

Proposed Increase in Student Numbers

**St Luke's Grammar School
Headland Road, Dee Why**

TRAFFIC AND PARKING ASSESSMENT REPORT

1 December 2015

Ref 15558

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1. INTRODUCTION

This report has been prepared to accompany an application to Council for a proposed increase in student numbers at St Luke's Grammar School, which is located on Headland Road, Dee Why (Figures 1 & 2).

This proposal seeks approval to increase student numbers from 884 students to 1200 students.

There will not be any increase in staff numbers at the school as a result of the proposed increase in student numbers. The additional students will be accommodated on an "infill" basis whereby the additional students would fill gaps in existing classes, or where some existing teachers with spare capacity in their timetable could be given additional classes.

In essence, the proposal seeks to increase the staff/student ratio from 1 staff per 8.6 students to 1 staff per 10 students.

The school has recently increased in the amount of off-street car parking provided on the site from 57 spaces to 139 spaces with the construction of a multi-storey car parking structure located in Tango Avenue. The new car park more than *doubled* the amount of car parking provided on the site, without any change to student or staff numbers.

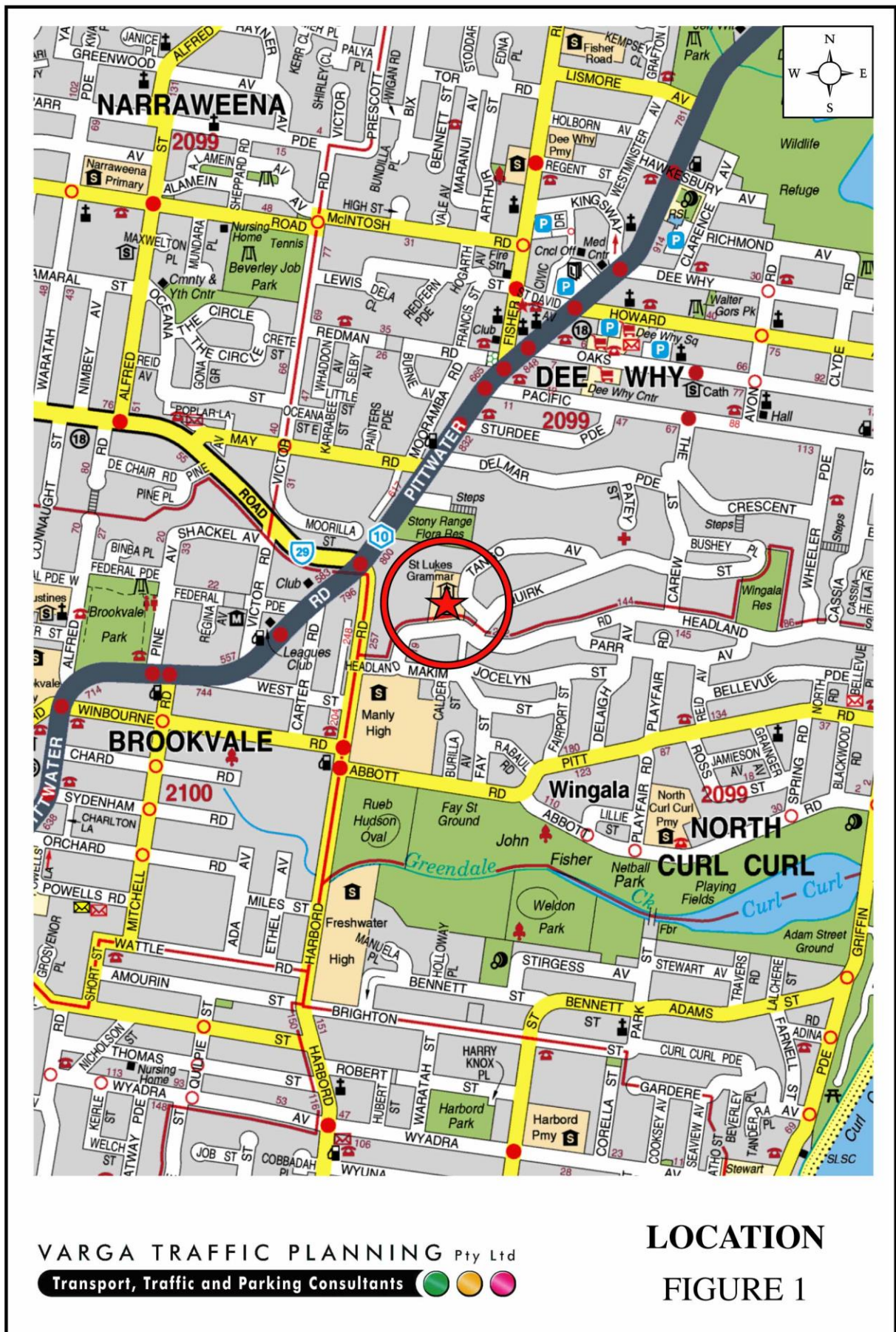
In a subsequent Land and Environment Court Hearing approval was granted to close 6 parking spaces under the school hall to facilitate the construction of a number of music practice rooms.

During those LEC proceedings it was agreed that the 119 staff parking spaces provided on the site were sufficient to accommodate the parking needs of the existing 119 staff.

The purpose of this report is to assess the traffic and parking implications of the proposed increase in student numbers, noting that there will not be an increase in staff numbers at the school. To that end this report:

- describes the site and provides details of the existing parking arrangements on the site

- reviews the road network in the vicinity of the site, and the traffic conditions on that road network
- assesses the traffic and parking implications of the proposed increase in student numbers.





2. PROPOSED DEVELOPMENT

Site

The subject site is located on the north-western corner of the Headland Road and Quirk Street intersection, and has a third street frontage to Tango Avenue. The site has street frontages approximately 129m in length to Headland Road, 48m in length to Quirk Street and 147m in length to Tango Avenue.

The subject site is occupied by St Luke's Grammar School, a Preschool-K-12 school for 884 students with 119 staff.

The existing school comprises a number of school buildings, including a junior block, middle-school block and senior block, as well as a resource centre, multi-purpose hall, playing courts, a playing field and grassed areas.

As noted in the foregoing, the amount of off-street car parking provided on the site was recently increased from 57 spaces to 139 spaces with the construction of a multi-storey car parking structure located in Tango Avenue. The new car parking more than *doubled* the amount of car parking provided on the site, without any change to student or staff numbers.

Following the recent LEC hearing the amount of car parking on the site was reduced to 133 spaces as set out in the table below:

Existing Off-Street Car Parking	
104 spaces:	Multi-storey staff car park
15 spaces:	School hall undercroft staff car park
14 spaces:	At-grade car park off Headland Road
133 spaces:	TOTAL

In addition, there are a number of drop-off/pick-up areas and bus bays located around the perimeter of the school site in Headland Road, Quirk Street and Tango Avenue.

Proposed Development

The proposed development seeks approval to increase student enrolments from 884 students to 1200 students.

There will be *no change* in staff numbers as the additional students will be accommodated on an “infill” basis whereby the additional students will fill gaps in existing classes or where some teachers with spare capacity in their timetable will be given additional classes.

No change is proposed to any of the buildings or car parking areas on the site as a consequence of this application.

3. TRAFFIC ASSESSMENT

Road Hierarchy

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

Pittwater Road is classified by the RMS as a *State Road* and provides the key north-south road link in the area, linking North Manly to Church Point. It typically carries 3 traffic lanes in each direction in the vicinity of the site, with opposing traffic flows separated by a central median island. Kerbside parking is generally permitted on both sides of the road outside of commuter peak periods.

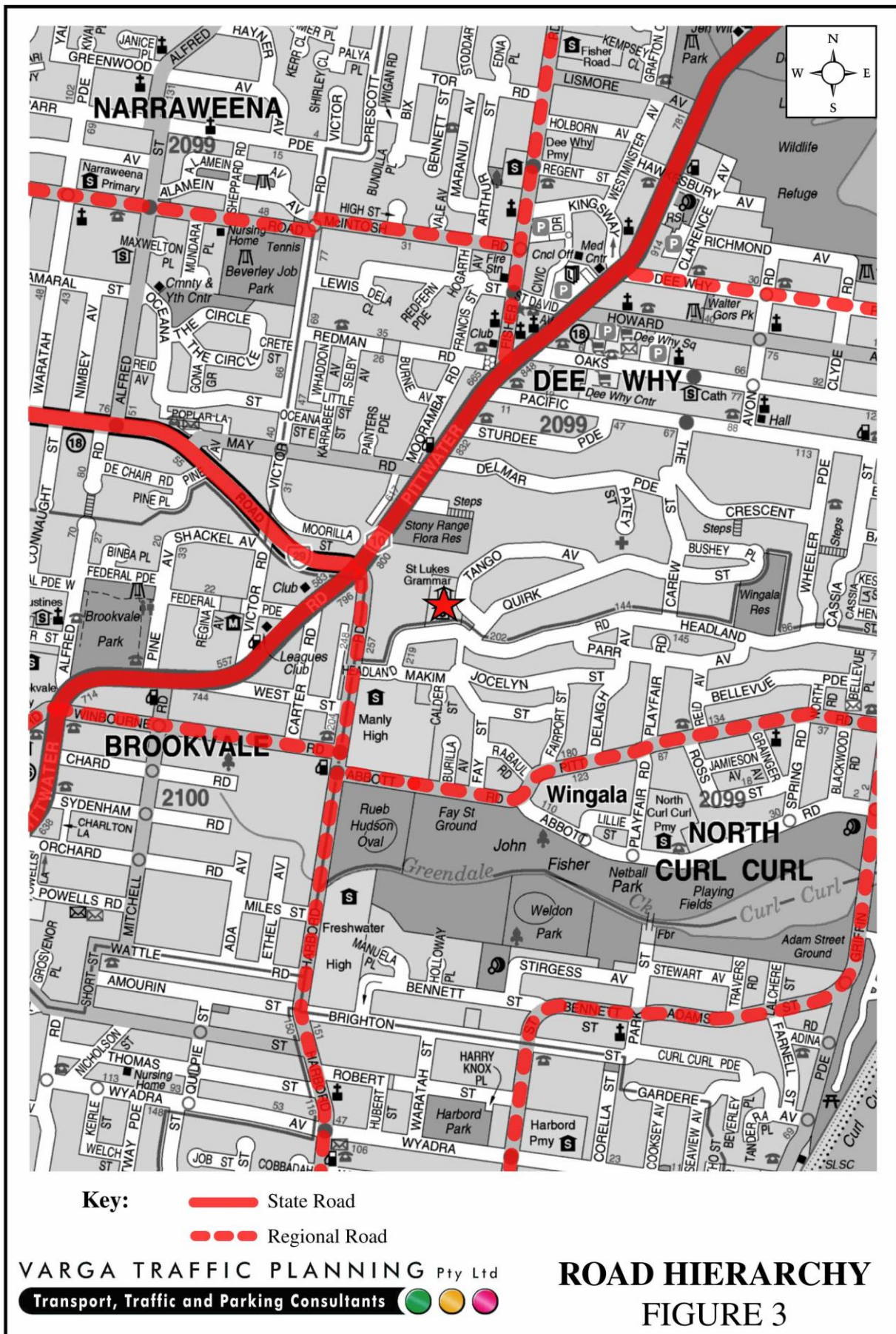
Harbord Road is classified by the RMS as a *Regional Road* and follows an east-west alignment between the Harbord West and Brookvale areas. It typically carries 2 traffic lanes in each direction in the vicinity of the site with kerbside parking permitted at selected locations.

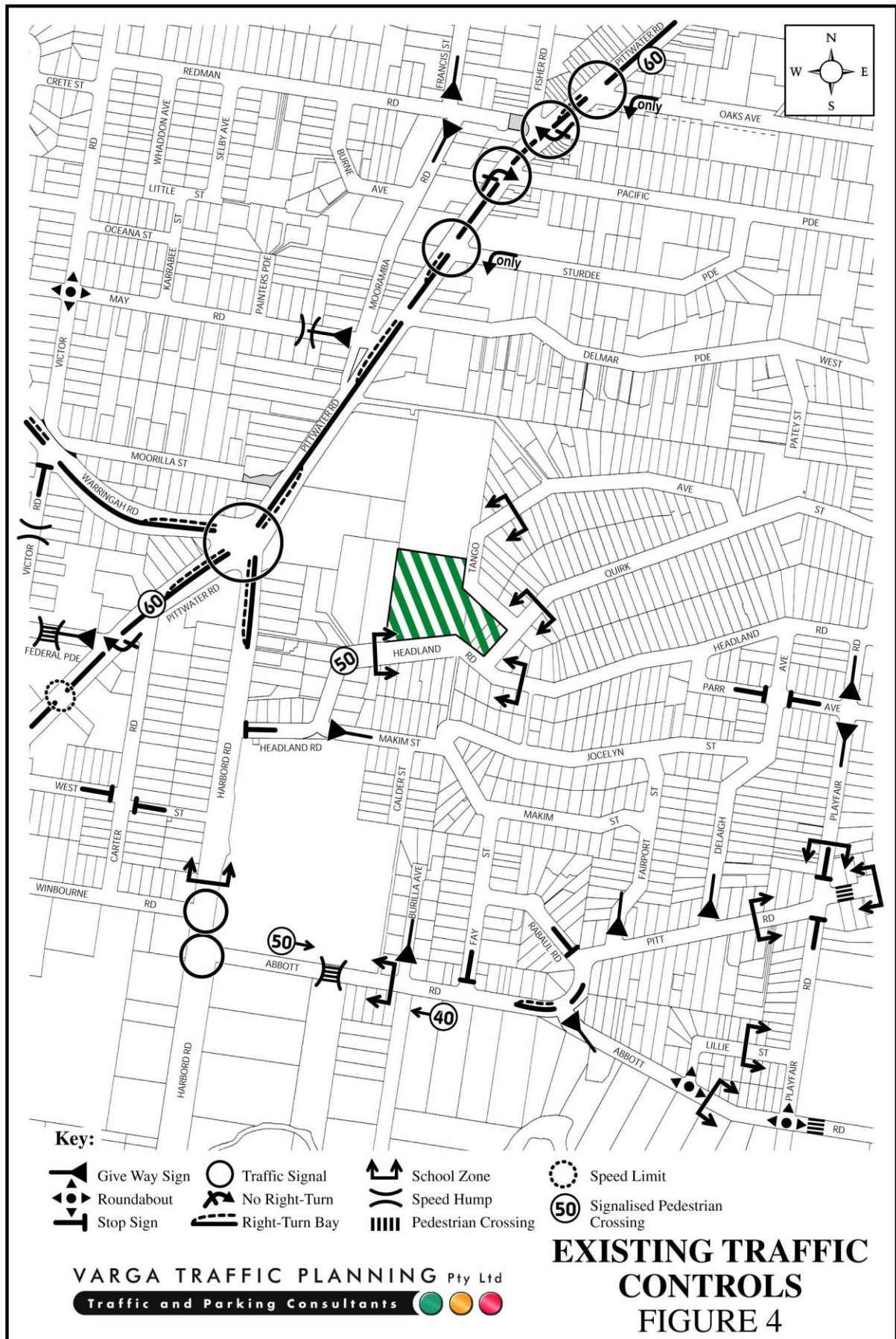
Headland Road, Quirk Street and Tango Avenue are all local, unclassified roads which are primarily used to provide vehicular and pedestrian access to frontage properties. Kerbside parking is generally permitted on both sides of all three roads. Headland Road performs the function of a *collector road*, connecting the local residential area to the *higher-order* classified RMS road network.

