Planning Proposal for a
Mixed-Use Development

90-96 Phillip Street
Parramatta

TRAFFIC AND PARKING ASSESSMENT REPORT

7 June 2018

Ref 18190

VARGA TRAFFIC PLANNING Pty Ltd
Transport, Traffic and Parking Consultants

Suite 6, 20 Young Street, Neutral Bay NSW 2089 - PO Box 1868, Neutral Bay NSW 2089
Ph: 9904 3224

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

1. INTRODUCTION

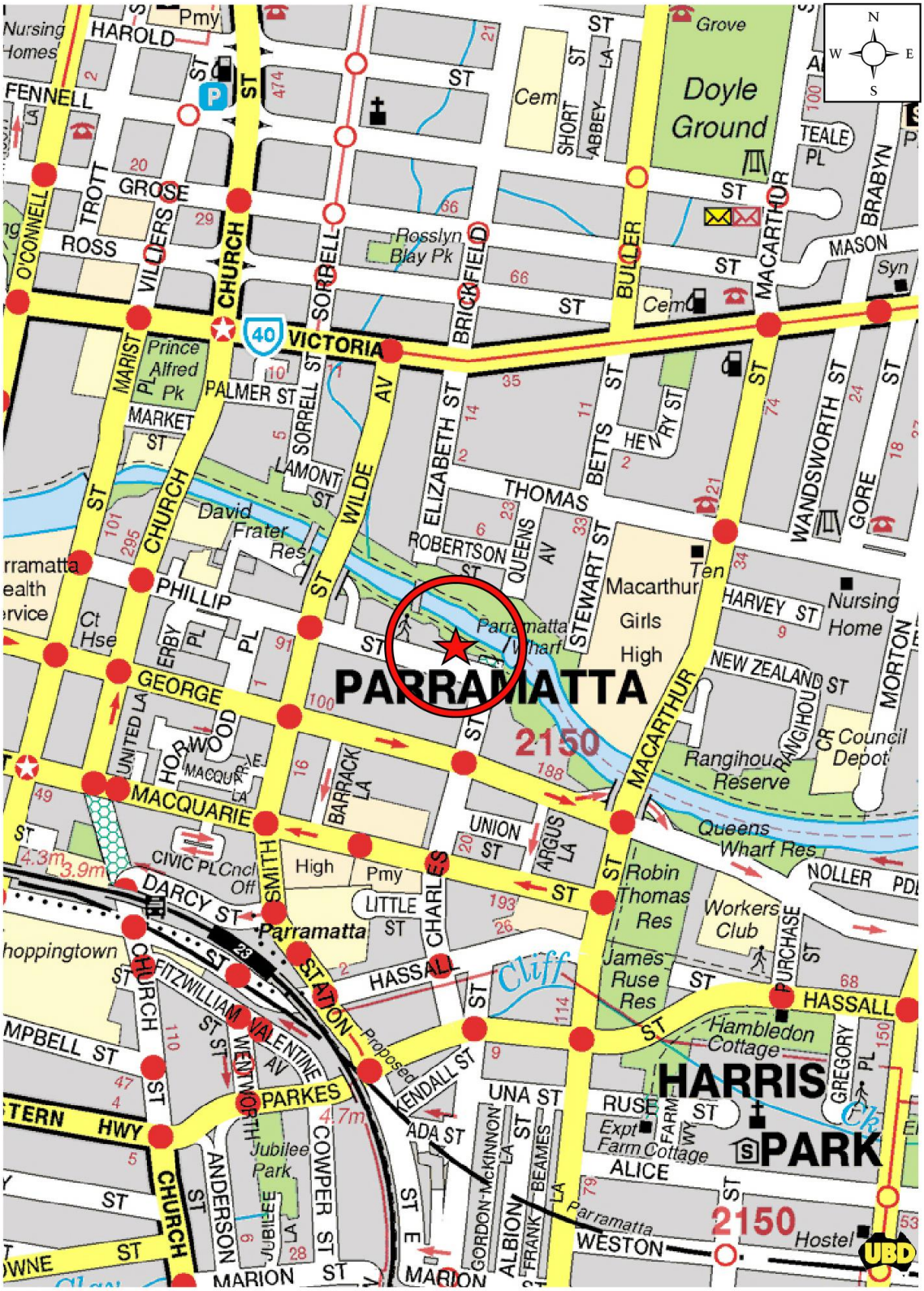
This report has been prepared to accompany a planning proposal to Parramatta City Council for a mixed-use development to be located at 90-96 Phillip Street, Parramatta (Figures 1 and 2).

The planning proposal seeks approval to modify the existing planning controls on the site to permit a mixed-use residential / serviced apartment / commercial building with an increased development yield.

Off-street parking will ultimately be provided in a multi-level basement car parking area beneath the building in accordance with Council requirements.

The purpose of this report is to assess the traffic and parking implications of the planning proposal and to that end this report:

- describes the site and provides details of the planning proposal
- reviews the road network in the vicinity of the site, and the traffic conditions on that road network
- reviews the existing public transport services in the vicinity of the site
- estimates the traffic generation potential of the development proposal, and assigns that traffic generation to the road network serving the site
- assesses the traffic implications of the planning proposal in terms of road network capacity
- assesses the parking implications of the planning proposal.



VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants

LOCATION
FIGURE 1


LAMONT PDE
AVE
WILDE
GEORGE KHATTAR LA
Parramatta
ELIZABETH ST
THOMAS
ST
ROBERTSON
ST
ALASKA
QUEENS
AVE
STEWART ST
PEDESTRIAN FOOTBRIDGES
SMITH ST
PHILLIP ST
CHARLES ST
River
GEORGE ST
LA
BARRACK
ST
CHARLES
MACQUARIE ST
GEORGE
ST
UNION ST
LA
ARGUS
N
W
E
S
Road Closure / Unformed Road
VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants
SITE
FIGURE 2

2. PROPOSED DEVELOPMENT

Site

The subject site is located on the northern side of Phillip Street just to the west of the Parramatta Wharf and is situated within the "Parramatta City Centre" under the *Parramatta DCP 2011*. The site has a street frontage approximately 69 metres in length to Phillip Street and occupies an area of approximately 2,192m^2.

The existing site is currently occupied by a multi-storey commercial building with an estimated floor area in the order of 6,200m^2. It has 86 off-street parking spaces with vehicular entry / exit driveway located at the western end of the Phillip Street site frontage.

Existing Planning Controls

The primary instrument that governs the mass and scale of the development on the site is stipulated in the *Parramatta Local Environmental Plan (LEP) 2011* as follows:

- Land Zoning: B4 - Mixed Use
- Floor Space Ratio (FSR): 6.00
- Height of Building (HoB): 80 metres

Planning Proposal

The planning proposal seeks approval to amend the planning controls of the site to increase the permissible FSR and HoB of the site to facilitate the development of a 63-storey mixed-use residential / serviced apartment / commercial building.

A total of 320 residential apartments are envisaged in the 63-storey mixed use building as follows:

1 bedroom apartments:	72
2 bedroom apartments:	180
3 bedroom apartments:	36
3+ bedroom penthouses:	32
TOTAL APARTMENTS:	**320**

A commercial component is envisaged on the lower levels of the building from ground to level 3 comprising a cumulative floor area of 4,150m^2.

Serviced apartments are envisaged on level 5 to level 18 of the building comprising a total of 182 serviced apartments.

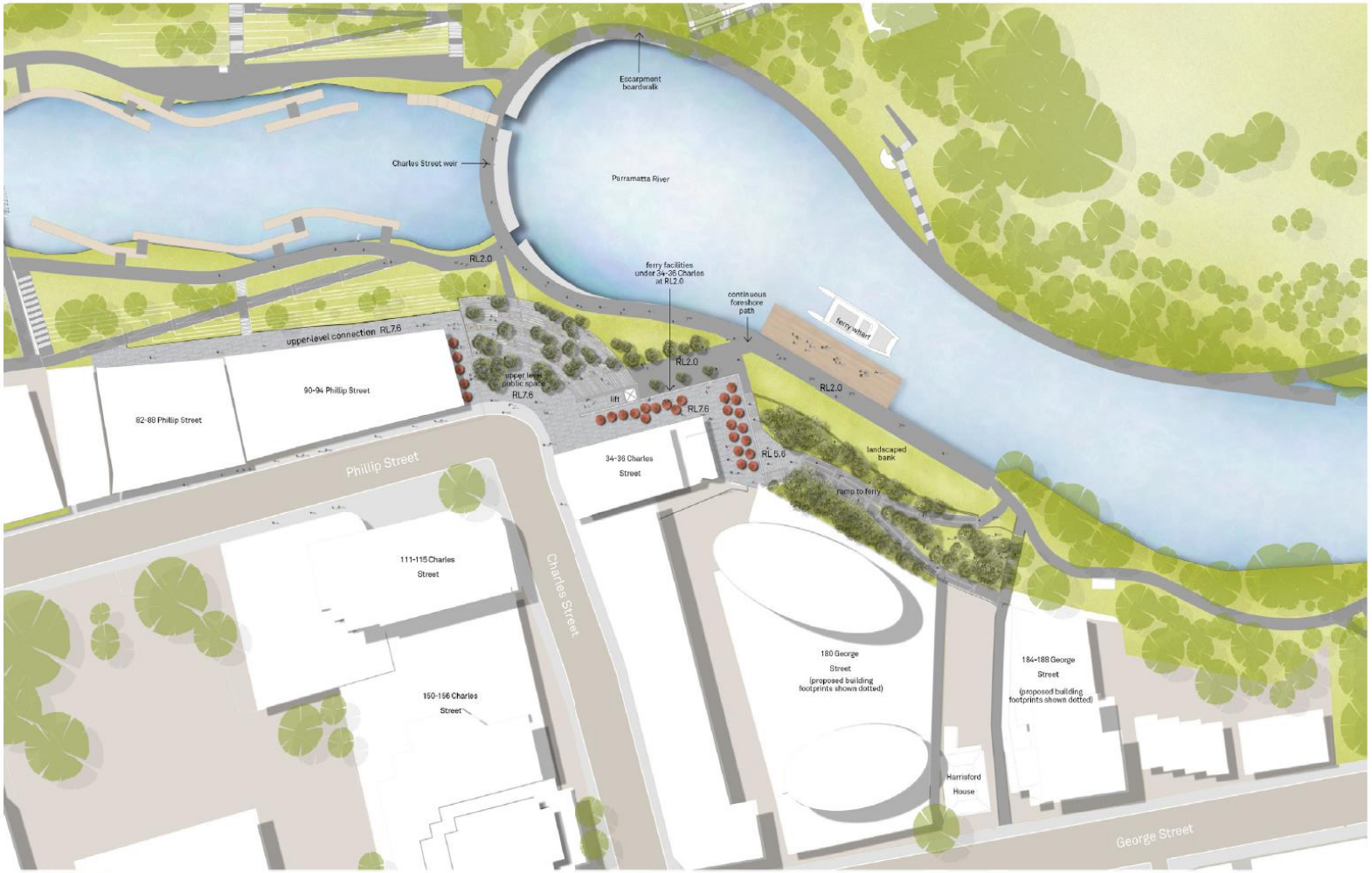
Off-street car parking is envisaged to be provided in an automated car parking system spanning across multiple basement levels beneath the building which will be designed to meet the statutory car parking requirements as well as the applicable Australian Standards.

Entry and exit to the proposed automated car parking system is to be provided by 5 transfer cabins which are to be located in the Basement 1 car parking level.

Vehicular access to the basement car parking facilities are to be provided via an entry/exit driveway located at the western end of the Phillip Street site frontage.

Loading / servicing for the future development is expected to be undertaken by a variety of commercial vehicles up to and including 8.8 metres long MRV trucks. A dedicated service area will be provided at the rear of the site, with a truck turntable to allow these MRV trucks to enter and exit the site whilst travelling in forward gear at all times.

Architectural concept plans for the purposes of this planning proposal have been prepared by *Project Tourism International Architecture Pty Ltd* and are reproduced in the following pages.



MASTER PLAN

Project Tourism International Architecture Pty Ltd
Level 10, 263 Clarence Street Sydney NSW 2000
T +61 2 9283 0845 www.ptigroup.com.au ABN 90 050 971 022
Nominated Registered Architect: Peter Israel (reg no. 5044)

REV	DESCRIPTION	BY	CHK	DATE
I	REVISED		LL	12/02/18
J	REVISED		LL	19/03/18
K	REVISED		VD	18/04/18

CLIENT:
ACADEMY CONSTRUCTION & DEVELOPMENT & BUILDUP DEVELOPMENT

PROJECT TITLE:
90-94 PHILLIP ST, PARRAMATTA

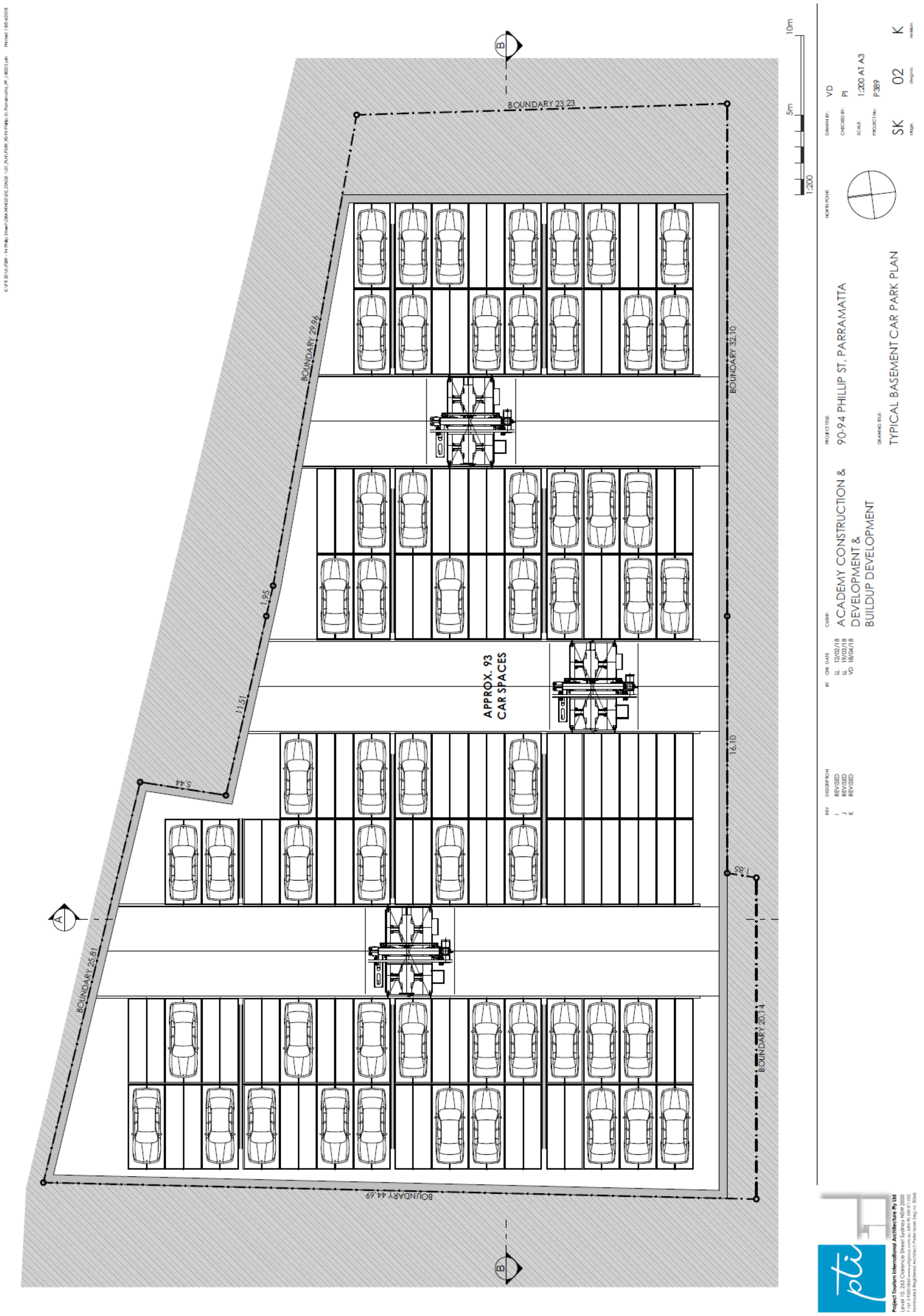
DRAWING TITLE:
MASTER PLAN

NORTH POINT

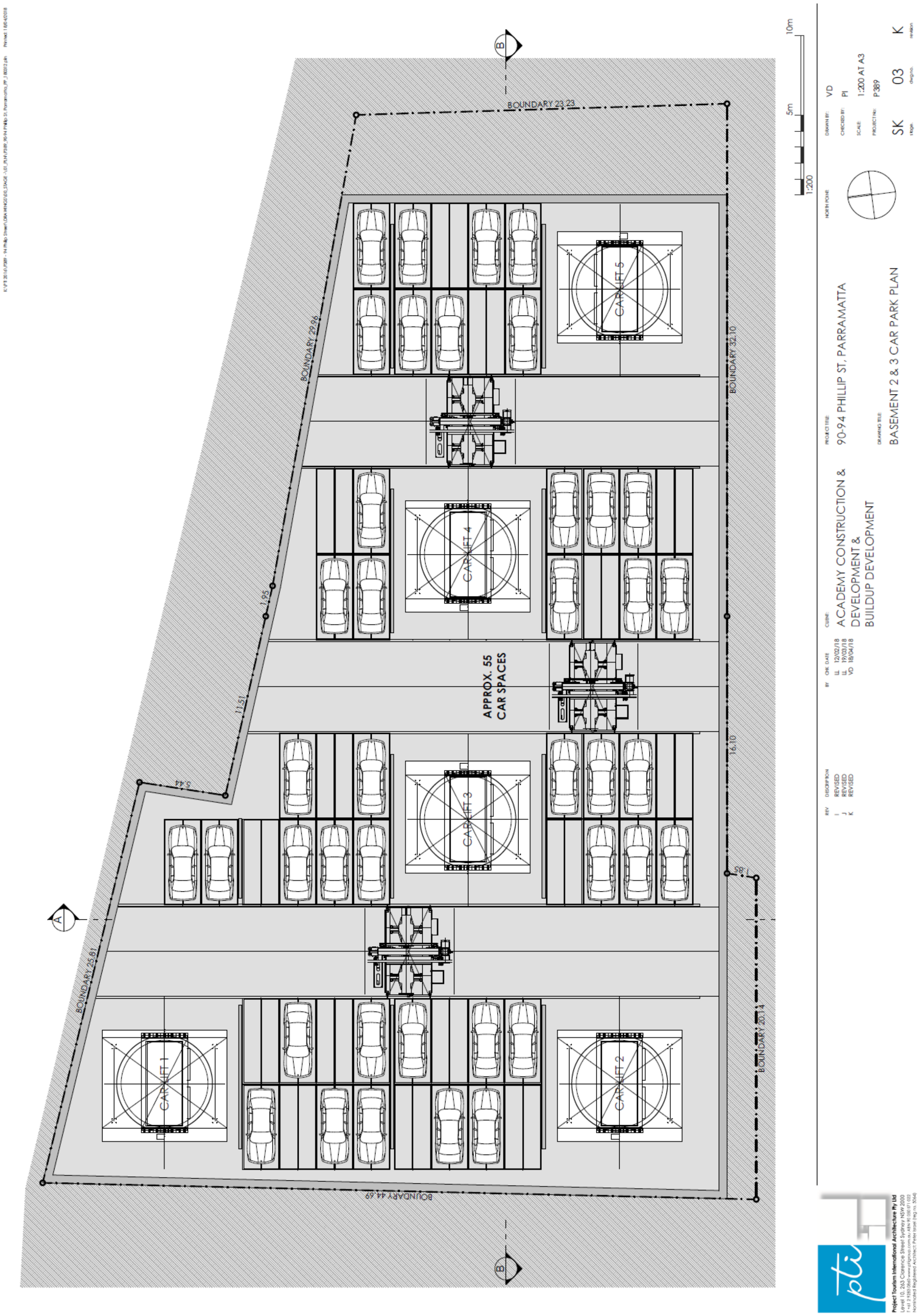
DRAWN BY: VD
CHECKED BY: PI
SCALE: AT A3
PROJECT No: P389

