

Proposed Increase in Student Numbers

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

TRAFFIC AND PARKING ASSESSMENT REPORT

10 July 2018

Ref 18145

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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).

On 8 March 2018 the Sydney North Planning Panel granted approval to modification of Condition Number 3 of DA2011/0446. MOD2017/0071 approved an increase in the student enrolments from 884 students to 992 students, although the application had sought an increased enrolment up to 1092 students. The Planning Panel's *Determination and Statement of Reasons* included the following statement in this regard:

“Dr John Roseth further noted that while agreeing to the consent conditions on which Council and the applicant have agreed, he would have agreed to the increased number of students that the applicant had originally asked for. This is because the school provides more parking than the vast majority of schools in NSW. He notes it is therefore unreasonable to reduce the student numbers which the applicant has originally applied for on the grounds of traffic and parking.”

The school has now successfully implemented its new drop-off/pick-up arrangements in the “Drop and Go” zone in Tango Avenue to ensure a much more efficient use of this area.

The new arrangements require parents/carers to display the family name on a *label on the passenger side dashboard (or sun visor)* to enable school staff to call their children forward in readiness to get into the car.

School staff will open the car doors and will assist students in/out of the car. There are 4 additional staff positioned in the Tango Avenue “Drop and Go” zone to assist students and to ensure that:

- drivers do not get out of the car, and
- cars keep moving forward to minimise delays.

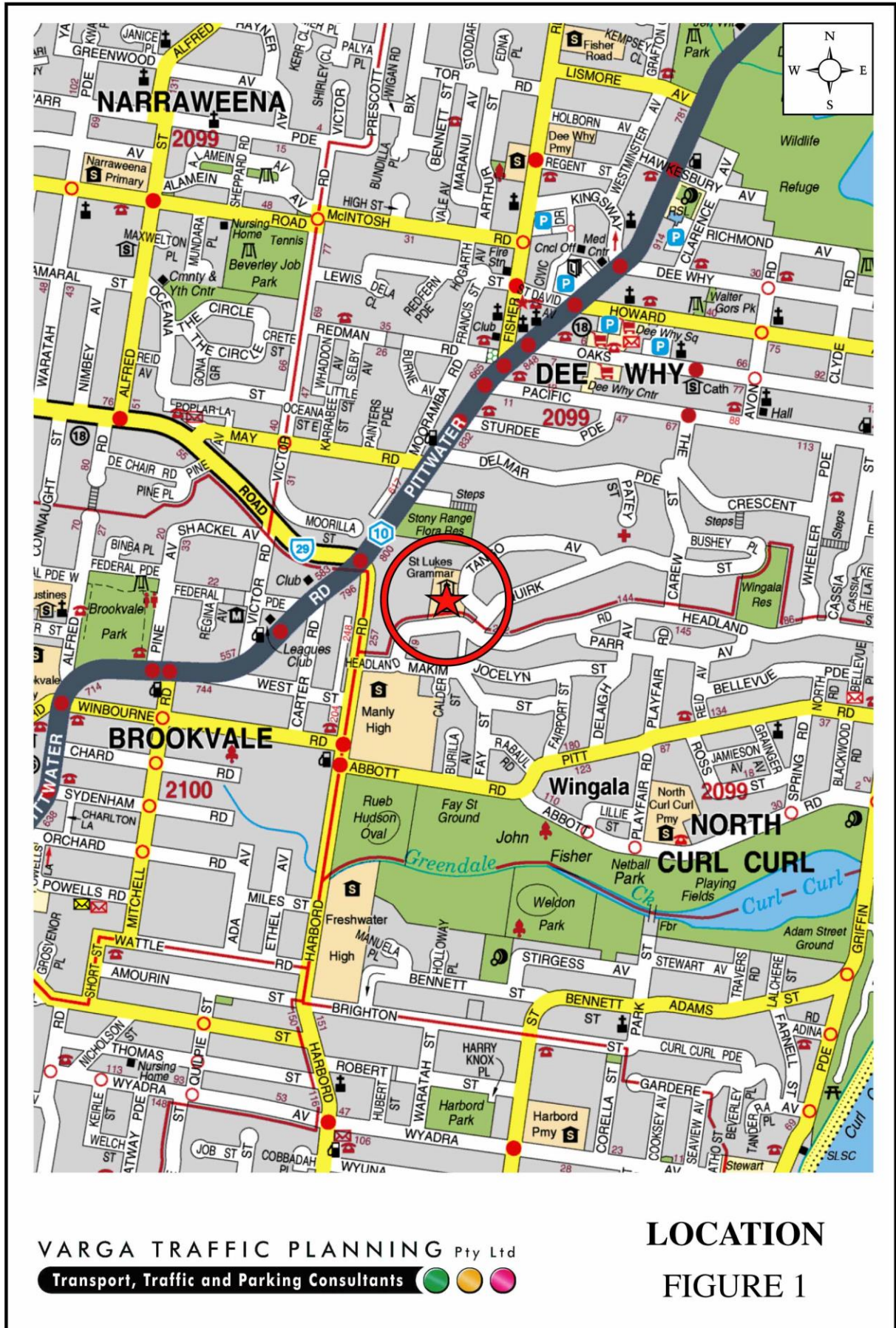
The new drop-off/pick-up arrangements have now been operating for 2 school terms and have proved to be very successful.

The new arrangements have significantly increased the pick-up/set-down capacity of the “Drop and Go” zone in Tango Avenue, to the point where congestion in Headland Road has been completely eliminated.

This application seeks approval to increase student numbers from 992 students to 1092 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.

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.





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 co-educational school.

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.

In 2004 a student enrolment of 884 student was approved by DA2003/1728.

In 2012 the school increased 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 seven (7) of the parking spaces under the school hall to facilitate the construction of a number of music practice rooms. There are currently 132 parking spaces provided on the site as set out in the table below:

	Off-Street Car Parking
104 spaces:	Multi-storey staff car park
14 spaces:	School hall undercroft staff car park
10 spaces:	Student car park off Headland Road
2 spaces:	Disabled parking
1 space:	School visitors
1 space:	School deliveries
132 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, Quick Street and in Tango Avenue.

On 8 March 2018 the Sydney North Planning Panel granted approval to modification of Condition Number 3 of DA2011/0446 which states:

3. *The maximum number of students to be enrolled at the school is 884 at any time. In this regard, any proposal to increase the student numbers as part a future development application will not be approved without a corresponding increase in on-site parking and pick-up/set-down capacity”.*

MOD2017/0071 approved an increase in the student enrolments from 884 students to 992 students, although the application had sought an increased enrolment up to 1092 students. The Planning Panel’s *Determination of Statement of Reasons* included the following statement in this regard:

“Dr John Roseth further noted that while agreeing to the consent conditions on which Council and the applicant have agreed, he would have agreed to the increased number of students that the applicant had originally asked for. This is because the school provides more parking than the vast majority of schools in NSW. He notes it is therefore unreasonable to reduce the student numbers which the applicant has originally applied for on the grounds of traffic and parking.”

