

APPENDIX B

PARSONS

Transportation & Traffic Analysis Final Report

Adelaide Street North Widening Municipal Class Environmental Assessment

November 2019

Prepared for:
The Corporation of The City of London
300 Dufferin Avenue
London, ON
N6A 4L9



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November 13, 2019

Our Ref: [476793]

The Corporation of The City of London
300 Dufferin Avenue
London, ON, Canada
N6A 4L9

Re: Adelaide Street North Environmental Assessment – Transportation & Traffic Analysis, Final Report

We are pleased to provide you a PDF copy of the completed Transportation and Traffic Analysis Report as part of the Adelaide Street North Widening Municipal Class Environmental Assessment (EA) study between Fanshawe Park Road East and Sunningdale Road East.

If you would like any additional information or further clarifications on any aspect of our submission, please contact the undersigned at (905) 569-4122.

Yours truly,



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1. BACKGROUND

Parsons has been retained by the City of London to undertake a Municipal Class Environmental Assessment (EA) study for the Adelaide Street North corridor from Fanshawe Park Road East to 350m north of Sunningdale Road East, as well as Sunningdale Road East from Blackwater Road to the Stoney Creek Community Centre entrance.

The purpose of this study is to identify future transportation deficiencies and to develop the recommendations for widening of Adelaide Street North and intersection improvements within the study area to meet the goals of the City's Transportation Master Plan. The study will identify and develop a range of design elements and features aimed at facilitating movement by different users and be attractive in its appearance. The preferred design is to reflect both the existing and planned land use, urban form and transportation contexts and conform to the Complete Street Design Manual. Trade-offs between features should reflect the long-term objectives for the street and surrounding areas.

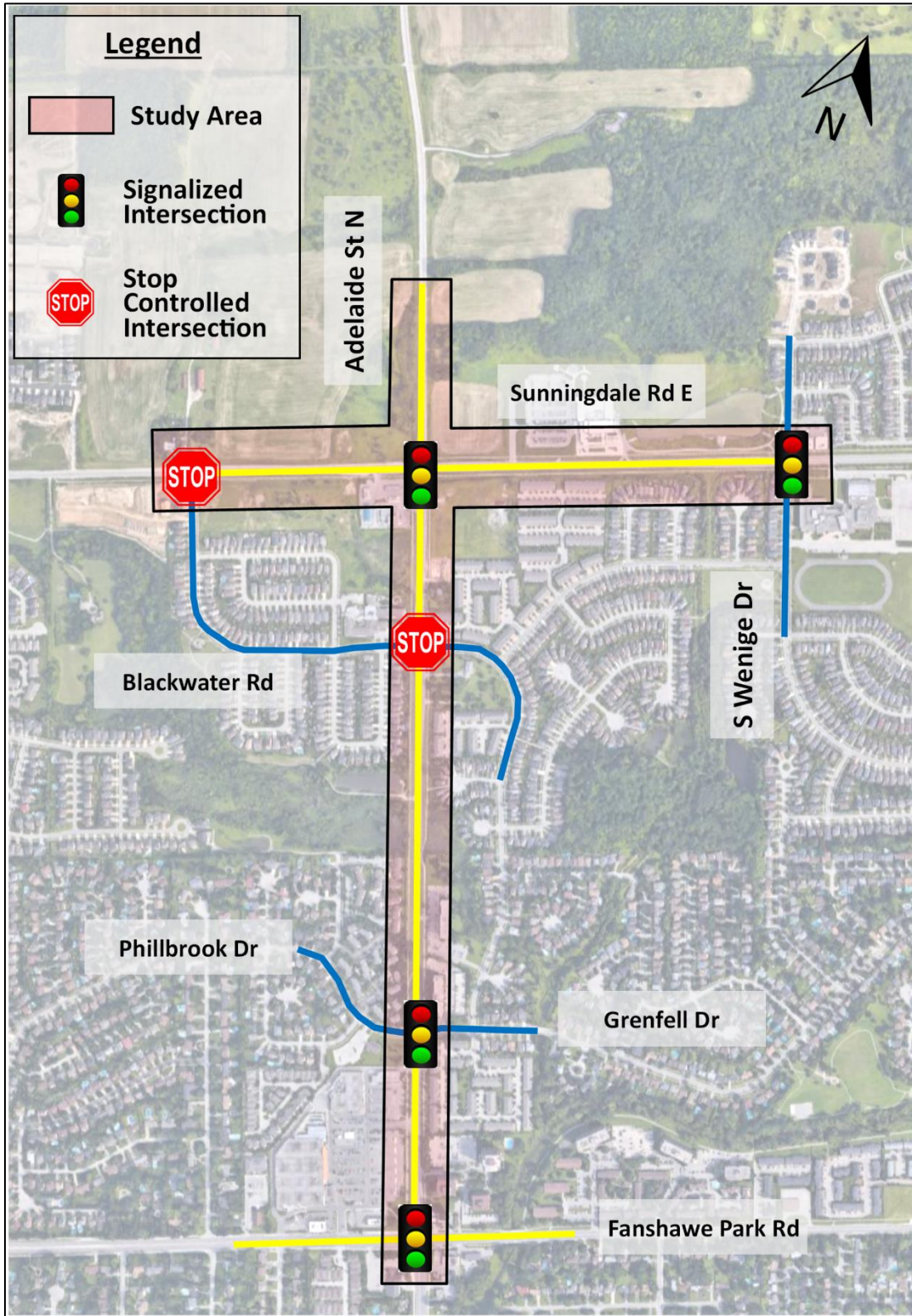
The corridor of Adelaide Street North between Fanshawe Park Road East and Sunningdale Road East is recommended to be widened from 2 lanes to 4 lanes in the 2030 Transportation Master Plan (TMP) Update May 2013 and the 2014 Development Charges Background Study (DCBS). However, as part of the 2019 Development Charges Background Study update, this widening is now scheduled for 2029.