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 60 km/h SPEED LIMIT which applies to Pittwater Road
- a 50 km/h SPEED LIMIT which applies to Headland Road, Quirk Street, Tango Avenue and all other local roads in the area





- a SCHOOL ZONE in Headland Road, Quirk Street and Tango Avenue in the vicinity of the site.

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 Headland Road with Quirk Street, and the intersection with Quirk Street with Tango Avenue. The traffic surveys were undertaken on Tuesday, 1 September 2015 and are reproduced in the Appendix A. The traffic surveys reveal that:

- two-way traffic flows in Headland Road are typically in the order of 500 vehicles per hour (vph) during the AM peak period, decreasing to approximately 400 vph during the PM peak period
- two-way traffic flows in Quirk Street are typically in the order of 370 vph during the AM peak period, decreasing to approximately 280 vph during the PM peak period
- two-way traffic flows in Tango Avenue are typically in the order of 330 vph during the AM peak period, decreasing to approximately 190 vph during the PM peak period.

Existing School Traffic Generation Rates

The traffic surveys were also used to identify the number of vehicles dropping-off students in the morning and picking-up students in the afternoon. Those surveys identified the following traffic generation rates on a “per student” basis:

TRAFFIC GENERATION RATE PER STUDENT

	AM PEAK	PM PEAK
TO:	0.29 vph/student	0.11 vph/student
FROM:	0.29 vph/student	0.15 vph/student
TOTAL:	0.58 vph/student	0.26 vph/student

Projected Additional Traffic Generation Potential

Application of the above traffic generation rates to the proposed additional 316 students is expected to generate an additional 92 vph dropping-off students in the AM peak, and an additional 47 vph picking-up students in the PM peak, as set out in the table below:

	PROJECTED ADDITIONAL TRAFFIC GENERATION	
	AM PEAK	PM PEAK
TO:	92 vph	35 vph
FROM:	92 vph	47 vph
TOTAL:	184 vph	82 vph

Traffic Assessment

The traffic implications of development proposals primarily concern the effect that the *additional* traffic flows generated by the development may have on the operational performance of nearby intersections. Those effects can be assessed using the SIDRA capacity analysis program as is widely used by the RMS and many LGAs for this purpose. Criteria for evaluating the results of SIDRA capacity analysis are reproduced in the following pages.

The results of the SIDRA capacity analysis of the Headland Road/Quirk Street intersection are summarised in Table 3.1 below, revealing that:

- the intersection currently operates at *Level of Service "A"*, with total average vehicle delays in the order of 2 to 3 seconds per vehicle under the existing traffic demands
- under the projected additional traffic flows expected to be generated by the development the intersection will continue to operate at *Level of Service "A"*, with increases in total average vehicle delays in the order of less than 1 second per vehicle.

The results of the SIDRA capacity analysis of the Quirk Street/Tango Avenue intersection are summarised in Table 3.2 below, revealing that:

- the intersection currently operates at *Level of Service “A”*, with total average vehicle delays in the order of 2 to 3 seconds per vehicle under the existing traffic demands
- under the projected additional traffic flows expected to be generated by the development the intersection will continue to operate at *Level of Service “A”*, with increases in total average vehicle delays in the order of less than 1 second per vehicle.

In summary, the results of the capacity analysis confirm that the proposed increase in student numbers will not have any unacceptable traffic implications in terms of road network capacity.

TABLE 3.1 - RESULTS OF INTANAL ANALYSIS OF OF HEADLAND ROAD & QUIRK STREET				
Key Indicators	Existing Traffic Demand		Projected Development Traffic Demand	
	AM	PM	AM	PM
Level of Service	A	A	A	A
Degree of Saturation	0.135	0.140	0.168	0.230
Average Vehicle Delay (secs/veh)				
Headland Road (East) T	0.6	0.5	0.8	0.8
R	4.5	4.5	4.7	5.1
Quirk Street (North) L	3.7	3.8	3.8	3.9
R	5.2	4.9	5.5	5.3
Headland Road (West) L	3.4	3.4	3.4	3.4
T	0.0	0.0	0.0	0.0
TOTAL AVERAGE VEHICLE DELAY	2.8	2.4	2.9	2.6

HEA_QUIX

HEA_QUIP

TABLE 3.2 - RESULTS OF INTANAL ANALYSIS OF OF QUIRK STREET & TANGO AVENUE				
Key Indicators	Existing Traffic Demand		Projected Development Traffic Demand	
	AM	PM	AM	PM
Level of Service	A	A	A	A
Degree of Saturation	0.132	0.099	0.152	0.144
Average Vehicle Delay (secs/veh)				
Quirk Street (South) L	3.4	3.4	3.4	3.4
T	0.0	0.0	0.0	0.0
Quirk Street (North) T	0.6	0.4	0.8	0.6
R	4.4	4.1	4.6	4.5
Tango Avenue (West) L	3.5	3.6	3.5	3.6
R	4.8	4.5	4.9	4.7
TOTAL AVERAGE VEHICLE DELAY	2.8	2.2	2.9	2.5

QUI_TANX

QUI_TANP

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 signals¹ 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 5 and comprise:

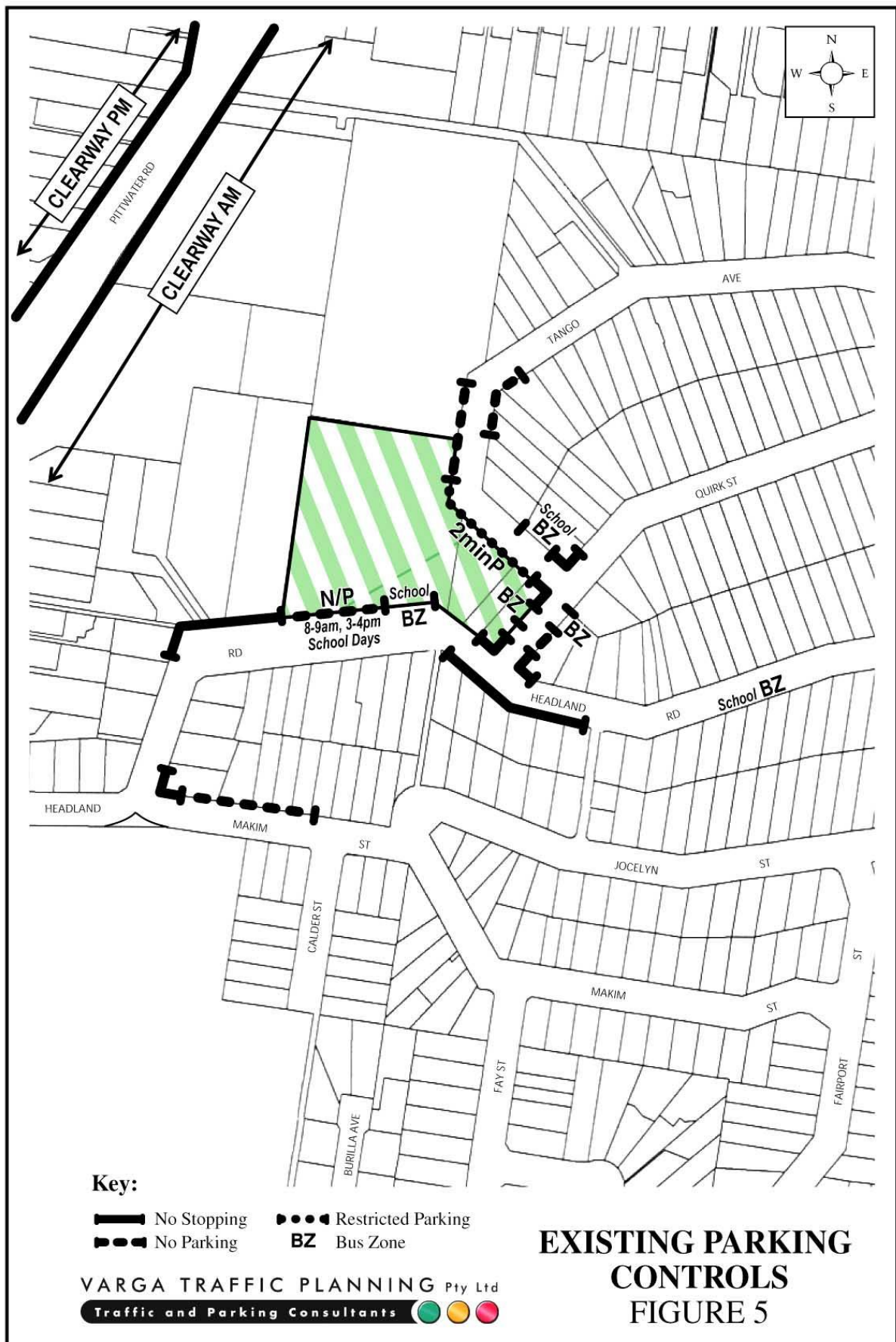
- NO PARKING restrictions along the western portion of the Headland Road street frontage from 8-9am and 3-4pm
- a small section of UNRESTRICTED parking along the eastern portion of the Headland Road street frontage as well as the majority of the southern side of Headland Road
- 2 MINUTE PARKING along the majority of the Tango Avenue street frontage in the indented drop-off bay
- generally UNRESTRICTED parking along both sides of Quirk Street
- AM & PM BUS ZONES located on the northern side of Headland Road as well as the western side of Quirk Street along the school frontages
- PM ONLY BUS ZONES along the eastern side of Quirk Street and the northern side of Tango Avenue opposite the school

Off-Street Parking Provisions

The off-street parking requirements applicable to the development proposal are specified in Warringah Council's *DCP 2011 – Appendix 1 – Car Parking Requirements* document in the following terms:

Primary Schools, further education

1 car space per staff member in attendance *plus*
as relevant, adequate pick-up/set-down area on-site *plus*
adequate provision of bicycle racks *plus*
adequate provision for student parking *plus*
provision of bus standing and turning area



As noted in the foregoing, there are 133 off-street car parking spaces provided on the site, including 119 spaces for the 119 staff as set out in the table below.

