ACN: 164611652
Ground Floor, 161 Scott Street
Newcastle NSW 2300
Ph: (02) 4032 7979
admin@secasolution.com.au

9 August 2019

P1410 WA St James Kotara South TIA

Catholic Diocese of Maitland - Newcastle
C/- Webber Architects
Suite 3, Level 1
426 Hunter Street
Newcastle NSW 2300

Attn: Sandra Hinchey

Dear Sandra,

Proposed School Expansion and Early Learning Centre, St James Primary School, Kotara South, NSW.

Further to your recent email we have now completed our site work and review of the documentation provided for the proposed expansion of St James Primary School including a new early learning centre located off Vista Parade, Kotara South. We have reviewed the potential impacts of this proposal on traffic and parking, and provide the following traffic impact assessment to support a development application to Newcastle City Council.

The following assessment has been prepared in accordance with the Austroads Guidelines and Section 2.3 of the RMS Guide to Traffic Generating Developments, which provides the structure for the reporting of key issues to be addressed when determining the impacts of traffic associated with a development. Consideration has also been given to the relevant planning requirements outlined within Newcastle Development Control Plan 2012 and State Environmental Planning Policy (Education Establishments and Child Care Facilities).

Background

St James Primary School is located on Vista Parade, Kotara South, between Grayson Avenue and Princeton Avenue as shown in Figure 1. The existing consent for the school provides for a capacity of 385 students, of which there are currently 366 students enrolled. The school employs a total of 34 staff. School hours are 8:50am to 2:50pm.

YMCA Kotara OSCH (OSCH) provides out of school hours care within the existing hall to the front of the school, between 6:30am-9am and 2:45pm-6pm, Monday to Friday. YMCA Kotara OSHC has a capacity for up to 150 students, which includes students from St James Primary School together with a number of nearby schools. A shuttle bus service provides transport for students between these schools and YMCA Kotara OSHC.

The school is located within a residential area comprising of mostly single dwelling houses with St Phillips Church located opposite the school on Vista Parade and Nesbitt Park further south. The school is bounded by Styx Creek to the west and parklands to the north.

Figure 1 – Subject site within the context of the local road network

Traffic Impact Assessment:

Item	Comment
Existing Situation	
2.1.1 Site Location and Access	St James Primary School is located on the northern side of Vista Parade, Kotara South, between Grayson Avenue and Princeton Avenue as shown in Figure 1. Access to the school is provided via an existing driveway off Vista Parade, which caters for all vehicle movements associated with the school as well as OSHC.
2.2.1 Road Hierarchy	**Princeton Avenue** is a local collector road to the east of St James Primary School, which connects with Lexington Parade to the north. In the vicinity of the school it provides a sealed pavement in the order of 12 metres wide allowing for a single lane of travel in each direction with kerbside parking in both directions. Street lighting and pedestrian footpaths are available (although pathways are discontinuous to the south of Vista Parade). There are no provisions for cyclists on Princeton Avenue, which operates under the posted speed limit of 50 km/hr. Princeton Avenue connects with Vista Parade via a priority controlled T-intersection which allows for all turning movements with Princeton Avenue having priority. **Grayson Avenue** is a local collector road to the west of St James Primary School, which connects with Park Avenue (Kotara) to the north. It provides a sealed pavement in the order of 9 metres wide allowing for a single lane of travel in each direction with opportunities for kerbside parking to both sides. Street lighting is provided however there are no pedestrian or cyclist facilities. The posted speed limit along Grayson Avenue is 50 km/hr.

Item	Comment
	Grayson Avenue connects with Vista Parade via a sign controlled 4-way intersection where Grayson Avenue has priority. This intersection allows for all turning movements with 'Stop Signs' to control traffic turning out of Vista Parade. **Vista Parade** is a local street, which provides a sealed pavement in the order of 9 metres wide allowing for a single lane of travel in each direction with some opportunities for kerbside parking. Street lighting is provided along its length together with pedestrian pathways to both sides (although the southern footpath terminates at the shared pathways near Princeton Avenue). A children's crossing is located mid-block on Vista Parade to the front of St James Primary School. Vista Parade functions as a link road between the residential areas to the east and west of Styx Creek with this providing a local route for trips to Kotara High School and Westfield Kotara. The posted speed limit along Vista Parade is 50 km/hr with school zones (40 km/hr) operating during normal school pick up and drop off times. The surrounding roads are local residential streets under the control and care of the City of Newcastle.
2.2.2 Current and Proposed Roadworks, Traffic Management Works and Bikeways.	No road works or traffic management works are occurring or currently planned within the immediate locality.
2.3 Traffic Flows	
2.3.1 Daily Traffic Flows	Traffic surveys were undertaken on Vista Parade to determine the peak hour traffic volumes on this road and demands for vehicles entering and exiting St James Primary School. These surveys were completed during a typical weekday morning (8:00am to 9:30am) and afternoon (2:30pm to 4:00pm) on Wednesday 13th February 2019, with these times selected to coincide with the typical drop off and pick up periods associated with St James Primary School. During the morning peak period (8am to 9am), the two-way flows on Vista Parade (west of the school access) were recorded as 502 vehicles per hour (vph). Flows in the afternoon peak (2:30pm to 3:30pm) were lower with 327 vph in this location. The morning peak flows are attributed to the demands for traffic accessing St James Primary School during the morning drop off, as well as demands for non-school related traffic/commuters travelling past the school. The afternoon peak does not carry the commuter demands and due to the limited car parking to the front of the school and within the existing informal car park, many parents in the afternoon park on the surrounding roads (i.e. Grayson Avenue and Princeton Avenue) so do not access Vista Parade. Outside of the school peaks the flows on Vista Parade are typically much lower. Detailed survey data is provided within **Attachment B**.
2.3.2 Daily Traffic Flow Distribution	In both the morning and afternoon school peak periods, there is a slight bias in traffic travelling east along Vista Parade (~55-65%).