1.1 STUDY AREA

Adelaide Street North is a north-south Civic Boulevard (as classified in the London Plan) under the jurisdiction of the City of London and as an arterial roadway in the 1989 City of London Official Plan, Schedule C. The subject roadway currently consists of a 2-lane urban cross-section with a posted speed limit of 60 km/hr while the section north of Sunningdale Road East is posted as 80 km/hr. The corridor within the study area is approximately 1.7 km in length with predominantly residential and commercial land uses with some agricultural areas located north of Sunningdale Road East.

The project limits for the EA study include the section of Adelaide Street North from 350 metres north of Sunningdale Road East to Fanshawe Park Road East in the south. Included as part of the study are sections of Sunningdale Road East from Adelaide Street to Blackwater Road in the west and South Wenige Drive in the East. For the traffic analysis purposes, the extent of the study area and intersections included in the analysis are illustrated in **Figure 1**.

Figure 1: Traffic Analysis Study Area



1.2 STUDY ANALYSIS SCOPE

In order to complete the Transportation and Traffic analysis report for the Adelaide Street North study area corridor, the scope of work consisted of the following tasks:

- Summarize and review the existing traffic volumes provided by the City of London;
- Undertake both the existing Adelaide Street North and Sunningdale Road East corridor capacity and intersection operation analysis to identify any operational issues;
- Conduct safety performance assessment based on the historical collisions to identify any safety-related concerns within the project limits;
- Review and assess the traffic impact study reports provided by the City conducted for various developments in the study area;
- Estimate future traffic volumes using the proposed/approved developments site traffic volumes, general traffic growth rate, and potential future land uses proposed in the proximity of the study limits;
- Undertake both the Adelaide Street North corridor capacity and intersection operation analysis using the future projected traffic volumes without improvements (Do Nothing Scenario), Identify the geometric improvements needed to improve the traffic flows along the study corridor and at the intersections;
- Conduct the signal warrant analysis for the existing unsignalized intersection of Adelaide Street North & Blackwater Road, and recommend the appropriate intersection controls;
- Analyze both the Adelaide Street North corridor and intersections with future traffic volumes and recommend the future lane configurations for both the corridor and intersections; and
- Evaluate the implementation of roundabout control at the intersection of Adelaide Street and Sunningdale Road as recommended in the Sunningdale Environmental Study Report.

1.3 ANALYSIS APPROACH AND TOOLS

The traffic analysis conducted for this study considers the capacity and level of service for individual intersections and mid-block sections along the study corridor. Intersections were analyzed using the procedures of the Highway Capacity Manual (HCM) methodologies for signalized and unsignalized intersections, as implemented in the Synchro / SimTraffic software developed by Trafficware.

