TRAFFIC AND PARKING IMPACT ASSESSMENT
OF THE PROPOSED MIXED USE DEVELOPMENT
AT 118 CARY STREET, TORONTO

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1 INTRODUCTION

M^CLaren Traffic Engineering (MTE) was commissioned by *Toronto Developments No. 1 Pty Ltd* to provide a traffic and parking impact assessment of the Mixed Use Development at 118 Cary Street, Toronto.

The proposed development is reduced in size and scale to DA/419/2018, which was refused by the Hunter and Central Coast Regional Planning Panel despite being recommended for deferred commencement approval by Lake Macquarie City Council. **Table 1** provides a comparison between the subject proposal and that proposed under DA/419/2018.

TABLE 1: COMPARISON OF DA/419/2018 AND SUBJECT PROPOSAL

Category	DA/419/2018	Subject Proposal
Residential Units	124	108
Retail / Commercial GFA	2872	929
Car Parking Spaces	268	208
Maximum Truck Size	12.5m (HRV)	8.8m (MRV)

1.1 Description and Scale of Development

The proposed mixed-use development, as depicted in **Annexure A** for reference, includes 108 residential units over five storeys (including at the ground level) divided between four (**4**) blocks above mixed commercial and retail space with a basement carpark. The development consists of the following scale relevant to this traffic and parking impact assessment:

- 18 One-bedroom units;
- 66 Two-bedroom units;
- 24 Three-bedroom units;
- 929 m^2 Mixed Commercial/Retail/Office gross floor area (GFA);
- 208 car parking spaces in two basement levels including:
    - 140 Residential car parking spaces;
    - 28 Visitor car parking spaces;
    - 38 Retail car parking spaces;
    - 4 car parking spaces for servicing and deliveries.

All passenger vehicle access is proposed to the site via Arnott Avenue, with service vehicles proposed to enter from Arnott Avenue and exit onto Cary Street as approved by Transport for New South Wales (TfNSW).

1.2 State Environmental Planning Policy (Infrastructure) 2007

The proposed development qualifies as a development with relevant size and/or capacity under Clause 104 of the SEPP (Infrastructure) 2007. The subject site is located within 90m of connection to Cary St which is a classified road and proposes more than 50 car spaces. As a result, the subject development exceeds the threshold and therefore qualifies as a development with relevant size. Accordingly, formal referral to Transport for NSW is necessary and Lake Macquarie City Council officers can determine this proposal accordingly.

1.3 Site Description

The subject site is currently vacant, with frontages to Cary Street to the West and Arnott Avenue to the East. All vehicular access to the car park is via a proposed two-way driveway on Arnott Avenue.

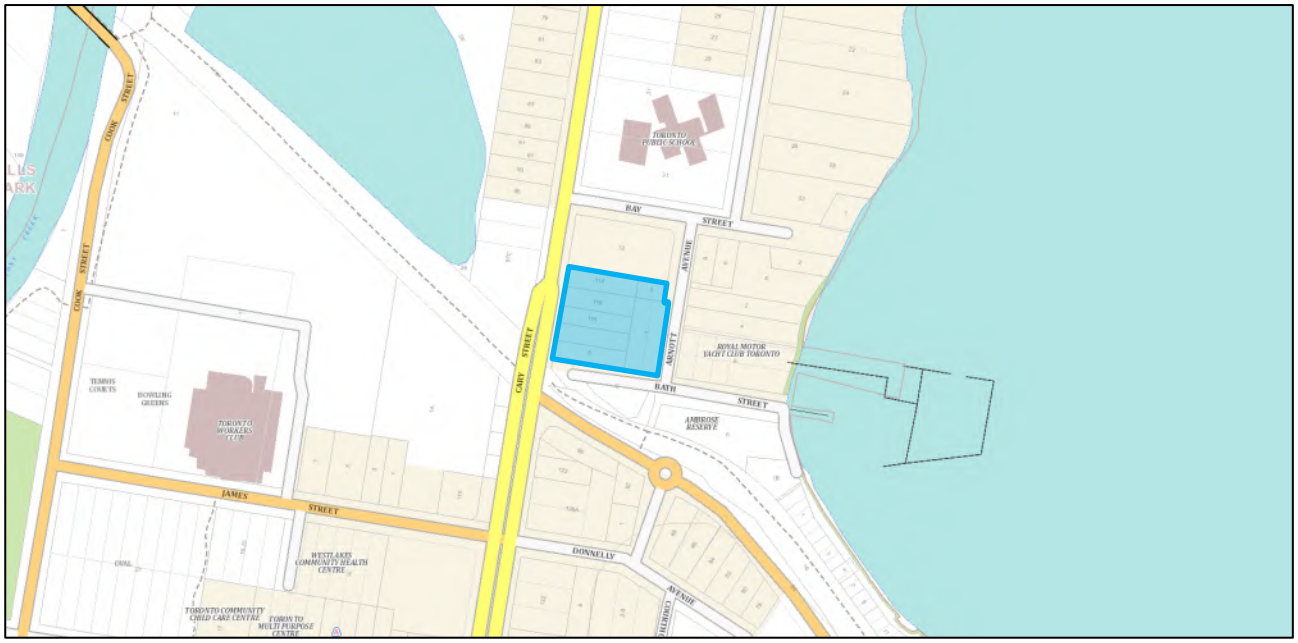
The site is generally surrounded by low-density residential dwellings to the north and medium-sized commercial developments to the south, with a McDonalds Restaurant located to the immediate north of the site.

1.4 Site Context

The site location is shown on aerial imagery and a map in **Figure 1** & **Figure 2** respectively.

Site Location

FIGURE 1: SITE CONTEXT – AERIAL PHOTO



Site Location

FIGURE 2: SITE CONTEXT – STREET MAP

2 EXISTING TRAFFIC AND PARKING CONDITIONS

2.1 Road Hierarchy

The relevant characteristics of the road network surrounding the site are provided surrounding the site are provided in the following sub-sections.

2.1.1 Cary Street

- TfNSW Classified STATE Road (No. 217);
- Approximately 12.5m in width facilitating two traffic flow lanes in both directions;
- Signposted 60km/h speed limit;
- "No Parking" signage along both sides of the road.

2.1.2 Bay Street

- Unclassified LOCAL road;
- Approximately 10m in width facilitating two-way passing;
- No speed limit signposted - 50km/h applies;
- "No Parking" signage between Cary Street and Arnott Avenue.

2.1.3 Arnott Avenue

- Unclassified LOCAL road;
- Approximately 7m in width facilitating two-way passing;
- Signposted 40 km/hr speed limit;
- "No Parking" signage on both sides of the street.

2.2 Existing Traffic Management

- Signal controlled intersection of Cary Street / Bay Street.

2.3 Existing Traffic and Parking Environment

Traffic counts were completed at the intersections of Arnott Avenue/Bay Street, Cary Street/Bay Street and Cary Street/Victory Parade on Friday 12 February 2021 between 7:00 AM to -9:30 AM and 2:30 PM to 6:00 PM, representing a typical weekday. The detailed results of the traffic counts are provided in **Annexure B**.

2.3.1 Intersection Performances

Existing intersection performances have been assessed using SIDRA INTERSECTION 8. The results of the analysis are summarised in **Table 2** below. It is noted that detailed calibration and validation of the SIDRA model was undertaken, with this process outlined in **Section 4.3**.

TABLE 2: INTERSECTION PERFORMANCES (SIDRA INTERSECTION 8)

Intersection	Peak Hour	Degree of Saturation[1]	Average Delay[2] (sec/vehicle)	Level of Service[3]	Control Type	Worst Movement	95th Percentile Queue
EXISTING PERFORMANCE							
Cary St / Bay St	AM	0.95	16.5	**B**	Signals	RT from Bay Street	11.4 veh (83.8m) Cary Street
	PM	0.89	13.5	**A**		RT from Bay Street	13.2 veh (95.2m) Cary Street
Cary Street / Victory Parade	AM	0.71	13.1	**A**	Signals	LT from Victory Parade (E)	10.5 veh (77m) Cary Street (S)
	PM	0.65	12.2	**A**		RT from Victory Parade (E)	8.1 veh (59.2m) Cary Street (S)
Arnott Avenue / Bay Street	AM	0.07	0.8 (Worst: 6.6)	**N/A** (Worst: A)	Give Way	RT from Arnott Avenue (S)	0 veh (0.3m) Arnott Avenue (S)
	PM	0.07	1.1 (Worst: 6.9)	**N/A** (Worst: A)		RT from Arnott Avenue (S)	0 veh (0.3m) Arnott Avenue (S)

NOTES:

(1) The recorded PM peak hours from the intersection surveys differ by 30 minutes between the two intersections. McLaren Traffic Engineers take the PM peak hour of the Cary Street / Bay Street intersection to represent the system due to its large traffic volume.

(2) The degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.

(3) The average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.

(4) Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.

As shown above, the surrounding intersections are operating satisfactorily at Level of Service (LoS) A and B during the morning and afternoon peak periods. This represents minimal delays and additional capacity.

2.4 Public Transport

The subject site is approximately 100m walking distance from two bus stops which provide access to existing bus Routes 269, and 270 provided by Hunter Valley Buses. Routes 269 and 270 run along Cary Street and provide access through Charlestown and the University of Newcastle respectively.

The nearest train station is in Fassifern approximately 4.9 km from the subject site and can be reached on the 271 or the 273 bus service after transferring at the Toronto Station bus interchange. The location of the site relative to the surrounding public transport infrastructure is depicted in **Figure 3**.

★ **Site Location**

FIGURE 3: PUBLIC TRANSPORT MAP

2.5 Future Road and Infrastructure Upgrades

From the Lake Macquarie City Council's Development Application tracker and website, it appears that there are no future planned road or public transport changes that will affect traffic conditions within the immediate vicinity of the subject site.

3 PARKING ASSESSMENT

3.1 Council Parking Requirement

The subject site is zoned B2 – Local Centre as per Sheet 009B of Council's LEP 2014. Reference is made to the *Lake Macquarie City Council DCP 2014 Revision 10, Part 4 – Development within Business Zones* Table 7 provides the following car parking rate:

Residential Flat Building – Criteria A

1 bedroom – 0.5 space per unit

2 bedroom – 0.75 spaces per unit

3 bedroom – 1.0 space per unit

Visitor parking – 1 per 4 units

Shops or Group of Shops - <5,000m^2 GFA

1 space per 25m^2 GFA

The RTA *Guide to Traffic Generation Developments- 2002 Section 5- Parking Requirements for Specific Land Uses* provides the following car parking rate:

High density residential flat buildings

Metropolitan Sub-Regional Centres:

Visitor Parking– 1 space per 5 units

The resulting parking requirement is summarised in **Table 2**. It should be noted that the specific uses of the commercial areas of the building have not been determined and the parking requirement for shops, which exceeds the requirements for other likely land uses, has been utilised.

As shown, the proposal requires a total of **148** car spaces, whereby the demand split between residential and retail parking is 110 and 38 respectively. The proposal details a total of **206** car parking spaces which complies with the minimum requirements of the Lake Macquarie DCP 2014.

With regards to the residential visitor car parking provision, it is proposed that the 30 car spaces for residential visitors be available to the commercial premises. Such an arrangement ensures that there will be ample car parking available to both visitors to residents and visitors to the commercial premises at all times.

TABLE 3: DCP PARKING REQUIREMENTS

Development Type	Scale	Rate	Minimum Spaces Required	Spaces Provided
1 Bedroom	18 Units	0.5 per unit	9	18
2 Bedroom	66 Units	0.75 per unit	49.5	74
3 Bedroom	24 Units	1 per unit	24	48
Residential Visitor	108 Units	0.25 per unit	27	28(1)
Residential Total	-	-	**110**	**170**
Shops / Office	929 m² GFA	1 per 25m² GFA	37.1	38(1)
Commercial Total	**-**	**-**	**38**	**40**
Service/Delivery Vehicle Spaces	-	-	-	2
Total	**-**	**-**	**148**	**208**

Notes:
(1) The residential visitor car parking spaces will be shared between residential visitors and commercial uses, for a shared total of 66 spaces.

3.2 Car Parking Needs Analysis

3.2.1 Residential Car Parking

The car occupancy rates of residents in the Lake Macquarie City Council Local Government Area has been examined using Census data from 2016. The average car ownership of residents in the Lake Macquarie LGA is summarised in **Table 4**.

TABLE 4: CAR OWNERSHIP IN LAKE MACQUARIE

Number of Bedrooms in Dwelling	Average Number of Vehicles Owned
1	0.91
2	1.24
3	1.75

It is reasonable to expect that residents of the proposed residential units would own private vehicles at similar rates to other persons in the LGA given that the transport context is similar. On this basis, if car parking were not to be provided to accommodate this demand for private cars, there would likely be overspill of car parking from the development onto the street.

The likely car parking demands of the development based on the existing car ownership rates in the LGA are estimated in **Table 5**.

TABLE 5: PARKING REQUIREMENTS BASED ON AVERAGE VEHICLE OWNERSHIP

Number of Bedrooms	Scale	Average LGA Vehicle Ownership Rate	Estimated Demand	Spaces Proposed
1 Bedroom	18 Units	0.91 per unit	17	18
2 Bedroom	66 Units	1.24 per unit	82	74
3 Bedroom	24 Units	1.75 per unit	43	48
Total	-	-	142	140

As outlined in **Table 5**, 142 spaces are required if residents have similar car ownership requirements to existing residents in the Lake Macquarie LGA and a total of 140 spaces are proposed. Noting that the DCP requires only 83 spaces, it is likely that the provision of 140 spaces is more likely to meet the actual demands of the residents of the proposed residential units and that provision of 83 spaces only would likely result in some overflow of parking on to the surrounding streets.

3.2.2 Commercial Car Parking

The proposed retail/commercial space on the ground floor is unlikely to be leased as a single premises and is more likely to be split into several premises of different uses. It has been advised that a possible configuration of the ground floor commercial/retail space would provide for:

- Health consulting rooms with both general and specialist consulting rooms;
- A pharmacy, and;
- A restaurant and café.

A concept floor plan for such a configuration is provided in **Annexure C**, with the associated parking requirements provided in **Table 6**.

TABLE 6: PARKING REQUIREMENTS – CONCEPT COMMERCIAL LAND USES

Land Use	Type	Scale	Rate	Spaces Required
Health Consulting Rooms	Practitioner	14 Practitioners	1 space per practitioner	14
	Full Time Equivalent (FTE) Staff	5 FTE Staff	1 space per two FTE staff	3
	Consulting Room	13(1) Consulting Rooms	2 spaces per consulting room	26
Shops	-	133m^2	1 space per 25m^2 GFA	6
Restaurant or Cafe	-	266m^2	1 space per 25m^2 GFA	11
Total		-	-	60

Notes:
(1) Each specialist assumed to have a single consulting room.

As summarised in **Table 6**, the concept configuration of the commercial space on the ground floor could result in uses requiring a total of 60 car parking spaces based on the requirements of the Lake Macquarie Development Control Plan 2014. The DCP only requires a total of 38 spaces for the proposal with no specific uses nominated and there is the potential that this quantum of car parking spaces would be insufficient to serve the future uses of the site.

To account for this possibility, the proposal includes a total of 38 spaces for commercial use and 28 spaces for residential visitors to be shared, providing a total pool of some 66 car parking spaces for these uses. It is noted that residential visitor car parking spaces are typically in demand on Friday and Saturday evenings, outside of the peak times of commercial uses and that the sharing of car parking for these uses represents an efficient usage of car parking.

The concept plan is provided for the purposes of discussion and to inform future planning decisions regarding the acceptable car parking provisions of the site only. It is not proposed that the application be modified to include these uses or that the use of the site should be restricted to these uses.

3.2.3 Site Accessibility

The site is located on the outskirts of the Toronto Town Centre and is not within walking distance of the shops, such that every day trips are likely to be made using a car rather than on-foot. In addition, the site is within walking distance of bus stops serving only two very similar bus Routes which are unlikely to be sufficient for the every day travel needs of the future occupants of and visitors to the site. On this basis, it is likely that residents will need own vehicles to travel to essential services and that if parking is not provided at an appropriate rate, that these vehicles will be parked on the local streets.

3.2.4 Summary

In view of the above, the proposed car parking provision of 206 spaces is required to meet the likely needs of the future residents of the site and future commercial use of the ground floor and to avoid the possibility that car parking demand will overflow onto the surrounding streets.

3.3 Bicycle Storage Requirements

Lake Macquarie City Council DCP 2014 Revision 10, Part 4 – Development within Business Zones Section 5.3 requires the following with respect to bicycle parking:

> ***For customers and short-term users;***
> *For developments requiring over 50 car parking spaces, a flat 10% ratio of bike parking spaces/car parking spaces applies.*
>
> ***For employees***
> *One employee bike parking space for each 10 employees, or part thereof;*

At the time of writing of this report the number of employees was unknown and for the purposes of bicycle storage provision, the number of staff has been estimated based on a typical retail rate of 1 employee per 50m^2 leasable floor area. This rate when combined with the bicycle parking rate for employees shown above, provides a rate of one (1) bicycle space per 500m^2 leasable floor area. The resulting bicycle storage requirement is summarised in **Table 3**.

TABLE 7: BICYCLE STORAGE PROVISION

Development Land Use	Bicycle Users	Rate	Spaces Required
Commercial	Employees	1 per 500m^2 leasable floor area	1.9 (2)
	Customers	1 per 10 car parking spaces	11
Total			**13**

The development requires a total of **13** bicycle parking spaces for employees and customers. There is sufficient room within the site to accommodate the bicycle storage required by the DCP and the provision of this storage should be required by consent condition.

3.4 Motorcycle Parking Requirements

Lake Macquarie City Council DCP 2014 Revision 10, Part 4 – Development within Business Zones Section 5.4 requires the following with respect to motorcycle parking:

> *One motorbike parking space for each 20 car parking spaces*

Based on the provided 206 car spaces, 11 motorcycle spaces are required. The plans provide a total of **12** spaces, meeting the requirements of the DCP.

3.5 Servicing & Loading

Council's DCP's *Traffic Impact Statement and Vehicle Access Guidelines* require a commercial development such as the subject development to accommodate regular access for a Heavy Rigid Vehicle (HRV). Discussion with TfNSW has resulted in a requirement that the largest vehicle to be provided for on site is a Medium Rigid Vehicle. As such, the site will operate under Loading Dock Management Plan which will limit the maximum size of service vehicles to vehicles of 8.8m length (MRV) or less.

The plans have provided servicing and loading access for service vehicles from Arnott Avenue, with an exit-only, left-only driveway onto Cary Street. An extension to the existing median in Cary Street is proposed to physically enforce left turn movements out of the site. A concept drawing for the extension of this median is provided in **Annexure D** and it considered there are no constraints present that would require the completion of a detailed strategic design prior to approval of the application.

Small deliveries to the site will typically be completed by vehicles similar to the B99 Large Car vehicle (as per AS2890.1) that can utilise the commercial parking provided on Basement 1. Larger deliveries and waste collection to the site that require a Medium Rigid vehicle will use the service lane that runs from Arnott Street to Cary Street. This one-way driveway will only be used by the few medium rigid vehicles that will arrive each week so as to limit the impact on Cary Street.

M^{C}Laren Traffic Engineering conducted swept path testing for service vehicles approaching the site and exiting onto Bay Street via the Bay Street/Arnott Avenue intersection. These swept paths can be found in **Annexure E**.

3.6 Disabled Parking

Lake Macquarie City Council DCP 2014 Revision 10, Part 4 – Development within Business Zones Table 7 requires the following:

> *1 space per 50 spaces. Where the requirement is between 5 and 50 spaces, at least 1 space is to be provided for persons with a disability.*

Lake Macquarie City Council DCP 2014 Revision 10, Part 9 – Residential Flat Building Section 13.13 requires the following:

> 2. *Adaptable dwellings must have a car park linked to the dwelling by an unobstructed path of travel, at a suitable gradient for wheelchair access*
> 3. *Adaptable dwelling must have entries, doors and passageways that are of suitable dimensions to facilitate wheelchair access*
> 4. *Adaptable dwellings must be designed and constructed to meet the performance requirements stated in Clause 2.2 and to include the essential features listed in Appendix A of AS 4299.*

Therefore, based on Council's DCP one (1) disabled spaces are required for non-residential tenants (i.e. residential visitor and commercial/retail) whilst a minimum of one (1) disabled parking space per adaptable dwelling is to be provided.

The appropriate design outcome for the disabled spaces shall be provided with a 2.4m wide space and an adjacent 2.4m wide shared zone as per AS2890.6: 2009, which supersedes the requirements of AS4299.

The plans allocated 12 adaptable units and **12** disabled spaces for residential tenants, and a further **4** disabled spaces for non-residential uses.

3.7 Car Park Design & Compliance

The proposed parking layout is designed in accordance with relevant clauses of AS2890.1:2004, AS2890.2:2002 & AS2890.6:2009 (or better. The features of the compliant car parking layout include:

- Resident and Retail space dimensions of 2.4 minimum width x 5.4m;
- Disabled parking spaces compliant with AS2890.6 or AS4299;
- Straight ramp width of 3m between kerbs for one-way travel;
- Aisle width (on straight) of 5.8m for two lanes;
- Driveway ramp grade no more than 25%;
- Change of ramp grade not in excess of 12.5% for summits and 15% for sags.

It should be noted that whilst this report assesses the plans attached in **Annexure A** to be compliant with relevant standards, it is typical that a construction certificate is required to be issued prior to construction due to possible changes during or after DA determination.

3.8 Proposed Road Widening Works

Road widening works are proposed along Arnott Avenue at the request of Council, with the scale of works summarised as follows and depicted on a concept plan in **Annexure F** and on the Civil Plans in **Annexure I**:

- Widening of Arnott Street to provide for an 8.0m wide carriageway width;
- Modifications to the verge:
    - To the south of the proposed driveway, construction of a 2.3m wide footpath with a 1.5m wide landscaped buffer;
    - To the north of the proposed driveway, construction of a 2.9m wide footpath with a 1.5m wide landscaped buffer.
- Retention of the “No Parking” signage along the frontage of the site;
- Construction of kerb and gutter along the eastern side of the road (presently no kerb and gutter exists);
- Modification of existing kerb return to accommodate widened width of Arnott Avenue.

3.9 Sight Lines at Driveway

The sight lines at the vehicular driveway from Arnott Avenue have been assessed against the requirements of AS2890.1:2004 for sight lines both to vehicular traffic on the road and pedestrians on the footpath.

Arnott Avenue is a 50km/h road and on this basis Figure 3.2 of AS2890.1:2004 requires that 45m of sight distance be available in both directions to vehicles leaving the driveway. Based on the driveway location and the future conditions in the verge, approximately 54m of sight distance will be available to the north of the driveway and 64m to the south of the driveway. Drivers using the proposed driveway will, therefore, have sufficient sight lines to turn safely into and out of the site.

The proposed design provides for sight lines to pedestrians on the footpath as required by AS2890.1:2004 Figure 3.3 and is acceptable in this regard.

4 TRAFFIC ASSESSMENT

The impact of the expected traffic generation levels associated with the subject proposal is discussed in the following sub-sections.

4.1 Traffic Generation

The RTA *Guide to Traffic Generating Developments* and more recent supplements detail the following traffic generation rates relevant to the subject development:

High Density Residential

0.53 trips per unit

Retail (Specialty Shops)

5.6 trips per 100m²

The high-density residential trip generation is adopted from the RMS Guide for High-Density development in sub-regional areas. The individual traffic generation of each proposed land use is summarised in **Table 8** below.

TABLE 8: TRAFFIC GENERATION PER LAND USE

Type	Scale	Trip Rate	Traffic Generation
Residential (Peak)	108	0.53 per unit	58 trips
Retail (Peak)	929 m²	5.6/100m²	52 trips
Total (Peak)			**110 trips**

The peak times of the two land-uses on the site will not coincide, particularly in the AM peak hour. For the purposes of this analysis, it has been assumed that 50% of the peak the retail generation will coincide with the residential peak in the morning and that in the evening the generation for the residential and retail components overlaps. The estimated worst case peak hourly traffic generation of the site is provided in **Table 5.**

TABLE 9: TRAFFIC DISTRIBUTION OF SITE

Type	Percentage of Peak Experienced	Traffic Generation	Direction (1)
Residential (7:00-9:00am)	100%	58 trips	(12 in, 46 out)
Retail (7:00-9:00am)	50%	26 trips	(13 in, 13 out)
Total (AM Peak)		**84 trips**	**(25 in, 59 out)**
Residential (4:00-6:00pm)	100%	58 trips	(46 in, 12 out)
Retail (4:00-6:00pm)	100%	52 trips	(26 in, 26 out)
Total (PM Peak)		**110 trips**	**(72 in, 38 out)**

Note: (1) traffic distribution for the AM peak has been assumed to be an 80/20 split for residential and 50/50 split for retail.