The school has now successfully implemented its new drop-off/pick-up arrangements in the “Drop and Go” zone in Tango Avenue to ensure a much more efficient use of this area.

The new arrangements require parents/carers to display the family name on a *label on the passenger side dashboard (or sun visor)* to enable school staff to call their children forward in readiness to get into the car.

School staff will open the car doors and will assist students in/out of the car. There are 4 additional staff positioned in the Tango Avenue “Drop and Go” zone to assist students and to ensure that:

- drivers do not get out of the car, and
- cars keep moving forward to minimise delays.

Significantly, the school no longer allows parents to park their car in Tango Avenue, get out of the car and go into the school to collect their child/children.

The new drop-off/pick-up arrangements have now been operating for 2 school terms and have proved to be very successful.

The new arrangements have significantly increased the pick-up/set-down capacity of the “Drop and Go” zone in Tango Avenue, to the point where congestion in Headland Road has now been completely eliminated.

Proposed Development

The proposed development seeks approval to increase student enrolments from 992 students to 1092 students, (ie 100 additional students) including 17 additional Year 12 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, parking areas or the school’s Traffic Management Plan 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.

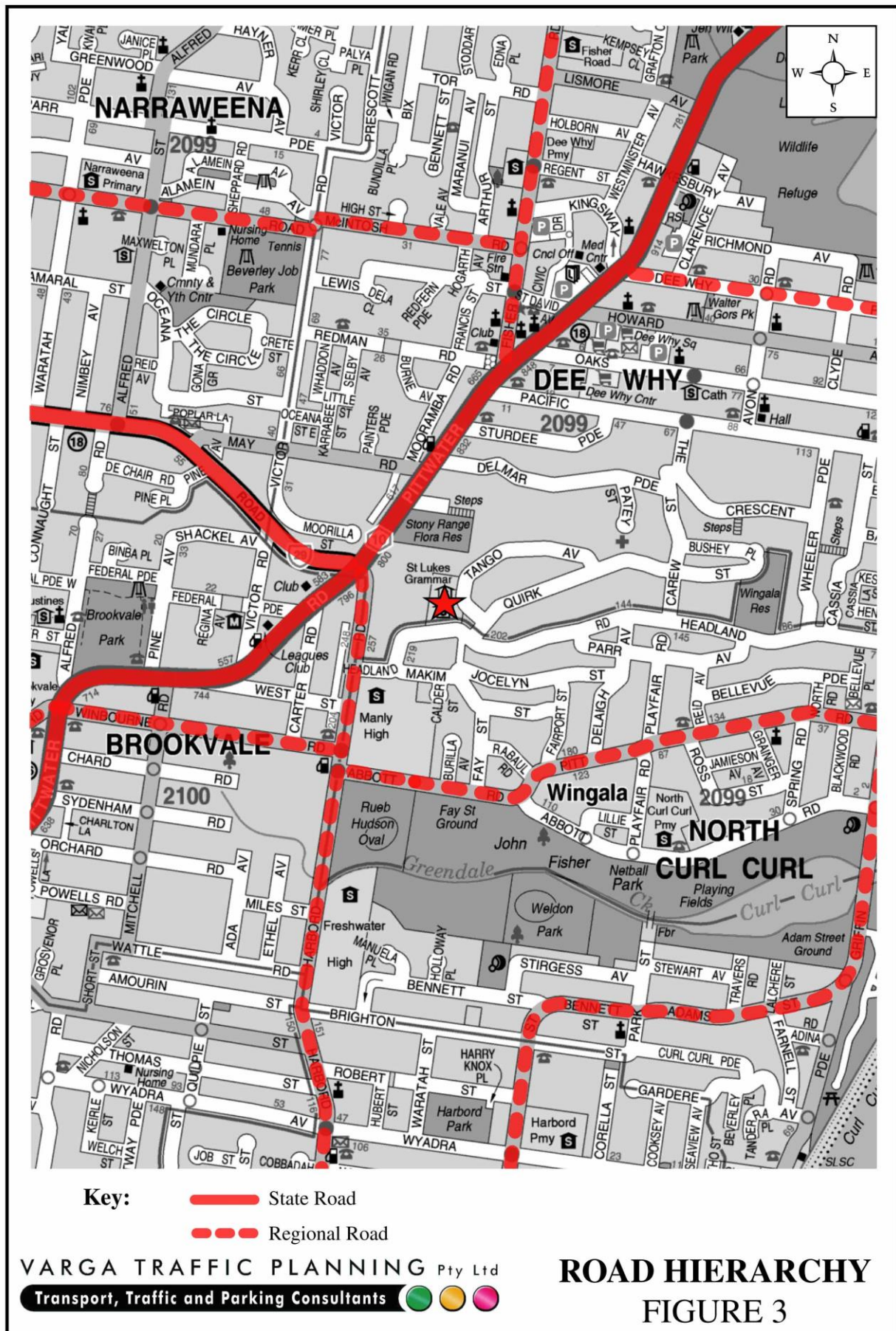
Harbord Road is classified by the RMS as a *Regional Road* and follows an east-west alignment between the Harbord West and Brookvale areas. It typically carries 2 traffic lanes in each direction in the vicinity of the site with kerbside parking permitted at selected locations.

