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SUMMARY RESPONSE TO SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS (SEARS)

The following provides a summary of the relevant sections of the report which directly addresses the SEARs requirements relating to *Traffic and Transport* as outlined in NSW Planning and Environment letter to the Department of Education dated 11/05/2018.

SEARs TRAFFIC AND TRANSPORT REQUIREMENTS (SSD 9274)	
Requirements	Pertinent sections of report for reference
Accurate details of the current daily and peak hour vehicle, existing and future public transport networks and pedestrian and cycle movement provided on the road network located adjacent to the proposed development	Sections 5 and 6
Details of estimated total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and bicycle trips based on surveys of the existing and similar schools within the local area	Section 6.1 (The majority of traffic generated by schools, associated with staff journeys to and from work and student pick-ups and drop-offs, predominantly coincides with the starting and finishing periods of the school. Thus, the assessment of traffic impacts is limited to peak school hour periods.)
The adequacy of existing public transport or any future public transport infrastructure within the vicinity of the site, pedestrian and bicycle networks and associated infrastructure to meet the likely future demand of the proposed development	Sections 5.4, 5.5, 5.6 and 6.2.3
Measures to integrate the development with the existing/future public transport network	Section 7

the impact of trips generated by the development on nearby intersections, including, but not limited to, the intersection of Smith Street/Garfield Street, Smith Street/Station Street, Station Street/Monash Street, the Great Western Highway/Station Street and Station Street/Fullagar Road (an associated pedestrian zebra crossings), with consideration of the cumulative impacts from other approved developments in the vicinity, and the need/associated funding for, and details of, upgrades or road improvement works, if required (Traffic modelling is to be undertaken using SIDRA network modelling for current and future years)	Sections 5 and 6
The identification of infrastructure required to ameliorate any impacts on traffic efficiency and road safety impacts associated with the proposed development, including details on improvements required to affected intersections, additional school bus routes along bus capable roads (i.e. minimum 3.5m wide travel lanes), additional bus stops or bus bays	Section 6.2.1
Details of travel demand management measures to minimise the impact on general traffic and bus operations, including details of a location-specific sustainable travel plan (Green Travel Plan and specific Workplace travel plan) and the provision of facilities to increase the non-car mode share for travel to and from the site	Section 7
The proposed walking and cycling access arrangements and connections to public transport services	Sections 5.4, 5.5 and 5.6

The proposed access arrangements, including car and bus pick-up/drop-off facilities, and measures to mitigate any associated traffic impacts and impacts on public transport, pedestrian and bicycle networks, including pedestrian crossings and refuges and speed control devices and zones	Sections 4, 5 and 6
Details of any traffic management measures to ensure the safe and efficient operation of student pick-up/drop-off	Section 8
Proposed bicycle parking provision, including end of trip facilities, in secure, convenient, accessible areas close to main entries incorporating lighting and passive surveillance	Section 4.2.2
Proposed number of on-site car parking spaces for teaching staff and visitors and corresponding compliance with existing parking codes and justification for the level of car parking provided on-site	Section 4.2.1
An assessment of the cumulative on-street parking impacts of cars and bus pick-up/drop-off, staff parking and any other parking demands associated with the development	Sections 4.2.1, 6.2.2 and 8
an assessment of road and pedestrian safety adjacent to the proposed development and the details of required road safety measures and personal safety in line with CPTED	Section 5
emergency vehicle access, service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times)	Section 4.1.1

The preparation of a draft Construction Traffic Management Plan to demonstrate the proposed management of the impact in relation to construction traffic addressing the following:

- assessment of cumulative impacts associated with other construction activities (if any);
- an assessment of road safety at key intersection and locations subject to heavy vehicle construction traffic movements and high pedestrian activity;
- details of construction program detailing the anticipated construction duration and highlighting significant and milestone stages and events during the construction process;
- details of anticipated peak hour and daily construction vehicle movements to and from the site;
- details of on-site car parking and access arrangements of construction vehicles, construction workers to and from the site, emergency vehicles and service vehicle; and
- Details of temporary cycling and pedestrian access during construction;

A draft Construction Traffic Management Plan has been prepared in Section 9 of this report, with the specific subsection addressing each of the dot points listed below:

Dot Point 1 - 9.1

Dot Point 2 - 9.6 and 9.7

Dot Point 3 - 9.2

Dot Point 4 - 9.6

Dot Point 5 - 9.5

Dot Point 6 - 9.3

1. **INTRODUCTION**

This Practice has been engaged by Fulton Trotter Architects to prepare a traffic and transport impact assessment to accompany a Development Application ('DA') lodged with the Department of Planning and Environment ('DPE') and the Roads and Maritime Services, in accordance with Clause 13 of the State Environmental Planning Policy for *Educational Establishments and Child Care Facilities* 2017 (SEPP 2017).

The subject proposal involves alterations and additions to Wentworthville Public School, located at 70 – 100 Fullagar Road, Wentworthville ('Subject Site'), to accommodate an increase in school population from 604 to 1,000 students between K – Year 6.

The purpose of this report is to assess and document the likely traffic and parking impacts resulting from the proposed development and to recommend, where appropriate treatments to ameliorate any such impacts. This assessment is provided in response to DPE's Secretary Environmental Assessment Requirements (SEARs) under the *Traffic and Accessibility* section, applicable to the subject development, which is considered to be a State Significant Development (SSD 9273). In this regard, this report undertakes assessment of the following:

- The existing road network conditions within the vicinity of the site including traffic volumes and general traffic safety;
- Identify traffic likely to be generated by the proposal;
- Assess the ability of the surrounding public road network to accommodate additional traffic movements;
- The existing sustainable transport infrastructure including pedestrian, cycle, bus, train and ferry travel modes within the vicinity of the site;
- The likely additional demands on surrounding pedestrian, cycle, bus, train and ferry infrastructure as a result of the proposal and the ability of existing infrastructure to accommodate additional demand;
- Initiatives to encourage more sustainable forms of travel, intended to reduce the impact of general traffic on the surrounding road network to be detailed within a Green Travel Plan;
- The accessibility to and from the site from the frontage roads under existing and projected conditions;
- The suitability and safety of the internal circulation, manoeuvring, queuing and parking arrangements as relevant to the site and local conditions; and
- Preliminary assessment of the traffic and transport impacts during construction and the primary items to be incorporated into a Construction Traffic & Pedestrian Management Plan.

Reference has been made to the following documents throughout this report:

- The Australian Standard for *Parking Facilities Part 1: Off-Street Car Parking* (AS2890.1-2004);
- The Australian Standard for *Parking Facilities Part 6: Off-Street People for People with Disabilities* (AS2890.6-2009); and
- Cumberland Council's *Holroyd Development Control Plan 2013* (DCP 2013).

This report should be read in conjunction with the architectural plans prepared by Fulton Trotter Architects, copies of which are submitted under separate cover.

2. SITE DETAILS

2.1 Site Location

The subject site is bound by Fullagar Road to the north, Garfield Street to the west, Monash Street to the south and Station Street, Wentworthville to the east. This location is shown in the context of its surrounding road network and land use in **Figures 1 and 2** overleaf.

2.2 Site Description

The subject site provides a legal property description of Lot 1 in Deposited Plan 1245593 and a street address of 70 – 100 Fullagar Road, Wentworthville. The site forms a rectangular shaped parcel of land, providing frontages of approximately 242m to Fullagar Street along its northern boundary, 91m to Station Street along its eastern boundary, 242m to Monash Street along its southern boundary and 91m to Garfield Street along its western boundary. The total area of the site is in the order of 2.205ha.

2.3 Existing Uses

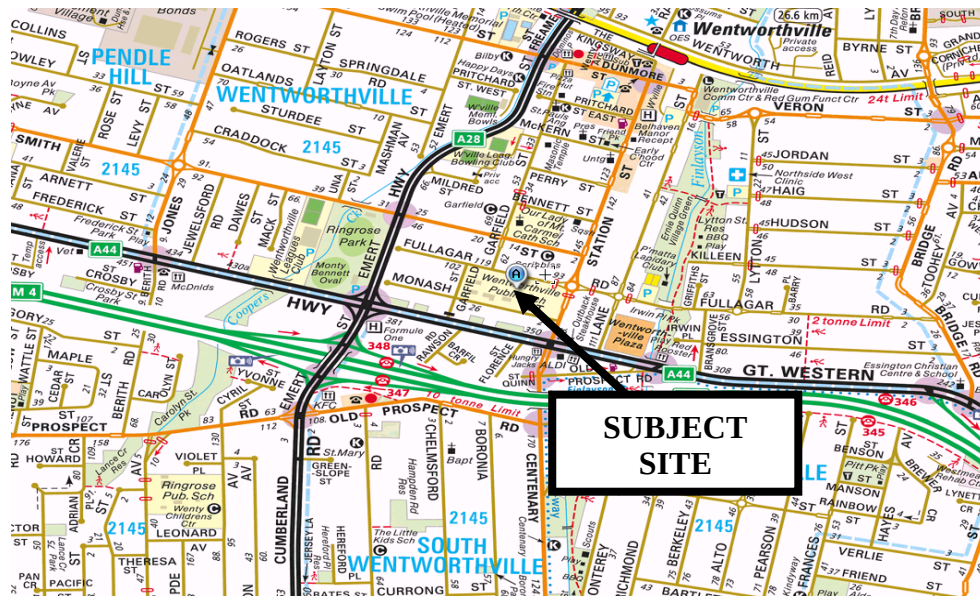
The site currently accommodates Wentworthville Public School, a co-educational primary school accommodating 604 students (between Kindergarten – Year 6) and 49 staff. The current hours of operation of the primary school is between 8:25am to 2:55pm. The school campus currently accommodates a number of buildings, providing learning and administration facilities in conjunction with on-site student recreation, play and sporting areas.

