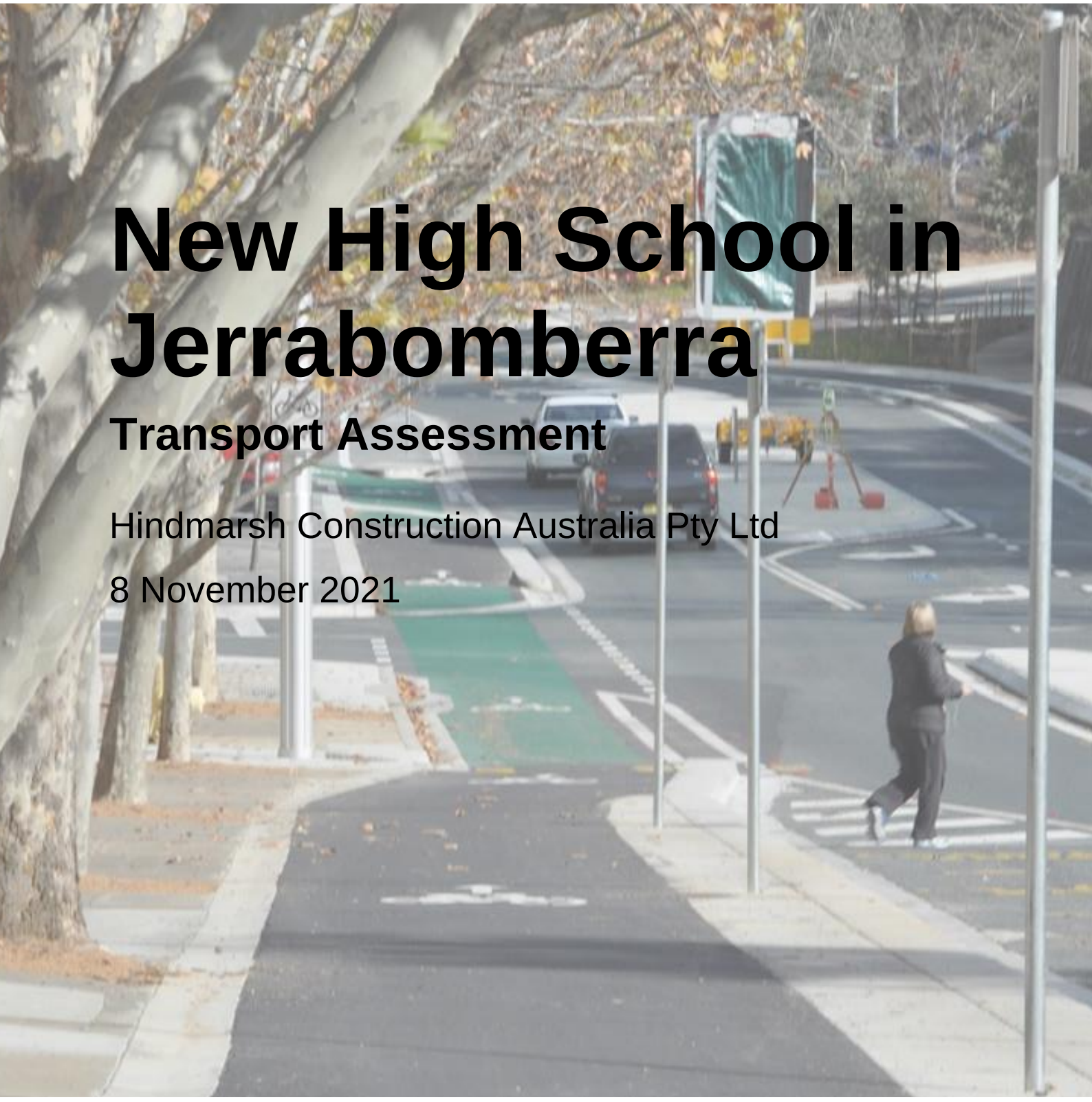

New High School in Jerrabomberra

Transport Assessment

Hindmarsh Construction Australia Pty Ltd

8 November 2021

→ The Power of Commitment

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S4	11	M Lucas	S Clarke	On file	S Clarke	On file	05/11/2021

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1. Strategic context

This Transport Assessment (TA) accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) in support of an application for a State Significant Development (SSD No 24461956). The SSDA is for a new high school located at Jerrabomberra.

In addition to this TA, a School Transport Plan (STP) has been prepared by GHD for the new high school in Jerrabomberra. The STP has been prepared to manage travel demand during the construction of the high school and to govern travel to and from school throughout post-occupancy. A copy of the STP is included in Appendix A.

Additionally, a Preliminary Construction and Pedestrian Traffic Management Plan (CTMP), has been prepared by GHD as a separate deliverable (with a summary provided in this TA) for the new high school in Jerrabomberra.

This report addresses the Secretary's Environmental Assessment Requirements (SEARs), as detailed in Table 1.1.

Table 1.1 SEARs Comments

SEARs	GHD Response
Provide a transport and accessibility impact assessment, which includes, but is not limited to the following: Analysis of the existing transport network to at least the proposed enrolment boundary, including: – road hierarchy. – pedestrian, cycle and public transport infrastructure. – details on existing school travel behavioural patterns of the area (e.g. travel survey results from local schools) – details of current daily and peak hour vehicle movements based on traffic surveys and / or existing traffic studies relevant to the locality. – existing transport operation for 1hr before and after proposed bell times such as span of service, frequency for public transport and school buses, pedestrian phasing for signals. – existing performance levels of nearby intersections utilising appropriate traffic modelling methods (such as SIDRA network modelling). Intersections to be modelled should be determined in consultation with TfNSW and Council and include intersections such as: • Tompsitt Drive/Environa Drive • Tompsitt Drive/Lanyon Drive • Tompsitt Drive/Jerrabomberra Circle • Coachwood Avenue/Coral Drive	A summary of the road hierarchy, including Tompsitt Drive, Coachwood Avenue and Jerrabomberra Parkway is provided in Section 2.1.1 of the TA. A description of the active transport networks, including maps of the facilities adjacent to the school and the 1.2 km walking catchment, are included in 2.1.2.1 of the TA. The arrival and departure times of school buses in proximity to the high school subject site are summarised in Section 2.1.2.2 of the TA. As per discussions with TfNSW and QPRC at a meeting on 6th October 2021 (refer to Appendix B Transport Working Group Minutes): – SIDRA analysis has been undertaken by GHD for the existing situation (2021) for the following intersections (refer to Section 4.3): • Tompsitt Drive/Environa Drive • Tompsitt Drive/Lanyon Drive • Tompsitt Drive/Jerrabomberra Circle – Intersection analysis is not required for: • Coachwood Avenue/Coral Drive • Coachwood Avenue/Firethorn Place • Coachwood Avenue/Jerrabomberra Parkway • Jerrabomberra Parkway/Bicentennial Drive • Jerrabomberra Parkway/Brudenell Drive

SEARs	GHD Response
• Coachwood Avenue/Firethorn Place • Coachwood Avenue/Jerrabomberra Parkway • Jerrabomberra Parkway/Bicentennial Drive • Jerrabomberra Parkway/Brudenell Drive • Jerrabomberra Parkway/Jerrabomberra Circle	• Jerrabomberra Parkway/Jerrabomberra Circle To identify the existing traffic conditions in proximity to the new high school in Jerrabomberra, GHD were provided (by TSA Management) with weekday AM and PM peak periods traffic survey data. The traffic surveys were undertaken by Trans Traffic Survey at the following intersections on Thursday 13th May 2021, as displayed in Figure 4.1: 1. Lanyon Drive and Tompsitt Drive. 2. Tompsitt Drive, Henry Place and Environa Drive. 3. Tompsitt Drive, Limestone Drive, Edwin Land Parkway and Jerrabomberra Parkway (referred to henceforth as the Jerrabomberra Circle).
Details of the proposed development, including: – a map of the proposed access which identifies public roads, bus routes, footpaths and cycleways. – pedestrian site access and vehicular access arrangements, including for service and emergency vehicles and loading/unloading, including swept path analysis demonstrating the largest design vehicle entering and leaving the site and moving in each direction through intersections along the proposed transport routes. – car and motorcycle parking, bicycle parking and end-of-trip facilities. – drop-off / pick-zone(s) and arrival/departure bus bay(s). – pedestrian, public transport or road infrastructure improvements or safety measures.	An image showing the proposed walking and cycling network adjacent to the school, including the pedestrian and vehicular access points, bicycle parking locations, pick-up/drop-off locations for buses and cars and the car parking area is displayed in Section 1.1.1 and 3.2 of the TA. The routes of the current bus services in proximity to the high school displayed in Section 2.1.2.2 of the TA. A description of the active transport networks including maps of the facilities adjacent to the school and the 1.2 km walking catchment, are included in Section 2.1.2.1 of the TA. A description of the end of trip facilities is provided in Section 3.2.1.2 of the TA. The site infrastructure that will be provided for the high is describer in Section 3.2.1 of the TA. The committed infrastructure that will be provided by QPRC adjacent to the school is detailed in Section 3.2.2.1 of the TA. A description of the car parking arrangements at the high school is provided in Section 3.2.1.4 of the TA. Details of the waste collection and delivery arrangements at the high school are included in Section 3.2.1.5 of the TA. Detail of the proposed pick-up/drop-off facilities are included in Section 3.2.1.4 of the TA.

SEARs	GHD Response
Analysis of the impacts due to the operation of the proposed development, including: – proposed modal split for all users of the development including vehicle, pedestrian, bicycle riders, public transport, school buses and other sustainable travel modes. – estimated total daily and peak hour vehicular trip generation. – a clear explanation and justification of the: • assumed growth rate applied. • volume and distribution of proposed trips to be generated. • type and frequency of design vehicles accessing the site. • assumed safe travel routes for each modal split. – details of performance of nearby intersections and level crossings with the additional traffic generated by the development both at the commencement of operation and in a 10-year time period (using SIDRA network modelling). – cumulative traffic impacts from any surrounding approved development(s). – adequacy of pedestrian, bicycle and public transport infrastructure and operations to accommodate the development. – adequacy of car and motorcycle parking and bicycle parking provisions when assessed against the relevant car / bicycle parking codes and standards. – adequacy of the drop-off / pick-up zone(s) and bus bay(s), including assessment of any related queuing during peak-hour access. – adequacy of the existing / proposed pedestrian infrastructure to enable convenient and safe access to and from the site for all users. – adequacy of access and egress for service and delivery vehicles.	The mode share targets for students and staff at the high school (based on the mode share targets) are detailed in Section 2.1.2 of the TP (Appendix A). The analysis of the parking supply at the high school is included in Section 3.2.1.4 of the TA. A summary of the expected demand for buses and the expected capacity of the proposed bus zone adjacent to Environa Drive is provided in Section 3.2.1.3 of the TA. The site infrastructure that will be provided for the high school by SINSW that will support active transport connectivity, are detailed in Section 3.2.1 of the TA. The committed infrastructure that will be provided by QPRC adjacent to the school is detailed in Section 3.2.2.1 of the TA. SIDRA analysis for the 2023 and 2033 horizon years are detailed in Section 4.5.
Measures to ameliorate any adverse traffic and transport impacts due to the development based on the above analysis, including: – a preliminary School Transport Plan detailing; • an operational traffic and access management plan (OTAMP) for the	The policies and procedures to increase sustainable mode shares and reduce the use of private vehicles are summarised in Section 2.2 of the TP (Appendix A). The roles and responsibilities of the Travel Coordinator at the new high school in

SEARs	GHD Response
site, pedestrian entries, the drop-off/pick-up zone(s) and bus bay(s) • travel demand management programs to increase sustainable transport (such as a Green Travel Plan). – arrangements for the Travel Coordinator roles. – governance arrangements or relationships with state and local government transport providers to update roads safety. – infrastructure improvements or protection measures, including details of timing and method of delivery.	Jerrabomberra are detailed in Section 2.6.1 of the TP (Appendix A). The governance framework for the high school including the roles of the internal and external working groups are detailed in Section 2.6 of the TP (Appendix A). The site infrastructure that will be provided for the high school by SINSW that will support active transport connectivity, are detailed in Section 3.2.1 of the TA.
Analysis of the impacts of the traffic generated during construction of the proposed development, including: – construction vehicle routes, types and volumes. – construction program (duration and milestones). – on-site car parking and access arrangements for construction, emergency and construction worker vehicles. – cumulative impacts associated with other construction activities in the locality (if any). – road safety at identified intersections and level crossings near the site due to conflicts between construction vehicles and existing traffic in the locality. – measures to mitigate impacts, including to ensure the safety of pedestrian and cyclists during construction. A preliminary Construction Traffic and Pedestrian Management Plan A preliminary detail on the school zone requirements to be installed including a school zone plan as per the School Zone 40 km/h Policy	The primary construction routes to and from the subject site are detailed in 5.3.1 of the TA. The available construction program data is detailed in Section 5.1 of the TA. The onsite car parking arrangements are detailed in Section 5.3.3 of the TA. The emergency services vehicle arrangements are detailed in Section 5.3.7 of the TA. Potential impacts to public transport during construction are detailed in Section 5.3.6 of the TA. The measures to manage the potential impacts during construction on pedestrians and cyclists are detailed in 5.3.4 of the TA. A preliminary Construction Traffic and Pedestrian Management Plan (CTPMP), has been prepared by GHD as a separate deliverable for the new high school in Jerrabomberra. A summary of key aspects of the CTPMP is provided in Section 5.3. Details of the school zone requirements fro Environa Drive are detailed in Section 3.2.2.1.

On the 9th September 2021, 6th October 2021 and 22nd October 2021, meetings were held with a transport working group with representatives from QPRC, Department of Education, Hindmarsh Construction, TSA Management and GHD to discuss the new high school in Jerrabomberra. Key discussion points of the meeting included:

– The layout and operation of the school's transport facilities
– Analysis of the operation of intersections in proximity to the school
– Intersection modelling requirements

A copy of the minutes of these meetings are included in Appendix B.

1.1 Proposal

The proposed development is for the construction of a new high school in Jerrabomberra. The proposal will meet community demand and to ensure new learning facilities are co-located near existing open space infrastructure. The proposal generally includes the following works:

– Site preparation
– Construction of a series of buildings up to three storeys including administration/staff areas, library, hall and general learning spaces
– Construction of new walkways, central plaza and outdoor games courts
– Construction of a new at-grade car park
– Associated site landscaping and open space.

The proposal has been designed to accommodate approximately 500 students with Stream 3 teaching spaces, however the core facilities will be future proofed to a Stream 5 to enable possible future expansion to meet projected demand.

The proposal will include site preparation works, such as clearing and levelling to accommodate the proposed buildings and play areas. The proposal will involve the construction of a series of buildings housing general learning spaces, administration and staff wings, outdoor learning areas, a library and assembly hall.

The proposal will include construction of a new driveway and hardstand with access proposed off the northern stub road east of Environa Drive. Pedestrian access is proposed off Environa Drive and the northern stub road.

The site plan for the new high school in Jerrabomberra is displayed in Figure 1.1, end of trip facilities are displayed in Figure 3.1.

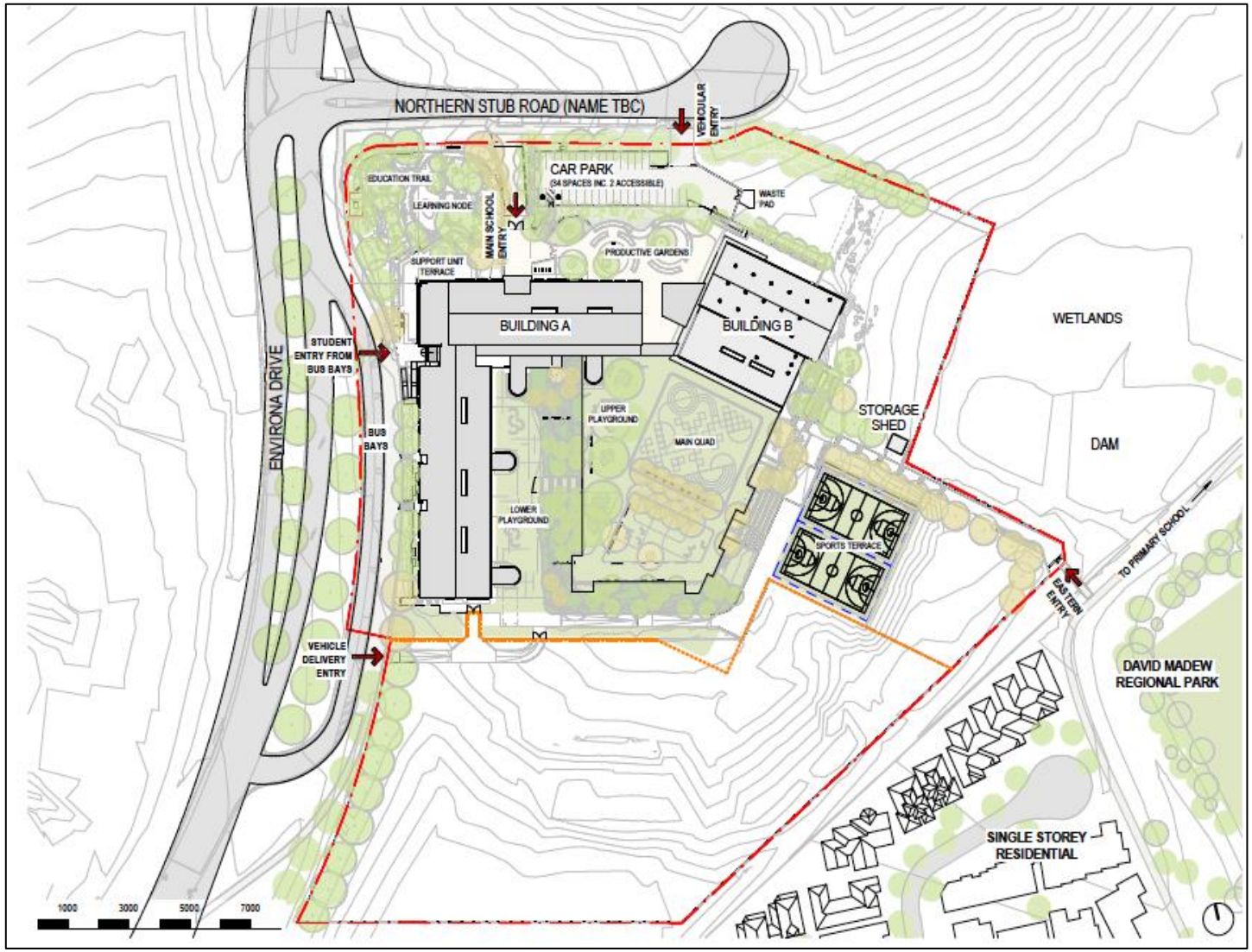

Figure 1.1 Site plan

Source: TKD Architects

1.1.1 Subject site

The proposed development is located within the South Jerrabomberra Innovation Precinct, also referred as the Poplars Innovation Hub, in the local government area of Queanbeyan-Palerang Regional Council.

The school site is part of an existing lot (Lot 1 in DP 1263364), which is approximately 65.49 ha in area and will be characterised by a mix of business park and open space uses and a new north-south connector road named Environa Drive.

Delivery of the Precinct is underway with Environa Drive currently under construction. Most of the-lot, however, remains undeveloped.

The school site is subject to a proposed lot (Lot 2 in DP 1263364), which was approved by Council under DA332-2015 on 10 March 2021 but is not yet registered. The approved lot is irregular in shape, is largely cleared and is approximately 4.5 ha in area. A small dam is located adjacent to the south eastern boundary of the site, which forms part of a broader wetland.

The site is located in excellent proximity to existing open space facilities. It adjoins David Madew Regional Park to the south east and is located 100 m east of an existing recreational field associated with Jerrabomberra Public School.

A description of the site is provided in Table 1.2 and an aerial image of the school's subject site is displayed in Figure 1.2.

Table 1.2 Site description

Item	Description
Site addresses	School address yet to be determined however, it is located within the Jerrabomberra Innovation Precinct at 300 Lanyon Drive, Jerrabomberra.
Legal description	Lot 1 in DP 1263364 (existing) Lot 2 in DP 1263364 (proposed, but not registered)
Total area	Lot 1 – 65.49 ha Lot 2 – 4.5 ha
Frontages	The site provides frontage to Environa Drive and the northern stub road, both currently under construction.
Existing use	The site is undeveloped and contains a series of small vegetation clusters scattered across the site.
Existing access	Existing access is via an informal unsealed driveway off Tompsitt Drive along the northern boundary of the existing lot. The site will be accessed via Environa Drive and a secondary access road (North Road), which is currently under construction.
Context	Land to the south is primarily residential in nature. Jerrabomberra Public School and David Madew Regional Park are located to the east/south-east, while land to the west is undeveloped and features Jerrabomberra Creek. The site is located within the South Jerrabomberra Innovation Precinct, which is currently under construction. The areas north and west of the site are currently undeveloped but the site is currently undergoing a transition from rural to business park uses. Development further north on the opposite side of Tompsitt Drive and along Edwin Land Parkway includes retail and commercial uses. Development immediately to the south includes existing low density residential development. Land in the south west has been identified for future low density residential, light industrial and business park uses.

Figure 1.2 Aerial image of the subject site

Source: TKD Architects

The North Road cul-de-sac, which will intersect Environa Drive at a priority controlled intersection in a "seagull" [1] arrangement, will provide direct access to the high school's main pedestrian entry, pick-up/drop-off facility, car park and waste collection facility.

An aerial image from 10th July 2021 (refer to Figure 1.3) shows the construction of Environa Drive and surrounding roads to the new high school in Jerrabomberra.

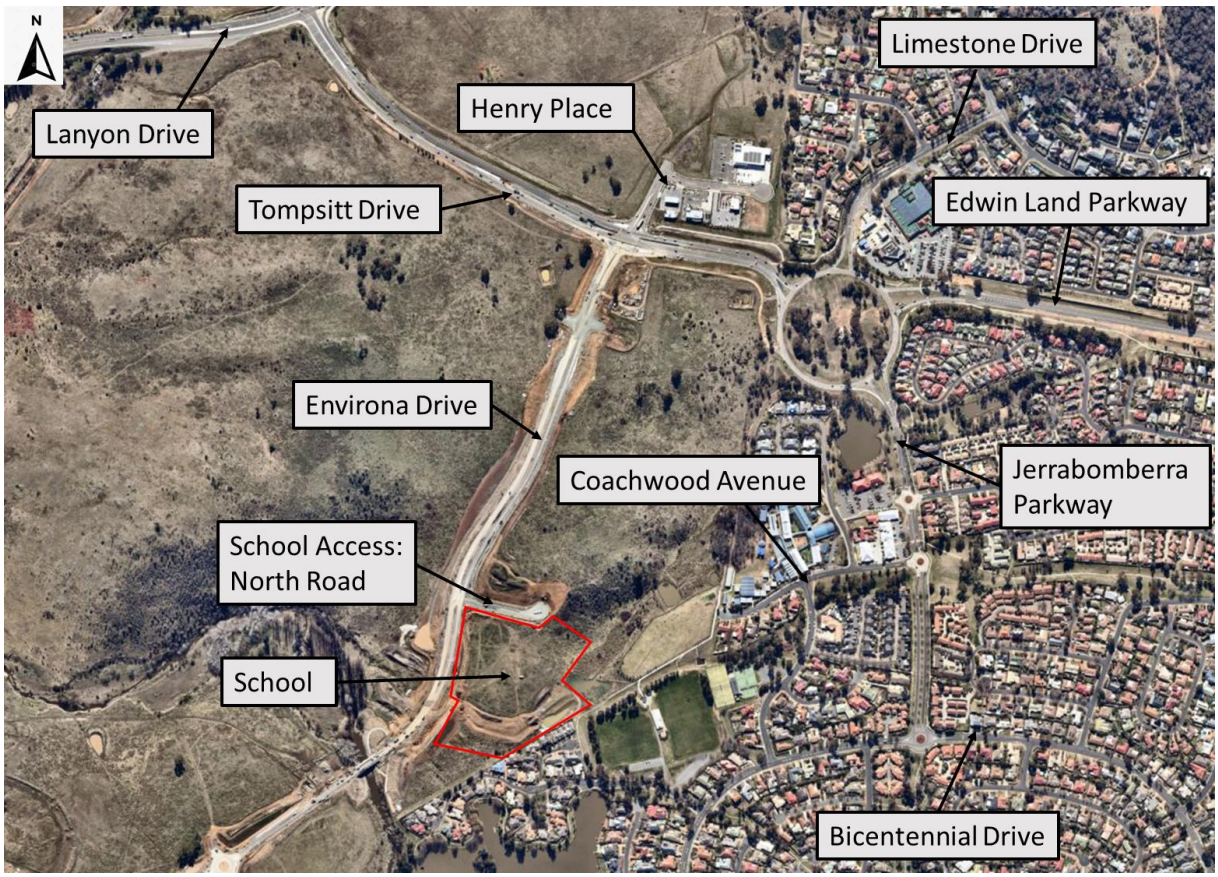

Figure 1.3 New high school in Jerrabomberra subject site and surrounding road network

Source: Nearmaps modified by GHD

1.1.2 Student catchment

The indicative student catchment and location of the new high school in Jerrabomberra is displayed in Figure 1.4.

[1] In a seagull arrangement, a separate lane for vehicles turning right from the side road to enter and accelerate to through traffic speed before merging with through traffic.

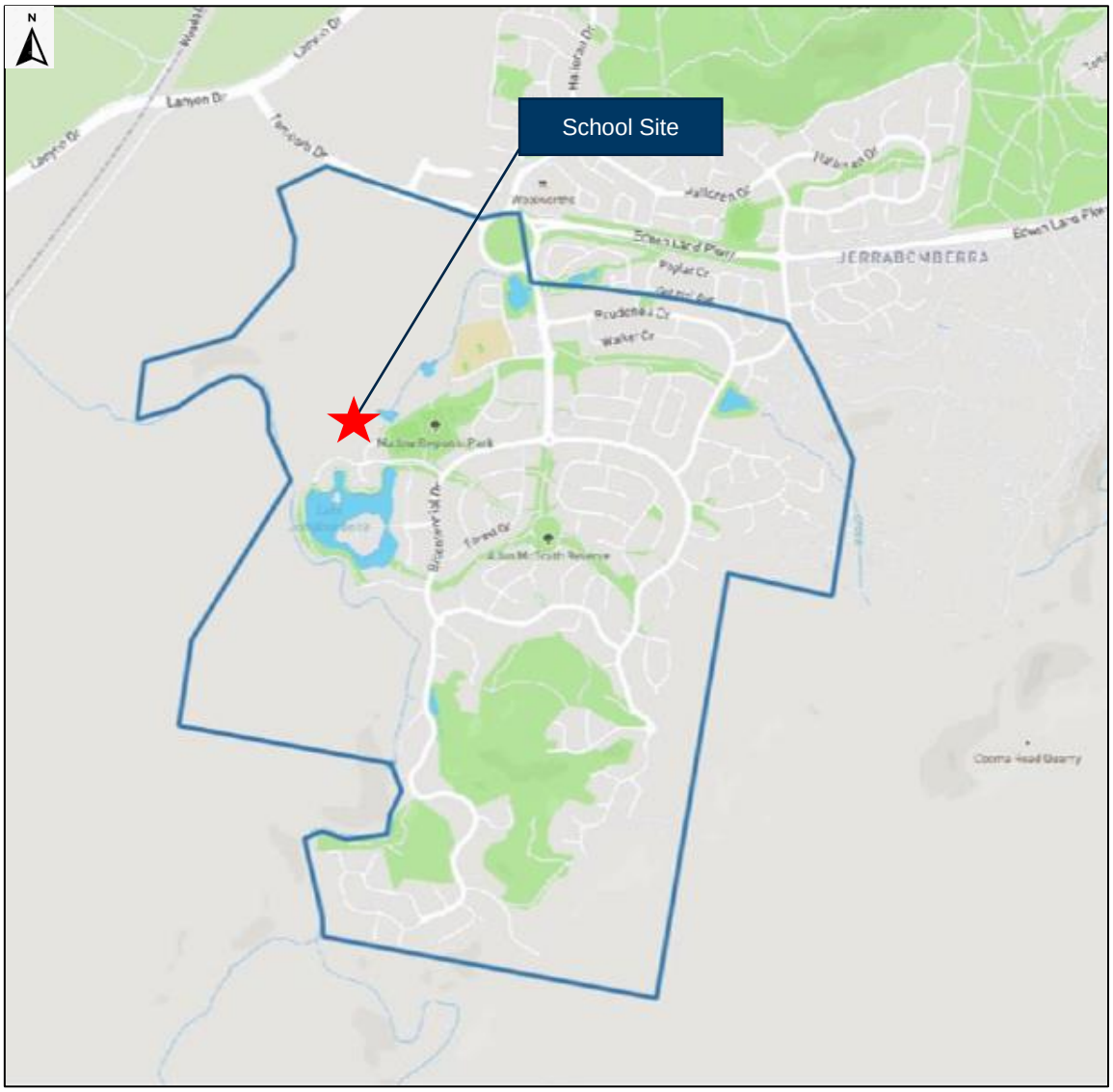

Figure 1.4 Indicative student catchment

Figure 1.4 indicates that the student catchment for the proposed high school is small and will consist of the Jerrabomberra Township, south of Tompsitt Drive and Edwin Land Parkway.

1.1.3 Purpose of the Transport Assessment

The Transport Assessment (TA) has been prepared to:

– Respond to the SEARs (refer to Table 1.1)
– Assess multi-modal access to the school.
– Identify potential travel impacts of the school.
– Propose solutions to mitigate identified impacts.

2. Existing conditions

2.1 Transport networks and operations

2.1.1 Road network

The key roads in proximity to the subject site are displayed in Figure 1.3.

2.1.1.1 Tompsitt Drive

Tompsitt Drive is a divided sub-arterial road with two travel lanes in either direction (refer to Figure 2.1) and an 80 km/h speed limit. Parking is not permitted on Tompsitt Drive.

An on-road bike lane, designated with logos, is provided within the shoulder on the northern side of Tompsitt Drive.

Figure 2.1 Tompsitt Drive looking east towards subject site

Source: Google streetview

The intersection of Tompsitt Drive and Henry Place intersect at a signalised junction, with pedestrian crossings on each leg (refer to Figure 2.2). Environa Drive, which is currently under construction, will form the southern leg of this intersection.

Figure 2.2 Intersection of Tompsitt Drive and Henry Place

Source: Google streetview

2.1.1.2 Coachwood Avenue

Coachwood Avenue is a local road that currently operates with a single travel lane in either direction (refer to Figure 2.3). Parking is typically permitted on Coachwood Avenue. A footpath is provided on the northern side of Coachwood Avenue.

Figure 2.3 Coachwood Avenue looking west towards subject site

Source: Google streetview

The existing Jerrabomberra Public School has frontage to Coachwood Avenue. A school crossing is provided on Coachwood Avenue at the front of the public school.

The speed limit on Coachwood Avenue is typically 50 km/h and includes a 40 km/h School Zone (8:00 am – 9:30 am and 2:30 pm – 4:00 pm school days) at the frontage to Jerrabomberra Public School.

An indented bus stop, with a small shelter, is provided on Coachwood Avenue at the front of Jerrabomberra Public School that accommodates both public and school services.

Jerrabomberra Public School kiss and ride zone is provided on the northern side of Coachwood Avenue and is controlled by No Parking signage (8:30 am – 9:30 am and 2:30 pm – 4:00 pm school days). In order to access this zone, vehicles currently undertake a U-turn at the cul-de-sac at the end of Coachwood Avenue.

2.1.1.3 Jerrabomberra Parkway

Jerrabomberra Parkway is a collector road that provides a single travel lane in either direction (refer to Figure 2.4). Parking is not permitted on Jerrabomberra Parkway.

Figure 2.4 Jerrabomberra Parkway looking north from Coachwood Avenue

Source: Google streetview

The speed limit on Jerrabomberra Parkway is typically 50 km/h, but it includes a 40 km/h School Zone (8:00 am – 9:30 am and 2:30 pm – 4:00 pm school days) in proximity to Jerrabomberra Public School.

A raised pedestrian crossing is provided on Jerrabomberra Parkway at the frontage to the Jerrabomberra Shopping Centre.

Pedestrian footpaths are provided on the eastern side of Jerrabomberra Parkway.

An informal “goat track” is located on the western side of Jerrabomberra Parkway, suggesting there is a key pedestrian desire line that is not supported by active transport infrastructure.

The parking controls and school zones in proximity to the school site are displayed in Figure 2.5.

Figure 2.5 Parking Controls and School Zones

Source: Sixmaps modified by GHD

The state and regional roads in proximity to the school subject site are displayed in Figure 2.6, with Figure 2.7 outlining the Restricted Access Vehicle (RAV) map for 19 m B-double vehicles as detailed in the Transport for NSW website.

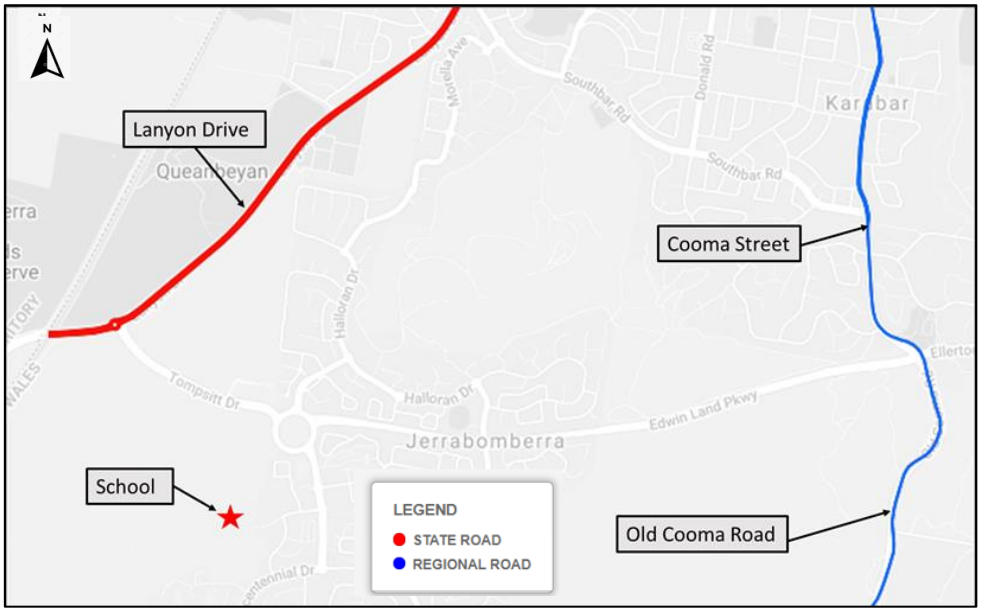

Figure 2.6 State and Regional road network

Source: TfNSW modified by GHD

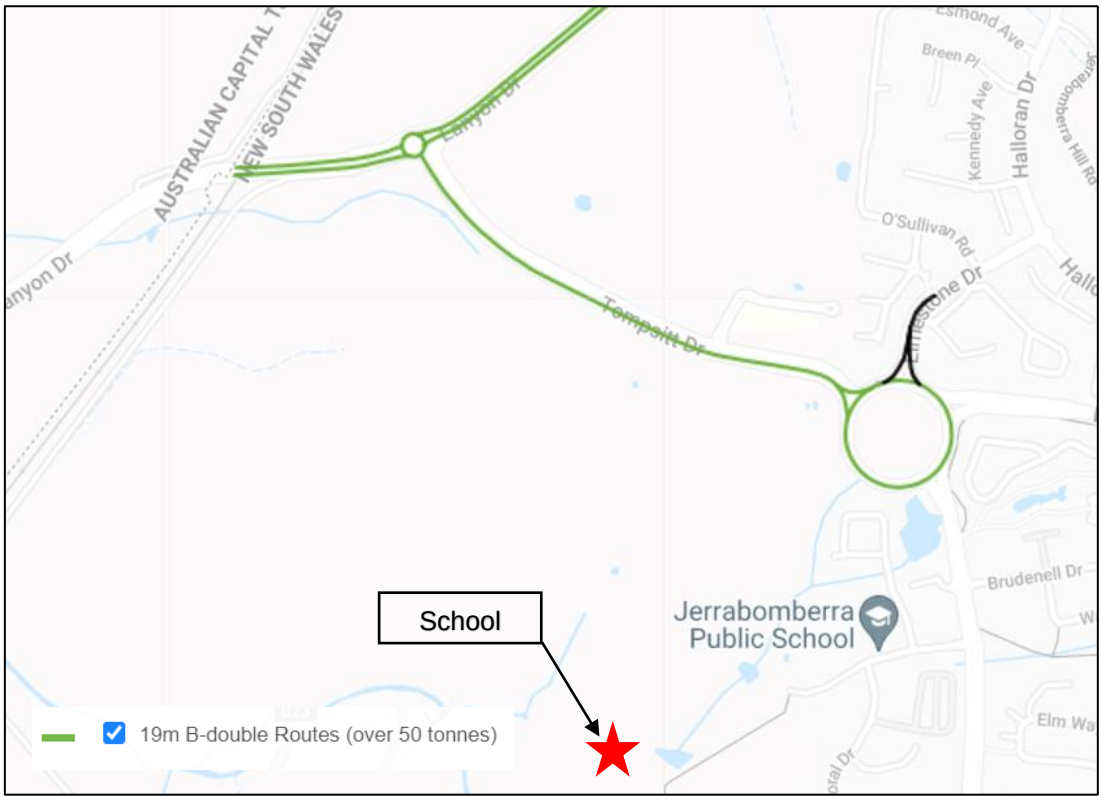

Figure 2.7 Restricted Access Vehicle (RAV) maps – 19 m B-double

Source: TfNSW modified by GHD

2.1.2 Active and public transport

2.1.2.1 Active transport

As described previously:

– An on-road bicycle path is provided on the northern side of Tompsitt Drive.
– Footpaths are provided on the northern side of Coachwood Avenue.
– Footpaths are provided on the eastern side of Jerrabomberra Parkway.

In addition to the above:

– Signalised pedestrian crossings are provided at the intersection of Tompsitt Drive and Henry Place.
– School crossings are provided at the frontage to Jerrabomberra Public School on Coachwood Avenue and Firethorn Place.
– A raised pedestrian crossing is provided on Jerrabomberra Parkway, north of Coachwood Avenue.

At the end of Coachwood Avenue, a pedestrian path, with a width of approximately 1.2 metres is provided that runs along the southern boundary of the school site, past David Madew Oval.

The active transport infrastructure in proximity to the school site is displayed in Figure 2.8.

Figure 2.8 Active transport infrastructure within proximity of the school

Source: Google Maps modified by GHD

The active transport infrastructure within the school's walking catchment (refer to Section 2.2) is displayed in Figure 2.9.

Figure 2.9 Jerrabomberra active transport infrastructure

Source: Google Maps modified by GHD

2.1.2.2 Public transport

Three public bus services and eight school services currently operate from the Bus Zone at the front of the Jerrabomberra Public School on Coachwood Avenue, as summarised in Table 2.1.

Table 2.1 Current Bus Services

Route	Direction	Route name	AM	PM
835	Loop	Queanbeyan Interchange to Jerrabomberra (Loop) via Letchworth	2	1
836	Loop	Queanbeyan Interchange to Jerrabomberra Heights (Loop) via Karabar & North Terrace	2	2
835/836	Loop	Queanbeyan to Jerrabomberra (Loop) via Queanbeyan West	1	1
S187	OB	Queanbeyan Interchange to Jerrabomberra Public School via Queanbeyan West	1	0
S161	OB	North Terrace to Jerrabomberra PS, St Benedict's Public School, St Bede's PS, Red Hill Public School	1	0
S217	OB	Queanbeyan Interchange to Googong Anglican School and Jerrabomberra Public School via Karabar	1	0
S189	Loop	Jerrabomberra loop	1	0
S128	Loop	Jerrabomberra loop	0	1
S103	IB	Jerrabomberra Public School to Crestwood	0	1
S138	IB	Jerrabomberra Public School to Edwin Land Parkway	0	1
S216	IB	Jerrabomberra Public School to Queanbeyan Interchange via Googong Anglican School and Karabar	0	1

Of the school services listed above, the S161, S189, S128 and S138 operate within Jerrabomberra, while S187, S217, S103 and S216 also provide access to nearby population centres, including Karabar, Googong and Queanbeyan.

Information provided by QPRC indicates that the bus stop on Coachwood Avenue provides an interchange for students in Jerrabomberra travelling to private schools in Canberra.

A summary of the morning bus services are displayed in Figure 2.10, and the afternoon bus services are displayed in Figure 2.11.

