

3 June 2020

P1677 SD Muswellbrook Music Academy

Stanton Dahl Architects
PO Box 833
Epping NSW 1710

Attn: Peter Rodgers

Dear Peter,

Proposed Redevelopment, Richard Gill National Music Academy, Muswellbrook, NSW.

Further to your recent email, we have now completed our site work for the proposed Richard Gill National Music Academy to be located at 157 Maitland Street, Muswellbrook. We have reviewed the documentation provided in relation to the proposed music academy and provide the following assessment of traffic, parking and access to support the Environmental Impact Statement (EIS) being prepared for the project. The report has been prepared to respond to the various matters raised in the SEARs which are included in **Attachment E**.

The following assessment has been prepared taking into consideration the requirements of the Austroads Guidelines and Guide to Traffic Generating Developments together with the relevant planning controls outlined within Muswellbrook Development Control Plan 2009.

Background and Existing Situation

The Richard Gill School is a comprehensive, secular, independent primary school with a musical focus, tailored around the educational philosophy of Richard Gill AO. With music and physical education as cornerstones of the curriculum, the school will provide an opportunity for regional students to engage in a unique education where creativity plays a central role in all key learning areas, including English and STEM (Science, Technology, Engineering and Mathematics) with a specialised teacher.

Site Location and Access

The subject site is located at 157 Maitland Street as shown in Figure 1. It has a frontage with access to the New England Highway. Access is also available to the rear of the site off Eucalypt Avenue.

There are two buildings within the site, a child care centre and the Muswellbrook Shire Council Administration Building. The surrounding land use comprises mostly low density residential housing, with Muswellbrook Golf Club located on the northern side of the New England Highway.



Figure 1 - Location of the subject site within the context of the local road network.

Road Hierarchy

The **New England Highway** is the major arterial road through the locality, forming part of the state road network (HW9) connecting the Pacific Highway at Hexham via Muswellbrook, to the Queensland State Border at Wallangarra. In the immediate locality of the subject site it provides two lanes of travel eastbound with a single lane westbound, with sealed shoulder to both sides. Street lighting is provided. The posted speed limit adjacent to the site is 60 km/hr, decreasing to 50 km/hr to the west of the site.

Access to the site is provided via an unsignalised T-Intersection off the New England Highway. This intersection provides for all turning movements with the New England Highway having priority. Turn treatments include a short channelised right turn lane and auxiliary left turn deceleration lane on the New England Highway.

The surrounding roads are local roads under the control and care of Muswellbrook Shire Council.

Current and Proposed Roadworks and Traffic Management Works

No road works or traffic management works are nominated within the Muswellbrook Shire Council Section 94A Contributions Plan for the immediate locality of the site. The intersection of the New England Highway / Bimbadeen Drive is to be upgraded to traffic control signals in conjunction with ongoing development within the Eastbrook Links Estate however details to the timing of these works are not available at this time.

TfNSW are preparing a concept design and a Review of Environmental Factors for the proposed Muswellbrook Bypass with an options report published in July 2018 and the preferred option scheduled to be displayed for community feedback in early 2020 (**Attachment D**). Construction of this bypass is expected to commence by 2022, subject to project approval, and will see reductions in regional traffic passing through the Muswellbrook Town

Centre. Five separate alignments are presented in the option report, three of which will see the bypass connect with the New England Highway to the east of the subject site.

Traffic Surveys

Traffic surveys were completed to the front of the site on Thursday 19th March 2020 to determine the current two-way traffic demands past the site as well as the demands for inbound and outbound movements associated with the existing uses on site. These surveys were completed during a typical weekday morning (7:00am-9:00am) and afternoon (3:30pm-5:30pm) to coincide with the typical commuter peak periods on the surrounding road network.

A summary of the peak hour volumes obtained from these surveys is summarised in Table 1 with detailed survey data provided within **Attachment C**.

Table 1 - Surveyed Peak Hour Demands on the New England Highway (west of site access)

Peak	Two-Way	Eastbound	Westbound
AM	869	349	520
PM	1,109	563	546

Seca Solution Pty Ltd had previously undertaken traffic surveys at the intersection of New England Highway / Bimbadeen Drive on Thursday 3rd May 2018, which indicates a reduction in traffic of between 10-12% between 2018 and 2020 (Table 2). This is likely due to the impacts of Covid-19 which by the 19th March had seen an increasing number of people working from home. To account for this, a factor of 10% has therefore been applied to the surveyed traffic volumes to better reflect those volumes surveyed in 2018.

Table 2 - Adjusted Peak Hour Demands on the New England Highway (west of site access)

Peak	Two-Way	Eastbound	Westbound
AM	956	384	572
PM	1,220	619	601

It is typically accepted that peak hour traffic volumes represent between 8-12% of the daily traffic volumes. This would suggest that daily traffic volumes on the New England Highway could be in the order of 9070-13600 vehicles per day (vpd) in this location with 10% being 11,000 vpd.

Average Annual Daily Traffic (AADT) data is available on the New England Highway approximately 4.1km east of the site (Station ID 6154). Data from the permanent classifier on the New England Highway indicates an average annual daily traffic demand of 9,570 vpd for the year in 2019.

Existing Site Flows

Surveys of the existing site flows were completed in conjunction with the traffic surveys on the New England Highway to determine the demands associated with the existing Council Administration Building and adjacent child care centre. A summary of the surveyed demands is provided within Table 3 for the AM peak and the earlier afternoon period (3.30-4.30pm) selected to represent typical volumes for the school peak. These numbers have also been increased by 10% to allow for the decrease in traffic associated with early stages of Covid 19.

Table 3 - Existing Site Flows (8.15-9.15 and 3.30-4.30)

Peak	Combined		Child Care		Council Building	
	In	Out	In	Out	In	Out
AM	54	20	14	14*	41*	7
PM	14	18	7	10	7	8

* Includes one vehicle exiting the child care centre and entering the Council Administration Building

Access to a small car park is also available off Eucalypt Avenue however this car park appears to be underutilised with a low number of vehicles using this car park.

Current Road Network Operation

Observations on site indicate that the local roads currently provide a good standard of operation throughout the day and during the peak periods. Some delays are observed for vehicles turning right onto the New England Highway when exiting the site during the morning and afternoon peak periods, however the demands for this movement is relatively low and well within the capacity of the existing access.

Performance standards for assessing the capacity of a road are described within The Guide to Traffic Generating Developments. For the New England Highway, which provides an arterial function offering two lanes eastbound and a single lane westbound in this location, its mid-block capacity would be in the order of 1,900 vph eastbound and between 1,200-1,400 vph westbound (allowing for the low number of intersections to create delays on the New England Highway).

Current traffic volumes on the New England Highway would be less than 650 vph eastbound or westbound during the morning and afternoon peak periods, and are therefore well within the mid-block capacity of this road.

Traffic Safety and Crash History

A review of crash data provided by Transport for New South Wales, indicates that there has been a single accident recorded on the New England Highway within 150 metres of the existing access over the 5 year period between July 2014 to June 2019. This accident involved vehicles travelling in the same direction westbound along the New England Highway.

Detailed crash data is provided within **Attachment B**.

The local roads are typically well aligned and provide excellent visibility on approaches to intersections. Given this, together with the low number of accidents, it is considered that the local road network provides an acceptable level of road safety.

Car Parking Demands and Availability

Off-street car parking is available throughout the site including 12 car spaces adjacent to the child care centre and 91 car spaces within three separate parking modules adjacent to the Muswellbrook Shire Council administration building.

On-street car parking is also available on Eucalypt Avenue and Oak Place to the immediate west of the site.