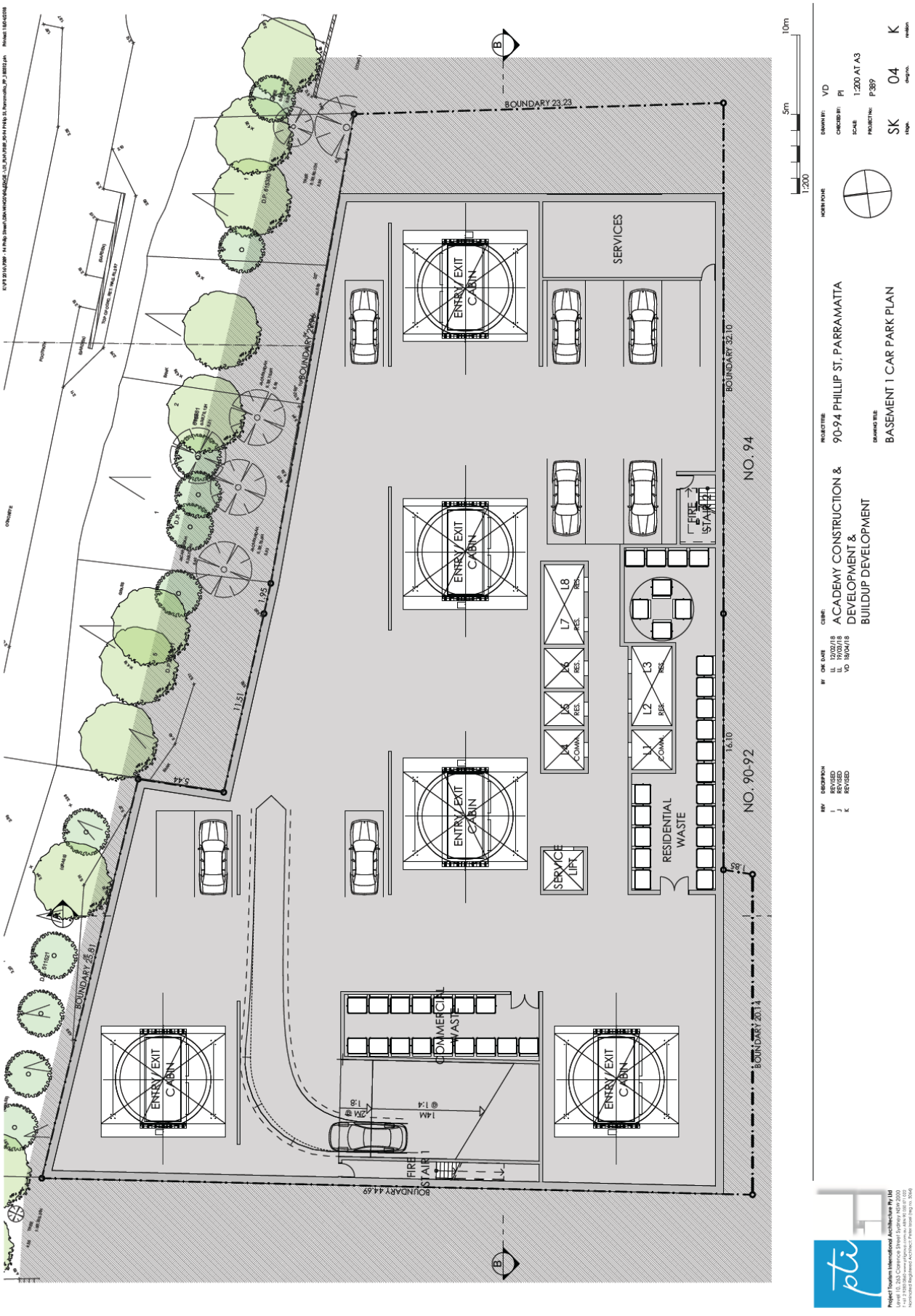
SK (stage) 01 (dwg no.) K (revision)

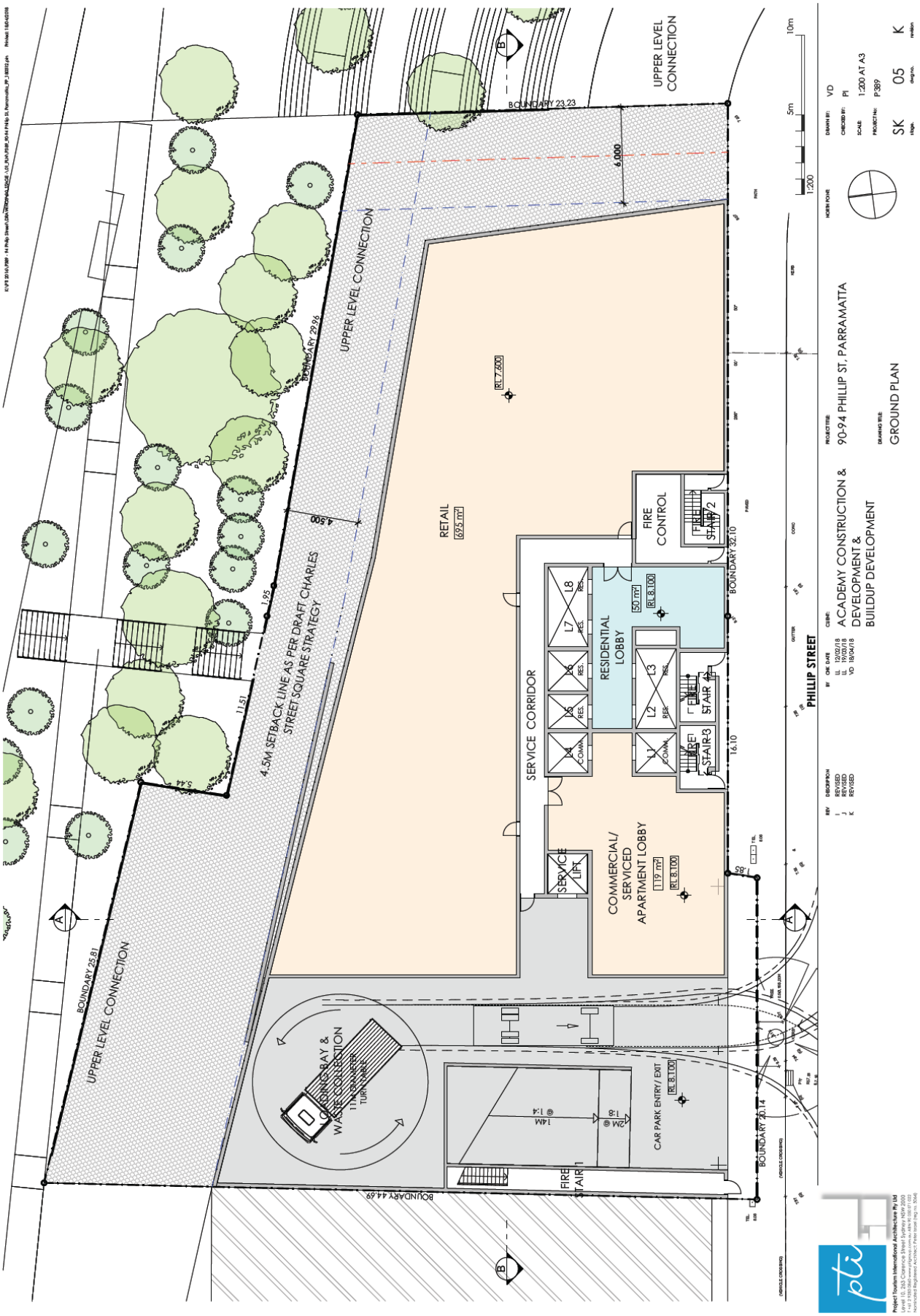
VARGA TRAFFIC PLANNING PTY LTD



BOUNDARY 23.23
BOUNDARY 29.96
BOUNDARY 32.10
BOUNDARY 25.51
BOUNDARY 44.69
BOUNDARY 20.14
1.95
11.51
5.44
16.10
1.85
APPROX. 93
CAR SPACES
A
B
1:200
5m
10m
ACADEMY CONSTRUCTION &
DEVELOPMENT &
BUILDUP DEVELOPMENT
90-94 PHILLIP ST, PARRAMATTA
TYPICAL BASEMENT CAR PARK PLAN
VD
PI
1:200 AT A3
P389
SK
02
K
I REVISED
J REVISED
K REVISED
LL 12/02/18
LL 19/03/18
VD 18/04/18


BOUNDARY 23.23
BOUNDARY 29.96
BOUNDARY 32.10
BOUNDARY 25.61
BOUNDARY 20.14
BOUNDARY 44.69
CAR LIFT 1
CAR LIFT 2
CAR LIFT 3
CAR LIFT 4
CAR LIFT 5
APPROX. 55 CAR SPACES
ACADEMY CONSTRUCTION & DEVELOPMENT & BUILDUP DEVELOPMENT
90-94 PHILLIP ST, PARRAMATTA
BASEMENT 2 & 3 CAR PARK PLAN
1:200 AT A3
P389
SK 03 K
VD
PI
REVISED
REVISED
REVISED
12/02/18
19/02/18
18/04/18


BOUNDARY 23.23
BOUNDARY 32.10
BOUNDARY 20.14
BOUNDARY 44.69
BOUNDARY 28.81
NO. 94
NO. 90-92
SERVICES
ENTRY / EXIT CABIN
FIRE STAIR
SERVICE LIFT
RESIDENTIAL WASTE
COMMERCIAL WASTE
L1 COMM.
L2 RES.
L3 RES.
L4 COMM.
L5 RES.
L6 RES.
L7 RES.
L8 RES.
10m
5m
1:200
REV DESCRIPTION
I REVISED
J REVISED
K REVISED
BY CHK DATE
IL 12/02/18
IL 19/03/18
VD 18/04/18
CLIENT:
ACADEMY CONSTRUCTION & DEVELOPMENT & BUILDUP DEVELOPMENT
PROJECT TITLE:
90-94 PHILLIP ST, PARRAMATTA
DRAWING TITLE:
BASEMENT 1 CAR PARK PLAN
DRAWN BY: VD
CHECKED BY: PI
SCALE: 1:200 AT A3
PROJECT No: P389
SK 04 K
Dwg no. revision
Project Tourism International Architecture Pty Ltd


UPPER LEVEL CONNECTION
BOUNDARY 23.23
6.000
UPPER LEVEL CONNECTION
BOUNDARY 29.96
4.500
4.5M SETBACK LINE AS PER DRAFT CHARLES STREET SQUARE STRATEGY
1.95
11.51
5.44
UPPER LEVEL CONNECTION
BOUNDARY 25.81
RL 7.600
RETAIL
695 m²
FIRE CONTROL
FIRE STAIR 2
BOUNDARY 32.10
SERVICE CORRIDOR
L8 RES.
L7 RES.
L6 RES.
L5 RES.
L4 COMM.
RESIDENTIAL LOBBY
50 m²
RL 8.100
L3 RES.
L2 RES.
L1 COMM.
STAIR
FIRE STAIR-3
16.10
SERVICE LIFT
COMMERCIAL/ SERVICED APARTMENT LOBBY
119 m²
RL 8.100
1.85
GARBAGE BAY & WASTE COLLECTION
11.4m RIGID TURNING CIRCLE
CAR PARK ENTRY / EXIT
RL 8.100
1:4 @ 1.4M
1:8 @ 2M
FIRE STAIR 1
BOUNDARY 20.14
BOUNDARY 44.69
PHILLIP STREET
REV DESCRIPTION
1 REVISED
2 REVISED
K REVISED
CHK DATE
LL 12/02/18
LL 19/03/18
VD 18/04/18
CLIENT:
ACADEMY CONSTRUCTION & DEVELOPMENT & BUILDUP DEVELOPMENT
PROJECT:
90-94 PHILLIP ST, PARRAMATTA
DRAWING TITLE:
GROUND PLAN
DRAWN BY: VD
CHECKED BY: PI
SCALE: 1:200 AT A3
PROJECT NO: P389
SK 05 K
10m
5m
1:200

3. TRAFFIC ASSESSMENT

Road Hierarchy

The road hierarchy allocated to the road network in the vicinity of the site by the Roads and Maritime Services is illustrated on Figure 3.

Victoria Road is classified by the RMS as a *State Road* and provides the key east-west road link in the area, linking North Parramatta to Rozelle. It typically carries three traffic lanes in each direction in the vicinity of the site, with opposing traffic flows separated by a central median island. Clearway/Bus Lane restrictions apply during commuter peak periods.

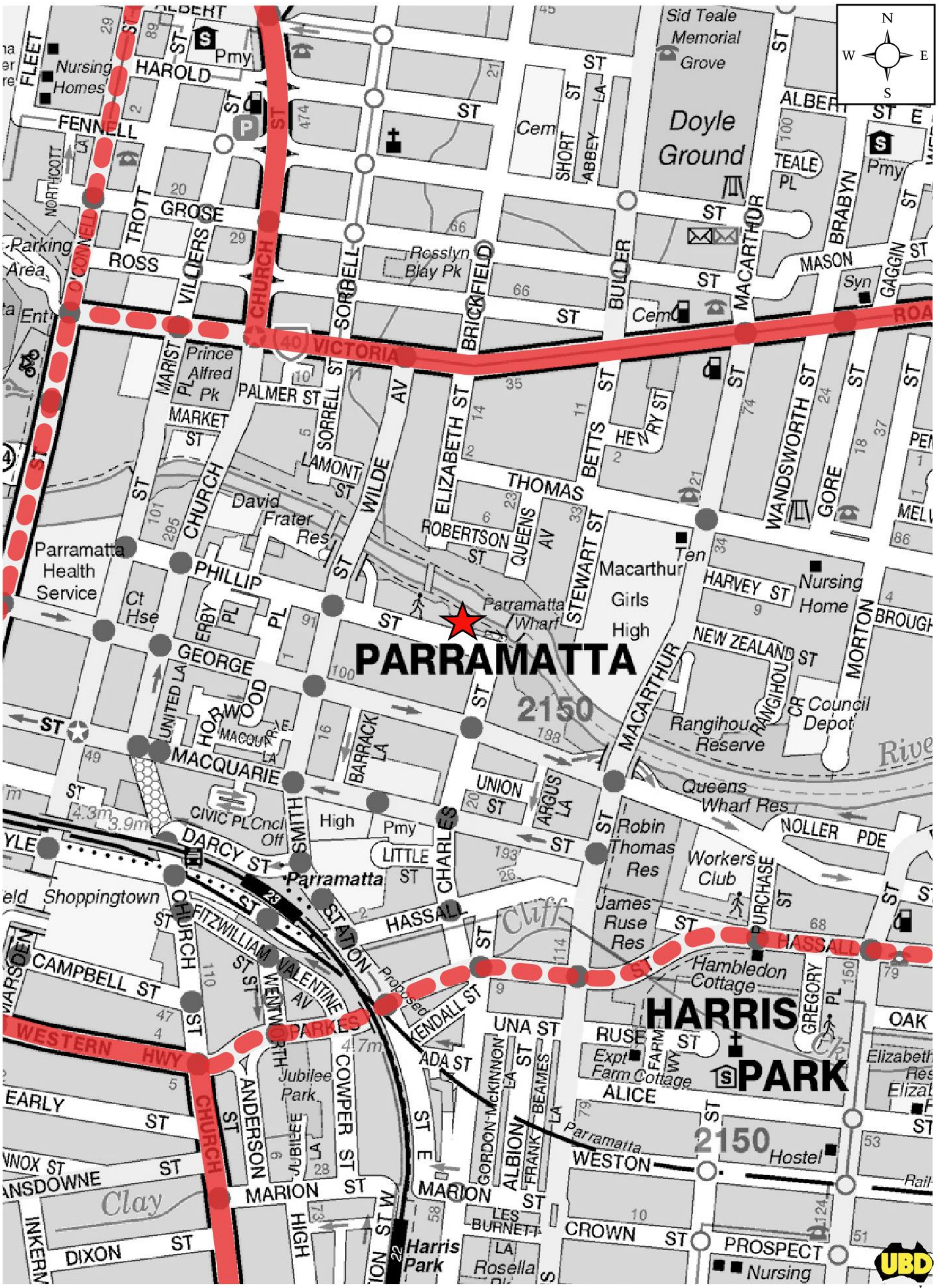
Parkes Street is classified by the RMS as a *Regional Road* and provides another east-west road link in the area, linking Great Western Highway and James Ruse Drive via Hassall Street. It typically carries two traffic lanes in each direction in the vicinity of the site. Kerbside parking is generally prohibited on both sides of the road.

Smith Street, Wilde Avenue, Phillip Street and George Street are local unclassified roads that are primarily used to provide vehicular and pedestrian access to frontage properties in the Parramatta City Centre. Kerbside parking is generally permitted on these roads subject to sign-posted restrictions.

Existing Traffic Controls

The existing traffic controls which apply to the road network in the vicinity of the site are illustrated on Figure 4. Key features of those traffic controls are:

- a 50km/h SPEED LIMIT which applies to George Street
- a 40 km/h SPEED LIMIT which applies to Phillip Street and all other local roads in the Parramatta City Centre
- TRAFFIC SIGNALS in Charles Street where it intersects with George Street and Macquarie Street



VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants

ROAD HIERARCHY
FIGURE 3


N
W
E
S
LAMONT PDE
AVE
WILDE
THOMAS
ST
BETTS ST
ELIZABETH ST
ST
AVE
ROBERTSON
ST
Parramatta
ALASKA
QUEENS
STEWART ST
PEDESTRIAN
FOOTBRIDGES
GEORGE KHATTAR
LA
PHILLIP
ST
SMITH ST
40
River
CHARLES ST
GEORGE ST
BARRACK LA
GEORGE
50
ST
ST
UNION ST
LA
CHARLES
MACQUARIE ST
ARGUS
Key:
One-Way
Stop Sign
Right-Turn Bay
Traffic Signal
School Zone
50
Speed Limit
Signalised Pedestrian Crossing
Pedestrian Crossing
Speed Hump
VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants
EXISTING TRAFFIC CONTROLS
FIGURE 4

- TRAFFIC SIGNALS in Wilde Avenue / Smith Street where it intersects with Phillip Street

- a ONE-WAY EASTBOUND restriction in George Street

- a ONE-WAY WESTBOUND restriction in Macquarie Street

- RAISED PEDESTRIAN ZEBRA CROSSINGS in Phillip Street to the west of the site.

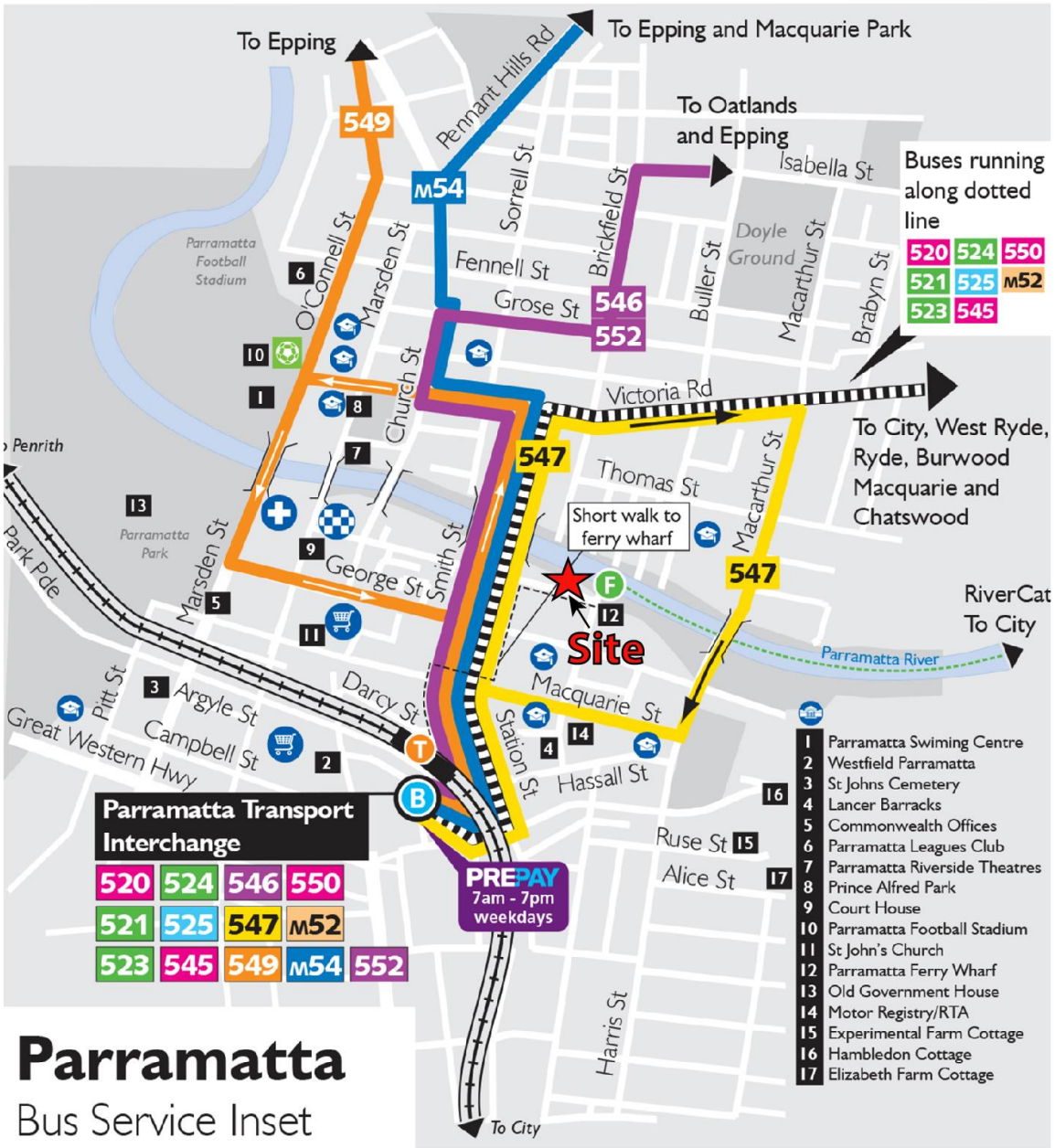
Existing Public Transport

The Parramatta Station is located within approximately 1 kilometre or 15 minutes walking distance to / from the site servicing the T1 Western Line, T2 Inner West Line and T5 Cumberland Line. Train services typically arrive / depart the station at less than 10 minute intervals during commuter peak periods as well as throughout the day allowing commuters to simply turn up and go without ever needing to rely on a train timetable.

The Parramatta Wharf is located immediately to the east of the site servicing the F3 Parramatta River ferry service operating between Parramatta and Circular Quay. Ferry services arrive / depart the wharf at approximate 60 minute intervals with the first service departing at 6:24am and the last service arriving at 7:42pm.

A bus stop is also located directly outside the site providing access to the free Parramatta shuttle bus that links key destinations within the Parramatta City Centre operating at 10 minute intervals between 7:00am-6:30pm Monday to Friday and 8:00am-4:00pm on Saturday, Sunday and Public Holidays.