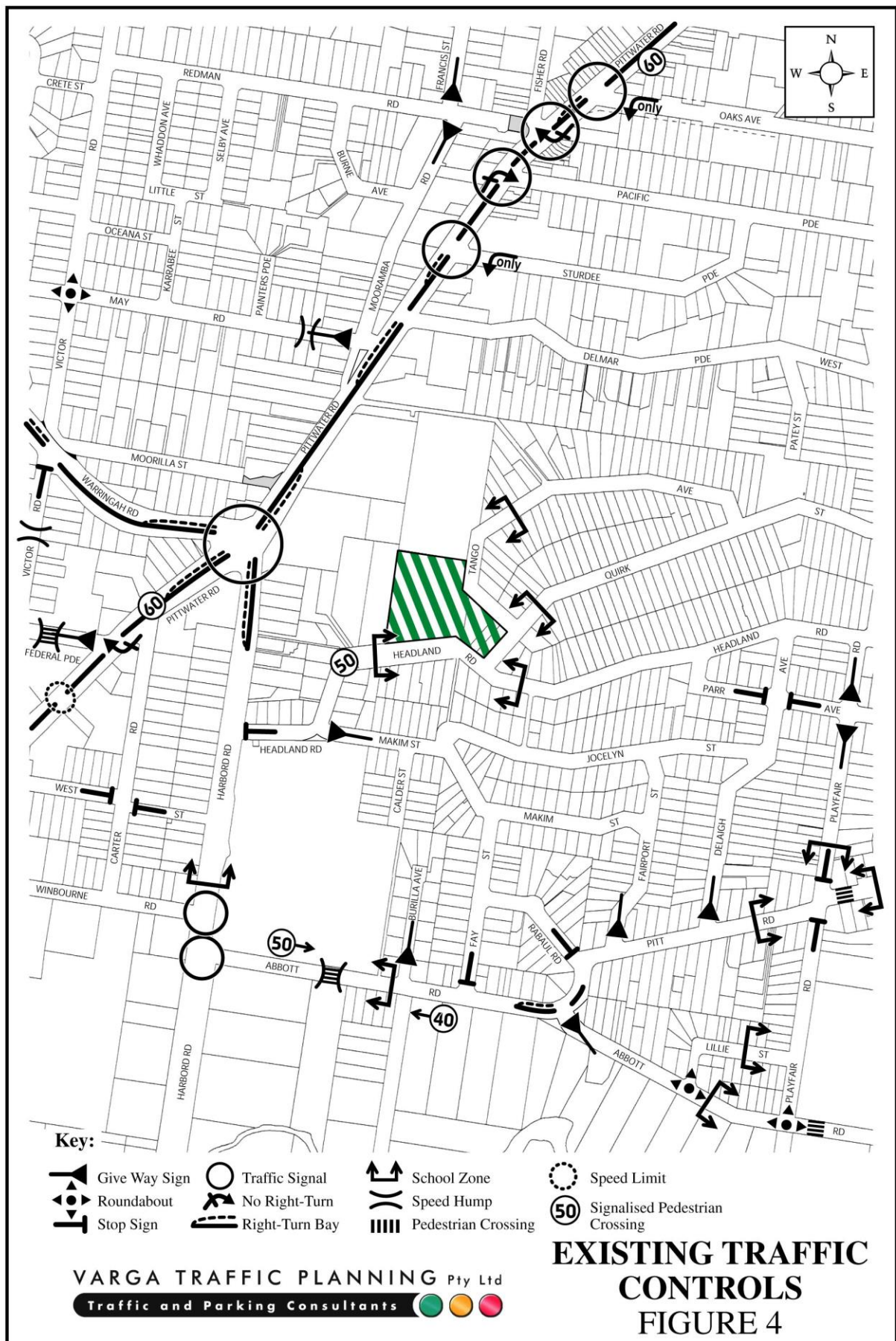
Headland Road, Quirk Street and Tango Avenue are all local, unclassified roads which are primarily used to provide vehicular and pedestrian access to frontage properties. Kerbside parking is generally permitted on both sides of all three roads. Headland Road performs the function of a *collector road*, 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 School Traffic Generation Rates

As noted in the foregoing, the school has successfully implemented a new Traffic Management Plan which has significantly improved the efficiency or “*through-put*” of the “Drop and Go” Zone in Tango Avenue.

The new Traffic Management Plan has now been operating for 2 school terms, and a number of traffic and parking surveys were conducted at the end of Term 2 to gauge the efficiency of the new Traffic Management Plan.

Those surveys included counts of traffic activity around the perimeter of the school site which identified the following traffic generation characteristics on a “*per student*” basis.

TRAFFIC GENERATION RATE PER STUDENT		
STUDENTS ONLY		
	AM PEAK	PM PEAK
TO:	0.26 vph/student	0.13 vph/student
FROM:	0.26 vph/student	0.15 vph/student
TOTAL:	0.52 vph/student	0.28 vph/student
STAFF ONLY		
	AM PEAK	PM PEAK
TO:	0.09 vph/student	0.00 vph/student
FROM:	0.01 vph/student	0.02 vph/student
TOTAL:	0.10 vph/student	0.02 vph/student
STAFF & STUDENTS CUMULATIVE TOTAL		
	AM PEAK	PM PEAK
TO:	0.34 vph/student	0.13 vph/student
FROM:	0.26 vph/student	0.17 vph/student
TOTAL:	0.60 vph/student	0.30 vph/student

Projected Additional Traffic Generation Potential

Application of the above traffic generation rates to the proposed additional 100 students is expected to generate an additional 26 vph dropping-off students in the AM peak, and an additional 15 vph picking-up students in the PM peak, as set out in the table below:

100 ADDITIONAL STUDENTS		
PROJECTED ADDITIONAL TRAFFIC GENERATION		
	AM PEAK	PM PEAK
TO:	26 vph	13 vph
FROM:	26 vph	15 vph
TOTAL:	52 vph	28 vph

Traffic Assessment

The projected increase in traffic activity of an additional 26 vph dropping-off students in the AM peak, and an additional 15 vph picking-up students in the PM peak is minimal, and will clearly not have any unacceptable traffic implications in terms of road network capacity.

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:

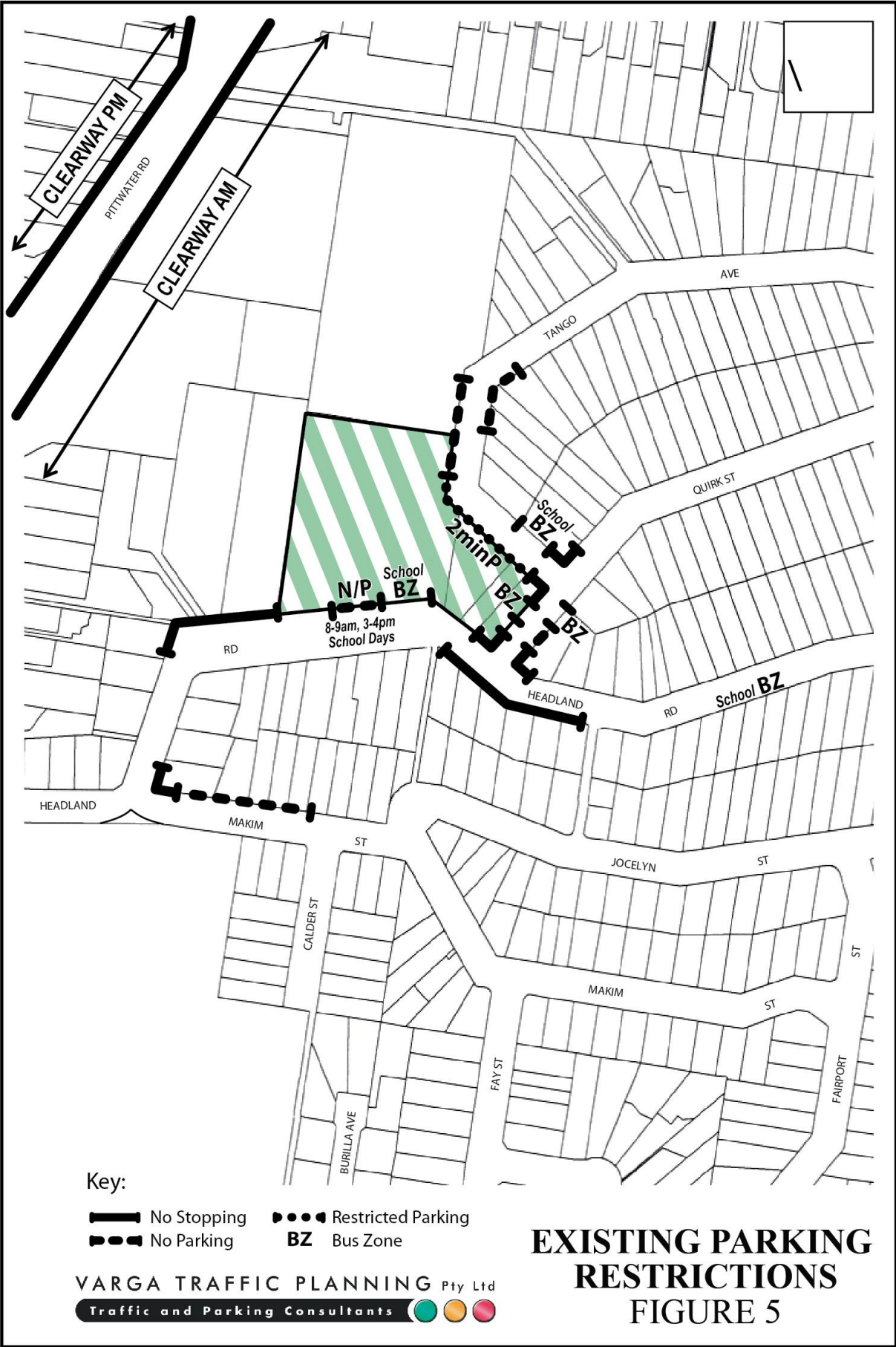
- NO PARKING restrictions along the western portion of the Headland Road street frontage from 8-9am and 3-4pm
- a small section of UNRESTRICTED parking along the eastern portion of the Headland Road street frontage as well as the majority of the southern side of Headland Road
- 2 MINUTE PARKING along 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:

Educational Establishment

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



There will *not* be any increase in staff numbers as a result of the proposed increase in student numbers. The proposed 100 additional students will be accommodated on an “in-fill” basis whereby the additional students will fill gaps in existing classes, or where some existing teachers with spare capacity in their timetable could be given additional classes.

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. The bus stops are used by 8 buses in the morning and 11 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.

As noted in the foregoing, the school has now successfully implemented its new drop-off/pick-up arrangements in the “Drop and Go” zone in Tango Avenue to ensure a much more efficient use of this area.

The new arrangements require parents/carers to display the family name on a *label on the passenger side dashboard (or sun visor)* to enable school staff to call their children forward in readiness to get into the car.

School staff will open the car doors and will assist students in/out of the car. There are 4 additional staff positioned in the Tango Avenue “Drop and Go” zone to assist students and to ensure that:

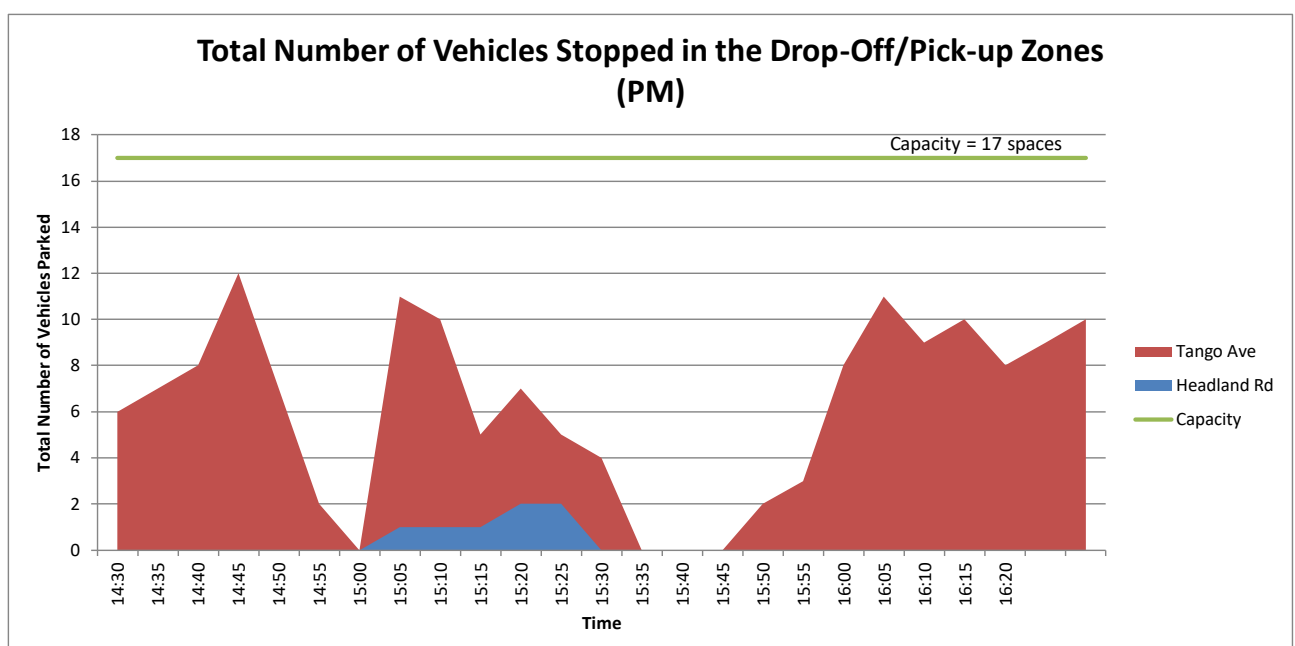
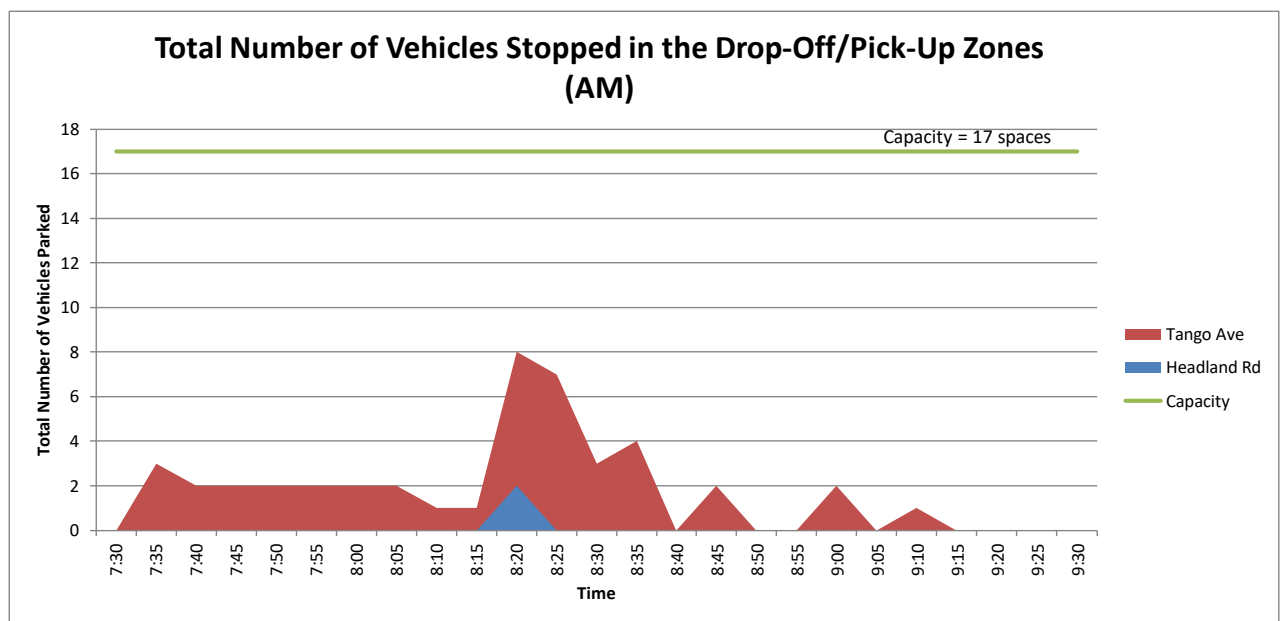
- drivers do not get out of the car, and
- cars keep moving forward to minimise delays.

