

27 October 2020

P1608 SDA Gillieston Heights School TIA

Stephen Rose Architects
PO Box 159
Morpeth NSW 2321

Attn: Stephen Rose

Dear Stephen,

Proposed school, 209 Cessnock Road, Gillieston Heights, NSW.

Further to your recent email, we have now completed our site work and review of the documentation for the proposed school located at 209 Cessnock Road, Gillieston Heights and have collected traffic data to assist in this traffic and parking assessment. We have reviewed the impacts of the proposed development and provide the following traffic impact assessment to support a development application to Maitland City Council.

This assessment has been prepared in accordance with the Austroads Guidelines and Section 2.3 of the RMS Guide to Traffic Generating Developments, which provides the structure for the reporting of key issues to be addressed when determining the impacts of traffic associated with a development. This guide indicates that the use of this format and checklist ensures that the most significant matters are considered by the relevant road authority.

The report has also taken into consideration the planning requirements outlined in the Maitland Development Control Plan 2011 together with the Section 94 for the locality that allows for significant road upgrades in this location.

It is noted that the school site has current consent for operating as a school with a limit of 40 students. This consent has not yet been acted on and no school activities are occurring on site.

Site Location and Context

The proposed development is located in the suburb of Gillieston Heights, on land to the north of Gillieston Road as shown in Figure 1. It is located to the north of the Gillieston Heights Urban Release Area.

The surrounding land use comprises of mostly rural land to the north and west, with low density residential housing to the south. There is an existing poultry farm located to the west of the site at 18 Gillieston Road and Gillieston Heights Public School is also located to the west, on the corner of Gillieston Road and Ryans Road.

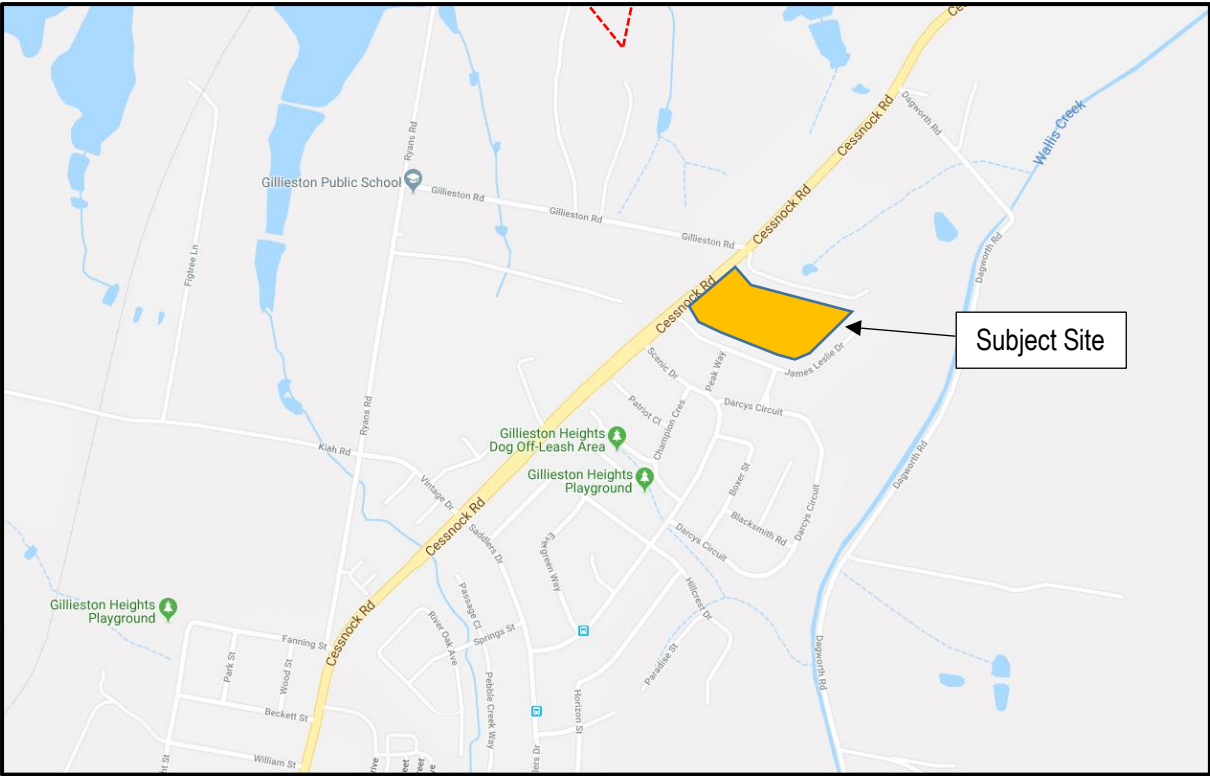


Figure 1 – Subject site in the context of the local road network

A summary of the key issues and their comments are provided below:

Item	Comment
Existing Situation	
2.1 Site Location and Access	The proposed development is located in the suburb of Gillieston Heights, on land to the east of Cessnock Road as shown in Figure 1 above. It comprises a single lot with vehicle access provided direct from Gillieston Road. The site has an existing approved DA to operate a school with a limit of 40 students.
2.2.1 Road Hierarchy	The major road through the locality is Cessnock Road, which forms part of the state road network providing an important connection between Kurri Kurri (via Main Road) and the Hunter Expressway (south), and extending north through Heddon Greta, Cliftleigh and Gillieston Heights to the New England Highway at Maitland. It provides a single lane of travel in each direction along most of its length, widening to two lanes between Russell Street and north of Vintage Drive / Saddlers Drive. Pedestrian footpaths are provided inconsistently along its length with street lighting provided in the locality of Gillieston Road and Vintage Drive. The posted speed limit on Cessnock Road is 70 km/hr, decreasing to 60 km/hr south of Vintage Drive and increasing to 80 km/hr to the south of Russell Street. Reduced speeds also apply within the locality of Cliftleigh and Heddon Greta. Cessnock Road connects with Gillieston Road via a 'Stop Sign' controlled T-intersection, allowing for all turning movements with Cessnock Road having priority. Whilst there are no turn treatments provided, a wide sealed shoulder on the eastern side of Cessnock Road allows for vehicles travelling south through this intersection to pass around a vehicle propped waiting to turn right into Gillieston Road. Further south, Cessnock Road forms a four-way signal controlled intersection with Saddlers Drive and Vintage Drive which allows for all movements. Gillieston Road is a local street located opposite the northern boundary of the subject site which provides a sealed pavement in the order of 6 metres allowing for a single lane of travel in each direction. Shoulders on each side of the road are unsealed and display a varying degree of wear. No street lighting or pedestrian facilities are provided. The posted speed limit on Gillieston Road is 50 km/hr with a 40km/hr school zone located to the western end of the street. Gillieston Road connects with Ryans Road at its western end via a priority controlled T-junction which allows for all turning movements. Vintage Drive is a local street in the order of 11 metres wide allowing for a single lane of travel in each direction with kerbside parking to both sides. Street lighting is provided although there are no pedestrian pathways. The posted speed limit on Vintage Drive is 50 km/hr.

Item	Comment
	Vintage Drive forms a four-way 'Stop Sign' controlled intersection with Ryans Road and Kiah Road which allows for all turning movements with Ryans Road having priority. Ryans Road is a local in the order of 6 metres wide allowing for a single lane of travel in each direction with some opportunities for kerbside parking. Kerb and guttering is provided along the eastern side of Ryans Road only with unsealed shoulders and verge opposite. Adjacent to Gillieston Heights Public School, there is significant wear to the pavement on Ryans Road with no kerb or guttering provided in this location. Saddlers Road is a local road providing access to the residential development in this location. It provides a single lane of travel in both directions with a width of 11.5 metres. Scenic Drive to the south of the subject site provides a similar level of local residential road, allowing for on-street parking and a single lane of travel in both directions. These roads operate under the posted speed limit of 50 km/h. The surrounding roads and intersections are local streets under the control and care of Maitland City Council.
2.2.2 <i>Current and Proposed Roadworks, Traffic Management Works and Bikeways</i>	A review of the Maitland Development Control Plan 2011, Part F, Chapter 5 - Gillieston Heights Urban Release Area indicates that development fronting Gillieston Road shall include provisions for the widening of Gillieston Road to an 11 metre wide carriageway as well as the provision of suitable pedestrian and cyclist links. The intersection of Gillieston Road / Cessnock Road has been identified for upgrades, however, advice from Maitland Council indicates that there are no plans available for these upgrades at this time. The requirement for these upgrades is to be as part of ongoing development within the Gillieston Heights West Precinct and also needs to consider TfNSW requirements. To the south of Gillieston Heights, in the locality of Testers Hollow, upgrades are planned which will raise the height of the road to allow for access during flood events. It is noted however that this upgrade will allow for a single lane of travel only in each direction.
2.3 Traffic Flows	As part of the project work, Seca Solution has collected traffic data on Gillieston Road to determine the current 2-way traffic flow adjacent to the subject site. These surveys were completed on 22nd September 2020 to cover the morning and afternoon peak periods and specifically for the morning drop off period and afternoon pick up period for the school. The traffic surveys provided the following 2-way summary: Between 8.30 and 9.30 AM the 2-way traffic flow was 1,537 vehicles with 60% northbound Between 3.30 and 4.30 PM the 2-way traffic flow was 1,871 vehicles with 55% southbound