Level of Service (LOS) can be characterized for each intersection approach and each lane group. Control delay alone is used to characterize LOS for the entire intersection or an approach. Control delay and volume-to-capacity (V/C) ratio are used to characterize LOS for a lane group. Delay quantifies the variations in travel time due to traffic signal control. It is also a surrogate measure of driver discomfort and fuel consumption. The volume-to-capacity (V/C) ratio quantifies the degree to which the capacity of each signal phase is utilized by a defined lane group. **Table 1** summarizes the characteristics of each level of service at signalized intersections.

The LOS criteria for unsignalized intersections are somewhat different from the criteria for signalized intersections because perceptions of facility users differ. The expectation is that a signalized intersection is designed to carry higher traffic volumes and will present greater delay than an unsignalized intersection. Unsignalized intersections are also associated with more uncertainty for users, as delays are less predictable

than at signalized junctions. This uncertainty can reduce driver’s delay tolerance. **Table 2** summarizes the characteristics of each level of service at unsignalized intersections.

Table 1: Signalized Intersection Level of Service Characteristics

LEVEL OF SERVICE	FEATURES	CONTROL DELAY (SEC/VEH)
A	Describes operations with very low control delay, up to 10 seconds/ vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all at this LOS. Short cycle lengths may also contribute to low delay.	≤ 10
B	Describes operations with control delay greater than 10 seconds and up to 20 seconds/vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop at this level than at LOS A, causing longer average delays.	> 10 to 20
C	Describes operations with control delay greater than 20 seconds and up to 35 seconds/vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.	> 20 to 35
D	Describes operations with control delay greater than 35 seconds and up to 55 seconds/vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures become noticeable.	> 35 to 55
E	Describes operations with control delay greater than 55 seconds and up to 80 seconds/vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.	> 55 to 80
F	LOS F describes operations with control delay in excess of 80 seconds/vehicle. This <i>oversaturation</i> , considered to be unacceptable to most drivers, occurs when arrival flow rates exceed the design capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such high delay levels.	> 80

Source: Highway Capacity Manual (HCM) 2000

Table 2: Unsignalized Intersection Level of Service Characteristics

LEVEL OF SERVICE	EXPECTED DELAY TO MINOR STREET TRAFFIC	AVERAGE CONTROL DELAY 'D' (SEC/VEH)
A	Little or no delays	0 < D ≤ 10
B	Short traffic delays	10 < D ≤ 15

LEVEL OF SERVICE	EXPECTED DELAY TO MINOR STREET TRAFFIC	AVERAGE CONTROL DELAY 'D' (SEC/VEH)
C	Average traffic delays	$15 < D \leq 25$
D	Long traffic delays	$25 < D \leq 35$
E	Very long traffic delays	$35 < D \leq 50$
F	Extreme delays with queuing which may cause congestion affecting other traffic movements in the intersection	$D > 50$

Source: Highway Capacity Manual (HCM) 2000

Roadway corridor operations are generally assessed based on the lane capacity analysis. Lane capacity analysis at the mid-block sections are based on the ratio of the link volumes and theoretical lane capacity (V/C). Table 3 shows planning level LOS at corridor based on the estimated V/C values.

Table 3: Lane Capacity Level of Service Characteristics

VOLUMES TO CAPACITY RATIOS (V/C)	LOS	GENERAL CONDITIONS
< 0.75	A to C	Stable flows with acceptable delays
$\geq 0.75 < 0.85$	D	Approaching unstable flows and tolerable delays
$\geq 0.85 < 1.00$	E	Unstable flows and intolerable delays
≥ 1.00	F	Forced flows and significant delays

Based on City of London's Transportation Impact Assessment Guidelines (April 2012), Section 8.1, the current capacity thresholds for Level of Service (LOS) and Volume to Capacity (V/C) are the following:

Identify intersections and proposed accesses where:

1. Volume/capacity (V/C) ratios for overall operations, through movements, shared through/turning movements increased to 0.90 or above and Level of Service "E" or worse;
2. V/C ratios for dedicated turning movements increased to 0.90 or above and Level of Service "E" or worse; and
3. Queues for an individual movement and turning movement projected to exceed available lane storage (95th percentile queue).