Significantly, the school no longer allows parents to park their car in Tango Avenue, get out of the car and go into the school to collect their child/children.

The new drop-off/pick-up arrangements have now been operating for 2 school terms and have proved to be very successful.

The new arrangements have significantly increased the pick-up/set-down capacity of the “Drop and Go” zone in Tango Avenue, to the point where congestion in Headland Road has now been completely eliminated.

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 8 and 12 cars during the morning and afternoon peaks respectively, as illustrated on the two graphs below.



As noted in the foregoing, the proposed 100 additional students will result in:

- 26 additional cars dropping-off students throughout the duration of the morning school peak period, and
- 15 additional cars picking-up students throughout the duration of the afternoon school peak period.

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 1 additional car *at any one point in time* throughout the duration of the morning and afternoon school peak periods.

The survey results indicate that there is sufficient capacity to accommodate the additional drop-off/pick-up demands of 1 vehicle 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.

APPENDIX A

TRAFFIC MANAGEMENT PLAN

St Luke's Grammar School

TRAFFIC MANAGEMENT PLAN

10 July 2018

Ref 18028

Traffic Management Plan

Dated 10 July 2018

1. Objectives of the Traffic Management Plan

- 1.1 Ensure the safety of children, parents, staff and the public as a result of the operation of the School.
- 1.2 Parents, and any students eligible to drive to School, are to be made aware that they are subject to the same parking restrictions and road safety rules as every member of the public, and those rules can be enforced by Warringah Council's Traffic Wardens and the NSW Police.
- 1.3 Encourage due courtesy the owners of the residential properties surrounding the School.
- 1.4 Safety of children arriving to and departing from the School.
- 1.5 Provision of parking onsite for staff.
- 1.6 Provision of parking onsite for students.
- 1.7 Provision of parking for visitors to the School, including delivery trucks.
- 1.8 Minimisation of inconvenience to local residents both during normal school days and for "special events" at the School.

2. Procedures

2.1 *Buses in Headland Road – morning arrivals*

Buses arrive in Headland Road in the morning from approximately 8.00 am to 8.25 am. Parents and students are instructed not to park within the designated bus zones.

Students arriving by bus each morning will move directly from the Bus Bay into the School

2.2 *Buses in Headland Road – afternoon departures*

There are 2 staff members rostered to supervise student activities during departures at the Headland Road bus stop.

Buses depart from the designated bus bays from approximately 3.25 pm to 3.40 pm.

Students are to wait within areas specified by the staff member, and are called forward as buses arrive. Students are to move in line onto the designated bus under supervision.

2.3 *Tango Avenue and Quirk Street buses – afternoon departures*

Two staff members are rostered to supervise students departing School via the two bus stops in Tango Avenue and Quirk Street in the afternoon. A staff member is allocated to each of the 2 bus stops on the western side of Quirk Street and on the northern side of Tango Avenue. Students are to wait within the areas specified by the rostered staff member. The 2 members of staff will assist students to cross Tango Avenue.

2.4 Drop off and pick up zone in Tango Avenue

A drop off and pick-up zone with a capacity of approximately 12 cars is provided in an indented parking bay in Tango Avenue. Four staff members are rostered to supervise students in the Tango Avenue “Drop & Go” zone. The arrival and departure of students via the Tango Avenue drop off/pick up zone is supervised by the School's Traffic Warden. The parents are not permitted to wait in the “Drop & Go” zone and drivers must remain the driver's seat. Parents are to move away from the zone immediately upon being requested by staff.

2.4.1 Morning Drop-Off

Parents/carers using the Tango Avenue “Drop & Go” zone will not exit their vehicle. Drivers must remain in the driver's seat. A member of the St Luke's staff will open the passenger side door(s) and assist your children to exit the car. In order to support this process drivers must ensure that they:

- move as far forward in the line as possible
- remain in the car at all times
- have your children's school bag in the vehicle, rather than in the boot
- students will *exit* the car from the passenger side of the vehicle
- when departing drivers must continue in the same direction along Tango Avenue. U-turns are not permitted.