Item	Comment
	Previous to these surveys, Seca Solution have also collected traffic data at the following intersections to determine the current peak hour traffic volumes and observe the operation of the road network: • Cessnock Road / Gillieston Road • Cessnock Road / Saddlers Drive / Vintage Drive These surveys were completed on a typical weekday morning (7:30am to 9:30am) and afternoon (2:30pm to 5:30pm) on Tuesday 16th October 2018. These times also reflect the peak periods associated with Gillieston Heights Public School. Detailed survey data is provided in Attachment A. Two-way traffic flows on Gillieston Road are low with 45 vph during the morning and 34 vph during the afternoon. Increased traffic volumes occur on Gillieston Road during the school drop off and pickup, although this does not coincide with the afternoon peak hour on Cessnock Road.
	TfNSW guidelines indicate that peak hours typically represent between 8-12% of daily traffic volumes. Adopting an average of 10%, this would indicate that the daily traffic flows along Cessnock Road are in the order of 18,000 vehicles per day (vpd). It is noted that the traffic flows along this length of road have significantly increased with the opening of the Hunter Expressway to the south of the location providing an attractive alternative route between Newcastle and Maitland. Daily flows on Gillieston Road are significantly lower, in the order of 450 vpd.
2.3.2 AADT	There is no current valid AADT data available in the locality.
2.3.3 Daily Traffic Flow Distribution	The traffic surveys indicate a high demand for northbound travel along Cessnock Road during the morning, which reflects commuters travelling towards employment opportunities to the north of the site and along the New England Highway. These flows are tidal with the reverse occurring the afternoon. Over the course of a day, traffic would be reasonably balanced along Cessnock Road. Flows on Gillieston Road comprise of mostly local residents and trips associated with Gillieston Heights Public School, which sees vehicles both inbound and outbound during the peak periods.
2.3.4 Vehicle Speeds	No speed surveys were completed as part of the study work, however given the high volume of traffic on Cessnock Road during the peak periods, vehicles would typically travel at or below the posted speed limit. Cessnock Road provides a good road alignment, which may encourage vehicles to travel above the posted speed limit outside of the peak periods when traffic demands are lower.
2.3.5 Existing Site Flows	The subject site does not currently generate any traffic flows.
2.3.6 Heavy Vehicle Flows	Cessnock Road is an approved B-double route which sees a moderate demand for heavy vehicles travelling along this road each day between the

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	New England Highway and Hunter Expressway. It also forms part of a bus route with several bus services operating along this road during the peak periods. Based on the survey data collected for Cessnock Road, heavy vehicles represent in the order of 6% of total traffic during the morning peak, and 3% of total traffic during the afternoon. Gillieston Road does not provide a through connection for heavy vehicles although several buses were observed to use Gillieston Road to access Gillieston Heights Public School during the normal school drop off and pickup. Maitland City Council has indicated that there is an existing approval for B-Double access along Gillieston Road associated with the adjacent poultry farm. Whilst no trucks associated with the poultry farm were noted during the surveys or site work it is understood that the majority of heavy vehicle movements associated with this type of land use occur at night with the movement of the birds.
2.3.7 <i>Current Road Network Operation</i>	Observations on site indicate that the local roads and intersections typically operate to an acceptable standard although there can be considerable delays for vehicles turning right into or out of Gillieston Road onto Cessnock Road during the peak periods. For vehicles turning right out of Gillieston Road, the high through traffic volumes on Cessnock Road create minimal gaps to enable vehicles to complete this turn. There are some gaps created by the upstream traffic signals at Saddlers Drive / Vintage Drive however, which assists vehicles turning right into Gillieston Road. A wide shoulder on the eastern side of Cessnock Road allows southbound vehicles to pass around another vehicle propped whilst waiting for a suitable gap to turn right into Gillieston Road. The signalised intersection of Cessnock Road / Saddlers Drive / Vintage Drive currently provides an acceptable standard of operation with minimal delays and queueing observed during the peak periods. The RMS Guide to Traffic Generating Development provides typical mid-block capacities for urban roads. For Cessnock Road, which provides an arterial road function with a single lane of travel in each direction, its mid-block capacity is indicated as 900 vph per direction. The RMS Guide also indicates that increased capacities of 1,200-1,400 vph (per direction) can be achieved depending upon the traffic conditions and delays due to intersections etc. The current traffic volumes on Cessnock Road are in the order of 900 vph northbound during the morning and 1026 vehicles southbound during the afternoon peak periods. This corresponds with an overall Level of Service (LoS) E, which reflects Cessnock Road operating at or close to its capacity. At these volumes, drivers have very limited freedom to select their desired travel speed and minor disturbances to the traffic stream are likely to cause significant congestion.
2.4 Traffic Safety and Accident History	A review of accident data provided by TfNSW (Attachment B) indicates that there has been only a single accident recorded in the vicinity of the subject

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	site over the 5 year period between 2013 and 2018. This accident involved a rear end collision with a vehicle travelling southbound along Cessnock Road. No other accidents have been recorded along Gillieston Road. At present, there are no turn treatments provided at the intersection of Cessnock Road / Gillieston Road, which sees vehicles turning into Gillieston Road either slowing down or stopping within the through traffic lanes on Cessnock Road. Whilst this increases the risk of rear end collisions, the demand for these movements is low, and the wide shoulder on the eastern side of Cessnock Road allows for a southbound vehicle to pass another vehicle propped when waiting to turn right into Gillieston Road. All other roads and intersections are generally well aligned and provide an acceptable level of traffic safety as reflected in the low number of accidents recorded at these intersections over this period.
2.5 Parking Supply and Demand	
2.5.1 On-street Parking Provision	There are limited parking controls along Cessnock Road with the existing development to both sides of the road allowing for off street parking.
2.5.2 Off-street Parking Provision	No formal off-street parking is available in the locality.
2.5.3 Current Parking Demand and Utilisation	There is very limited parking demands along Cessnock Road in the locality of the subject site.
2.5.4 Short term set down or pick up areas	There are no set down or pick up areas in the vicinity of the site.
2.6 Public Transport	
2.6.1 Rail Station Locations	The nearest rail station is located at Maitland approximately 2.5km to the north and accessible by car or bus along Cessnock Road.
2.6.2 Bus Stops and Associated Facilities	Bus stops are provided on both sides of Cessnock Road with the nearest bus stop located immediately north of Gillieston Road. This stop provides both seating and shelter.
2.6.3 Transport Services	Bus services operate along Cessnock Road through the locality with services provided by Rover Coaches including: • Route 164: Cessnock to Maitland - Hourly services between 5am and 8pm. • Route 166: Kurri Kurri to Stockland Green Hills - Services every 1-3 hours between 7am and 6pm. Several school buses also operate through the locality with services using Gillieston Road to access Gillieston Heights Public School.
2.7 Pedestrian Network	A shared pathway has recently been constructed along the eastern side of Cessnock Road between Scenic Drive and Dagworth Road. This pathway is planned to be extended to the New England Highway.

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2.8 Other Developments	A review of the Maitland Development Application Tracker indicates that a large residential development is proposed off Gillieston Road to the west of the site, together with ongoing development within the Gillieston Heights Urban Release Area. Ongoing residential development is also occurring to the south of Gillieston Heights within the suburbs of Cliftleigh and Heddon Greta.
The Development	
3.1.1 Nature of Development	The proposal allows for the development of the existing school, with Stage 2A allowing for 120 students and 2B to 2E increasing to 360 students. Total staff numbers will be in the order of 25. The Masterplan allows for all traffic to enter and exit the site off Cessnock Road only via a left in and left out movement, with on-site parking for staff and students as well as a drop off / pick up zone adjacent to Cessnock Road. A concept plan for the masterplan development is provided in Attachment A. A breakdown of the school growth is provided below: • 2022: 35 primary, 5 secondary + 5 staff (approved DA on site) • 2023: 70 primary, 17 secondary + 10 staff • 2024: 104 primary, 50 secondary + 15 staff • 2025: 148 primary, 89 secondary + 24 staff • 2026: 199 primary, 121 secondary + 29 staff • 2027: 231 primary, 161 secondary + 36 staff • 2028: 252 primary, 220 secondary + 45 staff – this is the first year that there will be Yr 11 students on site – anticipate 25 students • 2029: 279 primary, 289 secondary + 54 staff – this is the first year that there will be Yr 11 + Yr 12 students – anticipate 61 students • 2030: 306 primary, 340 secondary + 62 staff – Yrs 11 + 12 anticipate 77 students • 2031: 333 primary, 379 secondary + 68 staff – Yrs 11 + 12 anticipate 90 students • 2032: 354 primary, 405 secondary + 72 staff – Yrs 11 + 12 anticipate 90 students • 2033: 348 primary, 438 secondary + 75 staff • 2034: 342 primary, 455 secondary + 76 staff
3.1.2 Access and Circulation Requirements	The layout of the access road and internal driveways shall be consistent with the Maitland Development Control Plan which incorporates the requirements of AS2890. The layout of the drop off / pick up zone shall allow for one-way traffic movements southbound through this zone which is located within the

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	site boundary and accommodates the existing off road shared path that runs along the site boundary. Internal driveways shall be designed and constructed in accordance with Council's specifications. Due to the road width and traffic volumes on Cessnock Road, the access to the school shall allow for left in and left out only. A management plan will be implemented by the school to manage the traffic movements which will be reviewed annually as the school expands. This access and traffic management plan has been adopted due to the current lack of detail on the road upgrade in this location together with no timeframe for this work to be implemented. Once the road upgrade and timing is determined by the road authority, the access for the school could be reviewed.
3.2 Access	Access to the site shall be via a driveway connection direct to Cessnock Road. A separate exit driveway shall be provided at the southern end of the site to allow for one-way traffic movements through the site. All traffic movements will be left in and left out only.
3.2.1 Driveway Location	The project allows for an entry towards the northern boundary of the school frontage and an exit towards the southern end of the site boundary. These will replace the existing driveway located in the middle of the site frontage, which will be removed as part of this project.
3.2.2 Sight Distances	Sight distance requirements for intersections are specified by the Austroads Guide to Road Design, which requires two criteria to be met: • Safe Intersection Sight Distance which is the minimum sight distance for the major road approaches; and • Approach Sight Distance which is the minimum sight distance for the minor road approaches. For the posted speed limit of 70 km/hr along Cessnock Road, the Austroads Guide specifies a minimum safe intersection sight distance (SISD) of 141 metres. As part of the project work, sight distances have been reviewed at the proposed site exit on Cessnock Road. Cessnock Road in this location provides a reasonably straight alignment and verges are provided to both sides. On-site review indicates that this required sight distance is available for the site access, to allow for drivers exiting the subject site. The approach sight distance is subject to confirmation as part of the detailed design for the site. Sight distance have also been reviewed at the intersection of Cessnock Road / Gillieston Road and were measured to be in excess of 150 metres in both directions along Cessnock Road. This exceeds the minimum sight distance requirements for the posted speed limit of 70 km/hr on Cessnock Road. It is noted however that the alignment of this intersection requires drivers intending to turn onto Cessnock Road to look over their shoulder when

