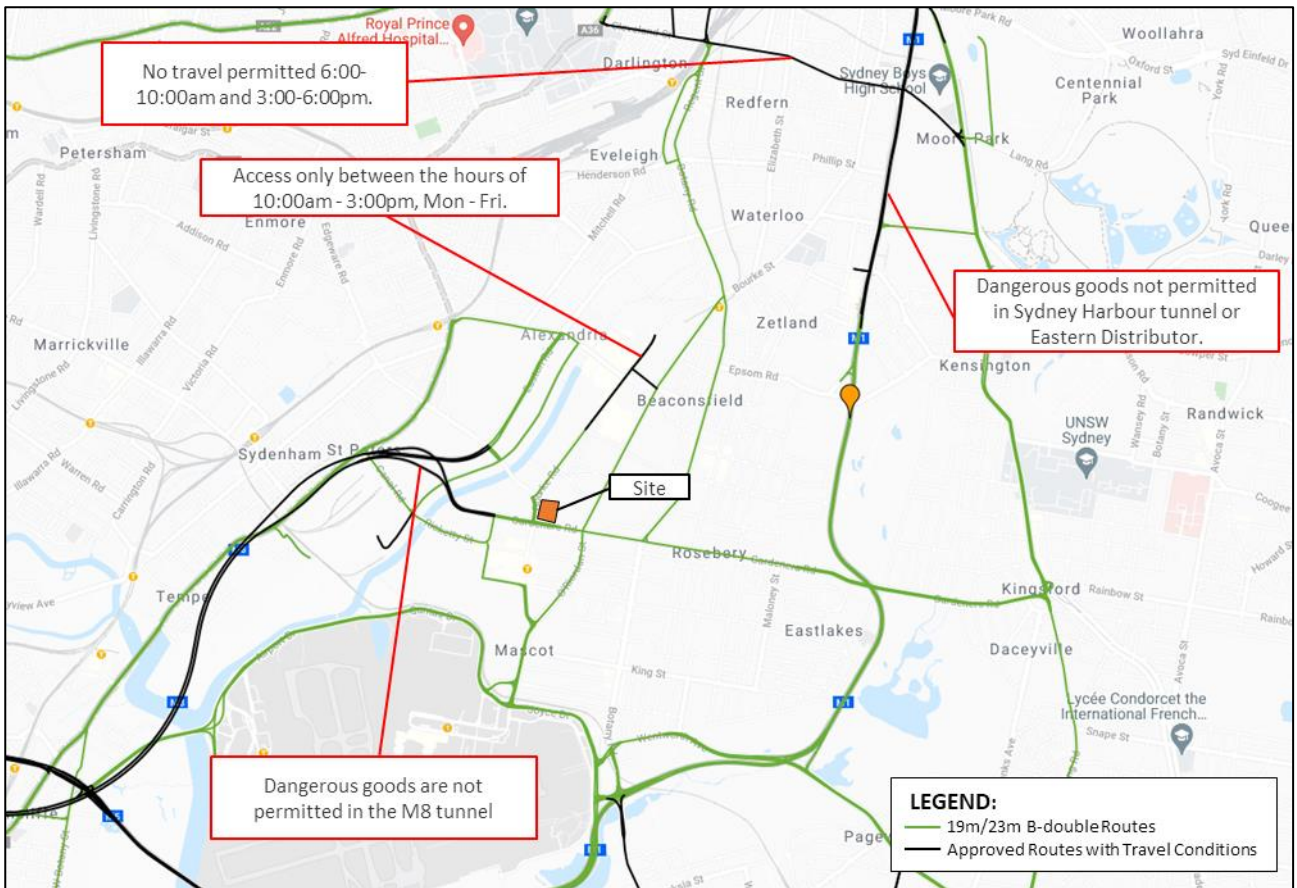


Figure 17: NSW Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) Map

In the event of the Gardeners Road access closure, heavy vehicle access will be required to be rerouted to Bourke Road. **Figure 18** and **Figure 19** illustrate the expected heavy vehicle travel routes to the Site under the baseline scenario (i.e. Gardeners Road access available – option 1) and under the alternate scenario (i.e. Gardeners Road access not available – option 2).

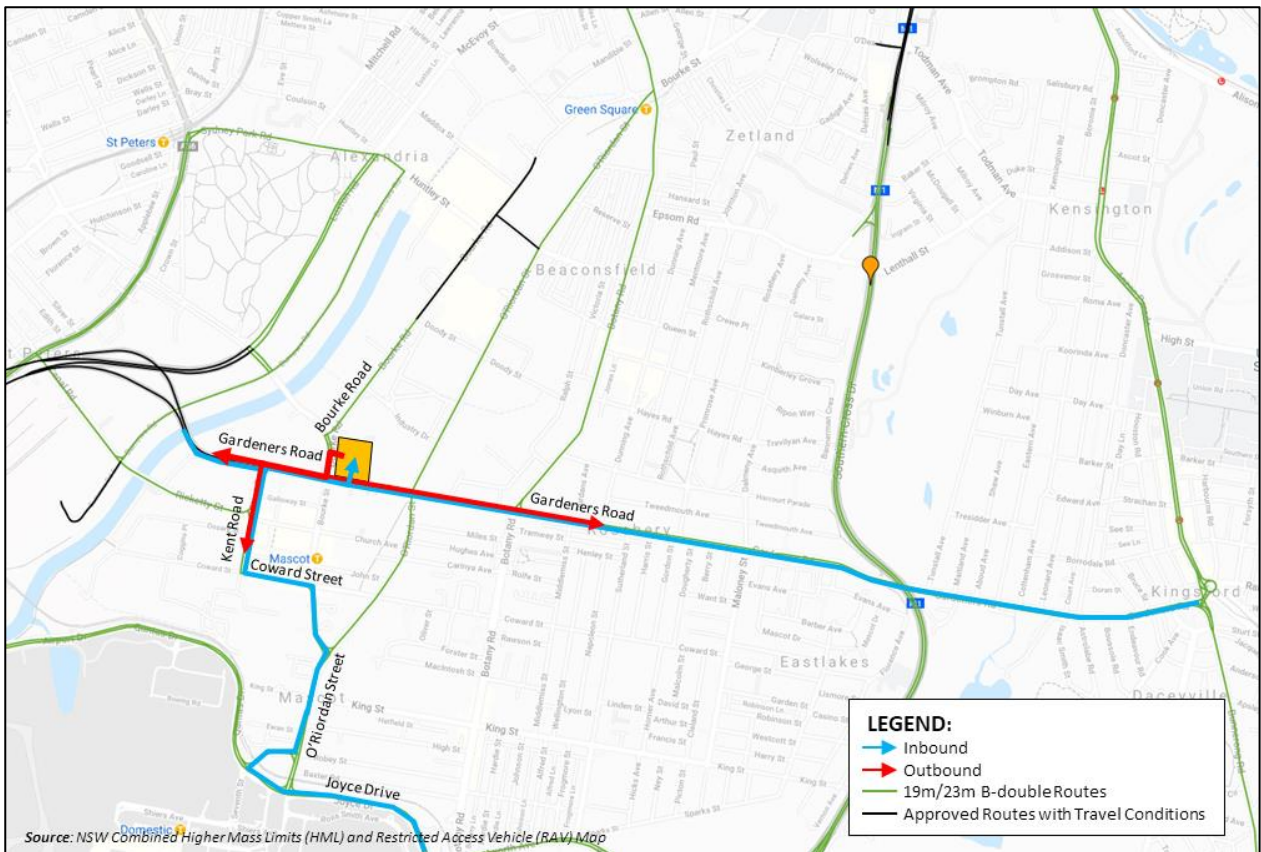


Figure 18: Heavy vehicle access route – Option 1: Gardeners Road access available

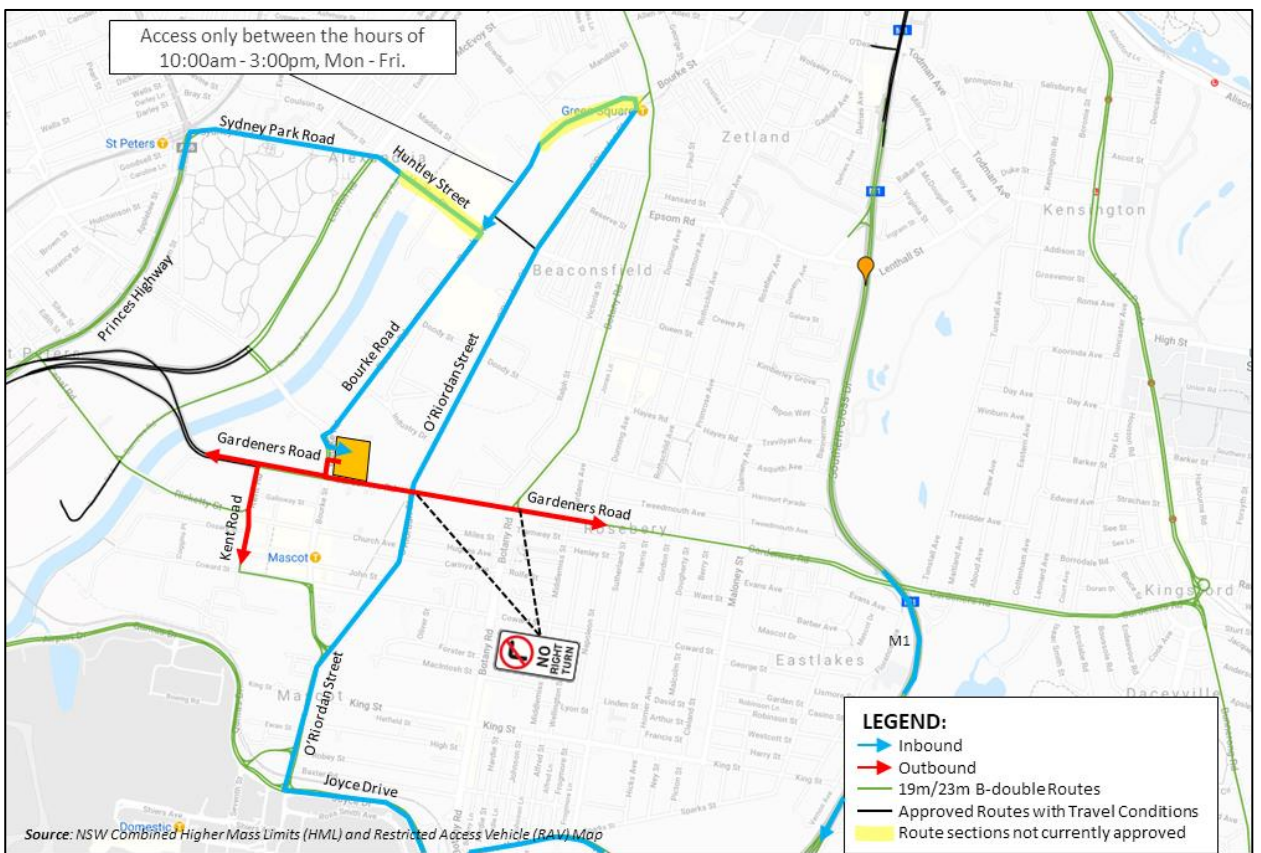


Figure 19: Heavy vehicle access route – Option 2: Gardeners Road access **not** available

Under Option 1, heavy vehicle routes are contained within existing approved 19m/ 232m B-double routes per the HML and RAV map. Under Option 2, approvals for extensions of heavy vehicle routes will be required.

This includes:

- Huntley Street (eastbound), between Burrows Road and Bourke Road
- Bourke Road (southbound), between O’Riordan Street and Collins Street
 - Note there is an existing approved route on Bourke Road between Collins Street and Public Weighbridge, Perry Park which restricted access only between the hours of 10:00am-3:00pm, Monday to Friday

Additional travel distance and travel time is also expected due to the diversions. This is summarised in **Table 11**.

TABLE 11 IMPACTS OF OPTION 2 HEAVY VEHICLE ROUTE COMPARED TO OPTION 1			
Origin	Additional Travel Distance	Additional Travel Time	Notes
West	0.7km	11min (AM) 11min (PM)	• Continue on M5 at Kingsgrove, instead of entering M8 tunnel • Through Sydney Park Road, Huntley Street, Bourke Road • Will require application to approve additional section of Huntley Street for larger heavy vehicles
North	5.9km	14min (AM) 11min (PM)	• Access from Gardeners Road into Botany Road and O’Riordan Street not available due to existing right turn bans • Vehicles will need to divert south via M1, Wentworth Avenue, General Homes Drive, Joyce Drive, O’Riordan Street • Will require application to approve section of Bourke Road near Green Square station for larger heavy vehicles • Section of Bourke Road between Collins Street and weighbridge only available between 10am-3pm, Mon-Fri • Swept path assessment indicates insufficient space for a left turn from O’Riordan Street into Doody Street. Likewise for the left turn from Collins Street into Bourke Road
South	3.3km	19min (AM) 15min (PM)	• Similar to North, with diversions through O’Riordan Street

Note: Additional travel time based on travel time data from TomTom during the AM and PM peak periods factored up by a heavy vehicle acceleration factor to account for higher travel times of heavy vehicles. This is indicative only. Accurate travel times will require a Microsimulation model.

The traffic modelling impacts of Option 1 and Option 2 are analysed further in Section 6.

5 Parking Provisions

5.1 Car Parking

5.1.1 General Provisions

The Sydney Local Environmental Plan 2012 (LEP) provides the following maximum rates regarding car parking for office/ business premises, in Section 7.6:

- *if the building is on land in category F and has a floor space ratio of no more than 1.5:1—1 space for each 75 square metres of gross floor area of the building used for those purposes.*

The LEP provides the following maximum rates regarding car parking for warehouse or distribution centre developments, in Section 7.8:

- *If the building is on land in category F—1 space for each 300 square metres of gross floor area of the building used for those purposes.*

With a proposed office GFA of 5,557m² and a proposed warehouse GFA of 20,144m², this equates to a maximum car parking provision of **141 spaces**. The development proposes 144 spaces, inclusive of accessible spaces and as such is consistent with the requirements of Council's controls.

It should be noted that additional vehicle storage will be provided for work vans and fleet vehicles where employees will not have commuter use of these vehicles.

Generally, employees driving to site will park their vehicle on-site and transfer to a work van during a typical work shift, hence the need for dedicated storage spaces for work and fleet vehicles. The additional vehicle storage is not expected to influence the traffic generation as utilisation of these work vehicles will be throughout the workday, outside of network traffic peak periods. It is also not expected to influence staff car mode share as the vehicle storage will only be permitted to be occupied by work vans, prohibiting additional employees from parking their personal vehicles within these spaces.

It is noted that the Proposal could provide for up to 659 jobs. However, it is recognised that the staff actually on-site at any one time will be significantly less than this, with the jobs spread over the varying shift patterns for each tenancy.

For example, assuming that each of the 7 tenancies operates 3 x 8 hour shifts over the course of the day, this would equate to 220 staff on-site at any one time. Therefore, given the highly accessible location of the Site, it is deemed entirely appropriate that the parking provision for the Site be informed by Council's controls, which have been designed to be restrictive to assist in achieve Council's sustainability aims and objectives, supported by the accessibility of the area.

As such, it is concluded that the parking provision is supportable.

5.1.2 Accessible Parking

The City of Sydney Development Control Plan 2012 (DCP) outlines, in Section 7.8.5, an accessible car parking provision of one space for every 20 car parking spaces or part thereof. With a car parking provision of 140 spaces, this equates to an accessible parking requirement of 8 accessible spaces.

The proposed development provides 7 accessible spaces on Level 2.

5.1.3 Car Share Parking

The DCP outlines, in Section 3.11.2, the required provision of car share scheme parking spaces.

The Site is located within Category F of the Public Transport Accessibility Level (PTAL) Map³, hence the minimum number of on-site parking spaces to be made available for a car share scheme is 1 per 50 car spaces provided. With a car parking provision of 144 spaces, this equates to a car share parking requirement of 3 car share spaces.

The proposed development provides 3 car share spaces on Level 2, satisfying the DCP requirement.

5.2 Motorcycle Parking

The DCP outlines in Schedule 7, Section 7.8.4, a requirement for 1 motorcycle parking space for every 12 car parking spaces. With a car parking provision of 144 spaces, this equates to a motorcycle parking requirement of 12 motorcycle spaces.

The proposed development provides 12 motorcycle spaces on Level 2, satisfying the DCP requirement.

5.3 Bicycle Parking

The DCP outlines, in Section 3.11.3, the following rates for bicycle parking:

- Office premises
 - 1 per 150sqm GFA for employees
 - 1 per 400sqm GFA for customers
- Industry or warehouse or distribution centre
 - 1 per 10 staff

With a proposed office GFA of 5,557m² and an indicative 95 warehouse staff (assumed based on 1 staff per 226m² per the RMS Guide average rate for warehouses), this equates to a required bicycle parking provision of 61 spaces.

The proposed development provides 64 bicycle spaces on Ground Level.

5.4 Service Vehicles

The DCP outlines in Schedule 7, Section 7.8.1, the following required service vehicle parking rates:

³ Source: https://eplanningdlprod.blob.core.windows.net/pdfmaps/7200_COM_TAL_012_005_20150709.pdf, accessed 26 October 2021

Commercial premises:

- 1 space per 3,300m² GFA, or part thereof, for the first 50,000 m²; plus

Industry, warehouse, distribution centre:

- 1 space per 700m² GFA, or part thereof

With a proposed office GFA of 5,557m² and a proposed warehouse GFA of 20,144m², this equates to a required service vehicle parking provision of **31 spaces**.

The proposed development provides the following service vehicle parking facilities across the Ground Level, Level 1. and Level 2:

- A central breezeway on Ground Level and Level 1, facilitating side loading/ unloading.
- A total of 23 roller shutters across 4 warehouses which can accommodate rear-in parking arrangements.
- 1,278m² of service vehicle storage (work vans and fleet vehicles) is provided on level 2, accommodating up to 47 vans

As such, the proposed service vehicle parking provision satisfies the DCP requirements.

6 Traffic Assessment

6.1 Traffic Generation

6.1.1 Trip Generation Rates

The traffic impacts of the proposed development have been assessed having regard for the RMS Guide to Traffic Generating Developments Updated Traffic Surveys TDT 2013/04a 2013 (RMS Guide Update).

For the warehouse component, reference has specifically been drawn to sites 3 and 4 of the of the RMS Guide Update, rather than the generalised average, as it is acknowledged the proposal more closely aligns with these sites (in terms of size and public transport accessibility).

The Proposal comprises the following GFA:

- 20,144m² warehouse GFA
- 5,557m² office GFA
- 1,278m² service vehicle storage GFA

The RMS Guide Update specifies the following peak hour vehicle trip generation rates:

- Business parks and industrial estates (Site 3 and 4)
 - 0.316 per 100m² GFA for the morning peak hour
 - 0.299 per 100m² GFA for the evening peak hour
- Office developments
 - 1.6 vehicle trips per 100m² GFA for the morning peak hour
 - 1.2 vehicle trips per 100m² GFA for the evening peak hour

Applications of these rates results in the following traffic generation⁴:

TABLE 12 TRAFFIC GENERATION

Period	Vehicle trips	Calculation
AM Peak	157	$[(20,144+1,278) \times 0.316 \div 100] + [5,557 \times 1.6 \div 100]$
PM Peak	131	$[(20,144+1,278) \times 0.299 \div 100] + [5,557 \times 1.2 \div 100]$

Minimal vehicle trip generation is expected on the weekend for this land use.

⁴ For this assessment, the service vehicle storage is treated as warehouse GFA for traffic generation purposes

6.1.2 Former Bunnings Development

By way of comparison, the proposed traffic generation is substantially less than the trip generation presented by the previous Bunnings development (391 vehicle trips per hour in the weekday PM peak, and 651 vehicle trips per hour in the Saturday PM peak – as referenced in the Bunnings TA 2017).

An assessment of the vehicle movements compared to the previous Bunnings development is presented in **Table 13**. For conservativeness, the morning peak traffic generation from the Proposal (higher than the evening peak) is compared against the weekday evening peak of the Bunnings development.

TABLE 13 TRIP GENERATION COMPARISON

	Former Bunnings development	The Proposal	Net Difference
Peak hour vehicle trips	391	157	-234

Hence the proposed development presents a net reduction in peak vehicle trips compared to the previous Bunnings development on site and is considered suitable from a traffic generation perspective.

At the time of the survey data collection, Bunnings was no longer operational, hence no deduction has been made for the existing land use on the Site for the purposes of the modelling assessment summarised below. As such it is critical to recognise the significant reduction in traffic flows that the Proposal represents when considered against the historical use of the Site.

6.2 Traffic Distribution

The traffic distribution was determined through a review of the existing road network, likely route choices for light/ heavy vehicles, permitted turning movements at key intersections (e.g. considering medians, right-turn bans, and similar), NSW Restricted Access Vehicle map, and swept path assessment to determine the ability of 20m articulated vehicles to navigate through certain intersections.

For the light vehicle routes, 2016 ABS Census data was used to inform the residential locations of employees within the assessed destination zone (DZN 113301328), and subsequently, the likely travel routes.

For the heavy vehicle routes, the routes identified in Section 4.3 are adopted, with Option 1 representing the likely route choice with the Gardeners access remaining open and Option 2 representing the likely route choice with the access closed.

This is summarised in **Figure 20**, **Figure 21**, and **Figure 22**.

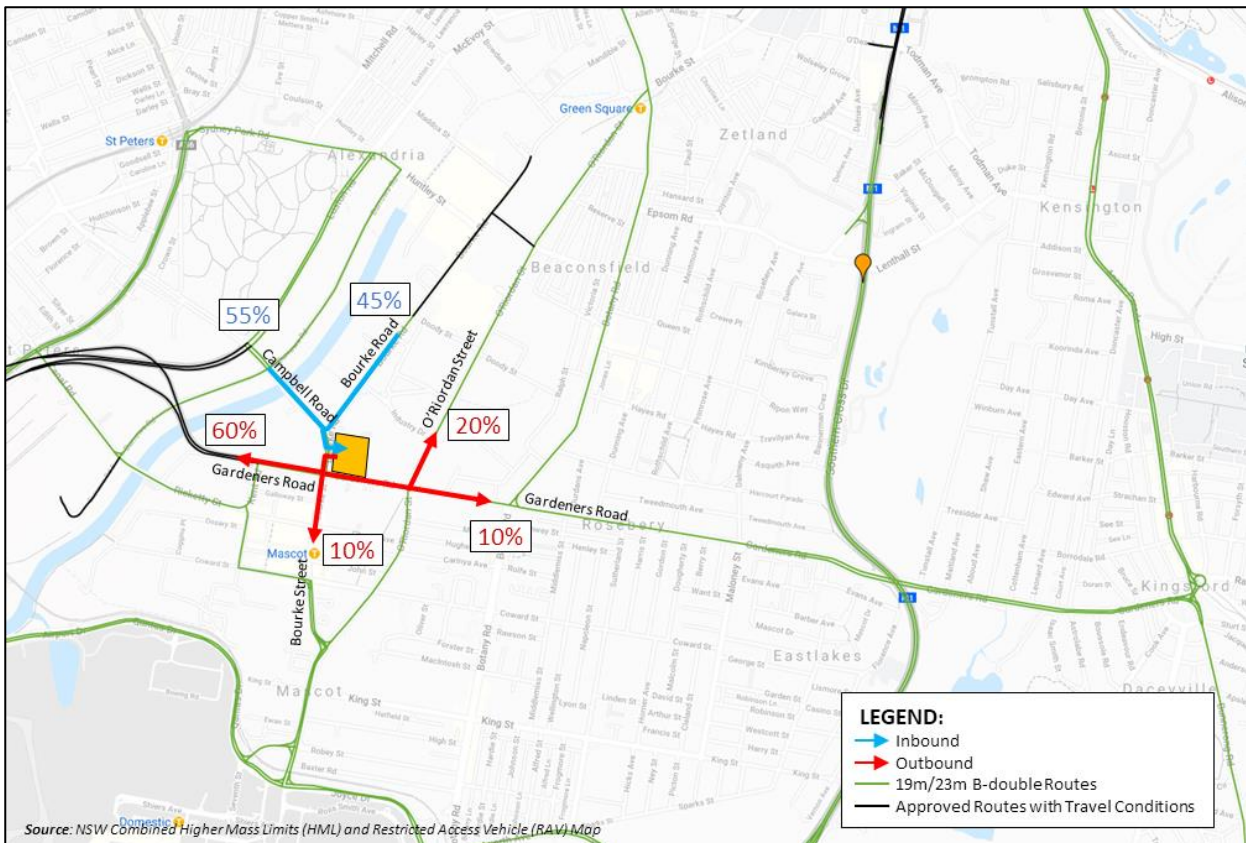


Figure 20: Light vehicle traffic distribution

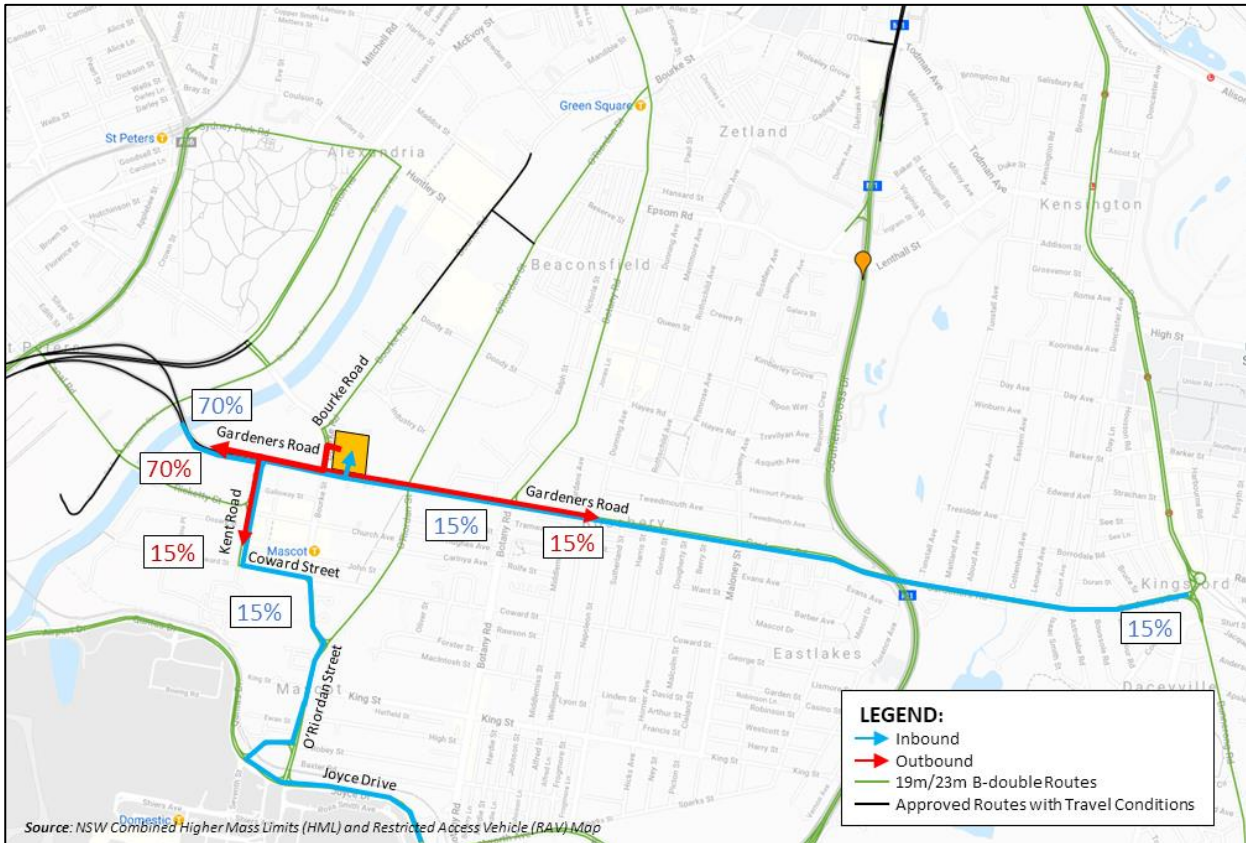


Figure 21: Heavy vehicle traffic distribution – Option 1: Gardeners Road access available

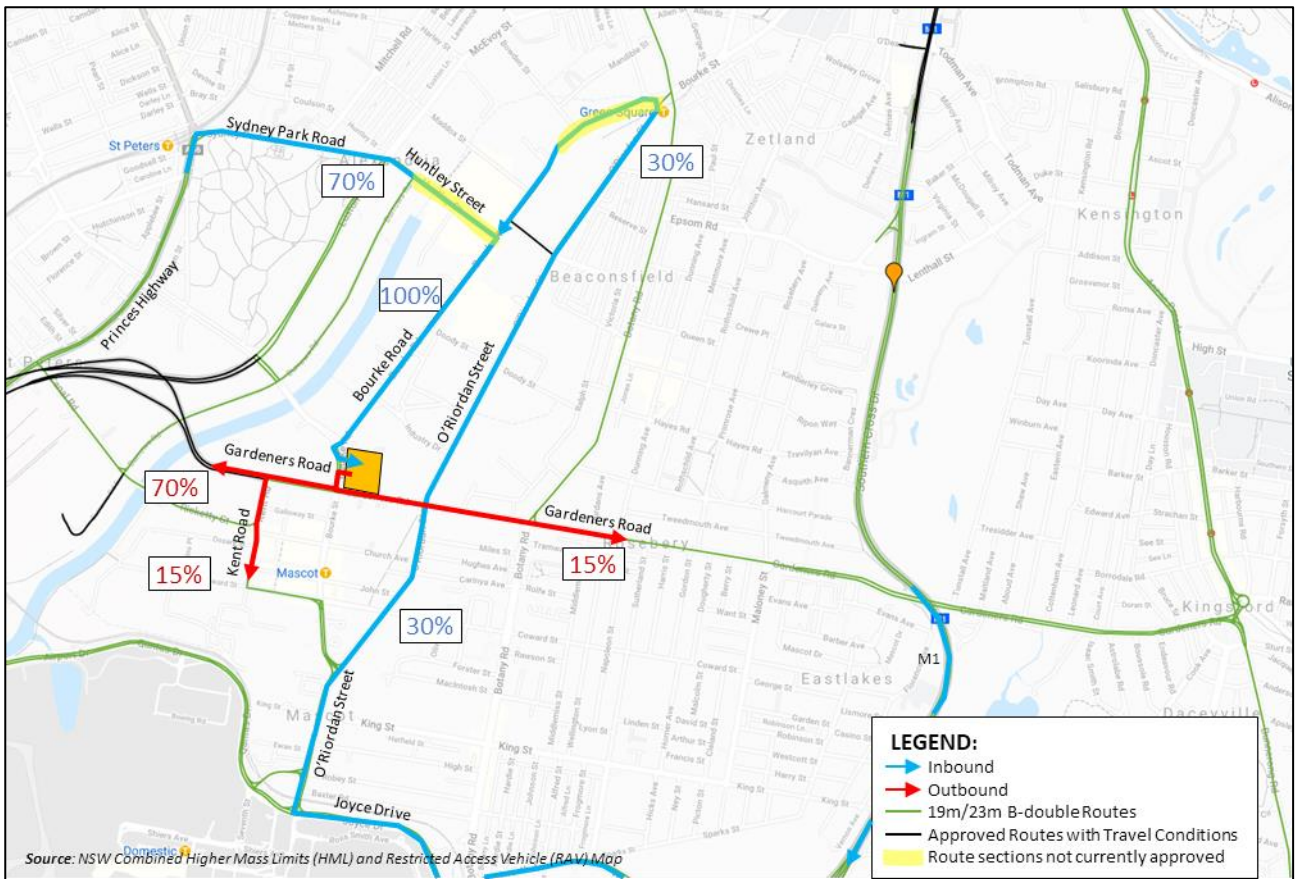


Figure 22: Heavy vehicle traffic distribution – Option 2: Gardener's Road access **not** available

6.3 Background Growth of Traffic

6.3.1 Strategic Model Demand

To review the background growth of traffic in the vicinity of the Site, reference has been drawn to the Strategic Motorway Projection Model (SMPM) for the modelled years of 2021 and 2026. Snapshots of the link flows from the model to the south of the site are provided in **Figure 23** to **Figure 28**.



Figure 23: SMPM 2021 (left) and 2026 (right) AM Car Volumes

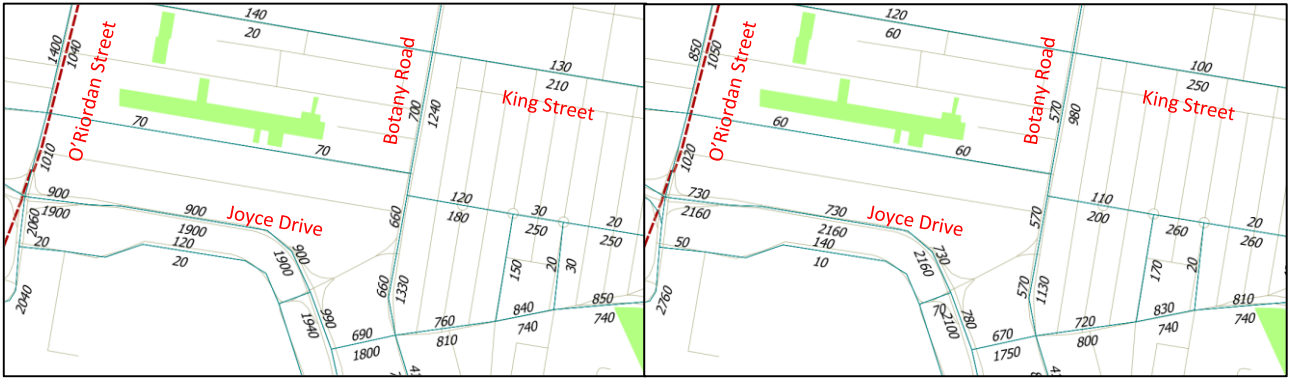


Figure 24: SMPM 2021 (left) and 2026 (right) PM Car Volumes



Figure 25: SMPM 2021 (left) and 2026 (right) AM Light Commercial Vehicle Volumes



Figure 26: SMPM 2021 (left) and 2026 (right) PM Light Commercial Vehicle Volumes



Figure 27: SMPM 2021 (left) and 2026 (right) AM Heavy Commercial Vehicle Volumes



Figure 28: SMPM 2021 (left) and 2026 (right) PM Heavy Commercial Vehicle Volumes

As shown in above figures, the SMPM data indicates that most links in the area either maintain consistent volumes or decrease from 2021 to 2026. The reduction in future background traffic is generally attributed to planned infrastructure upgrades at nearby arterial road network that provide alternative route choices captured in the SMPM model.

6.3.2 Previous Traffic Report 2011

Reference is also drawn to the 49-59 O'Riordan Street, Alexandria Traffic and Parking Assessment Report prepared by Varga Traffic Planning, dated 30 June 2011 (ref: D/2011/1003⁵). As part of this traffic report, turning movement counts were conducted for the O'Riordan Street/ Doody Street intersection on Thursday 17 March 2021.

A comparison of these survey results to the 2021 SCATS detector volumes relied upon for the baseline traffic assessment for this report (refer to **Figure 10** and **Figure 11**) is summarised in **Table 14**.

⁵ Source: City of Sydney DA Tracker <https://online2.cityofsydney.nsw.gov.au/DA/IndividualApplication?tpklapappl=1015327>

TABLE 14 COMPARISON OF TRAFFIC VOLUMES

Approach	Turn	AM			PM		
		2011 Survey	2021 Detector	Linear growth	2011 Survey	2021 Detector	Linear growth
North	Right	53	75	4.2%	29	64	12.1%
	Through	907	669	-2.6%	939	856	-0.9%
	Left	68	108	5.9%	37	68	8.4%
East	Right	43	49	1.4%	44	39	-1.1%
	Through	162	157	-0.3%	144	171	1.9%
	Left	97	140	4.4%	99	112	1.3%
South	Right	96	145	5.1%	115	137	1.9%
	Through	1,053	991	-0.6%	1,176	873	-2.6%
	Left	83	125	5.1%	83	97	1.7%
West	Right	66	43	-3.5%	60	68	1.3%
	Through	111	101	-0.9%	115	92	-2.0%
	Left	42	117	17.9%	38	164	33.2%
Total		2,781	2,720	-0.2%	2,879	2,741	-0.5%

The comparison indicates a flat growth rate from 2011 to 2021 in terms of overall intersection volume at the O'Riordan Street/ Doody Street intersection, with the total volume observed to decrease by 0.2% and 0.5% over the 10-year period. What is also important is note is a general decrease in the volumes of the through movement of each approach. The through movement is typically the highest-volume turning movement for each approach and a reduction in this movement in particular further highlights the trend that background traffic growth within the study area is generally flat.

6.3.3 Summary of Adopted Growth Rate

Based on the assessment in Sections 6.3.1 and 6.3.2, a growth rate of 0% is considered appropriate. This is considered a conservative approach that does not capture expected reductions in background traffic flowing from construction of planned future road infrastructure. The 2021 existing conditions model is adopted as the Base Case, with the subsequent development scenario demands directly appended on top of this.

6.4 SIDRA Assessment Scenarios

Scenario 1 is the base case scenario as referred to in Section 3.8.4. A separate future base case scenario has not been developed based on the observed flat growth in background traffic as noted in Section 6.3.3. For the development traffic, two scenarios have been prepared: Project Case 1 and 2 with reference to the different distribution patterns as a result of a Gardeners Road access closure (refer to Section 4.3).

Scenarios assessed for this study are listed in **Table 15**.

TABLE 15 MODELLING SCENARIOS

Scenario #	Scenario Name	Traffic Volumes	Development Traffic
1	Base Case	Existing (see Section 3.8.4 and Section 6.3.3)	No
2	Project Case 1	Base + Development Option 1	Yes
3	Project Case 2	Base + Development Option 2	Yes

6.5 SIDRA Intersection Performance – Operational Traffic

6.5.1 Project Case 1

TABLE 16 INTERSECTION OPERATION – PROJECT CASE 1

Intersection	Control Type	Period	Degree of Saturation	Average Delay (sec)	Level of Service
Bourke Road / Doody Street	Priority	AM Peak	0.80	44	D
		PM Peak	0.28	11	A
O’Riordan Street / Doody Street	Signalised	AM Peak	0.92	32	C
		PM Peak	0.97	28	B
Bourke Road / Campbell Road	Signalised	AM Peak	0.83	43	D
		PM Peak	0.67	32	C
Bourke Road Access	Priority	AM Peak	0.18	3	A
		PM Peak	0.23	3	A
Gardeners Road / Bourke Road	Signalised	AM Peak	0.89	41	C
		PM Peak	0.76	41	C
Gardeners Road Access	Signalised	AM Peak	0.34	1	A
		PM Peak	0.30	1	A
Gardeners Road / O’Riordan Street	Signalised	AM Peak	0.96	68	E
		PM Peak	1.00	78	F

Summary of the Project Case 1 modelling results:

- SIDRA modelling predicts that all intersections – except Gardeners Road / O’Riordan Street – will continue to operate with acceptable degree of saturation and delays (LOS D or better) in both peaks.

- For Gardeners Road / O’Riordan Street, the increase in demand is minimal and as such the delays are identical to that of the base case. This also means the intersection will continue to operate at LOS F (similar to Base Case).
- Both the accesses on Bourke Road and Gardeners Road perform well with LOS A during both peaks.

6.5.2 Project Case 2

TABLE 17 INTERSECTION OPERATION – PROJECT CASE 2

Intersection	Control Type	Period	Degree of Saturation	Average Delay (sec)	Level of Service
Bourke Road/ Doody Street	Priority	AM Peak	0.82	46	D
		PM Peak	0.28	11	A
O’Riordan Street/ Doody Street	Signalised	AM Peak	0.88	26	B
		PM Peak	0.93	27	B
Bourke Road/ Campbell Road	Signalised	AM Peak	0.87	45	D
		PM Peak	0.69	32	C
Bourke Road Access	Priority	AM Peak	0.19	3	A
		PM Peak	0.23	3	A
Gardeners Road/ Bourke Road	Signalised	AM Peak	0.89	41	C
		PM Peak	0.76	41	C
Gardeners Road/ O’Riordan Street	Signalised	AM Peak	0.96	68	E
		PM Peak	1.00	79	F

Summary of the Project Case 2 modelling results:

- SIDRA modelling predicts that all intersections – except Gardeners Road / O’Riordan Street – will continue to operate with acceptable degree of saturation and delays (LOS D or better) in both peaks.
- For Gardeners Road / O’Riordan Street, the increase in demand is minimal and as such the delays are identical to that of the base case. This also means the intersection will continue to operate at LOS F (similar to Base Case).
- Both the accesses on Bourke Road and Gardeners Road perform well with LOS A during both peaks.
- There is no notable difference of performance outcomes (degree of saturation, delays and level of service) between the project cases.

6.5.3 Overall Summary

TABLE 18 INTERSECTION OPERATION SUMMARY – AM PEAK

Intersection	Control Type	Scenario	Degree of Saturation	Average Delay (sec)	Level of Service
Bourke Road / Doody Street	Priority	Base Case	0.36	12	A
		Project Case 1	0.80	44	D
		Project Case 2	0.82	46	D
O’Riordan Street / Doody Street	Signalised	Base Case	0.88	26	B
		Project Case 1	0.92	32	C
		Project Case 2	0.88	26	B
Bourke Road / Campbell Road	Signalised	Base Case	0.57	28	B
		Project Case 1	0.83	43	D
		Project Case 2	0.87	45	D
Bourke Road site access	Priority	Base Case	N/A	N/A	N/A
		Project Case 1	0.18	3	A
		Project Case 2	0.19	3	A
Gardeners Road / Bourke Road	Signalised	Base Case	0.86	40	C
		Project Case 1	0.89	41	C
		Project Case 2	0.89	41	C
Gardeners Road site access	Signalised	Base Case	N/A	N/A	N/A
		Project Case 1	0.34	1	A
		Project Case 2	N/A	N/A	N/A
Gardeners Road / O’Riordan Street	Signalised	Base Case	0.92	51	D
		Project Case 1	0.96	68	E
		Project Case 2	0.96	68	E

TABLE 19 INTERSECTION OPERATION SUMMARY – PM PEAK

Intersection	Control Type	Scenario	Degree of Saturation	Average Delay (sec)	Level of Service
Bourke Road / Doody Street	Priority	Base Case	0.27	11	A
		Project Case 1	0.28	11	A
		Project Case 2	0.28	11	A
O’Riordan Street / Doody Street	Signalised	Base Case	0.91	26	B
		Project Case 1	0.97	28	B
		Project Case 2	0.93	27	B
Bourke Road / Campbell Road	Signalised	Base Case	0.92	31	C
		Project Case 1	0.67	32	C
		Project Case 2	0.69	32	C
Bourke Road site access	Priority	Base Case	N/A	N/A	N/A
		Project Case 1	0.23	3	A
		Project Case 2	0.23	3	A
Gardeners Road / Bourke Road	Signalised	Base Case	0.76	40	C
		Project Case 1	0.76	41	C
		Project Case 2	0.76	41	C
Gardeners Road site access	Signalised	Base Case	N/A	N/A	N/A
		Project Case 1	0.30	1	A
		Project Case 2	N/A	N/A	N/A
Gardeners Road / O’Riordan Street	Signalised	Base Case	1.00	78	F
		Project Case 1	1.00	78	F
		Project Case 2	1.00	79	F

The modelling generally indicates that most intersections continue to operate similar to the base case operating conditions. Notable changes from the base case include:

- Bourke Road / Doody Street intersection changes from a LOS A to LOS D in the AM peak.
- Bourke Road/ Campbell Road intersection changes from a LOS B to LOS D in the AM peak.