2.4.2 Afternoon Pick-Up

Parents wishing to use the Tango Avenue “Drop & Go” zone in the afternoon must place their family name *label* on the passenger side of the dashboard or suspended from the passenger side sun visor – so that it can be seen by St Luke's staff. As the vehicle nears the front of the “Drop & Go” zone a member of St Luke's staff will call your child(ren) to come to the gate. St Luke's staff will then assist your child(ren) into the vehicle. To support this process drivers must ensure that they:

- move as far forward in the line as possible
- remain in the car at all times
- have your children's school bag in the vehicle, rather than in the boot
- students will *enter* the car from the passenger side of the vehicle
- when departing drivers must continue in the same direction along Tango Avenue. U-turns are not permitted.

2.5 Drop off/pick up zone in Headland Road

A drop off pick up zone is provided in Headland Road to the south of the site access driveway which has the capacity of 5 cars. The arrival and departure of students via the Headland Road drop off/pick up zone is encouraged to be used parents /carers.

2.6 Deliveries

Deliveries are to be made by parking in carparking space “No.15”(shown on the approved plans) in the Undercroft, to be signposted and used for routine/bulk deliveries. One (1) delivery / visitor space is to be allocated for (adjacent the disabled persons parking) for general visitors to reception entry carpark off Headland road.

The location of staff parking areas, student parking areas, bus zones and drop off/pick up zones are illustrated on the attached diagram to the Traffic Management Plan.

3. General Issues

3.1 *Staggering of school hours*

Class times have been staggered to minimise peak parking demands and congestion at the School. These hours are currently:

- Cottage Classes – 8.30 am to 2.45 pm
- Kindergarten – Year 6 – 8.30 am to 3.00 pm
- Year 7 to Year 12 – 8.30 am to 3.20 pm
- Before and After School Care is provided from 7.00 am to 8.30 am and then from 2.45 pm to 6.00 pm.

3.2 *Traffic Warden*

3.2.1 The School will use supervisors to assist safety management and employs a Traffic Warden during the morning and afternoon school peak periods. The Traffic Warden monitors traffic at the Quirk Road and Tango Street intersection to reduce congestion in the surrounding streets. The primary purpose of the Traffic Warden is to ensure the safety of students and to request parents/drivers to:

- carry out drop off and pick up activities safely and efficiently,
- move on to avoid congestion, and
- adhere to the correct road and parking rules.

so the School is a safer place for the community.

3.2.2 Parents will be reminded that Warringah Council's Rangers and the NSW Police will apply penalties for non-compliance with the road traffic rules.

3.2.3 The Traffic Warden is to wear a reflective vest with "Traffic Warden" in visible lettering to enable identification by pedestrians and drivers. Supervisors are to also wear a reflective vest.

3.3 *Senior students driving to School*

3.3.1 The School does not encourage the senior school students to drive to school.

3.3.2 Senior School students are granted permission to drive to school at the School's discretion. The School keeps a list of students who have been granted permission.

3.3.3 The School provides 17 spaces for senior student parking, located in the 2 parking areas off Headland Road within the School site, and in the hall undercroft area.

3.3.4 The School shall monitor student parking on site and routinely remind students who drive to school to be considerate with respect to public parking within the surrounding streets near the school.

3.3.5 Parents of students driving to school and parking on the surrounding public streets must:

- (a) give details of the registration no. and student name to the Business Manager by email or letter;
- (b) Request the students not to park in Tango Avenue. (Reason: safety and neighbours' amenity)

3.4 Staff Parking

A total of 112 parking spaces are provided on the site for staff. They are:

- (a) 104 car spaces in the Tango Avenue carpark;
- (b) 8 car parking spaces in the Undercroft.

3.5 Special Events

3.5.1 Limitation of special events on site: school speech days, and HSC exams are held off site to minimise the impact of ingress to and egress from the School.

3.5.2 Where possible, parking of parents cars for special events will be accommodated in the Tango Street carpark (eg a meeting of parents of a Year group or a Class group).

3.5.3 For large functions, such as the Musical/Drama Production Nights the School will provide off street parking for parents in the Tango Street carpark (104 cars). If additional special event carparking is required then the School will provide parking for 76 vehicles on the existing playing field located on site, entry via Tango Avenue and at these times:

- entry to the Tango Avenue carpark and over-flow to the existing playing field will be monitored by School staff guiding the traffic,
- there is to be a directional sign installed to assist parents accessing this special event parking facility (as illustrated on the plan annexed), and
- exit from the Tango Avenue carpark and the playing field overflow will be monitored and directed by School staff

3.6 The use of the existing playing field for overflow parking is subject to the prevailing weather and condition of the playing field.

3.7 Alternative transport

3.6.1 The School will actively promote students catching public transport to and from the School. At the beginning of the new School year in Junior and Senior School, information booths are displayed relaying information regarding bus routes and timetables.









3.6.2 Carpooling is encouraged and for school families to car pool and take turns in delivering students to, and collecting them from, the School.