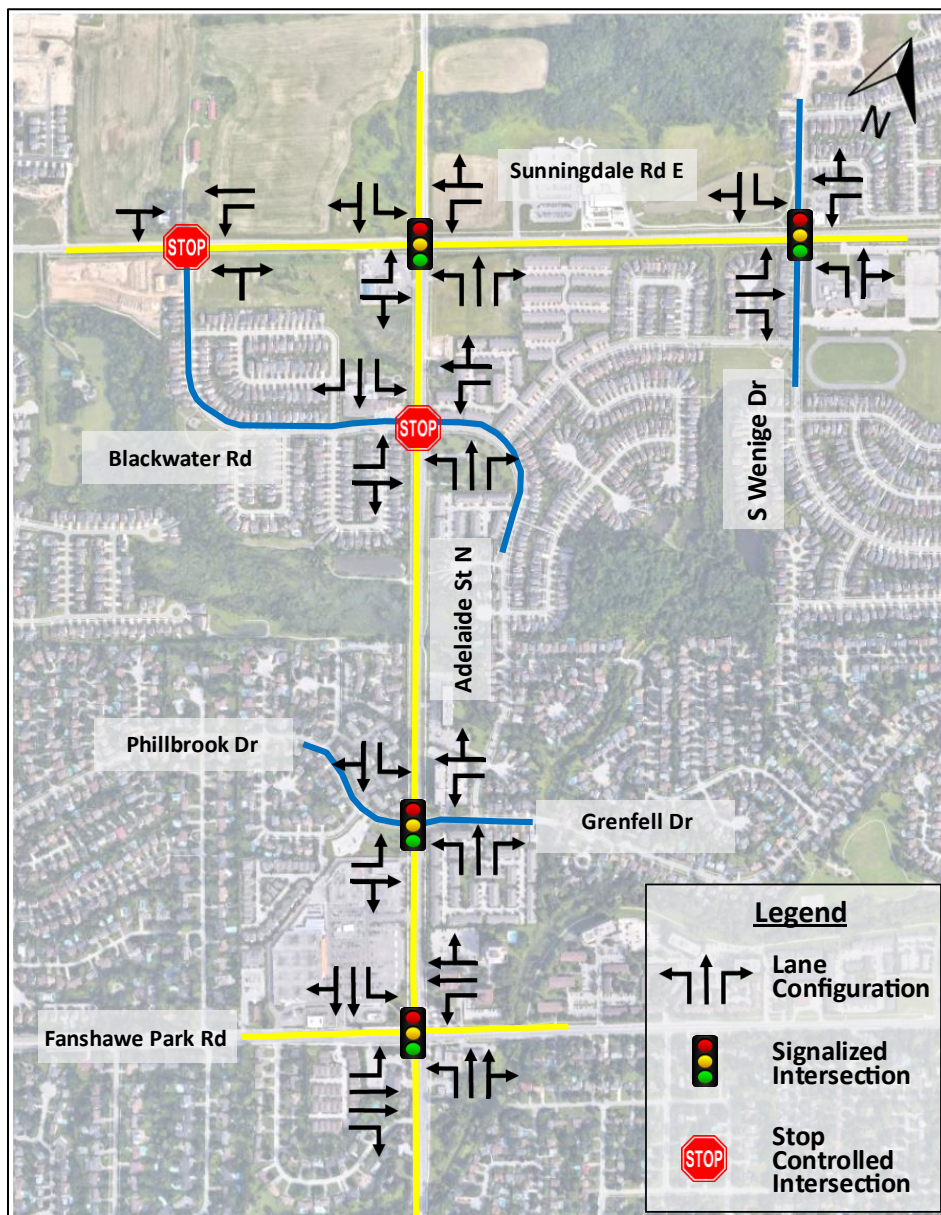
Additionally, estimated 95th percentile queues were highlighted for movements where V/C was estimated to be equal or greater than 1.0. This was done with the anticipation that queues may extend beyond the available storage lengths during some cycles within the peak hours analyzed.

2. EXISTING (2018) TRAFFIC CONDITIONS

2.1 EXISTING (2018) TRAFFIC VOLUMES

Existing traffic volumes for the study area intersections collected between 2015 and 2017 were provided by the City of London and are included in **Appendix A**. Traffic volume data was also extracted from a Synchro file and the Sunningdale ESR, both provided by the City. In consultation with the City of London, a 1% growth rate per annum was applied to the volumes to bring them all to a base 2018 analysis year then volumes were further adjusted to remove any significant imbalances. A summary of the existing unadjusted and adjusted (2018) intersection volumes for the weekday AM and PM peak hours is shown in **Appendix B**. The existing intersection lane configurations are illustrated in **Figure 2**.