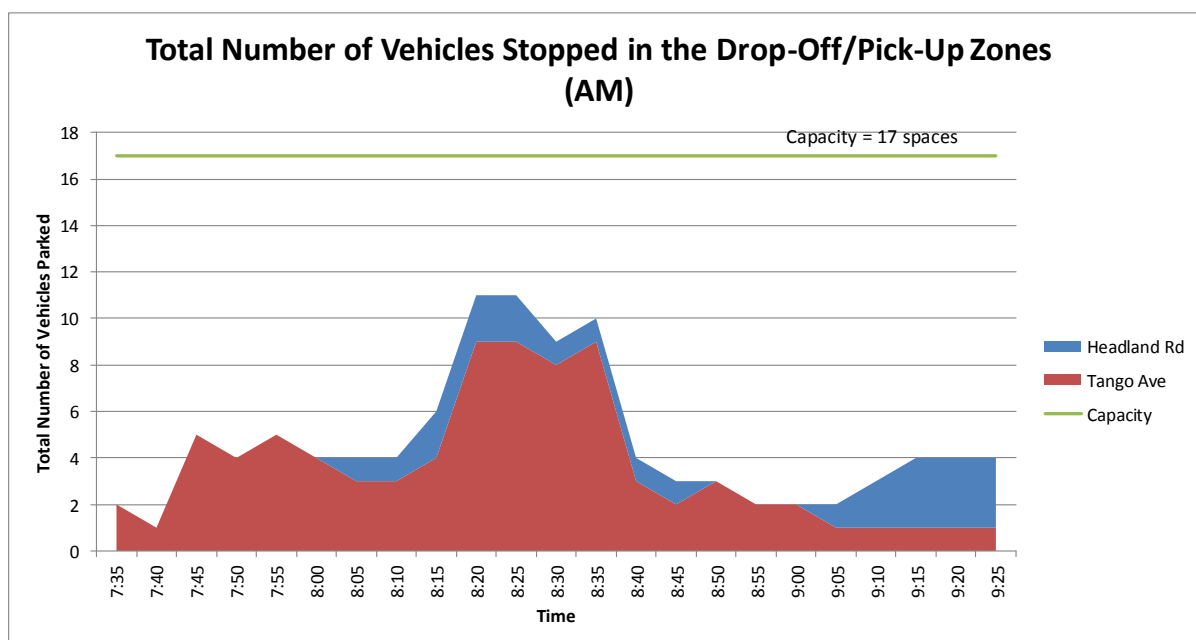
Existing Off-Street Car Parking

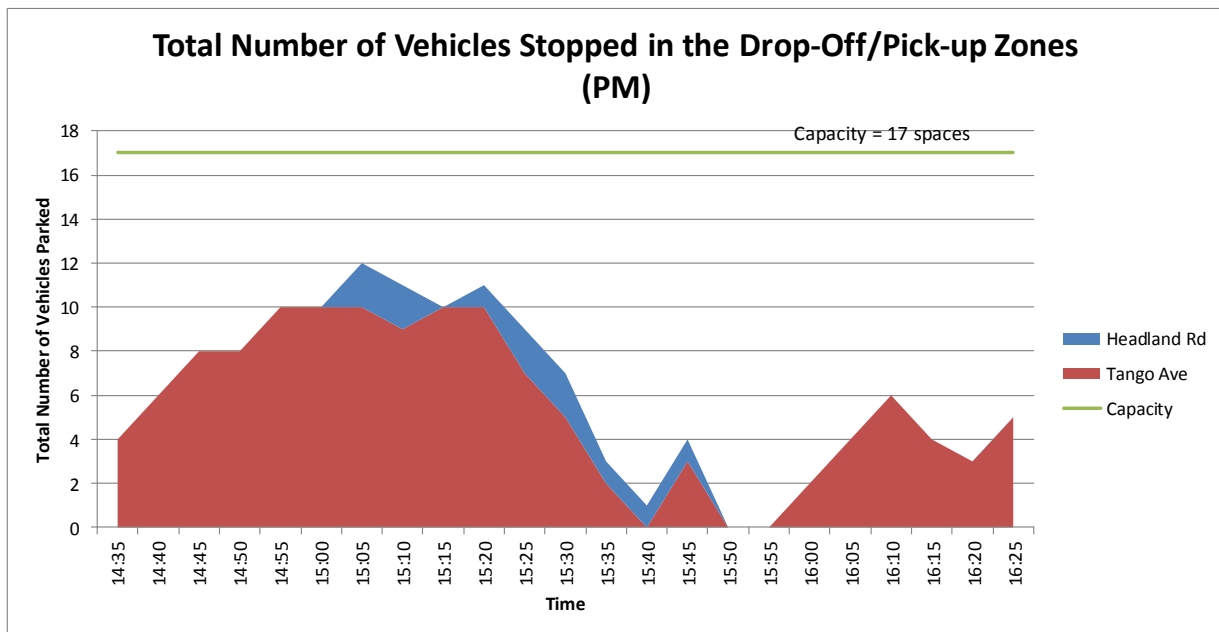
104 spaces:	Multi-storey staff car park
15 spaces:	School hall undercroft staff car park
14 spaces:	At-grade car parks off Headland Road
133 spaces:	TOTAL

In addition, there are a number of drop-off/pick-up areas and bus stops located around the perimeter of the school site in Headland Road, Quirk Street and Tango Avenue.

There are 4 bus stops serving the school which are currently used by 6 buses in the morning and 10 buses in the afternoon.

The 2 drop-off/pick-up bays have a combined capacity of 17 cars comprising 5 spaces in Headland Road and a further 12 spaces in Tango Avenue. Surveys conducted at 5 minute intervals in the two drop-off/pick-up zones found that the peak parking demand in the two drop-off/pick-up zones is typically in the order of 11 to 12 cars during the morning and afternoon peaks respectively, as illustrated on the two graphs below.





On a pro-rata basis, the proposed increase in student numbers would therefore result in an increase in the peak parking demand for drop-off and pick-up of approximately 4 cars during the morning and afternoon peak periods.

The survey results indicate that there is sufficient capacity to accommodate the additional drop-off/pick-up demands of approximately 4 vehicles which is expected to be generated by the proposed increase in student numbers.

Accordingly, no change is proposed to the existing drop-off and pick-up arrangements located in the street around the perimeter of the school site.

In summary, the proposed parking facilities comply with the relevant requirements specified in both Council's Parking Code and it is therefore concluded that the proposed increase in student numbers will not have any unacceptable parking implications.

APPENDIX A

TRAFFIC SURVEY DATA



R.O.A.R. DATA

Reliable, Original & Authentic Results

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AM

Client : Varga Traffic Planning
Job No/Name : 5729 Dee Why St. Lukes School
Day/Date : Tuesday 1st September 2015

NORTH Headland Rd A				NORTH Headland Rd B				No Parking 8 - 9am 3 - 4pm C				Bus Zone 8 - 9am 3 - 4pm D				NORTH Headland Rd E			
Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT
0730 - 0745	0	0	0	0730 - 0745	0	0	0	0730 - 0745	3	3	6	0730 - 0745	1	1	2	0730 - 0745	0	0	0
0745 - 0800	0	0	0	0745 - 0800	0	0	0	0745 - 0800	2	2	4	0745 - 0800	1	1	2	0745 - 0800	0	0	0
0800 - 0815	0	0	0	0800 - 0815	0	0	0	0800 - 0815	6	6	12	0800 - 0815	1	1	2	0800 - 0815	0	0	0
0815 - 0830	2	2	4	0815 - 0830	1	1	2	0815 - 0830	10	10	20	0815 - 0830	5	5	10	0815 - 0830	0	1	1
0830 - 0845	0	0	0	0830 - 0845	0	0	0	0830 - 0845	6	6	12	0830 - 0845	1	1	2	0830 - 0845	1	1	2
0845 - 0900	0	0	0	0845 - 0900	0	0	0	0845 - 0900	1	1	2	0845 - 0900	0	0	0	0845 - 0900	0	0	0
0900 - 0915	0	0	0	0900 - 0915	0	0	0	0900 - 0915	3	0	3	0900 - 0915	1	1	2	0900 - 0915	0	0	0
0915 - 0930	0	0	0	0915 - 0930	0	0	0	0915 - 0930	0	0	0	0915 - 0930	3	1	4	0915 - 0930	0	0	0
Period End	2	2	4	Period End	1	1	2	Period End	31	28	59	Period End	13	11	24	Period End	1	2	3
SOUTH Headland Rd A				NORTH Headland Rd B				NORTH Headland Rd C				Bus Zone D				NORTH Headland Rd E			
Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT
0730 - 0830	2	2	4	0730 - 0830	1	1	2	0730 - 0830	21	21	42	0730 - 0830	8	8	16	0730 - 0830	0	1	1
0745 - 0845	2	2	4	0745 - 0845	1	1	2	0745 - 0845	24	24	48	0745 - 0845	8	8	16	0745 - 0845	1	2	3
0800 - 0900	2	2	4	0800 - 0900	1	1	2	0800 - 0900	23	23	46	0800 - 0900	7	7	14	0800 - 0900	1	2	3
0815 - 0915	2	2	4	0815 - 0915	1	1	2	0815 - 0915	20	17	37	0815 - 0915	7	7	14	0815 - 0915	1	2	3
0830 - 0930	0	0	0	0830 - 0930	0	0	0	0830 - 0930	10	7	17	0830 - 0930	5	3	8	0830 - 0930	1	1	2
PEAK HR				PEAK HR				PEAK HR				PEAK HR				PEAK HR			
SOUTH Headland Rd F				Bus Zone 8 - 9am 3 - 4pm WEST Quirk Rd G				WEST Quirk Rd H				EAST Quirk Rd I				Bus Zone 8 - 9am 3 - 4pm EAST Quirk Rd J			
Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT
0730 - 0745	1	0	1	0730 - 0745	0	0	0	0730 - 0745	0	0	0	0730 - 0745	1	1	2	0730 - 0745	0	0	0
0745 - 0800	1	0	1	0745 - 0800	0	0	0	0745 - 0800	0	0	0	0745 - 0800	0	0	0	0745 - 0800	0	0	0
0815 - 0830	1	0	1	0815 - 0830	0	0	0	0815 - 0830	0	0	0	0815 - 0830	1	1	2	0815 - 0830	1	1	2
0815 - 0830	3	0	3	0815 - 0830	1	1	2	0815 - 0830	0	0	0	0815 - 0830	0	0	0	0815 - 0830	3	3	6
0830 - 0845	1	0	1	0830 - 0845	0	0	0	0830 - 0845	0	0	0	0830 - 0845	0	0	0	0830 - 0845	1	1	2
0845 - 0900	0	0	0	0845 - 0900	0	0	0	0845 - 0900	0	0	0	0845 - 0900	0	0	0	0845 - 0900	0	0	0
0900 - 0915	0	0	0	0900 - 0915	0	0	0	0900 - 0915	1	0	1	0900 - 0915	0	0	0	0900 - 0915	0	0	0
0915 - 0930	0	0	0	0915 - 0930	0	0	0	0915 - 0930	0	0	0	0915 - 0930	0	0	0	0915 - 0930	0	0	0
Period End	7	0	7	Period End	1	1	2	Period End	1	0	1	Period End	2	2	4	Period End	5	5	10
SOUTH Headland Rd F				Bus Zone WEST Quirk Rd G				WEST Quirk Rd H				EAST Quirk Rd I				EAST Quirk Rd J			
Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT
0730 - 0830	6	0	6	0730 - 0830	1	1	2	0730 - 0830	0	0	0	0730 - 0830	2	2	4	0730 - 0830	4	4	8
0745 - 0845	6	0	6	0745 - 0845	1	1	2	0745 - 0845	0	0	0	0745 - 0845	1	1	2	0745 - 0845	5	5	10
0800 - 0900	5	0	5	0800 - 0900	1	1	2	0800 - 0900	0	0	0	0800 - 0900	1	1	2	0800 - 0900	5	5	10
0815 - 0915	4	0	4	0815 - 0915	1	1	2	0815 - 0915	1	0	1	0815 - 0915	0	0	0	0815 - 0915	4	4	8
0830 - 0930	1	0	1	0830 - 0930	0	0	0	0830 - 0930	1	0	1	0830 - 0930	0	0	0	0830 - 0930	1	1	2
PEAK HR				PEAK HR				PEAK HR				PEAK HR				PEAK HR			



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

AM

Client : Varga Traffic Planning
Job No/Name : 5729 Dee Why St. Lukes School
Day/Date : Tuesday 1st September 2015

No Parking												Bus Zone							
8 - 9.30am												3 - 4pm							
2.30 - 4pm																			
SOUTH				EAST				NORTH				NORTH				Combined			
Tango Ave				Tango Ave				Tango Ave				Tango Ave				On Street			
K				L				M				N				ALL AREAS			
Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	IN	OUT	TOT
0730 - 0745	19	16	35	0730 - 0745	2	0	2	0730 - 0745	0	0	0	0730 - 0745	1	0	1	0730 - 0745	28	21	49
0745 - 0800	18	15	33	0745 - 0800	1	1	2	0745 - 0800	0	0	0	0745 - 0800	1	1	2	0745 - 0800	24	20	44
0800 - 0815	70	69	139	0800 - 0815	1	1	2	0800 - 0815	1	1	2	0800 - 0815	1	1	2	0800 - 0815	82	81	163
0815 - 0830	85	83	168	0815 - 0830	0	0	0	0815 - 0830	2	0	2	0815 - 0830	0	0	0	0815 - 0830	109	106	215
0830 - 0845	34	40	74	0830 - 0845	0	0	0	0830 - 0845	1	2	3	0830 - 0845	1	2	3	0830 - 0845	45	53	98
0845 - 0900	2	4	6	0845 - 0900	0	0	0	0845 - 0900	1	0	1	0845 - 0900	1	1	2	0845 - 0900	5	6	11
0900 - 0915	0	0	0	0900 - 0915	0	0	0	0900 - 0915	1	1	2	0900 - 0915	1	1	2	0900 - 0915	7	3	10
0915 - 0930	1	0	1	0915 - 0930	0	0	0	0915 - 0930	0	0	0	0915 - 0930	0	0	0	0915 - 0930	4	1	5
Period End	229	227	456	Period End	4	2	6	Period End	6	4	10	Period End	6	6	12	Period End	304	291	595
SOUTH				EAST				WEST				EAST							
Tango Ave				Tango Ave				Tango Ave				Tango Ave				On Street			
K				L				M				N				ALL AREAS			
Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	IN	OUT	TOT
0730 - 0830	192	183	375	0730 - 0830	4	2	6	0730 - 0830	3	1	4	0730 - 0830	3	2	5	0730 - 0830	243	228	471
0745 - 0845	207	207	414	0745 - 0845	2	2	4	0745 - 0845	4	3	7	0745 - 0845	3	4	7	0745 - 0845	260	260	520
0800 - 0900	191	196	387	0800 - 0900	1	1	2	0800 - 0900	5	3	8	0800 - 0900	3	4	7	0800 - 0900	241	246	487
0815 - 0915	121	127	248	0815 - 0915	0	0	0	0815 - 0915	5	3	8	0815 - 0915	3	4	7	0815 - 0915	166	168	334
0830 - 0930	37	44	81	0830 - 0930	0	0	0	0830 - 0930	3	3	6	0830 - 0930	3	4	7	0830 - 0930	61	63	124
PEAK HR				PEAK HR				PEAK HR				PEAK HR				PEAK HR			



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Client	: Varga Traffic Planning	
Job No/Name	: 5729 Dee Why St. Lukes School	
Day/Date	: Tuesday 1st September 2015	

AM

[illegible]