Furthermore, within a short walk or utilising the free shuttle bus services, there is a significant number of bus services operating in the Parramatta City Centre, these include: *Metrobus* M41 (Hurstville to Macquarie Park), *Metrobus* M90 (Burwood to Liverpool), route 407 (Burwood to Strathfield), route 408 (Rookwood Cemetery to Burwood via Flemington), route 458 (Ryde to Burwood), route 461 (Burwood to City Domain), route 464 (Ashfield to Mortlake) and route 466 (Ashfield to Cabarita Park).



VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants

PUBLIC TRANSPORT
FIGURE 5

On the above basis, it is clear that the site has excellent connectivity to existing public transport services and is ideally located to promote the greater use of sustainable modes of transport.

Parramatta Light Rail

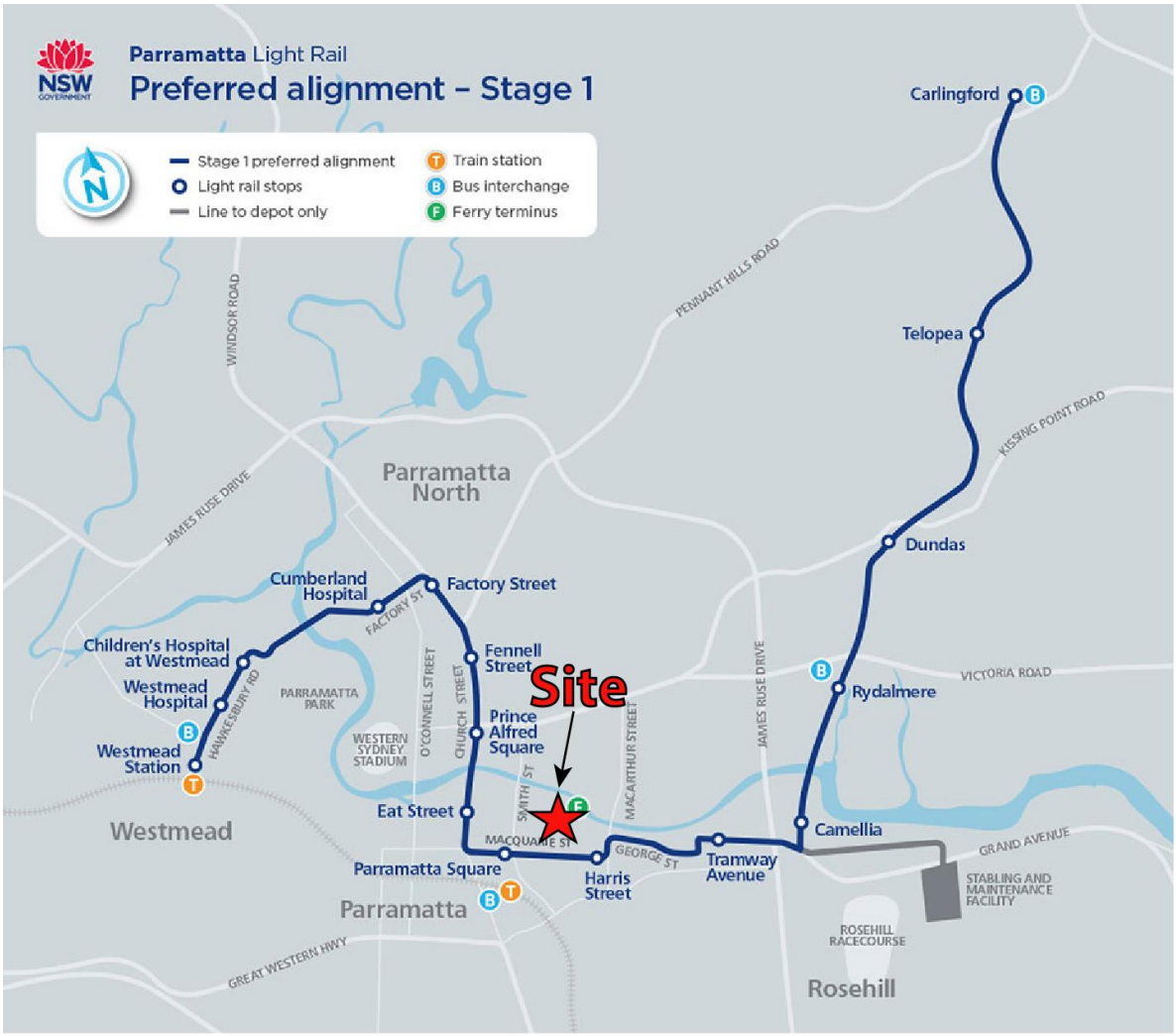
Parramatta Light Rail is one of the NSW Government's latest major infrastructure projects being delivered to serve a growing Sydney. Light rail will create new communities, connect great places and help both locals and visitors move around and explore what the region has to offer.

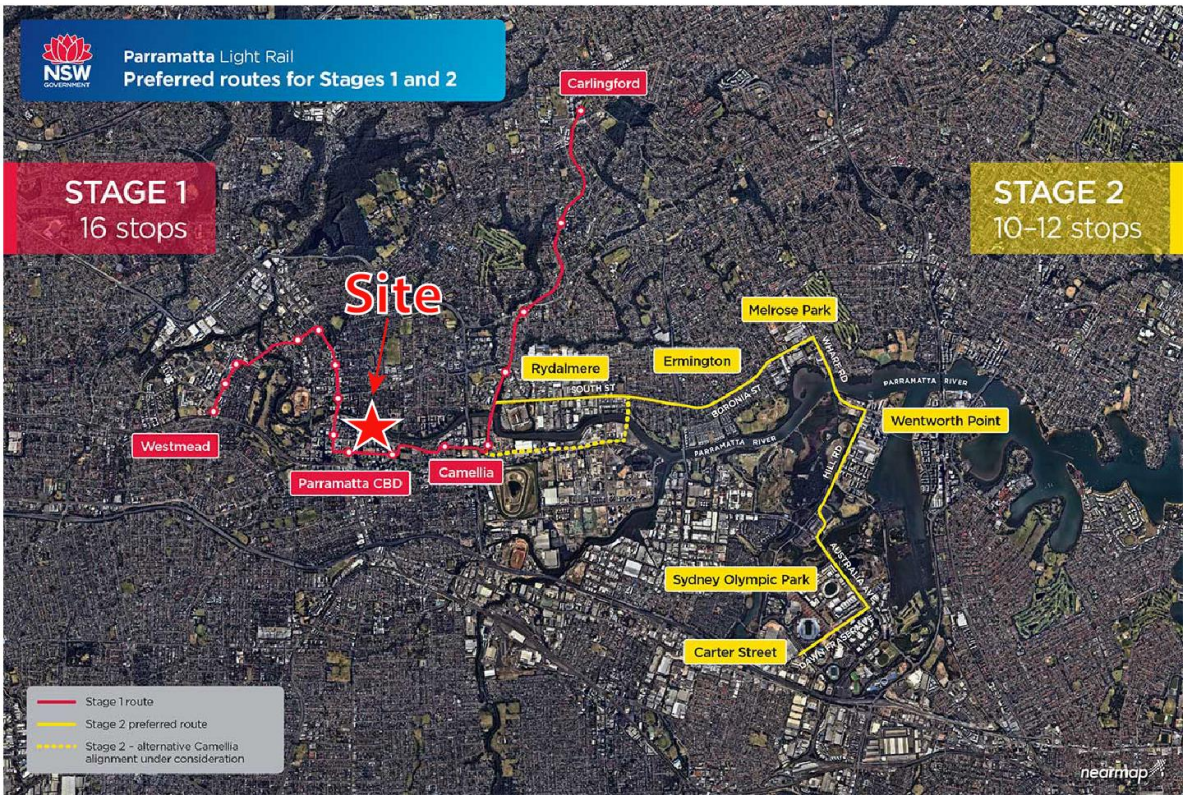
The nearest light rail station to / from the site will be located at the corner of Harris Street and Macquarie Street within a convenient walking distance of less than 550 metres or 8 minutes.

Stage 1 will connect Westmead to Carlingford via Parramatta CBD and Camellia with a two-way track spanning 12 kilometres, and is expected to open in 2023. The route will link Parramatta's CBD and train station to the Westmead Precinct, Parramatta North Growth Centre, the new Western Sydney Stadium, the Camellia Town Centre, the New Powerhouse Museum and Riverside Theatres, the private and social housing redevelopment at Telopea, Rosehill Gardens Racecourse and three Western Sydney University campuses.

In October 2017, the NSW Government announced the preferred route for Stage 2 which will connect the Parramatta CBD to Ermington, Melrose Park, Wentworth Point and Sydney Olympic Park along a nine-kilometre route.

Extracts of the stage 1 and stage 2 light rail route maps are reproduced below.


Parramatta Light Rail
Preferred alignment – Stage 1
Stage 1 preferred alignment
Light rail stops
Line to depot only
Train station
Bus interchange
Ferry terminus
Carlingford
Telopea
Dundas
Rydalmere
Camellia
Tramway Avenue
Harris Street
Parramatta Square
Eat Street
Prince Alfred Square
Fennell Street
Factory Street
Cumberland Hospital
Children's Hospital at Westmead
Westmead Hospital
Westmead Station
Site
Parramatta North
Parramatta
Westmead
Rosehill
PENNANT HILLS ROAD
KISSING POINT ROAD
VICTORIA ROAD
GRAND AVENUE
JAMES RUSE DRIVE
WINDSOR ROAD
HAWKESBURY RD
PARRAMATTA PARK
WESTERN SYDNEY STADIUM
O'CONNELL STREET
CHURCH STREET
SMITH ST
MACARTHUR STREET
MACQUARIE ST
GEORGE ST
FACTORY ST
STABLING AND MAINTENANCE FACILITY
ROSEHILL RACECOURSE
GREAT WESTERN HWY


Parramatta Light Rail
Preferred routes for Stages 1 and 2
STAGE 1
16 stops
STAGE 2
10–12 stops
Site
Carlingford
Rydalmere
Ermington
Melrose Park
Wentworth Point
Sydney Olympic Park
Carter Street
Camellia
Parramatta CBD
Westmead
SOUTH ST
BORONIA ST
WHARF RD
HILL RD
PARRAMATTA RIVER
AUSTRALIA AVE
Stage 1 route
Stage 2 preferred route
Stage 2 - alternative Camellia alignment under consideration
nearmap

Bicycle and Pedestrian Routes

There are a number of cycleways and shared pedestrian paths providing convenient access into and out of the Parramatta CBD for those that prefer to cycle or walk to their destination and live relatively near the CBD. Studies have shown that in Sydney, over 50% of trips are less than 5km.

Some of the key bicycle and pedestrian routes include:

- the Parramatta Valley Cycleway which starts at Morrison Bay Park in Ryde and heads west along dedicated bike paths, quite streets and the river foreshore. Cyclists can proceed to Parramatta CBD or explore the connection to Sydney Olympic Park via the Silverwater Bridge

- the two Transitways to the North-West and Liverpool both include shared pedestrian and cycle paths offering a good route to Liverpool via Wetherill Park and to Rouse Hill adjacent to Old Windsor Road

- the M4 Motorway Viaduct Route links Auburn, Granville, Holroyd and the Parramatta CBD via Good Street or Mays Hill

- the Parramatta to Liverpool Rail Trail is nearly 17km long and runs parallel to the railway line through Merrylands, Yennora and Fairfield to Liverpool.

Existing Traffic Conditions

An indication of the existing traffic conditions on the road network in the vicinity of the site is provided by peak period traffic surveys undertaken as part of this traffic study.

The traffic surveys were undertaken at the intersections of Phillip Street / Wilde Avenue / Smith Street and also Charles Street / George Street on Tuesday 1st May 2018 between 6:30am-9:30am and 3:30pm-6:30pm. The results of the traffic surveys are reproduced in full in Appendix A and reveal that:

- two-way traffic flows in Phillip Street are typically in the order of 500-600 vehicles per hour (vph) in the AM and PM peak hours

- two-way traffic flows in Wilde Avenue are typically in the order of 1,200-1,300 vph in the AM and PM peak hours

- two-way traffic flows in Smith Street are typically in the order of 700-800 vph in the AM and PM peak hours

- two-way traffic flows in Charles Street are typically in the order of 400-700 vph in the AM and PM peak hours

- one-way traffic flows in George Street are typically in the order of 500-800 vph in the AM and PM peak hours.

Projected Traffic Generation

The traffic implications of development proposals primarily concern the effects of the *additional* traffic flows generated as a result of a development and its impact on the operational performance of the adjacent road network during the morning and afternoon commuter peak periods.

An indication of the traffic generation potential of the planning proposal is provided by reference to the Roads and Maritime Services' publication *Guide to Traffic Generating Developments, Section 3 - Landuse Traffic Generation (October 2002)* and the updated traffic generation rates in the RMS *Technical Direction (TDT 2013/04a)* document.

The RMS *Technical Direction* document specifies that it replaces those sections of the RMS *Guidelines* indicated and must be followed when RMS is undertaking trip generation and/or parking demand assessments.

In this instance, car parking provisions on the site are to be *constrained* in accordance with Council's *Parramatta CBD Planning Proposal* and the following traffic generation rates

nominated in the RMS *Technical Direction (TDT2013/04A)* document are therefore applicable to the subject planning proposal:

High Density Residential Flat Dwellings

AM: 0.15 peak hour vehicle trips per car space

PM: 0.12 peak hour vehicle trips per car space

Commercial Premises (Office Blocks)*

AM: 0.83 peak hour vehicle trips per space

PM: 0.64 peak hour vehicle trips per space

Neither the RMS *Guidelines* nor the *Technical Direction* nominate a traffic generation rate for serviced apartments, however given the CBD location and the ready accessibility of the site to public transport it is likely that the serviced apartments will exhibit similar traffic generation rates to the proposed residential apartments.

Application of the above traffic generation rates and assumptions to the various components of the planning proposal yields a traffic generation potential of approximately 42 vehicle trips per hour (vph) during the AM peak hour and 33 vph during the PM peak hour as set out below:

Projected Total Future Traffic Generation Potential of the Site as a Consequence of the Planning Proposal

	AM	**PM**
Residential (max. 216 spaces):	32.4 vph	25.9 vph
Commercial (max. 4 spaces):	3.3 vph	2.6 vph
Serviced Apartments (max. 41 spaces):	6.2 vph	4.9 vph
TOTAL TRAFFIC GENERATION POTENTIAL:	**41.9 vph**	**33.4 vph**

That projected future level of traffic generation potential should however, be offset or *discounted* by the volume of traffic which could reasonably be expected to be generated by the existing uses of the site, in order to determine the *nett increase* in traffic generation potential of the planning proposal.

Application of the above traffic generation rates for *commercial premises* nominated in the RMS *Technical Direction* to the existing commercial buildings with 86 parking spaces on the

site yields a traffic generation potential of approximately 71 vph during the AM peak hour and 55 vph during the PM peak hour.

Accordingly, it is likely that the planning proposal will result in a *nett reduction* in the traffic generation potential of the site of approximately 30 vph during the AM peak hour and 22 vph during the PM peak hour, as set out below:

Projected Nett Decrease in Peak Hour Traffic Generation Potential of the Site as a Consequence of the Development Proposal

	AM	**PM**
Projected Future Traffic Generation Potential:	41.9 vph	33.4 vph
Less Existing Traffic Generation Potential:	-71.4 vph	-55.0 vph
NETT DECREASE IN TRAFFIC GENERATION POTENTIAL:	**-29.5 vph**	**-21.6 vph**

Notwithstanding the above, for the purposes of a robust traffic assessment, it has been assumed that *all* of the projected future traffic flows of 42 vph in the AM peak hour and 33 vph in PM peak hour, will be new or *additional* to the existing traffic flows currently using the adjacent road network.

Traffic Implications - Road Network Capacity

The traffic implications of those *additional* traffic flows on the operational performance of the nearby road network has been assessed using the SIDRA program which is widely used by the RMS and many LGA's. Criteria for evaluating the results of SIDRA analysis are reproduced in the following pages.

Phillip Street, Smith Street & Wilde Avenue Intersection

The results of the SIDRA analysis of the subject intersection are summarised in Table 1, revealing that:

- the intersection currently operates at *Level of Service "B"* under the existing traffic demands during the AM and PM peak hour with total average vehicle delays in the order of 26 seconds/vehicle

- under the projected future traffic demands expected to be generated by the proposed development, the intersection is expected to continue to operate at *existing Levels of Service* during the AM and PM peak hour, with changes in total average vehicle delays of ***less than*** 1 seconds/vehicle.

Charles Street & George Street Intersection

The results of the SIDRA analysis of the subject intersection are summarised in Table 2, revealing that:

- the intersection currently operates at *Level of Service "A"* under the existing traffic demands during both the AM and PM peak hour with total average vehicle delays in the order of 13 seconds/vehicle

- under the projected future traffic demands expected to be generated by the proposed development, the intersection is expected to continue to operate at *existing Levels of Service* during the AM and PM peak hour, with increases in total average vehicle delays of ***less than*** 1 second/vehicle.

It is pertinent to note that the increase in total average vehicle delay is not directly proportional to the increase in vehicle turning movements at the intersection. For instance, when the additional vehicle movements are in a direction where there is ample spare capacity, it will not result in any appreciable increase in the average vehicle delay of that movement. However, when the total average vehicle delay is calculated, it is now divisible by a larger number of vehicle movements and can therefore result in a *lesser* total average vehicle delay when *more* vehicle movements are added to the intersection.

It is further noted that traffic signal cycle times are generally flexible and every signal cycle can be different in reality as it is being optimised by SCATS or in-ground loop detectors which is captured in the SIDRA modelling. This can sometimes result in an *improvement* to the average vehicle delays when *additional* vehicle demands are introduced prompting the signal phasing to be *optimised* for the combination of the new set of vehicle turning movements.

The detailed SIDRA *movements summaries* are reproduced in full in Appendix B.

In summary, the SIDRA capacity analysis demonstrates that the proposed redevelopment of the site will not have any unacceptable traffic implications, and that no road improvements or intersection upgrades are required as a consequence of the development proposal.

TABLE 1 - RESULTS OF SIDRA ANALYSIS OF PHILLIP STREET, SMITH STREET & WILDE AVENUE

Key Indicators		Existing Traffic Demand		Projected Development Traffic Demand	
		AM	**PM**	**AM**	**PM**
Level of Service		B	B	B	B
Degree of Saturation		0.697	0.749	0.712	0.749
Average Vehicle Delay (secs/veh)					
Smith Street (South)	L	25.1	25.5	25.0	25.5
	T	25.7	29.0	25.9	28.9
	R	19.6	18.5	18.3	18.7
Phillip Street (East)	L	29.1	27.6	26.7	27.6
	T	28.1	27.2	25.6	27.3
	R	31.5	31.1	29.0	31.3
Wilde Avenue (North)	L	19.6	19.9	12.3	18.6
	T	23.8	21.8	13.8	21.6
	R	21.8	21.1	21.1	21.1
Phillip Street (West)	L	20.6	19.3	18.2	19.3
	T	42.1	39.2	37.7	39.2
	R	45.4	42.6	41.0	42.6
TOTAL AVERAGE VEHICLE DELAY		**25.0**	**26.2**	**20.1**	**26.0**

PHI_SMIX PHI_SMIP

TABLE 2 - RESULTS OF SIDRA ANALYSIS OF CHARLES STREET & GEORGE STREET

Key Indicators		Existing Traffic Demand		Projected Development Traffic Demand	
		AM	**PM**	**AM**	**PM**
Level of Service		A	A	A	A
Degree of Saturation		0.592	0.429	0.596	0.417
Average Vehicle Delay (secs/veh)					
Charles Street (South)	T	11.3	11.9	11.1	12.7
	R	15.7	16.6	15.6	17.7
Charles Street (North)	L	13.4	15.3	13.3	15.6
	T	10.0	11.2	9.7	11.5
George Street (West)	L	16.2	13.1	16.7	14.3
	T	13.6	11.2	14.2	12.5
	R	17.3	14.9	17.9	16.1
TOTAL AVERAGE VEHICLE DELAY		**13.3**	**12.9**	**13.4**	**13.8**
		CHA_GEOX		CHA_GEOP	

Criteria for Interpreting Results of Sidra Analysis

1. Level of Service (LOS)

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'	Good operation.	Good operation.
'B'	Good with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
'C'	Satisfactory.	Satisfactory but accident study required.
'D'	Operating near capacity.	Near capacity and accident study required.
'E'	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode.	At capacity and requires other control mode.
'F'	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode.

2. Average Vehicle Delay (AVD)

The AVD provides a measure of the operational performance of an intersection as indicated on the table below which relates AVD to LOS. The AVD's listed in the table should be taken as a guide only as longer delays could be tolerated in some locations (ie inner city conditions) and on some roads (ie minor side street intersecting with a major arterial route).

Level of Service	Average Delay per Vehicle (secs/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 and spare capacity.	Acceptable delays and spare capacity.
C	29 to 42	Satisfactory.	Satisfactory but accident study required.
D	43 to 56	Operating near capacity.	Near capacity and accident study required.
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode.	At capacity and requires other control mode.

3. Degree of Saturation (DS)

The DS is another measure of the operational performance of individual intersections.

For intersections controlled by traffic signals[1] both queue length and delay increase rapidly as DS approaches 1, and it is usual to attempt to keep DS to less than 0.9. Values of DS in the order of 0.7 generally represent satisfactory intersection operation. When DS exceeds 0.9 queues can be anticipated.

For intersections controlled by a roundabout or GIVE WAY or STOP signs, satisfactory intersection operation is indicated by a DS of 0.8 or less.