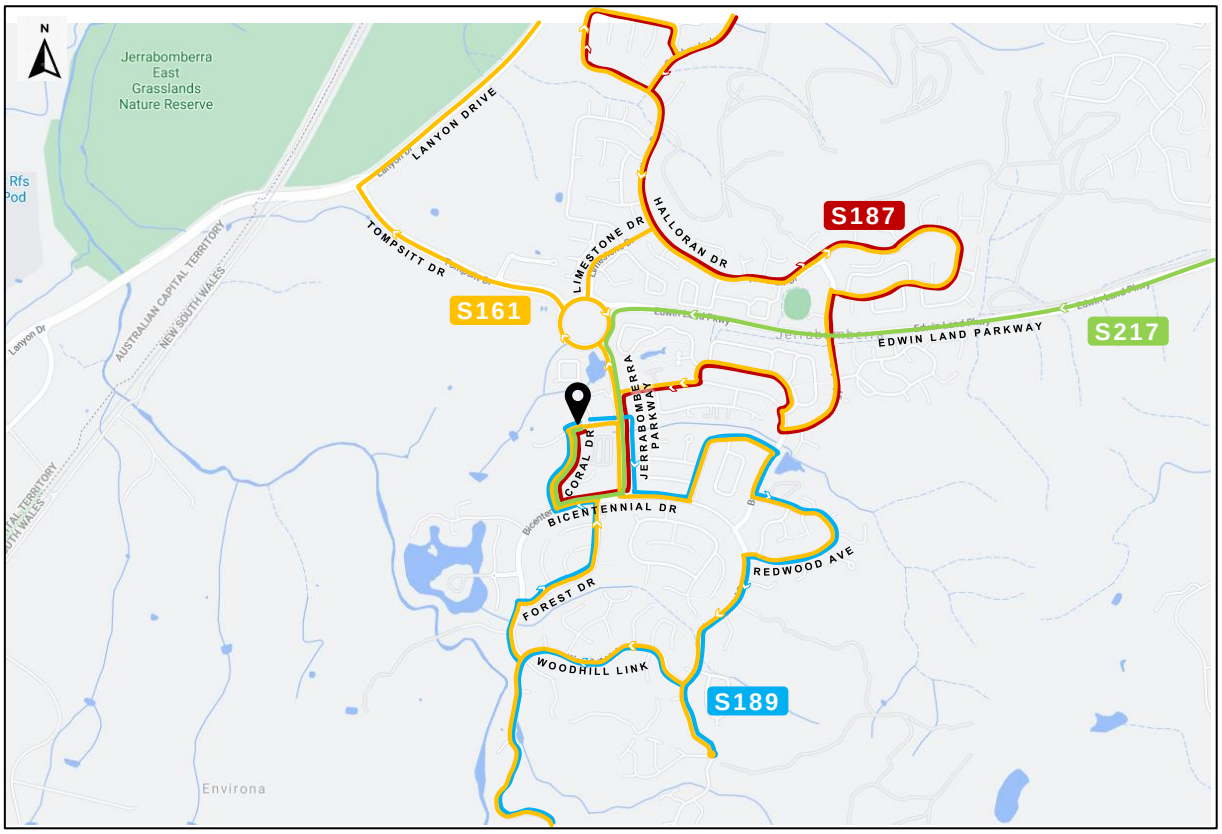

Figure 2.10 Morning Bus Services

Source: Google Maps modified by GHD

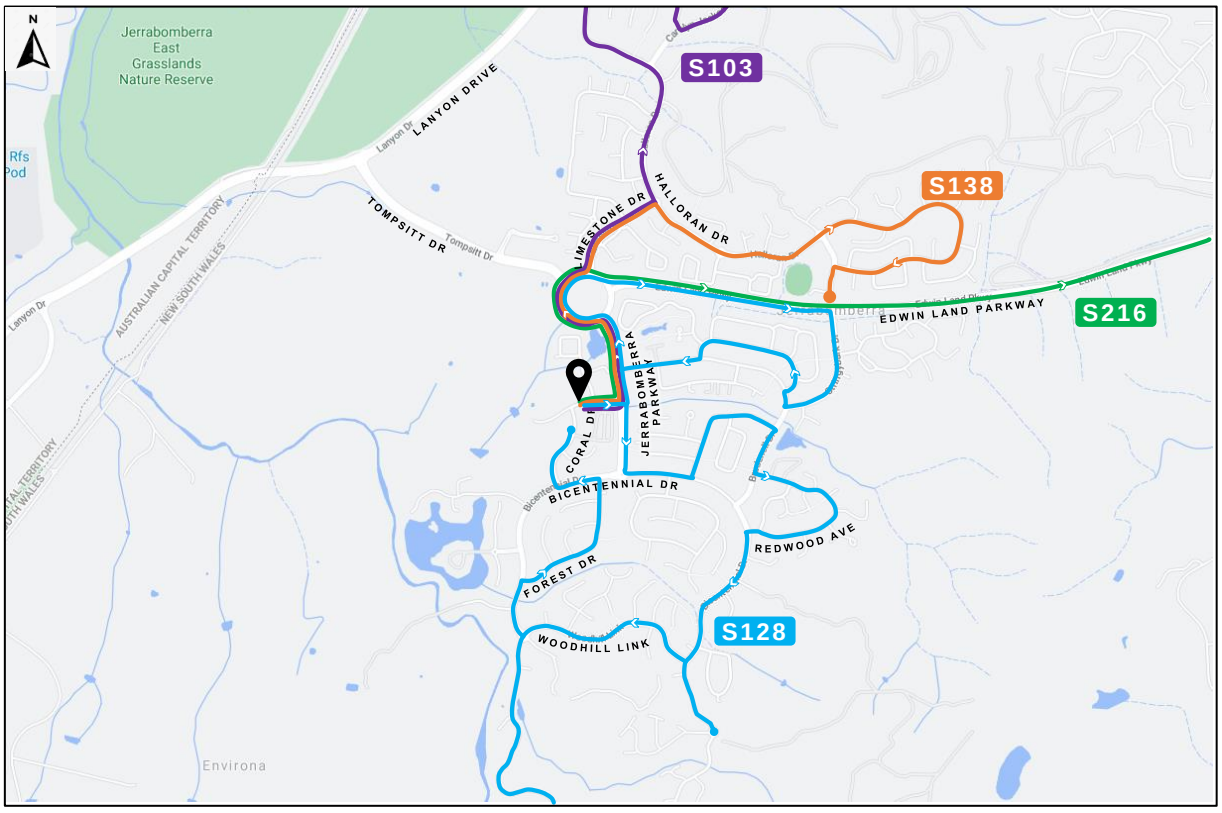

Figure 2.11 Afternoon Bus Services

Source: Google Maps modified by GHD

2.1.3 Crash data

Crash data obtained from TfNSW's Centre for Road Safety indicates that in the last five years (2015 – 2019) there have been no crashes on Coachwood Avenue and Jerrabomberra Parkway.

There have been four recorded crashes on the Jerrabomberra Circle, as follows:

– Two crashes involved rear-end collisions, one of which resulted in a minor injury and one of which was "non-casualty".
– One crash involved a vehicle driving off the road, resulting in a minor injury.
– One crash involved a collision between vehicles travelling in opposite directions, which did not result in any casualties

2.2 Travel patterns and travel demand

The following catchment analysis has been undertaken, using geographical information software (GIS), in the context of the residential locations of the school's student population. The catchment analysis represents the population at the time of assessment and will fluctuate each year as new students start or leave the school. This approach is in accordance with SINSW specifications, which requires the following catchment assumptions:

– Pedestrians = 400 metres, 800 metres and 1.2 kilometres
– Bicycle riders = 1,200 metres, 2,400 metres and 3.6 kilometres

The catchment analysis included the locations of 828 high school student residences, providing an excellent sample size to determine potential transport demands, by mode, for future students at the high school in Jerrabomberra.

The following is noted with respect to student eligibility to free public transport to/from schools as part of the School Student Transport Scheme (SSTS) for high school students:

– The straight-line distance from their home address to school is more than two kilometres, or
– Walking distance is more than 2.9 kilometres.

In each case, the analysis has been undertaken for:

– The notional catchments, i.e. a straight line radius from the school site.
– The actual catchment, based on the availability of the surrounding traffic and transport networks.

The outputs from the catchment analysis for the actual catchment are displayed in Table 2.2.

Table 2.2 Catchment Data

Catchment	Number Students	Percentage
1 m-400 m (5-min walk)	24	3%
401 m-800 m (10-min walk)	77	9%
801 m-1200 m (15-min walk or 5-min bike ride)	171	21%
Total walking catchment	**272**	**33%**
1 m-1200 m (5-min bike ride)	272	33%
1,201 m – 2,400 m (10-min bike ride)	401	48%
2,401 m – 3,600 m (15-min bike ride)	131	15%
Total bike riding catchment	**804**	**96%**
1 m – 2,900 m (excluded from SSTS)	782	94%

The data in Table 2.2 indicates that:

– Approximately 33 percent of students reside within the (actual) 15-minute walking catchment from high school in Jerrabomberra. The majority of these students reside south of Tompsitt Drive and Edwin Land Parkway. Further, significant portions also reside south of Bicentennial Drive.
– Approximately 96 percent of students live within the 15-minute bike riding (actual) catchment of the new high school in Jerrabomberra.
– Approximately 95 percent of students live within the SSTS bus catchment from the school. These students are not entitled to free public transport.

Given the high portion of students who reside within the school's cycling catchment, improvements to the bicycle infrastructure within this catchment is expected to increase the number of students accessing the school by cycling.

Students who live within the 2.9 kilometre catchment and are not eligible for free travel will be able to purchase a term pass from QCity Transit and travel at a reduced concession rate.

2.3 Transport use

The residents of Jerrabomberra are highly reliant on their cars. The 2016 Journey to Work (JTW) census data for Jerrabomberra indicates that:

– 77 percent of employed residents drove to work and five percent were car passengers.
– Three percent of employed residents worked from home.
– One percent of employed residents walked to work.
– One percent of employed residents used public transport.

The 2016 census data, indicates that Jerrabomberra has a population of 321 students attending government secondary schools and 508 students attending catholic secondary schools.

Mode share survey data for students at a school similar to the new high school in Jerrabomberra is not currently available.

3. Strategic context, existing transport networks and travel demand

3.1 Testing school transport scenarios

3.1.1 Base case scenario

TfNSW have prepared the *Trip Generation Surveys Schools Analysis Report* to determine contemporary trip generation data for schools within Greater Sydney and Regional NSW. Regional high schools included in the mode share surveys were located at Kiama, Cessnock, Springwood and Wyong.

The summary of the average mode split for regional high schools is presented in Table 3.1.

Table 3.1 Regional Secondary School

Mode	Portion
Car	38%
Bus	35%
Walk	28%

It is noted that the data does not include cycling or distinguish between students who were dropped off or drove themselves.

As described previously:

– There are currently some key deficiencies in Jerrabomberra's walking and cycling network. This may suppress the portion of students who utilise active transport.
– The majority of students are expected to reside with 2.9 kilometres of the school and will not be eligible for free public transport.

Accordingly, for the purposes of analysis, it has been assumed that for the baseline scenario:

– Twenty five percent of students will walk or scooter.
– Ten percent of students will cycle.
– Ten percent will catch the bus.
– Ten percent of students will drive themselves or be passengers.
– Forty five percent of students will be picked-up/dropped -off.

3.1.2 Reach scenario

The reach mode share targets are based on the catchment analysis included in Section 2.3. In summary, the analysis indicates that:

– 33 percent of students reside within 1,200 m of the school.
– 63 percent of students reside between 2,400 m and 3,600 m of the school site.
– Five percent of students reside outside 2,900 m of the school and are eligible for the SSTS.

In summary, for the reach scenario it has been assumed that:

– 33 percent of students will walk.
– 47 percent of students will cycle.
– 20 percent of students will catch the bus (assuming some students will purchase term passes).

3.1.3 Target scenario

The target scenario mode share has been identified as being between the base and reach mode shares, as follows.

– For walking/scootering, the base scenario is 25 percent, and the reach scenario is 33 percent. The target scenario of 30 percent has been determined on the premise that most students residing within 1,200 m should be supported in walking to and from school.
– The majority of students are expected to be within 15-minute cycling distance from the school. Accordingly, a target scenario of 20 percent (consisting of 100 students) has been determined for cycling.
– For buses, the baseline scenario is 10 percent, and the reach scenario (based on the first-principles analysis) is 20 percent. For the target scenario, a bus mode share, an average of the two, 15 percent has been assumed.
– Of the remaining 35 percent of students, it is assumed that 25 percent will be picked-up/dropped-off, and ten percent of students will drive themselves or be passengers.

The mode share scenarios have been applied to the expected student population of the new high school in Jerrabomberra is detailed in Table 3.2.

Table 3.2 New high school in Jerrabomberra mode share target (students)

Mode	Base case		Reach		Target	
	Usage	Mode share	Usage	Mode share	Usage	Mode share
Walk, incl ped scooter	125	25%	165	33%	150	30%
Bicycle	50	10%	235	47%	100	20%
School bus	50	10%	100	20%	75	15%
Kiss-and-drop	225	45%			125	25%
Drive themselves	50	10%			50	10%
Total	500	100%	500	100%	500	100%

The residential locations of the staff at the high school are not currently available. However, it is expected that a significant portion of staff will reside in the nearby population centres of Canberra and Queanbeyan. Public transport connections between these centres and Jerrabomberra are poor. The mode share targets for staff are also included in Table 3.3.

Table 3.3 New high school in Jerrabomberra mode share targets (staff)

Mode	Target	
	Staff	Mode Share
Walk, incl ped scooter	5	10%
Bicycle	5	10%
Car as driver	30	70%
Car as passenger	5	10%
Total	45	100%

3.2 Supporting scenarios with infrastructure, operations, policies and programs

3.2.1 Site transport infrastructure

The site infrastructure that will be provided for the high school is detailed as below.

An indicative drawing of the traffic and transport routes and facilities at the new high school in Jerrabomberra is displayed in Figure 3.1.

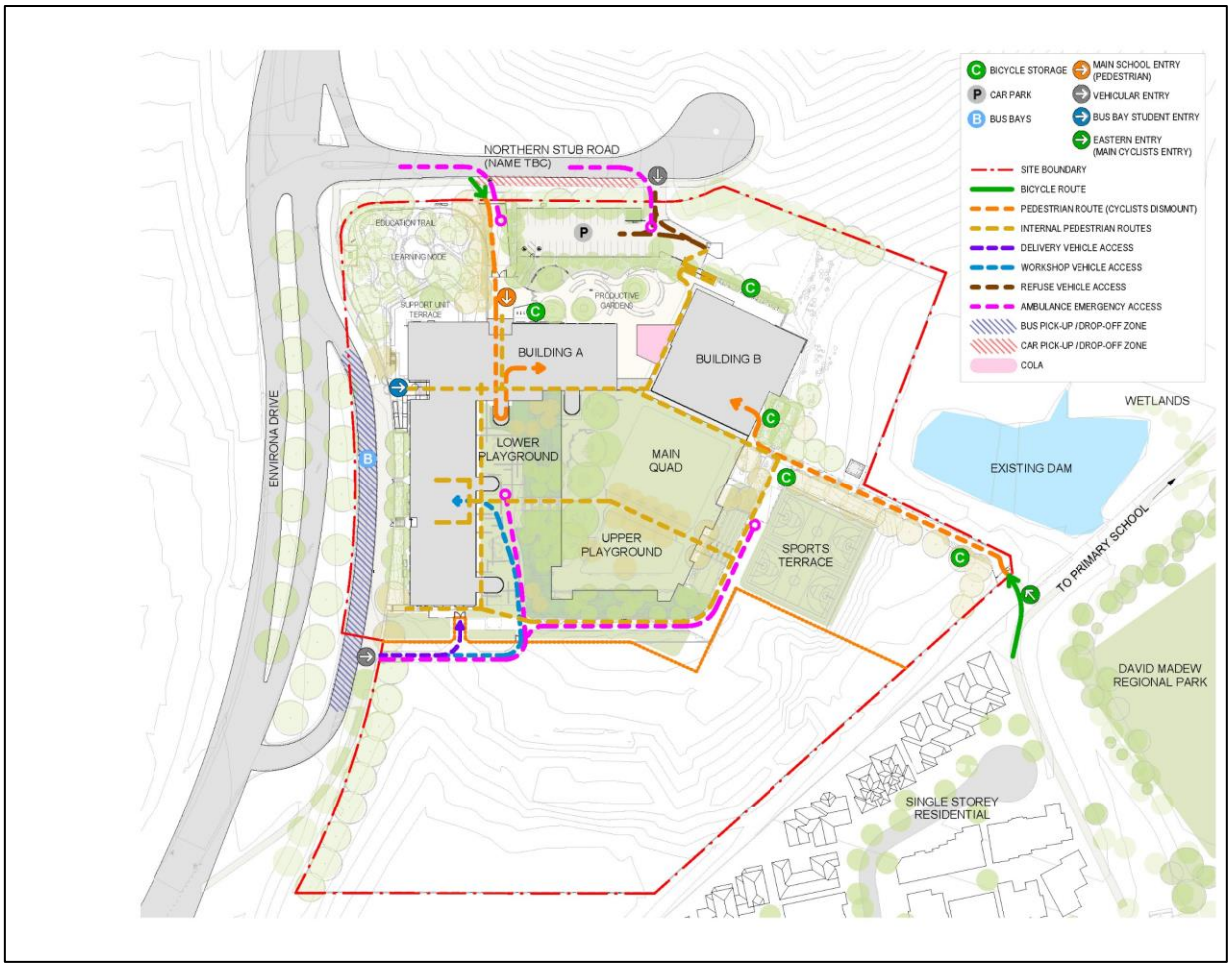

Figure 3.1 New high school in Jerrabomberra traffic and transport facilities

Source: TKD Architects

3.2.1.1 Pedestrians, bicycle and scooter

Pedestrian, scooter and bicycle access to the site will be provided:

– In the east via the current path at the end of Coachwood Avenue.
– To the north via North Road.

3.2.1.2 End of Trip facilities

The high school will have 45 staff and will provide one unisex shower/change cubicle will be provided near the northern entry (for use of staff only).

In accordance with the mode share targets detailed in Table 3.2, 114 bicycle parking spaces will be provided for staff and students. These will be located at the northern and eastern pedestrian entries of the school.

The provision of parking for 114 bikes is consistent with the target mode share scenario for cycling, as detailed in Section 3.1.3.

All bike parking will be provided within the secured, fenced, boundary of the school.

3.2.1.3 Public transport

A Bus Zone will be provided adjacent to the west of the high school, separated from Environa Drive through traffic flow. Key advantages of this arrangement are:

– It minimises the impacts of buses drawing in and drawing out at the school on the through movement of traffic on Environa Drive.
– Students will not be required to cross a road to access the Bus Zone.

A separate pedestrian access/egress gate will be provided for students accessing/egressing the school via bus (refer to Figure 1.1).

The bus bay length services up to five buses to accommodate additional bus route services at the high school.

In accordance with the geometry of the zone, all buses will access and egress the high school in a north to south direction.

Buses for excursions (or similar) will use the school's designated Bus Zones.

The current bus operating in proximity of the high school subject site (at Jerrabomberra Public School) are summarised in Table 2.1.

Based on mode share targets in Table 3.2, approximately 75 students are expected to catch a bus to and from school. This is the equivalent of two buses, assuming approximately 40 students per bus. Accordingly, the Bus Zone will have sufficient capacity to accommodate the expected demand.

At the time of writing this report, discussions have been initiated with TfNSW and QCity Transit about providing bus services to accommodate the additional demand associated with the high school in Jerrabomberra. Emails from GHD enquiring into the operation of bus services at the new high school in Jerrabomberra are included in Appendix C.

Based on discussions with TfNSW, there are ongoing internal discussions about the provision of bus services for the high school in Jerrabomberra. Based on these discussions it is noted that:

– For bus services to be determined for a new school, a SSTS Portal needs to be set up by TfNSW.
– The portal will provide parents with an opportunity to apply for free public transport, for students residing outside the 2.9 kilometre catchment.
– Based on that data, appropriate bus routes will be developed with the public transport providers for the new high school in Jerrabomberra. These will account for the public transport needs of the adjacent primary school.
– Bus routes are typically identified within eight months of a school opening.

3.2.1.4 Vehicles

3.2.1.4.1 Pick-up/Drop-off

Parents/guardians picking up or dropping off their child/children will undertake a U-turn at the eastern end (at the turning head), use the designated facility on the southern side of North Road and exit onto Environa Drive.

Seven spaces will be provided in the pick-up/drop-off zone, plus one dedicated space for students with special needs, but do not require ASTP services, as shown in Figure 3.2.

Vehicles will be able to queue within North Road before utilising the pick-up/drop-off facility and exiting onto Environa Drive.

The pick-up/drop-off zone will be controlled by No Parking signage (8:00 am - 9:30 am and 2:30 pm – 4:00 pm school days) to encourage vehicle turnover. Outside of these periods, the pick-up/drop-off zone will be used for visitor parking.

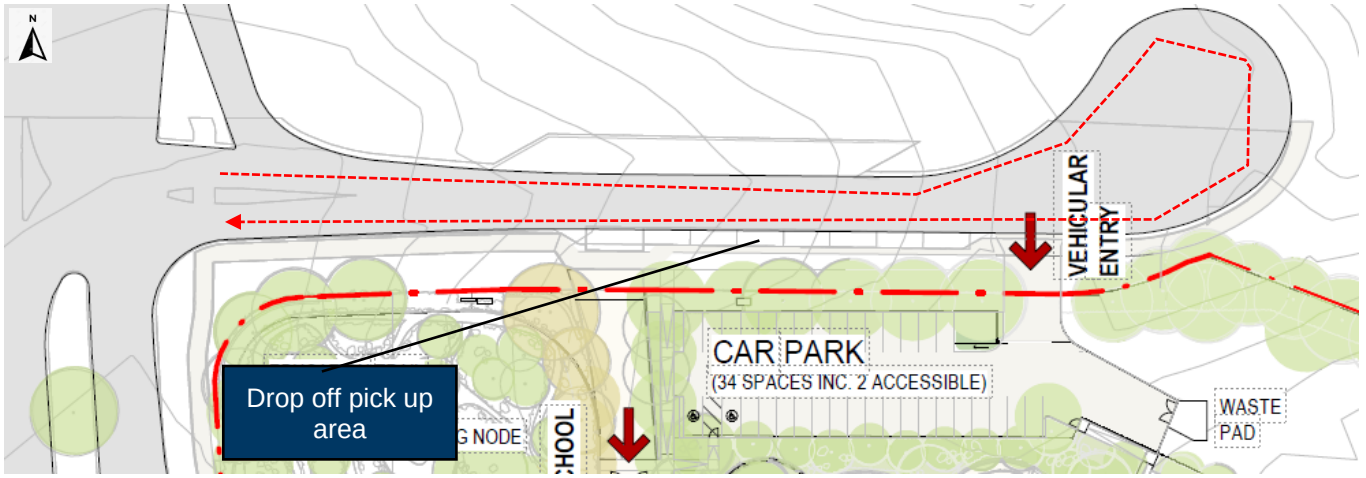

Figure 3.2 Vehicle access/egress

The agreed mode share target for students being dropped off is 25 percent of the student population, which is the equivalent of 125 students. Assuming there will be an occupancy rate of 1.4 students per vehicle, this corresponds to 90 vehicles.

Assuming that the school peak will occur over a 15 minute period and conservatively it takes approximately 60 seconds for a student to embark or disembark a vehicle, each space would turn over approximately 15 times. Therefore the seven spaces will accommodate up to 105 vehicles in the peak 15 minutes of school activity.

Accordingly, seven spaces are appropriate to accommodate the expected demand and minimise the risk of queuing vehicles on the North Road or Environa Drive.

3.2.1.4.2 Parking

Vehicle access to the high school is from the North Road cul-de-sac, as displayed in Figure 3.2.

Staff and waste collection vehicles will be able to enter the school. Access to the car park will be controlled by a gate and a reader/intercom.

The car park at the new high school in Jerrabomberra will provide 34 parking bays, including two parking bays for the mobility impaired.

In order to encourage carpooling, two parking bays will be allocated to staff who carpool.

The QPRC Development Control Plan does not provide a parking rate for high schools.

However, 34 parking bays is consistent with the mode share targets, detailed in Section 3.1.3, and is considered to be acceptable to accommodate typical parking demand of staff associated with the day to day operation of the high school.

3.2.1.4.3 Special needs students

There will be opportunities for parents/guardians with special needs children attending the high school and minibuses associated with the NSW's Government Assisted School Travel Plan (ASTP), to pick-up/drop-off these students within the staff parking.

The available information on the ASTP team at the Department of Education indicates that:

- The volume of students who will require the ASTP services is not currently known.
- Transport will be provided in vehicles ranging from a car to a 12-seater minibus.
- Typically up to three ASTP vehicles will be queued up at the end of the school day.
- Students who require ASTP services should be picked up/dropped off separate from general parental traffic volumes.
- Students running onto the road is a major safety risk.
- The Bus Zone on the western boundary of the site and the staff car park provide potentially suitable locations ASTP vehicles pick-up/drop-off.

It is noted that the use of the Bus Zone will result in students catching buses and special needs students sharing a common facility.

The provision of ASTP vehicles within the staff car park, will provide separation from other parental pick-up/drop-off activity and occur behind gates, significantly reducing risks associated with students running onto the road.

3.2.1.5 Waste collection and deliveries

Waste collection will be undertaken within the school immediately east of the car park by a private contractor.

Information on how waste collection vehicles are expected to access/egress the high school and layover locations will be conveyed upon engagement of contract services.

The waste collection company will determine the collection hours based on school location and logistical access. They will schedule collection outside of peak school hours from 8:00 am to 9:30 am and from 2.30 pm to 4:00 pm to reduce any risk from the truck and bin movements affecting the school children.

Deliveries (excluding the wood and metal store) will typically also occur within the Bus Zone adjacent to Environa Drive and be scheduled to occur outside peak periods of school activity, i.e., no deliveries will be scheduled between 8:00 am – 9:30 am and 2:30 pm – 4:00 pm.

Additionally, a separate vehicle access will be provided from the Bus Zone for deliveries to the wood and metal store. This access will be fenced and physically separated from the high school.

Information on layover locations and access arrangements will be conveyed upon engagement of contracted services.

3.2.2 Adjacent and to site transport infrastructure

3.2.2.1 Committed infrastructure

Access to the high school in Jerrabomberra will be provided by the North Road cul-de-sac that will intersect Environa Drive at a priority controlled “seagull” intersection. QPRC are currently constructing Environa Drive and the North Road cul-de-sac (refer to Figure 1.3).

A construction drawing of the high school’s access intersection is displayed in Figure 3.3.

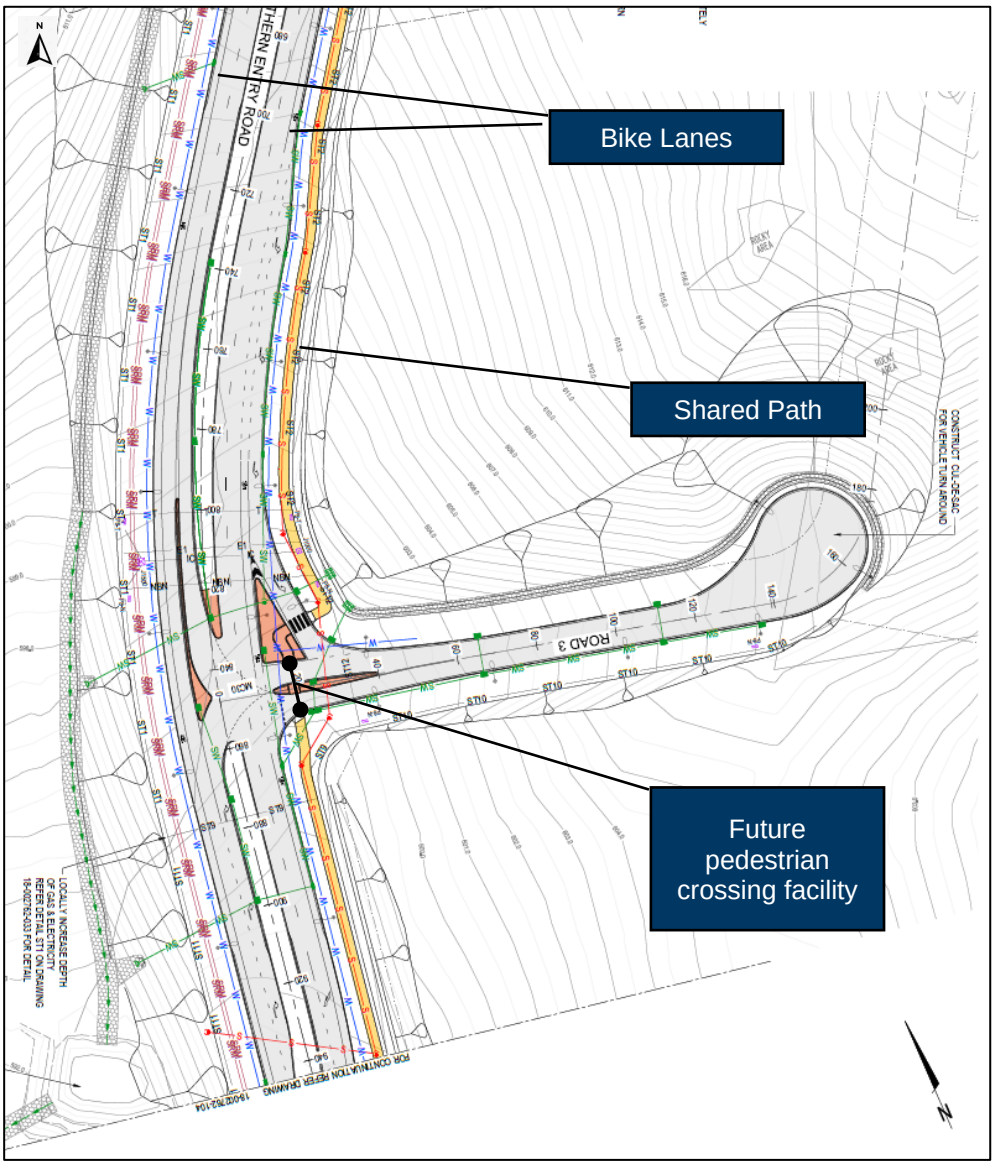

Figure 3.3 New high school in Jerrabomberra access intersection

Source: Prepared by Calibre

As displayed in Figure 3.3, a separated shared path is proposed along the eastern side of Environa Drive. The shared path will support the movement of students accessing the high school from the north and south. Additionally, on road marked bicycle lanes will be provided on both sides of Environa Drive.

The current intersection drawing indicates that a pedestrian crossing is not currently proposed on North Road at its intersection with Environa Drive. As part of the high school development, a pedestrian crossing will be provided in this location (refer to Figure 3.3).

A 40 km/h School Zone (8:00 am – 9:30 am and 2:30 pm – 4:00 pm) with supporting signage and road markings will be provided on Environa Drive in accordance with Technical Direction TD 2003/RS02 Installation of 40 km/h School Zones on Multi-lane Road and High Speed Roads.

3.2.3 Adjacent and to-site transport operations

3.2.3.1 Active transport

With respect to the high school's active transport network:

– All individuals will be responsible for locking their bikes at the designated bike rack.

– A security fence will be provided around the perimeter of the school to restrict activity to the designated entry points for pedestrians, bicycle riders and vehicles.
– All bike parking will be provided within the secure, fenced, boundary of the school.
– Advanced cycling and bike maintenance classes will be provided to high school students.
– A Transport Access Guide (TAG) will be prepared to detail the ways students can get to school, emphasising active transport.
– The school will encourage and support sustainable modes of transport to the school through the provision of appropriate infrastructure, education, communication and support (like a Travel Coordinator).

3.2.3.2 Public transport

With respect to the high school's Bus Zone:

– Staff will be allocated to "bus duty" in afternoon periods, within the school gates, to support the safe movement of students using the Bus Zone adjacent to Environa Drive.
– Buses for excursions (or similar) will use the school's designated Bus Zone.
– A TAG will be prepared to detail the ways students can get to school, emphasising public transport.

At the time of writing this report, discussions have been initiated with QCity Transit and TfNSW about providing additional bus services to accommodate the additional demand associated with the high school.

These communications are ongoing, and it is expected that a suitable provision of buses and appropriate bus routes will be operational on day one, term one of the commencement of the new high school in Jerrabomberra.

3.2.3.3 Vehicles

With respect to vehicle access/egress to the high school:

– Staff will not manage/supervise the operation of the school's pick-up/drop-off facilities. Students will be responsible for egressing/accessing their parent's/guardian's vehicle.
– A staff carpooling scheme may be established with prioritised on site parking spaces for vehicles transporting more than one staff member to school.
– Access to the car park will be controlled by a gate and a reader/intercom. Only authorised vehicles (staff) will be issued with a key fob to open the gate.
– Waste will be collected within the school site east of the car park area with access from North Road.
– The waste collection company will determine the collection hours based on school location and logistical access. They will schedule collection outside of peak school hours from 8:00 am to 9:30 am and from 2.30 pm to 4:00 pm to reduce any risk from the truck and bin movements affecting the school children.
– There will be opportunities for parents/guardians with special needs children attending the high school and minibuses associated with the NSW's Government Assisted School Travel Plan (ASTP), to pick-up/drop-off these students within the staff parking.
– Small vans and trucks will be required to deliver materials to the materials store of the wood and metal workshops. The procedures associated with these deliveries is currently being determined by SINSW.

3.2.4 Transport operations, encouragement programs and staffing:

3.2.4.1 Encouragement programs

The Travel Coordinator will make recommendations to the School Principal after consultation with the school community, including students, parents and staff, as to the type of programs that are best suited to the community and most likely to see the most impact to improving sustainable transport to the school.

These programs might include:

– Safe Routes to School.
– Independent Walking to School.
– Advanced cycling classes [2]
– Bike maintenance programs.
– Running to school – potentially as a form of training (if appropriate).

The programs need to be complemented by infrastructure investment like shared pathways and safe crossing locations to the school in order to be successful.

A summary of the proposed infrastructure and supporting management strategies are detailed in the TAG will provide:

– Active travel information, including:
    - Best active transport routes to school and how to access bicycle parking.
    - Messaging that a socially distant way of getting to school is walking and cycling.
    - Safety tips/rules for cycling (safety on wheels).
    - The health advantages of walking and cycling.
– Bus travel options, including:
    - School bus routes.
    - School bus timetables.
    - Information on the eligibility of the school bus pass (SSTS).
– Kiss-and-Drop (pick-up/drop-off) location.
– Bus Zone and No Parking restrictions.
– Demerits and fines associated with contravening these constrictions.

The TAG will include a map showing bus routes, walking routes, pedestrian crossing points, bus stop locations, bike parking locations and pick-up/drop-off locations.

The NSW Department of Education TAG template is included in Appendix D.

3.2.4.1.1 Staffing

In order to implement the transport initiatives at the new high school in Jerrabomberra, a Travel Coordinator will need to be appointed, it is noted that:

– A Travel Coordinator will be required for the duration of construction and first year of post-occupancy occupancy to promote sustainable travel behaviours.
– During these periods, transport programs must be implemented to achieve travel behaviour change and support the active and public transport mode split targets.
– This role is initially funded by the project during delivery.
– After one year, ongoing discussion will be undertaken between the Department, SINSW and TfNSW regarding the funding of the Travel Coordinator.

[2] Preliminary research in bike training providers indicates that rideTECHNICS in Canberra provides advanced training for groups of 10 people for a fee of $285 (incl GST). Assuming 100 students cycle to school and each student will be provided with two training sessions, a budget of $5,700 (incl GST) should be set aside for bike courses.

The Travel Coordinator will be responsible for:

– Implementing the initiative/measures.
– Liaising with key stakeholders and executing the Communications Plan.
– Measuring the participation of the program and collecting data in the way staff and students travel to and from school.
– Organising annual surveys to determine changes in patterns of mode splits.
– Amending the Action Plan based on survey results, to support the mode share targets being met.
– Raising awareness of sustainable travel modes amongst students and their parents/guardians.
– The Travel Coordinator will be included in the internal and external working groups at the new high school in Jerrabomberra.

The Travel Coordinator role is initially funded by the project during delivery. After one year, on going discussion will be undertaken between the Department, SINSW and TfNSW regarding the funding of the Travel Coordinator.

The following working groups will be established at the new high school in Jerrabomberra:

– An internal group consisting of the school leadership team, parent/guardian and student representatives. The Road Safety Education Officer and representatives from the Asset Management Unit and Work Health and Safety Unit will also form part of this group.
– An external working group including representatives from the new high school in Jerrabomberra, QPRC, TfNSW and public transport providers.

The internal working group will identify key issues (including safety issues) in the operation of the school's traffic and transport facilities and identify potential mitigation measures.

The external working group will assess the feasibility of the mitigation measures and allocate resources for their implementation (if required).

4. Traffic assessment

4.1 Literature review

4.1.1 South Jerrabomberra Local Infrastructure Contributions Plan (2018)

The Contributions Plan was prepared by QPRC as a basis to collect contributions from developments in South Jerrabomberra to fund local infrastructure.

Key points of the Contributions Plan with respect to traffic and transport include:

– The dwelling yield and number of jobs created by the employment lands within South Jerrabomberra is limited by the capacity of the intersection of Lanyon Drive/Tompsitt Drive and Environa Drive.
– Traffic modelling (undertaken by QPRC) indicates that the capacity of Environa Drive is limited and a maximum of 1,500 dwellings and 1,204 workers/jobs in South Jerrabomberra over a 20 year period.

The land uses included in this TA to inform the impact assessment are consistent with the yields identified in the Contribution Plan.

4.2 Traffic data

To identify the existing traffic conditions in proximity to the new high school in Jerrabomberra, GHD were provided (by TSA Management) with weekday AM and PM peak periods traffic survey data.

The traffic surveys were undertaken by Trans Traffic Survey at the following intersections on Thursday 13th May 2021, as displayed in Figure 4.1:

1. Lanyon Drive and Tompsitt Drive.
2. Tompsitt Drive, Henry Place and Environa Drive.
3. Tompsitt Drive, Limestone Drive, Edwin Land Parkway and Jerrabomberra Parkway (referred to henceforth as the Jerrabomberra Circle).

Figure 4.1 Traffic survey locations

Source: MetroMap modified by GHD

It is noted that Tompsitt Drive and Henry Place currently operate as a signalized T-junction. However, Environa Drive is currently under construction and will be operational prior to the opening of the high school (2023), at which time it will operate as a four-leg signalised intersection.

The traffic counts were undertaken in 15-minute intervals for the following times, to coincide road network peak periods of activity of road network activity:

– 7:30 am – 9:30 am.
– 4:30 pm – 6:30 pm.

The observed road network peak hours were identified as the following:

– AM Peak: 7:45 am – 8:45 am.
– PM: Peak 5:00 pm – 6:00 pm.

It is noted that while in the morning, the road network peak typically coincides with the school network peak, in the afternoon, the school network peak precedes the road network peak. For the purposes of analysis, it has been assumed that the afternoon school peak will occur between 3:15 pm and 4:15 pm. This time period was chosen as it represented the highest peak traffic movement within school finishing times.

To account for this offset, GHD purchased Sydney Coordinated Adaptive Traffic System (SCATS) data from TfNSW for the 13th May 2021 for the signalised intersections of Tompsitt Drive/Lanyon Drive and Tompsitt Drive/Henry Lane.

SCATS is a traffic control system provided at signalised intersections in NSW designed to optimise traffic flow, based on real-time data to adjust traffic signal timings that respond to traffic patterns. SCATS provides outputs for:

– Traffic volumes.
– Signal phasing.

A review of the SCATS data indicates that in afternoon periods:

– At the intersection of Tompsitt Drive and Lanyon Drive, the school peak traffic volume is approximately 85 percent of the road network peak traffic volume.
– At the intersection of Tompsitt Drive and Henry Place, the school peak traffic volume is approximately 78 percent of the road network peak traffic volume.

Using an average between the two, it has been assumed traffic volumes during the afternoon school peak hour are 82 percent of the road network peak hour.

The current AM peak hour traffic volumes are displayed in Figure 4.2 and the school PM peak hour traffic volumes are displayed in Figure 4.3.

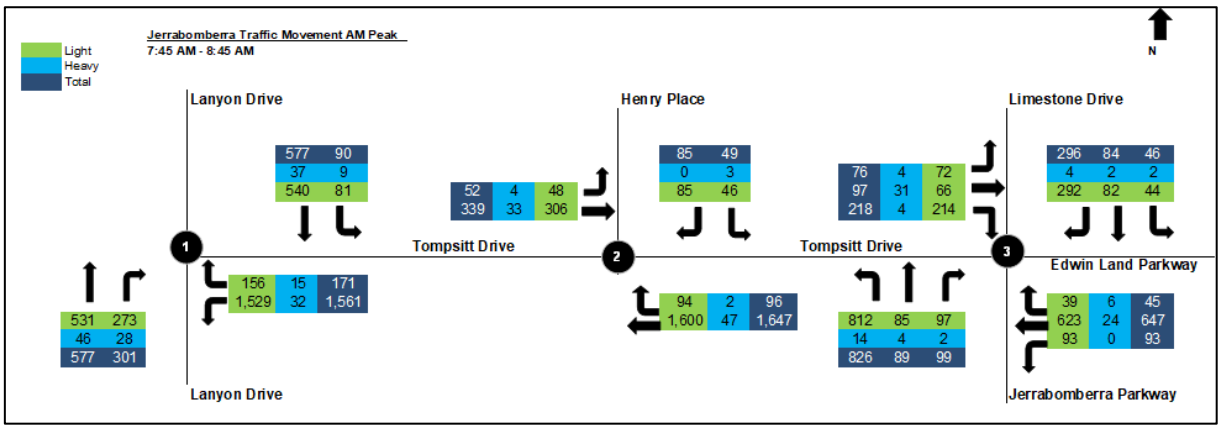

Figure 4.2 AM peak hour volumes (2021)

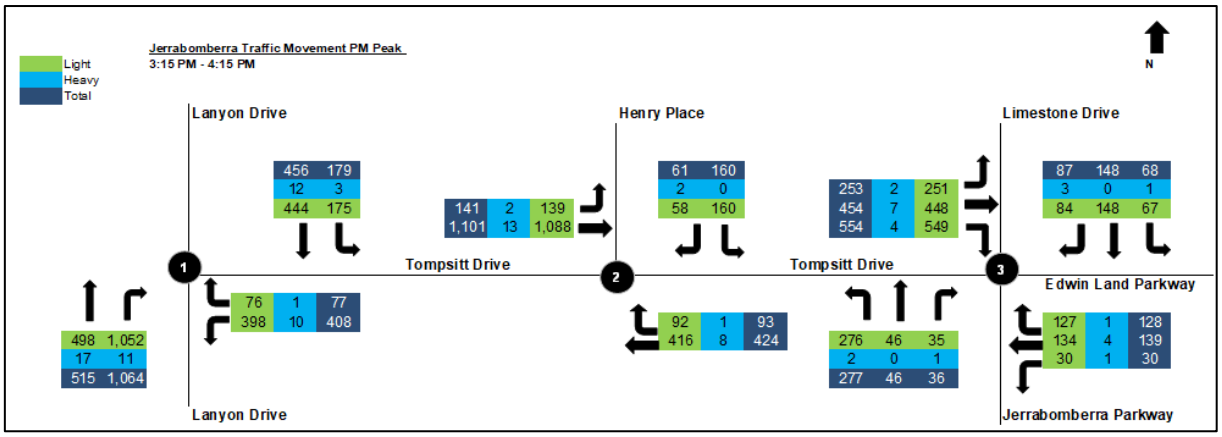

Figure 4.3 PM Peak hour volumes (2021)

The survey outputs indicate that peak hour traffic volumes are “tidal” in both the road network and school peak periods, namely westbound along Tompsitt Drive in the AM peak and eastbound along Tompsitt Drive in the PM peak.

This is consistent with individuals travelling towards the nearby commercial centres of Queanbeyan and Canberra in the AM peak and returning to their residences in the PM peak.

The intersection survey outputs are included in Appendix E.

4.3 Current network operation

The operation of the intersections of interest has been assessed using SIDRA 9.

SIDRA calculates the amount of delay to vehicles using an intersection and, amongst other performance measures, gives a Level of Service (LoS) rating, which indicates the relative performance of traffic movements within the intersection.

Table 4.1 presents the criteria generally applied to intersection performance. The LoS is determined from the calculated delay to traffic movements, which is a representation of driver frustration, fuel consumption and increased travel time. There are six LoS measures ranging from A (very low delay

and very good operating conditions) to F (over saturation where arrival rates exceed intersection capacity). Typically a LoS D or better is considered to be acceptable. However, a LoS E may be acceptable if it also operates with a low degree of saturation.

Table 4.1 Intersection Level of Service criteria

LoS	Average Delay/ Vehicle (sec)	Traffic Signals & Roundabouts	Give-way & Stop signs
A	Less than 15	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	28 to 42	Satisfactory	Satisfactory, but accident study required
D	42 to 56	Operating near capacity	Near capacity, accident study required
E	56 to 70	At capacity, excessive delays; roundabout requires other control mode	At capacity; requires other control mode
F	Exceeding 70	Unsatisfactory; requires additional capacity	Unsatisfactory, requires other control mode.

The layouts of the intersections of interest (as modelled in SIDRA) are displayed below in Figure 4.4.

