Planning Proposal for a
Proposed Mixed Use Development

286-300 Church Street, Parramatta

TRAFFIC AND PARKING ASSESSMENT REPORT

25 August 2017

Ref 17283

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

Document Verification

Location:	286-298 Church Street, Parramatta	**Job Number**		17283	
Revision	**Details**	**Prepared**		**Approved**	
		By	**Date**	**By**	**Date**
Final	Final for Submission	DL	21/08/17	CP	22/08/17

1. INTRODUCTION

This report has been prepared to accompany a planning proposal to Council for a mixed use development to be located at 286-300 Church Street, Parramatta (Figures 1 and 2).

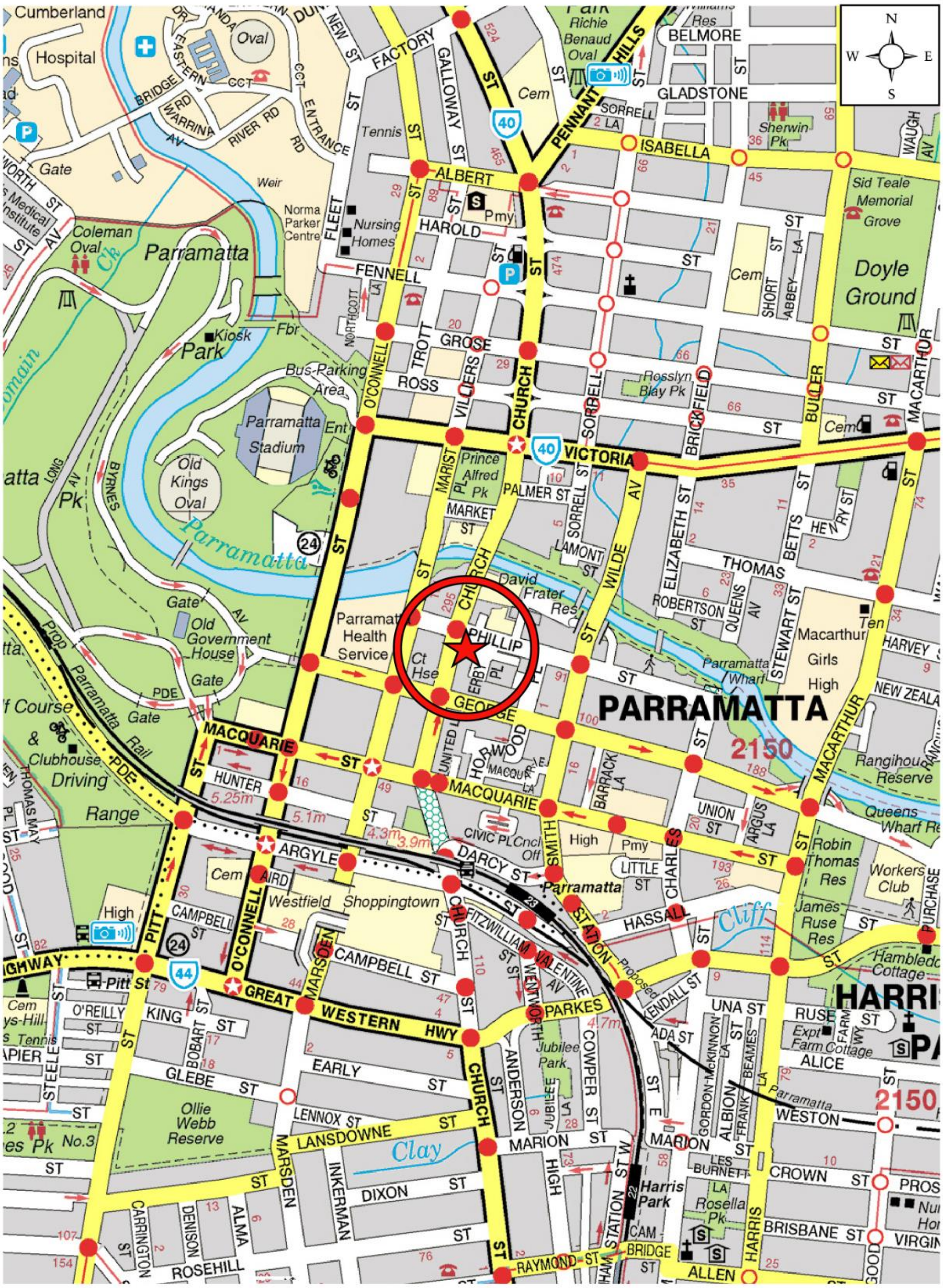
The subject site is currently zoned *B4 – Mixed Use* and is situated approximately 600m walking distance north of Parramatta Railway Station & Bus Interchange.

The planning proposal seeks to amend the current planning controls on the subject site by increasing the permissible Floor Space Ratio (FSR) as well as increasing the permissible height controls.

Off-street parking will ultimately be provided in a new multi-level basement car parking area beneath the building, in accordance with the Council's 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 sites and provides details of the planning proposal
- reviews the road network in the vicinity of the sites, and the traffic conditions on that road network
- estimates the traffic generation potential of the planning proposal, and assigns that traffic generation to the road network serving the sites
- assesses the traffic implications of the planning proposal in terms of road network capacity
- reviews the geometric design features of the conceptual car parking facilities for compliance with the relevant codes and standards
- assesses the adequacy and suitability of the quantum of off-street car parking provided on the site.



LOCATION
FIGURE 1

VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants


N
W
E
S
PARRAMATTA
RIVER
MARSDEN ST
CHURCH ST
SORRELL ST
PARRAMATTA RIVER
PHILLIP ST
GEORGE ST
FREEMASONS ARMS
LN
ERBY PL
PL
ANDREW NASH LN
MARSDEN ST
CHURCH ST
HORWOOD PL
SMITH LN
UNITED LN
MACQUARIE ST
Road Closure / Unformed Road
VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants
SITE
FIGURE 2

2. PLANNING PROPOSAL

Site

The subject site is located on the eastern side Church Street, approximately 20m south of Phillip Street, and extends through to Erby Place. The site has street frontages approximately 43m in length to Church Street, approximately 34m in length to Erby Place and occupies an area of approximately 2,099m^2.

The subject site is currently occupied by three older style two-storey buildings used for commercial/retail purposes. Limited at-grade parking is provided at the rear of the respective existing buildings, with vehicular access provided via Erby Place.

Existing Planning Controls

The primary instrument that governs the mass and scale of the development on the site is contained within the *Parramatta Local Environmental Plan (PLEP) 2011*. As noted in the foregoing, the subject site is currently zoned *B4 – Mixed Use.* The western portion of the site currently permits an FSR of 3:1 with a height limit of 12m whilst the eastern portion of the site currently permits an FSR of 10:1 with a height limit of 120m. In addition, Clause 7.10 of the *PLEP 2011* permits additional height and FSR (15% for any development or 25% for entirely non-residential floor space in land zoned *B4 – Mixed Use*) for developments that exhibit design excellence.

It is therefore envisaged that a mixed use residential/commercial building comprising approximately 3,162m^2 of retail/commercial floor space, with an approximate yield of 175 residential apartments is permissible under the existing planning controls for the site.

Planning Proposal

As mentioned in the foregoing, the planning proposal envisages increasing the allowable FSR as well as increasing the height limit currently permissible under *Parramatta LEP 2011*.

Specifically, the planning proposal seeks an FSR of 16:1, comprising 2:1 for the commercial/retail levels and 14:1 for the residential levels, with a height limit of 202m.

The proposed changes to the planning controls have the potential to achieve approximately 318 apartments as follows:

1 bedroom apartments:	106
2 bedroom apartments:	193
3 bedroom apartments:	19
TOTAL APARTMENTS:	**318**

A number of commercial/retail tenancies are proposed on the lower five levels of the new building, with a cumulative floor area of approximately 4,144m^2 as follows:

Retail:	3,342m^2 GFA
Commercial:	802m^2 GFA
TOTAL:	**4,144m^2 GFA**

The proposed design also makes provision for a new pedestrian through link between Church Street and Erby Lane, in accordance with Council's *Laneway Strategy.*

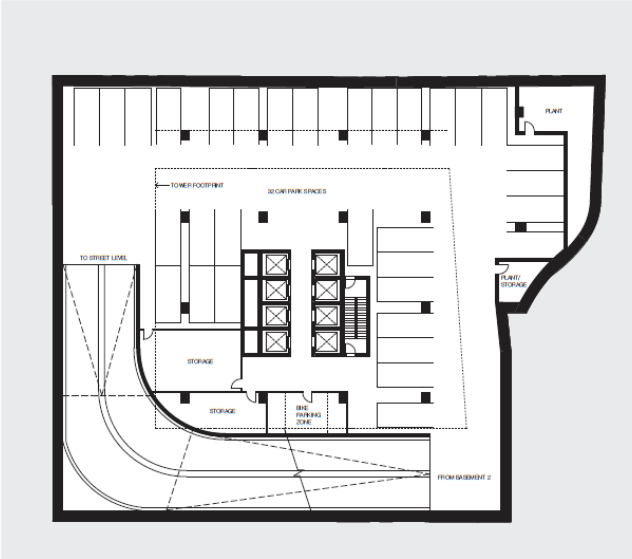
It is envisaged that off-street parking will be provided in a new multi-level basement parking area which will ultimately be designed to comply with Council's requirements, as well as the relevant Australian Standards. Vehicular access to the site is proposed to be provided via a new two-way driveway located at the southern end of the Erby Lane site frontage.

Loading/servicing for the proposed development is expected to be undertaken by a variety of light commercial vehicles such as white vans, utilities and the like, up to and including 12.5m long large rigid trucks. A dedicated loading bay is to be located on the ground floor level at the rear of the site, adjacent to the car parking entry ramp. Vehicular access to the loading bay is to be provided via Erby Place, such that the truck reverses off the lane into the loading dock, thereby allowing the truck to exit in a forward direction.

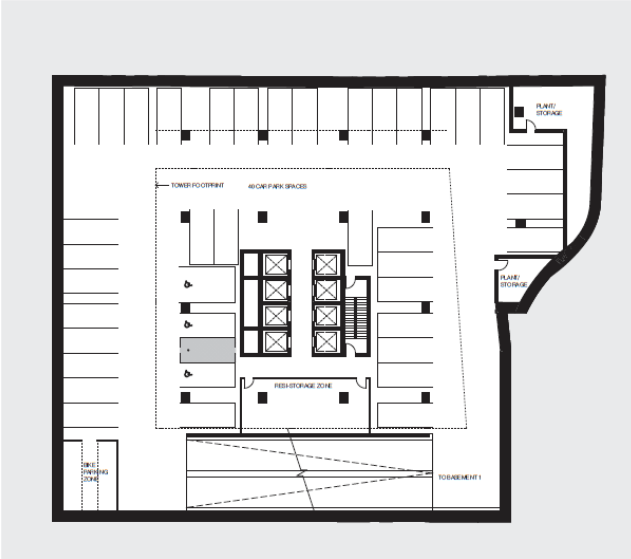
Concept plans of the planning proposal have been prepared by *PTW Architects* and are reproduced in the following pages.

11 SUBJECT SITE - PRELIMINARY STUDY

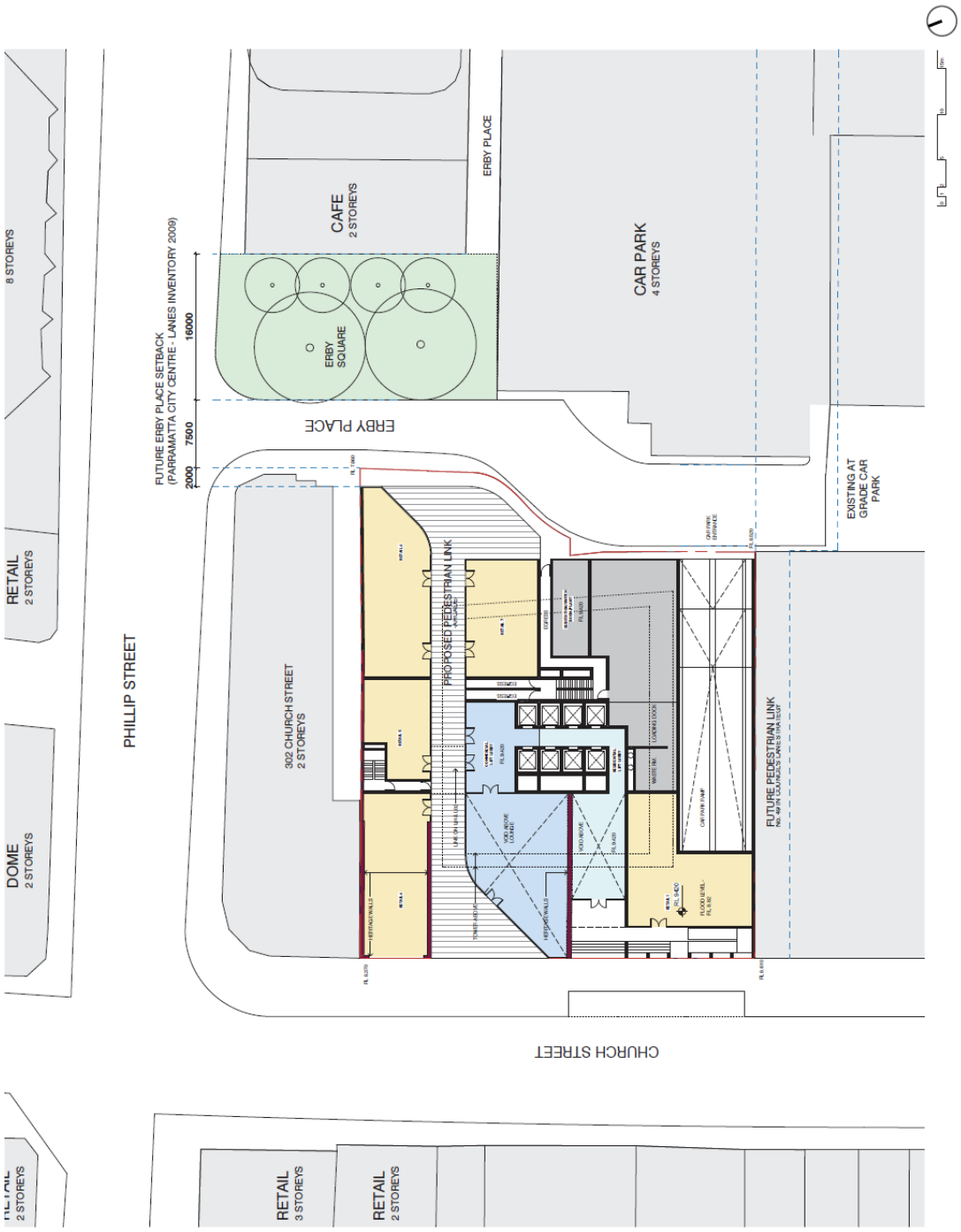
BASEMENT FLOOR PLANS



BASEMENT 01



TYPICAL BASEMENT



11 SUBJECT SITE - PRELIMINARY STUDY

GROUND FLOOR PLAN

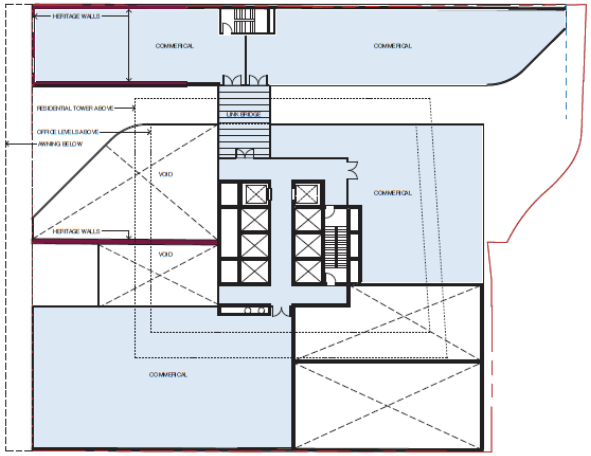
26

PTW

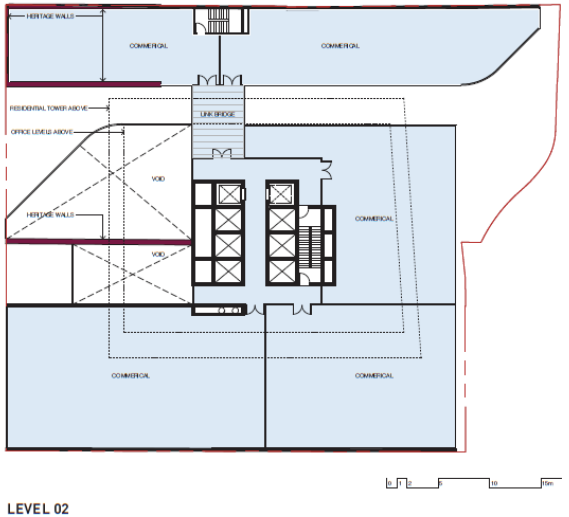
286-300 Church Street, Parramatta Planning Proposal