[1] *The values of DS for intersections under traffic signal control are only valid for cycle length of 120 secs.*

4. PARKING IMPLICATIONS

Existing Kerbside Parking Restrictions

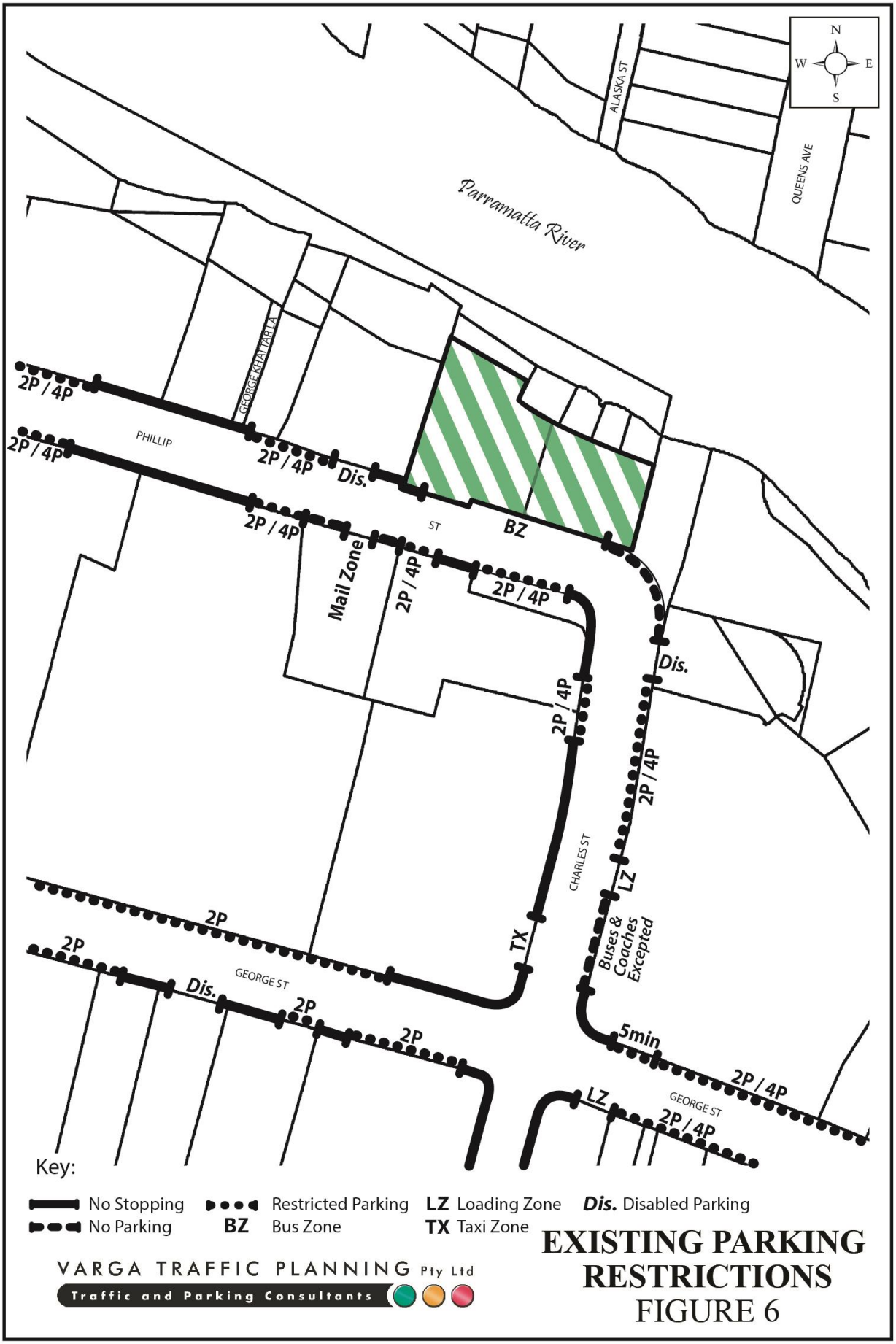
The existing kerbside parking restrictions which apply to the road network in the vicinity of the site are illustrated on Figure 6. Key features of those parking restrictions are:

- 2 HOUR / 4 HOUR PARKING restrictions on both sides of Phillip Street and Charles Street
- a BUS ZONE on the northern side of Phillip Street immediately outside the site
- DISABLED PARKING on Phillip Street and Charles Street
- Taxi Zone on the western side of Charles Street near George Street
- 2 HOUR / 4 HOUR PARKING on both sides of George Street.

Off-Street Car Parking Provisions

The off-street car parking requirements applicable to the planning proposal are specified in the *Parramatta Local Environmental Plan 2011, Part 7 Additional local provisions – Parramatta City Centre* in the following terms:

> **Multi dwelling housing: 1, 2 and 3 bedrooms**
> A maximum of 1 parking space to be provided for every dwelling plus 1 parking space to be provided for every 5 dwellings for visitors.
>
> **Commercial premises**
> A maximum of 1 parking space to be provided for every 100 square meters of gross floor area.
>
> **Hotel Accommodation**
> A maximum of 1 parking space to be provided for every 5 hotel rooms or suites plus 1 parking space to be provided for every 3 employees.


N
W
E
S
ALASKA ST
QUEENS AVE
Parramatta River
GEORGE KHAYYAR LA
PHILLIP
ST
2P / 4P
Dis.
BZ
Mail Zone
CHARLES ST
LZ
Buses & Coaches Excepted
TX
GEORGE ST
2P
5min
Key:
No Stopping
No Parking
Restricted Parking
BZ Bus Zone
LZ Loading Zone
TX Taxi Zone
Dis. Disabled Parking
VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants
EXISTING PARKING RESTRICTIONS
FIGURE 6

Motels

A maximum of 1 parking space to be provided for every 2 motel rooms or suites plus 1 parking space to be provided for every 3 employees.

Notwithstanding the above, it is understood that Parramatta City Council is in the process of updating their car parking code in the Parramatta City Centre and the following rates are nominated in the future *Parramatta CBD Planning Proposal*:

Residential flat buildings

Maximum of 0.1 spaces per studio apartment
Maximum of 0.3 spaces per 1 bedroom apartment
Maximum of 0.7 spaces per 2 bedroom apartment
Maximum of 1 space per 3 bedroom apartment

Commercial premises

M = (G×A) / (50×T) where:
M = maximum number of parking spaces
G = GFA of all commercial premises
A = site area
T = total GFA of all buildings on the site

Serviced apartments

Maximum of 1 space per 4 rooms up to 100 rooms
Maximum of 1 space per 5 rooms above 100 rooms

Application of the Council's *Parramatta CBD Planning Proposal* parking requirements to the various components of the planning proposal yields a *maximum permissible* off-street car parking requirement of 261 spaces as set out below:

Residents (320 apartments):	215.6 spaces
Commercial (4,150m^2):	4.0 spaces
Serviced apartments (182 apartments):	41.4 spaces
TOTAL PARKING REQUIRED:	**261.0 spaces**

The architectural concept plans prepared for the purposes of this planning proposal demonstrates that both the quantum supply and geometric design layout of the off-street car parking facilities are capable of complying with Council requirements as well as the relevant

Australian Standards, and will be reviewed in detail in the subsequent development application subject to the approval of this planning proposal.

Off-Street Bicycle Parking Provisions

The off-street bicycle parking requirements applicable to the planning proposal are specified in the *Parramatta Development Control Plan 2011, Section 3.6 – Movement and Circulation* document in the following terms:

Residential Flat Buildings
1 bicycle space per 2 dwellings

Business, Office and Retail Premises
1 bicycle space per 200m^2 of floor space

Off-street bicycle facilities will ultimately be provided in accordance with the above requirements and designed in accordance with Standards Australia publication *Parking Facilities Part 3 – Bicycle Parking Facilities AS2890.3.*

Loading / Servicing Provisions

Loading / servicing for the future development is expected to be undertaken by a variety of commercial vehicles up to and including 8.8m long MRV trucks.

A dedicated service area will be provided at the rear of the site with a truck turntable to allow these MRV trucks to enter and exit the site whilst travelling in forward gear at all times.

The architectural concept plans prepared for the purposes of this planning proposal demonstrates that the geometric design layout of the loading bay is capable of complying with Council requirements as well as the relevant Australian Standards which will be reviewed in detail in the subsequent development application subject to the approval of this planning proposal.

Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

- the planning proposal seeks approval to amend the planning controls of the site to permit a 63-storey mixed-use development envisaged to comprise a 4,150m^2 commercial floor, 182 serviced apartments and 320 residential apartments

- the subject site is located in the Parramatta City Centre, immediately adjacent the Parramatta Wharf and has excellent connectivity to existing public transport services

- the planning proposal will result in a *nett reduction* in the traffic generation potential of the site of approximately -30 vph during the AM peak hour and -22 vph during the PM peak hour when compared with the existing development on the site

- for the purposes of a robust traffic assessment however, it has been assumed that *all* of the projected future traffic flows of 42 vph in the AM peak hour and 33 vph in PM peak hour, will be new or *additional* to the existing traffic flows currently using the adjacent road network, and SIDRA modelling found that the projected increase in traffic flows will not result in any unacceptable implications in terms of road network capacity

- the future off-street parking and loading facilities will ultimately be designed and provided in accordance with the statutory parking requirements as well as relevant Australian Standards.

APPENDIX A

TRAFFIC SURVEY DATA

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : Varga Traffic Planning
Job No/Name : 6771 PARRAMATTA Intersection Counts
Day/Date : Tuesday 1st May 2018

Lights

Time Per	NORTH Wilde Ave L	T	R	WEST Phillip St L	T	R	SOUTH Smith St L	T	R	EAST Phillip St L	T	R	TOT
0630 - 0645	49	34	13	6	10	1	3	17	6	3	10	3	**155**
0645 - 0700	29	61	18	8	8	6	5	10	2	4	6	10	**167**
0700 - 0715	42	71	24	7	7	4	3	16	2	4	14	9	**203**
0715 - 0730	49	78	27	12	24	8	3	27	5	1	10	10	**254**
0730 - 0745	58	98	30	15	15	5	11	34	2	4	12	6	**290**
0745 - 0800	65	115	50	20	18	8	7	26	1	4	17	18	**349**
0800 - 0815	51	108	44	17	16	3	5	32	7	7	20	14	**324**
0815 - 0830	68	93	54	22	18	4	11	18	4	3	26	16	**337**
0830 - 0845	85	118	58	28	23	1	10	26	2	16	24	22	**413**
0845 - 0900	77	96	60	18	24	4	8	25	2	4	28	23	**369**
0900 - 0915	56	112	43	22	27	8	13	27	4	11	20	15	**358**
0915 - 0930	49	83	30	14	16	9	11	34	8	11	17	10	**292**
Period End	**678**	**1067**	**451**	**189**	**206**	**61**	**90**	**292**	**45**	**72**	**204**	**156**	**3511**

Lights

Peak Time	NORTH Wilde Ave L	T	R	WEST Phillip St L	T	R	SOUTH Smith St L	T	R	EAST Phillip St L	T	R	TOT
0630 - 0730	169	244	82	33	49	19	14	70	15	12	40	32	**779**
0645 - 0745	178	308	99	42	54	23	22	87	11	13	42	35	**914**
0700 - 0800	214	362	131	54	64	25	24	103	10	13	53	43	**1096**
0715 - 0815	223	399	151	64	73	24	26	119	15	16	59	48	**1217**
0730 - 0830	242	414	178	74	67	20	34	110	14	18	75	54	**1300**
0745 - 0845	269	434	206	87	75	16	33	102	14	30	87	70	**1423**
0800 - 0900	281	415	216	85	81	12	34	101	15	30	98	75	**1443**
0815 - 0915	286	419	215	90	92	17	42	96	12	34	98	76	**1477**
0830 - 0930	267	409	191	82	90	22	42	112	16	42	89	70	**1432**
PEAK HOUR	**286**	**419**	**215**	**90**	**92**	**17**	**42**	**96**	**12**	**34**	**98**	**76**	1477

Heavies

Time Per	NORTH Wilde Ave L	T	R	WEST Phillip St L	T	R	SOUTH Smith St L	T	R	EAST Phillip St L	T	R	TOT
0630 - 0645	0	7	0	0	0	0	0	9	0	0	0	0	**16**
0645 - 0700	0	10	0	0	0	0	0	10	0	0	0	0	**20**
0700 - 0715	0	11	0	0	1	0	0	11	0	0	0	0	**23**
0715 - 0730	0	11	0	0	2	0	0	15	0	0	0	0	**28**
0730 - 0745	0	10	0	0	2	0	0	16	0	0	0	1	**29**
0745 - 0800	0	8	0	0	1	0	0	16	0	0	0	0	**25**
0800 - 0815	0	8	0	0	1	0	0	11	0	0	0	0	**20**
0815 - 0830	0	15	0	0	2	1	0	18	0	0	0	0	**36**
0830 - 0845	0	10	0	0	2	0	1	6	0	0	0	0	**19**
0845 - 0900	0	8	0	0	1	1	0	19	0	0	0	0	**29**
0900 - 0915	0	20	0	0	2	0	0	9	0	0	0	0	**31**
0915 - 0930	0	15	0	0	1	0	0	13	0	0	0	0	**29**
Period End	**0**	**133**	**0**	**0**	**15**	**2**	**1**	**153**	**0**	**0**	**0**	**1**	**305**

Heavies

Peak Per	NORTH Wilde Ave L	T	R	WEST Phillip St L	T	R	SOUTH Smith St L	T	R	EAST Phillip St L	T	R	TOT
0630 - 0730	0	39	0	0	3	0	0	45	0	0	0	0	**87**
0645 - 0745	0	42	0	0	5	0	0	52	0	0	0	1	**100**
0700 - 0800	0	40	0	0	6	0	0	58	0	0	0	1	**105**
0715 - 0815	0	37	0	0	6	0	0	58	0	0	0	1	**102**
0730 - 0830	0	41	0	0	6	1	0	61	0	0	0	1	**110**
0745 - 0845	0	41	0	0	6	1	1	51	0	0	0	0	**100**
0800 - 0900	0	41	0	0	6	2	1	54	0	0	0	0	**104**
0815 - 0915	0	53	0	0	7	2	1	52	0	0	0	0	**115**
0830 - 0930	0	53	0	0	6	1	1	47	0	0	0	0	**108**
PEAK HOUR	**0**	**53**	**0**	**0**	**7**	**2**	**1**	**52**	**0**	**0**	**0**	**0**	115

Combined

Time Per	NORTH Wilde Ave L	T	R	WEST Phillip St L	T	R	SOUTH Smith St L	T	R	EAST Phillip St L	T	R	TOT
0630 - 0645	49	41	13	6	10	1	3	26	6	3	10	3	**171**
0645 - 0700	29	71	18	8	8	6	5	20	2	4	6	10	**187**
0700 - 0715	42	82	24	7	8	4	3	27	2	4	14	9	**226**
0715 - 0730	49	89	27	12	26	8	3	42	5	1	10	10	**282**
0730 - 0745	58	108	30	15	17	5	11	50	2	4	12	7	**319**
0745 - 0800	65	123	50	20	19	8	7	42	1	4	17	18	**374**
0800 - 0815	51	116	44	17	17	3	5	43	7	7	20	14	**344**
0815 - 0830	68	108	54	22	20	5	11	36	4	3	26	16	**373**
0830 - 0845	85	128	58	28	25	1	11	32	2	16	24	22	**432**
0845 - 0900	77	104	60	18	25	5	8	44	2	4	28	23	**398**
0900 - 0915	56	132	43	22	29	8	13	36	4	11	20	15	**389**
0915 - 0930	49	98	30	14	17	9	11	47	8	11	17	10	**321**
Period End	**678**	**1200**	**451**	**189**	**221**	**63**	**91**	**445**	**45**	**72**	**204**	**157**	**3816**

Combined

Peak Per	NORTH Wilde Ave L	T	R	WEST Phillip St L	T	R	SOUTH Smith St L	T	R	EAST Phillip St L	T	R	TOT
0630 - 0730	169	283	82	33	52	19	14	115	15	12	40	32	**866**
0645 - 0745	178	350	99	42	59	23	22	139	11	13	42	36	**1014**
0700 - 0800	214	402	131	54	70	25	24	161	10	13	53	44	**1201**
0715 - 0815	223	436	151	64	79	24	26	177	15	16	59	49	**1319**
0730 - 0830	242	455	178	74	73	21	34	171	14	18	75	55	**1410**
0745 - 0845	269	475	206	87	81	17	34	153	14	30	87	70	**1523**
0800 - 0900	281	456	216	85	87	14	35	155	15	30	98	75	**1547**
0815 - 0915	286	472	215	90	99	19	43	148	12	34	98	76	**1592**
0830 - 0930	267	462	191	82	96	23	43	159	16	42	89	70	**1540**
PEAK HOUR	**286**	**472**	**215**	**90**	**99**	**19**	**43**	**148**	**12**	**34**	**98**	**76**	1592

R.O.A.R DATA

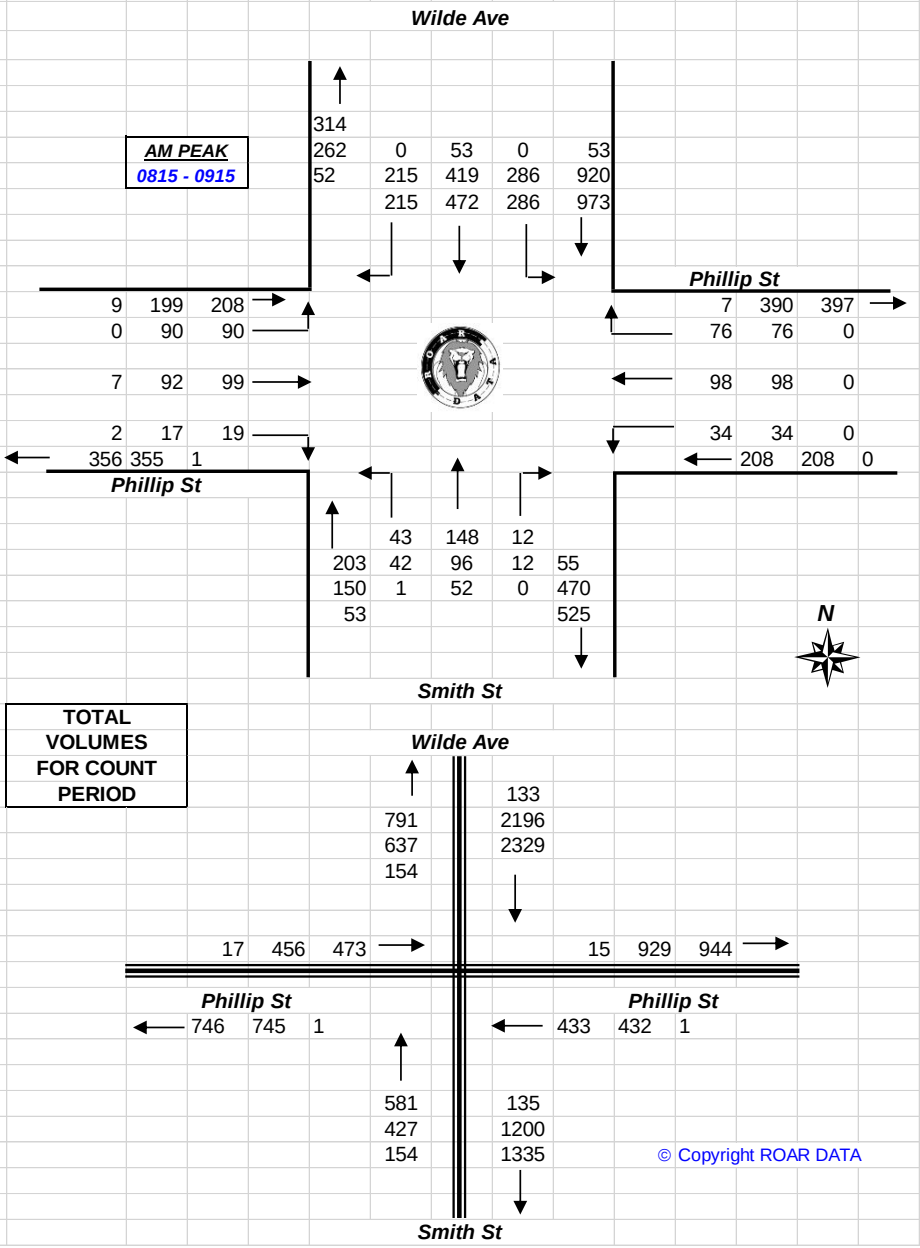
Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client	: Varga Traffic Planning
Job No/Name	: 6771 PARRAMATTA Intersection Counts
Day/Date	: Tuesday 1st May 2018

Peds	NORTH	WEST	SOUTH	EAST	
	Wilde Ave	*Phillip St*	*Smith St*	*Phillip St*	
Time Per	**UNCLASSIFIED**	**UNCLASSIFIED**	**UNCLASSIFIED**	**UNCLASSIFIED**	**TOT**
0630 - 0645	2	4	3	5	**14**
0645 - 0700	2	18	5	10	**35**
0700 - 0715	6	17	6	11	**40**
0715 - 0730	10	17	4	12	**43**
0730 - 0745	19	29	15	17	**80**
0745 - 0800	8	39	10	14	**71**
0800 - 0815	18	61	15	29	**123**
0815 - 0830	15	48	19	24	**106**
0830 - 0845	15	44	24	21	**104**
0845 - 0900	27	34	13	27	**101**
0900 - 0915	31	26	20	25	**102**
0915 - 0930	18	19	17	16	**70**
Period End	**171**	**356**	**151**	**211**	**889**

Peds	NORTH	WEST	SOUTH	EAST	
	Wilde Ave	*Phillip St*	*Smith St*	*Phillip St*	
Peak Per	**UNCLASSIFIED**	**UNCLASSIFIED**	**UNCLASSIFIED**	**UNCLASSIFIED**	**TOT**
0630 - 0730	20	56	18	38	**132**
0645 - 0745	37	81	30	50	**198**
0700 - 0800	43	102	35	54	**234**
0715 - 0815	55	146	44	72	**317**
0730 - 0830	60	177	59	84	**380**
0745 - 0845	56	192	68	88	**404**
0800 - 0900	75	187	71	101	**434**
0815 - 0915	88	152	76	97	**413**
0830 - 0930	91	123	74	89	**377**
PEAK HR	**88**	**152**	**76**	**97**	**413**