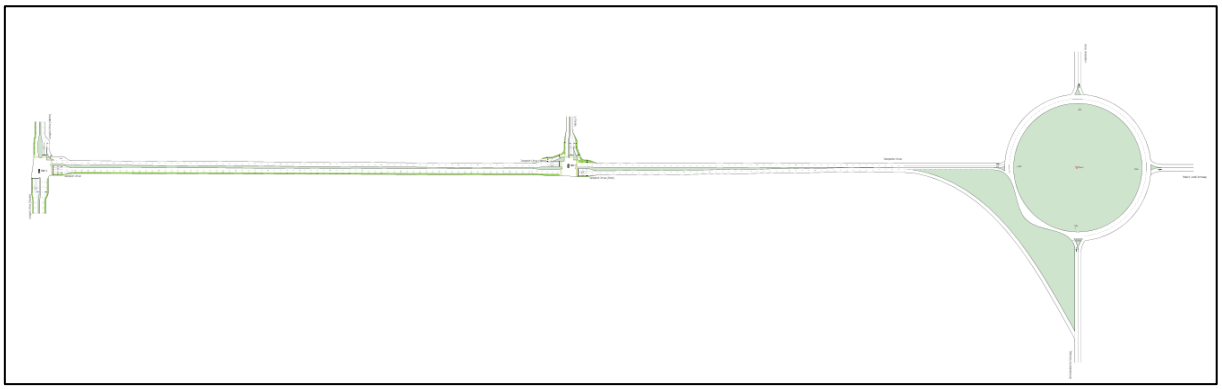

Figure 4.4 SIDRA network layout

4.3.1 Roundabout Configuration

The Jerrabomberra Circle was coded in SIDRA to include a low angle slip-bypass for left turn from the south approach (Jerrabomberra Parkway) to reflect the current traffic operation. The left turn from the south approach acts as a continuous lane at the roundabout, as there is only one circulating lane in front of the south approach.

Accordingly, the left-turning traffic from the south approach is not opposed by the circulating traffic from east, and therefore the traffic entering the roundabout from south turning left (exiting on west approach) does not give way to the circulating traffic. The kerb-side lane of the two circulating lanes exiting to the west approach (Tompsitt Drive) acts as a “trap lane”, enabling the left-turning traffic to exit the roundabout with minimum delay.

Therefore, to replicate the existing observed traffic behaviour in the SIDRA model, the roundabout was coded with a low angle slip-bypass from the south approach. Due to limited traffic data available, the base model validation is based on the google typical traffic performance data available for the weekday period. The extent of queuing from the model is compared to the google typical weekday traffic operation data. The model outputs indicated that the roundabout operation is consistent with the google data, and therefore it is considered appropriate and representative of current conditions.

Figure 4.5 shows the google typical weekday traffic operation snapshot in the AM peak (8:00 am).

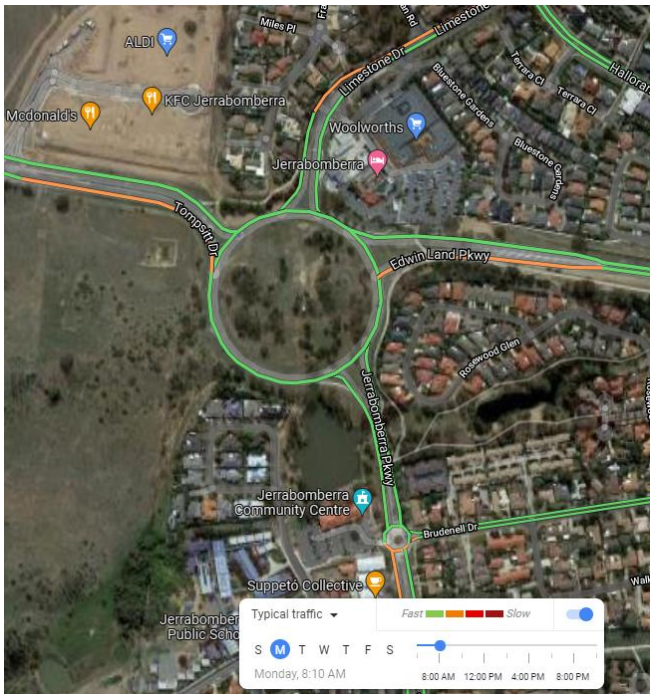

Figure 4.5 Jerrabomberra roundabout – Typical weekday traffic operation AM peak (google)

Source: Google Maps

The Traffic Control Signals (TCS) drawings were used to inform the signal phasing in the SIDRA models are included in Appendix F.

The results of the SIDRA intersection modelling analysis, based on the existing (2021) traffic volumes and road geometry, are summarised in Table 4.2.

Table 4.2 Existing (2021) intersection performance

Intersection	AM School Peak			PM School Peak		
	Av Delay (sec)	LoS	95th % Queue (m)	Av Delay (sec)	LoS	95th % Queue (m)
Lanyon Drive and Tompsitt Drive						
Lanyon Dr - south	17	LoS B	126	20	LoS B	159
Tompsitt Dr	24	LoS B	134	24	LoS B	35
Lanyon Dr - north	31	LoS C	113	34	LoS C	100
Total	24	LoS B	134	24	LoS B	159
Tompsitt Drive any Henry Pl						
Tompsitt Dr - east	13	LoS A	223	7	LoS A	23
Henry Pl	60	LoS E	33	49	LoS D	27
Tompsitt Dr - west	10	LoS A	23	22	LoS B	175
Total	15	LoS B	233	21	LoS B	175
Jerrabomberra Circle						
Jerrabomberra Pkwy	1	LoS A	0	1	LoS A	0
Edwin Land Pkwy	24	LoS B	164	4	LoS A	15
Limestone Dr	3	LoS B	17	5	LoS A	18
Tompsitt Dr	2	LoS A	8	3	LoS A	39
Total	8	LoS A	164	3	LoS A	39

The data in Table 4.2 indicates that all the intersections of interest operate with a good LoS during peak periods of school activity in the existing (2021) scenarios.

SIDRA outputs for the existing (2021) situation are included in Appendix G.

4.4 Impact assessment

In accordance with SEARs specifications, SIDRA intersection analysis has been undertaken for:

– Commencement of operation (2023).
– A ten year time period from the commencement of operation (2033).

In each horizon year, analysis has been undertaken for two scenarios, as follows:

– A “no-build” scenario, accounting for background traffic growth in Jerrabomberra and its surrounds.

– A “build” scenario, accounting for background traffic growth in Jerrabomberra and its surrounds plus the trips associated with the high school.

It is noted that for the 2023 and 2033 horizon years, the intersection of Tompsitt Drive and Henry Place was updated in the SIDRA model (as part of the network) to include Environa Drive (refer to Figure 4.6).

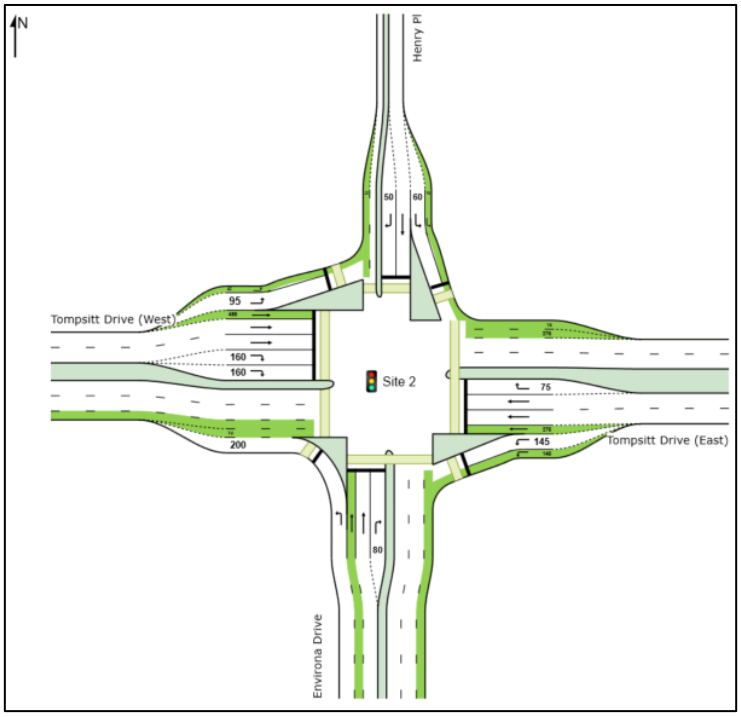

Figure 4.6 Tompsitt Drive, Henry Place and Environa Drive intersection horizon year scenarios configuration

4.4.1 Background traffic

4.4.1.1 Traffic volumes

Information to account for the background traffic growth within Jerrabomberra has been provided by QPRC.

There are five major developments in Jerrabomberra that are proposed to be constructed in the coming 20 years (to 2041).

The development names, type and quantum, are detailed in Table 4.3.

Table 4.3 Jerrabomberra developments

Name	Type	Yield (2041)
North Poplars	Retail/commercial	262 jobs
South Poplars	Retail/commercial	480 jobs
North Tralee	Retail/commercial	336 jobs
South Tralee	Retail/commercial	25 jobs
South Jerrabomberra	Residential	1,500 dwellings

The South Jerrabomberra Staging Plan indicating the location of the above developments is displayed in Figure 4.7

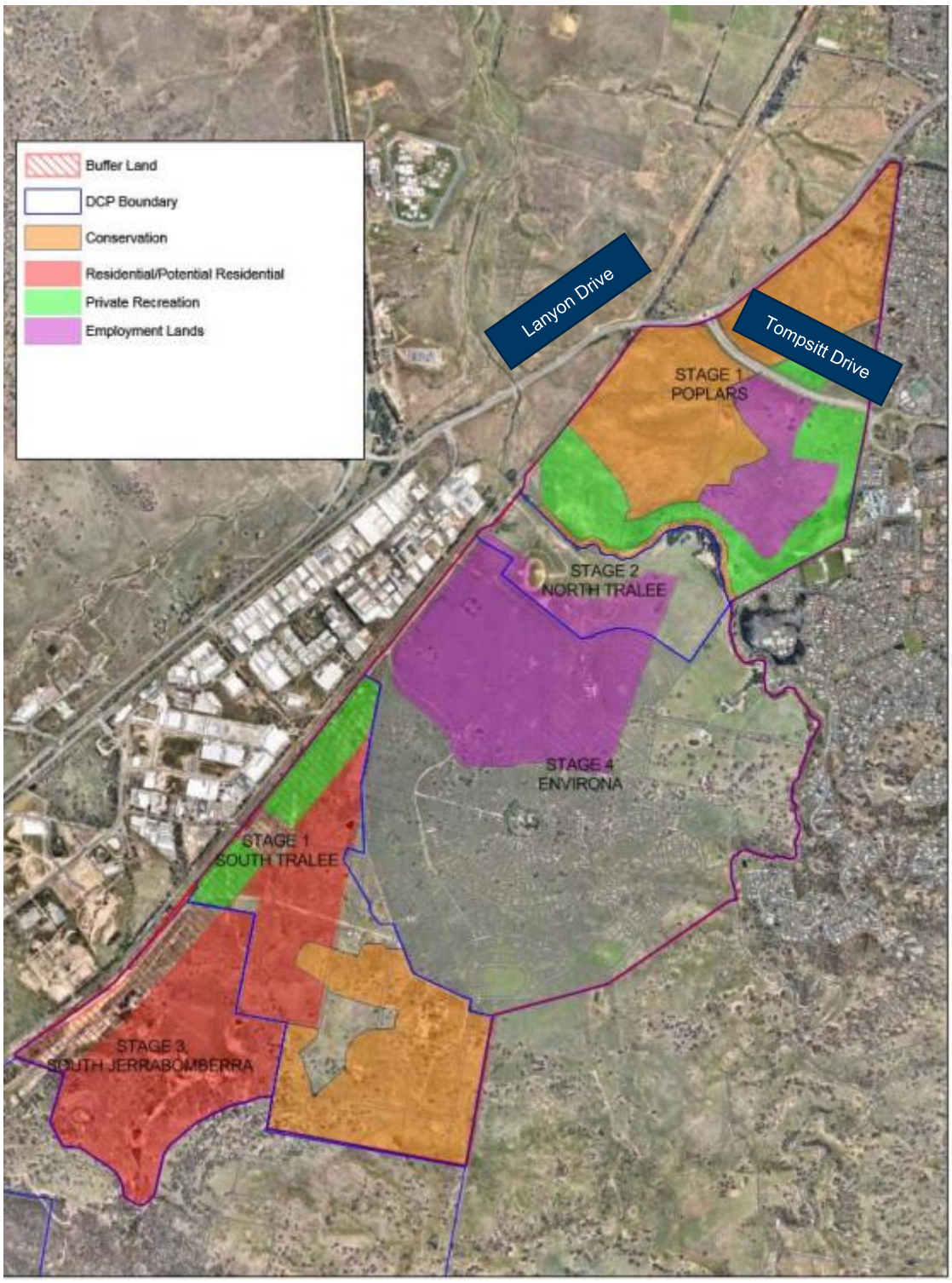

Figure 4.7 Jerrabomberra staging plan

Source: South Jerrabomberra DCP 2015

Based on discussions with QPRC, it was agreed that:

– For the 2023 horizon year, 20 percent of the proposed developments would be constructed and occupied.
– For the 2033 horizon year, to provide a conservative assessment, all the developments in Table 4.3 will be constructed and occupied.

The trip generation for the South Jerrabomberra Development has been undertaken in accordance with the TfNSW Technical Direction, Guide to Traffic Generating Developments Updated traffic surveys TDT 2013/04a.

The technical direction indicates that low density dwellings in regional areas (on average) generate:

– 0.71 trips per dwelling in the AM peak hour.
– 0.78 trips per dwelling in the PM peak hour.

For the purposes of analysis it has been assumed:

– In the morning, peak trips will be 80 percent outbound and 20 percent inbound.
– In the afternoon, peak trips will be 20 percent outbound and 80 percent inbound.
– 82 percent of the total afternoon peak activity will occur within the school peak hour.

A summary of the trips associated with Jerrabomberra South Development is presented in Table 4.4.

Table 4.4 South Jerrabomberra trip generation

Peak period	2023		2033	
	Inbound	Outbound	Inbound	Outbound
AM Peak	43	170	213	852
PM Peak	154	38	768	192

The data in Table 4.4 indicates that by 2033 the South Jerrabomberra Development will generate 960 – 1,065 trips in peak periods of school activity.

For the employment land uses, the following assumptions have been made:

– Ten percent of employees will walk, cycle, take public transport or work from home.
– In the morning, peak trips will be 80 percent inbound and 20 percent outbound.
– In the afternoon, peak trips will be 20 percent inbound and 80 percent outbound.
– 82 percent of the total afternoon peak activity will occur within the school peak hour.

A summary of the trips associated with the employment land uses is displayed in Figure 4.7, and the land use data provided by QPRC are detailed in Table 4.5.

Table 4.5 Employment land uses trip generation

Lots	2023		2033	
	Inbound	Outbound	Inbound	Outbound
AM Peak	159	40	794	199
PM Peak	33	130	163	651

The data in Table 4.5 indicates that by 2033, the employment land uses will generate 814 – 993 trips in peak periods of school activity.

In addition to the trips detailed in Table 4.4 and Table 4.5, a one percent annual growth rate has been applied to the current traffic volumes to account for the wider growth of Jerrabomberra and its surrounds.

The 2023 AM school peak “no-build” traffic volumes are displayed in Figure 4.8.

The 2023 PM school peak “no-build” traffic volumes are displayed in Figure 4.9.

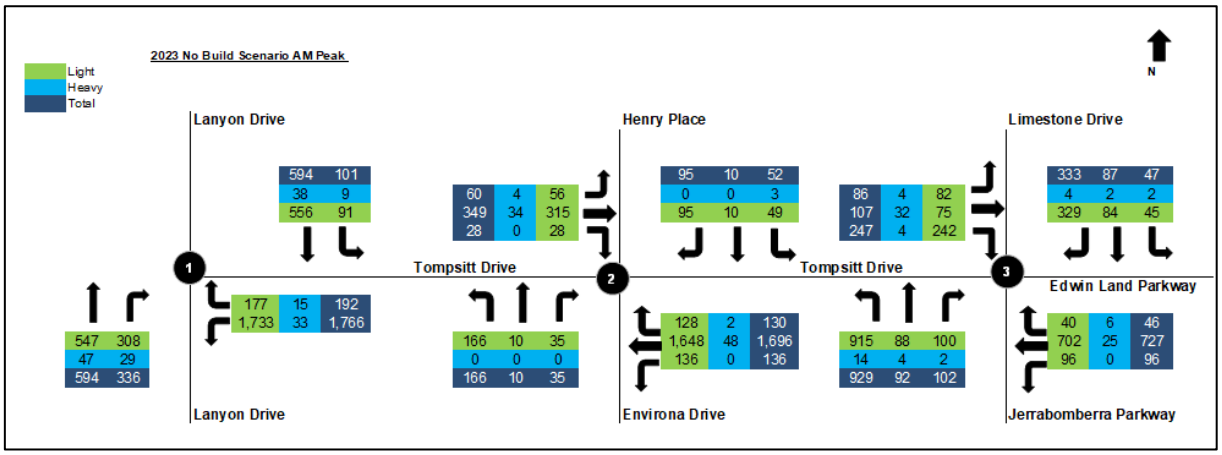

Figure 4.8 2023 AM school peak – "no-build" scenario

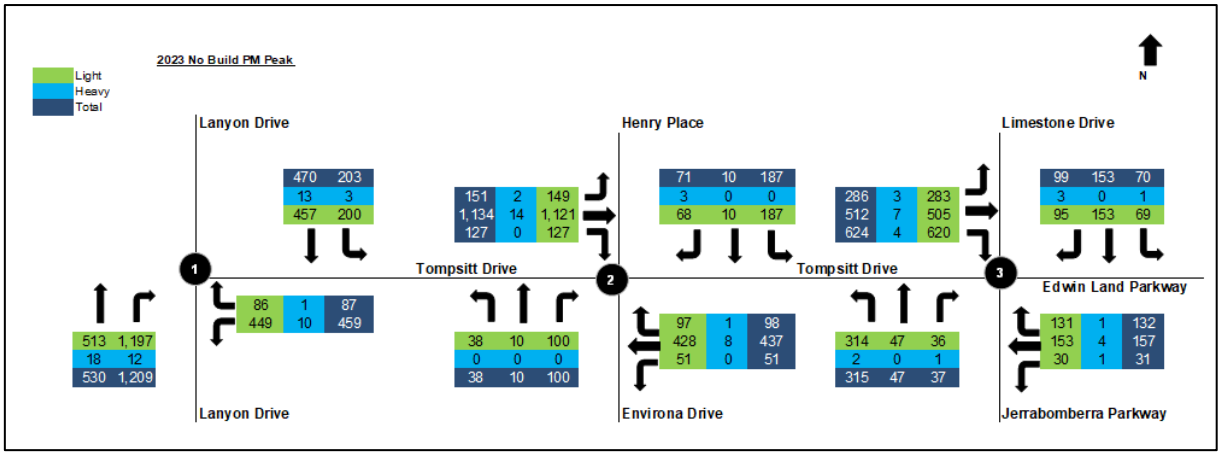

Figure 4.9 2023 PM school peak – "no-build" scenario

The 2033 AM school peak "no-build" traffic volumes are displayed in Figure 4.10.

The 2033 PM school peak "no-build" traffic volumes are displayed in Figure 4.11.

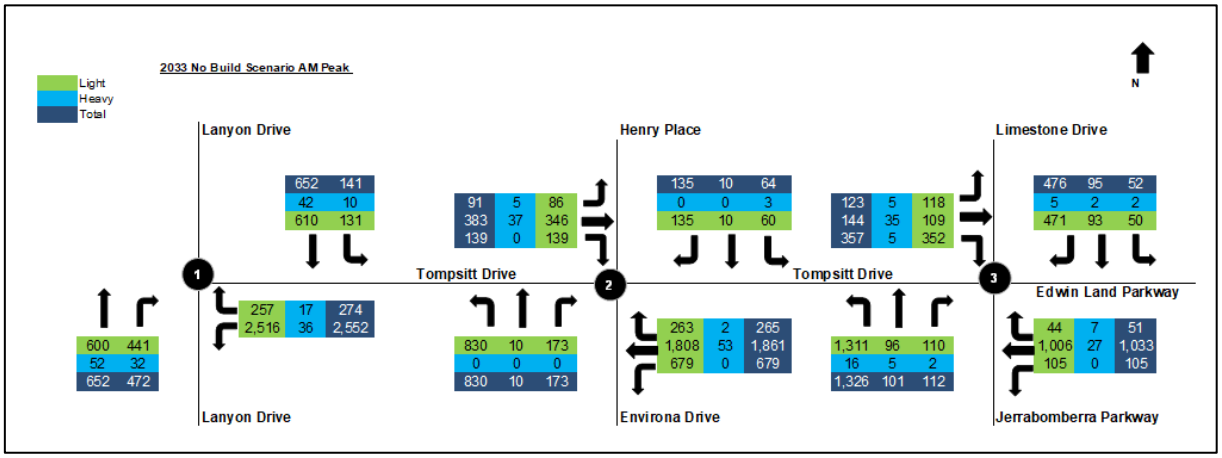

Figure 4.10 2033 AM school peak – "no-build" scenario

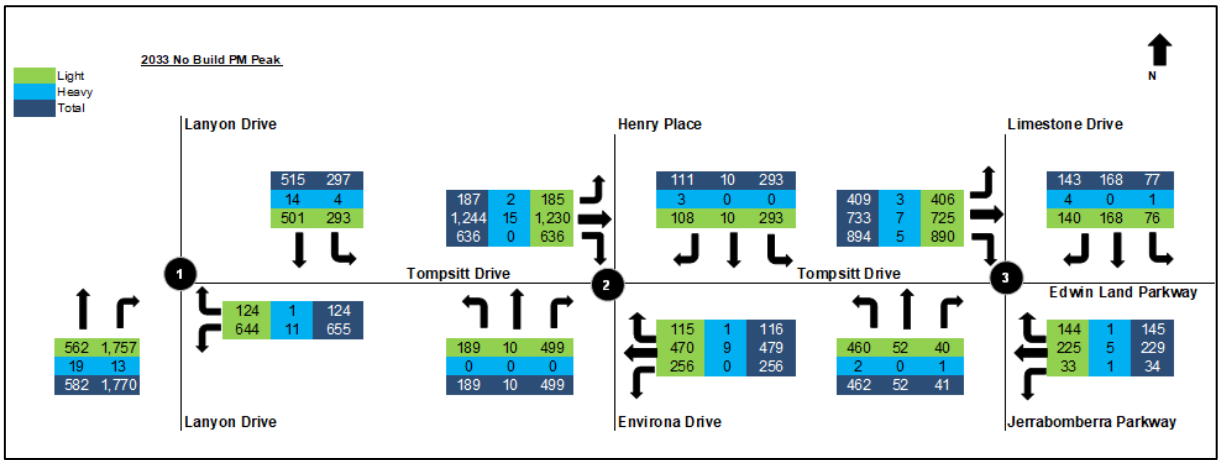

Figure 4.11 2033 PM school peak – "no-build" scenario

4.4.1.2 Trip distribution

The trips associated with the land uses detailed in Table 4.3 and Figure 4.7, have been distributed onto the adjoining road network in accordance with the patterns identified with the peak hour traffic survey volumes displayed in Figure 4.2 and Figure 4.3.

The key patterns are as follows:

– In the AM peak, the majority of vehicles travel westbound on Edwin Land Parkway/Tompsitt Drive and then turn left onto Lanyon Drive, towards Canberra.
– In the PM peak, the majority of vehicles turn right from Lanyon Drive and travel eastbound on Tompsitt Drive.

4.4.2 School trips

4.4.2.1 Traffic volumes

The trips generated by the high school have been determined on a first principles basis in accordance with the target scenarios detailed in Table 3.2, namely:

– 125 students will be picked-up/dropped-off.
– 50 students will drive.

To be conservative, it has been assumed that 175 vehicles will access and egress the high school and its surrounds in peak morning and afternoon school hours. It should be noted that no reduction of trip generation has been applied associated with multiple students per vehicle occupancy.

Additionally, it has been assumed that 30 vehicles driven by teachers will access the school in the morning peak hour and depart the school in the afternoon peak hour.

4.4.2.2 Trip distribution

As per the school catchments drawing (refer to Figure 1.4), the majority of students are expected to reside in South Jerrabomberra. Accordingly, it is not anticipated that many parents/teachers will utilise the intersection of Tompsitt Drive/Lanyon Drive to access the school. However, to be conservative, it has been assumed that ten percent of vehicle trips will utilise the Tompsitt Drive/Lanyon Drive to access the school.

A review of the household data also indicates that the majority of students will reside in Jerrabomberra, south of Tompsitt Drive and Edwin Land Parkway.

In the 2023 horizon year it has been assumed that:

– Ten percent of trips will access the school via the Tompsitt Drive/Lanyon Drive intersection.
– 15 percent of trips will access the school via Edwin Land Parkway and the Jerrabomberra Circle.
– Ten percent of trips will access the school via Limestone Drive and the Jerrabomberra Circle.

– 65 percent of trips will access the school via Jerrabomberra Parkway and the Jerrabomberra Circle.

For the purposes of analysis (in accordance with the instruction from QPRC), it has been assumed that the South Jerrabomberra development (1,500 dwellings) and the employment land uses will be fully developed in 2033.

Information in the .idcommunity website (profile.id.com.au/queanbeyan-palerang/about?WebID=160) indicates that Jerrabomberra currently provides approximately 3,000 dwellings. Accordingly, the South Jerrabomberra Development represents a significant increase in housing stocks.

To account for this in the 2033 horizon year, it has been assumed that:

– Ten percent of trips will access the school via the Tompsitt Drive/Lanyon Drive intersection.
– Ten percent of trips will access the school via Edwin Land Parkway and the Jerrabomberra Circle.
– Five percent of trips will access the school via Limestone Drive and the Jerrabomberra Circle.
– 45 percent of trips will access the school via Jerrabomberra Parkway and the Jerrabomberra Circle.
– 30 percent of trips will access the school via Environa Drive.

For the purposes of analysis, it has been assumed that after dropping their students at school:

– 60 percent of outbound vehicles will travel to Queanbeyan/Canberra.
– The remaining 40 percent will return to their places of residence.

The 2023 AM school peak “build” traffic volumes are displayed in Figure 4.12.

The 2023 PM school peak “build” traffic volumes are displayed in Figure 4.13.

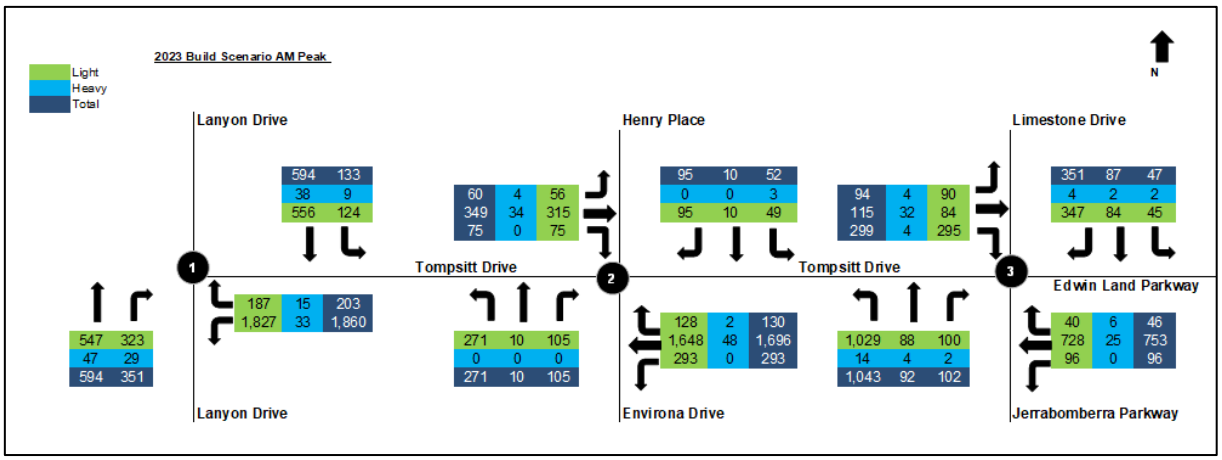

Figure 4.12 2023 AM school peak – “build” scenario

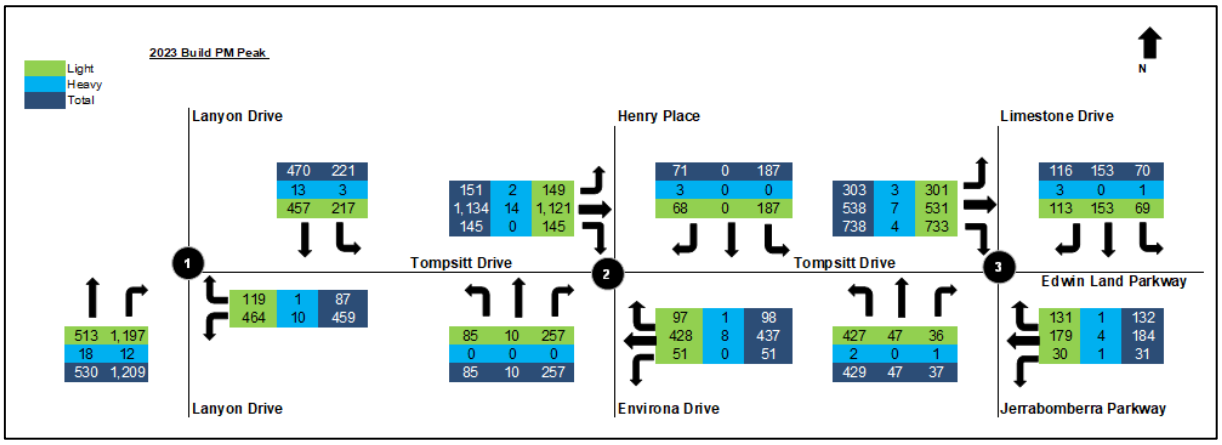

Figure 4.13 2023 PM school peak – "build" scenario

The 2033 AM school peak "build" traffic volumes are displayed in Figure 4.14.

The 2033 PM school peak "build" traffic volumes are displayed in Figure 4.15.

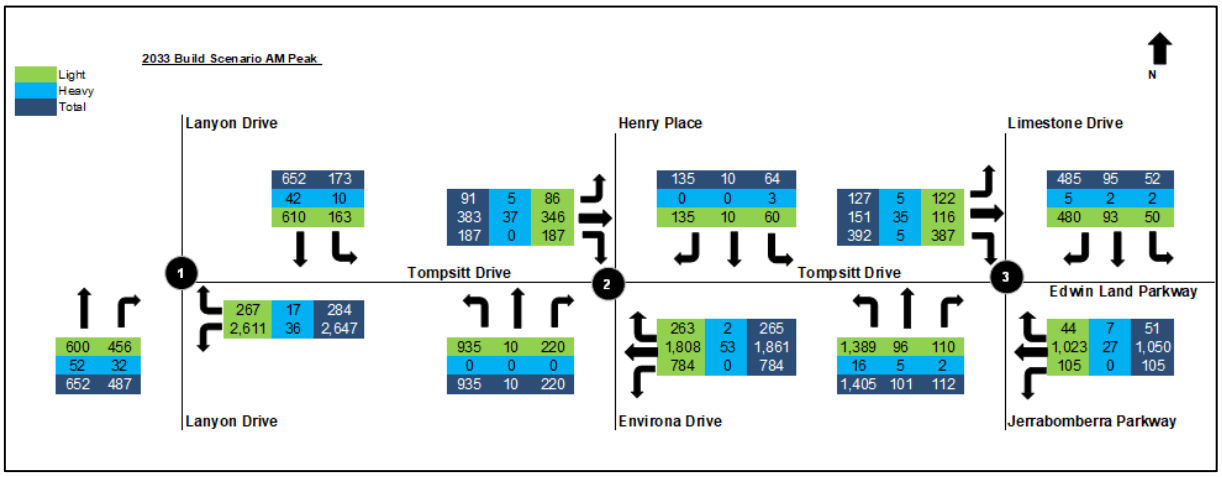

Figure 4.14 2033 AM school peak – "build" scenario

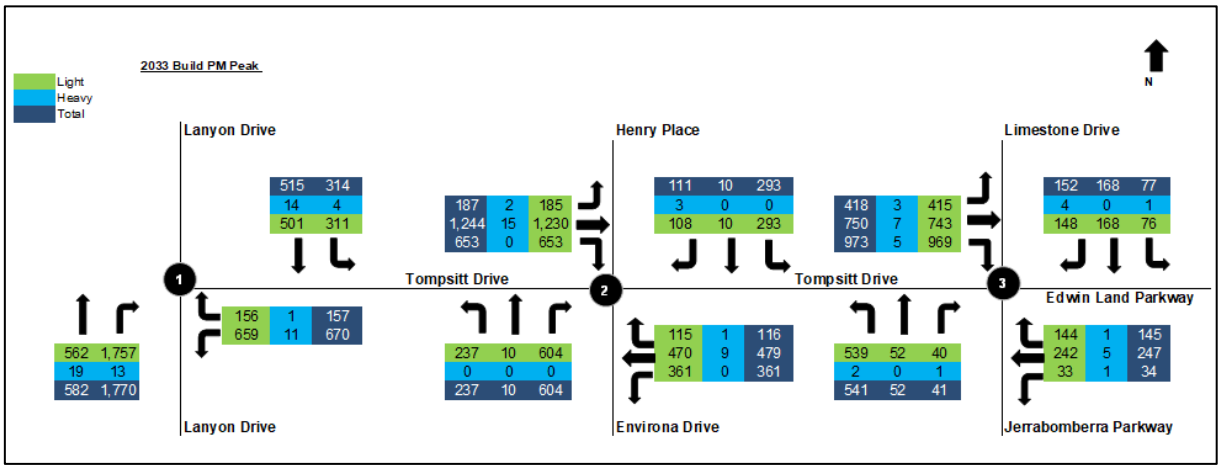

Figure 4.15 2033 PM school peak – "build" scenario

4.5 Intersection performance

The outputs of the 2023 “no-build” SIDRA analysis are displayed in Table 4.6.

The outputs of the 2023 “build” SIDRA analysis are displayed in Table 4.7.

Table 4.6 2023 “no-build” scenario intersection performance

Intersection	AM School Peak			PM School Peak		
	Av Delay (sec)	LoS	95th % Queue (m)	Av Delay (sec)	LoS	95th % Queue (m)
Lanyon Drive and Tompsitt Drive						
Lanyon Dr - south	19	LoS B	151	22	LoS B	188
Tompsitt Dr	32	LoS C	244	20	LoS B	29
Lanyon Dr - north	36	LoS C	130	35	LoS C	105
Total	29	LoS C	244	24	LoS B	188
Tompsitt Drive and Henry Place						
Environa Dr	18	LoS B	15	50	LoS D	45
Tompsitt Dr - east	21	LoS B	297	28	LoS B	58
Henry Pl	59	LoS E	45	45	LoS D	53
Tompsitt Dr - west	30	LoS C	51	45	LoS D	241
Total	25	LoS B	297	41	LoS C	241
Jerrabomberra Circle						
Jerrabomberra Pkwy	1	LoS A	0	1	LoS A	0
Edwin Land Pkwy	130	LoS F	583	5	LoS A	20
Limestone Dr	4	LoS A	21	6	LoS A	24
Tompsitt Dr	3	LoS A	8	4	LoS A	57
Total	40	LoS C	583	4	LoS A	57

The SIDRA model analysis results for the 2023 “no-build” scenario indicate that the signalised intersections (AM and PM school peaks) and the Jerrabomberra Circle in the PM school peak are operating within a practical level of capacity with a LoS better than D.

Although the Jerrabomberra Circle is operating at LoS C and the overall roundabout average delay is approximately 40 seconds, in the AM school peak hour, the eastern approach at the roundabout operates at an unsatisfactory LoS F and average delays of approximately 130 seconds. This is because the large volumes of traffic entering the roundabout from Edwin Land Parkway, is opposed by high right turn volumes from Tompsitt Drive in the AM school peak hour.

It is noted that Henry Place operates with a LoS E in the AM school peak. This is associated with the majority of the green time being allocated to the heavy through movement of vehicles on Tompsitt Drive, and the overall intersection performance is within acceptable parameters.

Table 4.7 2023 "build" scenario intersection performance

Intersection	AM School Peak			PM School Peak		
	Av Delay (sec)	LoS	95th % Queue (m)	Av Delay (sec)	LoS	95th % Queue (m)
Lanyon Drive and Tompsitt Drive						
Lanyon Dr - south	27	LoS B	162	23	LoS B	174
Tompsitt Dr	16	LoS B	149	18	LoS B	37
Lanyon Dr - north	34	LoS C	130	26	LoS B	78
Total	23	LoS B	162	23	LoS B	174
Tompsitt Drive and Henry Place						
Environa Dr	26	LoS B	52	48	LoS D	104
Tompsitt Dr - east	32	LoS C	358	32	LoS C	58
Henry Pl	57	LoS E	45	32	LoS C	33
Tompsitt Dr - west	42	LoS C	79	56	LoS D	227
Total	34	LoS C	358	47	LoS D	227
Jerrabomberra Circle						
Jerrabomberra Pkwy	2	LoS A	0	1	LoS A	0
Edwin Land Pkwy	268	LoS F	1,038	8	LoS A	30
Limestone Dr	4	LoS A	24	9	LoS A	34
Tompsitt Dr	2	LoS A	10	4	LoS A	69
Total	78	LoS F	1,038	5	LoS A	69

Similar to the "no-build" analysis outputs, the SIDRA model analysis results for the "build" scenario" both the signalised intersections. that the signalised intersections (AM and PM school peaks) and the Jerrabomberra Circle in the PM school peak are operating within practical level of capacity with a LoS better than D.

However, the Jerrabomberra Circle is operating at LoS F with overall average delay being approximately 78 seconds. Edwin Land Parkway at the roundabout operates at an unsatisfactory LoS F and average delay of approximately 268 seconds. Similarly to the "no-build" scenario, this is because the large traffic volumes on Edwin Land Parkway are required to give way to the high right turn volumes from Tompsitt Drive in the AM peak hour.

This delay is primarily associated with the wider growth of Jerrabomberra, rather than the vehicle activity associated with the operation of the high school. The analysis indicates that in 2023, delays on Edwin Land Parkway will occur, regardless if the school is constructed.

The difference between the 2023 "no-build" and "build" SIDRA outputs, indicates that the trips associated with the new high school in Jerrabomberra will have a minor impact on the operation of the intersections of interest.

The outputs of the 2033 “no-build” SIDRA analysis are displayed in Table 4.8.

The outputs of the 2033 “build” SIDRA analysis are displayed in Table 4.9.

Table 4.8 2033 “no build” scenario intersection performance

Intersection	AM School Peak			PM School Peak		
	Av Delay (sec)	LoS	95th % Queue (m)	Av Delay (sec)	LoS	95th % Queue (m)
Lanyon Drive and Tompsitt Drive						
Lanyon Dr - south	25	LoS B	152	60	LoS E	480
Tompsitt Dr	15	LoS B	145	21	LoS B	64
Lanyon Dr - north	35	LoS C	130	54	LoS D	175
Total	22	LoS B	152	51	LoS D	480
Tompsitt Drive and Henry Place						
Environa Dr	20	LoS B	83	117	LoS F	403
Tompsitt Dr - east	60	LoS E	413	50	LoS D	110
Henry Pl	46	LoS D	52	47	LoS D	83
Tompsitt Dr - west	45	LoS D	75	120	LoS F	520
Total	46	LoS D	413	97	LoS F	520
Jerrabomberra Circle						
Jerrabomberra Pkwy	2	LoS A	0	1	LoS A	0
Edwin Land Pkwy	840	LoS F	2785	15	LoS B	54
Limestone Dr	8	LoS A	48	37	LoS C	93
Tompsitt Dr	3	LoS A	14	19	LoS B	239
Total	253	LoS F	2785	14	LoS C	239

The SIDRA model analysis for the 2033 “no build” scenario indicate that:

– The intersection of Lanyon Drive and Tompsitt Drive is expected to operate with an acceptable LoS in the AM and PM school peak hours.
– The intersection of Tompsitt Drive and Henry Place is expected to operate with an acceptable LoS in the AM school peak hour.
– The Jerrabomberra Circle Place is expected to operate with an acceptable LoS in the PM school peak hour.

The operation of Jerrabomberra Circle worsens significantly with LoS F and with overall average delay being approximately 253 seconds in the PM school peak hour, without the trips generated by the proposed high school.

Again Edwin Land parkway fails with LoS F and average delay significantly increases with approximately 988 seconds in the AM school peak.

In the PM school peak, the analysis results indicate that the Lanyon Drive / Tompsitt Drive intersection operates within practical level of capacity with LoS less than D. However, the Henry Place / Tompsitt Drive intersection is operating with LoS F and overall intersection average delay being approximately

97 seconds. The Tompsitt Drive west approach right turn into Environa Drive is failing with LoS F and queues recorded as 510 meters. This impacts the traffic at upstream intersection at Lanyon Drive / Tompsitt Drive with right turn delays and impacting the overall intersection operation.

Table 4.9 2033 "build" scenario intersection performance

Intersection	AM School Peak			PM School Peak		
	Av Delay (sec)	LoS	95th % Queue (m)	Av Delay (sec)	LoS	95th % Queue (m)
Lanyon Drive and Tompsitt Drive						
Lanyon Dr - south	19	LoS B	160	121	LoS F	660
Tompsitt Dr	22	LoS B	168	39	LoS C	113
Lanyon Dr - north	39	LoS C	144	35	LoS C	123
Total	25	LoS B	168	86	LoS F	660
Tompsitt Drive & Henry Pl						
Environa Dr	30	LoS C	143	140	LoS F	549
Tompsitt Dr - east	77	LoS F	490	66	LoS E	123
Henry Pl	46	LoS D	54	51	LoS D	101
Tompsitt Dr - west	43	LoS D	64	135	LoS F	506
Total	57	LoS E	490	111	LoS F	549
Jerrabomberra Circle						
Jerrabomberra Pkwy	2	LoS A	15	1	LoS A	0
Edwin Land Pkwy	1790	LoS F	3,868	17	LoS B	61
Limestone Dr	204	LoS F	589	29	LoS B	80
Tompsitt Dr	3	LoS A	12	11	LoS B	156
Total	557	LoS F	3,868	11	LoS B	156

Similar to the "no-build" analysis outputs, the "build" SIDRA model analysis results indicate that the intersection at Lanyon Drive/Tompsitt Drive is operating within practical level of capacity with LoS less than D in the AM school peak hour.

In the AM school peak hour, the Tompsitt Drive/Henry Place intersection is operating with LoS E, with a slight increase in delay when compared to "no-build" scenario.

The Jerrabomberra Circle operation is consistent with the "no-build" scenario, operating with LoS F and increased average delay for the eastern approach in the AM school peak.

In the PM school peak "build" scenario, both signal intersections fail with LoS F and average delay recorded at 86 and 111 seconds, respectively.

For the Lanyon Drive/Tompsitt Drive intersection, the increase in delay is associated with the large volumes of traffic on Tompsitt Drive, causing congestion throughout the network.

The SIDRA results indicate that the intersections operation in the "build" scenario is consistent when compared to "no-build" scenario.

It is to note that the nominal increase in the proposed high school traffic would not have a significant impact on the intersections, which are already failing because of the significant background traffic growth in the south Jerrabomberra region by 2033.

Accordingly, any upgrades to the intersections in Jerrabomberra to facilitate an acceptable LoS should not be the responsibility of the high school to fund or implement.