Parking demands associated with the child care centre are typical with a high turnover of parking throughout the main pick up and drop off times. In the morning 2 vehicles were parked on site with 4 parked at the end of the survey period at 9.30am.

Demands for the Council building car parks include a mix of staff parking, Council vehicles and visitors coming and going throughout the day. On the morning of the surveys 50 vehicles were parked adjacent to the Council building at 9.30am.

Pedestrian and Cyclist Facilities

A shared pathway runs through the site, adjacent to the New England Highway, extending west from the Eastbrook Links Estate. No other dedicated pedestrian or cyclist facilities are noted within the immediate locality of the site reflective of the low demands for these movements.

Demands for pedestrian and cyclist movements in this location are very low, with typically less than 10 pedestrian or cyclists using the existing shared pathway per hour.

Public Transport

Local bus services are operated by Osborne's Transport with bus routes operating along Bimbadeen Drive and Henry Dangar Drive including:

- Route 413: Highbrook Loop - Five buses daily (Monday to Friday) and three buses on Saturdays.
- Route 418: Eastlinks Loop - Four buses daily (Monday to Friday) and three buses on Saturdays.

Osborne's Transport provides local school bus services for Muswellbrook and its surrounds, with over 30 schools buses servicing the following areas: Sandy Hollow, Denman, Martindale, Muswellbrook, Manobalai, Aberdeen, Dartbrook, Scone, Merriwa, Ellerston, Isis River, Gundy, Bunnan, Kars Springs, Middlebrook and the surrounds of these areas.

No formal bus stops are provided within the immediate locality of the site, with bus services typically operating as hail and ride. Provision for such a service is available 150m to the west of the site on the New England Highway with pedestrian access to this provided by the shared pathway running adjacent to the highway.

Muswellbrook Railway Station is serviced by the Hunter Line which operates services to Scone to the north and Newcastle to the east. Regional train services also operate between Armidale and Sydney.

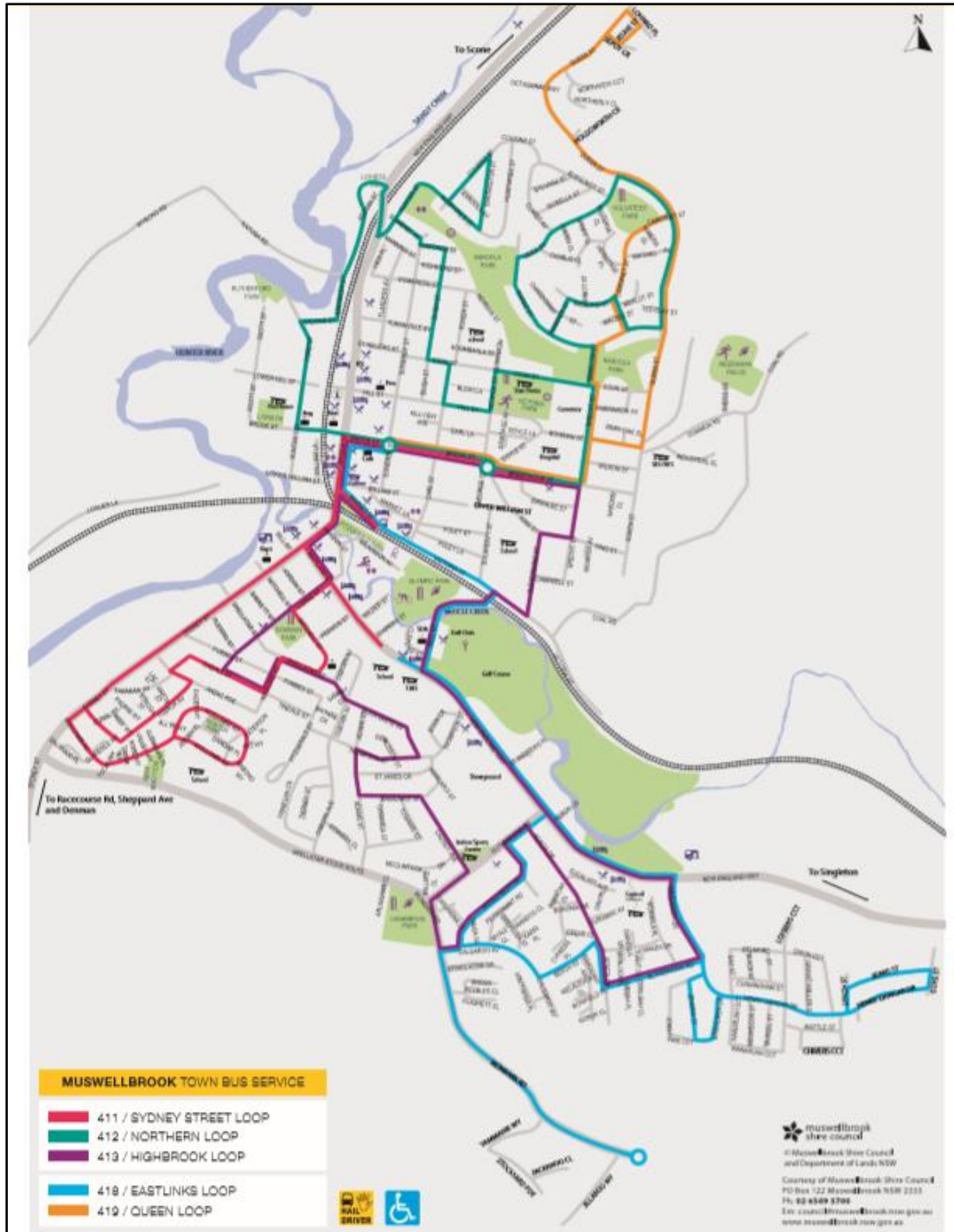


Figure 2 - Osborn's Transport Route Map

Proposed Development

The proposal allows for the adaptive re-use of the former Muswellbrook Shire Council Administration Building to provide a new independent primary school. The proposed development is to be delivered over several stages with Stage 1 allowing for the first year of enrolments being intakes of Kindergarten, Year 1 and Year 2 students. While Stage 1 of the proposed scheme has been the main subject of this assessment commentary has also been allowed for the ongoing growth of the school to provide for a single stream K-6.

Stage 1 is expected to cater for between 25-50 students with up to 4 staff with a catchment area encompassing all areas within approximately 1 hour of the site. The school has indicated that the majority of interest initially has been from Muswellbrook and Singleton. Ongoing growth of the school over coming years will see the school expand to K-6 with 165 students and 12-15 staff.

Operating hours for the school are proposed as 8:45am to 3pm weekdays. No changes are proposed to the existing car parking or access arrangements from the New England Highway.

The childcare centre will continue to operate on the site independent of the school.

The carpark to the rear of the site will become court area and playground space with an available parking supply of 49 spaces to the front of the site, including the parking accessed of Eucalypt Avenue. This rear harstand area shall provide for servicing of the site consistent with the current arrangements.

A concept site plan for the development is provided within **Attachment A**.

Review of Parking

Parking Supply

The site shall provide 49 parking spaces within two separate parking modules adjacent to the proposed school building (including two accessible spaces).

Car Parking Demands

Muswellbrook Development Control Plan 2009 provides the following car parking rates for education facilities relevant to the proposed Richard Gill National Music Academy:

- 1 space for every employee or staff member; plus
- Provision for a drop off/ pick up area.

