

ATTACHMENT D

Traffic and Parking Assessment Report - Varga Traffic Planning Pty Ltd

Planning Proposal for a Residential Development

**Killara Golf Club,
556 Pacific Highway, Killara**

TRAFFIC AND PARKING ASSESSMENT REPORT

26 September 2017

Ref 15654

VARGA TRAFFIC PLANNING Pty Ltd
Transport, Traffic and Parking Consultants 

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1. INTRODUCTION

This report has been prepared to accompany a planning proposal for a residential development proposal to be located at Killara Golf Club, 556 Pacific Highway, Killara (Figures 1 and 2).

The site lies to the rear of existing *R4 High Density Residential* allotments fronting the Pacific Highway. The planning proposal therefore proposes to rezone a portion of the golf club land which backs onto these allotments from *R2 Low Density Residential* to *R4 High Density Residential*. The site is less than 800m walking distance to/from Killara Railway Station and therefore ideally located to cater for higher density residential living.

In particular it is noted that the strategic centres of Chatswood, St Leonards, North Sydney and Hornsby are all located within a 30 minute public transport travel catchment. It is also likely that many future residents will travel to the Central Sydney CBD which is readily accessible from Killara Station via the suburban railway road network.

These centres provide substantial employment opportunities as well as retail, services and medical facilities for future residents.

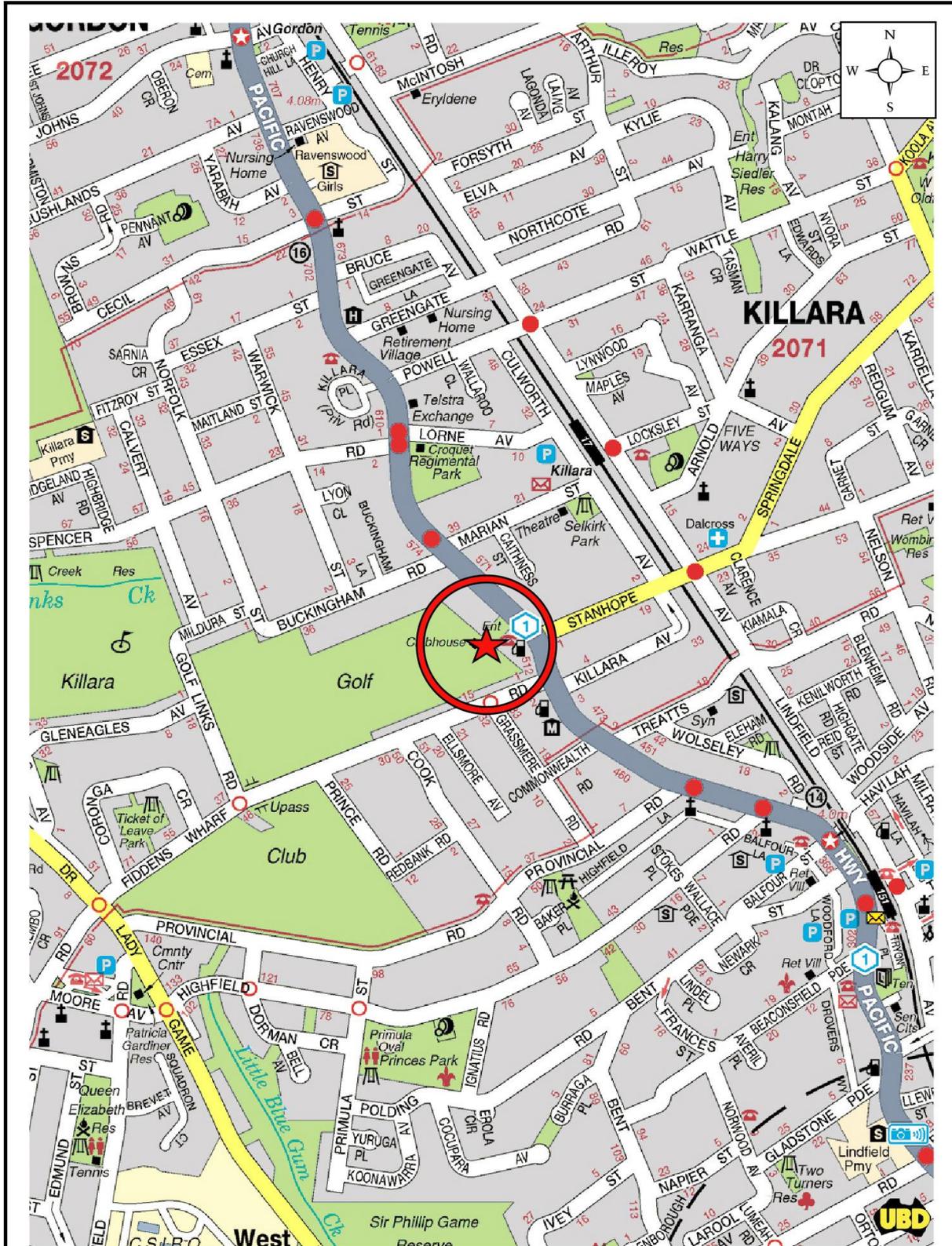
The planning proposal envisages the construction of up to 270 new residential apartments in a number of new buildings. Off-street parking for the golf club, residents and their visitors is to be provided in basement car parking areas, with the number of spaces ultimately to be provided in accordance with Council's requirements.

The planning proposal also makes provision in the longer term for a separate *R2 Low Density Residential* zone which could comprise up to 15 dwelling houses.

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

- describes the site and provides details of the planning proposal

- reviews the road network in the vicinity of the site, and the traffic conditions on that road network
- estimates the traffic generation potential of the planning proposal, and assigns that traffic generation to the road network serving the site
- assesses the traffic implications of the planning proposal in terms of road network capacity
- reviews the off-street car parking requirements applicable to the planning proposal.



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LOCATION
FIGURE 1



2. PROPOSED DEVELOPMENT

Site

Killara Golf Club lies on both sides of Fiddens Wharf Road, with the golf course extending between the Pacific Highway and Lady Game Drive. The portion of the site which forms the basis of the planning proposal is shown on the aerial image below.

The planning proposal has a street frontage approximately 52m in length to the Pacific Highway and occupies an area of approximately 44,651m².

The subject site is currently occupied by the golf club clubhouse as well as two bowling greens, two tennis courts, a practice putting green and a commercial building fronting the Pacific Highway. Vehicular access to the site is provided via the golf club's entry/exit driveway which is located in the Pacific Highway.



Source: Nearmap

Proposed Development

The site lies to the rear of the existing *R4 High Density Residential* allotments fronting the Pacific Highway. The planning proposal therefore proposes to rezone a portion of the golf club land which backs onto these allotments from *R2 Low Density Residential* to *R4 High Density Residential*.

The remainder of Council's "deferred zone" shall remain as *R2 Low Density Residential*.

The planning proposal envisages the construction of up to 270 new residential apartments in a number of new buildings.

Off-street parking for the golf club residential apartments and their visitors is to be provided in basement car parking areas, with the number of spaces to ultimately be provided in accordance with Council's requirements.

Loading/servicing for the proposed development is expected to be undertaken by a variety of light commercial vehicles up to and including 6.4m long small rigid trucks.