Regardless of the above changes, it is noted that these intersections continue to operate with an acceptable degree of saturation and delay in the peak periods.

7 Design Commentary

7.1 Design Standards

The Sites access, car park and loading areas have been designed with reference to the following Australian Standards:

- AS2890.1:2004 for car parking areas.
- AS2890.2:2018 for commercial vehicle loading areas.
- AS2890.3:2015 for bicycle parking areas; and
- AS2890.6:2009 for accessible (disabled) parking.

It is expected that any detailed construction drawings in relation to any modified areas of the car park or site access would comply with these Standards. Furthermore, compliance with the above Standards would be expected to form a standard Condition of Consent further to approval.

7.2 Design Review

7.2.1 Site Access

The proposed site access comprises of the following:

- Gardeners Road – left in access driveway designed for 26m B-Doubles. Entry gate is proposed and located approximately 27.7 m in from the site boundary. The access gate will remain open during core business hours of the site to align with tenants' operational hours.
- Bourke Road – left in / left out access driveway designed for 6.4m Small Rigid Vehicle for access to / from the roof top parking and vehicle storage areas. Entry gate is proposed and set back approximately 38 metres from the property boundary.
- Bourke Road – left out access driveway designed for 26m B-Doubles

7.2.2 Ramps

The internal ramps have been provided with the following ramp grades and lengths which are in accordance with the requirements of AS2890.1:2004 and AS2890.2:2018.

A total of three ramps are proposed within the development, comprising:

- Ground level to Level 1 truck access ramp designed for 20 metres Articulated Vehicle; the ramp has been designed in accordance with AS2890.2:2018 which requires the following:
 - Maximum ramp grade of 1:6.5 (15.4%)
 - Maximum change of grade of 1:16 (6.25%) in 10m of travel
- Level 1 to ground level truck access ramp designed for 20 metres Articulated Vehicle; the ramp has been designed in accordance with AS2890.2:2018 which requires the following:
 - Maximum ramp grade of 1:6.5 (15.4%)
 - Maximum change of grade of 1:16 (6.25%) in 10m of travel

- Ground level to Level 2 access ramp designed for 6.4 metres long Small Rigid Vehicle; the ramp has been designed in accordance with AS2890.2:2018 which requires the following:
 - Maximum ramp grade of 1:6.5 (15.4%)
 - Maximum change of grade of 1:12 (8.3%) in 4m of travel

The ramp grades have been designed in accordance with Section 3.3.3 and 3.3.4 of AS2890.2:2018.

It is expected that any on-going detailed design development will need to be reviewed and validated as being compliant with AS2890.2:2018.

7.2.3 Parking Modules & Internal Circulation

- Minimum two-way circulation width of 6.2m within the rooftop parking area.
- Minimum one-way circulation width of 3.6m within the rooftop parking area.
- Commercial parking spaces are designed in accordance with a User Class 1A and are provided with a minimum space length of 5.4m, width of 2.4m and a minimum aisle width of 6.2m.
- Accessible car parking spaces provided with a minimum space length of 5.4m, width of 2.4m (for both the space and adjacent shared zone) and a minimum aisle width of 6.2m.
- A minimum 1.0m blind aisle extension.

7.2.4 Bicycle Facilities

- Bicycle parking facilities for office and warehouse staff shall be designed to Security Level B in accordance with Table 1.1 of AS2890.3:2015.
- Customer bicycle parking facilities shall be designed to Security Level C in accordance with Table 1.1 of AS2890.3:2015.
- A mixture of vertical and horizontal bicycle parking spaces can be used for staff bicycle parking purposes. Bicycle parking design shall be in accordance with Section 2.2 of AS2890.3:2015.
- Minimum access aisle width shall be in accordance with Table 2.1 of AS2890.3:2015, determined on the basis of the type of bicycle parking provided.
- AS 2890.3:2015 requires a minimum 20% of the bicycle parking provision to be provided in a horizontally mounted arrangement. As all of the on-site spaces are proposed within a horizontally mounted arrangement, this requirements has been readily exceeded.

7.3 Design Vehicle

The proposed internal roads and warehouse hardstand area on the Ground level has been designed to accommodate access and circulation requirements for vehicles up to a 26 metre B-double.

The ramp and hardstand area on Level 1 has been designed to accommodate access and circulation requirements for vehicles up to a 20 metre Articulated Vehicle.

The Level 2 parking area has been designed to accommodate access and circulation requirements of vehicles up to a 6.4 metre Small Rigid Vehicle.

Swept path assessment has been prepared and is included in **Appendix A**.

7.4 Parking Areas

All parking areas, including access aisles and parking modules, are to be designed with reference to AS2890.1:2004 and AS2890.6:2009. It is anticipated that full parking area design compliance with the relevant standards would form a standard Condition of Consent further to approval.

7.5 Service Areas

All service areas are to be designed with reference to AS 2890.2:2018 and provide for the movement of vehicles up to and including a 26 metre B-doubles. It is anticipated that service area design compliance with AS 2890.2 would form a standard Condition of Consent further to approval.

This will include a requirement to achieve a minimum 4.5 metre clear height for the access, circulation and hardstand areas in accordance with AS 2890.2:2018.

Design of the service area has been formulated in a manner that acknowledges either a side loading arrangement within the hardstand area where forklift operational areas and temporary stacking zones are allowed for, or 90-degree reverse in manoeuvre with trucks stopping flush with the roller shutter doors.

In each of the potential scenario, a through traffic zone of at least 4 metres is achievable. Refer to Appendix A for the operations and associated swept paths prepared for details.

The future operations and traffic management arrangement of the service / hardstand area shall be subject to an Operational Traffic Management Plan to allow for identification of tenants requirements and a customised traffic management arrangement specifically to support the operational needs of the tenants.

7.6 Traffic Management

It is recommended that a detailed traffic management plan, including a signage and linemaking plan, and any other desirable traffic management devices (e.g. Speed Humps, Wheel Stops, Warning Devices etc) be prepared prior to the Construction Certification.

7.7 Fire Service Appliance Circulation

In line with Fire and Rescue NSW (FRNSW) Guidelines, access arrangements for the Site have been tested for a 12.5 m HRV, demonstrating sufficient access for 'Specialist' fire appliances, as demonstrated in **Appendix A**.

8 Preliminary Construction Traffic Management Plan

A detailed Construction Traffic Management Plan (CTMP) will be provided as part of detailed construction management plan (which is expected to form a standard Condition of Consent). For the purposes of this TA report, the following general principles for managing construction traffic have been assumed and provide an understanding of the likely traffic impacts during the construction period. It should be noted that the construction details and programme for the development has not yet been finalised.

8.1 Overview

The proposed works consist of the following components of works considered as part of this Preliminary Construction Traffic Management Plan.

- Minor bulk earthworks and site preparation;
- Construction works associated with the development of the proposed industrial estate;
- Construction works associated with the access driveways to Gardeners Road and Bourke Road; and
- Potential road works subject to requirements of TfNSW on Gardeners Road.

This Preliminary Construction Traffic Management and Pedestrian Management Plan outlines principles that shall be adopted by the appointed contractors for the project and is subject to a detailed Construction Traffic Management and Pedestrian Management Plan that forms part of a Construction Management Plan to be prepared and commissioned by the incumbent contractor engaged for the civil works, construction works, and intersection upgrade works.

This report has been prepared by a consultant who holds a SafeWork NSW Work Health & Safety Traffic Control Work card, accredited for the 'Prepare a Work Zone Traffic Management Plan'. Details of the accredited consultant is provided below:

- Dora Choi Ticket No. TCT0021456
- Wendy Zheng Ticket No. TCT1015144

8.2 Overall Principles of Construction Traffic and Pedestrian Management

The overall principals of traffic management during construction activities include:

- Minimising the impact on pedestrian and cyclist safety and movements
- Maintaining appropriate emergency vehicle, public transport, school bus, service vehicle access
- Minimising the impact to existing traffic on adjacent roads and intersections
- Minimising the loss of on-street parking
- Maintaining access to / from adjacent properties
- Restricting construction vehicle movements to designated routes to / from the site
- Managing and controlling construction vehicle activity near the site
- Ensuring construction activity is carried out in accordance with Council's approved hours of work.

8.3 Proposed Work Hours

The construction work will vary depending on the phase of construction and associated activities. Construction works however will be undertaken during standard construction-working hours, which are likely to be as follows:

- Monday to Friday: 7.30AM to 5:30PM
- Saturday: 7.30AM to 3.30PM
- Sunday and Public holidays: No planned work.

It may (on occasions) be necessary to undertake night works to minimise disruption to traffic however any works undertaken outside of these times will only occur with prior approval from Council.

8.4 Civil Works / Road Works on Road Reserve / Within Close Proximity to Signalised Intersections

For civil works, intersection works, and road works forming part of works within the road reservation on Gardeners Road, or works within the immediate vicinity of traffic signals at the intersections of Gardeners Road / Bourke Road, and Bourke Road / Campbell Street, work hours are subject to confirmation following coordination with TfNSW Sydney Coordination Office and City of Sydney, as well as key stakeholders identified in Section 8.9 of this report.

Civil works within the local road network and within the Site are expected to be undertaken within general construction hours as outlined in Section 8.3.

Any night works or works outside of standard construction hours will only occur with prior approval from TfNSW and Council.

8.5 Contractor Parking

A small amount of on-site parking for key contractors and staff is expected to be provided throughout the construction works. The number and location of this temporary on-site car parking is expected to change throughout the various construction phases, depending on the surplus area available not required for truck loading and turning areas.

It is noted the Site is within 400m of Mascot Train Station, therefore the use of public transport and car pooling will be actively encouraged to reduce the reliance on private vehicles and minimise parking demands.

Should parking be not available for specific stages of works, it is the incumbent contractor's responsibility to prepare relevant plan and documentation to ensure contractor parking demand and associated management measures are documented, implemented, continually monitored and managed.

8.6 Worker Induction

All workers and subcontractors engaged on-site would be required to complete a site induction. The induction should include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, work, health, and safety (WHS), driver protocols and emergency procedures.

Any workers required to undertake works or traffic control within the public domain would be suitably trained and covered by adequate and appropriate insurances.

8.7 Authorised Traffic Controller

There is unlikely to be a requirement for authorised traffic controller(s) to be present throughout the project. In the event that traffic controllers are required, the responsibilities are likely to include:

- Pedestrian and cyclist management, to ensure that adverse conflicts between vehicle movements and pedestrians do not occur.
- Supervision of all vehicle movements across pedestrian footpaths and nearby sensitive interfaces.
- Supervision of all loading and unloading of construction materials during the deliveries in the construction phase of the project.
- Management and supervision of road closures / lane closures for specific activities.
- Monitoring of traffic conditions whilst Traffic Guidance Schemes are implemented to ensure no conflict with existing Traffic Control Devices along the public roadway.

8.8 Public Transport Services

Construction works are not expected to impact existing public transport services as the construction works are expected to be largely contained on-site. No bus stops are present along the frontages of the site.

8.9 Stakeholder Engagement Plan

The lead contractor (upon engagement) will liaise with relevant stakeholders regarding construction schedules and trucks routes and will raise any potential conflict with stakeholder at the earliest time. Stakeholder consultation actions required by the lead contractor are detailed below:

TABLE 20: STAKEHOLDER CONSULTATION ACTIONS	
Stakeholder	Action
TfNSW	Lead contractor to submit CTMP to stakeholder. Lead contractor to liaise with stakeholder to address comments and re-submit final CTMP
City of Sydney	Lead contractor to submit CTMP to stakeholder. Lead contractor to liaise with stakeholder to address comments and re-submit final CTMP

Transport Management Centre (TMC)	Lead contractor to submit CTMP to stakeholder. Lead contractor to liaise with stakeholder to address comments and re-submit final CTMP
NSW Police	Lead contractor to submit CTMP to stakeholder. Lead contractor to liaise with stakeholder to address comments and re-submit final CTMP
Emergency Services	Lead contractor to attend fortnightly meetings with TfNSW and Emergency Services

8.10 Pedestrian Management Principles During Construction

The proposed works consists of road works, potential civil works and intersection works that are likely to result in some footpath closures due to the nature of works required.

The following principles provide guidance to the incumbent contractors to assist with the planning and staging of construction activities to minimise impact to pedestrian movements and shall form part of the detailed CTPMP. Key considerations being:

- Pedestrian access to / from each of the properties occupied along roadways adjacent to the works area shall be maintained at all times.
- Pedestrian pathways adjacent to works area shall be protected by hoarding. If the pedestrian pathway is adjacent to areas where deep excavation works are being undertaken, additional no-go areas shall be allowed for within the works area to improve pedestrian safety.
- Temporary pedestrian pathways may be required as part of the pedestrian diversion strategy. Temporary pedestrian pathways shall be constructed to suitable standards in accordance with Council requirements. Temporary lighting may be required and subject to review by lighting engineer to ensure compliance with relevant Australian Standards.
- Should pedestrian diversion be required, detailed TGS outlining the relevant pedestrian diversion signage, temporary kerb ramps (where required), and whether Authorised Traffic Controllers will be in place to support the temporary diversion shall be prepared and submitted to TfNSW / Council for approvals.
- Traffic controller(s) shall be present at the site accesses to manage pedestrian and vehicular traffic to ensure public safety while construction vehicles enter and exit the Site. Pedestrians will not be directed to use the other footpath by use of signage alone. Also, traffic controls would need to be in accordance with AS1742.3 and RMS 'Traffic Control at Worksites' manual at all times.
- Should any unforeseen activities require the temporary closure of any existing pedestrian access, a TGS should be developed and implemented by the contractor to ensure a safe alternative for pedestrians traversing these routes in the vicinity of the Site.

8.11 Staging and Duration of Works

Detailed staging and duration of works is not available at the time of preparation of this preliminary CTPMP.

Detailed staging of works will require consultation and coordination with TfNSW and Council to enable the development of a coordinated Construction Traffic and Pedestrian Management Plan.

It is recommended that a condition be included in the SSD requiring a Detailed Construction Traffic and Pedestrian Management Plan prior to the commencement of development on site.

8.12 Construction Vehicle Types and Estimated Traffic Volumes

Construction traffic is expected to generally comprise:

- Vehicles up to the dimensions of a Truck + Dog Trailers and 19m long Articulated Vehicles for removal of spoil and transportation of material.
- Concrete mixer trucks up to 12m in length.
- Vehicles up to the dimension of a 19m long Articulated Vehicle for delivery of material such as steel / façade panels, roof panels.

Any oversize vehicles using local roads to access the site for would require additional Council and/or TfNSW approval.

The maximum number of trucks accessing the site is subject to the development of a detailed construction staging plan upon the appointment of the contractor.

8.13 Site Access

Construction vehicles accessing the Site are expected to travel in a forward-in and forward-out direction. Existing site accesses are available off Bourke Road (left-in/ left-out) and Gardeners Road (left/ right-in, left-out).

8.14 Construction Mitigation Measures

Construction of the above development would generate a moderate increase in traffic on the surrounding road network. In this regard, the following measures should be undertaken to minimise the impacts of the construction activities of the development:

- A construction fence and suitably classed Hoarding shall be provided along site boundaries / works area boundaries to provide safe pedestrian access. The fencing / hoardings should be maintained for the duration of the construction program associated with the stage of works being undertaken.
- Traffic control would be required to manage and regulate traffic movements into and out of the Site during construction, with pedestrian priority provided during peak hour periods and to maintain accessibility to public transport facilities.
- Disruption to road users should be kept to a minimum by scheduling intensive delivery activities outside of road network peak hours.
- Supervised traffic control will be required where two-way flow is restricted over any length of the roadway, depending on the number of truck movements required and would be managed outside of peak hour vehicle and pedestrian activity.

8.15 Potential Haulage Routes

Indicative haulage routes for construction vehicles to/ from the Site are shown in **Figure 29**. This is subject to change upon engagement of a contractor and confirmation of construction and staging methodology. The route may also vary depending on the size of construction vehicle, with larger vehicles (e.g. 19m articulated vehicles restricted to certain approved routes). A copy of the truck routes shall be provided to all drivers prior to attending the Site.

The access and egress routes in **Figure 29** are to be utilised by all construction vehicles associated with the Site and generally represents the shortest route between the local and regional road network – hence minimising the impacts of the construction process. No trucks are to be queued on local roads. Due to the Site's location being within close proximity to the M8 off-ramp, an electronic booking system that track delivery vehicles will be required to ensure there is sufficient on-site storage capacity to store incoming delivery vehicles.

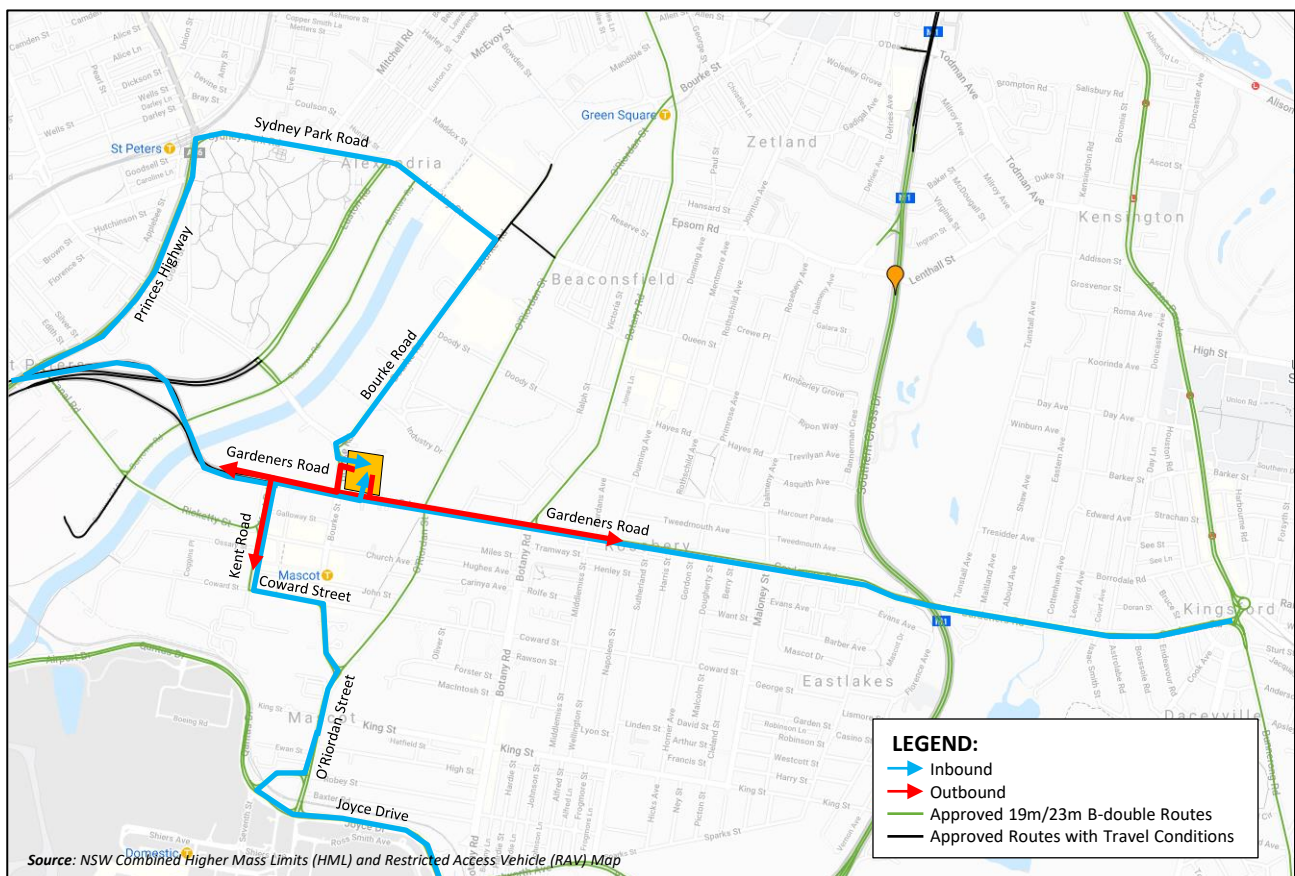


Figure 29: Construction Traffic Routes

9 Summary and Conclusions

9.1 Key Findings

The key findings of this TA are summarised below:

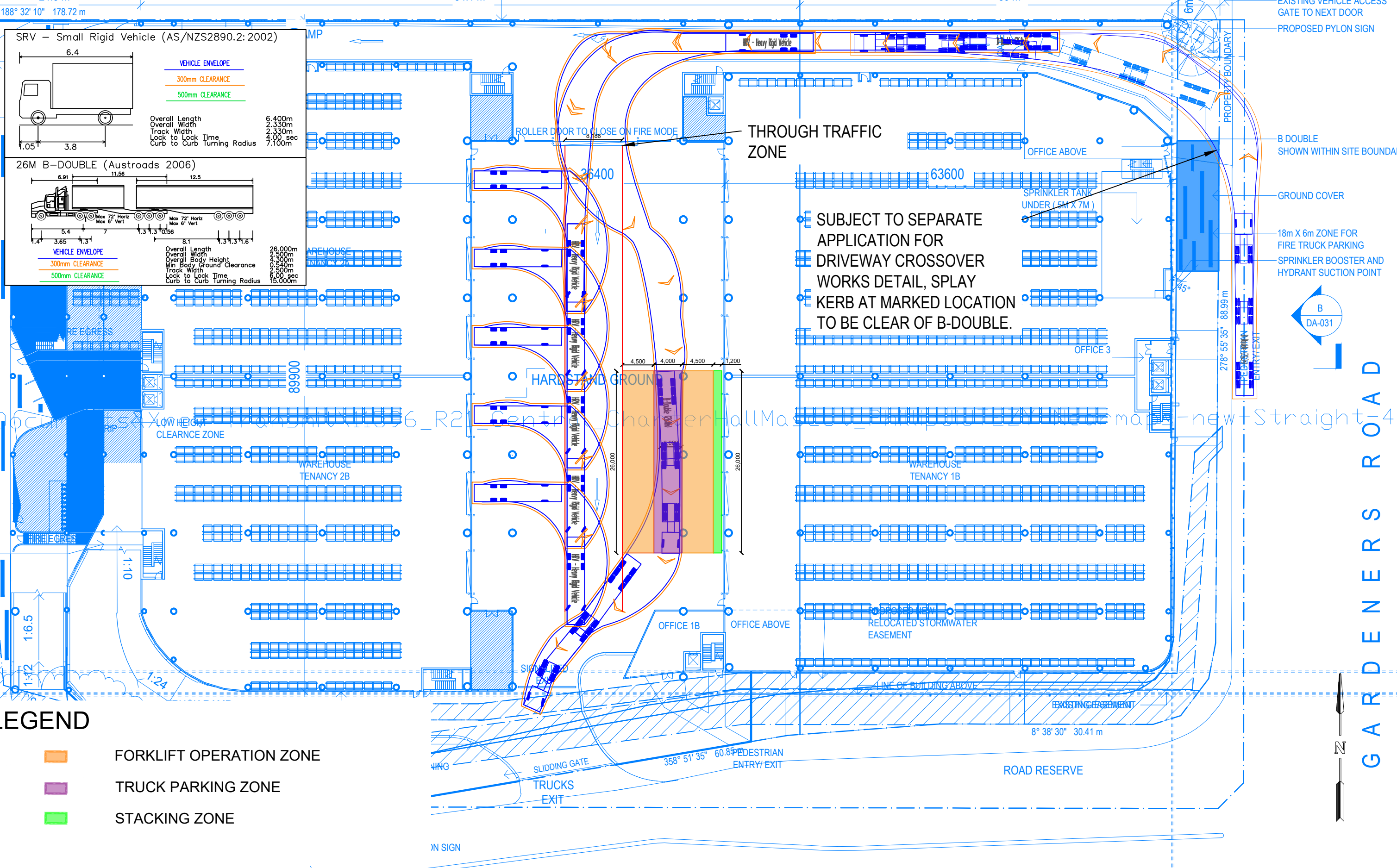
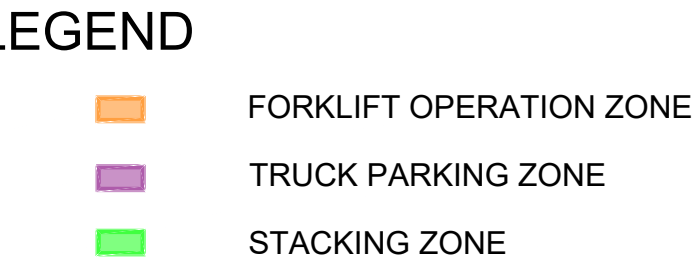
- The Proposal relates to a proposed multi-deck warehouse at 520-530 Gardeners Road, Alexandria comprising:
 - 20,144m² warehouse GFA composed of 4 warehouses distributed across Ground Level and Level 1
 - 5,557m² office GFA composed of 7 offices across Mezzanine levels and Level 2
 - 1,062m² of ancillary space (inclusive of end of trip, Gym and café)
 - 1,278m² service vehicle storage GFA located on Level 2
- The Site is located at the corner of Bourke Road and Gardeners Road and presents existing accesses on both frontages, with a left-in/ left-out priority intersection on Bourke Road, and a signalised intersection on Gardeners Road (permitting left and right inbound movements and left only outbound movements).
- The Site is located within 400m of Mascot Train Station and a range of bus services (305, 358). Existing pedestrian amenity is generally high with wide footpaths signalised pedestrian crossings at most intersections. The Site is well connected in terms of cycling infrastructure, with an extensive network of bicycle routes (on and off-road) adjacent to the Site along key routes.
- SIDRA modelling shows the existing intersections around the site are operating with acceptable delays, except the Gardeners Road / O’Riordan Street intersection which is operating at LOS F.
- Two site access options were reviewed:
 - Option 1: light vehicle entry/ exit from Bourke Road, heavy vehicle entry from Gardeners Road, heavy vehicle exit onto Bourke Road
 - Option 2: all vehicle entry/ exit from Bourke Road (i.e. no access to/ from Gardeners Road)
 - Option 2 results in increased travel distance and travel time for heavy vehicles and will require additional approval to utilise sections of road not currently approved for 19m/23m B-doubles. Hence, Option 1 is adopted for the project design.
- With reference to the Sydney LEP 2012, which provides a maximum car parking rate, a maximum car parking provision of 141 spaces is calculated. The proposed development will provide 144 car parking spaces, consistent with the maximum allowance per the LEP. Additional service vehicle storage space is provided on Level 2 for work vans and fleet vehicles, not included in the 144 spaces.
- Based on the trip generation rates outlined in the RMS Guide to Traffic Generating Developments Updated Traffic Surveys TDT 2013/04a 2013, the proposed development is expected to generate 155 vehicle trips in the AM peak and 130 vehicle trips in the PM peak.
- SIDRA modelling predicts that with development trips, all intersections (except Gardeners Road / O’Riordan Street) will continue to operate with acceptable delays (LOS D or better) under both access options. For Gardeners Road / O’Riordan Street, the increase in demand is minimal and as such the delays are identical to that of the existing base case.
- The access and parking design has generally been designed having regard for relevant Australian Standards (AS2890 series). A standard condition of consent requiring compliance with AS2890 would be considered sufficient to ensure that any minor changes to the plans required, if any, could be undertaken as part of detailed Construction Certificate documentation.
- A preliminary Construction Traffic Management Plan has been provided that sets out the number of principles that should be adopted by any future detailed CTMP that is developed in coordination with the prospective building contractor.

- A framework Travel Plan has been provided that sets out the overarching requirements for a future Sustainable / Green Travel Plan package to be delivered in future occupier-specific plans.

9.2 Conclusions

In summary, the Proposal is supportable on traffic planning grounds and will not result in any adverse impacts on the surrounding road network or the availability of on-street parking.

Appendix A. Swept Path Assessment



This drawing is provided for information purposes only and should not be used for construction.
Ground Floor Plan provided by Project Strategy/nettletontribe, received 17/03/2022.
Swept path assessments completed at 10 km/h and 300mm clearance.
Design vehicle: HRV & B-Double Check Vehicle: HRV & B-Double

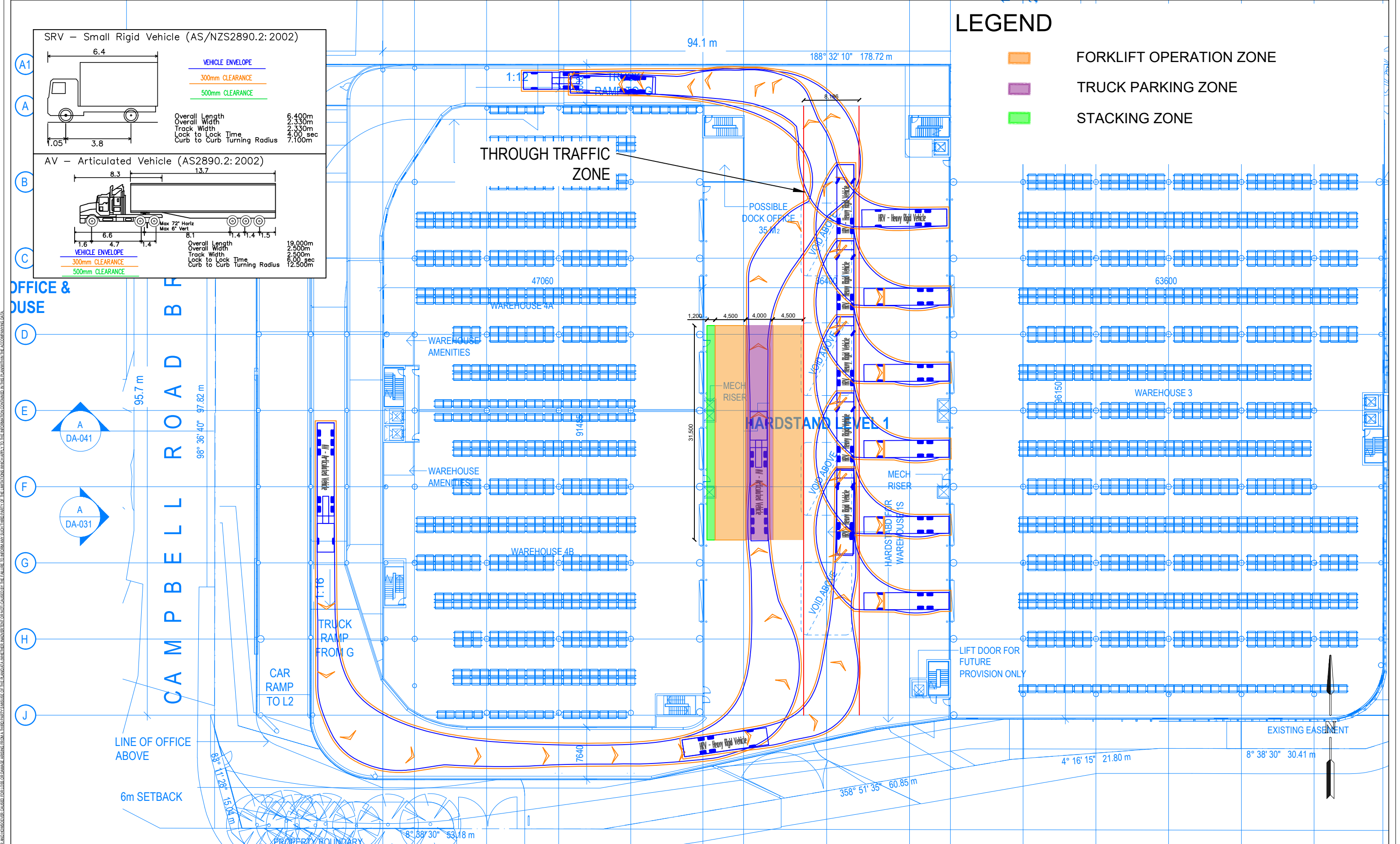
DESIGNED RebeccaBMadden	PAPER SIZE A3	CLIENT PROJECT STRATEGY
APPROVED BY D.CHOI	DATE 09.03.2022	PROJECT 1279
SCALE 1:500		520-530 GARDENERS ROAD, ALEXANDRIA

DOCUMENT INFORMATION	
SWEEP PATH ASSESSMENT (GROUND LEVEL)	
OPTION 1 - CURTILAGE (FOR DISCUSSION ONLY)	
FILE NAME	SHEET
AG1279-011-v2a.dwg	AG01

asongroup

Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000

info@asongroup.com.au



SRV — Small Rigid Vehicle (AS/NZS2890.2: 2002)

Overall Length: 6.400m
Overall Width: 2.330m
Track Width: 2.330m
Lock to Lock Time: 4.00 sec
Curb to Curb Turning Radius: 7.100m

AV — Articulated Vehicle (AS2890.2: 2002)

Overall Length: 19.000m
Overall Width: 2.500m
Track Width: 2.500m
Lock to Lock Time: 6.00 sec
Curb to Curb Turning Radius: 12.500m

GENERAL NOTES

This drawing is provided for information purposes only and should not be used for construction.
Level 1 Plan provided by Charter Hall, received 15/12/2021.
Swept path assessments completed at 10 km/h and 300mm clearance.
Design vehicle: HRV & AV Check Vehicle: HRV & AV

DESIGNED

Meg Kong

APPROVED BY

D.CHOI

SCALE

1:500

PAPER SIZE

A3

DATE

09.03.2022

0510

CLIENT

PROJECT STRATEGY

PROJECT

1279

520-530 GARDENERS ROAD, ALEXANDRIA

DOCUMENT INFORMATION

SWEPT PATH ASSESSMENT (GROUND LEVEL)

OPTION 2 - HRV (FOR DISCUSSION ONLY)

FILE NAME

AG1279-01-v2.dwg

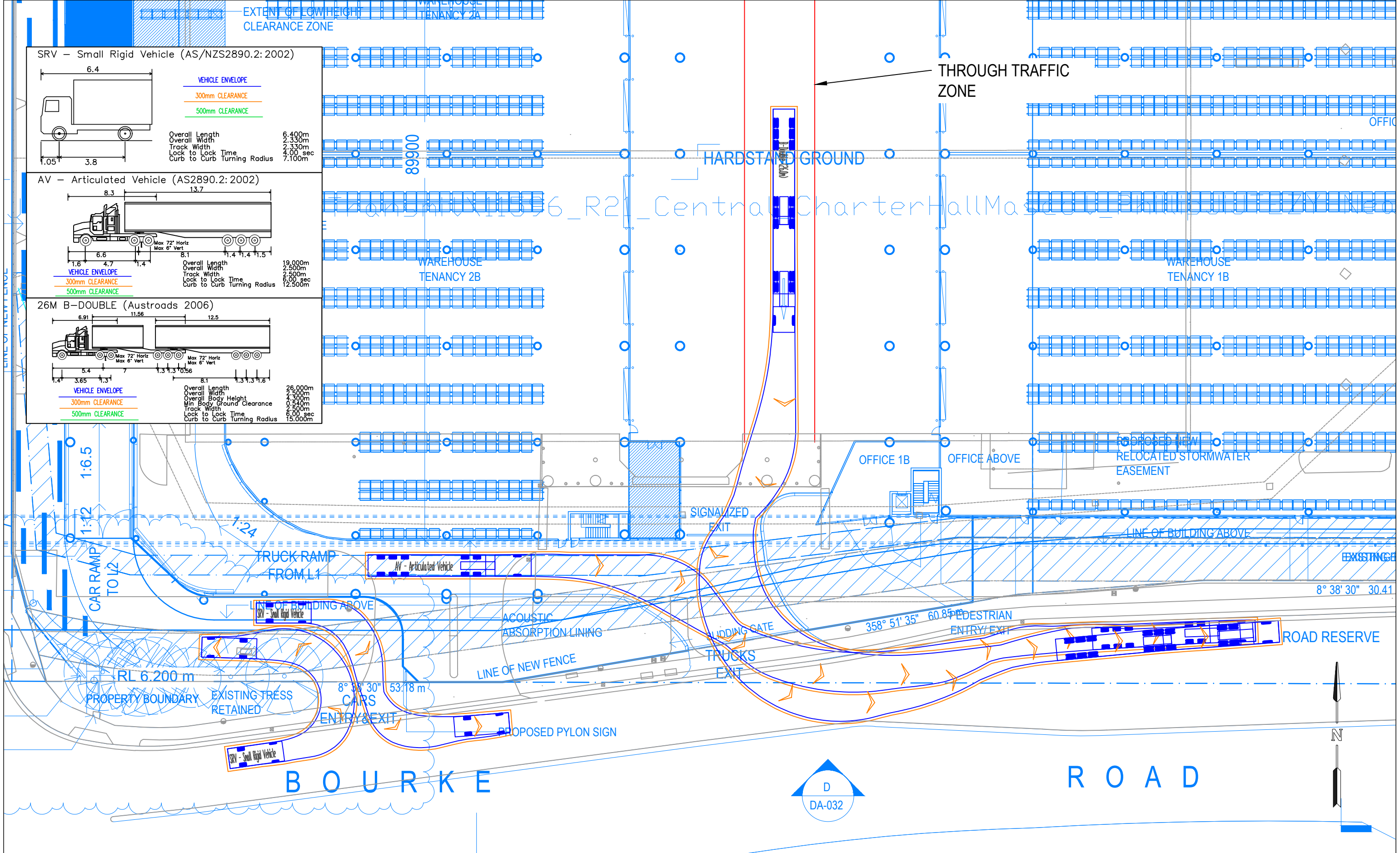
SHEET

AG02

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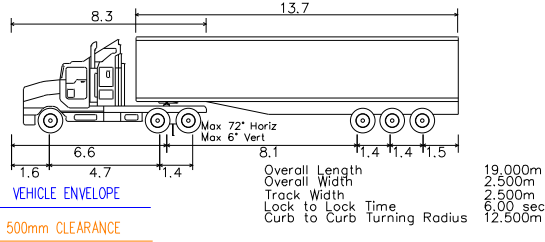
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GENERAL NOTES This drawing is provided for information purposes only and should not be used for construction. Ground Floor Plan provided by Project Strategy/nettletontribe, received 17/03/2022. Swept path assessments completed at 10 km/h and 300mm clearance. Design vehicle: SRV, AV, B-Double Check Vehicle: SRV, AV, B-Double		DESIGNED Meg Kong	PAPER SIZE A3	CLIENT PROJECT STRATEGY	DOCUMENT INFORMATION	
APPROVED BY D.CHOI		DATE 09.03.2022	PROJECT 1279		SWEPT PATH ASSESSMENT (SITE ACCESS)	
SCALE 1:400		0 5 10		520-530 GARDENERS ROAD, ALEXANDRIA		FILE NAME AG1279-01-v2.dwg
						SHEET AG03

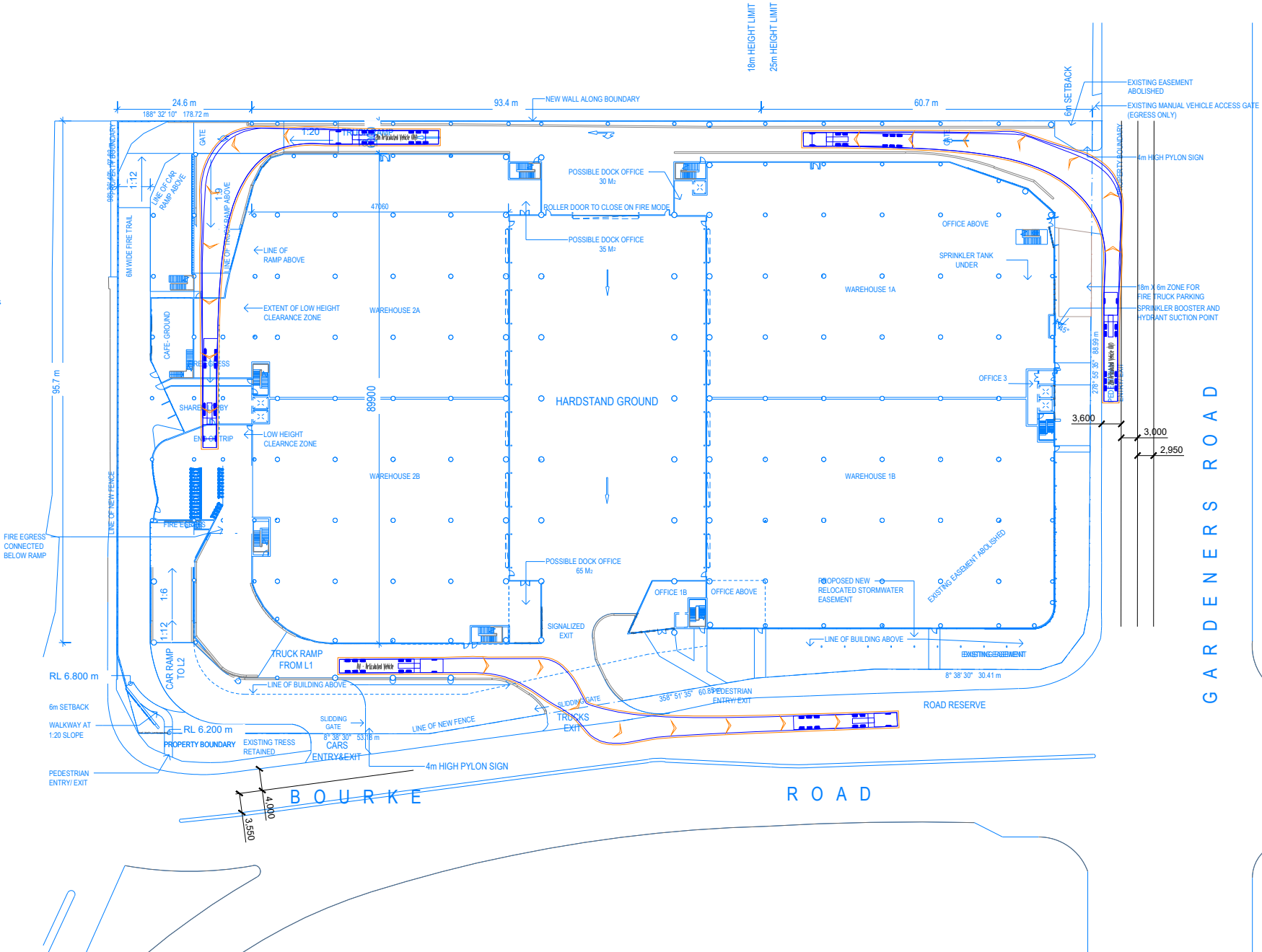
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au

AV – Articulated Vehicle (AS2890.2:2002)



4 STORY BUILDING
B/200 BOURKE ROAD

CONCRETE OFFICE &
WAREHOUSE



GENERAL NOTES

This drawing is provided for information purposes only and should not be used for construction.
The base plan (file name: 11596_DA-010[9]CAD - Ground Floor Plan) prepared by nettletontribe on 22 Dec 2021.
Swept path assessments completed at 10 km/h and 300mm clearance.