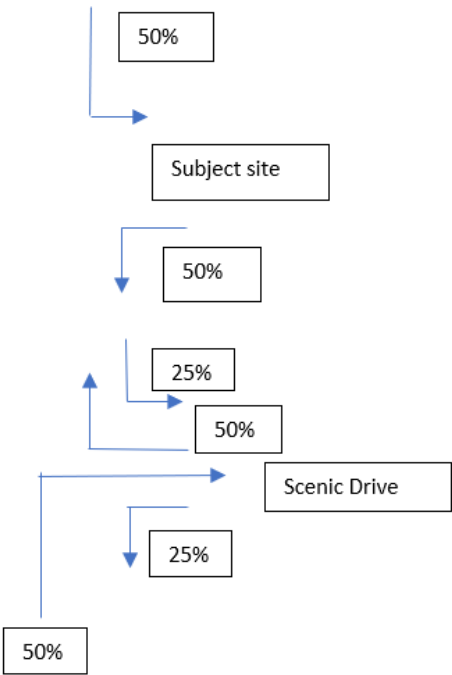
Item	Comment
	checking for traffic approaching from the south. This may however be improved with the future upgrade of this intersection. When assessing the sight distance available, the sight distance has been assessed in both directions. However, previous discussion with Council has highlighted that this section of road is subject to further upgrade, with the final details of this upgrade not available at this time. Council have however indicated that the intersection of Cessnock Road and Gillieston Road will be upgraded with some form of raised central median, which shall restrict traffic movements in and out of Gillieston Road to left in and left out only. Council are still working through the options for this intersection in consultation with TfNSW and the option for a right turn lane into the side road could be developed. This upgrade at this intersection shall impact upon the access to the subject site and would probably see the access restricted to left in and left out. This would mean that visibility to the north only would be required for drivers exiting the subject site.
3.2.3 Service Vehicle Access	Servicing for the school shall allow for service vehicles to enter and exit the site in a forward direction only. Waste collection will be required on site, together with other delivery vehicles for typical school demands. The service vehicle required will be a maximum of 12.5 m long rigid truck, associated with the waste collection. All other service vehicles would be smaller than this design vehicle.
3.2.4 Queuing at entrance to site	The design of the entry for the school together with the drop off / pick up zone will allow for drivers to enter the school site and not be required to park on Cessnock Road adjacent to the site. The internal design of the drop off / pick up zone together with the bus zone ensures that vehicles can be located wholly within the site and not create a bottle neck at the site entry point. This will ensure that other vehicles entering the site can do so without blocking the entry and causing queues at the site entry point. For vehicles exiting the site, all traffic will need to turn left out of the site and as such any queue will be located within the site and not create an issue on Cessnock Road.
3.2.5 Comparison with existing site access	The existing site access is located in the centre of the site frontage to Cessnock Road and is not considered appropriate for development of the school. This will be removed as part of the project and replaced with the new separate entry and exit point.
3.2.6 Access to Public Transport	School buses will be able to enter and exit the site to allow for students to connect direct to the bus services, with no requirement to connect to external bus stops.
3.3 Circulation	
3.3.1 Pattern of circulation	All vehicles will be able to enter and exit the site in a forward direction and travel along the internal roadway to the drop off / pick up zone as well as the

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	dedicated on-site parking. The layout of the roadway through the site allows for one-way traffic movements in a southerly direction only.
3.3.2 Internal Road width	All internal roads will be designed in accordance with the requirements of the Maitland Development Control Plan and AS2890 for off street car parking. The design also caters for bus movements through the drop off / pick up zone.
3.3.3 Internal Bus Movements	Internal bus movements will be limited to the drop off / pick up zone at the front of the site off Cessnock Road.
3.3.4 Service Area Layout	A serviced area is provided for the waste storage and collection. Other servicing requirements will be catered for within the parking areas across the site. Typical servicing requirements are minimal for the school.
3.4 Parking	
3.4.1 Proposed Supply	The proposed parking supply will vary over the development of the site to allow for the full masterplan. For the initial stage of the project, a total of 75 parking spaces will be provided. In addition, parking for 4 buses will be provided within the zone to the front of the site.
3.4.2 Authority Parking	Maitland Development Control Plan 2011 specifies a minimum parking requirement of one space per staff / employee member plus 1 space for every 30 student aged 17 and over.
3.4.3 Parking Layout	The car park is designed in accordance with the Council DCP and AS2890.
3.4.4 Parking Demand	The parking demand and hence provision will increase as the school expands. Stage one of the masterplan allows for 75 parking spaces, which equates to 75 staff / employees on site. This will provide for the full staff parking demands for the full development, but beyond 2028 additional parking will be needed to allow for students aged 17 and over. The masterplan includes provision for parking towards the northern side of the site, accessed via the service road provided to the rear of the site along the southern boundary. Given the size of the site, it is considered that adequate parking can be provided on site from 2028 onwards to accommodate the parking requirements as required by the Council DCP.
3.4.5 Service Vehicle Parking	No dedicated service vehicle parking required on site. The occasional service vehicle will be able to park on the internal roads and parking spaces to access the various buildings across the school site. The waste collection will occur in the south-west corner of the site and accommodates the swept path movements associated with a standard 10.5 metre long waste collection truck.
3.4.6 Pedestrian and Bicycle Facilities	The site has frontage to the existing off-road shared path on Cessnock Road. The school access will provide a quality connection to this path, to allow for the safe movement of students and any cycling demands associated with the school.

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	Parking for bicycles will be provided for within the school.																														
Traffic Assessment																															
4.1 Traffic Generation	It can be seen that the traffic flows associated with the school will alter and increase as the number of students associated with the school increase over time. As part of the school, use of dedicated school buses will be encouraged and supported for student travel, to reduce the dependence on private motor vehicles for the busy drop off and pick up period. The RMS Guide to Traffic Generating Developments does not provide a traffic generation rate for educational facilities. Student travel data has been provided for the Catherine McAuley College project at Medowie (by the Catholic Schools Office) detailing the modal split for a number of existing primary schools (4) and secondary schools (4) in the Hunter region. Through consultation with TfNSW on that project, TfNSW recommended that the recorded light vehicle and bus generation rates for both the primary school and secondary school in Lochinvar were recommended as the basis for determining the traffic generation for the proposed development. This is considered appropriate for this school. The rates are outlined in Table 4 1 below. <i>Table 4 1 – Modal split of students for the primary school and high school populations</i> <table><tr><th>Travel mode</th><th>Primary school</th><th>Secondary school</th></tr><tr><td>Private vehicles</td><td>58%</td><td>25%</td></tr><tr><td>Bus travel</td><td>37%</td><td>70%</td></tr><tr><td>Walk cycle</td><td>5%</td><td>5%</td></tr><tr><td>Total</td><td>100%</td><td>100 %</td></tr></table> The rates above were applied to the proposed school populations, giving the modal split outlined in Table 4 2. This has been completed for the future design year of 2027, allowing for 5 years of growth beyond the current approved student levels. At this point, there could be 231 primary students, 161 senior students and 36 staff. <i>Table 4.2 – predicted traffic movements by mode</i> <table><tr><th>Travel mode</th><th>Primary school</th><th>Secondary school</th></tr><tr><td>Private vehicles</td><td>134</td><td>40</td></tr><tr><td>Bus travel</td><td>85</td><td>113</td></tr><tr><td>Walk cycle</td><td>12</td><td>8</td></tr><tr><td>Total</td><td>231</td><td>161</td></tr></table>	Travel mode	Primary school	Secondary school	Private vehicles	58%	25%	Bus travel	37%	70%	Walk cycle	5%	5%	Total	100%	100 %	Travel mode	Primary school	Secondary school	Private vehicles	134	40	Bus travel	85	113	Walk cycle	12	8	Total	231	161
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	For 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. For the primary school applying a vehicle occupancy rate of 2 students per vehicle, indicates that for the 134 students travelling via private vehicle, there will be 67 vehicles generated. This gives 67 inbound and 67 outbound movements in the AM with the same in the PM pick up period. For the secondary school, the 40 students travelling via private vehicle will generate 20 vehicles, giving 20 inbound and 20 outbound. For the combined school, this give: • 87 inbound movements and 87 outbound in the AM, • 87 inbound movements and 87 outbound in the PM. Combining both schools, it is anticipated 198 students shall travel via bus. For a capacity of 50 seats per bus, there would be 4 buses required to service the development. Based on the large catchment and potential for bus services to operate below their full capacity, including shared services with other schools, an allowance has been made for additional services. A bus occupancy of 75% has been applied to accommodate this, which gives a total of 5-6 buses for the development Traffic beyond 2028 will need review at that time, as it can be seen that the road network in the locality of the subject site will alter. Council and TfNSW are still assessing the options for the upgrade, which given the current high traffic flows in this location, could require two lanes of travel in both directions. This will have a significant impact on the road capacity at this location. Council has also indicated that the upgrade in this location will also need to review intersection controls, which would include Gillieston Road as well as other driveways and side roads to the north of the site. As such, it is considered appropriate to consider the initial stage of the development only, prior to the senior students being present as traffic patterns and road geometry in 2028 and beyond could change considerably. With regards to traffic movements for staff, these have been assumed to occur outside of the school drop and pick up period, with staff typically arriving prior to school starting and then exiting the site after the school pick up has finished. Staff will be able to use the local road network to complete U-turns as required as well as the roundabout further north at the New England Highway to complete a U-turn for arrivals from the south of the school.
4.1.1 Daily and Seasonal Factors	Limited daily and seasonal variation in traffic movements associated with the development, other than normal variation between weekdays (working days) and weekends as well as school holidays with extended closure over December/January.

Item	Comment
4.1.2 Pedestrian Movements	The site is located within easy walking distance to the on-going residential development in Gillieston Heights and as such is expected to generate some demands for pedestrian movements between the school and residential dwellings. There may also be some demand for pedestrian movements to/from nearby bus stops on Cessnock Road. There is a high quality off road shared path running along the site boundary, which shall provide a good connection for students and parents as well as staff associated with the school. Due to restricted access for traffic entering and exiting the site i.e. no right turns it is proposed that parents will be encouraged by the school to drop off and pick up students from a designated spot on Scenic Drive, that will allow parents arriving from the south to turn right into Scenic Drive and drop off their child in this location. A marshall would be provided by the school at this location, to control the students and then the students can walk along the off-road path to access the school (150 metres approximately). In the PM peak parents can also collect their children from this location. This arrangement will be documented through the school Operational Traffic Management Plan.
4.2 Hourly distribution of trips	As a school, it can be seen that there is a high demand associated with the morning drop off and afternoon pick up period only. These typically occur over a 30 minute timeframe.
4.2.1 Origin / destinations assignment	Advice from the study team indicates that the student demands will be reasonably evenly spread between centres to the north (Maitland) and south of the site. A split of 50: 50 has been adopted for this assessment. The split of traffic is shown diagrammatically below (%).