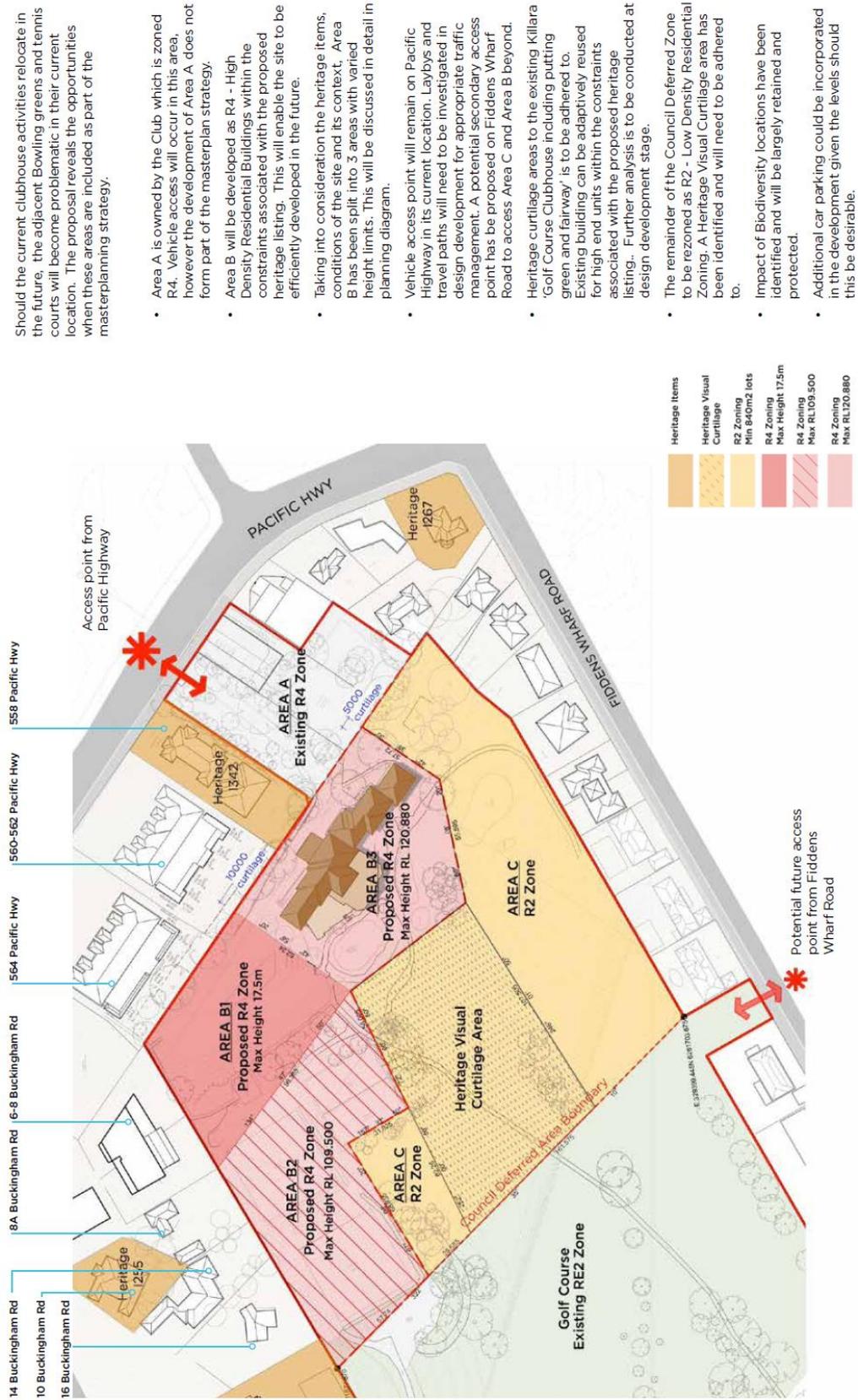
Loading/servicing of the existing club building on the golf course will continue to be undertaken by medium to large trucks, whilst provision will also be made for servicing the future *R2 Low Density Residential* zone using Council's standard-length waste collection vehicle (approximately 10m long).

The only vehicular access available to the site is provided via the existing golf club's entry/exit driveway located in the Pacific Highway.

The planning proposal also makes provision for a new *R2 Low Density Residential* zone to be provided in the longer term. Vehicular access to the proposed *R2* zone would be provided via a new access road off Fiddens Wharf Road to facilitate kerbside garbage collection, however it is not known when the *R2* zone would be implemented.

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

PLANNING PROPOSAL



Should the current clubhouse activities relocate in the future, the adjacent Bowling greens and tennis courts will become problematic in their current location. The proposal reveals the opportunities when these areas are included as part of the masterplanning strategy.

- Area A is owned by the Club which is zoned R4. Vehicle access will occur in this area, however the development of Area A does not form part of the masterplan strategy.
- Area B will be developed as R4 - High Density Residential Buildings within the constraints associated with the proposed heritage listing. This will enable the site to be efficiently developed in the future.
- Taking into consideration the heritage items, conditions of the site and its context, Area B has been split into 3 areas with varied height limits. This will be discussed in detail in planning diagram.
- Vehicle access point will remain on Pacific Highway in its current location. Laybys and travel paths will need to be investigated in design development for appropriate traffic management. A potential secondary access point has been proposed on Fiddens Wharf Road to access Area C and Area B beyond.
- Heritage curtilage areas to the existing Killara 'Golf Course Clubhouse including putting green and fairway' is to be adhered to. Existing building can be adaptively reused for high end units within the constraints associated with the proposed heritage listing. Further analysis is to be conducted at design development stage.
- The remainder of the Council Deferred Zone to be rezoned as R2 - Low Density Residential Zoning. A Heritage Visual Curtilage area has been identified and will need to be adhered to.
- Impact of Biodiversity locations have been identified and will be largely retained and protected.
- Additional car parking could be incorporated in the development given the levels should this be desirable.

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 Pacific Highway is classified by the RMS as a *State Road* and provides the key north-south road link in the area, linking North Sydney to Hornsby and beyond. It typically carries three traffic lanes in each direction in the vicinity of the site, with opposing traffic flows separated by a central median island. Clearway restrictions apply along both sides of the road during commuter peak periods.