Item	Comment
2.3.3 Vehicle Speeds	No speed surveys were completed as part of the survey work however observations on site indicate that drivers typically travel at or below posted speed limit during the school peaks, due to delays and congestion associated with parents dropping off or collecting their children. Outside of school times, vehicle speeds would be slightly higher.
2.3.4 Existing Site Flows	During the morning peak a total of 141 vehicles entered St James Primary School with 120 vehicles also exiting during this period. A further 15 vehicles were also observed to park on street in front of the school on Vista Parade associated with dropping off children or parents walking into the school. Many parents also drop off or pick up their children from St James Church, which provides a car park opposite the school on Vista Parade. During the survey, 26 vehicles entered this car park during the morning drop off, with 22 vehicles also exiting. This gives a total of 339 vehicle movements associated with St James Primary School during the morning peak hour (including 3 bus movements associated with OSHC). These movements occur periodically across the peak hour, with the majority of students arriving within the 30 minutes prior to school commencing. Consistent with the RMS Guide to Traffic Generating Developments which recognises that schools typically rely on surrounding streets to accommodate parking demands, many parents park on the surrounding roads (i.e. Grayson Avenue or Princeton Avenue) when picking up their children at the end of the school day. This is reflected in the lower traffic demands on Vista Parade in the afternoon peak. A total of 32 vehicles entered the school during the afternoon with 31 vehicles departing. A further 9 vehicles also parked in front of the school on Vista Parade with 31 vehicles entering and 39 vehicles exiting the car park at St Phillips Church. This gives a total of 151 movements during the afternoon peak hour associated with St James Primary School, although this also includes a small number of trips associated with the YMCA Kotara OSCH. Parents typically start arriving 25 minutes prior to school ending, with those who arrive early being able to park within the informal car park at St James Primary School, to the front of the school on Vista Parade or at St Phillips Church. Due to the limited parking, car parking in these locations is typically at capacity, with parents who arrive closer to the school bell therefore seeking parking on the surrounding local roads. Demands associated with parents who park on the surrounding roads were not captured in the above surveys and therefore the actual demands associated with the school would be somewhat higher than indicated above. Students leaving the school during the afternoon are managed by teaching staff who were observed to walk with large groups of students (typically 30-50 students) to parents waiting at either end of Vista Parade as well as at St Phillips Church. During this time the gate located at the front of the school is closed, preventing vehicles from entering or exiting. The management of students departing in the afternoon peak ensures

Item	Comment
	the safe and efficient operation of the local road network at the end of the school day. A number of students also walk or ride to school from nearby residences and several students (8) also caught the bus in the afternoon. Many students also attend before and after school care (YMCA Kotara OSHC), which sees parents dropping off or collecting their children outside of the school peak periods. Advice from the study team indicates that typical attendance for YMCAK Kotara OSCH is in the order of 50-100 students, however this includes a number of students from nearby schools.
2.3.5 Heavy Vehicle Flows	Several school buses operate along Vista Parade including a dedicated bus service departing from St James Primary School during the afternoons. Excluding school buses, there are minimal demands for heavy vehicles on Vista Parade, which would comprise mostly of waste collection services and occasional deliveries. Neither Vista Parade nor the surrounding residential streets provide a through route for heavy vehicle traffic.
2.3.6 Current Road Network Operation	Vista Parade currently experiences congestion during the morning school peak associated with the high demands for parents dropping off their children. Delays associated with vehicles entering or leaving St James Primary School and St Phillips Church sees queues form on Vista Parade, which impact traffic in both directions, particularly within the 20 minutes prior to school commencing. This is further compounded by delays associated with vehicles manoeuvring into and out of parking spaces on Vista Parade. The management of students leaving the school in the afternoon together with the reduced demands for traffic on Vista Parade (due to parents parking on the surrounding roads) ensures that the road network provides an acceptable standard of operation with no significant delays or congestion noted. For an urban road, the capacity of a two lane, two-way road is typically accepted as being in the order of 900 vph per direction. As a residential street the environmental capacity is suggested as 500vph. The function of Vista Parade as the link over Styx Creek connecting surrounding residential with employment and education sees this road carrying high traffic flows during the commuter and school peaks, with less outside these times. As such it operates as an urban road rather than a residential collector. Based on the traffic surveys above, the current peak hour flows on Vista Parade (west of the school access) during the critical AM peak were 502 vph (two-way), and are therefore within the capacity of this road.
2.4 Traffic Safety and Accident History	A review of crash statistics published online by Transport for New South Wales indicates that there were no accidents recorded on Vista Parade over the 5-year period between 2013 and 2017. Vista Parade provides a relatively straight and flat road alignment, and its connections with Grayson Avenue and Princeton Avenue offer

Item	Comment
	excellent sight distances in excess of the Austroads Guidelines. Allowing for this and with consideration to the reduced travel speeds on Vista Parade during the school peak hours, and low rate of accidents in this location, it is concluded that the local road network operates in a safe and appropriate manner.
2.5 Parking Supply and Demand	
2.5.1 On-street Parking Provision	Whilst kerbside parking is permitted along Vista Parade, several bus zones and 'No Stopping' zones are provided along its length which restrict parking during the school drop off (8am-9:30am) and pick-up (2:30pm-4:00pm). Only a small number of spaces are available to the west of the school during these times. On-street parking is available on the surrounding roads (including Grayson Avenue, Princeton Avenue and further west along Vista Parade) with typical restrictions associated with driveways and intersections.
2.5.2 Off-street Parking Provision	Off-street car parking is provided at St James Primary School, including a staff car park adjacent to the existing classrooms and an informal car park to the front of the site, which currently operates as a drop off zone during the morning peak period. Parents are permitted to park at St Phillips Church on the southern side of Vista Parade. This car park provides a total of 36 car parking spaces.
2.5.3 Parking Demand and Utilisation	During the school drop off and pick up there is typically a high demand for car parking in the immediate locality of St James Primary School. Due to the limited car parking available at St James Primary School, St Phillips Church and on Vista Parade, many parents park on the surrounding roads including Grayson Avenue and Princeton Avenue when picking up their children in the afternoon. Outside of the school peaks the demands for car parking are significantly lower with many spaces available.
2.5.4 Set down or pick up areas	The informal car park to the front of St James Primary School currently operates as a set down area for parents to drop off their children in the morning. No other set down or pick up areas are provided.
2.6 Public Transport	
2.6.1 Rail Station Locations	Given the nature and location of the site, connections to rail services do not require consideration.
2.6.2 Bus Stops and Associated Facilities	There are school bus stops located on both sides of Vista Parade in the immediate locality of St James Primary School. No seating or shelter is provided. Public bus stops are located on Melissa Avenue approximately 200m east of the school.
2.6.3 Rail and Bus Service Frequencies	Route 14 (Swansea Heads to Newcastle via Belmont, Charlestown and Kotara) operates along Melissa Avenue and Princeton Avenue to the east of the school and provides services every 15 minutes (each direction) throughout the day.