Item	Comment
	 Figure 2 – Traffic distribution (%)
4.3 Impact on Road Safety	When assessing road safety, the major impact is associated with right turn movements for the school access. As the existing road layout (together with the through traffic movements on Cessnock Road) is not considered acceptable for the existing site access controls to be maintained, traffic movements will be restricted to left in and left out only for the school. Until the upgrade of Cessnock Road has been completed in this location, an interim access arrangement has been assessed up until the design year of 2027 which allows for 392 students to attend the school. This interim assessment has allowed for students to be dropped off and collected on Scenic Drive to the south of the school and then walk between this location and the school via the off-road path. For this assessment stage, traffic will turn right into Scenic Drive (or right at Saddlers Drive or Redwood Drive to then connect to Scenic Drive) to drop off or pick up students. These drivers can then turn right out of Scenic Drive if continuing north or turn left and head south. The intersection of Scenic Drive provides a sheltered right turn lane in and out of the side road and allows for safe vehicle turns in this manner. Both Saddlers Drive and Redwood Drive are signal controlled intersections and cater for all turning movements in a safe manner. The site access is located on a straight section of road and provides good visibility in both directions for drivers entering and exiting the site. It is considered that this access can operate in a safe manner for left in and left out movements. As discussed above, right turns are not considered appropriate or safe for the site entry or exit point.

Item	Comment
4.4 Impact of Generated Traffic	
4.4.1 <i>Impact on Daily Traffic Flows</i>	The overall impact upon daily traffic flows within local road network would be reasonable and within the capacity of the local roads. The proposed school will impact Cessnock Road during the morning drop off period and the afternoon pick up period with limited impact outside of these two periods. The school shall generate in the order of 200 vehicle movements during the 2 peaks, and allowing for staff movement and minimal servicing demands could generate around 480 trips per day. Whilst there are no limits on daily traffic flows, the RMS provides performance standards for assessing the capacity of a residential street with regards to amenity. As outlined in Section 2.3.7, Cessnock Road is already operating close to capacity in this location, with the additional traffic associated with the proposed development likely to see the one-way flows (north of Gillieston Road) increase by up to 100 vph in the morning peak 2-way. This would see peak directional flows (northbound) Cessnock Road of 1,637 vph and therefore represents an increase of ~6% over the existing traffic volumes with no change to the existing level of service (LoS E).
4.4.2 <i>Peak Hour Impacts on Intersections</i>	A number of intersections could be impacted by the traffic demands, but these can be spread out to reduce the impact at any one location. The three intersections are: • Cessnock Road and Scenic Drive (T-intersection with sheltered turn lanes) • Scenic Drive and Saddlers Drive (traffic signals) • Cessnock Road and Redwood Drive (traffic signals) With the nominated drop off / pick up area on Scenic Drive the majority shall impact this intersection. These would predominately be right turns in and right (or left) turns out. These flows will increase over time and the values and impacts are discussed below.
4.4.3 <i>Impact of Construction Traffic</i>	All construction work will be located on site with minimal interaction with the local road network. There will be a requirement for construction vehicles (light and heavy) to access the site with the majority of the construction work located on the site. Construction of the site connection to Cessnock Road shall require the preparation of a Construction Traffic Management Plan which shall detail any traffic control requirements on the local roads. This shall be prepared by the contractor in conjunction with the construction certificate for the project. This work shall also be completed under the WAD process with TfNSW. The construction traffic will be significantly less than the traffic associated with the completed development and as such is considered to have an acceptable impact upon the local road network.

Item	Comment
4.4.4 Other Developments	There is ongoing residential development within the Gillieston Heights Urban Release Area including a current development application for residential development off Gillieston Road opposite the school site. There is also ongoing residential development in Cliftleigh and Heddon Greta to the south. The former Hydro Aluminium smelter site is also being assessed for development which will allow for a number of different land uses, with a potential road link to Main Road / Cessnock Road for access to Maitland, which shall increase traffic flows on Cessnock Road past the site. These developments will all increase the traffic demands on Cessnock Road in this location and increase the requirement to upgrade this section of Cessnock Road in this location.
4.5 Public Transport	
4.5.1 Options for improving services	No requirement to improve services. Buses shall be provided for the student population with these services increasing with the growth of the school.
4.5.2 Pedestrian Access to Bus Stops	The existing shared path for pedestrian and cyclist along Cessnock Road allows for good quality connectivity to the existing residential development in Gillieston Heights as well as the nominated drop off / pick up zone on Scenic Drive.
4.6 Recommended Works	
4.6.1 Improvements to Access and Circulation	Ensure access and internal driveways are designed and constructed in accordance with Council requirements.
4.6.2 Improvements to External Road Network	The intersection of Cessnock Road / Gillieston Road shall be upgraded to provide additional capacity and improve its overall level of traffic safety under the S94 (S7.11) plan for Gillieston Heights. Details of the proposed upgrades are further described in Section 4.4.2 above as per the S94 plan for this location No Stopping signs will be required on Cessnock Road adjacent to the subject site on both sides of the road to ensure parents do not drop off or pick up students in this location.
4.6.3 Improvements to Pedestrian Facilities	Pedestrian and cyclist facilities shall be provided along the length of Cessnock Road in accordance with the Gillieston Heights West Precinct Plan and is funded under the S94 plan for Gillieston Heights.
4.6.4 Effect of Recommended Works on Adjacent Developments	No impacts on adjacent developments.
4.6.5 Effect of Recommended Works on Public Transport Services	None.
4.6.6 Provision of LATM Measures	None Required.
4.6.7 Funding	All internal site work and works associated with the site access (together with signage on Cessnock Road) shall be funded by the developer.

Proposed Traffic Management Plan.

The proposal allows for an off site drop off / pick up area on Scenic Drive during the initial stages of the school development. This has been determined due to the issues around the existing traffic volumes of Cessnock Road together with the status of the proposed road upgrade works in the locality of the subject site. The traffic flows on Cessnock Road are considered to be high and close to capacity for a single lane of travel meaning that the current driveway access to the subject site is not acceptable for increased traffic demands associated with the development of the school. Whilst right turn features could be developed to accommodate the traffic demands, with no plans (or timeframe) available for the road upgrade in this location it is not considered practicable to upgrade the road at this time. It can also be seen that in the initial stages of the school development, the cost of providing this could not be justified.

The basics of the Traffic Management Plan allow for the following elements:

- Allow for a drop off / pick up area on Scenic Drive for students arriving from the south
- Provide a Marshall (teacher) to manage this area with regards to students waiting in this zone for the pick up period and drop off period
- Allow students to walk between this drop off area and the school via the existing off road shared path on the eastern side of Cessnock Road
- For parents / carers from the south of the site, direct traffic to arrive at the area via either Scenic Drive or Redwood Drive or Saddlers Drive
- For traffic from the north wishing to head back north, direct drivers to turn left out of the site then left into Scenic Drive and then exit right out of Scenic Drive to head north on Cessnock Road.
- For traffic wishing to head south from the area on Scenic Drive, continue along Scenic Drive to exit back onto Cessnock Road at Saddlers Drive or Redwood Drive.
- Reinforce to all parents / carers that no drop off or pick up is permitted along the site frontage on Cessnock Road. Given the high traffic volumes in this location, crossing the road in this location is very difficult with limited gaps in the 2-way traffic streams.

The above management plan will need to be discussed and approved with Council and will be included within the enrolment package for parents.

Traffic impacts

When assessing the traffic impacts, it is important to note that the school will commence with just 40 students on site with potential for 40 vehicles maximum. The student numbers then increase to 87 in 2023, 154 in 2024, 237 in 2025 and 320 in 2026. For the final year before Year 11 students commence at the school there could be 392 students at the school – this is projected to be in 2027 and it is considered that Cessnock Road will have been upgraded by this time and as such, access to the school site would be different.

For the first 2 years of the school development, the majority of students would access the site by private motor vehicles and from then onwards a bus service could be viable to reduce the car dependence for trips. After 2 years of development, there could be 154 students, and assuming a car occupancy rate of 1.5 students per car would generate 102 vehicles. For the third year of growth, to 237 students, bus use would be viable and assuming 2 buses could carry students, then this would equate to 100 students and hence there would not be any additional traffic movements by private vehicle.

For the final school year prior to Year 11 students being on the site, there could be 392 students, with 58% traveling by car. With an occupancy rate of 2 students per car, this would require 115 cars for drop off / pick up activities. At this stage, school bus usage would be at the target rate of 37%.

For the initial 2 years of the school expansion to 154 students, the traffic flows associated with the project site are presented below.

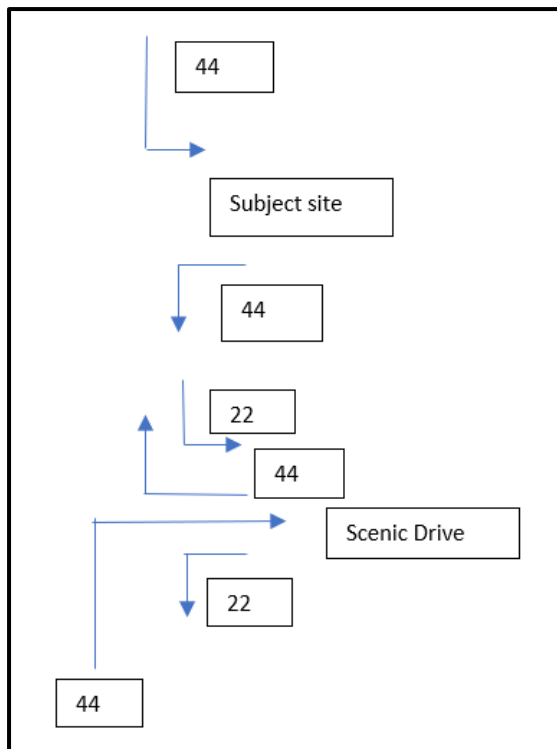


Figure 3 – Traffic flows for year three (2024) with 154 students

For the future design year of 2027 for the school expansion to 392 students, the traffic flows associated with the project site are presented below

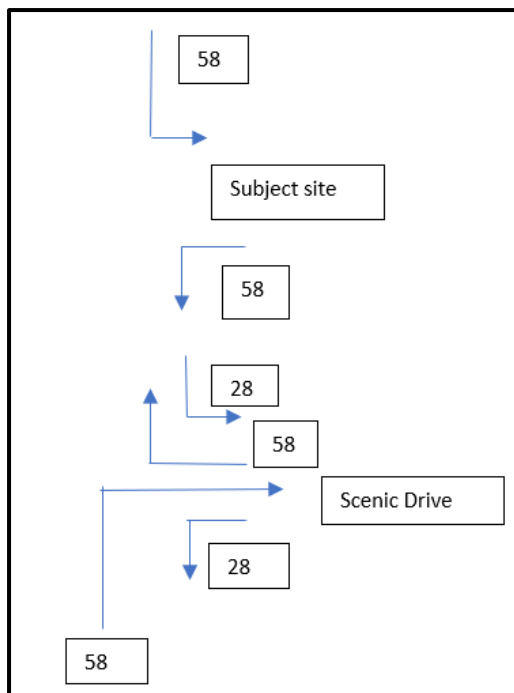


Figure 4 - Traffic flows for year five (2027) with 392 students

From the above figures, it can be seen that the impact of the traffic at Scenic Drive is low, with 174 2-way traffic movements associated with the school drop off / pick up area. Current traffic flows at this location are relatively low, especially the right turn into Scenic Drive and as such this temporary traffic demand at this location would have an acceptable impact upon the overall operation of this intersection.