Applying these rates, the proposed primary school would require 4 car spaces to be provided on site for staff together with a suitable area for pick up and drop off of students. Allowing for the future staffing this could increase to 15 employee or staff parking spaces. Staff parking shall primarily be provided in the parking module off Eucalypt Avenue with the balance of parking to provide for the drop off and pick up of children.

The available car parking exceeds that required by the Muswellbrook Development Control Plan 2009 and is therefore appropriate for the proposed school for its initial development and future scenario.

Stage 1

As the early stages of the school are K-2 and allowing for the low number of enrolments, opportunities for students to travel by bus or walk and cycle to school are expected to initially be low. It is therefore assumed that students will be dropped off and picked up by parents and carers although there would be opportunities for shared trips as families get to know each other. With Stage 1 enrolments of up to 50 students expected, this could see a worst-case demand for 50 car parking spaces within the school associated with parents dropping off or collecting their children (assuming 1 student per vehicle).

Actual demands would be somewhat less than this allowing for absentees as well as children who are picked up later than the school finish time plus those that are transferred by the school 12 seater mini-bus. As the school becomes established future students will be expected to travel by bus or walk / cycle to school from nearby residences within the Eastbrook Links Estate and surrounding residential areas.

The main carpark to the front of the school building will provide adequate space for the pick up and drop off of children with suitable queuing available within the site to ensure there is no impact on the New England Highway. As the school grows management plans shall be implemented for the operation of this area, particularly in the afternoon. The school shall also implement and monitor a Green Travel Plan to promote and support the use of active transport by staff and families. Given this, all car parking demands can be accommodated on site with no requirement for parents to drop off / pick up their children on the surrounding local road network.

A review of the concept plan shows suitable space to the west of the carpark to provide for the loading or unloading of the mini-bus separate to the carpark or otherwise a dedicated parking space can be allowed for within the carpark.

Future Scenario

As the school grows there shall be opportunities for siblings to attend the school together supporting a higher car occupancy rate. Similarly, older children are more likely to use school bus services with opportunities for siblings to also travel together by bus.

As detailed in the traffic generation below, 40% of the future cohort shall be able to access the school using active transport whilst 60% may travel by car. Allowing a car occupancy of 2 per vehicle this could see a demand for 50 vehicles to access the site throughout the drop off and pick up period. Given the high turnover of parking during this time the proposed parking area and access driveway within the site is considered appropriate to accommodate this future demand. A management plan shall be implemented to provide for the safe loading of children and the exiting of vehicles from the site.

Bicycle Parking

There is no requirement for bicycle parking nominated within Muswellbrook Development Control Plan 2009 for educational facilities. The Trip Generation Surveys - School - Analysis Report prepared by GTA Consultants on behalf of Transport for New South Wales, indicates an average modal share for cycling of ~7.5% of trips, which was based on surveys of 7 regional primary schools throughout the state. Given the large catchment for this school, allowing for 5% of students to cycle, this equates to a demand for 3 bicycles to be stored on site initially. Suitable storage can be provided in secure, convenient areas with suitable lighting to allow for staff who may ride as well as passive surveillance from surrounding rooms within the school.

Additional bike storage can be incorporated into the future planning for the school as the cohort grows and the students are older. Future storage for 10 bikes could be appropriate for the eventual development of the site.

Coach / Bus Parking

The school is proposing to offer a private minibus shuttle service (12 seater) for the transportation of students to/from the school, subject to the level of interest received by parents. A suitable parking space shall be allocated to the rear of the site when the bus is out of service with provision for the set down and pick up of students to the front of the school building.

The proponent is also liaising with local bus operators to investigate the feasibility of extending school bus services to the site however this is unable to be confirmed until enrolments are set and addresses, and locations of families are known.

Site Servicing

The site shall have minimal servicing with the main being that of waste collection. This will occur in a manner consistent with the existing situation with waste being collected from the rear of the building. This shall be managed to occur outside of school and office hours.

Other deliveries to the school will typically be by large van (eg HiAce) made to the main entry. These will occur outside peak drop off and pick up times with parking available to the front of the school in the main carpark.

Review of Access

Access to the site shall continue to be as per the existing situation with a combined entry/exit driveway off the New England Highway also providing connection to the childcare centre carpark.

Connection to the highway provides for a short right turn lane of the highway as well as a left turn deceleration lane.

A review of this driveway shows it is suitable to accommodate the demands of the proposed change of use with site servicing similar to the current demands of the Council administration centre with occasional deliveries and waste collection all undertaken within the site. Such servicing would be managed to not coincide with school pick up and drop off times.

The access is also suitable to provide for heavy vehicles including waste collection and emergency vehicles which may be required by the school from time to time.

Sight Distances

Safe Intersection Sight Distance

- Minimum of 114 metres, 123 metres desirable for the posted speed limit of 60km/hr on the New England Highway

A review of the road alignment along the site frontage indicates that these sight distances can be achieved with sight distances from the existing driveway exceeding 150 metres in both directions along the New England Highway as shown in Photos 1 and 2.



Photo 1 - View looking west (left out) along the New England Highway from existing driveway crossover.



Photo 2 - View looking east (right out) along the New England Highway from existing driveway crossover.

Queueing at Site Entry

Observations on site confirmed that there are minimal delays for vehicles entering the site from the New England Highway with free flow for left hand turns and suitable gaps in opposing traffic for right turns into the site.

Typical of school demands, motorists arriving and leaving the site in the morning are likely to be disbursed throughout the half hour or so prior to school starting reducing the numbers of vehicles needing to turn right out of the site at any one time. Queues in the afternoon, when vehicles are leaving together, shall be contained within the site and benefit from lower flows on the New England Highway at this time of the day. The Sidra assessment detailed below demonstrates that queues associated with the project are acceptable being less than 10-16m. This will ensure that vehicles held within the site will not impact on vehicles wishing to turn into the childcare centre with this driveway some 27metres into the site.

Review of Traffic Impacts

Traffic Generation

The Guide to Traffic Generating Developments does not provide standard trip rates for schools or education facilities.

The Trip Generation Surveys - School - Analysis Report prepared by GTA Consultants included surveys of seven regional primary schools throughout New South Wales to determine the average vehicle trips and mode share of these schools. This report indicates average trips rates of 1.23 trips per student in the morning peak and 1.01 trips per student in the afternoon peak, with minimal variation across the schools. This included 65% of students traveling by car with the balance being bus trips, walking or cycling.

By comparison student travel data for a number of Catholic Primary Schools throughout the Maitland Newcastle Diocese indicates an average of 50% of students arriving by car with 42% by bus, 6% walk or ride and 2% attending an OOSH.

The following mode share would therefore be considered appropriate for the longer term development of the school assuming a slightly lower level of bus usage to reflect the reduced availability of bus services within Muswellbrook.

- 60% travel by car
- 35% travel by bus
- 5% walk or cycle

These rates could be improved through the implementation of active travel measures to support non car travel including the promotion of shared trips and bus travel.

As Stage 1 of the proposed school development however will see up to 50 students enrolled in Kindergarten, Year 1 and Year 2 it is anticipated that in the short term there would be a high rate of car usage with the majority of children being dropped to and picked up from the school by parents and carers. Operating hours for the school are proposed as 8:45am to 3pm Monday to Friday.

The majority of pupils will be dropped to school between 8.15-8.45am. As a worst-case scenario, allowing 1 student per vehicle, this would see 100 trips associated with the school (50 inbound, 50 outbound) in the hour 7.45-8.45am, prior to the start of school. In the afternoon the majority of parents are expected to arrive to the school between 2.40pm and 3pm with outbound trips between 3.00 and 3-15pm with again 100 trips (50 inbound, 50 outbound). This is on the basis that there is no OOSH available.