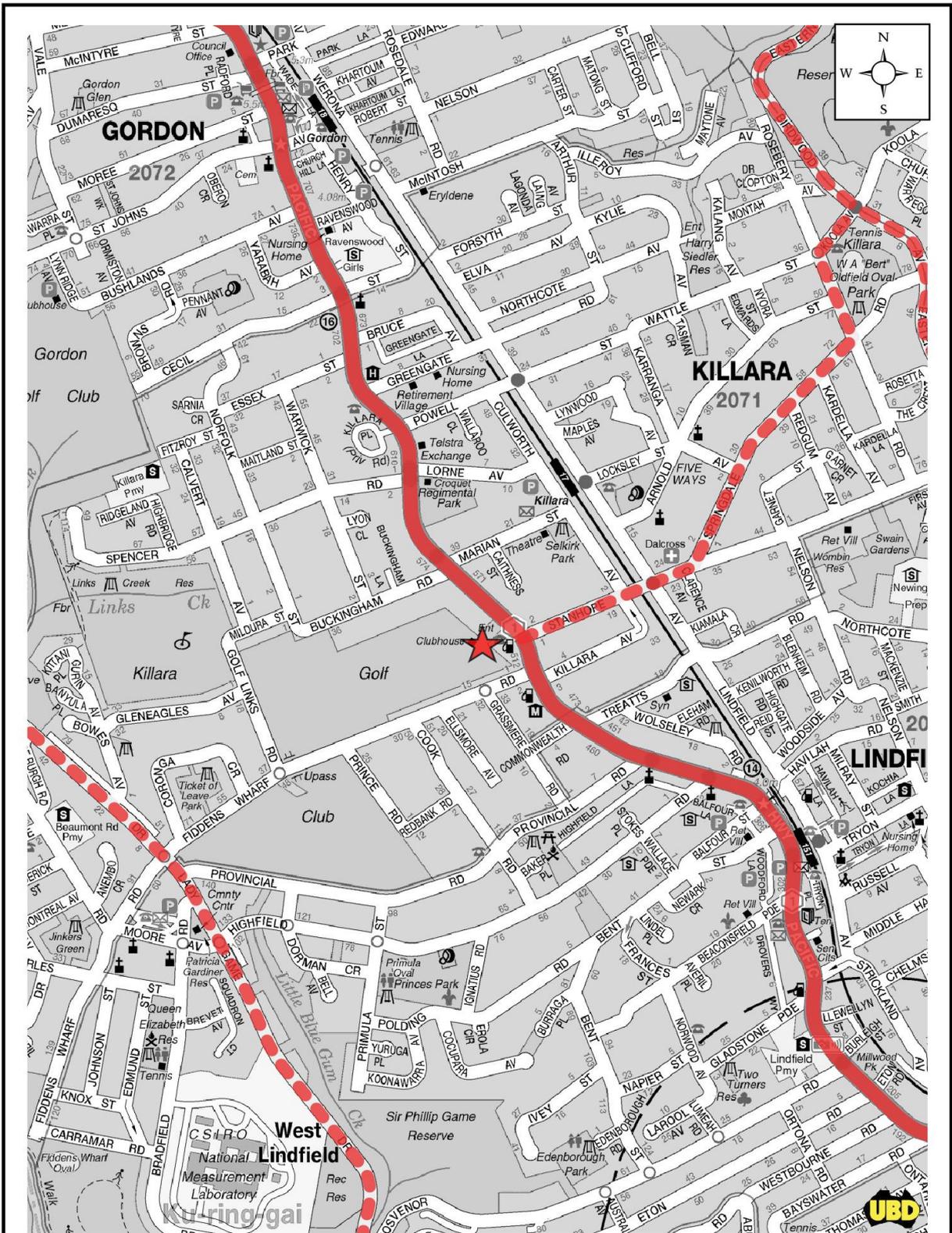
Lady Game Drive is classified by the RMS as a *Regional Road* which provides another key north-south road link in the local area, linking Delhi Road to Lane Cove Road. It typically carries one traffic lane in each direction in the vicinity of the site with additional lanes provided at key locations including its intersection with Fiddens Wharf Road.

Fiddens Wharf Road is a local, unclassified road which performs the function of a *collector route* through the area. Kerbside parking is generally permitted along both sides of the road in the vicinity of the site.

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 the Pacific Highway
- a CENTRAL MEDIAN ISLAND in the Pacific Highway which precludes right turn movements into and out of the site
- a 50 km/h SPEED LIMIT which applies to Fiddens Wharf Road and all other local roads in the area



Key: —— State Road
- - - - Regional Road

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ROAD HIERARCHY
FIGURE 3



- PEDESTRIAN TRAFFIC SIGNALS in the Pacific Highway just north of Marian Street and also just south of Provincial Road
- a RIGHT TURN HOLDING BAY in the Pacific Highway where it intersects with Fiddens Wharf Road
- NO RIGHT TURN eastbound restrictions in Fiddens Wharf Road turning onto the Pacific Highway during the morning and afternoon commuter peak periods.

Journey to Work Data

The NSW Bureau of Transport Statistics provides information on the mode of travel used by residents living in a particular suburb when travelling to work. The mode of travel used for the *Journey To Work* by Killara residents is as follows:

Mode of Travel
57% vehicle driver
32% train
5% vehicle passenger
3% walked only
2% other
1% bus

The *Journey To Work* data also provides information on where the residents of Killara work, as set out in the table below:

Destination or Place of Work
29% Sydney CBD
22% Ku-ring-gai LGA
13% Chatswood – Lane Cove
8% North Sydney – Mosman
5% Ryde – Hunters Hill
2% Wahroonga
2% Hornsby
2% Parramatta
13% Other

Based on the above data it is evident that a substantial proportion of future residents are likely to work in the Central Sydney CBD or in strategic centres which can be accessed via the T1 North Shore and Northern Rail Line. All of these centres are all located within a 30 minute travel time from Killara Railway Station. The preferred walking route to Killara Railway Station via Marian Street is 715m long, equivalent to a walking time of 7 or 8 minutes.

In addition, the data also suggests that a substantial proportion of future residents will be employed in the Ku-ring-gai LGA. These residents could travel to work with a relatively short car journey if their work place is not located within walking distance to another train station on the T1 North Shore Rail Line.

Existing Public Transport Services

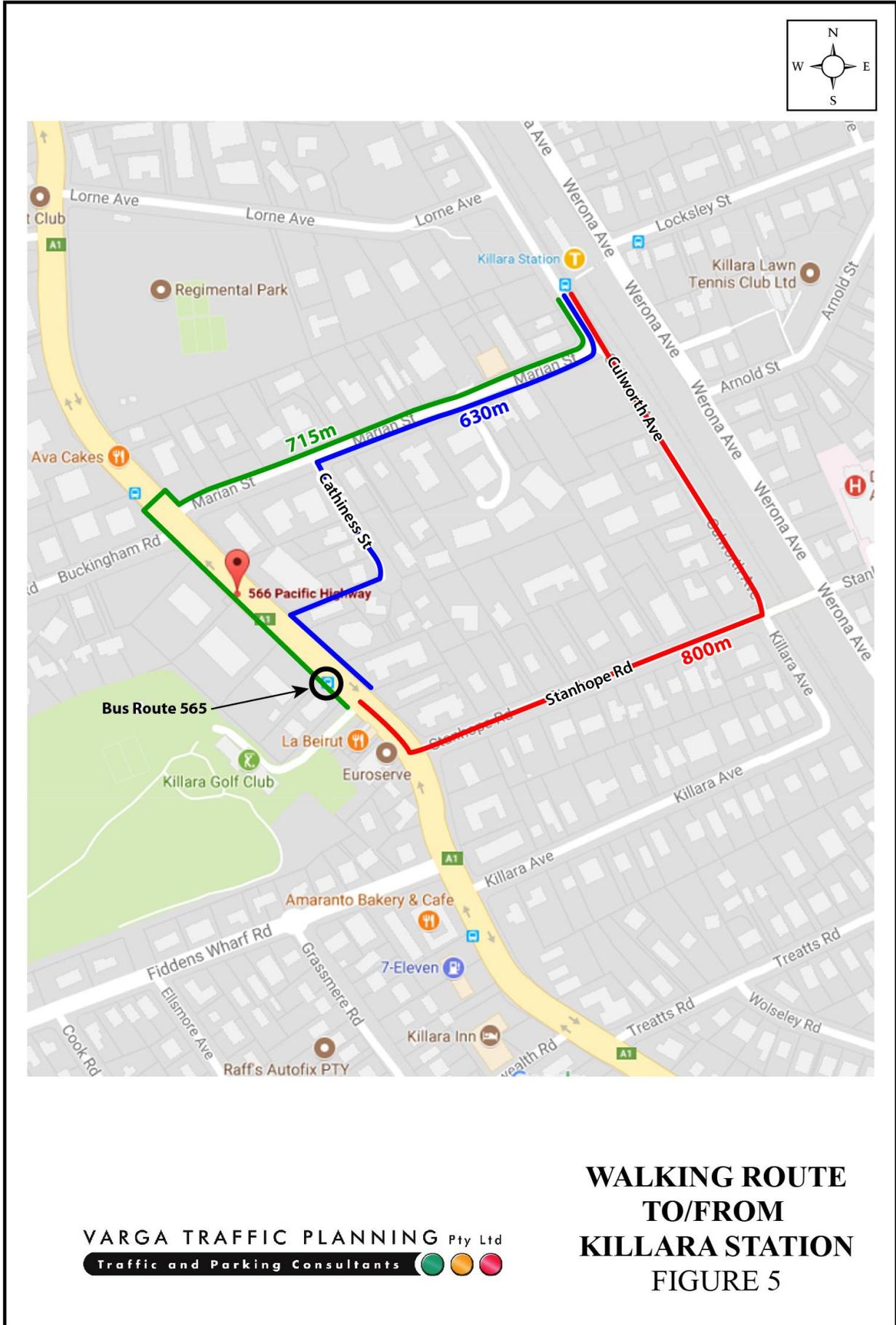
Killara Railway Station is located north-east of the site and is situated on the T1 North Shore & Northern, operating between Berowra to City via Gordon, Hornsby to City via Macquarie University.