DESIGNED	PAPER SIZE
Alan Tan	A3
APPROVED BY	DATE
D. Choi	22.12.2021
SCALE	
1:1000	0 10 20

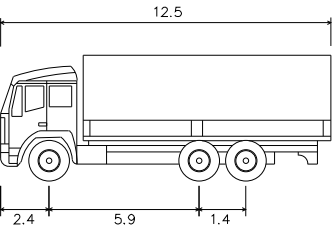
CLIENT	
Charter Hall	
PROJECT	
1279	
520 - 530 Gardeners Road Alexandria	

DOCUMENT INFORMATION	
Swept Path Assessment	
FILE NAME	SHEET
AG1279-07v1.dwg	AG02

asongroup

Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au

HRV - Heavy Rigid Vehicle (AS/NZS2890.2:2002)



Overall Length 12.500m
Overall Width 2.500m
Track Width 2.500m
Lock to Lock Time 6.00 sec
Curb to Curb Turning Radius 2.500m

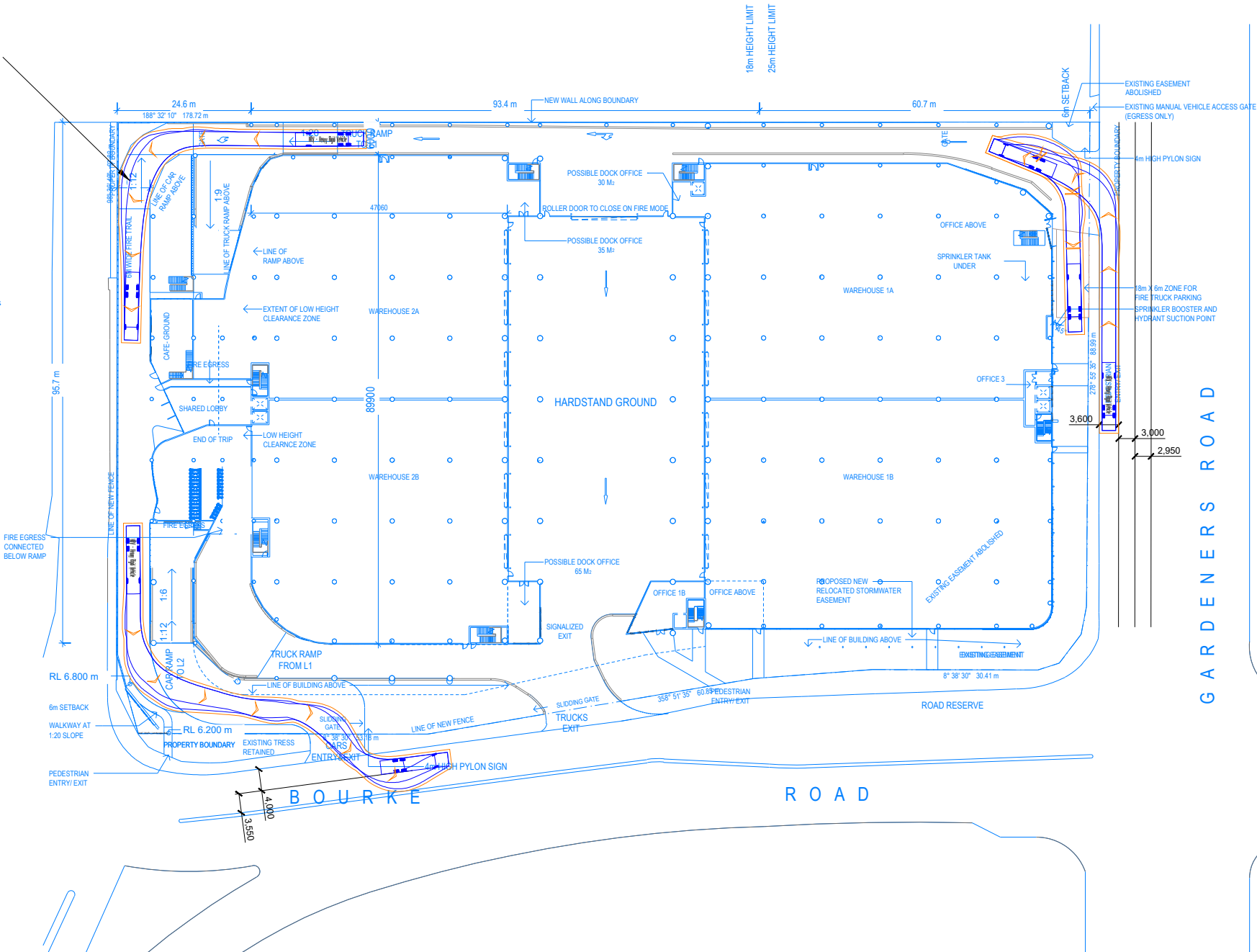
VEHICLE ENVELOPE

500mm CLEARANCE

Provide a grade of 1:16 (6.25%) over 7m of travel in accordance with AS2890.2:2018

CONCRETE OFFICE & WAREHOUSE

4 STORY BUILDING
B/200 BOURKE ROAD



GENERAL NOTES

This drawing is provided for information purposes only and should not be used for construction.
The base plan (file name: 11596_DA-010[9]CAD - Ground Floor Plan) prepared by nettletontribe on 22 Dec 2021.
Swept path assessments completed at 10 km/h and 300mm clearance.

DESIGNED	PAPER SIZE	CLIENT
Alan Tan	A3	Charter Hall
APPROVED BY	DATE	PROJECT
D. Choi	22.12.2021	1279
SCALE		520 - 530 Gardeners Road Alexandria
1:1000	0 10 20	

DOCUMENT INFORMATION

Swept Path Assessment

FILE NAME
AG1279-07v1.dwg

SHEET
AG03

asongroup

Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au

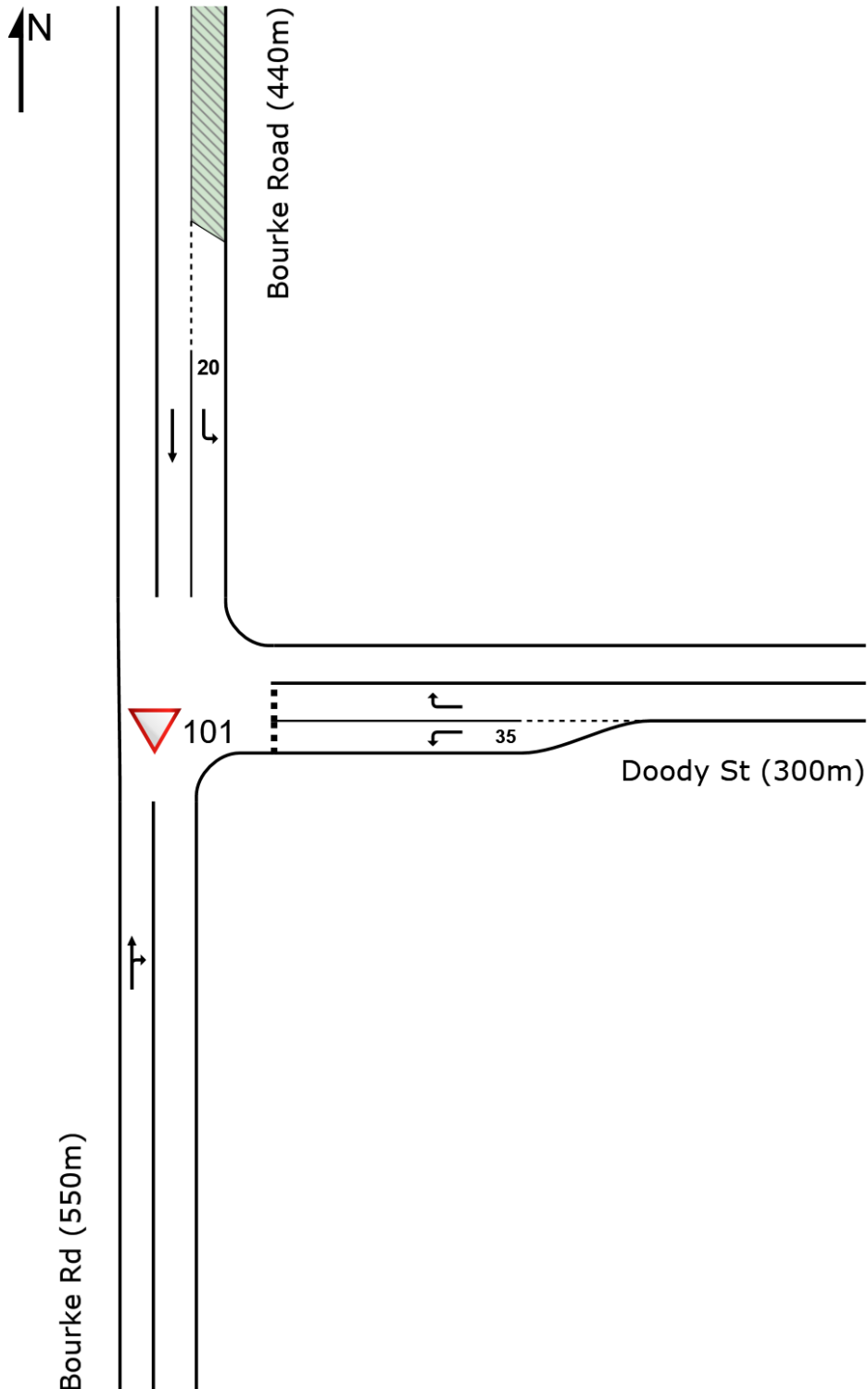
Appendix B. SIDRA Movement Summaries

SITE LAYOUT

▽ Site: 101 [1. Bourke Rd / Doody St - AM (Site Folder: Base Case)]

Bourke Road / Doody Street
Site Category: Existing
Give-Way (Two-Way)

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



MOVEMENT SUMMARY

▼ Site: 101 [1. Bourke Rd / Doody St - AM (Site Folder: Base Case)]

Bourke Road / Doody Street
Site Category: Existing
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Bourke Rd (550m)														
2	T1	460	37	484	8.0	0.578	3.5	LOS A	5.8	43.2	0.51	0.31	0.77	46.3
3	R2	257	21	271	8.0	0.578	9.7	LOS A	5.8	43.2	0.51	0.31	0.77	45.1
Approach		717	57	755	8.0	0.578	5.7	NA	5.8	43.2	0.51	0.31	0.77	45.9
East: Doody St (300m)														
4	L2	198	16	208	8.0	0.174	5.9	LOS A	0.7	5.1	0.34	0.58	0.34	45.0
6	R2	159	13	167	8.0	0.735	35.9	LOS C	3.7	27.4	0.94	1.23	1.77	29.7
Approach		357	29	376	8.0	0.735	19.3	LOS B	3.7	27.4	0.61	0.87	0.98	37.1
North: Bourke Road (440m)														
7	L2	121	10	127	8.0	0.075	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.4
8	T1	276	22	291	8.0	0.162	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		397	32	418	8.0	0.162	1.4	NA	0.0	0.0	0.00	0.16	0.00	48.7
All Vehicles		1471	118	1548	8.0	0.735	7.9	NA	5.8	43.2	0.39	0.41	0.61	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.

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

MOVEMENT SUMMARY

▼ Site: 101 [1. Bourke Rd / Doody St - PM (Site Folder: Base Case)]

Bourke Road / Doody Street
Site Category: Existing
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Bourke Rd (550m)														
2	T1	79	2	83	3.0	0.274	2.5	LOS A	1.3	9.6	0.48	0.50	0.48	46.3
3	R2	195	6	205	3.0	0.274	7.2	LOS A	1.3	9.6	0.48	0.50	0.48	45.0
Approach		274	8	288	3.0	0.274	5.9	NA	1.3	9.6	0.48	0.50	0.48	45.4
East: Doody St (300m)														
4	L2	197	6	207	3.0	0.172	5.9	LOS A	0.7	4.8	0.35	0.59	0.35	45.1
6	R2	135	4	142	3.0	0.265	10.6	LOS A	1.0	7.2	0.62	0.85	0.68	41.2
Approach		332	10	349	3.0	0.265	7.8	LOS A	1.0	7.2	0.46	0.70	0.48	43.5
North: Bourke Road (440m)														
7	L2	125	4	132	3.0	0.074	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	45.5
8	T1	308	9	324	3.0	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		433	13	456	3.0	0.172	1.4	NA	0.0	0.0	0.00	0.15	0.00	48.8
All Vehicles		1039	31	1094	3.0	0.274	4.6	NA	1.3	9.6	0.27	0.42	0.28	46.2

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.

SITE LAYOUT

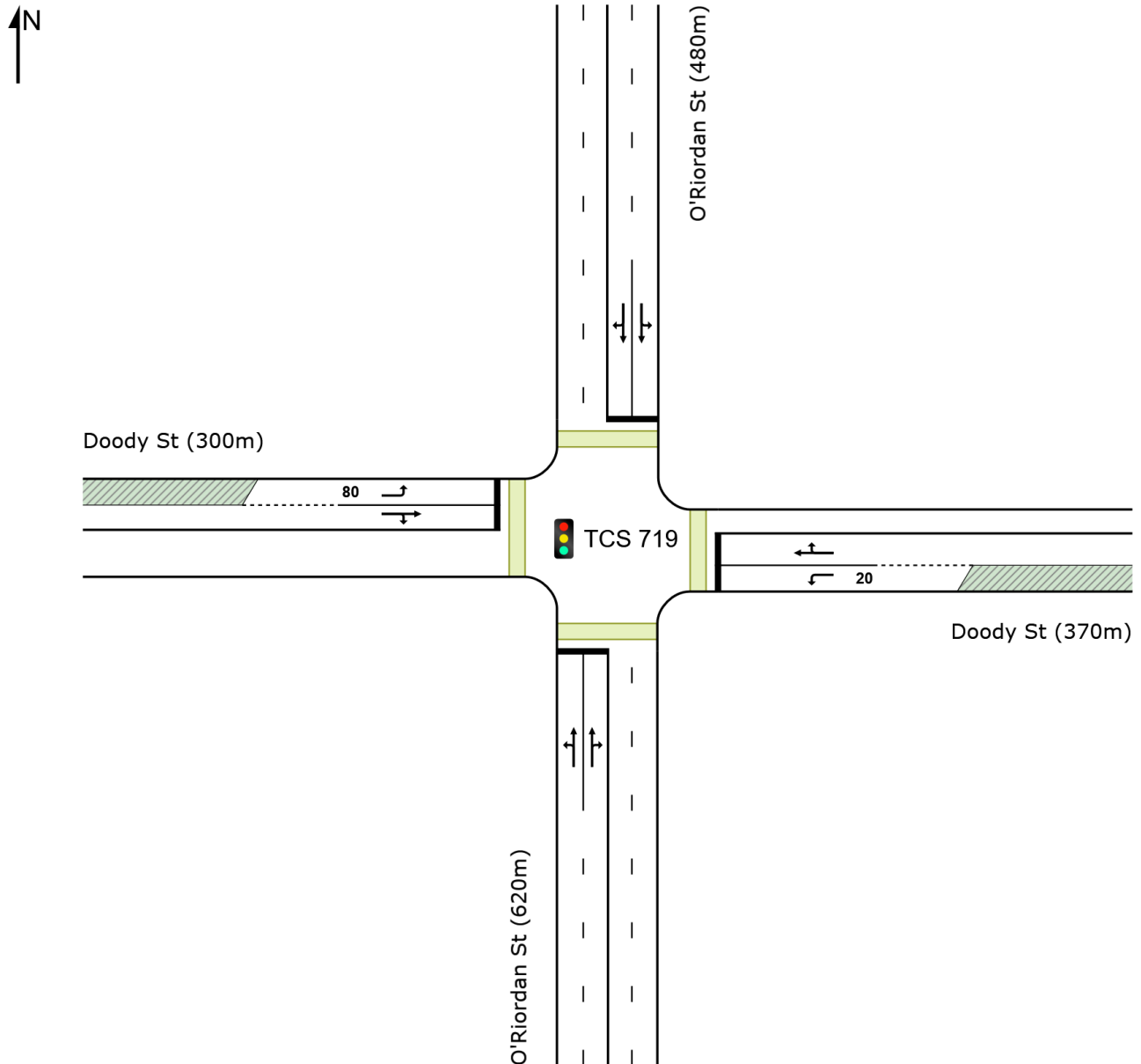
 **Site: TCS 719 [2. O'Riordan St / Doody St - AM (Site Folder: Base Case)]**

O'Riordan Street / Doody Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated

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Project: C:\Users\Faria Imam\Desktop\1279_Gardeners Road\1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

Site: TCS 719 [2. O'Riordan St / Doody St - AM (Site Folder: Base Case)]

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site User-Given Phase Times)

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.

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: O'Riordan St (620m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.3	214.6	0.96
East: Doody St (370m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	222.6	212.3	0.95
North: O'Riordan St (480m)												

P3 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.4	214.7	0.96
West: Doody St (300m)											
P4 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.1	214.3	0.96
All Pedestrians	200	211	59.3	LOS E	0.2	0.2	0.96	0.96	223.9	214.0	0.96

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.

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PHASING SUMMARY

Site: TCS 719 [2. O'Riordan St / Doody St - AM (Site Folder: Base Case)]

O'Riordan Street / Doody Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS TCS 0719

Reference Phase: Phase A

Input Phase Sequence: A, B

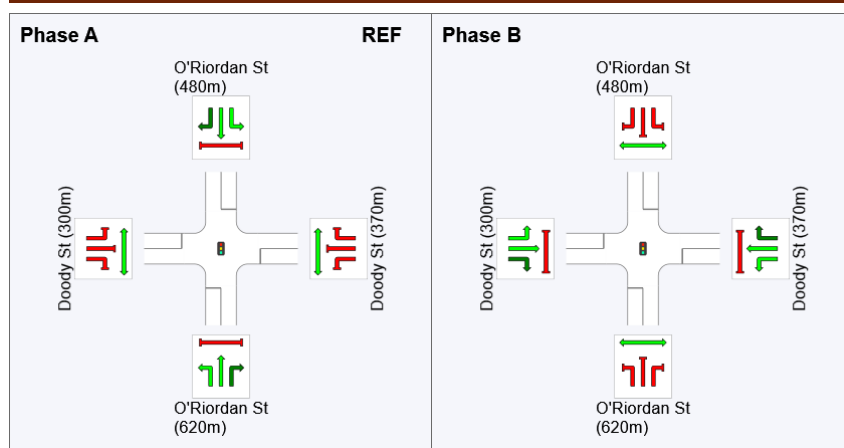
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	90
Green Time (sec)	84	34
Phase Time (sec)	90	40
Phase Split	69%	31%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

Site: TCS 719 [2. O'Riordan St / Doody St - PM (Site Folder: Base Case)]

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site User-Given Phase Times)

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: O'Riordan St (620m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.3	214.6	0.96
East: Doody St (370m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	222.6	212.3	0.95
North: O'Riordan St (480m)												

P3 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.4	214.7	0.96
West: Doody St (300m)											
P4 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.1	214.3	0.96
All Pedestrians	200	211	59.3	LOS E	0.2	0.2	0.96	0.96	223.9	214.0	0.96

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.

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

Site: TCS 719 [2. O'Riordan St / Doody St - PM (Site Folder: Base Case)]

O'Riordan Street / Doody Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS TCS 0719

Reference Phase: Phase A

Input Phase Sequence: A, B

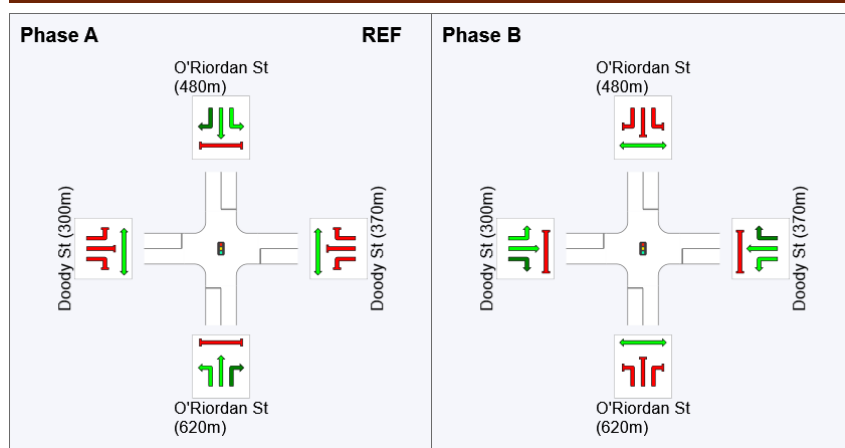
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	88
Green Time (sec)	82	36
Phase Time (sec)	88	42
Phase Split	68%	32%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

SITE LAYOUT

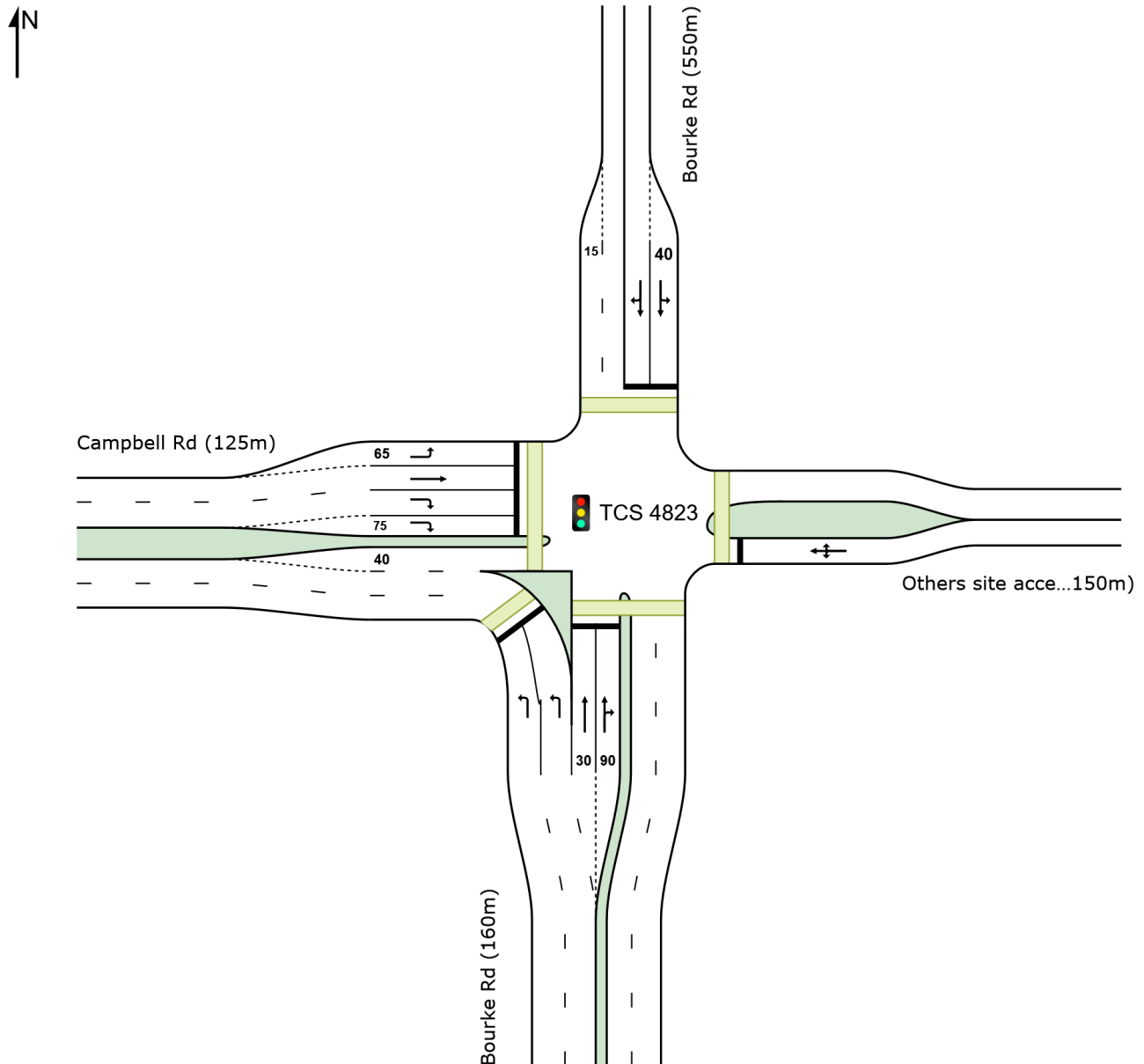
 Site: TCS 4823 [3. Bourke Rd / Campbell Rd - AM (Site Folder: Base Case)]

Bourke Road / Campbell Road

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

Site: TCS 4823 [3. Bourke Rd / Campbell Rd - AM (Site Folder: Base Case)]

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 112 seconds (Site User-Given Phase Times)

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Bourke Rd (160m)												
P1	Full	50	53	50.3	LOS E	0.2	0.2	0.95	0.95	217.6	217.5	1.00
P1B	Slip/Bypass	50	53	22.9	LOS C	0.1	0.1	0.89	0.89	184.3	209.7	1.14
East: Others site access (150m)												

P2 Full	50	53	50.3	LOS E	0.2	0.2	0.95	0.95	215.4	214.7	1.00
North: Bourke Rd (550m)											
P3 Full	50	53	50.3	LOS E	0.2	0.2	0.95	0.95	215.9	215.3	1.00
West: Campbell Rd (125m)											
P4 Full	50	53	50.3	LOS E	0.2	0.2	0.95	0.95	224.3	226.3	1.01
All Pedestrians	250	263	44.8	LOS E	0.2	0.2	0.94	0.94	211.5	216.7	1.02

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.

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

 **Site: TCS 4823 [3. Bourke Rd / Campbell Rd - AM (Site Folder: Base Case)]**

Bourke Road / Campbell Road
Site Category: Existing
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 112 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: SCATS TCS 4823
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D, E
Output Phase Sequence: A, B, C, D, E

Phase Timing Summary

Phase	A	B	C	D	E
Phase Change Time (sec)	0	51	59	64	91
Green Time (sec)	45	2	4	25	15
Phase Time (sec)	51	3	6	31	21
Phase Split	46%	3%	5%	28%	19%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

Site: TCS 4823 [3. Bourke Rd / Campbell Rd - PM (Site Folder: Base Case)]

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 121 seconds (Site User-Given Phase Times)

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Bourke Rd (160m)												
P1	Full	50	53	56.7	LOS E	0.2	0.2	0.97	0.97	224.0	217.5	0.97
P1B	Slip/Bypass	50	53	24.6	LOS C	0.1	0.1	0.90	0.90	185.9	209.7	1.13
East: Others site access (150m)												

P2 Full	50	53	54.8	LOS E	0.2	0.2	0.95	0.95	219.9	214.7	0.98
North: Bourke Rd (550m)											
P3 Full	50	53	54.8	LOS E	0.2	0.2	0.95	0.95	220.4	215.3	0.98
West: Campbell Rd (125m)											
P4 Full	50	53	54.8	LOS E	0.2	0.2	0.95	0.95	228.8	226.3	0.99
All Pedestrians	250	263	49.1	LOS E	0.2	0.2	0.95	0.95	215.8	216.7	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.

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

 **Site: TCS 4823 [3. Bourke Rd / Campbell Rd - PM (Site Folder: Base Case)]**

Bourke Road / Campbell Road
Site Category: Existing
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 121 seconds (Site User-Given Phase Times)

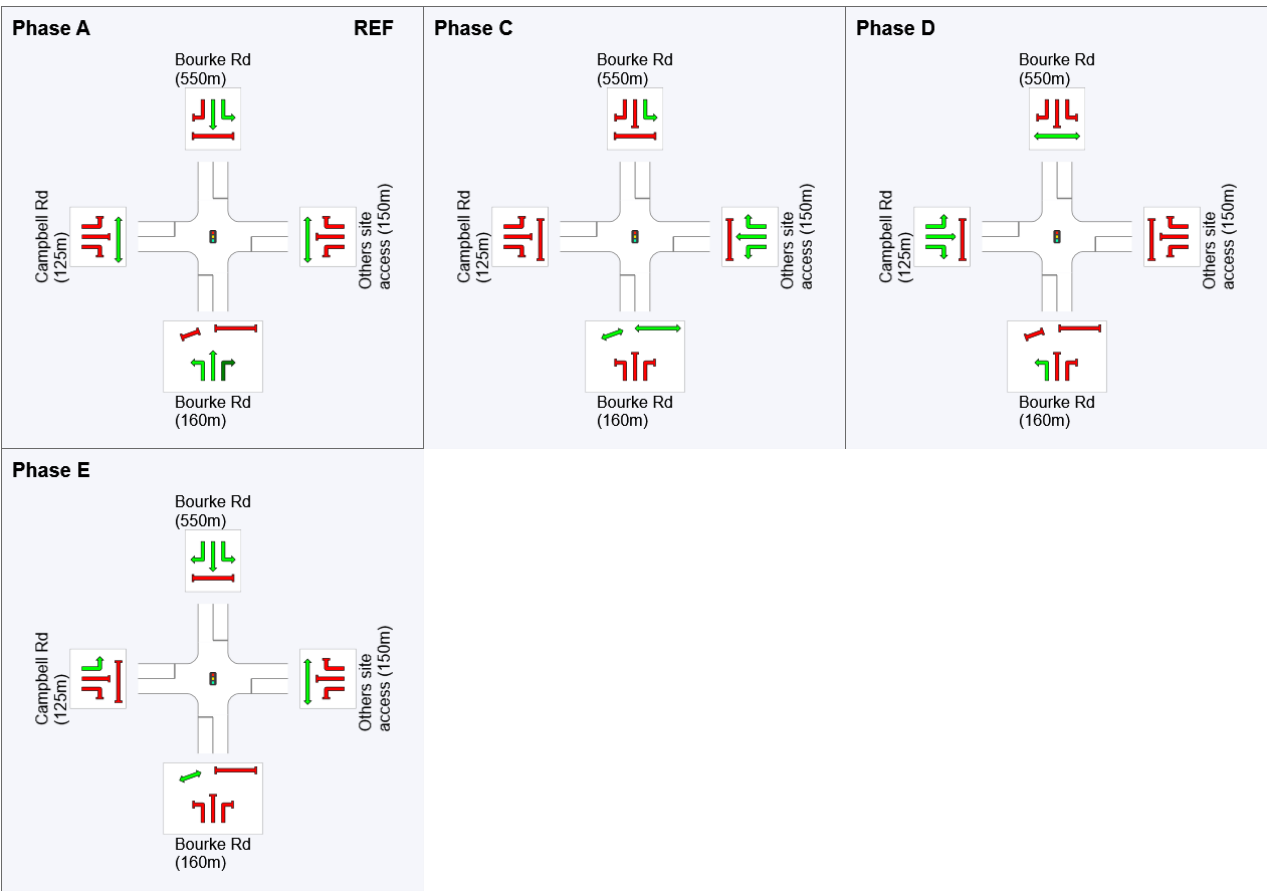
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: SCATS TCS 4823
Reference Phase: Phase A
Input Phase Sequence: A, C, D, E
Output Phase Sequence: A, C, D, E

Phase Timing Summary

Phase	A	C	D	E
Phase Change Time (sec)	0	47	60	90
Green Time (sec)	41	7	26	25
Phase Time (sec)	47	11	32	31
Phase Split	39%	9%	26%	26%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

SITE LAYOUT

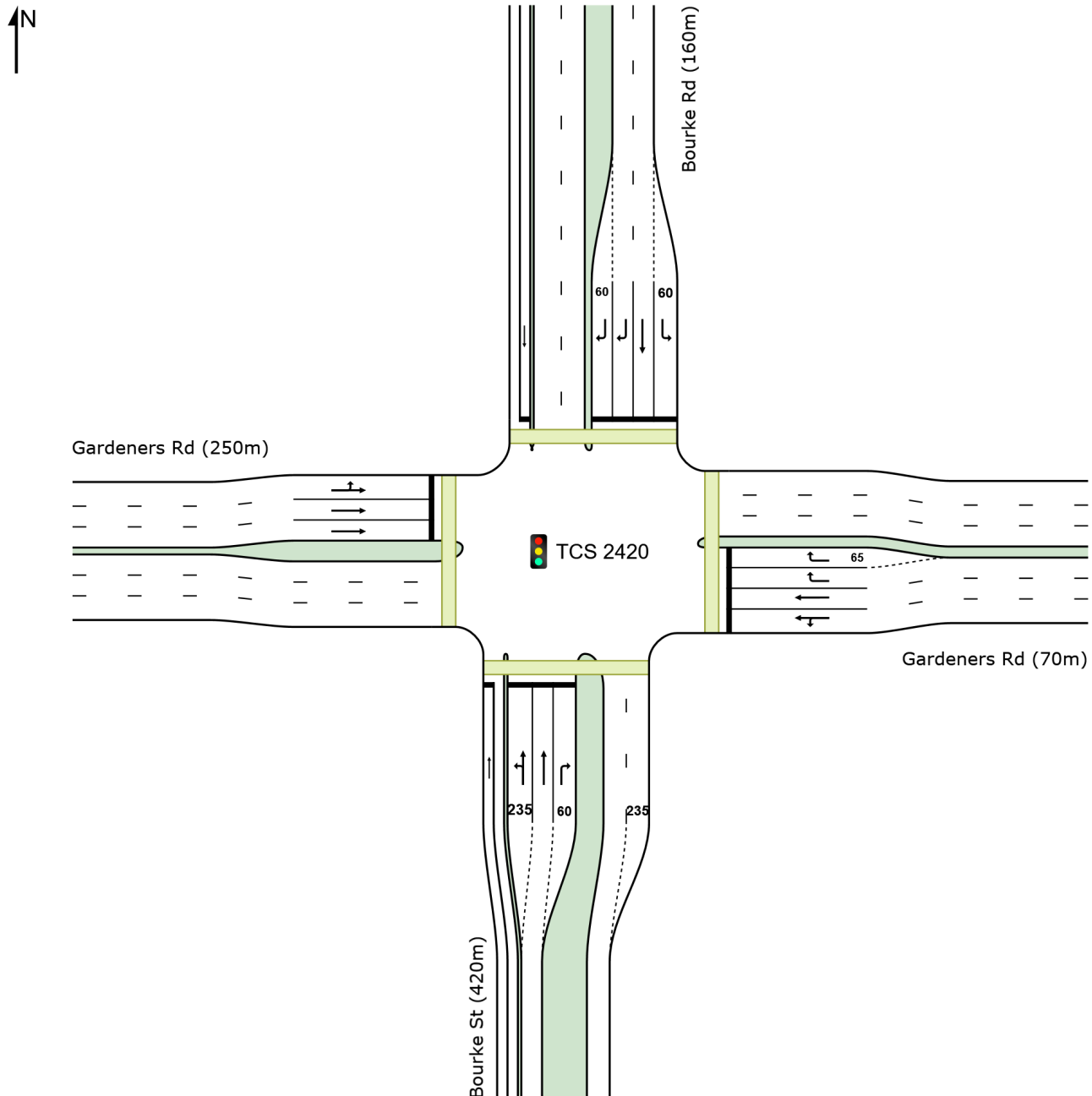
 Site: TCS 2420 [5. Gardeners Rd / Bourke Rd - AM (Site Folder: Base Case)]

Gardeners Road/ Bourke Road

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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MOVEMENT SUMMARY

 Site: TCS 2420 [5. Gardeners Rd / Bourke Rd - AM (Site Folder: Base Case)]

Gardeners Road/ Bourke Road

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: Bourke St (420m)														
1	L2	104	8	109	8.0	0.482	62.6	LOS E	6.6	49.5	0.97	0.79	0.97	22.1
2	T1	196	14	206	7.1	0.419	46.2	LOS D	9.8	73.3	0.90	0.73	0.90	24.6
3	R2	110	9	116	8.0	0.535	54.6	LOS D	6.5	48.9	0.99	0.79	0.99	19.8
Approach		410	31	432	7.6	0.535	52.6	LOS D	9.8	73.3	0.94	0.76	0.94	22.5
East: Gardeners Rd (70m)														
4	L2	94	8	99	8.0	0.476	25.0	LOS B	17.5	131.1	0.68	0.64	0.68	31.9
5	T1	751	60	791	8.0	0.476	20.6	LOS B	17.5	131.3	0.68	0.62	0.68	29.8
6	R2	349	28	367	8.0	* 0.889	78.7	LOS F	13.3	99.6	1.00	0.99	1.36	9.6
Approach		1194	96	1257	8.0	0.889	37.9	LOS C	17.5	131.3	0.77	0.73	0.88	20.4
North: Bourke Rd (160m)														
7	L2	234	19	246	8.0	0.565	30.2	LOS C	8.5	63.3	0.92	0.81	0.92	18.6
8	T1	190	15	200	7.7	* 0.440	46.5	LOS D	10.4	77.6	0.90	0.76	0.90	25.0
9	R2	115	9	121	8.0	0.283	53.8	LOS D	3.3	24.6	0.95	0.75	0.95	18.9
Approach		539	43	567	7.9	0.565	41.0	LOS C	10.4	77.6	0.92	0.78	0.92	21.5
West: Gardeners Rd (250m)														
10	L2	219	18	231	8.0	* 0.742	42.2	LOS C	24.3	181.6	0.94	0.88	0.94	23.0
11	T1	1114	89	1173	8.0	* 0.742	38.9	LOS C	25.9	193.6	0.94	0.84	0.94	20.7
Approach		1333	107	1403	8.0	0.742	39.5	LOS C	25.9	193.6	0.94	0.85	0.94	21.1
All Vehicles		3476	276	3659	7.9	0.889	40.7	LOS C	25.9	193.6	0.88	0.79	0.92	21.2

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Bourke St (420m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	233.1	226.0	0.97
East: Gardeners Rd (70m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	232.7	225.5	0.97
North: Bourke Rd (160m)												
P3	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	233.3	226.3	0.97

West: Gardeners Rd (250m)												
P4 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	231.6	224.0	0.97	
All Pedestrians	200	211	59.3	LOS E	0.2	0.2	0.96	0.96	232.7	225.5	0.97	

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

Pedestrian movement LOS values are based on average delay per pedestrian movement.