Item	Comment
	A number of school buses also operate throughout the locality associated with the nearby schools including St James Primary School.
2.6.4 Pedestrians	Pedestrian footpaths are inconsistent in this location, with pathways typically available to the east of St James Primary School including both sides of Vista Parade and Princeton Avenue. No dedicated pathways are available on Grayson Avenue or on any the of the local roads further west. There is a shared pathway to the east of the school, which forms part of the R4 Kotara South to Mayfield regional cycling route.
2.7 Other Proposed Developments	No other significant developments are currently proposed or occurring within the immediate locality of St James Primary School.

The Development	
3.1.1 Nature of Development	The proposal allows for the expansion of St James Primary School to provide for a third teaching stream, increasing the capacity of the school to 630 students over the existing approval for 385 students. Key elements of this expansion include: • Alterations and additions to a number of existing buildings within the site. • Demolition of several buildings to enable construction of new single and two storey buildings; • Ancillary works including landscaping, fencing and improvements to vehicle and pedestrian access. To support the increase in student numbers, up to 15 additional staff shall be required. No changes are proposed to the existing operating hours for the school. The proposal also allows for the construction of a new early learning centre to the front of the school, adjacent to Block G (Hall). The early learning centre shall provide extended hours care between 6:30am-6:30pm with up to 79 places available. Up to 22 staff shall be employed by the centre across all shifts. To support the proposal, separate car parking areas shall be created within the school to support the demands for both St James Primary School and the proposed early learning centre, with a primary school drop off zone within the site connected via a relocated driveway off Vista Parade. A concept plan for the proposed development is provided within **Attachment A**.
3.1.2 Access and Circulation Requirements	Newcastle Development Control Plan 2012 requires that all access is designed to enable vehicles to enter and exit in a single movement and in a forward direction. Vehicle crossings and access driveways shall be designed and located in accordance with AS2890 and shall provide adequate sight distances to traffic along the frontage road.
3.2 Access	
3.2.1 Driveway Location	Access to the site shall be provided via a new driveway adjacent to Styx Creek on the western site boundary. This driveway shall provide access

	to St James Primary School, the proposed early learning centre and existing YMCA Kotara OSCH.
3.2.2 Sight Distances	Sight distance requirements for an access driveway are prescribed by AS2890.1, and depend upon the vehicle speeds along the frontage road. For the posted speed limit of 50 km/hr on Vista Parade, the minimum entering sight distance is given as 45 metres. Vista Parade in this location provides a straight and relatively flat road alignment, which offers good visibility in both direction for drivers exiting the site. Sight distances at the proposed access have been reviewed on site and extend more than 45 metres in each direction along Vista Parade, therefore satisfying the above requirement. Suitable sight triangles shall be provided at the property boundary in accordance with AS2890.1 to ensure that a driver exiting the school can clearly observe any pedestrian movements on the site frontage prior to exiting onto Vista Parade. Consideration shall be given to the design of any landscaping, signage or fencing to ensure that visibility to pedestrians is not obstructed.
3.2.3 Service Vehicle Access	Minimal servicing will be required for the site other than the management of waste, which shall be collected on site by commercial waste contractors. Swept paths have been prepared to confirm access through the site for a standard 8.8m medium rigid truck. Other servicing relating to the childcare centre would typically be completed by a light commercial / utility vehicle e.g. Toyota HiAce. These vehicles would be able to park within the on-site car park as required. The occasional delivery by larger trucks can be accommodated on-street as required or outside school pick up and drop off times.
3.2.4 Queuing at entrance to site	The proposed changes to the school access are expected to reduce congestion on Vista Parade in the morning peak compared with the existing access arrangements. This is achieved through the provision of additional queuing within the site for the school drop off, providing capacity for parents to kiss and drop. The relocation of the school access west to Styx Creek also provides for separation between the access driveway with St Phillips Church reducing potential conflicts and delays. Access to the early learning centre/staff car park shall be restricted to one way clock-wise with controls provided at the entry to ensure that this access is not blocked by vehicles waiting to exit the site. School crossing supervisors to manage the operation of the existing children's crossing to the front of the school could be consider to further improve the overall efficiency of Vista Parade and reduce congestion past the site entry.
3.2.5 Comparison with existing site access	The existing access driveway shall be removed and a new driveway access provided further to the west. Any redundant kerb crossovers shall be removed and kerb and guttering reinstated to Council standard drawings and specifications.
3.2.6 Access to Public Transport	No changes are proposed to the existing bus stops on Vista Parade. Pedestrian access to these bus stops is available via the existing footpaths on Vista Parade, with the existing children's crossing providing safe and appropriate access to bus services on the southern side of Vista Parade.