There are nearly 200 train services per day travelling on weekdays, decreasing to 150 train services per day on weekends and public holidays.

During weekday *inbound* morning and afternoon peak periods there are train services every 3-12 minutes and train services every 15 minutes outside peak periods. During the weekends and public holidays, train services decreases to 15 minutes during the day and 30 minutes in between midnight and 6am.

During weekday *outbound* morning peak periods there are train services every 3-6 minutes and train services every 15 minutes outside peak periods. During the weekends and public holidays, train services decreases to 15 minutes.

There are 3 options available for walking between the site and Killara Railway Station ranging in length from 630m to 800m, as illustrated on Figure 5 as follows:



- 630m via Cathiness Street and Marian Street
- 715m via the signalised pedestrian crossing on the Pacific Highway and Marian Street
- 800m via Stanhope Road and Culworth Avenue.

The 715m long walking route via Marian Street is preferred, as it enables pedestrians to cross the Pacific Highway at an existing signalised pedestrian crossing.

Killara Station provides access to a number of strategic centres with major employment, retail and service facilities. These centres are located within a short travel time from Killara Station as follows:

Rail Travel Times from Killara Station

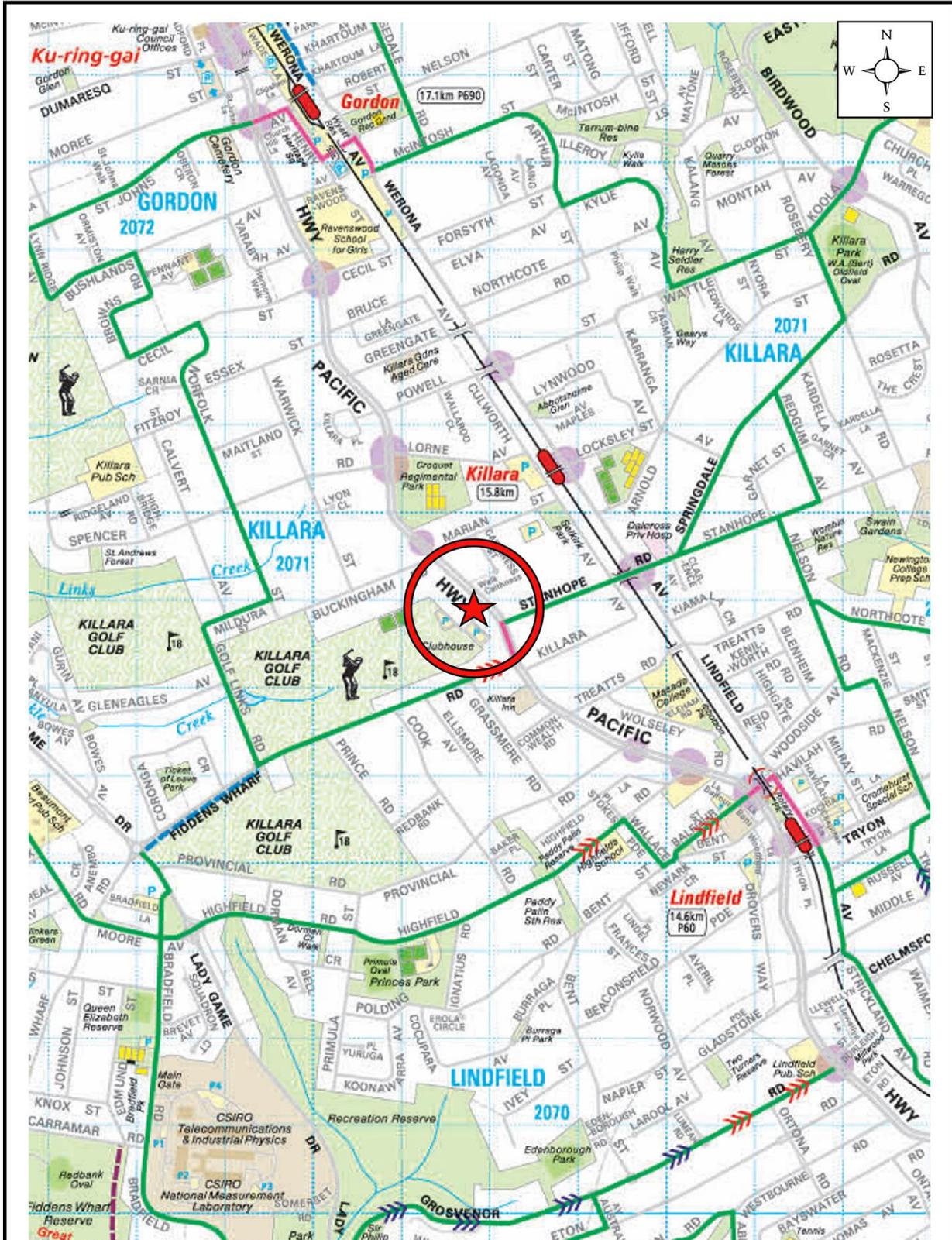
Gordon Station:	3 minutes
Chatswood Station:	8 minutes
St Leonards Station:	12 minutes
Hornsby Station:	18 minutes
North Sydney Station:	20 minutes
Wynyard Station:	26 minutes

The strategic centres of Chatswood, St Leonards, North Sydney and Hornsby are located within a 30 minute public transport travel catchment. It is also likely that many future residents will travel to the Central Sydney CBD via the suburban railway road network.

Local Bicycle Routes

The location of the existing bicycle routes in the vicinity of the site are illustrated on Figure 6. These bicycle routes are readily accessible from the subject site and provide a number of on-road bicycle routes linking the local area with the following destinations:

- Dalcross Adventist Hospital via Stanhope Road
- Killara Railway Station via Stanhope Road
- Lindfield Railway Station and town centre via Stanhope Road and Nelson Road
- Gordon Railway Station and town centre via Fiddens Wharf Road, Golf Links Road, Mildura Street, Norfolk Street, Cecil Street, Browns Road, Bushlands Road, Lynn Ridge Avenue and St Johns Avenue.