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : Varga Traffic Planning
Job No/Name : 6771 PARRAMATTA Intersection Counts
Day/Date : Tuesday 1st May 2018

Lights

Time Per	NORTH Wilde Ave L	T	R	WEST Phillip St L	T	R	SOUTH Smith St L	T	R	EAST Phillip St L	T	R	TOT
1530 - 1545	12	54	11	20	15	16	3	44	2	12	11	35	**235**
1545 - 1600	18	45	18	17	15	8	7	30	2	12	23	29	**224**
1600 - 1615	27	60	19	31	17	6	10	73	0	10	15	40	**308**
1615 - 1630	21	47	19	24	17	9	7	57	5	14	17	30	**267**
1630 - 1645	25	49	21	41	16	8	6	58	2	7	22	46	**301**
1645 - 1700	15	49	28	33	15	12	12	71	5	11	16	30	**297**
1700 - 1715	30	52	23	52	26	7	12	73	3	12	24	42	**356**
1715 - 1730	25	78	27	34	21	9	5	67	3	13	29	51	**362**
1730 - 1745	28	54	21	44	21	9	9	57	5	10	29	46	**333**
1745 - 1800	26	89	26	34	25	12	10	70	8	4	17	41	**362**
1800 - 1815	31	51	34	28	21	7	4	58	2	9	22	36	**303**
1815 - 1830	30	45	30	28	20	11	17	40	3	7	14	25	**270**
Period End	**288**	**673**	**277**	**386**	**229**	**114**	**102**	**698**	**40**	**121**	**239**	**451**	**3618**

Lights

Peak Time	NORTH Wilde Ave L	T	R	WEST Phillip St L	T	R	SOUTH Smith St L	T	R	EAST Phillip St L	T	R	TOT
1530 - 1630	78	206	67	92	64	39	27	204	9	48	66	134	**1034**
1545 - 1645	91	201	77	113	65	31	30	218	9	43	77	145	**1100**
1600 - 1700	88	205	87	129	65	35	35	259	12	42	70	146	**1173**
1615 - 1715	91	197	91	150	74	36	37	259	15	44	79	148	**1221**
1630 - 1730	95	228	99	160	78	36	35	269	13	43	91	169	**1316**
1645 - 1745	98	233	99	163	83	37	38	268	16	46	98	169	**1348**
1700 - 1800	109	273	97	164	93	37	36	267	19	39	99	180	**1413**
1715 - 1815	110	272	108	140	88	37	28	252	18	36	97	174	**1360**
1730 - 1830	115	239	111	134	87	39	40	225	18	30	82	148	**1268**
PEAK HOUR	**109**	**273**	**97**	**164**	**93**	**37**	**36**	**267**	**19**	**39**	**99**	**180**	**1413**

Heavies

Time Per	NORTH Wilde Ave L	T	R	WEST Phillip St L	T	R	SOUTH Smith St L	T	R	EAST Phillip St L	T	R	TOT
1530 - 1545	0	23	0	0	1	1	0	11	0	0	0	0	**36**
1545 - 1600	0	15	0	0	2	0	0	14	1	0	0	0	**32**
1600 - 1615	0	11	0	0	0	0	0	17	0	0	0	0	**28**
1615 - 1630	0	14	0	0	1	0	0	11	0	0	0	0	**26**
1630 - 1645	0	12	0	0	0	0	0	15	0	0	0	0	**27**
1645 - 1700	0	14	0	0	1	0	0	13	0	0	0	0	**28**
1700 - 1715	0	10	0	0	1	0	0	12	0	0	0	0	**23**
1715 - 1730	0	14	0	0	2	0	0	15	0	0	0	0	**31**
1730 - 1745	0	12	0	0	1	0	0	13	0	0	0	0	**26**
1745 - 1800	0	7	0	0	1	0	0	15	0	0	0	0	**23**
1800 - 1815	0	12	0	0	1	0	0	9	0	0	0	0	**22**
1815 - 1830	0	9	0	0	2	0	0	18	0	0	0	0	**29**
Period End	**0**	**153**	**0**	**0**	**13**	**1**	**0**	**163**	**1**	**0**	**0**	**0**	**331**

Heavies

Peak Per	NORTH Wilde Ave L	T	R	WEST Phillip St L	T	R	SOUTH Smith St L	T	R	EAST Phillip St L	T	R	TOT
1530 - 1630	0	63	0	0	4	1	0	53	1	0	0	0	**122**
1545 - 1645	0	52	0	0	3	0	0	57	1	0	0	0	**113**
1600 - 1700	0	51	0	0	2	0	0	56	0	0	0	0	**109**
1615 - 1715	0	50	0	0	3	0	0	51	0	0	0	0	**104**
1630 - 1730	0	50	0	0	4	0	0	55	0	0	0	0	**109**
1645 - 1745	0	50	0	0	5	0	0	53	0	0	0	0	**108**
1700 - 1800	0	43	0	0	5	0	0	55	0	0	0	0	**103**
1715 - 1815	0	45	0	0	5	0	0	52	0	0	0	0	**102**
1730 - 1830	0	40	0	0	5	0	0	55	0	0	0	0	**100**
PEAK HOUR	**0**	**43**	**0**	**0**	**5**	**0**	**0**	**55**	**0**	**0**	**0**	**0**	**103**

Combined

Time Per	NORTH Wilde Ave L	T	R	WEST Phillip St L	T	R	SOUTH Smith St L	T	R	EAST Phillip St L	T	R	TOT
1530 - 1545	12	77	11	20	16	17	3	55	2	12	11	35	**271**
1545 - 1600	18	60	18	17	17	8	7	44	3	12	23	29	**256**
1600 - 1615	27	71	19	31	17	6	10	90	0	10	15	40	**336**
1615 - 1630	21	61	19	24	18	9	7	68	5	14	17	30	**293**
1630 - 1645	25	61	21	41	16	8	6	73	2	7	22	46	**328**
1645 - 1700	15	63	28	33	16	12	12	84	5	11	16	30	**325**
1700 - 1715	30	62	23	52	27	7	12	85	3	12	24	42	**379**
1715 - 1730	25	92	27	34	23	9	5	82	3	13	29	51	**393**
1730 - 1745	28	66	21	44	22	9	9	70	5	10	29	46	**359**
1745 - 1800	26	96	26	34	26	12	10	85	8	4	17	41	**385**
1800 - 1815	31	63	34	28	22	7	4	67	2	9	22	36	**325**
1815 - 1830	30	54	30	28	22	11	17	58	3	7	14	25	**299**
Period End	**288**	**826**	**277**	**386**	**242**	**115**	**102**	**861**	**41**	**121**	**239**	**451**	**3949**

Combined

Peak Per	NORTH Wilde Ave L	T	R	WEST Phillip St L	T	R	SOUTH Smith St L	T	R	EAST Phillip St L	T	R	TOT
1530 - 1630	78	269	67	92	68	40	27	257	10	48	66	134	**1156**
1545 - 1645	91	253	77	113	68	31	30	275	10	43	77	145	**1213**
1600 - 1700	88	256	87	129	67	35	35	315	12	42	70	146	**1282**
1615 - 1715	91	247	91	150	77	36	37	310	15	44	79	148	**1325**
1630 - 1730	95	278	99	160	82	36	35	324	13	43	91	169	**1425**
1645 - 1745	98	283	99	163	88	37	38	321	16	46	98	169	**1456**
1700 - 1800	109	316	97	164	98	37	36	322	19	39	99	180	**1516**
1715 - 1815	110	317	108	140	93	37	28	304	18	36	97	174	**1462**
1730 - 1830	115	279	111	134	92	39	40	280	18	30	82	148	**1368**
PEAK HOUR	**109**	**316**	**97**	**164**	**98**	**37**	**36**	**322**	**19**	**39**	**99**	**180**	**1516**

R.O.A.R DATA

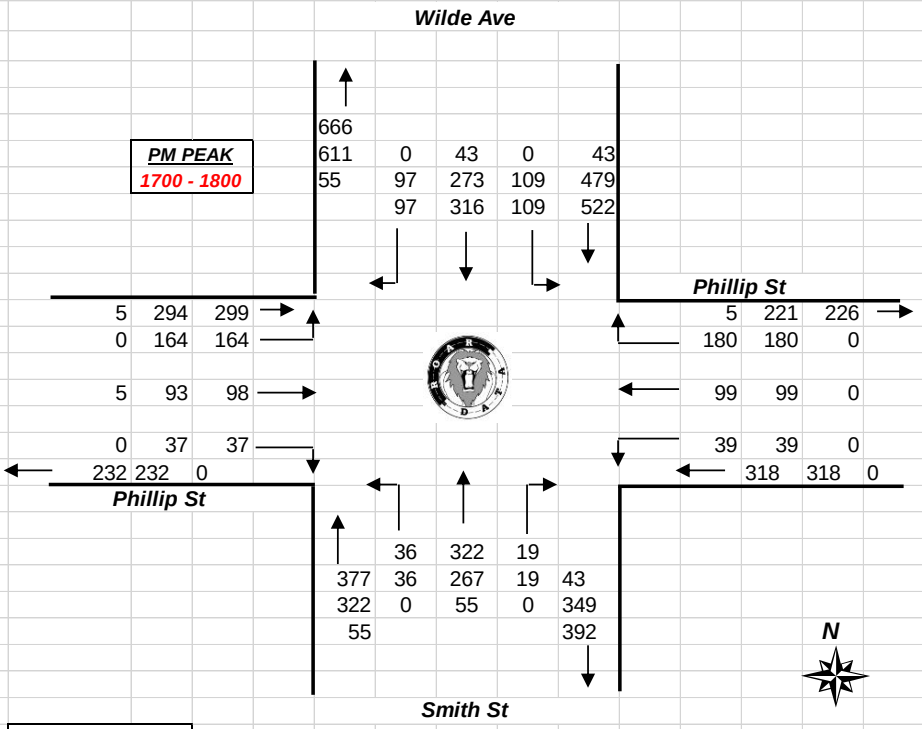
Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

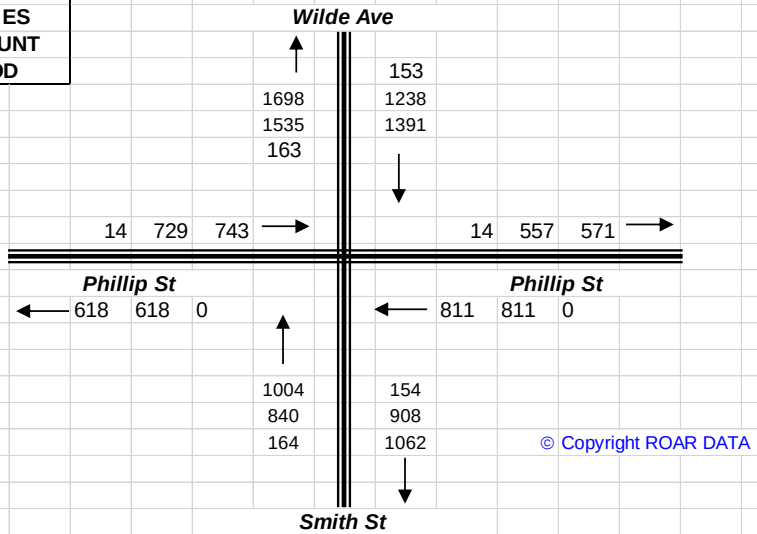
Client	: Varga Traffic Planning
Job No/Name	: 6771 PARRAMATTA Intersection Counts
Day/Date	: Tuesday 1st May 2018

Peds	NORTH	WEST	SOUTH	EAST	
	Wilde Ave	*Phillip St*	*Smith St*	*Phillip St*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1530 - 1545	26	22	12	15	**75**
1545 - 1600	11	16	8	8	**43**
1600 - 1615	14	16	12	10	**52**
1615 - 1630	12	25	6	14	**57**
1630 - 1645	11	28	5	17	**61**
1645 - 1700	19	39	12	17	**87**
1700 - 1715	37	32	12	20	**101**
1715 - 1730	22	40	12	25	**99**
1730 - 1745	19	31	12	17	**79**
1745 - 1800	23	51	1	24	**99**
1800 - 1815	18	31	7	17	**73**
1815 - 1830	22	19	10	12	**63**
Period End	**234**	**350**	**109**	**196**	**889**

Peds	NORTH	WEST	SOUTH	EAST	
	Wilde Ave	*Phillip St*	*Smith St*	*Phillip St*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1530 - 1630	63	79	38	47	**227**
1545 - 1645	48	85	31	49	**213**
1600 - 1700	56	108	35	58	**257**
1615 - 1715	79	124	35	68	**306**
1630 - 1730	89	139	41	79	**348**
1645 - 1745	97	142	48	79	**366**
1700 - 1800	101	154	37	86	**378**
1715 - 1815	82	153	32	83	**350**
1730 - 1830	82	132	30	70	**314**
PEAK HR	**101**	**154**	**37**	**86**	**378**



TOTAL VOLUMES FOR COUNT PERIOD



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client	: Varga Traffic Planning
Job No/Name	: 6771 PARRAMATTA Intersection Counts
Day/Date	: Tuesday 1st May 2018

Intersection Details

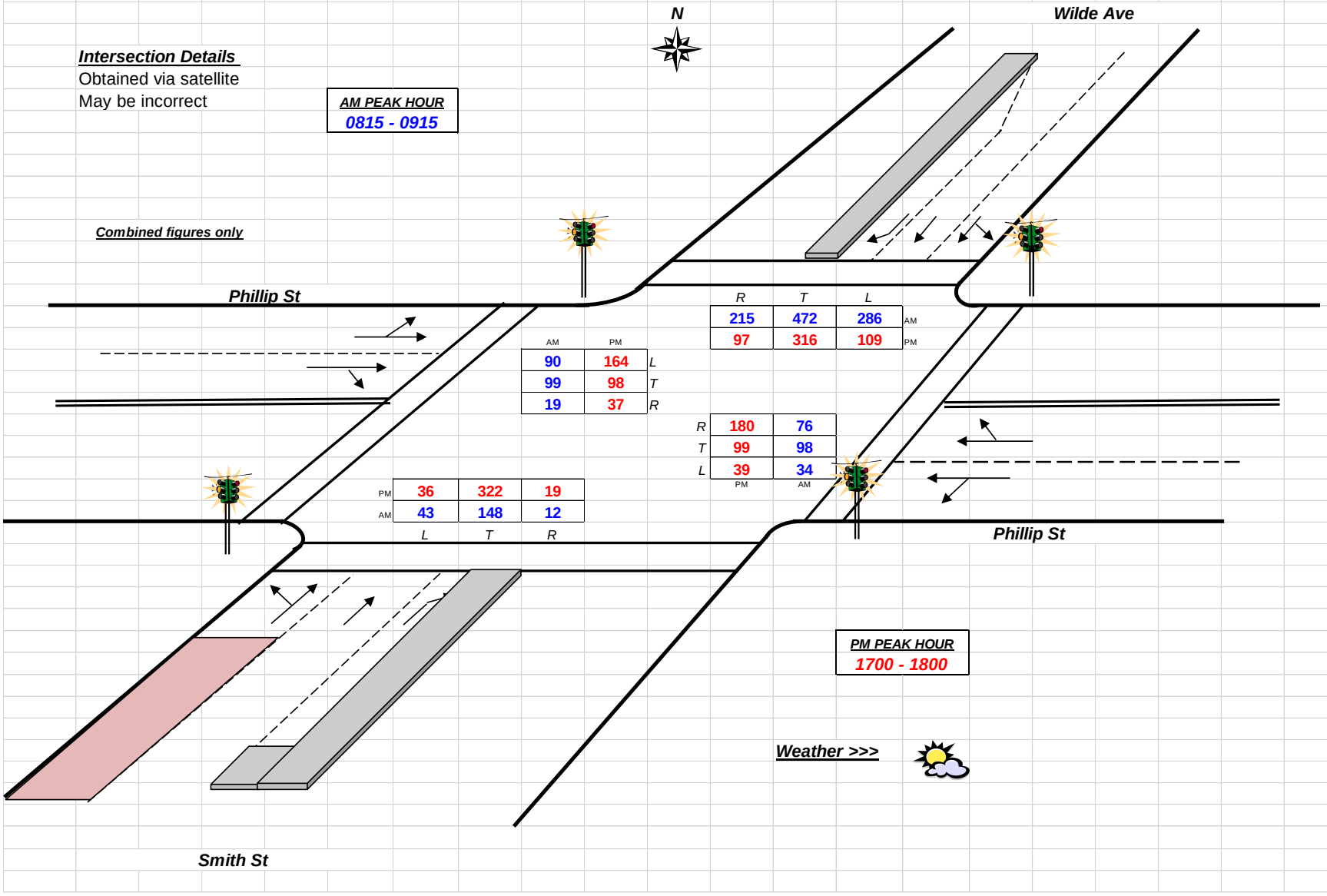
Obtained via satellite

May be incorrect

AM PEAK HOUR

0815 - 0915

Combined figures only



PM PEAK HOUR

1700 - 1800

Weather >>>

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : Varga Traffic Planning
Job No/Name : 6771 PARRAMATTA Intersection Counts
Day/Date : Tuesday 1st May 2018

Lights

	NORTH			WEST			SOUTH			EAST			
	Charles St			*George St*			*Charles St*			*George St*			
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
0630 - 0645	18	20	0	1	28	8	0	31	6	0	0	0	**112**
0645 - 0700	10	13	0	6	33	7	0	31	10	0	0	0	**110**
0700 - 0715	11	21	0	14	22	11	0	41	14	0	0	0	**134**
0715 - 0730	22	25	0	13	52	10	0	44	27	0	0	0	**193**
0730 - 0745	19	21	0	22	50	22	0	64	26	0	0	0	**224**
0745 - 0800	25	25	0	19	57	28	0	67	35	0	0	0	**256**
0800 - 0815	31	13	0	21	52	22	0	67	39	0	0	0	**245**
0815 - 0830	36	23	0	21	79	24	0	89	30	0	0	0	**302**
0830 - 0845	27	37	0	28	92	34	0	97	31	0	0	0	**346**
0845 - 0900	31	34	0	16	52	20	0	74	38	0	0	0	**265**
0900 - 0915	32	35	0	22	54	27	0	64	38	0	0	0	**272**
0915 - 0930	25	20	0	18	58	24	0	48	24	0	0	0	**217**
Period End	**287**	**287**	**0**	**201**	**629**	**237**	**0**	**717**	**318**	**0**	**0**	**0**	**2676**

Lights

	NORTH			WEST			SOUTH			EAST			
	Charles St			*George St*			*Charles St*			*George St*			
Peak Time	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
0630 - 0730	61	79	0	34	135	36	0	147	57	0	0	0	**549**
0645 - 0745	62	80	0	55	157	50	0	180	77	0	0	0	**661**
0700 - 0800	77	92	0	68	181	71	0	216	102	0	0	0	**807**
0715 - 0815	97	84	0	75	211	82	0	242	127	0	0	0	**918**
0730 - 0830	111	82	0	83	238	96	0	287	130	0	0	0	**1027**
0745 - 0845	119	98	0	89	280	108	0	320	135	0	0	0	**1149**
0800 - 0900	125	107	0	86	275	100	0	327	138	0	0	0	**1158**
0815 - 0915	126	129	0	87	277	105	0	324	137	0	0	0	**1185**
0830 - 0930	115	126	0	84	256	105	0	283	131	0	0	0	**1100**
PEAK HOUR	**126**	**129**	**0**	**87**	**277**	**105**	**0**	**324**	**137**	**0**	**0**	**0**	**1185**

Heavies

	NORTH			WEST			SOUTH			EAST			
	Charles St			*George St*			*Charles St*			*George St*			
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
0630 - 0645	0	0	0	0	1	0	0	0	0	0	0	0	**1**
0645 - 0700	0	0	0	0	0	0	0	0	0	0	0	0	**0**
0700 - 0715	1	0	0	0	0	0	0	0	0	0	0	0	**1**
0715 - 0730	1	3	0	1	0	0	0	0	0	0	0	0	**5**
0730 - 0745	1	1	0	0	0	1	0	1	0	0	0	0	**4**
0745 - 0800	0	1	0	0	2	1	0	0	0	0	0	0	**4**
0800 - 0815	0	1	0	0	0	0	0	0	0	0	0	0	**1**
0815 - 0830	1	1	0	0	3	1	0	0	0	0	0	0	**6**
0830 - 0845	0	2	0	0	2	0	0	0	0	0	0	0	**4**
0845 - 0900	1	0	0	0	1	0	0	0	0	0	0	0	**2**
0900 - 0915	0	2	0	0	0	0	0	0	0	0	0	0	**2**
0915 - 0930	0	1	0	0	0	0	0	0	0	0	0	0	**1**
Period End	**5**	**12**	**0**	**1**	**9**	**3**	**0**	**1**	**0**	**0**	**0**	**0**	**31**

Heavies

	NORTH			WEST			SOUTH			EAST			
	Charles St			*George St*			*Charles St*			*George St*			
Peak Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
0630 - 0730	2	3	0	1	1	0	0	0	0	0	0	0	**7**
0645 - 0745	3	4	0	1	0	1	0	1	0	0	0	0	**10**
0700 - 0800	3	5	0	1	2	2	0	1	0	0	0	0	**14**
0715 - 0815	2	6	0	1	2	2	0	1	0	0	0	0	**14**
0730 - 0830	2	4	0	0	5	3	0	1	0	0	0	0	**15**
0745 - 0845	1	5	0	0	7	2	0	0	0	0	0	0	**15**
0800 - 0900	2	4	0	0	6	1	0	0	0	0	0	0	**13**
0815 - 0915	2	5	0	0	6	1	0	0	0	0	0	0	**14**
0830 - 0930	1	5	0	0	3	0	0	0	0	0	0	0	**9**
PEAK HOUR	**2**	**5**	**0**	**0**	**6**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**14**