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

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

 **Site: TCS 2420 [5. Gardeners Rd / Bourke Rd - AM (Site Folder: Base Case)]**

Gardeners Road/ Bourke Road
Site Category: Existing
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

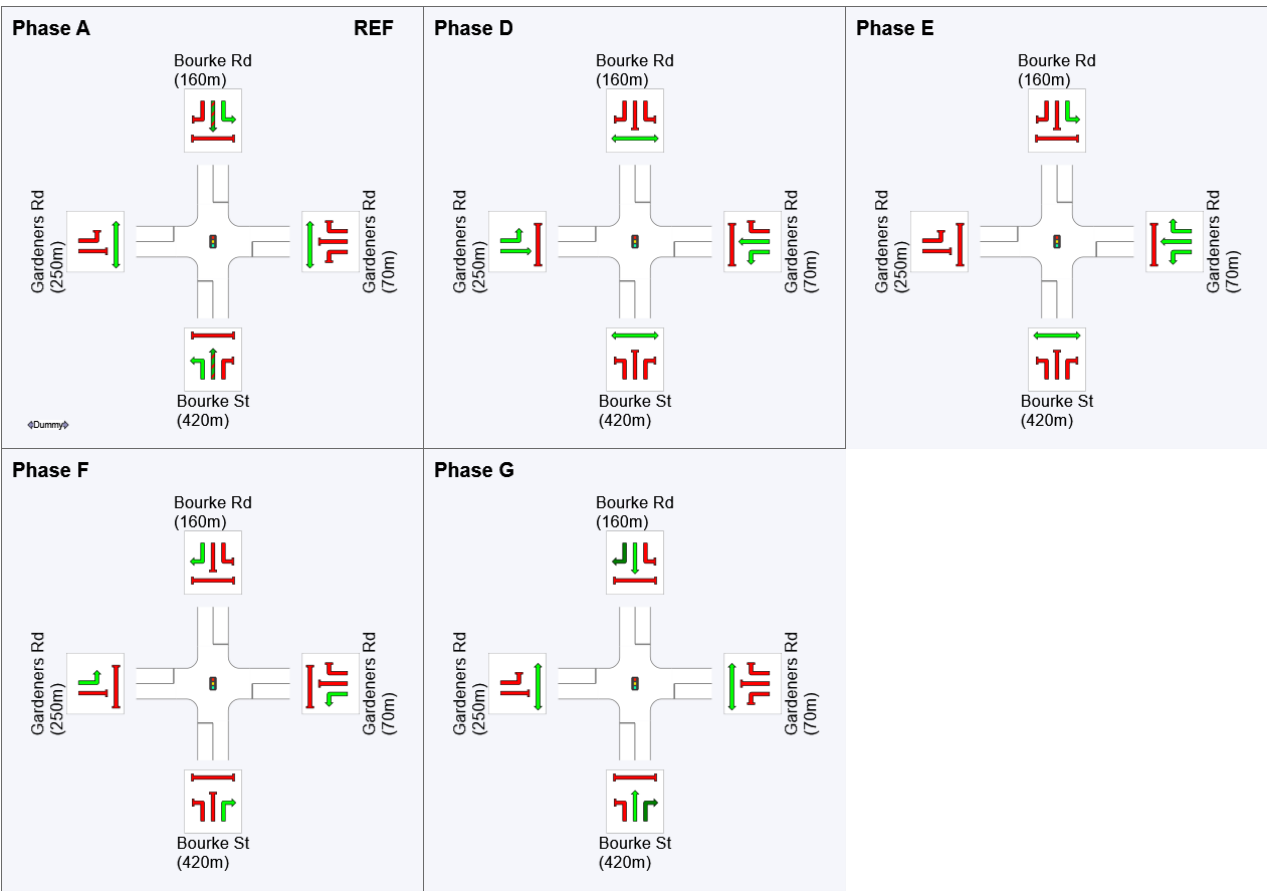
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: SCATS TCS 2420
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F, G
Output Phase Sequence: A, D, E, F, G

Phase Timing Summary

Phase	A	D	E	F	G
Phase Change Time (sec)	0	23	75	97	115
Green Time (sec)	17	46	16	12	9
Phase Time (sec)	23	52	22	18	15
Phase Split	18%	40%	17%	14%	12%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

MOVEMENT SUMMARY

 Site: TCS 2420 [5. Gardeners Rd / Bourke Rd - PM (Site Folder: Base Case)]

Gardeners Road/ Bourke Road

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Bourke St (420m)														
1	L2	101	3	106	3.0	0.378	58.7	LOS E	6.2	44.2	0.94	0.78	0.94	23.0
2	T1	152	4	160	2.6	* 0.277	42.8	LOS D	6.9	49.8	0.85	0.68	0.85	25.8
3	R2	96	3	101	3.0	0.398	51.5	LOS D	5.5	39.2	0.96	0.77	0.96	20.5
Approach		349	10	367	2.8	0.398	49.8	LOS D	6.9	49.8	0.91	0.73	0.91	23.3
East: Gardeners Rd (70m)														
4	L2	125	4	132	3.0	0.709	32.1	LOS C	31.6	227.0	0.84	0.78	0.84	28.5
5	T1	1098	33	1156	3.0	* 0.709	27.7	LOS B	31.6	227.0	0.85	0.77	0.85	25.5
6	R2	371	11	391	3.0	0.756	66.1	LOS E	12.6	90.7	1.00	0.87	1.11	11.1
Approach		1594	48	1678	3.0	0.756	37.0	LOS C	31.6	227.0	0.88	0.80	0.91	21.0
North: Bourke Rd (160m)														
7	L2	360	11	379	3.0	* 0.698	28.2	LOS B	12.1	86.7	0.94	0.84	0.94	19.4
8	T1	227	7	239	2.9	0.466	44.3	LOS D	12.4	88.9	0.89	0.77	0.89	25.7
9	R2	219	7	231	3.0	0.489	53.3	LOS D	6.3	45.2	0.98	0.78	0.98	19.2
Approach		806	24	848	3.0	0.698	39.5	LOS C	12.4	88.9	0.94	0.80	0.94	21.6
West: Gardeners Rd (250m)														
10	L2	126	4	133	3.0	* 0.610	46.0	LOS D	17.0	122.3	0.92	0.85	0.92	22.1
11	T1	822	25	865	3.0	0.610	42.1	LOS C	18.2	130.3	0.92	0.80	0.92	19.7
Approach		948	28	998	3.0	0.610	42.6	LOS D	18.2	130.3	0.92	0.81	0.92	20.0
All Vehicles		3697	110	3892	3.0	0.756	40.2	LOS C	31.6	227.0	0.91	0.80	0.92	21.2

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Bourke St (420m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	233.1	226.0	0.97
East: Gardeners Rd (70m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	232.7	225.5	0.97
North: Bourke Rd (160m)												
P3	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	233.3	226.3	0.97

West: Gardeners Rd (250m)												
P4 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	231.6	224.0	0.97	
All Pedestrians	200	211	59.3	LOS E	0.2	0.2	0.96	0.96	232.7	225.5	0.97	

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

Pedestrian movement LOS values are based on average delay per pedestrian movement.

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

PHASING SUMMARY

 **Site: TCS 2420 [5. Gardeners Rd / Bourke Rd - PM (Site Folder: Base Case)]**

Gardeners Road/ Bourke Road
Site Category: Existing
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

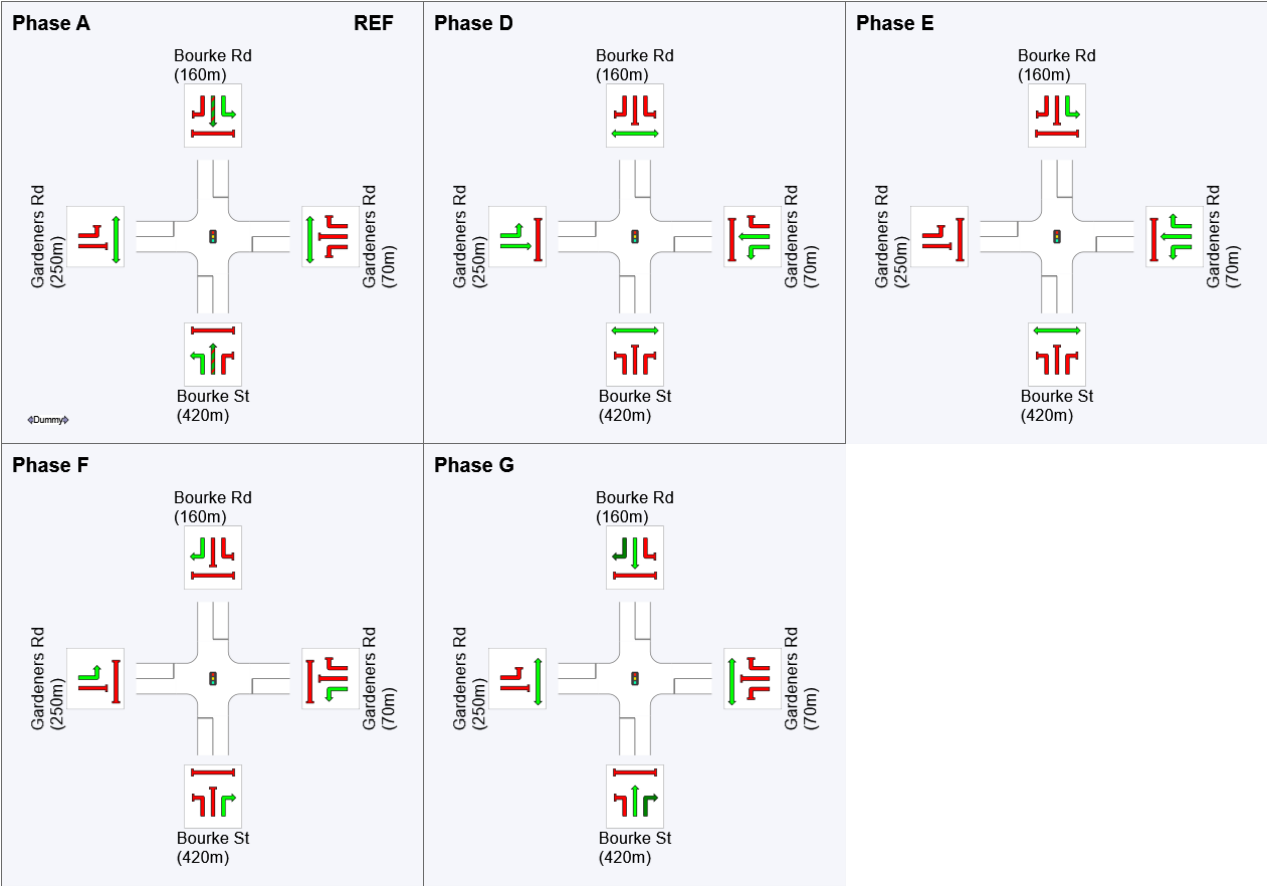
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: SCATS TCS 2420
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F, G
Output Phase Sequence: A, D, E, F, G

Phase Timing Summary

Phase	A	D	E	F	G
Phase Change Time (sec)	0	26	70	95	115
Green Time (sec)	20	38	19	14	9
Phase Time (sec)	26	44	25	20	15
Phase Split	20%	34%	19%	15%	12%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

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SITE LAYOUT

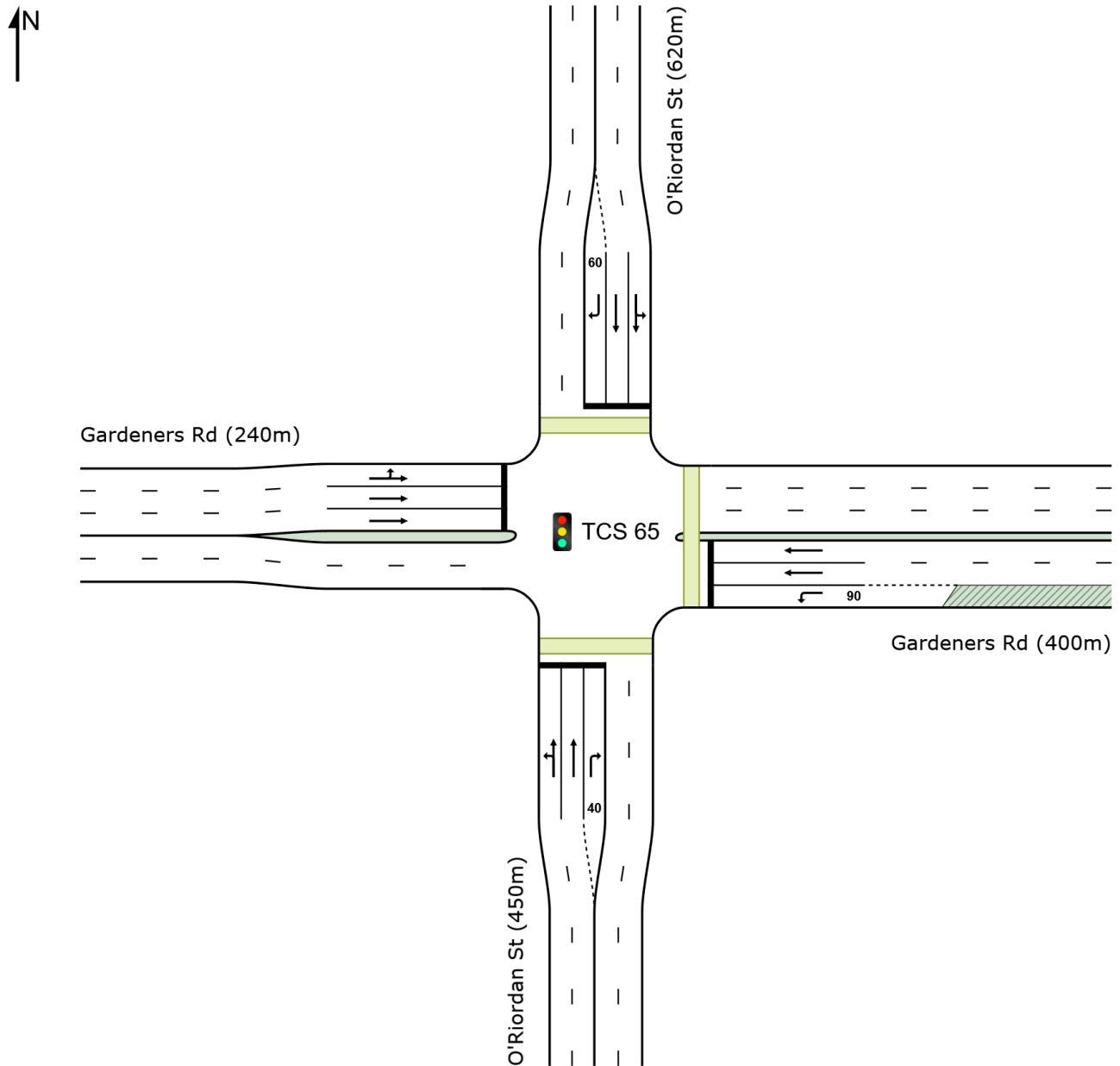
 **Site: TCS 65 [7. Gardeners Rd / O'Riordan St - AM (Site Folder: Base Case)]**

Gardeners Road / O'Riordan Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



MOVEMENT SUMMARY

 **Site: TCS 65 [7. Gardeners Rd / O'Riordan St - AM (Site Folder: Base Case)]**

Gardeners Road / O'Riordan Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: O'Riordan St (450m)														
1	L2	197	16	207	8.0	0.975	83.7	LOS F	60.9	455.4	1.00	1.17	1.37	19.4
2	T1	930	74	979	8.0	* 0.975	79.7	LOS F	60.9	455.4	0.93	1.15	1.35	24.7
3	R2	300	24	316	8.0	0.704	28.8	LOS C	9.6	72.1	0.96	0.84	0.96	35.3
Approach		1427	114	1502	8.0	0.975	69.6	LOS E	60.9	455.4	0.95	1.09	1.27	25.4
East: Gardeners Rd (400m)														
4	L2	107	9	113	8.0	0.104	14.8	LOS B	2.6	19.8	0.40	0.67	0.40	42.7
5	T1	958	77	1008	8.0	0.964	80.7	LOS F	43.7	326.7	1.00	1.20	1.40	19.7
Approach		1065	85	1121	8.0	0.964	74.1	LOS F	43.7	326.7	0.94	1.15	1.30	21.2
North: O'Riordan St (620m)														
7	L2	151	12	159	8.0	0.579	50.6	LOS D	13.9	103.9	0.93	0.81	0.93	30.9
8	T1	332	27	349	8.0	0.579	45.2	LOS D	14.3	107.1	0.92	0.79	0.92	31.5
9	R2	195	16	205	8.0	0.763	64.9	LOS E	13.2	99.1	1.00	0.88	1.11	24.7
Approach		678	54	714	8.0	0.763	52.1	LOS D	14.3	107.1	0.95	0.82	0.98	29.4
West: Gardeners Rd (240m)														
10	L2	324	26	341	8.0	* 0.928	72.3	LOS F	39.8	297.9	1.00	1.05	1.28	24.0
11	T1	1130	90	1189	8.0	0.928	67.7	LOS E	39.8	297.9	1.00	1.10	1.28	22.0
Approach		1454	116	1531	8.0	0.928	68.7	LOS E	39.8	297.9	1.00	1.09	1.28	22.5
All Vehicles		4624	370	4867	8.0	0.975	67.8	LOS E	60.9	455.4	0.96	1.06	1.24	24.3

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: O'Riordan St (450m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	226.0	216.8	0.96
East: Gardeners Rd (400m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	228.8	220.4	0.96
North: O'Riordan St (620m)												
P3	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	225.7	216.4	0.96

All Pedestrians	150	158	59.3	LOS E	0.2	0.2	0.96	0.96	226.9	217.9	0.96
-----------------	-----	-----	------	-------	-----	-----	------	------	-------	-------	------

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.

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PHASING SUMMARY

 **Site: TCS 65 [7. Gardeners Rd / O'Riordan St - AM (Site Folder: Base Case)]**

Gardeners Road / O'Riordan Street
Site Category: Existing
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

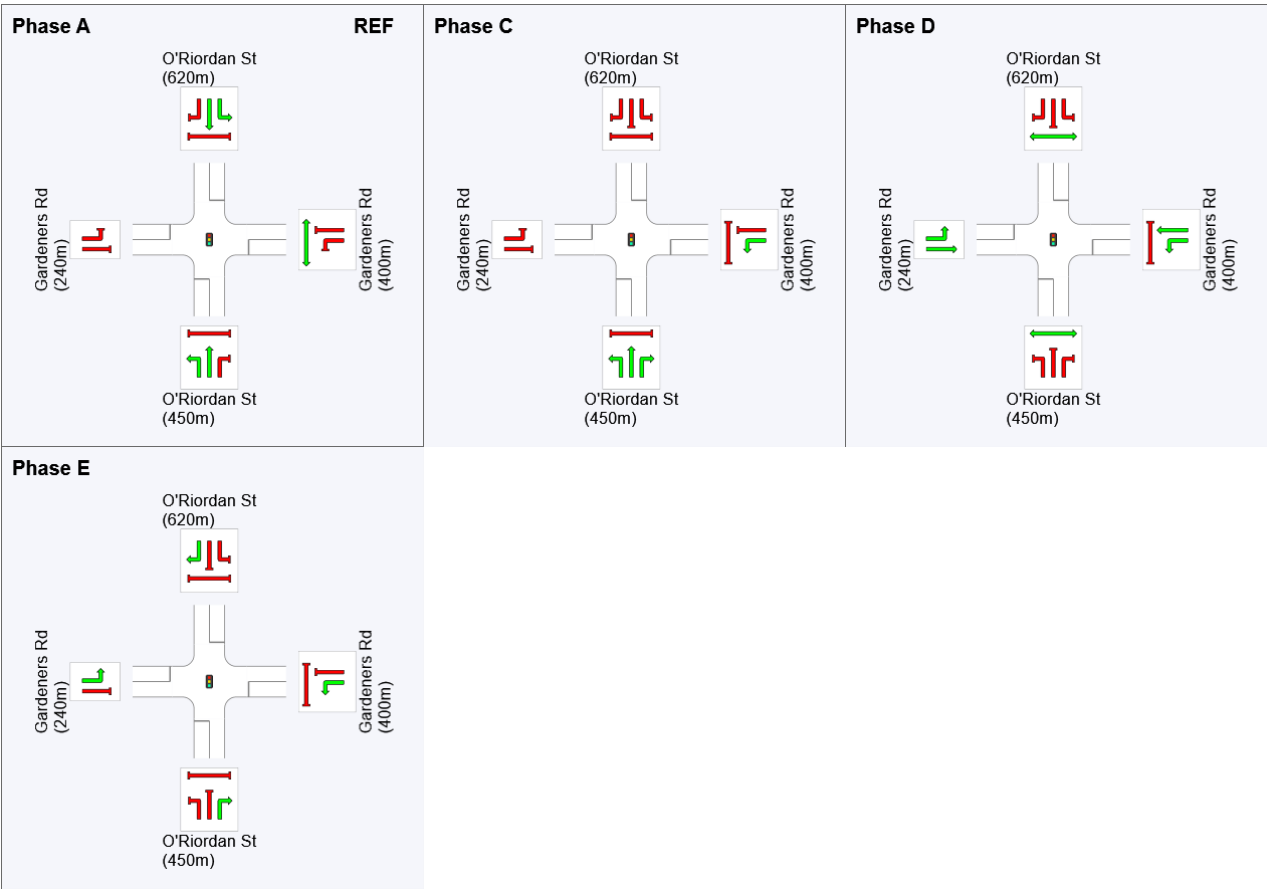
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: SCATS TCS 65
Reference Phase: Phase A
Input Phase Sequence: A, C, D, E
Output Phase Sequence: A, C, D, E

Phase Timing Summary

Phase	A	C	D	E
Phase Change Time (sec)	0	40	60	103
Green Time (sec)	34	14	40	21
Phase Time (sec)	40	17	46	27
Phase Split	31%	13%	35%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

MOVEMENT SUMMARY

 **Site: TCS 65 [7. Gardeners Rd / O'Riordan St - PM (Site Folder: Base Case)]**

Gardeners Road / O'Riordan Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: O'Riordan St (450m)														
1	L2	257	8	271	3.0	0.999	104.0	LOS F	48.4	347.7	1.00	1.22	1.52	16.8
2	T1	616	18	648	3.0	* 0.999	99.6	LOS F	48.4	347.7	0.98	1.27	1.54	21.9
3	R2	222	7	234	3.0	* 0.993	107.0	LOS F	20.2	144.9	0.97	1.15	1.65	18.8
Approach		1095	33	1153	3.0	0.999	102.2	LOS F	48.4	347.7	0.98	1.23	1.56	20.2
East: Gardeners Rd (400m)														
4	L2	136	4	143	3.0	0.135	17.5	LOS B	3.9	27.7	0.46	0.69	0.46	41.2
5	T1	1203	36	1266	3.0	* 0.993	90.7	LOS F	60.1	431.2	1.00	1.27	1.46	18.2
Approach		1339	40	1409	3.0	0.993	83.3	LOS F	60.1	431.2	0.95	1.21	1.36	19.6
North: O'Riordan St (620m)														
7	L2	218	7	229	3.0	0.971	89.8	LOS F	42.7	306.6	1.00	1.16	1.43	23.5
8	T1	635	19	668	3.0	0.971	85.1	LOS F	42.7	306.6	0.98	1.19	1.44	23.9
9	R2	271	8	285	3.0	0.988	103.3	LOS F	24.6	176.6	1.00	1.14	1.61	19.1
Approach		1124	34	1183	3.0	0.988	90.4	LOS F	42.7	306.6	0.99	1.17	1.48	22.6
West: Gardeners Rd (240m)														
10	L2	197	6	207	3.0	0.590	40.3	LOS C	20.0	143.3	0.86	0.80	0.86	32.1
11	T1	930	28	979	3.0	0.590	35.8	LOS C	20.3	145.4	0.87	0.77	0.87	31.2
Approach		1127	34	1186	3.0	0.590	36.6	LOS C	20.3	145.4	0.87	0.77	0.87	31.4
All Vehicles		4685	141	4932	3.0	0.999	78.2	LOS F	60.1	431.2	0.94	1.10	1.32	22.4

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: O'Riordan St (450m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	226.0	216.8	0.96
East: Gardeners Rd (400m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	228.8	220.4	0.96
North: O'Riordan St (620m)												
P3	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	225.7	216.4	0.96

All Pedestrians	150	158	59.3	LOS E	0.2	0.2	0.96	0.96	226.9	217.9	0.96
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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.

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

Site: TCS 65 [7. Gardeners Rd / O'Riordan St - PM (Site Folder: Base Case)]

Gardeners Road / O'Riordan Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS TCS 65

Reference Phase: Phase A

Input Phase Sequence: A, D, E

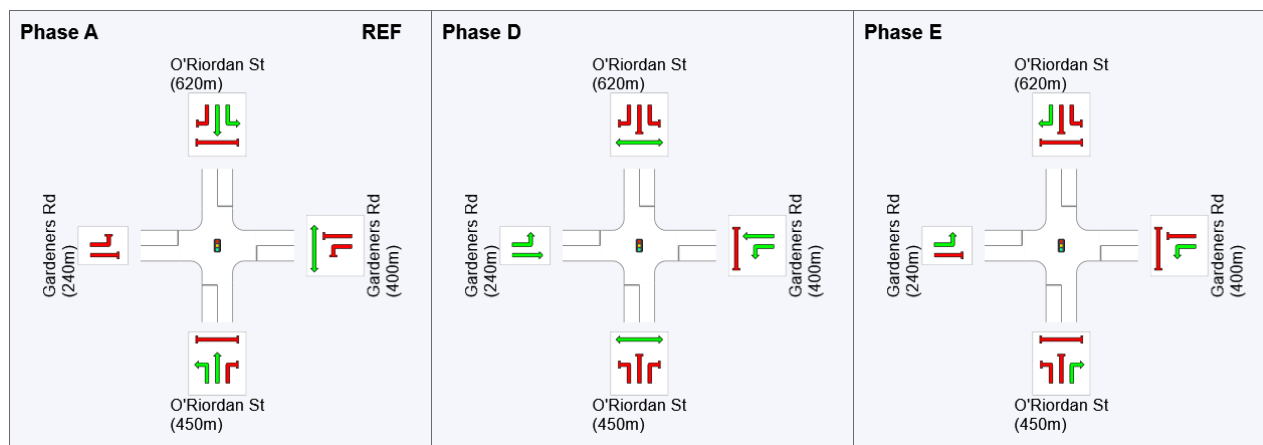
Output Phase Sequence: A, D, E

Phase Timing Summary

Phase	A	D	E
Phase Change Time (sec)	0	44	97
Green Time (sec)	38	47	27
Phase Time (sec)	44	53	33
Phase Split	34%	41%	25%

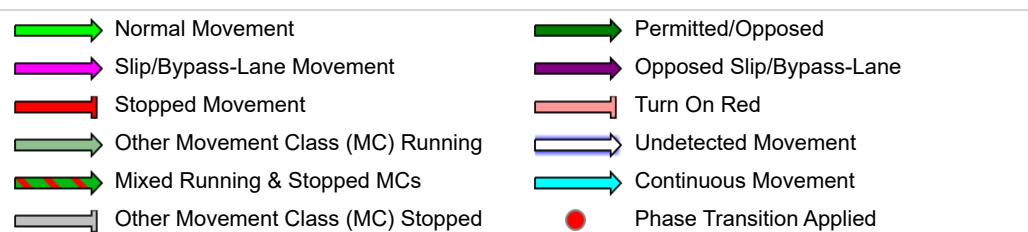
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

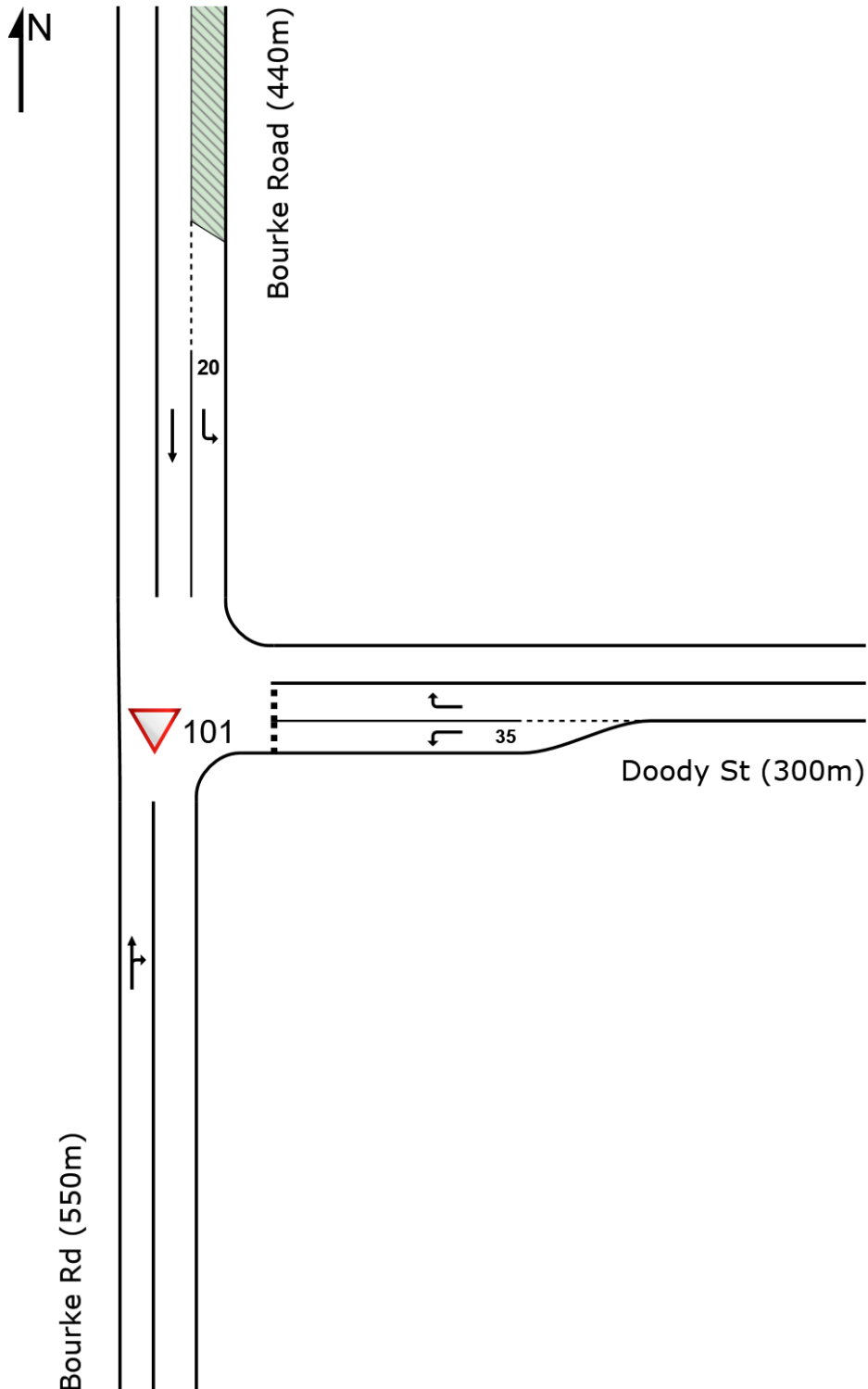


SITE LAYOUT

▽ Site: 101 [1. Bourke Rd / Doody St - AM (Site Folder: Project Case 1)]

Bourke Road / Doody Street
Site Category: Existing
Give-Way (Two-Way)

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



MOVEMENT SUMMARY

Site: 101 [1. Bourke Rd / Doody St - AM (Site Folder: Project Case 1)]

Bourke Road / Doody Street
Site Category: Existing
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: Bourke Rd (550m)														
2	T1	460	37	484	8.0	0.598	4.3	LOS A	6.3	47.0	0.57	0.34	0.90	45.9
3	R2	257	21	271	8.0	0.598	10.6	LOS A	6.3	47.0	0.57	0.34	0.90	44.5
Approach		717	57	755	8.0	0.598	6.5	NA	6.3	47.0	0.57	0.34	0.90	45.4
East: Doody St (300m)														
4	L2	198	16	208	8.0	0.184	6.2	LOS A	0.7	5.4	0.37	0.61	0.37	44.9
6	R2	159	13	167	8.0	0.802	44.4	LOS D	4.4	32.6	0.96	1.32	2.06	27.2
Approach		357	29	376	8.0	0.802	23.2	LOS B	4.4	32.6	0.63	0.92	1.12	35.4
North: Bourke Road (440m)														
7	L2	121	10	127	8.0	0.075	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.4
8	T1	328	22	345	6.7	0.190	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		449	32	473	7.1	0.190	1.3	NA	0.0	0.0	0.00	0.14	0.00	48.9
All Vehicles		1523	118	1603	7.7	0.802	8.9	NA	6.3	47.0	0.42	0.42	0.69	43.8

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: 101 [1. Bourke Rd / Doody St - PM (Site Folder: Project Case 1)]

Bourke Road / Doody Street
Site Category: Existing
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: Bourke Rd (550m)														
2	T1	79	2	83	3.0	0.277	2.6	LOS A	1.4	9.7	0.49	0.51	0.49	46.2
3	R2	195	6	205	3.0	0.277	7.3	LOS A	1.4	9.7	0.49	0.51	0.49	45.0
Approach		274	8	288	3.0	0.277	6.0	NA	1.4	9.7	0.49	0.51	0.49	45.4
East: Doody St (300m)														
4	L2	197	6	207	3.0	0.175	6.0	LOS A	0.7	4.9	0.36	0.60	0.36	45.1
6	R2	135	4	142	3.0	0.270	10.8	LOS A	1.0	7.4	0.63	0.85	0.69	41.0
Approach		332	10	349	3.0	0.270	7.9	LOS A	1.0	7.4	0.47	0.70	0.49	43.5
North: Bourke Road (440m)														
7	L2	125	4	132	3.0	0.074	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	45.5
8	T1	320	9	337	2.9	0.179	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		445	13	469	2.9	0.179	1.3	NA	0.0	0.0	0.00	0.15	0.00	48.8
All Vehicles		1051	31	1107	3.0	0.277	4.6	NA	1.4	9.7	0.27	0.42	0.28	46.2

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.

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SITE LAYOUT

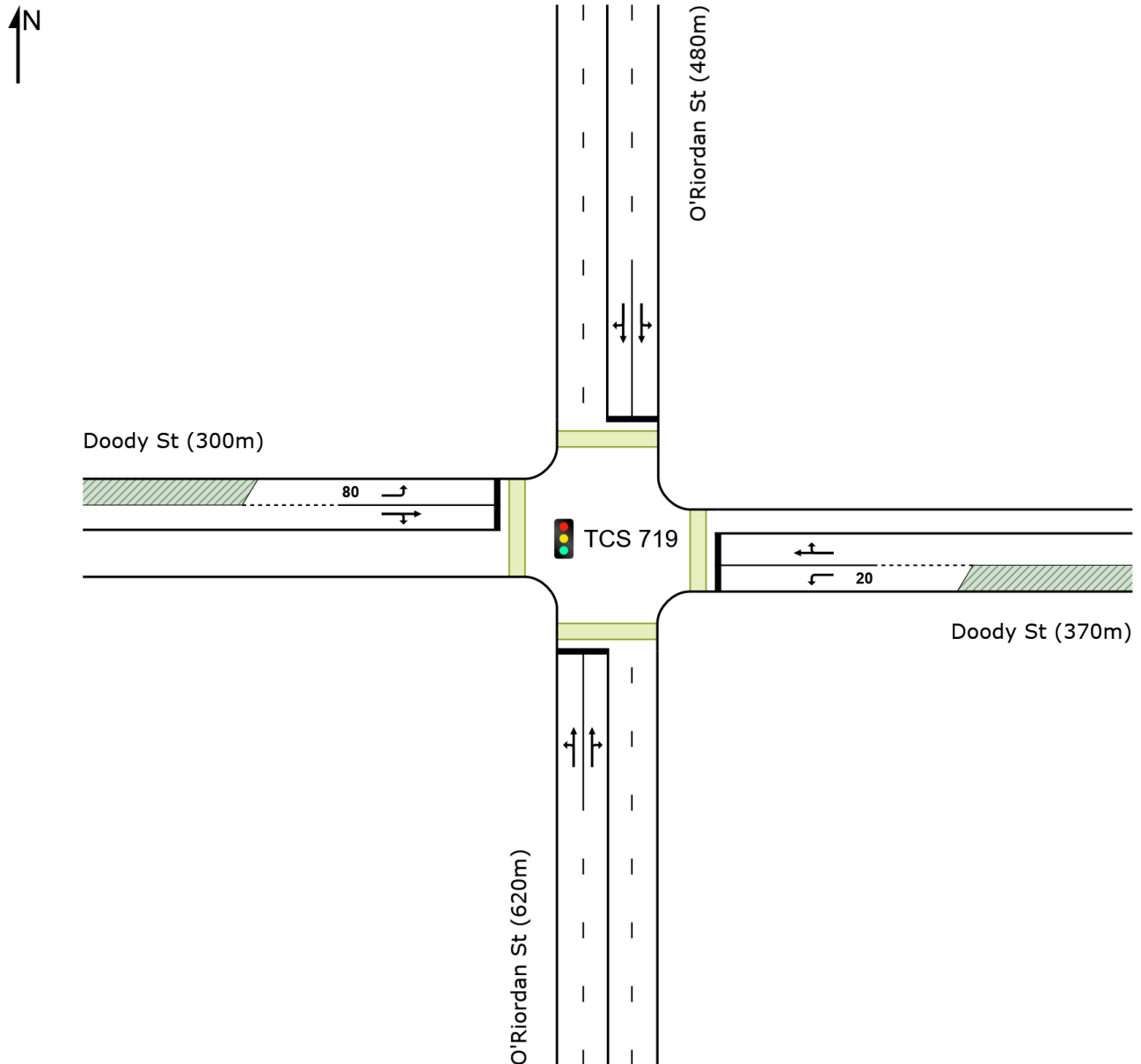
 **Site: TCS 719 [2. O'Riordan St / Doody St - AM (Site Folder: Project Case 1)]**

O'Riordan Street / Doody Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated

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



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Project: C:\Users\Faria Imam\Desktop\1279_Gardeners Road\1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

Site: TCS 719 [2. O'Riordan St / Doody St - AM (Site Folder: Project Case 1)]

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site User-Given Phase Times)

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: O'Riordan St (620m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.3	214.6	0.96
East: Doody St (370m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	222.6	212.3	0.95
North: O'Riordan St (480m)												

P3 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.4	214.7	0.96
West: Doody St (300m)											
P4 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.1	214.3	0.96
All Pedestrians	200	211	59.3	LOS E	0.2	0.2	0.96	0.96	223.9	214.0	0.96

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.

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PHASING SUMMARY

 **Site: TCS 719 [2. O'Riordan St / Doody St - AM (Site Folder: Project Case 1)]**

O'Riordan Street / Doody Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS TCS 0719

Reference Phase: Phase A

Input Phase Sequence: A, B

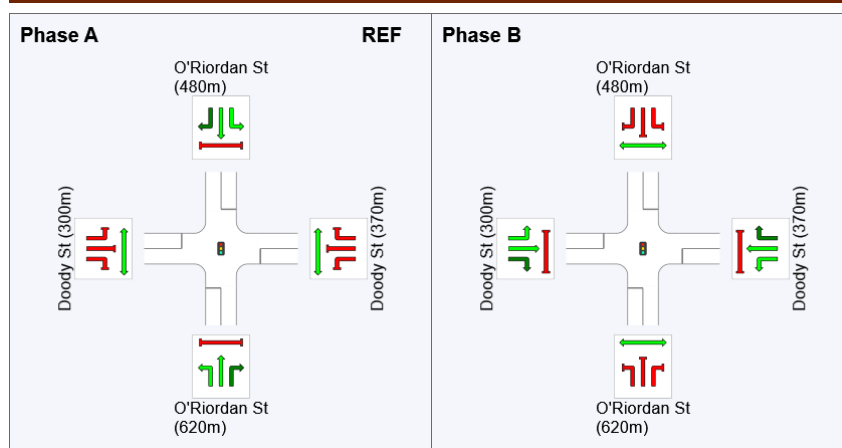
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	90
Green Time (sec)	84	34
Phase Time (sec)	90	40
Phase Split	69%	31%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

 Normal Movement	 Permitted/Opposed
 Slip/Bypass-Lane Movement	 Opposed Slip/Bypass-Lane
 Stopped Movement	 Turn On Red
 Other Movement Class (MC) Running	 Undetected Movement
 Mixed Running & Stopped MCs	 Continuous Movement
 Other Movement Class (MC) Stopped	 Phase Transition Applied

Site: TCS 719 [2. O'Riordan St / Doody St - PM (Site Folder: Project Case 1)]

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site User-Given Phase Times)

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.

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: O'Riordan St (620m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.3	214.6	0.96
East: Doody St (370m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	222.6	212.3	0.95
North: O'Riordan St (480m)												

P3 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.4	214.7	0.96
West: Doody St (300m)											
P4 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.1	214.3	0.96
All Pedestrians	200	211	59.3	LOS E	0.2	0.2	0.96	0.96	223.9	214.0	0.96

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.

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PHASING SUMMARY

Site: TCS 719 [2. O'Riordan St / Doody St - PM (Site Folder: Project Case 1)]

O'Riordan Street / Doody Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS TCS 0719

Reference Phase: Phase A

Input Phase Sequence: A, B

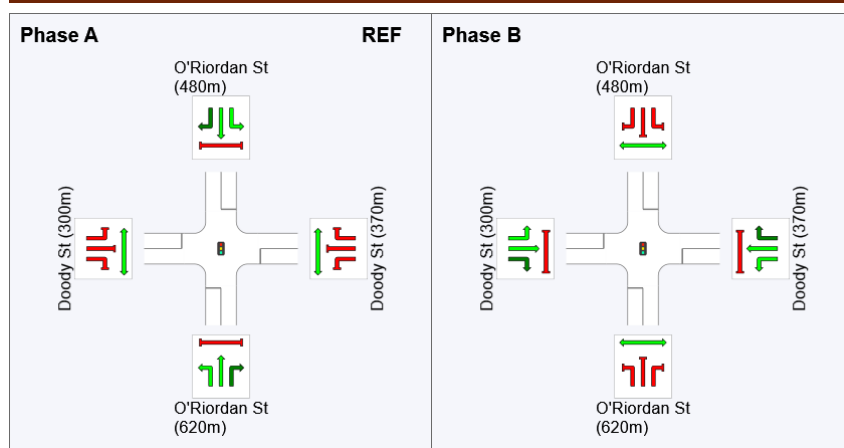
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	88
Green Time (sec)	82	36
Phase Time (sec)	88	42
Phase Split	68%	32%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

SITE LAYOUT

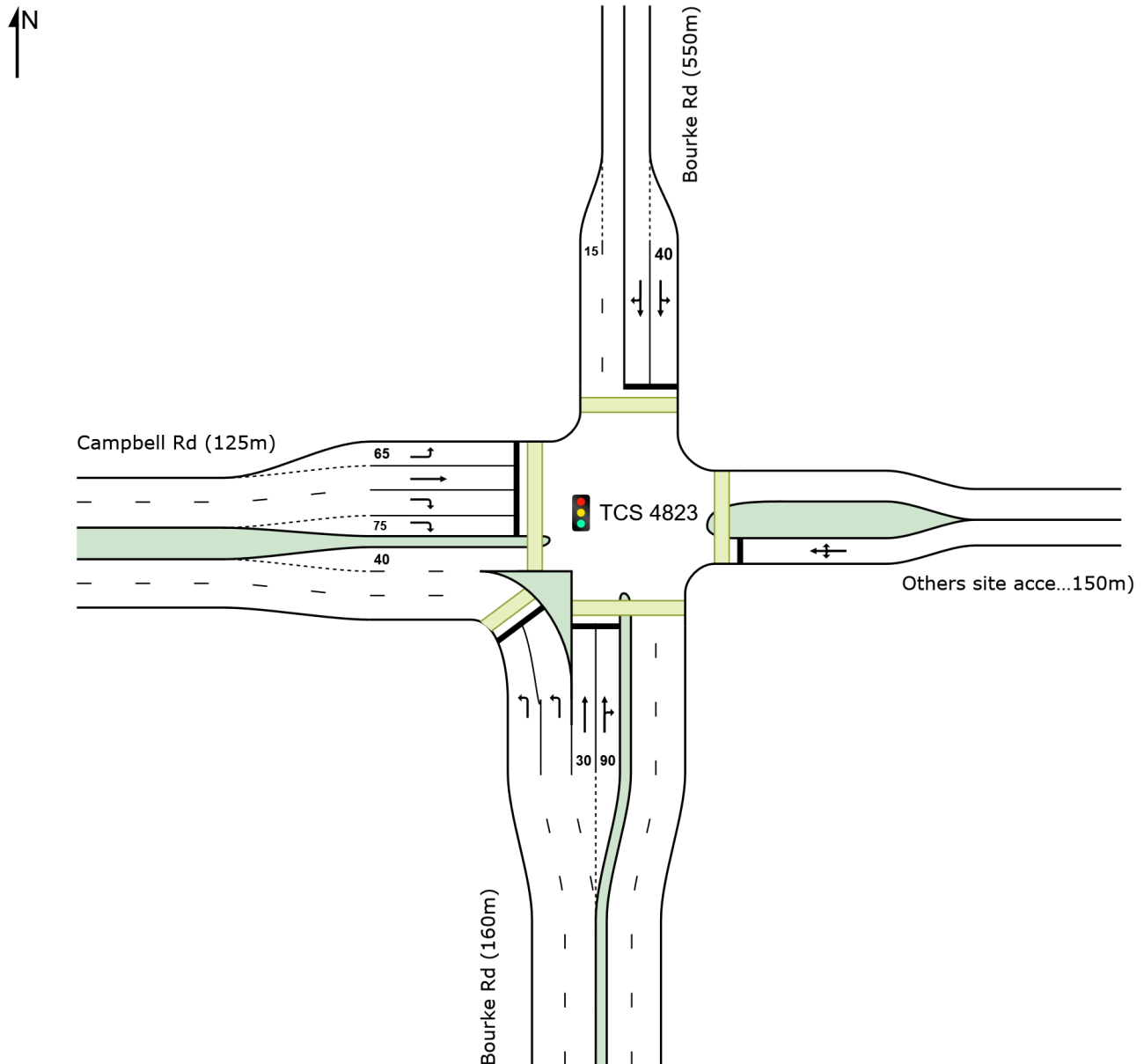
 Site: TCS 4823 [3. Bourke Rd / Campbell Rd - AM (Site Folder: Project Case 1)]

Bourke Road / Campbell Road

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



Site: TCS 4823 [3. Bourke Rd / Campbell Rd - AM (Site Folder: Project Case 1)]

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site User-Given Cycle Time)

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Bourke Rd (160m)												
P1	Full	50	53	49.3	LOS E	0.2	0.2	0.95	0.95	216.6	217.5	1.00
P1B	Slip/Bypass	50	53	23.7	LOS C	0.1	0.1	0.89	0.89	185.0	209.7	1.13
East: Others site access (150m)												

P2 Full	50	53	49.3	LOS E	0.2	0.2	0.95	0.95	214.4	214.7	1.00
North: Bourke Rd (550m)											
P3 Full	50	53	49.3	LOS E	0.2	0.2	0.95	0.95	214.9	215.3	1.00
West: Campbell Rd (125m)											
P4 Full	50	53	49.3	LOS E	0.2	0.2	0.95	0.95	223.3	226.3	1.01
All Pedestrians	250	263	44.1	LOS E	0.2	0.2	0.94	0.94	210.8	216.7	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.