Staff would typically arrive prior to students arriving at the school and would normally depart once the majority of students have left. Staff demands could see an additional 4 trips inbound in the morning and outbound in the afternoon but typically outside of the school peak.

The existing road peak period is 8.15-9.15am which will coincide with the school morning peak however the afternoon peak will be earlier than the existing road peak which is 4.30-5.30pm. The future demands for the site are shown in Table 4 below. The school would generate minimal traffic demands throughout the day with total daily trips therefore being the cumulative trips within the morning and afternoon peaks.

Table 4 – Future Site Flows Stage 1

Peak	School		Child Care		Combined	
	In	Out	In	Out	In	Out
AM	50	50	14	14	64	64
PM	50	50	7	10	57	60

For the future scenario (K-6) the above mode split has been applied with 60% to arrive by private vehicle. For these private vehicle trips an average vehicle occupancy of 2 students per vehicle has been adopted, to account for shared trips between siblings and carpooling which typically occurs for school developments. Allowing for 165 students this would see 99 travel by car with 50 vehicles arriving and departing. This would see the future flows consistent with those for Stage 1.

Staff demands could see an additional 15 trips inbound in the morning and outbound in the afternoon but typically outside of the school peak.

Net Increase

The existing Muswellbrook Shire Council Administration Building generates in the order of 47 trips in the morning peak hour and 14 trips in the afternoon prior to the road peak hour. Over the course of a day, the demands generated by the Council Administration Building would include staff travelling off-site as well as local residents

attending the site to resolve Council matters. It is assumed that daily trips could be in the order of 100-200 trips per day.

Allowing for these, the additional trips generated by the proposed school development is 53 trips in the morning peak and 86 in the afternoon school peak.

Traffic Distribution

Given the large catchment area expected for the school, the distribution of these trips onto the New England Highway is expected to be equally distributed to the east and west of the site. This reflects strong residential catchments within both Singleton and Muswellbrook.

The majority of traffic is expected to access the site off the New England Highway given that this provides access to the main carpark and drop off area. Staff shall be directed to use the existing car park at the end of Eucalypt Avenue which is consistent with its current use.

The distribution of traffic associated with the school is summarised in Figure 3.

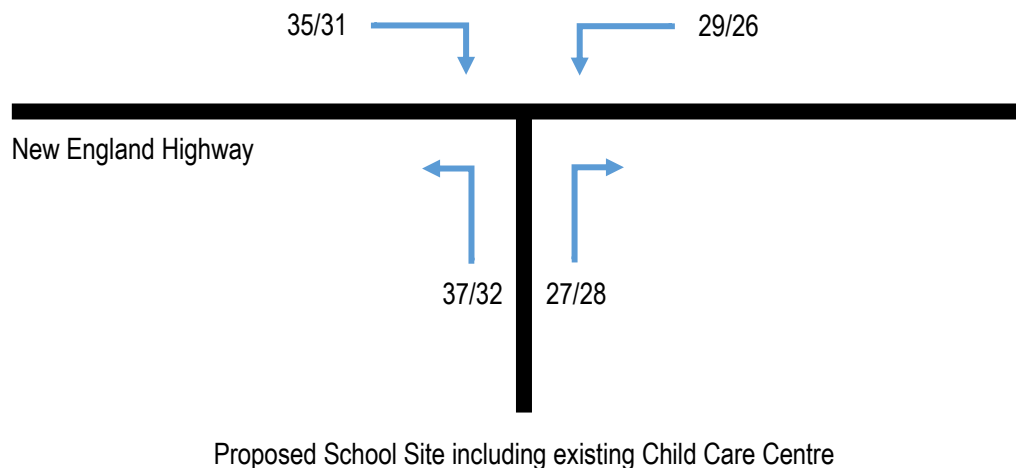


Figure 3 - Distribution of traffic including the childcare centre onto the New England Highway (AM/PM)

Impacts to Road Capacity

The impact of the additional trips on the New England Highway shall be negligible with 53 trips in the AM and 86 in the school afternoon peak period. Whilst the additional afternoon trips are higher due to the end of school day not coinciding with the existing operations on site, the afternoon pick up period also does not coincide with the local road peak. The reduced traffic during the afternoon peak will benefit the road capacity.

Allowing for the traffic distribution above, the proposed development could see traffic flows onto the New England Highway (west of the site) increase by up to 22 vph during the morning peak. This represents a minimal increase of less than 2% over the existing situation and shall therefore have a minimal and acceptance impact upon the capacity of the New England Highway.

With regard to mid-block capacity, the existing traffic volumes together with the additional traffic demands associated with the development would be less than 650 vph in either direction along the New England Highway,

and are therefore well within the capacity of this road. Similarly, the future scenario would still be less than 650 vph in either direction.

Impacts to Intersection Performance

The key intersection that could be impacted upon by the proposed development is the existing site access off the New England Highway. To determine the existing operation and quantify the potential impacts of the proposed development, the existing site access has been assessed using *Sidra Intersection 8* with the following three scenarios considered:

1. 2020 Baseline Assessment - Allowing for surveyed traffic volumes adjusted to account for the potential impacts of Covid-19 (+10%).
2. 2020 Plus Development - Allowing for the above assessment together with *additional* traffic generated by the future K-6 proposal. This has been assessed with a sensitivity test of +25% for the school traffic.
3. 2030 Future Design Year - Allowing for the above assessments together with 2% per annum growth along the New England Highway to account for ongoing development along this corridor including the Eastbrook Links Estate.

No allowances have been made for the Muswellbrook Bypass which may see reduced traffic flows in this area in the future.

The results of this modelling are summarised below.

Table 5 - Sidra Results - Site Access - 2020 Existing Situation Assessment (AM/PM)

Approach	Movement	Level of Service	Ave. Delay (s)	95% Queue (m)
Site Access	Left	A / A	7.4 / 5.8	0.9 / 1.7
	Right	B / B	22.4 / 18.3	
New England Highway (Westbound)	Left	A / A	5.5 / 5.5	0.0 / 0.0
New England Highway (Eastbound)	Right	A / A	9.5 / 7.7	1.4 / 0.2

Table 6 - Sidra Results - Site Access - 2020 Plus Development (AM/PM)

Approach	Movement	Level of Service	Ave. Delay (s)	95% Queue (m)
Site Access	Left	A / A	10.5 / 7.2	10.4 / 8.3
	Right	C / B	30.9 / 23.2	
New England Highway (Westbound)	Left	A / A	5.5 / 5.5	0.0 / 0.0
New England Highway (Eastbound)	Right	A / A	10.1 / 8.1	3.4 / 1.5

The above results demonstrate that the current intersection layout can accommodate the development traffic flows including a 25% sensitivity loading with minimal impact with the delays and queues being very low for the key turning movements.

The intersection was then assessed for the future design year of 2030, allowing for 2% background growth on the New England Highway in both directions. The results of this Sidra modelling are presented below.

Table 7 - Sidra Results - Site Access - 2030 plus Development traffic Assessment (AM/PM)

Approach	Movement	Level of Service	Ave. Delay (s)	95% Queue (m)
Site Access	Left	B / A	19.7 / 10.7	16.5 / 11.9
	Right	D / C	54.1 / 35.8	
New England Highway (Westbound)	Left	A / A	5.5 / 5.5	0.0 / 0.0
New England Highway (Eastbound)	Right	A / A	11.9 / 8.8	4.0 / 1.7

The above results demonstrate that the current intersection control is adequate for the future design year of 2030.

Construction

As the project provides for the adaptive reuse of the existing building construction is expected to primarily involve internal fit out and modifications to the building.