11 SUBJECT SITE - PRELIMINARY STUDY

RETAIL UPPER FLOOR PLANS



LEVEL 01

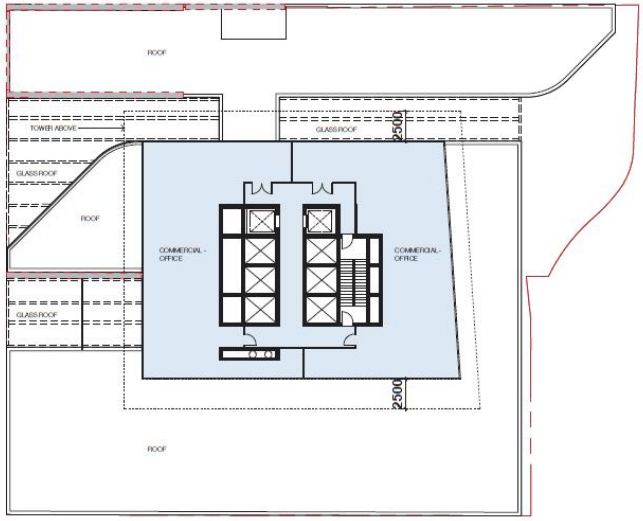


LEVEL 02

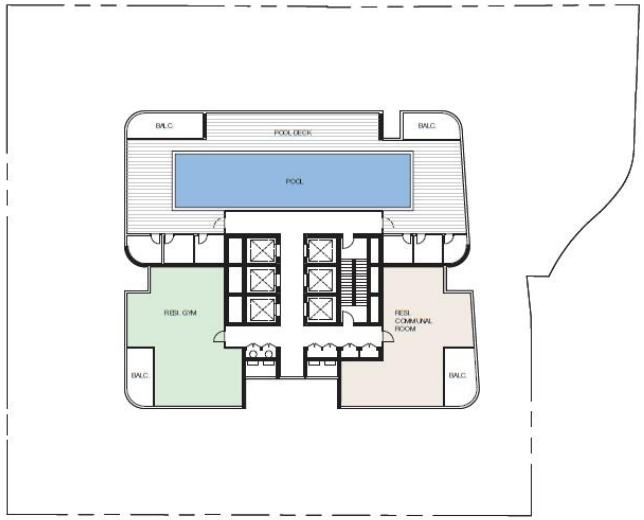
VARGA TRAFFIC PLANNING PTY LTD

11 SUBJECT SITE - PRELIMINARY STUDY

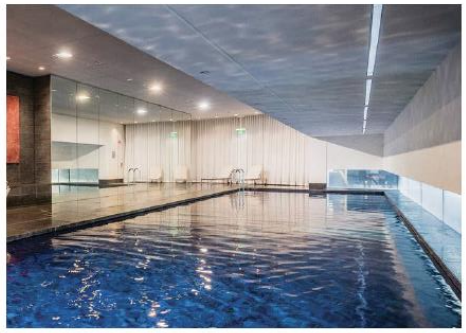
COMMERCIAL AND RESIDENTIAL AMENITY FLOOR PLANS



LEVEL 03 & 04 COMMERCIAL FLOOR PLAN



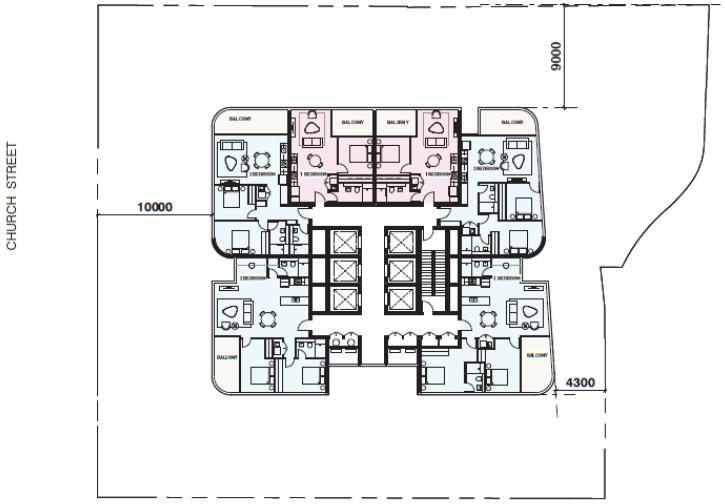
LEVEL 05 RESIDENTIAL AMENITY FLOOR PLAN



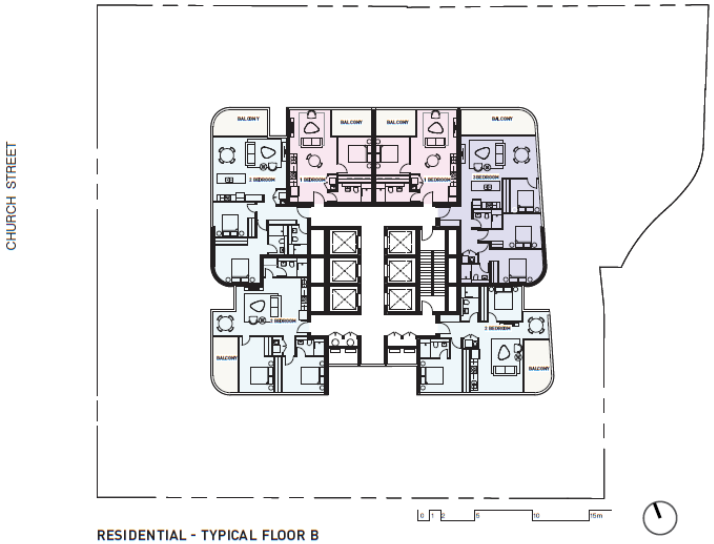
PTW

11 SUBJECT SITE - PRELIMINARY STUDY

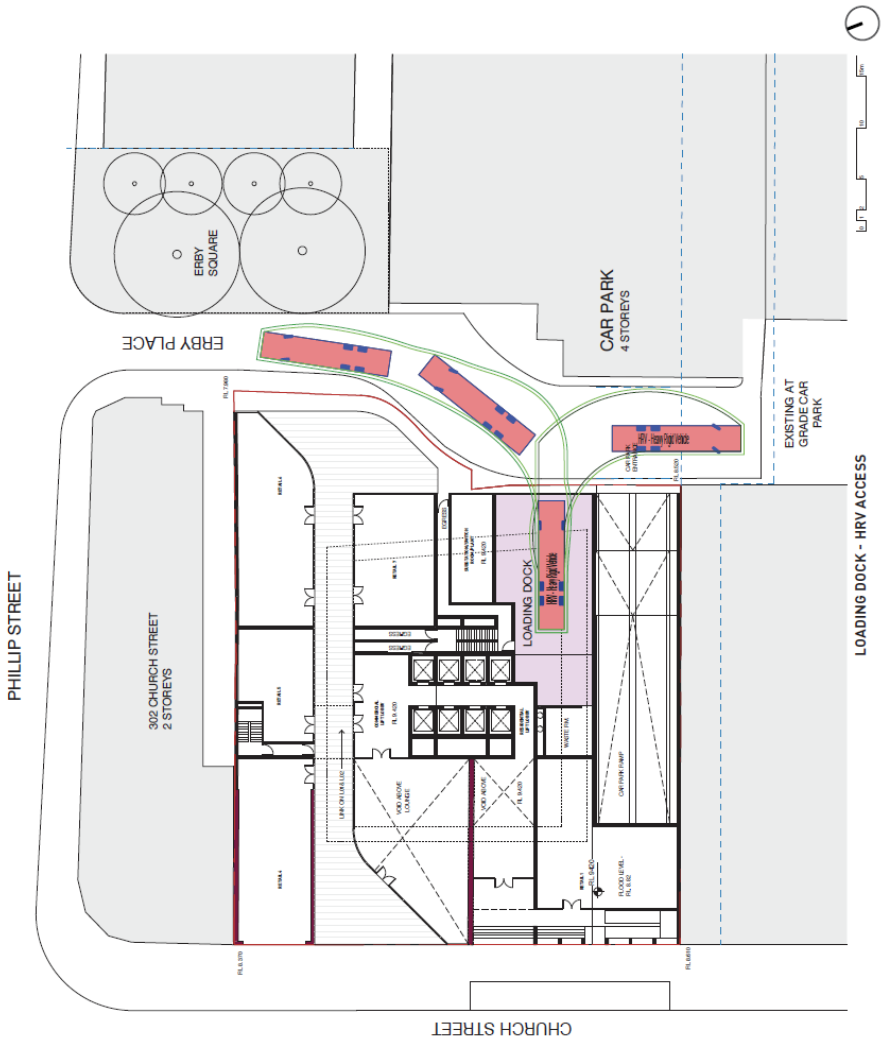
TYPICAL RESIDENTIAL FLOOR PLANS



RESIDENTIAL - TYPICAL FLOOR A



RESIDENTIAL - TYPICAL FLOOR B



11 SUBJECT SITE - PRELIMINARY STUDY

LOADING DOCK - HRV ACCESS

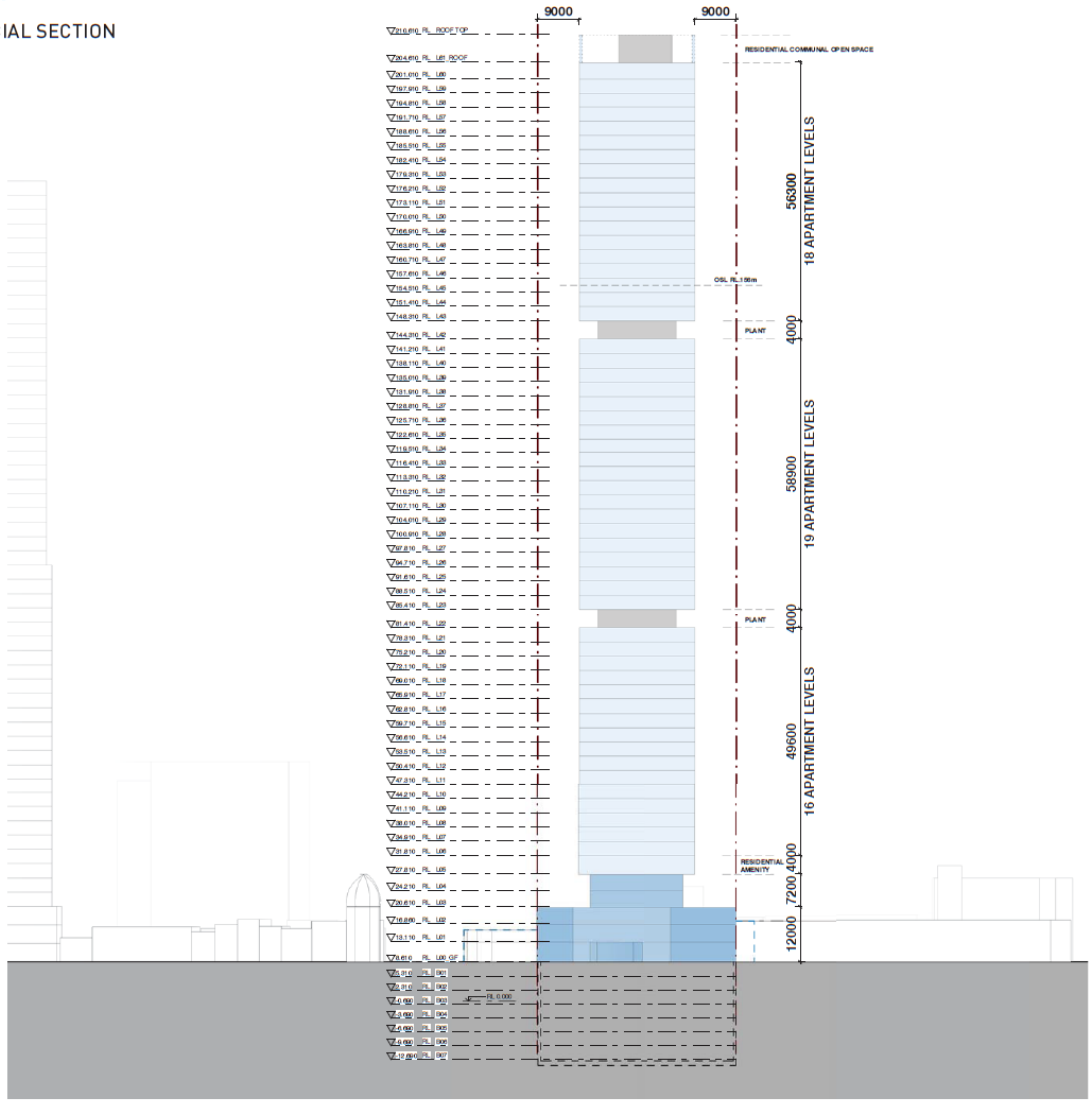
PTW

286-300 Church Street, Parramatta Planning Proposal

31

11 SUBJECT SITE - PRELIMINARY STUDY

RESIDENTIAL AND COMMERCIAL SECTION



MASS AREA SCHEDULE (SUBJECT SITE)				
SITE AREA	FSR		TARGET GFA	
20 000m²	14:1 RESIDENTIAL 2:1 COMMERCIAL/RETAIL		28 000m² RESIDENTIAL 4 000m² COMMERCIAL/RETAIL	
w	GBA	GFA	USAGE	FSR
L60	723m²	542m²	3. Residential	0.26
L59	723m²	542m²	3. Residential	0.26
L58	723m²	542m²	3. Residential	0.26
L57	723m²	542m²	3. Residential	0.26
L56	723m²	542m²	3. Residential	0.26
L55	723m²	542m²	3. Residential	0.26
L54	723m²	542m²	3. Residential	0.26
L53	723m²	542m²	3. Residential	0.26
L52	723m²	542m²	3. Residential	0.26
L51	723m²	542m²	3. Residential	0.26
L50	723m²	542m²	3. Residential	0.26
L49	723m²	542m²	3. Residential	0.26
L48	723m²	542m²	3. Residential	0.26
L47	723m²	542m²	3. Residential	0.26
L46	723m²	542m²	3. Residential	0.26
L45	723m²	542m²	3. Residential	0.26
L44	723m²	542m²	3. Residential	0.26
L43	723m²	542m²	3. Residential	0.26
L41	723m²	542m²	3. Residential	0.26
L40	723m²	542m²	3. Residential	0.26
L39	723m²	542m²	3. Residential	0.26
L38	723m²	542m²	3. Residential	0.26
L37	723m²	542m²	3. Residential	0.26
L36	723m²	542m²	3. Residential	0.26
L35	723m²	542m²	3. Residential	0.26
L34	723m²	542m²	3. Residential	0.26
L33	723m²	542m²	3. Residential	0.26
L32	723m²	542m²	3. Residential	0.26
L31	723m²	542m²	3. Residential	0.26
L30	723m²	542m²	3. Residential	0.26
L29	723m²	542m²	3. Residential	0.26
L28	723m²	542m²	3. Residential	0.26
L27	723m²	542m²	3. Residential	0.26
L26	723m²	542m²	3. Residential	0.26
L25	723m²	542m²	3. Residential	0.26
L24	723m²	542m²	3. Residential	0.26
L23	723m²	542m²	3. Residential	0.26
L21	723m²	542m²	3. Residential	0.26
L20	723m²	542m²	3. Residential	0.26
L19	723m²	542m²	3. Residential	0.26
L18	723m²	542m²	3. Residential	0.26
L17	723m²	542m²	3. Residential	0.26
L16	723m²	542m²	3. Residential	0.26
L15	723m²	542m²	3. Residential	0.26
L14	723m²	542m²	3. Residential	0.26
L13	723m²	542m²	3. Residential	0.26
L12	723m²	542m²	3. Residential	0.26
L11	723m²	542m²	3. Residential	0.26
L10	723m²	542m²	3. Residential	0.26
L09	723m²	542m²	3. Residential	0.26
L08	723m²	542m²	3. Residential	0.26
L07	723m²	542m²	3. Residential	0.26
L06	723m²	542m²	3. Residential	0.26
L05	723m²	542m²	3. Residential	0.26
1. Residential 54	39121 m²	29 266 m²		1.394
L04	935m²	401 m²	1. Retail/Commercial	0.19
L03	935m²	401 m²	1. Retail/Commercial	0.19
L02	1536 m²	1146 m²	1. Retail/Commercial	0.55
L01	1536 m²	1146 m²	1. Retail/Commercial	0.55
L00 GF	1406 m²	1054 m²	1. Retail/Commercial	0.50
1. Retail/Commercial 5	5527 m²	4148 m²		1.97
Total 59	44547 m²	33 410 m²		1.592

MASS AREA SCHEDULE (PLANT ROOM & SERVICES)		
LEVEL	GBA	USAGE
L42	369 m²	4. Plant
L22	369 m²	4. Plant
Total 2	737 m²	

RESIDENTIAL

COMMERCIAL/RETAIL

ADJOINING BUILDINGS

VARGA TRAFFIC PLANNING PTY LTD

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.