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PHASING SUMMARY

 **Site: TCS 4823 [3. Bourke Rd / Campbell Rd - AM (Site Folder: Project Case 1)]**

Bourke Road / Campbell Road
Site Category: Existing
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: SCATS TCS 4823
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D, E
Output Phase Sequence: A, B, C, D, E

Phase Timing Summary

Phase	A	B	C	D	E
Phase Change Time (sec)	0	12	43	69	95
Green Time (sec)	6	25	20	20	9
Phase Time (sec)	12	31	26	26	15
Phase Split	11%	28%	24%	24%	14%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

MOVEMENT SUMMARY

Site: TCS 4823 [3. Bourke Rd / Campbell Rd - PM (Site Folder: Project Case 1)]

Bourke Road / Campbell Road

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance															
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed	
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m					v/c
South: Bourke Rd (160m)															
1	L2	499	15	525	3.0	* 0.395	26.6	LOS B	9.2	66.3	0.80	0.78	0.80	24.9	
2	T1	188	6	198	3.0	0.592	52.8	LOS D	9.0	64.5	0.96	0.78	0.96	25.6	
3	R2	2	0	2	3.0	0.592	57.8	LOS E	9.0	64.5	0.98	0.80	0.98	15.8	
Approach		689	21	725	3.0	0.592	33.8	LOS C	9.2	66.3	0.84	0.78	0.84	25.2	
East: Others site access (150m)															
4	L2	12	0	13	3.0	0.272	68.0	LOS E	1.4	10.1	0.99	0.71	0.99	13.1	
5	T1	6	0	6	3.0	* 0.272	63.9	LOS E	1.4	10.1	0.99	0.71	0.99	12.4	
6	R2	4	0	4	3.0	0.272	68.0	LOS E	1.4	10.1	0.99	0.71	0.99	21.7	
Approach		22	1	23	3.0	0.272	66.9	LOS E	1.4	10.1	0.99	0.71	0.99	14.9	
North: Bourke Rd (550m)															
7	L2	8	0	8	3.0	0.671	18.6	LOS B	19.1	136.9	0.61	0.55	0.61	38.8	
8	T1	638	19	671	2.9	0.671	15.8	LOS B	19.1	136.9	0.63	0.57	0.63	40.0	
9	R2	189	6	199	3.0	* 0.671	31.7	LOS C	11.9	85.3	0.75	0.73	0.75	31.5	
Approach		835	25	879	3.0	0.671	19.4	LOS B	19.1	136.9	0.66	0.61	0.66	37.8	
West: Campbell Rd (125m)															
10	L2	83	2	87	3.0	0.078	14.9	LOS B	2.0	14.1	0.42	0.67	0.42	39.1	
11	T1	9	0	9	3.0	0.025	42.4	LOS C	0.4	3.2	0.83	0.61	0.83	17.4	
12	R2	449	13	473	2.9	* 0.661	54.2	LOS D	13.2	94.8	0.98	0.83	0.98	15.2	
Approach		541	16	569	2.9	0.661	47.9	LOS D	13.2	94.8	0.89	0.80	0.89	18.5	
All Vehicles		2087	62	2197	3.0	0.671	32.1	LOS C	19.1	136.9	0.78	0.72	0.78	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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Bourke Rd (160m)												
P1	Full	50	53	56.2	LOS E	0.2	0.2	0.97	0.97	223.5	217.5	0.97
P1B	Slip/Bypass	50	53	29.2	LOS C	0.1	0.1	0.90	0.90	190.5	209.7	1.10
East: Others site access (150m)												

P2 Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.4	214.7	0.98
North: Bourke Rd (550m)											
P3 Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.9	215.3	0.98
West: Campbell Rd (125m)											
P4 Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	228.3	226.3	0.99
All Pedestrians	250	263	49.6	LOS E	0.2	0.2	0.95	0.95	216.3	216.7	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.

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PHASING SUMMARY

 **Site: TCS 4823 [3. Bourke Rd / Campbell Rd - PM (Site Folder: Project Case 1)]**

Bourke Road / Campbell Road
Site Category: Existing
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: SCATS TCS 4823
Reference Phase: Phase A
Input Phase Sequence: A, C, D, E
Output Phase Sequence: A, C, D, E

Phase Timing Summary

Phase	A	C	D	E
Phase Change Time (sec)	0	24	36	66
Green Time (sec)	18	6	24	48
Phase Time (sec)	24	12	30	54
Phase Split	20%	10%	25%	45%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

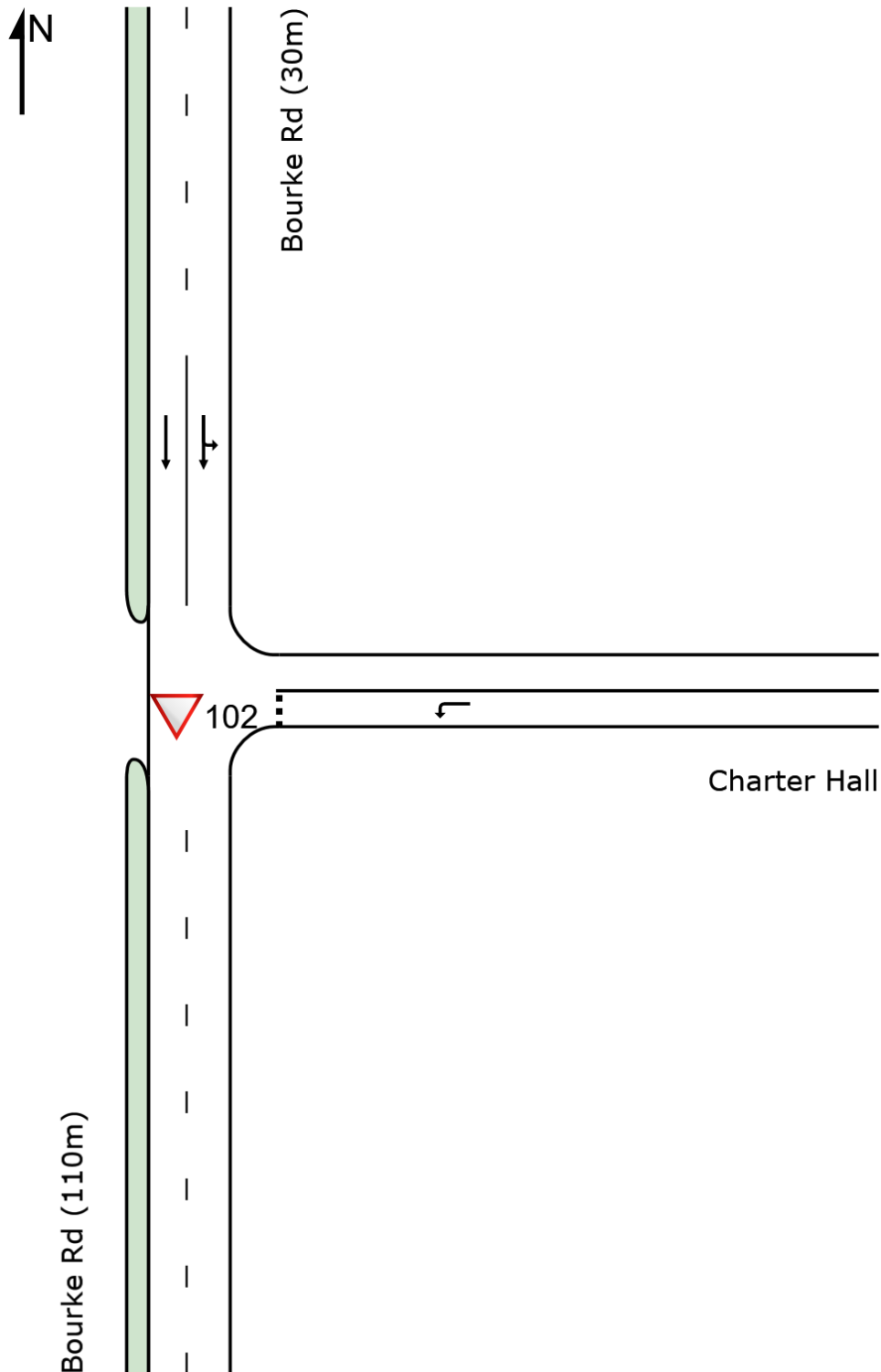
	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

SITE LAYOUT

▽ Site: 102 [4. Bourke Rd access - AM (Site Folder: Project Case 1)]

Bourke Road access
Site Category: Existing
Give-Way (Two-Way)

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



MOVEMENT SUMMARY

▼ Site: 102 [4. Bourke Rd access - AM (Site Folder: Project Case 1)]

Bourke Road access
Site Category: Existing
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Charter Hall														
4	L2	34	6	36	17.6	0.029	0.9	LOS A	0.1	1.1	0.32	0.16	0.32	19.4
Approach		34	6	36	17.6	0.029	0.9	LOS A	0.1	1.1	0.32	0.16	0.32	19.4
North: Bourke Rd (30m)														
7	L2	116	0	122	0.1	0.184	3.0	LOS A	0.0	0.0	0.00	0.18	0.00	42.4
8	T1	532	43	560	8.0	0.184	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	48.0
Approach		648	43	682	6.6	0.184	0.5	NA	0.0	0.0	0.00	0.09	0.00	46.9
All Vehicles		682	49	718	7.1	0.184	0.6	NA	0.1	1.1	0.02	0.10	0.02	42.5

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.

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MOVEMENT SUMMARY

▼ Site: 102 [4. Bourke Rd access - PM (Site Folder: Project Case 1)]

Bourke Road access
Site Category: Existing
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Charter Hall														
4	L2	98	6	103	6.1	0.093	1.7	LOS A	0.4	3.2	0.45	0.31	0.45	19.1
Approach		98	6	103	6.1	0.093	1.7	LOS A	0.4	3.2	0.45	0.31	0.45	19.1
North: Bourke Rd (30m)														
7	L2	27	0	28	0.1	0.225	3.0	LOS A	0.0	0.0	0.00	0.03	0.00	45.8
8	T1	801	24	843	3.0	0.225	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.5
Approach		828	24	872	2.9	0.225	0.1	NA	0.0	0.0	0.00	0.02	0.00	49.3
All Vehicles		926	30	975	3.2	0.225	0.3	NA	0.4	3.2	0.05	0.05	0.05	39.8

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.

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SITE LAYOUT

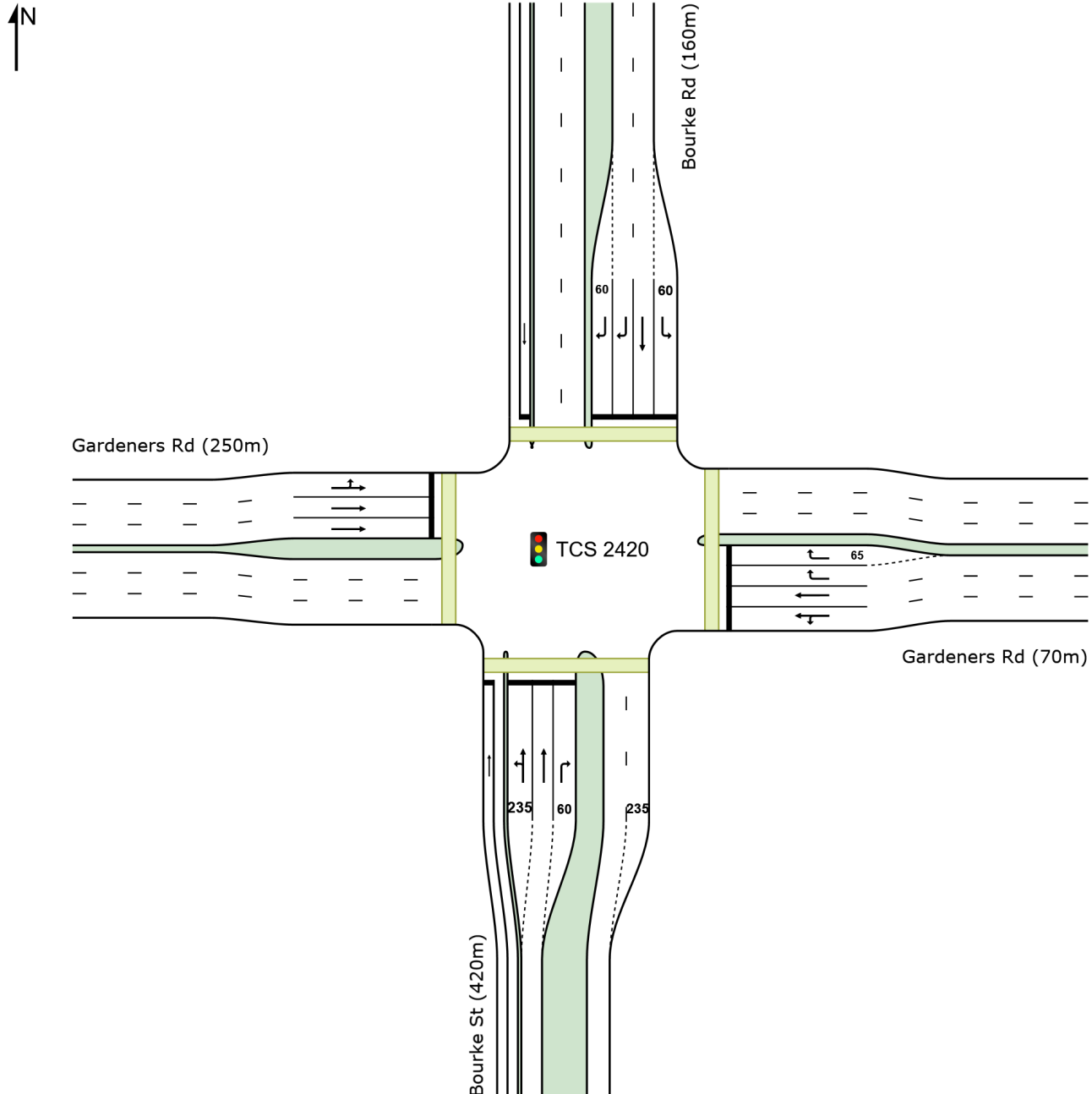
 Site: TCS 2420 [5. Gardeners Rd / Bourke Rd - AM (Site Folder: Project Case 1)]

Gardeners Road/ Bourke Road

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



MOVEMENT SUMMARY

 **Site: TCS 2420 [5. Gardeners Rd / Bourke Rd - AM (Site Folder: Project Case 1)]**

Gardeners Road/ Bourke Road

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Bourke St (420m)														
1	L2	104	8	109	8.0	0.482	62.6	LOS E	6.6	49.5	0.97	0.79	0.97	22.1
2	T1	196	14	206	7.1	0.419	46.2	LOS D	9.8	73.3	0.90	0.73	0.90	24.6
3	R2	110	9	116	8.0	0.535	54.6	LOS D	6.5	48.9	0.99	0.79	0.99	19.8
Approach		410	31	432	7.6	0.535	52.6	LOS D	9.8	73.3	0.94	0.76	0.94	22.5
East: Gardeners Rd (70m)														
4	L2	94	8	99	8.0	0.476	25.0	LOS B	17.5	131.1	0.68	0.64	0.68	31.9
5	T1	751	60	791	8.0	0.476	20.6	LOS B	17.5	131.3	0.68	0.62	0.68	29.8
6	R2	349	28	367	8.0	* 0.889	78.7	LOS F	13.3	99.6	1.00	0.99	1.36	9.6
Approach		1194	96	1257	8.0	0.889	37.9	LOS C	17.5	131.3	0.77	0.73	0.88	20.4
North: Bourke Rd (160m)														
7	L2	244	20	257	8.2	0.590	30.4	LOS C	8.9	66.6	0.93	0.82	0.93	18.5
8	T1	193	15	203	7.6	* 0.446	46.6	LOS D	10.5	78.8	0.90	0.76	0.90	25.0
9	R2	137	14	144	10.2	0.344	54.4	LOS D	4.0	30.2	0.96	0.76	0.96	18.7
Approach		574	49	604	8.5	0.590	41.5	LOS C	10.5	78.8	0.93	0.79	0.93	21.3
West: Gardeners Rd (250m)														
10	L2	219	18	231	8.0	* 0.747	42.4	LOS C	24.5	183.5	0.94	0.88	0.94	22.9
11	T1	1119	94	1178	8.4	* 0.747	39.1	LOS C	26.0	195.5	0.94	0.84	0.94	20.7
Approach		1338	112	1408	8.3	0.747	39.6	LOS C	26.0	195.5	0.94	0.85	0.94	21.1
All Vehicles		3516	287	3701	8.2	0.889	40.9	LOS C	26.0	195.5	0.88	0.79	0.92	21.1

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Bourke St (420m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	233.1	226.0	0.97
East: Gardeners Rd (70m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	232.7	225.5	0.97
North: Bourke Rd (160m)												
P3	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	233.3	226.3	0.97

West: Gardeners Rd (250m)												
P4 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	231.6	224.0	0.97	
All Pedestrians	200	211	59.3	LOS E	0.2	0.2	0.96	0.96	232.7	225.5	0.97	

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

Pedestrian movement LOS values are based on average delay per pedestrian movement.

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

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

 **Site: TCS 2420 [5. Gardeners Rd / Bourke Rd - AM (Site Folder: Project Case 1)]**

Gardeners Road/ Bourke Road
Site Category: Existing
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

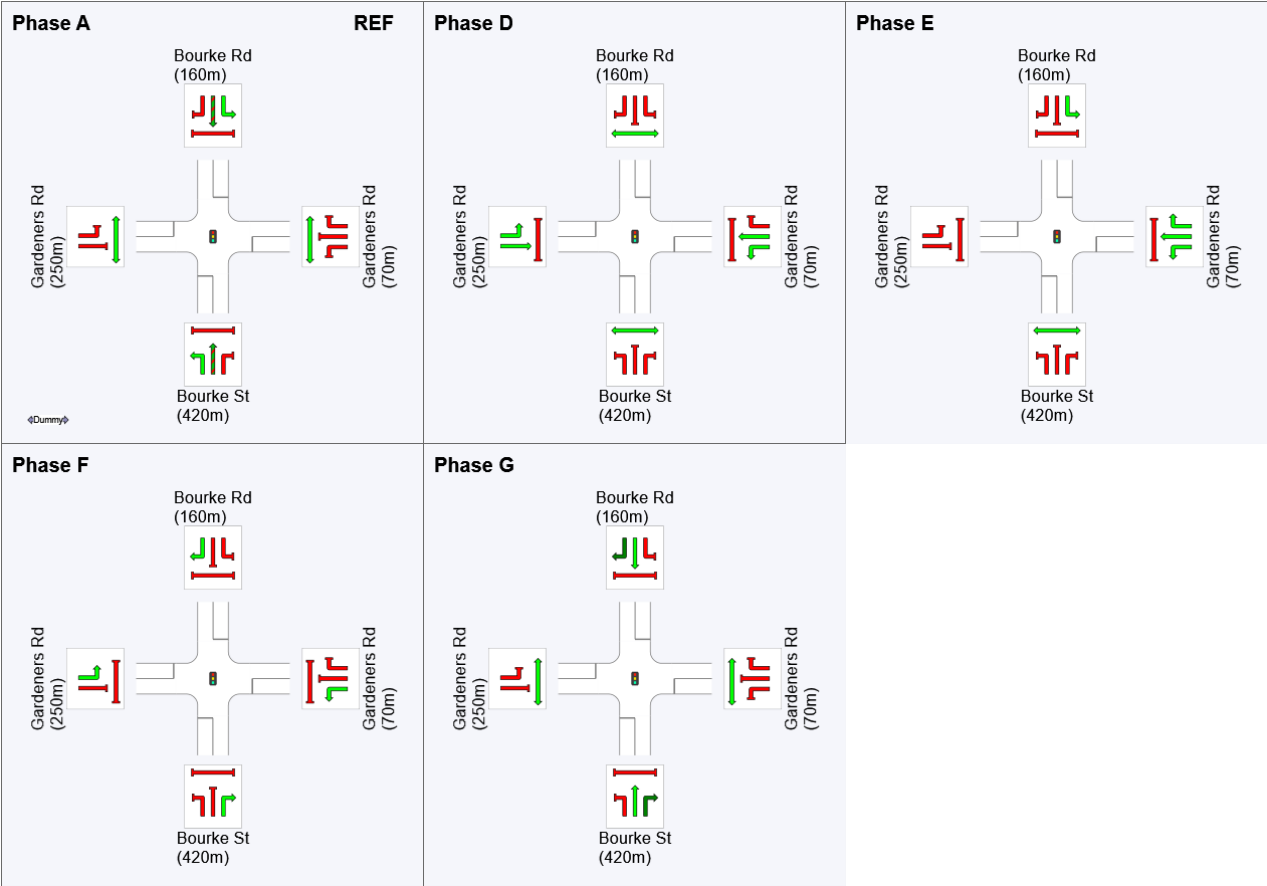
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: SCATS TCS 2420
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F, G
Output Phase Sequence: A, D, E, F, G

Phase Timing Summary

Phase	A	D	E	F	G
Phase Change Time (sec)	0	23	75	97	115
Green Time (sec)	17	46	16	12	9
Phase Time (sec)	23	52	22	18	15
Phase Split	18%	40%	17%	14%	12%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

MOVEMENT SUMMARY

 Site: TCS 2420 [5. Gardeners Rd / Bourke Rd - PM (Site Folder: Project Case 1)]

Gardeners Road/ Bourke Road

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: Bourke St (420m)														
1	L2	101	3	106	3.0	0.378	58.7	LOS E	6.2	44.2	0.94	0.78	0.94	23.0
2	T1	152	4	160	2.6	0.277	42.8	LOS D	6.9	49.8	0.85	0.68	0.85	25.8
3	R2	96	3	101	3.0	0.398	51.5	LOS D	5.5	39.2	0.96	0.77	0.96	20.5
Approach		349	10	367	2.8	0.398	49.8	LOS D	6.9	49.8	0.91	0.73	0.91	23.3
East: Gardeners Rd (70m)														
4	L2	125	4	132	3.0	0.709	32.1	LOS C	31.6	227.0	0.84	0.78	0.84	28.5
5	T1	1098	33	1156	3.0	0.709	27.7	LOS B	31.6	227.0	0.85	0.77	0.85	25.5
6	R2	371	11	391	3.0	0.756	66.1	LOS E	12.6	90.7	1.00	0.87	1.11	11.1
Approach		1594	48	1678	3.0	0.756	37.0	LOS C	31.6	227.0	0.88	0.80	0.91	21.0
North: Bourke Rd (160m)														
7	L2	389	12	409	3.1	* 0.755	29.6	LOS C	13.7	98.5	0.96	0.86	0.99	18.8
8	T1	237	7	249	2.8	0.485	44.6	LOS D	13.0	93.3	0.89	0.77	0.89	25.6
9	R2	279	11	294	3.9	* 0.629	54.5	LOS D	8.2	59.6	1.00	0.81	1.01	18.8
Approach		905	30	952	3.3	0.755	41.2	LOS C	13.7	98.5	0.96	0.82	0.97	21.0
West: Gardeners Rd (250m)														
10	L2	126	4	133	3.0	* 0.616	46.1	LOS D	17.2	123.7	0.92	0.85	0.92	22.1
11	T1	826	29	870	3.5	0.616	42.2	LOS C	18.3	131.7	0.92	0.81	0.92	19.6
Approach		952	33	1002	3.4	0.616	42.7	LOS D	18.3	131.7	0.92	0.81	0.92	20.0
All Vehicles		3800	120	4000	3.2	0.756	40.6	LOS C	31.6	227.0	0.91	0.80	0.92	21.1

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Bourke St (420m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	233.1	226.0	0.97
East: Gardeners Rd (70m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	232.7	225.5	0.97
North: Bourke Rd (160m)												
P3	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	233.3	226.3	0.97

West: Gardeners Rd (250m)												
P4 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	231.6	224.0	0.97	
All Pedestrians	200	211	59.3	LOS E	0.2	0.2	0.96	0.96	232.7	225.5	0.97	

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

Pedestrian movement LOS values are based on average delay per pedestrian movement.

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

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

 **Site: TCS 2420 [5. Gardeners Rd / Bourke Rd - PM (Site Folder: Project Case 1)]**

Gardeners Road/ Bourke Road
Site Category: Existing
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

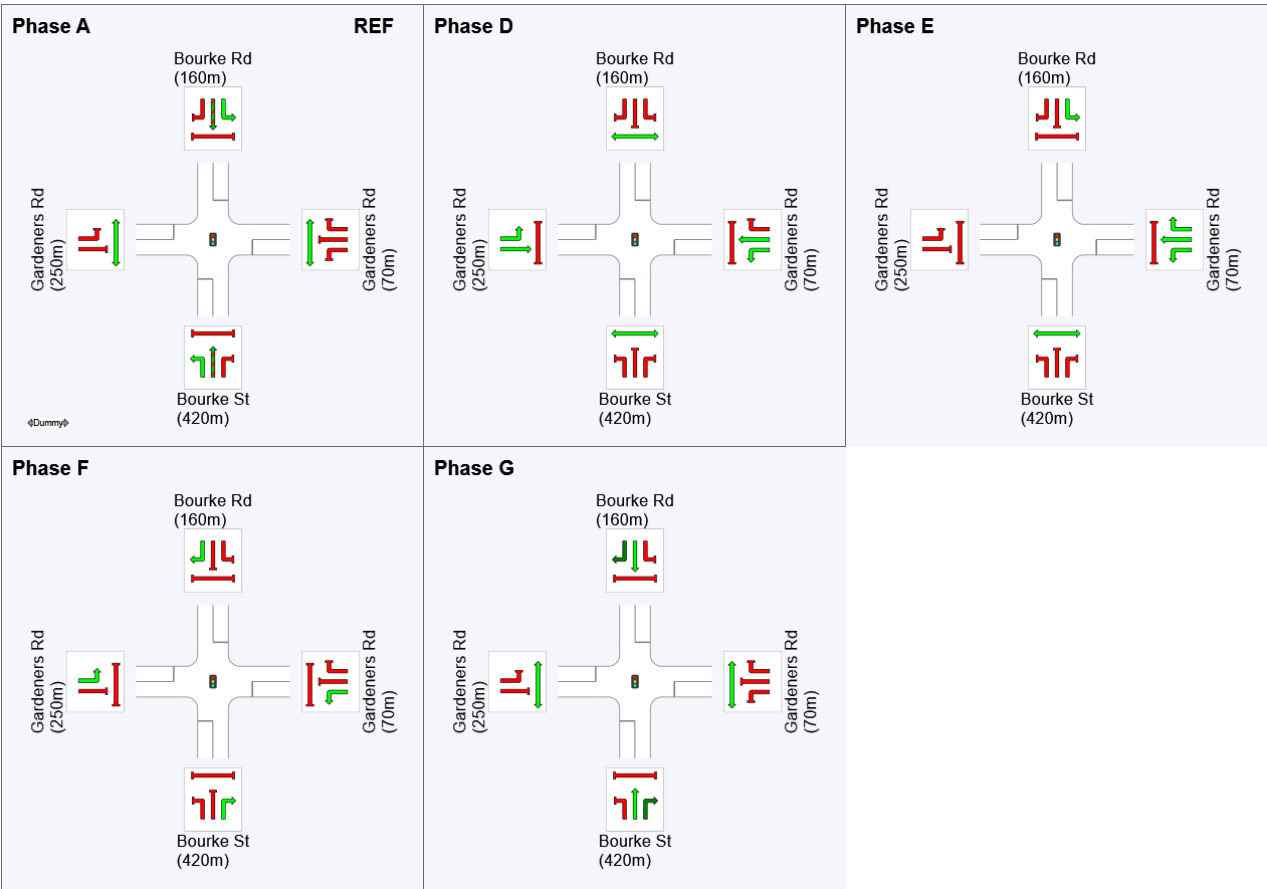
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: SCATS TCS 2420
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F, G
Output Phase Sequence: A, D, E, F, G

Phase Timing Summary

Phase	A	D	E	F	G
Phase Change Time (sec)	0	26	70	95	115
Green Time (sec)	20	38	19	14	9
Phase Time (sec)	26	44	25	20	15
Phase Split	20%	34%	19%	15%	12%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

SITE LAYOUT

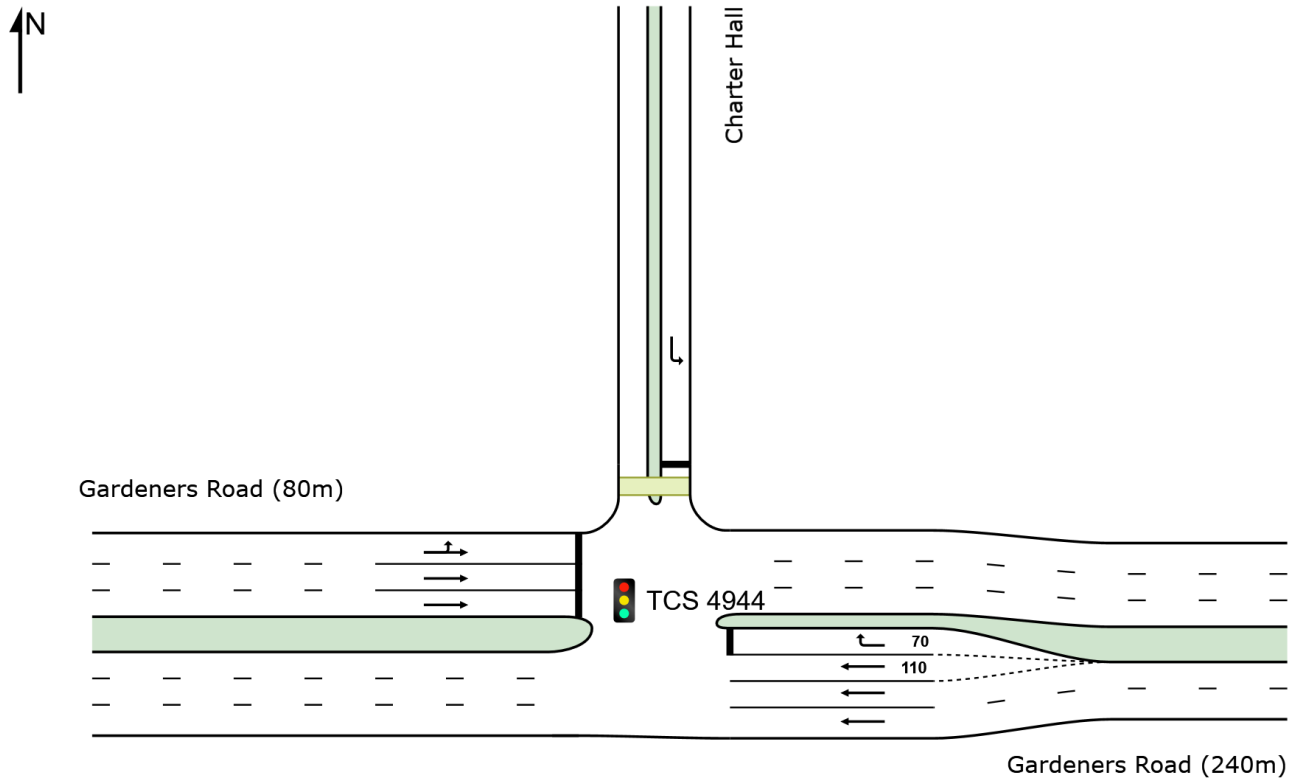
 Site: TCS 4944 [6. Gardeners Rd access - AM (Site Folder: Project Case 1)]

Gardeners Road access

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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Project: C:\Users\Faria Imam\Desktop\p1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

MOVEMENT SUMMARY

 **Site: TCS 4944 [6. Gardeners Rd access - AM (Site Folder: Project Case 1)]**

Gardeners Road access

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Gardeners Road (240m)														
5	T1	1194	96	1257	8.0	0.234	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	1	0	1	8.0	* 0.014	71.6	LOS F	0.1	0.5	0.97	0.59	0.97	13.4
Approach		1195	96	1258	8.0	0.234	0.1	LOS A	0.1	0.5	0.00	0.00	0.00	59.7
North: Charter Hall														
7	L2	1	0	1	8.0	0.013	65.9	LOS E	0.1	0.5	0.97	0.57	0.97	9.9
Approach		1	0	1	8.0	0.013	65.9	LOS E	0.1	0.5	0.97	0.57	0.97	9.9
West: Gardeners Road (80m)														
10	L2	6	5	6	84.5	* 0.336	6.9	LOS A	6.3	47.4	0.21	0.20	0.21	20.6
11	T1	1468	118	1545	8.0	0.336	1.8	LOS A	6.3	47.4	0.21	0.19	0.21	54.9
Approach		1474	123	1551	8.3	0.336	1.9	LOS A	6.3	47.4	0.21	0.19	0.21	54.7
All Vehicles		2670	219	2810	8.2	0.336	1.1	LOS A	6.3	47.4	0.12	0.11	0.12	56.7

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
North: Charter Hall												
P3	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	220.9	210.1	0.95
All Pedestrians		50	53	59.3	LOS E	0.2	0.2	0.96	0.96	220.9	210.1	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.

PHASING SUMMARY

 **Site: TCS 4944 [6. Gardeners Rd access - AM (Site Folder: Project Case 1)]**

Gardeners Road access

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: SCATS TCS 4944

Reference Phase: Phase A

Input Phase Sequence: A, B

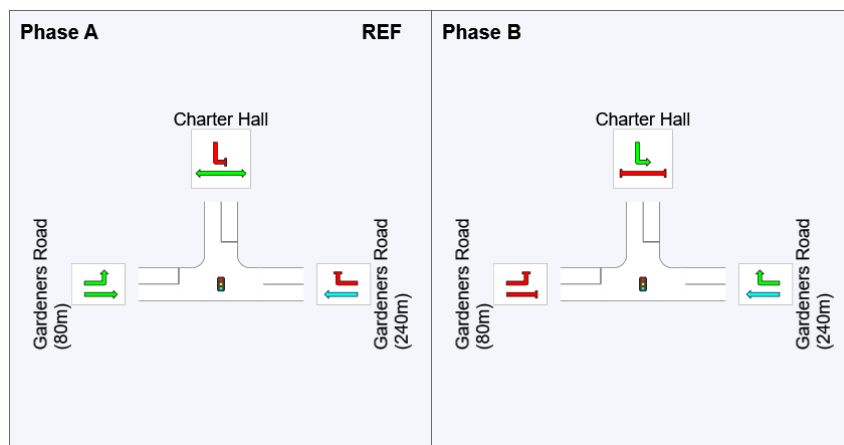
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	118
Green Time (sec)	112	6
Phase Time (sec)	118	12
Phase Split	91%	9%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

 Normal Movement	 Permitted/Opposed
 Slip/Bypass-Lane Movement	 Opposed Slip/Bypass-Lane
 Stopped Movement	 Turn On Red
 Other Movement Class (MC) Running	 Undetected Movement
 Mixed Running & Stopped MCs	 Continuous Movement
 Other Movement Class (MC) Stopped	 Phase Transition Applied

MOVEMENT SUMMARY

 **Site: TCS 4944 [6. Gardeners Rd access - PM (Site Folder: Project Case 1)]**

Gardeners Road access

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
East: Gardeners Road (240m)														
5	T1	1594	48	1678	3.0	0.297	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
6	R2	1	0	1	3.0	* 0.013	71.3	LOS F	0.1	0.5	0.97	0.59	0.97	13.4
Approach		1595	48	1679	3.0	0.297	0.1	LOS A	0.1	0.5	0.00	0.00	0.00	59.7
North: Charter Hall														
7	L2	1	0	1	3.0	0.013	65.7	LOS E	0.1	0.5	0.97	0.57	0.97	9.9
Approach		1	0	1	3.0	0.013	65.7	LOS E	0.1	0.5	0.97	0.57	0.97	9.9
West: Gardeners Road (80m)														
10	L2	5	4	5	80.5	* 0.285	6.8	LOS A	5.3	38.0	0.20	0.18	0.20	20.8
11	T1	1305	38	1374	2.9	0.285	1.7	LOS A	5.3	38.0	0.20	0.18	0.20	55.2
Approach		1310	42	1379	3.2	0.285	1.7	LOS A	5.3	38.0	0.20	0.18	0.20	55.0
All Vehicles		2906	90	3059	3.1	0.297	0.9	LOS A	5.3	38.0	0.09	0.08	0.09	57.4

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
North: Charter Hall												
P3	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	220.9	210.1	0.95
All Pedestrians		50	53	59.3	LOS E	0.2	0.2	0.96	0.96	220.9	210.1	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.