The subject site is large with adequate space to accommodate the parking and work zone requirements for such work.

Traffic demands are expected to be lower than historically generated by the site given that the Council administration building also accommodated the parking and traffic demands for fleet vehicles and various Council service vehicles. There is therefore no requirement for a Construction Traffic and Pedestrian Management Plan for this stage of the school development.

Consultation with Road Authority

Additional comments/feedback from TfNSW were sought via the Department at the outset of this project. At that time no additional information/direction could be provided.

Upon finalisation of the assessment further comment was sought and a preliminary copy of this assessment provided.

At this time however no response has been received. It is however noted that this development would be considered traffic generating and as such the application will be forwarded upon lodgement to TfNSW for concurrence.

Conclusion

From the site visit completed and the above assessment of parking, traffic and access against the requirements of the Guide to Traffic Generating Developments and Muswellbrook Development Control Plan 2009, it is concluded that the proposed development shall have an acceptable impact upon the surrounding road network and should be recommended for approval.

- The additional traffic movements generated by the development shall have an acceptable impact on the New England Highway and the site access. Whilst morning trips coincide with the existing road network the existing use on site also generates traffic demands at this time with the impact of additional trips acceptable. In the afternoon the school will generate traffic outside of the road peak and the change of use will reduce the traffic volumes at this later time. Traffic generated by the development is well within the capacity of the local road network.

- Sight lines at the existing site access have been reviewed on site and satisfy the minimum requirements for a 60km/hr speed zone.
- The driveway provides for two-way movements into and out of the site.
- The provision of car parking exceeds the requirements of the Muswellbrook Development Control Plan 2009 and includes the provision of accessible parking. There is adequate parking and holding space within the site to provide for both Stage 1 and the future scenario.
- Existing shared pathways provide access to the site from the Eastlinks Estate to the east with connection to the surrounding streets also available via Eucalypt Avenue
- School zones would be subject to application to TfNSW as detailed by TfNSW Centre for Road Safety.

Please feel free to contact me on 4032 7979 should you require any additional information.