3.3 Circulation	
3.3.1 Pattern of circulation	A single driveway shall provide access to car parking areas associated with St James Primary School (including a new drop off zone), the proposed early learning centre and YMCA Kotara OSCH. Both the driveway and the internal circulating roads shall be designed to accommodate two-way movements, with the internal road forming a loop at its northern end allowing for parents to access the drop off zone and exit the site in a forward direction. The parking aisles for the early learning centre shall allow for one way clockwise circulation enabling vehicles to continue to circulate within the carpark and not need to re-enter the main driveway.
3.3.2 Road width	The internal circulation roads shall be designed to accommodate two-way traffic movements as required, with a minimum width of 5.5 metres. Additional width may be required on curves and at intersections to ensure that two vehicles can safely pass, reducing the potential for delays and congestion associated with vehicles entering or exiting the car parking areas.
3.3.3 Internal Bus Movements	No requirement for large buses to access the development associated with St James Primary School or the proposed early learning centre. The internal roads however have been designed to enable small buses (up to 22 seats) associated with the YMCA Kotara OSCH to access the site, consistent with its existing operations.
3.3.4 Service Area Layout	No dedicated service area is to be provided on site. As noted above, the demands for servicing associated with St James Primary School and the proposed early learning centre are low and can typically be completed by small commercial vehicles such as a van or ute. These vehicles shall be able to park on site as required. Waste collection shall be able to occur along the driveway no dedicated service area required.
3.4 Parking	
3.4.1 Proposed Supply	The proposal shall provide for a total of 55 parking spaces (including 4 accessible car spaces) across two separate car parking areas. This includes: • 30 spaces designated for St James Primary School staff; • 23 spaces for the proposed early learning centre; and • Two spaces suitable for small buses associated with YMCA Kotara OSCH. In addition to this, a drop off zone is also proposed for St James Primary School comprising 7 parallel car spaces with queuing for approximately 33 cars within the site. The proposal does not include provisions for separate car parking associated with YMCA Kotara OSCH however it is anticipated that staff shall be able to utilise the car parking available on site (shared use). A single motorcycle space is also proposed.
3.4.2 Authority Parking	Newcastle Development Control Plan 2012 provides the following parking rates for the various uses across the site:

St James Primary School

- 1 space per 2 staff; plus
- 1 space per 100 students for visitors.

Proposed ELC

- *1 space for every 4 children in attendance.*

Whilst there is no standard parking rate provided for out of school hours care, it is considered that parking for YMCA Kotara OSCH would be comparable to that for a school i.e. 1 space per 2 staff.

3.4.3 Parking Layout

The layout of car parking throughout the site shall be designed in accordance with AS2890, which specifies varying dimensions depending upon the intended use of the car parking.

Car parking spaces for staff shall be designed as Class 1A parking, which requires minimum dimensions of 2.4m wide by 5.4m long. Car parking spaces for parents and visitors require additional width to ensure adequate door opening for the loading and unloading of children. The recommended user class for such car parking is Class 3, which specifies dimensions of 2.6m wide by 5.4m long.

Parking aisles shall be a minimum of 5.8 metres wide.

Car parking within the drop off zone shall be confirmed as part of the detailed design. Parallel car parking shall be a minimum of 2.1m wide.

3.4.4 Parking Demand

The demands for car parking have been calculated for the site by applying the authority rates above:

Use	Quantity	Spaces Required
St James Primary School		
Staff	49	24.5
Visitors (1/100 students)	630	6.3
Sub-Total		**31**
Early Learning Centre		
Children Attending	79	19.75
Sub-Total		**20**
YMCA Kotara OSCH		
Staff	6	3
Sub-Total		**3**

Applying the authority parking rates, the parking demand associated with St James Primary School is therefore 31 spaces (including staff and visitors). The provision of 30 designated parking spaces for staff together with 7 spaces within the primary school drop off is therefore adequate for the proposed school expansion.

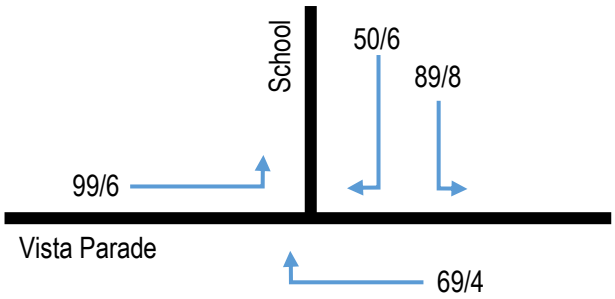
Similarly, the provision of 23 car spaces for the proposed early learning centre is also adequate to support the future demands associated with this use.

No formal car parking is provided for the existing YMCA Kotara OSCH

	and as there are no changes proposed to the existing operation of this facility, no additional car parking is required. This facility is provided during the hours before and after school and so parking demands can be managed within the shared use of the existing parking facilities. It is noted that the provision of surplus car parking (3 spaces) adjacent to the proposed early learning centre shall be adequate to accommodate the staff car parking demands associated with this facility during the absolute peak demand when all staff are potentially on site. The two spaces suitable for small buses are suitable to support the demands for bus parking associated with the operation of YMCA Kotara OSCH. A review of the local streets demonstrates there is adequate capacity to accommodate any on-street parking demands during the afternoon school pick up. Princeton Avenue, to the south-east of the school allows for parking on both sides, including adjacent to the reserve. A shared pathway through this reserve provides quality pedestrian connectivity.
3.4.5 Service Vehicle Parking	No dedicated service vehicle parking provided on site.
3.4.6 Pedestrian and Bicycle Facilities	Pedestrian access is currently available off Vista Parade with footpaths available throughout the site offering suitable access between the frontage road, car parking areas and the various buildings within the site. New footpaths shall be constructed within the site as required to ensure the continuity of pedestrian access and connectivity throughout the site. The shared pathway to the south-east of the site provides connectivity to on-street parking along the parkland on Princeton Avenue. Suitable bicycle storage shall be provided within the school to reflect the increased demands associated with the proposed expansion for both staff and student demands.
Traffic Assessment	
4.1 Traffic Generation	*St James Primary School* The RMS Guide to Traffic Generating Developments does not specify trip rates for schools or education facilities. Rather, it is assumed that traffic associated with the expansion of the school would increase proportionally with future increases in student enrolments. Based on the surveys completed by Seca Solution, St James Primary School currently generates in the order of 336 vehicle movements during the morning peak which is equivalent to a trip rate of ~0.92 trips per student. Applying this rate, the capacity for an additional 264 students over the existing enrolment could therefore generate 243 additional trips during the morning peak. Whilst the demands for vehicles associated with St James Primary School are somewhat lower during the afternoon peak, to ensure a robust assessment of the traffic impacts it is assumed that the proposed expansion could generate a similar number of trips associated with the additional students during the afternoon peak (i.e. 243 additional trips). *YMCA Kotara OSCH* Whilst no changes are proposed to the operation of YMCA Kotara OSCH, this facility does not currently operate at capacity and could