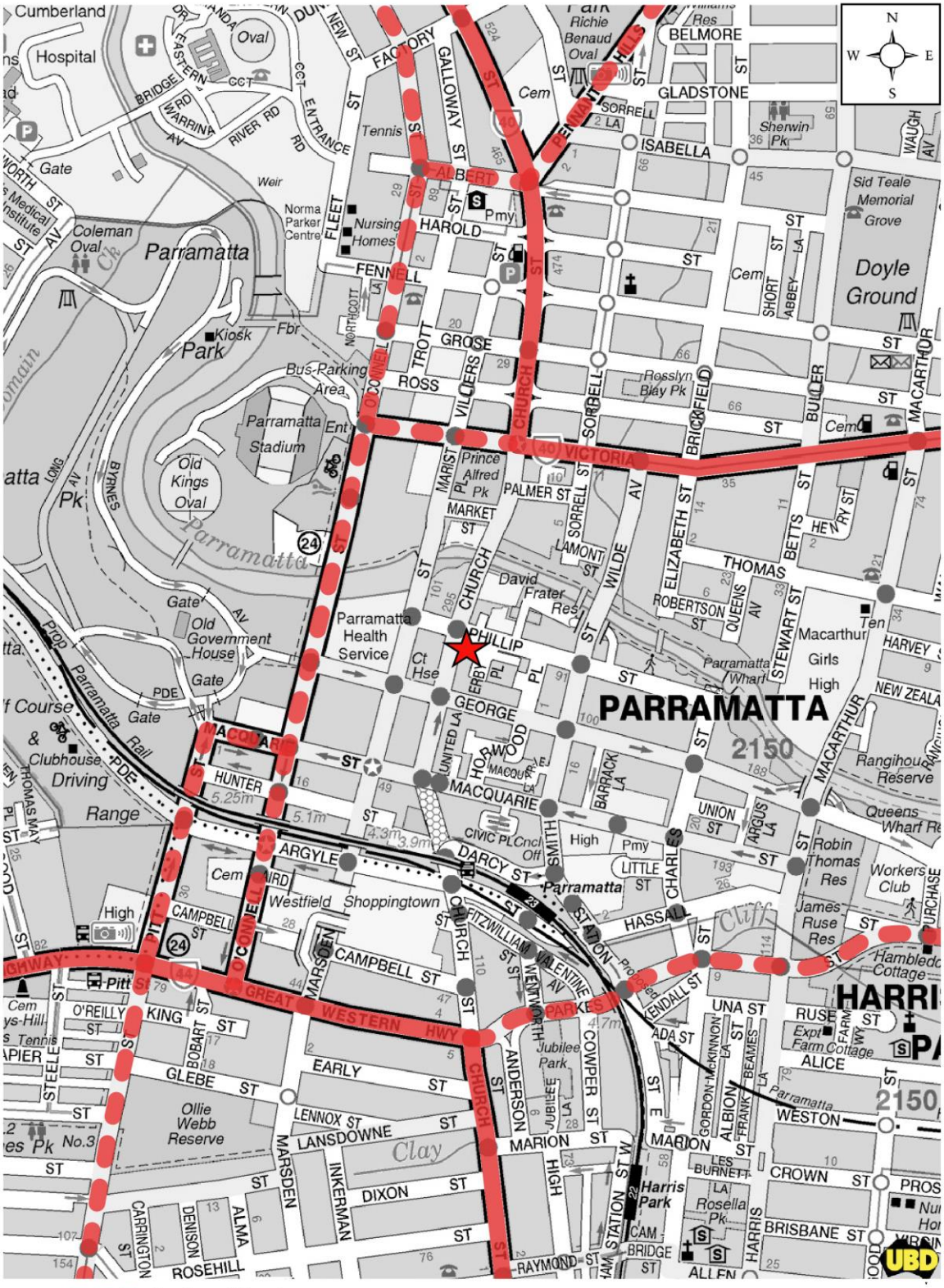
The Great Western Highway is classified by the RMS as a *State Road* and provides the key east-west road link in the area, linking Parramatta to the Blue Mountains. It typically carries two traffic lanes in each direction in the vicinity of the site with opposing traffic lanes separated by a central median island and additional lanes provided at key locations.

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

Church Street, north of Victoria Road and south of the Great Western Higway, is classified by the RMS as a *State Road* and provides the key north-south road link in the area. It typically carries two traffic lanes in each direction in the vicinity of the site with opposing traffic lanes separated by a central median island and additional lanes provided at key locations.

O'Connell Street is classified by the RMS as a *Regional Road* and provides a secondary north-south road link in the area, linking the Great Western Highway and Church Street. It typically carries two traffic lanes in each direction in the vicinity of the site, with additional lanes provided at key locations.

Church Street (between Victoria Road and the Great Western Highway) is a local, unclassified road which is primarily used to provide vehicular and pedestrian access to frontage properties. Kerbside parking is permitted in selected locations, subject to sign posted restrictions.

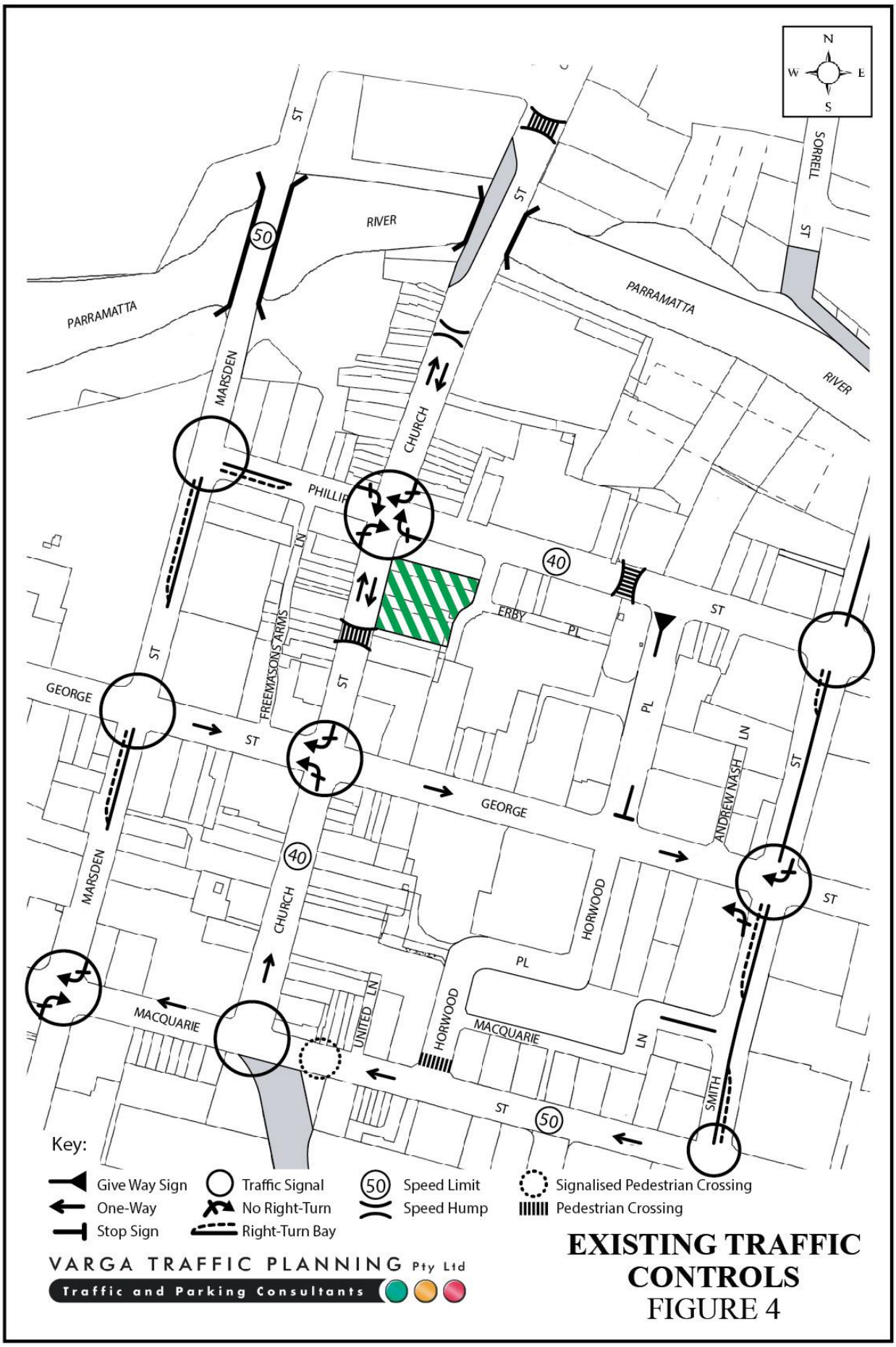

Regional Road
State Road
VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants
ROAD HIERARCHY
FIGURE 3

Erby Place is a local, unclassified "no through" service lane which is primarily used to provide rear vehicular and pedestrian access to properties fronting Church Street, Phillip Street and also access to the Erby Place Public Car Park.

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 40 km/h SPEED LIMIT which applies to Church Street, Phillip Street and all other local roads in the vicinity of the Parramatta local centre, due to high pedestrian activity
- a 50 km/h SPEED LIMIT which applies to Marsden Street and Macquarie Street
- TRAFFIC SIGNALS in Church Street where it intersects with Macquarie Street, George Street and also Phillip Street
- TRAFFIC SIGNALS in Phillip Street where it intersects with Marsden Street and also Smith Street
- a ONE-WAY eastbound restriction in George Street
- a ONE-WAY westbound restriction in Macquarie Street
- a ONE-WAY northbound restriction in Church Street, in between Macquarie Street and George Street
- RIGHT TURN HOLDING LANES in Marsden Street turning into Phillip Street and also George Street
- a RIGHT TURN HOLDING LANE in Phillip Street turning onto Marsden Street
- NO RIGHT TURN restrictions for all movements on Phillip Street turning onto Church Street


N
W
E
S
PARRAMATTA
RIVER
MARSDEN ST
CHURCH ST
SORRELL ST
PARRAMATTA RIVER
PHILLIP
FREEMASONS ARMS LN
ERBY PL
GEORGE ST
ANDREW NASH LN
HORWOOD PL
UNITED LN
MACQUARIE ST
SMITH LN
50
40
Key:
Give Way Sign
One-Way
Stop Sign
Traffic Signal
No Right-Turn
Right-Turn Bay
Speed Limit
Speed Hump
Signalised Pedestrian Crossing
Pedestrian Crossing
VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants
EXISTING TRAFFIC CONTROLS
FIGURE 4

- a RAISED PEDESTRIAN CROSSING in Church Street, just south of the site

- PEDESTRIAN SCRAMBLE CROSSING located at the Church Street and Phillip Street intersection.

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 intersection of Church Street & Phillip Street as well as Phillip Street & Erby Place, in the vicinity of the site on Tuesday 23rd May 2017. The results of the traffic surveys are reproduced in full in Appendix A reveal that:

- two-way traffic flows in Church Street in the vicinity of the Phillip Street intersection, are typically in the order of 300-400 vehicles per hour (vph) during peak periods

- two-way traffic flows in Phillip Street, west of the Church Street intersection, are typically in the order of 250-350 vph during peak periods

- two-way traffic flows in Phillip Street, east of the Church Street intersection, are typically in the order of 400-450 vph during peak periods

- two-way traffic flows in Erby Place are typically in the order of 160-210 vph during peak periods, with the majority of movements *entering* during the morning peak period and *exiting* during the afternoon peak period, given its access to the *Secure Parking* public car park.

Existing Sustainable and Public Transport Options

The subject site is located within the boundaries of the Parramatta City Centre where there is an extensive variety of sustainable transport options such as train, bus, ferry, cycling and walking, as illustrated on Figure 5.

SUMMARY OF ALTERNATE TRANSPORT OPTIONS

FIGURE 5

The subject site is conveniently located within approximately 600m walking distance north of the Parramatta Railway Station which is a major railway interchange servicing three train lines – The Blue Mountains Line, the Western Line and the Cumberland Line.

The Western Line operates between Emu Plains/Richmond and North Sydney/North Shore, with generally one service approximately every 15 min during off-peak periods, increasing to one service approximately every 5-10 min during peak periods. The Blue Mountains Line operates between Lithgow and Central, with generally one service per hour during off-peak periods, increasing to one service every 20-30 min during peak periods. The Cumberland Line operates Monday to Friday only and offers two morning services and three afternoon services between Campbelltown and Blacktown.

A free CBD shuttle bus that operates on a one-way loop starting from Parramatta Interchange as shown on the attached Sustainable transport Guide. The free CBD shuttle bus runs every 10 minutes seven days a week Monday to Friday 7:00am-6:30pm and Saturday/Sunday 8:00am-4:00pm.

A major bus/rail interchange is located adjacent to Parramatta Railway Station with access to a large number of bus services. In particular, the route M52, M54, M60, M91 and M92 buses are available at the bus interchange. These buses form part of Sydney's *Metrobus* network that provides high-frequency, high-capacity links between key employment and growth centres across Sydney. These services typically operate at 10 minute intervals during commuter peak periods, 15 minute intervals during the day and 20 minute intervals at other times. The majority of the bus services also traverses along Smith Street located within approximately 300m walking distance south-east of the site.

In addition to the extensive range of train and bus services available in the Parramatta area, the Parramatta Rivercat Ferry service provides *express-only* services every hour between Circular Quay and Parramatta, 7 days a week. The Parramatta wharf is located at the northern end of Charles Street, within approximately 500m walking distance east of the subject site.

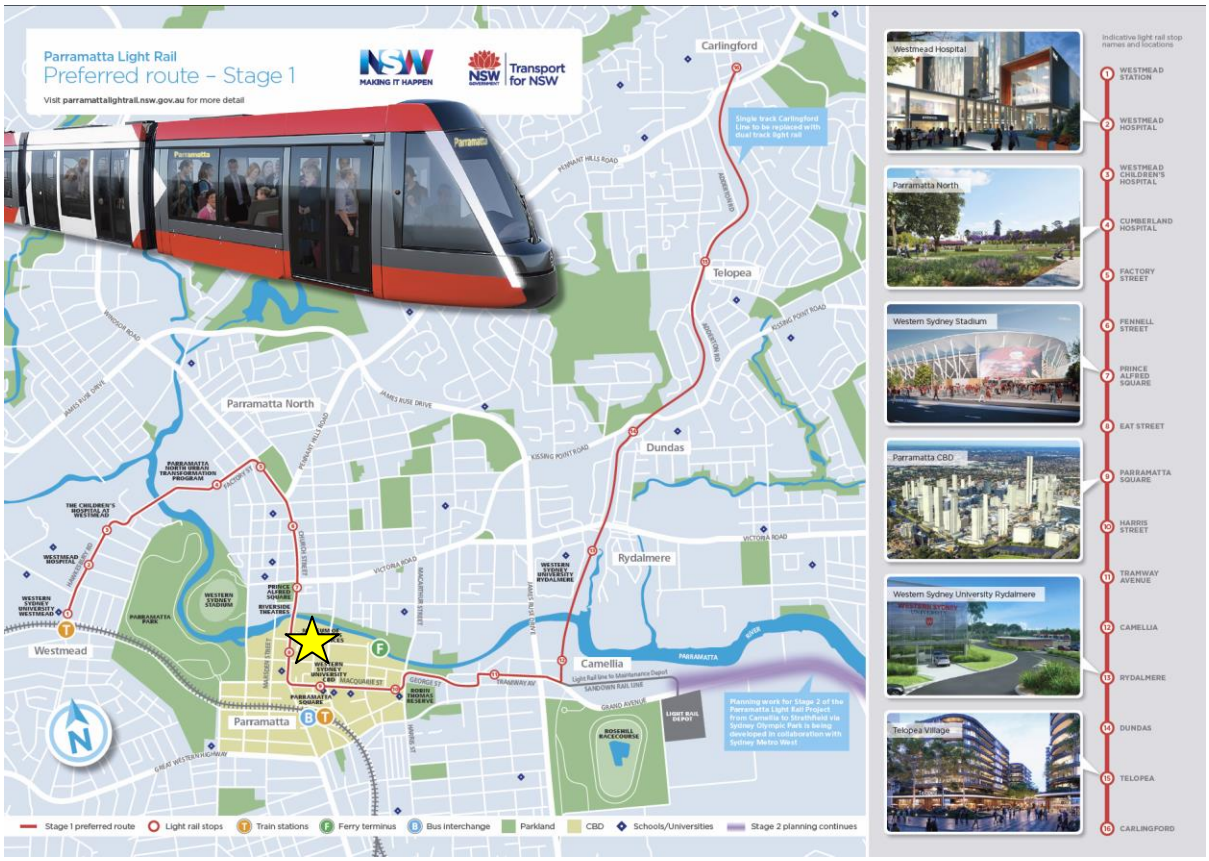
In the circumstances, it is considered that the site is readily accessible by public services.