The school is primarily serviced by passenger vehicle car park containing 20 formally painted car parking spaces, accessible off Fullagar Road via a combined entry/exit driveway at the centre of the northern property boundary. Further, access to an internal maintenance vehicle area and a pick-up/set-down area for children with special needs is facilitated via separate driveways off Monash Street at the southern property boundary.

2.4 Surrounding Uses

The site is primarily surrounded by a mix of medium to high density residential land uses in its immediate vicinity (i.e. detached dwellings to the north, south and west and apartment buildings to the east).

FIGURE 1
SITE LOCATION – ROAD NETWORK CONTEXT



Source: www.street-directory.com.au (Accessed 29/08/18)

FIGURE 2
SITE LOCATION – LOCAL LAND USE CONTEXT



Source: Six Maps (Accessed 29/08/18)

3. PROPOSED DEVELOPMENT

3.1 Built Form/School Demographic Changes

The subject application involves the following structural works:

- Demolition of existing demountable buildings, an Out-of-School Hours (OOSH) building, the existing canteen and a covered foyer area;
- Construction of an L-shaped building accommodating 31 classrooms and a library (Building G);
- Extension and refurbishment of existing Building E into a new administration building;
- Construction of a new OOSH building, canteen and an auditorium hall (Building H);
- Extension and refurbishment of existing Building F to provide new classrooms for children with special needs; and
- Refurbishment of existing classroom buildings (Buildings B and C).

The abovementioned new building for children with special needs is proposed to be serviced by an internal pick-up/drop-off area, adjacent to the front of the new building, with access to be provided by the existing driveway, currently servicing the off-street staff car park and an existing driveway currently disused, off Fullagar Road.

The existing access off Monash Street is still to be retained for garbage collection purposes.

The existing on-site parking provision and the driveway accommodating access to this parking area is to remain unaltered.

The abovementioned works are intended to facilitate an increase in the school population from 604 to 1,000 students (between K – Year 6) and from 60 to 80 staff.

4. ACCESS & PARKING CONSIDERATIONS

4.1 Access Arrangements

4.1.1 Vehicular Access

Vehicular access to the on-site passenger vehicle parking area for staff is currently facilitated by a 5m wide driveway supporting a combined ingress and egress function off Fullagar Road at the northern property boundary. This existing driveway is also proposed to service ingress movements to the new internal pick-up/drop-off area dedicated for children with special needs. Vehicles exiting this pick-up/drop-off area are to do so via an existing 5.7m wide driveway currently disused, which also provides accessibility to Fullagar Road at the northern property boundary.

It is also noted that emergency vehicles and service vehicles currently use the existing driveway mentioned above to access the site. It is understood that the site currently accommodates up to one (1) service vehicle a day, which generally occurs outside of the peak starting and finishing times of the school.

The existing vehicular driveway arrangements for passenger, service and emergency vehicles and the number of service vehicle movements to and from the site are to remain unaltered as part of the subject proposal.

4.1.2 Pedestrian Access

Primary pedestrian access to the school grounds is currently controlled by a gated entrance connecting with the southern Fullagar Road footpath, which is to be retained as part of the subject proposal.

4.2 Parking Provision

The existing off-street parking area which is to remain unchanged, provides 20 formal passenger vehicle parking spaces, allocated primarily to staff.

Visitor parking primarily associated with student pick-up/drop-off activity is currently being accommodated by the surrounding on-street public parking facilities. It is further noted following discussions with Council's traffic engineer at a meeting on 23 July 2018 that an on-street pick-up/set-down zone, approximately 33m in length, along the northern side of Monash Street, adjacent to the southern property boundary is to be installed. **Figure 3** overleaf shows the signposting plan prepared by Council, illustrating the extent of the on-street student pick-up/set-down zone.

A recent inspection has indicated that the signposting associated with the student pick-up/set-down area has been implemented. Further, it is noted that six (6) formally linemarked parallel parking spaces have been provided within the designated student pick-up/set-down area.

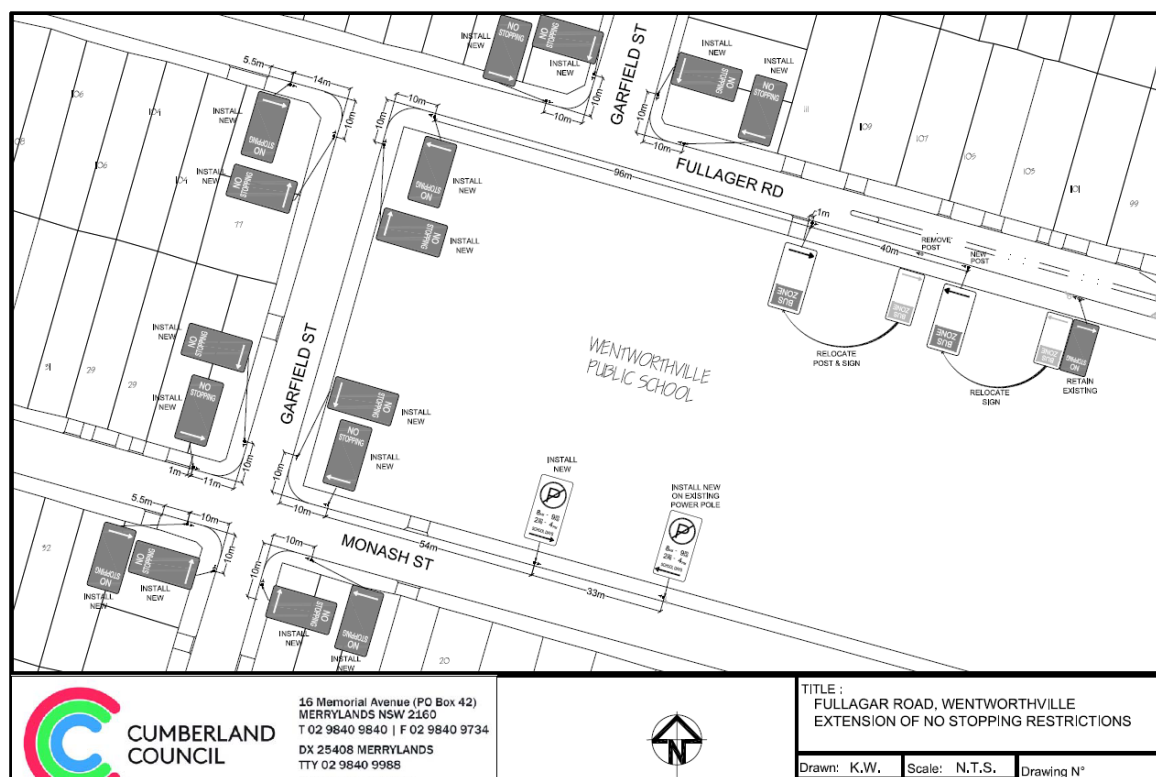
4.2.1 Car Parking

Cumberland Council provides locally sensitive parking requirements within Part A Section 3 of *Holroyd Development Control Plan 2013* (DCP 2013) for schools (primary and secondary) as follows:

1 space per employee, plus 1 car parking space per 100 students

Based on a proposed future student and employee population of 1000 students and 80 staff, a total of 90 car parking spaces comprising 80 staff and 10 visitor spaces are required to be provided in accordance with Council's DCP.

FIGURE 3
SIGNPOSTING ARRANGEMENT IN IMMEDIATE VICINITY OF
WENTWORTHVILLE PUBLIC SCHOOL



Source: Cumberland Council

In order to evaluate the parking impacts associated with the proposed development, a survey of the existing on-street parking facilities within the surrounding road network in the immediate vicinity of the site has been recently undertaken by staff of this Practice.

These spot surveys were conducted on 25 and 26 February 2019 between 8:00am – 9:00am and 2:30pm – 3:30pm to coincide with the peak starting and finishing periods of the school.

Table 1 overleaf provides a summary of the existing surveyed on-street parking demand, with the surveyed areas highlighted in **Figure 4** overleaf.

TABLE 1 EXISTING (2019) PARKING DEMAND (OCCUPIED SPACES)										
Date/Time	On-Street Parking Areas									
	Zone A (14 spaces)	Zone B (15 spaces)	Zone C (25 spaces)	Zone D (32 spaces)	Zone E (4 spaces)	Zone F (40 spaces)	Zone G (33 spaces)	Zone H (7 spaces)	Zone I (7 spaces)	Total (177 spaces)
MONDAY, 25 FEBRUARY 2019										
2.30am	5	3	11	9	0	18	8	2	1	57
2.45am	7	12	17	15	0	23	14	3	1	92
3.00pm	11	8	16	21	0	26	11	2	3	98
3.15pm	9	9	13	22	0	19	12	2	1	87
3.30pm	8	6	10	19	0	13	9	2	1	68
TUESDAY, 26 FEBRUARY 2019										
8.00am	1	1	6	4	0	3	7	1	0	23
8.15am	2	2	8	11	0	5	7	1	0	36
8.30am	3	6	9	13	0	16	8	1	0	56
8.45pm	3	9	9	15	0	18	18	3	1	76
9.00pm	3	7	12	13	0	16	13	2	1	67

**FIGURE 4
EXTENT OF SURVEYED AREA**



Table 3 indicates the following with respect to surveyed on-street parking demand:

- The total parking capacity within the adjoining road network (comprising Station Street, Fullagar Road, Monash Street and Garfield Street) is identified to be 177 spaces;

- The maximum parking demand was surveyed to be 76 vehicles during the morning peak period resulting in a minimum of 101 unoccupied spaces (177 – 76); and
- The maximum parking demand was surveyed to be 98 vehicles during the morning peak period resulting in a minimum of 79 unoccupied spaces (177 – 98).