Combined

	NORTH			WEST			SOUTH			EAST			
	Charles St			*George St*			*Charles St*			*George St*			
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
0630 - 0645	18	20	0	1	29	8	0	31	6	0	0	0	**113**
0645 - 0700	10	13	0	6	33	7	0	31	10	0	0	0	**110**
0700 - 0715	12	21	0	14	22	11	0	41	14	0	0	0	**135**
0715 - 0730	23	28	0	14	52	10	0	44	27	0	0	0	**198**
0730 - 0745	20	22	0	22	50	23	0	65	26	0	0	0	**228**
0745 - 0800	25	26	0	19	59	29	0	67	35	0	0	0	**260**
0800 - 0815	31	14	0	21	52	22	0	67	39	0	0	0	**246**
0815 - 0830	37	24	0	21	82	25	0	89	30	0	0	0	**308**
0830 - 0845	27	39	0	28	94	34	0	97	31	0	0	0	**350**
0845 - 0900	32	34	0	16	53	20	0	74	38	0	0	0	**267**
0900 - 0915	32	37	0	22	54	27	0	64	38	0	0	0	**274**
0915 - 0930	25	21	0	18	58	24	0	48	24	0	0	0	**218**
Period End	**292**	**299**	**0**	**202**	**638**	**240**	**0**	**718**	**318**	**0**	**0**	**0**	**2707**

Combined

	NORTH			WEST			SOUTH			EAST			
	Charles St			*George St*			*Charles St*			*George St*			
Peak Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
0630 - 0730	63	82	0	35	136	36	0	147	57	0	0	0	**556**
0645 - 0745	65	84	0	56	157	51	0	181	77	0	0	0	**671**
0700 - 0800	80	97	0	69	183	73	0	217	102	0	0	0	**821**
0715 - 0815	99	90	0	76	213	84	0	243	127	0	0	0	**932**
0730 - 0830	113	86	0	83	243	99	0	288	130	0	0	0	**1042**
0745 - 0845	120	103	0	89	287	110	0	320	135	0	0	0	**1164**
0800 - 0900	127	111	0	86	281	101	0	327	138	0	0	0	**1171**
0815 - 0915	128	134	0	87	283	106	0	324	137	0	0	0	**1199**
0830 - 0930	116	131	0	84	259	105	0	283	131	0	0	0	**1109**
PEAK HOUR	**128**	**134**	**0**	**87**	**283**	**106**	**0**	**324**	**137**	**0**	**0**	**0**	**1199**

R.O.A.R DATA

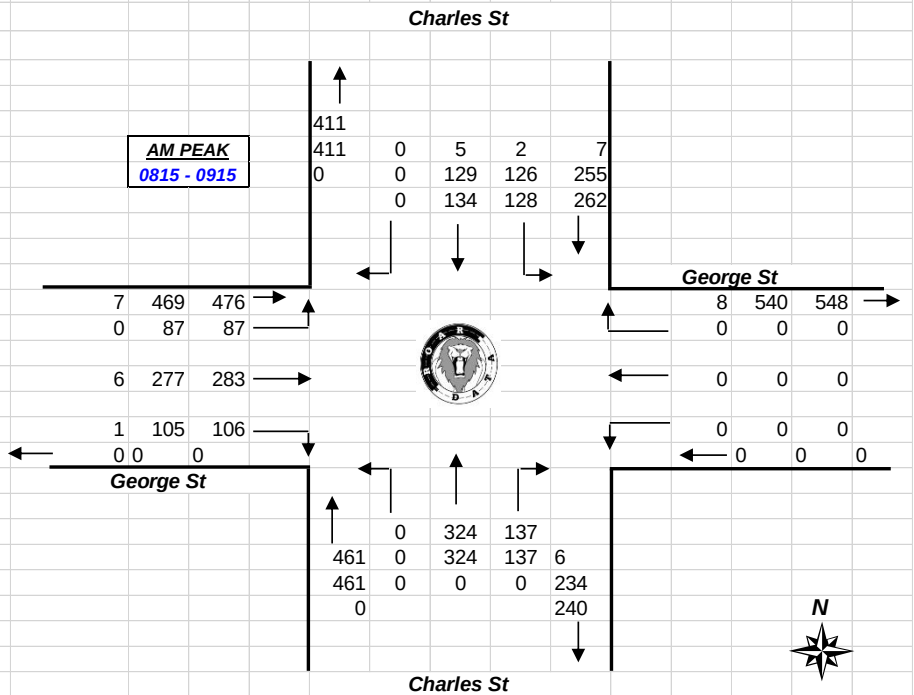
Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

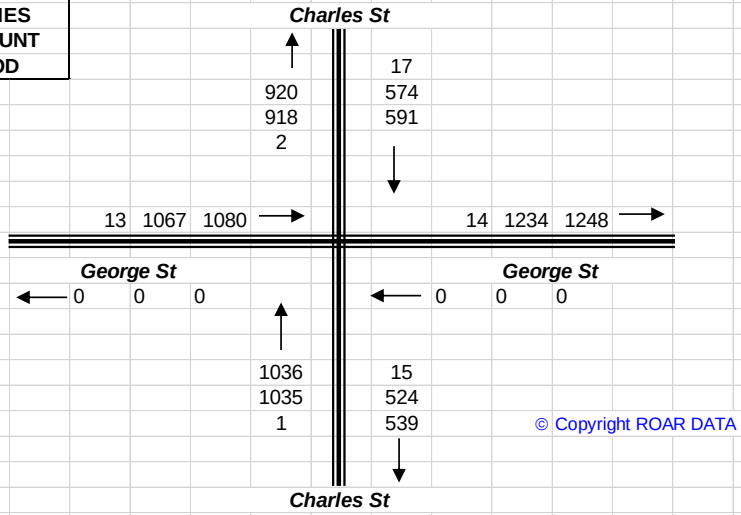
Client : Varga Traffic Planning
Job No/Name : 6771 PARRAMATTA Intersection Counts
Day/Date : Tuesday 1st May 2018

Peds	NORTH	WEST	SOUTH	EAST	
	Charles St	*George St*	*Charles St*	*George St*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0630 - 0645	8	15	18	5	**46**
0645 - 0700	19	18	23	14	**74**
0700 - 0715	23	34	26	7	**90**
0715 - 0730	27	42	51	24	**144**
0730 - 0745	29	59	52	21	**161**
0745 - 0800	60	67	87	28	**242**
0800 - 0815	66	94	86	42	**288**
0815 - 0830	71	69	101	79	**320**
0830 - 0845	76	81	79	67	**303**
0845 - 0900	81	71	69	42	**263**
0900 - 0915	60	50	106	45	**261**
0915 - 0930	84	69	84	53	**290**
Period End	**604**	**669**	**782**	**427**	**2482**

Peds	NORTH	WEST	SOUTH	EAST	
	Charles St	*George St*	*Charles St*	*George St*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0630 - 0730	77	109	118	50	**354**
0645 - 0745	98	153	152	66	**469**
0700 - 0800	139	202	216	80	**637**
0715 - 0815	182	262	276	115	**835**
0730 - 0830	226	289	326	170	**1011**
0745 - 0845	273	311	353	216	**1153**
0800 - 0900	294	315	335	230	**1174**
0815 - 0915	288	271	355	233	**1147**
0830 - 0930	301	271	338	207	**1117**
PEAK HR	**288**	**271**	**355**	**233**	**1147**



TOTAL VOLUMES FOR COUNT PERIOD



1 2 3

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : Varga Traffic Planning
Job No/Name : 6771 PARRAMATTA Intersection Counts
Day/Date : Tuesday 1st May 2018

Lights	NORTH			WEST			SOUTH			EAST			
	Charles St			*George St*			*Charles St*			*George St*			
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
1530 - 1545	36	19	0	15	72	20	0	30	14	0	0	0	**206**
1545 - 1600	26	15	0	13	65	13	0	41	16	0	0	0	**189**
1600 - 1615	46	47	0	18	88	32	0	24	20	0	0	0	**275**
1615 - 1630	45	28	0	14	82	20	0	29	24	0	0	0	**242**
1630 - 1645	42	43	0	24	98	29	0	26	28	0	0	0	**290**
1645 - 1700	44	41	0	12	82	28	0	59	36	0	0	0	**302**
1700 - 1715	67	47	0	16	138	30	0	58	31	0	0	0	**387**
1715 - 1730	64	33	0	23	111	29	0	27	16	0	0	0	**303**
1730 - 1745	50	40	0	16	93	22	0	32	21	0	0	0	**274**
1745 - 1800	55	36	0	8	127	30	0	34	31	0	0	0	**321**
1800 - 1815	35	43	0	12	77	34	0	40	31	0	0	0	**272**
1815 - 1830	37	26	0	16	48	16	0	28	22	0	0	0	**193**
Period End	**547**	**418**	**0**	**187**	**1081**	**303**	**0**	**428**	**290**	**0**	**0**	**0**	**3254**

Lights	NORTH			WEST			SOUTH			EAST			
	Charles St			*George St*			*Charles St*			*George St*			
Peak Time	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
1530 - 1630	153	109	0	60	307	85	0	124	74	0	0	0	**912**
1545 - 1645	159	133	0	69	333	94	0	120	88	0	0	0	**996**
1600 - 1700	177	159	0	68	350	109	0	138	108	0	0	0	**1109**
1615 - 1715	198	159	0	66	400	107	0	172	119	0	0	0	**1221**
1630 - 1730	217	164	0	75	429	116	0	170	111	0	0	0	**1282**
1645 - 1745	225	161	0	67	424	109	0	176	104	0	0	0	**1266**
1700 - 1800	236	156	0	63	469	111	0	151	99	0	0	0	**1285**
1715 - 1815	204	152	0	59	408	115	0	133	99	0	0	0	**1170**
1730 - 1830	177	145	0	52	345	102	0	134	105	0	0	0	**1060**
PEAK HOUR	**236**	**156**	**0**	**63**	**469**	**111**	**0**	**151**	**99**	**0**	**0**	**0**	**1285**

Heavies	NORTH			WEST			SOUTH			EAST			
	Charles St			*George St*			*Charles St*			*George St*			
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
1530 - 1545	0	3	0	0	1	0	0	0	0	0	0	0	**4**
1545 - 1600	0	0	0	0	0	1	0	0	0	0	0	0	**1**
1600 - 1615	0	2	0	0	1	0	0	0	0	0	0	0	**3**
1615 - 1630	0	1	0	0	0	0	0	0	0	0	0	0	**1**
1630 - 1645	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1645 - 1700	0	2	0	0	0	0	0	0	0	0	0	0	**2**
1700 - 1715	0	1	0	0	0	0	0	0	0	0	0	0	**1**
1715 - 1730	0	1	0	0	0	0	0	0	0	0	0	0	**1**
1730 - 1745	0	1	0	0	0	0	0	0	0	0	0	0	**1**
1745 - 1800	0	1	0	0	0	0	0	0	0	0	0	0	**1**
1800 - 1815	0	1	0	0	0	0	0	0	0	0	0	0	**1**
1815 - 1830	0	1	0	0	0	0	0	0	0	0	0	0	**1**
Period End	**0**	**14**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**17**

Heavies	NORTH			WEST			SOUTH			EAST			
	Charles St			*George St*			*Charles St*			*George St*			
Peak Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
1530 - 1630	0	6	0	0	2	1	0	0	0	0	0	0	**9**
1545 - 1645	0	3	0	0	1	1	0	0	0	0	0	0	**5**
1600 - 1700	0	5	0	0	1	0	0	0	0	0	0	0	**6**
1615 - 1715	0	4	0	0	0	0	0	0	0	0	0	0	**4**
1630 - 1730	0	4	0	0	0	0	0	0	0	0	0	0	**4**
1645 - 1745	0	5	0	0	0	0	0	0	0	0	0	0	**5**
1700 - 1800	0	4	0	0	0	0	0	0	0	0	0	0	**4**
1715 - 1815	0	4	0	0	0	0	0	0	0	0	0	0	**4**
1730 - 1830	0	4	0	0	0	0	0	0	0	0	0	0	**4**
PEAK HOUR	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**

Combined	NORTH			WEST			SOUTH			EAST			
	Charles St			*George St*			*Charles St*			*George St*			
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
1530 - 1545	36	22	0	15	73	20	0	30	14	0	0	0	**210**
1545 - 1600	26	15	0	13	65	14	0	41	16	0	0	0	**190**
1600 - 1615	46	49	0	18	89	32	0	24	20	0	0	0	**278**
1615 - 1630	45	29	0	14	82	20	0	29	24	0	0	0	**243**
1630 - 1645	42	43	0	24	98	29	0	26	28	0	0	0	**290**
1645 - 1700	44	43	0	12	82	28	0	59	36	0	0	0	**304**
1700 - 1715	67	48	0	16	138	30	0	58	31	0	0	0	**388**
1715 - 1730	64	34	0	23	111	29	0	27	16	0	0	0	**304**
1730 - 1745	50	41	0	16	93	22	0	32	21	0	0	0	**275**
1745 - 1800	55	37	0	8	127	30	0	34	31	0	0	0	**322**
1800 - 1815	35	44	0	12	77	34	0	40	31	0	0	0	**273**
1815 - 1830	37	27	0	16	48	16	0	28	22	0	0	0	**194**
Period End	**547**	**432**	**0**	**187**	**1083**	**304**	**0**	**428**	**290**	**0**	**0**	**0**	**3271**

Combined	NORTH			WEST			SOUTH			EAST			
	Charles St			*George St*			*Charles St*			*George St*			
Peak Per	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOT**
1530 - 1630	153	115	0	60	309	86	0	124	74	0	0	0	**921**
1545 - 1645	159	136	0	69	334	95	0	120	88	0	0	0	**1001**
1600 - 1700	177	164	0	68	351	109	0	138	108	0	0	0	**1115**
1615 - 1715	198	163	0	66	400	107	0	172	119	0	0	0	**1225**
1630 - 1730	217	168	0	75	429	116	0	170	111	0	0	0	**1286**
1645 - 1745	225	166	0	67	424	109	0	176	104	0	0	0	**1271**
1700 - 1800	236	160	0	63	469	111	0	151	99	0	0	0	**1289**
1715 - 1815	204	156	0	59	408	115	0	133	99	0	0	0	**1174**
1730 - 1830	177	149	0	52	345	102	0	134	105	0	0	0	**1064**
PEAK HOUR	**236**	**160**	**0**	**63**	**469**	**111**	**0**	**151**	**99**	**0**	**0**	**0**	**1289**

R.O.A.R DATA

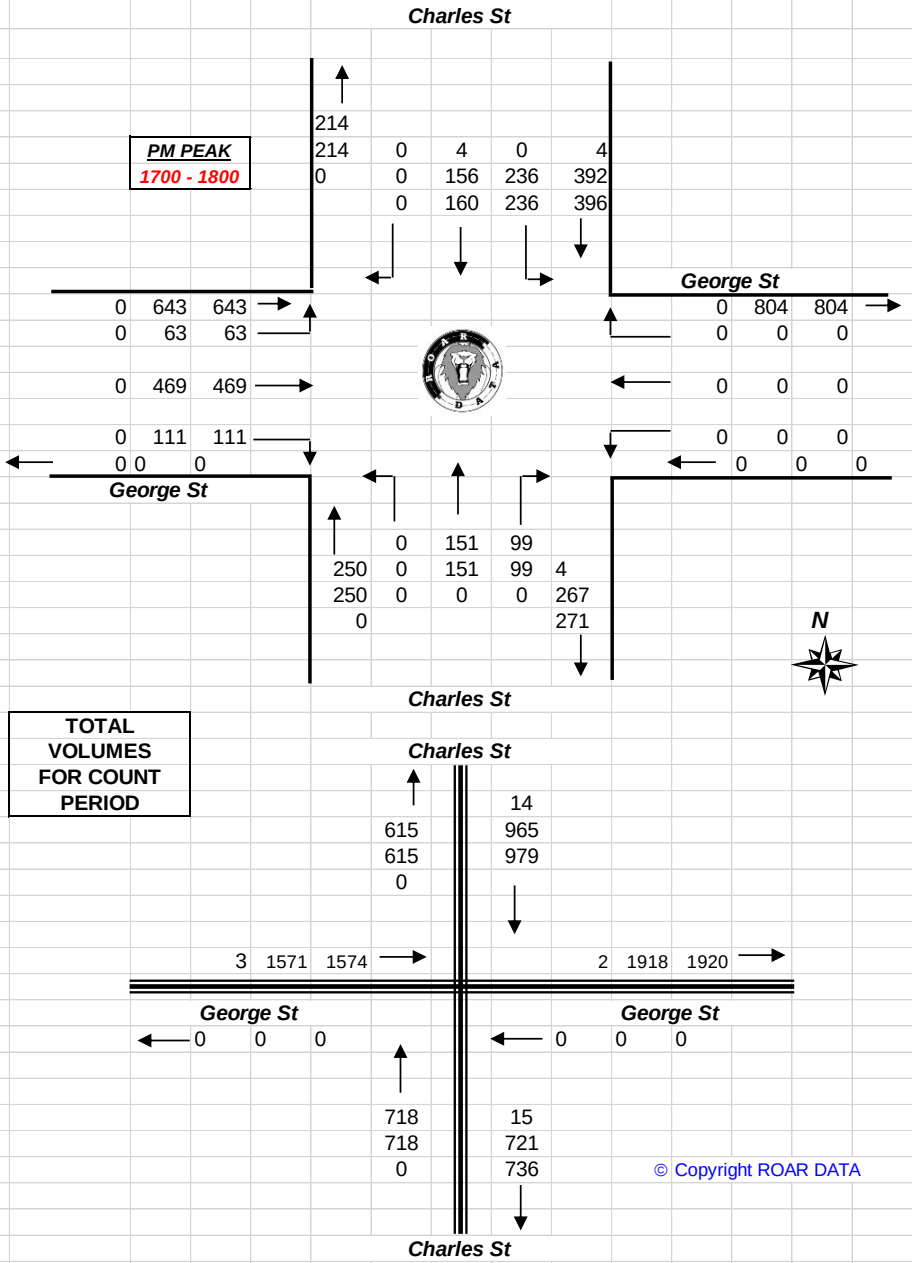
Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client	: Varga Traffic Planning
Job No/Name	: 6771 PARRAMATTA Intersection Counts
Day/Date	: Tuesday 1st May 2018

Peds	NORTH	WEST	SOUTH	EAST	
	Charles St	*George St*	*Charles St*	*George St*	
Time Per	**UNCLASSIFIED**	**UNCLASSIFIED**	**UNCLASSIFIED**	**UNCLASSIFIED**	**TOT**
1530 - 1545	32	31	76	53	**192**
1545 - 1600	26	47	41	26	**140**
1600 - 1615	32	54	66	40	**192**
1615 - 1630	26	61	51	14	**152**
1630 - 1645	43	58	68	34	**203**
1645 - 1700	32	53	66	18	**169**
1700 - 1715	52	58	86	31	**227**
1715 - 1730	38	31	44	20	**133**
1730 - 1745	42	28	68	15	**153**
1745 - 1800	24	33	47	18	**122**
1800 - 1815	36	14	45	14	**109**
1815 - 1830	12	15	30	12	**69**
Period End	**395**	**483**	**688**	**295**	**1861**

Peds	NORTH	WEST	SOUTH	EAST	
	Charles St	*George St*	*Charles St*	*George St*	
Peak Per	**UNCLASSIFIED**	**UNCLASSIFIED**	**UNCLASSIFIED**	**UNCLASSIFIED**	**TOT**
1530 - 1630	116	193	234	133	**676**
1545 - 1645	127	220	226	114	**687**
1600 - 1700	133	226	251	106	**716**
1615 - 1715	153	230	271	97	**751**
1630 - 1730	165	200	264	103	**732**
1645 - 1745	164	170	264	84	**682**
1700 - 1800	156	150	245	84	**635**
1715 - 1815	140	106	204	67	**517**
1730 - 1830	114	90	190	59	**453**
PEAK HR	**156**	**150**	**245**	**84**	**635**



TOTAL VOLUMES FOR COUNT PERIOD

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client	: Varga Traffic Planning
Job No/Name	: 6771 PARRAMATTA Intersection Counts
Day/Date	: Tuesday 1st May 2018