This intersection provides a sheltered right turn lane for movements into Scenic Drive as well as a right turn acceleration lane for traffic turning right out of Scenic Drive. As part of the overall upgrade of Cessnock Road in this location, it is expected that this intersection could be upgraded further as the layout currently only provides a single through lane in each direction.



Figure 5 – existing layout of Cessnock Road and Scenic Drive and pedestrian connection to subject site

Site Photos



Photo 1 – View looking south from existing site access. Note shared path on left hand side of photo.



Photo 2 – View looking north from existing site access.

Conclusion

From the above assessment and the review of the proposal and associated plans against the requirements of the RMS Guide to Traffic Generating Developments and Austroads Guide to Traffic Management, it is considered that the proposed development can operate in a safe and satisfactory manner for the initial stages of the school development. It can be seen that the school will have a staged increase in student numbers and an interim traffic management plan can be implemented for the initial 5-6 years of operation.

Discussion with Council and a review of the S94 plan for this location shows that Cessnock Road and its intersection with Gillieston Road will be upgraded in the future, but there are no plans for the road upgrade or intersection works. The traffic data collected by Seca Solution for the project also shows that the current traffic demands on Cessnock Road are close to capacity in the peak periods, and with continual growth along this road corridor there is a need to increase the capacity of this road.

The access to the school is not considered adequate for the on-going development of the school beyond the existing approval, and as an interim measure it is proposed to allow for a drop off / pick area on Scenic Drive to cater for the traffic demands during the initial stages of the school development. Once the extent of road upgrades

have been determined on Cessnock Road along the site frontage, access to the school can be provided in a safe and appropriate manner at that stage, which could include right turn options.

The proposal can meet the requirements of the Development Control Plan in relation to parking and access for buses to support non-reliance on the use of private motor vehicles for access to the site.

Please feel free to contact our office on 4032 7979, should you have any queries.

Yours sincerely,

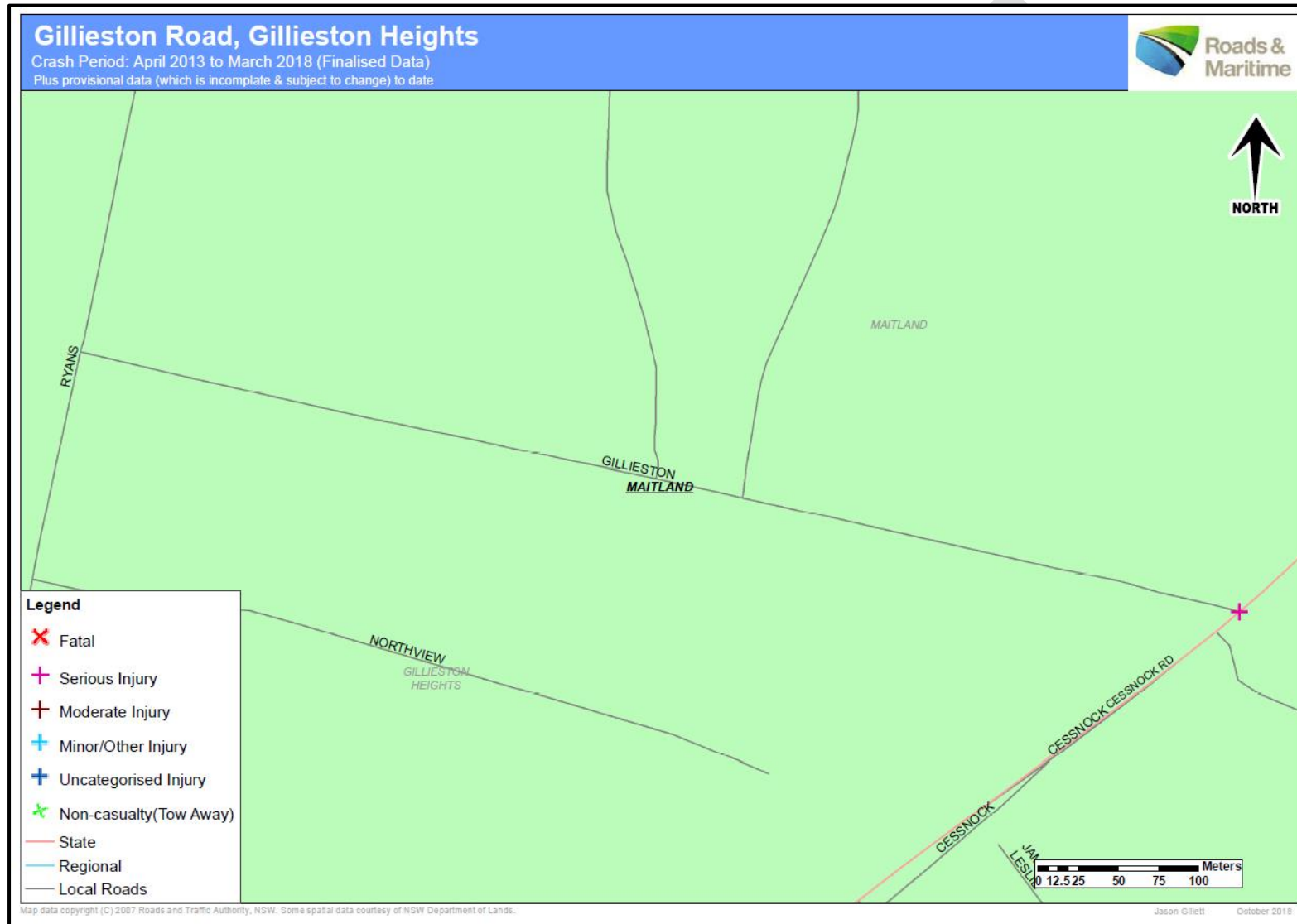
Sean Morgan
Director

Attached: A – Site Plan
 B – Accident Data
 C – Survey Data

DRAFT



Attachment B RMS Accident Data



Transport
for NSW

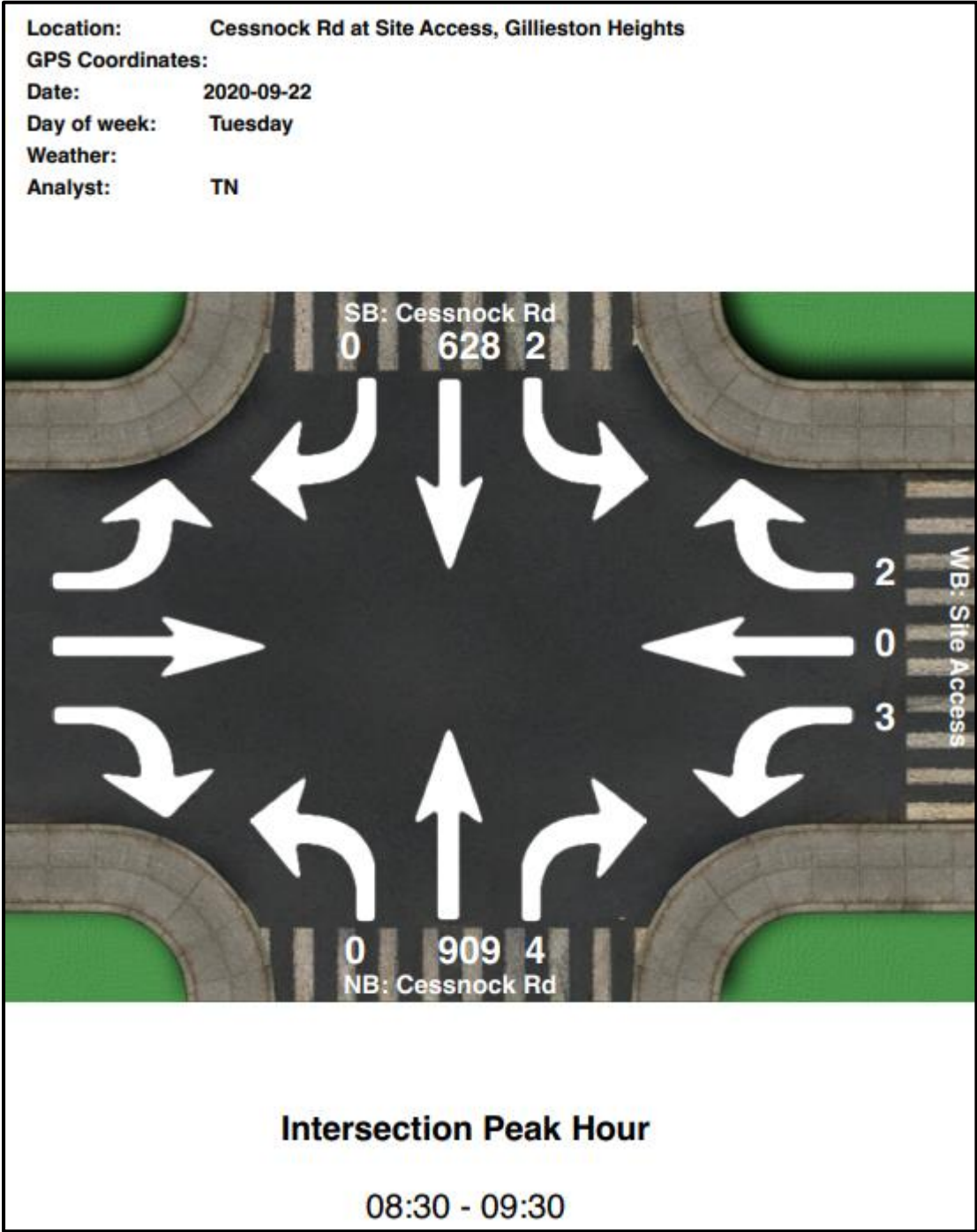
Centre for Road Safety

Crashid dataset Gillieston Road, Gillieston Heights - 1st April 2013 to 2018*

Note: 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 and 2018 onwards contain uncategorised inj crashes.