Parramatta Light Rail

As described on the Transport for NSW website, the new Parramatta Light Rail is one of the NSW Government's latest infrastructure projects being delivered to serve a growing Sydney. Stage 1 will connect Westmead to Carlingford via the Parramatta CBD and Camellia, with a two-way track spanning 12kms, and is expected to open in 2023.

The Stage 1 route will link Parramatta's CBD and Railway Station to the Westmead Health precinct, Parramatta North Urban Transformation Program, the new Western Sydney Stadium, the Camellia Precinct, the new Powerhouse Museum, the private and social housing redevelopment at Telopea, Rosehill Gardens Racecourse and three Western Sydney University campuses, as shown in the map below.

Planning work for Stage 2 of the project from Camellia to Strathfield via Sydney Olympic Park is being developed in collaboration with Sydney Metro West. Australia's largest public transport infrastructure project and is currently under construction, with opening scheduled for the first half of 2019.



The project will deliver 16 new stations, including "Eat Street" station which is located directly outside the subject site on Church Street. Regular services will be provided from early morning to late evening, including every 7.5 minutes throughout the day.

Projected Traffic Generation

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 recently published RMS *Technical Direction (TDT 2013/04a)* document.

The *TDT 2013/04a* document specifies that it replaces those sections of the RMS *Guidelines* indicated, and that it must be followed when RMS is undertaken trip generation and/or parking demand assessments.

The RMS *Guidelines* and the updated *TDT 2013/04a* are based on extensive surveys of a wide range of land uses and nominate the following traffic generation rates which are applicable to the planning proposal:

Office Blocks

AM: 1.6 peak hour vehicle trips per 100m^2 GFA

PM: 1.2 peak hour vehicle trips per 100m^2 GFA

High Density Residential Flat Dwellings

AM: 0.19 peak hour vehicle trips per unit

PM: 0.15 peak hour vehicle trips per unit

The RMS *Guidelines* also make the following observation in respect of high density residential flat buildings:

Definition

A *high density residential flat building* refers to a building containing 20 or more dwellings. This does not include aged or disabled persons housing. *High density residential flat buildings* are usually more than 5 levels, have basement level car parking and are located in close proximity to public transport services. The building may contain a component of commercial use.

Factors

The above rates include visitors, staff, service/delivery and on-street movements such as taxis and pick-up/set-down activities.

The RMS *Guidelines* do not nominate a traffic generation rate for small, local shops, referring only to major regional shopping centres incorporating supermarkets and department stores. For the purpose of this assessment therefore, the abovementioned traffic generation rate for *office blocks* has been adopted in respect of the retail component of the development proposal.

Application of the above traffic generation rates to the various components of the planning proposal yields a traffic generation potential of approximately 126 vph during the *morning* commuter peak period and approximately 98 vph during the *afternoon* commuter peak period as set out below:

Planning Proposal - Projected Future Traffic Generation Potential

	AM	**PM**
Residential (318 apartments):	60 vph	48 vph
Commercial/retail (4,144m^2):	66 vph	50 vph
TOTAL TRAFFIC GENERATION POTENTIAL:	**126 vph**	**98 vph**

That projected future traffic generation potential which could occur as a consequence of the planning proposal should however, be offset or *discounted* by the volume of traffic which could reasonably be expected to be generated by a development permitted under the current *Parramatta LEP 2011* planning controls.

Application of the abovementioned traffic generation rates to a hypothetical scheme permissible under the current *Parramatta LEP 2011* planning controls yields a peak hour traffic generation potential of approximately 84 vph during the AM commuter peak period and a traffic generation potential of approximately 64 vph during the PM commuter peak period, as set out below:

PLEP 2011 Permissible Scheme - Potential Additional Traffic Generation Potential

	AM	PM
Residential (175 apartments):	33 vph	26 vph
Commercial/retail (3,162m^2):	51 vph	38 vph
TOTAL TRAFFIC GENERATION POTENTIAL:	**84 vph**	**64 vph**

Accordingly, the planning proposal scheme could result in a *nett increase* in the traffic generation potential of the site of approximately 42 vph during the AM commuter peak period and approximately 34 vph during the PM commuter peak period, when compared with a scheme permissible under the current *PLEP 2011* planning controls, as set out below:

Projected Nett Increase in the Traffic Generation Potential of the Site as a Consequence of the Planning Proposal

	AM	PM
Projected Future Traffic Generation Potential (Planning Proposal scheme):	126 vph	98 vph
Less Permissible Traffic Generation Potential (PLEP 2011 scheme):	-84 vph	-64 vph
NETT INCREASE IN TRAFFIC GENERATION POTENTIAL:	**42 vph**	**34 vph**

Furthermore, it is pertinent to note that the projected future traffic generation potential of the retail component of the planning proposal *does not* take into account the number of "linked trips" or any "passing trade" which will occur. Linked trips occur when a person visits the site but also visits another premises nearby on the same trip whilst not moving their car, thereby not incurring an additional vehicle trip. Passing trade occurs when a person might visit the proposed supermarket on the site on their way home from work. That person is already travelling on the nearby road network, thereby not incurring an additional vehicle trip.

That projected increase in the traffic generation potential of the site as a consequence of the planning proposal will clearly not have any unacceptable traffic implications in terms of road network capacity, as is demonstrated by the following section of this report.

Traffic Implications - Road Network Capacity

The traffic implications of planning proposals primarily concern the effects that any *additional* traffic flows may have on the operational performance of the nearby road network. Those effects can be assessed using the SIDRA program which is widely used by the RMS

and many LGA's for this purpose. Criteria for evaluating the results of SIDRA analysis are reproduced in the following pages.

The results of the SIDRA analysis of the in Church Street and Phillip Street intersection are summarised on Table 3.1 below, revealing that:

- the Church Street and Phillip Street intersection currently operates at *Level of Service "A"* under the existing traffic demands with total average vehicle delays in the order of ***less than*** 1 second/vehicle

- under the projected additional traffic demands which could be generated by a mixed use development permitted under the *current planning controls*, the intersection would continue to operate at *Level of Service "A"* during the AM and PM commuter peak periods, with increases in average vehicle delays of ***less than*** 1 second/vehicle.

- under the projected future traffic demands expected to be generated by the *planning proposal*, the intersection would also continue to operate at *Level of Service "A"* during the AM and PM commuter peak periods, with increases in average vehicle delays of ***less than*** 1 second/vehicle.

The results of the SIDRA analysis of the Phillip Street and Erby Lane intersection are summarised on Table 3.2 below, revealing that:

- the Phillip Street and Erby Lane intersection currently operates at *Level of Service "A"* under the existing traffic demands with total average vehicle delays in the order of ***less than*** 1 second/vehicle

- under the projected additional traffic demands which could be generated by a mixed use development permitted under the *current planning controls*, the intersection would continue to operate at *Level of Service "A"* during the AM and PM commuter peak periods, with increases in average vehicle delays of ***less than*** 1 second/vehicle.

- under the projected future traffic demands expected to be generated by the *planning proposal*, the intersection would also continue to operate at *Level of Service "A"* during the AM and PM commuter peak periods, with increases in average vehicle delays of ***less than*** 1 second/vehicle.

In the circumstances, it is clear that the proposed development will not have any unacceptable traffic implications in terms of road network capacity.

TABLE 3.1 - RESULTS OF SIDRA ANALYSIS OF CHURCH STREET & PHILLIP STREET

Key Indicators		Existing Traffic Demand		Existing PLEP 2011 Planning Controls Traffic Demand		Planning Proposal Traffic Demands	
		AM	**PM**	**AM**	**PM**	**AM**	**PM**
Level of Service		B	B	B	B	B	B
Degree of Saturation		0.611	0.613	0.637	0.661	0.648	0.679
Average Vehicle Delay (secs/veh)							
Church Street (south)	L	17.0	18.9	17.0	18.9	17.0	18.9
	T	13.6	15.5	13.6	15.5	13.6	15.5
Phillip Street (east)	L	21.2	20.7	21.4	21.2	21.6	21.5
	T	17.8	17.2	18.0	17.8	18.2	18.1
Church Street (north)	L	19.0	20.7	19.3	20.9	19.4	21.1
	T	15.5	17.3	15.9	17.5	16.0	17.7
Phillip Street (west)	L	20.0	18.1	20.0	18.1	20.0	18.1
	T	18.6	15.2	18.9	15.3	19.1	15.4
TOTAL AVERAGE VEHICLE DELAY		**17.4**	**17.5**	**17.7**	**17.8**	**17.9**	**18.0**

CHU_PHIX CHU_PHIPermissible CHU_PHIP

TABLE 3.2 - RESULTS OF SIDRA ANALYSIS OF PHILLIP STREET & ERBY LANE

Key Indicators		Existing Traffic Demand		Existing PLEP 2011 Planning Controls Traffic Demand		Planning Proposal Traffic Demands	
		AM	**AM**	**AM**	**PM**	**AM**	**PM**
Level of Service		A	A	A	A	A	A
Degree of Saturation		0.187	0.148	0.204	0.179	0.210	0.194
Average Vehicle Delay (secs/veh)							
Erby Place (south)	L	3.7	3.9	3.7	3.9	3.7	3.9
	R	5.2	4.8	5.5	5.0	5.6	5.1
Phillip Street (east)	L	3.4	3.4	3.4	3.4	3.4	3.4
	T	0.0	0.0	0.0	0.0	0.0	0.0
Erby Place (west)	T	0.2	0.1	0.3	0.2	0.4	0.2
	R	4.1	4.1	4.2	4.1	4.2	4.2
TOTAL AVERAGE VEHICLE DELAY		**1.4**	**1.8**	**1.8**	**2.1**	**2.0**	**2.2**
		PHI_ERBX		PHI_ERBPermissible		PHI_ERBP	

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 and comprise:

- NO STOPPING restrictions in the vicinity of the Church Street and Phillip Street intersection, including along the northern portion of the Church Street site frontage

- generally 1P/2P TICKETED PARKING along both sides of Church Street, including along the southern portion of the site frontage

- LOADING ZONES at various locations throughout the CBD area including along Church Street, Phillip Street and Erby Place

- 5 MINUTE PARKING restrictions along the western side of Erby Place, along the northern and southern portion of the site frontage

- generally NO STOPPING restrictions elsewhere in Erby Place

- a *SECURE PARKING* CAR PARK located in Erby Lane

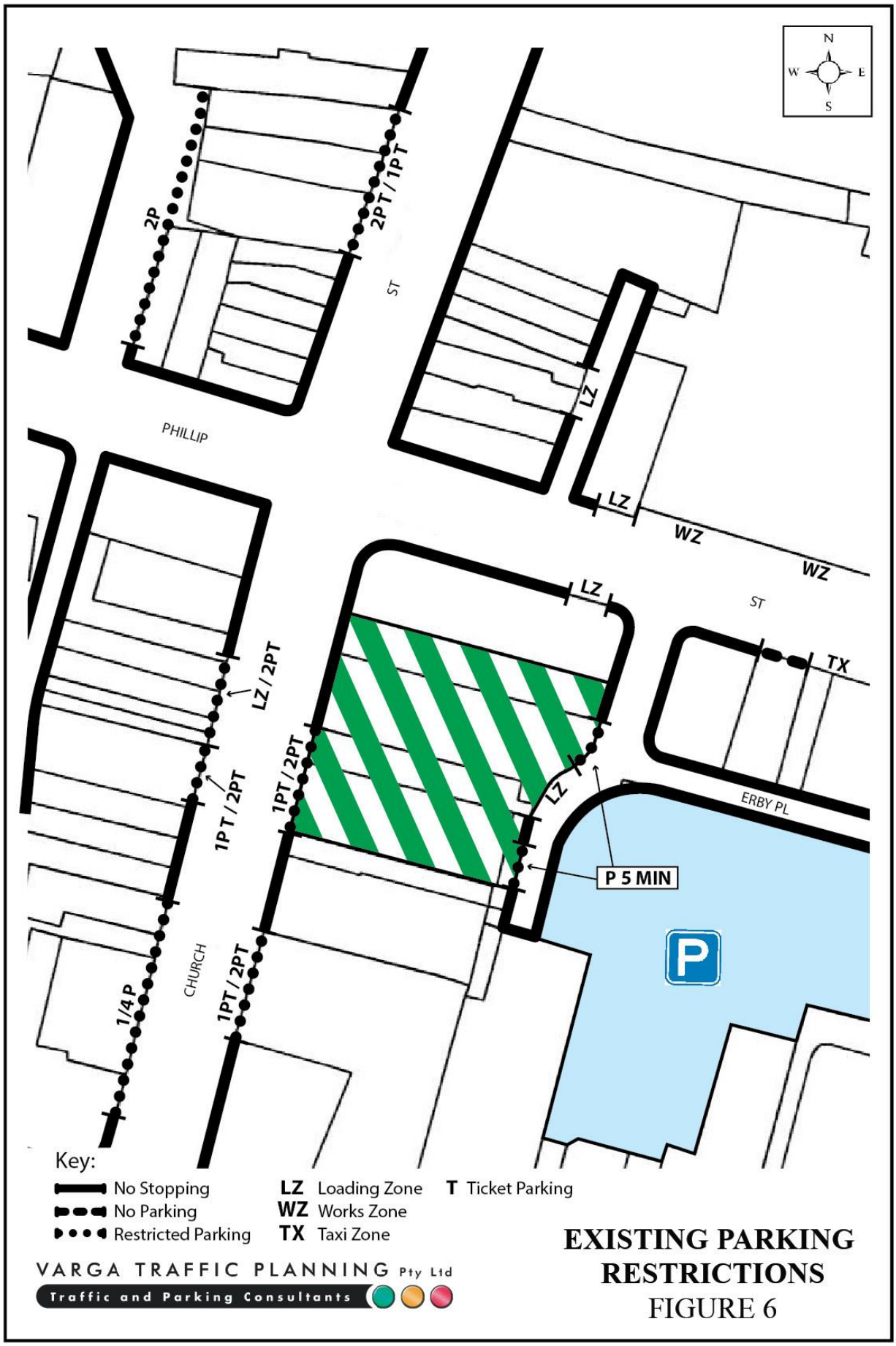
- BUS ZONES along both sides of Church Street and also Phillip Street.

Off-Street Car Parking Provisions

The *maximum* off-street car parking provisions permitted on the site are specified in *Parramatta Local Environmental Plan 2011, Part 7.3 Car Parking* document in the following terms:

Multi dwelling housing: 1, 2 and 3 bedrooms

Residents:	a maximum of 1 parking space to be provided for every dwelling
Visitors:	1 parking space to be provided for every 5 dwellings


N
W
E
S
2P
2PT / 1PT
ST
PHILLIP
LZ
LZ
WZ
WZ
LZ
ST
TX
LZ / 2PT
1PT / 2PT
1PT / 2PT
LZ
ERBY PL
P 5 MIN
P
1/4 P
CHURCH
1PT / 2PT
Key:
No Stopping
No Parking
Restricted Parking
LZ Loading Zone
WZ Works Zone
TX Taxi Zone
T Ticket Parking
VARGA TRAFFIC PLANNING Pty Ltd
Traffic and Parking Consultants
EXISTING PARKING RESTRICTIONS
FIGURE 6

Shops

A maximum of 1 parking space to be provided for every 30m^2 of gross floor area

Commercial Premises

A maximum of 1 parking space to be provided for every 100m^2 of gross floor area

Notwithstanding the above, it is understood Council are proposing new parking rates as part of the Parramatta CBD planning proposal which are based on the parking rates used by the City of Sydney Council in their CBD areas. Those *maximum* off-street parking rates are specified in the City of Sydney Council's *Local Environmental Plan 2012, Part 7, Division 1 – Car Parking Ancillary to other Development* document in the following terms:

Residential Flat Buildings (Category A)

1 bedroom dwelling:	0.3 spaces per dwelling
2 bedroom dwelling:	0.7 spaces per dwelling
3 bedroom dwelling:	1 space per dwelling

Retail, Office & Business (Category D) if FSR > 3.5:1

M = (G x A) / (50 x T)

Where:

M = maximum number of parking spaces

G = GFA of all office/business premises in the building (m^2)

A = site area (m^2)

T = total GFA of all buildings on the site (m^2)

Note, Category A and Category D are areas within the City of Sydney LGA with excellent access to public transport services, such as the subject site in the Parramatta CBD.