Yours sincerely



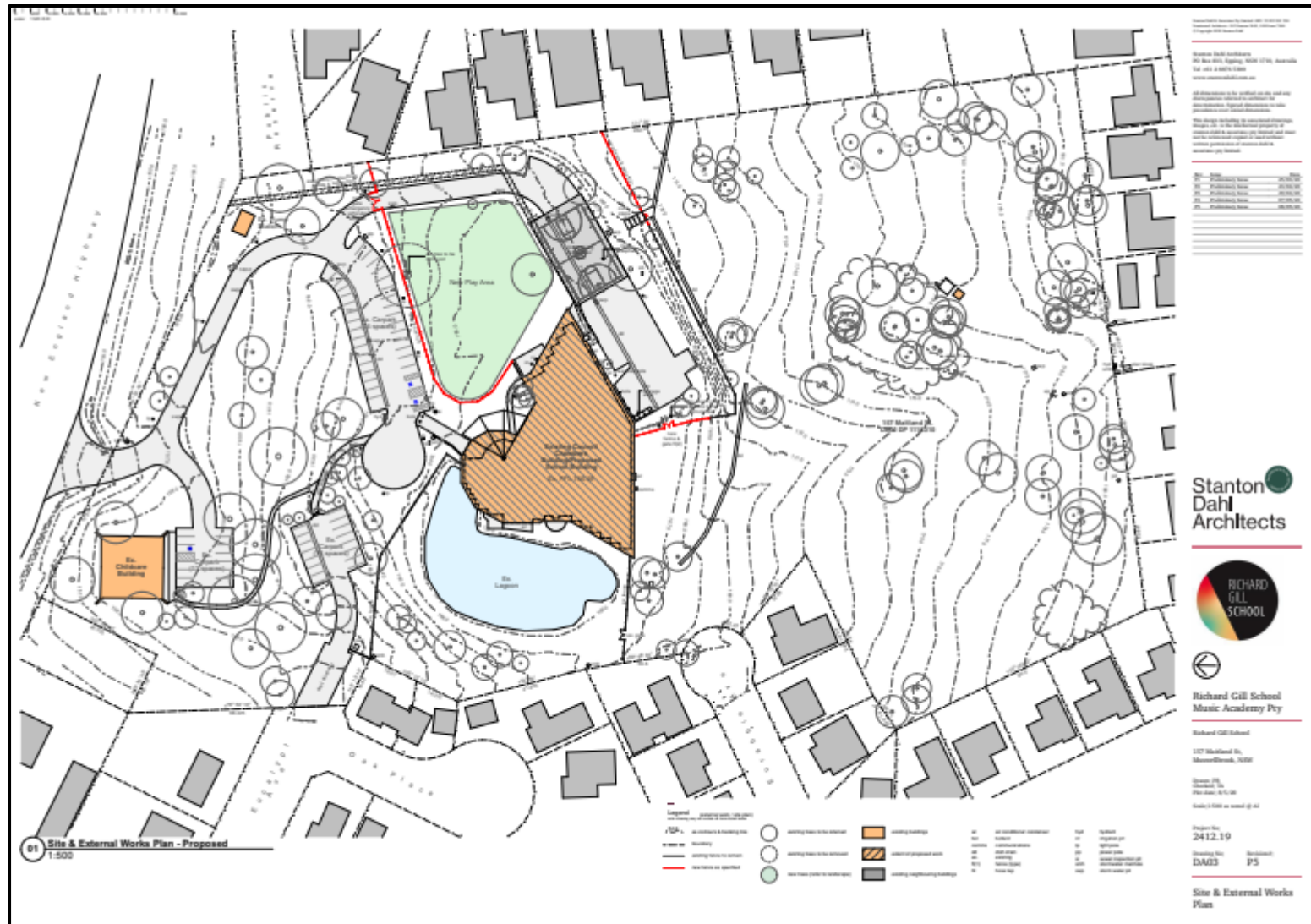
Sean Morgan

Director

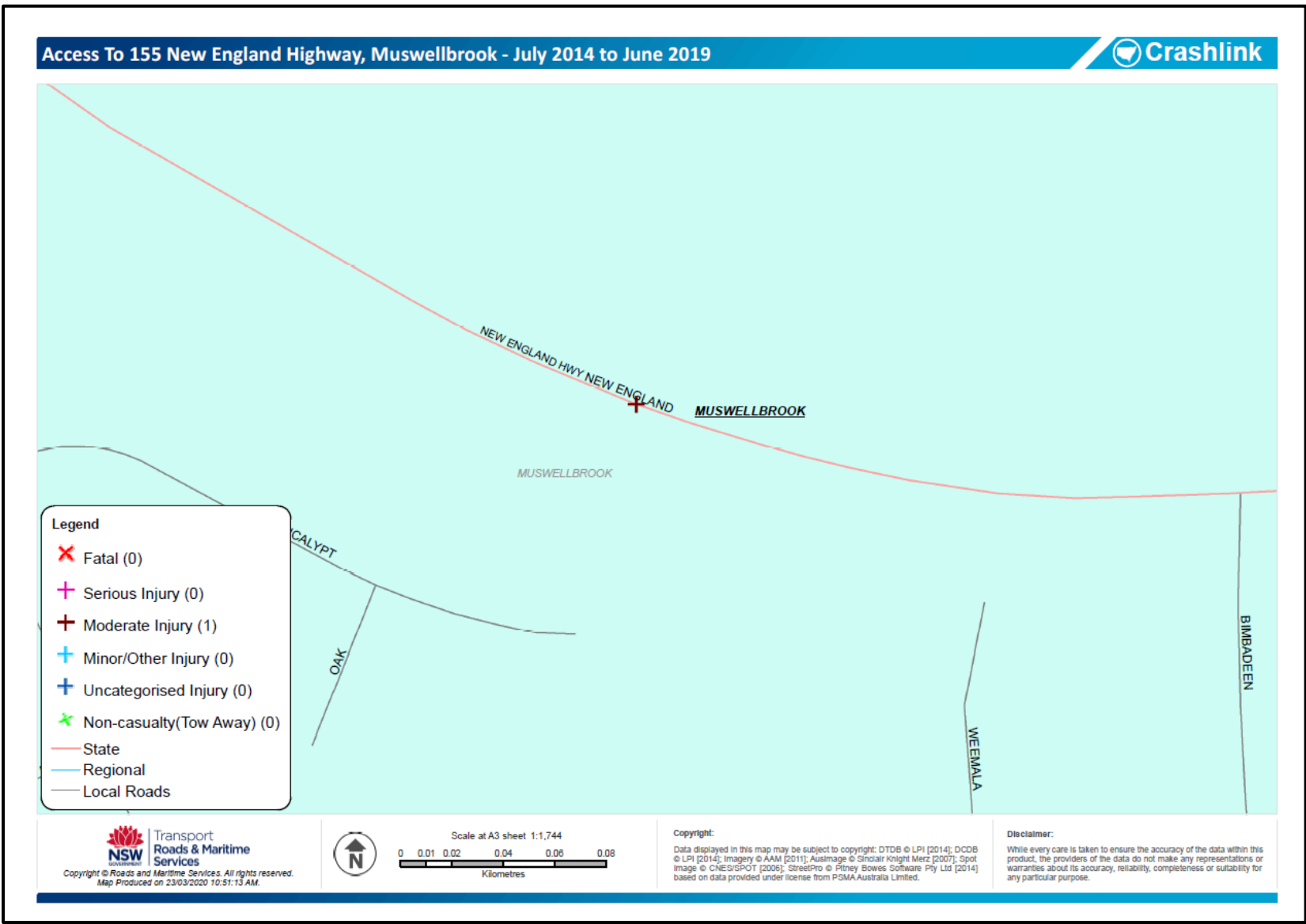
List of Attachments:

- Attachment A - Site Plan
- Attachment B – TfNSW Crash Data
- Attachment C – Traffic Surveys
- Attachment D – Muswellbrook Bypass Alignment Options
- Attachment E - Interpreting Sidra Results
- Attachment F – SEARS
- Attachment G – Green Travel Plan

Attachment A – Site Plan



Attachment B – Crash Data



NSW
GOVERNMENT

Transport
for NSW

Centre for Road Safety

Crash self reporting, including self reported injuries began Oct 2014. Trends from 2014 are expected to vary from previous yrs. More unknowns are expected in self reported data. Reporting yrs 1996-2004 & 2019 Q3 onwards contain uncategorised inj crashes.

Attachment C: Survey Data



Turn Count Summary

Location: Entry at New England Hwy, Muswellbrook

GPS Coordinates:

Date: 2020-03-19

Day of week: Thursday

Weather:

Analyst: CT

Total vehicle traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:01	0	0	0	0	67	0	1	0	0	0	59	1	128
07:15	0	0	0	0	98	0	1	0	0	0	65	1	165
07:30	0	0	0	0	119	0	2	0	0	0	54	4	179
07:45	0	0	0	2	124	0	5	0	0	0	58	5	194
08:00	0	0	0	3	146	0	2	0	1	0	67	7	226
08:15	0	0	0	5	123	0	3	0	0	0	67	6	204
08:30	0	0	0	4	119	0	2	0	0	0	71	6	202
08:45	0	0	0	5	129	0	6	0	0	0	82	18	240
09:00	0	0	0	1	133	0	5	0	2	0	95	4	240

Car traffic

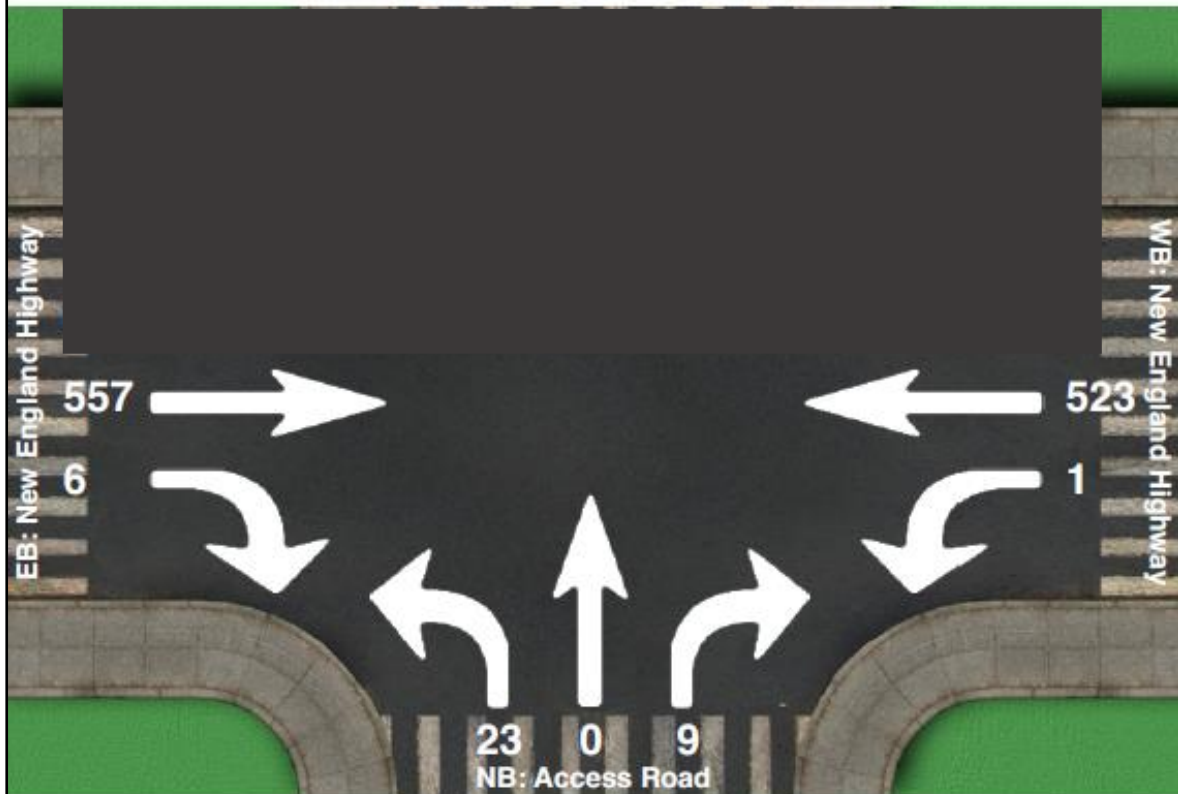
Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:01	0	0	0	0	59	0	1	0	0	0	53	1	114
07:15	0	0	0	0	88	0	1	0	0	0	56	1	146
07:30	0	0	0	0	113	0	2	0	0	0	44	4	163
07:45	0	0	0	2	109	0	5	0	0	0	47	5	168
08:00	0	0	0	3	122	0	2	0	1	0	57	7	192
08:15	0	0	0	5	107	0	3	0	0	0	57	6	178
08:30	0	0	0	4	109	0	2	0	0	0	60	6	181
08:45	0	0	0	5	121	0	6	0	0	0	69	18	219
09:00	0	0	0	1	127	0	5	0	2	0	87	4	226