Reliable, Original & Authentic Results

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PM

Client	: Varga Traffic Planning
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Job No/Name	: 5729 Dee Why St. Lukes School
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Day/Date	: Tuesday 1st September 2015
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NORTH Headland Rd A				NORTH Headland Rd B				No Parking 8 - 9am 3 - 4pm				NORTH Headland Rd C				Bus Zone 8 - 9am 3 - 4pm				NORTH Headland Rd D				NORTH Headland Rd E			
Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT								
1430 - 1445	0	0	0	1430 - 1445	0	0	0	1430 - 1445	0	0	0	1430 - 1445	0	1	1	1430 - 1445	0	0	0								
1445 - 1500	0	0	0	1445 - 1500	0	0	0	1445 - 1500	0	0	0	1445 - 1500	1	1	2	1445 - 1500	0	0	0								
1500 - 1515	0	0	0	1500 - 1515	1	0	1	1500 - 1515	2	2	4	1500 - 1515	1	0	1	1500 - 1515	0	0	0								
1515 - 1530	0	0	0	1515 - 1530	0	3	3	1515 - 1530	2	2	4	1515 - 1530	0	1	1	1515 - 1530	0	2	2								
1530 - 1545	0	0	0	1530 - 1545	1	1	2	1530 - 1545	1	1	2	1530 - 1545	1	1	2	1530 - 1545	0	0	0								
1545 - 1600	0	0	0	1545 - 1600	0	0	0	1545 - 1600	0	0	0	1545 - 1600	0	0	0	1545 - 1600	0	1	1								
1600 - 1615	0	0	0	1600 - 1615	0	1	1	1600 - 1615	0	0	0	1600 - 1615	0	0	0	1600 - 1615	0	2	2								
1615 - 1630	0	0	0	1615 - 1630	0	0	0	1615 - 1630	0	0	0	1615 - 1630	0	0	0	1615 - 1630	0	0	0								
Period End	0	0	0	Period End	2	5	7	Period End	5	5	10	Period End	3	4	7	Period End	0	5	5								
SOUTH Headland Rd A				NORTH Headland Rd B				NORTH Headland Rd C				Bus Zone NORTH Headland Rd D				NORTH Headland Rd E											
Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT								
1430 - 1530	0	0	0	1430 - 1530	1	3	4	1430 - 1530	4	4	8	1430 - 1530	2	3	5	1430 - 1530	0	2	2								
1445 - 1545	0	0	0	1445 - 1545	2	4	6	1445 - 1545	5	5	10	1445 - 1545	3	3	6	1445 - 1545	0	2	2								
1500 - 1600	0	0	0	1500 - 1600	2	4	6	1500 - 1600	5	5	10	1500 - 1600	2	2	4	1500 - 1600	0	3	3								
1515 - 1615	0	0	0	1515 - 1615	1	5	6	1515 - 1615	3	3	6	1515 - 1615	1	2	3	1515 - 1615	0	5	5								
1530 - 1630	0	0	0	1530 - 1630	1	2	3	1530 - 1630	1	1	2	1530 - 1630	1	1	2	1530 - 1630	0	3	3								
PEAK HR				PEAK HR				PEAK HR				PEAK HR				PEAK HR											
SOUTH Headland Rd F				Bus Zone WEST Quirk Rd G				WEST Quirk Rd H				EAST Quirk Rd I				Bus Zone EAST Quirk Rd J											
Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT								
1430 - 1445	0	0	0	1430 - 1445	0	0	0	1430 - 1445	1	0	1	1430 - 1445	0	0	0	1430 - 1445	0	0	0								
1445 - 1500	0	0	0	1445 - 1500	0	0	0	1445 - 1500	0	0	0	1445 - 1500	1	0	1	1445 - 1500	4	1	5								
1500 - 1515	0	0	0	1500 - 1515	0	0	0	1500 - 1515	1	2	3	1500 - 1515	1	2	3	1500 - 1515	2	4	6								
1515 - 1530	1	2	3	1515 - 1530	2	1	3	1515 - 1530	1	2	3	1515 - 1530	0	2	2	1515 - 1530	1	2	3								
1530 - 1545	1	2	3	1530 - 1545	2	3	5	1530 - 1545	1	1	2	1530 - 1545	0	0	0	1530 - 1545	1	1	2								
1545 - 1600	0	1	1	1545 - 1600	0	0	0	1545 - 1600	0	0	0	1545 - 1600	0	0	0	1545 - 1600	0	0	0								
1600 - 1615	0	0	0	1600 - 1615	0	0	0	1600 - 1615	0	0	0	1600 - 1615	0	0	0	1600 - 1615	0	0	0								
1615 - 1630	0	0	0	1615 - 1630	0	0	0	1615 - 1630	0	0	0	1615 - 1630	0	1	1	1615 - 1630	0	0	0								
Period End	2	5	7	Period End	4	4	8	Period End	4	5	9	Period End	2	5	7	Period End	8	8	16								
SOUTH Headland Rd F				Bus Zone WEST Quirk Rd G				WEST Quirk Rd H				EAST Quirk Rd I				EAST Quirk Rd J											
Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT								
1430 - 1530	1	2	3	1430 - 1530	2	1	3	1430 - 1530	3	4	7	1430 - 1530	2	4	6	1430 - 1530	7	7	14								
1445 - 1545	2	4	6	1445 - 1545	4	4	8	1445 - 1545	3	5	8	1445 - 1545	2	4	6	1445 - 1545	8	8	16								
1500 - 1600	2	5	7	1500 - 1600	4	4	8	1500 - 1600	3	5	8	1500 - 1600	1	4	5	1500 - 1600	4	7	11								
1515 - 1615	2	5	7	1515 - 1615	4	4	8	1515 - 1615	2	3	5	1515 - 1615	0	2	2	1515 - 1615	2	3	5								
1530 - 1630	1	3	4	1530 - 1630	2	3	5	1530 - 1630	1	1	2	1530 - 1630	0	1	1	1530 - 1630	1	1	2								
PEAK HR				PEAK HR				PEAK HR				PEAK HR				PEAK HR											



R.O.A.R. DATA

Reliable, Original & Authentic Results

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PM

Client : Varga Traffic Planning
Job No/Name : 5729 Dee Why St. Lukes School
Day/Date : Tuesday 1st September 2015

No Parking												Bus Zone							
8 - 9.30am												3 - 4pm							
2.30 - 4pm																			
SOUTH				EAST				NORTH				NORTH				Combined			
Tango Ave				Tango Ave				Tango Ave				Tango Ave				On Street			
K				L				M				N				ALL AREAS			
Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	Arrive	Depart	TOT	Time Per	IN	OUT	TOT
1430 - 1445	8	3	11	1430 - 1445	0	0	0	1430 - 1445	0	0	0	1430 - 1445	3	0	3	1430 - 1445	12	4	16
1445 - 1500	6	4	10	1445 - 1500	1	0	1	1445 - 1500	0	0	0	1445 - 1500	0	0	0	1445 - 1500	9	6	15
1500 - 1515	26	25	51	1500 - 1515	0	2	2	1500 - 1515	2	4	6	1500 - 1515	0	3	3	1500 - 1515	34	44	78
1515 - 1530	25	31	56	1515 - 1530	0	0	0	1515 - 1530	4	4	8	1515 - 1530	0	0	0	1515 - 1530	35	52	87
1530 - 1545	11	12	23	1530 - 1545	0	1	1	1530 - 1545	0	2	2	1530 - 1545	3	3	6	1530 - 1545	21	28	49
1545 - 1600	2	4	6	1545 - 1600	0	1	1	1545 - 1600	0	0	0	1545 - 1600	1	1	2	1545 - 1600	3	8	11
1600 - 1615	6	3	9	1600 - 1615	0	1	1	1600 - 1615	1	0	1	1600 - 1615	1	0	1	1600 - 1615	8	7	15
1615 - 1630	10	12	22	1615 - 1630	0	0	0	1615 - 1630	0	2	2	1615 - 1630	0	1	1	1615 - 1630	10	16	26
Period End	94	94	188	Period End	1	5	6	Period End	7	12	19	Period End	8	8	16	Period End	132	165	297
SOUTH				EAST				WEST				EAST				On Street			
Tango Ave				Tango Ave				Tango Ave				Tango Ave				ALL AREAS			
K				L				M				N							
Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	Arrive	Depart	TOT	Peak Per	IN	OUT	TOT
1430 - 1530	65	63	128	1430 - 1530	1	2	3	1430 - 1530	6	8	14	1430 - 1530	3	3	6	1430 - 1530	90	106	196
1445 - 1545	68	72	140	1445 - 1545	1	3	4	1445 - 1545	6	10	16	1445 - 1545	3	6	9	1445 - 1545	99	130	229
1500 - 1600	64	72	136	1500 - 1600	0	4	4	1500 - 1600	6	10	16	1500 - 1600	4	7	11	1500 - 1600	93	132	225
1515 - 1615	44	50	94	1515 - 1615	0	3	3	1515 - 1615	5	6	11	1515 - 1615	5	4	9	1515 - 1615	67	95	162
1530 - 1630	29	31	60	1530 - 1630	0	3	3	1530 - 1630	1	4	5	1530 - 1630	5	5	10	1530 - 1630	42	59	101
PEAK HR				PEAK HR				PEAK HR				PEAK HR				PEAK HR			



R.O.A.R. DATA

Reliable, Original & Authentic Results

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Client : Varga Traffic Planning
 Job No/Name : 5729 Dee Why St. Lukes School
 Day/Date : Tuesday 1st September 2015

BUS LOADINGS

PM

Bus Zone	NORTH		
8 - 9am	Headland Rd		
3 - 4pm	D		
Time Per	QN	QEE	TOT
1430 - 1445	0	0	0
1445 - 1500	0	0	0
1500 - 1515	0	0	0
1515 - 1530	50	0	50
1530 - 1545	0	3	3
1545 - 1600	0	0	0
1600 - 1615	0	0	0
1615 - 1630	0	0	0
Period End	50	3	53

1515 - 1530 **50**
 1530 - 1545 **3**

Bus Zone	WEST		
8 - 9am	Quirk Rd		
3 - 4pm	G		
Time Per	QN	QEE	TOT
1430 - 1445	0	0	0
1445 - 1500	0	0	0
1500 - 1515	0	0	0
1515 - 1530	15	0	15
1530 - 1545	56	0	56
1545 - 1600	0	0	0
1600 - 1615	0	0	0
1615 - 1630	0	0	0
Period End	71	0	71

1515 - 1530 **7 / 8**
 1530 - 1545 **29 / 27**

Bus Zone	EAST		
8 - 9am	Quirk Rd		
3 - 4pm	J		
Time Per	QN	QEE	TOT
1430 - 1445	0	0	0
1445 - 1500	0	0	0
1500 - 1515	0	0	0
1515 - 1530	0	0	0
1530 - 1545	55	0	55
1545 - 1600	0	0	0
1600 - 1615	0	0	0
1615 - 1630	0	0	0
Period End	55	0	55

1530 - 1545 **55**

Bus Zone	NORTH		
3 - 4pm	Tango Ave		
	N		
Time Per	QN	QEE	TOT
1430 - 1445	0	0	0
1445 - 1500	0	0	0
1500 - 1515	0	0	0
1515 - 1530	0	0	0
1530 - 1545	74	0	74
1545 - 1600	0	0	0
1600 - 1615	0	0	0
1615 - 1630	0	0	0
Period End	74	0	74

1530 - 1545 **46 / 28 / 0**



R.O.A.R. DATA

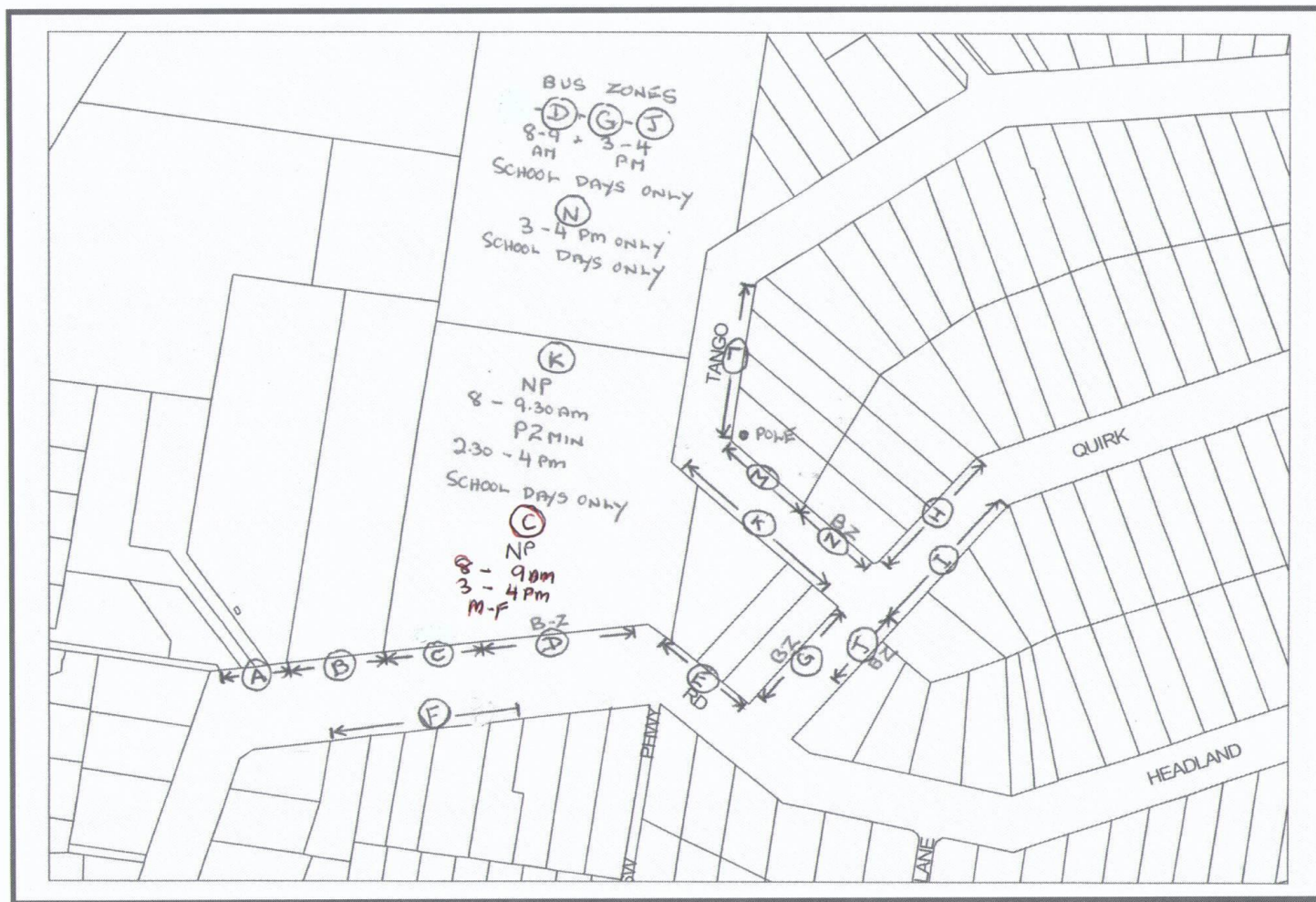
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Client
Job No/Name
Day/Date