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EXISTING BICYCLE ROUTES

FIGURE 6

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 golf club's existing vehicular access driveway in the Pacific Highway. The results of the traffic surveys are also reproduced in full in Appendix A and reveal that:

- two-way traffic flows into and out of the golf club are in the order of 23 vph during the AM "on-road" commuter peak period, comprising 3 trips IN and 20 trips OUT
- two-way traffic flows into and out of the golf club are in the order of 35 vph during the PM "on-road" commuter peak period, comprising 19 trips IN and 16 trips OUT.

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 *Technical Direction TDT 2013/04a (August 2013)* which notes that the Technical Direction *must* be followed when the RMS is undertaking trip generation assessments.

The *Technical Direction* is based on extensive surveys of a wide range of land uses and nominates the following traffic generation rates which are applicable to the planning proposal:

High Density Residential Flat Buildings

AM: 0.19 peak hour vehicle trips per dwelling

PM: 0.15 peak hour vehicle trips per dwelling

Low Density Residential Dwellings

AM: 0.99 peak hour vehicle trips per dwelling

PM: 0.95 peak hour vehicle trips per dwelling

Application of the above traffic generation rates to the 270 residential apartments outlined in the planning proposal yields a traffic generation potential of approximately 51 vehicles per hour (vph) during the AM commuter peak period and 41 vph during the PM commuter peak period.

Application of the above traffic generation rates to the longer-term proposal to provide 15 dwelling houses yields an additional traffic generation potential of approximately 15 vph.

That projected increase in traffic activity as a consequence of the planning proposal is minimal and 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 Pacific Highway & the site access driveway intersection are summarised on Table 3.1 below, revealing that:

- the Pacific Highway & the site access driveway 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 future traffic demands expected to be generated by the development proposal, the Pacific Highway & the site access driveway intersection will continue to operate at *Level of Service "A"*, 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 PACIFIC HIGHWAY & THE SITE ACCESS DRIVEWAY				
Key Indicators	Existing Traffic Demand		Projected Development Traffic Demand	
	AM	PM	AM	PM
Level of Service	A	A	A	A
Degree of Saturation	0.199	0.315	0.201	0.321
Average Vehicle Delay (secs/veh)				
Pacific Highway (south)	L	5.7	5.6	5.6
	T	0.0	0.0	0.0
Site Access Driveway (west)	L	7.3	8.0	6.8
TOTAL AVERAGE VEHICLE DELAY		0.2	0.2	0.3

PAC_ACCX

PAC_ACCP

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

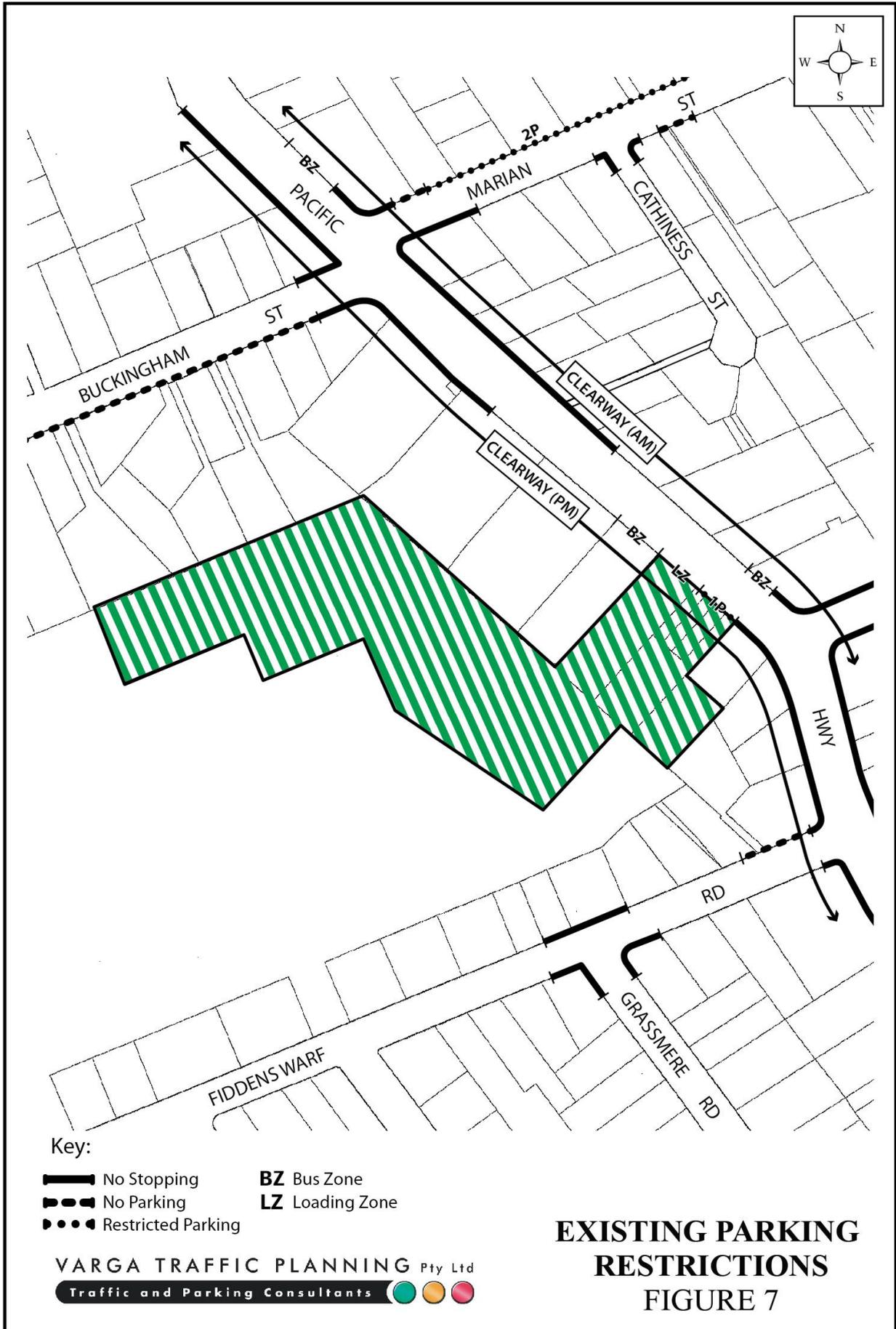
The existing kerbside parking restrictions which apply to the road network in the vicinity of the site are illustrated on Figure 7 and comprise:

- CLEARWAY restrictions along both sides of the Pacific Highway during commuter peak periods
- 1 HOUR PARKING restrictions along the southern half of the Pacific Highway site frontage
- a LOADING ZONE located along the northern half of the Pacific Highway site frontage
- NO PARKING restrictions along the western side of Fiddens Wharf Road on approach to the Pacific Highway intersection
- generally UNRESTRICTED kerbside parking elsewhere in Fiddens Wharf Road and throughout the local area
- BUS ZONES located at regular intervals along both sides of the Pacific Highway.

Off-Street Parking Provisions

The off-street car parking requirements applicable to the planning proposal are specified in Council's *Development Control Plan, Part 23R.2 – Car Parking Rates* document in the following terms:

1 bedroom unit:	1 space per unit
2 bedroom unit:	1 space per unit
3 bedroom unit:	1.5 spaces per unit
Visitors:	1 space per 4 units for visitor parking



Whilst the precise unit mix of the planning proposal is not yet known, it is expected that Council's numerical requirements for parking spaces will be satisfied, and that the design layout of all off-street car parking areas will comply with the relevant requirements specified in the Standards Australia publication *Parking Facilities Part 1 - Off-Street Car Parking AS2890.1*.

In addition, the future layout will be designed to accommodate the swept path and manoeuvring requirements of Council's small rigid garbage truck with an overhead clearance requirement of 2.6m.