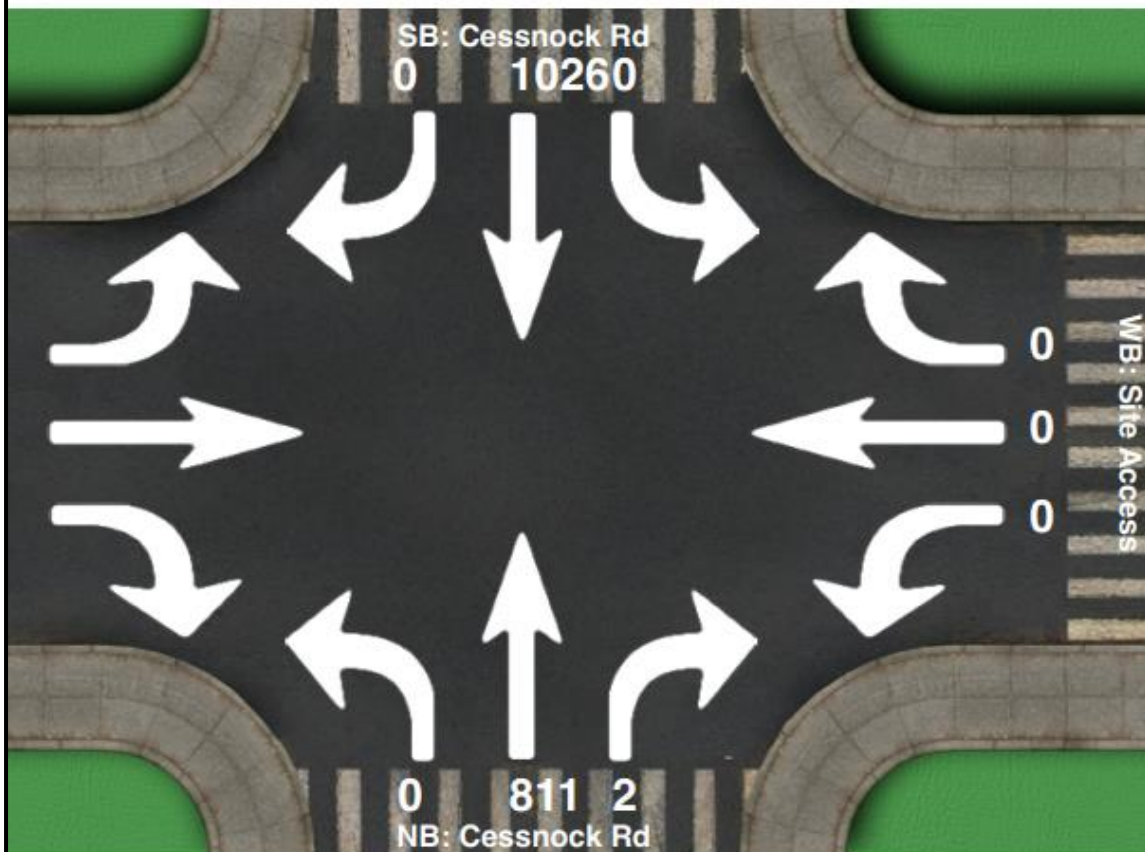
Percentages are percentages of all crashes. Unknown values for each category are not shown on this report.

Attachment C Survey Data



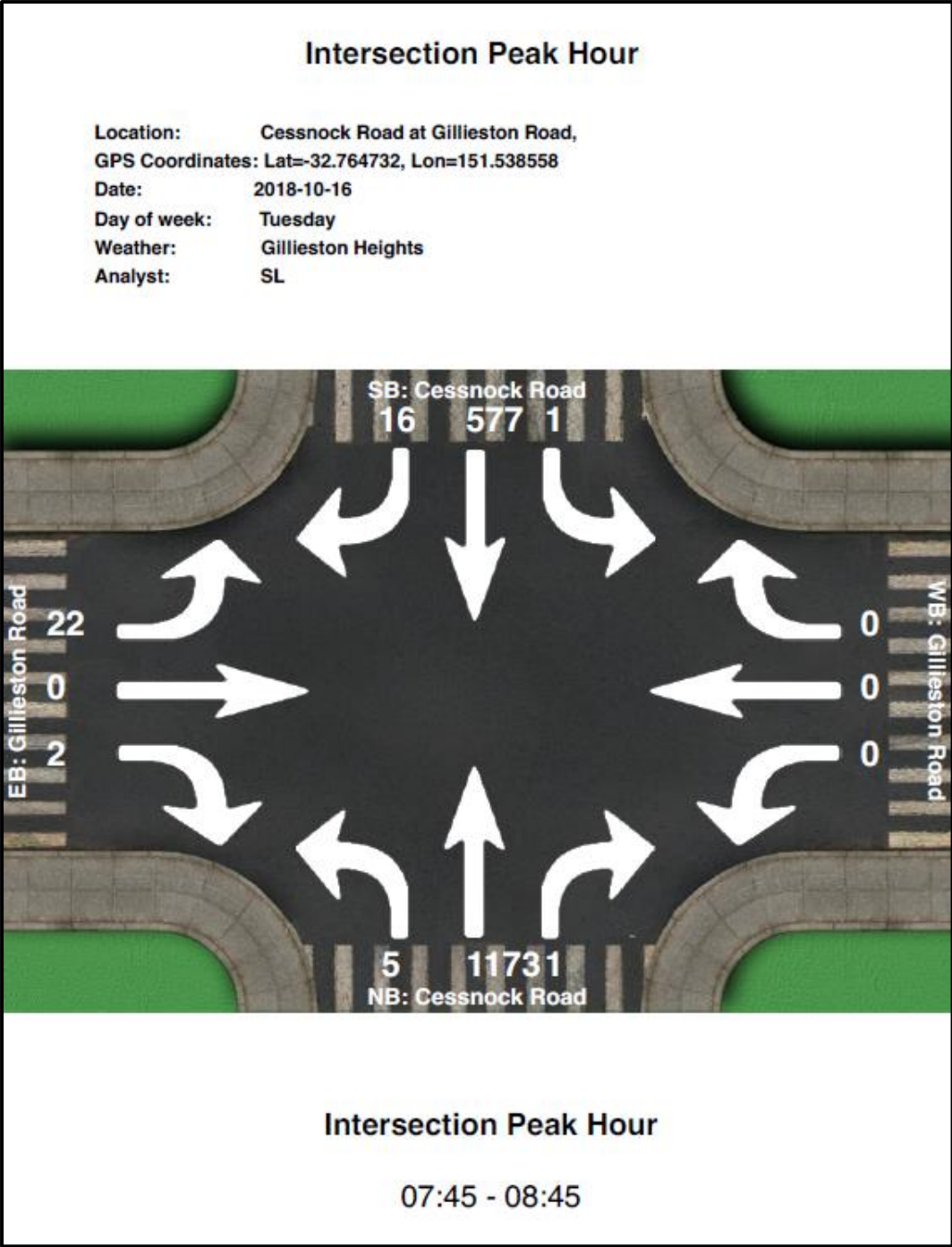
Intersection Peak Hour

Location: Cessnock Rd at Site Access, Gillieston Heights
GPS Coordinates:
Date: 2020-09-22
Day of week: Tuesday
Weather:
Analyst: TN