Application therefore of the above parking requirements to the various components of the planning proposal yields the following *maximum* off-street car parking requirements:

	Parramatta LEP 2011	**Sydney LEP 2012**
Residents (318 apartments):	318 spaces	186 spaces
Visitors:	64 spaces	0 spaces
Shops (3,342m^2):	111 spaces	4 spaces
Offices (802m^2):	8 spaces	1 space
TOTAL:	**501 spaces (maximum)**	**191 spaces (maximum)**

Whilst the number of parking spaces to be provided as part of the planning proposal is not yet known, it is envisaged that the parking will be provided in a new multi-level basement car parking area in accordance with *market demand*, however would not exceed the *maximum* parking requirements of 191 spaces. Notwithstanding, the concept basement plans indicates that a typical basement level has the potential to accommodate approximately 40 parking spaces.

The geometric design layout of the future car parking facilities will ultimately be designed to comply with the relevant requirements specified in the Standards Australia publication *Parking Facilities Part 1 - Off-Street Car Parking AS2890.1:2004* and *Parking Facilities Part 6 - Off-Street Parking for People with Disabilities AS2890.6*.

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 Premises, Office Premises, Retail and Industrial Development**
> 1 bicycle space per 200m^2 of floor space

Application of the above bicycle parking requirements to the various components of the planning proposal yields an off-street bicycle parking requirement of 159 resident spaces and 21 commercial/retail spaces.

The proposed development will ultimately provide the required number of bicycle parking spaces, thereby ensuring the development's commitment to a more sustainable approach to travel.

Loading/Servicing Provisions

The proposed new mixed use building is expected to be serviced by a variety of commercial vehicles including white vans, utilities and wagons, up to and including 12.5m long large rigid trucks. A dedicated service area is to be located on the ground floor level adjacent to the car parking entry ramp, such that service vehicles will reverse off the laneway into the dock allowing them to enter and exit the site in a forward direction.

The geometric design layout of the proposed loading facilities will ultimately be designed to comply with the relevant requirements specified in the Standards Australia publication *Parking Facilities Part 2 - Off-Street Commercial Vehicle Facilities AS2890.2* in respect of overhead clearances, loading dock dimensions and service area requirements.

Conclusion

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

- the planning proposal seeks to amend the current planning controls on the subject site by increasing the permissible FSR as well as increasing the permissible height controls

- in doing so, the planning proposal has the potential to yield a total of approximately 318 apartments with approximately 4,144m² of retail/commercial floor space

- the capacity analysis of nearby intersections using the SIDRA capacity analysis program indicates that:

    - the projected additional traffic flows will not have any adverse effects on the operational performance of the nearby intersections, and

    - no road improvements or intersection upgrades would be required as a consequence of the planning proposal

- the future car, bicycle and loading facilities will ultimately be provided and designed in accordance with Council's requirements, *SEPP 65* and the relevant Australian Standards

- the future vehicular access arrangements will also be designed in accordance with Council and RMS requirements.

It is therefore reasonable to conclude that the planning proposal will not have any unacceptable implications in terms of road network capacity or off-street parking/loading requirements.

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 : 6453 PARRAMATTA Phillip St
Day/Date : Tuesday 23rd May 2017

Lights

Time Per	NORTH Church St			WEST Phillip St			SOUTH Church St			EAST Phillip St			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0730 - 0745	37	19	0	3	32	0	5	18	0	2	16	0	**132**
0745 - 0800	37	25	0	2	28	0	2	13	0	0	16	0	**123**
0800 - 0815	27	33	0	8	39	0	6	15	0	2	21	0	**151**
0815 - 0830	42	25	0	4	36	0	7	31	0	0	25	0	**170**
0830 - 0845	42	29	0	4	42	0	8	25	0	4	20	0	**174**
0845 - 0900	39	34	0	2	36	0	7	20	0	4	21	0	**163**
0900 - 0915	34	31	0	3	44	0	7	13	0	3	22	0	**157**
0915 - 0930	32	22	0	0	25	0	9	26	0	6	23	0	**143**
Period End	**290**	**218**	**0**	**26**	**282**	**0**	**51**	**161**	**0**	**21**	**164**	**0**	**1213**

Heavies

Time Per	NORTH Church St			WEST Phillip St			SOUTH Church St			EAST Phillip St			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0730 - 0745	1	0	0	0	2	0	0	0	0	0	2	0	**5**
0745 - 0800	2	0	0	0	1	0	0	0	0	0	0	0	**3**
0800 - 0815	2	1	0	0	0	0	0	0	0	0	1	0	**4**
0815 - 0830	2	0	0	0	0	0	0	0	0	0	1	0	**3**
0830 - 0845	1	2	0	0	1	0	0	0	0	0	1	0	**5**
0845 - 0900	2	0	0	0	1	0	0	0	0	0	0	0	**3**
0900 - 0915	1	0	0	0	0	0	0	0	0	0	0	0	**1**
0915 - 0930	1	0	0	0	0	0	0	0	0	0	2	0	**3**
Period End	**12**	**3**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**27**

Lights

Peak Time	NORTH Church St			WEST Phillip St			SOUTH Church St			EAST Phillip St			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0730 - 0830	143	102	0	17	135	0	20	77	0	4	78	0	**576**
0745 - 0845	148	112	0	18	145	0	23	84	0	6	82	0	**618**
0800 - 0900	150	121	0	18	153	0	28	91	0	10	87	0	**658**
0815 - 0915	157	119	0	13	158	0	29	89	0	11	88	0	**664**
0830 - 0930	147	116	0	9	147	0	31	84	0	17	86	0	**637**
PEAK HOUR	**157**	**119**	**0**	**13**	**158**	**0**	**29**	**89**	**0**	**11**	**88**	**0**	**664**

Heavies

Peak Time	NORTH Church St			WEST Phillip St			SOUTH Church St			EAST Phillip St			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0730 - 0830	7	1	0	0	3	0	0	0	0	0	4	0	**15**
0745 - 0845	7	3	0	0	2	0	0	0	0	0	3	0	**15**
0800 - 0900	7	3	0	0	2	0	0	0	0	0	3	0	**15**
0815 - 0915	6	2	0	0	2	0	0	0	0	0	2	0	**12**
0830 - 0930	5	2	0	0	2	0	0	0	0	0	3	0	**12**
PEAK HOUR	**6**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**12**

Combined

Time Per	NORTH Church St			WEST Phillip St			SOUTH Church St			EAST Phillip St			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0730 - 0745	38	19	0	3	34	0	5	18	0	2	18	0	**137**
0745 - 0800	39	25	0	2	29	0	2	13	0	0	16	0	**126**
0800 - 0815	29	34	0	8	39	0	6	15	0	2	22	0	**155**
0815 - 0830	44	25	0	4	36	0	7	31	0	0	26	0	**173**
0830 - 0845	43	31	0	4	43	0	8	25	0	4	21	0	**179**
0845 - 0900	41	34	0	2	37	0	7	20	0	4	21	0	**166**
0900 - 0915	35	31	0	3	44	0	7	13	0	3	22	0	**158**
0915 - 0930	33	22	0	0	25	0	9	26	0	6	25	0	**146**
Period End	**302**	**221**	**0**	**26**	**287**	**0**	**51**	**161**	**0**	**21**	**171**	**0**	**1240**

Peds

Time Per	NORTH Church St	WEST Phillip St	SOUTH Church St	EAST Phillip St	
	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0700 - 0715					**0**
0715 - 0730		Not in Use	Not in Use		**0**
0730 - 0745					**0**
0745 - 0800					**0**
0800 - 0815					**0**
0815 - 0830					**0**
0830 - 0845					**0**
0845 - 0900					**0**
Period End	**0**	**0**	**0**	**0**	**0**

Combined

Peak Time	NORTH Church St			WEST Phillip St			SOUTH Church St			EAST Phillip St			
	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0730 - 0830	150	103	0	17	138	0	20	77	0	4	82	0	**591**
0745 - 0845	155	115	0	18	147	0	23	84	0	6	85	0	**633**
0800 - 0900	157	124	0	18	155	0	28	91	0	10	90	0	**673**
0815 - 0915	163	121	0	13	160	0	29	89	0	11	90	0	**676**
0830 - 0930	152	118	0	9	149	0	31	84	0	17	89	0	**649**
PEAK HOUR	**163**	**121**	**0**	**13**	**160**	**0**	**29**	**89**	**0**	**11**	**90**	**0**	**676**

Peds

Peak Per	NORTH Church St	WEST Phillip St	SOUTH Church St	EAST Phillip St	
	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0730 - 0830	0	0	0	0	**0**
0745 - 0845	0	0	0	0	**0**
0800 - 0900	0	0	0	0	**0**
0815 - 0915	0	0	0	0	**0**
0830 - 0930	0	0	0	0	**0**
PEAK HR	**0**	**0**	**0**	**0**	**0**

R.O.A.R DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob. 0418 239019

Client : Varga Traffic Planning

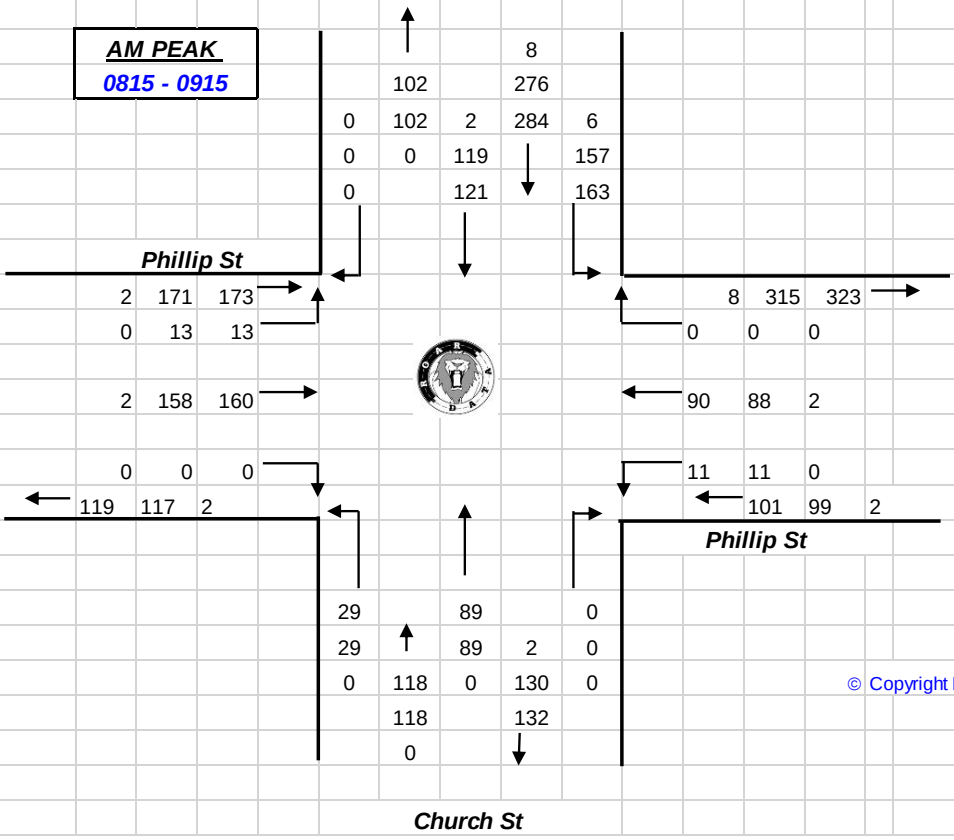
Job No/Name : 6453 PARRAMATTA Phillip St

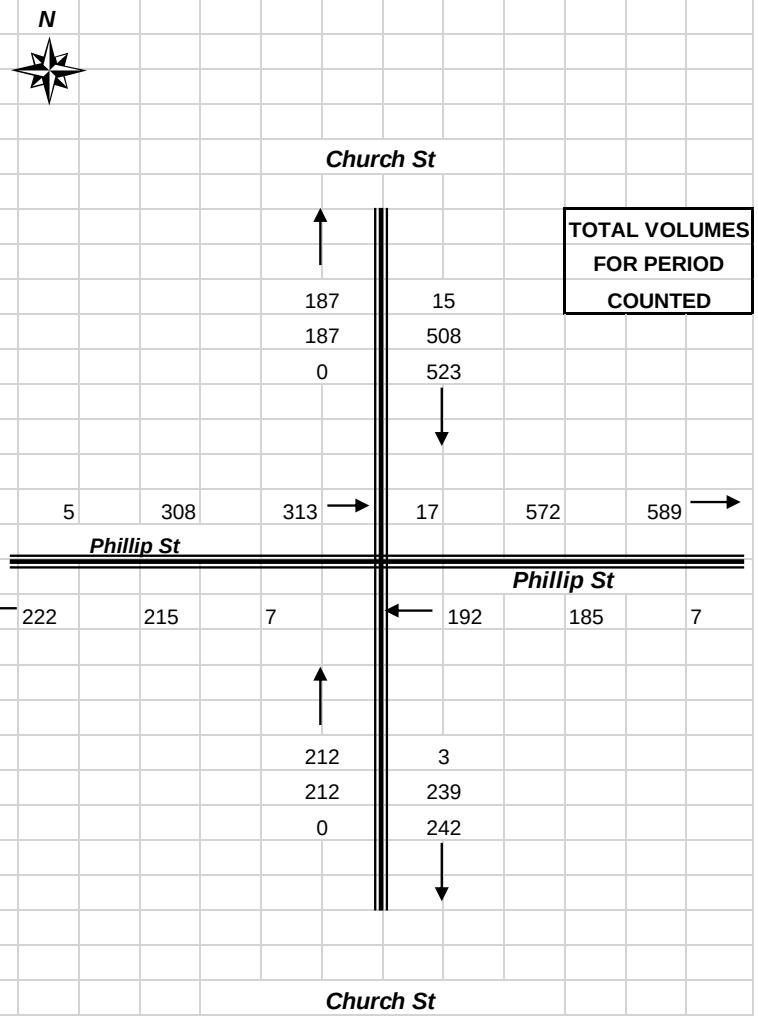
Day/Date : Tuesday 23rd May 2017

Hours 1 | Hours 2 | Hours 3 | Hours 4 | Hours 5

AM PEAK

0815 - 0915





R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob. 0418 239019

Client	: Varga Traffic Planning
Job No/Name	: 6453 PARRAMATTA Phillip St
Day/Date	: Tuesday 23rd May 2017

Lights

	NORTH			WEST			SOUTH			EAST			
	Church St			*Phillip St*			*Church St*			*Phillip St*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1630 - 1645	16	25	0	6	18	0	4	28	0	4	63	0	**164**
1645 - 1700	21	26	0	5	22	0	5	29	0	7	38	0	**153**
1700 - 1715	24	21	0	10	20	0	5	23	0	5	64	0	**172**
1715 - 1730	27	31	0	3	18	0	3	26	0	5	59	0	**172**
1730 - 1745	29	35	0	9	23	0	3	17	0	11	42	0	**169**
1745 - 1800	26	33	0	10	22	0	3	29	0	4	48	0	**175**
1800 - 1815	27	24	0	9	25	0	9	28	0	5	29	0	**156**
1815 - 1830	29	34	0	7	30	0	11	26	0	4	42	0	**183**
Period End	**199**	**229**	**0**	**59**	**178**	**0**	**43**	**206**	**0**	**45**	**385**	**0**	**1344**