: Varga Traffic Planning
: 5729 Dee Why St. Lukes School
: Tuesday 1st September 2015





R.O.A.R. DATA

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Client : Varga Traffic Planning

Job No/Name : 5729 DEE WHY St. Lukes

Day/Date : Tuesday 1st September 2015

Lights	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Time Per	T	R	L	R	L	T	TOT
0730 - 0745	13	9	0	4	21	9	56
0745 - 0800	12	17	2	7	33	12	83
0800 - 0815	25	27	4	5	62	14	137
0815 - 0830	35	36	1	7	78	10	167
0830 - 0845	28	15	3	6	23	14	89
0845 - 0900	12	1	2	1	2	9	27
0900 - 0915	11	1	1	4	4	22	43
0915 - 0930	10	1	0	2	3	14	30
Per End	146	107	13	36	226	104	632

Heavies	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Time Per	T	R	L	R	L	T	TOT
0730 - 0745	0	0	0	0	0	0	0
0745 - 0800	0	0	0	0	0	0	0
0800 - 0815	0	0	0	0	0	0	0
0815 - 0830	0	0	0	0	1	0	1
0830 - 0845	0	0	0	0	0	0	0
0845 - 0900	0	0	0	0	0	1	1
0900 - 0915	0	0	0	0	0	0	0
0915 - 0930	0	0	0	0	0	0	0
Per End	0	0	0	0	1	1	2

Combined	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Time Per	T	R	L	R	L	T	TOT
0730 - 0745	13	9	0	4	21	9	56
0745 - 0800	12	17	2	7	33	12	83
0800 - 0815	25	27	4	5	62	14	137
0815 - 0830	35	36	1	7	79	10	168
0830 - 0845	28	15	3	6	23	14	89
0845 - 0900	12	1	2	1	2	10	28
0900 - 0915	11	1	1	4	4	22	43
0915 - 0930	10	1	0	2	3	14	30
Per End	146	107	13	36	227	105	634

Lights	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Peak Per	T	R	L	R	L	T	TOT
0730 - 0830	85	89	7	23	194	45	443
0745 - 0845	100	95	10	25	196	50	476
0800 - 0900	100	79	10	19	165	47	420
0815 - 0915	86	53	7	18	107	55	326
0830 - 0930	61	18	6	13	32	59	189

Heavies	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Peak Per	T	R	L	R	L	T	TOT
0730 - 0830	0	0	0	0	1	0	1
0745 - 0845	0	0	0	0	1	0	1
0800 - 0900	0	0	0	0	1	1	2
0815 - 0915	0	0	0	0	1	1	2
0830 - 0930	0	0	0	0	0	1	1

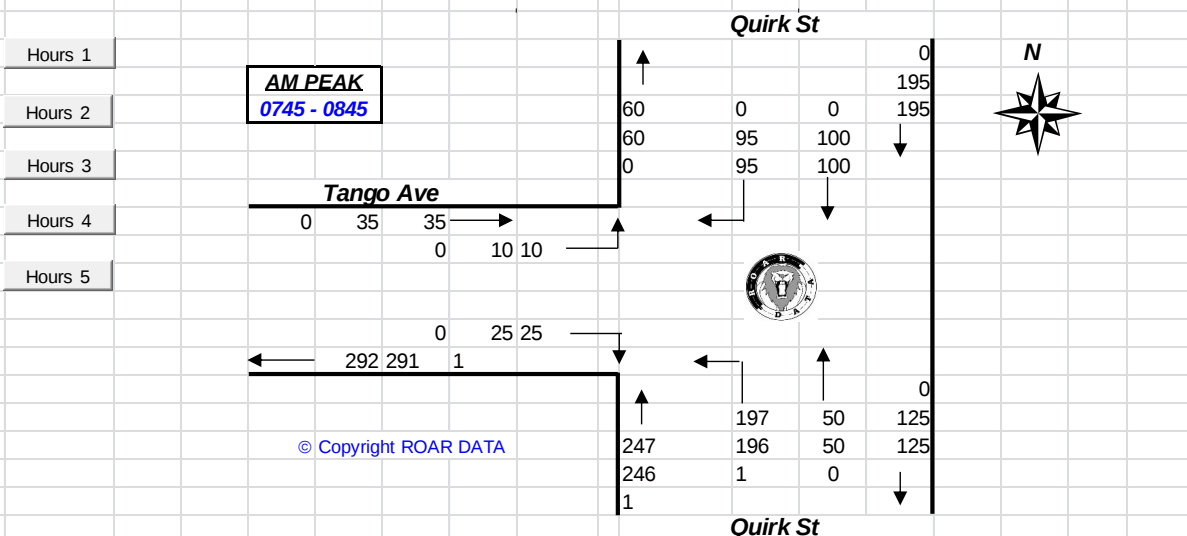
Combined	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Peak Per	T	R	L	R	L	T	TOT
0730 - 0830	85	89	7	23	195	45	444
0745 - 0845	100	95	10	25	197	50	477
0800 - 0900	100	79	10	19	166	48	422
0815 - 0915	86	53	7	18	108	56	328
0830 - 0930	61	18	6	13	32	60	190

PEAK HR	100	95	10	25	196	50	476
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PEAK HR	0	0	0	0	1	0	1
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PEAK HR	100	95	10	25	197	50	477
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Peds	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Time Per	T	R	L	R	L	T	TOT
0730 - 0745	0	0	1	0	3	0	4
0745 - 0800	0	0	3	0	3	0	6
0800 - 0815	0	0	2	0	1	0	3
0815 - 0830	0	0	4	0	2	0	6
0830 - 0845	0	0	7	0	3	0	10
0845 - 0900	0	0	4	0	0	0	4
0900 - 0915	1	0	3	0	0	0	4
0915 - 0930	0	0	0	0	0	0	0
Per End	1	0	24	0	12	0	37



	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Peak Per	T	R	L	R	L	T	TOT
0730 - 0830	0	0	10	0	9	0	19
0745 - 0845	0	0	16	0	9	0	25
0800 - 0900	0	0	17	0	6	0	23
0815 - 0915	1	0	18	0	5	0	24
0830 - 0930	1	0	14	0	3	0	18
PEAK HR	0	0	16	0	9	0	25



R.O.A.R DATA

Reliable, Original & Authentic Results

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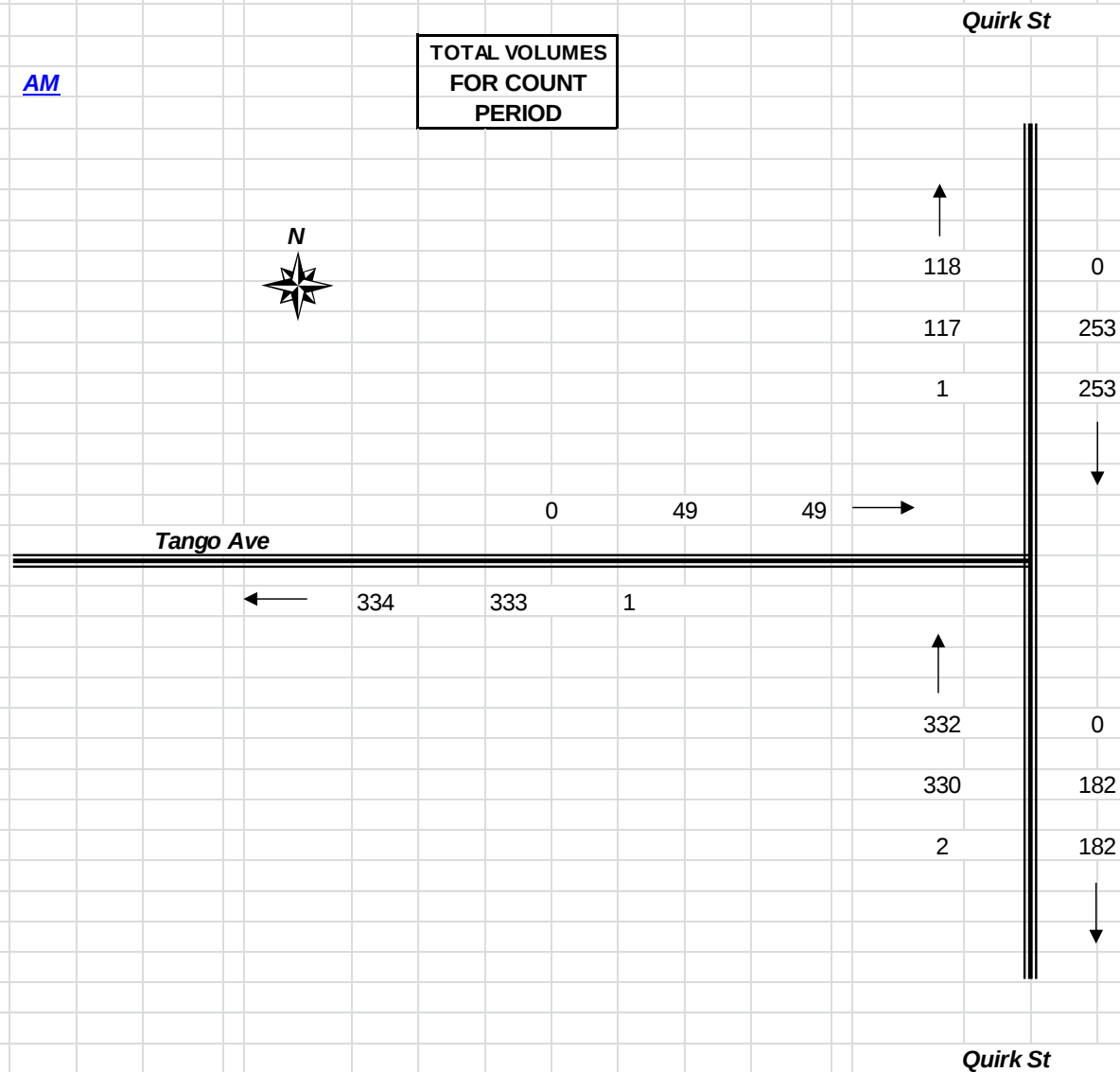
Client : Varga Traffic Planning

Job No/Name : 5729 DEE WHY St. Lukes

Day/Date : Tuesday 1st September 2015

AM

TOTAL VOLUMES
FOR COUNT
PERIOD





R.O.A.R DATA

Reliable, Original & Authentic Results

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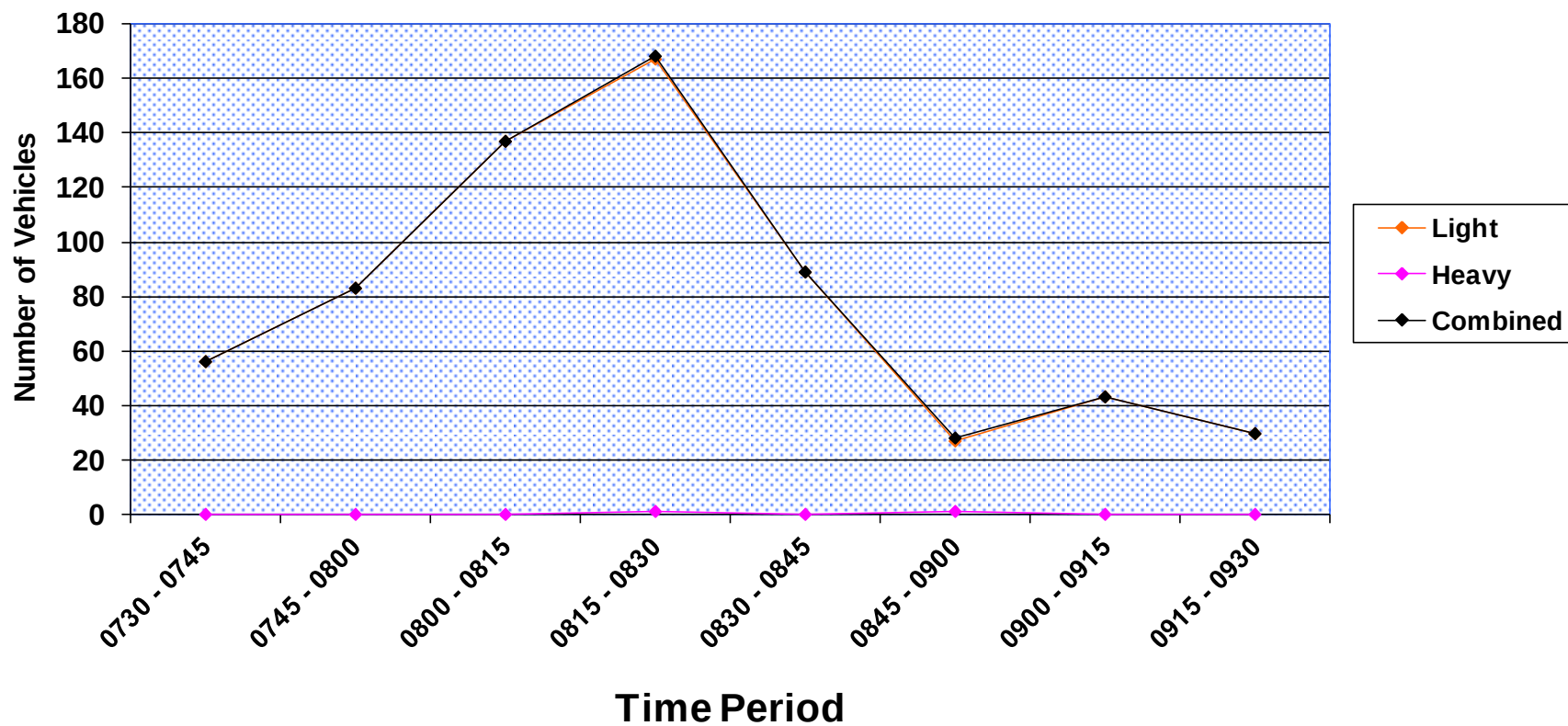
Client : Varga Traffic Planning

Job No/Name : 5729 DEE WHY St. Lukes

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AM

Tango Ave & Quirk St





R.O.A.R. DATA

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Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Varga Traffic Planning