As shown above, during the 7-9am period the traffic generated by the site is estimated at some **84** vehicle trips (25 in; 59 out) based upon a rate of 0.53 vehicle trips per residential unit as per the RMS Technical Direction, 5.6 vehicle trips per 100m^2 of retail area as per the RMS Guide, and the direction assumptions shown in **Table 5** above. For the 4-6pm period, the site generated traffic is estimated at **110** vehicle trips (72 in; 38 out) based upon a rate of 0.53 vehicle trips per residential unit as per the RMS Technical Direction, 5.6 vehicle trips per 100m^2 of retail area as per the RMS Guide, and the distribution assumptions shown in **Table 9** above.

4.2 Traffic Assignment

4.2.1 Residential

Given the surrounding road network and available routes to and from the site, a traffic assignment for the generated retail and residential traffic has been developed and is shown in **Figure 4** below.

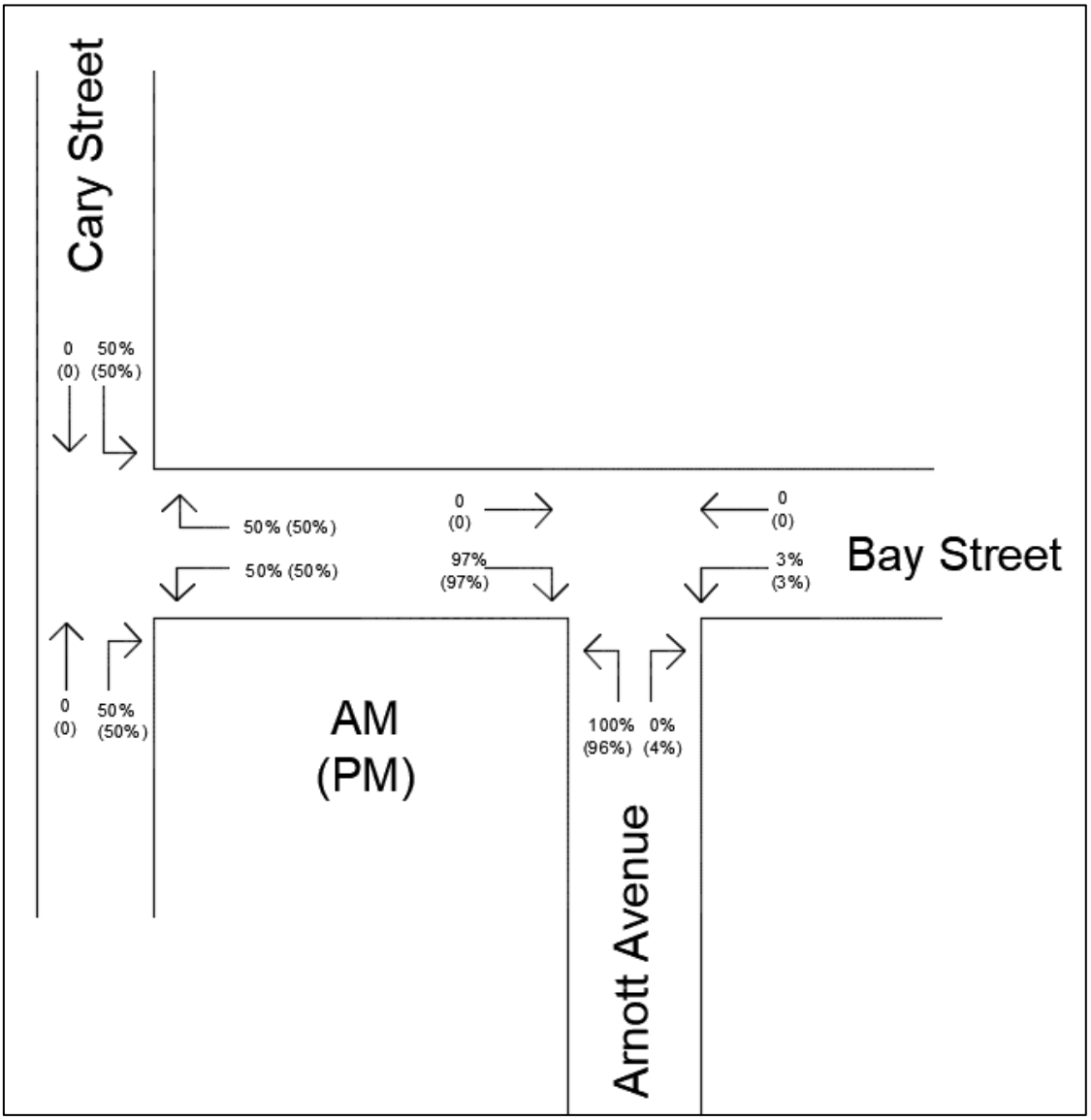


FIGURE 4: RESIDENTIAL AND RETAIL TRAFFIC ASSIGNMENT

4.3 Calibration and Validation of Model

The SIDRA model was examined in comparison to the survey results, which included a record of queue lengths and the survey footage in order to calibrate the model. The most relevant intersection to the subject development is the intersection of Bay Street and Cary Street, and the calibration focused on the performance of this intersection. The steps taken to calibrate the model are outlined below:

- Review of video footage showed that Bay Street operated as a two-lane approach, with two lanes of queues occurring past Arnott Street for a single 15 minute period immediately surrounding the final bell at the nearby school. Two lanes on approach were added to address this operation. Snapshots from the video footage are provided in **Annexure L** for reference.
- It was noted that SCATS skipped B,C and D phases when there was no demand present. SIDRA is unable to replicate this operation and therefore the analysis is conservative.
- Observed cycle times were between 80 and 140 seconds, and this range was used as an input into the minimum and maximum cycle times option in the phasing and timing menu.
- Based on the count data there is a pronounced 15-minute peak in both the AM and PM peak periods. This period was chosen to aid with the determination of capacity adjustments. The AM peak chosen was 8:45AM – 9:00AM, the PM peak 3:15PM – 3:30PM.
- AM
    - Optimum cycle time of 94 seconds was chosen by SIDRA. The phase times were manually entered according to this to prevent capacity adjustments via signal timing changes.
    - Based on observed driver behaviour, changed lane utilisation ratio on northbound approach to 100% for through only lane and 75% for through/right lane. This caused SIDRA to output queue lengths very similar to those observed.
    - The observed and outputted queue lengths after calibration are summarised in **Table 10** for reference.
- PM
    - Optimum cycle time of 90 seconds was chosen by SIDRA. The phase times were manually entered according to this to prevent capacity adjustments via signal timing changes.
    - Based on observed driver behaviour, changed lane utilisation ratio on northbound approach to 100% for through only lane and 75% for through/right lane. With this change, queue lengths were approaching those observed, but the southbound movement was still over capacity.

- Phase timing was adjusted (retaining a 90 second cycle time) to bring queue lengths closer to those observed.
- The observed and outputted queue lengths after calibration are summarised in **Table 10** for reference.

- These settings have been applied to the future (growth and plus development) scenarios which use 60-minute volumes. The cycle time setting was reset to optimised (80 to 140 seconds) to manage changes in demand.

TABLE 10: VALIDATION – OBSERVED VS MODELLED QUEUE LENGTHS

15 Minute Peak	Cary Street South Approach				Bay Street East Approach			
	Through		Through/Right		Left		Right	
	Observed Average Queue Length (veh)	SIDRA Average Queue Length (veh)	Observed Average Queue Length (veh)	SIDRA Average Queue Length (veh)	Observed Average Queue Length (veh)	SIDRA Average Queue Length (veh)	Observed Average Queue Length (veh)	SIDRA Average Queue Length (veh)
8:45 AM – 9:00 AM	9.5	9.6	7.625	7.8	4.625	2.9	4	4.4
Difference (veh)	+0.1		+0.175		-1.725		+0.4	
3:15 PM – 3:30 PM	5.16	5.2	3.25	4.7	5.25	3.9	4.83	3.0
Difference	+.04		+1.45		-1.35		-1.83	

- The results provided in **Table 10** indicate that the SIDRA model has been calibrated adequately to reflect the performance of the intersection.

4.4 Traffic Impact

The traffic generation outlined in **Section 4.1 & 4.2** above has been added to the existing traffic volumes recorded. SIDRA INTERSECTION 8 was used to assess the intersections performance. The purpose of this assessment is to compare the existing intersection operations to the future scenario under the increased traffic load. The results of this assessment are shown in **Table 11** below. The detailed output reports are provided in **Annexure G** for reference.

The results of the modelling indicate that the traffic associated with the development would have no impact on the surrounding road intersections. It is noted that the PM network peak modelled was the school peak (2:45 PM to 3:45 PM) and that the site peak traffic generation associated with the development is more likely to occur later in the afternoon, when the road network is experiencing less demand. The results outlined in **Table 11** are therefore a worst case.

TABLE 11: INTERSECTION PERFORMANCES (SIDRA INTERSECTION 8) EXISTING + DEVELOPMENT

Intersection	Peak Hour	Degree of Saturation[1]	Average Delay[2] (sec/vehicle)	Level of Service[3]	Control Type	Worst Movement	Average Queue
EXISTING PERFORMANCE							
Cary Street / Bay Street	AM	0.95	16.5	**B**	Signals	RT from Bay Street	11.4 veh (83.8m) Cary Street
	PM	0.89	13.5	**A**		RT from Bay Street	13.2 veh (95.2m) Cary Street
Cary Street / Victory Parade	AM	0.71	13.1	**A**	Signals	LT from Victory Parade (E)	10.5 veh (77m) Cary Street (S)
	PM	0.65	12.2	**A**		RT from Victory Parade (E)	8.1 veh (59.2m) Cary Street (S)
Arnott Avenue / Bay Street	AM	0.07	0.8 (Worst: 6.6)	**N/A** (Worst: A)	Give Way	RT from Arnott Avenue (S)	0 veh (0.3m) Arnott Avenue (S)
	PM	0.07	1.1 (Worst: 6.9)	**N/A** (Worst: A)		RT from Arnott Avenue (S)	0 veh (0.3m) Arnott Avenue (S)
EXISTING PLUS DEVELOPMENT							
Cary Street / Bay Street	AM	0.80	20.5	**B**	Signals	RT from Bay Street	14.4 veh (106.6m) Cary Street
	PM	0.78	14.7	**B**		RT from Bay Street	17.3 veh (124.7m) Cary Street
Cary Street / Victory Parade	AM	0.81	17.7	**B**	Signals	LT from Victory Parade (E)	16.4 veh (120m) Cary Street (S)
	PM	0.66	13.5	**A**		RT from Victory Parade (E)	9.9 veh (71.9m) Cary Street (S)
Arnott Avenue / Bay Street	AM	0.09	2.2 (Worst: 6.9)	**N/A** (Worst: A)	Give Way	RT from Arnott Avenue (S)	0.1 veh (0.8m) Arnott Avenue (S)
	PM	0.13	2.4 (Worst: 7.4)	**N/A** (Worst: A)		RT from Arnott Avenue (S)	0.2 veh (1.4m) Bay Street (W)

"NOTES:
(1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
(2) Average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
(3) Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.
(4) No overall Level of Service is provided for Give Way and Stop controlled intersections as the low delays associated with the dominant movements skew the average delay of the intersection. The Level of Service of the worst approach is an indicator of the operation of the intersection, with a worse Level of Service corresponding to long delays and reduced safety outcomes for that approach.

4.4.1 10-Year Growth Scenario

TfNSW (formerly RMS) requested that 10-year growth modelling be undertaken to determine the impact of the development up to 10 years in the future based on a generic traffic growth assumption along Cary Street, the State Road. A growth rate of 1% was assumed for traffic in both directions along Cary Street and the calibrated SIDRA 8 model was used to assess the “10-year growth” and “10-year growth plus development” scenarios. The results of the analysis are summarised in **Table 12**. The detailed output reports are provided in **Annexure H** for reference.

TABLE 12: INTERSECTION PERFORMANCES (SIDRA INTERSECTION 8)
EXISTING + 10 YEARS GROWTH + DEVELOPMENT

Intersection	Peak Hour	Degree of Saturation[1]	Average Delay[2] (sec/vehicle)	Level of Service[3]	Control Type	Worst Movement	Average Queue
EXISTING + 10 YEAR GROWTH							
Cary Street / Bay Street	AM	0.84	18.6	**B**	Signals	RT from Bay Street	14.3 veh (106m) Cary Street
	PM	0.92	14.5	**A**		RT from Bay Street	15.8 veh (114.5m) Cary Street
Cary Street / Victory Parade	AM	0.84	15.6	**B**	Signals	LT from Victory Parade (E)	15.9 veh (116.5m) Cary Street (S)
	PM	0.68	12.5	**A**		RT from Victory Parade (E)	9.4 veh (68.2m) Cary Street (S)
Arnott Avenue / Bay Street	AM	0.07	0.8 (Worst: 6.6)	**N/A** (Worst: A)	Give Way	RT from Arnott Avenue (S)	0 veh (0.3m) Arnott Avenue (S)
	PM	0.08	1.2 (Worst: 7.2)	**N/A** (Worst: A)		RT from Arnott Avenue (S)	0.1 veh (0.4m) Arnott Avenue (S)
EXISTING + 10 YEAR GROWTH + DEVELOPMENT							
Cary Street / Bay Street	AM	0.84	18.4	**B**	Signals	RT from Bay Street	14 veh (103.7m) Cary Street
	PM	0.95	13.8	**A**		RT from Bay Street	17.5 veh (126.1m) Cary Street
Cary Street / Victory Parade	AM	0.83	15.1	**B**	Signals	LT from Victory Parade (E)	15.3 veh (111.4m) Cary Street (S)
	PM	0.69	12.4	**A**		RT from Victory Parade (E)	9.9 veh (71.5m) Cary Street (S)
Arnott Avenue / Bay Street	AM	0.07	0.8 (Worst: 6.6)	**N/A** (Worst: A)	Give Way	RT from Arnott Avenue (S)	0 veh (0.3m) Arnott Avenue (S)
	PM	0.07	1.1 (Worst: 6.9)	**N/A** (Worst: A)		RT from Arnott Avenue (S)	0 veh (0.3m) Arnott Avenue (S)

"NOTES:
(1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
(2) Average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
(3) Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.
(4) No overall Level of Service is provided for Give Way and Stop controlled intersections as the low delays associated with the dominant movements skew the average delay of the intersection. The Level of Service of the worst approach is an indicator of the operation of the intersection, with a worse Level of Service corresponding to long delays and reduced safety outcomes for that approach.

As shown in **Table 12**, The results of the modelling indicate that the traffic associated with the development would have little to no impact on the surrounding road intersections in the 10-year growth scenario. As for the previous modelling, the network peak time modelled was the school peak and the site peak is not expected to occur during this time and is more likely to occur later in the afternoon, when the road network is experiencing less demand. The results outlined in **Table 12** are therefore a worst case.

4.5 Residential Amenity

The existing two-way traffic volume surveyed along Arnott Ave is 44 two-way vehicles during the morning and 72 two-way vehicles during the evening peak hour. This two-way flow is well below the environmental goal of 200 vehicles per hour or the maximum threshold of 300 vehicles per hour for a local street as specified in the RTA Guide to Traffic Generating Developments 2002.

The additional traffic of 84 morning trips will raise the level of two-way traffic on Arnott Ave 128 vehicles per hour. The 110 additional evening trips will raise the level of two-way traffic of Arnott Ave to 182 vehicles per hour. The future morning and evening two-way traffic will therefore remain below the environmental threshold goal of 200 vehicles per hour which is an acceptable outcome.

5 Transport for New South Wales (TfNSW) Consultation

Advice was received from TfNSW on 17 September 2021 on DA/419/2018, noting that this previous application was for development identical in size and scale to the subject development. The letter is reproduced in **Annexure K** for reference. The comments provided by TfNSW relevant to traffic engineering are reproduced in *italics* and responded to in the following sub-sections.

5.1 Location of Service Vehicle Exit Driveway

> *The new location of the service vehicle exit-only driveway to Cary Street is considered acceptable. All works on Cary Street, including extension of the central concrete median, will require the consent of TfNSW under the terms of a Works Authorisation Deed (WAD).*

The conditional support of TfNSW for the exit-only driveway onto Cary Street is noted. A concept plan illustrating the extension of the median is provided in **Annexure I**.

5.2 Bay Street/Cary Street Intersection

> *Section 4.3 of the submitted traffic report outlines that the SIDRA traffic models the operation of Bay Street as a two-lane westbound approach during the afternoon school peak. Video footage provides evidence of the informal use of the existing single lane as two lanes. The traffic control signal infrastructure (detectors, signal phasing etc.) and existing line marking in Bay Street function as a single-lane westbound approach, not as two-lanes. The TIA demonstrates that two lanes on the approach are more efficient than a single lane as it reduces the extent of queuing and the overall level of service for vehicles in Bay Street. The works recommended by TfNSW in advice dated 29 July 2019, including (but not limited to) installation of adjusted line marking and two separate detectors, would formalise the approach for use as two lanes and improve the overall performance of the intersection. As Council is the Roads Authority for Bay Street and is responsible for settings standards, determining priorities and carrying out works, the above matter is highlighted for Council's consideration.*
>
> *TfNSW recommends Council consider a condition to upgrade Bay Street from one to two lanes. Should such a condition be required TfNSW recommends the developer undertake the following under the terms of the Works Authorisation Deed (WAD):*
>
> *o Additional detectors located in both the approach lanes*
>
> *o Extra pedestrian detection on the crossings, which can be added as part of the software upgrade required to add in the extra detector*
>
> *o New TCS lantern posts at the relocated stop line*

o Removal of existing line marking and provision of new line marking

o Consultation with Council and the school / school bus operator regarding any impact on the existing school bus stop opposite McDonalds.

5.2.1 Results of Modelling of the Bay Street/Cary Street Intersection

The modelling has been calibrated to reflect the existing conditions by adding a traffic lane to the model on the basis that in the observed conditions, two lanes of traffic formed on the Bay Street approach to Cary Street, though it is agreed that only one lane is presently line marked. Some extracts from the video footage which demonstrate that the Bay Street approach to the intersection functions as a two-lane approach are provided in **Annexure L**.

The performance of the intersection was then validated through comparing the output queue lengths against those observed on the video footage.

Having undertaken this process and noting the favourable comparison between the observed conditions and the model outputs, it is considered that the model adequately reflects the existing operation of the intersection and that this model can be used for traffic impact assessment purposes.

The inclusion of two distinct traffic lanes in the model is not an indication that a second line-marked traffic lane is required at the intersection but rather provides the means by which the existing performance of the intersection may be accurately modelled.

The results of the modelling, as detailed in **Section 4.4,** indicate that the traffic associated with the development would have little to no impact on the intersection of Bay Street and Cary Street as it presently operates. On this basis, there is no nexus between the request from TfNSW to upgrade the intersection and the subject development.

5.2.2 Impacts of Widening Bay Street

Several services are present in the Bay Street verge and could potentially be affected by works to widen Bay Street including:

- Underground electrical Mains;
- Water and Sewer Mains, and;
- NBN Lines.

In addition to the services, three street trees would be required to be removed if Bay Street were to be widened. An arborist has assessed these three trees and indicated that the trees are of high retention value.

5.3 Works Authorisation Deed (WAD) Requirements

> *For works on classified (State) roads, and for upgrades to traffic signals on any road, the developer would be required to enter into a Works Authorisation Deed (WAD) with TfNSW. TfNSW would exercise its powers and functions of the road authority, to undertake road works in accordance with Sections 64, 71, 72 and 73 of the Roads Act, as applicable, for all works under the WAD (Attachment A).*
>
> *• All road works under the WAD shall be undertaken at full cost to the developer and completed prior to issuing any Occupation Certificate for the development.*

It is understood that any works on classified (State) roads will require entry into a Works Authorisation Deed agreement with TfNSW.

6 Outcomes of 2021 Joint Report for LEC Matter 91325 of 2020

As part of the Land and Environment Court appeal of the refusal of the previous proposal on the site, a joint report was completed between Mr. Thomas Steal on behalf of the applicant and Mr. Kenneth Hollyoak on behalf of the respondent.

Some outcomes of the joint report that are relevant to note are:

a) It was agreed in Paragraph 3.4.1.1 of the Joint Report that the modelling demonstrated no significant adverse impact on the operation of the Bay Street/Cary Street traffic signals:

> *…the modelling generally shows that with a two lane approach on the Bay Street approach to the traffic signals, the operation of the Bay Street / Cary Street traffic signals experiences no significant adverse traffic impact.*

b) Mr Hollyoak stated in Paragraph 3.4.3.3 that he agreed that the Bay Street approach to the junction with Cary Street presently operates with two lanes at peak times:

> *TS has provided videos and photos (which are attached as Annexure I). These show that in the peak times, the Bay Street approach to the traffic signals already operates as two lanes (without lane markings) for a length of about 35- 40m (i.e., for the length of the adjacent centre line - after this point, there is no centreline line marking to guide traffic). This formation of two lane probably occurs because much of the traffic is familiar with the intersection and align themselves in two lanes to facilitate the operation.*

c) It was agreed in Paragraph 3.8.1.1 that the swept path diagrams provided adequately demonstrated that a Medium Rigid Vehicle (MRV) can enter and exit the site:

> *It is agreed that the requested swept path diagrams have been provided and adequately demonstrate that an 8.8m long Medium Rigid Vehicle (MRV) can enter and exit the site.*

7 CONCLUSIONS

The traffic and parking impacts of the proposed mixed-use development at Cary Street, Toronto (as depicted on reduced plans in **Annexure A** have been assessed.

A total of 206 car parking spaces are proposed, exceeding the 147 spaces required under the *Lake Macquarie City Council DCP 2014*, representing an acceptable outcome. A total of 16 disabled car parking spaces are provided, including 12 for the 12 adaptable units and four (4) for use by the retail component & by visitors to residents. There is sufficient space on the site to provide the bicycle storage required by the DCP and it is recommended that this is required by consent condition.

The proposed design meets the relevant requirements and objectives of AS2890.1, AS2890.2 and AS2890.6 and the design is sufficient for all parking, loading and servicing uses. Minor amendments to the roads are recommended in **Section 3.5** to improve both vehicle manoeuvring and safety outcomes.

The traffic generation of the site has been estimated at some **84** vehicle trips (25 in; 59 out) in the AM and **110** vehicle trips (72 in; 38 out) in the PM peak hour. Detailed SIDRA Intersection 9.0 modelling of the intersection surrounding the site in both the existing and 10-year growth scenarios demonstrate that the development will have no adverse impact on the surrounding road network.

In view of the foregoing, the traffic and parking impacts of the subject development are fully supported.