Heavies

	NORTH			WEST			SOUTH			EAST			
	Church St			*Phillip St*			*Church St*			*Phillip St*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1630 - 1645	1	0	0	0	0	0	1	0	0	0	0	0	**2**
1645 - 1700	2	0	0	0	0	0	0	0	0	0	1	0	**3**
1700 - 1715	1	0	0	0	0	0	0	0	0	0	0	0	**1**
1715 - 1730	1	0	0	0	0	0	0	0	0	0	0	0	**1**
1730 - 1745	1	0	0	0	0	0	0	0	0	0	0	0	**1**
1745 - 1800	1	0	0	0	0	0	0	0	0	0	0	0	**1**
1800 - 1815	2	0	0	0	0	0	0	0	0	0	0	0	**2**
1815 - 1830	1	1	0	0	0	0	0	0	0	0	0	0	**2**
Period End	**10**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**13**

Lights

	NORTH			WEST			SOUTH			EAST			
	Church St			*Phillip St*			*Church St*			*Phillip St*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1630 - 1730	88	103	0	24	78	0	17	106	0	21	224	0	**661**
1645 - 1745	101	113	0	27	83	0	16	95	0	28	203	0	**666**
1700 - 1800	106	120	0	32	83	0	14	95	0	25	213	0	**688**
1715 - 1815	109	123	0	31	88	0	18	100	0	25	178	0	**672**
1730 - 1830	111	126	0	35	100	0	26	100	0	24	161	0	**683**
PEAK HOUR	**106**	**120**	**0**	**32**	**83**	**0**	**14**	**95**	**0**	**25**	**213**	**0**	**688**

Heavies

	NORTH			WEST			SOUTH			EAST			
	Church St			*Phillip St*			*Church St*			*Phillip St*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1630 - 1730	5	0	0	0	0	0	1	0	0	0	1	0	**7**
1645 - 1745	5	0	0	0	0	0	0	0	0	0	1	0	**6**
1700 - 1800	4	0	0	0	0	0	0	0	0	0	0	0	**4**
1715 - 1815	5	0	0	0	0	0	0	0	0	0	0	0	**5**
1730 - 1830	5	1	0	0	0	0	0	0	0	0	0	0	**6**
PEAK HOUR	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**

Combined

	NORTH			WEST			SOUTH			EAST			
	Church St			*Phillip St*			*Church St*			*Phillip St*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1630 - 1645	17	25	0	6	18	0	5	28	0	4	63	0	**166**
1645 - 1700	23	26	0	5	22	0	5	29	0	7	39	0	**156**
1700 - 1715	25	21	0	10	20	0	5	23	0	5	64	0	**173**
1715 - 1730	28	31	0	3	18	0	3	26	0	5	59	0	**173**
1730 - 1745	30	35	0	9	23	0	3	17	0	11	42	0	**170**
1745 - 1800	27	33	0	10	22	0	3	29	0	4	48	0	**176**
1800 - 1815	29	24	0	9	25	0	9	28	0	5	29	0	**158**
1815 - 1830	30	35	0	7	30	0	11	26	0	4	42	0	**185**
Period End	**209**	**230**	**0**	**59**	**178**	**0**	**44**	**206**	**0**	**45**	**386**	**0**	**1357**

Peds

	NORTH	WEST	SOUTH	EAST	
	Church St	*Phillip St*	*Church St*	*Phillip St*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1630 - 1645					**0**
1645 - 1700		Not in Use	Not in Use		**0**
1700 - 1715					**0**
1715 - 1730					**0**
1730 - 1745					**0**
1745 - 1800					**0**
1800 - 1815					**0**
1815 - 1830					**0**
Period End	**0**	**0**	**0**	**0**	**0**

Combined

	NORTH			WEST			SOUTH			EAST			
	Church St			*Phillip St*			*Church St*			*Phillip St*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1630 - 1730	93	103	0	24	78	0	18	106	0	21	225	0	**668**
1645 - 1745	106	113	0	27	83	0	16	95	0	28	204	0	**672**
1700 - 1800	110	120	0	32	83	0	14	95	0	25	213	0	**692**
1715 - 1815	114	123	0	31	88	0	18	100	0	25	178	0	**677**
1730 - 1830	116	127	0	35	100	0	26	100	0	24	161	0	**689**
PEAK HOUR	**110**	**120**	**0**	**32**	**83**	**0**	**14**	**95**	**0**	**25**	**213**	**0**	**692**

Peds

	NORTH	WEST	SOUTH	EAST	
	Church St	*Phillip St*	*Church St*	*Phillip St*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1630 - 1730	0	0	0	0	**0**
1645 - 1745	0	0	0	0	**0**
1700 - 1800	0	0	0	0	**0**
1715 - 1815	0	0	0	0	**0**
1730 - 1830	0	0	0	0	**0**
PEAK HR	**0**	**0**	**0**	**0**	**0**

R.O.A.R DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob. 0418 239019

Client : Varga Traffic Planning

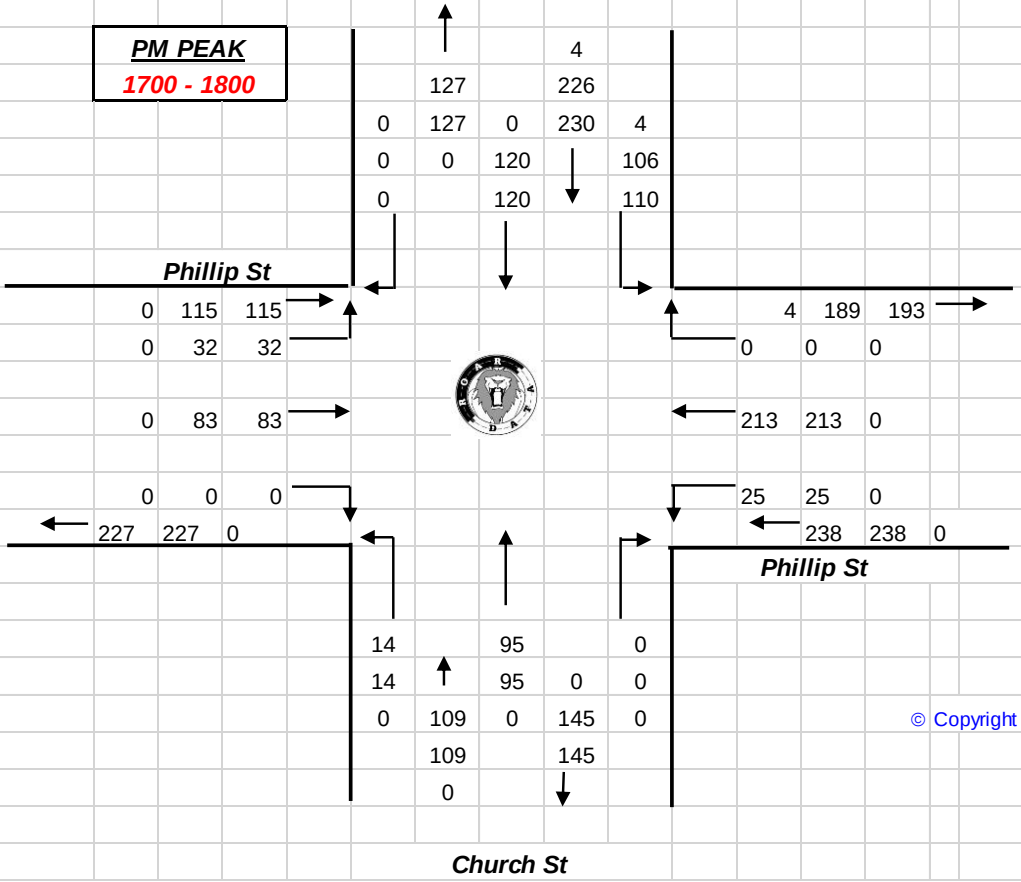
Job No/Name : 6453 PARRAMATTA Phillip St

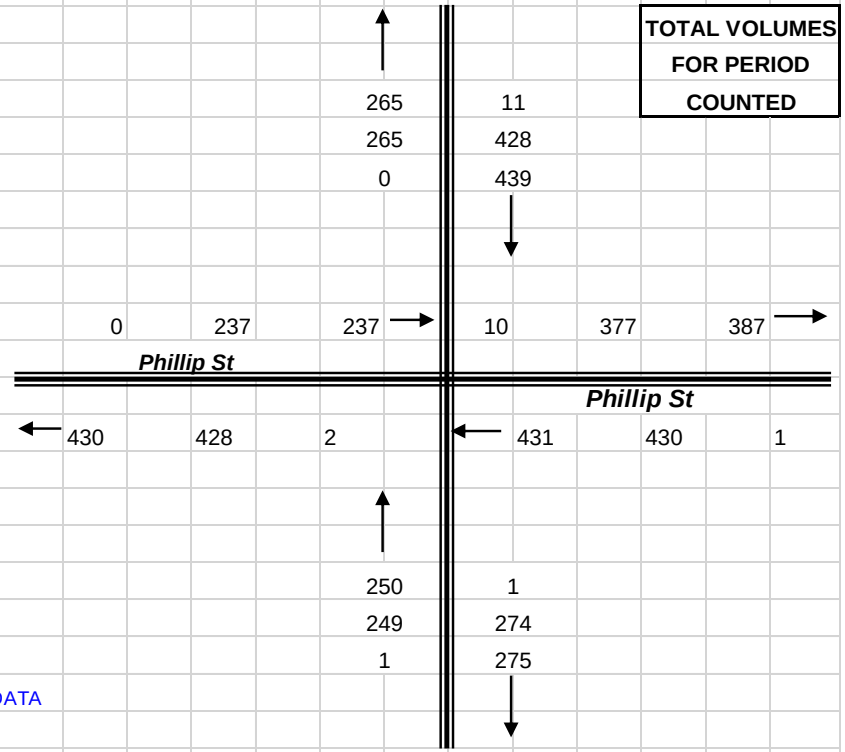
Day/Date : Tuesday 23rd May 2017

Hours 1 | Hours 2 | Hours 3 | Hours 4 | Hours 5

PM PEAK

1700 - 1800





TOTAL VOLUMES FOR PERIOD COUNTED

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob. 0418 239019

Client	: Varga Traffic Planning
Job No/Name	: 6453 PARRAMATTA Phillip St
Day/Date	: Tuesday 23rd May 2017

Intersection Layout

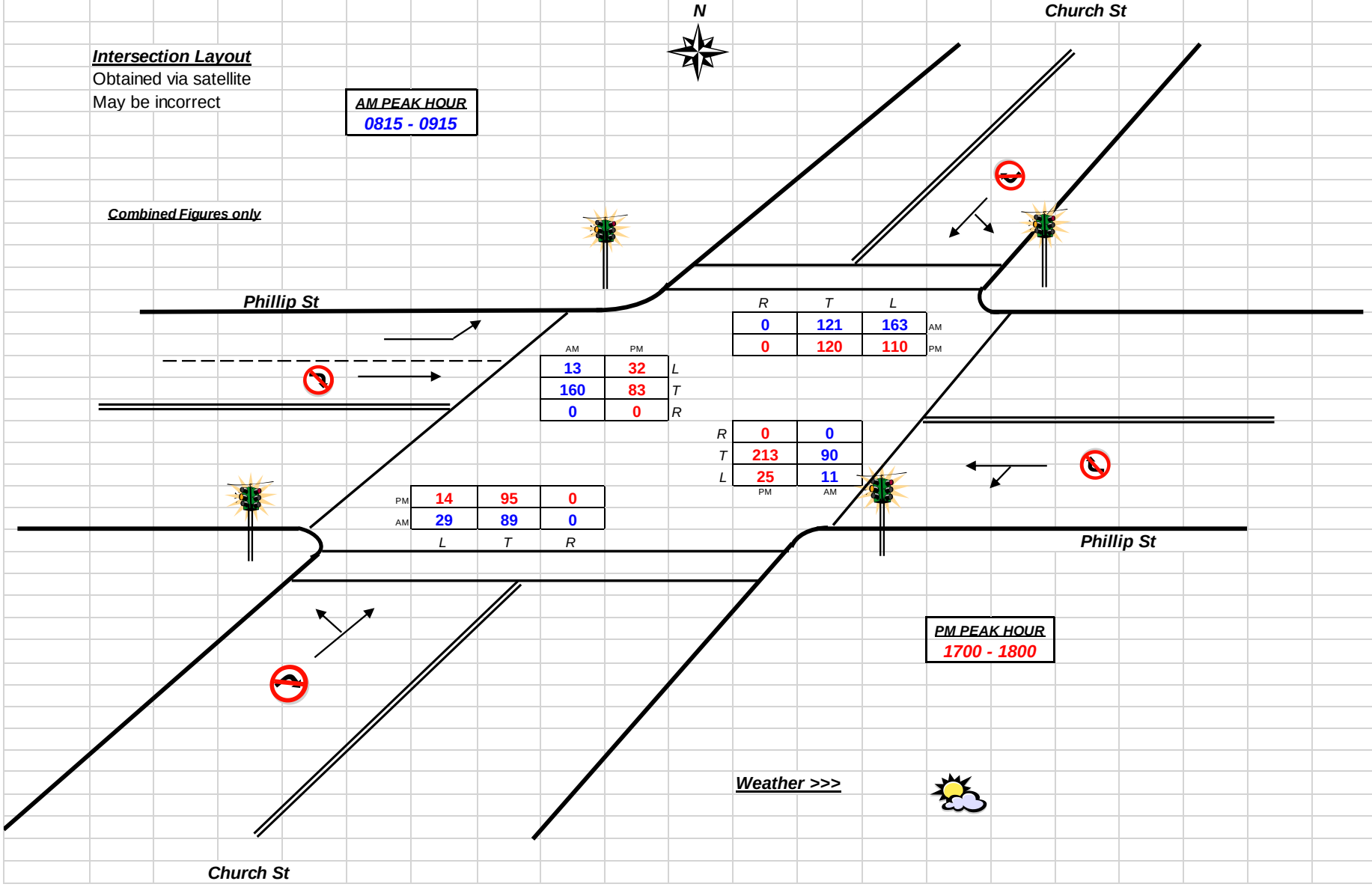
Obtained via satellite

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 : 6453 PARRAMATTA Phillip St
Day/Date : Tuesday 23rd May 2017

Peds	NORTH	EAST	MIDDLE	WEST	SOUTH	
	Church St	*Phillip St*	*Diagonal*	*Phillip St*	*Church St*	
Time Period	UNCLASS	UNCLASS	UNCLASS	UNCLASS	UNCLASS	TOT
0730 - 0745	1	68	5	18	13	**105**
0745 - 0800	3	98	7	48	15	**171**
0800 - 0815	4	84	8	36	14	**146**
0815 - 0830	6	72	7	36	11	**132**
0830 - 0845	0	113	10	37	17	**177**
0845 - 0900	11	100	9	34	25	**179**
0900 - 0915	24	68	10	34	29	**165**
0915 - 0930	23	57	10	20	25	**135**
Period End	**72**	**660**	**66**	**263**	**149**	**1210**

Peds	NORTH	WEST	MIDDLE	SOUTH	EAST	
	Church St	*Phillip St*	*Diagonal*	*Phillip St*	*Church St*	
Time Period	UNCLASS	UNCLASS	UNCLASS	UNCLASS	UNCLASS	TOT
1630 - 1645	24	67	14	22	105	**232**
1645 - 1700	20	45	16	16	88	**185**
1700 - 1715	26	66	21	17	140	**270**
1715 - 1730	12	50	20	10	113	**205**
1730 - 1745	27	40	23	6	123	**219**
1745 - 1800	22	40	21	6	99	**188**
1800 - 1815	29	34	18	18	125	**224**
1815 - 1830	43	31	25	15	157	**271**
Period End	**203**	**373**	**158**	**110**	**950**	**1794**

Peds	NORTH	EAST	MIDDLE	WEST	SOUTH	
	Church St	*Phillip St*	*Diagonal*	*Phillip St*	*Church St*	
Peak Period	UNCLASS	UNCLASS	UNCLASS	UNCLASS	UNCLASS	TOT
0730 - 0830	14	322	27	138	53	**554**
0745 - 0845	13	367	32	157	57	**626**
0800 - 0900	21	369	34	143	67	**634**
0815 - 0915	41	353	36	141	82	**653**
0830 - 0930	58	338	39	125	96	**656**
PEAK HR	**41**	**353**	**36**	**141**	**82**	**656**

Peds	NORTH	WEST	MIDDLE	SOUTH	EAST	
	Church St	*Phillip St*	*Diagonal*	*Phillip St*	*Church St*	
Peak Period	UNCLASS	UNCLASS	UNCLASS	UNCLASS	UNCLASS	TOT
1630 - 1730	82	228	71	65	446	**892**
1645 - 1745	85	201	80	49	464	**879**
1700 - 1800	87	196	85	39	475	**882**
1715 - 1815	90	164	82	40	460	**836**
1730 - 1830	121	145	87	45	504	**902**
PEAK HR	**87**	**196**	**85**	**39**	**475**	**882**