	experience an increase in enrolments associated with the expansion of St James Primary School. These trips would typically occur outside of the normal school peak hours. As the RMS Guide does not provide daily rates for schools, additional trips associated with the school expansion could see in the order 650-700 trips daily over the existing flows being both children arriving and departing in the peak hours as well as those attending OSCH. *Early Learning Centre* The RMS Guide to Traffic Generating Developments provides the following trip rates for a long hours child care centre: • 0.8 trips per child during the morning commuter peak (7-9am) • 0.3 trips per child during the afternoon school peak (2:30-4pm) • 0.7 trips per child during the afternoon commuter peak (4-6pm) With a capacity for 79 children, the proposed child care centre could therefore generate in the order of 64 trips (32 inbound/32 outbound) during the morning commuter peak, 24 trips during the afternoon school peak (12 inbound, 12 outbound) and 55 trips (27 inbound / 28 outbound) during the afternoon commuter peak. This makes no allowance however for absentees or siblings. Given the nature of the ELC and its association with the primary school there is a high probability of children attending the ELC also having older siblings at St James. Similarly, there is a likelihood of working families having two or more children attending the ELC. Allowing for this could see 25% of shared trips due to siblings and families who travel together in a single vehicle. There are no daily trip rates provided for child care centres, however as a worst case, the proposed early learning centre could generate in the order of 360 trips per day (allowing for 100% attendance and no shared trips or alternate modes of travel), however allowing for 25% of shared trips associated with St James Primary School the early learning centre could generate in the order of 270 additional trips daily. *Whole of Development* The above assessment considers the additional traffic generated by the new development. This takes into consideration that the school is currently operating at 95% of its current approved enrolment. Overall the proposed development could therefore generate the following additional traffic movements over the existing situation: • 307 trips during the morning school peak; • 267 trips during the afternoon school peak; and • In the order of 920-970 trips per day (460-485 two-way vehicle movements).
4.1.1 Daily and Seasonal Factors	Minimal daily and seasonal variation in traffic movements associated with the development however neither St James Primary School or the proposed early learning centre would generate demands for traffic on the weekend or during the Christmas holidays. Similar there would be no

	traffic associated with St James Primary School during the school holidays.
4.1.2 Pedestrian Movements	The proposed expansion of St James Primary School is likely to generate an increase in pedestrian demands on Vista Parade associated with parents and students arriving at the school in the morning, and students walking to parents parked on the surrounding roads at the end of the school day. These movements can be catered for on the existing footpaths with students leaving school in the afternoon to be managed by teaching staff, consistent with the existing situation. This shall ensure the safety of students whilst also minimising potential disruptions to through traffic on Vista Parade. The proposed childcare centre would generate a low volume of pedestrian movements, being those residences located within easy walking distance to the centre. It is typical for this type of development for parents to drop their children off on the way to work and collect their children during the return trip home. Adequate car parking is available within the school site to accommodate the parking demands to the front of the proposed early learning centre, and therefore parents shall not be required to park on the surrounding roads and walk to the site.
4.2 Traffic Distribution and Assignments	All parents are expected to drop off their children using the drop off zone, or shall park on Vista Parade or at St Phillips Church. Consistent with the existing situation. During the afternoon, given the limited availability of car parking at St James Primary School, increased demands for car parking shall be accommodated on the surrounding roads, consistent with the existing situation. These movements do not necessarily increase the demands for vehicles travelling past the school on Vista Parade. The route vehicles choose when accessing the school or the surrounding local roads depends upon their origin / destination, which is expected to remain consistent with the existing situation.
4.2.1 Origin / destinations assignment	For St James Primary School, trips associated with parents dropping off or collecting their children would be reasonably balanced between inbound and outbound movements. During the morning there is a slight bias in traffic inbound associated with staff accessing the school prior to the commencement of classes. Similarly, staff typically depart once the majority of students have left. During the afternoon, parents typically start arriving 25 minutes prior to school concluding, with most trips being inbound during this time. Following the end of the school day there is a short peak associated with parents departing. Parking on Vista Parade and at St Phillips Church is currently operating at capacity and so the new drop off arrangement shall alleviate this situation with parents of new students utilising this during the morning. It is therefore assumed that all additional trips during the morning peak could access the school drop off. Traffic associated with the child care centre is reasonably balanced between inbound and outbound traffic with a slight bias inbound during

	the morning associated with staff arriving and the reverse in the afternoon / evening. Overall it is assumed that 60% of trips are inbound during the morning and outbound during the afternoon.  *Figure 2 - Distribution of trips associated with St James Primary School (AM/PM)* The above distribution does not include additional trips associated with parents travelling along Vista Parade during the afternoon to park on local streets including Grayson and Princeton Avenues. Depending upon the direction from which parents approach the school and in turn the direction to which they depart, as a worse case this could see up to 243 additional movements past the school. These trips do not enter the school with parents expected to park on Grayson Avenue or Princeton Avenue.
4.3 Impact on Road Safety	Several changes are proposed to the school access and drop off area to improve its efficiency and to reduce congestion on Vista Parade associated with vehicles entering and exiting the site during the morning peak period. Sight lines at the revised driveway location exceed the requirements prescribed by Australian Standards and therefore ensure adequate visibility for vehicles to safety enter and exit the school onto Vista Parade. Separation of this driveway from St Phillips Church will also reduce potential conflicts associated with opposing turning movements at the school entry. Whilst the proposed expansion could see additional demands for traffic travelling to St James Primary School, the changes to the access alignment and the provision of an improved drop off area offer an improvement over the existing situation. Overall it is therefore considered that the proposed development will have an acceptable impact upon road safety in this location.
4.4 Impact of Generated Traffic	
4.4.1 Impact on Daily Traffic Flows	The proposed development could increase daily traffic flows on Vista Parade by up to 970 trips (485 inbound/485 outbound) compared with the existing situation. This however includes diverted trips where vehicles which are passing the site, travel into the site, and then exit to continue their journey and as such are counted as two trips. Per the RMS Guide, there are no limits on the maximum number of vehicles travelling on a road per day, with the capacity of a road instead