With regards to the above, it is noted that the shortfall in parking (of 70 spaces with respect to Council's DCP can be readily accommodated within the on-street public parking facilities in the immediate vicinity of the site. Further, the following factors also contribute to reducing on-street parking:

- A large number of students are currently observed to travel to and from the site by walk trips as reflected in the pedestrian movement survey results presented in Section 5.4 of this report. This trend is expected to continue as the surrounding locality serviced by the school is understood to undergo further urbanisation in the future characterised by high density residential land uses, which are anticipated to be designed based on initiatives that promote sustainable travel that reduce private vehicle parking, in line with DPE's *Apartment Design Guide*; and
- Further, a Green Travel Plan (GTP) has been prepared by this Practice within Section 7 of this report, in response to DPE's SEARs condition under *Transport and Accessibility*, which is also designed to promote greater walk/bicycle trips, more public transport usage and other modes of travel, as an alternative to private vehicle utilisation. The measures raised within the GTP are intended to ensure that the transport infrastructure, services and policies within and outside the site are tailored to the future site users, being coordinated to achieve sustainable outcomes aimed at minimising traffic and parking impacts within the surrounding road network.

4.2.2 Bicycle Parking

Cumberland Council does not provide any specific bicycle parking requirements for schools within their DCP.

In any case, the subject development proposes to provide 15 double sided bicycle racks on site adjacent to building B, which is designed in accordance with AS2890.3-2015 and capable of accommodating up to 30 bicycles. Further, based on information provided by the Fulton Trotter Architects, other end-of trip facilities proposed to be provided are detailed below:

- Showering facilities for staff are to be provided within Building E; and
- Storage lockers for staff are to be provided within Building E.

Recent observations have indicated that bicycle trips to and from the site associated with staff, students and general visitors was found to be currently negligible. However, as outlined within the Green Travel Plan (GTP) in Section 7 of this report, there is an expectation that parents, students and staff travel characteristics/behaviour are encouraged to change, as alternative forms of transport to private vehicle usage are contemplated and actioned. The proposed bicycle parking provision is expected to assist with facilitating greater bicycle trips, consistent with this GTP objective.

Further, with regards to the provision of end-of-trip facilities, it is noted that Austroads *Part 11: Guide to Traffic Management: Parking* states that '*primary and secondary schools are exempt from having to provide end-of-trip facilities*'.

5. **EXTERNAL TRAFFIC CONDITIONS**

5.1 **Surrounding Road Network**

The following provides a road network immediately adjoining of the school site, which are expected to be most affected by the additional traffic generated by the proposed development:

Great Western Highway performs a State Road function under the care and control of the Roads & Maritime Services. It provides an east-west arterial road linking Parramatta in the east and Leonay in the west. In the vicinity of the subject site, it forms a six lane divided carriageway providing three through lanes in each direction. Pavement widening is provided on approach to major junctions in order to accommodate exclusive turning lanes.

Great Western Highway intersects with Station Street and Centenary Road adjacent to the subject site under traffic signal control. Exclusive left and right turn lanes are provided within the westbound approach to this junction, whilst a right turn bay is provided within the eastbound approach.

Traffic flow within Great Western Highway is governed by a sign posted speed limit of 80km/h.

Station Street performs a collector road function under the care and control of Cumberland Council. In this regard, it provides a north/south connection between the Dunmore Street in the north (in the vicinity of Wentworthville Railway Station) and Great Western Highway/Centenary Road in the south, intersecting with both under traffic signal control.

Station Street forms a 13m wide carriageway accommodating one through lane of traffic in each direction between formalised kerb and guttering. No Stopping (between 8:00am – 9:30am and 2:30pm – 4:00pm School Days) and Bus-Zone restrictions apply along the western side of Station adjacent to the eastern site frontage.

Immediately adjacent to the north-eastern corner of the site, Station Street intersects Fullagar Road under a single lane circulating roundabout. A pedestrian footpath is also provided along both sides of Station Street, with a wombat crossing facilitating pedestrian connectivity between the footpaths, approximately 12m to the south of this roundabout intersection.

Fullagar Road performs a local access function under the care and control of Cumberland Council. It provides an east/west orientation, connecting Bridge Road in the east with Garfield Road in the west, in the immediate vicinity of the site. Continuing further west, Fullagar Road terminates in a cul-de-sac.

Fullagar Road also provides a 13m wide pavement servicing one through lane of traffic in each direction in conjunction with parallel parking along both kerb alignments. No Stopping and Bus-Zone restrictions apply along the southern side of Fullagar Road along the northern site frontage. Approximately 44m west of its roundabout intersection with Station Street, a wombat crossing is provided which provides a pedestrian link across Fullagar Road between the footpath within the

northern verge and the footpath within the southern verge connecting with the pedestrian gate to the school.

Fullagar Road forms a T-junction with Garfield Street adjacent to the north-eastern corner of the site, under major/minor priority control with Fullagar Road forming the priority route. It is noted that there is a slight rise in elevation in the road profile within the section of Fullagar Road between Garfield Street and Station Street. However, our observations have indicated that such existing road characteristics does not appear to affect the sight line of motorists to on-coming road conditions (e.g. children crossing the road, etc.), in particular on approach to the school car park access, as reflected in photo shown in **Figure 5**.

FIGURE 5
SITE LINE OF MOTORISTS APPROACHING SCHOOL ACCESS



It is further noted that there is an existing painted island at the centre of Fullagar Road extending between the wombat crossing near Station Street and a concrete island (with 'Keep Left' signposting facing motorists in both directions), in the immediate vicinity of school car park access driveway. This existing central island from a traffic management context is observed to provide a pseudo-refuge function for pedestrians crossing Fullagar Road, although it is recommended that pedestrians use the concrete section, as it is expected to offer better protection.

Garfield Street in the immediate vicinity of the site, performs a local access function, providing connectivity between Fullagar Road in the north and Monash Street in the south. It terminates in a dead end at its southern extremity. Garfield Road forms a 12m wide carriageway servicing two-way traffic and parallel parking along both kerb alignments. A footpath is also provided along both sides of the road for the extent of the western site boundary. Garfield Street intersects with Monash Street under 'Give-Way' signage control with Garfield Street forming the minor route.

Monash Street perform a local access function to abutting developments. It has an east/west alignment which runs parallel to Fullagar Road to the south of the site. At its eastern extremity, Monash Street forms a T-junction with Station Street under major/minor priority control with Station Street forming the priority route. At its western extremity, the road terminates in a cul-de-sac.

Monash Street provides a 13m wide pavement carriageway accommodating one through lane of traffic in each direction in conjunction with parallel parking along both kerb alignments. It is understood that the school is proposing to seek an on-street 'Kiss & Drop' area within Monash Street, along the southern frontage of the school site. In this regard, the Department of Education is required to submit a formal proposal for such a facility to Cumberland Traffic Committee for evaluation, as a separate application.

Traffic flow within all of the abovementioned roads is governed by a sign posted speed limit of 50km/hr, with 40km/h school zone speed restrictions applying between 8:00am – 9:30am and 2:30pm – 4:00pm during school days.

5.2 Existing Traffic Volumes

In order to obtain an indication of the existing performance of the surrounding public road network immediately adjacent to the site, peak hour morning and afternoon weekday traffic surveys were undertaken at the following intersections:

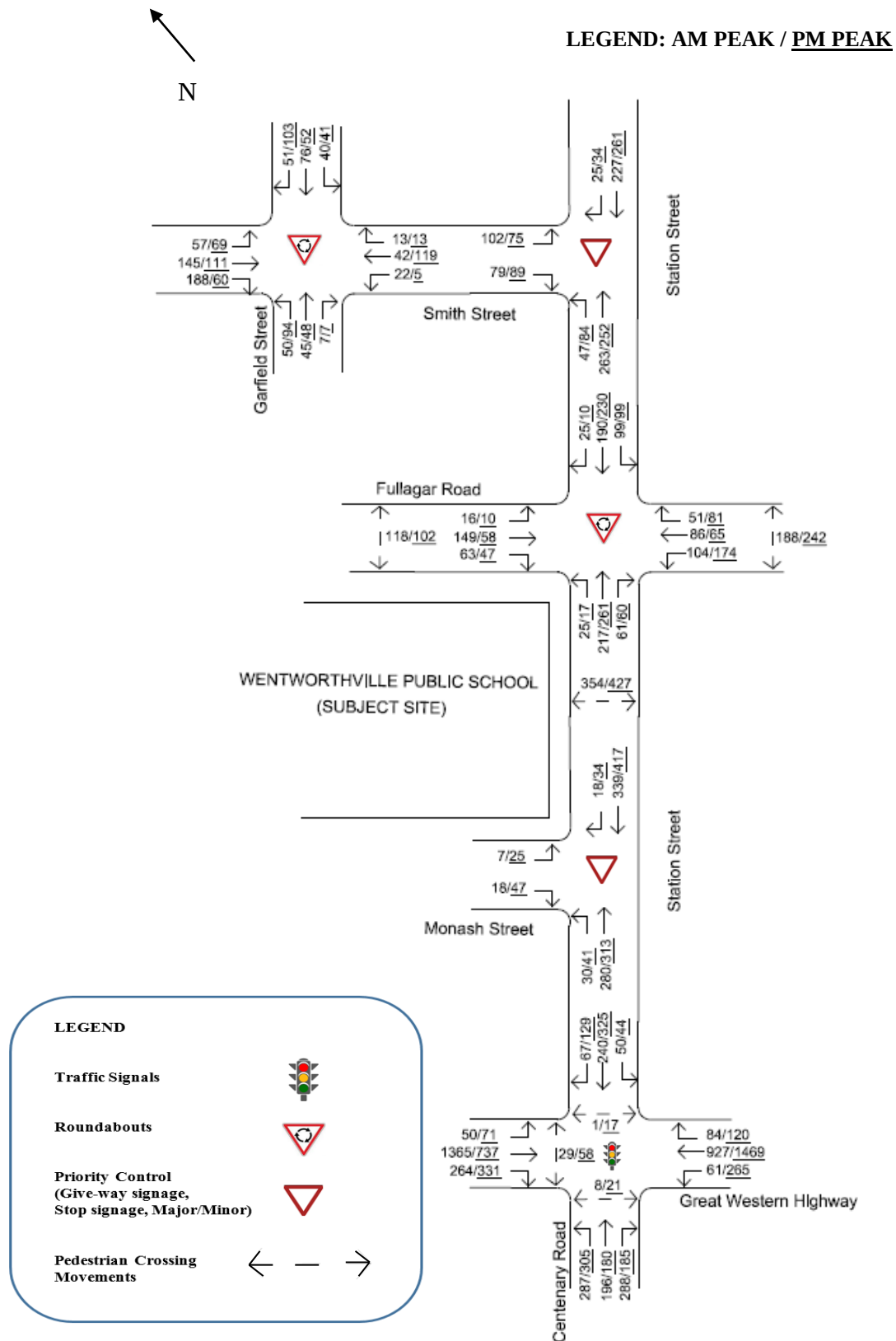
- Great Western Highway and Station Street;
- Station Street and Monash Street;
- Station Street and Fullagar Road;
- Station Street and Smith Street; and
- Smith Street and Garfield Street

These surveys were undertaken on 21st of May and 27th of July 2018 between 7:00am – 9:00am and 2:00pm – 4:00pm to coincide with the starting and finishing periods of the primary school. **Figure 6** overleaf illustrates the surveyed peak hour (8.00am – 9.00am and 3.00pm – 4.00pm) traffic flows at the surveyed intersections, whilst full details are available upon request.

It is noted that there are some minor net gains and losses between intersections associated with private development access locations, parking / unparking manoeuvres and differing survey days.

In addition to the above, it is noted that approximately 5% of the total peak hour traffic volumes at the surveyed intersection represent heavy vehicle movements.

FIGURE 6
EXISTING PEAK HOUR TRAFFIC VOLUMES
(8:00AM – 9:00AM AND 3:00PM - 4:00PM)



5.3 Existing Road Network Operations

In order to objectively assess the existing efficiency of the surveyed intersection during peak school traffic periods, a SIDRA analysis has been undertaken. SIDRA is a computerised traffic arrangement program which, when volume and geometrical configurations of a network of intersections are imputed, provides an objective assessment of the operation efficiency under varying types of control (i.e. signs, signal and roundabouts). Key indicators of SIDRA include level of service where results are placed on a continuum from A to F, with A providing the greatest intersection efficiency and therefore being the most desirable by the Roads and Maritime Services.

SIDRA uses detailed analytical traffic models coupled with an iterative approximation method to provide estimates of the abovementioned key indicators of capacity and performance statistics. Other key indicators provided by SIDRA are average vehicle delay, the number of stops per hour and the degree of saturation. Degree of saturation is the ratio of the arrival rate of vehicles to the capacity of the approach. Degree of saturation is a useful and professionally accepted measure of intersection performance.

SIDRA provides analysis of the operating conditions that can be compared to the performance criteria set out in **Table 2** (being the RMS NSW method of calculation of Level of Service).

TABLE 2		
LEVELS OF SERVICE CRITERIA FOR INTERSECTION		
Level of Service	Average Delay per Vehicle (secs/veh)	Expected Delay
SIGNALISED INTERSECTIONS AND ROUNDABOUTS		
A	Less than 14	Little or no delay
B	15 to 28	Minimal delay and spare capacity
C	29 to 42	Satisfactory delays with spare capacity
D	43 to 56	Satisfactory by near capacity
E	57 to 70	At capacity, incidents will cause excessive delays
F	> 70	Extreme delay, unsatisfactory
GIVE WAY & STOP SIGNS		
A	Less than 14	Good
B	15 to 28	Acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Near capacity
E	57 to 70	At capacity and requires other control mode
F	> 70	Unsatisfactory and requires other control mode

The existing conditions have been modelled utilising the peak hour traffic volumes presented within **Figure 6**. **Table 3** overleaf provides a summary of the SIDRA output data whilst full details are available upon request.

TABLE 3 SIDRA OUTPUT – EXISTING WEEKDAY PEAK HOUR INTERSECTION PERFORMANCE COINCIDING WITH THE STARTING AND FINISHING TIMES OF THE SCHOOL (8:00AM – 9:00AM AND 3:00PM – 4:00PM)		
Intersection	AM	PM
Great Western Hwy & Station St		
Delay	48.3	65.0
Degree of Saturation	0.91	0.98
Level of Service	D	E
Station St & Monash St		
Delay	8.5	9.9
Degree of Saturation	0.18	0.23
Level of Service	A	A
Station St & Fullagar Rd		
Delay	9.7	8.9
Degree of Saturation	0.50	0.52
Level of Service	A	A
Station St & Smith St		
Delay	8.5	8.8
Degree of Saturation	0.19	0.19
Level of Service	A	A
Smith St & Garfield St		
Delay	9.8	9.3
Degree of Saturation	0.30	0.19
Level of Service	A	A

The intersection level of service (LoS) presented within **Table 3** above is based on the following specified within Clause 4.2.2 of Roads and Maritime Services' (RMS) *Guide to Traffic Generating Developments*:

“...The best indicator of the level of service at an intersection is the average delay experienced by vehicles at that intersection. For traffic signals, the average delay over all movements should be taken. For roundabouts and priority control intersections (with Stop and Give Way signs or operating under the T-junction rule) the critical movement for level of service assessment should be that with the highest average delay.”

Table 3 indicates the following:

- The surrounding local intersections of Station Street/Monash Street, Station Street/Fullagar Road, Station Street/Smith Street and Smith Street/Garfield Street all operate with a level of service 'A' during peak school starting and finishing periods, representing good operating conditions with spare capacity; and
- The intersection of Great Western Highway and Station Street is assessed to operate with a level of service 'D' during the morning peak hour and a level of service 'E' during the afternoon peak hour. A level of service 'D' represents satisfactory operational performance, whilst a level of service 'E' signifies that the intersection is operating at capacity, based on RMS classifications.

In addition to the above, it is acknowledged based on recent discussions with the Roads and Maritime Services at a meeting on the 15th May, 2018 and past assessments associated with other projects undertaken by this Practice that the intersection of Great Western Highway and Station Street currently operates with a poor level of service ('F') during the peak afternoon period (between 4:00pm – 6:00pm) associated with commuters' journeys from work.

It is noted however that the abovementioned peak commuter period lies outside of the peak period (2:00pm – 4:00pm), where the school generates its peak traffic activity. In this regard, the additional traffic generated by the school is not expected to impact the operations of this intersection where delay is currently identified to be the highest.

The abovementioned SIDRA output is generally consistent with numerous inspections undertaken by staff of this Practice of the surrounding road network immediately adjacent to the site in recent times. It is also noted from our observations that the influx of traffic demand associated with the school is concentrated over a 15 – 30 minute window. As such, any inconvenience on other motorists, caused by this school traffic was observed to be generally a temporary event.