SIDRA outputs for the 2023 and 2033 horizon year are included in Appendix H.

5. Construction assessment

A Preliminary Construction Traffic and Pedestrian Management Plan (CTPMP), has been prepared by GHD as a separate deliverable for the new high school in Jerrabomberra. A summary of key aspects of the CTPMP is provided below.

5.1 Construction outline

The new high school in Jerrabomberra is expected to commence operation in early 2023.

Traffic generated by construction activities for the project would include heavy vehicles associated with the construction plant, deliveries and removal of materials along with light vehicles from construction workers.

5.1.1 Heavy vehicles

Preliminary estimates of the heavy vehicle activity associated with the construction of the new high school in Jerrabomberra is as follows:

– Cranes – likely to be required during the construction of the superstructure, approximately three cranes per week for a period of two months.
– Truck and dog trailer – likely to be required for the duration of the civil works, approximately four to six movements per day (inbound and outbound) for a period of two months.
– Material deliveries – likely to be multiple deliveries per day, in vehicles ranging from utes to pantecs.
– Waste – likely to be one movement every second day.

5.1.2 Light vehicles

It is expected that there will be a maximum workforce of approximately 150 workers.

The majority of workers are expected to reside in the nearby population centres of Queanbeyan and Canberra, offering opportunities for carpooling. For the purpose of analysis, it is assumed that there will be an occupancy rate of 1.5 workers per vehicle.

Application of this car driver rate to the assumed workforce yields a typical traffic generation in the order of 100 light vehicles per day, which are anticipated to access the subject site in the morning and depart the subject site in the afternoon/evening.

5.1.3 Oversize vehicles

Section 5.3.1 outlines the proposed access routes for heavy vehicles, typically up to 19 m semi trailer.

A review of the suitability of the use of the local road network for larger vehicles should be undertaken independently by the Contractor and may require specific traffic control (i.e. vehicle escort) if such larger vehicles are required.

At this stage of the project, details of the oversized vehicles required to transport equipment or plant to the site are not available. However, should oversize vehicles be required (i.e. lifts and pre-cast structures, crane erection), the Contractor will be required to apply for permits from Transport for NSW and Council, with the submission of suitable traffic management and transportation routes to be agreed, subject to the required size of the vehicle.

Oversize vehicle routes are to be carried out where possible on designated heavy vehicle routes or routes approved by Transport for NSW. Additionally, oversized traffic movements should be carried out, where possible, outside peak road network periods, thereby minimising the impacts on the road network.

5.1.4 Construction traffic impacts

The number of construction vehicles to access the site will need to be confirmed by the Contractor during the detailed construction planning stage. However, it is assumed that construction traffic volumes will be within typical daily traffic fluctuations [3]and will not adversely alter the operation of the existing road network condition. Furthermore, it is estimated construction active will be less than the future operational activity of the developed site.

Notwithstanding the above, the Contractor should encourage carpooling for workers and maintain deliveries at staggered intervals and outside road network periods and incorporated them in the Construction Traffic Management Plan.

5.2 Construction compound

Information provided by Hindmarsh for the construction compound indicates that:

– A chain mesh fence will be constructed around the compound with shade clothes providing a visual, physical and dust control barrier.
– The site gates at the construction compound will be provided:
  - Gale 1 on North Road will be allocated as the main site access/egress for staff/visitors and an entry only for construction vehicles.
  - Gate 2 on North Road will be for the egress of construction vehicles.
  - Gate 3 from Environa Drive will provide an additional access and egress for construction vehicle (southbound access/egress).
– Site gates will be managed by authorised traffic controllers to assist in the safe access and egress of vehicles associated with the construction activity and other vehicles, pedestrians and cyclist on the adjoining public road network.
– Site signage installed adjacent to all site gates providing site information to the general public.

5.3 Preliminary Construction Traffic and Pedestrian Management Plan

5.3.1 Construction vehicle access route

It is expected that the majority of heavy vehicles and workers will access/egress the subject site to and from the nearby population/commercial centres of Queanbeyan and Canberra.

Access and egress to the construction compound, including delivery and worker vehicles, will be provided via Environa Drive and North Road.

In determining haulage routes:

– All heavy vehicles will access the site from the north via the signalised intersection of Tompsitt Drive and Environa Drive. It is noted that Tompsitt Drive between Lanyon Dive and Jerrabomberra Parkway is authorised by Transport for NSW to accommodate vehicles up to the size of 19 metre B-doubles as outline in the RAV map (refer to Figure 2.7).
– Vehicle activity on the township's collector and local road network will be minimised.

As part of an induction, truck drivers will be informed of the designated haulage routes to and from the construction compound.

[3] Based on the current morning and afternoon peak hour vehicle volumes at the intersection of Tompsitt Drive and Henry Place (2,300 - 2,400 veh/h), the construction vehicle activity is expected to result in an increase of (approximately) four percent) compared to the current situation.

5.3.2 Construction works timing

The construction works at the new high school in Jerrabomberra will be scheduled to occur during these standard hours.

– Weekdays 7:00 am – 6:00 pm.
– Saturdays 8:00 am – 5:00 pm.
– Sundays and public holidays, no work.

Additionally, where possible, deliveries will be scheduled to occur outside of the periods of 8:00 am – 9:30 am and 2:30 pm – 4:00 pm to minimise potential impacts with vehicle activity at the adjoining Jerrabomberra Primary School.

5.3.3 Construction parking

5.3.3.1 Heavy vehicles

Heavy vehicle activity, i.e. deliveries and waste collection, will occur within the construction compound.

Heavy vehicle arrivals will be coordinated to avoid queuing of vehicles outside the site as queuing of vehicles is not permitted on the public road network or in a position that will cause obstruction or safety issues to vehicles (or occupants), pedestrians or cyclists.

Vehicles are not to double park or queue to impact traffic and pedestrian thoroughfare and property access.

5.3.3.2 Light vehicles

As stated previously, up to 100 light vehicles are expected to access the construction compound.

Short term parking can be made available for workers and deliveries on North Road cul-da-sac with application of a Works Zone with Council by the building contractor, prior to construction commencement. Longer term parking should be made available within the construction site boundary or within the David Madew Park car parking area, in consultation with Council.

5.3.4 Traffic management

Public access to the site is expected to be maintained on the surrounding road network with the exception of North Road cul-de-sac. The contractor will be responsible for application to Council for the road closure. It is noted that North Road does not provide access to any other properties, other than the construciton site.

Vehicles will be permitted to travel past the worksite on Environa Drive, with traffic signage in accordance with a TGS to be developed in accordance with Transport for NSW *Traffic Control at Works Sites Technical Manual* (Version 6, 2020) and AS1742.3 – T*raffic Control for Works on Roads*. This will advise motorists of changes in the road network or vehicle movements to/from the site, including any “truck turning” activity.

The TGS will need to be developed by the construction contractor as part of the detailed CTPMP prior to commencing construction activity on the site. The Contractor will ensure all signage is erected in accordance with the TGS and clearly visible. Each evening, upon completion of work, the Contractor will ensure signage is either covered or removed should such be required.

5.3.4.1 Road closures

Prior to construction, the building contractor may apply to Council for the closure or North Road cul-de-sac. This road network does not provide access to any properties, with the exception of the construction site. As such should such closure occur, there will be no diversions required to maintain access to other surrounding properties.

5.3.4.2 Works zones

Application for a Works Zone may be applied to Council by the building contractor, on North Road cul-de-sac to assist in short term parking and deliveries to the construction site. North Road is cul-de-sac with no access to other

properties. Vehicle movement along North Road during the construction of the school would only consist of vehicles associated with construction.

5.3.5 Pedestrian and bicycle management

Site access will be restricted to authorised personnel only.

It is anticipated that the pedestrian, and to a lesser extent, cyclist activity, within the public areas surrounding the site will be low due to the site's vicinity generally to a rural area along Environa Drive. East of the site, the area is residential including the local primary school, which will increase pedestrian and bicycle activity.

Potential interactions between construction traffic and pedestrians and bicycle riders include:

– Impact to pedestrian and bicycle rider movements due to the movement of material, traffic diversions and the location of crane/s during construction, anticipated to be low along Environa Drive.
– Increased vehicle movements may reduce safety.
– Site access and egress location crossing pedestrian footpath areas, anticipated to be low along Environa Drive.

Traffic controllers will monitor the site during construction deliveries entering and exiting from the site at each of the access/egress gates to ensure that people in the vicinity of the site are protected from heavy vehicles movements into and out of the construction compound.

The detailed CTPMP incorporating the Traffic Guidance Scheme (TGS) will need to be developed by the construction contractor will need to consider the safe access for pedestrians and cyclists, which may include minor local diversion to alternate pedestrian and cycle facilities to avoid the construction works areas. Pedestrian and cyclists path of travel is to be free of trip hazards and debris to minimise the risk of injuries and will be monitored throughout the works

5.3.6 Impacts on public transport

No changes to existing bus operations are required to facilitate construction works. The bus stop located on Coachwood Avenue will remain operational at all times. Pedestrian access to this bus stop will also be maintained.

5.3.7 Contact of emergency services

In the event of an emergency related construction traffic incident on the public road network, it will be the responsibility of the Site Manager to ensure that emergency services are notified. The emergency services include but are not limited to:

– Fire
– Ambulance
– Police.

Phone “000” in cases of emergency.

If required, emergency services vehicles will access the car park or park on the roads adjacent to the subject site.

Furthermore, it is the responsibility of the Site Manager to advise the emergency services of any restriction of vehicular access to the public and private areas (1) one week prior to its implementation.

6. Summary and conclusions

6.1 Summary

This Transport Assessment (TA) accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) in support of an application for a State Significant Development (SSD No 24461956). The SSDA is for a new high school located at Jerrabomberra.

The proposal has been designed to accommodate approximately 500 students with Stream 3 teaching spaces, however the core facilities will be future proofed to a Stream 5 to enable possible future expansion to meet projected demand.

The site is located in excellent proximity to existing open space facilities. It adjoins David Madew Regional Park to the south east and is located 100 m east of an existing recreational field associated with Jerrabomberra Public School.

6.2 Key findings

Following a detailed assessment of the proposed development of the new high school in Jerrabomberra, the following is concluded:

- The student catchment for the proposed high school is small and will consist of the Jerrabomberra Township, south of Tompsitt Drive and Edwin Land Parkway.
- SIDRA intersection analysis indicates that the key intersections in proximity to the school site operate with a good Level of Service and minimal delays under existing conditions.
- Information provided by QPRC, indicates that there are five major developments in Jerrabomberra that are proposed to be constructed in the coming 20 years (to 2041), as detailed in Table 4.3. Based on discussions with QPRC, it was agreed that:
  - For the 2023 horizon year traffic modelling analysis, 20 percent of the proposed developments would be constructed and occupied.
  - For the 2033 horizon year traffic modelling analysis, to provide a conservative assessment, all the developments in will be constructed and occupied.
- The trips generated by the high school have been determined on a first principles basis in accordance with the target scenarios detailed in Table 3.2, namely:
  - 125 students will be picked-up/dropped-off.
  - 50 students will drive.
- For a conservative assessment, it has been assumed that 175 vehicles will access and egress the high school and its surrounds in peak morning and afternoon school hours and that no reduction of trip generation has been applied associated with multiple students per vehicle occupancy.
- Additionally, it has been assumed that 30 vehicles driven by teachers will access the school in the morning peak hour and depart the school in the afternoon peak hour.
- In each horizon year, analysis has been undertaken for two scenarios, as follows:
  - A “no-build” scenario, accounting for background traffic growth in Jerrabomberra and its surrounds.
  - A “build” scenario, accounting for background traffic growth in Jerrabomberra and its surrounds plus the trips associated with the high school.
- In accordance with discussion with TfNSW and QPRC, SIDRA analysis was undertaken for
  - Lanyon Drive and Tompsitt Drive.
  - Tompsitt Drive, Henry Place and Environa Drive.
  - Jerrabomberra Circle.

– In the 2023 horizon year “no build” scenario:
  - Analysis results for the 2023 “no-build” scenario indicate that the signalised intersections (AM and PM school peaks) and the Jerrabomberra Circle in the PM school peak are operating within practical level of capacity with a LoS better than D.
  - Although the Jerrabomberra Circle is operating at LoS C and the overall roundabout average delay is approximately 40 seconds, in the AM school peak hour, the eastern approach at the roundabout operates at an unsatisfactory LoS F and average delays of approximately 130 seconds. This is because the large volumes of traffic entering the roundabout from Edwin Land Parkway, is opposed by high right turn volumes from Tompsitt Drive in the AM school peak hour.
– In the 2023 horizon year “no build” scenario:
  - Similar to the “no-build” analysis outputs, the SIDRA model analysis results for the “build” scenario” both the signalised intersections (AM and PM school peaks) and the Jerrabomberra Circle in the PM school peak are operating within practical level of capacity with a LoS better than D.
  - However, the Jerrabomberra Circle is operating at LoS F with overall average delay being approximately 78 seconds. Edwin Land Parkway at the roundabout operates at an unsatisfactory LoS F and average delay of approximately 268 seconds.
  - This delay is primarily associated with the wider growth of Jerrabomberra, rather than the vehicle activity associated with the operation of the high school. The analysis indicates that in 2023, delays on Edwin Land Parkway will occur, regardless if the school is constructed.
  - The difference between the 2023 “no-build” and “build” SIDRA outputs, indicates that the trips associated with the new high school in Jerrabomberra will have a minor impact on the operation of the intersections of interest.
– In the 2033 horizon year “no build” scenario:
  - The intersection of Lanyon Drive and Tompsitt Drive is expected to operate with an acceptable LoS in the AM and PM school peak hours.
  - The intersection of Tompsitt Drive and Henry Place is expected to operate with an acceptable LoS in the AM school peak hour.
  - The Jerrabomberra Circle is expected to operate with an acceptable LoS in the PM school peak hour.
  - The operation of Jerrabomberra Circle worsens significantly with LoS F and with overall average delay being approximately 253 seconds in the PM school peak hour, without the trips generated by the proposed high school.
  - Again Edwin Land parkway operates at an unsatisfactory with LoS F and average delay significantly increases with approximately 988 seconds in the AM school peak.
  - In the PM school peak, the analysis results indicate that the Lanyon Drive / Tompsitt Drive intersection operates within practical level of capacity with LoS less than D. However, the Henry Place / Tompsitt Drive intersection is operating with LoS F and overall intersection average delay being approximately 97 seconds. The Tompsitt Drive west approach right turn into Environa Drive is failing with LoS F and queues recorded as 510 meters. This impacts the traffic at upstream intersection at Lanyon Drive / Tompsitt Drive with right turn delays and impacting the overall intersection operation.
– In the 2033 horizon year “build” scenario:
  - Similar to the “no-build” analysis outputs, the “build” SIDRA model analysis results indicate that the intersection at Lanyon Drive/Tompsitt Drive is operating within practical level of capacity with LoS less than D in the AM school peak hour.
  - In the AM school peak hour, the Tompsitt Drive/Henry Place intersection is operating with LoS E, with a slight increase in delay when compared to “no-build” scenario.
  - The Jerrabomberra Circle operation is consistent to the “no-build” scenario, operating with LoS F and increased average delay for the eastern approach in the AM school peak.
  - In the PM school peak “build” scenario, both signal intersections operates at an unsatisfactory LoS F and average delay recorded at 86 and 111 seconds, respectively.

- For the Lanyon Drive/Tompsitt Drive intersection, the increase in delay is associated with the large volumes of traffic on Tompsitt Drive, causing congestion throughout the network.
- The SIDRA results indicate that the intersections operation in the “build” scenario is consistent when compared to “no-build” scenario.

– It is to note that the nominal increase in the proposed high school traffic would not have a significant impact on the intersections, which are already exceeding satisfactory operational capacity because of the significant background traffic growth in the south Jerrabomberra region by 2033.

– Accordingly, any upgrades to the intersections in Jerrabomberra to facilitate an acceptable LoS should not be the responsibility of the school to fund or implement, and the proposed high school in Jerrabomberra can be supported from a traffic and transport perspective.

Appendices

Appendix A

New High School in Jerrabomberra – School Transport Plan

New High School in Jerrabomberra

School Transport Plan

Hindmarsh Construction Australia Pty Ltd

2 November 2021

→ **The Power of Commitment**

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S04	1	M Lucas	S Clarke	On file	S Clarke	On file	25/06/21
S04	2	M Lucas	S Clarke	On file	S Clarke	On file	25/08/21
S04	3	M Lucas	S Clarke	On file	S Clarke	On file	07/09/21
S03	4	M Lucas	S Clarke	On file	S Clarke	On file	08/10/21
S03	5	M Lucas	S Clarke	On file	S Clarke	On file	13/10/21
S04	6	M Lucas	S Clarke	On file	S Clarke	On file	11/03/21

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1. Introduction

This School Transport Plan accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) in support of an application for a State Significant Development (SSD No 24461956). The SSDA is for a new high school located at Jerrabomberra.

School Infrastructure is seeking to implement a transport plan to increase sustainable mode share to the school. The basis of this plan is to set targets for sustainable mode share for staff and students and then to identify policies, procedures and strategies to improve sustainable travel.

1.1 Proposal

The proposed development is for the construction of a new high school in Jerrabomberra. The proposal will meet community demand and to ensure new learning facilities are co-located near existing open space infrastructure. The proposal generally includes the following works:

– Site preparation
– Construction of a series of buildings up to three storeys including administration/staff areas, library, hall and general learning spaces
– Construction of new walkways, central plaza and outdoor games courts
– Construction of a new at-grade car park
– Associated site landscaping and open space.

The proposal has been designed to accommodate approximately 500 students with Stream 3 teaching spaces, however the core facilities will be future proofed to a Stream 5 to enable possible future expansion to meet projected demand.

The proposal will include site preparation works, such as clearing and levelling to accommodate the proposed buildings and play areas. The proposal will involve the construction of a series of buildings housing general learning spaces, administration and staff wings, outdoor learning areas, a library and assembly hall.

The proposal will include construction of a new driveway and hardstand with access proposed off the northern stub road east of Environa Drive. Pedestrian access is proposed off Environa Drive and the northern stub road.

The site plan for the new high school in Jerrabomberra is displayed in Figure 1.1.

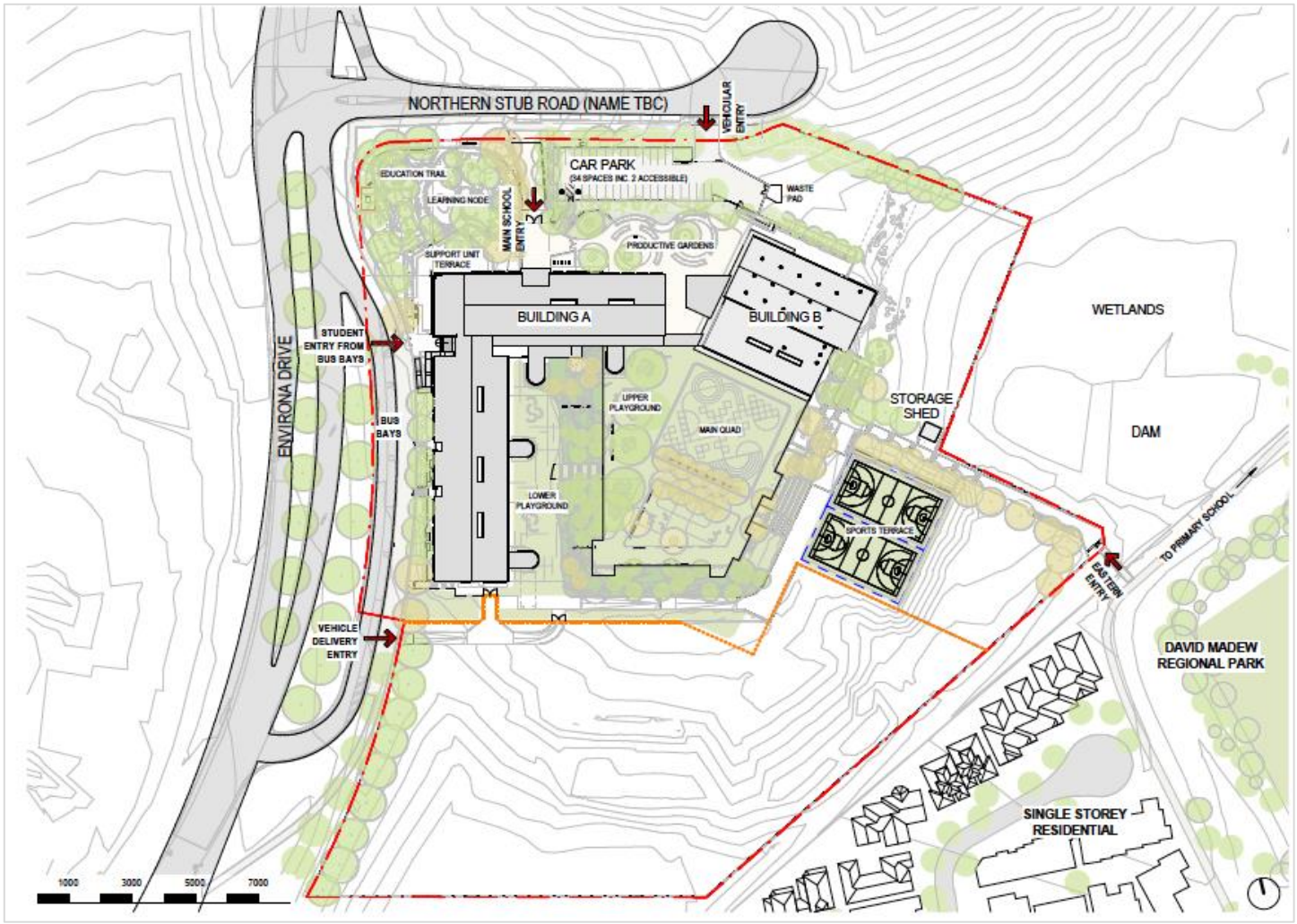

Figure 1.1 Site Plan

Source: TKD Architects

1.2 Site description

The high school in Jerrabomberra is located at 300 Lanyon Drive, Jerrabomberra, in the local government area of Queanbeyan-Palerang Regional Council (QPRC).

An aerial image of the school site prior to construction commencing is displayed in Figure 1.2.

Figure 1.2 Aerial image of the school site

Source: TKD Architects

A cul-de-sac (North Road), which will intersect Environa Drive at a priority controlled intersection will provide direct access to the high school's main pedestrian entry, pick-up/drop-off facility, car park and waste collection facility.

An aerial image from 10th July 2021 (refer to Figure 1.3) shows the construction of Environa Drive and surrounding roads to the new high school in Jerrabomberra.

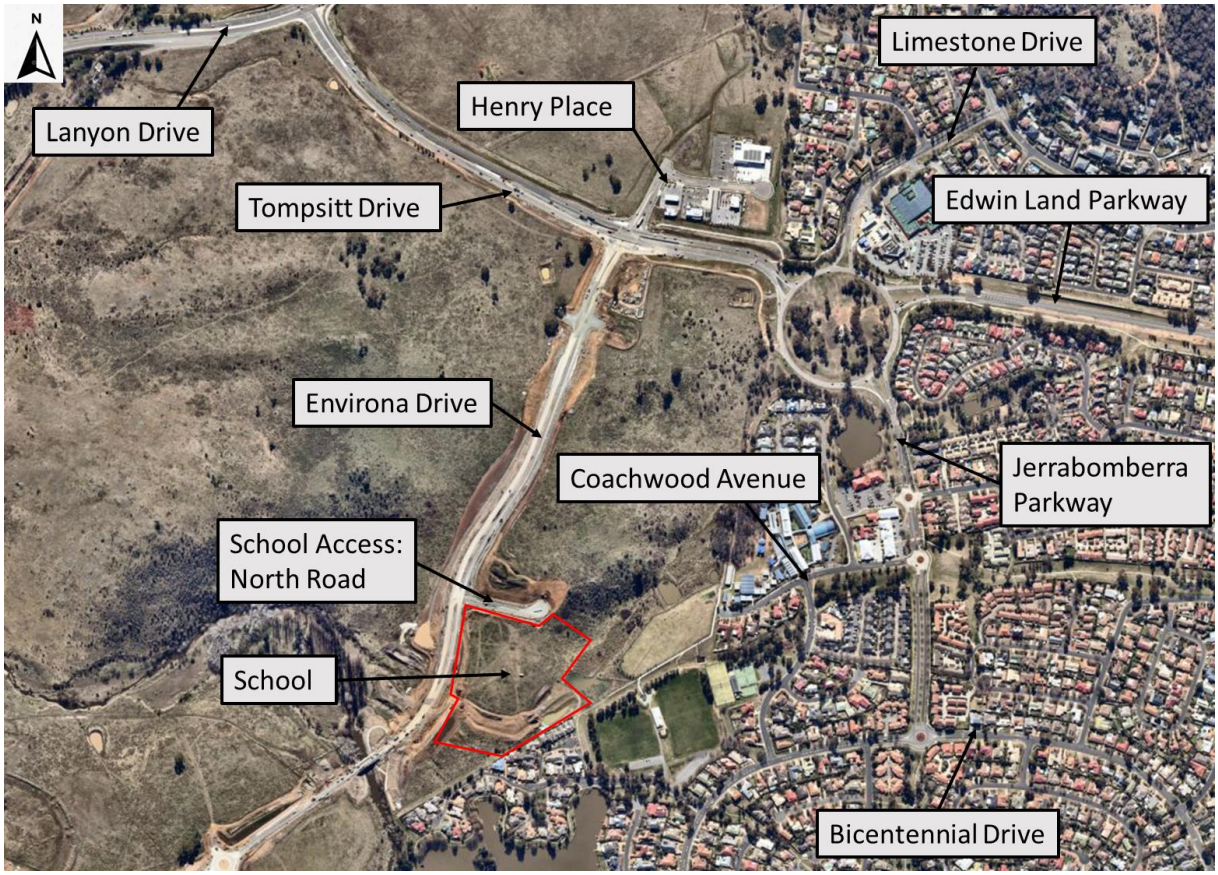

Figure 1.3 New high school in Jerrabomberra subject site and surrounding road network

Environa Drive and the North Road will be constructed prior to the opening of the high school, supporting the provision of the access arrangements detailed in Section 2.3.1.

A construction drawing of the Environa Drive and the high school's access intersection is displayed in Figure 1.4. A separated shared path will run along the eastern side of Environa Drive.

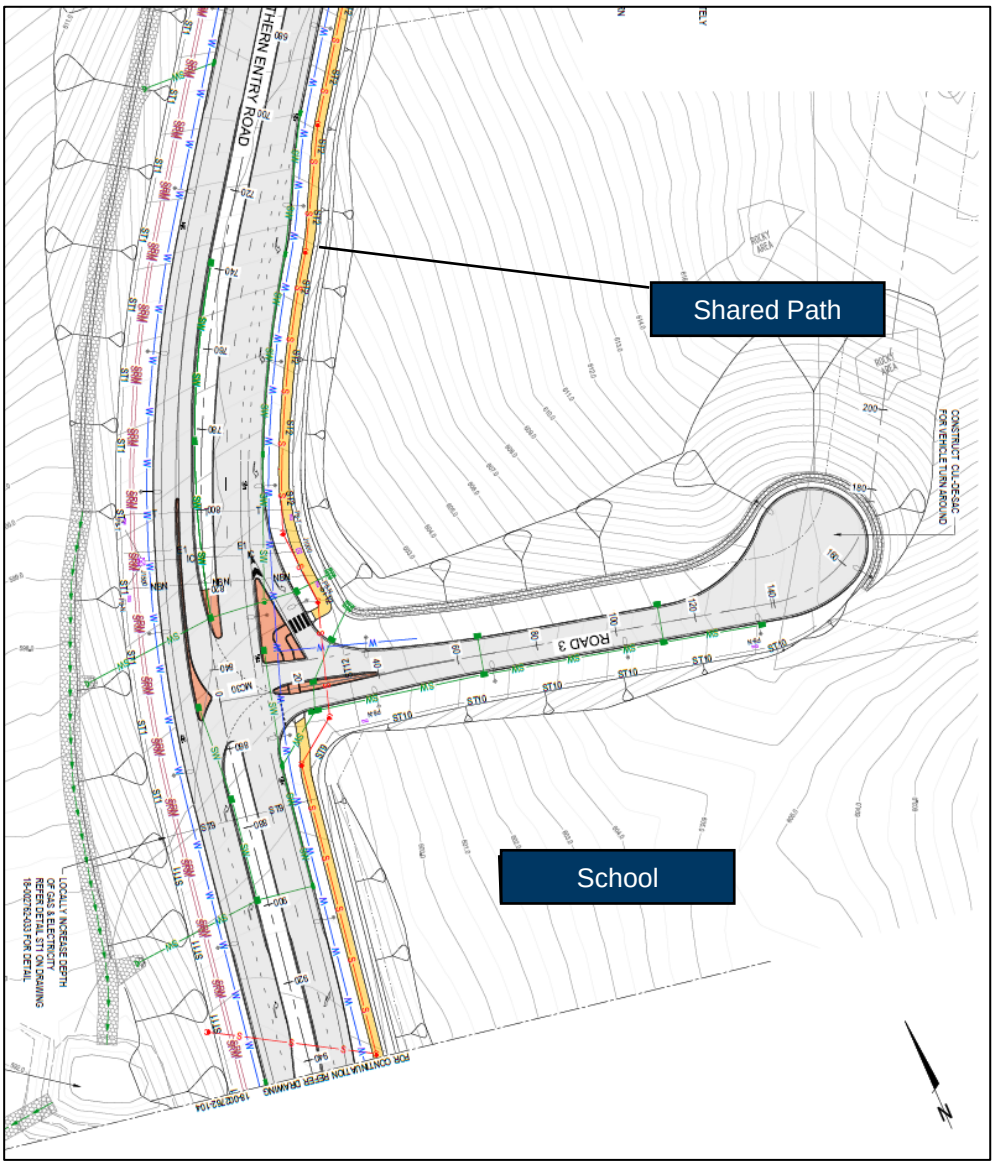

Figure 1.4 New high school in Jerrabomberra access intersection

Source: Prepared by Calibre

2. Transport plan

2.1 Transport goals

2.1.1 School Transport Plan vision and objectives

This School Transport Plan (STP) has been prepared to manage travel demand during construction of the high school and to govern travel to and from school throughout post-occupancy.

The key objectives of a STP are to:

– Achieve the transport mode shares identified in Table 2-1 of this report.
– Proactively identify and meet school travel demand safely, efficiently and sustainably.
– Deliver transport infrastructure to meet school travel demand.
– Maximise the use of active and public transport modes to reduce car traffic before and after school day start and end times
– Decongest the road networks around schools.
– Increase active travel to and from school in a safe transport environment.
– Enhance connectedness to neighbourhood and community through safe travel to and from school.
– Empower students and young people to be safe road users now and into the future.

2.1.2 Mode share targets

The mode share targets for the new high school in Jerrabomberra have been developed as part of scenario testing undertaken in the Transport Assessment and are displayed in Table 2-1.

The residential locations of the staff at the high school is not currently available. However, it is expected that a significant portion of staff will reside in the nearby population centres of Canberra and Queanbeyan. Public transport connections between these centres and Jerrabomberra are poor. However, the school proposes to include five car spaces dedicated to car sharing. The mode share targets for staff are also included in Table 2-1.

Table 2-1 New high school in Jerrabomberra mode share targets

Mode	Target		Target	
	Students	Mode share	Staff	Mode share
Walk, incl ped scooter	150	30%	5	10%
Bicycle	100	20%	5	10%
School Bus	75	15%		
Kiss-and-drop	125	25%		-
Drive themselves	50	10%		-
Car as driver	-	-	30	70%
Car as passenger			5	10%
Total	500	100%	45	100%

Achieving the target mode shares will be supported by the development of a communication plan, as detailed in Section 2.4, and implementing the policies and programs identified in this STP.

2.1.3 Links to other application documents

The Monaro Cluster – Jerrabomberra High School Ecological Sustainable Development Statement (April 2020) identifies the following initiatives to improve sustainable transport options:

– A traffic engineer has been engaged to carry out a transport assessment in line with the SINSW requirements.
– To encourage active and public transport, bicycle parking for staff and students as well as change facilities for staff are provided at the high school.

2.2 Policies and procedures

Policies and procedures to encourage mode shift towards active forms of transport will be co-designed with the School Principal and the Travel Coordinator. The outcomes sought will include:

– Increases in sustainable modes of travel
– To minimise the use of private vehicles.
– The management of risks including safe access to schools.

A summary of policies and procedures for the new school in Jerrabomberra which will be co-designed by the School Principal and Travel Coordinator may include:

Increase sustainable modes of transport

– Prioritisation of multi-modal transport access for example walking and bus to school.
– The school will encourage and support sustainable modes of transport to the school through the provision of appropriate infrastructure, education, communication and support (like a Travel Coordinator).
– The school will advocate with local council to improve walking and cycling infrastructure to the school
– A Transport Access Guide (TAG) will be prepared to detail the ways students can get to school, emphasising active and public transport.

Reduce use of private vehicles

– The school will promote carpooling and a dedicated space will be provided at the high school
– The school will provide education, communication and encouragement of sustainable travel.
– The school will support Council rangers inspection of poor behaviours during pick up/drop off activities to encourage safe behaviours and make private vehicle use unattractive.

School management procedures

– Safe access to the school will be guided by entry points for pedestrians, bikes and a separate entry for vehicles.
– A security fence will be provided around the perimeter of the school to restrict activity to the designated entry points for pedestrians, bicycle riders and vehicles.
– All bike parking will be provided within the secure, fenced, boundary of the school.
– Zones for each mode of transport to be communicated through wayfinding for example bus drop off and pick up to use Bus Zone (per Section 2.3.1.3).
– There will be opportunities for parents/guardians with special needs students attending the high school and minibuses associated with the NSW's Government Assisted School Travel Plan (ASTP), to pick-up/drop-off these students within the staff parking.
– All individuals will be responsible for locking their bikes at the designated bike rack.
– Access to the car park will be controlled by a gate and a reader/intercom. Only authorised vehicles (staff) will be issued with a key fob to open the gate.
– Waste collection will be undertaken within the car park.
– Gates providing access to the car park will be kept closed at all times, unless being used by the school.
– The waste collection company will determine the collection hours based on school location and logistical access. They will schedule collection outside of peak school hours from 8:00 am to 9:30 am and from 2.30 pm to 4:00 pm to reduce any risk from the truck and bin movements affecting the school children.

– A separate vehicle access will be provided from the Bus Zone for deliveries to the wood and metal store. This access will be fenced and physically separated from the high school.
– Staff will be allocated to “bus duty” in afternoon periods, within the school gates, to support the safe movement of students using the Bus Zone School transport operation.

2.3 School transport operation

2.3.1 Site transport access

The site infrastructure that will be provided for the high school is detailed as below.

An indicative drawing of the traffic and transport routes and facilities at the new high school in Jerrabomberra is displayed in Figure 2.1.

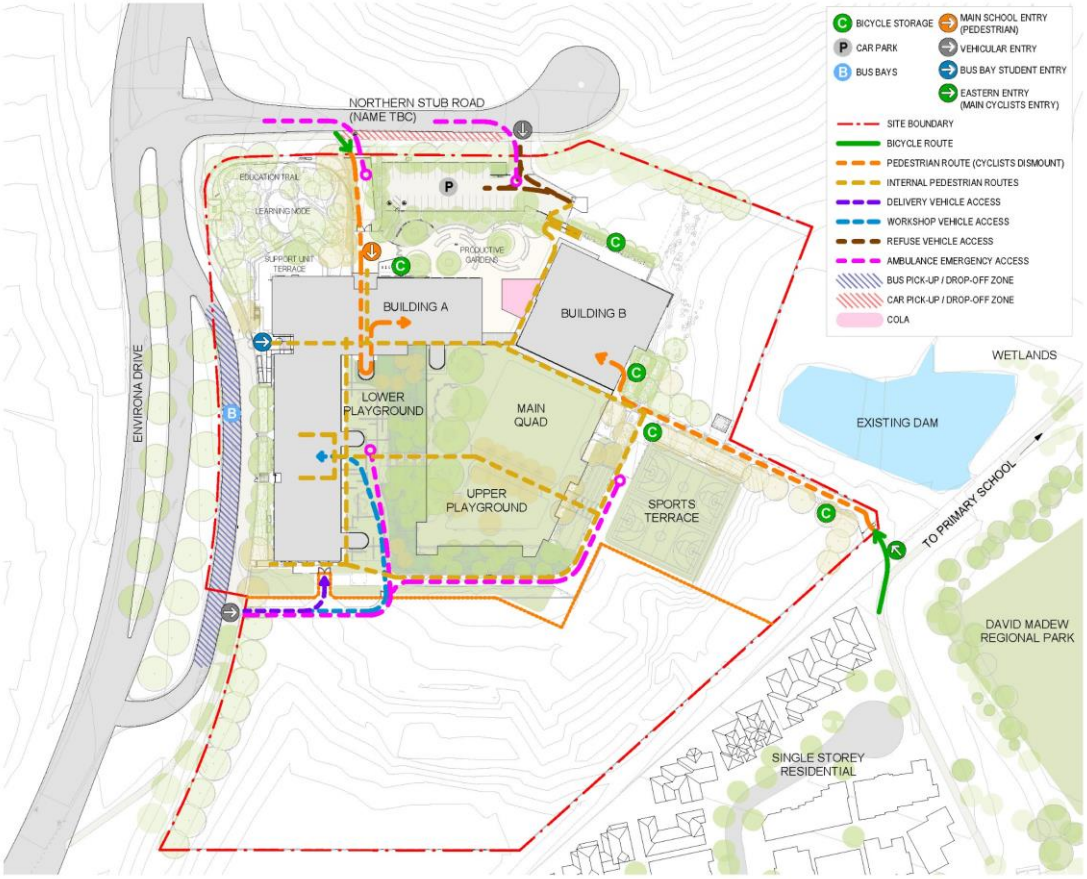

Figure 2.1 New high school in Jerrabomberra traffic and transport facilities

Source: TKD Architects

2.3.1.1 Pedestrians, bikes and scooters

Pedestrian, scooter and bicycle access within proximity to the site is provided:

– In the east via the current path at the end of Coachwood Avenue and Bayside Court.
– To the north via North Road.

Catchment analysis suggests 96 percent of students reside within a 15 minute bicycle riding catchment. A significant portion of these reside to the north of Tompsitt Drive. Accordingly. the provision of the active transport facilities associated with Environa Drive (refer to Figure 1.3) will provide utility to these students.

2.3.1.2 End of Trip facilities

The high school will have 45 staff and will provide one unisex shower/change cubicle will be located near the northern entry (for use by staff only).

In accordance with the mode share targets detailed in Table 2-1, 114 bicycle parking spaces will be provided for staff and students. These will be located at the northern and eastern pedestrian entries of the school.

All bike parking will be provided within the secured, fenced, boundary of the school.

2.3.1.3 Public transport

A Bus Zone will be located adjacent to the west of the high school, separated from Environa Drive through traffic flow. Key advantages of this arrangement are:

– It minimises the impacts of buses drawing in and drawing out at the school on the through movement of traffic on Environa Drive.
– Students will not be required to cross a road to access the Bus Zone.

Based on the mode share targets detailed in Table 2-1, approximately 75 students are expected to catch a bus to and from school. This is the equivalent of two buses, assuming 40 students per bus.

The bus bay length services up to five buses to accommodate additional bus route services.

2.3.1.4 Pick-up/Drop-off

All vehicle access to the high school will be from the North Road cul-de-sac.

Parents/guardians picking up or dropping off students will undertake a U-turn at the eastern end and use the designated facility on the southern side of North Road and exit onto Environa Drive.

Seven spaces will be provided in the pick-up/drop-off zone, plus one dedicated space for students with special needs.

Vehicles will be able to queue within the North Road before utilising the pick-up/drop-off facility and exiting onto Enviona Drive.

The pick-up/drop-off zone will be controlled by No Parking signage (8:00 am - 9:30 am and 2:30 pm – 4:00 pm school days) to encourage vehicle turnover. Outside of these periods, the pick-up/drop-off zone will be used for visitor parking.

2.3.1.5 Waste collection and deliveries

Waste collection will be undertaken within the school immediately east of the car park by a private contractor.

Information on how waste collection vehicles are expected to access/egress the high school will be conveyed upon engagement of contract services and will align with this plan.

The waste collection company will determine the collection hours based on school location and logistical access. They will schedule collection outside of peak school hours from 8:00 am to 9:30 am and from 2.30 pm to 4:00 pm to reduce any risk from the truck and bin movements affecting the school children.

Delivery vans will layover within the Bus Zone (outside school pick up drop off periods) and be scheduled to occur outside peak periods of school activity, i.e., no deliveries will be scheduled between 8:00 am – 9:30 am and 2:30 pm – 4:00 pm. Delivery vehicles will not be issued with a key fob or be able to access the school when it is unattended.

Additionally, a separate vehicle access will be provided from the Bus Zone for deliveries to the wood and metal store. This access will be fenced and physically separated from the high school.

Information on layover locations and access arrangements will be conveyed upon engagement of contracted services.

2.3.1.6 Car parking

The car park at the new high school in Jerrabomberra will provide 34 parking bays, including two parking bays for the mobility impaired.

In order to encourage carpooling, two parking bays will be allocated to staff who carpool.

Access to the car park will be controlled by a gate and a reader/intercom. Only authorised vehicles will be issued with a key fob to open the gate.

There will be opportunities for parents/guardians with special needs students attending the high school and minibuses associated with the NSW's Government Assisted School Travel Plan (ASTP), to pick-up/drop-off their students within the staff parking.

Visitors will park on the road network adjacent to the school.

2.3.2 Day to day school operations

A summary of the new high school in Jerrabomberra management strategies is provided in Table 2-2.