	being determined based on the peak one-hour traffic demands. For Vista Parade, its capacity would be well above 500 vph, and up to 900 vph per direction as noted in Section 2.3.6. The current traffic volumes on Vista Parade (west of the school access) are a maximum of 502 vph (two-way) during the morning peak and the proposed development could see this increase by up to 149 vph in this location. This gives a two-way flow of 651 vph which is well below the theoretical capacity of Vista Parade and would therefore have an acceptable impact upon its overall operation and efficiency. The impact upon the surrounding roads would be somewhat lower as traffic disperses across a variety of routes including via Princeton Avenue and Grayson Avenue.
4.4.2 Peak Hour Impacts on Intersections	The key intersections that could be impacted upon by the proposed development are the intersections of Vista Parade with Grayson Avenue and Princeton Avenue. Observation on site indicate that given the low traffic flows on the surrounding roads, both of these intersections operate to an acceptable standard during the peak periods and would have adequate spare capacity to support the additional traffic associated with this development. Proposed changes to the school access and the drop off zone within the school can provide improvements to the operation of Vista Parade compared with the existing situation allowing for the additional vehicles associated with the school expansion. The potential for parents to enter the school rather than drop off their children on Vista Parade and reduced congestion could also see improvements to the overall efficiency in this location, reducing the likelihood of queuing that may impact on the operation of the above intersections. Overall it is therefore considered that the proposed development shall have an acceptable impacts upon the nearby intersections.
4.4.3 Impact of Construction Traffic	The proposed ELC and expansion of St James Primary School is planned to occur over several stages with the above assessment pertaining to the masterplan assessment. This staging will see the construction impacts being spread out, minimising the potential impacts to the operation of the school and the surrounding road network. During construction there will be a requirement for vehicles to access the school associated with the demolition of existing buildings and construction of the new multi-level teaching facilities and the proposed child care centre. To minimise the potential disruptions during the school peaks, no heavy vehicle traffic shall be permitted to access the school during the morning drop off or afternoon pick up. Similarly, no construction staff shall be permitted to park within the school, or on Vista Parade to ensure that these spaces remain available for use by staff and parents. Details regarding the controls in association with construction traffic and parking demands shall be documented in a construction traffic management plan (CTMP) prepared as part of the construction certificate documentation. This shall also include details of any traffic control in relation to the works on site.

	It is anticipated that where possible demolition works would be scheduled for school holidays with the balance of works to occur throughout the term. Demountable classrooms may need to be transported to the school to serve as temporary classrooms during the construction phase. The CTMP shall include details regarding how the movement of large semi-trailers shall be managed throughout the school. The overall demand for construction traffic accessing the school is expected to be relatively low and can be accommodated within the existing capacity on the surrounding road network.
4.4.4 Other Developments	No other significant developments in the immediate locality.
4.5 Public Transport	
4.5.1 Options for improving services	None required. St James Primary School does not generate a significant demand for school buses with the existing services having adequate capacity to support the proposed expansion.
4.5.2 Pedestrian Access to Bus Stops	Pedestrian access is provided to nearby bus stops as described in Section 3.2.6.
4.6 Recommended Works	
4.6.1 Improvements to Access and Circulation	Provide controls within the main driveway to maintain access for vehicles entering the early learning centre carpark, and minimise delays associated with vehicles entering the site. Traffic flows through this carpark should occur one-way clockwise. Both the access driveway and internal roads shall be designed in accordance with AS2890.
4.6.2 Improvements to External Road Network	None required as a result of this development.
4.6.3 Improvements to Pedestrian Facilities	None required. Investigate the feasibility of a school crossing supervisor.
4.6.4 Effect of Recommended Works on Adjacent Developments	No works proposed that will impact on adjacent developments.
4.6.5 Effect of Recommended Works on Public Transport Services	Nil.
4.6.6 Provision of LATM Measures	None Required.
4.6.7 Funding	There is no external works required.

Site Photos:

Photo 1 – View looking east along Vista Parade showing typical road alignment to the front of St James Primary School.

Photo 2 – View looking west (right) along Vista Parade from proposed new access driveway.

Photo 3 – View looking east (left) along Vista Parade from proposed new access driveway.

Photo 4 – View looking west along Vista Parade showing existing footpath and children's crossing on school frontage.

Photo 5 – Existing informal car park / drop off zone to the front of St James Primary School.

Photo 6 – St Phillips Church Car Park located opposite St James Primary School.

Conclusion:

From the site work undertaken and the review of the development proposal and associated plans against the requirements of the RMS Guide to Traffic Generating Developments, it is considered that the proposed development should be approved on traffic and access grounds.

The additional traffic generated by the proposed expansion of St James Primary School including the proposed early learning centre to the front of the school is within the capacity of the surrounding roads and intersections and shall therefore have an acceptable impacts upon its overall operation. Changes proposed to the existing school access and drop off zone will have a positive impact upon the efficiency of Vista Parade, and is likely to reduce the existing congestion which occurs in this location during the morning peak. Sight lines at the relocated access driveway exceed those required by Australian Standards.

Adequate parking is provided on site to accommodate the parking demands in accordance with the Newcastle Development Control Plan 2012. There is adequate spare capacity on local streets to provide for the standing of vehicles in the afternoon for the short period while children are picked up having been released from the school.