PHASING SUMMARY

 **Site: TCS 4944 [6. Gardeners Rd access - PM (Site Folder: Project Case 1)]**

Gardeners Road access

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: SCATS TCS 4944

Reference Phase: Phase A

Input Phase Sequence: A, B

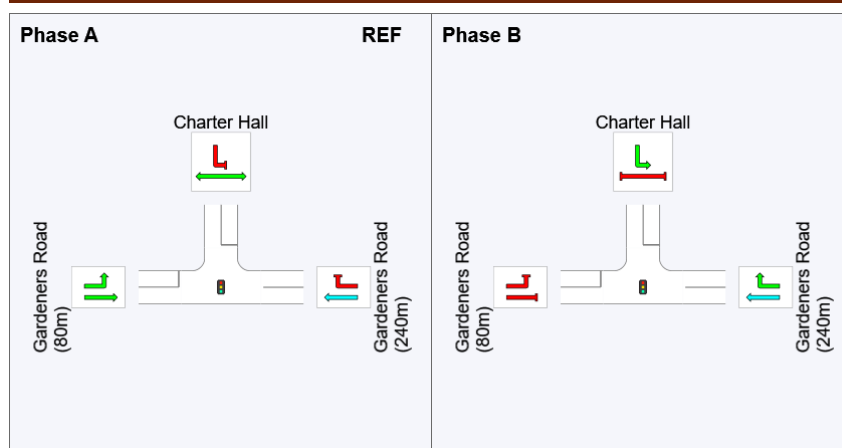
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	118
Green Time (sec)	112	6
Phase Time (sec)	118	12
Phase Split	91%	9%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

 Normal Movement	 Permitted/Opposed
 Slip/Bypass-Lane Movement	 Opposed Slip/Bypass-Lane
 Stopped Movement	 Turn On Red
 Other Movement Class (MC) Running	 Undetected Movement
 Mixed Running & Stopped MCs	 Continuous Movement
 Other Movement Class (MC) Stopped	 Phase Transition Applied

SITE LAYOUT

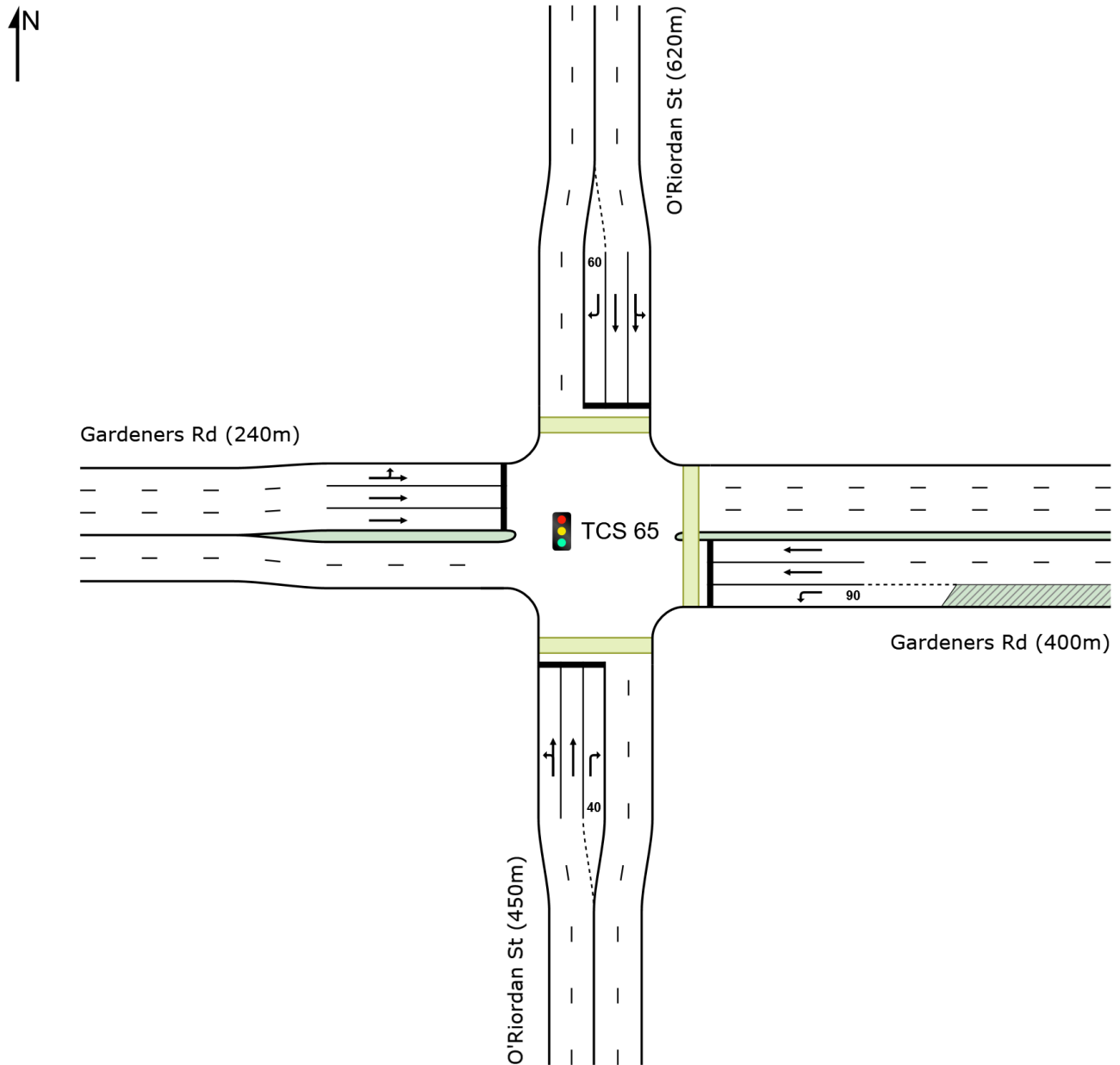
 Site: TCS 65 [7. Gardeners Rd / O'Riordan St - AM (Site Folder: Project Case 1)]

Gardeners Road / O'Riordan Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

MOVEMENT SUMMARY

 **Site: TCS 65 [7. Gardeners Rd / O'Riordan St - AM (Site Folder: Project Case 1)]**

Gardeners Road / O'Riordan Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: O'Riordan St (450m)														
1	L2	197	16	207	8.0	0.959	75.1	LOS F	57.8	432.2	1.00	1.13	1.31	20.8
2	T1	930	74	979	8.0	* 0.959	71.1	LOS F	57.8	432.2	0.93	1.10	1.29	26.1
3	R2	300	24	316	8.0	0.752	30.2	LOS C	10.8	81.0	0.95	0.85	1.00	34.7
Approach		1427	114	1502	8.0	0.959	63.1	LOS E	57.8	432.2	0.94	1.05	1.23	26.7
East: Gardeners Rd (400m)														
4	L2	107	9	113	8.0	0.099	13.3	LOS A	2.4	18.0	0.37	0.67	0.37	43.6
5	T1	958	77	1008	8.0	* 0.964	80.7	LOS F	43.7	326.7	1.00	1.20	1.40	19.7
Approach		1065	85	1121	8.0	0.964	73.9	LOS F	43.7	326.7	0.94	1.15	1.30	21.2
North: O'Riordan St (620m)														
7	L2	151	12	159	8.0	0.668	54.9	LOS D	14.8	110.6	0.97	0.83	0.97	29.8
8	T1	332	27	349	8.0	0.668	49.2	LOS D	14.8	110.6	0.96	0.81	0.96	30.5
9	R2	195	16	205	8.0	* 0.942	88.9	LOS F	16.1	120.4	1.00	1.06	1.50	20.8
Approach		678	54	714	8.0	0.942	61.9	LOS E	16.1	120.4	0.97	0.89	1.12	27.2
West: Gardeners Rd (240m)														
10	L2	329	26	346	7.9	0.933	73.8	LOS F	40.6	303.2	1.00	1.05	1.29	23.8
11	T1	1133	90	1193	8.0	0.933	69.1	LOS E	40.6	303.2	1.00	1.11	1.30	21.7
Approach		1462	116	1539	8.0	0.933	70.2	LOS E	40.6	303.2	1.00	1.10	1.29	22.2
All Vehicles		4632	370	4876	8.0	0.964	67.6	LOS E	57.8	432.2	0.96	1.07	1.25	24.3

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: O'Riordan St (450m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	226.0	216.8	0.96
East: Gardeners Rd (400m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	228.8	220.4	0.96
North: O'Riordan St (620m)												
P3	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	225.7	216.4	0.96

All Pedestrians	150	158	59.3	LOS E	0.2	0.2	0.96	0.96	226.9	217.9	0.96
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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.

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

 **Site: TCS 65 [7. Gardeners Rd / O'Riordan St - AM (Site Folder: Project Case 1)]**

Gardeners Road / O'Riordan Street
Site Category: Existing
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

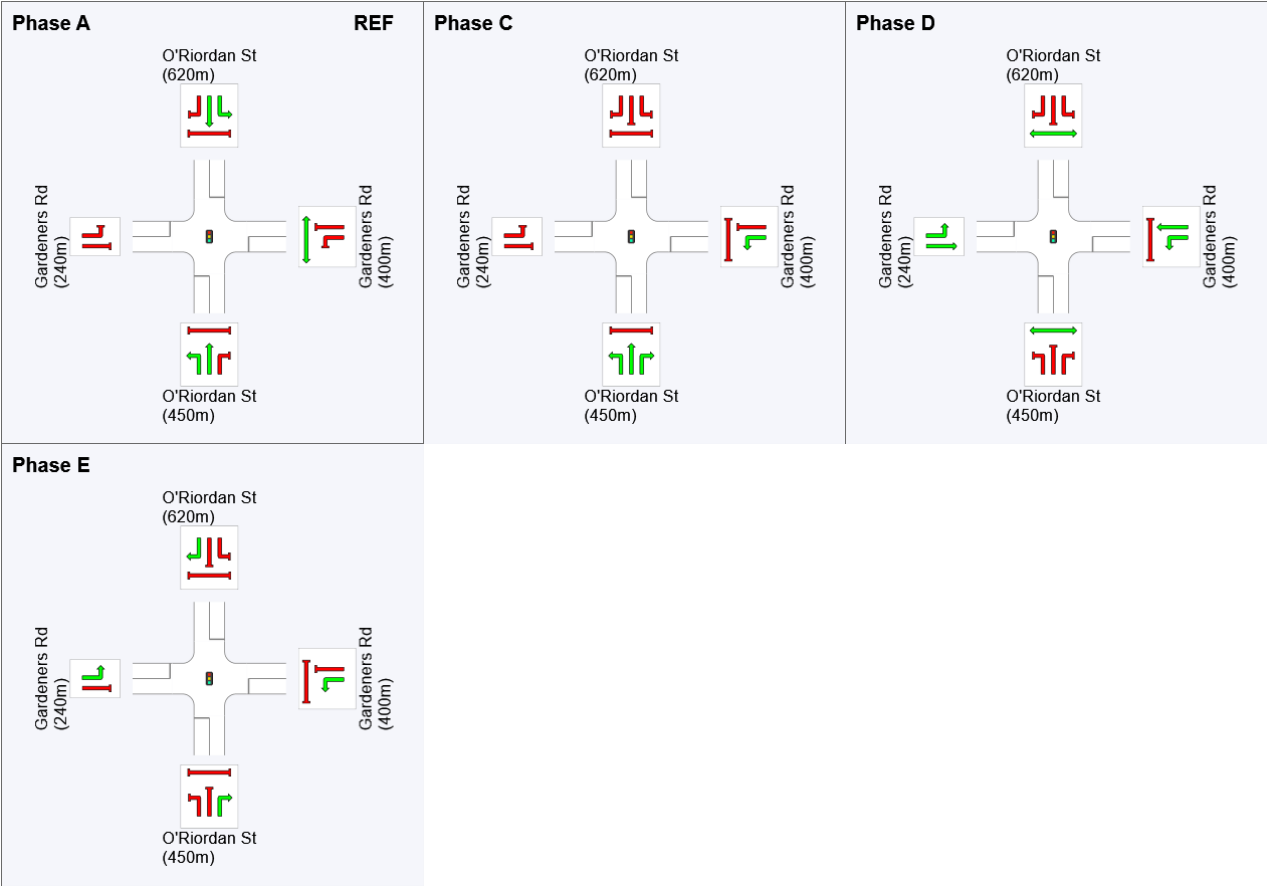
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: SCATS TCS 65
Reference Phase: Phase A
Input Phase Sequence: A, C, D, E
Output Phase Sequence: A, C, D, E

Phase Timing Summary

Phase	A	C	D	E
Phase Change Time (sec)	0	36	61	107
Green Time (sec)	30	19	40	17
Phase Time (sec)	36	25	46	23
Phase Split	28%	19%	35%	18%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

MOVEMENT SUMMARY

 Site: TCS 65 [7. Gardeners Rd / O'Riordan St - PM (Site Folder: Project Case 1)]

Gardeners Road / O'Riordan Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: O'Riordan St (450m)														
1	L2	257	8	271	3.0	0.999	104.0	LOS F	48.4	347.8	1.00	1.22	1.52	16.8
2	T1	616	18	648	3.0	* 0.999	99.7	LOS F	48.4	347.8	0.98	1.27	1.54	21.9
3	R2	222	7	234	3.0	* 0.993	107.0	LOS F	20.2	144.9	0.97	1.15	1.65	18.8
Approach		1095	33	1153	3.0	0.999	102.2	LOS F	48.4	347.8	0.98	1.23	1.56	20.2
East: Gardeners Rd (400m)														
4	L2	136	4	143	3.0	0.135	17.5	LOS B	3.9	27.7	0.46	0.69	0.46	41.2
5	T1	1203	36	1266	3.0	* 0.993	90.7	LOS F	60.1	431.2	1.00	1.27	1.46	18.2
Approach		1339	40	1409	3.0	0.993	83.3	LOS F	60.1	431.2	0.95	1.21	1.36	19.6
North: O'Riordan St (620m)														
7	L2	218	7	229	3.0	0.971	89.8	LOS F	42.7	306.6	1.00	1.16	1.43	23.5
8	T1	635	19	668	3.0	0.971	85.1	LOS F	42.7	306.6	0.98	1.19	1.44	23.9
9	R2	271	8	285	3.0	0.988	103.3	LOS F	24.6	176.6	1.00	1.14	1.61	19.1
Approach		1124	34	1183	3.0	0.988	90.4	LOS F	42.7	306.6	0.99	1.17	1.48	22.6
West: Gardeners Rd (240m)														
10	L2	216	6	227	2.7	0.605	40.6	LOS C	20.7	148.4	0.86	0.80	0.86	31.9
11	T1	940	29	989	3.1	0.605	36.0	LOS C	20.9	150.0	0.87	0.77	0.87	31.1
Approach		1156	35	1217	3.0	0.605	36.9	LOS C	20.9	150.0	0.87	0.78	0.87	31.3
All Vehicles		4714	142	4962	3.0	0.999	78.0	LOS F	60.1	431.2	0.95	1.10	1.32	22.4

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m					
South: O'Riordan St (450m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	226.0	216.8	0.96
East: Gardeners Rd (400m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	228.8	220.4	0.96
North: O'Riordan St (620m)												
P3	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	225.7	216.4	0.96

All Pedestrians	150	158	59.3	LOS E	0.2	0.2	0.96	0.96	226.9	217.9	0.96
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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.

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

Site: TCS 65 [7. Gardeners Rd / O'Riordan St - PM (Site Folder: Project Case 1)]

Gardeners Road / O'Riordan Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: SCATS TCS 65

Reference Phase: Phase A

Input Phase Sequence: A, D, E

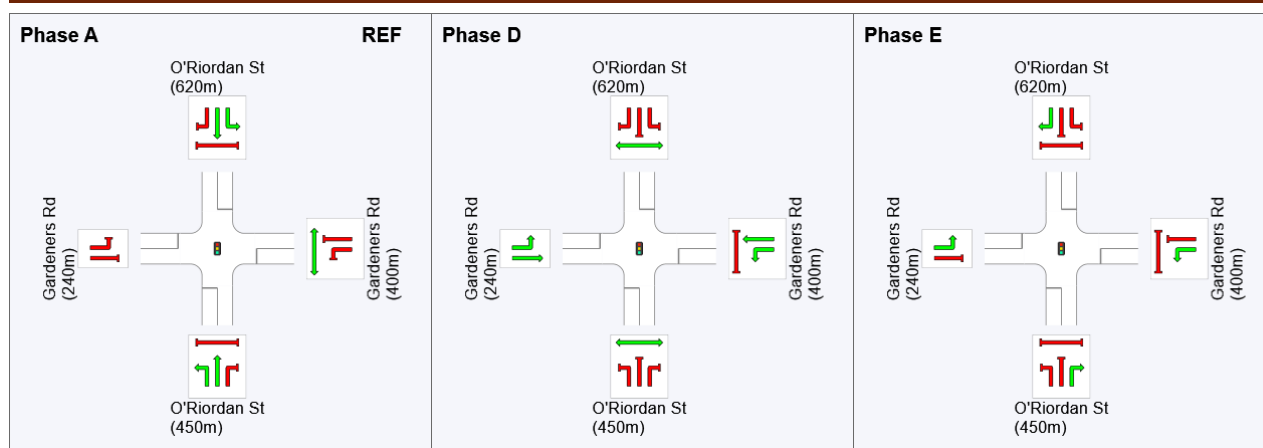
Output Phase Sequence: A, D, E

Phase Timing Summary

Phase	A	D	E
Phase Change Time (sec)	0	44	97
Green Time (sec)	38	47	27
Phase Time (sec)	44	53	33
Phase Split	34%	41%	25%

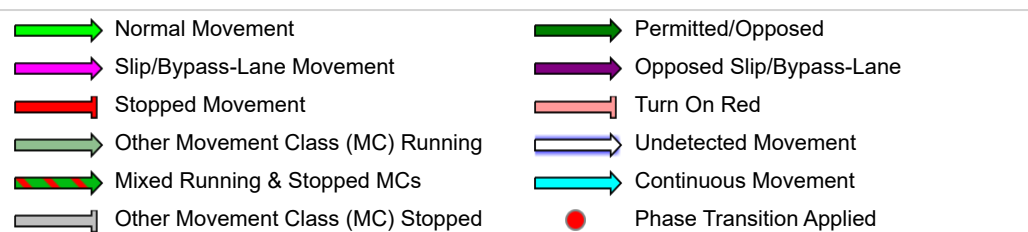
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

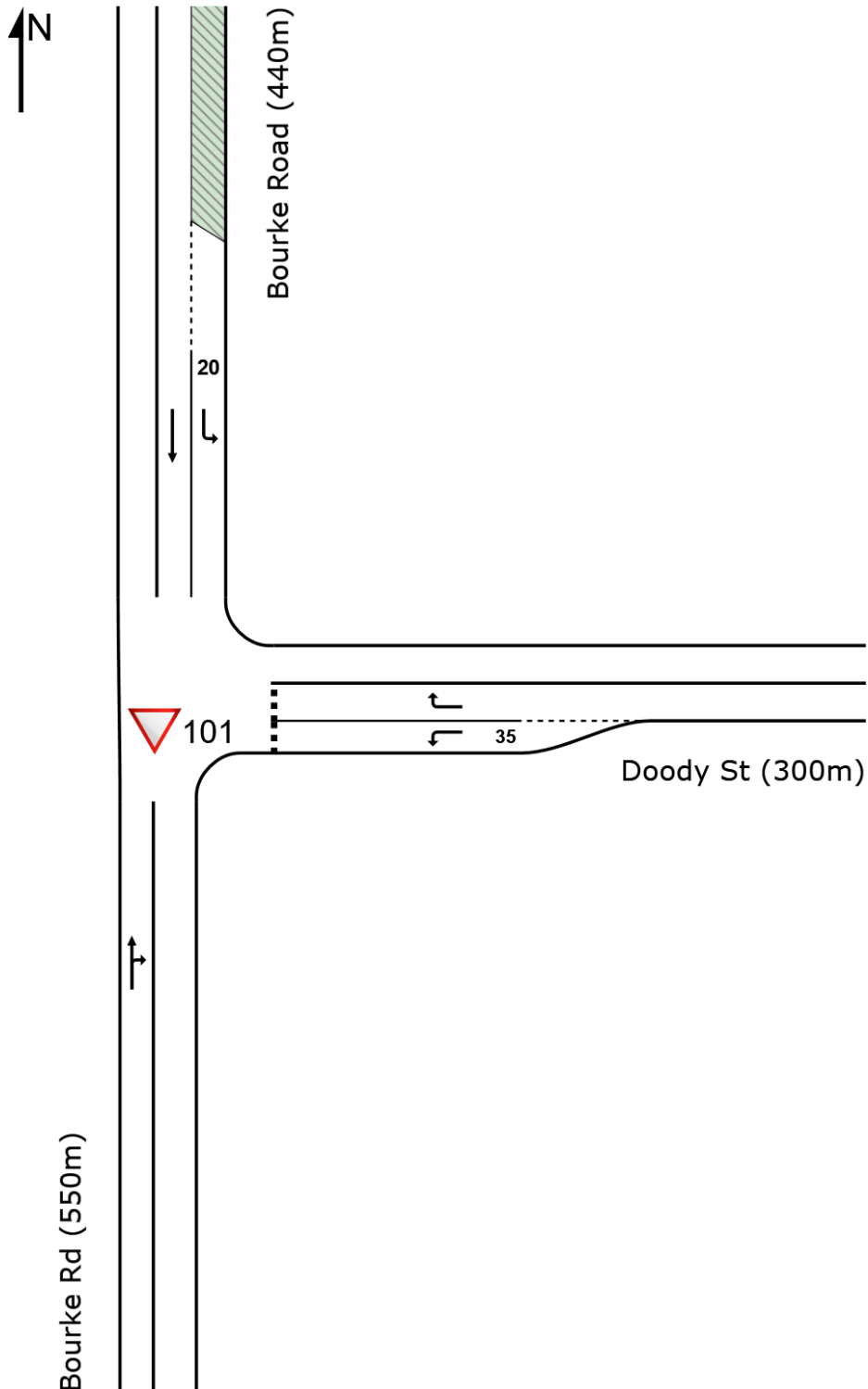


SITE LAYOUT

▽ Site: 101 [1. Bourke Rd / Doody St - AM (Site Folder: Project Case 2)]

Bourke Road / Doody Street
Site Category: Existing
Give-Way (Two-Way)

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



MOVEMENT SUMMARY

Site: 101 [1. Bourke Rd / Doody St - AM (Site Folder: Project Case 2)]

Bourke Road / Doody Street
Site Category: Existing
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: Bourke Rd (550m)														
2	T1	460	37	484	8.0	0.602	4.4	LOS A	6.4	47.7	0.58	0.34	0.93	45.8
3	R2	257	21	271	8.0	0.602	10.8	LOS A	6.4	47.7	0.58	0.34	0.93	44.4
Approach		717	57	755	8.0	0.602	6.7	NA	6.4	47.7	0.58	0.34	0.93	45.3
East: Doody St (300m)														
4	L2	198	16	208	8.0	0.186	6.2	LOS A	0.7	5.4	0.38	0.61	0.38	44.9
6	R2	159	13	167	8.0	0.815	46.3	LOS D	4.5	33.8	0.96	1.34	2.12	26.7
Approach		357	29	376	8.0	0.815	24.1	LOS B	4.5	33.8	0.64	0.94	1.16	35.1
North: Bourke Road (440m)														
7	L2	121	10	127	8.0	0.075	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.4
8	T1	334	28	352	8.4	0.196	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		455	38	479	8.3	0.196	1.3	NA	0.0	0.0	0.00	0.14	0.00	48.9
All Vehicles		1529	124	1609	8.1	0.815	9.1	NA	6.4	47.7	0.42	0.42	0.70	43.6

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: 101 [1. Bourke Rd / Doody St - PM (Site Folder: Project Case 2)]

Bourke Road / Doody Street
Site Category: Existing
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Bourke Rd (550m)														
2	T1	79	2	83	3.0	0.279	2.7	LOS A	1.4	9.9	0.49	0.51	0.50	46.1
3	R2	195	6	205	3.0	0.279	7.4	LOS A	1.4	9.9	0.49	0.51	0.50	44.9
Approach		274	8	288	3.0	0.279	6.1	NA	1.4	9.9	0.49	0.51	0.50	45.3
East: Doody St (300m)														
4	L2	198	6	208	3.0	0.177	6.0	LOS A	0.7	5.0	0.36	0.60	0.36	45.1
6	R2	135	4	142	3.0	0.273	10.9	LOS A	1.0	7.5	0.64	0.86	0.70	41.0
Approach		333	10	350	3.0	0.273	8.0	LOS A	1.0	7.5	0.47	0.71	0.50	43.4
North: Bourke Road (440m)														
7	L2	125	4	132	3.0	0.074	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	45.5
8	T1	325	14	342	4.3	0.184	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		450	18	474	3.9	0.184	1.3	NA	0.0	0.0	0.00	0.15	0.00	48.9
All Vehicles		1057	36	1113	3.4	0.279	4.7	NA	1.4	9.9	0.28	0.42	0.29	46.2

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.

SITE LAYOUT

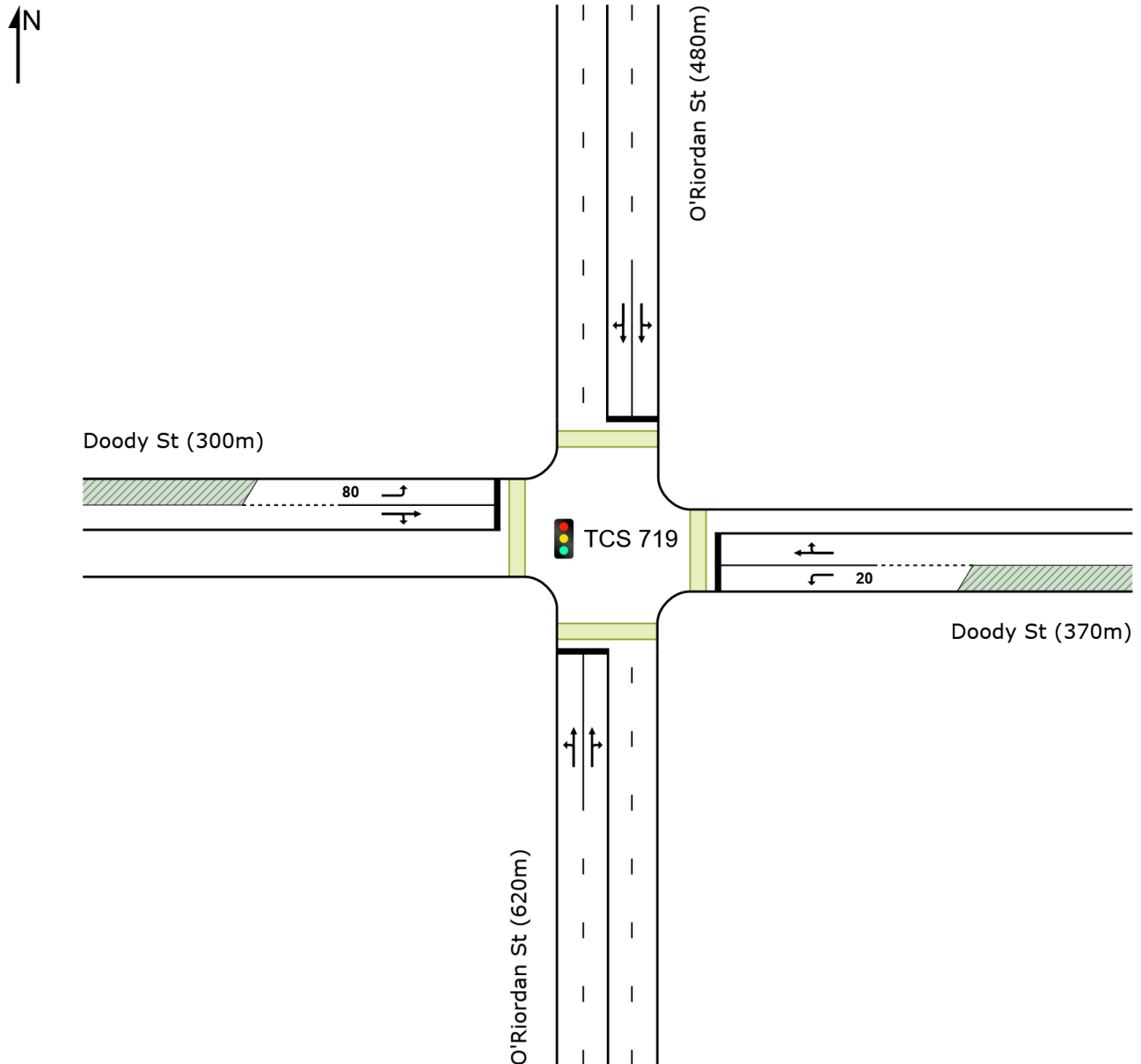
 Site: TCS 719 [2. O'Riordan St / Doody St - AM (Site Folder: Project Case 2)]

O'Riordan Street / Doody Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

Site: TCS 719 [2. O'Riordan St / Doody St - AM (Site Folder: Project Case 2)]

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site User-Given Phase Times)

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: O'Riordan St (620m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.3	214.6	0.96
East: Doody St (370m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	222.6	212.3	0.95
North: O'Riordan St (480m)												

P3 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.4	214.7	0.96
West: Doody St (300m)											
P4 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.1	214.3	0.96
All Pedestrians	200	211	59.3	LOS E	0.2	0.2	0.96	0.96	223.9	214.0	0.96

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.

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

 **Site: TCS 719 [2. O'Riordan St / Doody St - AM (Site Folder: Project Case 2)]**

O'Riordan Street / Doody Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS TCS 0719

Reference Phase: Phase A

Input Phase Sequence: A, B

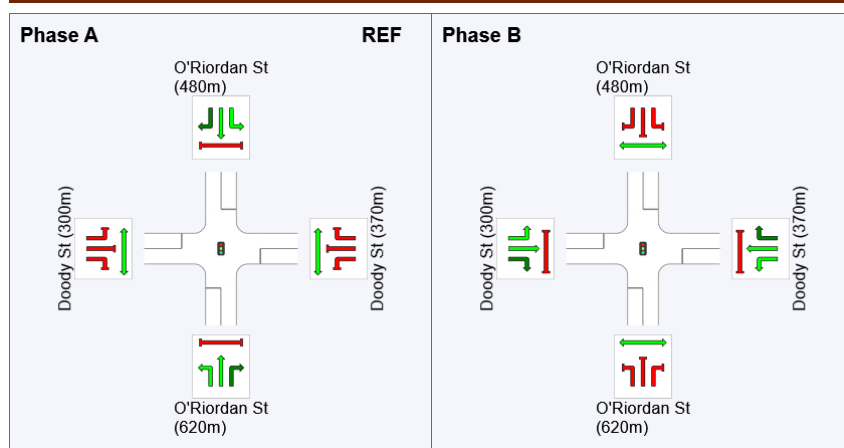
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	90
Green Time (sec)	84	34
Phase Time (sec)	90	40
Phase Split	69%	31%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

 Normal Movement	 Permitted/Opposed
 Slip/Bypass-Lane Movement	 Opposed Slip/Bypass-Lane
 Stopped Movement	 Turn On Red
 Other Movement Class (MC) Running	 Undetected Movement
 Mixed Running & Stopped MCs	 Continuous Movement
 Other Movement Class (MC) Stopped	 Phase Transition Applied

Site: TCS 719 [2. O'Riordan St / Doody St - PM (Site Folder: Project Case 2)]

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site User-Given Phase Times)

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: O'Riordan St (620m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.3	214.6	0.96
East: Doody St (370m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	222.6	212.3	0.95
North: O'Riordan St (480m)												

P3 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.4	214.7	0.96
West: Doody St (300m)											
P4 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.1	214.3	0.96
All Pedestrians	200	211	59.3	LOS E	0.2	0.2	0.96	0.96	223.9	214.0	0.96

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.

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

Site: TCS 719 [2. O'Riordan St / Doody St - PM (Site Folder: Project Case 2)]

O'Riordan Street / Doody Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS TCS 0719

Reference Phase: Phase A

Input Phase Sequence: A, B

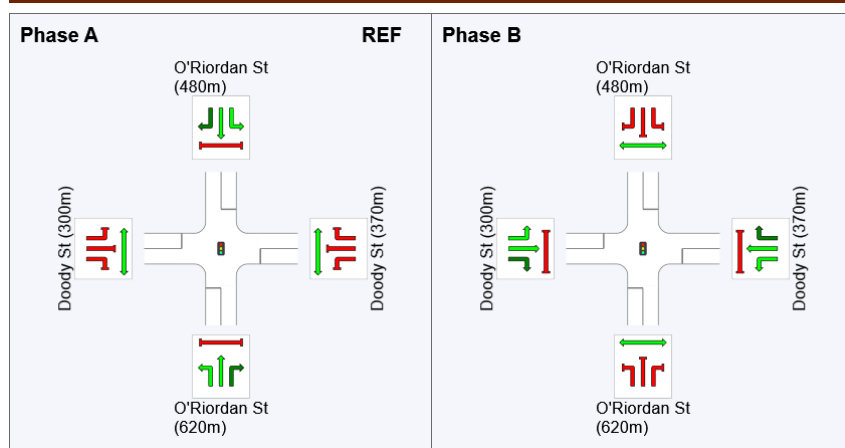
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	88
Green Time (sec)	82	36
Phase Time (sec)	88	42
Phase Split	68%	32%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

SITE LAYOUT

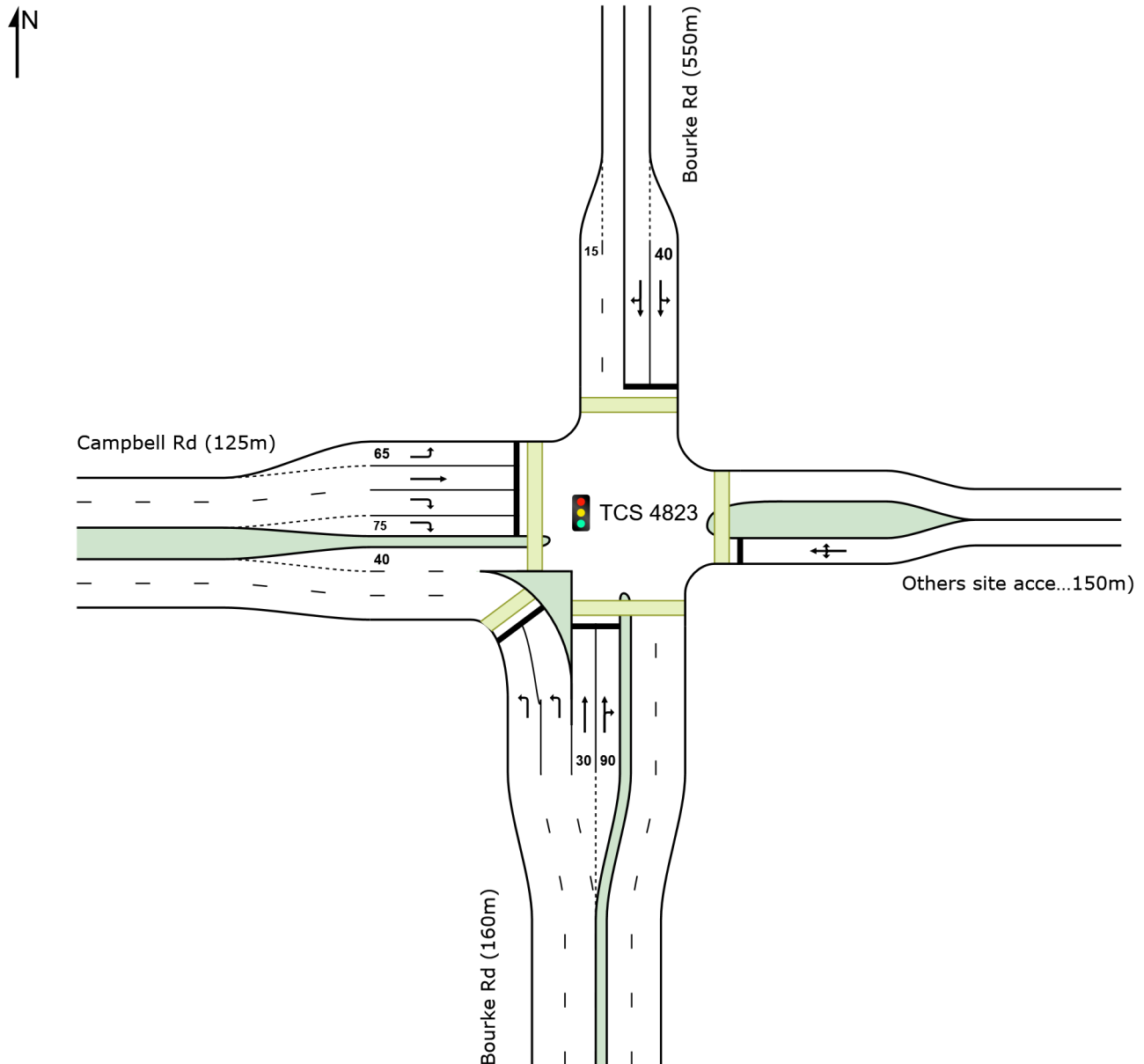
 Site: TCS 4823 [3. Bourke Rd / Campbell Rd - AM (Site Folder: Project Case 2)]

Bourke Road / Campbell Road

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

Site: TCS 4823 [3. Bourke Rd / Campbell Rd - AM (Site Folder: Project Case 2)]

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site User-Given Cycle Time)

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Bourke Rd (160m)												
P1	Full	50	53	49.3	LOS E	0.2	0.2	0.95	0.95	216.6	217.5	1.00
P1B	Slip/Bypass	50	53	23.9	LOS C	0.1	0.1	0.89	0.89	185.2	209.7	1.13
East: Others site access (150m)												

P2 Full	50	53	49.3	LOS E	0.2	0.2	0.95	0.95	214.4	214.7	1.00
North: Bourke Rd (550m)											
P3 Full	50	53	49.3	LOS E	0.2	0.2	0.95	0.95	214.9	215.3	1.00
West: Campbell Rd (125m)											
P4 Full	50	53	49.3	LOS E	0.2	0.2	0.95	0.95	223.3	226.3	1.01
All Pedestrians	250	263	44.2	LOS E	0.2	0.2	0.94	0.94	210.9	216.7	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.

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

 **Site: TCS 4823 [3. Bourke Rd / Campbell Rd - AM (Site Folder: Project Case 2)]**

Bourke Road / Campbell Road

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: SCATS TCS 4823

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D, E

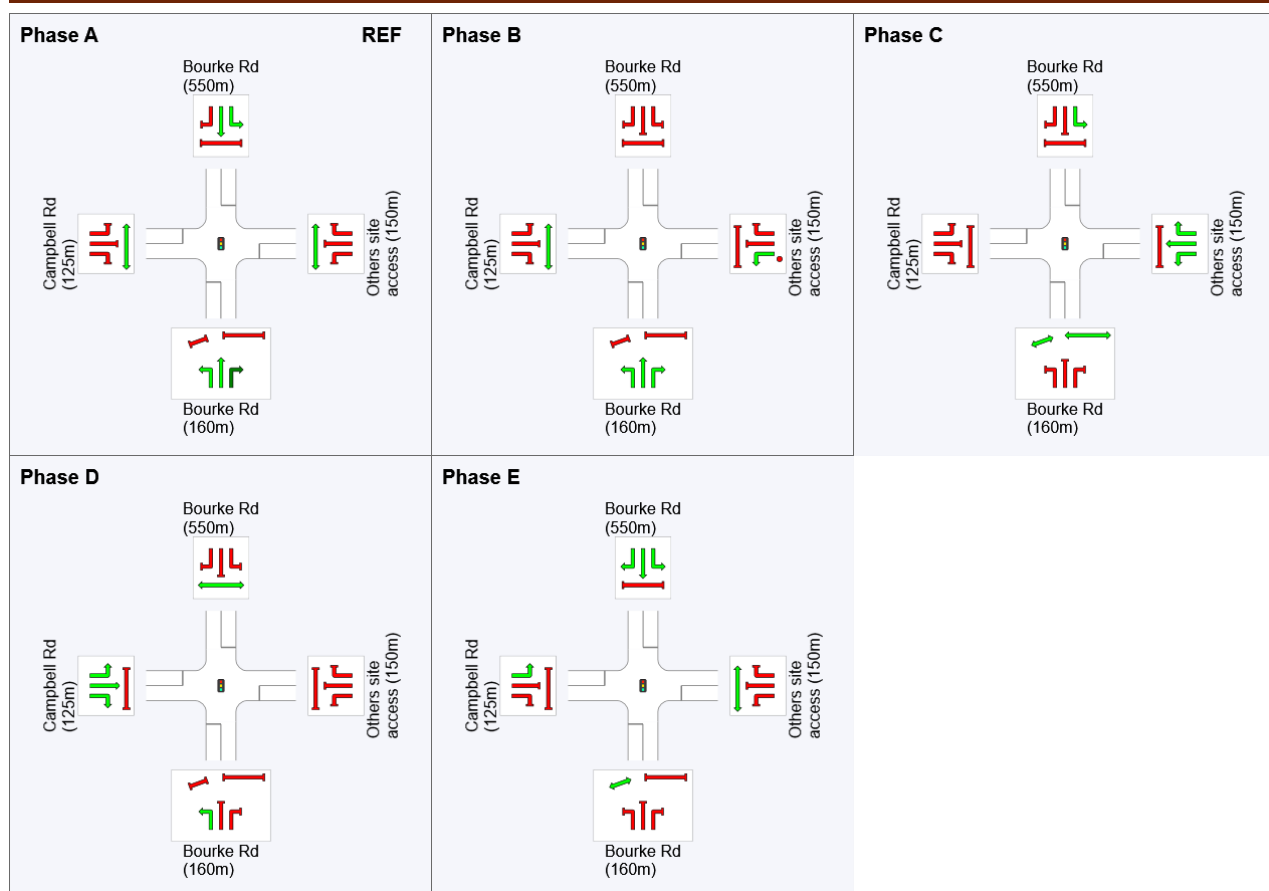
Output Phase Sequence: A, B, C, D, E

Phase Timing Summary

Phase	A	B	C	D	E
Phase Change Time (sec)	0	12	40	70	95
Green Time (sec)	6	22	24	19	9
Phase Time (sec)	12	28	30	25	15
Phase Split	11%	25%	27%	23%	14%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

Site: TCS 4823 [3. Bourke Rd / Campbell Rd - PM (Site Folder: Project Case 2)]

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

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.

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Bourke Rd (160m)												
P1	Full	50	53	56.2	LOS E	0.2	0.2	0.97	0.97	223.5	217.5	0.97
P1B	Slip/Bypass	50	53	28.8	LOS C	0.1	0.1	0.90	0.90	190.1	209.7	1.10
East: Others site access (150m)												

P2 Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.4	214.7	0.98
North: Bourke Rd (550m)											
P3 Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.9	215.3	0.98
West: Campbell Rd (125m)											
P4 Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	228.3	226.3	0.99
All Pedestrians	250	263	49.6	LOS E	0.2	0.2	0.95	0.95	216.2	216.7	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.

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

 **Site: TCS 4823 [3. Bourke Rd / Campbell Rd - PM (Site Folder: Project Case 2)]**

Bourke Road / Campbell Road
Site Category: Existing
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: SCATS TCS 4823
Reference Phase: Phase A
Input Phase Sequence: A, C, D, E
Output Phase Sequence: A, C, D, E

Phase Timing Summary

Phase	A	C	D	E
Phase Change Time (sec)	0	25	37	66
Green Time (sec)	19	6	23	48
Phase Time (sec)	25	12	29	54
Phase Split	21%	10%	24%	45%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

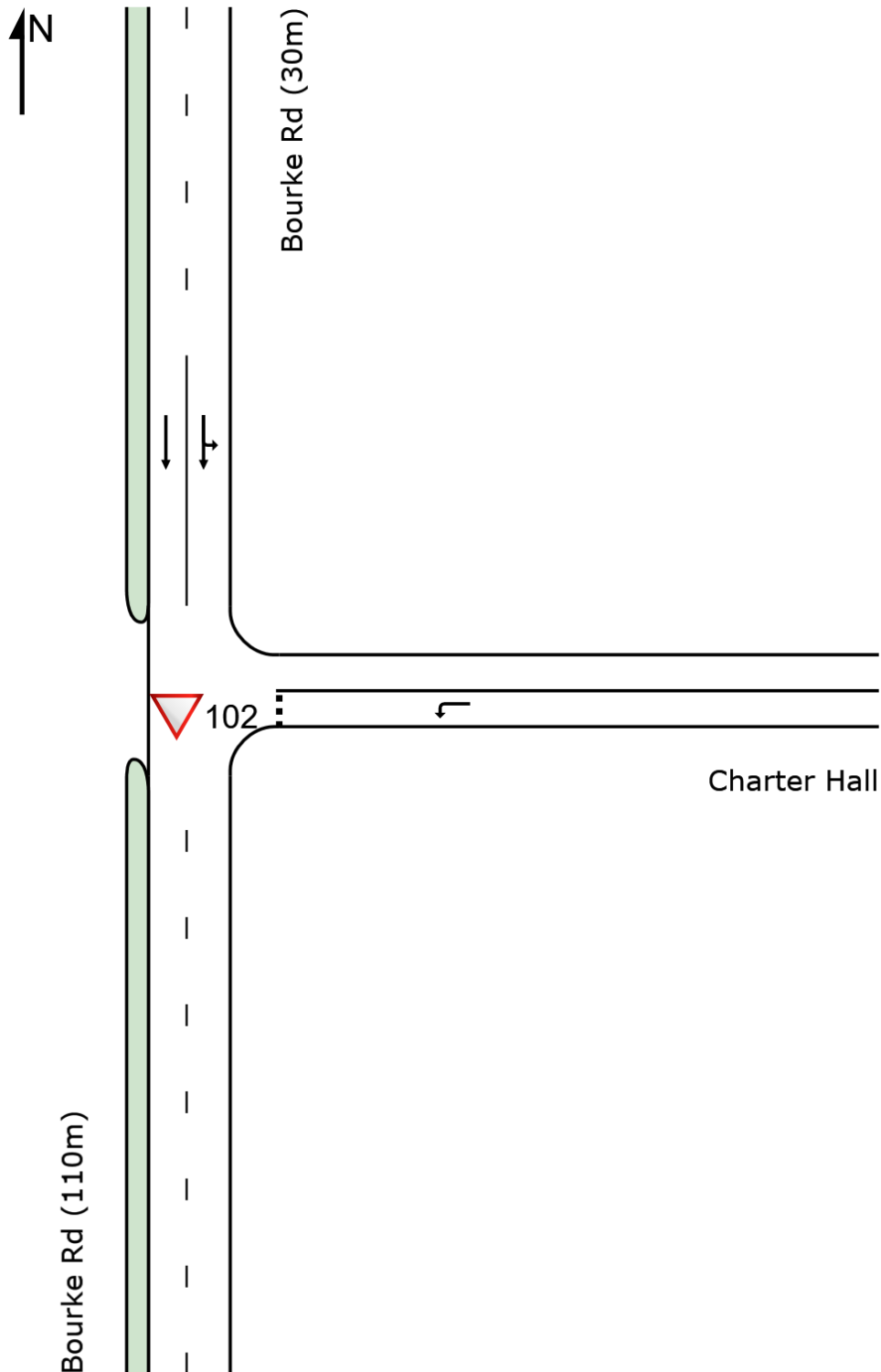
	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

SITE LAYOUT

▽ Site: 102 [4. Bourke Rd access - AM (Site Folder: Project Case 2)]

Bourke Road access
Site Category: Existing
Give-Way (Two-Way)

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



MOVEMENT SUMMARY

▼ Site: 102 [4. Bourke Rd access - AM (Site Folder: Project Case 2)]

Bourke Road access
Site Category: Existing
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Charter Hall														
4	L2	34	6	36	17.6	0.029	0.8	LOS A	0.1	1.1	0.32	0.15	0.32	19.4
Approach		34	6	36	17.6	0.029	0.8	LOS A	0.1	1.1	0.32	0.15	0.32	19.4
North: Bourke Rd (30m)														
7	L2	122	6	128	4.9	0.187	3.0	LOS A	0.0	0.0	0.00	0.19	0.00	41.5
8	T1	532	43	560	8.0	0.187	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	48.0
Approach		654	49	688	7.4	0.187	0.6	NA	0.0	0.0	0.00	0.10	0.00	46.7
All Vehicles		688	55	724	7.9	0.187	0.6	NA	0.1	1.1	0.02	0.10	0.02	42.3

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.