Figure 2: Existing Lane Configurations



2.2 EXISTING (2018) TRAFFIC CONDITIONS, LANE CAPACITY ANALYSIS

Link volumes were estimated using the intersection entering and exiting volumes at the mid-block sections. These volumes can be seen on the 'Existing (2018) Adjusted AM & PM Traffic Volumes' graphic found in **Appendix B**. Lane capacity analysis for the existing traffic conditions were undertaken using the estimated mid-block link volumes and theoretical lane capacity of 850 vehicles per hour per lane. The lane capacity analysis results for the existing (2018) conditions are presented in **Tables 4** and **Table 5**, for the AM and PM peak hours, respectively. It is noted that Adelaide St northbound immediately north of Fanshawe Park Rd contains two through lanes, but curb lane terminates after approximately 60 metres resulting in a single lane.

Table 4: Existing (2018) AM Peak Hour, Lane Capacity Analysis

ROADWAY SECTION	NORTHBOUND			SOUTHBOUND		
	VOLUME*	CAPACITY	V/C	VOLUME*	CAPACITY	V/C
North of Sunningdale Rd. E	270	850	0.32	245	850	0.29
between Sunningdale Rd. E & Blackwater Rd.	540	850	0.63	490	850	0.58
between Blackwater Rd. & Phillbrook Dr. / Grenfell Dr.	410	850	0.48	690	850	0.81
between Phillbrook Dr. / Grenfell Dr. & The Home Depot Plaza	450	850	0.53	1,030	850	1.21
Immediately north of Fanshawe Park Rd.	530	1,700	0.31	1,130	1,700	0.66

* value rounded to nearest 5

Table 5: Existing (2018) PM Peak Hour, Lane Capacity Analysis

ROADWAY SECTION	NORTHBOUND			SOUTHBOUND		
	VOLUME*	CAPACITY	V/C	VOLUME*	CAPACITY	V/C
North of Sunningdale Rd. E	295	850	0.35	280	850	0.33
between Sunningdale Rd. E & Blackwater Rd.	630	850	0.74	570	850	0.67
between Blackwater Rd. & Phillbrook Dr. / Grenfell Dr.	740	850	0.87	600	850	0.71
between Phillbrook Dr. / Grenfell Dr. & The Home Depot Plaza	1,075	850	1.26	780	850	0.92
Immediately north of Fanshawe Park Rd.	1,135	1,700	0.67	760	1,700	0.45

* value rounded to nearest 5

As presented in **Tables 4** and **5**, under the existing (2018) traffic conditions, the section of Adelaide Street North, between Phillbrook Drive / Grenfell Drive & The Home Depot Plaza Entrance, is over capacity for the southbound direction during the AM peak hour. During the PM peak hour, this section is over capacity in the northbound

direction. Respectively, some sections along Adelaide Street North are approaching capacity in the southbound traffic during the AM peak hour and northbound traffic during the PM peak hour.

2.3 EXISTING (2018) INTERSECTION OPERATIONS

Using the existing (2018) traffic volumes established and signal timings received from the City, operational analysis for the signalized and unsignalized intersections were completed within the corridor using the Synchro/SimTraffic for the AM and PM peak hours. All analyses were completed using parameters outlined in the City of London Transportation Impact Assessment Guidelines, April 2012. Based on the City's guidelines, any movements containing V/C ratios equal to/greater than 0.90 or contain LOS E or worse, and/or includes queues that exceeds the available storage have been highlighted within the table.

The results of the Synchro analysis completed for the existing (2018) Weekday AM and PM peak hours are provided in **Table 6**, for the study area unsignalized and signalized intersections. It should be noted that signal timings were extracted from signal timing plans and Synchro files, both provided by the City. The Synchro output sheets for existing conditions are provided in **Appendix C**.

Table 6: Existing (2018) Traffic Operation Analysis Results

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
South Wenige Dr. & Sunningdale Rd. E (Signalized)	B [17]	0.61	-	B [15]	0.52	-
EBL	A [9]	0.14	10	C [21]	0.60	42
EBT	B [19]	0.77	121	B [12]	0.44	54
EBR	A [8]	0.04	5	A [8]	0.06	6
WBL	A [9]	0.07	4	A [9]	0.12	9
WBT&R	B [12]	0.46	55	B [16]	0.67	98
NBL	C [23]	0.32	25	C [21]	0.23	21
NBT&R	B [19]	0.08	11	B [19]	0.03	6
SBL	B [19]	0.06	7	C [21]	0.20	18
SBT&R	B [19]	0.09	12	B [19]	0.04	7
Adelaide St. N & Sunningdale Rd. E (Signalized)	C [33]	0.87	-	C [27]	0.80	-
EBL	B [13]	0.10	10	B [16]	0.14	9
EBT&R	D [47]	0.97	230	D [40]	0.92	168