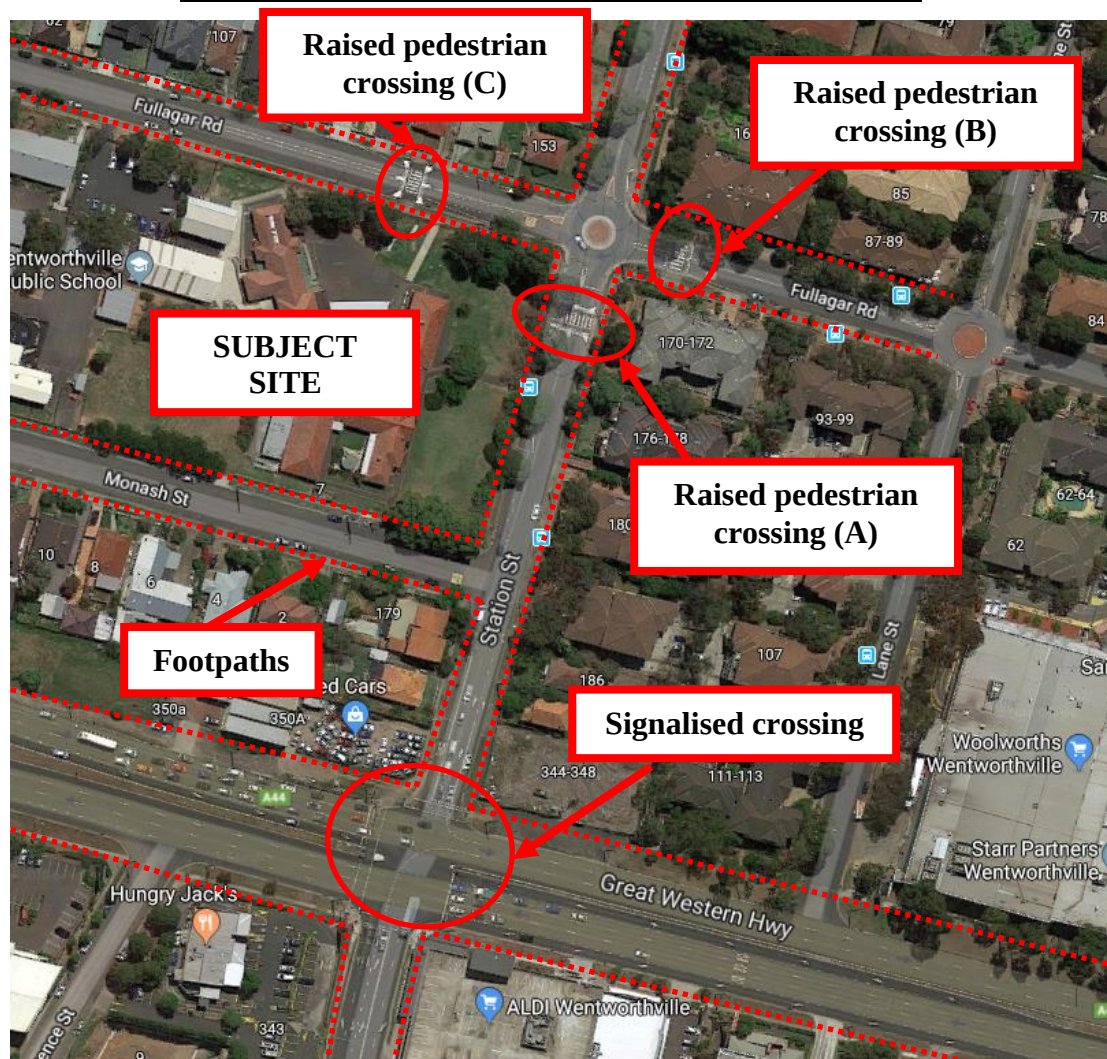
5.4 Pedestrian Infrastructure and Volumes

Pedestrians are supported with the following infrastructure in the vicinity of the subject site:

- Footpaths are provided along both sides of Great Western Highway, Station Street, Monash Street and Fullagar Road;
- Signalised crossings at the intersection of Great Western Highway are provided over the northern, western and southern approaches; and
- A raised pedestrian (zebra) crossing is provided over the western, southern and eastern approach of the intersection of Station Street and Fullagar Road.

The abovementioned existing pedestrian infrastructure are graphically depicted in **Figure 7** overleaf.

FIGURE 7
PUBLIC PEDESTRIAN INFRASTRUCTURE
IMMEDIATE ADJACENT TO THE SUBJECT SITE



Surveys of the pedestrian crossing movements over the crossing facilities denoted as A, B and C in **Figure 7** were undertaken by staff of this Practice in conjunction with the previously presented vehicle volume surveys during school start and finish periods on the 28th of May and 31st of July, 2018. **Table 4** provides a summary of the existing pedestrian crossing movements whilst full details are available upon request.

TABLE 4						
PEDESTRIAN MOVEMENTS COINCIDING WITH START AND FINISH PERIODS OF THE SCHOOL						
Crossing Facility	AM (Peds/Hr)			PM (Peds/Hr)		
	Adults	Children	Total	Adults	Children	Total
Raised zebra crossing (A)	136	218	354	153	274	427
Raised zebra crossing (B)	75	113	188	93	149	242
Raised zebra crossing (C)	45	73	118	39	63	102
Total	256	404	660	285	486	771

5.5 Parking Arrangements and Conditions

The following provides a summary of the existing on-street public parking facilities in the immediate vicinity of the site:

- Station Street, between Fullagar Road and Monash Street has ‘No-Stopping’ (and Bus Zone parking restrictions applicable along both sides of the road;
- Fullagar Road generally accommodates unrestricted parallel parking along both sides of the road, with the exception of a signposted bus zone applicable between 8:00am – 5:00pm on school days, along the southern side of the road adjacent to the northern site frontage; and
- Unrestricted parallel parking generally applies within other surrounding local roads (e.g. Monash Street and Garfield Street) within close proximity to the school.

Recent observations have found that whilst on-street parking within the surrounding road network are somewhat notable during peak starting and finishing times of the school, primarily associated with parents/guardians dropping-off/picking up their children and some staff parking. However, the on-street parking demand outside of these peak periods have been observed to be considerably lower.

5.6 Public Transport (Public Bus & School Bus)

The closest public bus stops are located along both sides of Station Street to the immediate east of the school site. Further, a school bus stop is provided along the southern side of Fullagar Road approximately central to northern property boundary. These bus stops service the following public and school bus routes within close walking distance to the site:

Public Services

Hillbus operates the following services:

- Route 818 – Westmead to Merrylands; and
- Route S8 – Pendle Hill to Wentworthville.

Based on the latest timetables obtained from Transport for NSW website, both Routes 818 and S8 provides one (1) service each during the morning and afternoon peak hour period coinciding with the starting and finishing times of the school (8.00am – 9.00am and 3:00pm – 4:00pm) with such services operating on 60 minute frequencies.

School Services

Based on information obtained from Hillsbus website (effective 26 February 2018), it is understood that three (3) buses currently service the school coinciding with its starting and finishing times, as follows:

- Route 8005 – Operates between Wentworthville Avenue and Wentworthville Public School via Westmead;
- Route 8021 – Operates between Girraween Road and Magowar Road via Wentworthville Public School; and
- Route 2558 – Operates between Wentworthville Public School and Barina Downs Road.

The Hillsbus travel advice dated 26 February 2018 indicates that Routes 8005 and 8021 provides one (1) service during the morning school start period at 8:05am and 8:32am respectively. In the afternoon school finish period, Route 2558 runs one (1) service at 3:00pm.

The staggering of the abovementioned bus services is such that at no time were buses observed to queue back out of the sign posted zones such that no unreasonable impedance on adjoining through traffic flow occurred.

6. **PROJECTED TRAFFIC CONDITIONS**

6.1 **Traffic Generation and Trip Assignment**

The subject development is projected to generate additional traffic demand to and from the site associated with the increase in school population from 604 to 1,000 students and from 60 to 80 staff. In order to estimate this additional traffic generating potential, the following factors and assumptions are considered:

Students

- Based on the surveyed data concerned with journeys to and from the school adopted by students presented in the previous section of this report, the following outcomes can be derived, with respect to the non-car forms of travel:
 - Walk Trips: From the surveyed pedestrian crossing movements presented within **Table 3**, it is noted that approximately 291 children were dropped to the school by parents during the morning peak school start period and 337 children were picked-up by parents during the afternoon peak school finish period. This represents approximately between 48 – 56% of the total current student population.

The above values were calculated by adding the pedestrian movements at crossing facility A to the pedestrian movements at facility C. The pedestrian movements across facility B (across Fullagar Road to the east of Station Street) going to and from the school were observed to also cross facility A (across Station Street to the south of Fullagar Road). As such, the pedestrian movements at facility B also formed part of the total pedestrian movements at facility A.

- Based on the surveyed adult and children pedestrian movements reflected in **Table 3**, a sibling rate of approximately 1 adult to 1.6 children can be derived (256 adults/404 children). In this regard, each private parent vehicle is assumed to transport 1.6 students to and from the site (1/sibling rate).
- Assuming that the school demographics presented in the above two (2) dot points do not alter, following the expansion of the school, the increase of 396 students is estimated to generate the following additional traffic:
 - Walk Trips: 190 additional pedestrian movements (396 x 48%).
 - Private Vehicle Trips: The subject development is anticipated to generate an additional 258 vehicle trips to and from the site (396 x 52%/1.6 x 2) over a 1.5 hour period between 8:00am – 9:30am and 2:30pm – 4:00pm (i.e. school zone periods). Assuming an evenly split trip distribution, the subject development is forecasted to generate up to 172 peak hour vehicle trips to and from the site, comprising 86 inbound and 86 outbound movements.

Staff

- It is noted from survey data provided by the school that a large majority (85%) of employees travel to and from the site by private vehicle, with the remaining employees travelling by walking, public transport (i.e. buses) and carpooling. Based on these transport mode preferences, up to 17 (20 x 85%) of the additional staff can be expected to travel to and from the school by private vehicle means. It is advised that alternative travel modes should be encouraged as much as practical (See Green Travel Plan in Section 7 of the report), if not already to minimise traffic and parking impact on the surrounding road network.