Table 2-2 Management strategy summary

Facility	Location	Strategy
Site entries, pedestrian and vehicle	Pedestrian, bicycle and scooter access will be provided via the footpath on the North Road cul-de-sac, which will intersect Environa Drive (which is currently under construction and will be completed prior to the school opening) at a priority controlled "seagull" intersection. Additional eastern access will be provided from the pedestrian path at the end of Coachwood Avenue and Bayside Court. Vehicle access (including service and emergency vehicles) to the high school will also be provided from the North Road cul-de-sac. A separate vehicle access will be provided from the Bus Zone for deliveries to the wood and metal store. This access will be fenced and physically separated from the high school.	All pedestrian entry/exit into the school will be controlled using gates, which will close outside of school periods to prevent unauthorised entry. Access to the car park will be controlled by a gate and a reader/intercom. Only authorised vehicles (staff) will be issued with a key fob to open the gate. A security fence will be provided around the perimeter of the school, to restrict activity to the designated entry points for pedestrian, bicycle riders and vehicles. Waste collection will be undertaken within the school immediately east of the car park by a private contractor. The waste collection company will determine the collection hours based on school location and logistical access. They will schedule collection outside of peak school hours from 8:00 am to 9:30 am and from 2.30 pm to 4:00 pm to reduce any risk from the truck and bin movements affecting the school children. Deliveries will be scheduled to occur outside peak periods of school activity, i.e., no deliveries will be scheduled between 8:00 am – 9:30 am and 2:30 pm – 4:00 pm. Delivery vehicles will not be issued with a key fob or be able to access the school when it is unattended.
Active Transport	The committed upgrades in proximity to the school include: The provision of signalised pedestrian crossings at the intersection of Environa Drive with Tompsitt Drive and Henry Place. A separated shared path that runs along the eastern side of Environa Drive. End of trip facilities, including 114 bike parking spaces for staff and students, four showers/lockers for staff and showers in the gym for use by students.	Communicate the ways students can get to school, emphasising active and public transport, through a TAG. All individuals will be responsible for locking their bikes at the designated bike rack. Advanced cycling and bike maintenance classes will be provided to high school students.
Kiss-and-drop including Assisted School Transport Program	The high school student pick-up/drop-off zone will be on the southern side of the North Road cul-de-sac, adjacent to the high school site. There will be opportunities for parents/guardians with special needs students attending the high school and minibuses associated with the NSW's Government Assisted School Travel Plan (ASTP), to pick-up/drop-off students within the staff parking.	Staff will not manage/supervise the operation of the school's pick-up/drop-off facilities. Students will be responsible for embarking/disembarking the bus services, A parking bays for the mobility impaired will be provided at the designated pick-up/drop-off zone. There will be opportunities for parents/guardians with special needs students attending the high school and minibuses associated with the NSW's Government ASTP, to pick-up/drop-off students within the staff parking. The pick-up/drop-off zone will be controlled by No Parking signage (8:00 am – 9:30 am and 2:30 pm – 4:00 pm school days) to encourage vehicle turnover. Outside of these periods, the pick-up/drop-off zone could potentially be used for visitor parking.

Facility	Location	Strategy
		Preparation of a TAG detailing expected student and parent behaviors at the pick-up/drop-off facility.
Buses	A Bus Zone will be provided adjacent to the west of the high school, physically separated from Environa Drive.	Staff will be allocated to “bus duty” in afternoon periods, within the school gates, to support the safe movement of students using the Bus Zone Buses for excursions (or similar) will use the school’s designated Bus Zone. Communicate bus routes serving the school, timetables and School Student Transport Scheme (SSTS) criteria through a TAG. Review bus patronage on an annual basis to ensure that there is sufficient capacity for primary and high school students. Review the school bus routes in the context of student addresses (using the depersonalised household data) and coordinate / advocate for better bus service design to pick up kids closer to where they live. Buses will arrive from 8:00 am – 9:00 am and depart from 3:00 pm – 3:45 pm. The pedestrian gate at the Bus Zone will be closed outside these periods of operation unless there is a school excursion, at which time the gates will be opened to enable the embarkation and disembarkation of students.
Car parking	A car park with 34 spaces, including two spaces for the mobility impaired and two carpooling spaces, will be provided at the new high school in Jerrabomberra.	Gates providing access to the car park be kept closed at all times, unless being used by the school. All vehicle entry/exit into the school will be controlled using gates, which will close outside of school periods to prevent unauthorised entry.

2.3.3 Event transport operations

During excursions or events the facilities/strategies will be similar to management strategy summary is outlined in Table 2-2, noting:

– Buses for excursions (or similar) will use the school's designated Bus Zone.
– The Jerrabomberra Community will not be able use the car park outside of school times.

2.3.4 Sample transport encouragement programs

The Travel Coordinator will make recommendations to the School Principal after consultation with the school community, including students, parents and staff, as to the type of programs that are best suited to the community and most likely to see the most impact to improving sustainable transport to the school.

These programs include:

– Safe Routes to School.
– Independent Walking to School.
– Advanced cycling classes [1](per Section 2.2).
– Bike maintenance programs.
– Running to school – potentially as a form of training (if appropriate).

2.4 Communication plan

2.4.1 Channels of communication

The key channels of communication between the school and the school community to keep them informed about travel and transport initiatives will include:

– Regular newsletters.
– Starter kits, with key information including the TAG, will be provided to all new students/parents.
– The high school's website.
– Social media accounts such as Facebook and twitter.

The Principal's Message, available online for schools, is another forum to communicate with students and their parents/guardians. These messages typically cover a range of subjects, including the school's ethos, extracurricular activities and academic and sporting results. However, it can also include feedback with respect to the operation of parking and pick-up/drop-off facilities.

The school leadership will coordinate with the NSW Police to:

– Monitor the operations of the vehicles utilising the school's pick-up/drop-off facilities.
– Assist in education students on safe travel.

2.4.2 Messages

The channels of communication detailed in Section 2.4.1, will provide an opportunity for the leadership of the new high school in Jerrabomberra and parents/guardian to communicate to each other directly about:

– Encouraging students to use sustainable modes of transport.
– The layout and location of the traffic and transport infrastructure in proximity to the school.
– Reporting of transport issues as concerns arise.

[1] Preliminary research in bike training providers indicates that rideTECHNICS in Canberra provides advanced training for groups of 10 people for a fee of $285 (incl GST). Assuming 100 students cycle to school and each student will be provided with two training sessions, a budget of $5,700 (incl GST) should be set aside for bike courses.

– Educational and learning opportunities for students, parents/guardians and the community.
– Car pooling initiatives and encouragement.
– Bike training, maintenance programs.
– Reporting of statistics on sustainable travel uptake by the school community.
– Championing of sustainable travel behaviour.

2.4.3 Transport Access Guide

Prior to the school opening, a TAG will be created for the school to encourage the use of sustainable modes of travel. The TAG will be used as a critical piece of information included in “welcome packs” provided to parents/guardians and carers as part of the Year 7 induction and for new enrolments throughout the school year.

A summary of the infrastructure and supporting management strategies are detailed in summary the TAG will provide:

– Active travel information, including:
  - Best active transport routes to school and how to access bicycle parking.
  - Messaging that a socially distant way of getting to school is walking and cycling.
  - Safety tips/rules for cycling (safety on wheels).
  - The health advantages of walking and cycling.
– Bus travel options, including:
  - School bus routes.
  - School bus timetables.
  - Information on the eligibility of the school bus pass (SSTS).
– Kiss-and-Drop (pick-up/drop-off) location.
– Bus Zone and No Parking restrictions.
– Demerits and fines associated with contravening these constrictions.

The TAG will include a map showing bus routes, walking routes, pedestrian crossing points, bus stop locations, bike parking locations and pick-up/drop-off locations.

The Transport for NSW TAG templates are included in Appendix A. The nearest bike shop to the school is Pushys, located in Canberra, which will be identified in the TAG.

A summary of key aspects of the Communication Plan for the new high school in Jerrabomberra is provided in Table 2-3.

Table 2-3 Communications Plan

What	When	Frequency	How	To Whom	By Whom
Aspirations to have students travel to school by walking, bike, scooter or bus. Share the vision and meet the mode share targets for the number of students to walk and ride to school.	Before the school opens – in promotional and marketing material.	Annually	Welcome packs (new starter kits) to new students. School website and Facebook page.	Student and parents.	School Principal and Travel Coordinator to draft contents.
Share the walk, ride and bus transport options for the high school.	Information will be available at all times.	Marketed at the start of every term.	Welcome packs (new starter kits) to new students. School website, school app and Facebook page. Principals message.	Student, parents and staff.	Travel Coordinator to draft content based on a TAG.
Communicate expected standards for behaviour at the pick-up and drop-off facilities.	Upon commencement of each school year.	Marketed at the start of every term.	Welcome packs to new students. Newsletters. Principals message.	Student and parents.	Travel Coordinator to draft content based on a TAG and Council's Road Safety Officer.
Road safety behaviours	Information will be available at all times.	Marketed at the start of every term.	Welcome packs (new starter kits) to new students. School website, school app and Facebook page. Principals message.	Student, parents and staff.	Travel Coordinator to draft content based on a TAG.

A copy of the TAG will be provided to all staff. A copy of the TAG will also be displayed prominently in staff areas, such as lunch rooms and foyer areas and information boards throughout the school for parents and students.

The TAG will be presented in a form that is reflective of the commitment to achieving positive transport objectives.

The TAG will be prepared upon completion of school bus route planning with TfNSW and local bus operators.

2.5 Data collection and monitoring

2.5.1 Data collection

With the appointment of the Travel Coordinator, before school opening, travel surveys will be established to form a baseline of mode share among students and staff. SINSW have prepared a questionnaire template, which identifies:

– The school year of the student.
– Mode of travel used to access/egress the school (for students and staff).
– Arrival and departure times.
– A selection of measures that would encourage students and staff to walk or cycle to school, use public transport or carpool.

The surveys will be undertaken on an annual basis at the start of the academic year (to be managed by the Travel Coordinator, as detailed in Section 2.6.1) to capture potential changes in travel mode as a result of interventions, i.e. the upgrades to the active transport network within Jerrabomberra that may be funded and delivered by QPRC and/or TfNSW.

A review of the school bus routes in the context of student addresses (in GIS using the depersonalised household data) will be undertaken every two years, and the Travel Coordinator will coordinate / advocate for better bus service design to pick up students closer to where they live.

Bus patronage monitoring will occur on an annual basis to determine if sufficient capacity is being provided for high school students.

Targeted interviews with staff, students and their parents/guardians will be undertaken by the Travel Coordinator on an annual basis, in terms two and three. The interviews will identify which aspects of the travel plan are supporting improved transport options and any impediments to transport they are facing.

2.5.2 Program evaluation

The program evaluation will determine if the initiatives implemented at the new high school in Jerrabomberra have been successful in terms of meeting the objectives and targets.

The School Travel Plan will be evaluated periodically and as a minimum every two years to increase the success of increasing active travel modes to school. It is recommended that data is collected annually in term 3 to enable refinements to be made to the program in time to influence behaviour changes

Recommendations on how the School Travel Plan, with a focus on the Communications Plan will be improved to assist with reaching the targets and aspirational targets will be recommended as a result of the data analysis.

The mode share targets for the new high school in Jerrabomberra (refer to Section 2.1.2) will be updated as required to reflect the identified travel patterns of student activity.

The school leadership will advocate for additional funding from the Department of Education if additional bike racks are required.

Feedback will be provided to parents and students via newsletters (as part of the Communication Plan) so they can see the benefits associated with sustainable travel.

The Travel Coordinator will be responsible for implementing the evaluation programs.

2.5.3 Report findings

The findings of the data collection, program evaluation and the required responses/mitigations will be included in an updated Communications Plan, which will be undertaken on an annual basis.

2.6 Governance framework

In order to implement the STP, the following groups will be required:

– An internal group consisting of the school leadership team (the school principal or their delegated representative), parent/guardian and student representatives, the QPRC Road Safety Education Officer and representatives from the Asset Management Unit and Work Health and Safety Unit will also form part of this group.
– An external working group including representatives from the new high school in Jerrabomberra, QPRC, TfNSW and public transport providers.

2.6.1 Travel Coordinator

In order to implement the STP for the high school in Jerrabomberra, a Travel Coordinator will be appointed, it is noted that:

– A Travel Coordinator will be required for the duration of construction and first year of post-occupancy to promote sustainable travel behaviours.
– During these periods, transport programs must be implemented to achieve travel behaviour change and support the active and public transport mode split targets.
– This role is initially funded by the project during delivery.
– After one year, ongoing discussion will be undertaken between the Department, SINSW and TfNSW regarding the funding of the Travel Coordinator.

The Travel Coordinator will be responsible for:

– Finalising the detail of this STP and implementing the measures with school leadership and stakeholders.
– Liaising with key stakeholders and executing the Communications Plan.
– Measuring the participation of the program and collecting data in the way staff and students travel to and from school.
– Organising travel surveys, at least annually or more frequently if possible to determine changes in patterns of mode splits.
– Reviewing the adequacy of the supply of bike racks, and the requirement for additional bike racks.
– Amending the STP Action Plan based on survey results, to support the mode share targets being met.
– Managing travel demand (walking, cycling, public transport and vehicles) amongst staff, students and their parents/guardians.
– The Travel Coordinator will be included in the internal and external working groups at the new high school in Jerrabomberra.

2.6.2 Internal working group

The internal working group for the new high school in Jerrabomberra will be established as close as possible to the school opening.

Upon the opening of the school, representatives for the student leadership will be invited to join the internal working group.

The internal working group will identify key issues (including safety issues) in the operation of the school's traffic and transport facilities and identify potential mitigation measures.

2.6.3 External transport working group

The external transport working group for the new high school in Jerrabomberra (consisting of representatives of QPRC, TfNSW and Department of Education) has commenced meeting to discuss the planning for the school.

The external working group will:

– Meet on a (minimum) quarterly basis.
– Review the issues and recommendations of the internal working group.
– Assess the feasibility of the mitigation measures and allocate resources for their implementation (if required).
– Review the annual survey data and any proposed changes to the STP.
– Respond to issues in a collaborative manner to support the safe and efficient movement of students to and from the school.
– The Travel Coordinator will be responsible for ensuring these meetings are minuted, and key actions/recommendation are included in the school's Communication Plan.

Appendix B

Transport Working Group Minutes

TSA

Minutes.

Meeting Title: Monaro Schools, Jerrabomberra – TfNSW & QPRC Transport Assessment & Strategy Discussion

Date: Thursday 09 September 2021

Time: 3pm – 4pm

Location: Microsoft Teams

Attendees:

Andrew Lissenden (AL)	Transport Planning	TfNSW	andrew.lissenden@transport.nsw.gov.au
Chris Millet (CM)	Transport Planning	TfNSW	Chris.MILLET@transport.nsw.gov.au
Derek Tooth (DT)	QPRC	QPRC	Derek.Tooth@qprc.nsw.gov.au
Andrew Palmer (AP)	QPRC	QPRC	Andrew.Palmer@qprc.nsw.gov.au
Lachlan Macdonald (LM)	Senior Project Director	SINSW	Lachlan.MacDonald34@det.nsw.edu.au
Bill Kabbout (BE)	Project Officer	SINSW	bill.elkabbout@det.nsw.edu.au
Shay Bergin (SB)	Senior Project Director	SINSW	Shay.Bergin@det.nsw.edu.au
Rebecca Lehman (RL)	Transport Advisor	SINSW	Rebecca.Lehman@det.nsw.edu.au
Angelo Casado (AC)	Senior Associate	TKD	ACasado@tkda.com.au
Kate Stanistreet (CR)	Senior Architect	TKD	KSanistreet@tkda.com.au
Robert McKnight (RM)	Senior Project Manager	TSA	Robert.McKnight@tsamgt.com
Stefan Szyczew (SS)	Design Manager	HCA	Stefan.Szyczew@hindmarsh.com.au
Mark Leigh-Lucas (ML)	Senior Transport Planner	GHD	Mark.Lucas@ghd.com

Apologies:

Sean Clarke (SC)	Transport Planner	GHD	Sean.Clarke@ghd.com
David Browning (DB)	Project Lead	TSA	David.Browning@tsamgt.com
Leigh Woodley (LW)	Design Manager	HCA	Leigh.Woodley@hindmarsh.com.au

Distribution: Those Above.

Item	Description	Responsible	Date
1.0	**Review Transport Assessments and SEARs requirements**		
1.01	ML presented the TA and reviewed sections responding to the SEARs.	Note	
1.02	Site plan discussed (key points) – • ML noted PS bus zone on Environa Drive, • Pick up and drop off for HS students on the Northern Road, • Waste Pad located in the School Staff carpark, • Entry and Exit to the School is from the Northern Road, • Entry and Exit to the Southern area of School is from Tompsitt Drive	Note	
1.03	DT noted that there is a noise mound in the Southern area to dissipate noise from Tompsitt Drive. AP shared drawing but noise mounds appeared to conflict. AP to provide drawing detailing locations of noise mounds	Note AP	 14/09
1.04	AL suggested bus operations to be discussed with *Tanya Jennison*. ML confirmed he is discussing with *Tanya Jennison* the bus arrangements.	Note	

1.05	Summary of bus operations on Coachwood Drive discussed. Bus companies use the bus stop as an interchange for students travelling to private schools in Canberra.	Note
1.06	Waste collection and deliveries will be requested to occur outside of school activity hours.	Note
1.07	Mode share presented. Based on information, high percentages of students will arrive at school via bus, walking and bicycle.	Note
1.08	The gated parking area will have an intercom system linked to the office. The gate can be operated remotely to allow access. Regular contractors can be provided fob access.	Note
1.09	ML raised concerns and challenges associated addressing the SEARs intersection modelling requirements due to the COVID lockdowns (current & future) any surveys would not be indicative of typical travel patterns and the road to the school is not operational AL has previously acknowledged the concerns with undertaking traffic surveys during this time as it would not represent typical traffic volumes and behaviours across the road network and noted for the two signalised intersections mentioned in the SEAR's issued for Jerrabomberra High School (Tompsitt Drive/Environa Drive and Tompsitt Drive/Lanyon Drive), SCATS data from the sensors at the existing traffic signals could be used to assist (e.g. AM/PM peaks, vehicle numbers and associated growth rates, etc) as they were in place pre-COVID (refer to the attached email).	
2.0	**Review of the available external data sources (Calibre report)**	
2.01	ML noted Calibre's North Poplars Business Park Traffic Impact assessment included traffic modelling requested in the Jerrabomberra School SEARs: • Intersection of Lanyon Drive and Tompsitt Drive, • Intersection of Tompsitt Drive and Henry Place, • Roundabout of Tompsitt Drive, Limestone Drive, Edwin Land Parkway, and Jerrabomberra Parkway	Note
2.02	ML noted the report included the upgraded intersection layout of Tompsitt Drive & Henry Place & Environa Drive and Environa Drive & South Poplars	Note
2.03	ML noted Calibre's North Poplars Business Park Traffic Impact assessment includes vehicle movements for the school and 500 students.	Note
2.04	ML noted the proposed AM and PM Trip Generation used in the report was 7:30AM and 9:30AM in the morning, and between 4:30PM and 6:30PM in the	Note

	afternoon and Traffic Generation Volumes are AM Peak 0.35 vph/student and 0.12 vph/student PM Peak.		
2.05	ML noted that the traffic studies associated with DA 128-2017 and DA 395-2017 as they are studies for South Jerrabomberra (South Tralee) and are not in the current Schools catchment area.	Note	
3.0	**Discussions on the use of this data to inform impact assessment of the new high school in Jerrabomberra.**		
3.01	GHD will included the following data from Calibre's North Poplars Business Park Traffic Impact assessment to repond to Jerrabomberra School SEARs requirements: • Intersection of Lanyon Drive and Tompsitt Drive, • Intersection of Tompsitt Drive and Henry Place, Roundabout of Tompsitt Drive, Limestone Drive, Edwin Land Parkway, and Jerrabomberra Parkway	Note	
3.02	ML noted that the traffic studies associated with DA 128-2017 and DA 395-2017 as they are studies for South Jerrabomberra (South Tralee) and are not in the current Schools catchment area.	Note	
4.0	**Discussions of expected changes in travel patterns on the local road network**		
4.01	DT - noted his main concern is the performance of the road network in areas away from the school and that some are close to saturation point.	Note	
4.02	ML and RM noted that the current level of traffic movements in Jerrabomberra would in large, remain to the existing level and movements. People that are using cars, public transport, cycling, etc to get to their place of work and or drop their children off at school are already using the road network for the same purpose.	Note	
4.03	ML noted that access to the school for student drop off is via Tompsitt Drive, Environa Drive (bus bay) and the Northern Road (pick up and drop off).	Note	
4.04	DT noted that the intersection modelling requested for the following, was a QPRC request. • Coachwood Avenue/Coral Drive. • Coachwood Avenue/Firethorn Place. • Coachwood Avenue/Jerrabomberra Parkway. • Jerrabomberra Parkway/Bicentennial Drive. • Jerrabomberra Parkway/Brudenell Drive. • Jerrabomberra Parkway/Jerrabomberra Circle RM asked if the modelling was required as in previous discussion and as noted in item 4.02, the current level of traffic movements in Jerrabomberra would in large, remain to the existing level and movements. DT and AP will discuss with the QPRC team to determine if the intersection modelling is required and provide advice back to the team early week commencing 13 September.	Note DT/AP	 14/09

5.0	Other Business
5.01	Meeting was scheduled to end at 3.30, Andrew Lissenden, Chris Millet and Rebecca Lehman left the meeting at this time, all other attendees remained until meeting close at 4pm.

Attachments:

2109XX Jerrabomberra Transport Assessment Rev X

AL email dated 26.08.21 titled TfNSW Response - Jerrabomberra HS: TfNSW Sears comments and issued SEARs

TSA

Minutes.

Meeting Title: Monaro Schools, Jerrabomberra – TfNSW & QPRC Transport Assessment & Strategy Discussion

Date: Wednesday 06 October 2021

Time: 10am – 11am

Location: Microsoft Teams

Attendees:

Andrew Lissenden (AL)	Transport Planning	TfNSW	andrew.lissenden@transport.nsw.gov.au
Derek Tooth (DT)	QPRC	QPRC	Derek.Tooth@qprc.nsw.gov.au
Andrew Palmer (AP)	QPRC	QPRC	Andrew.Palmer@qprc.nsw.gov.au
Sean Clarke (SC)	Transport Planner	GHD	Sean.Clarke@ghd.com
Shay Bergin (SB)	Senior Project Director	SINSW	Shay.Bergin@det.nsw.edu.au
Rebecca Lehman (RL)	Transport Advisor	SINSW	Rebecca.Lehman@det.nsw.edu.au
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Angelo Casado (AC)	Senior Associate	TKD	ACasado@tkda.com.au
Kate Stanistreet (CR)	Senior Architect	TKD	KSanistreet@tkda.com.au

Item	Description	Responsible	Date
1.0	**Review of the new high school in Jerrabomberra Traffic Assessment**		
1.01	ML presented the Site plan (key points) included in the TA: • ML noted PS bus zone on Environa Drive, • Pick up and drop off for HS students on the Northern Road, • Waste Pad located in the School Staff carpark, QPRC confirmed position of waste pickup within school was acceptable. • Entry and Exit to the School is from the Northern Road, • Entry and Exit to the Southern area of School is from Tompsitt Drive • Pedestrian Entry and Exit form the South East of the School towards David Madew Regional Park.	Note	
2.0	**Review of SEARs re intersection assessment**		
2.01	RM noted that the intersection modelling requested for the following, was a QPRC request and in discussion with DT over the last couple of weeks, DT confirmed that the intersection modelling was not required. DT noted that the below intersections (ie the last six intersections listed in the SEARs) have already been accounted for in their tracks model and included a school with 500	Note Note	

	students and determined that only the 3 intersections on Tompsitt Drive required modelling: Traffic modelling will be undertaken for 500 students. <u>Intersection modelling not required.</u>: • Coachwood Avenue/Coral Drive. • Coachwood Avenue/Firethorn Place. • Coachwood Avenue/Jerrabomberra Parkway. • Jerrabomberra Parkway/Bicentennial Drive. • Jerrabomberra Parkway/Brudenell Drive. • Jerrabomberra Parkway/Jerrabomberra Circle	Note	
2.02	DT requested modeling for 800 students to allow future High School expansion. SB commented that the SSD application was for 500 students and that the timing for stage 2 is not known at his stage, neither is the student population. SB to confirm Confirm additional student numbers to team for stage 2 [2033 - projection] and forward findings to TfNSW & QPRC. Separate analysis for additional students for stage 2 can be undertaken outside the application but will be a separate exercise. **Note**: if student numbers are unknown or timing of stage 2 is outside of the SEARs requirements i.e. 2033, modeling for 800 student cannot be provided as it would not be based on known future growth/expansion. ML suggested that the 2 models could run in parallel but separate models. RL noted that the 800-student scenario would not form any input into the SSD submission and would be provided as a separate document for information. DT and AL agreed to this approach.	Note Note SB Note ML Note Note	11/10 20/10
3.0	**Review of the available external data sources and use of this data to inform impact assessment of the new high school in Jerrabomberra.**		
3.01	ML noted the Poplars (Calibre) report included the upgraded intersection layout of Tompsitt Drive & Henry Place & Environa Drive and Environa Drive & South Poplars	Note	
3.02	ML noted Calibre's North Poplars Business Park Traffic Impact assessment includes vehicle movements for the school and 500 students.	Note	
3.03	ML noted the proposed AM and PM Trip Generation used in the report was 7:30AM and 9:30AM in the morning, and between 4:30PM and 6:30PM in the afternoon. ML commented that GHD will obtain the SCATS data to adjust the PM peak to align with school peak and phasing.	Note ML	8/10
3.04	GHD will included the following data from Calibre's North Poplars Business Park Traffic Impact assessment to respond to the new high school Jerrabomberra SEARs requirements: • Intersection of Lanyon Drive and Tompsitt Drive; • Intersection of Tompsitt Drive and Henry Place; • Intersection of Tompsitt Drive and Environa Drive.	Note	
3.05	Discussion was held as to what land use should be used and accounted for in the model.	Note	

	ML presented Land Use tables 4.1, 4.2 and 4.3 from the Calibre report. Meeting agreed to use known information in the Calibre report and not speculated rezone land requests.	Note	
3.06	RM asked if any DA's had been submitted for the proposed land use in tables 4.1, 4.2 and 4.3 from the Calibre report, noting that development such as supermarkets and the lies would take in excess of 5 years to develop.	Note	
	DT/AP were not aware of any submitted DA's	Note	
	DT to confirm future land use breakdown that should be incorporated into the 2023 and 2033 models.	DT	8/10
	QPRC & TfNSW to confirm accuracy of peak hour data tabling and data and will provide information	DT/AP	8/10
3.07	ML asked if the modelling should include future developments.	Note	
	AP referred to a future sports hub located South Tralee on Envonia Drive.	Note	
	AL referred to a job's precinct, South of Envonia Drive. AL to provide contact details of Vanessa Wilson (TfNSW Senior Manager, Community & Place Partner – South East Tablelands) – 4253 2618 in relation to the South Jerrabombarra Regional Jobs Precinct and proposed intermodel hub.	AL	8/10
3.08	RL made reference and consideration is to be given to the bus network and incorporated into the TA	Note	
	ML noted that he is in constant contact with Tanya (TfNSW) and information provide to bus routes will be included in the TA.	ML	22/10
3.09	RL referred to the road space allocation policy in relation to pedestrian access at intersections.	Note	
	Traffic analysis to include reference to walking, cycling, bus etc. GHD to use SINSW data.	ML	22/10
	Where appropriate, ML to apply the road space allocation policy requirements in the TA.	ML	22/10
	Bus data should be in the consistency review for the next TWG meeting.	ML	22/10
3.10	SIDRA modeling should include Auto Introduction for pedestrians.	ML	22/10
4.0	**Other Business**		
4.01	RL advised that the transport meeting is the platform to bring questions to the table for discussion. This is applicable to all attendees.	Note	
4.02	Tanya (TfNSW) to be invited to the next meeting.	RM	
4.03	Next meeting to be scheduled for 22 October at 10am	Note	

Attachments:

Nil

Minutes.

Meeting Title: Monaro Schools, Jerrabomberra – TfNSW & QPRC Transport Assessment & Strategy Discussion

Date: Friday 22 October 2021

Time: 10am – 11am

Location: Microsoft Teams

Attendees:

Andrew Lissenden (AL)	Transport Planning	TfNSW	andrew.lissenden@transport.nsw.gov.au
Derek Tooth (DT)	QPRC	QPRC	Derek.Tooth@qprc.nsw.gov.au
Eli Ramsland (ER)	QPRC	QPRC	Eli.Ramsland@qprc.nsw.gov.au
Sean Clarke (SC)	Transport Planner	GHD	Sean.Clarke@ghd.com
Lachlan Macdonald (LM)	Senior Project Director	SINSW	Lachlan.MacDonald34@det.nsw.edu.au
Shay Bergin (SB)	Senior Project Director	SINSW	Shay.Bergin@det.nsw.edu.au
Rebecca Lehman (RL)	Transport Advisor	SINSW	Rebecca.Lehman@det.nsw.edu.au
Robert McKnight (RM)	Senior Project Manager	TSA	Robert.McKnight@tsamgt.com
Bill Kabbout (BE)	Project Officer	SINSW	bill.elkabbout@det.nsw.edu.au
Angelo Casado (AC)	Senior Associate	TKD	ACasado@tkda.com.au
Stefan Szyczew (SS)	Design Manager	HCA	Stefan.Szyczew@hindmarsh.com.au
Mark Leigh-Lucas (ML)	Senior Transport Planner	GHD	Mark.Lucas@ghd.com
Jayme Akstein (JA)	GM, Business Traffic Engineering	GHD	Jayme.Akstein@ghd.com
Ajay Kallem (AK)		GHD	

Distribution

David Browning (DB)	Project Lead	TSA	David.Browning@tsamgt.com
Andrew Palmer (AP)	QPRC	QPRC	Andrew.Palmer@qprc.nsw.gov.au
Sarah Kelly (SK)	Principal Planner	SINSW	Sarah.Kelly97@det.nsw.edu.au
Chris Millet (CM)	Transport Planning	TfNSW	Chris.MILLET@transport.nsw.gov.au
Kate Stanistreet (CR)	Senior Architect	TKD	KSanistreet@tkda.com.au
Tanya Jennison (TJ)	A/Commercial Manager	TfNSW	Tanya.Jennison@transport.nsw.gov.au

Item	Description	Responsible	Date
1.0	**Previous Minutes**		
2.0	**Review of SEARs re intersection assessment and SIDRA modelling**		
2.01	ML presented Section 4.1 Literature Review (key points) included in the TA: • South Jerrabomberra Local Infrastructure Contributions Plan (2018) • South Jerrabomberra and Queanbeyan Traffic Analysis (2014) • Traffic surveys undertaken by Trans Traffic Survey on behalf of QPRC • Sydney Coordinated Adaptive Traffic System (SCATS) data for the 13th May 2021 The information presented and provided in the contributions plan, traffic analysis, surveys and SCATS data was used in the Transport Assessment (TA) traffic modelling outputs. ML noted there was an overlap between the surveys and school peak times. To bring the data in line with school peak periods there is an 18% reduction in peak activity.		
2.02	ML noted that the SIDRA modelling considered the intersections as a whole network		

	The SIDRA modelling responds to the new high school Jerrabomberra SEARs requirements: • Intersection of Lanyon Drive and Tompsitt Drive; • Intersection of Tompsitt Drive and Henry Place; • Intersection of Tompsitt Drive and Environa Drive. Item 2.01 TWG meeting minutes dated 6th October, DT confirmed that the intersection modelling was not required to the following: • Coachwood Avenue/Coral Drive. • Coachwood Avenue/Firethorn Place. • Coachwood Avenue/Jerrabomberra Parkway. • Jerrabomberra Parkway/Bicentennial Drive. • Jerrabomberra Parkway/Brudenell Drive. • Jerrabomberra Parkway/Jerrabomberra Circle ML noted noted that for the 2023 and 2033 horizon years, the intersection of Tompsitt Drive and Henry Place was updated in the SIDRA model (as part of the network) to include Environa Drive	Note Note
2.03	ML noted SIDRA intersection analysis has been undertaken for commencement of operation (2023) and a ten-year time period from the commencement of operation (2033). This included two scenarios: • A "no-build" scenario, accounting for background traffic growth in Jerrabomberra and its surrounds. • A "build" scenario, accounting for background traffic growth in Jerrabomberra and its surrounds plus the trips associated with the high school. ML advised that the the results of the SIDRA intersection modelling analysis indicates that all the intersections of interest operate with a good LoS during peak periods of school activity in the existing (2021) scenarios. The Henry Place intersection operated at LoS E but did operate satisfactory. The trip analysis used single car use occupancy even though it is envisaged that some car-pooling would talk place. GHD also included for an additional 1% growth to analysis. This approach provides further robustness to the SIDRA modelling.	Note Note Note
2.04	There are five major developments in Jerrabomberra that are proposed to be constructed in the coming 20 years (to 2041). North & South Poplars, North & South Tralee and South Jerrabomberra. DT and ML previously discussed what job and dwelling yields should be used in the TA and it was agreed to account for the 2041 yields as the timing for the developments are unknown but there are significant works currently underway in the area.	Note
2.05	The meeting discussed the SIDRA modelling results: The 2023 No build indicated that operated Edwin Land Parkway at a LoS F AK noted this was because of the large right turn movement and is close to capacity with 583mts queuing and average delay period of 130 seconds. ML noted that the 2023 and 2033 build scenarios increase the delay but as SIDRA analysis are not linear, a small number of vehicles can produce disproportionate results. DT mentioned that it was a challenging roundabout and a weird system of roads to model, and they do not see that delay in practice but did see a delay in Jerrabomberra	Note Note Note

	Parkway which is why they introduce a dedicated trap lane", enabling the left-turning traffic to exit the roundabout with minimum delay. GHD's SIDRA model reflects that.	Note	
	AL asked how the base model was calibrated. ML advised GHD used google typical traffic performance data available for the weekday periodas as there were no traffic videos available. The use of Google traffic outputs is mentioned in the TA	Note	
	RL mentioned that the project should adapt the base case to adjust to the current conditions.	DT/AL	27/10
	RL asked if AL and DT could validate the base case as the TA should not amplify a problem that does not currently exist.	DT/ML	28/10
	DT and ML to discuss QPRC traffic modelling and adjust the base case to current conditions.	DT	28/10
	DT to provide trip generators for GHD review and consideration of the base case.	Note	
	In the 2033 analysis AK noted that noted that Lanyon Drive intersection does fail but this is due to downstream queuing of Henry Place affecting the performance of the intersection.	Note	
	DT noted there are different program of works to allow for traffic lights for the intersection. DT mentioned that Council do not expect the project to upgrade the intersection as there are other traffic generators affecting the LoS of the intersections	Note	
	Other traffic generators are residential, commercial, retail, etc.	RM	25/10
	RM to provide TA and modelling data with the meeting minutes.	DT	2/11
	DT will review the modelling with Council Transport Dept and provide comments and feedback.	AL	2/11
	AL will review the modelling and provide comments and feedback.	Note	
	AL asked what the output of the report was, ML noted that if you are introducing 2000+ vehicles to Environa Drive and Tompsitt Drive (not school traffic) there will be problems.		
4.0	**Other Business**		
4.01	AL asked on bus requirements and scheduling and collaboration with TJ. ML confirmed he is discussing bus arrangements and operations with TJ.	Note	
	RM noted TJ had been invited to the next meeting but declined late 21/10 due to a double booking.	Note	
	RM will invite TJ to the next meeting	RM	29/10
	RL asked what bus network would be used for the High School. ML noted they would predominately use existing network with Primary school that currently operate in proximity to the proposed High School.	Note	
	GHD to convene a meeting with RL, AJ and AL to have advance conversations and development of bus routes and an understanding of bus movements and access.	ML	2/11
	ER asked how you determine bus routes if the catchment area detailed in the TA does not include South Jerrabomberra. LM advised that the catchment area is defined by the DoE regional planning team and the absolute catchment areas is define at a later stage.	Note Note	
	To address catchment queries, RM will invite the Regional Planning team to the next TWG meeting	RM	29/10

4.02	DT had previously requested modeling for 800 students to allow future High School expansion. LM and RL commented that the SSD application was for 500 students and that 2033, modeling for 800 students cannot be provided as it would not be based on known future growth/expansion and that the SSD and TA has to reflect what the project is producing. LM noted If there was a 2nd stage a new assessment would be required and would use known assumptions than what is currently a number of assumptions as development dates are unknown.	Note

Attachments:

Transport Assessment
SIDRA Modelling data

Appendix C

Email Communications TfNSW

Mark Leigh-Lucas

From: Mark Leigh-Lucas
Sent: Monday, September 6, 2021 9:06 AM
To: Tanya Jennison
Subject: FW: Bungendore and Jerrabomberra High School Bus Services.

CompleteRepository: 210101208
Description: Transportation
JobNo: 01012
OperatingCentre: 21
RepoEmail: 210101208@ghd.com
RepoType: Overhead
SubJob: 08

Hi Tanya,

I hope you are well.

I am having a few meetings this week re the new high schools in Bungendore and Jerrabomberra.

Could you please provide me an update on the planning of the school bus services?

Regards,

MARK LUCAS
Senior Transport Planner

GHD
Proudly employee-owned | ghd.com
Level 155, 133 Castlereagh Street, NSW, 2000
D +61 2 9239 7141 **M** +61 0428 269 819 **E** mark.lucas@ghd.com

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From: Mark Leigh-Lucas
Sent: Monday, August 16, 2021 4:12 PM
To: Tanya Jennison <Tanya.Jennison@transport.nsw.gov.au>
Cc: Stefan Szyczew <Stefan.Szyczew@hindmarsh.com.au>; Robert McKnight <Robert.McKnight@tsamgt.com>
Subject: RE: Bungendore and Jerrabomberra High School Bus Services.

Hi Tanya,

Can you please inform me of any updates to the planning of buses for the new high schools in Bungendore and Jerrabomberra?

Much appreciated.

Kind Regards,

MARK LUCAS
Senior Transport Planner

GHD
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D +61 2 9239 7141 **M** +61 0428 269 819 **E** mark.lucas@ghd.com

The Power of Commitment

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Please consider the environment before printing this email

From: Tanya Jennison <Tanya.Jennison@transport.nsw.gov.au>
Sent: Thursday, July 1, 2021 11:32 AM
To: Mark Leigh-Lucas <Mark.Lucas@ghd.com>
Subject: RE: Bungendore and Jerrabomberra High School Bus Services.

Thanks Marc, I have forwarded on your email for a response.

Thanks Tanya

Tanya Jennison
A/Commercial Manager - South
Rural & Regional Contracts
Transport Partnerships
Transport for NSW

T 02 4253 2683 | **M** 0439 606 691
Block C, Level 3, 84 Crown Street, WOLLONGONG NSW 2500

From: Mark Leigh-Lucas [mailto:Mark.Lucas@ghd.com]
Sent: Thursday, 1 July 2021 10:26 AM

To: Tanya Jennison <Tanya.Jennison@transport.nsw.gov.au>
Subject: Bungendore and Jerrabomberra High School Bus Services.

Hi Tanya,

I am meeting with a working group to discuss the Transport Plans for Bungendore and Jerrabomberra High Schools.

Could you please provide an update of the planning activities to date to support bus services at theses schools?

Many thanks,

MARK LUCAS
Senior Transport Planner

GHD
Proudly employee-owned | ghd.com
Level 155, 133 Castlereagh Street, NSW, 2000
D +61 2 9239 7141 **M** +61 0428 269 819 **E** mark.lucas@ghd.com

Mark Leigh-Lucas

From: Mark Leigh-Lucas
Sent: Thursday, June 17, 2021 9:18 AM
To: tanya.jennison@transport.nsw.gov.au
Subject: Bungendore and Jerrabomberra High School Bus Services

CompleteRepository: 210101208
Description: Transportation
JobNo: 01012
OperatingCentre: 21
RepoEmail: 210101208@ghd.com
RepoType: Overhead
SubJob: 08

Hi Tanya,

Thanks for your time yesterday.

As discussed, could you please provide me with an update of tasks that have been undertaken to plan for the future bus services at Bungendore and Jerrabomberra High Schools?

Let me know how I can help.

Kind Regards,

MARK LUCAS
Senior Transport Planner

GHD
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Level 155, 133 Castlereagh Street, NSW, 2000
D +61 2 9239 7141 **M** +61 0428 269 819 **E** mark.lucas@ghd.com

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Mark Leigh-Lucas

From: Mark Leigh-Lucas
Sent: Friday, October 1, 2021 9:47 AM
To: Tanya Jennison
Subject: Bungendore and Jerrabomberra Bus Services

CompleteRepository: 210101208
Description: Transportation
JobNo: 01012
OperatingCentre: 21
RepoEmail: 210101208@ghd.com
RepoType: Overhead
SubJob: 08

Hi Tanya,

I am meeting with TfNSW and QPRC next week to discuss the high schools in Bungendore and Jerrabomberra.

Can you please let me know if there has been any progress in planning for the school bus services at these schools?

Feel free to call to discuss.

Thanks for your help.

MARK LUCAS
Senior Transport Planner

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D +61 2 9239 7141 **M** +61 0428 269 819 **E** mark.lucas@ghd.com

Mark Leigh-Lucas

From: Tanya Jennison <Tanya.Jennison@transport.nsw.gov.au>
Sent: Wednesday, October 13, 2021 5:03 PM
To: Mark Leigh-Lucas
Subject: RE: School Bus Services Jerrabomberra and Bungendore

Hi Mark, thanks for your email, the below information in your email is correct.

In order for us to add a new School to the School Student Transport Scheme (SSTS) portal for students to enrol for a bus pass, the below information needs to be provided by Dept of Education.

- Certificate of Registration or Letter of confirmation from Department of Education (DET)
- Name of school
- Contact Person
- Street Address
- Postal Address if available
- Phone Number and Fax Number
- E-mail address
- School Type (eg. Government, Anglican, Catholic, Non-denominational etc)
- Start and finish of years of study (eg. K to 12)
- On a Google map, please indicate:
    - School boundary line – marked with a black marker pen.
    - Pedestrian access points (gates) used by students to access school grounds and Pathways used by students to access school grounds when the gate is not on a public road (e.g. walking through a playing field, reserve etc).

The boundary lines and gates must be marked using a black marker pen. Put a cross (X) where the access points are located on the boundary line.

Once student enrolment details for the new schools come through, the contracts team can then work with operators to ascertain whether we can vary existing school bus routes under a Bus Service Alteration Request (BSAR) with existing buses or determine if a new service is required, ideally 8 months prior to the school opening to enable the contract team to work with the existing operators.

If you have any questions about the construction of the school, I suggest that you contact Dept of Education or Andrew Lissenden on 0418 962 703.

Thank you

Tanya

Tanya Jennison
A/Commercial Manager - South
Rural & Regional Contracts
Transport Partnerships
Transport for NSW

T 02 4253 2683 | **M** 0439 606 691
Block C, Level 3, 84 Crown Street, WOLLONGONG NSW 2500

From: Mark Leigh-Lucas [mailto:Mark.Lucas@ghd.com]
Sent: Wednesday, 13 October 2021 4:25 PM
To: Tanya Jennison <Tanya.Jennison@transport.nsw.gov.au>
Subject: School Bus Services Jerrabomberra and Bungendore

Hi Tanya,

Thanks for your time today.

As discussed,

- For bus services to be determined for a new school the School Students Transport Scheme Portal needs to be set up
- This will provide parents with an opportunity to apply for the SSTS
- Based on that data, appropriate bus routes will be developed with the public transport providers. For Bungendore and Jerrabomberra these will account for the needs of the adjacent primary school.
- Bus routes are typically identified within eight months of a school opening.

If I have missed or misinterpreted anything, please let me know.

Cheers,

MARK LUCAS
Senior Transport Planner

GHD
Proudly employee-owned | ghd.com
Level 155, 133 Castlereagh Street, NSW, 2000
D +61 2 9239 7141 **M** +61 0428 269 819 **E** mark.lucas@ghd.com

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Appendix D

Transport Access Guide Template

[Insert school name]

Travel Access Guide

[Insert date/month/year]

Project overview

Insert project description from project page on SINSW website.

Active ways to get to school

Walking is an active and healthy way to get to school

- Include safety tips for local students.

Ride your bike

- Include safety tips for local students.

Ride your scooter

- Include safety tips for local students.