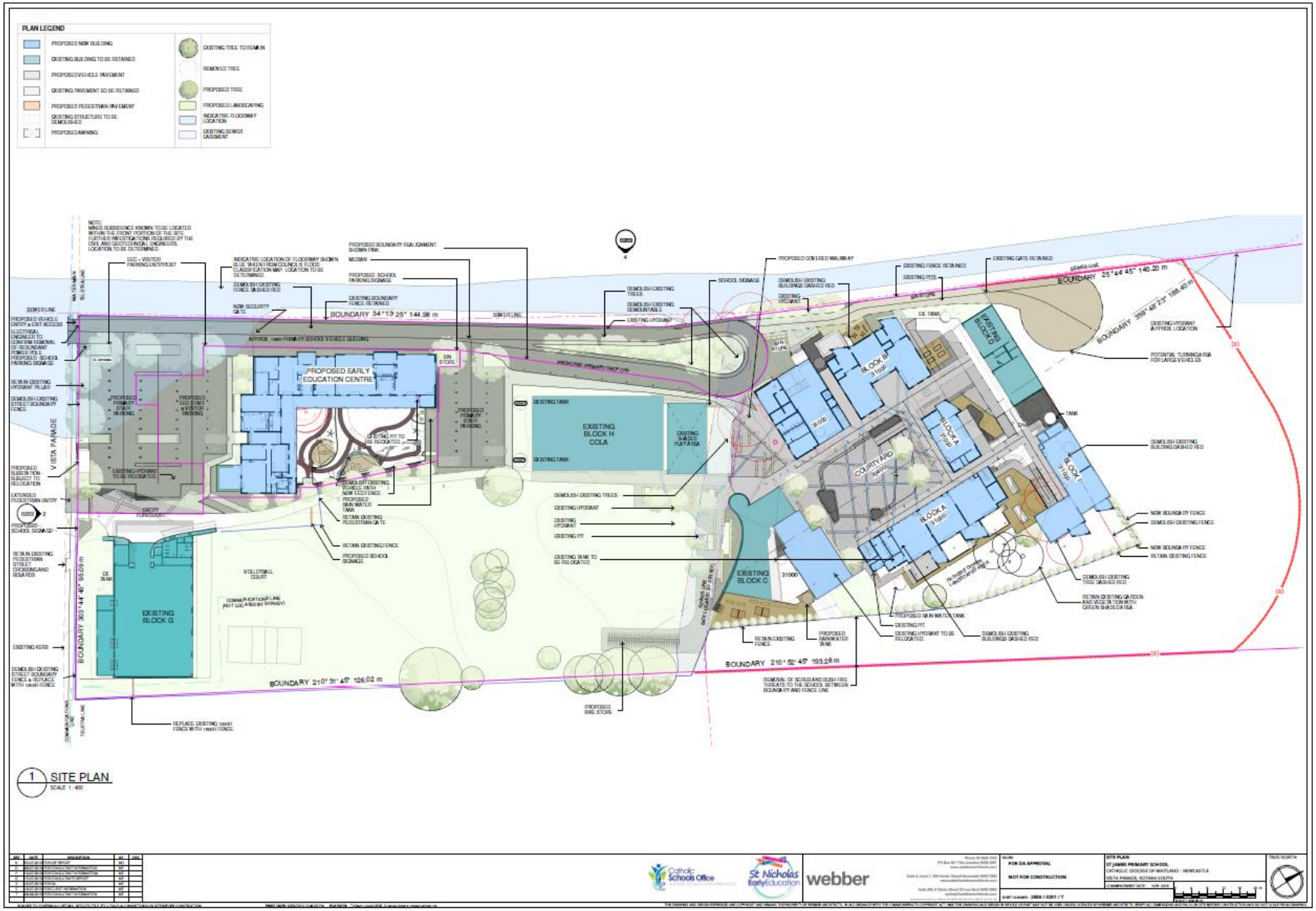
Please do not hesitate to contact me on 4032 7979, should you have any queries.

Yours sincerely,

Shaun Lear
Traffic Engineer

List of Attachments:
Attachment A: Site Plans
Attachment B: Detailed Traffic Survey Data

Attachment A: Site Plans



Attachment B: Detailed Traffic Survey Data
AM Traffic Surveys

Turn Count Summary

Location: School at Vista Parade,
GPS Coordinates:
Date: 2019-02-13
Day of week: Wednesday
Weather:
Analyst: SL

Total vehicle traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:59	0	0	0	0	0	0	0	0	0	0	1	0	1
08:00	16	0	5	1	30	16	1	0	1	14	56	0	140
08:15	25	0	10	5	18	23	1	0	0	29	60	5	176
08:30	26	1	19	5	24	12	5	0	1	32	68	7	200
08:45	9	0	9	0	33	7	6	0	7	8	60	2	141
09:00	0	0	4	1	21	1	4	0	0	3	25	0	59
09:15	2	0	0	0	14	0	1	0	0	0	27	0	44

Car traffic

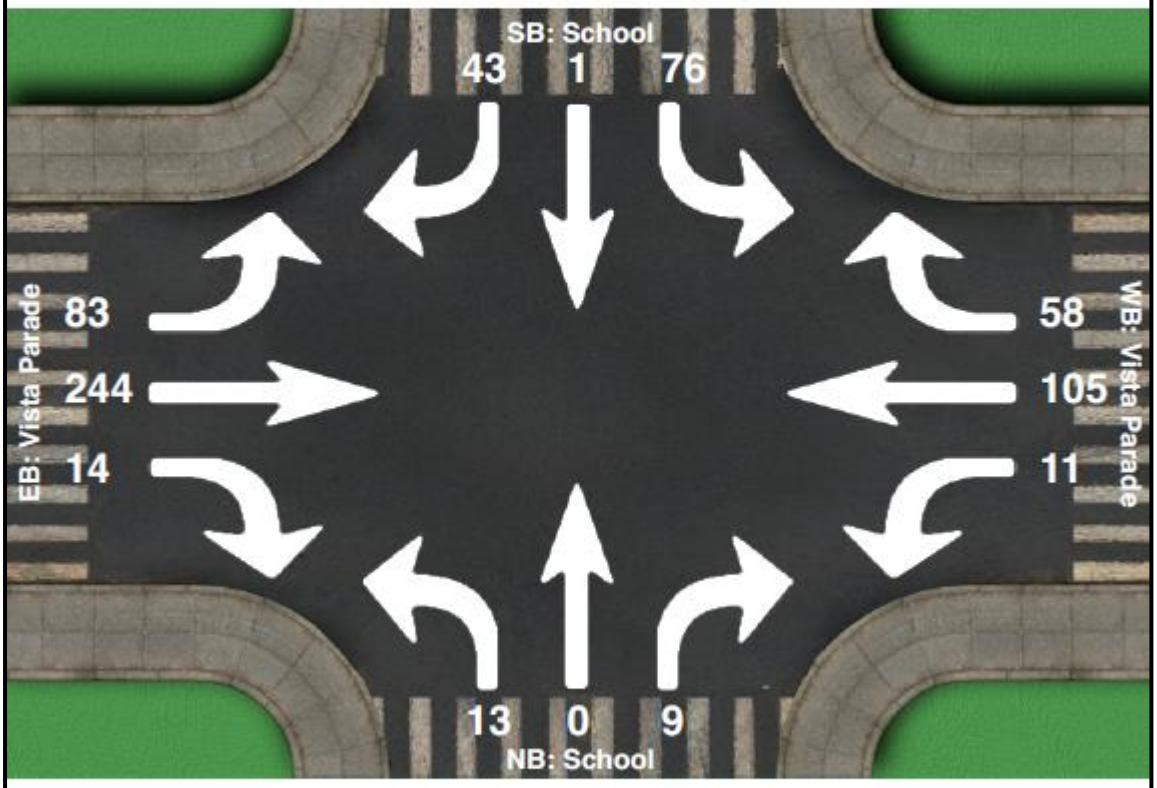
Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:59	0	0	0	0	0	0	0	0	0	0	1	0	1
08:00	16	0	5	1	30	16	1	0	1	14	56	0	140
08:15	25	0	10	5	18	23	1	0	0	29	60	5	176
08:30	25	1	19	5	24	12	5	0	1	32	64	7	195
08:45	8	0	9	0	33	6	6	0	7	8	60	2	139
09:00	0	0	4	1	21	1	4	0	0	3	25	0	59
09:15	2	0	0	0	14	0	1	0	0	0	27	0	44