Intersection Details

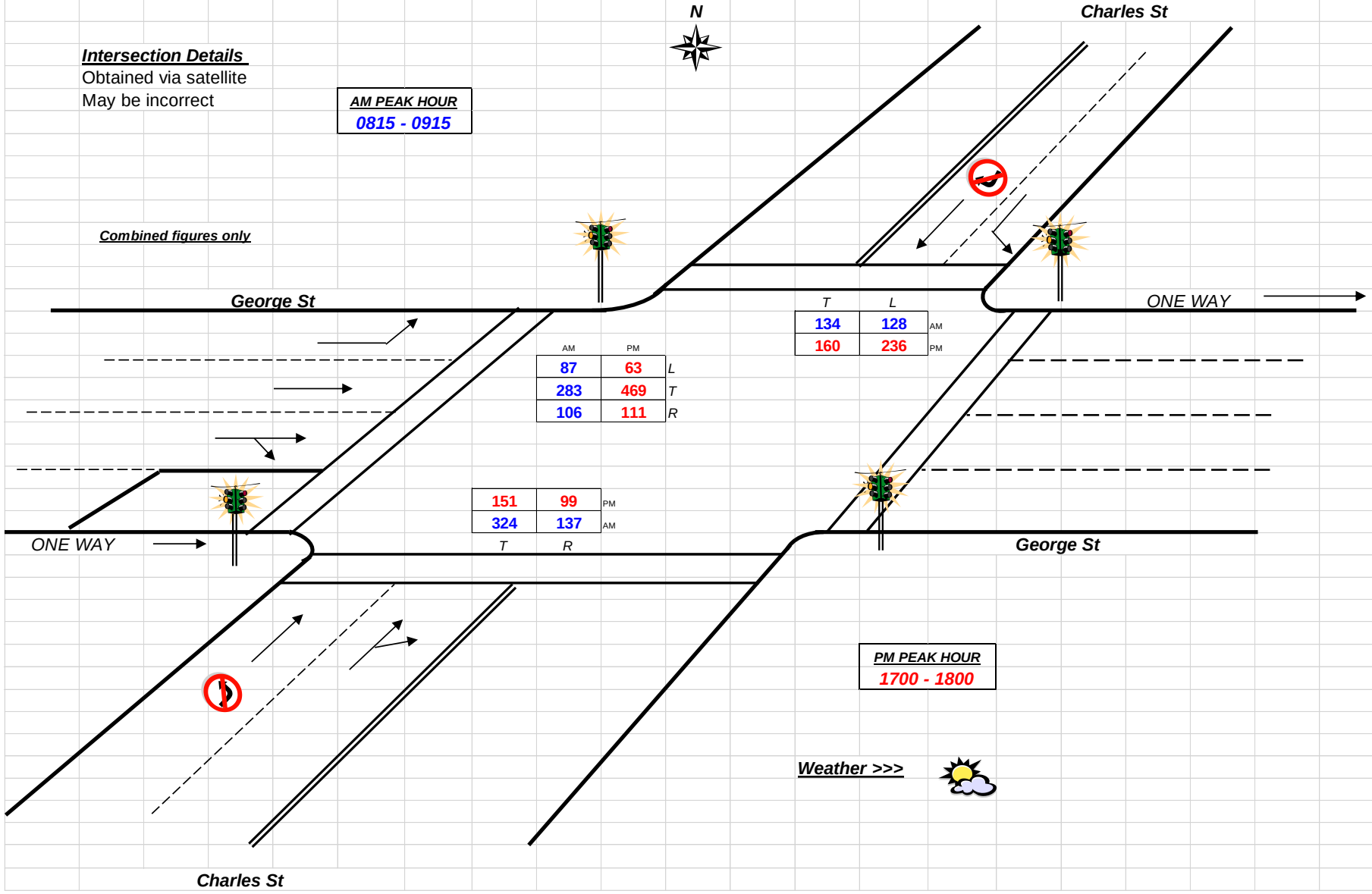
Obtained via satellite

May be incorrect

AM PEAK HOUR

0815 - 0915

Combined figures only



AM	PM	
87	63	L
283	469	T
106	111	R

T	L	
134	128	AM
160	236	PM

151	99	PM
324	137	AM
T	R	

PM PEAK HOUR

1700 - 1800

Weather >>>

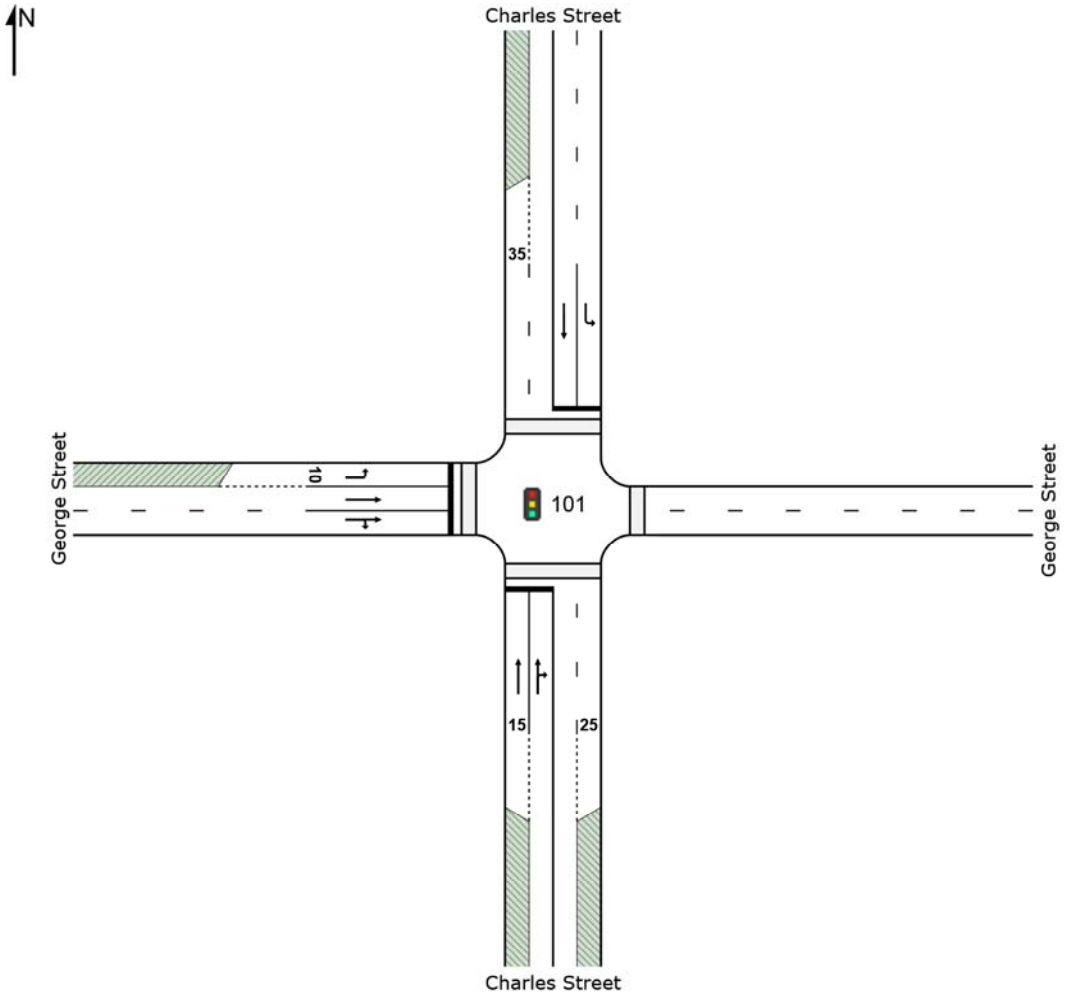
APPENDIX B

SIDRA MOVEMENT SUMMARIES

SITE LAYOUT

Site: 101 [Existing AM]

Charles Street & George Street Intersection
Signals - Actuated Isolated



Organisation: VARGA TRAFFIC PLANNING | Created: Tuesday, 5 June, 2018 11:31:41 AM
Project: Z:\DATA\Data\Jobs01\Jobs\18work\18190Y_90-96PhillipStParramatta\SIDRA\180605\CHA_GEOX.sip7

MOVEMENT SUMMARY

Site: 101 [Existing AM]

Charles Street & George Street Intersection
Signals - Actuated Isolated Cycle Time = 48 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Charles Street											
2	T1	324	0.0	0.592	11.3	LOS A	6.2	43.2	0.73	0.64	35.3
3	R2	137	0.0	0.592	15.7	LOS B	6.2	43.2	0.78	0.71	37.6
Approach		461	0.0	0.592	12.6	LOS A	6.2	43.2	0.74	0.66	35.9
North: Charles Street											
7	L2	128	1.6	0.167	13.4	LOS A	1.9	13.6	0.64	0.68	37.9
8	T1	134	3.7	0.169	10.0	LOS A	2.0	14.5	0.64	0.52	36.1
Approach		262	2.7	0.169	11.6	LOS A	2.0	14.5	0.64	0.60	36.9
West: George Street											
10	L2	87	0.0	0.141	16.2	LOS B	1.5	10.2	0.71	0.69	34.1
11	T1	283	2.1	0.324	13.6	LOS A	3.7	26.0	0.76	0.64	38.2
12	R2	106	0.9	0.324	17.3	LOS B	3.7	26.0	0.77	0.69	34.1
Approach		476	1.5	0.324	14.9	LOS B	3.7	26.0	0.75	0.66	36.4
All Vehicles		1199	1.2	0.592	13.3	LOS A	6.2	43.2	0.73	0.65	36.3

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	355	18.7	LOS B	0.4	0.4	0.89	0.89
P2	East Full Crossing	233	11.5	LOS B	0.2	0.2	0.69	0.69
P3	North Full Crossing	288	18.6	LOS B	0.3	0.3	0.89	0.89
P4	West Full Crossing	271	12.9	LOS B	0.3	0.3	0.74	0.74
All Pedestrians		1147	15.8	LOS B			0.81	0.81

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: 101 [Existing AM]

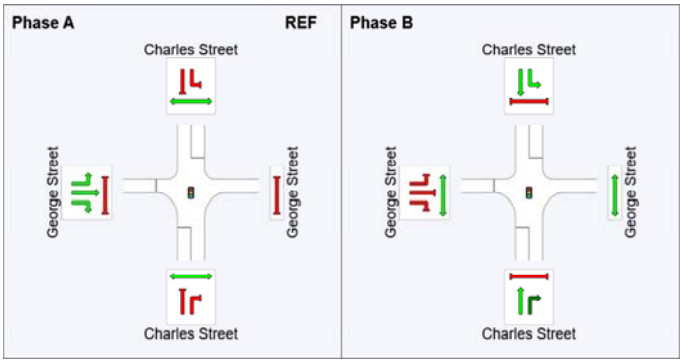
Charles Street & George Street Intersection
Signals - Actuated Isolated Cycle Time = 48 seconds (Practical Cycle Time)

Phase Times determined by the program
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Results

Phase	A	B
Phase Change Time (sec)	0	22
Green Time (sec)	16	20
Phase Time (sec)	22	26
Phase Split	46%	54%

See the Phase Information section in the Detailed Output 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, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



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: 101 [Existing PM]

Charles Street & George Street Intersection
Signals - Actuated Isolated Cycle Time = 41 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Charles Street											
2	T1	151	0.0	0.414	11.9	LOS A	3.0	21.1	0.76	0.63	35.0
3	R2	99	0.0	0.414	16.6	LOS B	3.0	21.1	0.81	0.72	37.0
Approach		250	0.0	0.414	13.7	LOS A	3.0	21.1	0.78	0.67	35.8
North: Charles Street											
7	L2	236	0.0	0.372	15.3	LOS B	3.7	26.0	0.78	0.74	37.2
8	T1	160	2.5	0.244	11.2	LOS A	2.4	17.0	0.74	0.59	35.6
Approach		396	1.0	0.372	13.6	LOS A	3.7	26.0	0.76	0.68	36.5
West: George Street											
10	L2	63	0.0	0.093	13.1	LOS A	0.8	5.9	0.67	0.66	35.1
11	T1	469	0.0	0.429	11.2	LOS A	4.7	32.9	0.77	0.66	39.2
12	R2	111	0.0	0.429	14.9	LOS B	4.7	32.9	0.78	0.69	35.0
Approach		643	0.0	0.429	12.0	LOS A	4.7	32.9	0.76	0.67	38.0
All Vehicles		1289	0.3	0.429	12.9	LOS A	4.7	32.9	0.76	0.67	37.1

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	245	15.1	LOS B	0.2	0.2	0.86	0.86
P2	East Full Crossing	84	12.5	LOS B	0.1	0.1	0.78	0.78
P3	North Full Crossing	156	15.0	LOS B	0.2	0.2	0.86	0.86
P4	West Full Crossing	150	14.2	LOS B	0.1	0.1	0.83	0.83
All Pedestrians		635	14.5	LOS B			0.84	0.84

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: 101 [Existing PM]

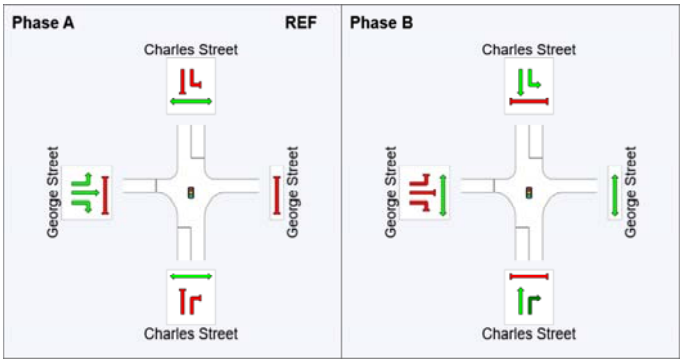
Charles Street & George Street Intersection
Signals - Actuated Isolated Cycle Time = 41 seconds (Practical Cycle Time)

Phase Times determined by the program
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Results

Phase	A	B
Phase Change Time (sec)	0	21
Green Time (sec)	15	14
Phase Time (sec)	21	20
Phase Split	51%	49%

See the Phase Information section in the Detailed Output 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, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



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: 101 [Proposed AM]

Charles Street & George Street Intersection
Signals - Actuated Isolated Cycle Time = 49 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Charles Street											
2	T1	334	0.0	0.596	11.1	LOS A	6.3	44.3	0.72	0.63	35.3
3	R2	137	0.0	0.596	15.6	LOS B	6.3	44.3	0.77	0.71	37.6
Approach		471	0.0	0.596	12.4	LOS A	6.3	44.3	0.73	0.65	36.0
North: Charles Street											
7	L2	148	1.4	0.188	13.3	LOS A	2.2	15.8	0.64	0.68	37.9
8	T1	134	3.7	0.164	9.7	LOS A	2.0	14.4	0.63	0.51	36.1
Approach		282	2.5	0.188	11.6	LOS A	2.2	15.8	0.63	0.60	37.0
West: George Street											
10	L2	87	0.0	0.143	16.7	LOS B	1.5	10.5	0.72	0.69	33.9
11	T1	283	2.1	0.332	14.2	LOS A	3.8	27.0	0.77	0.65	38.0
12	R2	106	0.9	0.332	17.9	LOS B	3.8	27.0	0.78	0.70	33.9
Approach		476	1.5	0.332	15.5	LOS B	3.8	27.0	0.76	0.67	36.2
All Vehicles		1229	1.1	0.596	13.4	LOS A	6.3	44.3	0.72	0.65	36.3

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	355	19.2	LOS B	0.4	0.4	0.89	0.89
P2	East Full Crossing	233	11.2	LOS B	0.2	0.2	0.68	0.68
P3	North Full Crossing	288	19.1	LOS B	0.4	0.4	0.89	0.89
P4	West Full Crossing	271	12.6	LOS B	0.3	0.3	0.72	0.72
All Pedestrians		1147	16.0	LOS B			0.81	0.81

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: 101 [Proposed AM]

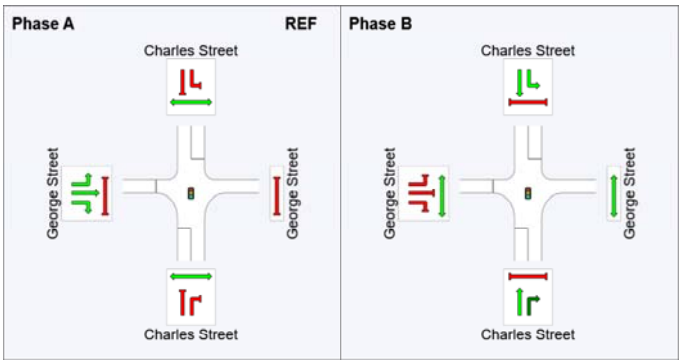
Charles Street & George Street Intersection
Signals - Actuated Isolated Cycle Time = 49 seconds (Practical Cycle Time)

Phase Times determined by the program
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Results

Phase	A	B
Phase Change Time (sec)	0	22
Green Time (sec)	16	21
Phase Time (sec)	22	27
Phase Split	45%	55%

See the Phase Information section in the Detailed Output 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, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



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: 101 [Proposed PM]

Charles Street & George Street Intersection
Signals - Fixed Time Isolated Cycle Time = 50 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Charles Street											
2	T1	169	0.0	0.404	12.7	LOS A	3.7	26.2	0.75	0.63	34.8
3	R2	99	0.0	0.404	17.7	LOS B	3.7	26.2	0.81	0.72	36.7
Approach		268	0.0	0.404	14.6	LOS B	3.7	26.2	0.77	0.66	35.4
North: Charles Street											
7	L2	246	0.0	0.349	15.6	LOS B	4.4	30.8	0.76	0.74	37.0
8	T1	160	2.5	0.219	11.5	LOS A	2.7	19.3	0.71	0.58	35.5
Approach		406	1.0	0.349	14.0	LOS A	4.4	30.8	0.74	0.68	36.4
West: George Street											
10	L2	63	0.0	0.089	14.3	LOS A	1.0	7.0	0.67	0.67	34.7
11	T1	469	0.0	0.417	12.5	LOS A	5.6	39.2	0.77	0.66	38.7
12	R2	111	0.0	0.417	16.1	LOS B	5.6	39.2	0.78	0.70	34.6
Approach		643	0.0	0.417	13.3	LOS A	5.6	39.2	0.76	0.67	37.5
All Vehicles		1317	0.3	0.417	13.8	LOS A	5.6	39.2	0.76	0.67	36.7

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	245	17.0	LOS B	0.3	0.3	0.83	0.83
P2	East Full Crossing	84	13.0	LOS B	0.1	0.1	0.72	0.72
P3	North Full Crossing	156	16.9	LOS B	0.2	0.2	0.83	0.83
P4	West Full Crossing	150	14.5	LOS B	0.2	0.2	0.76	0.76
All Pedestrians		635	15.9	LOS B			0.80	0.80

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: 101 [Proposed PM]

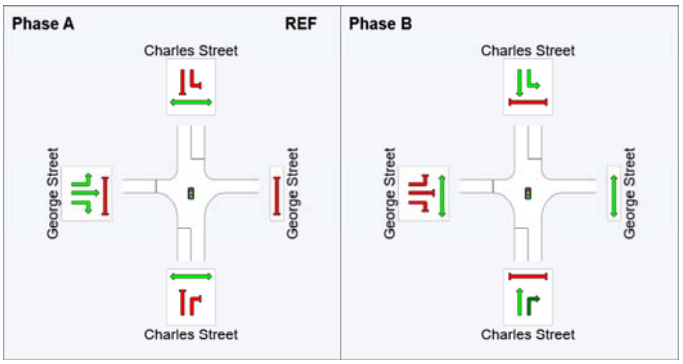
Charles Street & George Street Intersection
Signals - Fixed Time Isolated Cycle Time = 50 seconds (User-Given Cycle Time)

Phase Times determined by the program
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Results

Phase	A	B
Phase Change Time (sec)	0	25
Green Time (sec)	19	19
Phase Time (sec)	25	25
Phase Split	50%	50%

See the Phase Information section in the Detailed Output 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, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



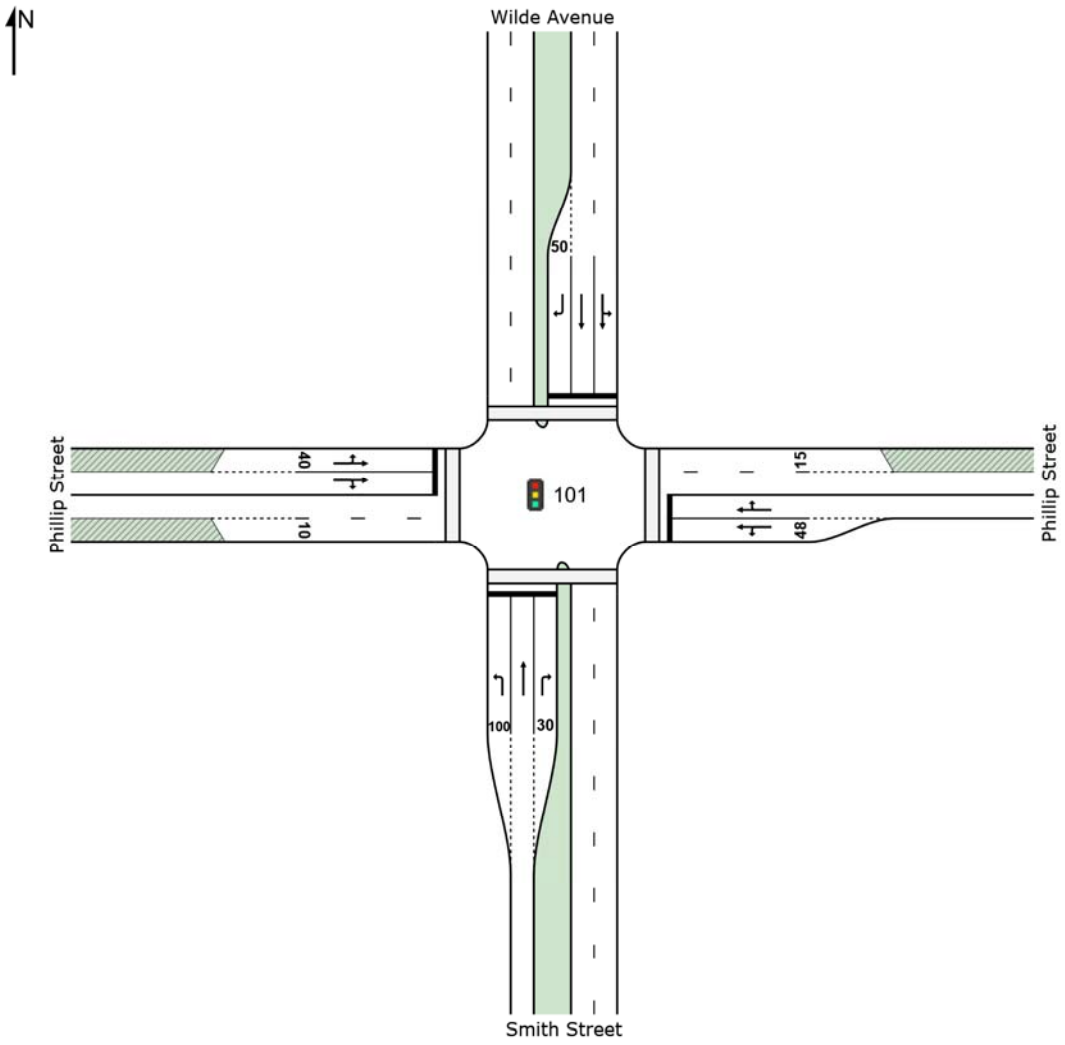
REF: Reference Phase
VAR: Variable Phase