It is noted that staff are generally expected to arrive prior to students arriving and leave after students depart the school. In this regard, the maximum traffic generating potential of the proposed development over an hourly period is anticipated to be predominantly associated with student pick-up/drop-off activity. **Table 5** provides a summary of the peak hour traffic generating ability of the subject based on the above discussion.

TABLE 5		
SUMMARY OF ADDITIONAL PRIVATE VEHICLE TRIPS ASSOCIATED WITH THE SUBJECT PROPOSAL		
	AM PEAK	PM PEAK
Inbound	86	86
Outbound	86	86
Total	172	172

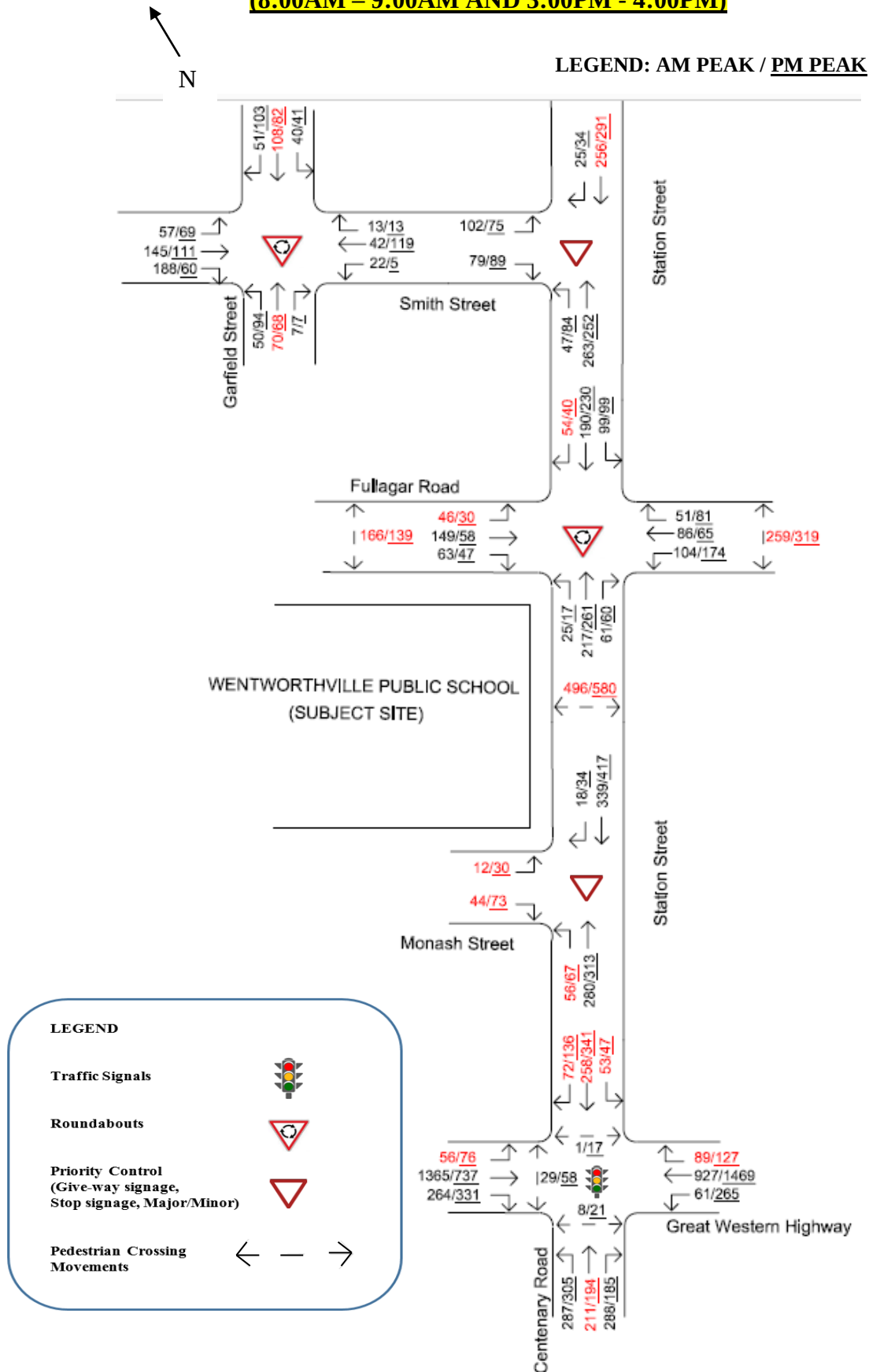
In order to gauge the impact of the traffic projected to be generated by the proposal, it is necessary to determine the impact on surrounding route and intersection efficiency. The objective of this section is to distribute the traffic generated by the proposed development along the major approach routes before it dissipates throughout the general road network.

It is rarely possible to precisely forecast the route that motorists will elect to utilise. Perceived traffic safety, traffic efficiency and individual preferences are all variables that will influence the traffic route selected by motorists. Nevertheless, it is common to assume that trips to the subject site will be distributed in accordance with existing traffic patterns and alterations currently observed in the surrounding road network.

With regards to the above, the post-development traffic volumes diagrammatically presented in **Figure 8** overleaf incorporates the additional traffic generated by the proposed development (in red), which have been assigned, based on the existing surrounding traffic distributions illustrated within **Figure 6**.

Further, up to 70% of the total additional traffic is assumed to originate from the north with the remaining 30% originating from the south via Station Street.

FIGURE 8
PROJECTED WEEKDAY PEAK HOUR TRAFFIC VOLUMES
INCORPORATING DEVELOPMENT TRAFFIC
(8:00AM – 9:00AM AND 3:00PM – 4:00PM)



6.2 Projected Traffic Impacts

6.2.1 Intersection Network Performance

Utilising the projected traffic volumes presented within **Figure 8** associated with the school population increase, the surveyed intersections have been remodelled using SIDRA to determine the post-development impact on traffic safety and efficiency due to the altered traffic characteristics. A summary of the most pertinent results are indicated within **Table 6** whilst full details are available if required.

TABLE 6 SIDRA NETWORK MODELLING ANALYSIS PROJECTED PEAK HOUR INTERSECTION PERFORMANCE COINCIDING WITH THE STARTING AND FINISHING TIMES OF THE SCHOOL (8:00AM – 9:00AM AND 3:00PM – 4:00PM)				
Intersection	Existing Conditions		Projected Conditions	
	AM Peak	PM Peak	AM Peak	PM Peak
Great Western Hwy & Station St Delay Degree of Saturation Level of Service	46.7 0.86 D	65.0 0.98 E	48.3 0.87 D	65.9 0.99 E
Station St & Monash St Delay Degree of Saturation Level of Service	8.5 0.18 A	9.9 0.23 A	8.7 0.18 A	10.1 0.23 A
Station St & Fullagar Rd Delay Degree of Saturation Level of Service	9.7 0.50 A	8.9 0.52 A	10.1 0.57 A	8.8 0.54 A
Station St & Smith St Delay Degree of Saturation Level of Service	8.5 0.19 A	8.8 0.19 A	8.7 0.19 A	9.1 0.19 A
Smith St & Garfield St Delay Degree of Saturation Level of Service	9.8 0.30 A	9.3 0.19 A	10.0 0.30 A	9.4 0.22 A

Table 6 indicates that the existing intersection level of service is projected to remain unaltered for all surveyed intersections with the additional traffic generated by the subject proposal, despite some minor increases to the average vehicle delay and degree of saturation.

It is worthwhile noting that the population increase associated with subject proposal is expected to occur incrementally (i.e. staged) over time in the future. As such, by the time the school reaches its ultimate student population of 1,000 students and 80 staff, it is anticipated that the sustainable travel initiatives detailed within the Green Travel Plan (GTP) provided in the following section of this report, should be implemented to assist with reducing private vehicle usage and therefore traffic impacts on the adjoining road network.

6.2.2 Set-down / Pick-Up Activity and Staff Parking Considerations

Based on a future school population of 1,000 students and assuming that the existing travel characteristics remain unaltered (i.e. average vehicle occupancy rate = 1.6 child per vehicle and 52% of students travel to/from school by car), the proposed development could generate up to 217 vehicles over an hourly period $((1000 \times 52\%/1.6)/1.5 \text{ hours})$ associated with student pick-up/drop-off activity. This is equivalent to approximately 3.6 vehicles per minute (i.e. 217 vehicles/60 minutes).

Further to the above, based on our observations of current school operations, the average length of stay for parents/guardians during the student drop-off/collection process is approximately five (5) minutes. In this regard, the proposed development could be expected to generate a maximum short term parking demand/queue of up to 18 vehicles, corresponding to student drop-off/collection activity during school start and finish periods. Based on Figure 2.5 of AS2890.1-2004, the minimum length for a parallel parked vehicle ranges between 5.9m – 6.2m. As such, a peak parking demand of approximately 18 vehicles could potentially require a kiss and drop bay length of around 106 – 112m.

It is noted that there is opportunity for the recently installed on-street student pick-up/drop-off area within Monash Street to be extended along the school frontage to accommodate the abovementioned pick-up/drop-off demand associated with the subject proposal. In this regard, it is recommended that the existing signposted kiss & ride zone within Monash Street be extend to cover the whole length of the site frontage (approximately 240m). It is noted that this measure is not expected to have any significant impact to the parking needs of staff of the school (with the parking surveys previously presented indicating that there is ample within the surrounding road network) as well as existing surrounding residential land uses (which have off-street parking facilities). Further, such a measure can be implemented through relocating the existing 'No Stopping 8am – 9:30am and 2:30pm – 4pm School Days' signposting and does not involve any further modification to the adjoining local road network. In any case, any modification to the existing student pick-up/drop-off area is subject to further review and monitoring by Council, as the school increases in student enrolment.