Intersection Peak Hour

15:30 - 16:30



Location: Cessnock Road at Gillieston Road,

GPS Coordinates: Lat=-32.764732, Lon=151.538558

Date: 2018-10-16

Day of week: Tuesday

Weather: Gillieston Heights

Analyst: SL

Total vehicle traffic

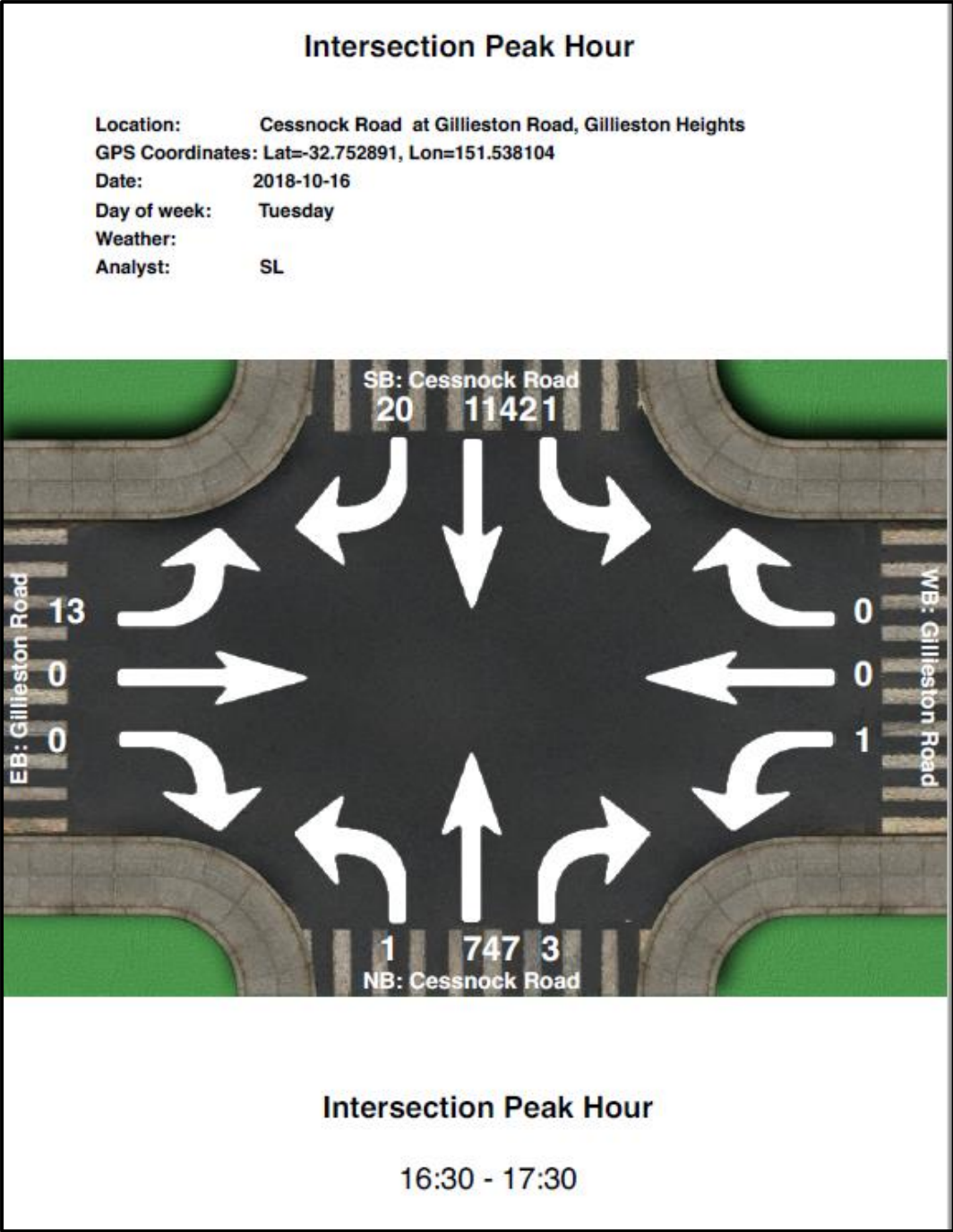
Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
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07:30	0	133	1	0	0	0	0	230	0	2	0	1	367
07:45	0	130	3	0	0	0	1	252	1	3	0	0	390
08:00	0	150	5	0	0	0	1	285	0	6	0	0	447
08:15	0	150	4	0	0	0	1	337	0	4	0	1	497
08:30	1	147	4	0	0	0	2	299	0	9	0	1	463
08:45	0	145	5	0	0	0	2	211	0	15	0	0	378
09:00	0	170	1	0	0	0	2	206	0	6	0	1	386
09:15	0	135	3	0	0	0	1	204	0	2	0	0	345
09:30	0	2	0	0	0	0	0	4	0	1	0	0	7

Car traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:26	0	23	0	0	0	0	0	47	0	0	0	0	70
07:30	0	128	1	0	0	0	0	217	0	2	0	1	349
07:45	0	119	3	0	0	0	1	240	1	3	0	0	367
08:00	0	137	5	0	0	0	1	264	0	6	0	0	413
08:15	0	138	4	0	0	0	1	323	0	4	0	1	471
08:30	0	128	3	0	0	0	2	289	0	9	0	1	432
08:45	0	127	5	0	0	0	2	195	0	15	0	0	344
09:00	0	157	1	0	0	0	1	198	0	6	0	1	364
09:15	0	123	3	0	0	0	1	196	0	2	0	0	325
09:30	0	2	0	0	0	0	0	4	0	1	0	0	7

Truck traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:26	0	5	0	0	0	0	0	2	0	1	0	0	8
07:30	0	5	0	0	0	0	0	13	0	0	0	0	18
07:45	0	11	0	0	0	0	0	12	0	0	0	0	23
08:00	0	13	0	0	0	0	0	21	0	0	0	0	34
08:15	0	12	0	0	0	0	0	14	0	0	0	0	26
08:30	1	19	1	0	0	0	0	10	0	0	0	0	31
08:45	0	18	0	0	0	0	0	16	0	0	0	0	34
09:00	0	13	0	0	0	0	1	8	0	0	0	0	22
09:15	0	12	0	0	0	0	0	8	0	0	0	0	20
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0



Location: Cessnock Road at Gillieston Road, Gillieston Heights

GPS Coordinates: Lat=32.752891, Lon=151.538104

Date: 2018-10-16

Day of week: Tuesday

Weather:

Analyst: SL

Total vehicle traffic

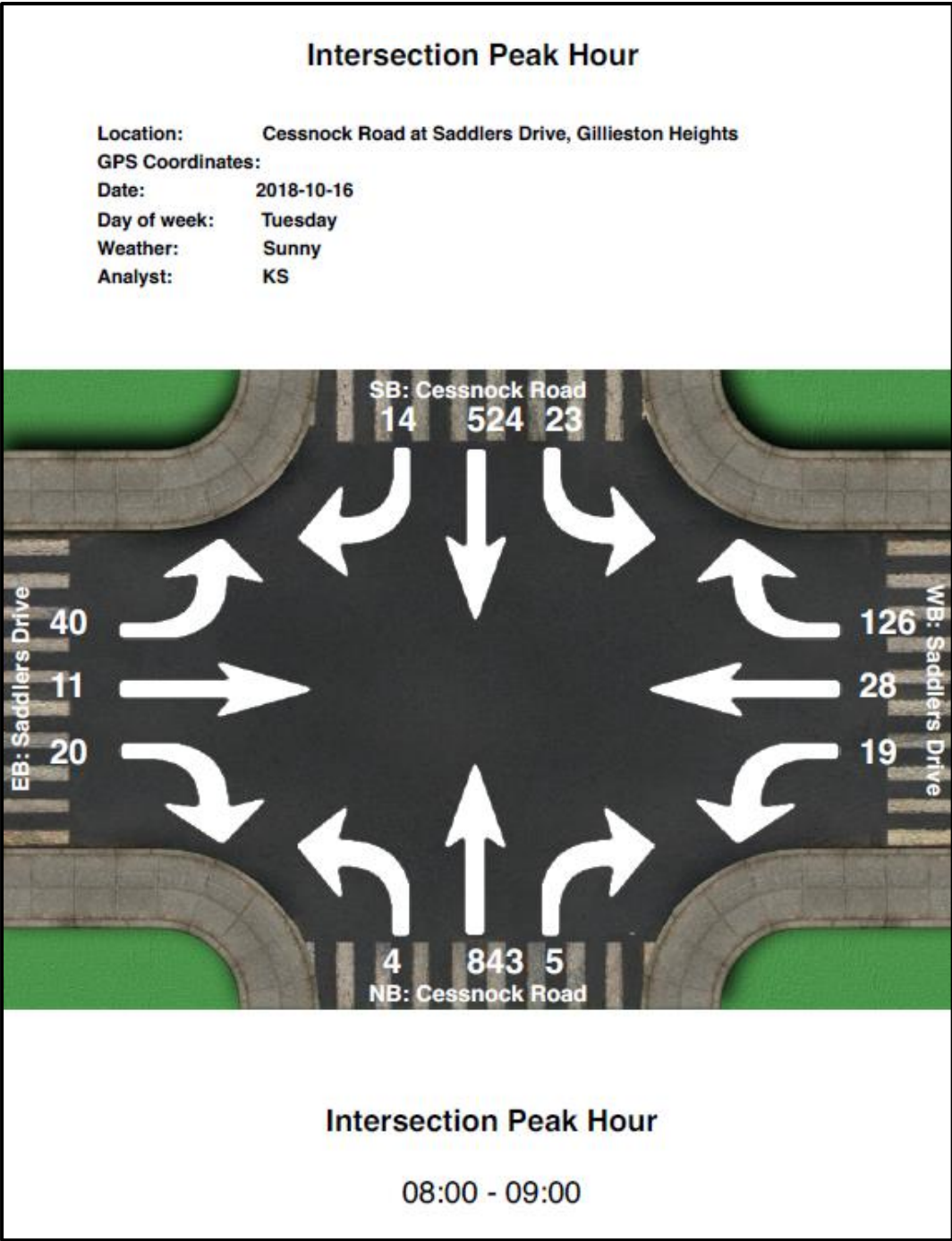
Interval starts	Southbound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
14:28	0	14	1	0	0	0	0	19	0	0	0	0	34
14:30	1	179	5	0	0	0	1	166	0	5	0	0	357
14:45	0	198	9	1	0	0	2	172	0	1	0	1	384
15:00	0	202	5	0	0	0	1	147	0	6	0	1	362
15:15	0	283	5	0	0	0	0	168	0	7	0	1	464
15:30	2	251	2	1	0	0	1	218	0	0	0	0	475
15:45	0	225	4	0	0	0	1	211	1	1	0	0	443
16:00	1	291	2	1	0	0	1	184	1	1	0	1	483
16:15	0	250	3	0	0	0	1	204	0	2	0	0	460
16:30	0	278	3	1	0	0	1	197	2	5	0	0	487
16:45	0	279	3	0	0	0	0	205	1	4	0	0	492
17:00	0	283	5	0	0	0	0	190	0	2	0	0	480
17:15	1	302	9	0	0	0	0	155	0	2	0	0	469
17:30	0	3	0	0	0	0	0	0	0	0	0	0	3

Car traffic

Interval starts	Southbound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
14:28	0	14	1	0	0	0	0	18	0	0	0	0	33
14:30	1	164	5	0	0	0	1	148	0	5	0	0	324
14:45	0	187	9	1	0	0	1	161	0	1	0	1	361
15:00	0	197	4	0	0	0	1	143	0	6	0	1	352
15:15	0	276	5	0	0	0	0	157	0	7	0	1	446
15:30	2	239	2	1	0	0	0	207	0	0	0	0	451
15:45	0	218	4	0	0	0	1	199	1	1	0	0	424
16:00	1	284	2	1	0	0	1	177	1	1	0	1	469
16:15	0	241	3	0	0	0	1	189	0	2	0	0	436
16:30	0	270	3	1	0	0	1	186	2	5	0	0	468
16:45	0	270	3	0	0	0	0	199	1	4	0	0	477
17:00	0	274	5	0	0	0	0	187	0	2	0	0	468
17:15	1	293	9	0	0	0	0	154	0	2	0	0	459
17:30	0	3	0	0	0	0	0	0	0	0	0	0	3