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob. 0418 239019

Client : Varga Traffic Planning

Job No/Name : 6453 PARRAMATTA Phillip St

Day/Date : Tuesday 23rd May 2017

Lights	WEST		SOUTH		EAST		
	Phillip St		*Erby Pl*		*Phillip St*		
Time Per	T	R	L	R	L	T	TOT
0730 - 0745	50	15	2	3	8	18	**96**
0745 - 0800	51	16	1	1	5	16	**90**
0800 - 0815	53	13	0	5	6	24	**101**
0815 - 0830	55	22	3	2	9	25	**116**
0830 - 0845	63	28	2	4	11	30	**138**
0845 - 0900	65	18	2	3	6	19	**113**
0900 - 0915	54	23	5	3	20	26	**131**
0915 - 0930	43	13	6	6	4	24	**96**
Per End	**434**	**148**	**21**	**27**	**69**	**182**	**881**

Heavies	WEST		SOUTH		EAST		
	Phillip St		*Erby Pl*		*Phillip St*		
Time Per	T	R	L	R	L	T	TOT
0730 - 0745	1	0	0	0	0	0	**1**
0745 - 0800	3	0	0	0	0	0	**3**
0800 - 0815	2	0	0	0	0	1	**3**
0815 - 0830	2	0	0	0	0	1	**3**
0830 - 0845	2	0	0	0	0	1	**3**
0845 - 0900	4	0	0	0	0	0	**4**
0900 - 0915	1	0	0	0	0	0	**1**
0915 - 0930	2	0	0	0	0	5	**7**
Per End	**17**	**0**	**0**	**0**	**0**	**8**	**25**

Combined	WEST		SOUTH		EAST		
	Phillip St		*Erby Pl*		*Phillip St*		
Time Per	T	R	L	R	L	T	TOT
0730 - 0745	51	15	2	3	8	18	**97**
0745 - 0800	54	16	1	1	5	16	**93**
0800 - 0815	55	13	0	5	6	25	**104**
0815 - 0830	57	22	3	2	9	26	**119**
0830 - 0845	65	28	2	4	11	31	**141**
0845 - 0900	69	18	2	3	6	19	**117**
0900 - 0915	55	23	5	3	20	26	**132**
0915 - 0930	45	13	6	6	4	29	**103**
Per End	**451**	**148**	**21**	**27**	**69**	**190**	**906**

Lights	WEST		SOUTH		EAST		
	Phillip St		*Erby Pl*		*Phillip St*		
Peak Per	T	R	L	R	L	T	TOT
0730 - 0830	209	66	6	11	28	83	**403**
0745 - 0845	222	79	6	12	31	95	**445**
0800 - 0900	236	81	7	14	32	98	**468**
0815 - 0915	237	91	12	12	46	100	**498**
0830 - 0930	225	82	15	16	41	99	**478**
PEAK HR	**237**	**91**	**12**	**12**	**46**	**100**	**498**

Heavies	WEST		SOUTH		EAST		
	Phillip St		*Erby Pl*		*Phillip St*		
Peak Per	T	R	L	R	L	T	TOT
0730 - 0830	8	0	0	0	0	2	**10**
0745 - 0845	9	0	0	0	0	3	**12**
0800 - 0900	10	0	0	0	0	3	**13**
0815 - 0915	9	0	0	0	0	2	**11**
0830 - 0930	9	0	0	0	0	6	**15**
PEAK HR	**9**	**0**	**0**	**0**	**0**	**2**	**11**

Combined	WEST		SOUTH		EAST		
	Phillip St		*Erby Pl*		*Phillip St*		
Peak Per	T	R	L	R	L	T	TOT
0730 - 0830	217	66	6	11	28	85	**413**
0745 - 0845	231	79	6	12	31	98	**457**
0800 - 0900	246	81	7	14	32	101	**481**
0815 - 0915	246	91	12	12	46	102	**509**
0830 - 0930	234	82	15	16	41	105	**493**
PEAK HR	**246**	**91**	**12**	**12**	**46**	**102**	**509**

Peds	WEST	SOUTH	EAST	
Time Per	Phillip St	Erby Pl	Phillip St	TOT
0730 - 0745	2	17	1	**20**
0745 - 0800	1	18	1	**20**
0800 - 0815	1	*27*	3	**31**
0815 - 0830	1	*35*	7	**43**
0830 - 0845	0	30	5	**35**
0845 - 0900	5	43	2	**50**
0900 - 0915	1	34	6	**41**
0915 - 0930	0	31	4	**35**
Per End	**11**	**235**	**29**	**275**

	WEST	SOUTH	EAST	
Peak Per	Phillip St	Erby Pl	Phillip St	TOT
0730 - 0830	5	97	12	**114**
0745 - 0845	3	110	16	**129**
0800 - 0900	7	135	17	**159**
0815 - 0915	7	142	20	**169**
0830 - 0930	6	138	17	**161**
PEAK HR	**7**	**142**	**20**	**169**

Hours 1

Hours 2

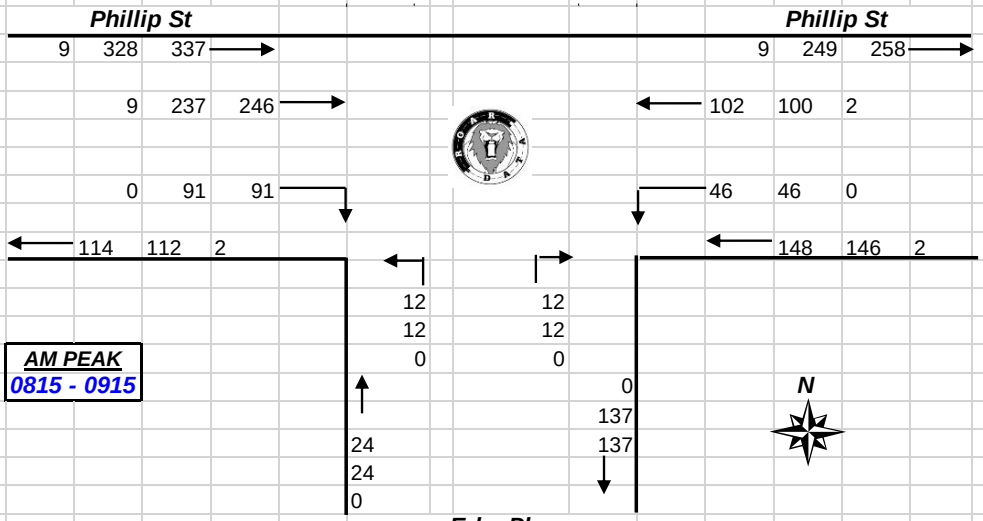
Hours 3

Hours 4

Hours 5

AM PEAK

0815 - 0915



R.O.A.R DATA

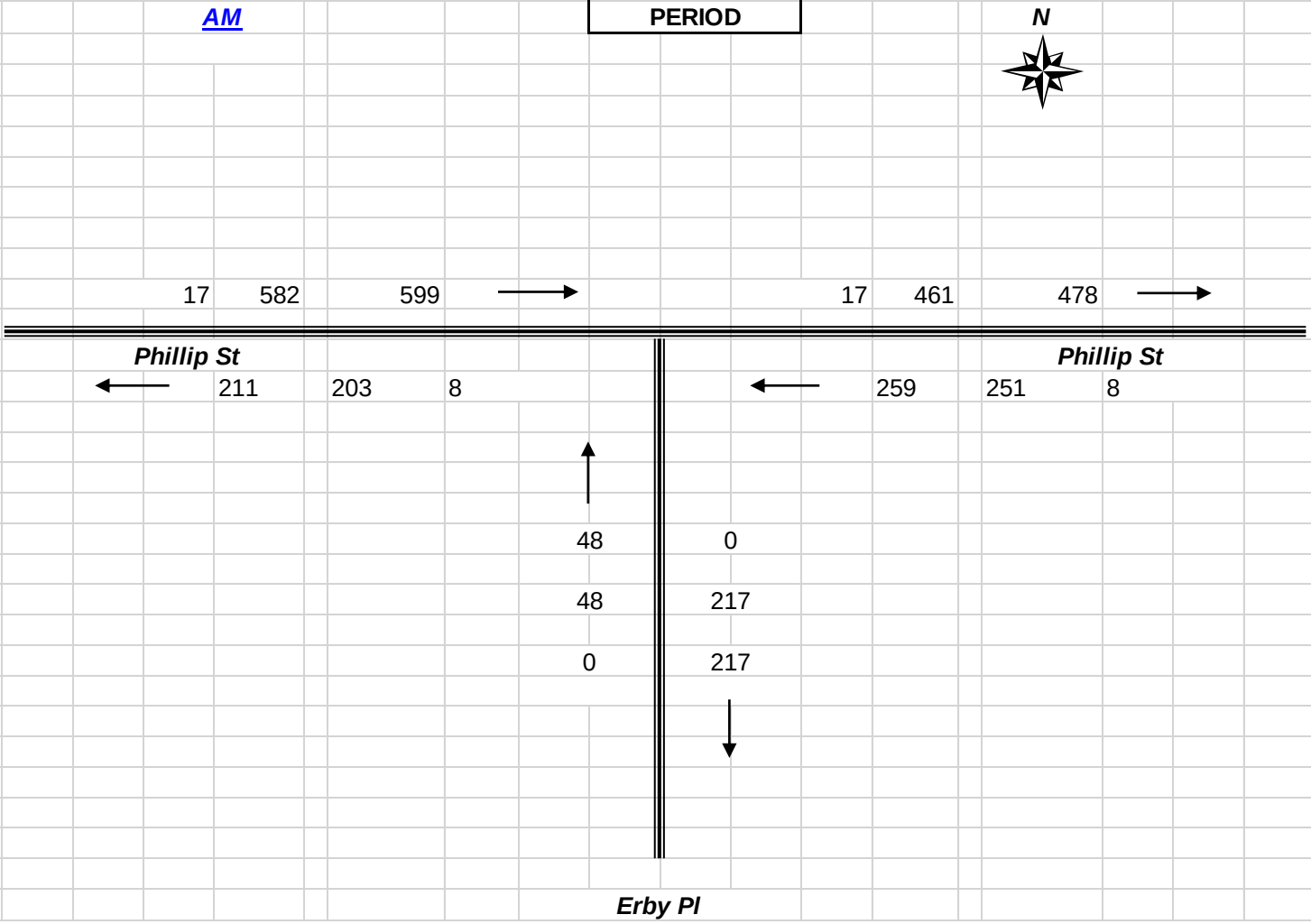
Reliable, Original & Authentic Results

Ph.88196847, Mob. 0418 239019

Client	: Varga Traffic Planning
Job No/Name	: 6453 PARRAMATTA Phillip St
Day/Date	: Tuesday 23rd May 2017

TOTAL VOLUMES FOR COUNT PERIOD

AM



R.O.A.R DATA

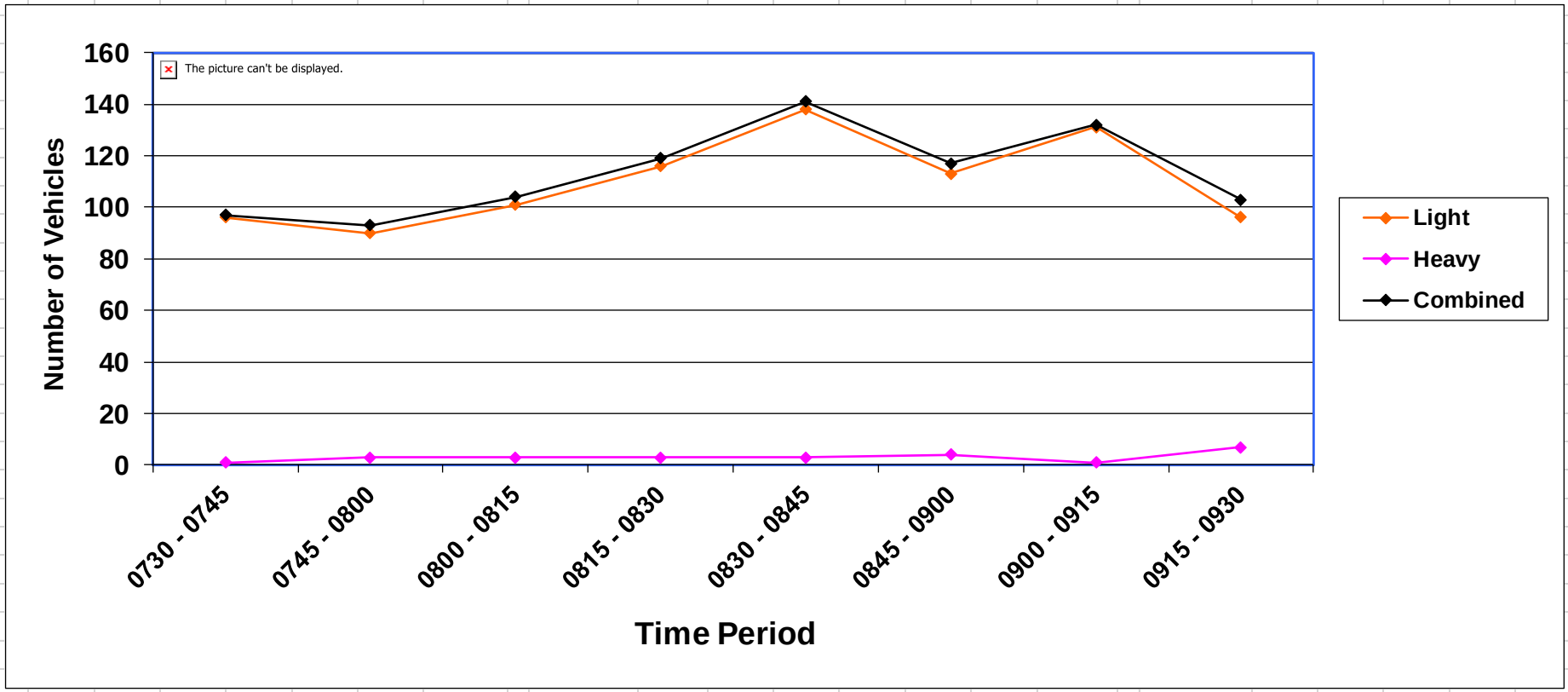
Reliable, Original & Authentic Results

Ph.88196847, Mob. 0418 239019

Client	: Varga Traffic Planning
Job No/Name	: 6453 PARRAMATTA Phillip St
Day/Date	: Tuesday 23rd May 2017

AM

Phillip St & Erby Pl



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob. 0418 239019

Client : Varga Traffic Planning

Job No/Name : 6453 PARRAMATTA Phillip St

Day/Date : Tuesday 23rd May 2017

Lights	WEST		SOUTH		EAST		
	Phillip St		*Erby Pl*		*Phillip St*		
Time Per	T	R	L	R	L	T	TOT
1630 - 1645	29	2	26	28	1	41	**127**
1645 - 1700	38	4	13	21	2	39	**117**
1700 - 1715	36	5	25	26	5	45	**142**
1715 - 1730	39	2	28	21	2	34	**126**
1730 - 1745	48	7	17	22	3	34	**131**
1745 - 1800	39	11	10	23	3	36	**122**
1800 - 1815	41	7	12	11	4	27	**102**
1815 - 1830	51	6	12	15	0	33	**117**
Per End	**321**	**44**	**143**	**167**	**20**	**289**	**984**

Heavies	WEST		SOUTH		EAST		
	Phillip St		*Erby Pl*		*Phillip St*		
Time Per	T	R	L	R	L	T	TOT
1630 - 1645	1	0	0	0	0	0	**1**
1645 - 1700	2	0	0	0	0	1	**3**
1700 - 1715	1	0	0	0	0	0	**1**
1715 - 1730	1	0	0	0	0	0	**1**
1730 - 1745	1	0	0	0	0	0	**1**
1745 - 1800	1	0	0	0	0	0	**1**
1800 - 1815	2	0	0	0	0	0	**2**
1815 - 1830	1	0	0	0	0	0	**1**
Per End	**10**	**0**	**0**	**0**	**0**	**1**	**11**

Combined	WEST		SOUTH		EAST		
	Phillip St		*Erby Pl*		*Phillip St*		
Time Per	T	R	L	R	L	T	TOT
1630 - 1645	30	2	26	28	1	41	**128**
1645 - 1700	40	4	13	21	2	40	**120**
1700 - 1715	37	5	25	26	5	45	**143**
1715 - 1730	40	2	28	21	2	34	**127**
1730 - 1745	49	7	17	22	3	34	**132**
1745 - 1800	40	11	10	23	3	36	**123**
1800 - 1815	43	7	12	11	4	27	**104**
1815 - 1830	52	6	12	15	0	33	**118**
Per End	**331**	**44**	**143**	**167**	**20**	**290**	**995**