Kiss and drop expectations

- Reflect anything agreed in the School Transport Plan.
- Ensure consistency with NSW Education's road safety messaging: https://education.nsw.gov.au/teaching-and-learning/curriculum/learning-across-the-curriculum/road-safety-education/safe-travel

Message from your Principal

- Insert text from Principal that lets the school community know they are becoming an active travel school.
- Principal message to include relevant safety information.
- Principal message may include their own commitment to active travel.
- Include Principal photo and signature block.

Message from your P&C President

- Insert text from P&C President that outlines their support for becoming an active travel school.
- P&C message may include information about how changing the way you get to school even one day per week can make a 20% difference to local traffic congestion.
- Include P&C President photo and signature block.

For more information contact:
School Infrastructure NSW
Email: schoolinfrastructure@det.nsw.edu.au
Phone: 1300 482 651
www.schoolinfrastructure.nsw.gov.au

NSW GOVERNMENT

Local map: Active Travel

Must be included

- Graphic map of the school, showing all school entry points.
- Emphasise accessible entry points.
- Use icons to show which entry points are most suitable for walking, riding bikes and riding scooters.
- Show the 5, 10, 15, 20+ minute walk to school with single line rings of different colours (not shading).
- Include footpaths near the school, on both sides of all roads and near pedestrian crossings.
- Include pedestrian crossings and crossings with signals or Lollipop staff.
- Include nearby bus stops and bus routes, if relevant.

Map details

- North is up.
- Include a scale, in metres.
- Show bike and scooter parking within the school grounds.
- Show steps and stairs that may make entrances harder to access.

For more information contact:
School Infrastructure NSW
Email: schoolinfrastructure@det.nsw.edu.au
Phone: 1300 482 651
www.schoolinfrastructure.nsw.gov.au

NSW GOVERNMENT

Breakout boxes to fill empty spaces

Something broken on the way to school?

Use the Snap Send Solve app or website to report issues to the people who can fix them.

Things like abandoned trolleys, broken footpaths or water leaks can all be reported in the app.

Download it today from the App Store or Google Play. Or visit **www.snapsendsolve.com**

Discounts, offers or initiatives for students and parents

- Include information about bike insurance, discounts, courses or car share pods, as relevant.

For more information contact:
School Infrastructure NSW
Email: schoolinfrastructure@det.nsw.edu.au
Phone: 1300 482 651
www.schoolinfrastructure.nsw.gov.au

NSW GOVERNMENT

[Insert school name]

Travel Access Guide

[Insert date/month/year]

Project overview

Insert project description from project page on SINSW website.

Using public transport to get to school

School buses and public buses

- Include route numbers and nearest bus stop locations.
- Include safety tips for local students.

Trains | Ferries | Light Rail

- Include nearest station or wharf locations.
- Include safety tips for local students.

Apply for a School Opal Card | School Term Bus Pass

- Include information about how to apply for any subsidised public transport programs available for students at this school.
- Student code of conduct
- Include information about expectations for students on public transport, for example offering seats to adults, no swearing or fighting, etc.

Message from your Principal

- Insert text from Principal that lets the school community know they are becoming a public transport school.
- Principal message to include relevant safety information.
- Principal message may include their own commitment to public transport.
- Include Principal photo and signature block.

Message from your P&C President

- Insert text from P&C President that outlines their support for becoming a public transport school.
- P&C message may include information about how changing the way you get to school even one day per week can make a 20% difference to local traffic congestion.
- Include P&C President photo and signature block.

Kiss and drop code of conduct

- Reflect anything agreed in the School Transport Plan.
- Ensure consistency with NSW Education's road safety messaging.

For more information contact:

School Infrastructure NSW
Email: schoolinfrastructure@det.nsw.edu.au
Phone: 1300 482 651
www.schoolinfrastructure.nsw.gov.au

NSW GOVERNMENT

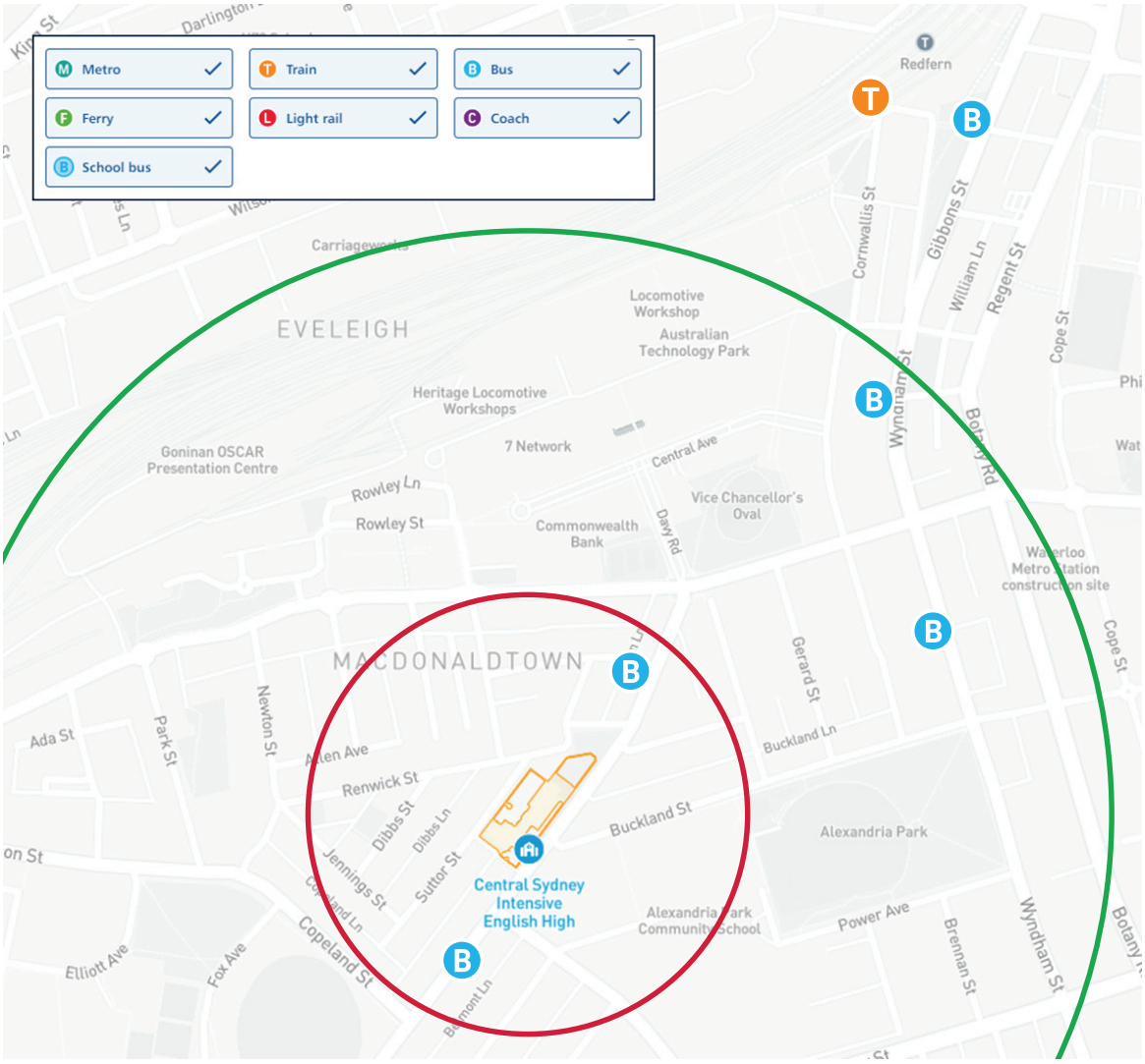
Local map: Public transport

Must be included

- Graphic map of the school, showing all school entry points.
- Use icons to show the nearest bus, train, ferry and light rail stops to the school. Only use Transport for NSW icons for each type of transport.
- Show routes using colours to match the Transport for NSW icon colours, for example, orange for trains, blue for buses.
- Differentiate morning and afternoon stop locations.
- Show the 5, 10, 15, 20+ minute walk to school with single line rings of different colours (not shading).
- Show the walk to school from public transport stops.

Map details

- North is up.
- Include a scale, in metres.
- Emphasise accessible entry points.
- Show steps and stairs that may make entrances harder to access.
- Show bike and scooter parking within the school grounds.
- Include footpaths near the school, on both sides of all roads and near pedestrian crossings.
- Include pedestrian crossings and crossings with signals or Lollipop staff.



For more information contact:
School Infrastructure NSW
Email: schoolinfrastructure@det.nsw.edu.au
Phone: 1300 482 651
www.schoolinfrastructure.nsw.gov.au

NSW GOVERNMENT

Breakout boxes to fill empty spaces

Something broken on the way to school?

Use the Snap Send Solve app or website to report issues to the people who can fix them.

Things like abandoned trolleys, broken footpaths or water leaks can all be reported in the app.

Download it today from the App Store or Google Play. Or visit **www.snapsendsolve.com**

Discounts, offers or initiatives for students and parents

- Include information about bike insurance, discounts, courses or car share pods, as relevant.

Tap on and tap off every time

Use your School Opal card every time you catch public transport to school.

It tells us how many people are using public transport to help us plan buses, trains and ferries to suit you.

Plan your trip to school

You can plan ahead to make sure you get to school on time!

Visit transport.info or download an app to help:

- Trip View
- Next There

For more information contact:
School Infrastructure NSW
Email: schoolinfrastructure@det.nsw.edu.au
Phone: 1300 482 651
www.schoolinfrastructure.nsw.gov.au

NSW GOVERNMENT

Appendix E

Traffic Survey Outputs

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Lanyon Dr and Tompsitt Dr, Jerrabomberra

GPS	-35.377320,149.188810
Date:	Thu 13/05/21
Weather:	Fine
Suburban:	Jerrabomberra
Customer:	Calibre

North:	N/A
East:	Lanyon Dr
South:	Tompsitt Dr
West:	Lanyon Dr

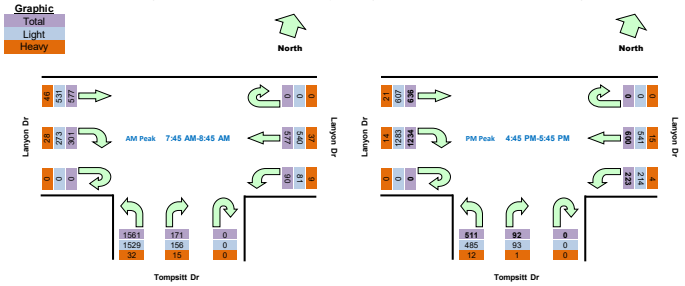
Survey	AM:	7:30 AM-9:30 AM
Period	PM:	4:30 PM-6:30 PM
Traffic	AM:	7:45 AM-8:45 AM
Peak	PM:	4:45 PM-5:45 PM

All Vehicles

Time		East Approach Lanyon Dr			South Approach Tompsitt Dr			West Approach Lanyon Dr			Hourly Total	
Period Start	**Period End**	**U**	**WB**	**L**	**U**	**R**	**L**	**U**	**R**	**EB**	**Hour**	**Peak**
7:30	7:45	0	146	14	0	32	343	0	60	121	3220	
7:45	8:00	0	140	24	0	35	410	0	81	170	3277	Peak
8:00	8:15	0	127	19	0	57	390	0	82	126	3069	
8:15	8:30	0	176	19	0	38	402	0	71	137	2823	
8:30	8:45	0	134	28	0	41	359	0	67	144	2413	
8:45	9:00	0	123	22	0	39	212	0	105	151		
9:00	9:15	0	110	29	0	26	194	0	84	112		
9:15	9:30	0	59	15	0	20	142	0	103	94		
16:30	16:45	0	160	56	0	32	130	0	287	162	3286	
16:45	17:00	0	168	45	0	18	121	0	261	144	3296	Peak
17:00	17:15	0	175	58	0	24	126	0	326	173	3290	
17:15	17:30	0	158	54	0	26	119	0	292	171	3108	
17:30	17:45	0	99	66	0	24	145	0	355	148	2832	
17:45	18:00	0	124	40	0	20	107	0	324	136		
18:00	18:15	0	110	45	0	19	132	0	276	118		
18:15	18:30	1	103	37	0	25	95	0	205	78		

Peak Time		East Approach Lanyon Dr			South Approach Tompsitt Dr			West Approach Lanyon Dr			Peak
Period Start	**Period End**	**U**	**WB**	**L**	**U**	**R**	**L**	**U**	**R**	**EB**	**total**
7:45	8:45	0	577	90	0	171	1561	0	301	577	3277
16:45	17:45	0	600	223	0	92	511	0	1234	636	3296

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Light Vehicles

Time		East Approach Lanyon Dr			South Approach Tompsitt Dr			West Approach Lanyon Dr		
Period Start	**Period End**	U	WB	L	U	R	L	U	R	EB
7:30	7:45	0	142	14	0	31	330	0	55	116
7:45	8:00	0	129	21	0	31	404	0	71	158
8:00	8:15	0	120	17	0	53	377	0	78	113
8:15	8:30	0	169	16	0	32	396	0	63	127
8:30	8:45	0	122	27	0	40	352	0	61	133
8:45	9:00	0	114	22	0	37	207	0	102	141
9:00	9:15	0	96	28	0	24	184	0	80	99
9:15	9:30	0	55	13	0	20	133	0	99	81
16:30	16:45	0	158	55	0	29	130	0	282	156
16:45	17:00	0	164	45	0	15	118	0	260	138
17:00	17:15	0	170	56	0	24	124	0	319	164
17:15	17:30	0	155	52	0	26	115	0	289	167
17:30	17:45	0	93	66	0	23	141	0	353	143
17:45	18:00	0	123	40	0	20	105	0	322	133
18:00	18:15	0	109	42	0	17	131	0	274	115
18:15	18:30	1	101	37	0	24	93	0	203	78

North South in SIDRA

Peak Time		East Approach Lanyon Dr			South Approach Tompsitt Dr			West Approach Lanyon Dr			Peak	
Period Start	**Period End**	**U**	**WB**	**L**	**U**	**R**	**L**	**U**	**R**	**EB**	**total**	
7:45	8:45	0	540	81	0	156	1529	0	273	531	3110	
17:00	18:00	0	541	214	0	93	485	0	1283	607	3223	changed to network peak

Heavy Vehicles

Time		East Approach Lanyon Dr			South Approach Tompsitt Dr			West Approach Lanyon Dr		
Period Start	**Period End**	U	WB	L	U	R	L	U	R	EB
7:30	7:45	0	4	0	0	1	13	0	5	5
7:45	8:00	0	11	3	0	4	6	0	10	12
8:00	8:15	0	7	2	0	4	13	0	4	13
8:15	8:30	0	7	3	0	6	6	0	8	10
8:30	8:45	0	12	1	0	1	7	0	6	11
8:45	9:00	0	9	0	0	2	5	0	3	10
9:00	9:15	0	14	1	0	2	10	0	4	13
9:15	9:30	0	4	2	0	0	9	0	4	13
16:30	16:45	0	2	1	0	3	0	0	5	6
16:45	17:00	0	4	0	0	3	3	0	1	6
17:00	17:15	0	5	2	0	0	2	0	7	9
17:15	17:30	0	3	2	0	0	4	0	3	4
17:30	17:45	0	6	0	0	1	4	0	2	5
17:45	18:00	0	1	0	0	0	2	0	2	3
18:00	18:15	0	1	3	0	2	1	0	2	3
18:15	18:30	0	2	0	0	1	2	0	2	0

North South in SIDRA

Peak Time		East Approach Lanyon Dr			South Approach Tompsitt Dr			West Approach Lanyon Dr			Peak
Period Start	**Period End**	**U**	**WB**	**L**	**U**	**R**	**L**	**U**	**R**	**EB**	**total**
7:45	8:45	0	37	9	0	15	32	0	28	46	167
17:00	18:00	0	15	4	0	1	12	0	14	21	67

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Tompsitt Dr and Henry Pl, Jerrabomberra

GPS -35.381009,149.195413

Date:	Thu 13/05/21
Weather:	Fine
Suburban:	Jerrabomberra
Customer:	Calibre

North:	Henry Pl
East:	Tompsitt Dr
South:	N/A
West:	Tompsitt Dr

Survey Period	AM:	7:30 AM-9:30 AM
	PM:	4:30 PM-6:30 PM
Traffic Peak	AM:	7:45 AM-8:45 AM
	PM:	5:00 PM-6:00 PM

All Vehicles

Time		North Approach Henry Pl			East Approach Tompsitt Dr			West Approach Tompsitt Dr			Hourly Total	
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	Hour	Peak
7:30	7:45	0	26	8	0	32	349	0	63	11	2219	
7:45	8:00	0	23	7	0	18	422	0	91	14	2268	Peak
8:00	8:15	0	19	12	0	26	428	0	90	11	2110	
8:15	8:30	0	20	13	0	26	420	0	77	13	1882	
8:30	8:45	0	23	17	0	26	377	0	81	14	1637	
8:45	9:00	0	17	15	0	24	234	0	118	9		
9:00	9:15	0	16	7	0	18	204	0	96	17		
9:15	9:30	0	12	20	0	24	150	0	103	15		
16:30	16:45	0	13	37	0	28	149	0	306	37	2269	
16:45	17:00	0	6	43	0	32	133	0	275	31	2365	
17:00	17:15	0	17	49	0	24	133	0	340	44	2414	Peak
17:15	17:30	0	22	46	0	35	123	0	307	39	2368	
17:30	17:45	0	22	56	0	20	147	0	364	57	2231	
17:45	18:00	0	13	44	0	34	114	0	332	32		
18:00	18:15	0	15	59	0	30	136	0	277	44		
18:15	18:30	0	14	44	0	29	106	0	217	25		

Peak Time		North Approach Henry Pl			East Approach Tompsitt Dr			West Approach Tompsitt Dr			Peak
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	total
7:45	8:45	0	85	49	0	96	1647	0	339	52	2268
17:00	18:00	0	74	195	0	113	517	0	1343	172	2414

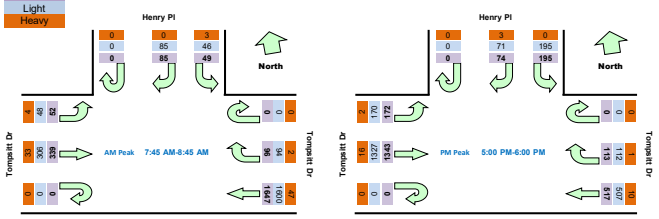
Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total

Light

Heavy



Light Vehicles

Time		North Approach Henry Pl			East Approach Tompsitt Dr			West Approach Tompsitt Dr		
Period Start	Period End	U	R	L	U	R	WB	U	EB	L
7:30	7:45	0	25	7	0	31	336	0	58	11
7:45	8:00	0	23	7	0	18	412	0	80	12
8:00	8:15	0	19	11	0	24	411	0	84	11
8:15	8:30	0	20	13	0	26	408	0	67	12
8:30	8:45	0	23	15	0	26	369	0	75	13
8:45	9:00	0	16	14	0	23	228	0	115	9
9:00	9:15	0	15	7	0	18	193	0	91	17
9:15	9:30	0	12	20	0	24	141	0	97	15
16:30	16:45	0	13	37	0	28	146	0	300	37
16:45	17:00	0	6	43	0	30	127	0	274	31
17:00	17:15	0	17	49	0	24	131	0	333	42
17:15	17:30	0	20	46	0	34	121	0	302	39
17:30	17:45	0	21	56	0	20	143	0	362	57
17:45	18:00	0	13	44	0	34	112	0	330	32
18:00	18:15	0	15	59	0	30	133	0	273	43
18:15	18:30	0	13	42	0	28	104	0	216	24

Peak Time		North Approach Henry Pl			East Approach Tompsitt Dr			West Approach Tompsitt Dr			Peak
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	total
7:45	8:45	0	85	46	0	94	1600	0	306	48	2179
17:00	18:00	0	71	195	0	112	507	0	1327	170	2382

Heavy Vehicles

Time		North Approach Henry Pl			East Approach Tompsitt Dr			West Approach Tompsitt Dr		
Period Start	Period End	U	R	L	U	R	WB	U	EB	L
7:30	7:45	0	1	1	0	1	13	0	5	0
7:45	8:00	0	0	0	0	0	10	0	11	2
8:00	8:15	0	0	1	0	2	17	0	6	0
8:15	8:30	0	0	0	0	0	12	0	10	1
8:30	8:45	0	0	2	0	0	8	0	6	1
8:45	9:00	0	1	1	0	1	6	0	3	0
9:00	9:15	0	1	0	0	0	11	0	5	0
9:15	9:30	0	0	0	0	0	9	0	6	0
16:30	16:45	0	0	0	0	0	3	0	6	0
16:45	17:00	0	0	0	0	2	6	0	1	0
17:00	17:15	0	0	0	0	0	2	0	7	2
17:15	17:30	0	2	0	0	1	2	0	5	0
17:30	17:45	0	1	0	0	0	4	0	2	0
17:45	18:00	0	0	0	0	0	2	0	2	0
18:00	18:15	0	0	0	0	0	3	0	4	1
18:15	18:30	0	1	2	0	1	2	0	1	1

Peak Time		North Approach Henry Pl			East Approach Tompsitt Dr			West Approach Tompsitt Dr			Peak
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	total
7:45	8:45	0	0	3	0	2	47	0	33	4	89
17:00	18:00	0	3	0	0	1	10	0	16	2	32

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Edwin Land Parkway and Limstone Dr, Jerrabomberra

GPS -35.382419,149.199501

Date:	Thu 13/05/21
Weather:	Fine
Suburban:	Jerrabomberra
Customer:	Calibre

North:	Limstone Dr
East:	Edwin Land Parkway
South:	Jerrabomberra Parkway
West:	Tompsitt Dr

Survey Period	AM:	7:30 AM-9:30 AM
	PM:	4:30 PM-6:30 PM
Traffic Peak	AM:	7:45 AM-8:45 AM
	PM:	5:00 PM-6:00 PM

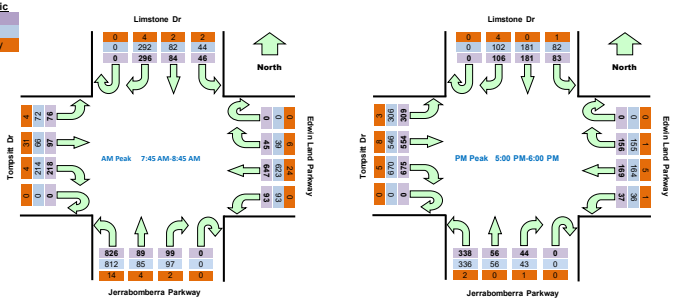
All Vehicles

Time		North Approach Limstone Dr				East Approach Edwin Land Parkway				South Approach Jerrabomberra Parkway				West Approach Tompsitt Dr				Hourly Total	
Period Start	**Period End**	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	**Hour**	**Peak**
7:30	7:45	0	72	19	7	0	8	131	19	0	22	35	225	0	42	25	5	2610	
7:45	8:00	0	69	19	8	0	8	169	20	0	27	21	233	0	44	31	23	2616	Peak
8:00	8:15	0	77	20	10	0	12	163	27	0	24	24	223	0	57	25	22	2488	
8:15	8:30	0	63	18	12	0	8	194	21	0	23	21	194	0	47	27	16	2205	
8:30	8:45	0	87	27	16	0	17	121	25	0	25	23	176	0	70	14	15	1938	
8:45	9:00	0	61	17	8	0	35	60	25	0	26	32	147	0	73	44	16		
9:00	9:15	0	34	10	9	0	27	53	7	0	17	15	126	0	33	41	29		
9:15	9:30	0	32	11	16	0	17	59	5	0	11	11	92	0	31	57	35		
16:30	16:45	0	29	49	23	0	28	58	7	0	11	27	82	0	139	136	68	2610	
16:45	17:00	0	19	42	24	0	31	54	7	0	12	10	88	0	119	106	93	2682	
17:00	17:15	0	30	47	19	0	33	60	10	0	10	15	68	0	177	145	67	2708	Peak
17:15	17:30	0	18	44	27	0	45	35	9	0	12	27	97	0	160	121	72	2612	
17:30	17:45	0	24	44	23	0	56	12	12	0	12	10	116	0	198	157	65	2433	
17:45	18:00	0	34	46	14	0	22	62	6	0	10	4	57	0	140	131	105		
18:00	18:15	0	31	53	23	0	4	64	5	0	11	7	51	0	103	119	114		
18:15	18:30	0	21	45	25	0	2	48	11	0	11	1	63	0	99	91	71		

Peak Time		North Approach Limstone Dr				East Approach Edwin Land Parkway				South Approach Jerrabomberra Parkway				West Approach Tompsitt Dr				Peak
Period Start	**Period End**	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	**total**
7:45	8:45	0	296	84	46	0	45	647	93	0	99	89	826	0	218	97	76	2616
17:00	18:00	0	106	181	83	0	156	169	37	0	44	56	338	0	675	554	309	2708

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic
Total
Light
Heavy



Light Vehicles

Time		North Approach Limstone Dr				East Approach Edwin Land Parkway				South Approach Jerrabomberra Parkway				West Approach Tompsitt Dr			
Period Start	**Period End**	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:30	7:45	0	67	18	7	0	4	128	19	0	22	34	223	0	42	19	4
7:45	8:00	0	68	19	8	0	5	162	20	0	27	20	230	0	44	21	22
8:00	8:15	0	74	20	9	0	12	158	27	0	24	22	217	0	57	17	21
8:15	8:30	0	63	18	12	0	8	188	21	0	22	20	189	0	45	20	15
8:30	8:45	0	87	25	15	0	14	115	25	0	24	23	176	0	68	8	14
8:45	9:00	0	61	17	8	0	35	56	23	0	25	32	146	0	73	40	16
9:00	9:15	0	33	10	9	0	27	44	7	0	16	15	124	0	33	37	28
9:15	9:30	0	31	11	15	0	17	48	5	0	11	10	92	0	31	52	34
16:30	16:45	0	29	49	21	0	28	57	7	0	10	27	79	0	137	134	66
16:45	17:00	0	18	42	24	0	31	50	7	0	11	10	86	0	119	106	92
17:00	17:15	0	30	47	18	0	33	59	10	0	10	15	68	0	175	141	66
17:15	17:30	0	17	44	27	0	45	32	8	0	12	27	97	0	160	118	70
17:30	17:45	0	22	44	23	0	55	12	12	0	11	10	114	0	196	157	65
17:45	18:00	0	33	46	14	0	22	61	6	0	10	4	57	0	139	130	105
18:00	18:15	0	31	53	22	0	4	63	5	0	10	7	49	0	101	118	113
18:15	18:30	0	21	45	25	0	2	46	11	0	10	1	61	0	97	90	71

Peak Time		North Approach Limstone Dr				East Approach Edwin Land Parkway				South Approach Jerrabomberra Parkway				West Approach Tompsitt Dr				Peak
Period Start	**Period End**	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	**total**
7:45	8:45	0	292	82	44	0	39	623	93	0	97	85	812	0	214	66	72	2519
17:00	18:00	0	102	181	82	0	155	164	36	0	43	56	336	0	670	546	306	2677

Heavy Vehicles

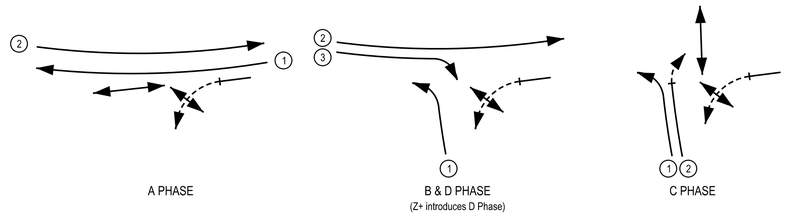
Time		North Approach Limstone Dr				East Approach Edwin Land Parkway				South Approach Jerrabomberra Parkway				West Approach Tompsitt Dr			
Period Start	**Period End**	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:30	7:45	0	5	1	0	0	4	3	0	0	0	1	2	0	0	6	1
7:45	8:00	0	1	0	0	0	3	7	0	0	0	1	3	0	0	10	1
8:00	8:15	0	3	0	1	0	0	5	0	0	0	2	6	0	0	8	1
8:15	8:30	0	0	0	0	0	0	6	0	0	1	1	5	0	2	7	1
8:30	8:45	0	0	2	1	0	3	6	0	0	1	0	0	0	2	6	1
8:45	9:00	0	0	0	0	0	0	4	2	0	1	0	1	0	0	4	0
9:00	9:15	0	1	0	0	0	0	9	0	0	1	0	2	0	0	4	1
9:15	9:30	0	1	0	1	0	0	11	0	0	0	1	0	0	0	5	1
16:30	16:45	0	0	0	2	0	0	1	0	0	1	0	3	0	2	2	2
16:45	17:00	0	1	0	0	0	0	4	0	0	1	0	2	0	0	0	1
17:00	17:15	0	0	0	1	0	0	1	0	0	0	0	0	0	2	4	1
17:15	17:30	0	1	0	0	0	0	3	1	0	0	0	0	0	0	3	2
17:30	17:45	0	2	0	0	0	1	0	0	0	1	0	2	0	2	0	0
17:45	18:00	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1	0
18:00	18:15	0	0	0	1	0	0	1	0	0	1	0	2	0	2	1	1
18:15	18:30	0	0	0	0	0	0	2	0	0	1	0	2	0	2	1	0

Peak Time		North Approach Limstone Dr				East Approach Edwin Land Parkway				South Approach Jerrabomberra Parkway				West Approach Tompsitt Dr				Peak
Period Start	**Period End**	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	**total**
7:45	8:45	0	4	2	2	0	6	24	0	0	2	4	14	0	4	31	4	97
17:00	18:00	0	4	0	1	0	1	5	1	0	1	0	2	0	5	8	3	31

Appendix F

TCS Drawings

TCS 4879



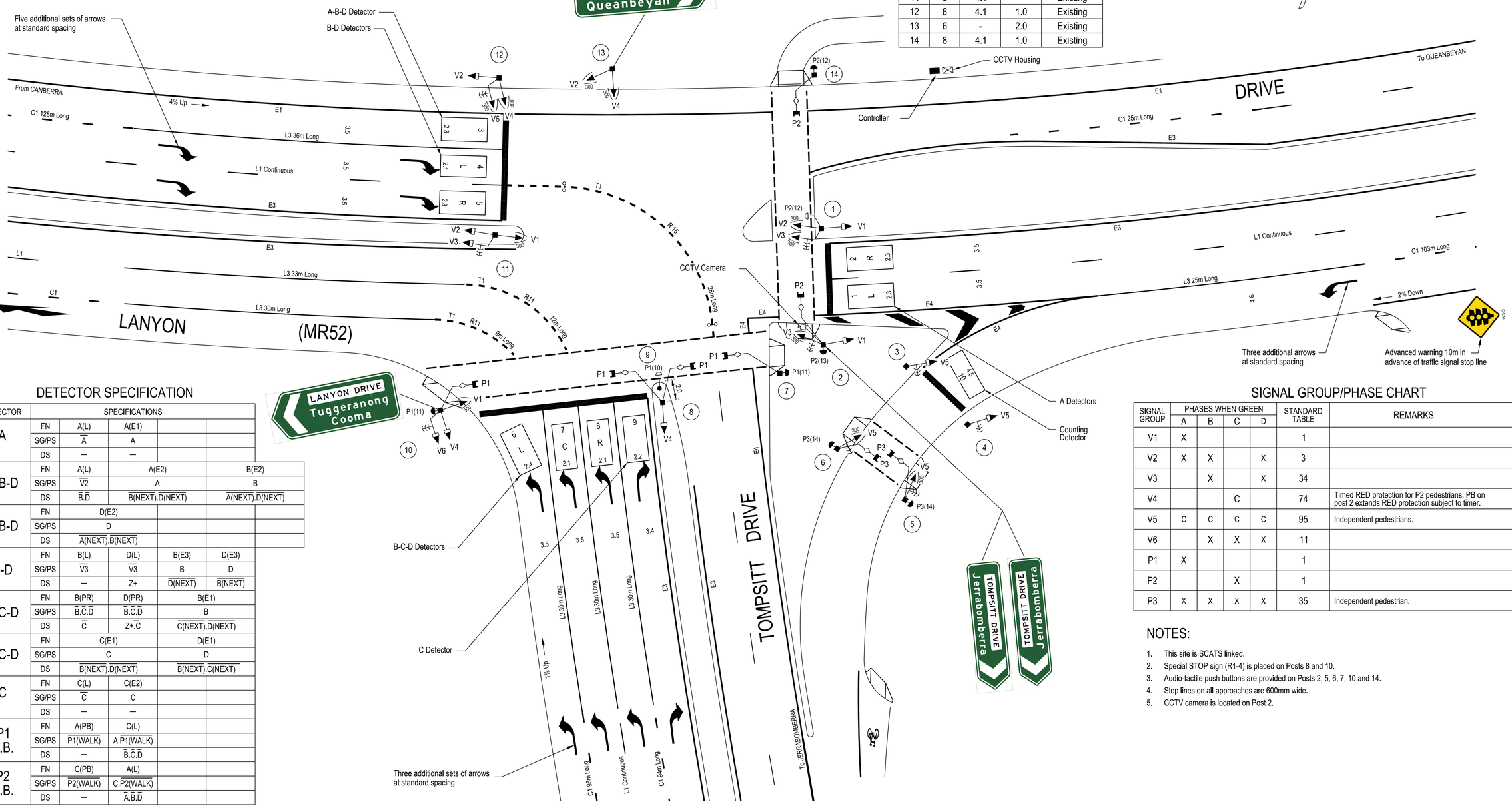
MOVEMENTS

POSTS

POST	TYPE	LENGTH	OFFSET	REMARKS
1	8	4.1	1.0	Existing
2	6	-	2.0	Existing
3	8	4.1	1.0	Existing
4	8	4.1	1.0	Existing
5	8	4.1	1.0	Existing
6	8	4.1	1.0	Existing
7	8	4.1	1.0	Existing
8	8	4.1	-	Existing
9	13	1.5	-	Existing
10	6	-	2.0	Existing
11	8	4.1	-	Existing
12	8	4.1	1.0	Existing
13	6	-	2.0	Existing
14	8	4.1	1.0	Existing

DATE IN SERVICE : 10/04/19

Transport Roads & Maritime Services



DETECTOR SPECIFICATION

DETECTOR		SPECIFICATIONS			
A	FN	A(L)	A(E1)		
	SG/PS	$\overline{A}$	A		
	DS	—	—		
A-B-D	FN	A(L)	A(E2)		B(E2)
	SG/PS	$\overline{V2}$	A		B
	DS	$\overline{B.D}$	$\overline{B(NEXT).D(NEXT)}$		$\overline{A(NEXT).D(NEXT)}$
cont. A-B-D	FN	D(E2)			
	SG/PS	D			
	DS	$\overline{A(NEXT).B(NEXT)}$			
B-D	FN	B(L)	D(L)	B(E3)	D(E3)
	SG/PS	$\overline{V3}$	$\overline{V3}$	B	D
	DS	—	Z+	$\overline{D(NEXT)}$	$\overline{B(NEXT)}$
B-C-D	FN	B(PR)	D(PR)	B(E1)	
	SG/PS	$\overline{B.C.D}$	$\overline{B.C.D}$	B	
	DS	$\overline{C}$	Z+.$\overline{C}$	$\overline{C(NEXT).D(NEXT)}$	
cont. B-C-D	FN	C(E1)		D(E1)	
	SG/PS	C		D	
	DS	$\overline{B(NEXT).D(NEXT)}$		$\overline{B(NEXT).C(NEXT)}$	
C	FN	C(L)	C(E2)		
	SG/PS	$\overline{C}$	C		
	DS	—	—		
P1 P.B.	FN	A(PB)	C(L)		
	SG/PS	$\overline{P1(WALK)}$	$\overline{A.P1(WALK)}$		
	DS	—	$\overline{B.C.D}$		
P2 P.B.	FN	C(PB)	A(L)		
	SG/PS	$\overline{P2(WALK)}$	$\overline{C.P2(WALK)}$		
	DS	—	$\overline{A.B.D}$		

SIGNAL GROUP/PHASE CHART

SIGNAL GROUP	PHASES WHEN GREEN				STANDARD TABLE	REMARKS
	A	B	C	D		
V1	X				1	
V2	X	X		X	3	
V3		X		X	34	
V4			C		74	Timed RED protection for P2 pedestrians. PB on post 2 extends RED protection subject to timer.
V5	C	C	C	C	95	Independent pedestrians.
V6		X	X	X	11	
P1	X				1	
P2			X		1	
P3	X	X	X	X	35	Independent pedestrian.

NOTES:

1. This site is SCATS linked.
2. Special STOP sign (R1-4) is placed on Posts 8 and 10.
3. Audio-tactile push buttons are provided on Posts 2, 5, 6, 7, 10 and 14.
4. Stop lines on all approaches are 600mm wide.
5. CCTV camera is located on Post 2.

A ORIGINAL ISSUE

B Issue
Controller & CCTV Housing relocated & posts re-numbered.
WH 6/08/2018

C Issue
Lanyon Drive on Tompsitt Drive approach and Lanyon Drive west bound departure amended in accordance with request from RMD.
NR 05/08/2019

PUBLIC UTILITY LEGEND	
HYDRANT	☐
STOP VALVE	▲
GAS VALVE	#
SEWER MANHOLE	⊗
COMMS PIT	◪
ELECT LIGHT POLE	☾
POWER POLE	○
STAY POLE	⊘
TELEPHONE BOX	T
COMMS PILLAR	◪

REFERENCE PLANS	
SYMBOLS/ABRVS	VD003-6
STD POSN CMPT	VD001-5
INSTL STOP DET	VC005-17
VEH GROUP OP	TS-TN-019
DET LOGIC OP	TS-TN-020
PED MVT OP	TS-TN-021
SURVEYOR : J. RODGERS	
DATE : 27/09/2017	

U.B.D. Rd Canberra Map 80 M14

I.S.G. CO-ORDS E : 317 059 N : 1 083 576

DESIGNED : N. RUSHMAN

CHECKED : N. COOKE

SITE CHECKED

N. COOKE

RECOMMENDED

DESIGN APPROVAL	RMS RECOMMENDATION	RMS ACCEPTANCE
APPROVED	RECOMMENDED	ACCEPTED
N. COOKE	C. Harding	J.Parrott
NAME N. COOKE	POSITION TLNO	POSITION N&S Mgr.
POSITION SRDM	DATE 20/2/2018	DATE 20/2/18
DATE 20.02.18		

DESIGN PREPARED BY

ROAD DESIGN ENGINEERING
ENGINEERING SERVICES
ASSET MAINTENANCE

ROADS AND MARITIME SERVICES

QUEANBEYAN - PALERANG COUNCIL AREA
TRAFFIC SIGNALS AT
LANYON (MR52) DRIVE
AND TOMPSITT DRIVE
JERRABOMBERRA

DESIGN LAYOUT

EXISTING ☐ PROPOSED ☒

CADD FILE: VV4879_1C.DGN

SCALE 5 0 (1:200) 5 10

FILE SF2017/250971

SUPERSEDES SHEET/ISSUE 1B

ISSUE C

REG No. DS2017/002647

TCS No. 4879

SHEET 1

5/08/2019 1:03:05 PM C:\Data\Projects\TCS\Working\vv4879\vv4879_1C.dgn

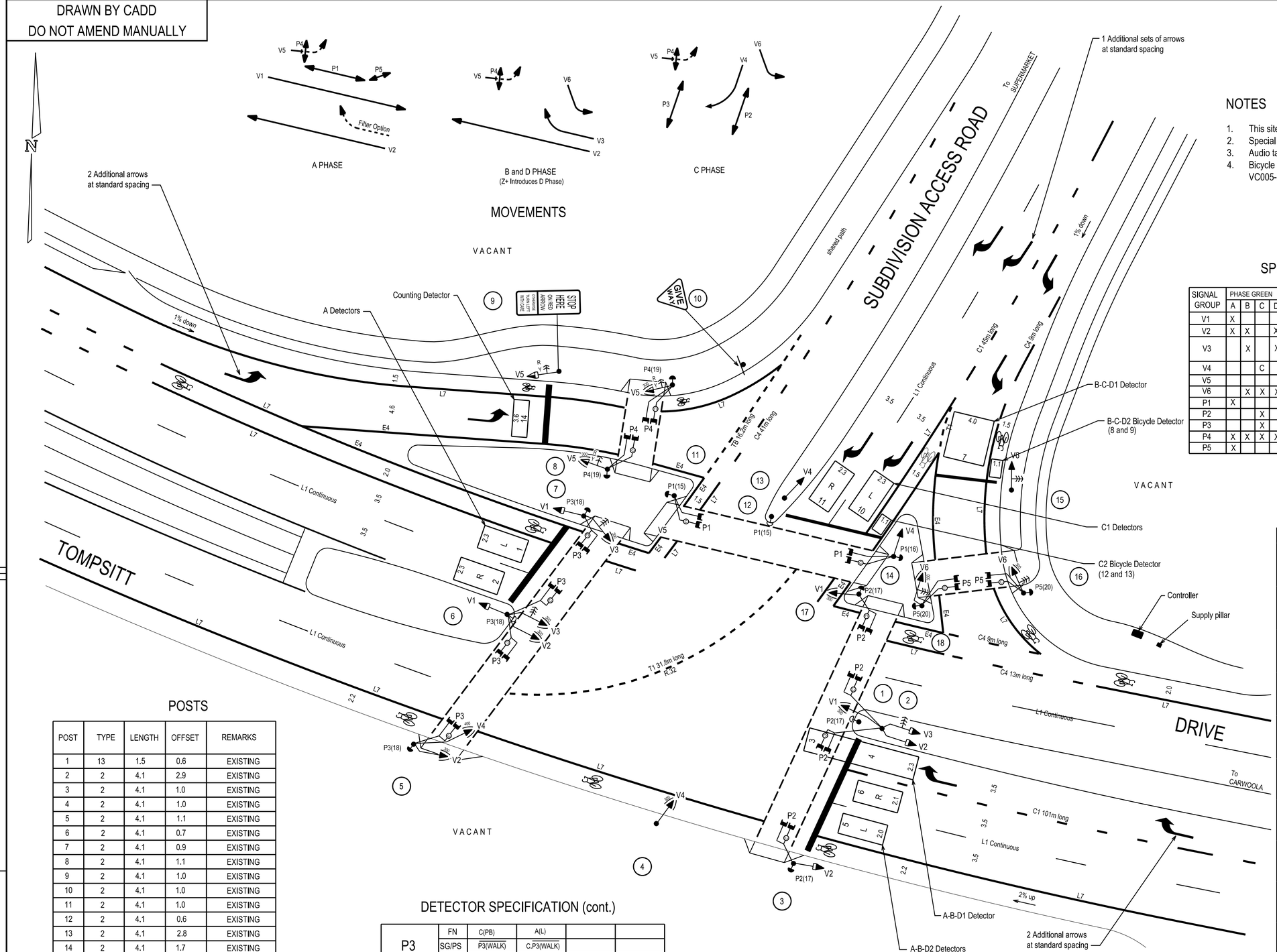
Revision 6 - July 2017

DRAWN BY CADD
DO NOT AMEND MANUALLY

TCS 4920

DATE IN SERVICE : 02/04/2019

NSW GOVERNMENT Transport Roads & Maritime Services



NOTES

1. This site is SCATS linked.
2. Special STOP Sign (R1-4) placed on Posts 13, 14 & 15.
3. Audio tactile push buttons are provided on Posts 3, 5, 7, 8, 10, 11, 14, 16, 17 and 18.
4. Bicycle detectors installed in accordance with RMS Drawings VC005-36A and VC005-38.