Job No/Name : 5729 DEE WHY St. Lukes

Day/Date : Tuesday 1st September 2015

Lights	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Time Per	T	R	L	R	L	T	TOT
1430 - 1445	11	6	3	2	16	21	59
1445 - 1500	15	1	5	2	22	19	64
1500 - 1515	17	18	14	11	34	16	110
1515 - 1530	20	18	5	7	31	19	100
1530 - 1545	12	4	2	6	10	23	57
1545 - 1600	3	0	0	14	6	16	39
1600 - 1615	6	2	2	11	8	32	61
1615 - 1630	11	1	2	7	8	17	46
Per End	95	50	33	60	135	163	536

Heavies	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Time Per	T	R	L	R	L	T	TOT
1430 - 1445	0	0	0	0	0	0	0
1445 - 1500	0	0	0	0	0	0	0
1500 - 1515	0	0	0	0	0	0	0
1515 - 1530	1	0	0	0	1	1	3
1530 - 1545	0	1	0	2	1	5	9
1545 - 1600	0	0	0	1	0	0	1
1600 - 1615	1	0	0	0	0	0	1
1615 - 1630	0	0	0	0	0	0	0
Per End	2	1	0	3	2	6	14

Combined	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Time Per	T	R	L	R	L	T	TOT
1430 - 1445	11	6	3	2	16	21	59
1445 - 1500	15	1	5	2	22	19	64
1500 - 1515	17	18	14	11	34	16	110
1515 - 1530	21	18	5	7	32	20	103
1530 - 1545	12	5	2	8	11	28	66
1545 - 1600	3	0	0	15	6	16	40
1600 - 1615	7	2	2	11	8	32	62
1615 - 1630	11	1	2	7	8	17	46
Per End	97	51	33	63	137	169	550

Lights	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Peak Per	T	R	L	R	L	T	TOT
1430 - 1530	63	43	27	22	103	75	333
1445 - 1545	64	41	26	26	97	77	331
1500 - 1600	52	40	21	38	81	74	306
1515 - 1615	41	24	9	38	55	90	257
1530 - 1630	32	7	6	38	32	88	203

Heavies	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Peak Per	T	R	L	R	L	T	TOT
1430 - 1530	1	0	0	0	1	1	3
1445 - 1545	1	1	0	2	2	6	12
1500 - 1600	1	1	0	3	2	6	13
1515 - 1615	2	1	0	3	2	6	14
1530 - 1630	1	1	0	3	1	5	11

Combined	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Peak Per	T	R	L	R	L	T	TOT
1430 - 1530	64	43	27	22	104	76	336
1445 - 1545	65	42	26	28	99	83	343
1500 - 1600	53	41	21	41	83	80	319
1515 - 1615	43	25	9	41	57	96	271
1530 - 1630	33	8	6	41	33	93	214

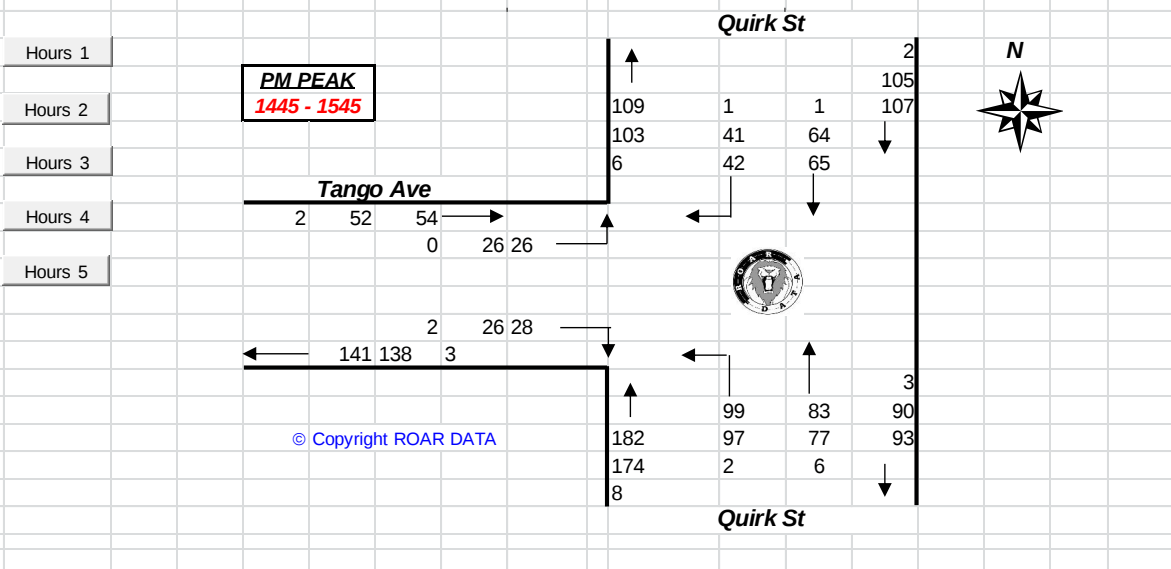
PEAK HR	64	41	26	26	97	77	331
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PEAK HR	1	1	0	2	2	6	12
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PEAK HR	65	42	26	28	99	83	343
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Peds	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Time Per	T	R	L	R	L	T	TOT
1430 - 1445	0		2		0		2
1445 - 1500	0		4		0		4
1500 - 1515	0		32		5		37
1515 - 1530	3		61		21		85
1530 - 1545	0		5		2		7
1545 - 1600	0		0		0		0
1600 - 1615	0		0		0		0
1615 - 1630	0		0		0		0
Per End	3		104		28		135

	NORTH		WEST		SOUTH		
	Quirk St		Tango Ave		Quirk St		
Peak Per	T	R	L	R	L	T	TOT
1430 - 1530	3		99		26		128
1445 - 1545	3		102		28		133
1500 - 1600	3		98		28		129
1515 - 1615	3		66		23		92
1530 - 1630	0		5		2		7
PEAK HR	3		102		28		133





R.O.A.R DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

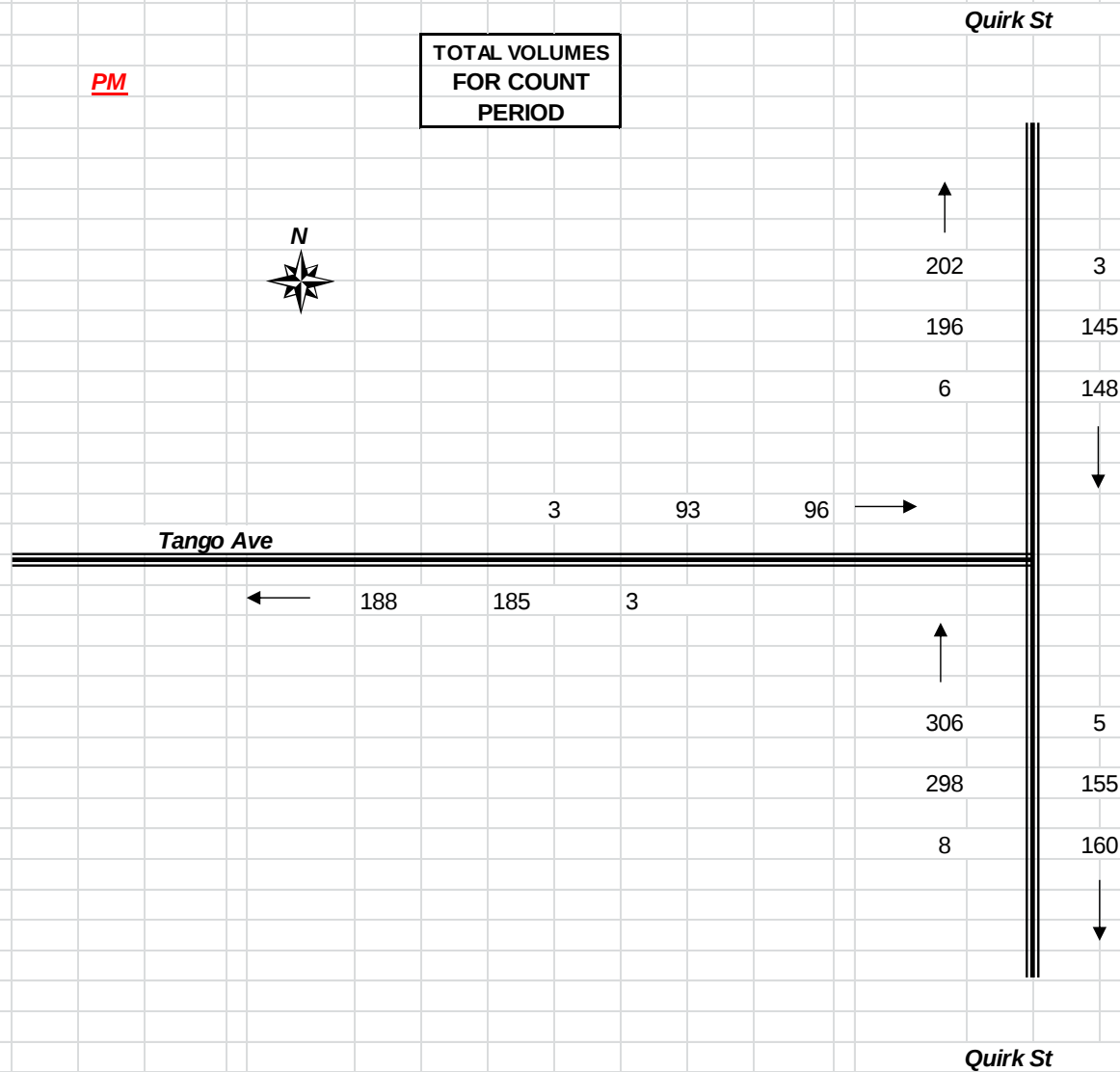
Client : Varga Traffic Planning

Job No/Name : 5729 DEE WHY St. Lukes

Day/Date : Tuesday 1st September 2015

PM

TOTAL VOLUMES
FOR COUNT
PERIOD





R.O.A.R DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

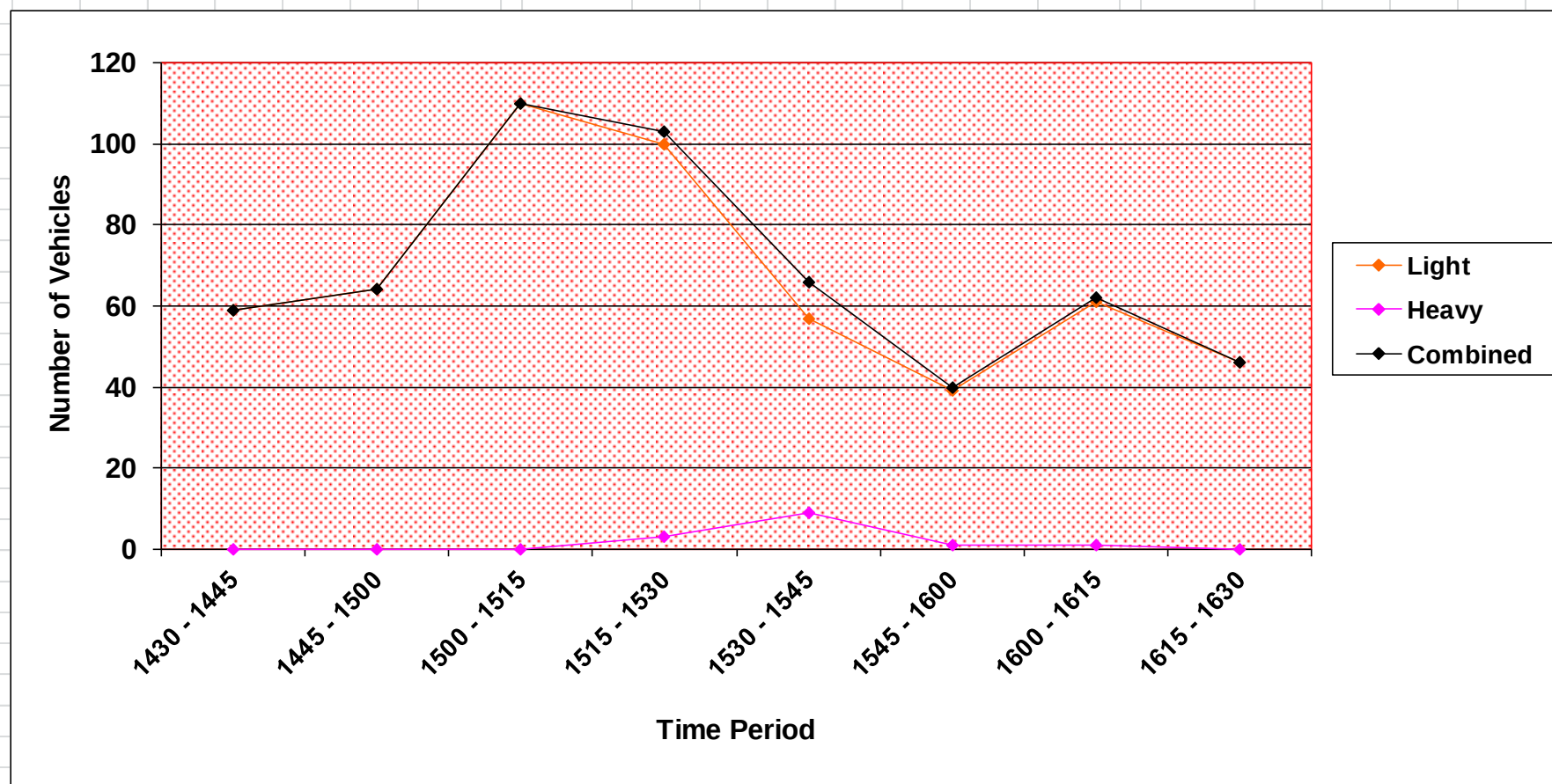
Client : Varga Traffic Planning

Job No/Name : 5729 DEE WHY St. Lukes

Day/Date : Tuesday 1st September 2015

PM

Tango Ave & Quirk St





R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Varga Traffic Planning
Job No/Name : 5729 DEE WHY St. Lukes
Day/Date : Tuesday 1st September 2015