Truck traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:59	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	1	0	0	0	0	0	0	0	0	0	4	0	5
08:45	1	0	0	0	0	1	0	0	0	0	0	0	2
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Peak Hour

Location: School at Vista Parade,
GPS Coordinates:
Date: 2019-02-13
Day of week: Wednesday
Weather:
Analyst: SL



Intersection Peak Hour

08:00 - 09:00

PM Traffic Surveys

Turn Count Summary

Location: School at Vista Parade,
GPS Coordinates:
Date: 2019-02-13
Day of week: Wednesday
Weather:
Analyst: SL

Total vehicle traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
14:27	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	1	0	2	5	19	4	1	0	1	7	28	6	74
14:45	3	0	1	8	23	5	0	0	3	7	24	11	85
15:00	4	0	13	0	24	1	13	0	18	4	57	0	134
15:15	3	0	4	0	40	1	1	0	2	3	38	1	93
15:30	1	0	3	0	29	6	1	0	0	1	23	0	64
15:45	5	0	3	0	28	4	0	0	0	4	26	0	70
16:00	0	0	1	0	2	0	0	0	0	1	2	0	6

Car traffic

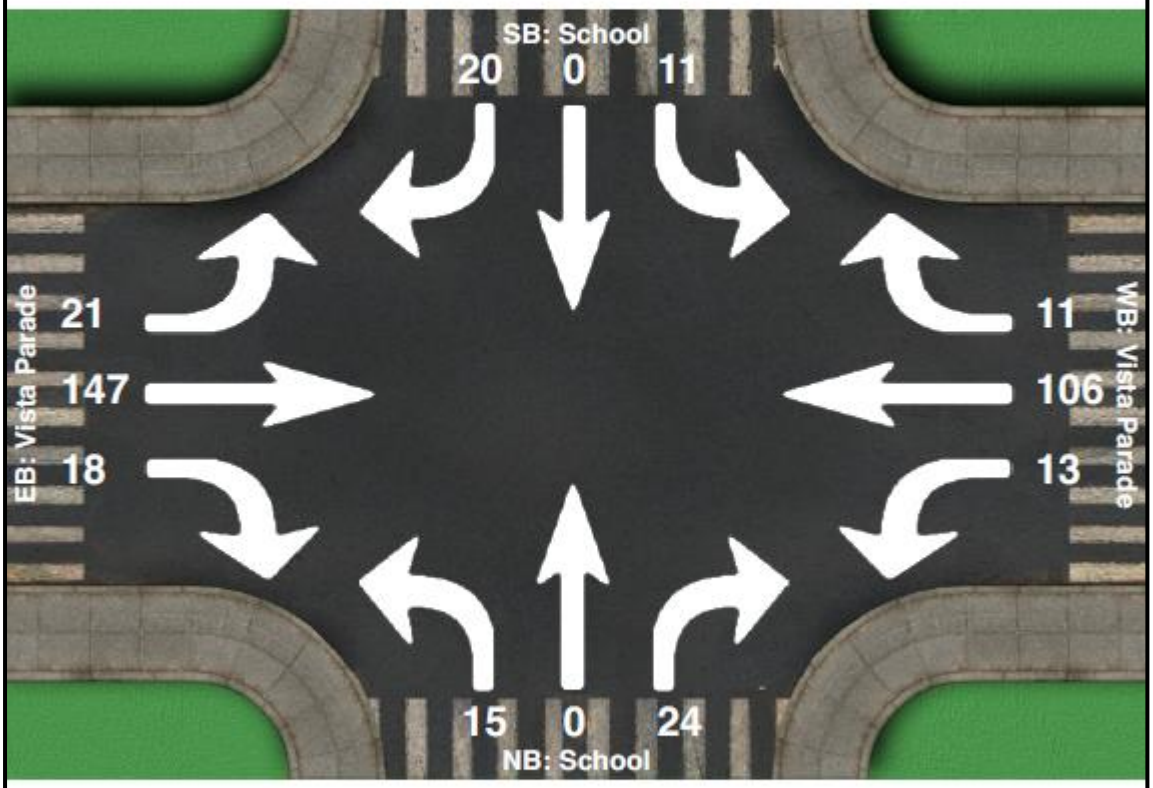
Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
14:27	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	2	5	19	4	1	0	1	7	25	6	70
14:45	3	0	1	8	23	5	0	0	3	7	24	11	85
15:00	4	0	13	0	24	1	13	0	18	4	57	0	134
15:15	3	0	4	0	38	1	1	0	2	2	37	1	89
15:30	1	0	3	0	28	5	1	0	0	1	23	0	62
15:45	5	0	3	0	27	4	0	0	0	4	26	0	69
16:00	0	0	1	0	2	0	0	0	0	1	2	0	6

Truck traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
14:27	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	1	0	0	0	0	0	0	0	0	0	3	0	4
14:45	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	0	0	0	0	2	0	0	0	0	1	1	0	4
15:30	0	0	0	0	1	1	0	0	0	0	0	0	2
15:45	0	0	0	0	1	0	0	0	0	0	0	0	1
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Peak Hour

Location: School at Vista Parade,
GPS Coordinates:
Date: 2019-02-13
Day of week: Wednesday
Weather:
Analyst: SL



Intersection Peak Hour

14:30 - 15:30