Trucks traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:01	0	0	0	0	8	0	0	0	0	0	6	0	14
07:15	0	0	0	0	10	0	0	0	0	0	9	0	19
07:30	0	0	0	0	6	0	0	0	0	0	10	0	16
07:45	0	0	0	0	15	0	0	0	0	0	11	0	26
08:00	0	0	0	0	23	0	0	0	0	0	10	0	33
08:15	0	0	0	0	16	0	0	0	0	0	10	0	26
08:30	0	0	0	0	10	0	0	0	0	0	11	0	21
08:45	0	0	0	0	8	0	0	0	0	0	13	0	21
09:00	0	0	0	0	6	0	0	0	0	0	8	0	14

Intersection Peak Hour

Location: Access Road at New England Highway, Muswellbrook
GPS Coordinates:
Date: 2020-03-19
Day of week: Thursday
Weather: Sunny
Analyst: TN



Intersection Peak Hour

16:30 - 17:30

Turn Count Summary

Location: Access Road at New England Highway, Muswellbrook

GPS Coordinates:

Date: 2020-03-19

Day of week: Thursday

Weather: Sunny

Analyst: TN

Total vehicle traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
15:26	0	0	0	0	2	0	0	0	0	0	0	0	2
15:30	0	0	0	0	84	0	5	0	1	0	126	6	222
15:45	0	0	0	0	107	0	4	0	2	0	107	1	221
16:00	0	0	0	2	117	0	3	0	2	0	143	3	270
16:15	0	0	0	0	105	0	4	0	4	0	115	4	232
16:30	0	0	0	1	135	0	7	0	2	0	156	1	302
16:45	0	0	0	0	128	0	4	0	4	0	141	4	281
17:00	0	0	0	0	136	0	6	0	1	0	125	0	268
17:15	0	0	0	0	124	0	6	0	2	0	135	1	268
17:30	0	0	0	0	1	0	0	0	0	0	2	0	3

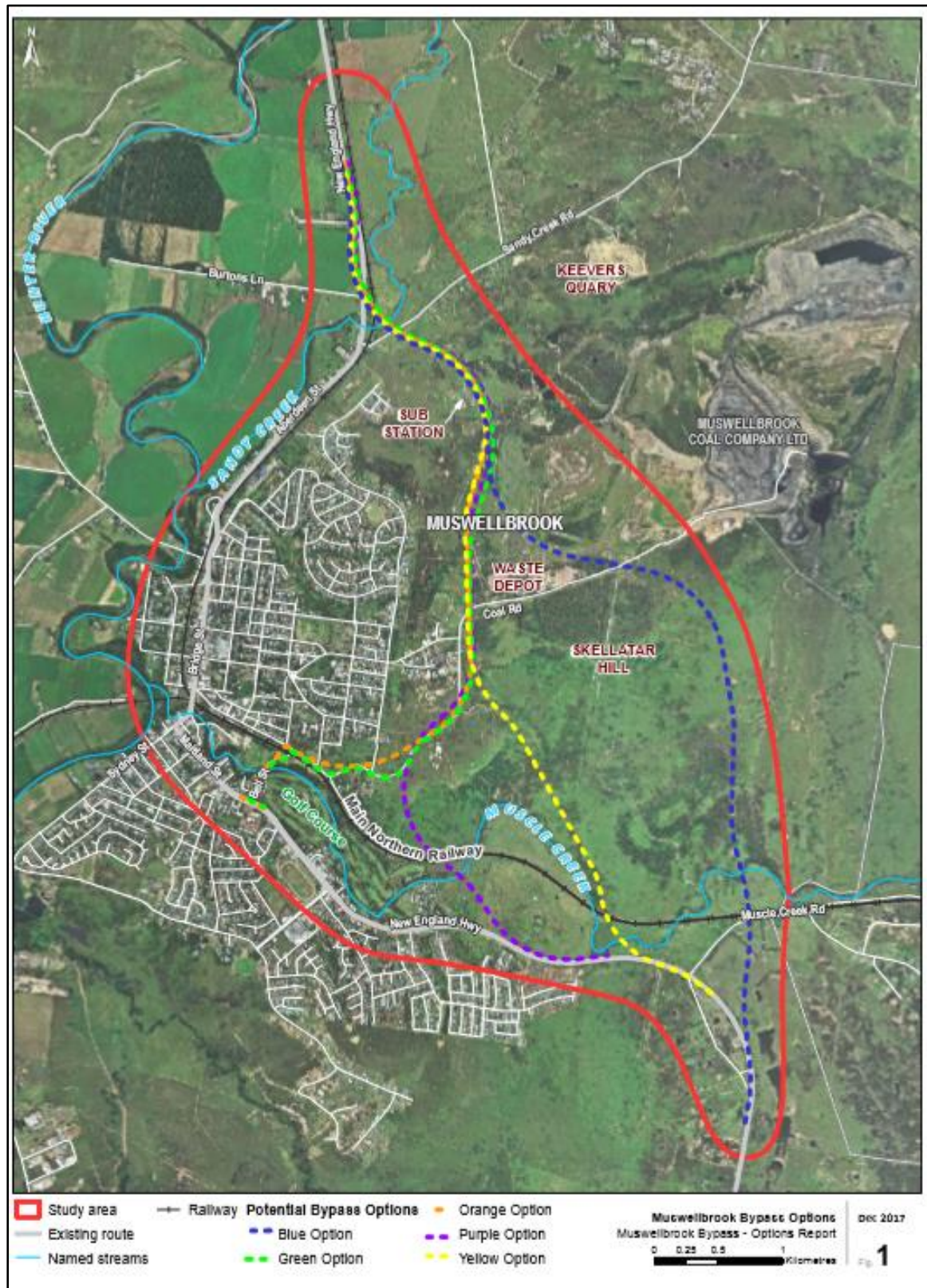
Car traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
15:26	0	0	0	0	2	0	0	0	0	0	0	0	2
15:30	0	0	0	0	80	0	5	0	1	0	115	6	207
15:45	0	0	0	0	101	0	3	0	2	0	100	1	207
16:00	0	0	0	2	101	0	3	0	2	0	129	3	240
16:15	0	0	0	0	92	0	4	0	4	0	107	4	211
16:30	0	0	0	1	126	0	7	0	2	0	153	1	290
16:45	0	0	0	0	116	0	4	0	4	0	124	4	252
17:00	0	0	0	0	126	0	6	0	1	0	121	0	254
17:15	0	0	0	0	117	0	6	0	2	0	129	1	255
17:30	0	0	0	0	0	0	0	0	0	0	2	0	2

Truck traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
15:26	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	4	0	0	0	0	0	10	0	14
15:45	0	0	0	0	5	0	1	0	0	0	4	0	10
16:00	0	0	0	0	14	0	0	0	0	0	14	0	28
16:15	0	0	0	0	12	0	0	0	0	0	8	0	20
16:30	0	0	0	0	9	0	0	0	0	0	3	0	12
16:45	0	0	0	0	12	0	0	0	0	0	17	0	29
17:00	0	0	0	0	10	0	0	0	0	0	4	0	14
17:15	0	0	0	0	7	0	0	0	0	0	6	0	13
17:30	0	0	0	0	1	0	0	0	0	0	0	0	1

Attachment D: Muswellbrook Bypass Alignment Options



Attachment E: Criteria for Interpreting Sidra Results

The capacity of an urban road is typically limited by the overall performance of the various intersections. The RMS Guide to Traffic Generating Developments specifies delays and queuing as the key performance measures for assessing the effectiveness of both signalised and unsignalised intersections. Degree of saturation is also recommended for assessing the performance of roundabouts and traffic signals.