ANNEXURE A: REDUCED PLANS

(3 SHEETS)

CARY STREET

A

C

KIOSK ABOVE

SERVICES

SHARE

APT. LIFT

2.4 x 2.4 CIRC

9.59 m²

12

10

5,500

6,000

5,500

MOTOR BIKES x 4

SHARE

8

APT. LIFT

9.90 m²

5

12.96 m²

2BED STORAGE

6

2BED STORAGE

6

5,800

SERVICES

800

5,500

MOTOR BIKES x 4

11

COMM LIFT

RESIDENTIAL CARPARK

RL -1.5 4,334.62 m²

TOTAL CARPARKS THIS LEVEL = 108

TOTAL CARPARKS B1 & B2 = 208

STORAGE UNITS = 119

11,509

SERVICES

SERVICES

9

6

8

12.5% TRANSITION

SERVICES

406.32 m²

18.78 m²

8

18.78 m²

8

6.67 m²

3

3BED STORAGE

1:6

6,710

1,181

6,000

PROVIDE WHEEL STOPS TO ALL CARPARKS

5,500

300

2,550

2,550

TYPICAL

2,550

300

5,500

2.4 x 2.4 CIRC

2.4 x 2.4 CIRC

1700mm HEAD HEIGHT OVER

13.36 m²

2100mm HEAD HEIGHT OVER

2

10.74 m²

5

6

APT. LIFT

5

SHARE

APT. LIFT

28

36.89 m²

STORAGE

2

SHARE

5

5

SHARE

2

2

SHARE

5

2.4 x 2.4 CIRC

2.4 x 2.4 CIRC

2.4 x 2.4 CIRC

2.4 x 2.4 CIRC

2.4 x 2.4 CIRC

2.4 x 2.4 CIRC

DEEP SOIL

261.05 m²

STORAGE x 10

.22 m²

7.15 m²

2

CPFS 2

2.4 x 2.4 CIRC

SHARE

11

7

11.00 m²

4

5,500

6,000

5,500

5,500

6,000

5,500

34.65 m²

DEEP SOIL

121.26 m²

3BED

ARNOTT AVENUE

LEGEND

APT	APARTMENT
BDY	BOUNDARY
EGL	EXISTING GROUND LEVEL
EX	EXISTING
EXH	EXHAUST
FHR	FIRE HOSE REEL
PP	POWER POLE
RL	REDUCED LEVEL

RESIDENT STORAGE

ISSUE	DATE	DRAWN	DESCRIPTION

DEVELOPMENT APPLICATION

NOT FOR CONSTRUCTION

Mark Lawler Architects

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B

0m 1m 2m 5m 10m

PROJECT:	TORONTO MIXED USE
CLIENT:	TORONTO INVESTMENTS NO.1 PTY LTD
LOCATION:	114-120 CARY STREET TORONTO
DRAWING:	**BASEMENT 2 PLAN | -02**
SCALE:	1:200 @ A2
DATE:	18/02/2022
DWG No:	1588A - 1-02
ISSUE:	AA
DRAWN	SC & CP & AD

CARY STREET

ARNOTT AVENUE

COMMERCIAL & RESIDENTIAL VISITOR PARKING
RL 1.5
TOTAL CARPARKS THIS LEVEL = 100
4,334.62 m²

RESIDENTIAL & VISITOR PARKING

PROVIDE WHEEL STOPS TO ALL CARPARKS

DEEP SOIL 74.97 m²

DEEP SOIL 261.05 m²

DEEP SOIL 121.26 m²

404.63 m²

34.65 m²

50.65 m²

DOWN TO RESIDENTIAL CARPARK B2
LINE OF RAMP ABOVE

STORMWATER DETENTION : 120m³ TO ENGS DETAILS

UP TO GROUND

12.5% TRANSITION

1:6

CPFS 1 CPFS 2 CPFS 3 CPFS 4 CPFS 5

APT. LIFT

COMM LIFT

SERVICES

BOOSTER PUMP ROOM

BICYCLE STORAGE

CAR WASH BAY

SECURITY FENCE

SECURITY SHUTTER

SECURITY WALL

CLEANERS/STAFF ONLY SHOWER AND WC

LOW HEAD HEIGHT, RAKING OVER

CH: 2100

CH: 2300

MOTOR BIKES x 4

KIOSK ABOVE

5M SETBACK

2.4 x 2.4 CIRC

SHARE

TYPICAL

2 BED STORAGE 6.04 m²

3BED STORAGE 6.67 m²

2 BED STORAGE 8.23 m²

3 BED STORAGE 11.29 m²

2 BED STORAGE 3.59 m²

2BED STORAGE 6 11.50 m²

BICYCLE STORAGE 5.75 m²

18.95 m²

1,181

2,574

35,878

2,582

10,910 4,310 22,750 4,500 12,150 6,055 14,945 6,040

13,347

LEGEND

APT	APARTMENT
BDY	BOUNDARY
EGL	EXISTING GROUND LEVEL
EX	EXISTING
EXH	EXHAUST
FHR	FIRE HOSE REEL
PP	POWER POLE
RL	REDUCED LEVEL

RESIDENT STORAGE

ISSUE	DATE	DRAWN	DESCRIPTION

DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION

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0m 1m 2m 5m 10m

PROJECT:	TORONTO MIXED USE
CLIENT:	TORONTO INVESTMENTS NO.1 PTY LTD
LOCATION:	114-120 CARY STREET TORONTO
DRAWING:	**BASEMENT 1 PLAN | -01**
SCALE:	1:200 @ A2
DATE:	18/02/2022
DWG No:	1588A - 1-03
ISSUE:	AA
DRAWN	SC & CP & AD

CARY STREET
EX KERB
EXISTING FOOTWAY TO REMAIN
AWNING OVER
NEW STREET TREE
EX FOOTPATH
ex no stopping sign
RELOCATE EX LIGHT
EX EP
EX PP
MAIL BOXES
LANDSCAPE ARCHITECTS DETAILS
BALUSTRADE
RL 3.3
29.68 m²
RL 4.5
RL 3.3
1:14 RAMP
6.94 m²
RL 3.20
SIGNALISED EXIT FOR SERVICE VEHICLES LEFT ONLY AS PERMITTED BY RMS
5.3 x 3.3
KIOSK
EASEMENT
RL 3.30
RL 4.50
BAL
RL 4.50
1:14 RAMP
4.50
700mm HIGH BARRIER
1:20 MIN GRADE
CAR-PARK
RL 4.5
ENTRY LOBBY C1
27.35 m²
3.85 m²
APT LIFT
ENTRY LOBBY C2
38.37 m²
ELECTRICAL MAINS
14.70 m²
CAR-PARK
ROLLER GRILLE
4.5m CLEAR HEAD HEIGHT
+3.77
APT
4.42 m
4,000
3,000
PUBLIC RESERVE
700mm HIGH PLANTER BOX
RL 4.50
1:20 MIN GRADE
PERGOLA
COMMERCIAL
929 m²
WC
WC
ACC WC
TOILET SUBJECT TO TENANT FITOUT
APT
RESIDENT GARBAGE
13 x 1100 LITRE BINS
RL 3.34
SCREEN
SCREEN
TRUCK
SCREEN
APT LIFT
COMM GARBAGE
71.62 m²
117.56 m²
COMM LIFT
ACC WC
MAINS COMM SERVICES
CLNR
RL 4.50
RL 4.50
COVERED WALKWAY
SHOP ENTRY DOOR LOCATIONS SUBJECT TO TENANCY
LOADING BAY
RL 3.69
LINE OF DRIVE BELOW
RAISED PLANTERBOX TO LANDSCAPE ARCHITECTS DETAILS
60.57 m²
RL 4.50
PLANTER 1000mm HIGH
90.47 m²
LANDSCAPING AND PAVING TO LANDSCAPE ARCHITECT DETAILS
DEEP SOIL 74.97 m²
CARPARK EXH
SCREEN
GRADIENT 1:57
RL 3.69
404.63 m²
McDONALDS DRIVE THROUGH
CAR PARK
A004
97 m²
ST 1.48 m²
ST 2.03 m²
ST 3.89 m²
ST 2.99 m²
ST 3.03 m²
900mm HIGH WINDOW SILLS OPAQUE GLASS FIXED LOWLIGHT AWNING SASHES OVER
1.8m HIGH FENCE
1.8m FENCE
FENCE ON PLANTER 1.8m HIGH
RESIDENT GARBAGE 16 x 1100 LITRE BINS
58.79 m²
SCREEN
SCREEN
TRUCK ACCESS
DEEP SOIL LANDSCAPE TO LANDSCAPE ARCHITECTS DETAILS
5.04
PP
A003
65 m²
ST 1.76 m²
ST 2.02 m²
ST 0.89 m²
4.50
APT LIFT
ST 2.82 m²
A005
70 m²
ST 3.24 m²
A006
82 m²
ST 3.24 m²
A007
82 m²
ST 3.24 m²
A008
78 m²
ST 0.86 m²
6,401
300
3,651
RAMP UP 1:12.8
4.40
A002
62 m²
ST 1.01 m²
ST 1.30 m²
ST 1.30 m²
APT LIFT
RL 4.50
SERVICES
SERVICE VEHICLES ONLY
LOBBY A2
33.68 m²
1:6
1:6
12.5% TRANSITION
261.05 m²
FENCE ON PLANTER 1.8m HIGH
BUILDING OVER
A001
91 m²
ST 2.13 m²
ST 2.28 m²
44.22 m²
LOBBY A1
RL 4.45
A011
84 m²
ST 3.01 m²
ST 1.01 m²
A010
84 m²
ST 3.01 m²
ST 1.01 m²
ST 0.92 m²
A009
59 m²
ST 2.09 m²
4.45
RL 4.45
ROLLER GRILLE
+3.23
5.29
DEEP SOIL
TO LANDSCAPE ARCHITECTS DETAILS
CPFS 2
COURT
A012
78 m²
ST 3.24 m²
1.8m FENCE
SPR VALVES
CPFS 1
TRUCK
APT OVER
RL 4.45
RL 4.45
RL 4.45
RL 5.45
5,793.40 m²
5.58
9.99 m²
4.40
COMMON DEEP SOIL
MAIL BOXES
34.65 m²
4.45
DEEP SOIL
TO LANDSCAPE ARCHITECTS DETAILS
121.26 m²
600mm MAX RETAINING WALL HEIGHT
5.40
RL 5.7 (approx)
HYD BOOSTER
TRUCK ACCESS TO MCLAREN TRAFFIC ENGINEERING DETAILS AS APPROVED BY RMS
5.92
PROPOSED B'DRY
RL 4.45
GAS VALVE SET
BDY WATER METRE ASSEMBLY
4.14 m²
DRIVEWAY
5.70
5.79
RL 5.26
77.74 m
PLANTING
PROPOSED VEHICLE BAY
PROPOSED ROAD KERB
EXISTING ROAD KERB
FOOTWAY TO COUNCIL'S STANDARDS
EX PP
NEW LAYBACK
6.05
6.53
6.65

LEGEND

A104 x m²	3 BED APARTMENT APARTMENT NO. AREA
A104 x m²	2 BED APARTMENT APARTMENT NO. AREA
A104 x m²	1BED APARTMENT APARTMENT NO. AREA

APT	APARTMENT
BDY	BOUNDARY
EGL	EXISTING GROUND LEVEL
EX	EXISTING
EXH	EXHAUST
FHR	FIRE HOSE REEL
PP	POWER POLE
RL	REDUCED LEVEL

ISSUE	DATE	DRAWN	DESCRIPTION

DEVELOPMENT APPLICATION

NOT FOR CONSTRUCTION

Mark Lawler Architects

- DIRECTOR + NOMINATED ARCHITECT:
- MARK LAWLER (4766)
- DIRECTOR: STEPHEN COON (DEP 0000398)
- 35 SMITH STREET, CHARLESTOWN NSW 2290
- ABN: 31 752 945 195
- P: (02) 4942 5222
- F: (02) 4942 5233
- E: reception@marklawlerarchitects.com.au
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0m 1m 2m 5m 10m

PROJECT:	TORONTO MIXED USE
CLIENT:	TORONTO INVESTMENTS NO.1 PTY LTD
LOCATION:	114-120 CARY STREET TORONTO
DRAWING:	GROUND PLAN - LEVEL 01
SCALE:	1:200 @ A2
DATE:	18/02/2022
DWG No:	1588A - 1-04
ISSUE:	AA
DRAWN	SC & CP & AD

ON SITE DEEP SOIL

SITE AREA = 5793.4m²

REQUESTED MINIMUM 7 % = 405.5m²

PROVIDED = 896.56m²

ANNEXURE B: TRAFFIC COUNT RESULTS

(3 SHEETS)

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Bay St and Cary St, Toronto

GPS *-33.00893, 151.59401*

Date:	Fri 12/02/21
Weather:	Overcast
Suburban:	Toronto
Customer:	McLaren

North:	Cary St
East:	Bay St
South:	Cary St
West:	N/A

Survey Period	AM:	7:00 AM-9:30 AM
	PM:	2:30 PM-6:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	2:45 PM-3:45 PM

All Vehicles

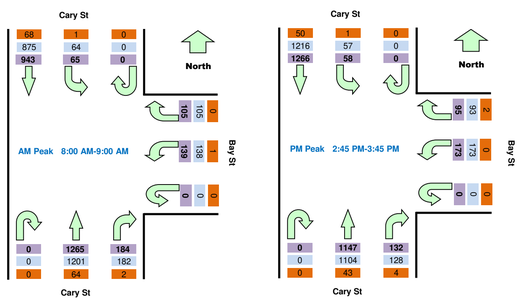
Time		North Approach Cary St			East Approach Bay St			South Approach Cary St			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
7:00	7:15	0	144	9	0	14	12	0	13	222	2078	
7:15	7:30	0	169	18	0	10	24	0	29	272	2340	
7:30	7:45	0	188	9	0	22	28	0	28	265	2475	
7:45	8:00	0	209	10	0	11	26	0	27	319	2612	
8:00	8:15	0	229	18	0	14	20	0	35	360	2701	Peak
8:15	8:30	0	214	13	0	26	31	0	34	339	2649	
8:30	8:45	0	222	15	0	31	38	0	55	316	2599	
8:45	9:00	0	278	19	0	34	50	0	60	250		
9:00	9:15	0	255	9	0	14	31	0	25	290		
9:15	9:30	0	243	16	0	19	27	0	32	270		
14:30	14:45	0	315	17	0	12	16	0	36	308	2850	
14:45	15:00	0	305	10	0	18	21	0	38	310	2871	Peak
15:00	15:15	0	288	14	0	29	68	0	42	246	2840	
15:15	15:30	0	344	20	0	25	46	0	26	296	2811	
15:30	15:45	0	329	14	0	23	38	0	26	295	2733	
15:45	16:00	0	317	17	0	11	37	0	26	263	2663	
16:00	16:15	0	310	17	0	10	37	0	14	270	2594	
16:15	16:30	0	339	12	0	15	30	0	21	262	2602	
16:30	16:45	0	312	18	0	14	29	0	27	255	2546	
16:45	17:00	0	313	7	0	19	25	0	29	209	2481	
17:00	17:15	0	328	11	0	16	30	0	17	264	2444	
17:15	17:30	0	287	13	0	22	27	0	23	251		
17:30	17:45	0	282	12	0	11	27	0	27	231		
17:45	18:00	0	284	15	0	12	33	0	21	200		

Peak Time		North Approach Cary St			East Approach Bay St			South Approach Cary St			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:00	9:00	0	943	65	0	105	139	0	184	1265	2701
14:45	15:45	0	1266	58	0	95	173	0	132	1147	2871

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 Cary St			East Approach Bay St			South Approach Cary St		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
7:00	7:15	0	130	9	0	14	12	0	13	206
7:15	7:30	0	147	18	0	10	24	0	29	258
7:30	7:45	0	176	9	0	22	28	0	28	243
7:45	8:00	0	198	10	0	11	26	0	27	306
8:00	8:15	0	216	18	0	14	20	0	35	344
8:15	8:30	0	206	13	0	26	31	0	33	318
8:30	8:45	0	198	15	0	31	37	0	55	299
8:45	9:00	0	255	18	0	34	50	0	59	240
9:00	9:15	0	238	9	0	13	31	0	24	280
9:15	9:30	0	226	16	0	19	26	0	31	251
14:30	14:45	0	307	17	0	12	16	0	35	295
14:45	15:00	0	291	10	0	17	21	0	38	294
15:00	15:15	0	277	13	0	28	68	0	39	236
15:15	15:30	0	331	20	0	25	46	0	25	287
15:30	15:45	0	317	14	0	23	38	0	26	287
15:45	16:00	0	306	17	0	11	37	0	26	253
16:00	16:15	0	305	16	0	10	37	0	14	264
16:15	16:30	0	334	12	0	15	30	0	21	249
16:30	16:45	0	307	18	0	14	29	0	27	244
16:45	17:00	0	309	7	0	19	25	0	29	205
17:00	17:15	0	324	11	0	16	29	0	17	260
17:15	17:30	0	282	13	0	22	27	0	23	248
17:30	17:45	0	274	12	0	11	27	0	27	227
17:45	18:00	0	283	15	0	12	33	0	21	200

Peak Time		North Approach Cary St			East Approach Bay St			South Approach Cary St			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:00	9:00	0	875	64	0	105	138	0	182	1201	2565
14:45	15:45	0	1216	57	0	93	173	0	128	1104	2771

Heavy Vehicles

Time		North Approach Cary St			East Approach Bay St			South Approach Cary St		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
7:00	7:15	0	14	0	0	0	0	0	0	16
7:15	7:30	0	22	0	0	0	0	0	0	14
7:30	7:45	0	12	0	0	0	0	0	0	22
7:45	8:00	0	11	0	0	0	0	0	0	13
8:00	8:15	0	13	0	0	0	0	0	0	16
8:15	8:30	0	8	0	0	0	0	0	1	21
8:30	8:45	0	24	0	0	0	1	0	0	17
8:45	9:00	0	23	1	0	0	0	0	1	10
9:00	9:15	0	17	0	0	1	0	0	1	10
9:15	9:30	0	17	0	0	0	1	0	1	19
14:30	14:45	0	8	0	0	0	0	0	1	13
14:45	15:00	0	14	0	0	1	0	0	0	16
15:00	15:15	0	11	1	0	1	0	0	3	10
15:15	15:30	0	13	0	0	0	0	0	1	9
15:30	15:45	0	12	0	0	0	0	0	0	8
15:45	16:00	0	11	0	0	0	0	0	0	10
16:00	16:15	0	5	1	0	0	0	0	0	6
16:15	16:30	0	5	0	0	0	0	0	0	13
16:30	16:45	0	5	0	0	0	0	0	0	11
16:45	17:00	0	4	0	0	0	0	0	0	4
17:00	17:15	0	4	0	0	0	1	0	0	4
17:15	17:30	0	5	0	0	0	0	0	0	3
17:30	17:45	0	8	0	0	0	0	0	0	4
17:45	18:00	0	1	0	0	0	0	0	0	0

Peak Time		North Approach Cary St			East Approach Bay St			South Approach Cary St			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:00	9:00	0	68	1	0	0	1	0	2	64	136
14:45	15:45	0	50	1	0	2	0	0	4	43	100

Peds crossing

Time		North Approach		East Approach		South Approach		Hourly Total	
Period Start	Period End	WB	EB	SB	NB	WB	EB	Hour	Peak
7:00	7:15	0	0	0	0	0	0	4	
7:15	7:30	0	0	0	0	0	0	5	
7:30	7:45	0	2	0	0	0	0	7	
7:45	8:00	1	0	0	0	0	1	14	
8:00	8:15	0	0	0	0	0	1	16	
8:15	8:30	1	0	0	0	0	1	22	Peak
8:30	8:45	1	8	0	0	0	0	21	
8:45	9:00	0	2	1	0	1	0		
9:00	9:15	0	3	1	1	1	1		
9:15	9:30	0	0	0	0	0	1		
14:30	14:45	0	0	1	0	0	4	38	Peak
14:45	15:00	0	3	0	1	0	2	36	
15:00	15:15	9	0	1	1	8	6	32	
15:15	15:30	0	0	0	0	2	0	12	
15:30	15:45	0	1	0	1	1	0	10	
15:45	16:00	0	0	2	0	0	0	10	
16:00	16:15	2	0	2	0	0	1	8	
16:15	16:30	0	0	0	0	0	0	5	
16:30	16:45	1	2	0	0	0	0	7	
16:45	17:00	0	0	0	0	0	0	5	
17:00	17:15	0	0	0	0	0	2	5	
17:15	17:30	1	0	0	0	0	1		
17:30	17:45	0	0	0	0	1	0		
17:45	18:00	0	0	0	0	0	0		

Queue on Bay St			
Green light	North Lane	Green light	South Lane
7:01:16	1	7:01:16	0
7:03:34	4	7:03:34	1
7:04:46	2	7:04:46	0
7:06:06	1	7:06:06	0
7:07:38	0	7:07:38	1
7:09:16	0	7:09:16	2
7:10:53	1	7:10:53	0
7:12:44	2	7:12:44	1
7:14:27	1	7:14:27	2
7:16:18	1	7:16:18	1
7:17:58	1	7:17:58	0
7:19:24	0	7:19:24	3
7:21:10	0	7:21:10	2
7:22:55	1	7:22:55	7
7:24:33	0	7:24:33	2
7:25:56	0	7:25:56	3
7:27:28	2	7:27:28	1
7:28:47	1	7:28:47	3
7:30:41	1	7:30:26	1
7:32:19	3	7:30:59	1
7:34:22	1	7:32:19	1
7:36:11	3	7:34:22	5
7:37:40	0	7:36:11	4
7:39:20	3	7:37:40	1
7:41:18	3	7:39:20	1
7:43:01	2	7:41:18	4
7:44:50	1	7:43:01	2
7:46:27	1	7:44:37	1
7:48:15	1	7:46:27	3
7:50:13	4	7:48:15	3
7:51:58	1	7:50:02	2
7:53:49	1	7:51:48	1
7:57:26	2	7:53:49	3
7:59:21	2	7:55:28	3
8:00:47	1	7:57:14	2
8:02:26	1	7:59:00	4
8:05:46	2	7:59:21	3
8:07:54	4	8:00:36	2
8:09:35	1	8:02:26	3
8:11:17	1	8:05:35	1
8:13:15	3	8:05:46	1
8:15:18	4	8:06:10	1
8:17:06	6	8:07:29	1
8:18:47	5	8:09:22	2
8:20:17	2	8:11:17	3
8:22:30	1	8:13:15	5
8:26:37	4	8:14:56	3
8:28:43	1	8:17:06	2
8:30:39	3	8:19:14	2
8:32:45	3	8:20:17	3
8:34:31	9	8:22:13	2
8:36:24	5	8:22:55	2
8:38:25	4	8:24:29	1
8:40:07	5	8:28:43	4
8:41:58	3	8:29:03	2
8:44:11	4	8:30:27	3
8:46:03	4	8:32:22	5
8:48:01	5	8:34:19	3
8:49:42	1	8:36:08	2
8:51:37	6	8:37:59	2
8:53:40	2	8:39:52	4
8:55:36	3	8:41:44	4
8:57:33	7	8:43:45	2
8:59:37	4	8:45:52	6
9:01:32	1	8:47:47	3
9:03:31	4	8:49:17	3
9:07:20	1	8:51:23	4
9:09:16	2	8:53:26	8
9:11:15	5	8:55:23	3
9:15:12	3	8:57:17	5
9:19:13	3	8:59:37	5
9:21:13	2	9:01:20	4
9:22:55	3	9:03:16	5
9:24:59	2	9:05:19	1
9:26:36	2	9:07:05	4
14:31:43	1	9:09:03	2
14:33:30	2	9:10:59	4
14:37:12	3	9:13:01	1
14:41:06	1	9:14:56	2
14:43:08	4	9:16:58	2
14:45:17	4	9:18:56	3
14:47:02	3	9:20:58	4
14:49:03	5	9:22:55	2
14:51:03	1	9:25:08	5
14:55:02	2	9:26:36	3
14:57:07	2	9:28:22	3
15:00:16	1	14:31:45	8
15:02:03	2	14:33:16	9
15:03:44	3	14:33:40	4
15:05:34	8	14:35:08	3
15:07:18	10	14:38:50	1
15:08:58	10	14:40:53	4
15:10:43	4	14:41:15	3
15:12:40	4	14:44:52	1
15:16:30	9	14:45:17	2
15:18:22	7	14:46:48	2
15:20:08	5	14:48:46	1
15:22:11	2	14:50:43	2
15:24:02	2	14:53:11	3
15:26:05	4	14:54:48	2
15:31:44	5	14:56:42	3
15:33:41	3	14:58:26	3
15:35:41	5	15:00:03	1
15:37:34	3	15:01:49	2
15:39:24	1	15:02:13	2
15:41:30	1	15:03:32	10
15:43:14	2	15:05:10	9
15:45:02	1	15:06:51	8
15:47:03	2	15:07:18	10
15:48:57	1	15:08:40	12
15:53:00	2	15:09:02	11
15:54:56	1	15:10:20	11
15:58:18	3	15:12:17	12
16:00:17	1	15:14:15	10
16:01:59	2	15:16:08	9
16:03:48	1	15:18:22	7
16:05:40	1	15:19:57	2
16:09:24	1	15:21:52	5
16:10:59	2	15:24:02	3
16:13:11	2	15:25:49	7
16:15:05	3	15:27:41	3
16:16:57	1	15:29:37	6
16:20:40	2	15:31:31	6
16:22:34	4	15:33:41	7
16:25:58	1	15:35:29	4
16:27:43	1	15:37:34	2
16:29:35	1	15:39:11	4
16:31:22	3	15:41:30	7
16:34:49	2	15:43:01	6
16:36:41	1	15:44:49	2
16:38:27	2	15:46:45	1
16:42:03	5	15:48:42	4
16:43:46	1	15:50:51	8
16:47:08	2	15:53:00	11
16:48:53	3	15:54:56	9
16:50:35	2	15:56:38	8
16:52:11	2	15:58:18	2
16:53:58	3	15:59:53	7
16:55:39	2	16:00:17	3
16:57:17	1	16:01:59	6
16:58:54	2	16:03:48	1
17:00:36	2	16:05:40	4
17:01:58	3	16:07:32	6
17:11:50	4	16:09:09	2
17:13:44	3	16:10:59	5
17:15:29	2	16:12:58	5
17:17:25	1	16:14:53	4
17:19:02	2	16:16:57	3
17:24:04	1	16:18:38	5
17:25:46	2	16:20:26	8
17:27:41	7	16:22:23	2
17:29:30	3	16:24:01	1
17:31:14	1	16:25:58	3
17:32:38	1	16:27:31	4
17:39:00	2	16:29:35	3
17:40:47	2	16:31:22	1
17:42:23	3	16:33:23	3
17:44:04	2	16:34:49	4
17:45:42	1	16:36:28	3
17:48:37	1	16:38:27	3
17:49:59	1	16:40:04	1
17:51:56	2	16:42:03	3
17:53:41	1	16:43:35	7
17:55:24	3	16:45:16	9
17:56:58	2	16:47:08	8
		16:48:39	2
		16:50:35	3
		16:52:00	2
		16:53:58	3
		16:57:07	1
		16:58:43	2
		17:00:44	4
		17:01:58	5
		17:03:40	2
		17:05:03	9
		17:06:44	3
		17:08:20	2
		17:10:02	4
		17:11:50	2
		17:13:34	4
		17:17:25	5
		17:19:02	5
		17:20:30	2
		17:22:02	1
		17:23:52	2
		17:25:35	1
		17:27:50	5
		17:29:30	4
		17:31:14	6
		17:32:38	5
		17:34:17	1
		17:35:53	1
		17:37:31	1
		17:39:00	1
		17:40:34	2
		17:42:12	1
		17:44:04	3
		17:45:42	4
		17:47:02	3
		17:48:37	1
		17:49:59	2
		17:51:56	3
		17:53:41	2
		17:55:12	4
		17:56:58	6
		17:58:14	7
		17:59:52	2