SPECIAL SIGNAL GROUP DISPLAY SEQUENCE

SIGNAL GROUP	PHASE GREEN A	B	C	D	TABLE TYPE	REMARKS
V1	X				1	—
V2	X	X		X	3	—
V3		X		X	81	Z- Filter Option. Timed Red Arrow protection for P1 pedestrians. PB on Post 14 extends Red Arrow protection for P1 pedestrians.
V4			C		72	Full Red protection for P3 pedestrians
V5					96	Independent
V6		X	X	X	11	—
P1	X				1	Auto introduction in the presence of XSF5
P2			X		1	—
P3			X		1	—
P4	X	X	X	X	35	Independent —
P5	X				21	Automatic introduction - walk for GREEN

POSTS

POST	TYPE	LENGTH	OFFSET	REMARKS
1	13	1.5	0.6	EXISTING
2	2	4.1	2.9	EXISTING
3	2	4.1	1.0	EXISTING
4	2	4.1	1.0	EXISTING
5	2	4.1	1.1	EXISTING
6	2	4.1	0.7	EXISTING
7	2	4.1	0.9	EXISTING
8	2	4.1	1.1	EXISTING
9	2	4.1	1.0	EXISTING
10	2	4.1	1.0	EXISTING
11	2	4.1	1.0	EXISTING
12	2	4.1	0.6	EXISTING
13	2	4.1	2.8	EXISTING
14	2	4.1	1.7	EXISTING
15	2	4.1	1.0	EXISTING
16	2	4.1	1.0	EXISTING
17	2	4.1	1.1	EXISTING
18	2	4.1	1.0	EXISTING

DETECTOR SPECIFICATION

Detector		Specifications				
A	FN	A(L)	A(E1)			
	SG/PS	$\overline{A}$	A			
	DS	—	—			
A-B-D1 Approach & Departure	FN	B(PR)	D(PR)			
	SG/PS	A	A			
	DS	Z-	Z-Z+			
A-B-D1 Approach cont.	FN	A(L),B(L)	B(L)	D(L)	D(L)	
	SG/PS	$\overline{V2}$	$\overline{V3}$	$\overline{V2}$	$\overline{V3}$	
	DS	Z-	$\overline{Z-}$	Z-Z+	$\overline{Z-}$Z+	
A-B-D1 Approach cont.	FN	A(E3)			B(E3)	D(E3)
	SG/PS	A			B	D
	DS	Z-$\overline{A\text{-}B\text{-}D1(PR)}$.$\overline{B(NEXT)}$.$\overline{D(NEXT)}$			$\overline{D(NEXT)}$	$\overline{B(NEXT)}$
A-B-D2	FN	A(L)	A(E2)	B(E2)	D(E2)	
	SG/PS	$\overline{V2}$	A	B	D	
	DS	$\overline{B.D}$	B(NEXT).D(NEXT)	A(NEXT).D(NEXT)	$\overline{A(NEXT).B(NEXT)}$	
B-C-D1	FN	B(PR)	D(PR)	B(E1)	C(E1)	D(E1)
	SG/PS	$\overline{B.C.D}$	$\overline{B.C.D}$	B	C	D
	DS	$\overline{C}$	Z+.$\overline{C}$	C(NEXT).D(NEXT)	B(NEXT).D(NEXT)	B(NEXT).C(NEXT)
B-C-D2 Bike	FN	B(PR)	D(PR)	B(E4)	C(E4)	D(E4)
	SG/PS	$\overline{B.C.D}$	$\overline{B.C.D}$	B	C	D
	DS	$\overline{C}$	Z+.$\overline{C}$	C(NEXT).D(NEXT)	B(NEXT).D(NEXT)	B(NEXT).C(NEXT)
C1	FN	C(L)	C(E3)			
	SG/PS	$\overline{C}$	C			
	DS	—	—			
C2 Bike	FN	C(PR)	C(E2)			
	SG/PS	$\overline{C}$	C			
	DS	—	—			
P1 P.B.	FN	A(PB)	C(L)			
	SG/PS	$\overline{P1(WALK)}$	A.$\overline{P1(WALK)}$			
	DS	—	$\overline{B.C.D}$			
P2 P.B.	FN	C(PB)	A(L)			
	SG/PS	$\overline{P2(WALK)}$	C.$\overline{P2(WALK)}$			
	DS	—	$\overline{A.B.D}$			

DETECTOR SPECIFICATION (cont.)

P3 P.B.	FN	C(PB)	A(L)		
	SG/PS	$\overline{P3(WALK)}$	C.$\overline{P3(WALK)}$		
	DS	–	$\overline{A.B.D}$		
P5 P.B.	FN	A(PB)	Auto Intro		
	SG/PS	$\overline{P5(WALK)}$	Walk for GREEN		
	DS	–			

STAGE 1

A ORIGINAL ISSUE
'B' ISSUE - WAE
MINOR POSTREL/LOCATIONS TO SUIT WAE
ECOWISE 25/03/2019

PUBLIC UTILITY LEGEND		REFERENCE PLANS	
HYDRANT	□	SYMBOLS/ABRVS	VD003-6
STOP VALVE	▲	STD POSN CMPT	VD001-5
GAS VALVE	#	INSTL STOP DET	VC005-17
SEWER MANHOLE	⊕	VEH GROUP OP	TS-TN-019
COMMS PIT	◪	DET LOGIC OP	TS-TN-020
ELECT LIGHT POLE	○	PED MVT OP	TS-TN-021
POWER POLE	○		
STAY POLE	⊘		
TELEPHONE BOX	T	SURVEYOR : CALIBRE	
COMMS PILLAR	◪	DATE : 2017	

U.B.D. Ref. Map 80 - Q15
I.S.G. CO-ORDS E: 317 790 N: 1 083 130
DESIGNED : G VARLEY, Road Delay Solutions P/L
CHECKED : B HOGARTH, CALIBRE
SITE CHECKED
BEN HOGARTH
RECOMMENDED

DESIGN APPROVAL
APPROVED
NAME GLEN VARLEY
POSITION DIRECTOR
DATE 20.8.2018
ROAD DELAY SOLUTIONS
ROAD DELAY SOLUTIONS Pty Ltd
2/12 FLITTON VALLEY CLOSE FRENCHS FOREST NSW 2086 AUSTRALIA
Mobile 0414 800 912 Email gvarley@bigpond.com

RMS RECOMMENDATION
ROAD DESIGN ENGINEERING
N. Cooke
NAME NARELLE COOKE
POSITION SENIOR ROAD DESIGN MGR
DATE 3/09/2018
NETWORK OPERATIONS
C. Harding
NAME CHRIS HARDING
POSITION TEAM LEADER NETWORK OPS
DATE 3/09/2018

RMS ACCEPTANCE
ACCEPTED
R. Heffernan
NAME RICHARD HEFFERNAN
POSITION SENIOR PROJECT MGR
DATE 3/09/2018
ACCEPTED BY
RMD
SECTION

ROADS AND MARITIME SERVICES

QUEANBEYAN CITY COUNCIL AREA
TRAFFIC SIGNALS AT
TOMPSITT DRIVE
AND SUBDIVISION ACCESS ROAD
JERRABOMBERRA

DESIGN LAYOUT

EXISTING ☒ PROPOSED ☐
CADD FILE: VV4920_1B.dgn
SCALE 5 0 (1:200) 5 10
FILE SF2018/170467
SUPERSEDES SHEET/ISSUE -
ISSUE B
REG No. DS2018/000601
TCS No. 4920
SHEET 1

Revision 6 - July 2017

DRAWN BY CADD
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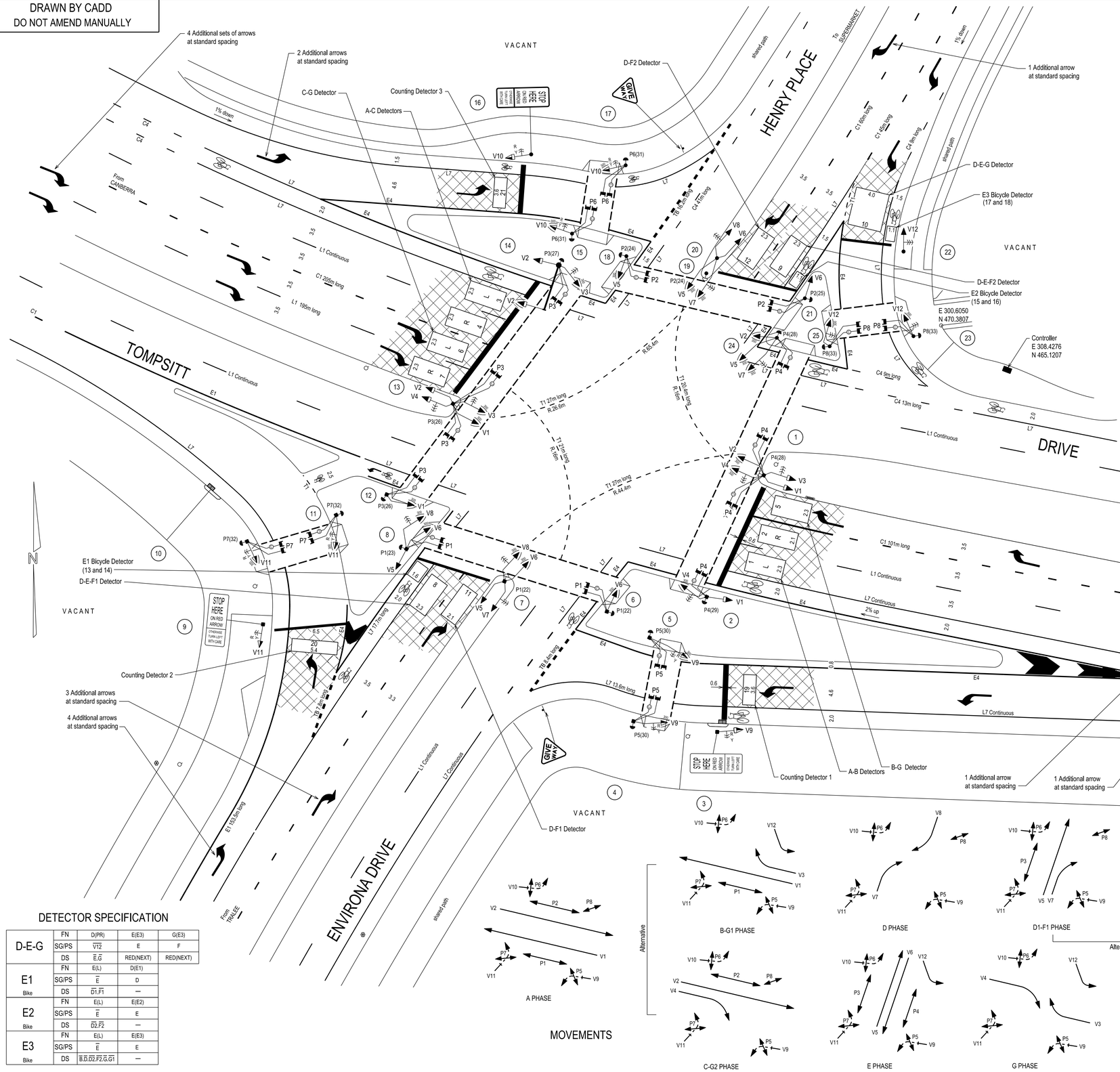
DATE IN SERVICE : 00/00/00

NSW GOVERNMENT | Transport Roads & Maritime Services

TCS 4920



SIGNAL GROUP PHASE CHART

SIGNAL GROUP	PHASE DURING WHICH GREEN DISPLAYED											TABLE	REMARKS
	A	B	C	D	D1	D2	E	F1	F2	G	G1	G2	
V1	X	X									X		TS-TN-027	——
V2	X		X									X	TS-TN-027	——
V3		X								X	X		165	
V4			X							X		X	165	
V5					X		X	X					1	——
V6						X		X					1	——
V7				X	X			X					69	
V8				X		X			X				69	
V9													96	Independent
V10													96	Independent
V11													96	Independent
V12		X				X	X			X	X		160	——
P1	X	X									X		109	——
P2	X		X									X	109	——
P3					X		X	X					1	——
P4						X		X					1	——
P5	X	X	X	X	X	X	X	X	X	X	X	X	35	Independent
P6	X	X	X	X	X	X	X	X	X	X	X	X	35	Independent
P7	X	X	X	X	X	X	X	X	X	X	X	X	35	Independent
P8	X		X	X	X			X				X	113	Automatic introduction - Walk for GREEN

NOTES

1. This site is SCATS linked.
2. Special STOP sign (R1-4) placed on Posts 7, 8, 20 and 21.
3. Audio tactile pushbuttons are provided on Posts 2, 4, 5, 6, 8, 10, 11, 12, 14, 15, 17, 18, 21, 23, 24 and 25.
4. Kerb ramps to be constructed in accordance with RMS Standard(Road) Drawing R.0300-11.
5. Roadworks in accordance with the civil road plans C13169-3351, prepared by Calibre.
6. Stop lines in the approaches on Tompsitt Drive are 600mm wide.
7. The walk aspects on on all posts are to be tilted down and/or incorporate the use of extended visors to obscure the view by pedestrians at opposing crossings.
8. The shared paths are to be delineated and signposted to comply with the current published NSW Bicycle Guidelines document and include the installation of pedestrian and cycle pavement symbols.
9. Supply is existing.
10. All utility services are currently under investigation. All utility services are to be confirmed prior to construction.
11. This site is in accordance with the design standard for Double Diamond Overlap specification TS-TN-027.
12. Provide 100mm deep pavement, 2 layers AC14, for 10m on approach to stop line, shown as

POSTS

POST	TYPE	LENGTH	OFFSET	REMARKS	COORDINATES (ASSUMED)	
1	8	4.0	0.6	NEW	279.5989	452.6276
2	8	4.0	1.0	NEW	272.8287	438.2334
3	8	4.0	1.0	NEW	274.0807	422.2344
4	8	4.0	1.0	NEW	264.1619	423.4980
5	8	4.0	1.0	NEW	266.0600	433.3953
6	8	4.0	1.0	NEW	261.0102	436.4925
7	8	4.0	1.0	NEW	248.8753	440.0699
8	8	4.0	1.0	NEW	237.2662	443.9021
9	8	4.0	1.0	NEW	220.2715	434.9750
10	8	4.0	1.0	NEW	218.3796	444.7944
11	8	4.0	1.0	NEW	228.9310	447.9183
12	8	4.0	1.0	NEW	234.9251	450.3494
13	8	4.0	0.6	NEW	242.7789	461.0942
14	5XL	-	2.0	NEW	255.3053	477.5105
15	2	4.1	1.0	EXISTING	"	"
16	2	4.1	1.0	EXISTING	"	"
17	2	4.1	1.0	EXISTING	"	"
18	2	4.1	1.0	EXISTING	"	"
19	13	1.5	0.6	EXISTING	"	"
20	2	4.1	2.8	EXISTING	"	"
21	2	4.1	1.0	EXISTING	"	"
22	2	4.1	1.0	EXISTING	"	"
23	2	4.1	1.0	EXISTING	"	"
24	2	4.1	1.0	EXISTING	"	"
25	2	4.1	1.0	EXISTING	"	"

DETECTOR SPECIFICATION

D-E-G	FN	D(PR)	E(E3)	G(E3)
	SG/PS	V12	E	F
	DS	E,G	RED(NEXT)	RED(NEXT)
E1 Bike	FN	E(L)	D(E1)	
	SG/PS	E	D	
	DS	D1,F1	—	
E2 Bike	FN	E(L)	E(E2)	
	SG/PS	E	E	
	DS	D2,F2	—	
E3 Bike	FN	E(L)	E(E3)	
	SG/PS	E	E	
	DS	B,D,D2,F2,G,G1	—	

MOVEMENTS

A ORIGINAL ISSUE 25.11.2020
B Issue DDO phasing implemented. Road delay Solutions 25.11.2020
C Issue DS & SF registration numbers corrected. N.R. 1/02/2021

PUBLIC UTILITY LEGEND		REFERENCE PLANS	
HYDRANT	□	SYMBOLS/ABBRVS	VD003-6
STOP VALVE	▲	STD POSN CMPT	VD001-5
GAS VALVE	#	INSTL STOP DET	VC005-17
SEWER MANHOLE	⊕	VEH GROUP OP	TS-TN-019
COMMS PIT	◪	DET LOGIC OP	TS-TN-020
ELECT LIGHT POLE	☼	PED MVT OP	TS-TN-021
POWER POLE	○		
STAY POLE	⊘		
TELEPHONE BOX	T	SURVEYOR : CALIBRE	
COMMS PILLAR	◪	DATE : 2017	

U.B.D. Ref. Map 80 - Q15
I.S.G. CO-ORDS E : 317 790 N : 1 083 130

DESIGNED : G VARLEY, Road Delay Solutions P/L
CHECKED : M MERANGE, CALIBRE
SITE CHECKED
MICHAEL MERANGE
RECOMMENDED

DESIGN APPROVAL	RMS RECOMMENDATION	RMS ACCEPTANCE
APPROVED	ROAD DESIGN ENGINEERING	ACCEPTED
NAME GLEN VARLEY	See signed original 4B	See signed original 4B
POSITION DIRECTOR	NAME Narelle Cooke	NAME Shaun Foster
DATE 10.9.2018	POSITION Snr Road Design Mgr	POSITION A/SPM Southern
ROAD DELAY SOLUTIONS	DATE 15/12/2020	DATE 17/12/2020
ROAD DELAY SOLUTIONS Pty Ltd 210 FUTTON VALLEY CLOSE KINGSCROFT NSW 2558 AUSTRALIA Mobile 0414 663 972 Email gvarley@bigpond.com	NETWORK OPERATIONS	ACCEPTED BY
	See signed original 4B	PM Southern
	NAME Chris Harding	SECTION
	POSITION Area Leader Net. Ops	
	DATE 15/12/2020	

ROADS AND MARITIME SERVICES
QUEANBEYAN-PALERANG COUNCIL AREA
TRAFFIC SIGNALS AT
TOMPSITT DRIVE, HENRY PLACE
AND ENVIRONA DRIVE
JERRABOMBERRA
DESIGN LAYOUT

EXISTING ☐ PROPOSED ☒
CADD FILE: VV4920_4C.DGN
SCALE 5 0 (1:200 A0 Sheet) 5 10
ISSUE C
FILE SF2018/170467
SUPERSEDES SHEET/ISSUE 4B
SHEET 4
REG No. DS2018/000601
TCS No. 4920

Revision 6 - July 2017

Appendix G

SIDRA Results - 2021

MOVEMENT SUMMARY

Site: Site 1 [2021_Base_AM Peak_Lanyon Drive & Tompsitt Drive (Site Folder: General)]

Network: N101 [2021_Base_AM Peak_Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Lanyon Drive & Tompsitt Drive
Site Category: AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lanyon Drive (South)														
11	T1	613	7.9	613	7.9	0.502	10.8	LOS A	16.8	125.8	0.56	0.51	0.56	64.6
12	R2	317	9.3	317	9.3	0.415	28.7	LOS C	4.2	31.6	0.90	0.79	0.90	36.4
Approach		929	8.4	929	8.4	0.502	16.9	LOS B	16.8	125.8	0.68	0.60	0.68	55.5
East: Tompsitt Drive														
1	L2	1648	2.0	1648	2.0	*0.578	21.6	LOS B	18.8	133.8	0.56	0.78	0.56	52.0
3	R2	180	8.8	180	8.8	0.438	46.5	LOS D	8.2	62.0	0.89	0.80	0.89	37.8
Approach		1828	2.7	1828	2.7	0.578	24.0	LOS B	18.8	133.8	0.59	0.78	0.59	50.1
North: Lanyon Drive (North)														
4	L2	100	9.5	100	9.5	0.063	9.2	LOS A	0.6	4.5	0.24	0.64	0.24	57.0
5	T1	607	6.4	607	6.4	*0.570	34.4	LOS C	15.2	112.5	0.87	0.74	0.87	46.7
Approach		707	6.8	707	6.8	0.570	30.8	LOS C	15.2	112.5	0.78	0.73	0.78	47.4
All Vehicles		3465	5.1	3465	5.1	0.578	23.5	LOS B	18.8	133.8	0.65	0.72	0.65	50.7

MOVEMENT SUMMARY

Site: Site 2 [2021_Base_AM Peak_Tompsitt Drive & Henry Pl (Site Folder: General)]

Network: N101 [2021_Base_AM Peak_Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitt Drive & Henry Pl
Site Category: AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Tompsitt Drive (East)														
5	T1	1739	2.8	1739	2.8	*0.719	12.7	LOS A	31.1	223.0	0.68	0.63	0.68	42.6
6	R2	101	2.1	101	2.1	*0.131	11.4	LOS A	1.5	10.5	0.35	0.69	0.35	45.9
Approach		1840	2.8	1840	2.8	0.719	12.6	LOS A	31.1	223.0	0.67	0.63	0.67	42.8
North: Henry Pl														
7	L2	57	5.6	57	5.6	0.266	62.5	LOS E	1.4	10.5	0.99	0.70	0.99	6.8
9	R2	89	0.0	89	0.0	*0.482	58.2	LOS E	4.7	33.2	0.99	0.77	0.99	7.3
Approach		146	2.2	146	2.2	0.482	59.9	LOS E	4.7	33.2	0.99	0.75	0.99	7.1
West: Tompsitt Drive (West)														
10	L2	57	7.4	57	7.4	0.049	8.7	LOS A	0.3	2.5	0.24	0.64	0.24	55.4
11	T1	360	9.6	360	9.6	0.148	10.1	LOS A	3.0	23.0	0.30	0.53	0.30	56.1
Approach		417	9.3	417	9.3	0.148	9.9	LOS A	3.0	23.0	0.29	0.55	0.29	55.7
All Vehicles		2403	3.9	2403	3.9	0.719	15.0	LOS B	31.1	223.0	0.62	0.63	0.62	40.6

MOVEMENT SUMMARY

Site: Site 3 [2021_Base_AM Peak_Tompsitte Drive and Limestone Drive (Site Folder: General)]

Network: N101 [2021_Base_AM Peak_Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitte Drive and Limestone Drive
Site Category: AM Peak
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jerrabomberra Parkway,														
1	L2	869	1.7	869	1.7	0.541	0.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.2
2	T1	94	4.5	94	4.5	0.541	0.6	LOS A	0.0	0.0	0.00	0.04	0.00	51.7
3	R2	104	2.0	104	2.0	0.541	1.3	LOS A	0.0	0.0	0.00	0.04	0.00	77.4
Approach		1067	2.0	1067	2.0	0.541	0.7	LOS A	0.0	0.0	0.00	0.04	0.00	52.5
East: Edwin Land Parkway														
4	L2	98	0.0	98	0.0	0.986	24.1	LOS B	22.7	164.0	1.00	1.81	2.88	40.5
5	T1	681	3.7	681	3.7	0.986	24.2	LOS B	22.7	164.0	1.00	1.81	2.88	31.4
6	R2	47	13.3	47	13.3	0.986	25.5	LOS B	22.7	164.0	1.00	1.81	2.88	51.4
Approach		826	3.8	826	3.8	0.986	24.2	LOS B	22.7	164.0	1.00	1.81	2.88	34.1
North: Limestone Drive														
7	L2	48	4.3	48	4.3	0.500	2.6	LOS A	2.4	16.9	0.51	0.40	0.56	50.8
8	T1	88	2.4	88	2.4	0.500	2.5	LOS A	2.4	16.9	0.51	0.40	0.56	49.2
9	R2	312	1.4	312	1.4	0.500	3.4	LOS A	2.4	16.9	0.51	0.40	0.56	45.8
Approach		448	1.9	448	1.9	0.500	3.1	LOS A	2.4	16.9	0.51	0.40	0.56	47.4
West: Tompsitte Drive														
10	L2	80	5.3	80	5.3	0.208	1.9	LOS A	1.0	8.2	0.42	0.28	0.42	52.5
11	T1	102	32.0	102	32.0	0.208	2.1	LOS A	1.0	8.2	0.42	0.28	0.42	50.0
12	R2	229	1.8	229	1.8	0.208	2.6	LOS A	1.0	7.3	0.40	0.29	0.40	70.5
Approach		412	10.0	412	10.0	0.208	2.3	LOS A	1.0	8.2	0.41	0.29	0.41	61.9
All Vehicles		2754	3.7	2754	3.7	0.986	8.4	LOS A	22.7	164.0	0.44	0.67	1.02	46.6

MOVEMENT SUMMARY

Site: Site 1 [2021_Base_PM Peak_Lanyon Drive & Tompsitt Drive (Site Folder: General)]

Network: N101 [2021_Base_PM Peak_ Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Lanyon Drive & Tompsitt Drive
Site Category: PM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lanyon Drive (South)														
11	T1	547	3.3	547	3.3	0.348	3.2	LOS A	8.2	59.4	0.29	0.26	0.29	74.5
12	R2	1119	1.0	1119	1.0	*0.585	28.8	LOS C	22.5	158.6	0.75	0.82	0.75	36.1
Approach		1666	1.8	1666	1.8	0.585	20.4	LOS B	22.5	158.6	0.60	0.64	0.60	48.2
East: Tompsitt Drive														
1	L2	435	2.4	435	2.4	0.119	15.8	LOS B	4.3	30.4	0.45	0.72	0.45	55.6
3	R2	81	1.3	81	1.3	*0.590	68.6	LOS E	4.9	34.7	1.00	0.78	1.03	31.3
Approach		516	2.2	516	2.2	0.590	24.1	LOS B	4.9	34.7	0.53	0.73	0.54	49.5
North: Lanyon Drive (North)														
4	L2	187	1.7	187	1.7	0.114	10.3	LOS A	1.2	8.6	0.23	0.66	0.23	58.2
5	T1	480	2.6	480	2.6	*0.579	43.2	LOS D	14.0	100.3	0.92	0.77	0.92	41.6
Approach		667	2.4	667	2.4	0.579	34.0	LOS C	14.0	100.3	0.73	0.74	0.73	43.7
All Vehicles		2849	2.0	2849	2.0	0.590	24.2	LOS B	22.5	158.6	0.62	0.68	0.62	47.2

MOVEMENT SUMMARY

Site: Site 2 [2021_Base_PM Peak_Tompsitt Drive & Henry Pl (Site Folder: General)]

Network: N101 [2021_Base_PM Peak_ Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitt Drive & Henry Pl
Site Category: PM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Tompsitt Drive (East)														
5	T1	452	1.9	452	1.9	0.146	3.1	LOS A	3.0	21.3	0.25	0.21	0.25	65.6
6	R2	98	1.1	98	1.1	*0.244	22.9	LOS B	3.2	22.8	0.62	0.76	0.62	34.3
Approach		549	1.7	549	1.7	0.244	6.6	LOS A	3.2	22.8	0.32	0.31	0.32	54.1
North: Henry Pl														
7	L2	174	0.0	174	0.0	0.171	43.5	LOS D	3.8	26.5	0.80	0.74	0.80	9.7
9	R2	63	3.3	63	3.3	*0.380	63.1	LOS E	3.6	26.1	0.98	0.76	0.98	6.8
Approach		237	0.9	237	0.9	0.380	48.7	LOS D	3.8	26.5	0.85	0.74	0.85	8.7
West: Tompsitt Drive (West)														
10	L2	151	1.4	151	1.4	0.122	10.2	LOS A	1.9	13.5	0.38	0.69	0.38	54.4
11	T1	1162	1.2	1162	1.2	*0.471	23.0	LOS B	24.8	175.1	0.78	0.79	0.78	42.0
Approach		1313	1.2	1313	1.2	0.471	21.5	LOS B	24.8	175.1	0.73	0.78	0.73	43.3
All Vehicles		2099	1.3	2099	1.3	0.471	20.7	LOS B	24.8	175.1	0.64	0.65	0.64	39.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

MOVEMENT SUMMARY

Site: Site 3 [2021_Base_PM Peak_Tompsitte Drive and Limestone Drive (Site Folder: General)]

Network: N101 [2021_Base_PM Peak_ Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitte Drive and Limestone Drive
Site Category: PM Peak
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jerrabomberra Parkway,														
1	L2	293	0.7	293	0.7	0.190	0.4	LOS A	0.0	0.0	0.00	0.05	0.00	49.4
2	T1	48	0.0	48	0.0	0.190	0.3	LOS A	0.0	0.0	0.00	0.05	0.00	51.9
3	R2	38	2.8	38	2.8	0.190	1.2	LOS A	0.0	0.0	0.00	0.05	0.00	77.8
Approach		379	0.8	379	0.8	0.190	0.5	LOS A	0.0	0.0	0.00	0.05	0.00	52.9
East: Edwin Land Parkway														
4	L2	33	3.2	33	3.2	0.417	3.7	LOS A	2.1	14.7	0.63	0.55	0.69	50.6
5	T1	145	2.9	145	2.9	0.417	3.6	LOS A	2.1	14.7	0.63	0.55	0.69	45.4
6	R2	135	0.8	135	0.8	0.417	4.5	LOS A	2.1	14.7	0.63	0.55	0.69	70.8
Approach		313	2.0	313	2.0	0.417	4.0	LOS A	2.1	14.7	0.63	0.55	0.69	56.7
North: Limestone Drive														
7	L2	72	1.5	72	1.5	0.465	4.6	LOS A	2.5	17.6	0.70	0.68	0.81	50.4
8	T1	156	0.0	156	0.0	0.465	4.4	LOS A	2.5	17.6	0.70	0.68	0.81	48.7
9	R2	92	3.4	92	3.4	0.465	5.5	LOS A	2.5	17.6	0.70	0.68	0.81	44.2
Approach		319	1.3	319	1.3	0.465	4.8	LOS A	2.5	17.6	0.70	0.68	0.81	48.2
West: Tompsitte Drive														
10	L2	266	0.8	266	0.8	0.653	2.6	LOS A	5.6	39.4	0.52	0.37	0.53	52.2
11	T1	479	1.5	479	1.5	0.653	2.5	LOS A	5.6	39.4	0.52	0.37	0.53	49.6
12	R2	582	0.7	582	0.7	0.555	3.1	LOS A	3.8	26.8	0.47	0.36	0.47	69.5
Approach		1327	1.0	1327	1.0	0.653	2.8	LOS A	5.6	39.4	0.49	0.36	0.50	59.0
All Vehicles		2338	1.2	2338	1.2	0.653	2.8	LOS A	5.6	39.4	0.46	0.38	0.49	56.2

Appendix H

SIDRA Results – 2023 and 2033

MOVEMENT SUMMARY

Site: Site 1 [2023_Future_No Build_AM Peak_Lanyon Drive & Tompsitt Drive (Site Folder: General)]

Network: N101 [2023_Future_No Build_Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Lanyon Drive & Tompsitt Drive
Site Category: AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lanyon Drive (South)														
11	T1	636	7.8	636	7.8	0.534	13.3	LOS A	20.2	151.3	0.60	0.55	0.60	61.7
12	R2	355	8.6	355	8.6	0.449	30.2	LOS C	4.8	36.3	0.91	0.80	0.91	35.4
Approach		991	8.1	991	8.1	0.534	19.3	LOS B	20.2	151.3	0.71	0.64	0.71	52.8
East: Tompsitt Drive														
1	L2	1869	1.9	1802	1.8	*0.620	28.4	LOS B	34.3	244.0	0.69	0.82	0.69	47.5
3	R2	202	7.8	194	7.6	0.430	60.6	LOS E	11.3	84.4	1.00	0.83	1.00	33.1
Approach		2072	2.4	1996[N1]	2.4	0.620	31.6	LOS C	34.3	244.0	0.72	0.82	0.72	45.6
North: Lanyon Drive (North)														
4	L2	105	9.0	105	9.0	0.067	9.4	LOS A	0.6	4.9	0.22	0.64	0.22	58.3
5	T1	625	6.4	625	6.4	*0.623	40.1	LOS C	17.7	130.4	0.90	0.77	0.90	43.9
Approach		731	6.8	731	6.8	0.623	35.6	LOS C	17.7	130.4	0.80	0.75	0.80	44.8
All Vehicles		3793	4.7	3717[N1]	4.8	0.623	29.1	LOS C	34.3	244.0	0.73	0.76	0.73	46.9

MOVEMENT SUMMARY

Site: Site 2 [2023_Future_No Build_AM Peak_Tompsitt Drive & Henry Pl (Site Folder: General)]

Network: N101 [2023_Future_No Build_Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitt Drive & Henry Pl
Site Category: AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Environa Drive														
1	L2	185	0.0	185	0.0	*0.108	6.3	LOS A	1.2	7.8	0.17	0.58	0.17	36.3
2	T1	11	0.0	11	0.0	0.037	52.0	LOS D	0.4	2.9	0.92	0.61	0.92	15.1
3	R2	37	0.0	37	0.0	0.295	66.0	LOS E	2.2	15.1	0.99	0.73	0.99	7.9
Approach		233	0.0	233	0.0	0.295	17.8	LOS B	2.2	15.1	0.34	0.60	0.34	22.1
East: Tompsitt Drive (East)														
4	L2	148	0.0	142	0.0	0.082	5.9	LOS A	0.5	3.5	0.12	0.57	0.12	47.4
5	T1	1791	2.8	1715	2.8	*0.810	20.8	LOS B	41.4	296.8	0.83	0.76	0.83	33.0
6	R2	137	1.5	131	1.5	0.273	45.5	LOS D	6.1	43.4	0.84	0.78	0.84	22.9
Approach		2076	2.5	1989[N1]	2.5	0.810	21.3	LOS B	41.4	296.8	0.78	0.75	0.78	32.7
North: Henry Pl														
7	L2	65	4.8	65	4.8	*0.255	40.4	LOS C	2.4	17.3	0.95	0.71	0.95	9.8
8	T1	11	0.0	11	0.0	0.050	52.3	LOS D	0.6	3.9	0.92	0.63	0.92	15.1
9	R2	100	0.0	100	0.0	*0.808	72.5	LOS F	6.4	44.8	1.00	0.90	1.29	6.3
Approach		176	1.8	176	1.8	0.808	59.4	LOS E	6.4	44.8	0.98	0.81	1.14	7.8
West: Tompsitt Drive (West)														
10	L2	68	6.2	68	6.2	0.043	7.4	LOS A	0.1	1.0	0.07	0.60	0.07	55.9
11	T1	373	9.6	373	9.6	0.270	31.5	LOS C	6.8	51.4	0.66	0.68	0.66	34.3
12	R2	29	0.0	29	0.0	0.157	64.5	LOS E	0.8	5.8	0.94	0.68	0.94	22.9
Approach		471	8.5	471	8.5	0.270	30.0	LOS C	6.8	51.4	0.59	0.67	0.59	35.0
All Vehicles		2955	3.2	2867[N1]	3.3	0.810	24.8	LOS B	41.4	296.8	0.72	0.73	0.73	30.2

MOVEMENT SUMMARY

Site: Site 3 [2023_Future_No Build_AM Peak_Tompsitte Drive and Limestone Drive (Site Folder: General)]

Network: N101 [2023_Future_No Build_Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitte Drive and Limestone Drive
Site Category: AM Peak
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jerrabomberra Parkway,														
1	L2	978	1.5	978	1.5	0.619	0.7	LOS A	0.0	0.0	0.00	0.04	0.00	49.1
2	T1	97	4.3	97	4.3	0.619	0.7	LOS A	0.0	0.0	0.00	0.04	0.00	51.5
3	R2	107	2.0	107	2.0	0.619	1.3	LOS A	0.0	0.0	0.00	0.04	0.00	77.3
Approach		1182	1.8	1182	1.8	0.619	0.8	LOS A	0.0	0.0	0.00	0.04	0.00	52.2
East: Edwin Land Parkway														
4	L2	101	0.0	101	0.0	1.131	129.0	LOS F	80.8	583.2	1.00	4.63	9.52	19.2
5	T1	765	3.4	765	3.4	1.131	129.0	LOS F	80.8	583.2	1.00	4.63	9.52	12.0
6	R2	48	13.0	48	13.0	1.131	130.3	LOS F	80.8	583.2	1.00	4.63	9.52	20.4
Approach		915	3.6	915	3.6	1.131	129.1	LOS F	80.8	583.2	1.00	4.63	9.52	13.3
North: Limestone Drive														
7	L2	49	4.3	49	4.3	0.547	3.0	LOS A	2.9	20.8	0.55	0.46	0.62	50.6
8	T1	91	2.3	91	2.3	0.547	2.9	LOS A	2.9	20.8	0.55	0.46	0.62	49.0
9	R2	351	1.2	351	1.2	0.547	3.8	LOS A	2.9	20.8	0.55	0.46	0.62	45.6
Approach		491	1.7	491	1.7	0.547	3.5	LOS A	2.9	20.8	0.55	0.46	0.62	47.2
West: Tompsitte Drive														
10	L2	91	4.7	91	4.7	0.232	1.9	LOS A	1.0	8.3	0.37	0.28	0.37	52.8
11	T1	113	29.9	113	29.9	0.232	2.2	LOS A	1.0	8.3	0.37	0.28	0.37	50.2
12	R2	259	1.6	259	1.6	0.232	2.6	LOS A	1.0	7.4	0.36	0.30	0.36	71.0
Approach		462	9.1	462	9.1	0.232	2.4	LOS A	1.0	8.3	0.36	0.29	0.36	62.3
All Vehicles		3049	3.4	3049	3.4	1.131	40.0	LOS C	80.8	583.2	0.44	1.52	3.01	30.2

MOVEMENT SUMMARY

Site: Site 1 [2023_Future_No Build_PM Peak_Lanyon Drive & Tompsitt Drive (Site Folder: General)]

Network: N101 [2023_Future_No Build_PM Peak_ Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Lanyon Drive & Tompsitt Drive
Site Category: PM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lanyon Drive (South)														
11	T1	569	3.3	569	3.3	0.362	3.5	LOS A	9.0	64.7	0.30	0.27	0.30	73.7
12	R2	1273	1.0	1273	1.0	*0.655	29.5	LOS C	26.7	188.4	0.78	0.84	0.78	35.8
Approach		1842	1.7	1842	1.7	0.655	21.5	LOS B	26.7	188.4	0.63	0.66	0.63	47.0
East: Tompsitt Drive														
1	L2	494	2.1	494	2.1	0.106	17.1	LOS B	4.1	29.2	0.56	0.73	0.56	54.4
3	R2	92	1.1	92	1.1	*0.600	37.3	LOS C	3.8	27.0	0.71	0.73	0.72	42.7
Approach		585	2.0	585	2.0	0.600	20.3	LOS B	4.1	29.2	0.58	0.73	0.58	52.0
North: Lanyon Drive (North)														
4	L2	214	1.5	214	1.5	0.130	10.6	LOS A	1.4	10.0	0.24	0.66	0.24	58.1
5	T1	495	2.8	495	2.8	*0.636	45.1	LOS D	14.7	105.1	0.95	0.79	0.95	40.7
Approach		708	2.4	708	2.4	0.636	34.7	LOS C	14.7	105.1	0.73	0.75	0.73	43.0
All Vehicles		3136	1.9	3136	1.9	0.655	24.2	LOS B	26.7	188.4	0.65	0.70	0.65	47.0

MOVEMENT SUMMARY

Site: Site 2 [2023_Future_No Build_PM Peak_Tompsitt Drive & Henry Pl (Site Folder: General)]

Network: N101 [2023_Future_No Build_PM Peak_ Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitt Drive & Henry Pl
Site Category: AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Environa Drive														
1	L2	40	0.0	40	0.0	0.024	6.4	LOS A	0.2	1.6	0.16	0.57	0.16	36.7
2	T1	21	0.0	21	0.0	0.046	50.2	LOS D	0.6	3.9	0.91	0.61	0.91	14.5
3	R2	105	0.0	105	0.0	*0.673	66.9	LOS E	6.4	44.6	1.00	0.82	1.09	7.8
Approach		166	0.0	166	0.0	0.673	50.3	LOS D	6.4	44.6	0.79	0.74	0.84	10.7
East: Tompsitt Drive (East)														
4	L2	59	0.0	59	0.0	0.083	28.7	LOS C	2.0	13.7	0.68	0.68	0.68	28.3
5	T1	464	1.8	464	1.8	0.257	21.1	LOS B	8.1	57.7	0.65	0.55	0.65	32.6
6	R2	104	2.0	104	2.0	0.423	60.1	LOS E	5.8	41.0	0.96	0.78	0.96	18.9
Approach		627	1.7	627	1.7	0.423	28.3	LOS B	8.1	57.7	0.71	0.60	0.71	27.9
North: Henry Pl														
7	L2	207	0.0	207	0.0	*0.561	37.4	LOS C	7.6	53.2	0.94	0.79	0.94	11.5
8	T1	11	0.0	11	0.0	0.046	51.1	LOS D	0.6	3.9	0.91	0.63	0.91	15.3
9	R2	75	4.2	75	4.2	0.497	65.1	LOS E	4.4	31.9	1.00	0.77	1.00	7.0
Approach		293	1.1	293	1.1	0.561	45.0	LOS D	7.6	53.2	0.95	0.78	0.95	10.0
West: Tompsitt Drive (West)														
10	L2	164	1.3	164	1.3	0.101	8.2	LOS A	1.4	9.6	0.23	0.65	0.23	56.3
11	T1	1200	1.2	1200	1.2	*0.655	49.7	LOS D	34.0	240.5	1.00	0.90	1.00	26.4
12	R2	134	0.0	134	0.0	0.251	44.2	LOS D	2.9	20.1	0.75	0.71	0.75	28.3
Approach		1498	1.1	1498	1.1	0.655	44.6	LOS D	34.0	240.5	0.89	0.85	0.89	28.5
All Vehicles		2584	1.2	2584	1.2	0.673	41.1	LOS C	34.0	240.5	0.85	0.78	0.85	25.5

MOVEMENT SUMMARY

Site: Site 3 [2023_Future_No Build_PM Peak_Tompsitte Drive and Limestone Drive (Site Folder: General)]

Network: N101 [2023_Future_No Build_PM Peak_ Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitte Drive and Limestone Drive
Site Category: PM Peak
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jerrabomberra Parkway,														
1	L2	333	0.6	333	0.6	0.211	0.4	LOS A	0.0	0.0	0.00	0.05	0.00	49.4
2	T1	49	0.0	49	0.0	0.211	0.3	LOS A	0.0	0.0	0.00	0.05	0.00	51.9
3	R2	39	2.7	39	2.7	0.211	1.2	LOS A	0.0	0.0	0.00	0.05	0.00	77.9
Approach		421	0.7	421	0.8	0.211	0.5	LOS A	0.0	0.0	0.00	0.05	0.00	52.7
East: Edwin Land Parkway														
4	L2	33	3.2	33	3.2	0.475	4.8	LOS A	2.8	19.9	0.71	0.72	0.81	50.3
5	T1	165	2.5	165	2.5	0.475	4.7	LOS A	2.8	19.9	0.71	0.72	0.81	45.0
6	R2	139	0.8	139	0.8	0.475	5.6	LOS A	2.8	19.9	0.71	0.72	0.81	70.4
Approach		337	1.9	337	1.9	0.475	5.1	LOS A	2.8	19.9	0.71	0.72	0.81	55.8
North: Limestone Drive														
7	L2	74	1.4	74	1.4	0.523	6.0	LOS A	3.3	23.6	0.78	0.85	0.95	49.8
8	T1	161	0.0	161	0.0	0.523	5.8	LOS A	3.3	23.6	0.78	0.85	0.95	48.1
9	R2	103	3.1	103	3.1	0.523	6.9	LOS A	3.3	23.6	0.78	0.85	0.95	43.4
Approach		338	1.2	338	1.2	0.523	6.2	LOS A	3.3	23.6	0.78	0.85	0.95	47.5
West: Tompsitte Drive														
10	L2	301	1.0	301	1.0	0.739	3.5	LOS A	8.0	56.9	0.53	0.44	0.58	52.1
11	T1	539	1.4	539	1.4	0.739	3.4	LOS A	8.0	56.9	0.53	0.44	0.58	49.5
12	R2	657	0.6	657	0.6	0.629	3.6	LOS A	5.0	35.5	0.47	0.42	0.48	69.5
Approach		1497	1.0	1497	1.0	0.739	3.5	LOS A	8.0	56.9	0.50	0.43	0.54	59.0
All Vehicles		2593	1.1	2593	1.1	0.739	3.6	LOS A	8.0	56.9	0.48	0.46	0.54	56.0