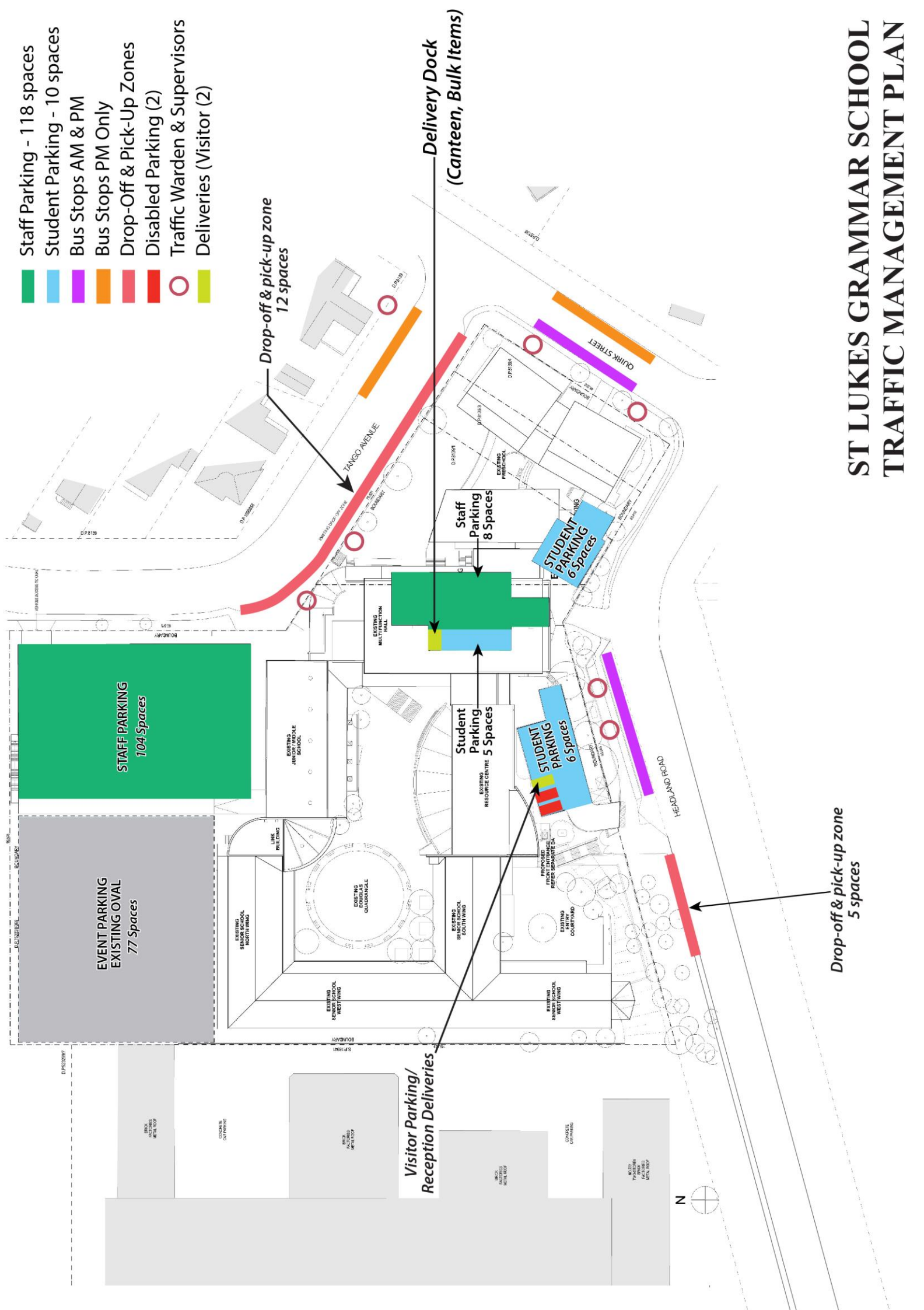
3.8 Management of Complaints

All complaints should be addressed to the Principal or Business Manager by telephone or email. The email address is: office@stlukes.nsw.edu.au. The School will always make contact with the complainant to address the particular complaint. The School Council receives a report of any particular complaint at each School Council meeting. The School keeps a record of each complaint on file and how the complaint has been addressed.

3.9 Annual Review

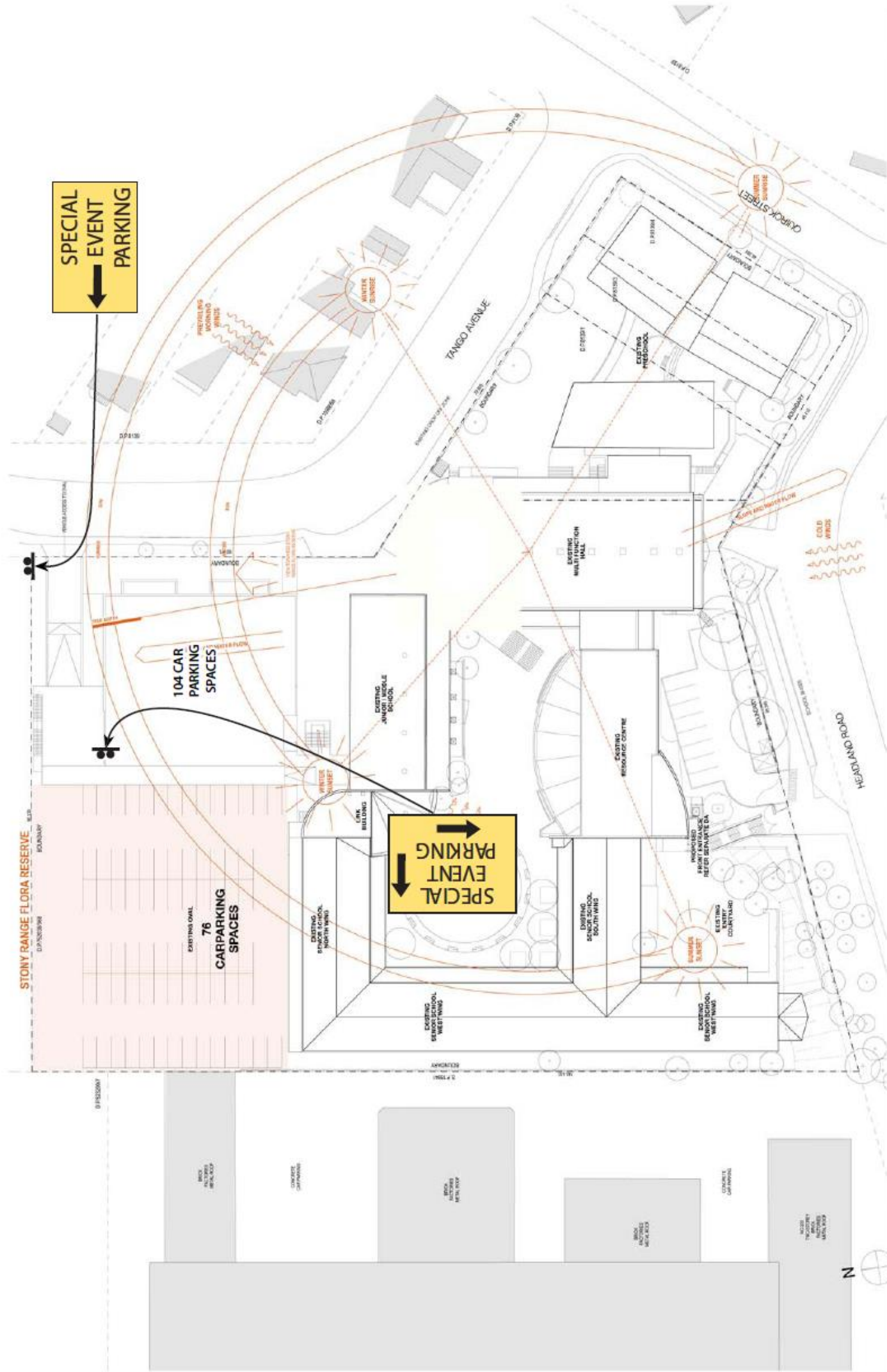
- 3.9.1 There are to be annual review meetings between the School and Council, the first one to be one year after the final occupation certificate is issued for this consent.
- 3.9.2 The School is to arrange these meetings between relevant School representatives (which must include the principal or deputy principal) and the relevant Council traffic engineer and planner to discuss and review the effective operation of this Traffic Management Plan.