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
WBL	D [36]	0.75	34	C [25]	0.68	24
WBT&R	B [12]	0.52	80	B [17]	0.69	117
NBL	D [45]	0.70	63	C [35]	0.62	54
NBT	C [31]	0.41	52	C [26]	0.43	58
NBR	C [26]	0.12	15	C [22]	0.15	16
SBL	C [27]	0.15	14	C [21]	0.09	9
SBT&R	C [31]	0.44	55	C [26]	0.46	61
Blackwater Rd. & Sunningdale Rd. E (Unsignalized)	A [7]	-	-	A [1]	-	-
EBT&R	A [0]	0.54	0	A [0]	0.43	0
WBL	A [10]	0.01	0	A [9]	0.02	0
WBT	A [0]	0.43	0	A [0]	0.51	0
NBL&R	F [111]	0.86	41	D [33]	0.32	10
Adelaide St. N & Blackwater Rd. (Unsignalized)	A [6]	-	-	A [5]	-	-
EBL	D [29]	0.06	1	F [60]	0.14	4
EBT&R	B [13]	0.10	3	C [19]	0.16	4
WBL	E [47]	0.55	22	F [99]	0.61	21
WBT&R	B [12]	0.13	4	C [19]	0.15	4
NBL	A [9]	0.02	0	A [9]	0.05	1
NBT	A [0]	0.24	0	A [0]	0.37	0
NBR	A [0]	0.01	0	A [0]	0.07	0
SBL	A [8]	0.02	0	A [10]	0.07	2
SBT	A [0]	0.29	0	A [0]	0.31	0
SBR	A [0]	0.01	0	A [0]	0.01	0
Adelaide St. N & Phillbrook Dr. / Grenfell Dr. (Signalized)	B [17]	0.76	-	B [13]	0.68	-
EBL	B [15]	0.11	8	B [17]	0.12	8

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
EBT&R	B [15]	0.26	19	B [17]	0.17	13
WBL	C [22]	0.67	39	C [21]	0.58	29
WBT&R	B [15]	0.12	11	B [17]	0.11	10
NBL	B [11]	0.21	9	B [11]	0.39	24
NBT	B [10]	0.40	50	B [14]	0.73	132
NBR	A [8]	0.07	7	A [7]	0.18	11
SBL	A [8]	0.03	4	A [8]	0.15	7
SBT&R	B [20]	0.81	151	B [11]	0.61	85
Adelaide St. N & Fanshawe Park Rd. (Signalized)	D [43]	0.94	-	D [48]	0.98	-
EBL	C [29]	0.35	19	F [81]	0.93	63
EBTT	D [46]	0.82	105	D [40]	0.62	101
EBR	C [27]	0.66	96	B [17]	0.42	61
WBL	E [60]	0.88	60	C [28]	0.46	32
WBTT&R	D [38]	0.67	88	D [54]	0.91	179
NBL	D [54]	0.89	99	E [74]	0.99	175
NBTT&R	C [26]	0.40	55	D [40]	0.82	153
SBL	C [24]	0.51	38	E [56]	0.83	60
SBTT&R	E [59]	0.97	153	D [54]	0.82	98

* - rounded values.

As presented in **Table 6**, the operations at the signalized intersection of Adelaide Street North and Fanshawe Park Road is currently approaching capacity during both the AM and PM peak hours, there are several critical movements present during both peak hours. Some critical movements are also present at both unsignalized intersections of Blackwater Road with Sunningdale Road East and Adelaide Street North. The other study area intersections are currently operating well.

3. SAFETY PERFORMANCE ASSESSMENT – COLLISION ANALYSIS

The Safety Performance Assessment completed as part of this study included a review of intersection and mid-block collision data within the study area. The purpose of the review was to determine if there are any discernable collision trends that would require the implementation of mitigation measures or roadway improvements. Historical collision data for the study area intersections and mid-blocks were received from the City for the years 2010 to 2017 (7 years), and are included in **Appendix D**. A summary of the intersection and midblock data is presented in **Tables 7** and **8** respectively.