Loading/servicing of the existing golf course will continue to be undertaken by medium to large trucks, whilst provision will also be made for servicing the future *R2 Low Density Residential* zone using Council's standard length waste collection vehicle (approximately 10m long).

Parking for the dwelling house allotments is to be provided on each of the individual allotments, and will be designed to comply with the requirements of *AS2809.1*.

It is therefore concluded that the planning proposal will not have any unacceptable parking, access or servicing implications and is recommended for approval.

APPENDIX A

TRAFFIC SURVEY DATA



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849.

Mobile.0418239019

Client : Varga Traffic Planning
 Job No/Name : 5975 KILLARA Golf Club Access
 Day/Date : Wednesday 9th March 2016

PEDS	NORTH	WEST	SOUTH	TOT
Time Per	Pacific Hwy	GC Access	Pacific Hwy	TOT
0630 - 0645	0	1	1	2
0645 - 0700	0	1	0	1
0700 - 0715	2	4	0	6
0715 - 0730	0	1	1	2
0730 - 0745	5	8	2	15
0745 - 0800	0	7	1	8
0800 - 0815	1	2	0	3
0815 - 0830	0	6	0	6
0830 - 0845	0	2	0	2
0845 - 0900	1	5	0	6
0900 - 0915	2	7	1	10
0915 - 0930	0	2	0	2
Per End	11	46	6	63

PEDS	NORTH	WEST	SOUTH	TOT
Peak Per	Pacific Hwy	GC Access	Pacific Hwy	TOT
0630 - 0730	2	7	2	11
0645 - 0745	7	14	3	24
0700 - 0800	7	20	4	31
0715 - 0815	6	18	4	28
0730 - 0830	6	23	3	32
0745 - 0845	1	17	1	19
0800 - 0900	2	15	0	17
0815 - 0915	3	20	1	24
0830 - 0930	3	16	1	20
PEAK HR	3	16	1	20

Lights	NORTH		WEST		SOUTH		TOT
	Pacific Hwy	GC Access	Pacific Hwy	GC Access	Pacific Hwy	GC Access	
Time Per	I	R	L	R	L	I	TOT
0630 - 0645			1		5	212	218
0645 - 0700			3		16	227	246
0700 - 0715			1		18	223	242
0715 - 0730			0		14	250	264
0730 - 0745			0		8	249	257
0745 - 0800			0		5	258	263
0800 - 0815			3		3	225	231
0815 - 0830			0		4	267	271
0830 - 0845			2		7	279	288
0845 - 0900			1		11	245	257
0900 - 0915			1		1	239	241
0915 - 0930			1		0	287	288
Per End	0	0	13	0	92	2961	3066

Heavies	NORTH		WEST		SOUTH		TOT
	Pacific Hwy	GC Access	Pacific Hwy	GC Access	Pacific Hwy	GC Access	
Time Per	I	R	L	R	L	I	TOT
0630 - 0645			0		0	3	3
0645 - 0700			0		0	6	6
0700 - 0715			0		0	6	6
0715 - 0730			0		0	5	5
0730 - 0745			0		0	9	9
0745 - 0800			0		0	17	17
0800 - 0815			0		0	13	13
0815 - 0830			0		0	15	15
0830 - 0845			0		0	16	16
0845 - 0900			0		1	12	13
0900 - 0915			0		1	13	14
0915 - 0930			1		0	14	15
Per End	0	0	1	0	2	129	132

Combined	NORTH		WEST		SOUTH		TOT
	Pacific Hwy	GC Access	Pacific Hwy	GC Access	Pacific Hwy	GC Access	
Time Per	I	R	L	R	L	I	TOT
0630 - 0645	0	0	1	0	5	215	221
0645 - 0700	0	0	3	0	16	233	252
0700 - 0715	0	0	1	0	18	229	248
0715 - 0730	0	0	0	0	14	255	269
0730 - 0745	0	0	0	0	8	258	266
0745 - 0800	0	0	0	0	5	275	280
0800 - 0815	0	0	3	0	3	238	244
0815 - 0830	0	0	0	0	4	282	286
0830 - 0845	0	0	2	0	7	295	304
0845 - 0900	0	0	1	0	12	257	270
0900 - 0915	0	0	1	0	2	252	255
0915 - 0930	0	0	2	0	0	301	303
Per End	0	0	14	0	94	3090	3198

Lights	NORTH		WEST		SOUTH		TOT
	Pacific Hwy	GC Access	Pacific Hwy	GC Access	Pacific Hwy	GC Access	
Peak Per	I	R	L	R	L	I	TOT
0630 - 0730	0	0	5	0	53	912	970
0645 - 0745	0	0	4	0	56	949	1009
0700 - 0800	0	0	1	0	45	980	1026
0715 - 0815	0	0	3	0	30	982	1015
0730 - 0830	0	0	3	0	20	999	1022
0745 - 0845	0	0	5	0	19	1029	1053
0800 - 0900	0	0	6	0	25	1016	1047
0815 - 0915	0	0	4	0	23	1030	1057
0830 - 0930	0	0	5	0	19	1050	1074

Heavies	NORTH		WEST		SOUTH		TOT
	Pacific Hwy	GC Access	Pacific Hwy	GC Access	Pacific Hwy	GC Access	
Peak Per	I	R	L	R	L	I	TOT
0630 - 0730	0	0	0	0	0	20	20
0645 - 0745	0	0	0	0	0	26	26
0700 - 0800	0	0	0	0	0	37	37
0715 - 0815	0	0	0	0	0	44	44
0730 - 0830	0	0	0	0	0	54	54
0745 - 0845	0	0	0	0	0	61	61
0800 - 0900	0	0	0	0	1	56	57
0815 - 0915	0	0	0	0	2	56	58
0830 - 0930	0	0	1	0	2	55	58

Combined	NORTH		WEST		SOUTH		TOT
	Pacific Hwy	GC Access	Pacific Hwy	GC Access	Pacific Hwy	GC Access	
Peak Per	I	R	L	R	L	I	TOT
0630 - 0730	0	0	5	0	53	932	990
0645 - 0745	0	0	4	0	56	975	1035
0700 - 0800	0	0	1	0	45	1017	1063
0715 - 0815	0	0	3	0	30	1026	1059
0730 - 0830	0	0	3	0	20	1053	1076
0745 - 0845	0	0	5	0	19	1090	1114
0800 - 0900	0	0	6	0	26	1072	1104
0815 - 0915	0	0	4	0	25	1086	1115
0830 - 0930	0	0	6	0	21	1105	1132

PEAK HR		5		19	1050	1074
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PEAK HR		1		2	55	58
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PEAK HR		6		21	1105	1132
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R.O.A.R. DATA