A summary of the key criteria for assessing the operation of signalised and unsignalised intersections is provided below.

Average Delays

The level of service criteria for each intersection type is outlined below.

Level of Service	Average Delay per Vehicle (secs)	Traffic Signals & Roundabouts	Give Way & Stop Signs
A	$d \leq 14.5$	Good operation.	Good operation.
B	$14.5 \leq d \leq 28.5$	Good with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
C	$28.5 \leq d \leq 42.5$	Satisfactory.	Satisfactory, accident study required.
D	$42.5 \leq d \leq 56.5$	Operating near capacity.	Near capacity, accident study required.
E	$56.5 \leq d \leq 70.5$	At capacity; at signals, incidents will cause excessive delays. Roundabout requires other control mode.	At capacity, requires other control mode.
F	$70.5 < d$	Failure.	Failure.

Degree of Saturation

Degree of Saturation (DoS) is another measure for assessing the performance of an intersection. It is usually calculated based on as the highest ratio of traffic volumes on an approach to its theoretical capacity and is a measure of the utilisation of available green time at traffic signals.

For intersections controlled by traffic signals, both queues and delays increase rapidly as the DoS approaches 1.0, with overflow queuing starting to become a problem at around 0.8-0.85. A satisfactory level of operation is generally achieved when DoS is kept below 0.75

Attachment F: SEARS

Include a transport and accessibility impact assessment, which details, but not limited to the following:

SEARS	Response
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	Existing Situation Pages 1-6
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;	Traffic Generation
· 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;	Page 5
· measures to integrate the development with the existing/future public transport network;	Page 5
· the impact of trips generated by the development on nearby intersections, 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);	Pages 11-12
· 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 3.5 m wide travel lanes), additional bus stops or bus bays;	None required
· 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;	Green Travel Plan Attachment G
· the proposed walking and cycling access arrangements and connections to public transport services;	Page 5
· 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;	Page 7
· proposed bicycle parking provision, including end of trip facilities, in secure, convenient, accessible areas close to main entries incorporating lighting and passive surveillance;	Page 7
· 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;	Page 7
· 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;	All demands can be contained within site
· 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;	Page 4 Page 15
· 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);	Page 9

· the preparation of a preliminary Construction Traffic and Pedestrian Management Plan to demonstrate the proposed management of the impact in relation to construction traffic addressing the following: - o assessment of cumulative impacts associated with other construction activities (if any); - o details of construction program detailing the anticipated construction duration and highlighting significant and milestone stages and events during the construction process; - o details of anticipated peak hour and daily construction vehicle movements to and from the site; - o details of on-site car parking and access arrangements of construction vehicles, construction workers to and from the site, emergency vehicles and service vehicle; - o details outlining the maintenance of pedestrian and bicycle rider movements along footways and cycleways at all times during construction activities. - Should the development require closure of facilities, details of adequate safety and diversion measures will be put in place to limit the time delay and detour distances; and - o details of temporary cycling and pedestrian access during construction.	Page 15
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Attachment F: Green Travel Plan

Having undertaken an analysis of the opportunities for active travel to and from the school by both staff and parents/carers, the following provides an action plan for sustainable travel to the Richard Gill Music School. As a new facility beginning with infants aged students many active travel opportunities will be relevant as the school grows and the cohort matures. Surveying of students and staff and monitoring of facilities can be undertaken to enable improvements to the action plan and to maintain relevance to the school community over time. The details for this shall be established in conjunction with the school principal.

The objective of this Green Travel Plan is to identify and implement measures that will implement and support active transport and the use of public transport while reducing the dependence on car-based travel. For the purpose of the current assessment a conservative target of 40% has been adopted as a realistic objective for travel by means other than private vehicle.

1.1 Active Transport	Implementation
Introduce the role of Transport Coordinator to oversee the implementation and management of this Green Travel Plan. - Undertake a staff and student survey to determine initial travel patterns and provide a baseline for implementation and monitoring. - Review the plan in conjunction with the surveys, determine mode share targets and prioritise implementation around survey results and the implementation timeline provided in this plan. - monitor the effectiveness of this plan through regular reviews once the majority of the measures have been implemented then an ongoing annual review with the overarching target to be to reduce dependence on car-based travel.	Upon commencement
Ensure that staff or parent concerns or complaints relating to travel or parking are fed back to the Transport Coordinator for review and assessment as appropriate.	Ongoing
Educate staff about their travel choices and provide an information pack to encourage active transport and shared travel. Include trip planning, cycle routes, end of trip facilities and bus timetable information.	Upon commencement
Provide future staff with information about their travel choices as part of their orientation.	3 months and ongoing
Provide staff and parents with information that makes their travel choices easy to make and less car reliant.	3 months
1.2 Public Transport	
Investigate opportunity to provide shuttle bus/minibus services to connect the school with the school community	Immediate and Ongoing
Ensure new staff who are open to travelling by bus or train have sufficient information and support for this to be a positive experience.	Immediate
Add Transport for NSW trip planning information to individual workstations and the school website.	Immediate
Provide information about public transport to new staff as part of their orientation	3 months
Liaise with local bus providers to include the school in future school bus services	Ongoing
1.3 Taxi and Uber Services	
Provide information for staff on accessing local taxi and Uber services.	3 months
1.4 Carpooling and Car Sharing	
Investigate the scope of establishing a staff carpooling program.	3 months

Provide priority staff parking within the school grounds for staff that carpool	Immediate
Encourage families to implement carpooling and shared travel arrangements for the pick up and drop off of children	Immediate
1.5 Bicycle and Pedestrian Travel	
Ensure that those who are intending to ride are well supported including allocation of lockers, showers, provision of route information etc.	Immediate
Provide secure and weatherproof bike storage space for staff	3 months
Monitor ongoing interest in children riding to school and provide suitable bike/scooter storage option so parents can leave bikes at school	Ongoing
Promote annual "Walk Safely to School Day" campaign	May each year
Promote "National Ride to Work Day" and networking with bike rider groups.	October each year
Promote "National Ride2School Day"	March each year Register Term 4
Apply for Grant funding to support Ride to School Day	6 month
Investigate opportunities for Active Paths and Walking Buses in collaboration with the school community. This would be subject to students living locally and could be organised with the support of school volunteers	Ongoing
Promote the health and environmental benefits of walking and cycling to students and staff. Incorporate into the school curriculum where possible.	3-12 months
1.6 Communication Plan	
Using school based communication platforms educate parents and staff of active transport opportunities	3 months
Encourage staff and parents to utilise active transport options through access to accurate travel information	3 months
Liaise with Muswellbrook Shire Council to encourage and promote active transport to the wider community surrounding the school	3 months
Liaise with Muswellbrook Shire Council to support opportunities for pathways to continue to connect the school with future residential developments.	3 months
Liaise with Bicycle Network and other bike user groups to access educational support for cycling and walking programs	3 -12 months

1.7 Monitoring and Review

A Green Travel Plan is a living document which to ensure a successful outcome needs to be monitored and the actions reviewed and modified to support changing circumstances.

Actions implemented should be monitored to ensure they are having a positive impact in achieving the goals of reducing the degree of private car usage, particularly for single drivers or a parent and individual child.

Such a review should be monitored frequently during the first year of implementation or whilst the school cohort is expanding to adjust and modify as necessary. Once the plan has been fully implemented then an annual review is appropriate.