In order to alleviate further some of the on-street parking impacts, it is recommended that consideration be given by the school to implement an Operational Traffic & Pedestrian Management Plan (OTPMP), prepared in the Section 8 of this report to govern the use of the on and off-site parking areas during peak school starting and finishing periods. The purpose of an OTPMP is to govern the implementation of the proposed altered parking arrangements and also to improve the safety and efficiency with which students are set-down / picked-up by private vehicles (e.g. to ensure the signposted student pick-up/drop-off area is not improperly used by staff during school zone periods). The OTPMP addresses issues which are considered vital to the safety of school students as well as to the sound site and public road management as they relate to traffic and pedestrian safety. The OTPMP should also be used in conjunction with the GTP to minimise parking impacts on the surrounding road network.

6.2.3 Public Transport

The additional students projected to use buses is not of sufficient size to have any measurable impact to the existing public transport services.

7. GREEN TRAVEL PLAN (GTP)

7.1 Introduction

Transport is an unavoidable factor in modern society and a major contributor to emissions in Australia. However, the effects of transport associated with new developments can be managed through the implementation of travel plans, which provide an opportunity to reduce harmful greenhouse gases. In conjunction with striving to provide more efficient environmental outcomes, providing a range of travel choices with a focus on walking, cycling and public transport will result in major public health advantages to the Wentworthville Public School and the surrounding precinct.

This Green Travel Plan (GTP) is intended to assist with ensuring that the transport infrastructure, services and policies within and outside the site are tailored to the future site users, being coordinated to achieve sustainable outcomes.

7.2 Green Travel Plan Definition

This Green Travel Plan provides a series of measures aimed at promoting and encouraging sustainable travel and reducing reliance on the private car. The aim of the Plan is to achieve travel behaviour change through raising awareness of alternatives to private motor vehicle use. The development of a site based Plan focuses on providing information, offering incentives and mode specific actions to optimise the use of sustainable travel (public transport, cycling and walking).

This Green Travel Plan specifically examines how future site users can travel to and from the site and what can be done to replace single occupancy motor vehicle trips with sustainable trips. As a trip generator, the site can enhance the choices available to residents in a way that promotes health, safety and environmentally sustainable outcomes.

The potential to change site based travel is affected by several factors including car parking provision, the provision of car share schemes, site user interest in changing, the provision of support for change and the availability of various forms of public transport in the immediate vicinity.

7.3 Green Travel Plan Benefits and Objectives

This Green Travel Plan provides a wide range of benefits to residents, the community and the environment including:

- Decreasing greenhouse gas emissions;
- Promoting the subject site and surrounding area as an innovative and environmentally aware location;
- Improving health and fitness of site users through increased cycling and walking activity;
- Improving site user moral and social interaction;

- Reducing traffic congestion and car parking problems;
- Fostering a sense of community; and
- Reducing general living expenses.

The main objectives of this Green Travel Plan are to:

- Reduce vehicle kilometres travelled (VKT) to and from the subject site, particularly single occupancy vehicle trips;
- Increase site user use of sustainable transport modes (walking, cycling and public transport);
- Ensure that site users are informed on the opportunities and benefits of using sustainable transport; and
- Promote the subject site and area as an innovative and environmentally aware location.

7.4 Mode Shift Initiatives

The close proximity of the site to a wide range of sustainable transport options (e.g. buses and walk trips) should be better capitalised to minimise dependence on private motor vehicles.

The following sub-sections provide a summary of these measures to promote sustainable transport for the subject development. The measures are to be in place from the initial occupancy of the development as people will establish lasting habits from this time.

7.4.1 Promote Cycling (for staff)

- Display cycling maps and fact sheets on the benefits of cycling to staff through school noticeboards, flyers, emails and other forms of communication;
- Encourage surrounding bicycle groups to advertise cycle skills training and bicycle maintenance workshops within school noticeboards; and
- Promote events such as Ride to Work Day, Bike Week etc. to encourage greater cycling trips.

7.4.2 Promote Walking (for staff and students)

- Display walking maps and fact sheets on the benefits of walking cycling to staff through school noticeboards, flyers, emails and other forms of communication; and

- Promote programs with incentives that encourage staff and students to walk to and from the school (e.g. walk to school competition with reward for top performers, etc.).

7.4.3 Promote Public Transport (for staff and students)

- Display route maps and timetables of bus routes with stops within 10 minutes walking distance of the site through school noticeboards, flyers, emails and other forms of communication.
- Provision of Opal cards for all new and existing students and staff.

7.4.4 Promote Carpooling (for staff and students)

- Display a fact sheet on the benefits of carpooling on the benefits of walking cycling to staff through school noticeboards, flyers, emails and other forms of communication; and
- Promote programs with incentives that encourage staff and students to car pool (e.g. Travel cost reimbursements for car pooled staff).

7.5 Monitoring

A checklist is provided in **Table 7** overleaf, identifying potential tasks/strategies outlined in the previous sections, which should be undertaken by the school to assist with the facilitation of green travel initiatives.

It is noted that a Green Travel Plan is a dynamic document, which will change over time depending on the environment and circumstances of the subject development. Accordingly, monitoring, evaluating and reviewing the Plan is important as it will guide ongoing efforts to reduce vehicle kilometres travelled and encourage the use of sustainable transport.

Monitoring and evaluation is an ongoing process which involves fine tuning. There is no standard methodology for the monitoring of a Green Travel Plan however, generally speaking, students and staff should be regularly surveyed as to their travel behaviour to ascertain the areas in which the Travel Plan is successful and those which require altered or improved initiatives.

It is important to understand people's reasons for travelling the way they do, any barriers to changing their behaviour and their propensity to change. This will enable the most effective initiatives to be identified, and conversely less effective initiatives to be modified or replaced to ensure the best outcomes are achieved.

It will be necessary to provide feedback to students and staff to ensure that they can see the benefits of sustainable transport. It is proposed that this occur through the provision of survey results within the school community noticeboards and other communication channels.

TABLE 7 GREEN TRAVEL PLAN CHECKLIST (PART 1)	
MEASURES	COMPLETED BY
Prepare a new starter pack for staff and students. The pack will include the following: ➤ Maps and timetables of public transport in the area ➤ Maps of the shared path network in the precinct ➤ Details of measures provided to secure bicycles ➤ Details of the car pool scheme and how to join ➤ Details of any measures provided by the school to minimise transport of heavy or bulky materials	
At the start of each year: ➤ Provide a forum to link possible cycling or walking partners ➤ Set up a new forum to form new groups as part of the car pool, taking into consideration the timetable for the following year. ➤ Review the plan and update as required.	
Utilise the school website, newsletters and social media to keep students, parents and staff informed of any changes to public transport, shared paths or other sustainable transport measures	
Develop a map showing the public transport routes to the school – both regular services and school service. Map to be available on the school website.	
At the start of the school year and mid-year, update the map to reflect any changes.	
Provide links on the school website to public transport companies servicing the area	

TABLE 7 GREEN TRAVEL PLAN CHECKLIST (PART 2)	
MEASURES	COMPLETED BY
Produce a map showing walking and cycling routes to the school, including distances and approximate travel times	
Identify employees living within walking or cycling distance of the school and develop measures to assist in allowing them to walk to school	
Monitor that the bicycle storage area to ensure that the area is secure and bicycles are not being stolen. If required, implement measures to upgrade to secure the area.	
Set up a car pool system for staff. Identify (with appropriate confidentiality) which staff live near each other and could car pool.	
Reserve a section of the parking area for those involved in the car pool program.	

8. INTERNAL OPERATIONAL TRAFFIC & PEDESTRIAN MANAGEMENT PLAN

In order to ensure safe and efficient school operations during peak start and finish periods, it is recommended that an Operational Traffic & Pedestrian Management Plan (OTPMP) be implemented. The following subsections of this report provide a summary of the key strategies which should be incorporated within the Plan, the requirement for which could be reasonably imposed by Council as a condition of Development Consent.

8.1 Operational Traffic & Pedestrian Management

8.1.1 General Items

- A Management & Safety Committee is to be established to implement the operational traffic and pedestrian management measures incorporated within this Plan and to develop further guidelines in order to ensure that on-site and off-site vehicular and pedestrian safety is maximised.

The Committee shall comprise the school principal or his / her senior representative, a parent's representative as well as an independent traffic consultant to provide initial assistance in the implementation of the Plan and subsequent periodic guidance in ongoing review of the Plan.

- The Management & Safety Committee shall ensure that the procedures contained within the OPTM are put in place with respect to: on and off-site traffic and pedestrian management and safety issues.
- The Committee shall put in place measures which should ensure parent / guardian compliance with the Plan. These should take the form of specific instructions via student newsletters and indications that such instructions are to be observed as may be applicable to any private property and could therefore form part of the initial enrolment procedures.
- The Plan should also be subject to periodic review by the school (in consultation with Council for endorsement), to ensure that road safety issues as they relate to the public roads close the school, are appropriately documented and implemented in accordance with sound traffic engineering and road safety practices.