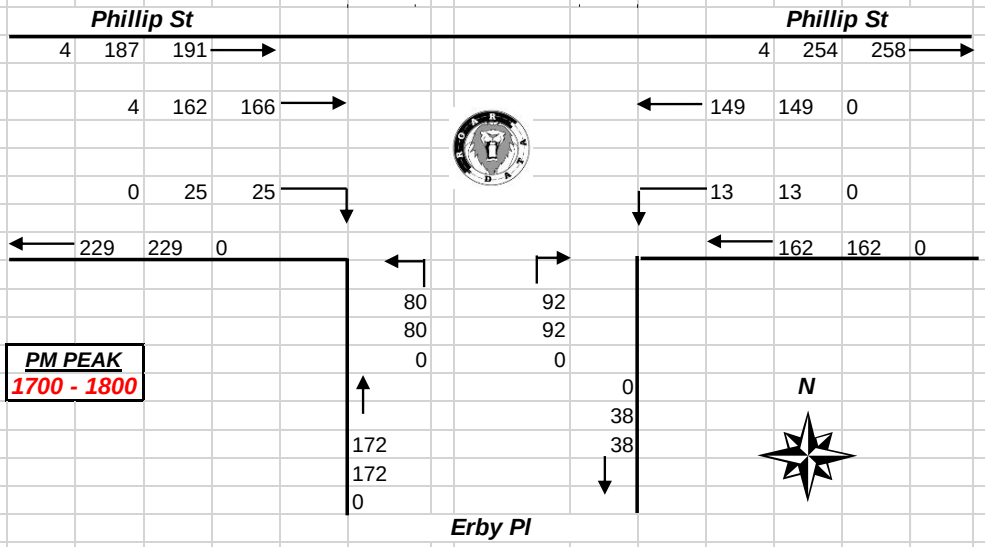
Lights	WEST		SOUTH		EAST		
	Phillip St		*Erby Pl*		*Phillip St*		
Peak Per	T	R	L	R	L	T	TOT
1630 - 1730	142	13	92	96	10	159	**512**
1645 - 1745	161	18	83	90	12	152	**516**
1700 - 1800	162	25	80	92	13	149	**521**
1715 - 1815	167	27	67	77	12	131	**481**
1730 - 1830	179	31	51	71	10	130	**472**
PEAK HR	**162**	**25**	**80**	**92**	**13**	**149**	**521**

Heavies	WEST		SOUTH		EAST		
	Phillip St		*Erby Pl*		*Phillip St*		
Peak Per	T	R	L	R	L	T	TOT
1630 - 1730	5	0	0	0	0	1	**6**
1645 - 1745	5	0	0	0	0	1	**6**
1700 - 1800	4	0	0	0	0	0	**4**
1715 - 1815	5	0	0	0	0	0	**5**
1730 - 1830	5	0	0	0	0	0	**5**
PEAK HR	**4**	**0**	**0**	**0**	**0**	**0**	**4**

Combined	WEST		SOUTH		EAST		
	Phillip St		*Erby Pl*		*Phillip St*		
Peak Per	T	R	L	R	L	T	TOT
1630 - 1730	147	13	92	96	10	160	**518**
1645 - 1745	166	18	83	90	12	153	**522**
1700 - 1800	166	25	80	92	13	149	**525**
1715 - 1815	172	27	67	77	12	131	**486**
1730 - 1830	184	31	51	71	10	130	**477**
PEAK HR	**166**	**25**	**80**	**92**	**13**	**149**	**525**

Peds	WEST	SOUTH	EAST	
Time Per	Phillip St	Erby Pl	Phillip St	TOT
1600 - 1615	8	32	2	**42**
1615 - 1630	4	30	4	**38**
1630 - 1645	3	29	2	**34**
1645 - 1700	4	34	3	**41**
1700 - 1715	0	21	8	**29**
1715 - 1730	9	27	4	**40**
1730 - 1745	2	28	9	**39**
1745 - 1800	3	27	3	**33**
Per End	**33**	**228**	**35**	**296**

	WEST	SOUTH	EAST	
Peak Per	Phillip St	Erby Pl	Phillip St	TOT
1630 - 1730	19	125	11	**155**
1645 - 1745	11	114	17	**142**
1700 - 1800	16	111	17	**144**
1715 - 1815	15	110	24	**149**
1730 - 1830	14	103	24	**141**
PEAK HR	**16**	**111**	**17**	**144**



R.O.A.R DATA

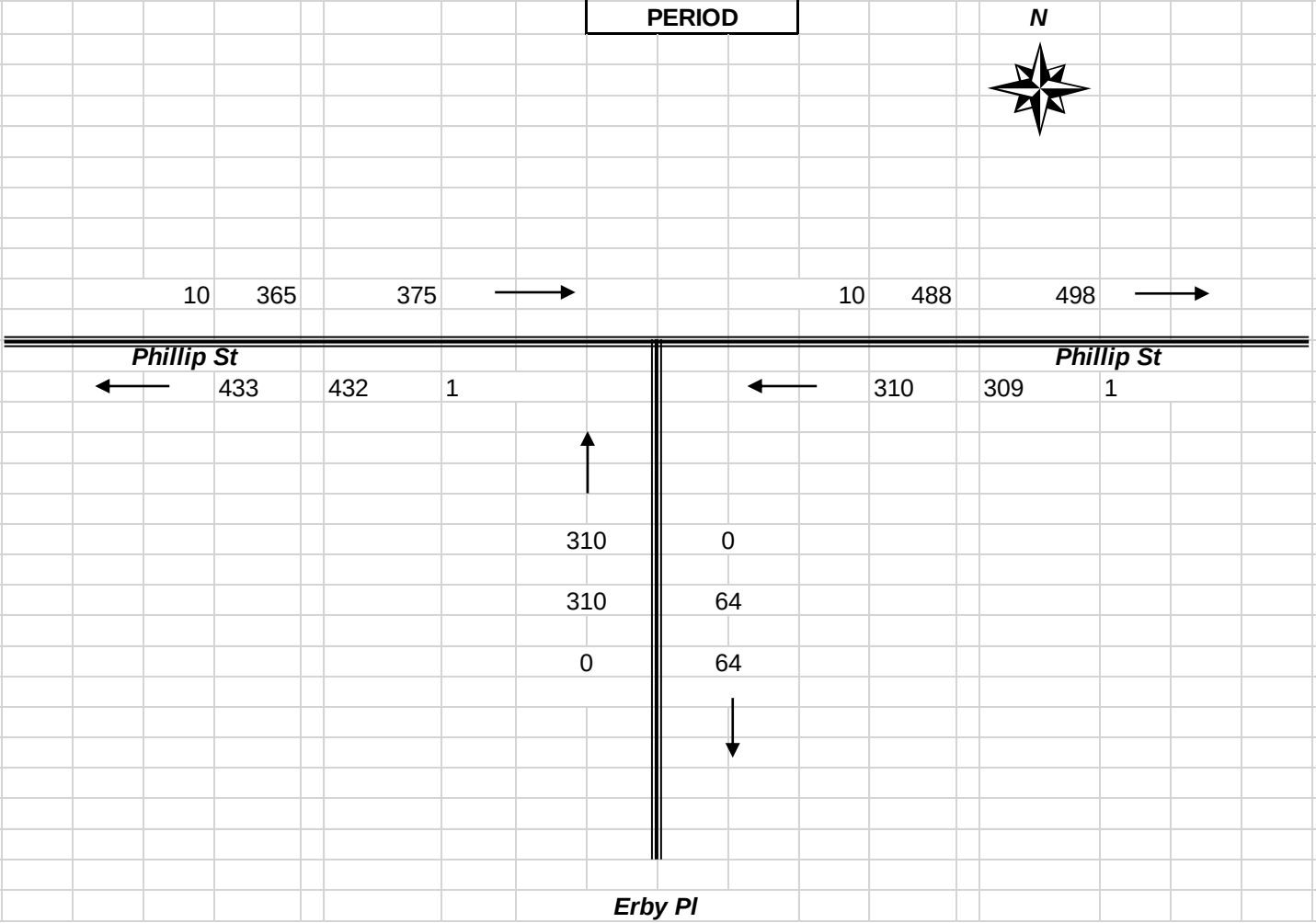
Reliable, Original & Authentic Results

Ph.88196847, Mob. 0418 239019

Client	: Varga Traffic Planning
Job No/Name	: 6453 PARRAMATTA Phillip St
Day/Date	: Tuesday 23rd May 2017

PM

TOTAL VOLUMES FOR COUNT PERIOD



R.O.A.R DATA

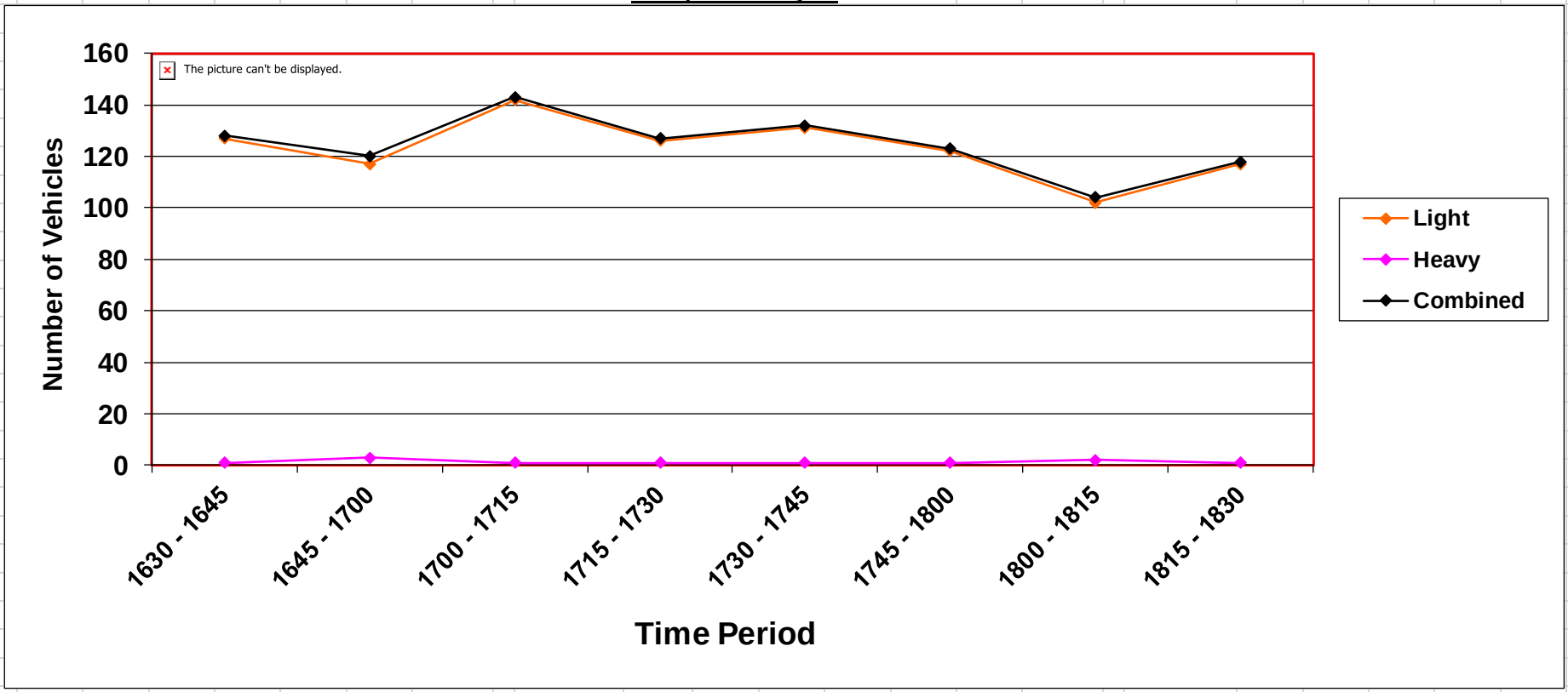
Reliable, Original & Authentic Results

Ph.88196847, Mob. 0418 239019

Client	: Varga Traffic Planning
Job No/Name	: 6453 PARRAMATTA Phillip St
Day/Date	: Tuesday 23rd May 2017

PM

Phillip St & Erby Pl



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob. 0418 239019

Client	: Varga Traffic Planning
Job No/Name	: 6453 PARRAMATTA Phillip St
Day/Date	: Tuesday 23rd May 2017

Intersection Details

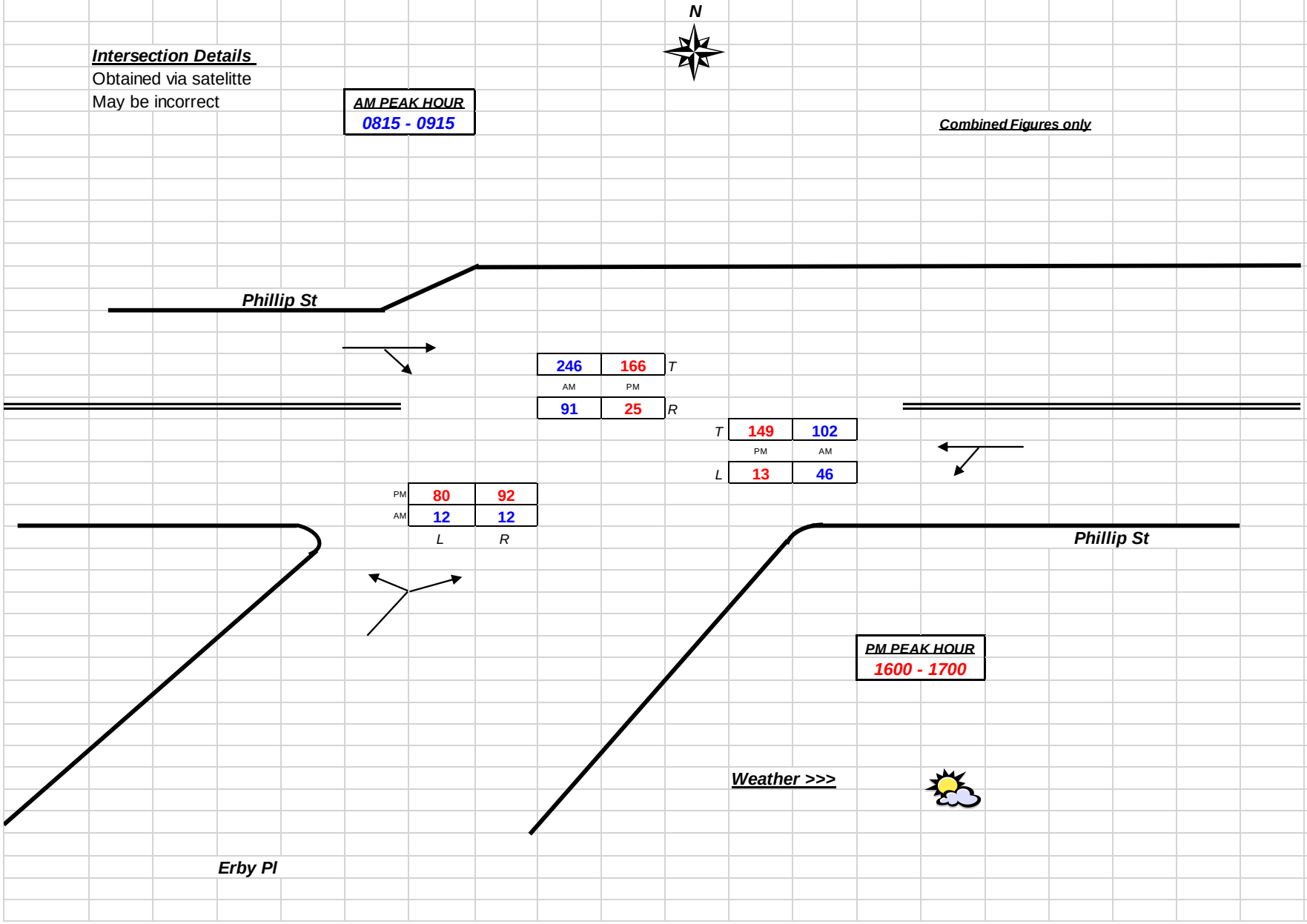
Obtained via satelitte

May be incorrect

AM PEAK HOUR

0815 - 0915

Combined Figures only



PM PEAK HOUR

1600 - 1700

Weather >>>