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Bay St and Arnott Ave, Toronto

GPS	-33.00907, 151.59499
Date:	Fri 12/02/21
Weather:	Overcast
Suburban:	Toronto
Customer:	McLaren

North:	N/A
East:	Bay St
South:	Arnott Ave
West:	Bay St

Survey Period	AM:	7:00 AM-9:30 AM
	PM:	2:30 PM-6:00 PM
Traffic Peak	AM:	8:15 AM-9:15 AM
	PM:	2:45 PM-3:45 PM

All Vehicles

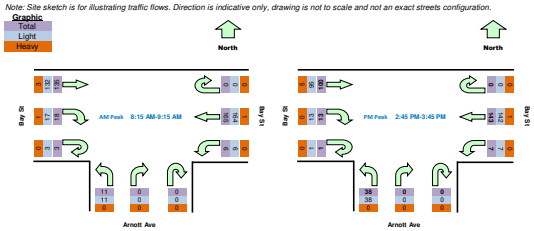
Time		East Approach Bay St			South Approach Arnott Ave			West Approach Bay St			Hourly Total	
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	Hour	Peak
7:00	7:15	0	10	0	0	0	1	0	1	7	130	
7:15	7:30	0	15	0	0	0	1	0	1	18	161	
7:30	7:45	0	21	0	0	0	1	1	2	14	185	
7:45	8:00	0	18	2	0	0	0	0	2	15	248	
8:00	8:15	0	15	5	0	0	4	0	5	21	336	
8:15	8:30	0	31	0	0	0	1	2	3	22	338	Peak
8:30	8:45	0	50	2	0	0	3	0	4	43	330	
8:45	9:00	0	55	3	0	0	5	0	9	53		
9:00	9:15	0	29	1	0	0	2	1	2	17		
9:15	9:30	0	25	0	0	0	4	0	5	17		
14:30	14:45	0	10	1	0	0	3	1	8	22	291	
14:45	15:00	0	17	2	0	0	7	0	3	37	302	Peak
15:00	15:15	0	69	1	0	0	12	0	2	30	285	
15:15	15:30	0	31	3	0	0	10	0	4	18	214	
15:30	15:45	0	26	1	0	0	9	1	4	15	195	
15:45	16:00	0	22	2	0	0	6	1	4	14	190	
16:00	16:15	0	23	1	0	0	5	0	7	7	190	
16:15	16:30	0	20	1	0	0	9	1	2	14	190	
16:30	16:45	0	16	6	0	0	7	2	2	18	185	
16:45	17:00	0	16	2	0	0	9	1	12	9	178	
17:00	17:15	0	15	1	0	1	14	0	2	10	177	
17:15	17:30	0	19	1	0	0	8	0	2	12		
17:30	17:45	0	10	1	0	0	13	0	6	14		
17:45	18:00	0	18	0	0	0	10	0	11	9		

Peak Time		East Approach Bay St			South Approach Arnott Ave			West Approach Bay St			Peak
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	total
8:15	9:15	0	165	6	0	0	11	3	18	135	338
14:45	15:45	0	143	7	0	0	38	1	13	100	302

Peds crossing

Time		East Approach		South Approach		West Approach		Hourly Total	
Period Start	Period End	SB	NB	WB	EB	SB	NB	Hour	Peak
7:00	7:15	1	1	0	0	0	0	8	
7:15	7:30	1	2	0	0	0	0	7	
7:30	7:45	0	1	0	0	0	0	4	
7:45	8:00	2	0	0	0	0	0	9	
8:00	8:15	1	0	0	0	0	0	14	
8:15	8:30	0	0	0	0	0	0	14	
8:30	8:45	1	4	0	0	1	0	15	Peak
8:45	9:00	3	3	0	0	1	0		
9:00	9:15	1	0	0	0	0	0		
9:15	9:30	1	0	0	0	0	0		
14:30	14:45	0	0	0	0	1	0	48	Peak
14:45	15:00	0	4	0	0	0	1	47	
15:00	15:15	18	3	10	0	11	0	42	
15:15	15:30	0	0	0	0	0	0	0	
15:30	15:45	0	0	0	0	0	0	2	
15:45	16:00	0	0	0	0	0	0	3	
16:00	16:15	0	0	0	0	0	0	4	
16:15	16:30	0	2	0	0	0	0	8	
16:30	16:45	0	1	0	0	0	0	8	
16:45	17:00	1	0	0	0	0	0	8	
17:00	17:15	3	0	0	0	1	0	8	
17:15	17:30	0	1	0	0	1	0		
17:30	17:45	1	0	0	0	0	0		
17:45	18:00	1	0	0	0	0	0		

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 Bay St			South Approach Arnott Ave			West Approach Bay St			Hourly Total
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	Hour
7:00	7:15	0	10	0	0	0	1	0	1	7	
7:15	7:30	0	15	0	0	0	1	0	1	18	
7:30	7:45	0	21	0	0	0	1	1	2	14	
7:45	8:00	0	18	2	0	0	0	0	2	15	
8:00	8:15	0	15	5	0	0	4	0	5	21	
8:15	8:30	0	31	0	0	0	1	2	2	22	
8:30	8:45	0	50	2	0	0	3	0	4	43	
8:45	9:00	0	55	3	0	0	5	0	9	51	
9:00	9:15	0	28	1	0	0	2	1	2	16	
9:15	9:30	0	25	0	0	0	4	0	5	17	
14:30	14:45	0	10	1	0	0	3	1	8	21	
14:45	15:00	0	17	2	0	0	7	0	3	37	
15:00	15:15	0	68	1	0	0	12	0	2	26	
15:15	15:30	0	31	3	0	0	10	0	4	17	
15:30	15:45	0	26	1	0	0	9	1	4	15	
15:45	16:00	0	22	2	0	0	6	1	4	14	
16:00	16:15	0	23	1	0	0	5	0	7	7	
16:15	16:30	0	20	1	0	0	9	1	2	14	
16:30	16:45	0	16	6	0	0	7	2	2	18	
16:45	17:00	0	16	1	0	0	9	1	12	9	
17:00	17:15	0	15	1	0	1	14	0	2	10	
17:15	17:30	0	19	1	0	0	8	0	2	12	
17:30	17:45	0	10	1	0	0	13	0	6	14	
17:45	18:00	0	18	0	0	0	10	0	11	9	

Peak Time		East Approach Bay St			South Approach Arnott Ave			West Approach Bay St			Peak
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	total
8:15	9:15	0	164	6	0	0	11	3	17	132	333
14:45	15:45	0	142	7	0	0	38	1	13	95	296

Heavy Vehicles

Time		East Approach Bay St			South Approach Arnott Ave			West Approach Bay St			Hourly Total
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	Hour
7:00	7:15	0	0	0	0	0	0	0	0	0	
7:15	7:30	0	0	0	0	0	0	0	0	0	
7:30	7:45	0	0	0	0	0	0	0	0	0	
7:45	8:00	0	0	0	0	0	0	0	0	0	
8:00	8:15	0	0	0	0	0	0	0	0	0	
8:15	8:30	0	0	0	0	0	0	0	1	0	
8:30	8:45	0	0	0	0	0	0	0	0	0	
8:45	9:00	0	0	0	0	0	0	0	0	2	
9:00	9:15	0	1	0	0	0	0	0	0	1	
9:15	9:30	0	0	0	0	0	0	0	0	0	
14:30	14:45	0	0	0	0	0	0	0	0	1	
14:45	15:00	0	0	0	0	0	0	0	0	0	
15:00	15:15	0	1	0	0	0	0	0	0	4	
15:15	15:30	0	0	0	0	0	0	0	0	1	
15:30	15:45	0	0	0	0	0	0	0	0	0	
15:45	16:00	0	0	0	0	0	0	0	0	0	
16:00	16:15	0	0	0	0	0	0	0	0	0	
16:15	16:30	0	0	0	0	0	0	0	0	0	
16:30	16:45	0	0	0	0	0	0	0	0	0	
16:45	17:00	0	0	1	0	0	0	0	0	0	
17:00	17:15	0	0	0	0	0	0	0	0	0	
17:15	17:30	0	0	0	0	0	0	0	0	0	
17:30	17:45	0	0	0	0	0	0	0	0	0	
17:45	18:00	0	0	0	0	0	0	0	0	0	

Peak Time		East Approach Bay St			South Approach Arnott Ave			West Approach Bay St			Peak
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	total
8:15	9:15	0	1	0	0	0	0	0	1	3	5
14:45	15:45	0	1	0	0	0	0	0	0	5	6

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Victory Parade and Cary St, Toronto

GPS -33.01022, 151.59378

Date:	Fri 12/02/21
Weather:	Overcast
Suburban:	Toronto
Customer:	McLaren

North:	Cary St
East:	Victory Parade
South:	Cary St
West:	N/A

Survey Period	AM:	7:00 AM-9:30 AM
	PM:	2:30 PM-6:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	2:45 PM-3:45 PM

All Vehicles

Time		North Approach Cary St			East Approach Victory Parad			South Approach Cary St			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
7:00	7:15	0	130	26	0	40	1	0	3	195	1996	
7:15	7:30	0	166	27	0	55	3	0	3	246	2253	
7:30	7:45	0	178	38	0	48	1	0	6	245	2375	
7:45	8:00	0	197	38	0	97	2	0	2	249	2504	
8:00	8:15	0	208	41	0	79	4	0	4	316	2560	Peak
8:15	8:30	0	183	62	0	71	2	0	2	302	2521	
8:30	8:45	0	200	60	0	81	9	0	5	290	2484	
8:45	9:00	0	228	100	0	62	1	0	2	248		
9:00	9:15	0	218	68	0	78	6	0	6	237		
9:15	9:30	0	198	72	0	72	12	0	1	230		
14:30	14:45	0	263	68	0	92	18	0	3	252	2755	
14:45	15:00	0	254	72	0	113	7	0	3	235	2756	Peak
15:00	15:15	0	267	89	0	59	4	0	6	229	2730	
15:15	15:30	0	289	101	0	81	5	0	4	241	2717	
15:30	15:45	0	287	80	0	63	7	0	2	258	2659	
15:45	16:00	0	259	95	0	71	12	0	3	218	2603	
16:00	16:15	0	270	77	0	81	6	0	4	203	2530	
16:15	16:30	0	289	80	0	90	6	0	5	193	2535	
16:30	16:45	0	265	76	0	87	14	0	4	195	2471	
16:45	17:00	0	261	77	0	81	6	0	3	157	2407	
17:00	17:15	0	275	83	0	74	5	0	2	207	2368	
17:15	17:30	0	233	81	0	81	5	0	6	193		
17:30	17:45	0	243	66	0	53	7	0	3	205		
17:45	18:00	0	245	72	0	53	6	0	2	168		

Peds crossing

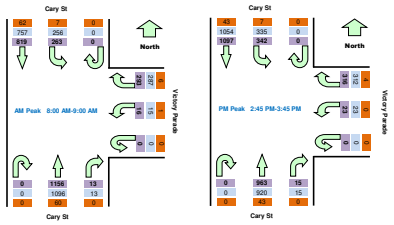
Time		North Approach		East Approach		South Approach		Hourly Total	
Period Start	Period End	WB	EB	SB	NB	WB	EB	Hour	Peak
7:00	7:15	3	1	0	0	0	0	16	Peak
7:15	7:30	3	0	0	0	0	0	15	
7:30	7:45	1	4	0	0	0	0	12	
7:45	8:00	1	3	0	0	0	0	8	
8:00	8:15	2	1	0	0	0	0	10	
8:15	8:30	0	0	0	0	0	0	14	
8:30	8:45	0	1	0	0	0	0	14	
8:45	9:00	3	3	0	0	0	0		
9:00	9:15	2	5	0	0	0	0		
9:15	9:30	0	0	0	0	0	0		
14:30	14:45	0	4	0	0	0	0	8	Peak
14:45	15:00	1	0	0	1	0	0	4	
15:00	15:15	0	1	0	0	0	0	6	
15:15	15:30	0	1	0	0	0	0	5	
15:30	15:45	0	0	0	0	0	0	5	
15:45	16:00	0	2	0	1	0	1	5	
16:00	16:15	0	0	0	0	0	0	1	
16:15	16:30	0	0	1	0	0	0	4	
16:30	16:45	0	0	0	0	0	0	3	
16:45	17:00	0	0	0	0	0	0	4	
17:00	17:15	1	1	0	1	0	0	4	
17:15	17:30	0	0	0	0	0	0		
17:30	17:45	0	0	1	0	0	0		
17:45	18:00	0	0	0	0	0	0		

Peak Time		North Approach Cary St			East Approach Victory Parad			South Approach Cary St			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:00	9:00	0	819	263	0	293	16	0	13	1156	2560
14:45	15:45	0	1097	342	0	316	23	0	15	963	2756

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 Cary St			East Approach Victory Parad			South Approach Cary St			Hourly Total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour
7:00	7:15	0	117	25	0	38	1	0	3	181	
7:15	7:30	0	144	27	0	53	3	0	3	234	
7:30	7:45	0	169	35	0	47	1	0	6	224	
7:45	8:00	0	186	38	0	97	2	0	2	236	
8:00	8:15	0	196	40	0	77	3	0	4	302	
8:15	8:30	0	176	61	0	69	2	0	2	282	
8:30	8:45	0	176	59	0	79	9	0	5	275	
8:45	9:00	0	209	96	0	62	1	0	2	237	
9:00	9:15	0	203	66	0	77	6	0	6	227	
9:15	9:30	0	181	71	0	71	12	0	1	211	
14:30	14:45	0	257	66	0	91	17	0	3	239	
14:45	15:00	0	241	71	0	111	7	0	3	221	
15:00	15:15	0	260	85	0	59	4	0	6	216	
15:15	15:30	0	276	101	0	81	5	0	4	231	
15:30	15:45	0	277	78	0	61	7	0	2	252	
15:45	16:00	0	252	91	0	69	11	0	3	210	
16:00	16:15	0	266	76	0	81	6	0	4	197	
16:15	16:30	0	286	78	0	90	5	0	5	180	
16:30	16:45	0	260	76	0	87	14	0	4	184	
16:45	17:00	0	258	76	0	81	6	0	3	153	
17:00	17:15	0	271	82	0	73	5	0	2	204	
17:15	17:30	0	228	81	0	81	5	0	6	190	
17:30	17:45	0	237	64	0	53	7	0	3	201	
17:45	18:00	0	244	72	0	53	6	0	2	168	

Peak Time		North Approach Cary St			East Approach Victory Parad			South Approach Cary St			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:00	9:00	0	757	256	0	287	15	0	13	1096	2424
14:45	15:45	0	1054	335	0	312	23	0	15	920	2659

Heavy Vehicles

Time		North Approach Cary St			East Approach Victory Parad			South Approach Cary St		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
7:00	7:15	0	13	1	0	2	0	0	0	14
7:15	7:30	0	22	0	0	2	0	0	0	12
7:30	7:45	0	9	3	0	1	0	0	0	21
7:45	8:00	0	11	0	0	0	0	0	0	13
8:00	8:15	0	12	1	0	2	1	0	0	14
8:15	8:30	0	7	1	0	2	0	0	0	20
8:30	8:45	0	24	1	0	2	0	0	0	15
8:45	9:00	0	19	4	0	0	0	0	0	11
9:00	9:15	0	15	2	0	1	0	0	0	10
9:15	9:30	0	17	1	0	1	0	0	0	19
14:30	14:45	0	6	2	0	1	1	0	0	13
14:45	15:00	0	13	1	0	2	0	0	0	14
15:00	15:15	0	7	4	0	0	0	0	0	13
15:15	15:30	0	13	0	0	0	0	0	0	10
15:30	15:45	0	10	2	0	2	0	0	0	6
15:45	16:00	0	7	4	0	2	1	0	0	8
16:00	16:15	0	4	1	0	0	0	0	0	6
16:15	16:30	0	3	2	0	0	1	0	0	13
16:30	16:45	0	5	0	0	0	0	0	0	11
16:45	17:00	0	3	1	0	0	0	0	0	4
17:00	17:15	0	4	1	0	1	0	0	0	3
17:15	17:30	0	5	0	0	0	0	0	0	3
17:30	17:45	0	6	2	0	0	0	0	0	4
17:45	18:00	0	1	0	0	0	0	0	0	0

Peak Time		North Approach Cary St			East Approach Victory Parad			South Approach Cary St			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:00	9:00	0	62	7	0	6	1	0	0	60	136
14:45	15:45	0	43	7	0	4	0	0	0	43	97

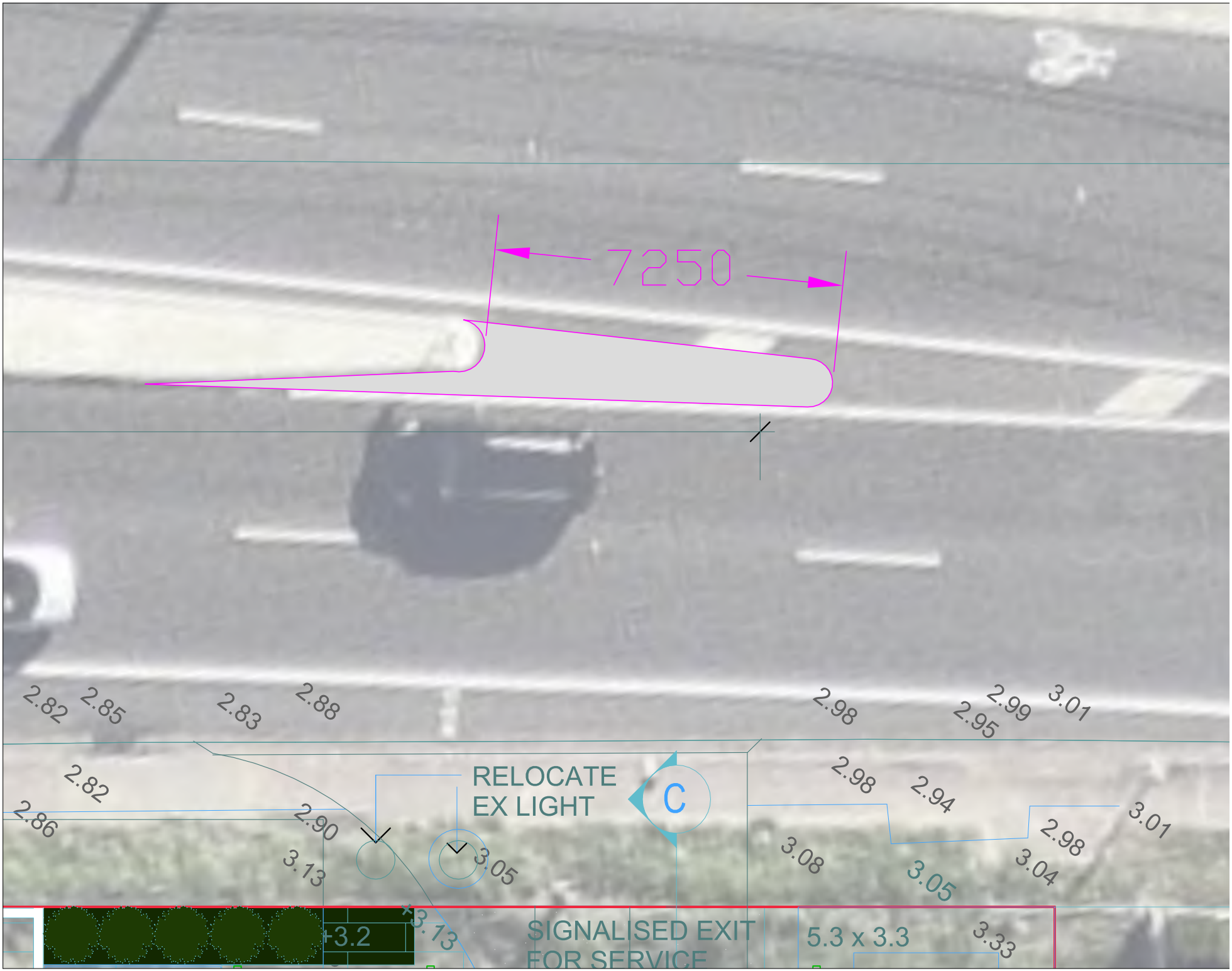
ANNEXURE C: CONCEPT PLAN FOR COMMERCIAL GFA

(1 SHEET)

EX KERB
NEW STREET TREE
EX FOOTPATH
AWNING OVER
EX EP
EX PP
NEW STREET TREE
TO LANDSCAPE ARCHITECTS DETAIL
MAIL BOXES
ex no stopping sign
EXISTING FOOTWAY TO REMAIN
700mm HIGH BARRIER
BALUSTRADE
RL 3.30
RL 4.50
RL 3.3
RL 4.5
BAL
1:14 RAMP
RL 3.20
CAR-PARK
1:20 MIN GRADE
ENTRY LOBBY C1
APT LIFT
CONSULT ROOM
1
2
3
4
5
6
MEDICAL 530m²
ENTRY LOBBY C2
ELECTRICAL MAINS
APT
CHEMIST 133m²
SPECIALIST
RECEPTION
WC
WC
WC
WC
WC
ACC WC
RESIDENT GARBAGE
12 x 1100 LITRE BINS
SCREEN
APT
7
8
9
10
11
ART LIFT
COMM BINS
KITCHEN
RESTAURANT 266m²
SPECIALIST
929m²
STAFF KITCHEN
SPECIALIST
COMM LIFT
ACC WC
SERVICES
CLNR
RL 4.50
PUBLIC RESERVE
700mm HIGH PLANTER BOX
PERGOLA
100m²
COVERED WALKWAY
130m²
SHOP ENTRY DOOR LOCATIONS SUBJECT TO TENANCY
LOADING BAY
RL 3.69
LINE OF DRIVE BELOW
SCREEN
CARPARK EXH
RESIDENT GARBAGE 15 x 1100 LITRE BINS
RAISED PLANTER BOX TO LANDSCAPE ARCHITECTS DETAILS
CAR-PARK
A004
97 m²
ST 1.48 m²
ST 3.89 m²
ST 2.03 m²
PLANTER 1000mm HIGH
LANDSCAPING AND PAVING TO LANDSCAPE ARCHITECT DETAILS
FENCE ON PLANTER 1.8m HIGH
1.8m FENCE
4,000
3,000

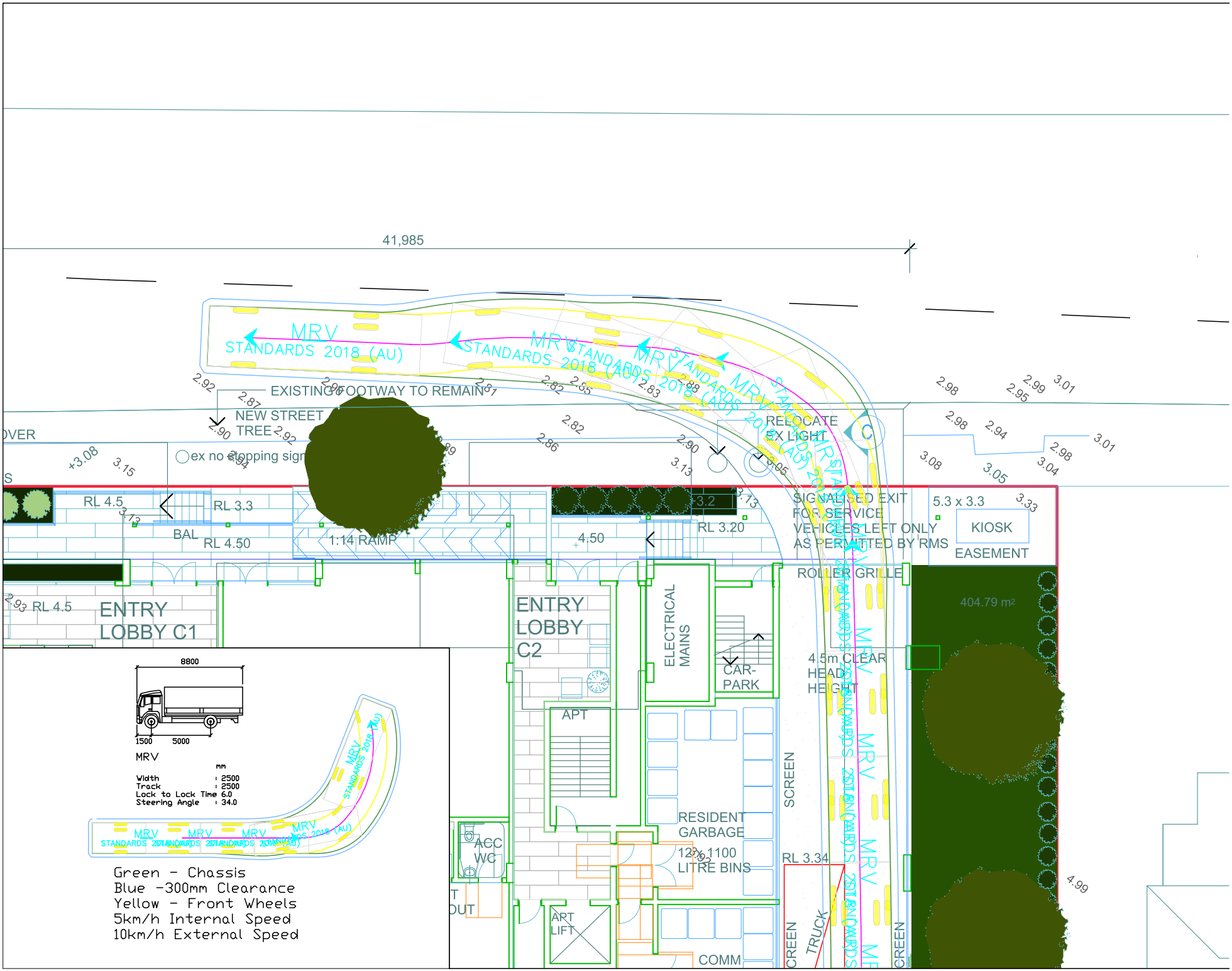
ANNEXURE D: CONCEPT PLAN FOR MEDIAN EXTENSION