Truck traffic

Interval starts	Southbound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
14:28	0	0	0	0	0	0	0	1	0	0	0	0	1
14:30	0	15	0	0	0	0	0	18	0	0	0	0	33
14:45	0	11	0	0	0	0	1	11	0	0	0	0	23
15:00	0	5	1	0	0	0	0	4	0	0	0	0	10
15:15	0	7	0	0	0	0	0	11	0	0	0	0	18
15:30	0	12	0	0	0	0	1	11	0	0	0	0	24
15:45	0	7	0	0	0	0	0	12	0	0	0	0	19
16:00	0	7	0	0	0	0	0	7	0	0	0	0	14
16:15	0	9	0	0	0	0	0	15	0	0	0	0	24
16:30	0	8	0	0	0	0	0	11	0	0	0	0	19
16:45	0	9	0	0	0	0	0	6	0	0	0	0	15
17:00	0	9	0	0	0	0	0	3	0	0	0	0	12
17:15	0	9	0	0	0	0	0	1	0	0	0	0	10
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0



Location: Cessnock Road at Saddlers Drive, Gillieston Heights

GPS Coordinates:

Date: 2018-10-16

Day of week: Tuesday

Weather: Sunny

Analyst: KS

Total vehicle traffic

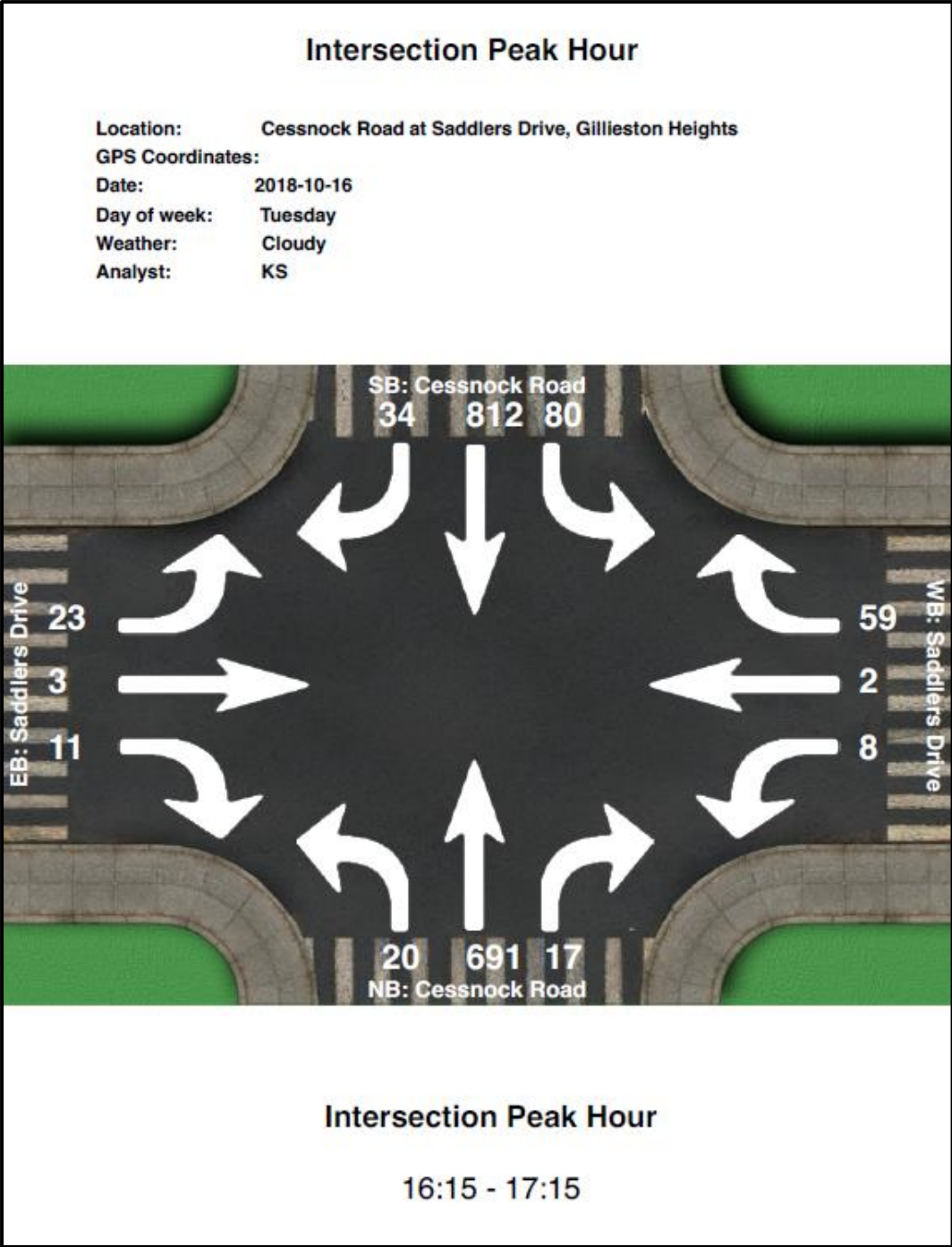
Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:28	1	13	0	0	0	2	0	19	0	0	0	0	35
07:30	1	122	5	4	0	16	0	190	1	7	0	5	351
07:45	1	129	4	4	1	19	2	176	4	8	1	2	351
08:00	3	120	4	4	0	35	2	229	0	8	0	5	410
08:15	5	144	5	5	4	31	1	246	1	13	0	8	463
08:30	3	141	1	3	10	42	0	197	3	14	6	4	424
08:45	12	119	4	7	14	18	1	171	1	5	5	3	360
09:00	15	125	5	2	3	17	2	146	3	6	5	1	330
09:15	8	114	3	3	0	11	1	164	2	7	1	3	317
09:30	1	2	0	0	0	0	0	2	0	0	0	0	5

Car traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:28	1	9	0	0	0	2	0	18	0	0	0	0	30
07:30	0	117	5	3	0	16	0	176	1	7	0	5	330
07:45	1	118	4	4	1	18	2	167	3	8	1	2	329
08:00	3	109	4	4	0	35	2	210	0	8	0	5	380
08:15	5	131	5	5	3	29	1	233	1	13	0	8	434
08:30	3	124	1	3	10	42	0	187	3	14	6	3	396
08:45	12	100	4	7	14	18	1	157	0	4	5	3	325
09:00	15	112	5	2	3	17	2	136	3	6	5	0	306
09:15	8	99	3	2	0	11	1	157	2	7	1	3	294
09:30	1	2	0	0	0	0	0	2	0	0	0	0	5

Truck traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:28	0	4	0	0	0	0	0	1	0	0	0	0	5
07:30	1	5	0	1	0	0	0	14	0	0	0	0	21
07:45	0	11	0	0	0	1	0	9	1	0	0	0	22
08:00	0	11	0	0	0	0	0	19	0	0	0	0	30
08:15	0	13	0	0	1	2	0	13	0	0	0	0	29
08:30	0	17	0	0	0	0	0	10	0	0	0	1	28
08:45	0	19	0	0	0	0	0	14	1	1	0	0	35
09:00	0	13	0	0	0	0	0	10	0	0	0	1	24
09:15	0	15	0	1	0	0	0	7	0	0	0	0	23
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0



Location: Cessnock Road at Saddlers Drive, Gillieston Heights

GPS Coordinates:

Date: 2018-10-16

Day of week: Tuesday

Weather: Cloudy

Analyst: KS

Total vehicle traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
14:29	0	1	0	0	0	2	0	1	1	0	0	0	5
14:30	15	149	7	3	2	15	1	141	1	1	0	2	337
14:45	11	175	5	3	8	12	2	145	0	6	0	2	369
15:00	15	154	3	2	3	15	2	120	2	9	20	6	351
15:15	23	215	14	3	1	9	1	145	4	5	0	0	420
15:30	10	194	10	2	0	17	6	180	3	11	1	3	437
15:45	10	187	14	0	1	14	5	168	3	8	0	3	413
16:00	27	204	12	2	0	8	3	153	7	3	0	3	422
16:15	23	174	8	2	0	9	7	184	1	7	0	3	418
16:30	17	224	11	3	0	11	4	175	6	4	2	2	459
16:45	16	216	11	3	0	19	5	166	5	5	1	5	452
17:00	24	198	4	0	2	20	4	166	5	7	0	1	431
17:15	22	216	10	1	1	9	3	123	7	6	0	6	404
17:30	0	1	0	0	0	0	0	3	0	0	0	0	4

Car traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
14:29	0	1	0	0	0	2	0	1	1	0	0	0	5
14:30	15	136	7	3	2	14	1	120	1	1	0	2	302
14:45	11	161	4	3	8	12	2	136	0	6	0	2	345
15:00	15	148	3	2	3	15	2	115	2	9	19	6	339
15:15	23	210	14	3	1	8	1	135	4	4	0	0	403
15:30	10	183	10	1	0	17	5	169	3	10	1	3	412
15:45	10	182	13	0	1	13	5	159	3	8	0	3	397
16:00	27	197	12	2	0	8	3	144	7	3	0	3	406
16:15	23	165	8	2	0	9	7	169	1	5	0	3	392
16:30	17	217	11	3	0	11	4	164	6	4	2	2	441
16:45	16	207	11	3	0	19	5	159	5	5	1	5	436
17:00	23	191	3	0	2	20	4	162	5	7	0	1	418
17:15	22	208	10	1	1	9	3	121	7	6	0	6	394
17:30	0	1	0	0	0	0	0	3	0	0	0	0	4

Truck traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
14:29	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	13	0	0	0	1	0	21	0	0	0	0	35
14:45	0	14	1	0	0	0	0	9	0	0	0	0	24
15:00	0	6	0	0	0	0	0	5	0	0	1	0	12
15:15	0	5	0	0	0	1	0	10	0	1	0	0	17
15:30	0	11	0	1	0	0	1	11	0	1	0	0	25
15:45	0	5	1	0	0	1	0	9	0	0	0	0	16
16:00	0	7	0	0	0	0	0	9	0	0	0	0	16
16:15	0	9	0	0	0	0	0	15	0	2	0	0	26
16:30	0	7	0	0	0	0	0	11	0	0	0	0	18
16:45	0	9	0	0	0	0	0	7	0	0	0	0	16
17:00	1	7	1	0	0	0	0	4	0	0	0	0	13
17:15	0	8	0	0	0	0	0	2	0	0	0	0	10
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0