Table 7: 2010 to 2017 Study Area Intersections - Collision Summary

INTERSECTION	COLLISION TYPE							TOTAL	
	ANGLE	APPROACHING	REAR END	SIDESWIPE	SMV	TURNING MOVEMENT	OTHER		
Sunningdale Rd. E & Blackwater Rd.	2	0	1	0	0	0	0	3	1%
Sunningdale Rd. E & South Wenige Dr.	2	0	4	1	2	1	0	10	3%
Adelaide St. N & Sunningdale Rd. E	5	0	17	2	1	3	1	29	9%
Adelaide St. N & Blackwater Rd.	6	0	3	0	1	1	1	12	4%
Adelaide St. N & Phillbrook Dr. / Grenfell Dr.	5	0	8	1	2	3	0	19	6%
Adelaide St. N & Fanshawe Park Rd.	14	1	148	18	2	49	6	238	77%
Totals	34	1	181	22	8	57	8	311	100%
	11%	0%	58%	7%	3%	18%	3%	100%	

As illustrated in **Table 7**, a total of 311 collisions occurred at intersections within the study area based on the 7 years of historical data. The intersection of Adelaide Street North and Fanshawe Park Road contained the greatest number of collisions with a total of 238 (77%) recorded over the 7 years. A review of the City of London's Development of Safety Performance Functions and Network Screening for Intersections report dated November 2014, indicates that this intersection is ranked 18th based on the Potential for Safety Improvement (PSI) for 'severe' and Property Damage Only (PDO) combined collisions. No other study area intersections are within the top 20 intersections identified within the report.

Between all of the study area intersections, rear-end collisions accounted for over half of collisions with a total of 181 recorded or 58% (181 of 311). Turning movement collisions accounted for approximately 18% (57 of

311), angle collisions made up 11% (34 of 311) while sideswipe accounted for 7% (22 of 311). Lastly, single motor vehicle and collisions classified as other accounted for 3% (8 of 311) of the total collisions.

Table 8 presents a summary of the collisions which occurred within the study area mid-blocks from 2010 to 2017 (7) years.

Table 8: 2010 to 2017 Study Area Mid-blocks - Collision Summary

MIDBLOCK	COLLISION TYPE							TOTAL	
	ANGLE	APPROACHING	REAR END	SIDESWIPE	SMV	TURNING MOVEMENT	OTHER		
North of Sunningdale Rd. E	0	0	0	0	8	0	0	8	14%
between Sunningdale Rd. E & Blackwater Rd.	0	0	2	1	1	2	0	6	11%
between Blackwater Rd. & Phillbrook Dr. / Grenfell Dr.	0	3	3	3	5	0	0	14	25%
between Phillbrook Dr. / Grenfell Dr. & Fanshawe Park Rd.	9	0	10	4	2	3	0	28	50%
Totals	9	3	15	8	16	5	0	56	100%
	16%	5%	27%	14%	29%	9%	0%	100%	

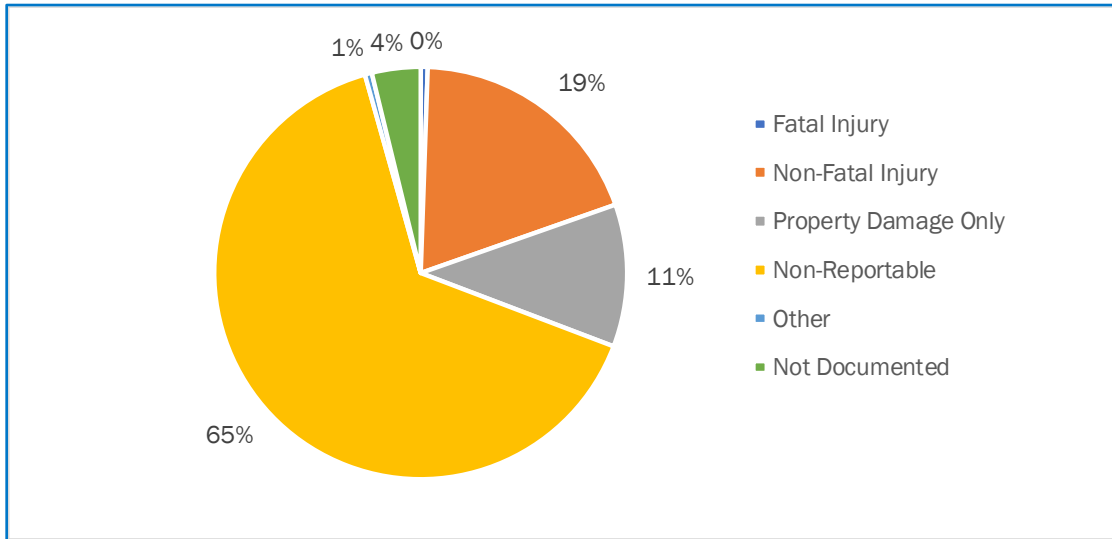
Based on the 7 years of historical collision data for the study area, a total of 56 collisions occurred within mid-blocks as presented in **Table 8**. The midblock section of Adelaide Street between Phillbrook Drive/Grenfell Drive contained approximately 28 (50%) of the 56 total collisions.