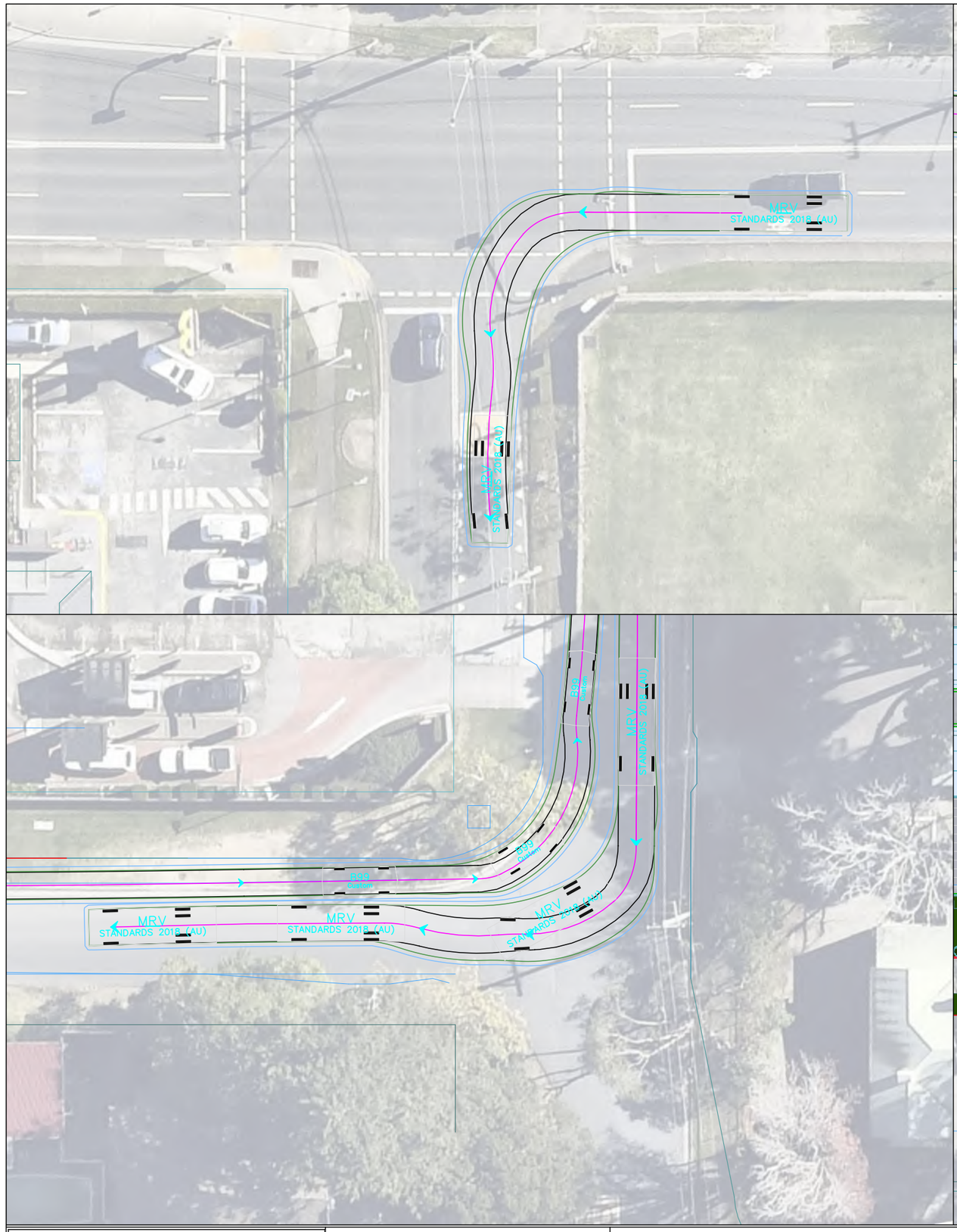
(1 SHEET)

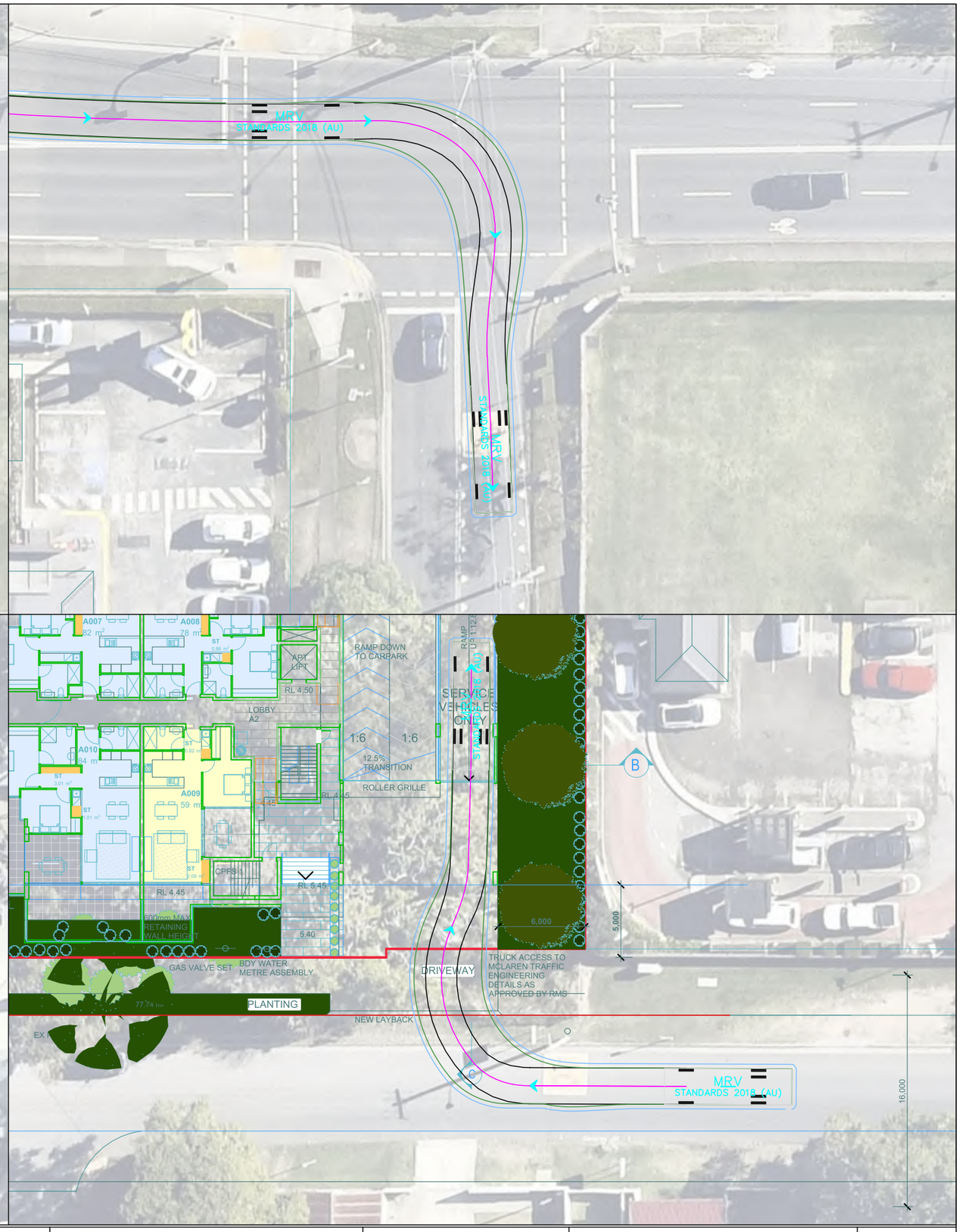

7250
2.82
2.85
2.83
2.88
2.98
2.95
2.99
3.01
2.82
2.86
2.90
3.13
RELOCATE
EX LIGHT
C
3.05
2.98
2.94
3.01
3.08
3.05
2.98
3.04
+3.2
3.73
SIGNALISED EXIT
FOR SERVICE
5.3 x 3.3
3.33

ANNEXURE E: SWEPT PATH TESTING RESULTS

(2 SHEETS)


41,985
MRV STANDARDS 2018 (AU)
EXISTING FOOTWAY TO REMAIN
NEW STREET TREE
ex no stopping sign
RL 4.5
RL 3.3
BAL
RL 4.50
1:14 RAMP
RL 3.20
+3.2
4.50
ENTRY LOBBY C1
ENTRY LOBBY C2
ELECTRICAL MAINS
CAR-PARK
APT
RESIDENT GARBAGE
1280 x 1100 LITRE BINS
ACC WC
ART LIFT
COMM
SCREEN
TRUCK
RL 3.34
ROLLER GRILLE
SIGNALISED EXIT FOR SERVICE VEHICLES LEFT ONLY AS PERMITTED BY RMS
RELOCATE EX LIGHT
5.3 x 3.3
KIOSK
EASEMENT
404.79 m²
4.5m CLEAR HEADROOM HEIGHT
8800
1500
5000
MRV
mm
Width : 2500
Track : 2500
Lock to Lock Time 6.0
Steering Angle : 34.0
Green - Chassis
Blue -300mm Clearance
Yellow - Front Wheels
5km/h Internal Speed
10km/h External Speed





McLaren Traffic Engineering

MCLAREN TRAFFIC ENGINEERING
A division of RAMTRANS Australia Pty. Ltd.

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CLIENT / Project:

Toronto Developments No. 1 Pty Ltd/ Mixed-Use Development

Project Address:

118 Cary Street, Toronto

Notes:
CONCEPT PLAN ONLY.
NOT FOR CONSTRUCTION.

Tested Using:
*AutoTURN 10
*ZWCAD 2019

Drawing Title:

MRV Swept Path Tests

Project No:	Drawing No:
2020/0306	2020-0306-01-01A

Revision	Date	Details
A	25/06/2021	

ANNEXURE F: ROAD WIDENING CONCEPT PLAN

(1 SHEET)

LOT 100
DP1110774
MC DONALDS

ROOF 9.10
AWNING
ROOF 8.83
ROOF 8.51
ROOF 10.68
ROOF 8.51
ROOF 8.73
ROOF 9.19
ROOF 8.85
ROOF 7.85
ROOF 7.82
AWNING
ROOF 7.78
ROOF 7.80
AWNING

SHEET METAL FENCE ON RET. WALL
CONCRETE RET. WALL

50.286
98°29'22"

LOT 4
DP 2505
689.2m²

20.380
278°29'35"

LOT 101
DP1110774
279.5m²

PT5
DP 2505
689.2m²

4.000
98°29'35"

WIRE MESH FENCE

64.005
8°28'05"

NO STOPPING SIGN

LOT 6
DP 2505
607.0m²

LOT 7
DP 2505
607.0m²

LOT 8
DP 2505
607.0m²

LOT 9
DP 2505
607.0m²

LOT 10
DP 2505
607.0m²

11.000
98°29'35"

"C"

Extend No Stopping

50.290
188°29'15"

WIRE MESH FENCE

NO STOPPING SIGN

ARNOTT AVENUE

UPRIGHT KERB

EDGE OF BITUMEN

BENCHMARK DRILL
AND WING IN KERB

8.0

Proposed Kerb

NO STOPPING SIGN

CLAD GARAGE

GARAGE OF CLAD COTTAGE

CARPARK ENTRANCE

CARPARK ENTRANCE

ROOF 9.90
ROOF 9.90
ROOF 13.30
ROOF 10.40
ROOF 10.40
ROOF 8.69
ROOF 10.13
ROOF 10.40
14.06

ROYAL MOTOR YACHT CLUB

ROOF 8.39
ROOF 9.48
ROOF 11.90

EASEMENT FOR PIPELINE (VARIABLE WIDTH) GAZ 24-5-1991 FOL3893
RESERVATIONS & CONDITIONS - CROWN GRANT
RESERVATIONS & CONDITIONS - S700000A EX MINERALS

"A"
"B"
"C"

ANNEXURE G: SIDRA RESULTS – EXISTING AND EXISTING PLUS DEVELOPMENT

(24 SHEETS)

LANE SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Arnott Avenue (S)															
Lane 1	9	0.0	9	0.0	1456	0.007	100	5.8	LOS A	0.0	0.1	Full	500	0.0	0.0
Approach	9	0.0	9	0.0		0.007		5.8	LOS A	0.0	0.1				
East: Bay Street (E)															
Lane 1	65	0.0	65	0.0	1936	0.033	100	0.8	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	65	0.0	65	0.0	1950	0.033	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	129	0.0	129	0.0		0.033		0.4	NA	0.0	0.0				
West: Bay Street (W)															
Lane 1	121	0.9	121	0.9	1801	0.067	100	0.8	LOS A	0.0	0.3	Full	75	0.0	0.0
Approach	121	0.9	121	0.9		0.067		0.8	NA	0.0	0.3				
Intersection	260	0.4	260	0.4		0.067		0.8	NA	0.0	0.3				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Arnott Avenue (S)														
1	L2	8	0.0	8	0.0	0.007	5.7	LOS A	0.0	0.1	0.13	0.54	0.13	50.2
3	R2	1	0.0	1	0.0	0.007	6.6	LOS A	0.0	0.1	0.13	0.54	0.13	53.0
Approach		9	0.0	9	0.0	0.007	5.8	LOS A	0.0	0.1	0.13	0.54	0.13	50.7
East: Bay Street (E)														
4	L2	9	0.0	9	0.0	0.033	5.5	LOS A	0.0	0.0	0.00	0.09	0.00	57.6
5	T1	120	0.0	120	0.0	0.033	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.3
Approach		129	0.0	129	0.0	0.033	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.0
West: Bay Street (W)														
11	T1	106	0.0	106	0.0	0.067	0.1	LOS A	0.0	0.3	0.05	0.07	0.05	58.7
12	R2	15	7.1	15	7.1	0.067	5.4	LOS A	0.0	0.3	0.05	0.07	0.05	55.0
Approach		121	0.9	121	0.9	0.067	0.8	NA	0.0	0.3	0.05	0.07	0.05	58.3
All Vehicles		260	0.4	260	0.4	0.067	0.8	NA	0.0	0.3	0.03	0.07	0.03	58.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

Site: 101 [Cary St/Victory Pde Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 80 seconds (Network Optimum Cycle Time - Minimum Delay)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cary Street (S)															
Lane 1	560	5.2	560	5.2	821	0.682	100	13.5	LOS A	9.6	70.0	Full	500	-22.6 N3	0.0
Lane 2	657	5.2	657	5.2	965 1	0.682	100	12.6	LOS A	10.5	77.0	Full	500	0.0	0.0
Lane 3	14	100.0	14	100.0	214	0.064	100	12.4	LOS A	0.1	1.7	Short	25	0.0	NA
Approach	1231	6.2	1231	6.2		0.682		13.0	LOS A	10.5	77.0				
East: Victory Parade (E)															
Lane 1	146	2.5	146	2.5	204	0.714	100	44.8	LOS D	3.7	26.3	Short	70	-20.5 N3	NA
Lane 2	180	2.0	180	2.0	252	0.714	100	44.5	LOS D	4.5	31.8	Full	500	0.0	0.0
Approach	325	2.3	325	2.3		0.714		44.6	LOS D	4.5	31.8				
North: Cary Street (N)															
Lane 1	277	2.7	277	2.7	1412	0.196	100	7.6	LOS A	1.2	8.9	Short	25	0.0	NA
Lane 2	431	7.6	431	7.6	1045	0.412	100	5.5	LOS A	3.0	22.4	Full	112	0.0	0.0
Lane 3	431	7.6	431	7.6	1045	0.412	100	0.5	LOS A	0.3	2.6	Full	112	0.0	0.0
Approach	1139	6.4	1139	6.4		0.412		4.1	LOS A	3.0	22.4				
Intersection	2695	5.8	2695	5.8		0.714		13.1	LOS A	10.5	77.0				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.

MOVEMENT SUMMARY

Site: 101 [Cary St/Victory Pde Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 80 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street (S)														
2	T1	1217	5.2	1217	5.2	0.682	13.0	LOS A	10.5	77.0	0.74	0.67	0.74	42.3
3	R2	14	100.0	14	100.0	0.064	12.4	LOS A	0.1	1.7	0.46	0.66	0.46	48.7
Approach		1231	6.2	1231	6.2	0.682	13.0	LOS A	10.5	77.0	0.74	0.67	0.74	42.4
East: Victory Parade (E)														
4	L2	17	6.2	17	6.2	0.714	44.8	LOS D	3.7	26.3	1.00	0.88	1.17	34.0
6	R2	308	2.0	308	2.0	0.714	44.6	LOS D	4.5	31.8	1.00	0.87	1.15	24.7
Approach		325	2.3	325	2.3	0.714	44.6	LOS D	4.5	31.8	1.00	0.88	1.15	25.3
North: Cary Street (N)														
7	L2	277	2.7	277	2.7	0.196	7.6	LOS A	1.2	8.9	0.20	0.63	0.20	48.0
8	T1	862	7.6	862	7.6	0.412	3.0	LOS A	3.0	22.4	0.17	0.15	0.17	55.6
Approach		1139	6.4	1139	6.4	0.412	4.1	LOS A	3.0	22.4	0.18	0.27	0.18	53.5
All Vehicles		2695	5.8	2695	5.8	0.714	13.1	LOS A	10.5	77.0	0.54	0.52	0.55	43.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	1	34.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		12	34.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

LANE SUMMARY

Site: 101 [Bay St / Cary St Existing AM - 2 Lane Bay]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 80 seconds (Network Optimum Cycle Time - Minimum Delay)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cary Street															
Lane 1	1058	5.1	1058	5.1	1463	0.723	100	4.1	LOS A	11.4	83.3	Full	112	0.0	22.6
Lane 2	468	3.4	468	3.4	863	0.542	75[7]	15.9	LOS B	7.3	52.3	Full	112	0.0	0.0
Approach	1525	4.6	1525	4.6		0.723		7.7	LOS A	11.4	83.3				
East: Bay Street															
Lane 1	146	0.7	146	0.7	855	0.171	100	18.4	LOS B	2.0	14.3	Full	75	0.0	0.0
Lane 2	111	0.0	111	0.0	116	0.952	100	64.3	LOS E	3.4	24.1	Full	75	0.0	0.0
Approach	257	0.4	257	0.4		0.952		38.2	LOS C	3.4	24.1				
North: Cary Street															
Lane 1	530	6.5	530	6.5	720	0.736	100	24.0	LOS B	11.0	81.5	Short (P)	90	0.0	NA
Lane 2	531	7.2	531	7.2	722	0.736	100	23.8	LOS B	11.3	83.8	Full	500	0.0	0.0
Approach	1061	6.8	1061	6.8		0.736		23.9	LOS B	11.3	83.8				
Intersection	2843	5.0	2843	5.0		0.952		16.5	LOS B	11.4	83.8				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

7 Lane under-utilisation specified by the user

MOVEMENT SUMMARY

Site: 101 [Bay St / Cary St Existing AM - 2 Lane Bay]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 80 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street														
2	T1	1332	5.1	1332	5.1	0.723	6.1	LOS A	11.4	83.3	0.55	0.52	0.57	51.1
3	R2	194	1.1	194	1.1	0.542	19.1	LOS B	7.3	52.3	0.74	0.76	0.86	19.2
Approach		1525	4.6	1525	4.6	0.723	7.7	LOS A	11.4	83.3	0.57	0.55	0.61	48.8
East: Bay Street														
4	L2	146	0.7	146	0.7	0.171	18.4	LOS B	2.0	14.3	0.62	0.72	0.62	13.7
6	R2	111	0.0	111	0.0	0.952	64.3	LOS E	3.4	24.1	1.00	1.09	1.92	20.8
Approach		257	0.4	257	0.4	0.952	38.2	LOS C	3.4	24.1	0.78	0.88	1.18	19.1
North: Cary Street														
7	L2	68	1.5	68	1.5	0.736	28.9	LOS C	11.0	81.5	0.90	0.83	0.93	33.7
8	T1	993	7.2	993	7.2	0.736	23.5	LOS B	11.3	83.8	0.91	0.83	0.94	33.8
Approach		1061	6.8	1061	6.8	0.736	23.9	LOS B	11.3	83.8	0.91	0.83	0.94	33.8
All Vehicles		2843	5.0	2843	5.0	0.952	16.5	LOS B	11.4	83.8	0.72	0.69	0.78	39.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	3	34.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	1	19.6	LOS B	0.0	0.0	0.70	0.70
P3	North Full Crossing	15	34.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		19	33.4	LOS D			0.91	0.91

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Arnott Avenue (S)														
1	L2	40	0.0	40	0.0	0.027	5.7	LOS A	0.0	0.3	0.15	0.54	0.15	50.0
3	R2	1	0.0	1	0.0	0.027	6.9	LOS A	0.0	0.3	0.15	0.54	0.15	52.9
Approach		41	0.0	41	0.0	0.027	5.8	LOS A	0.0	0.3	0.15	0.54	0.15	50.2
East: Bay Street (E)														
4	L2	7	0.0	7	0.0	0.041	5.5	LOS A	0.0	0.0	0.00	0.06	0.00	57.9
5	T1	151	0.7	151	0.7	0.041	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
Approach		158	0.7	158	0.7	0.041	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.4
West: Bay Street (W)														
11	T1	105	5.0	105	5.0	0.067	0.1	LOS A	0.0	0.3	0.05	0.07	0.05	58.7
12	R2	14	0.0	14	0.0	0.067	5.5	LOS A	0.0	0.3	0.05	0.07	0.05	55.6
Approach		119	4.4	119	4.4	0.067	0.7	NA	0.0	0.3	0.05	0.07	0.05	58.3
All Vehicles		318	2.0	318	2.0	0.067	1.1	NA	0.0	0.3	0.04	0.11	0.04	57.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Arnott Avenue (S)															
Lane 1	41	0.0	41	0.0	1515	0.027	100	5.8	LOS A	0.0	0.3	Full	500	0.0	0.0
Approach	41	0.0	41	0.0		0.027		5.8	LOS A	0.0	0.3				
East: Bay Street (E)															
Lane 1	79	0.6	79	0.6	1933	0.041	100	0.5	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	79	0.7	79	0.7	1941	0.041	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	158	0.7	158	0.7		0.041		0.3	NA	0.0	0.0				
West: Bay Street (W)															
Lane 1	119	4.4	119	4.4	1779	0.067	100	0.7	LOS A	0.0	0.3	Full	75	0.0	0.0
Approach	119	4.4	119	4.4		0.067		0.7	NA	0.0	0.3				
Intersection	318	2.0	318	2.0		0.067		1.1	NA	0.0	0.3				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Cary St/Victory Pde Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 81 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street (S)														
2	T1	1014	4.5	1014	4.5	0.515	11.7	LOS A	8.1	59.2	0.65	0.58	0.65	43.5
3	R2	16	100.0	16	100.0	0.089	14.6	LOS B	0.2	2.4	0.52	0.68	0.52	47.3
Approach		1029	5.9	1029	5.9	0.515	11.8	LOS A	8.1	59.2	0.65	0.58	0.65	43.6
East: Victory Parade (E)														
4	L2	24	0.0	24	0.0	0.646	42.0	LOS C	4.3	30.7	0.99	0.83	1.04	35.0
6	R2	333	1.3	333	1.3	0.646	42.4	LOS C	4.3	30.7	0.99	0.83	1.04	25.4
Approach		357	1.2	357	1.2	0.646	42.4	LOS C	4.3	30.7	0.99	0.83	1.04	26.3
North: Cary Street (N)														
7	L2	360	2.0	360	2.0	0.253	8.1	LOS A	2.3	16.4	0.29	0.66	0.29	47.5
8	T1	1155	3.9	1155	3.9	0.612	4.5	LOS A	4.9	35.6	0.28	0.25	0.28	53.7
Approach		1515	3.5	1515	3.5	0.612	5.3	LOS A	4.9	35.6	0.28	0.34	0.28	52.1
All Vehicles		2901	4.1	2901	4.1	0.646	12.2	LOS A	8.1	59.2	0.50	0.49	0.51	44.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	1	34.7	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	3	34.7	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		4	34.7	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