8.1.2 Internal Staff Parking

- Staff parking is to occur within the designated internal parking area on site.
- Staff who wish to utilise the site parking facilities are to arrive prior to 8.00am and exit after 4.00pm on school days to minimise the interaction of this vehicle movements with the peak student set-down / pick-up periods during school start and finish periods.

8.1.3 Student Set-Down / Pick-Up

- Student set-down / pick-up is to be undertaken within the formalised and signposted indented set-down / pick-up bay off Monash Street adjacent to the southern boundary of the school site, during the morning school start and afternoon school finish period.

School Start

- Parents setting-down students during the morning peak are to do so in the abovementioned signposted student set-down / pick-up parking area.
- Students set-down within the area are to access the school buildings to the north via the existing pathway adjoining the set-down / pick-up parking area to the north.
- No staff or parent parking is to occur within the set-down / pick-up area during the morning school start period.
- During the initial stages of the implementation of this TMP, a traffic warden (wearing an appropriate clean high visibility reflective vest) will supervise the set-down / pick-up area during the morning prior to school start to ensure that students disembark parent vehicles in a safe and efficient manner.

School Finish

- The school will implement the following operational management arrangements during the afternoon school finish period:
 - Students assemble under the supervision of a warden at the pick-up area following the completion of the school day;
 - Parents display the names of children to be picked-up on the windscreen of the vehicle when entering the pick-up area; and
 - The warden supervising the student assembly area arranges for the relevant student/s to be brought to the front of the assembly area upon the arrival of the parent vehicle to the pick-up location.
- No staff or parent parking is to occur within the student pick-up area during the afternoon school finish period.

9. CONSTRUCTION ISSUES

9.1 Introductory Statement

This Section of the report constitutes a preliminary Construction Traffic Management Plan (CTMP) addressing the traffic access and safety issues associated with construction works relating to the proposed development in response to DPE's SEARs comments under the *Traffic and Accessibility* section (SSD 9273). There is currently no construction activity observed in the immediate vicinity of the site associated with adjoining land uses. In this regard, the assessment contained in this draft CTMP is limited to the school site only.

CTMPs are generally prepared at Construction Certificate stage following the commissioning of a builder thereby allowing a greater appreciation of the likely construction methodology and therefore the required traffic management measures to be implemented.

The terms of the initiatives contained within the following subsections of this report are therefore somewhat generic and some modifications may be needed by or on behalf of the successful builder / civil contractor at Construction Certificate stage depending on their feasibility taking into consideration all project requirements.

9.2 Proposed Works and Traffic Management

The demolition and construction works are likely to be undertaken within three (3) separate stages as follows:

- Stage 1 – demolition of the relevant site structures;
- Stage 2 – remediation of demolished areas; and
- Stage 3 – construction of new site structures; and

It is noted that the scale of the buildings on site is such that there may be a requirement for construction vehicle activity to be accommodated within the adjoining public road network, which would necessitate a works zone to be implemented. The implementation of any proposed works zones will also necessitate an application being submitted to Council for a Works Permit, including the provision of appropriate application fees and charges. All areas of demolition / construction during the various stages including the construction compounds are to be fenced such that there will be no unreasonable interaction between the construction activities and the surrounding public roads.

Any potential occupation of the public roadway, associated with the provision of works zones may require the preparation of traffic control plan/s (TCP) to be prepared by the relevant contractor and submitted to Council for approval, prior to such works being undertaken. Any traffic control management measures detailed within such plan(s) to be implemented are to be sensitive to the surrounding land uses. Further, all traffic management measures included within the plan/s are to be certified on the drawings as being in accordance with AS1742.3 and the Roads & Maritime Services' *Traffic Control at Work Sites* manual.

9.3 Safe Ingress and Egress of Construction Traffic

During all stages of demolition / construction, all construction vehicles will enter and exit the site and/or works zone in a forward direction via an existing / proposed driveway. Reversing manoeuvres to and from the site will be prohibited, unless specific approval is granted by Cumberland Council. Site access and egress manoeuvres may be controlled by appropriately qualified traffic controllers to ensure that all such movements are undertaken in a safe and efficient manner. Traffic controllers are not to stop traffic on the public street to allow construction vehicles to enter or leave the site. They must wait until a suitable gap in traffic flow allows them to assist construction vehicles to enter or exit the site. The Roads Act does not give any special treatment for trucks leaving a construction site – the vehicles already on the road have right of way.

The timing of access / egress by construction traffic will be sensitive to the surrounding land uses and traffic flow demands. In this regard, construction vehicle ingress and egress movements are to be minimised where possible during road network and school peak periods (7.00am – 9.30am and 2.30pm – 6.00pm). With regards to pedestrian and cycling access during construction, this is to be confirmed with the future successful builder / civil contractor to be appointed.

9.4 Construction Vehicle Transport Routes

The frontage roads provide good connectivity to surrounding regional and arterial routes servicing the Sydney metropolitan area thereby indicating that construction vehicles are able to access and depart the site creating very little disturbance to surrounding local road traffic flow. The multiple directional traffic lanes of the approach and departure routes are such that heavy vehicle manoeuvring is able to occur without any unreasonable encroachment on opposing travel lanes, kerbs and / or parking lanes. None of the abovementioned roads are light thoroughfares or are restricted by load limits.

9.5 Parking Control

At no time are construction worker / tradesperson vehicles or construction vehicles to be parked within the adjoining public road network. In order to minimise the demand for parking associated with construction workers and thus the impact of the works on surrounding precinct amenity and parking provision, it is recommended that construction workers / tradespersons be encouraged to do either of the following when travelling to the site:

- Utilise public transport to the site (the site is well serviced by bus routes); and / or
- Car pool with other construction workers.

The above transport options are to be made available to site workers and as such form part of any site induction process. Details of induction scheduling and procedures are contained within the Occupational Health & Safety, Safe Work Method Statement and Induction Record Forms prepared by others are submitted as part of the Construction Certificate application.

9.6 Construction Traffic Generation

Construction materials are to be transported to and from the site and/or works zone by vehicles up to and including Heavy Rigid Vehicles (HRVs). The number of vehicles needed at each stage of the construction works has been estimated based on this Practice's experience with developments of similar scale as follows:

- Stage 1 – demolition of the relevant site structures – 60 vehicles per week or two (2) vehicles per hour
- Stage 2 – remediation of demolished areas – 10 vehicles per week or one (1) vehicles per hour; and
- Stage 3 – construction of new site structures – 30 vehicles per week or one (1) vehicles per hour.

The construction activities are projected to generate significantly less traffic than the proposed future use, thereby indicating suggesting that impacts will be minimal. During periods of more heavy construction vehicle generation (i.e. a concrete pour), drivers are to be instructed by radio when to arrive at the site to ensure that there is no vehicle queuing or parking within the adjoining road network. This is to be strictly adhered to.

9.7 Traffic Impact

The recent traffic investigations of the adjoining road network and the analysis contained within previous sections of this report have indicated that motorists are provided with a reasonable level of service within the immediately adjoining public road network. It is therefore considered that the limited traffic generation associated with the construction activities can be accommodated without any unreasonable impacts on adjoining vehicle movements considering the previously mentioned maximum hourly traffic generation. Notwithstanding this, it has accordingly been recommended that construction vehicle movements to and from the site be minimised where possible during road network peak periods (7.00am – 9.30am and 2.30pm – 6.00pm).

9.8 Impacts on Pedestrians

It has previously been presented that all internal construction zones are to be fenced to prevent pedestrian access. Pedestrians are to be protected from dust and debris by full perimeter scaffolding around the staged construction compounds, combined with chain wire mesh and shade cloth.

Qualified traffic controllers are to assist all site access movements during vehicular ingress and egress. In addition, the reduction and / or elimination vehicular movements during peak commuter periods (when pedestrian movements within the adjoining road network are at their greatest) will limit the impact of the construction works on pedestrian accessibility and safety.

10. CONCLUSIONS

This report details our assessment of the traffic, access and safety considerations associated with proposed alterations and additions to Wentworthville Public School, located at 70 – 100 Fullagar Road, Wentworthville. Having regard to the contents of this report, the following conclusions are now made:

- The application is expected to result in an increase in the school population from 604 to 1,000 students and from 60 to 80 staff;
- The existing access arrangements and off-street car parking provision are proposed to remain unaltered as part of the subject proposal;
- The surrounding road network in the immediate vicinity of the site is assessed to currently operate with a predominantly good level of service ‘A’ during peak school start/finish periods, with the exception of the Station Street’s intersection with Great Western Highway, which is assessed to operate with a level of service ‘D’ and ‘E’ during the morning and afternoon peak period respectively. A level of service ‘E’ indicates that the intersection is operating close to capacity, based on RMS guidelines;
- The school has been projected to generate an additional 172 peak hour vehicle trips to and from the site during school start and finish periods;
- The remodelled SIDRA output generally indicates no changes to the existing level of service due to the additional traffic generated by the subject proposal, within the surveyed intersections, despite some slight increases in average delay and degree of saturation; and
- Implementation of an OTPM in conjunction with the GTP is anticipated to assist with ensuring that the additional traffic generating potential of the proposed school expansion will not result in any unreasonable impacts on the surrounding road network and improve the overall efficiency & safety of the internal roads servicing the school during peak school start and finish periods.

Based on the contents contained within this report, there are no parking and traffic related issues associated with the proposed development which would prevent this Practice from recommending the proposal for approval by the Department of Planning and Environment.