Reliable, Original & Authentic Results

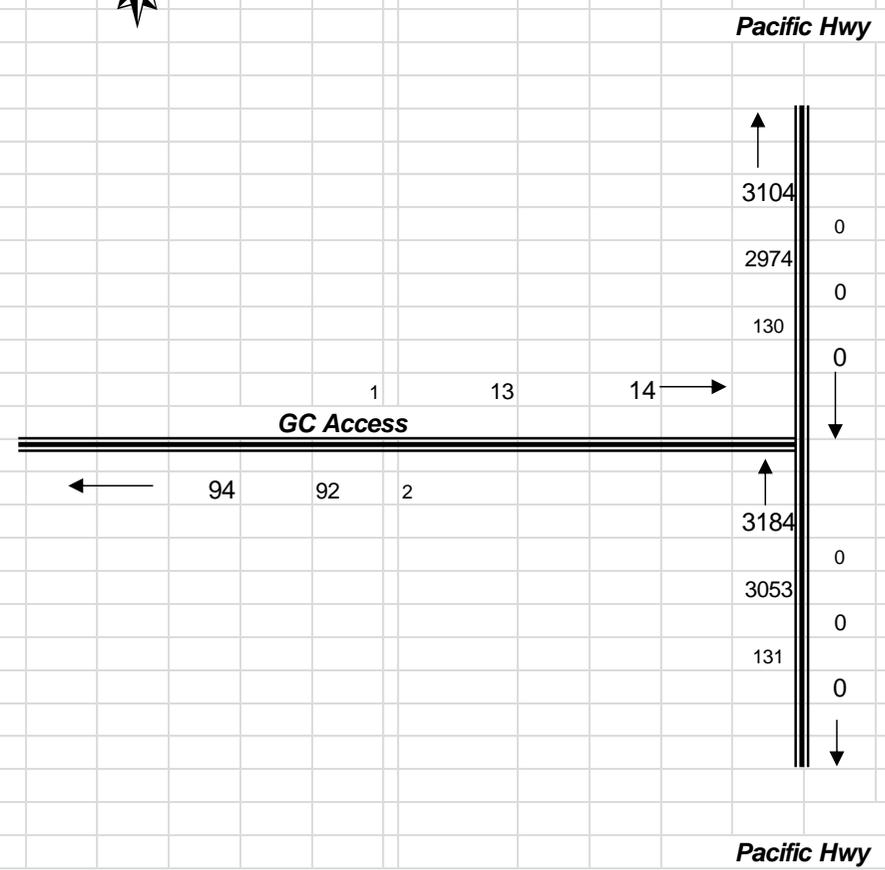
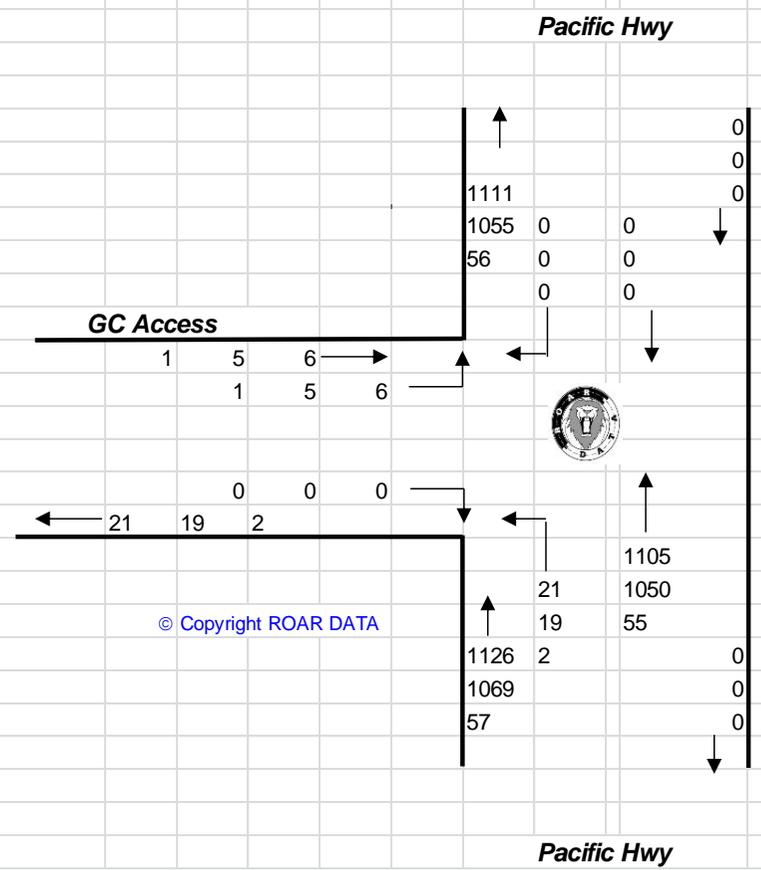
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Varga Traffic Planning
Job No/Name : 5975 KILLARA Golf Club Access
Day/Date : Wednesday 9th March 2016

1	2	3
4	5	6
7	8	9

AM PEAK
0830 - 0930

TOTAL VOLUMES FOR COUNT PERIOD





R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849.

Mobile.0418239019

Client : Varga Traffic Planning
 Job No/Name : 5975 KILLARA Golf Club Access
 Day/Date : Tuesday 8th March 2016

PEDS	NORTH	WEST	SOUTH	TOT
Time Per	Pacific Hwy	GC Access	Pacific Hwy	
1530 - 1545	0	1	0	1
1545 - 1600	0	3	0	3
1600 - 1615	0	3	0	3
1615 - 1630	0	3	1	4
1630 - 1645	0	9	0	9
1645 - 1700	1	4	0	5
1700 - 1715	0	2	0	2
1715 - 1730	1	0	0	1
1730 - 1745	0	5	0	5
1745 - 1800	1	5	0	6
1800 - 1815	0	4	0	4
1815 - 1830	0	4	1	5
Per End	3	43	2	48

PEDS	NORTH	WEST	SOUTH	TOT
Peak Per	Pacific Hwy	GC Access	Pacific Hwy	
1530 - 1630	0	10	1	11
1545 - 1645	0	18	1	19
1600 - 1700	1	19	1	21
1615 - 1715	1	18	1	20
1630 - 1730	2	15	0	17
1645 - 1745	2	11	0	13
1700 - 1800	2	12	0	14
1715 - 1815	2	14	0	16
1730 - 1830	1	18	1	20
PEAK HR	1	18	1	20

Lights	NORTH		WEST		SOUTH		TOT
	Pacific Hwy	GC Access	Pacific Hwy	GC Access	Pacific Hwy	GC Access	
Time Per	I	R	L	R	L	I	
1530 - 1545			5		5	419	429
1545 - 1600			7		7	428	442
1600 - 1615			4		4	447	455
1615 - 1630			6		2	377	385
1630 - 1645			5		2	282	289
1645 - 1700			2		13	262	277
1700 - 1715			9		8	190	207
1715 - 1730			1		1	384	386
1730 - 1745			3		7	480	490
1745 - 1800			3		3	477	483
1800 - 1815			9		4	460	473
1815 - 1830			11		1	405	417
Per End	0	0	65	0	57	4611	4733

Heavies	NORTH		WEST		SOUTH		TOT
	Pacific Hwy	GC Access	Pacific Hwy	GC Access	Pacific Hwy	GC Access	
Time Per	I	R	L	R	L	I	
1530 - 1545			0		0	10	10
1545 - 1600			0		0	6	6
1600 - 1615			0		0	8	8
1615 - 1630			0		0	7	7
1630 - 1645			0		0	3	3
1645 - 1700			0		0	5	5
1700 - 1715			0		0	3	3
1715 - 1730			0		0	6	6
1730 - 1745			0		0	1	1
1745 - 1800			0		0	1	1
1800 - 1815			0		0	0	0
1815 - 1830			0		0	0	0
Per End	0	0	0	0	0	50	50