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MOVEMENT SUMMARY

▼ Site: 102 [4. Bourke Rd access - PM (Site Folder: Project Case 2)]

Bourke Road access
Site Category: Existing
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Charter Hall														
4	L2	98	6	103	6.1	0.093	1.7	LOS A	0.4	3.2	0.45	0.31	0.45	19.1
Approach		98	6	103	6.1	0.093	1.7	LOS A	0.4	3.2	0.45	0.31	0.45	19.1
North: Bourke Rd (30m)														
7	L2	32	5	34	15.6	0.228	3.0	LOS A	0.0	0.0	0.00	0.04	0.00	42.7
8	T1	801	24	843	3.0	0.228	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.5
Approach		833	29	877	3.5	0.228	0.1	NA	0.0	0.0	0.00	0.02	0.00	49.2
All Vehicles		931	35	980	3.8	0.228	0.3	NA	0.4	3.2	0.05	0.05	0.05	39.8

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.

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

SITE LAYOUT

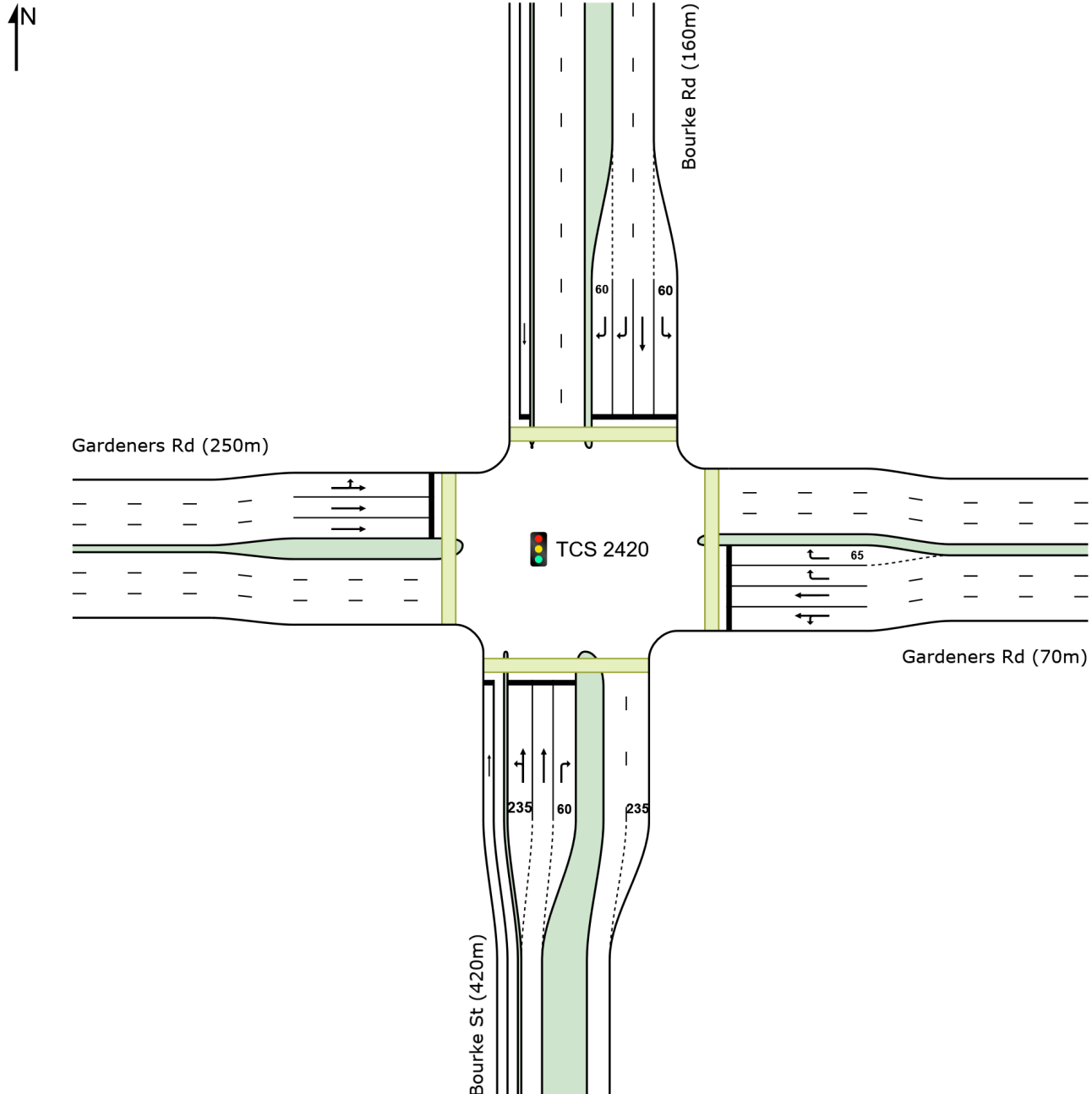
 Site: TCS 2420 [5. Gardeners Rd / Bourke Rd - AM (Site Folder: Project Case 2)]

Gardeners Road/ Bourke Road

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



MOVEMENT SUMMARY

 Site: TCS 2420 [5. Gardeners Rd / Bourke Rd - AM (Site Folder: Project Case 2)]

Gardeners Road/ Bourke Road

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Bourke St (420m)														
1	L2	104	8	109	8.0	0.482	62.6	LOS E	6.6	49.5	0.97	0.79	0.97	22.1
2	T1	196	14	206	7.1	0.419	46.2	LOS D	9.8	73.3	0.90	0.73	0.90	24.6
3	R2	110	9	116	8.0	0.535	54.6	LOS D	6.5	48.9	0.99	0.79	0.99	19.8
Approach		410	31	432	7.6	0.535	52.6	LOS D	9.8	73.3	0.94	0.76	0.94	22.5
East: Gardeners Rd (70m)														
4	L2	94	8	99	8.0	0.476	25.0	LOS B	17.5	131.1	0.68	0.64	0.68	31.9
5	T1	751	60	791	8.0	0.476	20.6	LOS B	17.5	131.3	0.68	0.62	0.68	29.8
6	R2	349	28	367	8.0	* 0.889	78.7	LOS F	13.3	99.6	1.00	0.99	1.36	9.6
Approach		1194	96	1257	8.0	0.889	37.9	LOS C	17.5	131.3	0.77	0.73	0.88	20.4
North: Bourke Rd (160m)														
7	L2	244	20	257	8.2	0.590	30.4	LOS C	8.9	66.6	0.93	0.82	0.93	18.5
8	T1	193	15	203	7.6	* 0.446	46.6	LOS D	10.5	78.8	0.90	0.76	0.90	25.0
9	R2	137	14	144	10.2	0.344	54.4	LOS D	4.0	30.2	0.96	0.76	0.96	18.7
Approach		574	49	604	8.5	0.590	41.5	LOS C	10.5	78.8	0.93	0.79	0.93	21.3
West: Gardeners Rd (250m)														
10	L2	219	18	231	8.0	* 0.742	42.2	LOS C	24.3	181.5	0.94	0.88	0.94	23.0
11	T1	1114	89	1173	8.0	* 0.742	38.9	LOS C	25.9	193.6	0.94	0.84	0.94	20.7
Approach		1333	107	1403	8.0	0.742	39.5	LOS C	25.9	193.6	0.94	0.85	0.94	21.1
All Vehicles		3511	282	3695	8.0	0.889	40.8	LOS C	25.9	193.6	0.88	0.79	0.92	21.2

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Bourke St (420m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	233.1	226.0	0.97
East: Gardeners Rd (70m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	232.7	225.5	0.97
North: Bourke Rd (160m)												
P3	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	233.3	226.3	0.97

West: Gardeners Rd (250m)												
P4 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	231.6	224.0	0.97	
All Pedestrians	200	211	59.3	LOS E	0.2	0.2	0.96	0.96	232.7	225.5	0.97	

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

Pedestrian movement LOS values are based on average delay per pedestrian movement.

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

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

 **Site: TCS 2420 [5. Gardeners Rd / Bourke Rd - AM (Site Folder: Project Case 2)]**

Gardeners Road/ Bourke Road
Site Category: Existing
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

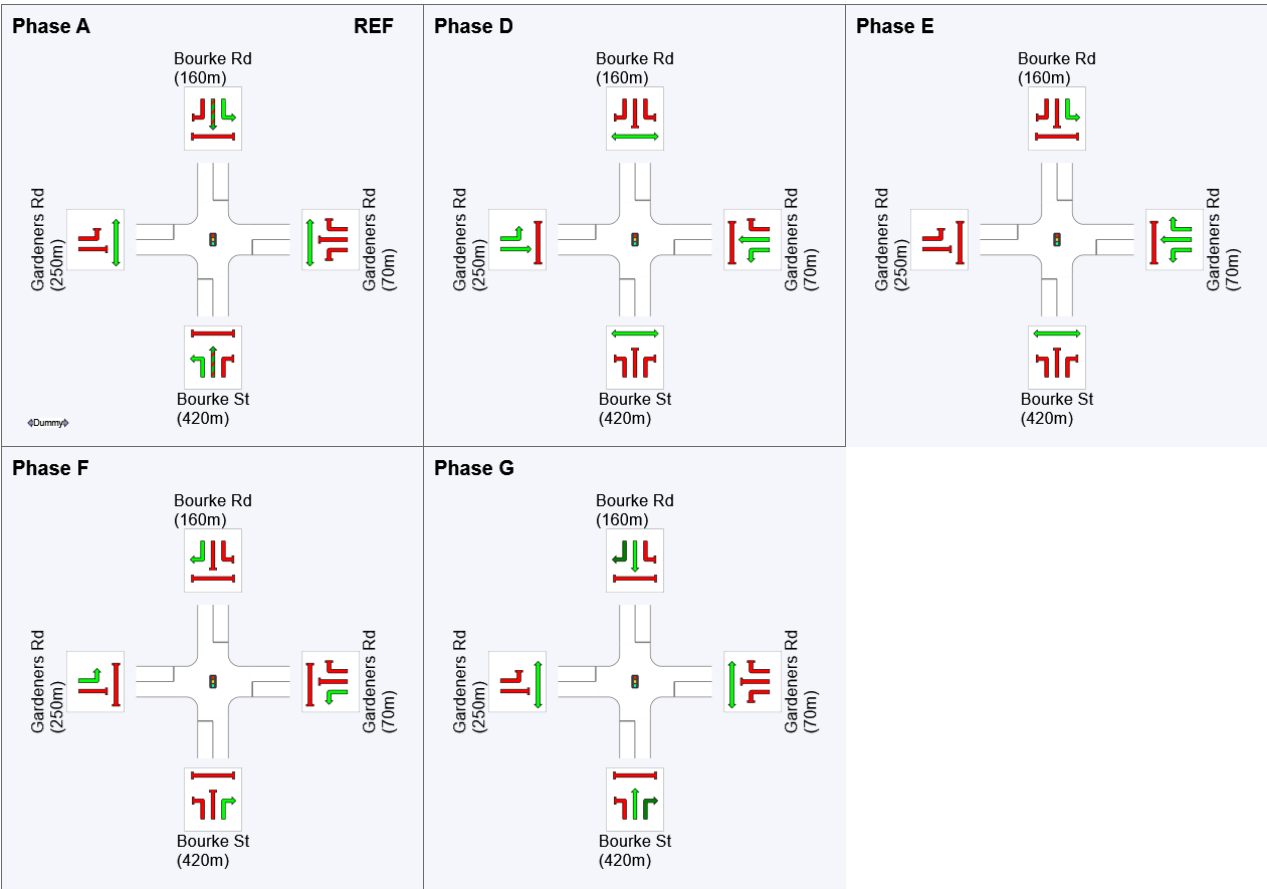
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: SCATS TCS 2420
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F, G
Output Phase Sequence: A, D, E, F, G

Phase Timing Summary

Phase	A	D	E	F	G
Phase Change Time (sec)	0	23	75	97	115
Green Time (sec)	17	46	16	12	9
Phase Time (sec)	23	52	22	18	15
Phase Split	18%	40%	17%	14%	12%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

MOVEMENT SUMMARY

 Site: TCS 2420 [5. Gardeners Rd / Bourke Rd - PM (Site Folder: Project Case 2)]

Gardeners Road/ Bourke Road

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Bourke St (420m)														
1	L2	101	3	106	3.0	0.378	58.7	LOS E	6.2	44.2	0.94	0.78	0.94	23.0
2	T1	152	4	160	2.6	0.277	42.8	LOS D	6.9	49.8	0.85	0.68	0.85	25.8
3	R2	96	3	101	3.0	0.398	51.5	LOS D	5.5	39.2	0.96	0.77	0.96	20.5
Approach		349	10	367	2.8	0.398	49.8	LOS D	6.9	49.8	0.91	0.73	0.91	23.3
East: Gardeners Rd (70m)														
4	L2	125	4	132	3.0	0.709	32.1	LOS C	31.6	227.0	0.84	0.78	0.84	28.5
5	T1	1098	33	1156	3.0	0.709	27.7	LOS B	31.6	227.0	0.85	0.77	0.85	25.5
6	R2	371	11	391	3.0	0.756	66.1	LOS E	12.6	90.7	1.00	0.87	1.11	11.1
Approach		1594	48	1678	3.0	0.756	37.0	LOS C	31.6	227.0	0.88	0.80	0.91	21.0
North: Bourke Rd (160m)														
7	L2	389	12	409	3.1	* 0.755	29.6	LOS C	13.7	98.5	0.96	0.86	0.99	18.8
8	T1	237	7	249	2.8	0.485	44.6	LOS D	13.0	93.3	0.89	0.77	0.89	25.6
9	R2	279	11	294	3.9	* 0.629	54.5	LOS D	8.2	59.6	1.00	0.81	1.01	18.8
Approach		905	30	952	3.3	0.755	41.2	LOS C	13.7	98.5	0.96	0.82	0.97	21.0
West: Gardeners Rd (250m)														
10	L2	126	4	133	3.0	* 0.611	46.0	LOS D	17.0	122.4	0.92	0.85	0.92	22.1
11	T1	822	25	866	3.0	0.611	42.1	LOS C	18.2	130.4	0.92	0.80	0.92	19.7
Approach		948	29	998	3.0	0.611	42.6	LOS D	18.2	130.4	0.92	0.81	0.92	20.0
All Vehicles		3796	116	3996	3.1	0.756	40.6	LOS C	31.6	227.0	0.91	0.80	0.92	21.1

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Bourke St (420m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	233.1	226.0	0.97
East: Gardeners Rd (70m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	232.7	225.5	0.97
North: Bourke Rd (160m)												
P3	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	233.3	226.3	0.97

West: Gardeners Rd (250m)												
P4 Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	231.6	224.0	0.97	
All Pedestrians	200	211	59.3	LOS E	0.2	0.2	0.96	0.96	232.7	225.5	0.97	

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

Pedestrian movement LOS values are based on average delay per pedestrian movement.

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

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

 **Site: TCS 2420 [5. Gardeners Rd / Bourke Rd - PM (Site Folder: Project Case 2)]**

Gardeners Road/ Bourke Road
Site Category: Existing
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

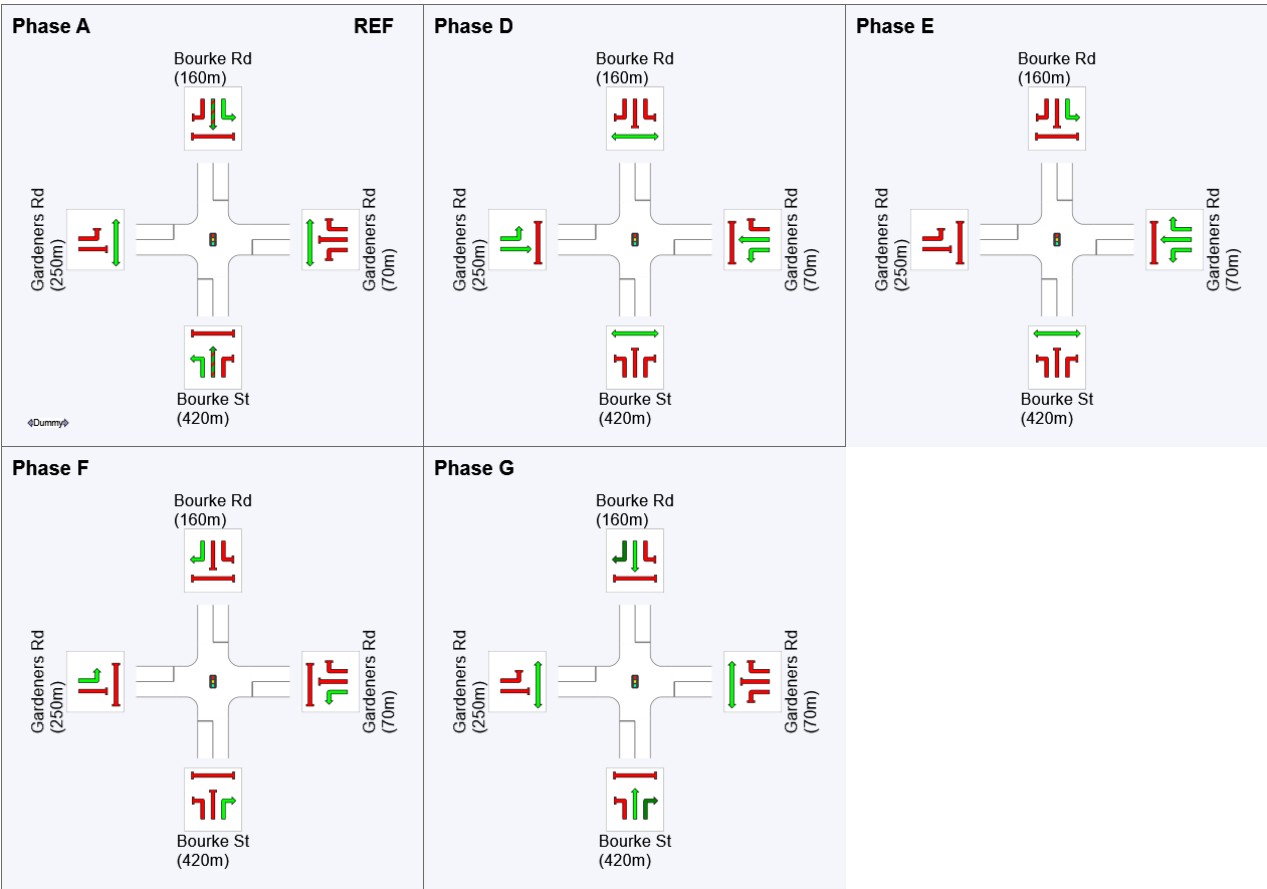
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: SCATS TCS 2420
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F, G
Output Phase Sequence: A, D, E, F, G

Phase Timing Summary

Phase	A	D	E	F	G
Phase Change Time (sec)	0	26	70	95	115
Green Time (sec)	20	38	19	14	9
Phase Time (sec)	26	44	25	20	15
Phase Split	20%	34%	19%	15%	12%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

SITE LAYOUT

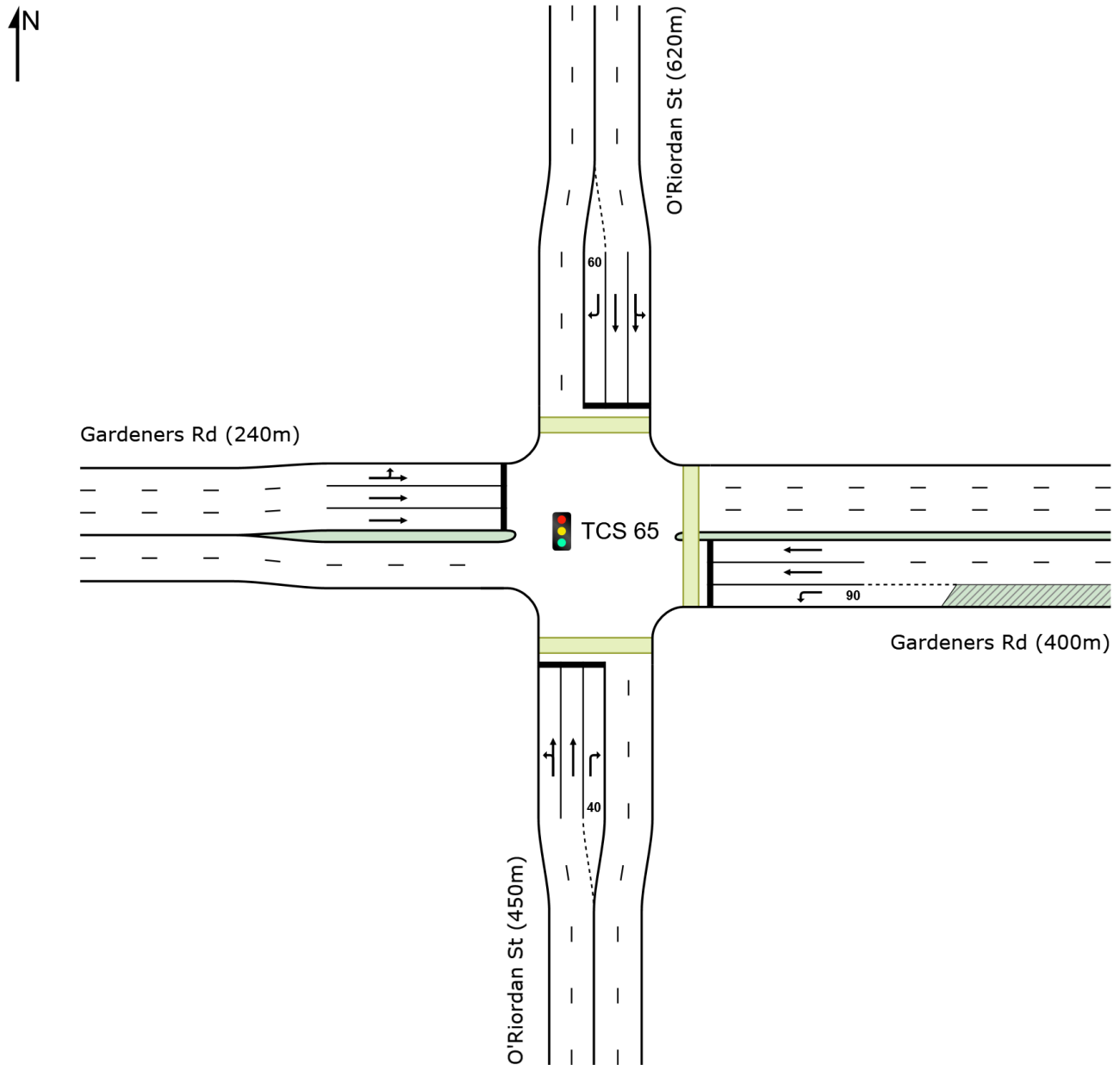
 **Site: TCS 65 [7. Gardeners Rd / O'Riordan St - AM (Site Folder: Project Case 2)]**

Gardeners Road / O'Riordan Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



MOVEMENT SUMMARY

 Site: TCS 65 [7. Gardeners Rd / O'Riordan St - AM (Site Folder: Project Case 2)]

Gardeners Road / O'Riordan Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: O'Riordan St (450m)														
1	L2	197	16	207	8.0	0.961	76.1	LOS F	58.3	436.1	1.00	1.13	1.32	20.6
2	T1	932	76	981	8.2	*0.961	72.1	LOS F	58.3	436.1	0.93	1.11	1.30	25.9
3	R2	300	24	316	8.0	0.752	30.2	LOS C	10.8	81.0	0.95	0.85	1.00	34.7
Approach		1429	116	1504	8.1	0.961	63.9	LOS E	58.3	436.1	0.94	1.06	1.24	26.5
East: Gardeners Rd (400m)														
4	L2	107	9	113	8.0	0.099	13.3	LOS A	2.4	18.0	0.37	0.67	0.37	43.6
5	T1	958	77	1008	8.0	*0.964	80.7	LOS F	43.7	326.7	1.00	1.20	1.40	19.7
Approach		1065	85	1121	8.0	0.964	73.9	LOS F	43.7	326.7	0.94	1.15	1.30	21.2
North: O'Riordan St (620m)														
7	L2	151	12	159	8.0	0.668	54.9	LOS D	14.8	110.6	0.97	0.83	0.97	29.8
8	T1	332	27	349	8.0	0.668	49.2	LOS D	14.8	110.6	0.96	0.81	0.96	30.5
9	R2	195	16	205	8.0	*0.942	88.9	LOS F	16.1	120.4	1.00	1.06	1.50	20.8
Approach		678	54	714	8.0	0.942	61.9	LOS E	16.1	120.4	0.97	0.89	1.12	27.2
West: Gardeners Rd (240m)														
10	L2	329	26	346	7.9	0.933	73.8	LOS F	40.6	303.2	1.00	1.05	1.29	23.8
11	T1	1133	90	1193	8.0	0.933	69.1	LOS E	40.6	303.2	1.00	1.11	1.30	21.7
Approach		1462	116	1539	8.0	0.933	70.2	LOS E	40.6	303.2	1.00	1.10	1.29	22.2
All Vehicles		4634	372	4878	8.0	0.964	67.9	LOS E	58.3	436.1	0.96	1.07	1.25	24.2

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: O'Riordan St (450m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	226.0	216.8	0.96
East: Gardeners Rd (400m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	228.8	220.4	0.96
North: O'Riordan St (620m)												
P3	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	225.7	216.4	0.96

All Pedestrians	150	158	59.3	LOS E	0.2	0.2	0.96	0.96	226.9	217.9	0.96
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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.

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

 **Site: TCS 65 [7. Gardeners Rd / O'Riordan St - AM (Site Folder: Project Case 2)]**

Gardeners Road / O'Riordan Street
Site Category: Existing
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

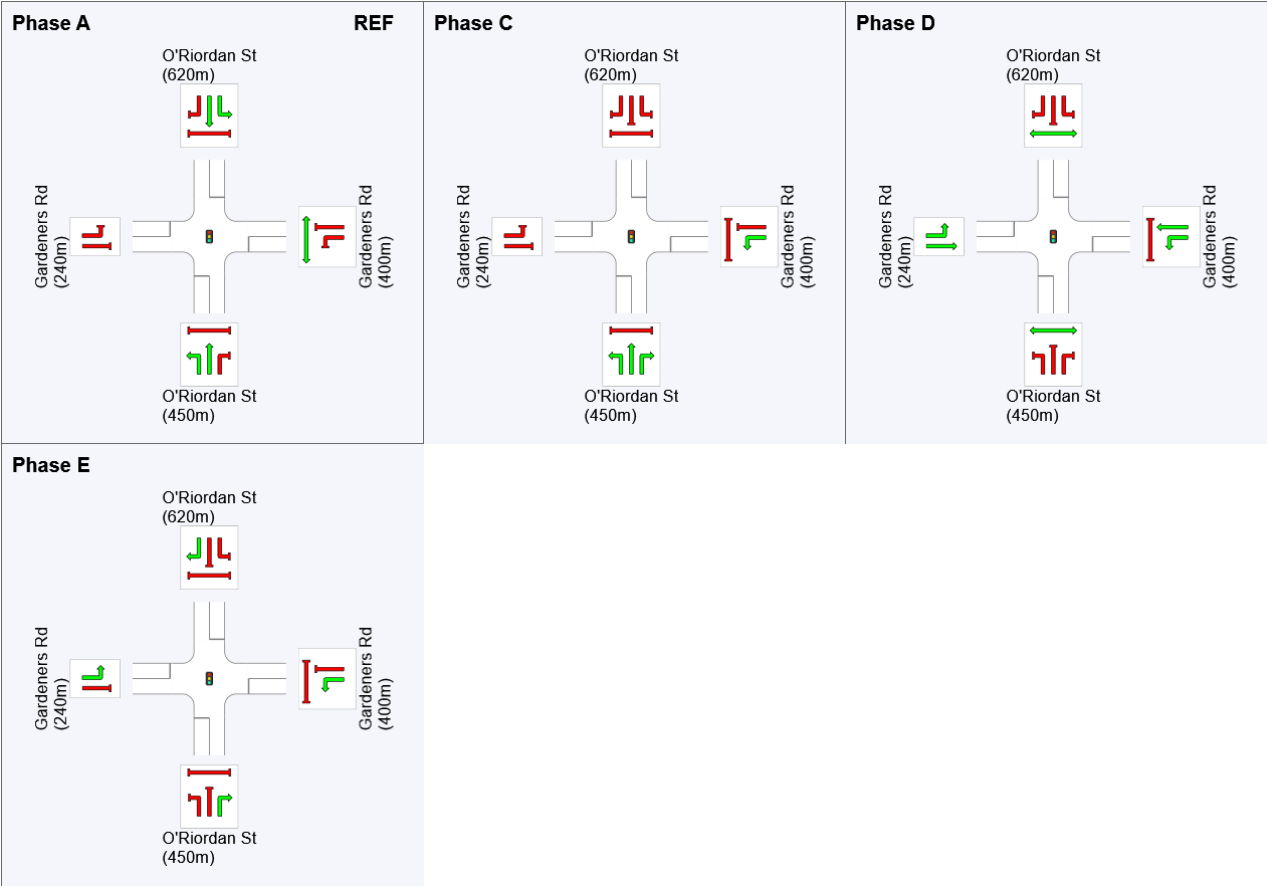
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: SCATS TCS 65
Reference Phase: Phase A
Input Phase Sequence: A, C, D, E
Output Phase Sequence: A, C, D, E

Phase Timing Summary

Phase	A	C	D	E
Phase Change Time (sec)	0	36	61	107
Green Time (sec)	30	19	40	17
Phase Time (sec)	36	25	46	23
Phase Split	28%	19%	35%	18%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

	Normal Movement		Permitted/Opposed
	Slip/Bypass-Lane Movement		Opposed Slip/Bypass-Lane
	Stopped Movement		Turn On Red
	Other Movement Class (MC) Running		Undetected Movement
	Mixed Running & Stopped MCs		Continuous Movement
	Other Movement Class (MC) Stopped		Phase Transition Applied

MOVEMENT SUMMARY

 **Site: TCS 65 [7. Gardeners Rd / O'Riordan St - PM (Site Folder: Project Case 2)]**

Gardeners Road / O'Riordan Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: O'Riordan St (450m)														
1	L2	257	8	271	3.0	1.002	105.6	LOS F	48.9	351.5	1.00	1.23	1.54	16.6
2	T1	618	20	650	3.2	* 1.002	104.3	LOS F	48.9	351.5	1.00	1.30	1.58	21.3
3	R2	222	7	234	3.0	* 0.993	107.4	LOS F	20.2	145.2	0.97	1.15	1.65	18.7
Approach		1097	34	1154	3.1	1.002	105.2	LOS F	48.9	351.5	0.99	1.25	1.58	19.8
East: Gardeners Rd (400m)														
4	L2	136	4	143	3.0	0.135	17.5	LOS B	3.9	27.7	0.46	0.69	0.46	41.2
5	T1	1203	36	1266	3.0	* 0.993	90.7	LOS F	60.1	431.2	1.00	1.27	1.46	18.2
Approach		1339	40	1409	3.0	0.993	83.3	LOS F	60.1	431.2	0.95	1.21	1.36	19.6
North: O'Riordan St (620m)														
7	L2	218	7	229	3.0	0.971	89.8	LOS F	42.7	306.6	1.00	1.16	1.43	23.5
8	T1	635	19	668	3.0	0.971	85.1	LOS F	42.7	306.6	0.98	1.19	1.44	23.9
9	R2	271	8	285	3.0	0.988	103.3	LOS F	24.6	176.6	1.00	1.14	1.61	19.1
Approach		1124	34	1183	3.0	0.988	90.4	LOS F	42.7	306.6	0.99	1.17	1.48	22.6
West: Gardeners Rd (240m)														
10	L2	216	6	227	2.7	0.605	40.6	LOS C	20.7	148.4	0.86	0.80	0.86	31.9
11	T1	940	29	989	3.1	0.605	36.0	LOS C	20.9	150.0	0.87	0.77	0.87	31.1
Approach		1156	35	1217	3.0	0.605	36.9	LOS C	20.9	150.0	0.87	0.78	0.87	31.3
All Vehicles		4715	143	4964	3.0	1.002	78.7	LOS F	60.1	431.2	0.95	1.11	1.32	22.3

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.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: O'Riordan St (450m)												
P1	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	226.0	216.8	0.96
East: Gardeners Rd (400m)												
P2	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	228.8	220.4	0.96
North: O'Riordan St (620m)												
P3	Full	50	53	59.3	LOS E	0.2	0.2	0.96	0.96	225.7	216.4	0.96

All Pedestrians	150	158	59.3	LOS E	0.2	0.2	0.96	0.96	226.9	217.9	0.96
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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.

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Project: C:\Users\Faria Imam\Desktop\P1279_Gardeners Road\p1279m01v1_520-530 Gardeners Rd, Alexandria.sip9

PHASING SUMMARY

 **Site: TCS 65 [7. Gardeners Rd / O'Riordan St - PM (Site Folder: Project Case 2)]**

Gardeners Road / O'Riordan Street

Site Category: Existing

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: SCATS TCS 65

Reference Phase: Phase A

Input Phase Sequence: A, D, E

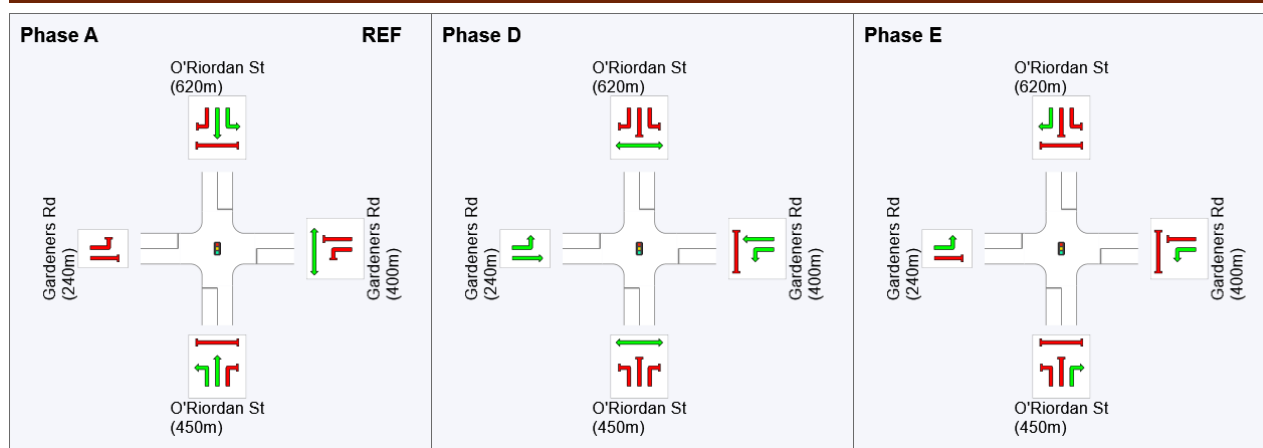
Output Phase Sequence: A, D, E

Phase Timing Summary

Phase	A	D	E
Phase Change Time (sec)	0	44	97
Green Time (sec)	38	47	27
Phase Time (sec)	44	53	33
Phase Split	34%	41%	25%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase



Appendix C. Pre-Lodgement Comments – TfNSW

01 December 2021

Our Reference: SYD21/01108/02

Ms Dora Choi
Principal Lead, Traffic Management & Operations
Ason Group
Suite 17.02, Level 17
1 Castlereagh Street
Sydney, NSW 2000

Email: dora.choi@asongroup.com.au

Dear Ms Choi,

**PRE-LODGE MENT ADVICE
PROPOSED INDUSTRIAL WAREHOUSE DEVELOPMENT
520-530 GARDENERS ROAD, ALEXANDRIA**

Thank you for your email dated 17 November 2021, seeking Transport for NSW (TfNSW) pre-lodgement advice regarding access to 520-530 Gardeners Road, Alexandria. After a review of the information submitted, TfNSW provides the following advice for consideration in the preparation of a formal development application:

- The signalized intersection of Bourke Road / Gardeners Road is a major intersection used by high volumes of traffic where network safety and efficiency are of great importance.

The proposed development will directly impact on this intersection increasing delays and queues well beyond acceptable Levels of Service (LoS), with currently SIDRA modelling indicating that the proposed development will reduce intersection performance at this location from LoS 'C' to 'E'.

- Current practice is to limit the number of vehicular conflict points along the arterial road network to maintain network efficiency and road safety. This current practice is reflected in Section 6.2.1 of TfNSW current publication of the Guide to Traffic Generating Developments, which states '*access across the boundary with a major road is to be avoided wherever possible*'.

Motorists and freight vehicles leaving the proposed driveways in Bourke Street would interrupt the flow of traffic by attempting to access the right turn bays into Gardeners Road. The movement requires crossing multiple traffic lanes through often queued traffic, which is not acceptable to TfNSW, particularly considering the impact that the proposed development would have to the existing LoS of the intersection.

As clause 101(2a) of *State Environmental Planning Policy (Infrastructure) 2007*, states: "*The consent authority must not grant consent to development on land that has frontage to a classified road unless it is satisfied that: where practicable, vehicular access to the land is provided by a road other than the classified road*". With this in consideration, TfNSW notes that there is no alternative vehicle access via the local road network and that Gardeners Road (classified road) vehicular access would be considered by the agency.

- The Gardeners Road access is currently traffic signal controlled that was installed based on generations of a previous development. The proposed generations to the subject site need to meet a Warrant Assessment for the traffic signals to be retained, otherwise the signals would be required to be removed and the median closed to restrict access to left-in, left-out (LILO) arrangement. This work would be required to be undertaken by the Applicant at no cost to TfNSW.

As Gardeners Road is a classified road with high movement function, any disruptions to through traffic by slow moving service vehicles turning left accessing site could have a detrimental impact to network safety and efficiency but also operations to the future development's operations.

Transport for NSW

27-31 Argyle Street, Parramatta NSW 2150 | PO Box 973, Parramatta NSW 2150

P (02) 8265 6962 | W transport.nsw.gov.au | ABN 18 804 239 602

Therefore, TfNSW recommends consideration is given to the development providing a left turn deceleration lane into the site from Gardeners Road in accordance with Australian Standards, in particular AS 2890.1 and Austroads Guide to Road Design: Part 4A: Un-signalised and Signalised Intersections (Section 3 – Sight Distance). Vegetation and proposed landscaping/fencing must not hinder sight lines to and from road users.

- Consideration should also be given to the management of pedestrians along Gardeners Road frontage.

Note: It is emphasised that the comments provided above are informal and of a Pre-DA nature, they are not to be interpreted as binding upon TfNSW and may change following formal assessment of a submitted development application from the appropriate consent authority.

Should you have any further enquiries in relation to this matter, please do not hesitate to contact Brett Morrison, Development Assessment Officer, by email at development.sydney@transport.nsw.gov.au.

Yours sincerely,



Brendan Pegg
Senior Land Use Planner
Planning and Programs, Greater Sydney Division

Transport for NSW

27-31 Argyle Street, Parramatta NSW 2150 | PO Box 973, Parramatta NSW 2150

P (02) 8265 6962 | **W** transport.nsw.gov.au | ABN 18 804 239 602

Appendix D. Framework Travel Plan



Ascent Logistics Centre

Framework Travel Plan

520-530 Gardeners Road, Alexandria

22/12/2021

P1279



Info@asongroup.com.au

+61 2 9083 6601

Suite 17.02, Level 17,

1 Castlereagh Street,

Sydney, NSW 2000

Document Control

Project No	P1279
Project	520-530 Gardeners Road, Alexandria
Client	Charter Hall
File Reference	1279r02v01 GTP 520-530 Gardeners Road, Alexandria

Revision History

Revision No.	Date	Details	Author	Approved by
-	07/12/2021	Draft	J. Wu	R. Butler-Madden
I	22/12/2021	Issue	E. Ye	R. Butler-Madden

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APPENDICES

- Appendix A. Travel Access Guide
- Appendix B. Sample Questionnaire

1 Introduction

1.1 Context

This Framework Travel Plan (FTP) has been developed to support State Significant Development (SSD) Application 32489140. The SSD relates to a proposed multi-deck warehouse at 520-530 Gardeners Road, Alexandria (the Site), which sits within the City of Sydney Local Government Area (LGA).