-  Staff Parking - 118 spaces
-  Student Parking - 10 spaces
-  Bus Stops AM & PM
-  Bus Stops PM Only
-  Drop-Off & Pick-Up Zones
-  Disabled Parking (2)
-  Traffic Warden & Supervisors
-  Deliveries (Visitor (2)



ST LUKES GRAMMAR SCHOOL TRAFFIC MANAGEMENT PLAN

SPECIAL EVENT PARKING PLAN



APPENDIX B

TRAFFIC SURVEY DATA

**R.O.A.R. DATA****Reliable, Original & Authentic Results**

Ph.88196847, Mob.0418-239019

Client : Varga Traffic Planning
 Job No / Name : 6813 DEE WHY St. Lukes
 Day/Date : Wednesday 13th June 2018

Time Period	Tango Ave AREA A		Totals
	IN	OUT	
0730 - 0745	30	28	58
0745 - 0800	21	19	40
0800 - 0815	41	40	81
0815 - 0830	97	99	196
0830 - 0845	37	38	75
0845 - 0900	6	8	14
0900 - 0915	1	1	2
0915 - 0930	0	0	0
Totals	233	233	466

Time Period	Tango Ave AREA A		Totals
	IN	OUT	
1430 - 1445	12	0	12
1445 - 1500	9	19	28
1500 - 1515	71	69	140
1515 - 1530	33	37	70
1530 - 1545	6	12	18
1545 - 1600	8	0	8
1600 - 1615	4	2	6
1615 - 1630	0	0	0
Totals	143	139	282

Time Period	Tango Ave AREA A		Totals
	IN	OUT	
0730 - 0830	189	186	375
0745 - 0845	196	196	392
0800 - 0900	181	185	366
0815 - 0915	141	146	287
0830 - 0930	44	47	91
Peak Hr	196	196	392

Time Period	Tango Ave AREA A		Totals
	IN	OUT	
1430 - 1530	125	125	250
1445 - 1545	119	137	256
1500 - 1600	118	118	236
1515 - 1615	51	51	102
1530 - 1630	18	14	32
Peak Hr	119	137	256



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client

: Varga Traffic Planning

Job No / Name

: 6813 DEE WHY St. Lukes

Day/Date

: Wednesday 13th June 2018

Time Period	Headland Rd Area B		Totals
	IN	OUT	
0730 - 0745	18	18	36
0745 - 0800	5	5	10
0800 - 0815	22	22	44
0815 - 0830	21	21	42
0830 - 0845	12	12	24
0845 - 0900	0	0	0
0900 - 0915	1	1	2
0915 - 0930	0	0	0
Totals	79	79	158

Time Period	Headland Rd Area B		Totals
	IN	OUT	
1430 - 1445	0	0	0
1445 - 1500	0	0	0
1500 - 1515	2	1	3
1515 - 1530	3	4	7
1530 - 1545	5	5	10
1545 - 1600	2	2	4
1600 - 1615	1	1	2
1615 - 1630	0	0	0
Totals	13	13	26

Time Period	Headland Rd Area B		Totals
	IN	OUT	
0730 - 0830	66	66	132
0745 - 0845	60	60	120
0800 - 0900	55	55	110
0815 - 0915	34	34	68
0830 - 0930	13	13	26
Peak Hr	60	60	120

Time Period	Headland Rd Area B		Totals
	IN	OUT	
1430 - 1530	5	5	10
1445 - 1545	10	10	20
1500 - 1600	12	12	24
1515 - 1615	11	12	23
1530 - 1630	8	8	16
Peak Hr	10	10	20

**R.O.A.R. DATA****Reliable, Original & Authentic Results**

Ph.88196847, Mob.0418-239019

Client : Varga Traffic Planning
 Job No / Name : 6813 DEE WHY St. Lukes
 Day/Date : Wednesday 13th June 2018

Time Period	COMBINED Areas		Totals
	IN	OUT	
0730 - 0745	48	46	94
0745 - 0800	26	24	50
0800 - 0815	63	62	125
0815 - 0830	118	120	238
0830 - 0845	49	50	99
0845 - 0900	6	8	14
0900 - 0915	2	2	4
0915 - 0930	0	0	0
Totals	312	312	624

Time Period	COMBINED Areas		Totals
	IN	OUT	
1430 - 1445	12	0	12
1445 - 1500	9	19	28
1500 - 1515	73	70	143
1515 - 1530	36	41	77
1530 - 1545	11	17	28
1545 - 1600	10	2	12
1600 - 1615	5	3	8
1615 - 1630	0	0	0
Totals	156	152	308

Time Period	COMBINED Areas		Totals
	IN	OUT	
0730 - 0830	255	252	507
0745 - 0845	256	256	512
0800 - 0900	236	240	476
0815 - 0915	175	180	355
0830 - 0930	57	60	117
Peak Hr	256	256	512

Time Period	COMBINED Areas		Totals
	IN	OUT	
1430 - 1530	130	130	260
1445 - 1545	129	147	276
1500 - 1600	130	130	260
1515 - 1615	62	63	125
1530 - 1630	26	22	48
Peak Hr	129	147	276



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : Varga Traffic Planning
Job No / Name : 6813 DEE WHY St. Lukes
Day/Date : Wednesday 13th June 2018

Tango Ave AREA A

Headland Rd AREA B

No of Veh
in area
every 5
mins

No of Veh
in area
every 5
mins

No of Veh
in area
every 5
mins

No of Veh
in area
every 5
mins

0730	0	1430	6
0735	3	1435	7
0740	2	1440	8
0745	2	1445	12
0750	2	1450	7
0755	2	1455	2
0800	2	1500	0
0805	2	1505	10
0810	1	1510	9
0815	1	1515	4
0820	6	1520	5
0825	7	1525	3
0830	3	1530	4
0835	4	1535	0
0840	0	1540	0
0845	2	1545	0
0850	0	1550	2
0855	0	1555	3
0900	2	1600	8
0905	0	1605	11
0910	1	1610	9
0915	0	1615	10
0920	0	1620	8
0925	0	1625	9
0930	0	1630	10

0730	0	1430	0
0735	0	1435	0
0740	0	1440	0
0745	0	1445	0
0750	0	1450	0
0755	0	1455	0
0800	0	1500	0
0805	0	1505	1
0810	0	1510	1
0815	0	1515	1
0820	2	1520	2
0825	0	1525	2
0830	0	1530	0
0835	0	1535	0
0840	0	1540	0
0845	0	1545	0
0850	0	1550	0
0855	0	1555	0
0900	0	1600	0
0905	0	1605	0
0910	0	1610	0
0915	0	1615	0
0920	0	1620	0
0925	0	1625	0
0930	0	1630	0