Intersection Layout

Obtained via satellite

May be incorrect

AM PEAK HOUR
0745 - 0845



Quirk Rd

Tango Ave

R	T
95	100
42	65

PM
AM

10	26	L
25	28	R

AM

PM

PM	99	83
AM	197	50

L

T

PM PEAK HOUR
1445 - 1545

Combined Figures only

Weather >>>



Quirk Rd



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Varga Traffic Planning

Job No/Name : 5729 DEE WHY St. Lukes

Day/Date : Tuesday 1st September 2015

Lights	WEST		NORTH		EAST		
	Headland		Quirk St		Headland		
Time Per	T	L	R	L	R	T	TOT
0730 - 0745	15	21	16	5	9	32	98
0745 - 0800	11	37	15	2	14	35	114
0800 - 0815	23	41	27	5	32	21	149
0815 - 0830	40	55	42	6	40	32	215
0830 - 0845	17	17	24	5	5	33	101
0845 - 0900	16	13	8	5	2	24	68
0900 - 0915	18	18	8	4	4	16	68
0915 - 0930	19	16	8	2	3	8	56
Per End	159	218	148	34	109	201	869

Heavies	WEST		NORTH		EAST		
	Headland		Quirk St		Headland		
Time Per	T	L	R	L	R	T	TOT
0730 - 0745	1	0	0	0	0	0	1
0745 - 0800	1	0	0	0	0	0	1
0800 - 0815	3	0	0	0	0	0	3
0815 - 0830	5	0	0	0	1	0	6
0830 - 0845	0	0	0	0	0	1	1
0845 - 0900	0	0	0	0	1	0	1
0900 - 0915	0	0	0	0	0	0	0
0915 - 0930	0	0	0	0	0	0	0
Per End	10	0	0	0	2	1	13

Combined	WEST		NORTH		EAST		
	Headland		Quirk St		Headland		
Time Per	T	L	R	L	R	T	TOT
0730 - 0745	16	21	16	5	9	32	99
0745 - 0800	12	37	15	2	14	35	115
0800 - 0815	26	41	27	5	32	21	152
0815 - 0830	45	55	42	6	41	32	221
0830 - 0845	17	17	24	5	5	34	102
0845 - 0900	16	13	8	5	3	24	69
0900 - 0915	18	18	8	4	4	16	68
0915 - 0930	19	16	8	2	3	8	56
Per End	169	218	148	34	111	202	882

Lights	WEST		NORTH		EAST		
	Headland		Quirk St		Headland		
Peak Per	T	L	R	L	R	T	TOT
0730 - 0830	89	154	100	18	95	120	576
0745 - 0845	91	150	108	18	91	121	579
0800 - 0900	96	126	101	21	79	110	533
0815 - 0915	91	103	82	20	51	105	452
0830 - 0930	70	64	48	16	14	81	293

Heavies	WEST		NORTH		EAST		
	Headland		Quirk St		Headland		
Peak Per	T	L	R	L	R	T	TOT
0730 - 0830	10	0	0	0	1	0	11
0745 - 0845	9	0	0	0	1	1	11
0800 - 0900	8	0	0	0	2	1	11
0815 - 0915	5	0	0	0	2	1	8
0830 - 0930	0	0	0	0	1	1	2

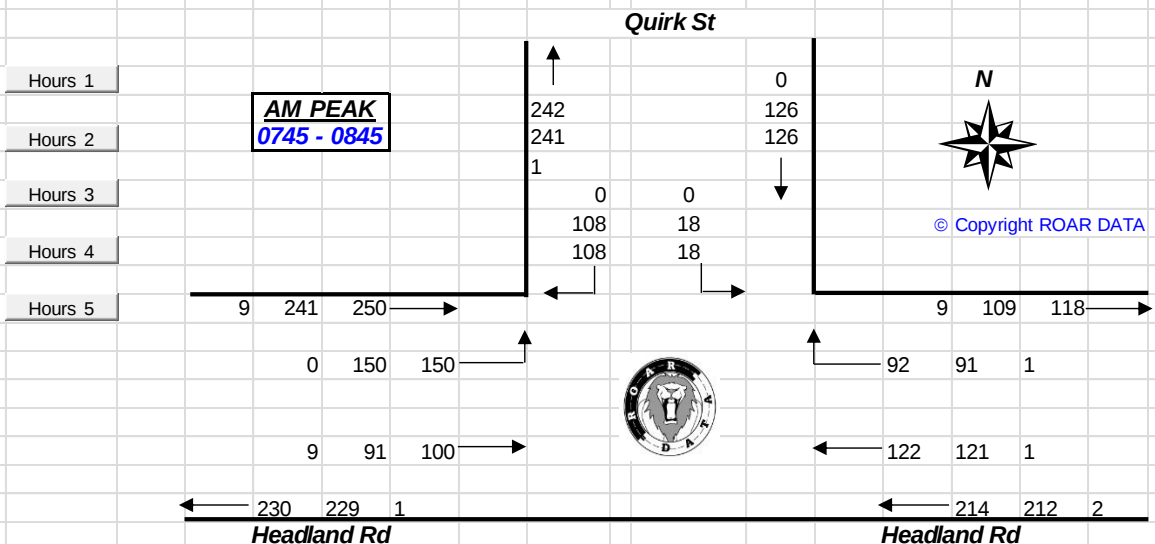
Combined	WEST		NORTH		EAST		
	Headland		Quirk St		Headland		
Peak Per	T	L	R	L	R	T	TOT
0730 - 0830	99	154	100	18	96	120	587
0745 - 0845	100	150	108	18	92	122	590
0800 - 0900	104	126	101	21	81	111	544
0815 - 0915	96	103	82	20	53	106	460
0830 - 0930	70	64	48	16	15	82	295

PEAK HR	91	150	108	18	91	121	579
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PEAK HR	9	0	0	0	1	1	11
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PEAK HR	100	150	108	18	92	122	590
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Peds	WEST		NORTH		EAST		
	Headland Rd		Quirk St		Headland Rd		
Time Per							TOT
0730 - 0745	0		1		0		1
0745 - 0800	0		5		0		5
0800 - 0815	0		4		0		4
0815 - 0830	0		16		0		16
0830 - 0845	0		3		0		3
0845 - 0900	0		0		0		0
0900 - 0915	0		0		0		0
0915 - 0930	0		0		0		0
Per End	0		29		0		29



	WEST		NORTH		EAST		
	Headland Rd		Quirk St		Headland Rd		
Peak Per							TOT
0730 - 0830	0		26		0		26
0745 - 0845	0		28		0		28
0800 - 0900	0		23		0		23
0815 - 0915	0		19		0		19
0830 - 0930	0		3		0		3
PEAK HR	0		28		0		28



R.O.A.R DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Varga Traffic Planning

Job No/Name : 5729 DEE WHY St. Lukes

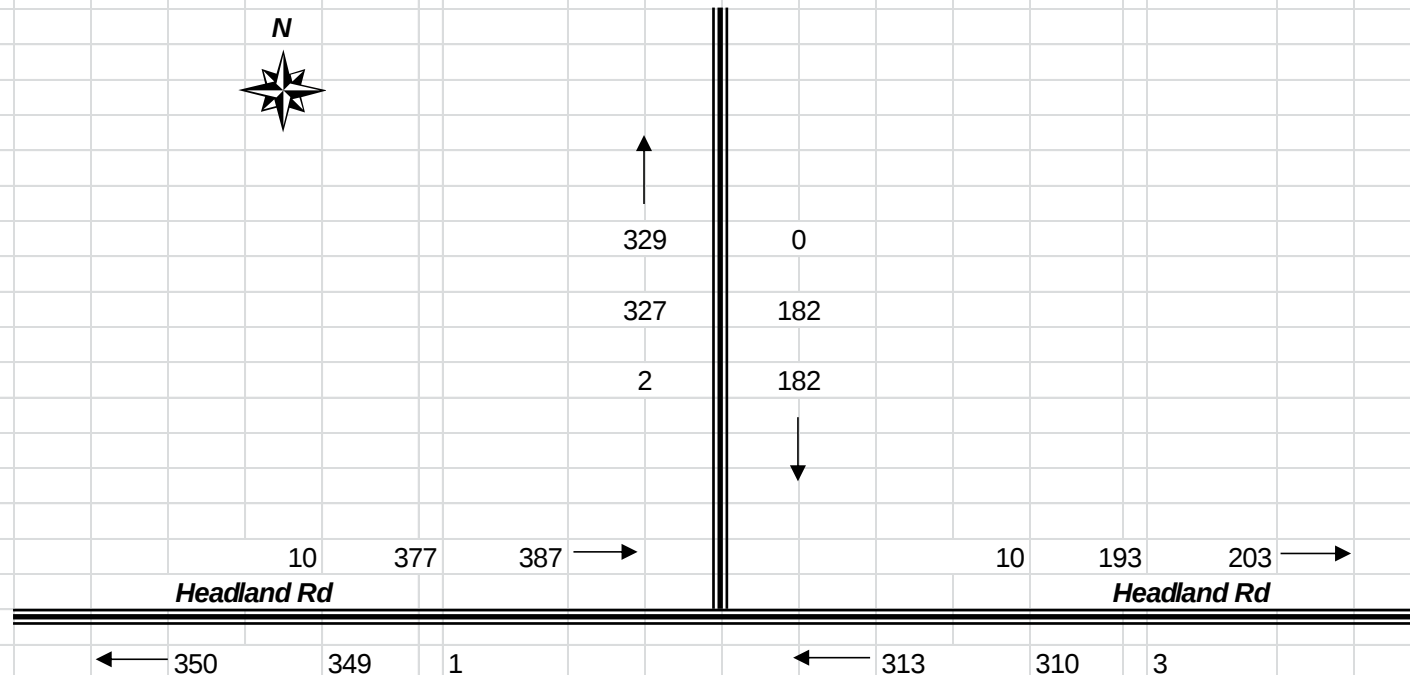
Day/Date : Tuesday 1st September 2015

AM

TOTAL VOLUMES
FOR COUNT
PERIOD



Quirk St





R.O.A.R DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

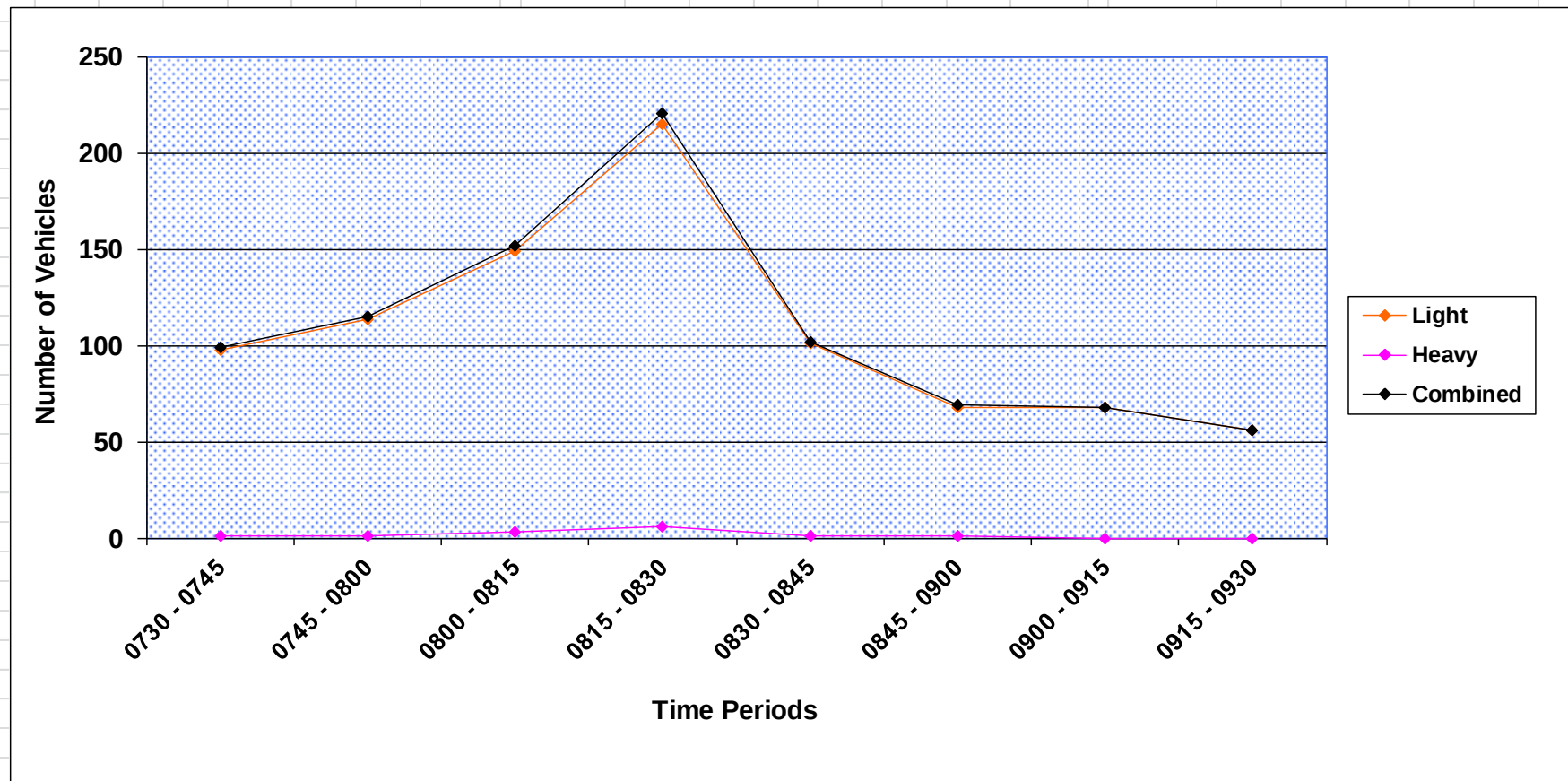
Client : Varga Traffic Planning

Job No/Name : 5729 DEE WHY St. Lukes

Day/Date : Tuesday 1st September 2015

AM

Headland Rd & Quirk St





ROAR DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Varga Traffic Planning