LANE SUMMARY

Site: 101 [Cary St/Victory Pde Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 81 seconds (Network Optimum Cycle Time - Minimum Delay)

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Cary Street (S)															
Lane 1	542	4.5	542	4.5	1053	0.515	100	12.0	LOS A	8.1	59.2	Full	500	0.0	0.0
Lane 2	472	4.5	472	4.5	916[1]	0.515	100	11.4	LOS A	6.7	48.9	Full	500	0.0	0.0
Lane 3	16	100.0	16	100.0	177	0.089	100	14.6	LOS B	0.2	2.4	Short	25	0.0	NA
Approach	1029	5.9	1029	5.9		0.515		11.8	LOS A	8.1	59.2				
East: Victory Parade (E)															
Lane 1	181	1.1	181	1.1	280	0.646	100	42.0	LOS C	4.3	30.7	Short	70	0.0	NA
Lane 2	176	1.3	176	1.3	273	0.646	100	42.8	LOS D	4.3	30.2	Full	500	0.0	0.0
Approach	357	1.2	357	1.2		0.646		42.4	LOS C	4.3	30.7				
North: Cary Street (N)															
Lane 1	360	2.0	360	2.0	1424	0.253	100	8.1	LOS A	2.3	16.4	Short	25	0.0	NA
Lane 2	509	3.9	509	3.9	831[1]	0.612	100	7.8	LOS A	4.9	35.6	Full	112	0.0	0.0
Lane 3	646	3.9	646	3.9	1056	0.612	100	1.8	LOS A	2.3	16.4	Full	112	0.0	0.0
Approach	1515	3.5	1515	3.5		0.612		5.3	LOS A	4.9	35.6				
Intersection	2901	4.1	2901	4.1		0.646		12.2	LOS A	8.1	59.2				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

MOVEMENT SUMMARY

Site: 101 [Bay St / Cary St Existing PM - 2 Lane Bay]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 81 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street														
2	T1	1207	3.7	1207	3.7	0.696	3.9	LOS A	7.3	52.6	0.40	0.37	0.40	53.9
3	R2	139	3.0	139	3.0	0.522	16.3	LOS B	4.4	31.8	0.85	0.77	0.85	21.9
Approach		1346	3.7	1346	3.7	0.696	5.2	LOS A	7.3	52.6	0.44	0.41	0.44	52.2
East: Bay Street														
4	L2	182	0.0	182	0.0	0.294	26.6	LOS B	3.3	23.0	0.78	0.77	0.78	10.2
6	R2	100	2.1	100	2.1	0.885	56.1	LOS D	2.9	20.5	1.00	0.99	1.64	22.6
Approach		282	0.7	282	0.7	0.885	37.1	LOS C	3.3	23.0	0.86	0.85	1.08	17.9
North: Cary Street														
7	L2	61	1.7	61	1.7	0.724	21.8	LOS B	13.0	94.2	0.83	0.76	0.83	38.9
8	T1	1333	3.9	1333	3.9	0.724	16.5	LOS B	13.2	95.2	0.84	0.76	0.84	38.9
Approach		1394	3.9	1394	3.9	0.724	16.7	LOS B	13.2	95.2	0.84	0.76	0.84	38.9
All Vehicles		3022	3.5	3022	3.5	0.885	13.5	LOS A	13.2	95.2	0.66	0.61	0.68	41.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	19	34.7	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	3	13.6	LOS B	0.0	0.0	0.58	0.58
P3	North Full Crossing	15	34.7	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		37	32.9	LOS D			0.90	0.90

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

LANE SUMMARY

Site: 101 [Bay St / Cary St Existing PM - 2 Lane Bay]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 81 seconds (Network Optimum Cycle Time - Minimum Delay)

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Cary Street															
Lane 1	1031	3.7	1031	3.7	1481	0.696	100	2.7	LOS A	7.3	52.6	Full	112	0.0	0.0
Lane 2	316	3.4	316	3.4	604	0.522	75[7]	13.2	LOS A	4.4	31.8	Full	112	0.0	0.0
Approach	1346	3.7	1346	3.7		0.696		5.2	LOS A	7.3	52.6				
East: Bay Street															
Lane 1	182	0.0	182	0.0	619	0.294	100	26.6	LOS B	3.3	23.0	Full	75	0.0	0.0
Lane 2	100	2.1	100	2.1	113	0.885	100	56.1	LOS D	2.9	20.5	Full	75	0.0	0.0
Approach	282	0.7	282	0.7		0.885		37.1	LOS C	3.3	23.0				
North: Cary Street															
Lane 1	697	3.8	697	3.8	964	0.724	100	16.7	LOS B	13.0	94.2	Short (P)	90	0.0	NA
Lane 2	696	3.9	696	3.9	962	0.724	100	16.8	LOS B	13.2	95.2	Full	500	0.0	0.0
Approach	1394	3.9	1394	3.9		0.724		16.7	LOS B	13.2	95.2				
Intersection	3022	3.5	3022	3.5		0.885		13.5	LOS A	13.2	95.2				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

7 Lane under-utilisation specified by the user

LANE SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Arnott Avenue (S)															
Lane 1	77	0.0	77	0.0	1549	0.050	100	5.7	LOS A	0.1	0.6	Full	500	0.0	0.0
Approach	77	0.0	77	0.0		0.050		5.7	LOS A	0.1	0.6				
East: Bay Street (E)															
Lane 1	65	0.0	65	0.0	1936	0.033	100	0.8	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	65	0.0	65	0.0	1950	0.033	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	129	0.0	129	0.0		0.033		0.4	NA	0.0	0.0				
West: Bay Street (W)															
Lane 1	155	0.7	155	0.7	1645	0.094	100	1.9	LOS A	0.1	0.8	Full	75	0.0	0.0
Approach	155	0.7	155	0.7		0.094		1.9	NA	0.1	0.8				
Intersection	361	0.3	361	0.3		0.094		2.2	NA	0.1	0.8				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Arnott Avenue (S)														
1	L2	76	0.0	76	0.0	0.050	5.7	LOS A	0.1	0.6	0.13	0.54	0.13	50.1
3	R2	1	0.0	1	0.0	0.050	6.9	LOS A	0.1	0.6	0.13	0.54	0.13	53.0
Approach		77	0.0	77	0.0	0.050	5.7	LOS A	0.1	0.6	0.13	0.54	0.13	50.2
East: Bay Street (E)														
4	L2	9	0.0	9	0.0	0.033	5.5	LOS A	0.0	0.0	0.00	0.09	0.00	57.6
5	T1	120	0.0	120	0.0	0.033	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.3
Approach		129	0.0	129	0.0	0.033	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.0
West: Bay Street (W)														
11	T1	106	0.0	106	0.0	0.094	0.3	LOS A	0.1	0.8	0.11	0.18	0.11	56.9
12	R2	48	2.2	48	2.2	0.094	5.4	LOS A	0.1	0.8	0.11	0.18	0.11	53.8
Approach		155	0.7	155	0.7	0.094	1.9	NA	0.1	0.8	0.11	0.18	0.11	55.9
All Vehicles		361	0.3	361	0.3	0.094	2.2	NA	0.1	0.8	0.08	0.21	0.08	55.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

Site: 101 [Cary St/Victory Pde Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 94 seconds (Network Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cary Street (S)															
Lane 1	507	5.1	507	5.1	630	0.805	100	25.3	LOS B	13.3	97.3	Full	500	-37.2 N3	0.0
Lane 2	723	5.1	723	5.1	898 [1]	0.805	100	20.6	LOS B	16.4	120.0	Full	500	-0.3 N3	0.0
Lane 3	14	100.0	14	100.0	264	0.052	100	12.6	LOS A	0.1	1.9	Short	25	0.0	NA
Approach	1244	6.2	1244	6.2		0.805		22.4	LOS B	16.4	120.0				
East: Victory Parade (E)															
Lane 1	131	2.6	131	2.6	196	0.668	100	48.6	LOS D	3.7	26.8	Short	70	-34.0 N3	NA
Lane 2	195	2.0	195	2.0	291	0.668	100	47.7	LOS D	5.4	38.5	Full	500	-0.3 N3	0.0
Approach	325	2.3	325	2.3		0.668		48.1	LOS D	5.4	38.5				
North: Cary Street (N)															
Lane 1	277	2.7	277	2.7	1377	0.201	100	7.8	LOS A	1.3	9.2	Short	25	0.0	NA
Lane 2	444	7.3	444	7.3	977 [1]	0.454	100	5.8	LOS A	3.6	27.1	Full	112	0.0	0.0
Lane 3	449	7.3	449	7.3	990	0.454	100	0.6	LOS A	0.5	3.4	Full	112	0.0	0.0
Approach	1170	6.2	1170	6.2		0.454		4.3	LOS A	3.6	27.1				
Intersection	2739	5.7	2739	5.7		0.805		17.7	LOS B	16.4	120.0				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.

MOVEMENT SUMMARY

Site: 101 [Cary St/Victory Pde Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 94 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street (S)														
2	T1	1230	5.1	1230	5.1	0.805	22.5	LOS B	16.4	120.0	0.85	0.82	0.92	34.7
3	R2	14	100.0	14	100.0	0.052	12.6	LOS A	0.1	1.9	0.43	0.66	0.43	48.6
Approach		1244	6.2	1244	6.2	0.805	22.4	LOS B	16.4	120.0	0.84	0.82	0.91	34.9
East: Victory Parade (E)														
4	L2	17	6.3	17	6.3	0.668	48.7	LOS D	3.7	26.8	0.99	0.86	1.09	32.8
6	R2	308	2.0	308	2.0	0.668	48.1	LOS D	5.4	38.5	0.99	0.85	1.06	23.6
Approach		325	2.3	325	2.3	0.668	48.1	LOS D	5.4	38.5	0.99	0.85	1.06	24.2
North: Cary Street (N)														
7	L2	277	2.7	277	2.7	0.201	7.8	LOS A	1.3	9.2	0.18	0.63	0.18	47.7
8	T1	893	7.3	893	7.3	0.454	3.2	LOS A	3.6	27.1	0.18	0.16	0.18	55.3
Approach		1170	6.2	1170	6.2	0.454	4.3	LOS A	3.6	27.1	0.18	0.27	0.18	53.3
All Vehicles		2739	5.7	2739	5.7	0.805	17.7	LOS B	16.4	120.0	0.58	0.59	0.62	39.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	1	41.2	LOS E	0.0	0.0	0.94	0.94
P3	North Full Crossing	11	41.2	LOS E	0.0	0.0	0.94	0.94
All Pedestrians		12	41.2	LOS E			0.94	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

LANE SUMMARY

Site: 101 [Bay St / Cary St Existing AM - 2 Lane Bay]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 94 seconds (Network Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cary Street															
Lane 1	1063	5.1	1063	5.1	1466	0.725	100	4.8	LOS A	13.4	97.9	Full	112	0.0	37.4
Lane 2	476	3.3	476	3.3	876	0.544	75[7]	20.6	LOS B	9.0	65.1	Full	112	0.0	0.2
Approach	1538	4.5	1538	4.5		0.725		9.7	LOS A	13.4	97.9				
East: Bay Street															
Lane 1	177	0.6	177	0.6	984	0.180	100	17.0	LOS B	2.5	17.9	Full	75	0.0	0.0
Lane 2	142	0.0	142	0.0	198	0.717	100	52.6	LOS D	4.2	29.2	Full	75	0.0	0.0
Approach	319	0.3	319	0.3		0.717		32.8	LOS C	4.2	29.2				
North: Cary Street															
Lane 1	545	6.3	545	6.3	678	0.804	100	32.1	LOS C	14.4	106.4	Short (P)	90	0.0	NA
Lane 2	529	7.2	529	7.2	658[1]	0.804	100	32.6	LOS C	14.3	106.6	Full	500	0.0	0.0
Approach	1074	6.8	1074	6.8		0.804		32.4	LOS C	14.4	106.6				
Intersection	2932	4.9	2932	4.9		0.804		20.5	LOS B	14.4	106.6				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
7 Lane under-utilisation specified by the user

MOVEMENT SUMMARY

Site: 101 [Bay St / Cary St Existing AM - 2 Lane Bay]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 94 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street														
2	T1	1332	5.1	1332	5.1	0.725	7.5	LOS A	13.4	97.9	0.56	0.54	0.60	49.5
3	R2	207	1.0	207	1.0	0.544	23.8	LOS B	9.0	65.1	0.81	0.85	1.02	16.1
Approach		1538	4.5	1538	4.5	0.725	9.7	LOS A	13.4	97.9	0.59	0.58	0.66	46.5
East: Bay Street														
4	L2	177	0.6	177	0.6	0.180	17.0	LOS B	2.5	17.9	0.55	0.71	0.55	14.5
6	R2	142	0.0	142	0.0	0.717	52.6	LOS D	4.2	29.2	1.00	0.85	1.14	23.6
Approach		319	0.3	319	0.3	0.717	32.8	LOS C	4.2	29.2	0.75	0.78	0.81	21.4
North: Cary Street														
7	L2	82	1.3	82	1.3	0.804	36.9	LOS C	14.4	106.4	0.93	0.90	1.02	29.3
8	T1	993	7.2	993	7.2	0.804	32.0	LOS C	14.4	106.4	0.95	0.91	1.03	29.2
Approach		1074	6.8	1074	6.8	0.804	32.4	LOS C	14.4	106.6	0.95	0.91	1.03	29.2
All Vehicles		2932	4.9	2932	4.9	0.804	20.5	LOS B	14.4	106.6	0.74	0.72	0.81	36.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	3	41.2	LOS E	0.0	0.0	0.94	0.94
P2	East Full Crossing	1	23.9	LOS C	0.0	0.0	0.71	0.71
P3	North Full Crossing	15	41.2	LOS E	0.0	0.0	0.94	0.94
All Pedestrians		19	40.3	LOS E			0.92	0.92

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Arnott Avenue (S)														
1	L2	80	0.0	80	0.0	0.053	5.7	LOS A	0.1	0.6	0.16	0.54	0.16	50.0
3	R2	1	0.0	1	0.0	0.053	7.4	LOS A	0.1	0.6	0.16	0.54	0.16	52.9
Approach		81	0.0	81	0.0	0.053	5.8	LOS A	0.1	0.6	0.16	0.54	0.16	50.1
East: Bay Street (E)														
4	L2	7	0.0	7	0.0	0.041	5.5	LOS A	0.0	0.0	0.00	0.06	0.00	57.9
5	T1	151	0.7	151	0.7	0.041	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
Approach		158	0.7	158	0.7	0.041	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.4
West: Bay Street (W)														
11	T1	105	5.0	105	5.0	0.128	0.5	LOS A	0.2	1.4	0.17	0.27	0.17	55.4
12	R2	89	0.0	89	0.0	0.128	5.6	LOS A	0.2	1.4	0.17	0.27	0.17	52.6
Approach		195	2.7	195	2.7	0.128	2.8	NA	0.2	1.4	0.17	0.27	0.17	54.1
All Vehicles		434	1.5	434	1.5	0.128	2.4	NA	0.2	1.4	0.10	0.23	0.10	55.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Arnott Avenue (S)															
Lane 1	81	0.0	81	0.0	1526	0.053	100	5.8	LOS A	0.1	0.6	Full	500	0.0	0.0
Approach	81	0.0	81	0.0		0.053		5.8	LOS A	0.1	0.6				
East: Bay Street (E)															
Lane 1	79	0.6	79	0.6	1933	0.041	100	0.5	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	79	0.7	79	0.7	1941	0.041	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	158	0.7	158	0.7		0.041		0.3	NA	0.0	0.0				
West: Bay Street (W)															
Lane 1	195	2.7	195	2.7	1518	0.128	100	2.8	LOS A	0.2	1.4	Full	75	0.0	0.0
Approach	195	2.7	195	2.7		0.128		2.8	NA	0.2	1.4				
Intersection	434	1.5	434	1.5		0.128		2.4	NA	0.2	1.4				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Cary St/Victory Pde Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 90 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street (S)														
2	T1	1052	4.3	1052	4.3	0.551	13.9	LOS A	9.9	71.9	0.68	0.60	0.68	41.5
3	R2	16	100.0	16	100.0	0.081	15.7	LOS B	0.2	2.7	0.52	0.68	0.52	46.6
Approach		1067	5.7	1067	5.7	0.551	13.9	LOS A	9.9	71.9	0.68	0.61	0.68	41.6
East: Victory Parade (E)														
4	L2	24	0.0	24	0.0	0.508	41.0	LOS C	4.4	31.4	0.94	0.80	0.94	35.3
6	R2	333	1.3	333	1.3	0.508	41.5	LOS C	4.4	31.4	0.94	0.80	0.94	25.7
Approach		357	1.2	357	1.2	0.508	41.5	LOS C	4.4	31.4	0.94	0.80	0.94	26.6
North: Cary Street (N)														
7	L2	360	2.0	360	2.0	0.246	7.5	LOS A	1.7	12.4	0.20	0.63	0.20	48.1
8	T1	1175	3.9	1175	3.9	0.663	6.6	LOS A	5.8	42.1	0.38	0.34	0.38	51.1
Approach		1535	3.4	1535	3.4	0.663	6.8	LOS A	5.8	42.1	0.34	0.41	0.34	50.3
All Vehicles		2959	4.0	2959	4.0	0.663	13.5	LOS A	9.9	71.9	0.53	0.53	0.53	43.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	1	39.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	3	39.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		4	39.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

LANE SUMMARY

Site: 101 [Cary St/Victory Pde Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 90 seconds (Network Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Cary Street (S)															
Lane 1	569	4.3	569	4.3	1033	0.551	100	14.3	LOS A	9.9	71.9	Full	500	0.0	0.0
Lane 2	483	4.3	483	4.3	876[1]	0.551	100	13.4	LOS A	7.9	57.2	Full	500	0.0	0.0
Lane 3	16	100.0	16	100.0	195	0.081	100	15.7	LOS B	0.2	2.7	Short	25	0.0	NA
Approach	1067	5.7	1067	5.7		0.551		13.9	LOS A	9.9	71.9				
East: Victory Parade (E)															
Lane 1	180	1.1	180	1.1	354	0.508	100	41.1	LOS C	4.4	31.4	Short	70	0.0	NA
Lane 2	177	1.3	177	1.3	348	0.508	100	41.9	LOS C	4.4	31.1	Full	500	0.0	0.0
Approach	357	1.2	357	1.2		0.508		41.5	LOS C	4.4	31.4				
North: Cary Street (N)															
Lane 1	360	2.0	360	2.0	1464	0.246	100	7.5	LOS A	1.7	12.4	Short	25	0.0	NA
Lane 2	489	3.9	489	3.9	737[1]	0.663	100	10.1	LOS A	5.8	42.1	Full	112	0.0	0.0
Lane 3	686	3.9	686	3.9	1036	0.663	100	4.1	LOS A	5.3	38.1	Full	112	0.0	0.0
Approach	1535	3.4	1535	3.4		0.663		6.8	LOS A	5.8	42.1				
Intersection	2959	4.0	2959	4.0		0.663		13.5	LOS A	9.9	71.9				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

MOVEMENT SUMMARY

Site: 101 [Bay St / Cary St Existing PM - 2 Lane Bay]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 90 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street														
2	T1	1207	3.7	1207	3.7	0.741	3.4	LOS A	7.2	51.8	0.32	0.30	0.32	54.7
3	R2	177	2.4	177	2.4	0.556	23.2	LOS B	4.8	34.3	0.91	0.85	0.99	15.8
Approach		1384	3.6	1384	3.6	0.741	5.9	LOS A	7.2	51.8	0.39	0.37	0.41	51.1
East: Bay Street														
4	L2	202	0.0	202	0.0	0.350	30.9	LOS C	4.2	29.6	0.82	0.78	0.82	9.0
6	R2	120	1.8	120	1.8	0.736	52.7	LOS D	3.5	24.6	1.00	0.86	1.20	23.5
Approach		322	0.7	322	0.7	0.736	39.0	LOS C	4.2	29.6	0.89	0.81	0.96	17.6
North: Cary Street														
7	L2	99	1.1	99	1.1	0.780	22.9	LOS B	17.3	124.7	0.85	0.79	0.86	37.8
8	T1	1333	3.9	1333	3.9	0.780	17.3	LOS B	17.3	124.7	0.79	0.74	0.82	38.1
Approach		1432	3.8	1432	3.8	0.780	17.7	LOS B	17.3	124.7	0.80	0.75	0.82	38.1
All Vehicles		3138	3.4	3138	3.4	0.780	14.7	LOS B	17.3	124.7	0.63	0.59	0.65	40.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	19	39.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	3	12.8	LOS B	0.0	0.0	0.53	0.53
P3	North Full Crossing	15	39.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		37	37.0	LOS D			0.90	0.90

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

LANE SUMMARY

Site: 101 [Bay St / Cary St Existing PM - 2 Lane Bay]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 90 seconds (Network Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Cary Street															
Lane 1	1113	3.7	1113	3.7	1502	0.741	100	2.1	LOS A	7.2	51.8	Full	112	0.0	0.0
Lane 2	271	2.9	271	2.9	488	0.556	75[7]	21.3	LOS B	4.8	34.3	Full	112	0.0	0.0
Approach	1384	3.6	1384	3.6		0.741		5.9	LOS A	7.2	51.8				
East: Bay Street															
Lane 1	202	0.0	202	0.0	578	0.350	100	30.9	LOS C	4.2	29.6	Full	75	0.0	0.0
Lane 2	120	1.8	120	1.8	163	0.736	100	52.7	LOS D	3.5	24.6	Full	75	0.0	0.0
Approach	322	0.7	322	0.7		0.736		39.0	LOS C	4.2	29.6				
North: Cary Street															
Lane 1	809	3.6	809	3.6	1037	0.780	100	18.1	LOS B	17.3	124.7	Short (P)	90	0.0	NA
Lane 2	622	3.9	622	3.9	797[1]	0.780	100	17.2	LOS B	12.1	87.4	Full	500	0.0	0.0
Approach	1432	3.8	1432	3.8		0.780		17.7	LOS B	17.3	124.7				
Intersection	3138	3.4	3138	3.4		0.780		14.7	LOS B	17.3	124.7				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
7 Lane under-utilisation specified by the user

ANNEXURE H: SIDRA RESULTS – 10 YEAR GROWTH AND GROWTH PLUS DEVELOPMENT

(24 SHEETS)

MOVEMENT SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)
Design Life Analysis: Constant Number of Years = 10

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Arnott Avenue (S)														
1	L2	8	0.0	8	0.0	0.007	5.7	LOS A	0.0	0.1	0.13	0.54	0.13	50.2
3	R2	1	0.0	1	0.0	0.007	6.6	LOS A	0.0	0.1	0.13	0.54	0.13	53.0
Approach		9	0.0	9	0.0	0.007	5.8	LOS A	0.0	0.1	0.13	0.54	0.13	50.7
East: Bay Street (E)														
4	L2	9	0.0	9	0.0	0.033	5.5	LOS A	0.0	0.0	0.00	0.09	0.00	57.6
5	T1	120	0.0	120	0.0	0.033	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.3
Approach		129	0.0	129	0.0	0.033	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.0
West: Bay Street (W)														
11	T1	106	0.0	106	0.0	0.067	0.1	LOS A	0.0	0.3	0.05	0.07	0.05	58.7
12	R2	15	7.1	15	7.1	0.067	5.4	LOS A	0.0	0.3	0.05	0.07	0.05	55.0
Approach		121	0.9	121	0.9	0.067	0.8	NA	0.0	0.3	0.05	0.07	0.05	58.3
All Vehicles		260	0.4	260	0.4	0.067	0.8	NA	0.0	0.3	0.03	0.07	0.03	58.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)
Design Life Analysis: Constant Number of Years = 10

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Arnott Avenue (S)															
Lane 1	9	0.0	9	0.0	1456	0.007	100	5.8	LOS A	0.0	0.1	Full	500	0.0	0.0
Approach	9	0.0	9	0.0		0.007		5.8	LOS A	0.0	0.1				
East: Bay Street (E)															
Lane 1	65	0.0	65	0.0	1936	0.033	100	0.8	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	65	0.0	65	0.0	1950	0.033	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	129	0.0	129	0.0		0.033		0.4	NA	0.0	0.0				
West: Bay Street (W)															
Lane 1	121	0.9	121	0.9	1801	0.067	100	0.8	LOS A	0.0	0.3	Full	75	0.0	0.0
Approach	121	0.9	121	0.9		0.067		0.8	NA	0.0	0.3				
Intersection	260	0.4	260	0.4		0.067		0.8	NA	0.0	0.3				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Cary St/Victory Pde Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 85 seconds (Network Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 10

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street (S)														
2	T1	1339	5.2	1339	5.2	0.807	18.3	LOS B	15.9	116.5	0.81	0.79	0.88	37.7
3	R2	14	100.0	14	100.0	0.069	11.7	LOS A	0.1	1.7	0.43	0.66	0.43	49.2
Approach		1352	6.1	1352	6.1	0.807	18.3	LOS B	15.9	116.5	0.80	0.79	0.88	37.9
East: Victory Parade (E)														
4	L2	17	6.3	17	6.3	0.836	54.7	LOS D	3.8	27.2	1.00	0.99	1.45	31.1
6	R2	308	2.0	308	2.0	0.836	52.9	LOS D	5.6	40.1	1.00	0.97	1.37	22.2
Approach		325	2.3	325	2.3	0.836	53.0	LOS D	5.6	40.1	1.00	0.97	1.38	22.9
North: Cary Street (N)														
7	L2	277	2.7	277	2.7	0.193	6.6	LOS A	0.7	5.0	0.11	0.61	0.11	49.0
8	T1	948	7.6	948	7.6	0.434	1.7	LOS A	2.3	16.9	0.12	0.11	0.12	57.4
Approach		1225	6.5	1225	6.5	0.434	2.8	LOS A	2.3	16.9	0.12	0.22	0.12	55.2
All Vehicles		2903	5.8	2903	5.8	0.836	15.6	LOS B	15.9	116.5	0.54	0.57	0.61	41.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	1	36.7	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	13	36.7	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		14	36.7	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

LANE SUMMARY

Site: 101 [Cary St/Victory Pde Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 85 seconds (Network Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 10

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Cary Street (S)															
Lane 1	531	5.2	531	5.2	658	0.807	100	21.4	LOS B	12.5	91.4	Full	500	-40.7 N3	0.0
Lane 2	807	5.2	807	5.2	1000 1	0.807	100	16.3	LOS B	15.9	116.5	Full	500	0.0	0.0
Lane 3	14	100.0	14	100.0	199	0.069	100	11.7	LOS A	0.1	1.7	Short	25	0.0	NA
Approach	1352	6.1	1352	6.1		0.807		18.3	LOS B	15.9	116.5				
East: Victory Parade (E)															
Lane 1	127	2.6	127	2.6	152	0.836	100	54.7	LOS D	3.8	27.2	Short	70	-37.3 N3	NA
Lane 2	198	2.0	198	2.0	237	0.836	100	51.9	LOS D	5.6	40.1	Full	500	0.0	0.0
Approach	325	2.3	325	2.3		0.836		53.0	LOS D	5.6	40.1				
North: Cary Street (N)															
Lane 1	277	2.7	277	2.7	1437	0.193	100	6.6	LOS A	0.7	5.0	Short	25	0.0	NA
Lane 2	474	7.6	474	7.6	1093	0.434	100	2.9	LOS A	2.3	16.9	Full	112	0.0	0.0
Lane 3	474	7.6	474	7.6	1093	0.434	100	0.5	LOS A	0.4	3.1	Full	112	0.0	0.0
Approach	1225	6.5	1225	6.5		0.434		2.8	LOS A	2.3	16.9				
Intersection	2903	5.8	2903	5.8		0.836		15.6	LOS B	15.9	116.5				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.