This FTP has been prepared in response to the industry standard Secretary Environmental Assessment Requirements (SEAR) number 6, which requires that a Green Travel Plan (GTP) or equivalent be provided with the SSD submission. As such, and recognising the early stage in the process of delivering the proposed development, the purpose of this FTP is to outline the overarching requirements for a future Sustainable / Green Travel Plan package to be delivered in future occupier-specific Plans.

It is anticipated that a Condition of Consent would apply to any SSD approval, requiring the implementation of the final GTP.

1.2 Site Location & Description

The Site is located around 6 kilometres South of the Sydney CBD. It has an area of approximately 19,000m² with a 170-metre frontage on Bourke Road and 100-metre frontage on Gardeners Road.

The site is shown in its local context in **Figure 1**.

The Proposal relates to the development of a three-storey multi-deck industrial warehouse, which will comprise:

- 20,144m² warehouse GFA composed of 4 tenancies distributed across Ground Level and Level 1
- 5,557m² office GFA composed of 7 offices across Mezzanine levels and Level 2
- 1,278m² service vehicle storage GFA located on Level 2
- 144 car parking spaces on Level 2 (inclusive of 7 accessible car parking spaces)
- 3 car share spaces

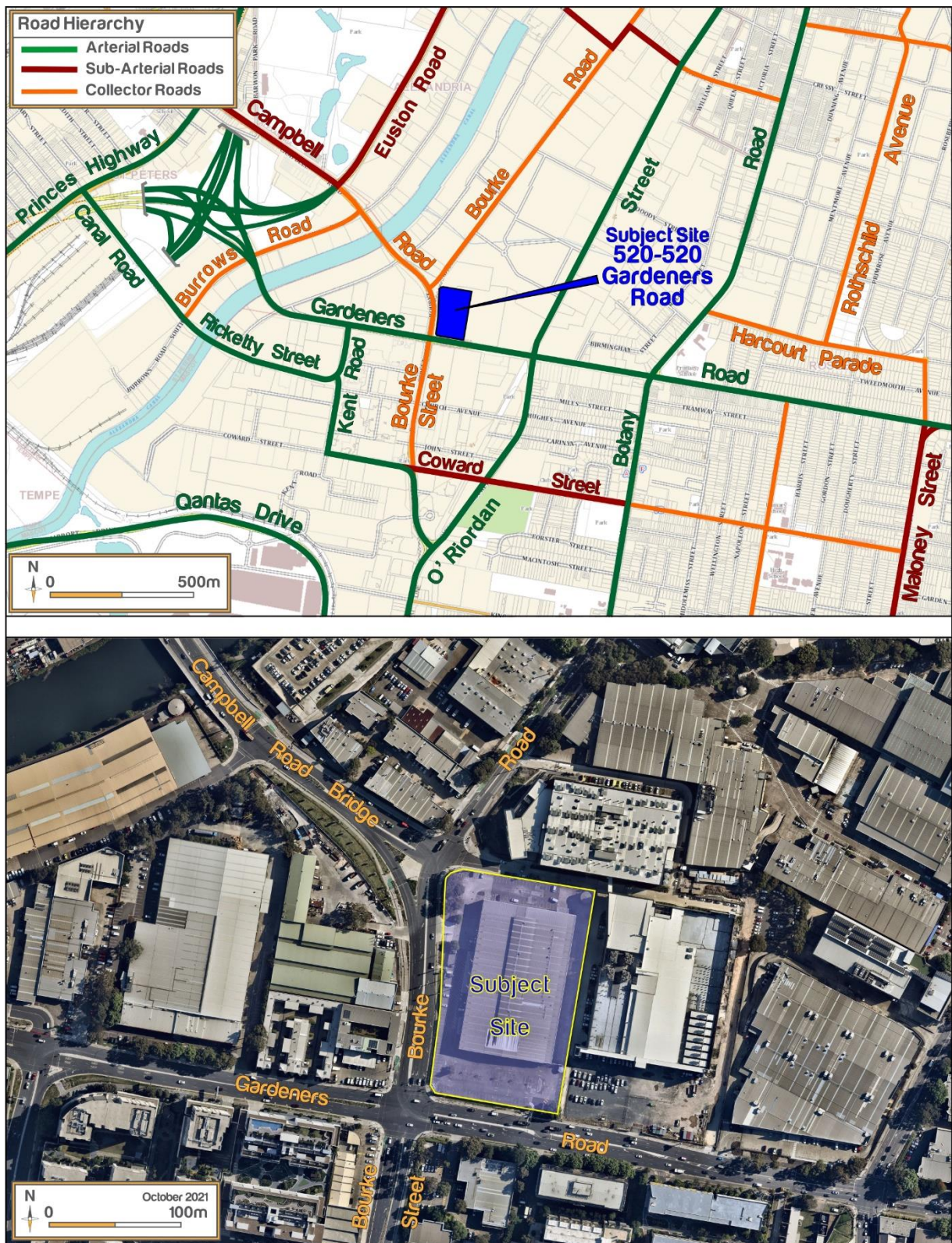


Figure 1: Site and Road Network

1.3 Objectives of FTP

Underpinning this FTP comprises a package of measures which could be adopted and designed to address the specific travel needs of the Site. In this regard, the overall intention is to encourage and facilitate the use of alternative and sustainable modes of transport and to reduce single-occupancy car travel for journeys to and from the Site.

The primary objectives of the FTP (and subsequent GTP) will be to:

- Reduce the environmental footprint of the Site.
- Set future staff travel mode share targets.
- Improve access, amenity, convenience, and safety of sustainable transport modes to/from the Site.
- Promote the use of 'active transport' modes such as walking and cycling, particularly for short-medium distance journeys.
- Reduce reliance on the use of private vehicles for all journeys.
- Encourage a healthier, happier, and more active & public transport use culture.

2 Site Audit

2.1 Introduction

An audit of the Site is required to determine the existing facilities in the area and review existing transport choices. This section has been based on the current conditions and will need to be updated prior to implementation of future Plan, as well during the monitoring process. The audit should consider the following:

- Site conditions, once the development is complete;
- Public transport services in the area, including proximity to the Site, frequency of services and accessibility;
- Bicycle and pedestrian facilities, including accessibility, connectivity, and safety; and
- Mode-split data for the Site and local area.

2.2 Public & Active Transport

The Site is well serviced by high-frequency public transport infrastructure and its close proximity to rail and bus services aligns with strategies to increase walking and cycling trips. The key train and bus services local to the Site are presented in **Figure 2**.

There are a number of bus stops within around 400m walking distance of the Site, located along Gardeners Road and Bourke Road and are summarised in **Table 1**. The following details the bus services that operate at these bus stops:

- Bus Route 357: This bus service operates from Bondi Junction to Mascot via Randwick and Kingsford with a weekday peak frequency of 15 – 25 minutes a service.
- Bus Route 305: This bus service operates from Redfern to Mascot Stamford Hotel with only 2 services in the AM and PM peaks with a service frequency of approximately 30 – 40 minutes.

Noting that TfNSW Guidelines state that bus services influence the travel mode choices of sites within 400m (approximately 5 minutes' walk) of a bus stop, access to bus services will be a key factor in influencing travel behaviour by way of increased convenience and reliability.

TABLE 1: BUS SERVICE & FREQUENCY

Bus Route No.	Route Description	Number of services		
		AM (8am – 9am)	Midday (12pm – 1pm)	PM (5pm – 6pm)
357	Mascot to Bondi Junction (EB)	3	2	3
	Bondi Junction to Mascot (WB)	3	2	3
305	Mascot to Redfern (EB)	0	0	2
	Redfern to Mascot (WB)	2	0	0

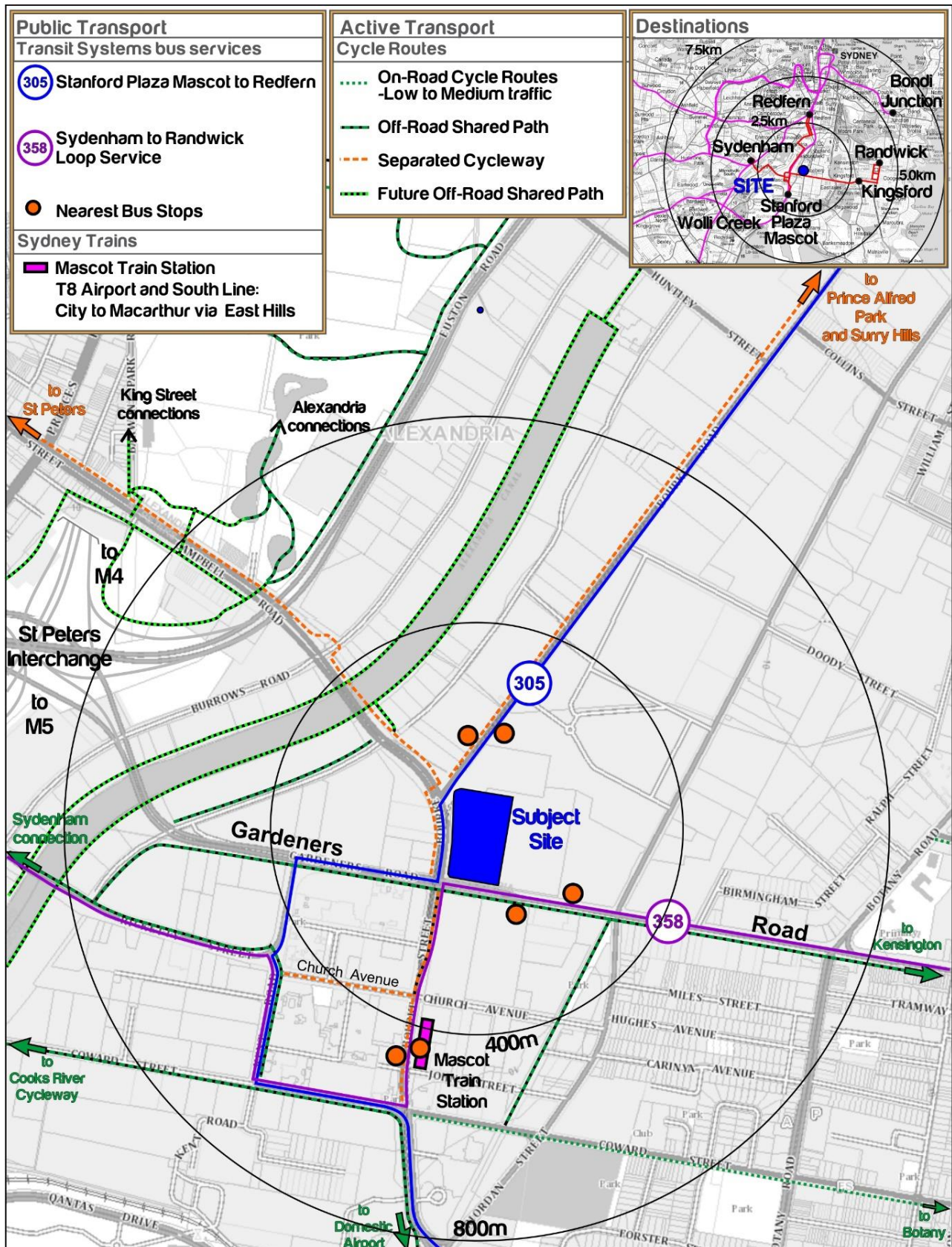


Figure 2: Nearby Public Transport Services

2.2.1 Train Services

The Site is located within 400 metres (straight line distance) of Mascot Station, which provides services along the T8 Airport & South Line between Central Station and Macarthur Station and summarised in **Table 2**. In the direction of Central Station, rail services operate every 3 – 6 minutes during morning commuter peak periods, 7 – 8 minutes during afternoon peak hour and every 7 – 8 minutes outside of these peak periods. In the other direction towards Macarthur Station, rail services operate every 6 – 9 minutes during morning commuter peak periods, 3 – 9 minutes during afternoon peak hour and every 6 – 9 minutes outside of these peak periods.

TfNSW Guidelines state that train services influence the travel mode choices of areas within 800 metres distance (approximately 10 minutes' walk) of a train station, quick access to Mascot Station will be a key factor in shifting travel share towards public transport to reach the Site.

TABLE 2: TRAIN SERVICE & FREQUENCY

Line	Destination	Number of services		
		AM (8am – 9am)	Midday (12pm – 1pm)	PM (5pm – 6pm)
T8 Airport & South Line	To Macarthur Station	8	8	11
	To Central Station	10	8	8

2.2.2 Bicycle Network

At present there is a well-connected mixture of recreational, sub-regional and local bicycle routes surrounding the Site within the City of Sydney Council LGA and Bayside Council LGA as seen in Figure 2.

As identified in the *City of Sydney Cycling Strategy and Action Plan* (Bike Plan), an extensive network of cycle routes connecting the site to the city northbound is shown in Figure 3. An overview of the cycle network is as follows:

- Off-road cycleways to Alexandria and St Peters via Campbell Road
- Access to recreational routes within Sydney Park via Campbell Road
- Separated and on-road cycleways towards Green Square via Bourke Road
- On-road cycle lanes to Eastlakes via Coward Street on both street sides
- Separated and on-road cycleways to Zetland Via Dunning Avenue and Gardeners Road
- Limited bicycle-friendly roads connecting Kensington and Eastern Suburbs via Epsom Road and Tunstall Avenue

Additionally, as outlined in the *Bayside Bike Plan: Bayside Cycleways* in **Figure 4**, a mixture of on-road and off-road shared paths heading south of the Site connecting Botany and Wolli Creek are provided as follows:

- Links to Wolli Creek via on-road cycle lanes in Cowards St connecting to off-road shared paths on Airport Drive
- On-road cycle lanes leading towards Botany via Cowards St connecting to off-road shared paths on Wentworth Avenue

The site is generally well-served with cycle routes within the City of Sydney and Bayside Council LGAs. However, strategies to better link south-eastern suburbs including Kensington, Randwick and Kingsford will ensure alternative travel accessibility to the site is increased.

Council's *Cycling Strategy and Action Plan 2018* highlights the completion of 11 regional bike routes better connecting the metropolitan centre including Redfern, Haymarket and Sydney. Additionally, priority actions to complete the local bike network improves accessibility between the Site and more suburban residential areas of Roseberry, Camperdown and Glebe.

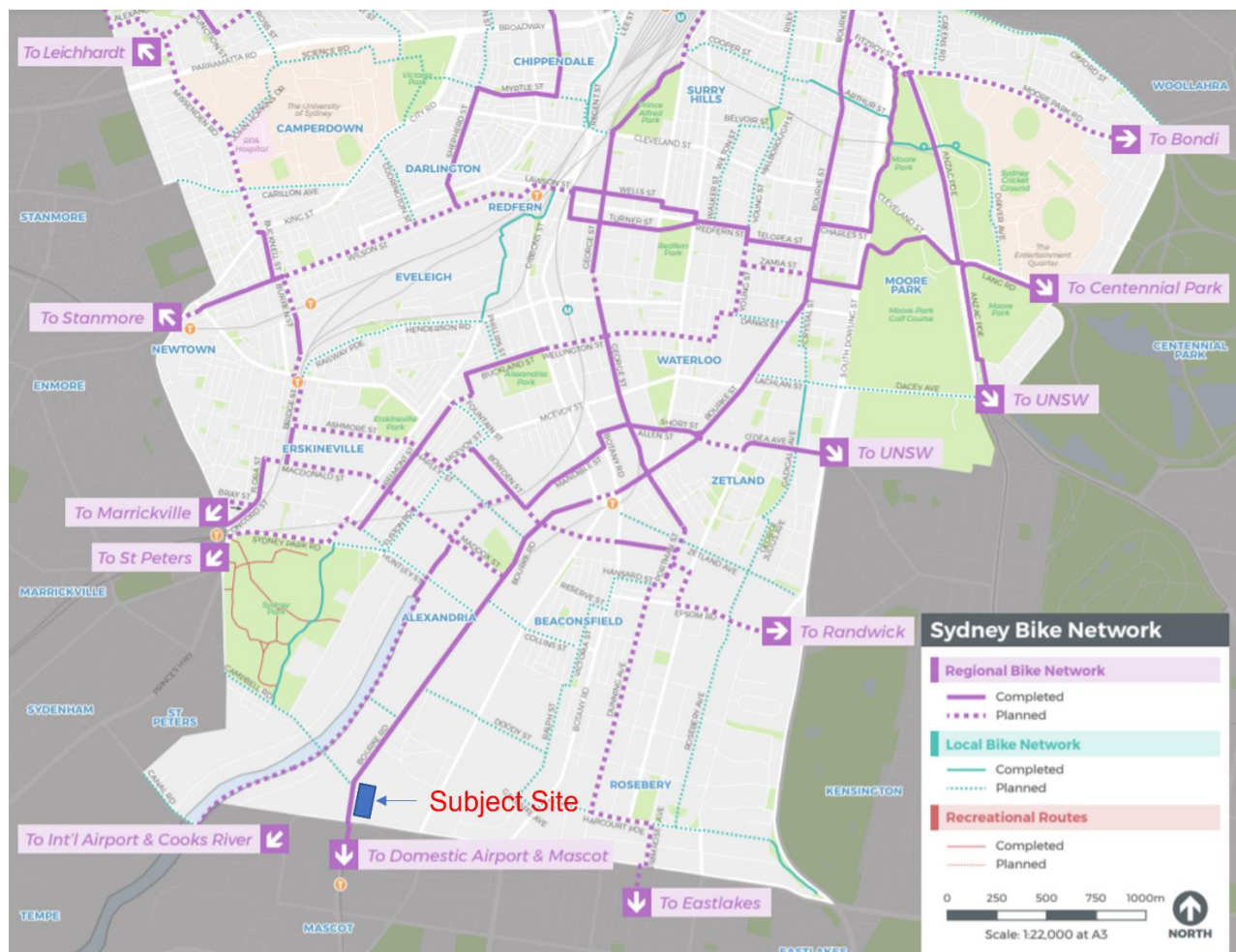


Figure 3: Sydney Bike Network

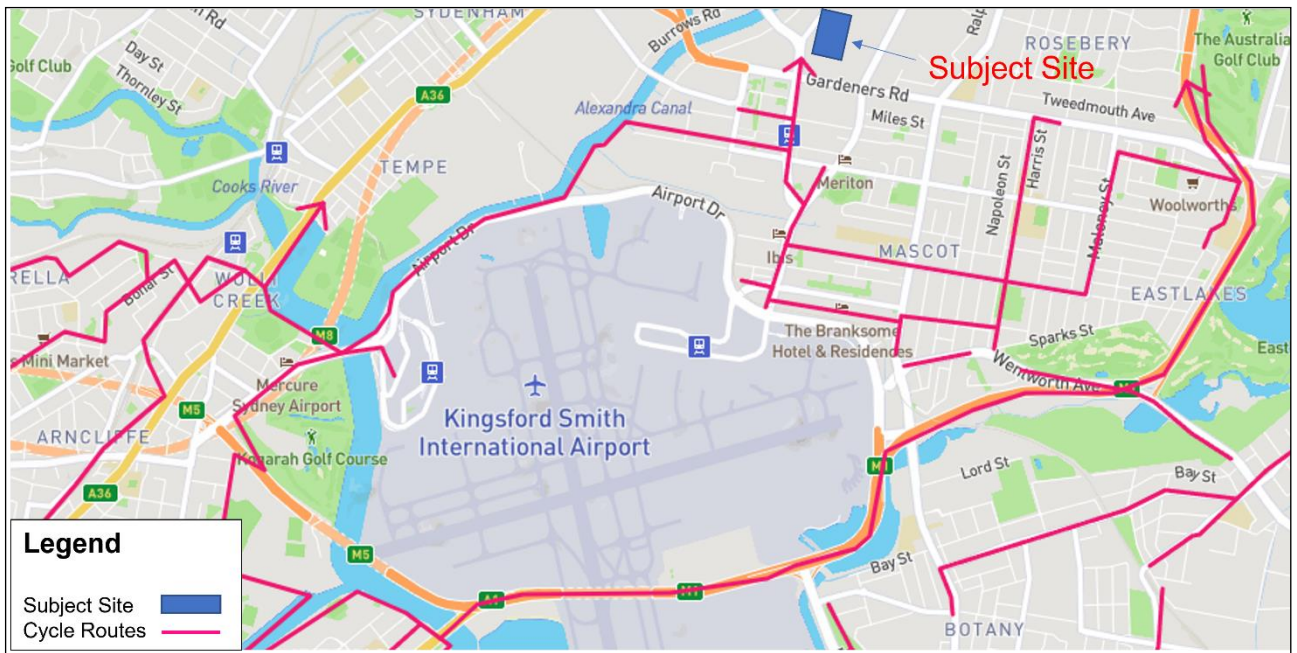


Figure 4: Cycle Routes Bayside Council

2.2.3 Pedestrian Connectivity

The Site is well serviced by an extensive pedestrian network, with the key features outlined as follows:

- Approximately 550 metre walk (approximately 7 minutes) from Mascot Station to the Site via Bourke Road
- Footpaths along both sides of all adjacent streets
- Signalised pedestrian crossings at the Bourke Road / Gardeners Road intersection
- Signalised pedestrian crossings at the Bourke Road / Campbell Road / Campbell Road intersection
- Signalised pedestrian crossings at the Doody Street / O'Riordan Street intersection

The surrounding area consists of a mixture of mostly enterprise corridor, residential, and general industrial developments, and as such would be considered key destinations and attractions for people to walk to. As such, this is reflected in the formal footpaths and crossings facilitating access to the public transport services within close proximity of the Site.

2.3 On Demand Services

2.3.1 Car Share

Car sharing has emerged as a cost effective, flexible alternative to private vehicle ownership. Provision of car share in the area could facilitate intermittent work trips that may need to be made by car such that staff can commute by other modes.

GoGet, for example provides a car share service allowing members to book cars for private use. While there are number of GoGet pods in the wider area, the closest pods to the site is currently 1km to the north east of the Site, on Doody Street.

Prior to establishment of car share spaces in closer proximity to the Site, it is proposed to consider schemes such as car share priority parking spaces on-site, to actively encourage car sharing amongst staff.

2.4 Existing Travel Patterns

Journey-to-Work (JTW) data from the Australian Bureau of Statistics (ABS) 2016 Census and specifically aggregated Destination Zones (DZ) has been referenced to understand the baseline travel characteristics of the area, inclusive of the site. This data has been used to inform the initial targets in lieu of site-specific travel data, which cannot be collated until the site is occupied.

A summary of key travel modes for those travelling to the locality for work have been reviewed with regard for the surrounding Destination Zone 113301328 within the Alexandria area.

A breakdown of the existing travel mode share is presented in **Table 3**.

TABLE 3: TRAVEL MODE SUMMARY (JOURNEY TO WORK)

Travel Mode	Mode Share of Employees
Car as driver	65%
Train	21%
Bus	4%
Walked only	3%
Car as passenger	3%
Motorbike/Scooter	1%
Bicycle	2%
Taxi	0%
Truck	1%
Other Modes	0%

With reference to Table 3, the majority of the Alexandria statistical area travels to work by car as drivers. The data indicates that approximately 68% travel by car, split between 65% as driver and 3% as passenger i.e. car-pooling. Furthermore, train travel mode uptake at 21% of commuters, in addition to 4% travelling by bus, indicates a relatively high dependence on public transport usage in the area. However, despite a well-connected bicycle and pedestrian network surrounding the area, 2% travel by bicycle and 3% by walking only.

3 Travel Mode Targets

3.1 Introduction

This section sets out the targets for the reduction in car journeys associated with the Site, with consideration to the land use in the area (being a mixture of business, residential and industrial developments in an urban environment). A focus on encouraging modal shifts away from private vehicles to utilising the existing public and active transport network aligns with the overall objective of this FTP.

Targets are the means of measuring the achievement of the objectives. They need to be clear, directly linked to the objectives, monitored and reviewed.

Questionnaire surveys will be conducted in the future that will form the updated travel mode baseline to further develop site-specific targets. The first surveys will be undertaken shortly after occupation. These surveys will be repeated at a suitable time to assess the effectiveness of the implemented Travel Plan; the targets are to be reviewed to align with the most up-to-date information.

The implemented GTP is to be in place for the lifetime of the development. The initial timeframe in which targets need to be monitored and reviewed will be reviewed every 1-2 years, for a minimum of 5 years.

3.2 Strategic Targets

To inform the preliminary targets of this FTP, key strategic policies have been referred to such as Sustainable Sydney 2030 (SS2030), which outlines a number of objectives in relation to sustainable transport modes set by Council. It is noted that Council is in the process of reviewing the 2030 plan (with the intent of providing an updated plan; Sustainable Sydney 2050) to assess the progress undertaken over the last 10 years under the 2030 plan.

Under the 2030 plan, greenhouse gas emissions reduced by 20% from the 2006 baseline. This is a result, in part, due to Council's *Walking Strategy and Action Plan (2015-2030)* and *Cycle Strategy and Action Plan (2018-2030)*.

The *Walking Strategy and Action Plan* provides the following numerical targets in relation to walking by City of Sydney residents:

- Walking to account for one third of commute trips by residents by 2030.
- Reduce delay to walking times by 10% across key walking routes by 2030.
- Increase footpath capacity by 20% on average on main activity streets through planned upgrades by 2030.
- Improve walking amenity by 10% on main activity streets through planned upgrades by 2030.

Finally, the *Cycling Strategy and Action Plan* outlines a target by 2030 of 10 per cent of all trips in the city to be made by bicycle.

3.3 Mode Share Targets

It is essential that Mode Share targets be achievable with consideration for the public transport, walking and cycling opportunities available within proximity to the Site. Targets should also be factoring in what future transport options could reasonably be used to access the Site, and also the nature of the development itself.

The targets should be revisited and updated after the opening of the development as part of the monitoring process. The preliminary targets, developed with consideration to Council's strategies and policies are nominated in **Table 4**. These represents *preliminary* 5-year targets to coincide with the minimum 5 years of monitoring and review.

TABLE 4: PRELIMINARY 2026 MODE SHARE TARGETS

Travel Mode	Mode Share of Employees	Proposed Targets	Relative Change
Car as driver	65%	55%	-10%
Train	21%	23%	+2%
Bus	4%	5%	+1%
Walked only	3%	6%	+3%
Car as passenger	3%	4%	+1%
Motorbike/Scooter	1%	1%	-
Bicycle	2%	5%	+3%
Taxi	0%	0%	-
Truck	1%	1%	-
Other Modes	0%	0%	-

4 Measures and Action Strategies

4.1 Measures

The below is a range of measures which could achieve the objectives of this FTP (and subsequent GTP).

This section needs to be reviewed and confirmed prior to implementation of any future Plan.

- An introduction to the Plan for all staff, setting out its purpose and objectives.
- Provision of public transport travel information for staff, customers and visitors.
- Encouragement of car sharing, both amongst staff on site and in the wider context.
- Provision of car share spaces (future potential measure) and / or provision of a business “pool car” while public car share operators are limited in the area.
- Assisted cycle purchase schemes.
- Interest free loans to assist with cycle purchase, cycle equipment purchase etc.
- A transport section on the company website with links to local bus operator sites, to ensure that travel information is always up to date.
- The provision of transport information for visitors to the Site.

4.2 Strategies

Seven main strategies are identified, and the actions required for each are detailed in **Table 5**. The table details specific actions that could be implemented as part of a future Plan (subject to tenant requirements) and the party responsible for implementing each action.

These actions must be reviewed at regular intervals to ensure that the mode split targets are being met. By that principle, this document is classed as a living document and subject to regular review. It is important to note, that the actions should not be taken as mandatory but rather potential options that should be investigated and implemented by future inhabitants of the development.

TABLE 5: PROPOSED ACTION STRATEGIES

STRATEGY	HOW IT WORKS	RESOURCES / RESPONSIBILITY	TIMELINE	FUNDING
1 Travel Planning and Demand Management				
1.1 Green / Sustainable Travel Plans	- Develop a GTP to provide information for Travel Access Guide (TAG) (See Appendix A) - Management of GTPs. - Promotion of GTPs.	Building Manager to be responsible for overall implementation of final GTP and providing annual reporting on GTP outcomes to Council. Tenant to develop Company specific travel plan based on Final GTP prior to the commencement of a new lease/sale of property. Company/Staff/Visitors shall be responsible for ongoing implementation of Company assigned actions and participation in annual monitoring and reporting process to Council	Upon completion of the development and ongoing annual GTP events	Tenant / Business Owner
1.2 Travel Information Points	- Establish locations such as travel information points where staff and visitors and others can access travel information via interactive platforms. - Promotion of GTPs - Provision of travel and transport information options	Tenant / Business Owner	Subject to employer preference.	Tenant / Business Owner
1.3 Flexible Working hours	Allow employees the flexibility to commute outside peak periods to reduce overall congestion and travel time.	Tenant / Business Owner	Subject to employer preference. Action to be considered by employers / Visitors as part of an Employer specific GTP to be developed and forwarded to Council prior to building occupation.	Tenant / Business Owner
1.4 Teleworking	Provide the option to work remotely (where possible) to reduce the number of vehicles travelling to the development and encourage teleconferencing rather than travelling to meetings.	Tenant / Business Owner	Subject to employer preference. Action to be considered by employers / visitors	Tenant / Business Owner
2 Promoting Public Transport				
2.1 Opal Card Loan Schemes / Subsidising	Company may consider subsidising staff public transport travel.	Tenant / Business Owner / TPC	Subject to employer. Can be implemented at building occupation	Tenant / Business Owner

STRATEGY	HOW IT WORKS	RESOURCES / RESPONSIBILITY	TIMELINE	FUNDING
schemes for public transport travel through pre-paid credit cards	Alternatively, staff can pay for their own Opal Cards / pre-paid travel card through their salary, spreading the cost over the year to make it more affordable.			
2.2 Public Transport for work travel	The company and the TPC can promote public transport as one of the main preferences for work travel. This should be supported by all users and visitors to development having access to Opal Cards.	TPC	Subject to employer. Can be implemented at building occupation	Tenant / Business Owner
3 Promoting Carpooling				
3.1 Open Car Sharing	Where anyone in a defined geographical area can join a ride sharing scheme. This involves no input from the employer and should be on the onus of staff to schedule.	Staff	Ongoing in the workplace	Fuel costs can be arranged and split equitably by those involved
3.2 Closed Car Sharing	The company / department sets up an in-house car-matching scheme	Company, TPC	Ongoing in the workplace. Updates can be made to organisation as appropriate	Tenant / Business Owner
3.3 Third-party Car Sharing Program	Companies such as Liftshare are an online service that facilitates journey sharing between individual users, as well as providing separate services for businesses, organisations and events.	Staff – encouraged by TPC	Ongoing in the workplace	Staff
3.4 Carpool week	Arrange for a dedicated carpool campaign week to promote the benefits of carpooling.	Tenant / Business Owner	One week per calendar year	Tenant / Business Owner
4 Promoting Cycling				
4.1 Create a Bicycle Users Group (BUG)	BUGs are local groups of like-minded bike riders who get together generally for social riding in their area. For the purposes of the workplace, this can be adapted as a way of creating as social and healthy aspect of travelling to work.	Tenant / Business Owner, TPC	Ongoing in the workplace	Tenant / Business Owner
4.2 Providing & Maintaining End of Trip Facilities	Providing facilities such as showers, change rooms, lockers. For the initial stages of development it is recommended to provide facilities compliant with the relevant controls, and as the Site develops further, they should be	Developer / Estate &/or warehouse Owner / Manager	To be provided at sports complex completion	Developer / Estate &/or warehouse Owner / Manager

STRATEGY	HOW IT WORKS	RESOURCES / RESPONSIBILITY	TIMELINE	FUNDING
	reviewed as part of monitoring process to meet any increase in demand.			
4.3 Promote Bicycle Initiatives	Promotion of bicycle initiatives – NSW bicycle week, Ride to Work etc.	TPC	To be promoted annually	Developer / Estate &/or warehouse Owner / Manager
4.4 Advertise Bicycle Routes	Promotion of bike lanes through the TAG.	TPC	To be promoted and provided at communal areas such as key information kiosks within facility	Tenant / Business Owner
5 Promoting Walking				
5.1 Providing End of Journey Facilities	Provision of sufficient end of trip facilities such as showers, change rooms, lockers etc to maximise pedestrian activity throughout the site.	Developer	To be provided at completion of development	Tenant / Business Owner
5.2 Walking routes	Incentivise travelling by foot by highlighting possible routes particularly those to nearest bus stops	Tenant / Business Owner	To be promoted and provided at communal areas such as key information kiosks within facility	Tenant / Business Owner
5.3 Promote walking initiatives	Promotion of walking initiatives: walk to game / training day, pedometers / step challenge / gamification of walking / reward programs based on steps to elevate pedestrian activity throughout site and to / from public transport points.	Tenant / Business Owner, TPC	To be implemented monthly or as appropriate throughout the calendar year.	Tenant / Business Owner
7 Influencing Travel Behaviour				
7.1 Provision of Sustainable Travel Packs to employees and visitors	Introduces employees and visitors alike to the GTP and provides information on walking and cycling routes, and travel by bus & train, timetables, and access routes. This would include a TAG.	Tenant / Business Owner, TPC	Travel Packs to be provided upon occupancy of building to employees.	Tenant / Business Owner

4.3 Communications Strategy

4.3.1 Welcome Packs

New staff shall be provided with a 'welcome pack' as part of the on-site induction process which includes a Travel Plan Pamphlet and other information in relation to sustainable transport choices. This pack shall include copy of the Travel Plan and a Travel Access guide (TAG) as provided in **Appendix A**, as well as general information regarding the health and social benefits of active transport and advice on where to seek further information. It is recommended that an electric copy of the welcome pack be created and made available to staff.

4.3.2 Accurate Transport Information

In addition to these 'welcome packs', a copy of the TAG shall be clearly displayed in communal areas of the site including (but not limited to):

- Staff lunchroom
- Lift lobby area and entrances to buildings
- Any marketing material associated with the Site, such as websites and newsletters

5 Monitoring Strategy

5.1 Responsibility for Implementation

The Travel Plan Coordinator (TPC) will be responsible for the running of the future Plan, including its administration and all liaison with interested parties. The role is likely to be undertaken by Site / Building Management, or an independent consultant, appointed by Building Management. The TPC will be appointed following occupation of the development, who will liaise with Council as part of the monitoring process.

5.2 Travel Plan Coordinator

A Travel Plan Coordinator (TPC) should be appointed to act as the primary point of contact for enquiries relating to the progress of the future Plans. The TPC will manage all aspects of the future Plan, including the co-ordination and joint working practices between those on-site.

The TPC will promote participation in and commitment to the future Plan from and will work in partnership with all stakeholders to deliver the strategies and actions.

The TPC should be appointed within 1 month of the site becoming occupied. Contact details for the TPC should be provided in the implemented Plan.

5.3 Plan Maintenance

This Plan shall be subject to ongoing reviews and will be updated accordingly. Regular reviews will be undertaken by the TPC. As a minimum, a review of the GTP would occur every 1-2 years.

The key considerations when reviewing or monitoring the GTP are as follows:

Update baseline conditions to reflect any changes to the transport environment in the vicinity of the Site such as changes to bus services, new cycle routes etc.

- Track progress against target travel mode targets.
- Identify any shortfalls and develop an updated action plan to address issues.
- Ensure travel modes targets are updated (if necessary) to ensure they are realistic and remain ambitious.

5.4 Monitoring

So as to record the overall success, as well as the effectiveness of the individual measures, monitoring and review of the GTP is to be conducted at regular intervals. The TPC will act as the primary point of contact for all enquiries relating to the GTP's progress.

The GTP will be monitored around every 1-2 years, with the first survey being carried out shortly after first occupation of the Development. Travel mode surveys would determine the proportion of persons travelling

to/from the Site by each transport mode. This will be in the form of annual travel mode questionnaire surveys to be completed by all persons attending the site, as far as practicable. A sample of a typical travel mode questionnaire form is included in Appendix B.

If targets are not met at the end of the initial period of monitoring, the GTP will be reviewed, new measures introduced and would be reassessed at the next monitoring stage.

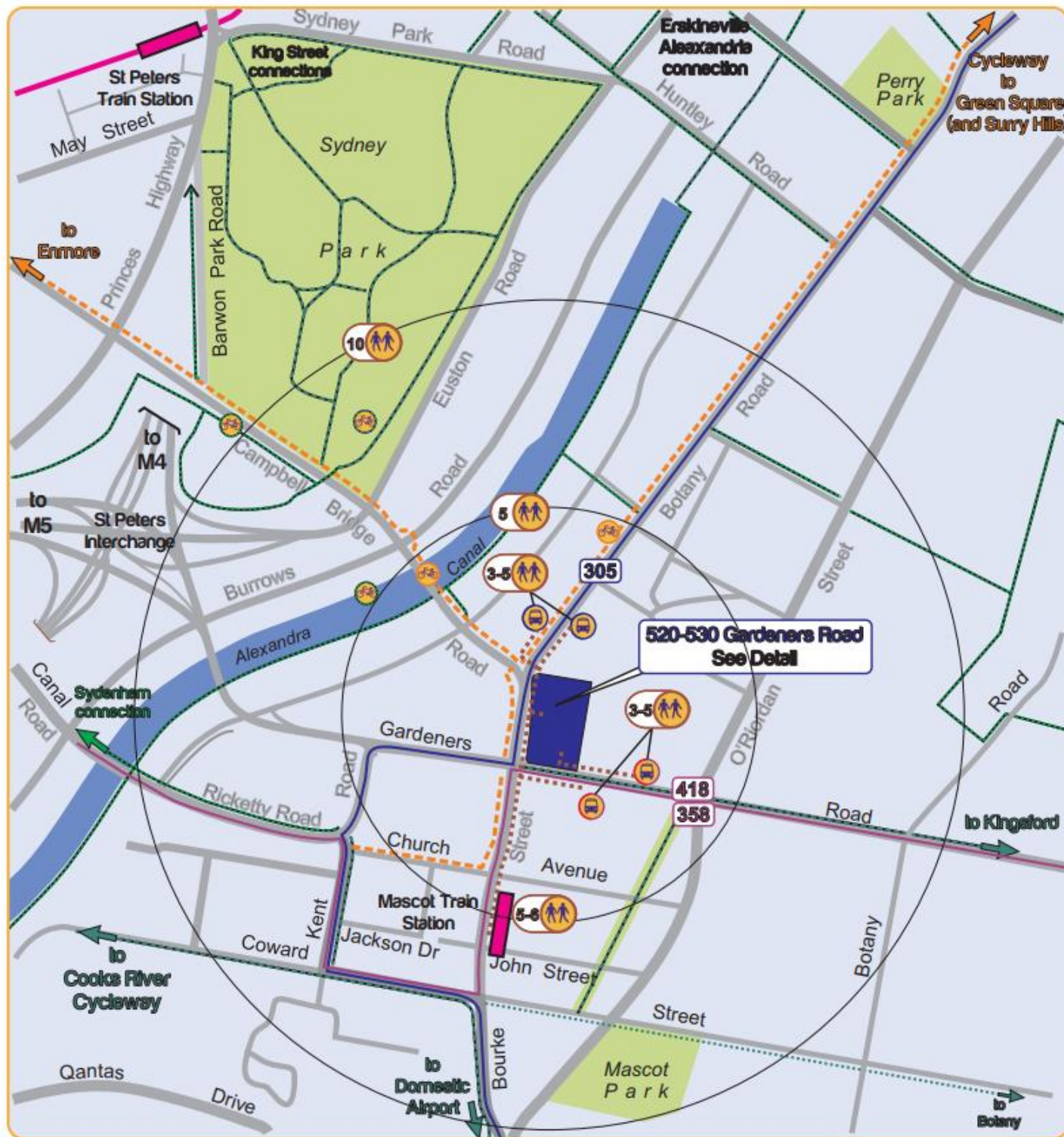
5.5 Consultation

It is essential that any parties that may play a part in the future of GTP's and their actions are aware and have an opportunity to discuss. This would enable equitable input and feedback as well maximising their overall efficacy. For this reason, a coordinated approach to GTPs should be implemented (subject to individual tenant participation) to assist in the consultation with the relevant parties, which could include the following:

- Council Traffic & Transport Department
- Traffic Committee
- Local Bus Operators
- Transport for New South Wales

Other organisations may be added to this list as the Plans evolve.

Appendix A. Travel Access Guide



Travel Access Guide

520-530 Gardeners Road, Mascot

Public Transport

Transit Systems bus services

Route Numbers and Destinations	Earliest / Latest Frequency
305 Stanford Plaza Mascot via Redfern	Monday to Friday only AM Peak: 06:15 - 08:45 PM Peak: 14:45 - 17:45 Every 30 minutes
Sydenham to Randwick 358 Loop Service	05:20 - 00:15 Every 15 to 20 minutes

Sydney Trains services

T8 Airport & South Line Macarthur to City	04:30 - 01:15 Every 8 to 15 minutes
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Active Transport Cycle / Walking Network

On-Road Cycle Routes -Low to Medium traffic	Planned Off-Road Shared Path
Off-Road Shared Path	Walking Route to Public Transport
Separated Cycleway	Walking Distance in minutes

520-530 Gardeners Road Detail



Prepared by

December 2021

asongroup

Appendix B. Sample Questionnaire

Instructions for Surveyor(s)

1. The Survey Form (over page) should be completed by EVERY PERSON attending the site on a particular day.
2. This survey should be completed SEPARATELY for EACH TRIP undertaken

Travel Mode Questionnaire Survey Form

Date:

Approximate Time:

Q1. Are you one of the following?

- | | |
|--|--|
| ☐ Warehouse staff | ☐ Casual contractor |
| ☐ Office staff | ☐ Company driver / sub-contractor |
| ☐ Courier / office delivery | ☐ Other (Please specify)..... |

Q2. How did you travel to / from the site today?

- | | |
|---------------------------------------|--|
| ☐ Walked only | ☐ Car share vehicle |
| ☐ Bicycle only | ☐ Motorcycle / scooter |
| ☐ Train | ☐ Car (as passenger) |
| ☐ Bus | ☐ Car (as driver) |
| ☐ Taxi | ☐ Other (Please specify)..... |

Q3. If you drove to the site, where did you park?

- ☐ Not applicable – did not drive
- ☐ On-site car park
- ☐ On-site within truck hardstand
- ☐ Other (Please specify).....

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