MOVEMENT SUMMARY

Site: Site 1 [2023_Future_Build_AM Peak_Lanyon Drive & Tompsitt Drive (Site Folder: General)]

Network: N101 [2023_Future_Build_Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Lanyon Drive & Tompsitt Drive
Site Category: AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lanyon Drive (South)														
11	T1	636	7.8	636	7.8	0.556	15.2	LOS B	21.6	161.6	0.64	0.58	0.64	59.8
12	R2	371	8.2	371	8.2	0.421	48.5	LOS D	9.2	68.7	0.89	0.80	0.89	26.4
Approach		1006	7.9	1006	7.9	0.556	27.4	LOS B	21.6	161.6	0.73	0.66	0.73	46.2
East: Tompsitt Drive														
1	L2	1968	1.8	1845	1.7	*0.614	16.9	LOS B	21.0	149.1	0.36	0.73	0.36	56.0
3	R2	213	7.4	199	7.1	0.411	8.5	LOS A	0.4	2.9	0.04	0.62	0.04	62.4
Approach		2181	2.3	2043[N1]	2.2	0.614	16.1	LOS B	21.0	149.1	0.33	0.72	0.33	56.4
North: Lanyon Drive (North)														
4	L2	140	6.8	140	6.8	0.088	9.4	LOS A	0.9	6.5	0.23	0.65	0.23	58.2
5	T1	625	6.4	625	6.4	*0.623	40.0	LOS C	17.7	130.4	0.90	0.77	0.90	43.9
Approach		765	6.5	765	6.5	0.623	34.4	LOS C	17.7	130.4	0.78	0.75	0.78	45.0
All Vehicles		3953	4.6	3815[N1]	4.7	0.623	22.8	LOS B	21.6	161.6	0.53	0.71	0.53	51.2

MOVEMENT SUMMARY

Site: Site 2 [2023_Future_Build_AM Peak_Tompsitt Drive & Henry Pl (Site Folder: General)]

Network: N101 [2023_Future_Build_Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitt Drive & Henry Pl
Site Category: AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Environa Drive														
1	L2	296	0.0	296	0.0	*0.175	6.4	LOS A	2.0	13.6	0.19	0.59	0.19	36.3
2	T1	11	0.0	11	0.0	0.023	43.8	LOS D	0.4	2.6	0.85	0.57	0.85	17.2
3	R2	111	0.0	111	0.0	*0.884	77.0	LOS F	7.4	51.6	1.00	0.97	1.45	6.9
Approach		417	0.0	417	0.0	0.884	26.1	LOS B	7.4	51.6	0.42	0.69	0.54	17.0
East: Tompsitt Drive (East)														
4	L2	314	0.0	290	0.0	0.173	6.0	LOS A	1.2	8.1	0.14	0.59	0.14	47.6
5	T1	1791	2.8	1652	2.7	*0.880	35.0	LOS C	49.9	357.6	0.93	0.92	1.02	23.5
6	R2	137	1.5	126	1.5	0.302	49.1	LOS D	6.2	43.8	0.88	0.78	0.88	21.8
Approach		2241	2.3	2069[N1]	2.3	0.880	31.8	LOS C	49.9	357.6	0.81	0.87	0.89	25.8
North: Henry Pl														
7	L2	65	4.8	65	4.8	*0.172	34.3	LOS C	2.1	15.6	0.88	0.70	0.88	11.2
8	T1	11	0.0	11	0.0	0.031	43.9	LOS D	0.5	3.6	0.86	0.59	0.86	17.1
9	R2	100	0.0	100	0.0	0.808	72.5	LOS F	6.4	44.8	1.00	0.90	1.29	6.3
Approach		176	1.8	176	1.8	0.808	56.6	LOS E	6.4	44.8	0.95	0.81	1.11	8.1
West: Tompsitt Drive (West)														
10	L2	68	6.2	68	6.2	0.043	7.4	LOS A	0.2	1.2	0.08	0.60	0.08	55.8
11	T1	373	9.6	373	9.6	0.297	46.8	LOS D	10.5	79.3	0.97	0.82	0.97	26.7
12	R2	29	0.0	29	0.0	0.157	53.1	LOS D	0.7	4.9	0.78	0.66	0.78	25.6
Approach		471	8.5	471	8.5	0.297	41.5	LOS C	10.5	79.3	0.83	0.77	0.83	29.1
All Vehicles		3304	2.9	3132[N1]	3.1	0.884	33.9	LOS C	49.9	357.6	0.77	0.83	0.85	24.3

MOVEMENT SUMMARY

Site: Site 3 [2023_Future_Build_AM Peak_Tompsitte Drive and Limestone Drive (Site Folder: General)]

Network: N101 [2023_Future_Build_Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitte Drive and Limestone Drive
Site Category: AM Peak
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jerrabomberra Parkway,														
1	L2	1098	1.3	1098	1.3	0.806	1.5	LOS A	0.0	0.0	0.00	0.01	0.00	48.4
2	T1	97	4.3	97	4.3	0.806	1.4	LOS A	0.0	0.0	0.00	0.01	0.00	50.7
3	R2	107	2.0	107	2.0	0.806	1.5	LOS A	0.0	0.0	0.00	0.01	0.00	76.2
Approach		1302	1.6	1302	1.6	0.806	1.5	LOS A	0.0	0.0	0.00	0.01	0.00	51.2
East: Edwin Land Parkway														
4	L2	101	0.0	101	0.0	1.288	267.5	LOS F	144.1	1038.4	1.00	7.45	16.18	11.3
5	T1	793	3.3	793	3.3	1.288	267.5	LOS F	144.1	1038.4	1.00	7.45	16.18	6.6
6	R2	48	13.0	48	13.0	1.288	268.8	LOS F	144.1	1038.4	1.00	7.45	16.18	11.3
Approach		942	3.5	942	3.5	1.288	267.6	LOS F	144.1	1038.4	1.00	7.45	16.18	7.4
North: Limestone Drive														
7	L2	49	4.3	49	4.3	0.606	3.6	LOS A	3.4	24.4	0.59	0.55	0.69	50.5
8	T1	91	2.3	91	2.3	0.606	3.5	LOS A	3.4	24.4	0.59	0.55	0.69	48.9
9	R2	369	1.1	369	1.1	0.606	4.4	LOS A	3.4	24.4	0.59	0.55	0.69	45.4
Approach		509	1.7	509	1.7	0.606	4.1	LOS A	3.4	24.4	0.59	0.55	0.69	46.9
West: Tompsitte Drive														
10	L2	99	4.3	99	4.3	0.265	1.9	LOS A	1.2	9.6	0.33	0.27	0.33	52.9
11	T1	122	27.6	122	27.6	0.265	2.1	LOS A	1.2	9.6	0.33	0.27	0.33	50.4
12	R2	315	1.3	315	1.3	0.265	2.7	LOS A	1.2	8.7	0.32	0.30	0.32	71.7
Approach		536	7.9	536	7.9	0.265	2.4	LOS A	1.2	9.6	0.33	0.29	0.33	63.1
All Vehicles		3289	3.2	3289	3.2	1.288	78.2	LOS F	144.1	1038.4	0.43	2.27	4.80	21.2

MOVEMENT SUMMARY

Site: Site 1 [2023_Future_Build_PM Peak_Lanyon Drive & Tompsitt Drive (Site Folder: General)]

Network: N101 [2023_Future_Build_PM Peak_ Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Lanyon Drive & Tompsitt Drive
Site Category: PM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 90 seconds (Network Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lanyon Drive (South)														
11	T1	569	3.3	569	3.3	0.384	4.0	LOS A	8.3	59.9	0.37	0.33	0.37	73.1
12	R2	1273	1.0	1273	1.0	*0.774	31.9	LOS C	24.6	173.8	0.91	0.88	0.95	34.3
Approach		1842	1.7	1842	1.7	0.774	23.3	LOS B	24.6	173.8	0.74	0.71	0.77	45.5
East: Tompsitt Drive														
1	L2	509	2.1	509	2.1	0.118	12.6	LOS A	2.2	15.5	0.30	0.68	0.30	58.4
3	R2	126	0.8	126	0.8	*0.774	38.1	LOS C	5.2	36.6	0.91	0.79	0.97	42.4
Approach		636	1.8	636	1.8	0.774	17.6	LOS B	5.2	36.6	0.42	0.70	0.44	54.1
North: Lanyon Drive (North)														
4	L2	232	1.4	232	1.4	0.152	11.2	LOS A	1.6	11.0	0.32	0.68	0.32	57.2
5	T1	495	2.8	495	2.8	*0.585	32.5	LOS C	10.8	77.5	0.92	0.77	0.92	47.2
Approach		726	2.3	726	2.3	0.585	25.7	LOS B	10.8	77.5	0.73	0.74	0.73	48.8
All Vehicles		3204	1.9	3204	1.9	0.774	22.7	LOS B	24.6	173.8	0.68	0.72	0.69	48.3

MOVEMENT SUMMARY

Site: Site 2 [2023_Future_Build_PM Peak_Tompsitt Drive & Henry Pl (Site Folder: General)]

Network: N101 [2023_Future_Build_PM Peak_ Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitt Drive & Henry Pl
Site Category: AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 90 seconds (Network Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Environa Drive														
1	L2	89	0.0	89	0.0	0.057	6.7	LOS A	0.5	3.8	0.22	0.59	0.22	36.0
2	T1	21	0.0	21	0.0	0.029	31.7	LOS C	0.4	2.6	0.84	0.56	0.84	19.5
3	R2	271	0.0	271	0.0	*0.927	63.5	LOS E	14.9	104.3	1.00	1.09	1.54	8.2
Approach		381	0.0	381	0.0	0.927	48.4	LOS D	14.9	104.3	0.81	0.95	1.19	10.6
East: Tompsitt Drive (East)														
4	L2	59	0.0	59	0.0	0.061	16.4	LOS B	1.2	8.3	0.56	0.64	0.56	35.8
5	T1	464	1.8	464	1.8	0.408	28.0	LOS B	8.2	58.3	0.85	0.71	0.85	27.3
6	R2	104	2.0	104	2.0	0.845	60.5	LOS E	5.2	37.2	1.00	0.91	1.45	18.8
Approach		627	1.7	627	1.7	0.845	32.3	LOS C	8.2	58.3	0.85	0.74	0.92	25.7
North: Henry Pl														
7	L2	207	0.0	207	0.0	*0.548	28.3	LOS B	4.7	32.6	0.94	0.78	0.94	14.7
8	T1	1	0.0	1	0.0	0.003	31.5	LOS C	0.0	0.3	0.83	0.50	0.83	21.5
9	R2	75	4.2	75	4.2	0.266	42.8	LOS D	3.0	21.6	0.92	0.75	0.92	10.0
Approach		283	1.1	283	1.1	0.548	32.1	LOS C	4.7	32.6	0.93	0.77	0.93	13.1
West: Tompsitt Drive (West)														
10	L2	164	1.3	164	1.3	0.104	8.1	LOS A	0.9	6.1	0.20	0.65	0.20	56.6
11	T1	1200	1.2	1200	1.2	*0.948	62.4	LOS E	32.1	227.1	1.00	1.04	1.27	22.4
12	R2	153	0.0	153	0.0	0.407	52.5	LOS D	3.5	24.4	1.00	0.77	1.00	25.8
Approach		1517	1.1	1517	1.1	0.948	55.6	LOS D	32.1	227.1	0.91	0.97	1.13	24.7
All Vehicles		2808	1.1	2808	1.1	0.948	47.0	LOS D	32.1	227.1	0.89	0.90	1.07	22.5

MOVEMENT SUMMARY

Site: Site 3 [2023_Future_Build_PM Peak_Tompsitte Drive and Limestone Drive (Site Folder: General)]

Network: N101 [2023_Future_Build_PM Peak_ Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitte Drive and Limestone Drive
Site Category: PM Peak
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jerrabomberra Parkway,														
1	L2	452	0.5	452	0.5	0.271	0.5	LOS A	0.0	0.0	0.00	0.05	0.00	49.4
2	T1	49	0.0	49	0.0	0.271	0.4	LOS A	0.0	0.0	0.00	0.05	0.00	51.9
3	R2	39	2.7	39	2.7	0.271	1.2	LOS A	0.0	0.0	0.00	0.05	0.00	78.1
Approach		540	0.6	540	0.6	0.271	0.5	LOS A	0.0	0.0	0.00	0.05	0.00	52.0
East: Edwin Land Parkway														
4	L2	33	3.2	33	3.2	0.577	7.3	LOS A	4.2	29.5	0.82	0.93	1.04	49.2
5	T1	193	2.2	193	2.2	0.577	7.2	LOS A	4.2	29.5	0.82	0.93	1.04	43.4
6	R2	139	0.8	139	0.8	0.577	8.1	LOS A	4.2	29.5	0.82	0.93	1.04	68.3
Approach		364	1.7	364	1.7	0.577	7.5	LOS A	4.2	29.5	0.82	0.93	1.04	53.4
North: Limestone Drive														
7	L2	74	1.4	74	1.4	0.620	9.0	LOS A	4.7	33.6	0.88	1.01	1.17	48.1
8	T1	161	0.0	161	0.0	0.620	8.8	LOS A	4.7	33.6	0.88	1.01	1.17	46.5
9	R2	122	2.6	122	2.6	0.620	9.9	LOS A	4.7	33.6	0.88	1.01	1.17	41.1
Approach		357	1.2	357	1.2	0.620	9.2	LOS A	4.7	33.6	0.88	1.01	1.17	45.6
West: Tompsitte Drive														
10	L2	320	1.0	320	1.0	0.780	4.1	LOS A	9.7	68.7	0.57	0.49	0.64	51.7
11	T1	566	1.3	566	1.3	0.780	4.0	LOS A	9.7	68.7	0.57	0.49	0.64	49.2
12	R2	776	0.5	776	0.5	0.723	4.4	LOS A	7.5	52.9	0.53	0.49	0.58	69.0
Approach		1662	0.9	1662	0.9	0.780	4.2	LOS A	9.7	68.7	0.55	0.49	0.61	59.1
All Vehicles		2923	1.0	2923	1.0	0.780	4.6	LOS A	9.7	68.7	0.52	0.53	0.62	55.4

MOVEMENT SUMMARY

Site: Site 1 [2033_Future_No Build_AM Peak_Lanyon Drive & Tompsitt Drive (Site Folder: General)]

Network: N101 [2033_Future_No Build_Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Lanyon Drive & Tompsitt Drive
Site Category: AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lanyon Drive (South)														
11	T1	697	7.9	697	7.9	0.579	13.4	LOS A	22.8	170.9	0.62	0.57	0.62	61.7
12	R2	498	6.8	498	6.8	0.542	29.1	LOS C	6.6	48.9	0.91	0.81	0.91	36.1
Approach		1195	7.4	1195	7.4	0.579	19.9	LOS B	22.8	170.9	0.74	0.67	0.74	51.7
East: Tompsitt Drive														
1	L2	2697	1.4	2273	1.2	*0.732	18.7	LOS B	25.9	183.3	0.36	0.73	0.36	57.1
3	R2	288	6.2	241	5.1	0.540	62.7	LOS E	14.1	102.9	1.00	0.84	1.00	32.7
Approach		2985	1.9	2514[N1]	1.5	0.732	22.9	LOS B	25.9	183.3	0.42	0.74	0.42	53.2
North: Lanyon Drive (North)														
4	L2	148	7.1	148	7.1	0.094	9.5	LOS A	0.9	7.0	0.23	0.65	0.23	58.2
5	T1	686	6.4	686	6.4	*0.746	49.3	LOS D	21.0	155.1	0.95	0.83	0.97	41.8
Approach		835	6.6	835	6.6	0.746	42.3	LOS C	21.0	155.1	0.82	0.80	0.84	43.0
All Vehicles		5015	4.0	4543[N1]	4.4	0.746	25.7	LOS B	25.9	183.3	0.58	0.73	0.58	50.7

MOVEMENT SUMMARY

Site: Site 2 [2033_Future_No Build_AM Peak_Tompsitt Drive & Henry Pl (Site Folder: General)]

Network: N101 [2033_Future_No Build_Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitt Drive & Henry Pl
Site Category: AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Environa Drive														
1	L2	884	0.0	884	0.0	*0.532	7.0	LOS A	9.4	65.2	0.30	0.63	0.30	35.1
2	T1	11	0.0	11	0.0	0.018	38.4	LOS C	0.3	2.4	0.80	0.54	0.80	18.9
3	R2	182	0.0	182	0.0	*0.970	93.1	LOS F	13.9	97.0	1.00	1.12	1.65	5.8
Approach		1077	0.0	1077	0.0	0.970	21.9	LOS B	13.9	97.0	0.42	0.72	0.53	19.1
East: Tompsitt Drive (East)														
4	L2	720	0.0	530	0.0	0.333	6.6	LOS A	4.0	28.1	0.21	0.62	0.21	47.0
5	T1	1964	2.8	1441	2.6	*0.943	58.6	LOS E	55.9	400.0	0.97	1.08	1.25	16.0
6	R2	279	0.8	205	0.7	0.454	49.2	LOS D	10.3	72.3	0.90	0.81	0.90	21.8
Approach		2963	2.0	2176[N1]	1.8	0.943	45.0	LOS D	55.9	400.0	0.78	0.94	0.97	20.8
North: Henry Pl														
7	L2	77	4.1	77	4.1	0.168	29.1	LOS C	2.2	16.3	0.83	0.70	0.83	12.8
8	T1	11	0.0	11	0.0	0.024	38.5	LOS C	0.5	3.3	0.80	0.56	0.80	18.8
9	R2	142	0.0	142	0.0	0.765	67.3	LOS E	8.8	61.3	1.00	0.88	1.17	6.7
Approach		229	1.4	229	1.4	0.765	53.2	LOS D	8.8	61.3	0.93	0.81	1.04	8.5
West: Tompsitt Drive (West)														
10	L2	101	5.2	101	5.2	0.070	7.9	LOS A	0.4	2.8	0.10	0.62	0.10	56.0
11	T1	408	9.5	408	9.5	0.466	56.9	LOS E	11.8	89.2	1.00	0.83	1.00	23.4
12	R2	146	0.0	146	0.0	*0.780	74.5	LOS F	4.7	32.7	1.00	0.81	1.15	20.9
Approach		656	6.7	656	6.7	0.780	53.3	LOS D	11.8	89.2	0.86	0.79	0.89	25.1
All Vehicles		4925	2.1	4138[N1]	2.5	0.970	40.8	LOS C	55.9	400.0	0.71	0.85	0.84	20.8

MOVEMENT SUMMARY

Site: Site 3 [2033_Future_No Build_AM Peak_Tompsitte Drive and Limestone Drive (Site Folder: General)]

Network: N101 [2033_Future_No Build_Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitte Drive and Limestone Drive
Site Category: AM Peak
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jerrabomberra Parkway,														
1	L2	1397	1.2	1397	1.2	1.139	78.8	LOS F	0.0	0.0	0.00	0.00	0.00	17.8
2	T1	105	4.0	105	4.0	1.139	78.8	LOS F	0.0	0.0	0.00	0.00	0.00	17.8
3	R2	118	1.8	118	1.8	1.139	78.8	LOS F	0.0	0.0	0.00	0.00	0.00	17.8
Approach		1620	1.4	1620	1.4	1.139	78.8	LOS F	0.0	0.0	0.00	0.00	0.00	17.8
East: Edwin Land Parkway														
4	L2	111	0.0	111	0.0	2.093	988.5	LOS F	421.9	3025.3	1.00	14.24	33.53	3.6
5	T1	1087	2.6	1087	2.6	2.093	988.5	LOS F	421.9	3025.3	1.00	14.24	33.53	2.0
6	R2	54	13.7	54	13.7	2.093	989.6	LOS F	421.9	3025.3	1.00	14.24	33.53	3.4
Approach		1252	2.9	1252	2.9	2.093	988.5	LOS F	421.9	3025.3	1.00	14.24	33.53	2.2
North: Limestone Drive														
7	L2	55	3.8	55	3.8	0.839	8.0	LOS A	7.9	55.8	0.76	0.99	1.19	48.7
8	T1	100	2.1	100	2.1	0.839	7.8	LOS A	7.9	55.8	0.76	0.99	1.19	47.2
9	R2	501	1.1	501	1.1	0.839	8.7	LOS A	7.9	55.8	0.76	0.99	1.19	43.1
Approach		656	1.4	656	1.4	0.839	8.5	LOS A	7.9	55.8	0.76	0.99	1.19	44.6
West: Tompsitte Drive														
10	L2	129	4.1	129	4.1	0.312	1.8	LOS A	1.5	11.5	0.32	0.26	0.32	53.0
11	T1	148	22.7	148	22.7	0.312	2.0	LOS A	1.5	11.5	0.32	0.26	0.32	50.4
12	R2	376	1.4	376	1.4	0.312	2.6	LOS A	1.5	10.7	0.32	0.29	0.32	71.7
Approach		654	6.8	654	6.8	0.312	2.3	LOS A	1.5	11.5	0.32	0.28	0.32	63.0
All Vehicles		4181	2.7	4181	2.7	2.093	328.1	LOS F	421.9	3025.3	0.47	4.46	10.27	7.0

MOVEMENT SUMMARY

Site: Site 1 [2033_Future_No Build_PM Peak_Lanyon Drive & Tompsitt Drive (Site Folder: General)]

Network: N101 [2033_Future_No Build_PM Peak_ Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Lanyon Drive & Tompsitt Drive
Site Category: PM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lanyon Drive (South)														
11	T1	622	3.2	622	3.2	0.392	3.4	LOS A	9.8	70.5	0.30	0.27	0.30	74.0
12	R2	1863	0.7	1863	0.7	*0.989	80.4	LOS F	73.9	520.7	1.00	1.15	1.40	18.3
Approach		2485	1.4	2485	1.4	0.989	61.1	LOS E	73.9	520.7	0.83	0.93	1.13	26.0
East: Tompsitt Drive														
1	L2	700	1.7	700	1.7	0.137	8.6	LOS A	1.2	8.6	0.09	0.65	0.09	62.7
3	R2	132	0.8	132	0.8	*0.955	85.9	LOS F	9.0	63.7	1.00	0.94	1.42	27.3
Approach		832	1.5	832	1.5	0.955	20.8	LOS B	9.0	63.7	0.24	0.69	0.30	51.9
North: Lanyon Drive (North)														
4	L2	312	1.0	312	1.0	0.189	12.9	LOS A	2.2	15.6	0.25	0.66	0.25	58.0
5	T1	542	2.7	542	2.7	*0.990	77.9	LOS F	24.5	175.3	1.00	1.04	1.41	29.9
Approach		854	2.1	854	2.1	0.990	54.2	LOS D	24.5	175.3	0.73	0.90	0.99	33.7
All Vehicles		4171	1.5	4171	1.5	0.990	51.7	LOS D	73.9	520.7	0.69	0.88	0.93	31.9

MOVEMENT SUMMARY

Site: Site 2 [2033_Future_No Build_PM Peak_Tompsitt Drive & Henry Pl (Site Folder: General)]

Network: N101 [2033_Future_No Build_PM Peak_ Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitt Drive & Henry Pl
Site Category: AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Environa Drive														
1	L2	199	0.0	199	0.0	0.121	6.5	LOS A	1.3	8.9	0.18	0.58	0.18	36.5
2	T1	21	0.0	21	0.0	0.032	44.4	LOS D	0.5	3.6	0.86	0.58	0.86	15.8
3	R2	525	0.0	525	0.0	*1.090	160.4	LOS F	57.6	403.3	1.00	1.36	2.00	3.4
Approach		745	0.0	745	0.0	1.090	116.0	LOS F	57.6	403.3	0.78	1.13	1.48	4.8
East: Tompsitt Drive (East)														
4	L2	275	0.0	275	0.0	0.286	21.7	LOS B	8.3	57.9	0.59	0.76	0.59	32.9
5	T1	509	1.9	509	1.9	0.818	58.3	LOS E	15.5	110.3	1.00	0.92	1.17	16.0
6	R2	122	0.9	122	0.9	0.873	77.1	LOS F	8.1	56.9	1.00	0.93	1.41	15.7
Approach		906	1.2	906	1.2	0.873	49.7	LOS D	15.5	110.3	0.87	0.87	1.03	19.7
North: Henry Pl														
7	L2	319	0.0	319	0.0	*0.893	48.6	LOS D	12.1	84.6	0.99	0.96	1.29	9.3
8	T1	11	0.0	11	0.0	0.032	44.9	LOS D	0.5	3.6	0.86	0.60	0.86	16.9
9	R2	117	2.7	117	2.7	0.248	43.6	LOS D	5.4	38.8	0.83	0.76	0.83	9.8
Approach		446	0.7	446	0.7	0.893	47.2	LOS D	12.1	84.6	0.95	0.90	1.16	9.6
West: Tompsitt Drive (West)														
10	L2	202	1.0	200	1.0	0.124	8.0	LOS A	1.1	7.8	0.15	0.64	0.15	57.0
11	T1	1316	1.2	1302	1.2	*1.106	163.3	LOS F	72.1	509.9	1.00	1.52	1.97	10.0
12	R2	669	0.0	663	0.0	0.815	58.3	LOS E	20.0	139.7	1.00	0.90	1.10	24.3
Approach		2187	0.8	2165[N1]	0.8	1.106	116.8	LOS F	72.1	509.9	0.92	1.25	1.54	14.1
All Vehicles		4285	0.7	4263[N1]	0.7	1.106	95.1	LOS F	72.1	509.9	0.89	1.11	1.38	12.8

MOVEMENT SUMMARY

Site: Site 3 [2033_Future_No Build_PM Peak_Tompsitte Drive and Limestone Drive (Site Folder: General)]

Network: N101 [2033_Future_No Build_PM Peak_ Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitte Drive and Limestone Drive
Site Category: PM Peak
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jerrabomberra Parkway,														
1	L2	486	0.4	486	0.4	0.293	0.5	LOS A	0.0	0.0	0.00	0.05	0.00	49.4
2	T1	55	0.0	55	0.0	0.293	0.4	LOS A	0.0	0.0	0.00	0.05	0.00	51.9
3	R2	43	2.4	43	2.4	0.293	1.2	LOS A	0.0	0.0	0.00	0.05	0.00	78.1
Approach		584	0.5	584	0.5	0.293	0.5	LOS A	0.0	0.0	0.00	0.05	0.00	52.1
East: Edwin Land Parkway														
4	L2	36	2.9	36	2.9	0.785	13.8	LOS A	7.5	53.3	0.94	1.18	1.53	45.8
5	T1	241	1.7	241	1.7	0.785	13.6	LOS A	7.5	53.3	0.94	1.18	1.53	38.9
6	R2	153	0.7	153	0.7	0.785	14.5	LOS B	7.5	53.3	0.94	1.18	1.53	61.7
Approach		429	1.5	429	1.5	0.785	14.0	LOS A	7.5	53.3	0.94	1.18	1.53	47.6
North: Limestone Drive														
7	L2	81	1.3	81	1.3	0.950	34.2	LOS C	12.6	89.1	0.99	1.61	2.65	36.9
8	T1	177	0.0	177	0.0	0.950	34.0	LOS C	12.6	89.1	0.99	1.61	2.65	35.9
9	R2	151	2.1	151	2.1	0.950	35.1	LOS C	12.6	89.1	0.99	1.61	2.65	27.9
Approach		408	1.0	408	1.0	0.950	34.4	LOS C	12.6	89.1	0.99	1.61	2.65	33.8
West: Tompsitte Drive														
10	L2	431	0.7	393	0.7	0.981	19.2	LOS B	33.8	238.5	0.94	1.20	1.70	40.6
11	T1	771	1.0	704	0.9	0.981	19.1	LOS B	33.8	238.5	0.94	1.20	1.70	39.8
12	R2	941	0.4	860	0.4	0.843	7.4	LOS A	12.7	89.6	0.67	0.68	0.84	66.7
Approach		2142	0.7	1957[N1]	0.7	0.981	14.0	LOS A	33.8	238.5	0.82	0.97	1.33	50.9
All Vehicles		3564	0.8	3379[N1]	0.8	0.981	14.1	LOS A	33.8	238.5	0.72	0.92	1.28	47.7

MOVEMENT SUMMARY

Site: Site 1 [2033_Future_Build_AM Peak_Lanyon Drive & Tompsitt Drive (Site Folder: General)]

Network: N101 [2033_Future_Build_Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Lanyon Drive & Tompsitt Drive
Site Category: AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lanyon Drive (South)														
11	T1	697	7.9	697	7.9	0.584	12.7	LOS A	21.3	159.7	0.63	0.57	0.63	62.4
12	R2	514	6.6	514	6.6	0.588	28.2	LOS B	6.4	47.6	0.93	0.82	0.93	36.7
Approach		1211	7.3	1211	7.3	0.588	19.3	LOS B	21.3	159.7	0.76	0.68	0.76	52.2
East: Tompsitt Drive														
1	L2	2797	1.4	2280	1.1	*0.740	18.2	LOS B	23.8	167.9	0.36	0.73	0.36	57.8
3	R2	299	6.0	241	4.7	0.570	59.3	LOS E	13.0	94.6	1.00	0.84	1.00	33.7
Approach		3096	1.8	2521[N1]	1.4	0.740	22.2	LOS B	23.8	167.9	0.42	0.74	0.42	54.0
North: Lanyon Drive (North)														
4	L2	182	5.8	182	5.8	0.116	9.7	LOS A	1.2	8.7	0.25	0.66	0.25	57.9
5	T1	686	6.4	686	6.4	*0.752	47.0	LOS D	19.6	144.4	0.95	0.83	0.98	43.1
Approach		868	6.3	868	6.3	0.752	39.2	LOS C	19.6	144.4	0.81	0.80	0.83	44.5
All Vehicles		5175	3.8	4600[N1]	4.3	0.752	24.6	LOS B	23.8	167.9	0.58	0.73	0.59	51.6

MOVEMENT SUMMARY

Site: Site 2 [2033_Future_Build_AM Peak_Tompsitt Drive & Henry Pl (Site Folder: General)]

Network: N101 [2033_Future_Build_Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitt Drive & Henry Pl
Site Category: AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Environa Drive														
1	L2	995	0.0	995	0.0	*0.606	7.4	LOS A	11.8	82.2	0.36	0.66	0.36	34.4
2	T1	11	0.0	11	0.0	0.018	35.1	LOS C	0.3	2.2	0.80	0.53	0.80	20.0
3	R2	232	0.0	232	0.0	*1.044	125.7	LOS F	20.4	143.0	1.00	1.30	1.99	4.4
Approach		1237	0.0	1237	0.0	1.044	29.8	LOS C	20.4	143.0	0.48	0.78	0.67	15.2
East: Tompsitt Drive (East)														
4	L2	831	0.0	613	0.0	0.393	6.9	LOS A	5.4	38.0	0.26	0.63	0.26	46.6
5	T1	1964	2.8	1443	2.5	*1.038	110.0	LOS F	68.4	489.6	1.00	1.40	1.75	9.3
6	R2	279	0.8	205	0.7	0.504	48.5	LOS D	9.8	69.0	0.93	0.81	0.93	22.0
Approach		3074	1.9	2261[N1]	1.7	1.038	76.5	LOS F	68.4	489.6	0.79	1.14	1.27	13.9
North: Henry Pl														
7	L2	77	4.1	77	4.1	0.164	26.0	LOS B	1.9	14.0	0.83	0.70	0.83	14.0
8	T1	11	0.0	11	0.0	0.024	35.1	LOS C	0.4	3.0	0.80	0.56	0.80	20.0
9	R2	142	0.0	142	0.0	0.647	58.0	LOS E	7.6	53.5	1.00	0.82	1.05	7.7
Approach		229	1.4	229	1.4	0.647	46.2	LOS D	7.6	53.5	0.93	0.77	0.96	9.5
West: Tompsitt Drive (West)														
10	L2	101	5.2	101	5.2	0.070	7.9	LOS A	0.3	2.4	0.10	0.61	0.10	56.1
11	T1	408	9.5	408	9.5	0.498	34.6	LOS C	8.4	63.7	0.78	0.73	0.78	32.5
12	R2	197	0.0	197	0.0	*0.962	79.3	LOS F	6.3	44.2	1.00	0.96	1.51	20.0
Approach		706	6.3	706	6.3	0.962	43.2	LOS D	8.4	63.7	0.74	0.78	0.89	28.6
All Vehicles		5246	2.0	4433[N1]	2.4	1.044	56.6	LOS E	68.4	489.6	0.71	0.96	1.03	16.2

MOVEMENT SUMMARY

Site: Site 3 [2033_Future_Build_AM Peak_Tompsitte Drive and Limestone Drive (Site Folder: General)]

Network: N101 [2033_Future_Build_Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitte Drive and Limestone Drive
Site Category: AM Peak
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jerrabomberra Parkway,														
1	L2	1479	1.1	1479	1.1	0.860	1.7	LOS A	2.1	15.2	0.00	0.00	0.00	48.1
2	T1	105	4.0	105	4.0	0.860	1.7	LOS A	2.1	15.2	0.00	0.00	0.00	48.1
3	R2	118	1.8	118	1.8	0.860	1.7	LOS A	2.1	15.2	0.00	0.00	0.00	48.1
Approach		1702	1.4	1702	1.4	0.860	1.7	LOS A	2.1	15.2	0.00	0.00	0.00	48.1
East: Edwin Land Parkway														
4	L2	111	0.0	111	0.0	2.984	1789.1	LOS F	539.5	3867.6	1.00	18.38	43.62	2.1
5	T1	1105	2.6	1105	2.6	2.984	1789.1	LOS F	539.5	3867.6	1.00	18.38	43.62	1.1
6	R2	54	13.7	54	13.7	2.984	1790.2	LOS F	539.5	3867.6	1.00	18.38	43.62	1.9
Approach		1269	2.8	1269	2.8	2.984	1789.1	LOS F	539.5	3867.6	1.00	18.38	43.62	1.2
North: Limestone Drive														
7	L2	55	3.8	55	3.8	1.215	203.6	LOS F	83.2	589.2	1.00	6.24	12.91	15.5
8	T1	100	2.1	100	2.1	1.215	203.5	LOS F	83.2	589.2	1.00	6.24	12.91	15.4
9	R2	511	1.0	511	1.0	1.215	204.4	LOS F	83.2	589.2	1.00	6.24	12.91	10.4
Approach		665	1.4	665	1.4	1.215	204.2	LOS F	83.2	589.2	1.00	6.24	12.91	11.7
West: Tompsitte Drive														
10	L2	134	3.9	132	4.0	0.333	2.0	LOS A	1.6	12.4	0.36	0.29	0.36	52.7
11	T1	156	21.6	154	21.9	0.333	2.2	LOS A	1.6	12.4	0.36	0.29	0.36	50.2
12	R2	413	1.3	407	1.3	0.333	2.7	LOS A	1.6	11.6	0.35	0.31	0.35	71.5
Approach		702	6.3	692[N1]	6.4	0.333	2.5	LOS A	1.6	12.4	0.36	0.30	0.36	62.9
All Vehicles		4339	2.6	4329[N1]	2.6	2.984	557.1	LOS F	539.5	3867.6	0.50	6.40	14.83	4.4

MOVEMENT SUMMARY

Site: Site 1 [2033_Future_Build_PM Peak_Lanyon Drive & Tompsitt Drive (Site Folder: General)]

Network: N101 [2033_Future_Build_PM Peak_ Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Lanyon Drive & Tompsitt Drive
Site Category: PM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lanyon Drive (South)														
11	T1	622	3.2	622	3.2	0.400	4.0	LOS A	10.7	76.7	0.33	0.30	0.33	73.1
12	R2	1863	0.7	1863	0.7	*1.117	159.5	LOS F	93.7	660.4	1.00	1.30	2.06	9.3
Approach		2485	1.4	2485	1.4	1.117	120.6	LOS F	93.7	660.4	0.83	1.05	1.62	14.2
East: Tompsitt Drive														
1	L2	716	1.6	716	1.6	0.150	12.9	LOS A	4.8	34.0	0.35	0.70	0.35	58.3
3	R2	165	0.6	165	0.6	*1.078	151.2	LOS F	16.1	113.3	1.00	1.14	1.91	18.0
Approach		881	1.4	881	1.4	1.078	38.9	LOS C	16.1	113.3	0.47	0.78	0.64	40.9
North: Lanyon Drive (North)														
4	L2	332	1.3	332	1.3	0.202	12.2	LOS A	2.3	16.6	0.25	0.67	0.25	57.9
5	T1	542	2.7	542	2.7	*0.752	49.0	LOS D	17.2	123.3	0.98	0.85	1.02	39.0
Approach		874	2.2	874	2.2	0.752	35.0	LOS C	17.2	123.3	0.70	0.78	0.73	42.3
All Vehicles		4240	1.5	4240	1.5	1.117	86.0	LOS F	93.7	660.4	0.73	0.94	1.23	21.1

MOVEMENT SUMMARY

Site: Site 2 [2033_Future_Build_PM Peak_Tompsitt Drive & Henry Pl (Site Folder: General)]

Network: N101 [2033_Future_Build_PM Peak_ Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitt Drive & Henry Pl
Site Category: AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Environa Drive														
1	L2	249	0.0	249	0.0	0.151	6.5	LOS A	1.6	11.5	0.18	0.59	0.18	36.5
2	T1	21	0.0	21	0.0	0.031	43.4	LOS D	0.5	3.6	0.85	0.58	0.85	16.0
3	R2	636	0.0	636	0.0	*1.136	195.5	LOS F	78.5	549.2	1.00	1.48	2.20	2.8
Approach		906	0.0	906	0.0	1.136	140.0	LOS F	78.5	549.2	0.77	1.21	1.62	4.0
East: Tompsitt Drive (East)														
4	L2	385	0.0	385	0.0	0.375	21.4	LOS B	10.7	74.6	0.59	0.80	0.59	33.2
5	T1	509	1.9	509	1.9	0.914	70.1	LOS E	17.3	123.2	1.00	1.01	1.39	13.8
6	R2	122	0.9	122	0.9	*1.122	189.5	LOS F	13.9	98.2	1.00	1.22	2.37	7.1
Approach		1017	1.0	1017	1.0	1.122	66.0	LOS E	17.3	123.2	0.84	0.96	1.20	16.0
North: Henry Pl														
7	L2	319	0.0	319	0.0	*0.925	54.9	LOS D	14.4	101.1	0.99	1.00	1.37	8.1
8	T1	11	0.0	11	0.0	0.031	43.9	LOS D	0.5	3.6	0.86	0.59	0.86	17.1
9	R2	117	2.7	117	2.7	0.214	39.3	LOS C	5.1	36.5	0.79	0.75	0.79	10.7
Approach		446	0.7	446	0.7	0.925	50.5	LOS D	14.4	101.1	0.94	0.93	1.21	8.9
West: Tompsitt Drive (West)														
10	L2	202	1.0	184	1.0	0.112	8.1	LOS A	1.2	8.4	0.18	0.64	0.18	56.7
11	T1	1316	1.2	1194	1.2	*1.140	187.2	LOS F	71.5	505.9	1.00	1.59	2.16	8.8
12	R2	687	0.0	623	0.0	0.906	72.2	LOS F	21.2	148.7	1.00	1.01	1.33	21.3
Approach		2205	0.8	2001[N1]	0.8	1.140	134.9	LOS F	71.5	505.9	0.92	1.32	1.72	12.5
All Vehicles		4575	0.7	4370[N1]	0.7	1.140	111.3	LOS F	78.5	549.2	0.87	1.17	1.52	10.9

MOVEMENT SUMMARY

Site: Site 3 [2033_Future_Build_PM Peak_Tompsitte Drive and Limestone Drive (Site Folder: General)]

Network: N101 [2033_Future_Build_PM Peak_ Between Lanyon Drive & Limestone Drive (Network Folder: General)]

Tompsitte Drive and Limestone Drive
Site Category: PM Peak
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jerrabomberra Parkway,														
1	L2	569	0.4	569	0.4	0.335	0.5	LOS A	0.0	0.0	0.00	0.05	0.00	49.4
2	T1	55	0.0	55	0.0	0.335	0.4	LOS A	0.0	0.0	0.00	0.05	0.00	51.9
3	R2	43	2.4	43	2.4	0.335	1.2	LOS A	0.0	0.0	0.00	0.05	0.00	78.1
Approach		667	0.5	667	0.5	0.335	0.5	LOS A	0.0	0.0	0.00	0.05	0.00	51.7
East: Edwin Land Parkway														
4	L2	36	2.9	36	2.9	0.822	16.0	LOS B	8.6	61.3	0.96	1.26	1.69	44.7
5	T1	260	2.0	260	2.0	0.822	15.9	LOS B	8.6	61.3	0.96	1.26	1.69	37.5
6	R2	153	0.7	153	0.7	0.822	16.8	LOS B	8.6	61.3	0.96	1.26	1.69	59.7
Approach		448	1.6	448	1.6	0.822	16.2	LOS B	8.6	61.3	0.96	1.26	1.69	45.7
North: Limestone Drive														
7	L2	81	1.3	81	1.3	0.915	27.7	LOS B	11.3	80.2	1.00	1.49	2.31	39.2
8	T1	177	0.0	177	0.0	0.915	27.6	LOS B	11.3	80.2	1.00	1.49	2.31	38.2
9	R2	160	2.6	160	2.6	0.915	28.6	LOS C	11.3	80.2	1.00	1.49	2.31	30.5
Approach		418	1.3	418	1.3	0.915	28.0	LOS B	11.3	80.2	1.00	1.49	2.31	36.1
West: Tompsitte Drive														
10	L2	440	0.7	372	0.7	0.932	10.5	LOS A	22.1	155.8	0.82	0.87	1.18	46.4
11	T1	789	0.9	667	0.9	0.932	10.4	LOS A	22.1	155.8	0.82	0.87	1.18	44.8
12	R2	1025	0.5	867	0.5	0.838	7.2	LOS A	12.5	87.9	0.66	0.66	0.83	66.9
Approach		2255	0.7	1906[N1]	0.7	0.932	9.0	LOS A	22.1	155.8	0.75	0.77	1.02	55.1
All Vehicles		3788	0.8	3440[N1]	0.9	0.932	10.6	LOS A	22.1	155.8	0.66	0.78	1.07	50.1

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