MOVEMENT SUMMARY

Site: 101 [Bay St / Cary St Existing AM - 2 Lane Bay]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 85 seconds (Network Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 10

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street														
2	T1	1465	5.1	1465	5.1	0.789	7.3	LOS A	13.9	101.4	0.57	0.56	0.62	49.7
3	R2	194	1.1	194	1.1	0.592	22.0	LOS B	8.3	59.8	0.77	0.83	0.98	17.3
Approach		1658	4.6	1658	4.6	0.789	9.0	LOS A	13.9	101.4	0.60	0.59	0.66	47.4
East: Bay Street														
4	L2	146	0.7	146	0.7	0.168	18.8	LOS B	2.1	14.9	0.61	0.72	0.61	13.5
6	R2	111	0.0	111	0.0	0.843	55.1	LOS D	3.2	22.5	1.00	0.95	1.46	22.9
Approach		257	0.4	257	0.4	0.843	34.4	LOS C	3.2	22.5	0.78	0.82	0.97	20.5
North: Cary Street														
7	L2	68	1.5	68	1.5	0.807	33.9	LOS C	14.2	104.7	0.94	0.91	1.03	30.9
8	T1	1092	7.2	1092	7.2	0.807	28.6	LOS C	14.3	106.0	0.94	0.92	1.04	30.9
Approach		1160	6.9	1160	6.9	0.807	28.9	LOS C	14.3	106.0	0.94	0.92	1.04	30.9
All Vehicles		3076	5.1	3076	5.1	0.843	18.6	LOS B	14.3	106.0	0.74	0.73	0.83	37.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	4	36.7	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	1	20.5	LOS C	0.0	0.0	0.69	0.69
P3	North Full Crossing	18	36.7	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		23	35.8	LOS D			0.92	0.92

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

LANE SUMMARY

Site: 101 [Bay St / Cary St Existing AM - 2 Lane Bay]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 85 seconds (Network Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 10

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cary Street															
Lane 1	1157	5.1	1157	5.1	1466	0.789	100	4.8	LOS A	13.9	101.4	Full	112	0.0	40.7
Lane 2	501	3.5	501	3.5	847	0.592	75[7]	18.6	LOS B	8.3	59.8	Full	112	0.0	0.0
Approach	1658	4.6	1658	4.6		0.789		9.0	LOS A	13.9	101.4				
East: Bay Street															
Lane 1	146	0.7	146	0.7	869	0.168	100	18.8	LOS B	2.1	14.9	Full	75	0.0	0.0
Lane 2	111	0.0	111	0.0	131	0.843	100	55.1	LOS D	3.2	22.5	Full	75	0.0	0.0
Approach	257	0.4	257	0.4		0.843		34.4	LOS C	3.2	22.5				
North: Cary Street															
Lane 1	583	6.5	583	6.5	722	0.807	100	29.0	LOS C	14.2	104.7	Short (P)	90	0.0	NA
Lane 2	577	7.2	577	7.2	715[1]	0.807	100	28.8	LOS C	14.3	106.0	Full	500	0.0	0.0
Approach	1160	6.9	1160	6.9		0.807		28.9	LOS C	14.3	106.0				
Intersection	3076	5.1	3076	5.1		0.843		18.6	LOS B	14.3	106.0				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
7 Lane under-utilisation specified by the user

LANE SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)
Design Life Analysis: Constant Number of Years = 10

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Arnott Avenue (S)															
Lane 1	49	0.0	49	0.0	1494	0.033	100	5.8	LOS A	0.1	0.4	Full	500	0.0	0.0
Approach	49	0.0	49	0.0		0.033		5.8	LOS A	0.1	0.4				
East: Bay Street (E)															
Lane 1	95	0.6	95	0.6	1933	0.049	100	0.5	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	95	0.7	95	0.7	1941	0.049	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	189	0.7	189	0.7		0.049		0.3	NA	0.0	0.0				
West: Bay Street (W)															
Lane 1	143	4.4	143	4.4	1770	0.081	100	0.8	LOS A	0.0	0.3	Full	75	0.0	0.0
Approach	143	4.4	143	4.4		0.081		0.8	NA	0.0	0.3				
Intersection	381	2.0	381	2.0		0.081		1.2	NA	0.1	0.4				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)
Design Life Analysis: Constant Number of Years = 10

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Arnott Avenue (S)														
1	L2	48	0.0	48	0.0	0.033	5.8	LOS A	0.1	0.4	0.17	0.54	0.17	49.9
3	R2	1	0.0	1	0.0	0.033	7.2	LOS A	0.1	0.4	0.17	0.54	0.17	52.8
Approach		49	0.0	49	0.0	0.033	5.8	LOS A	0.1	0.4	0.17	0.54	0.17	50.1
East: Bay Street (E)														
4	L2	9	0.0	9	0.0	0.049	5.5	LOS A	0.0	0.0	0.00	0.06	0.00	57.9
5	T1	181	0.7	181	0.7	0.049	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
Approach		189	0.7	189	0.7	0.049	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.4
West: Bay Street (W)														
11	T1	126	5.0	126	5.0	0.081	0.1	LOS A	0.0	0.3	0.06	0.07	0.06	58.6
12	R2	16	0.0	16	0.0	0.081	5.7	LOS A	0.0	0.3	0.06	0.07	0.06	55.5
Approach		143	4.4	143	4.4	0.081	0.8	NA	0.0	0.3	0.06	0.07	0.06	58.3
All Vehicles		381	2.0	381	2.0	0.081	1.2	NA	0.1	0.4	0.04	0.11	0.04	57.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

Site: 101 [Cary St/Victory Pde Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 84 seconds (Network Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 10

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Cary Street (S)															
Lane 1	592	4.5	592	4.5	1049	0.565	100	12.2	LOS A	9.4	68.2	Full	500	-3.1 N3	0.0
Lane 2	523	4.5	523	4.5	926 1	0.565	100	11.4	LOS A	7.7	56.1	Full	500	0.0	0.0
Lane 3	16	100.0	16	100.0	165	0.095	100	15.4	LOS B	0.2	2.6	Short	25	0.0	NA
Approach	1131	5.8	1131	5.8		0.565		11.9	LOS A	9.4	68.2				
East: Victory Parade (E)															
Lane 1	178	1.1	178	1.1	263	0.679	100	44.4	LOS D	4.5	32.0	Short	70	-2.7 N3	NA
Lane 2	179	1.3	179	1.3	263	0.679	100	45.0	LOS D	4.5	32.2	Full	500	0.0	0.0
Approach	357	1.2	357	1.2		0.679		44.7	LOS D	4.5	32.2				
North: Cary Street (N)															
Lane 1	360	2.0	360	2.0	1438	0.250	100	7.8	LOS A	1.9	13.3	Short	25	0.0	NA
Lane 2	538	3.9	538	3.9	798 1	0.674	100	8.6	LOS A	5.8	42.0	Full	112	0.0	0.0
Lane 3	732	3.9	732	3.9	1087	0.674	100	3.0	LOS A	4.5	32.4	Full	112	0.0	0.0
Approach	1630	3.5	1630	3.5		0.674		5.9	LOS A	5.8	42.0				
Intersection	3118	4.1	3118	4.1		0.679		12.5	LOS A	9.4	68.2				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.

MOVEMENT SUMMARY

Site: 101 [Cary St/Victory Pde Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 84 seconds (Network Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 10

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Aver. Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street (S)														
2	T1	1115	4.5	1115	4.5	0.565	11.8	LOS A	9.4	68.2	0.66	0.59	0.66	43.4
3	R2	16	100.0	16	100.0	0.095	15.4	LOS B	0.2	2.6	0.54	0.68	0.54	46.8
Approach		1131	5.8	1131	5.8	0.565	11.9	LOS A	9.4	68.2	0.66	0.59	0.66	43.5
East: Victory Parade (E)														
4	L2	24	0.0	24	0.0	0.679	44.4	LOS D	4.5	32.0	0.99	0.85	1.08	34.2
6	R2	333	1.3	333	1.3	0.679	44.8	LOS D	4.5	32.2	1.00	0.85	1.08	24.6
Approach		357	1.2	357	1.2	0.679	44.7	LOS D	4.5	32.2	1.00	0.85	1.08	25.5
North: Cary Street (N)														
7	L2	360	2.0	360	2.0	0.250	7.8	LOS A	1.9	13.3	0.23	0.64	0.23	47.8
8	T1	1270	3.9	1270	3.9	0.674	5.4	LOS A	5.8	42.0	0.35	0.31	0.35	52.5
Approach		1630	3.5	1630	3.5	0.674	5.9	LOS A	5.8	42.0	0.32	0.38	0.32	51.4
All Vehicles		3118	4.1	3118	4.1	0.679	12.5	LOS A	9.4	68.2	0.52	0.51	0.53	44.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	1	36.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	4	36.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		5	36.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

LANE SUMMARY

Site: 101 [Bay St / Cary St Existing PM - 2 Lane Bay]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 84 seconds (Network Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 10

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Cary Street															
Lane 1	1167	3.7	1167	3.7	1496	0.780	100	2.7	LOS A	9.3	67.2	Full	112	0.0	3.1
Lane 2	300	3.4	300	3.4	513	0.585	75[7]	15.4	LOS B	4.9	35.5	Full	112	0.0	0.0
Approach	1467	3.7	1467	3.7		0.780		5.3	LOS A	9.3	67.2				
East: Bay Street															
Lane 1	182	0.0	182	0.0	531	0.343	100	30.8	LOS C	3.7	25.7	Full	75	0.0	0.0
Lane 2	100	2.1	100	2.1	109	0.918	100	61.0	LOS E	3.1	22.0	Full	75	0.0	0.0
Approach	282	0.7	282	0.7		0.918		41.5	LOS C	3.7	25.7				
North: Cary Street															
Lane 1	778	3.8	778	3.8	956[1]	0.814	100	18.3	LOS B	15.8	114.5	Short (P)	90	0.0	NA
Lane 2	749	3.9	749	3.9	920[1]	0.814	100	18.3	LOS B	15.2	109.9	Full	500	0.0	0.0
Approach	1527	3.9	1527	3.9		0.814		18.3	LOS B	15.8	114.5				
Intersection	3276	3.5	3276	3.5		0.918		14.5	LOS A	15.8	114.5				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
7 Lane under-utilisation specified by the user

MOVEMENT SUMMARY

Site: 101 [Bay St / Cary St Existing PM - 2 Lane Bay]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 84 seconds (Network Optimum Cycle Time - Minimum Delay)
Design Life Analysis: Constant Number of Years = 10

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street														
2	T1	1328	3.7	1328	3.7	0.780	3.9	LOS A	9.3	67.2	0.42	0.39	0.42	53.9
3	R2	139	3.0	139	3.0	0.585	18.4	LOS B	4.9	35.5	0.91	0.82	0.92	19.8
Approach		1467	3.7	1467	3.7	0.780	5.3	LOS A	9.3	67.2	0.46	0.43	0.47	52.1
East: Bay Street														
4	L2	182	0.0	182	0.0	0.343	30.8	LOS C	3.7	25.7	0.84	0.78	0.84	9.0
6	R2	100	2.1	100	2.1	0.918	61.0	LOS E	3.1	22.0	1.00	1.03	1.75	21.5
Approach		282	0.7	282	0.7	0.918	41.5	LOS C	3.7	25.7	0.89	0.87	1.16	16.5
North: Cary Street														
7	L2	61	1.7	61	1.7	0.814	23.4	LOS B	15.8	114.5	0.80	0.78	0.86	37.7
8	T1	1466	3.9	1466	3.9	0.814	18.1	LOS B	15.8	114.5	0.79	0.78	0.86	37.6
Approach		1527	3.9	1527	3.9	0.814	18.3	LOS B	15.8	114.5	0.79	0.78	0.86	37.6
All Vehicles		3276	3.5	3276	3.5	0.918	14.5	LOS A	15.8	114.5	0.65	0.63	0.71	41.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	23	36.2	LOS D	0.1	0.1	0.93	0.93
P2	East Full Crossing	4	11.5	LOS B	0.0	0.0	0.52	0.52
P3	North Full Crossing	18	36.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		44	34.1	LOS D			0.89	0.89

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

LANE SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Arnott Avenue (S)															
Lane 1	9	0.0	9	0.0	1457	0.007	100	5.8	LOS A	0.0	0.1	Full	500	0.0	0.0
Approach	9	0.0	9	0.0		0.007		5.8	LOS A	0.0	0.1				
East: Bay Street (E)															
Lane 1	65	0.0	65	0.0	1936	0.033	100	0.8	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	65	0.0	65	0.0	1950	0.033	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	129	0.0	129	0.0		0.033		0.4	NA	0.0	0.0				
West: Bay Street (W)															
Lane 1	121	0.9	121	0.9	1801	0.067	100	0.8	LOS A	0.0	0.3	Full	75	0.0	0.0
Approach	121	0.9	121	0.9		0.067		0.8	NA	0.0	0.3				
Intersection	260	0.4	260	0.4		0.067		0.8	NA	0.0	0.3				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Arnott Avenue (S)														
1	L2	8	0.0	8	0.0	0.007	5.7	LOS A	0.0	0.1	0.13	0.54	0.13	50.2
3	R2	1	0.0	1	0.0	0.007	6.6	LOS A	0.0	0.1	0.13	0.54	0.13	53.0
Approach		9	0.0	9	0.0	0.007	5.8	LOS A	0.0	0.1	0.13	0.54	0.13	50.7
East: Bay Street (E)														
4	L2	9	0.0	9	0.0	0.033	5.5	LOS A	0.0	0.0	0.00	0.09	0.00	57.6
5	T1	120	0.0	120	0.0	0.033	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.3
Approach		129	0.0	129	0.0	0.033	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.0
West: Bay Street (W)														
11	T1	106	0.0	106	0.0	0.067	0.1	LOS A	0.0	0.3	0.05	0.07	0.05	58.7
12	R2	15	7.1	15	7.1	0.067	5.4	LOS A	0.0	0.3	0.05	0.07	0.05	55.0
Approach		121	0.9	121	0.9	0.067	0.8	NA	0.0	0.3	0.05	0.07	0.05	58.3
All Vehicles		260	0.4	260	0.4	0.067	0.8	NA	0.0	0.3	0.03	0.07	0.03	58.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

Site: 101 [Cary St/Victory Pde Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 85 seconds (Network Optimum Cycle Time - Minimum Delay)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Cary Street (S)															
Lane 1	548	4.7	548	4.7	688	0.797	100	20.0	LOS B	12.4	90.5	Full	500	-38.2 N3	0.0
Lane 2	797	4.7	797	4.7	1000 1	0.797	100	15.5	LOS B	15.3	111.4	Full	500	0.0	0.0
Lane 3	14	100.0	14	100.0	196	0.070	100	11.7	LOS A	0.1	1.7	Short	25	0.0	NA
Approach	1359	5.7	1359	5.7		0.797		17.3	LOS B	15.3	111.4				
East: Victory Parade (E)															
Lane 1	130	2.6	130	2.6	158	0.825	100	53.5	LOS D	3.8	27.4	Short	70	-35.0 N3	NA
Lane 2	195	2.0	195	2.0	237	0.825	100	51.2	LOS D	5.5	39.2	Full	500	0.0	0.0
Approach	325	2.3	325	2.3		0.825		52.1	LOS D	5.5	39.2				
North: Cary Street (N)															
Lane 1	277	2.7	277	2.7	1437	0.193	100	6.7	LOS A	0.7	5.1	Short	25	0.0	NA
Lane 2	486	6.7	486	6.7	1099	0.443	100	3.6	LOS A	2.5	18.2	Full	112	0.0	0.0
Lane 3	486	6.7	486	6.7	1099	0.443	100	0.5	LOS A	0.4	3.2	Full	112	0.0	0.0
Approach	1250	5.8	1250	5.8		0.443		3.1	LOS A	2.5	18.2				
Intersection	2934	5.3	2934	5.3		0.825		15.1	LOS B	15.3	111.4				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.

MOVEMENT SUMMARY

Site: 101 [Cary St/Victory Pde Existing AM]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 85 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street (S)														
2	T1	1345	4.7	1345	4.7	0.797	17.3	LOS B	15.3	111.4	0.80	0.77	0.86	38.5
3	R2	14	100.0	14	100.0	0.070	11.7	LOS A	0.1	1.7	0.43	0.66	0.43	49.2
Approach		1359	5.7	1359	5.7	0.797	17.3	LOS B	15.3	111.4	0.79	0.77	0.86	38.7
East: Victory Parade (E)														
4	L2	17	6.3	17	6.3	0.825	53.6	LOS D	3.8	27.4	1.00	0.98	1.41	31.4
6	R2	308	2.0	308	2.0	0.825	52.1	LOS D	5.5	39.2	1.00	0.96	1.34	22.4
Approach		325	2.3	325	2.3	0.825	52.1	LOS D	5.5	39.2	1.00	0.96	1.35	23.1
North: Cary Street (N)														
7	L2	277	2.7	277	2.7	0.193	6.7	LOS A	0.7	5.1	0.11	0.61	0.11	49.0
8	T1	973	6.7	973	6.7	0.443	2.0	LOS A	2.5	18.2	0.13	0.11	0.13	56.9
Approach		1250	5.8	1250	5.8	0.443	3.1	LOS A	2.5	18.2	0.12	0.22	0.12	54.9
All Vehicles		2934	5.3	2934	5.3	0.825	15.1	LOS B	15.3	111.4	0.53	0.56	0.60	41.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	1	36.7	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	36.7	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		12	36.7	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

LANE SUMMARY

Site: 101 [Bay St / Cary St Existing AM - 2 Lane Bay]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 85 seconds (Network Optimum Cycle Time - Minimum Delay)

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Cary Street															
Lane 1	1153	4.6	1153	4.6	1470	0.784	100	4.7	LOS A	13.6	98.7	Full	112	0.0	38.2
Lane 2	499	3.2	499	3.2	849	0.588	75[7]	19.2	LOS B	8.4	60.4	Full	112	0.0	0.0
Approach	1652	4.2	1652	4.2		0.784		9.1	LOS A	13.6	98.7				
East: Bay Street															
Lane 1	146	0.7	146	0.7	869	0.168	100	18.8	LOS B	2.1	14.9	Full	75	0.0	0.0
Lane 2	111	0.0	111	0.0	131	0.843	100	55.1	LOS D	3.2	22.5	Full	75	0.0	0.0
Approach	257	0.4	257	0.4		0.843		34.4	LOS C	3.2	22.5				
North: Cary Street															
Lane 1	576	6.0	576	6.0	724	0.795	100	28.2	LOS B	13.7	101.0	Short (P)	90	0.0	NA
Lane 2	577	6.6	577	6.6	726	0.795	100	28.0	LOS B	14.0	103.7	Full	500	0.0	0.0
Approach	1153	6.3	1153	6.3		0.795		28.1	LOS B	14.0	103.7				
Intersection	3062	4.7	3062	4.7		0.843		18.4	LOS B	14.0	103.7				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

7 Lane under-utilisation specified by the user

MOVEMENT SUMMARY

Site: 101 [Bay St / Cary St Existing AM - 2 Lane Bay]

Network: N101 [AM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 85 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street														
2	T1	1458	4.6	1458	4.6	0.784	7.3	LOS A	13.6	98.7	0.57	0.55	0.61	49.7
3	R2	194	1.1	194	1.1	0.588	22.6	LOS B	8.4	60.4	0.79	0.83	0.99	16.9
Approach		1652	4.2	1652	4.2	0.784	9.1	LOS A	13.6	98.7	0.59	0.58	0.65	47.3
East: Bay Street														
4	L2	146	0.7	146	0.7	0.168	18.8	LOS B	2.1	14.9	0.61	0.72	0.61	13.5
6	R2	111	0.0	111	0.0	0.843	55.1	LOS D	3.2	22.5	1.00	0.95	1.46	22.9
Approach		257	0.4	257	0.4	0.843	34.4	LOS C	3.2	22.5	0.78	0.82	0.97	20.5
North: Cary Street														
7	L2	68	1.5	68	1.5	0.795	33.1	LOS C	13.7	101.0	0.93	0.89	1.01	31.3
8	T1	1085	6.6	1085	6.6	0.795	27.8	LOS B	14.0	103.7	0.94	0.90	1.02	31.4
Approach		1153	6.3	1153	6.3	0.795	28.1	LOS B	14.0	103.7	0.94	0.90	1.02	31.4
All Vehicles		3062	4.7	3062	4.7	0.843	18.4	LOS B	14.0	103.7	0.74	0.72	0.82	37.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	3	36.7	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	1	20.5	LOS C	0.0	0.0	0.69	0.69
P3	North Full Crossing	15	36.7	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		19	35.8	LOS D			0.92	0.92

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

LANE SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Arnott Avenue (S)															
Lane 1	41	0.0	41	0.0	1515	0.027	100	5.8	LOS A	0.0	0.3	Full	500	0.0	0.0
Approach	41	0.0	41	0.0		0.027		5.8	LOS A	0.0	0.3				
East: Bay Street (E)															
Lane 1	79	0.6	79	0.6	1933	0.041	100	0.5	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	79	0.7	79	0.7	1941	0.041	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	158	0.7	158	0.7		0.041		0.3	NA	0.0	0.0				
West: Bay Street (W)															
Lane 1	119	4.4	119	4.4	1779	0.067	100	0.7	LOS A	0.0	0.3	Full	75	0.0	0.0
Approach	119	4.4	119	4.4		0.067		0.7	NA	0.0	0.3				
Intersection	318	2.0	318	2.0		0.067		1.1	NA	0.0	0.3				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Bay Street/Arnott Avenue Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Arnott Avenue (S)														
1	L2	40	0.0	40	0.0	0.027	5.7	LOS A	0.0	0.3	0.15	0.54	0.15	50.0
3	R2	1	0.0	1	0.0	0.027	6.9	LOS A	0.0	0.3	0.15	0.54	0.15	52.9
Approach		41	0.0	41	0.0	0.027	5.8	LOS A	0.0	0.3	0.15	0.54	0.15	50.2
East: Bay Street (E)														
4	L2	7	0.0	7	0.0	0.041	5.5	LOS A	0.0	0.0	0.00	0.06	0.00	57.9
5	T1	151	0.7	151	0.7	0.041	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
Approach		158	0.7	158	0.7	0.041	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.4
West: Bay Street (W)														
11	T1	105	5.0	105	5.0	0.067	0.1	LOS A	0.0	0.3	0.05	0.07	0.05	58.7
12	R2	14	0.0	14	0.0	0.067	5.5	LOS A	0.0	0.3	0.05	0.07	0.05	55.6
Approach		119	4.4	119	4.4	0.067	0.7	NA	0.0	0.3	0.05	0.07	0.05	58.3
All Vehicles		318	2.0	318	2.0	0.067	1.1	NA	0.0	0.3	0.04	0.11	0.04	57.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