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: 101 [Existing AM]

Phillip Street & Smith Street / Wilde Avenue Intersection
Signals - Fixed Time Isolated



Organisation: VARGA TRAFFIC PLANNING | Created: Tuesday, 5 June, 2018 11:23:33 AM
Project: Z:\DATA\Data\Jobs01\Jobs\18work\18190Y_90-96PhillipStParramatta\SIDRA\180605\PHI_SMIX.sip7

MOVEMENT SUMMARY

Site: 101 [Existing AM]

Phillip Street & Smith Street / Wilde Avenue Intersection
Signals - Fixed Time Isolated Cycle Time = 80 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Smith Street											
1	L2	43	2.3	0.078	25.1	LOS B	1.2	8.6	0.75	0.68	31.5
2	T1	244	39.3	0.539	25.7	LOS B	8.1	75.9	0.88	0.74	31.2
3	R2	12	0.0	0.040	19.6	LOS B	0.3	1.9	0.80	0.64	33.0
Approach		299	32.4	0.539	25.3	LOS B	8.1	75.9	0.86	0.73	31.3
East: Phillip Street											
4	L2	34	0.0	0.077	29.1	LOS C	1.0	7.3	0.81	0.69	30.4
5	T1	98	0.0	0.384	28.1	LOS B	5.8	40.7	0.88	0.74	30.2
6	R2	76	0.0	0.384	31.5	LOS C	5.8	40.7	0.88	0.74	30.4
Approach		208	0.0	0.384	29.5	LOS C	5.8	40.7	0.87	0.74	30.3
North: Wilde Avenue											
7	L2	286	0.0	0.636	19.6	LOS B	10.0	71.8	0.89	0.83	33.3
8	T1	472	11.2	0.636	23.8	LOS B	11.9	91.6	0.91	0.80	31.6
9	R2	215	0.0	0.574	21.8	LOS B	5.7	40.2	0.91	0.78	32.4
Approach		973	5.4	0.636	22.1	LOS B	11.9	91.6	0.90	0.81	32.2
West: Phillip Street											
10	L2	90	0.0	0.298	20.6	LOS B	1.8	12.5	0.92	0.74	32.7
11	T1	99	0.0	0.697	42.1	LOS C	4.9	34.4	1.00	0.87	27.3
12	R2	19	0.0	0.697	45.4	LOS D	4.9	34.4	1.00	0.87	27.4
Approach		208	0.0	0.697	33.1	LOS C	4.9	34.4	0.96	0.82	29.4
All Vehicles		1688	8.9	0.697	25.0	LOS B	11.9	91.6	0.90	0.78	31.5

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	76	34.3	LOS D	0.2	0.2	0.93	0.93
P2	East Full Crossing	97	27.3	LOS C	0.2	0.2	0.83	0.83
P3	North Full Crossing	88	34.4	LOS D	0.2	0.2	0.93	0.93
P4	West Full Crossing	152	27.4	LOS C	0.3	0.3	0.83	0.83
All Pedestrians		413	30.1	LOS D			0.87	0.87

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: 101 [Existing AM]

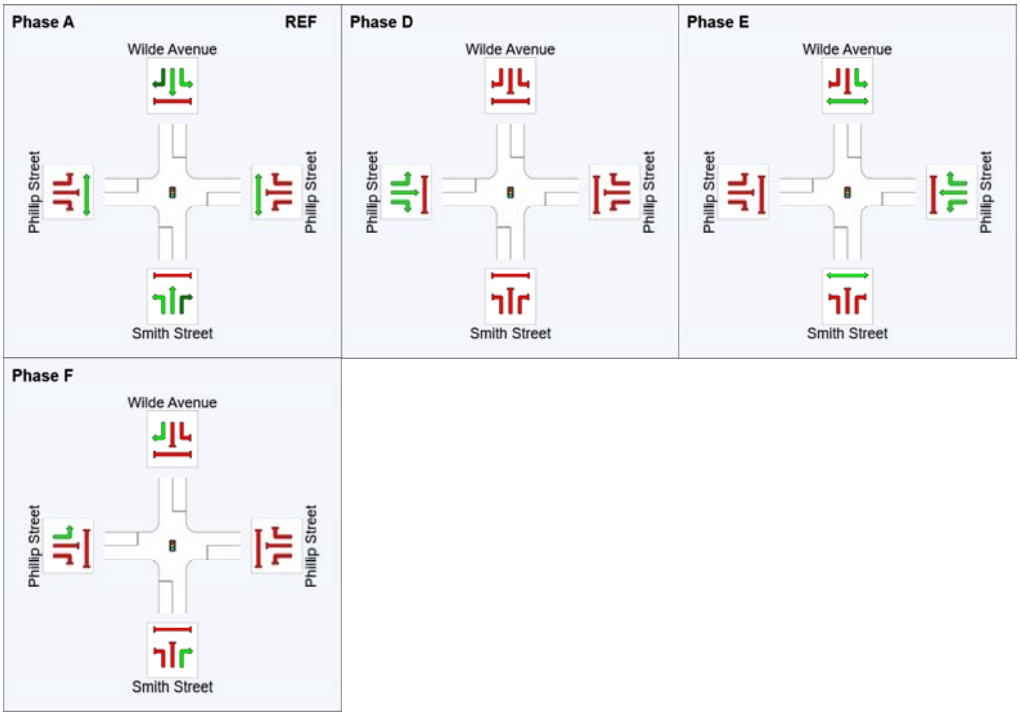
Phillip Street & Smith Street / Wilde Avenue Intersection
Signals - Fixed Time Isolated Cycle Time = 80 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Phase Times determined by the program
Phase Sequence: TCS Plan
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F, F1*, F2*
Output Phase Sequence: A, D, E, F
(* Variable Phase)

Phase Timing Results

Phase	A	D	E	F
Phase Change Time (sec)	0	30	43	68
Green Time (sec)	24	7	19	6
Phase Time (sec)	30	13	25	12
Phase Split	38%	16%	31%	15%

See the Phase Information section in the Detailed Output 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, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



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: 101 [Existing PM]

Phillip Street & Smith Street / Wilde Avenue Intersection
Signals - Fixed Time Isolated Cycle Time = 73 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Smith Street											
1	L2	36	0.0	0.074	25.5	LOS B	1.0	6.8	0.78	0.68	31.4
2	T1	322	17.1	0.730	29.0	LOS C	11.2	90.0	0.96	0.89	30.4
3	R2	19	0.0	0.050	18.5	LOS B	0.4	2.9	0.77	0.65	33.4
Approach		377	14.6	0.730	28.1	LOS B	11.2	90.0	0.94	0.86	30.6
East: Phillip Street											
4	L2	39	0.0	0.121	27.6	LOS B	1.5	10.6	0.82	0.68	31.1
5	T1	99	0.0	0.604	27.2	LOS B	8.7	60.9	0.93	0.79	30.3
6	R2	180	0.0	0.604	31.1	LOS C	8.7	60.9	0.95	0.81	30.3
Approach		318	0.0	0.604	29.5	LOS C	8.7	60.9	0.92	0.79	30.4
North: Wilde Avenue											
7	L2	109	0.0	0.430	19.9	LOS B	5.0	36.9	0.86	0.76	33.4
8	T1	316	13.6	0.430	21.8	LOS B	6.1	47.8	0.87	0.74	32.1
9	R2	97	0.0	0.310	21.1	LOS B	2.3	15.9	0.91	0.74	32.6
Approach		522	8.2	0.430	21.3	LOS B	6.1	47.8	0.88	0.75	32.5
West: Phillip Street											
10	L2	164	0.0	0.496	19.3	LOS B	2.9	20.6	0.95	0.78	33.1
11	T1	98	5.1	0.749	39.2	LOS C	5.2	37.9	1.00	0.93	27.8
12	R2	37	0.0	0.749	42.6	LOS D	5.2	37.9	1.00	0.93	28.0
Approach		299	1.7	0.749	28.7	LOS C	5.2	37.9	0.97	0.85	30.5
All Vehicles		1516	6.8	0.749	26.2	LOS B	11.2	90.0	0.92	0.80	31.2

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	37	30.8	LOS D	0.1	0.1	0.92	0.92
P2	East Full Crossing	86	28.2	LOS C	0.2	0.2	0.88	0.88
P3	North Full Crossing	101	30.9	LOS D	0.2	0.2	0.92	0.92
P4	West Full Crossing	154	28.2	LOS C	0.3	0.3	0.88	0.88
All Pedestrians		378	29.2	LOS C			0.90	0.90

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: 101 [Existing PM]

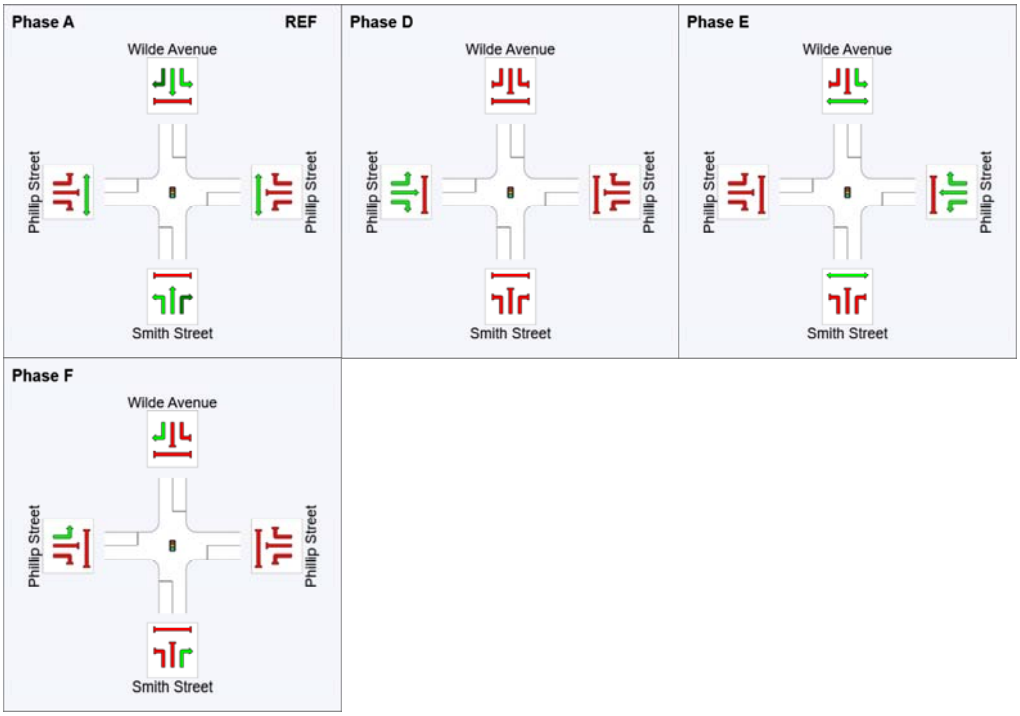
Phillip Street & Smith Street / Wilde Avenue Intersection
Signals - Fixed Time Isolated Cycle Time = 73 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Phase Times determined by the program
Phase Sequence: TCS Plan
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F, F1*, F2*
Output Phase Sequence: A, D, E, F
(* Variable Phase)

Phase Timing Results

Phase	A	D	E	F
Phase Change Time (sec)	0	25	38	61
Green Time (sec)	19	7	17	6
Phase Time (sec)	25	13	23	12
Phase Split	34%	18%	32%	16%

See the Phase Information section in the Detailed Output 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, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



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: 101 [Proposed AM]

Phillip Street & Smith Street / Wilde Avenue Intersection
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Smith Street											
1	L2	43	2.3	0.092	25.0	LOS B	1.1	8.1	0.79	0.69	31.5
2	T1	244	39.3	0.625	25.9	LOS B	7.7	72.1	0.93	0.80	31.2
3	R2	12	0.0	0.038	18.3	LOS B	0.2	1.7	0.81	0.64	33.4
Approach		299	32.4	0.625	25.5	LOS B	7.7	72.1	0.91	0.78	31.3
East: Phillip Street											
4	L2	34	0.0	0.087	26.7	LOS B	1.0	7.1	0.82	0.68	31.1
5	T1	98	0.0	0.436	25.6	LOS B	5.7	40.1	0.90	0.76	30.8
6	R2	95	0.0	0.436	29.0	LOS C	5.7	40.1	0.90	0.76	31.0
Approach		227	0.0	0.436	27.2	LOS B	5.7	40.1	0.89	0.75	30.9
North: Wilde Avenue											
7	L2	296	0.0	0.454	12.3	LOS A	7.6	54.9	0.69	0.70	35.7
8	T1	472	11.2	0.454	13.8	LOS A	8.7	66.4	0.74	0.66	34.6
9	R2	215	0.0	0.613	21.1	LOS B	5.3	36.8	0.94	0.80	32.6
Approach		983	5.4	0.613	14.9	LOS B	8.7	66.4	0.77	0.70	34.4
West: Phillip Street											
10	L2	90	0.0	0.283	18.2	LOS B	1.5	10.5	0.91	0.74	33.5
11	T1	99	0.0	0.712	37.7	LOS C	4.4	30.6	1.00	0.89	28.2
12	R2	19	0.0	0.712	41.0	LOS C	4.4	30.6	1.00	0.89	28.4
Approach		208	0.0	0.712	29.5	LOS C	4.4	30.6	0.96	0.82	30.3
All Vehicles		1717	8.7	0.712	20.1	LOS B	8.7	72.1	0.83	0.74	32.8

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	76	29.4	LOS C	0.1	0.1	0.92	0.92
P2	East Full Crossing	97	17.9	LOS B	0.1	0.1	0.72	0.72
P3	North Full Crossing	88	29.4	LOS C	0.2	0.2	0.92	0.92
P4	West Full Crossing	152	27.6	LOS C	0.3	0.3	0.89	0.89
All Pedestrians		413	26.0	LOS C			0.86	0.86

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: 101 [Proposed AM]

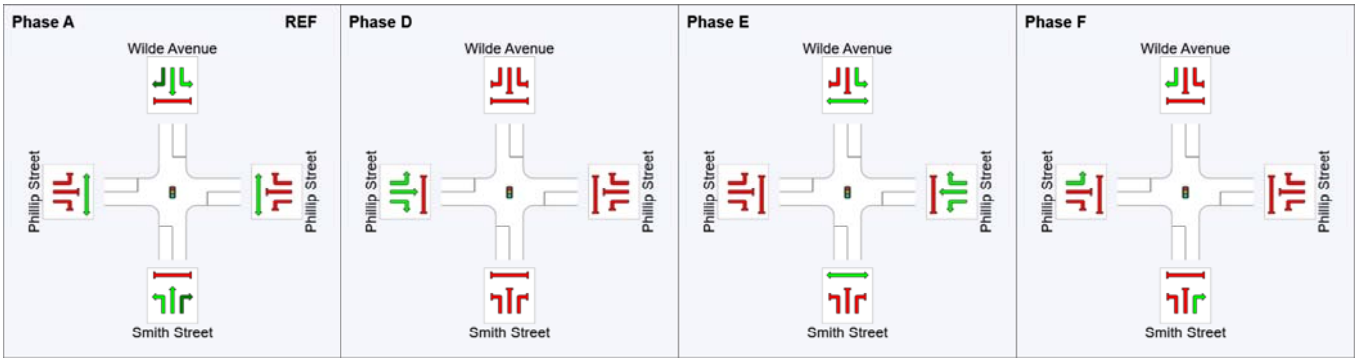
Phillip Street & Smith Street / Wilde Avenue Intersection
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Phase Times determined by the program
Phase Sequence: TCS Plan
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F, F1*, F2*
Output Phase Sequence: A, D, E, F
(* Variable Phase)

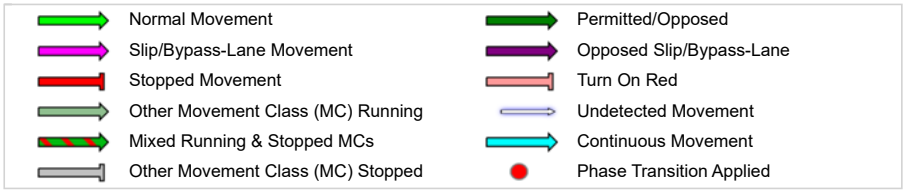
Phase Timing Results

Phase	A	D	E	F
Phase Change Time (sec)	0	24	36	58
Green Time (sec)	18	6	16	6
Phase Time (sec)	24	12	22	12
Phase Split	34%	17%	31%	17%

See the Phase Information section in the Detailed Output 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, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 101 [Proposed PM]

Phillip Street & Smith Street / Wilde Avenue Intersection
Signals - Fixed Time Isolated Cycle Time = 73 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Smith Street											
1	L2	36	0.0	0.074	25.5	LOS B	1.0	6.8	0.78	0.68	31.4
2	T1	322	17.1	0.729	28.9	LOS C	11.2	90.0	0.96	0.89	30.4
3	R2	19	0.0	0.051	18.7	LOS B	0.4	2.9	0.79	0.65	33.3
Approach		377	14.6	0.729	28.1	LOS B	11.2	90.0	0.94	0.86	30.6
East: Phillip Street											
4	L2	39	0.0	0.125	27.6	LOS B	1.6	10.9	0.82	0.68	31.1
5	T1	99	0.0	0.623	27.3	LOS B	9.0	63.2	0.93	0.79	30.2
6	R2	190	0.0	0.623	31.3	LOS C	9.0	63.2	0.95	0.81	30.2
Approach		328	0.0	0.623	29.6	LOS C	9.0	63.2	0.93	0.79	30.3
North: Wilde Avenue											
7	L2	127	0.0	0.444	18.6	LOS B	4.9	36.4	0.86	0.77	33.8
8	T1	316	13.6	0.444	21.6	LOS B	6.3	49.4	0.88	0.74	32.2
9	R2	97	0.0	0.310	21.1	LOS B	2.3	15.9	0.91	0.74	32.6
Approach		540	8.0	0.444	20.8	LOS B	6.3	49.4	0.88	0.75	32.6
West: Phillip Street											
10	L2	164	0.0	0.496	19.3	LOS B	2.9	20.6	0.95	0.78	33.1
11	T1	98	5.1	0.749	39.2	LOS C	5.2	37.9	1.00	0.93	27.8
12	R2	37	0.0	0.749	42.6	LOS D	5.2	37.9	1.00	0.93	28.0
Approach		299	1.7	0.749	28.7	LOS C	5.2	37.9	0.97	0.85	30.5
All Vehicles		1544	6.7	0.749	26.0	LOS B	11.2	90.0	0.92	0.80	31.2

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	37	30.8	LOS D	0.1	0.1	0.92	0.92
P2	East Full Crossing	86	28.2	LOS C	0.2	0.2	0.88	0.88
P3	North Full Crossing	101	30.9	LOS D	0.2	0.2	0.92	0.92
P4	West Full Crossing	154	28.2	LOS C	0.3	0.3	0.88	0.88
All Pedestrians		378	29.2	LOS C			0.90	0.90

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: 101 [Proposed PM]

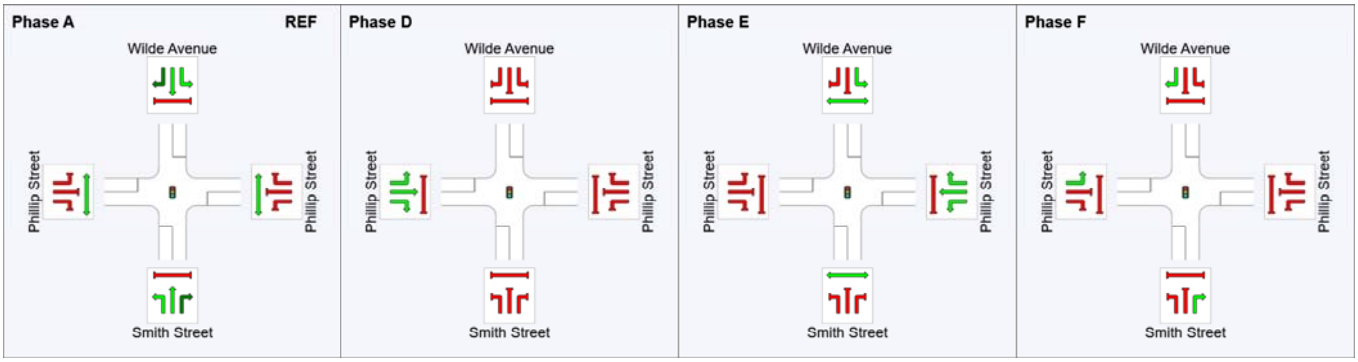
Phillip Street & Smith Street / Wilde Avenue Intersection
Signals - Fixed Time Isolated Cycle Time = 73 seconds (Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Phase Times determined by the program
Phase Sequence: TCS Plan
Reference Phase: Phase A
Input Phase Sequence: A, B*, C*, D, E, F, F1*, F2*
Output Phase Sequence: A, D, E, F
(* Variable Phase)

Phase Timing Results

Phase	A	D	E	F
Phase Change Time (sec)	0	25	38	61
Green Time (sec)	19	7	17	6
Phase Time (sec)	25	13	23	12
Phase Split	34%	18%	32%	16%

See the Phase Information section in the Detailed Output 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, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



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