Job No/Name : 5729 DEE WHY St. Lukes

Day/Date : Tuesday 1st September 2015

Lights	WEST		NORTH		EAST		
	Headland		Quirk St		Headland		
Time Per	T	L	R	L	R	T	TOT
1430 - 1445	24	36	12	3	9	16	100
1445 - 1500	25	33	8	4	10	19	99
1500 - 1515	31	28	21	14	11	20	125
1515 - 1530	31	41	25	16	13	18	144
1530 - 1545	32	29	12	11	2	22	108
1545 - 1600	25	17	16	5	2	16	81
1600 - 1615	36	39	16	3	2	12	108
1615 - 1630	30	34	15	4	1	15	99
Per End	234	257	125	60	50	138	864

Heavies	WEST		NORTH		EAST		
	Headland		Quirk St		Headland		
Time Per	T	L	R	L	R	T	TOT
1430 - 1445	0	0	0	0	0	0	0
1445 - 1500	0	0	0	0	0	0	0
1500 - 1515	1	0	0	0	0	0	1
1515 - 1530	1	2	1	0	1	0	5
1530 - 1545	0	5	2	0	1	0	8
1545 - 1600	0	0	1	0	0	0	1
1600 - 1615	0	0	1	0	0	0	1
1615 - 1630	0	0	0	0	0	0	0
Per End	2	7	5	0	2	0	16

Combined	WEST		NORTH		EAST		
	Headland		Quirk St		Headland		
Time Per	T	L	R	L	R	T	TOT
1430 - 1445	24	36	12	3	9	16	100
1445 - 1500	25	33	8	4	10	19	99
1500 - 1515	32	28	21	14	11	20	126
1515 - 1530	32	43	26	16	14	18	149
1530 - 1545	32	34	14	11	3	22	116
1545 - 1600	25	17	17	5	2	16	82
1600 - 1615	36	39	17	3	2	12	109
1615 - 1630	30	34	15	4	1	15	99
Per End	236	264	130	60	52	138	880

Lights	WEST		NORTH		EAST		
	Headland		Quirk St		Headland		
Peak Per	T	L	R	L	R	T	TOT
1430 - 1530	111	138	66	37	43	73	468
1445 - 1545	119	131	66	45	36	79	476
1500 - 1600	119	115	74	46	28	76	458
1515 - 1615	124	126	69	35	19	68	441
1530 - 1630	123	119	59	23	7	65	396

Heavies	WEST		NORTH		EAST		
	Headland		Quirk St		Headland		
Peak Per	T	L	R	L	R	T	TOT
1430 - 1530	2	2	1	0	1	0	6
1445 - 1545	2	7	3	0	2	0	14
1500 - 1600	2	7	4	0	2	0	15
1515 - 1615	1	7	5	0	2	0	15
1530 - 1630	0	5	4	0	1	0	10

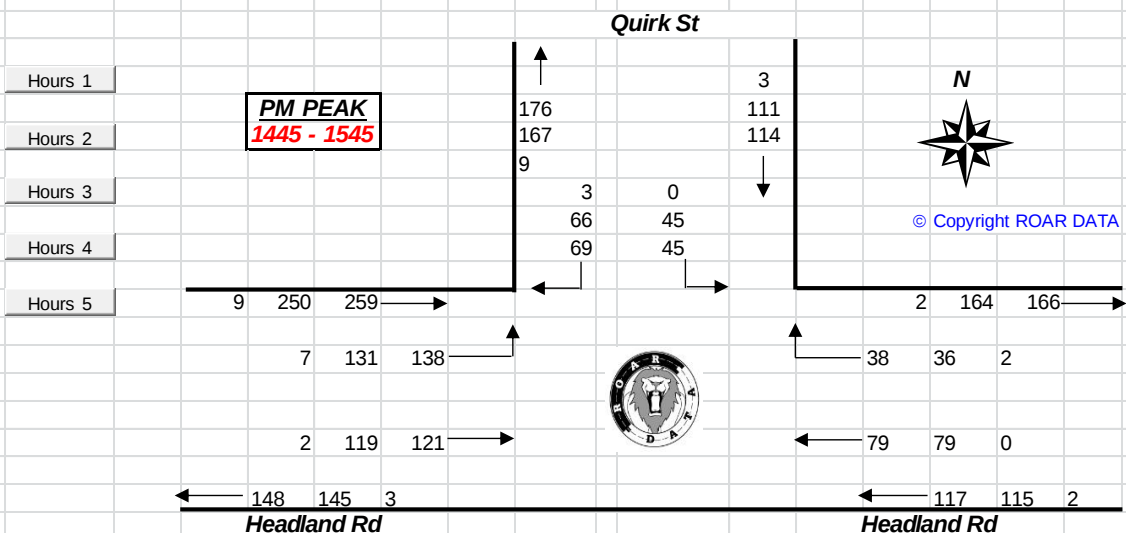
Combined	WEST		NORTH		EAST		
	Headland		Quirk St		Headland		
Peak Per	T	L	R	L	R	T	TOT
1430 - 1530	113	140	67	37	44	73	474
1445 - 1545	121	138	69	45	38	79	490
1500 - 1600	121	122	78	46	30	76	473
1515 - 1615	125	133	74	35	21	68	456
1530 - 1630	123	124	63	23	8	65	406

PEAK HR	119	131	66	45	36	79	476
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PEAK HR	2	7	3	0	2	0	14
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PEAK HR	121	138	69	45	38	79	490
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Peds	WEST	NORTH	EAST	
Time Per	Headland Rd	Quirk St	Headland Rd	TOT
1430 - 1445	0	2	0	2
1445 - 1500	0	6	0	6
1500 - 1515	0	39	0	39
1515 - 1530	0	24	0	24
1530 - 1545	0	9	0	9
1545 - 1600	0	1	0	1
1600 - 1615	0	1	0	1
1615 - 1630	0	1	0	1
Per End	0	83	0	83



	WEST	NORTH	EAST	
Peak Per	Headland Rd	Quirk St	Headland Rd	TOT
1430 - 1530	0	71	0	71
1445 - 1545	0	78	0	78
1500 - 1600	0	73	0	73
1515 - 1615	0	35	0	35
1530 - 1630	0	12	0	12
PEAK HR	0	78	0	78



R.O.A.R DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Varga Traffic Planning

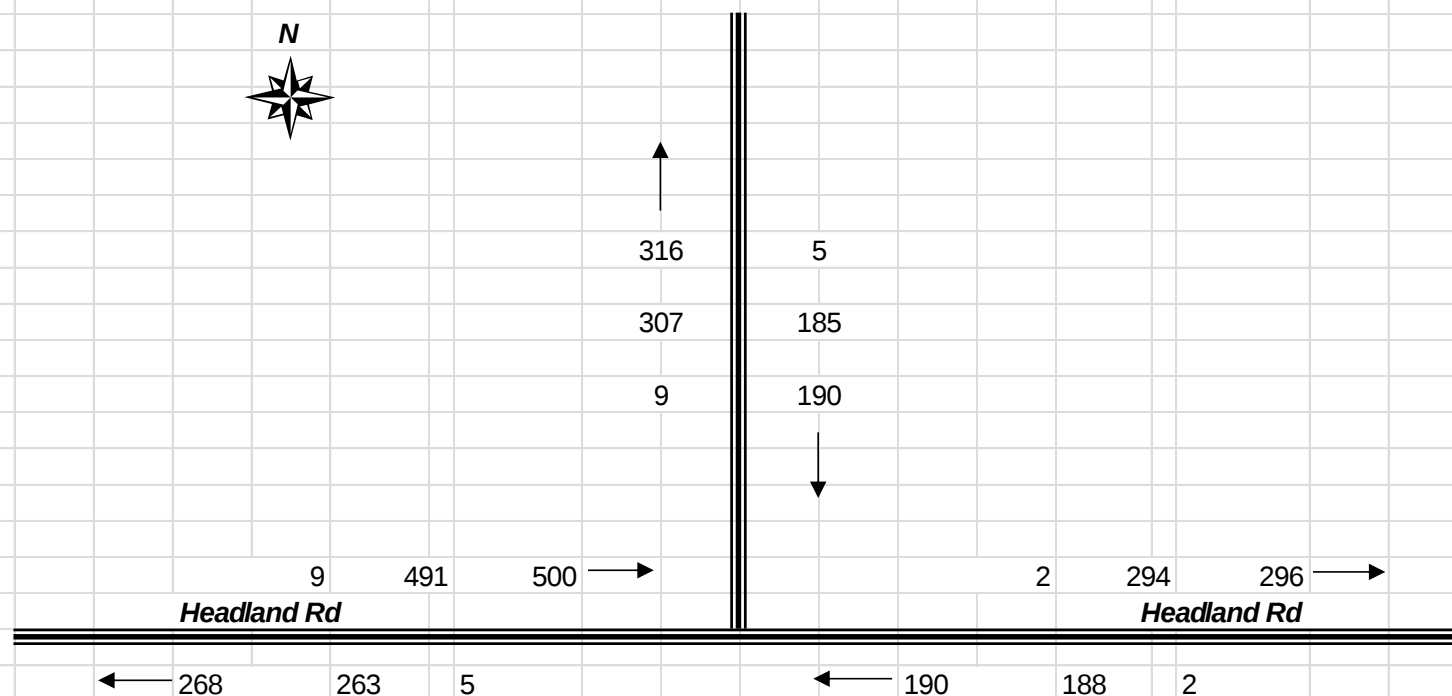
Job No/Name : 5729 DEE WHY St. Lukes

Day/Date : Tuesday 1st September 2015

PM

TOTAL VOLUMES
FOR COUNT
PERIOD

Quirk St





R.O.A.R DATA

Reliable, Original & Authentic Results

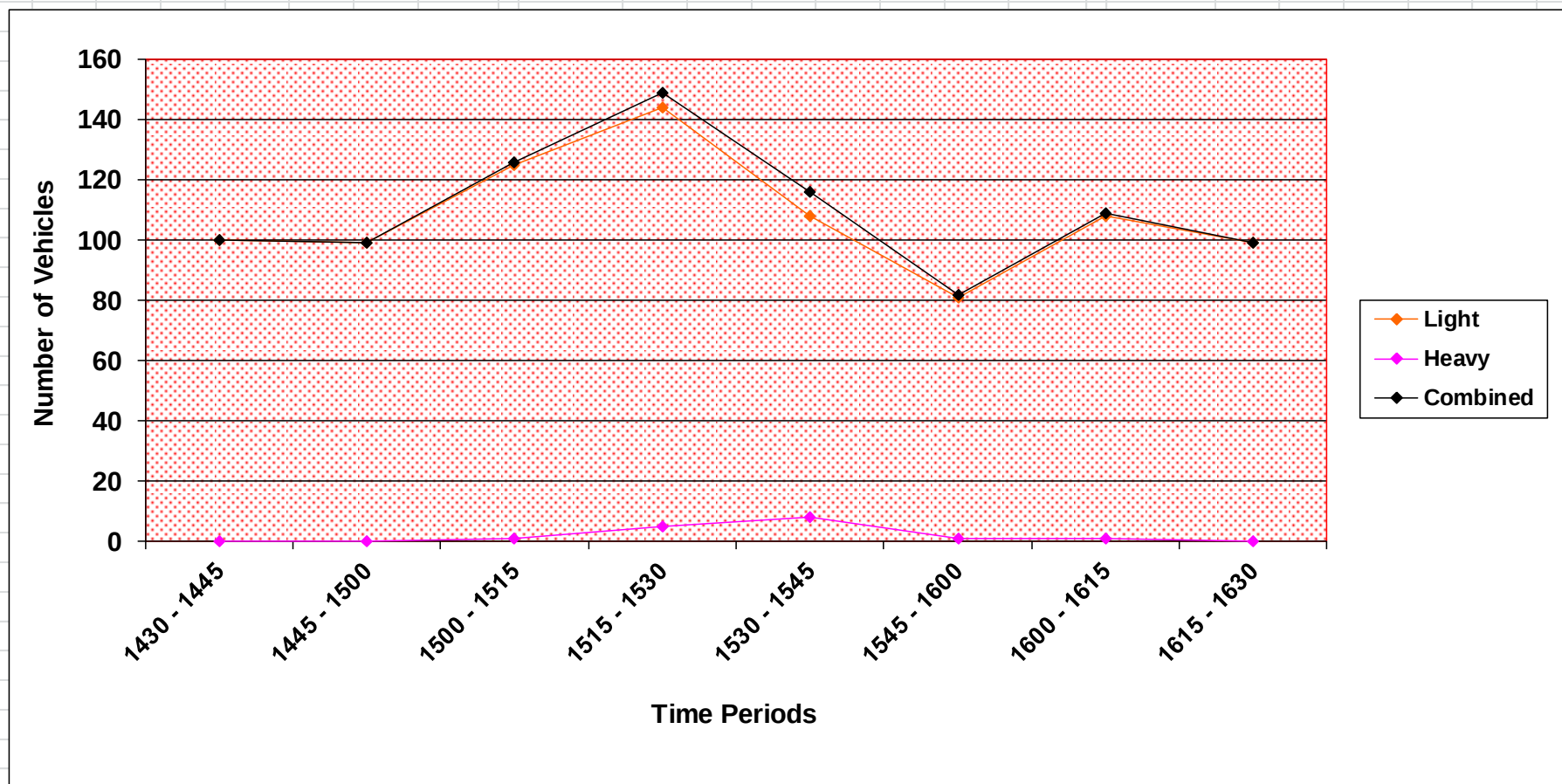
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Varga Traffic Planning

Job No/Name : 5729 DEE WHY St. Lukes

Day/Date : Tuesday 1st September 2015

PM
Headland Rd & Quirk St





R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Varga Traffic Planning
Job No/Name : 5729 DEE WHY St. Lukes
Day/Date : Tuesday 1st September 2015

Intersection Details

Obtained via satellite

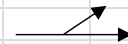
May be incorrect

AM PEAK HOUR
0745 - 0845



Quirk St

Headland Rd



AM	PM	
150	138	L

100	121	T
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R	38	92
	PM	AM
T	79	122

R	L	
108	18	AM
69	45	PM



Headland Rd

Combined Figures only

PM PEAK HOUR
1445 - 1545

Weather >>>