Site: 101 [Cary St/Victory Pde Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 87 seconds (Network Optimum Cycle Time - Minimum Delay)

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Cary Street (S)															
Lane 1	622	3.9	622	3.9	1115	0.558	100	11.8	LOS A	9.9	71.5	Full	500	0.0	0.0
Lane 2	526	3.9	526	3.9	943[1]	0.558	100	11.0	LOS A	7.8	56.2	Full	500	0.0	0.0
Lane 3	16	100.0	16	100.0	160	0.098	100	15.1	LOS B	0.2	2.6	Short	25	0.0	NA
Approach	1164	5.2	1164	5.2		0.558		11.5	LOS A	9.9	71.5				
East: Victory Parade (E)															
Lane 1	181	1.1	181	1.1	261	0.694	100	46.3	LOS D	4.8	33.8	Short	70	0.0	NA
Lane 2	176	1.3	176	1.3	254	0.694	100	47.0	LOS D	4.7	33.1	Full	500	0.0	0.0
Approach	357	1.2	357	1.2		0.694		46.7	LOS D	4.8	33.8				
North: Cary Street (N)															
Lane 1	360	2.0	360	2.0	1452	0.248	100	7.6	LOS A	2.0	14.3	Short	25	0.0	NA
Lane 2	546	3.5	546	3.5	826[1]	0.662	100	8.2	LOS A	5.8	42.2	Full	112	0.0	0.0
Lane 3	739	3.5	739	3.5	1118	0.662	100	2.6	LOS A	4.0	29.0	Full	112	0.0	0.0
Approach	1646	3.2	1646	3.2		0.662		5.6	LOS A	5.8	42.2				
Intersection	3167	3.7	3167	3.7		0.694		12.4	LOS A	9.9	71.5				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

MOVEMENT SUMMARY

Site: 101 [Cary St/Victory Pde Existing PM]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 87 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street (S)														
2	T1	1148	3.9	1148	3.9	0.558	11.5	LOS A	9.9	71.5	0.64	0.57	0.64	43.8
3	R2	16	100.0	16	100.0	0.098	15.1	LOS B	0.2	2.6	0.52	0.68	0.52	47.0
Approach		1164	5.2	1164	5.2	0.558	11.5	LOS A	9.9	71.5	0.64	0.57	0.64	43.9
East: Victory Parade (E)														
4	L2	24	0.0	24	0.0	0.694	46.3	LOS D	4.8	33.8	1.00	0.86	1.10	33.6
6	R2	333	1.3	333	1.3	0.694	46.7	LOS D	4.8	33.8	1.00	0.85	1.10	24.0
Approach		357	1.2	357	1.2	0.694	46.7	LOS D	4.8	33.8	1.00	0.85	1.10	24.9
North: Cary Street (N)														
7	L2	360	2.0	360	2.0	0.248	7.6	LOS A	2.0	14.3	0.23	0.65	0.23	48.0
8	T1	1286	3.5	1286	3.5	0.662	5.0	LOS A	5.8	42.2	0.32	0.29	0.32	53.0
Approach		1646	3.2	1646	3.2	0.662	5.6	LOS A	5.8	42.2	0.30	0.37	0.30	51.8
All Vehicles		3167	3.7	3167	3.7	0.694	12.4	LOS A	9.9	71.5	0.50	0.50	0.52	44.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	1	37.7	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	3	37.7	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		4	37.7	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

LANE SUMMARY

Site: 101 [Bay St / Cary St Existing PM - 2 Lane Bay]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 87 seconds (Network Optimum Cycle Time - Minimum Delay)

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist m		m	%	%
South: Cary Street															
Lane 1	1182	3.4	1182	3.4	1513	0.781	100	2.3	LOS A	8.7	62.7	Full	112	0.0	0.0
Lane 2	281	3.2	281	3.2	479	0.586	75[7]	20.2	LOS B	5.2	37.4	Full	112	0.0	0.0
Approach	1463	3.4	1463	3.4		0.781		5.8	LOS A	8.7	62.7				
East: Bay Street															
Lane 1	182	0.0	182	0.0	512	0.355	100	32.5	LOS C	3.9	27.0	Full	75	0.0	0.0
Lane 2	100	2.1	100	2.1	105	0.951	100	68.3	LOS E	3.3	23.8	Full	75	0.0	0.0
Approach	282	0.7	282	0.7		0.951		45.2	LOS D	3.9	27.0				
North: Cary Street															
Lane 1	861	3.5	861	3.5	1095	0.786	100	15.9	LOS B	17.5	126.1	Short (P)	90	0.0	NA
Lane 2	660	3.6	660	3.6	840[1]	0.786	100	15.5	LOS B	12.1	87.1	Full	500	0.0	0.0
Approach	1522	3.5	1522	3.5		0.786		15.8	LOS B	17.5	126.1				
Intersection	3266	3.2	3266	3.2		0.951		13.8	LOS A	17.5	126.1				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.
7 Lane under-utilisation specified by the user

MOVEMENT SUMMARY

Site: 101 [Bay St / Cary St Existing PM - 2 Lane Bay]

Network: N101 [PM Existing - 2 Lane Bay - 60 Minute Peak]

Bay St / Cary St
Future Conditions
AM Peak Hour
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 87 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	Aver. Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Cary Street														
2	T1	1324	3.4	1324	3.4	0.781	4.0	LOS A	8.7	62.7	0.38	0.36	0.39	53.9
3	R2	139	3.0	139	3.0	0.586	23.0	LOS B	5.2	37.4	0.97	0.87	1.04	16.4
Approach		1463	3.4	1463	3.4	0.781	5.8	LOS A	8.7	62.7	0.44	0.41	0.45	51.4
East: Bay Street														
4	L2	182	0.0	182	0.0	0.355	32.5	LOS C	3.9	27.0	0.85	0.78	0.85	8.6
6	R2	100	2.1	100	2.1	0.951	68.3	LOS E	3.3	23.8	1.00	1.07	1.88	20.0
Approach		282	0.7	282	0.7	0.951	45.2	LOS D	3.9	27.0	0.90	0.89	1.21	15.5
North: Cary Street														
7	L2	61	1.7	61	1.7	0.786	21.1	LOS B	17.5	126.1	0.83	0.78	0.84	39.5
8	T1	1461	3.6	1461	3.6	0.786	15.5	LOS B	17.5	126.1	0.77	0.73	0.80	39.7
Approach		1522	3.5	1522	3.5	0.786	15.8	LOS B	17.5	126.1	0.78	0.73	0.80	39.7
All Vehicles		3266	3.2	3266	3.2	0.951	13.8	LOS A	17.5	126.1	0.64	0.60	0.68	41.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	19	37.7	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	3	11.1	LOS B	0.0	0.0	0.51	0.51
P3	North Full Crossing	15	37.7	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		37	35.5	LOS D			0.90	0.90

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

ANNEXURE I: CIVIL PLANS

(1 SHEET)

NEW MEDIAN EXTENSION TO MATCH NEATLY INTO EXISTING.

7.25m

ONLY

R2-14A(L)

CARY STREET

UPRIGHT KERB

VC

EXTENT NEW PIPE TO EXISTING COUNCIL DRAINAGE PIT.

EXISTING PIT AND PIPE TO BE REMOVED.

INTERNAL DEVELOPMENT

REFER TO PLANS PREPARED BY NORTHROP.

ROOF 9.10

ROOF 8.83

ROOF 8.51

ROOF 8.51

ROOF 10.68

ROOF 7.88

ROOF 7.82

ROOF 7.80

ROOF 7.85

BACK OF UPRIGHT KERB

BAY STREET

MINIMUM 4m WIDE OVERLAND FLOW PATH. REGRADE ADJACENT LAND AS REQUIRED.

NO STOPPING

R5-400(L&R)

A C31DA

B C31DA

EXISTING POWER POLES TO BE RELOCATED TO AUSGRID REQUIREMENTS.

EXISTING POWER POLES TO BE RELOCATED BEHIND BACK OF KERB TO AUSGRID REQUIREMENTS.

R13.0m

RKG

R8.0m

KG

KR

ARNOTT STREET

R5.0m

PROVIDE ROLL KERB AROUND CORNER TO PROVIDE VEHICLE ACCESS TO COUNCIL LAND FOR MAINTENANCE PURPOSES. ROLL KERB TO ALSO FACILITATE OVERLAND FLOW IN THE EVENT OF PIPE BLOCKAGE.

EXISTING SCHOOL ZONE SIGNAGE TO BE REPLACED BEHIND NEW KERB.

NEW DRIVEWAY LAYBACKS TO BE PROVIDED AT EXISTING DRIVEWAY LOCATIONS.

2.9m

1.5m

4.6m

8.0m

3.6m

LEGEND

- PROPOSED BOUNDARY LINE.
- DENOTES DRIVEWAY CROSSOVER TO BE CONSTRUCTED IN ACCORDANCE WITH LMCC STANDARDS.
- DENOTES FOOTPATH PAVEMENT TO BE CONSTRUCTED IN ACCORDANCE WITH LMCC STANDARDS.
- DENOTES MEDIAN EXTENSION PAVEMENT IN ACCORDANCE WITH LMCC STANDARDS.
- DENOTES EXISTING STORMWATER PIT.
- DENOTES EXISTING STORMWATER PIPE.
- DENOTES EXISTING STORMWATER PIPE TO BE REMOVED.
- DENOTES PROPOSED STORMWATER PIT
- DENOTES PROPOSED STORMWATER PIPE.
- DENOTES MINIMUM 4m OVERLAND FLOW PATH.
- DENOTES PROPOSED STREET SIGN.
- KG — DENOTES PROPOSED NEW KERB AND GUTTER TO BE CONSTRUCTED IN ACCORDANCE WITH LMCC.
- RKG — DENOTES PROPOSED NEW ROLL KERB AND GUTTER TO BE CONSTRUCTED IN ACCORDANCE WITH LMCC.
- KR — DENOTES PROPOSED NEW KERB RAMP TO BE CONSTRUCTED IN ACCORDANCE WITH LMCC.
- VC — DENOTES PROPOSED NEW VEHICLE CROSSING CONSTRUCTED IN ACCORDANCE WITH LMCC.

VERIFIER C.SMITH

JOB MANAGER K.SINCLAIR

DESIGNED R.JEANS

DRAWN L.STEEL

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR DA APPROVAL	LS	CS	RJ	27.10.21
2	REVISED FOR DA APPROVAL	BD	CS	RJ	25.02.22

CLIENT

TORONTO INVESTMENTS NO.1

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT

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ALL SETOUT TO ARCHITECT'S DRAWINGS. DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT AND ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.

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PROJECT

118 CARY STREET TORONTO, NSW, 2283

DRAWING TITLE

CONCEPT EXTERNAL WORKS PLAN

JOB NUMBER **NL171556**

DRAWING NUMBER **C30DA** REVISION **2**

DRAWING SHEET SIZE = A1

ANNEXURE J: OPERATIONAL LOADING DOCK MANAGEMENT PLAN

(5 SHEETS)

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Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

25 June 2021 Reference: 18365.01FC

OPERATIONAL LOADING DOCK MANAGEMENT PLAN
118 CARY STREET, TORONTO

This Loading Dock Management Plan outlines the procedures to be implemented within the loading / delivery facilities of the Commercial Lots at 118 Cary Street, Toronto NSW.

1 INTRODUCTION

Deliveries to the Commercial Lots will be controlled by this Operational Loading Dock Management Plan and shall be complied with at all times.

The aim of this Operational Loading Dock Management Plan is as follows:

- Confirm the dock manager and tenant manager responsibilities.
- Provide specifics regarding the operation of the loading dock.

The on-site loading / delivery facilities are provided along the northern boundary of the site and are capable of accommodating vehicles up to 8.8m in length (Medium Rigid Vehicles). Entry only is provided from Arnott Avenue, with exit provided onto Cary Street; secure gates are provided at both the entry and exit points.

This one-way arrangement avoids any MRV reversing; thereby minimising impacts on traffic flow whilst facilitating safe movement of large vehicles.

2 LOADING DOCK MANAGEMENT

It is the duty of management of the Commercial Lots to supervise the efficient unloading of deliveries and co-ordinate their arrival with dispatch from their suppliers. The management of the Commercial Lots should designate a dock manager to monitor the dock and supervise loading and unloading operations.

Some physical measures shall be implemented to mitigate the impacts of loading operations on Cary Street including:

- To install security gates at both the Arnott Avenue and Cary Street entry and exit points;
- "Watch for Pedestrians" signage at the Cary Street exit of the loading dock and "Watch for Exiting Vehicles" line marking on footpath on either side of the Cary Street driveway;
- Convex mirrors within the site at the Cary Street driveway supplementing the sight distances of both pedestrians and truck drivers.

3 CONTACT BY TRUCK DRIVER

The truck driver must contact the dock manager (tenant manager for loading zone use) by mobile phone or radio when the driver is within an estimated 15-minute driving distance from the site.

The dock manager will ensure that the loading dock is vacant or has sufficient available queueing length to accommodate the incoming vehicle.

Delivery and garbage delivery times by different contractors will be coordinated on an agreed schedule so that there will not be any queueing of trucks.

In the possibility that the loading dock cannot accommodate the incoming vehicle, the dock manager must advise the driver to delay their arrival until a specified time when the vehicle can be accommodated. Drivers are not permitted to wait in the vicinity of the proposed development to make a delivery if the loading dock is occupied.

Trucks shall not enter the loading dock during the following times:

- Before 9:00 am or after 9:00 pm Monday – Sunday;
- Between 8:00 am and 10:00 am Monday – Friday; or,
- Between 3:00 pm and 6:00 pm Monday – Friday.

4 OPERATING CAPACITY OF LOADING DOCK & LOADING ZONE

The assigned dock manager will manage the loading dock in order to ensure that the operating capacity of the loading dock is not exceeded. The operating capacity of the loading dock is four (4) 8.8m long vehicles, only one of which can load at a time.

5 DIRECT DELIVERIES

Commercial Lots management will ensure that all direct deliveries and pickups are coordinated so that vehicle movements in and out of the loading dock and loading zone will not breach timing restrictions.

6 TRUCK MANAGEMENT

Commercial Lots management shall ensure that the Operational Traffic Management Plan is adhered to as far as practicable, in order to ensure that the residential amenity in both Bay Street and Arnott Avenue is not adversely affected and traffic movement on the surrounding local street network is not impeded.
All vehicles shall make a left turn only out of the loading dock onto Cary Street and will be reminded to do so by the dock manager. Any driver that disobeys this requirement shall be reported by the dock manager to the management of the truck, with the driver being prohibited from entering the Commercial Lots for a period of time determined by the Commercial Lots management.

7 ADVICE TO DELIVERY SERVICE PROVIDERS

Each direct delivery service provider must be provided with this Operational Loading Dock Management Plan.

8 DRIVER CONDUCT

Commercial Lots management will provide every visiting driver a one-page Notice to Drivers (see **Attachment 1**). The drivers servicing the loading dock and loading zone are required to adhere to the following rules:

- Not to enter the loading dock:
  - Before 9:00 am or after 9:00 pm Monday – Sunday;
  - Between 8:00 am and 10:00 am Monday – Friday; or,
  - Between 3:00 pm and 6:00 pm Monday – Friday.
- To have departed the loading dock:
  - 9:00 pm Monday to Sunday.
- Direct delivery vehicles must arrange a delivery time with the dock manager and be punctual.
- All loading or unloading will only be conducted in the loading dock, with no loading/unloading to occur outside of these areas.
- A sign shall be erected in the loading dock stating, *"For the comfort of nearby residents, please make as little noise as possible"*.
- A sign shall be erected in the loading dock at the exit to Cary Street stating *"Left Turn Only*".
- No public address system shall be used in the loading dock except for emergency fire evacuation;
- The driver shall apply all possible skill and care when driving into the loading dock and loading zone and during the subsequent departure from the loading dock/zone, to minimise the noise emission from the vehicle.
- The driver shall ensure that when alighting from the truck and when unloading the truck or relocating the truck, that reasonable precaution is taken to minimise unnecessary noise emission.
- Drivers shall ensure that any radio and music systems are deactivated, or do not generate sound which may be audible to nearby residences.
- The driver shall ensure that neither he/she, nor the people with whom he/she may need to liaise or work within the loading areas, will shout or use language that could be considered offensive or generate other sources of noise, which may be audible or disturbing for nearby residents.
- Commercial Lots management shall ensure that all drivers under its control or drivers who work as contractors or suppliers, who are instructed to make deliveries, or are likely to make deliveries shall be provided with a copy of the conditions referred in **Attachment 1**.
- When standing within the loading dock for more than 2-minutes, engines should be switched off.

- Commercial Lots management shall instruct its employees, contractors and/or agents to observe care in the use and control of equipment in the loading dock and access areas so as not to cause or allow to be caused any unreasonable noise during the hours of operation of the loading dock, loading zone or access areas.

9 COMPLAINT MANAGEMENT PROCEDURES

A complaints management email address and phone number will be set up and displayed at the driveway entry to the commercial lots.

Please contact the undersigned or Mr Craig M^{c}Laren on (02) 8355-2440 should this management plan require any amendments.

Yours faithfully
M^{c}Laren Traffic Engineering

Tom Steal
Senior Traffic Engineer
BE Civil AMAITPM MIEAust
RMS Accredited Level 2 Road Safety Auditor

ATTACHMENT 1

NOTICE TO DRIVERS

The loading dock is located within the Commercial Lots and Residential Flat Building with entry from Arnott Avenue and is proximate to nearby residents. Drivers must conduct themselves in a manner that respects the nature of the surrounding area.

You are advised that the following delivery constraints have been imposed upon the Commercial Lots and Residential Flat Building:

1. Do not enter the loading dock or loading zone:
    - Before 9:00 am or after 9:00 pm Monday – Sunday;
    - Between 8:00 am and 10:00 am Monday – Friday; or,
    - Between 3:00 pm and 6:00 pm Monday – Friday.
2. You must have departed the internal access road by:
    - 9.00pm Monday to Sunday.
3. Delivery vehicles to the loading dock must not exceed 12.5m in length.
4. All loading or unloading will only be conducted in the loading dock.
5. Drivers shall ensure that any radio and/or music system is deactivated, or does not generate sound which may be audible to the nearby residence.
6. Arrange a delivery time with the dock manager and STICK TO IT.
7. The Commercial Lots dock manager is the driver's initial point of contact for all transport concerns. They may be contacted on the following telephone number (#).
8. The loading dock is within close proximity to nearby residences. Please make as little noise as possible.
9. No vehicle is to wait in the vicinity of the Commercial Lots or queue within the site or on surrounding streets if it is early or if the loading dock or loading zone is full. In those circumstances, the driver must leave the area and arrange a new delivery time.

CONTACT BY TRUCK DRIVER

The truck driver must contact the assigned dock manager by mobile phone or radio (where appropriate) when the driver is within an estimated 15 minute driving distance from the site. The driver must inform the assigned dock manager of the vehicle's length.

The Commercial Lots considers the above constraints to be our MINIMUM *"good citizen"* responsibilities towards nearby residents.

Commercial Lots staff will closely monitor the loading dock and loading zone usage, and will report all incidents.

Driver failure to observe the above instructions will result in that driver being prohibited from entering the Commercial Lots for a period of time determined by Commercial Lots management.

ANNEXURE K: TFNSW LETTER – 17 SEPTEMBER 2021

(3 SHEETS)

CR2021/002472
SF2016/010417
MK

17 September 2021

Chief Executive Officer
Lake Macquarie City Council
PO Box 1906
HRMC NSW 2310

Attention: Andrew Leese

CARY STREET (MR217): DA/419/2018, MIXED USE DEVELOPMENT – 114 – 120 CARY STREET, TORONTO

On 30 July 2021 TfNSW accepted the referral by Lake Macquarie City Council (Council) via email regarding the abovementioned application (Development Application). It is understood that the development application is currently under an appeal process with the NSW Land & Environment Court and that Council re-referred the Development Application to TfNSW for comment in accordance with Section 138 of the *Roads Act 1993.*

TfNSW key interests are the safety and efficiency of the transport network, the needs of our customers and the integration of land use and transport in accordance with the Future Transport Strategy 2056.

Cary Street (MR217) is a classified (State) road and Bay Road and Arnott Avenue are both local roads. Council is the roads authority for these roads and all other public roads in the area, in accordance with Section 7 of the *Roads Act 1993*.

TfNSW has reviewed the following referred documentation:

- Revised Traffic Impact Assessment by McLaren Traffic Engineering & Road Safety Consultants (refer Report No. 16401.01FD, Final Issue D, dated 29 June 2021).
- Revised Site Plans by Mark Lawler Architects (refer Job No. 1588DD, Issue K, Drawing Nos. 1-01 to 3-01, dated 23 June 2021)

TfNSW does not object to the proposal subject to the following matters being considered by the consent authority in determining this development:

- The new location of the service vehicle exit-only driveway to Cary Street is considered acceptable. All works on Cary Street, including extension of the central concrete median, will require the consent of TfNSW under the terms of a Works Authorisation Deed (WAD).

- Section 4.3 of the submitted traffic report outlines that the SIDRA traffic models the operation of Bay Street as a two-lane westbound approach during the afternoon school peak. Video footage provides evidence of the informal use of the existing single lane as two lanes.
  The traffic control signal infrastructure (detectors, signal phasing etc.) and existing line marking in Bay Street function as a single-lane westbound approach, not as two-lanes.
  The TIA demonstrates that two lanes on the approach are more efficient than a single lane as it reduces the extent of queuing and the overall level of service for vehicles in Bay Street. The works recommended by TfNSW in advice dated 29 July 2019, including (but not limited to) installation of adjusted line marking and two separate detectors, would formalise the approach for use as two lanes and improve the overall performance of the intersection.
  As Council is the Roads Authority for Bay Street and is responsible for settings standards, determining priorities and carrying out works, the above matter is highlighted for Council's consideration.
  TfNSW recommends Council consider a condition to upgrade Bay Street from one to two lanes. Should such a condition be required TfNSW recommends the developer undertake the following under the terms of the Works Authorisation Deed (WAD):

    - Additional detectors located in both the approach lanes
    - Extra pedestrian detection on the crossings, which can be added as part of the software upgrade required to add in the extra detector
    - New TCS lantern posts at the relocated stop line
    - Removal of existing line marking and provision of new line marking
    - Consultation with Council and the school / school bus operator regarding any impact on the existing school bus stop opposite McDonalds

- For works on classified (State) roads, and for upgrades to traffic signals on any road, the developer would be required to enter into a Works Authorisation Deed (WAD) with TfNSW. TfNSW would exercise its powers and functions of the road authority, to undertake road works in accordance with Sections 64, 71, 72 and 73 of the Roads Act, as applicable, for all works under the WAD (Attachment A).

- All road works under the WAD shall be undertaken at full cost to the developer and completed prior to issuing any Occupation Certificate for the development.

- The consent authority should ensure that appropriate traffic measures are in place during the construction phase of the project to minimise the impacts of construction vehicles on traffic efficiency and road safety within the vicinity.

- Discharged storm water from the development shall not exceed the capacity of the Cary Street stormwater drainage system. The consent authority shall ensure that drainage from the site is catered for appropriately and should advise TfNSW of any adjustments to the existing system that are required prior to final approval of the development.

- The consent authority should ensure that the applicant is aware of the potential for road traffic noise to impact on development on the site, in particular, noise generated by Cary Street. In this regard, the developer is responsible for providing noise attenuation measures in accordance with the *NSW Road Noise Policy 2011*, prepared by the department previously known as the Department of Environment, Climate Change and Water.

- The consent authority should ensure that engineering measures are to be put in place to eliminate the risk of road collapse during excavation of the basement carpark.

TfNSW highlights that in determining the application under Part 4 of the *Environmental Planning and Assessment Act, 1979*, it is the consent authority's responsibility to consider the environmental impacts of any road works which are ancillary to the development. This includes any works which form part of the proposal and/or any works which are deemed necessary to include as requirements in the conditions of development consent.

On the determination of this matter by the consent authority, please forward a copy of the Notice of Determination to TfNSW for our records. Should you require further information please contact Masa Kimura Development Services Case Officer, on 02 4908 7688 or 0407 707 999 or by emailing development.hunter@transport.nsw.gov.au.

Yours sincerely

Liz Smith
Manager Development Services North

ANNEXURE L: EXTRACTS FROM VIDEO FOOTAGE

(49 SHEETS)


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