Combined	NORTH		WEST		SOUTH		TOT
	Pacific Hwy	GC Access	Pacific Hwy	GC Access	Pacific Hwy	GC Access	
Time Per	I	R	L	R	L	I	
1530 - 1545	0	0	5	0	5	429	439
1545 - 1600	0	0	7	0	7	434	448
1600 - 1615	0	0	4	0	4	455	463
1615 - 1630	0	0	6	0	2	384	392
1630 - 1645	0	0	5	0	2	285	292
1645 - 1700	0	0	2	0	13	267	282
1700 - 1715	0	0	9	0	8	193	210
1715 - 1730	0	0	1	0	1	390	392
1730 - 1745	0	0	3	0	7	481	491
1745 - 1800	0	0	3	0	3	478	484
1800 - 1815	0	0	9	0	4	460	473
1815 - 1830	0	0	11	0	1	405	417
Per End	0	0	65	0	57	4661	4783

Lights	NORTH		WEST		SOUTH		TOT
	Pacific Hwy	GC Access	Pacific Hwy	GC Access	Pacific Hwy	GC Access	
Peak Per	I	R	L	R	L	I	
1530 - 1630	0	0	22	0	18	1671	1711
1545 - 1645	0	0	22	0	15	1534	1571
1600 - 1700	0	0	17	0	21	1368	1406
1615 - 1715	0	0	22	0	25	1111	1158
1630 - 1730	0	0	17	0	24	1118	1159
1645 - 1745	0	0	15	0	29	1316	1360
1700 - 1800	0	0	16	0	19	1531	1566
1715 - 1815	0	0	16	0	15	1801	1832
1730 - 1830	0	0	26	0	15	1822	1863
PEAK HR	0	0	26	0	15	1822	1863

Heavies	NORTH		WEST		SOUTH		TOT
	Pacific Hwy	GC Access	Pacific Hwy	GC Access	Pacific Hwy	GC Access	
Peak Per	I	R	L	R	L	I	
1530 - 1630	0	0	0	0	0	31	31
1545 - 1645	0	0	0	0	0	24	24
1600 - 1700	0	0	0	0	0	23	23
1615 - 1715	0	0	0	0	0	18	18
1630 - 1730	0	0	0	0	0	17	17
1645 - 1745	0	0	0	0	0	15	15
1700 - 1800	0	0	0	0	0	11	11
1715 - 1815	0	0	0	0	0	8	8
1730 - 1830	0	0	0	0	0	2	2
PEAK HR	0	0	0	0	0	2	2

Combined	NORTH		WEST		SOUTH		TOT
	Pacific Hwy	GC Access	Pacific Hwy	GC Access	Pacific Hwy	GC Access	
Peak Per	I	R	L	R	L	I	
1530 - 1630	0	0	22	0	18	1702	1742
1545 - 1645	0	0	22	0	15	1558	1595
1600 - 1700	0	0	17	0	21	1391	1429
1615 - 1715	0	0	22	0	25	1129	1176
1630 - 1730	0	0	17	0	24	1135	1176
1645 - 1745	0	0	15	0	29	1331	1375
1700 - 1800	0	0	16	0	19	1542	1577
1715 - 1815	0	0	16	0	15	1809	1840
1730 - 1830	0	0	26	0	15	1824	1865
PEAK HR	0	0	26	0	15	1824	1865



R.O.A.R. DATA

Reliable, Original & Authentic Results

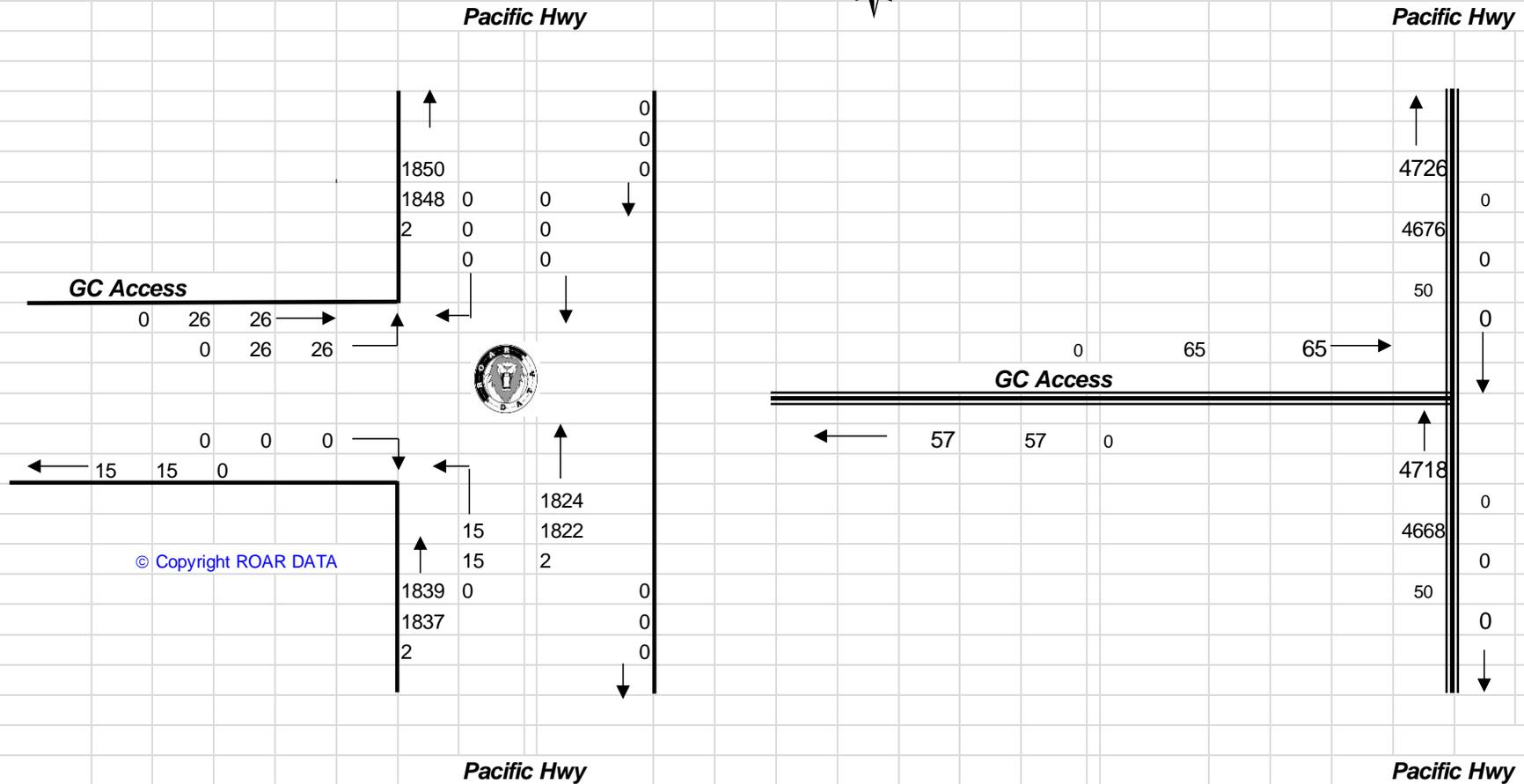
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Varga Traffic Planning
Job No/Name : 5975 KILLARA Golf Club Access
Day/Date : Tuesday 8th March 2016

1	2	3
4	5	6
7	8	9

PM PEAK
1730 - 1830

**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 : 5975 KILLARA Golf Club Access
Day/Date : Tuesday 8th & Wednesday 9th March 2016

Intersection Details

Obtained via satellite
May be incorrect



AM PEAK HOUR
0830 - 0930

Golf Club Access



	6	26	L
AM		PM	

PM	15	1824
AM	21	1105
	L	T

PM PEAK HOUR
1730 - 1830

Combined figures only

Weather >>>



Pacific Hwy

Pacific Hwy