A review of collisions by impact type indicates that single motor vehicle (SMV) and rear-end collisions accounted for 29% (16 of 56) and 27% (15 of 56) of the total collisions respectively recorded between mid-blocks. Angle collisions accounted for 16% (9 of 56) while sideswipe, turning movement and approaching accounted for 14% (8), 9% (5) and 5% (3), respectively.

3.1 STUDY AREA COLLISIONS BY CLASSIFICATIONS

A review of collision classification at intersections and mid-blocks within the study area are presented in **Figure 3**. 65% were non-reportable collisions, 19% were non-fatal injury, 11% were property damage only, and 4% were not documented. There were two collisions (1%) within the study area that resulted in fatal injury. These collisions occurred at the intersections of Adelaide Street with Sunningdale Road and Fanshawe Park Road. The collision at the Sunningdale Road intersection was an angle collision where the vehicle operator disobeyed the traffic control. The collision which occurred at the Fanshawe Park Road intersection was recorded as a single motor vehicle collision with a pedestrian.

Figure 3: Study Area Collisions by Classification

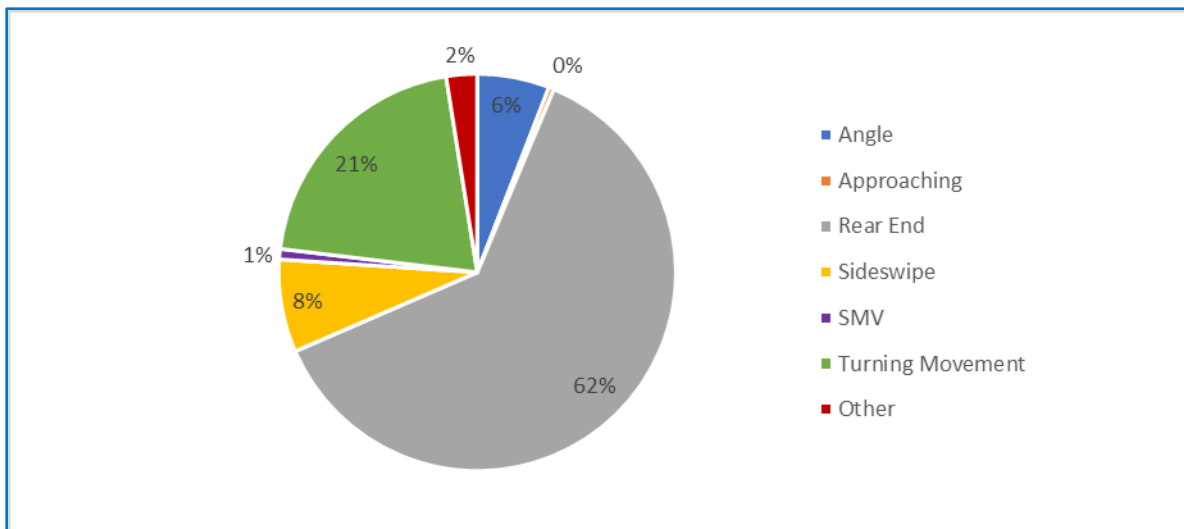


3.2 COLLISION ANALYSIS FOR ADELAIDE STREET NORTH AND FANSHAW PARK ROAD

Based on the initial review of collisions within the study area, the signalized intersection of Adelaide Street North and Fanshawe Park Road contained a significant number of collisions as it contained a total of 238 collisions over the 7 year. The intersection was also ranked 18th for PSI based on the City of London’s intersection screen report. As a result, Parsons reviewed these collisions to identify if any collision trends were occurring at this intersection that could be mitigated through any intersection improvements.

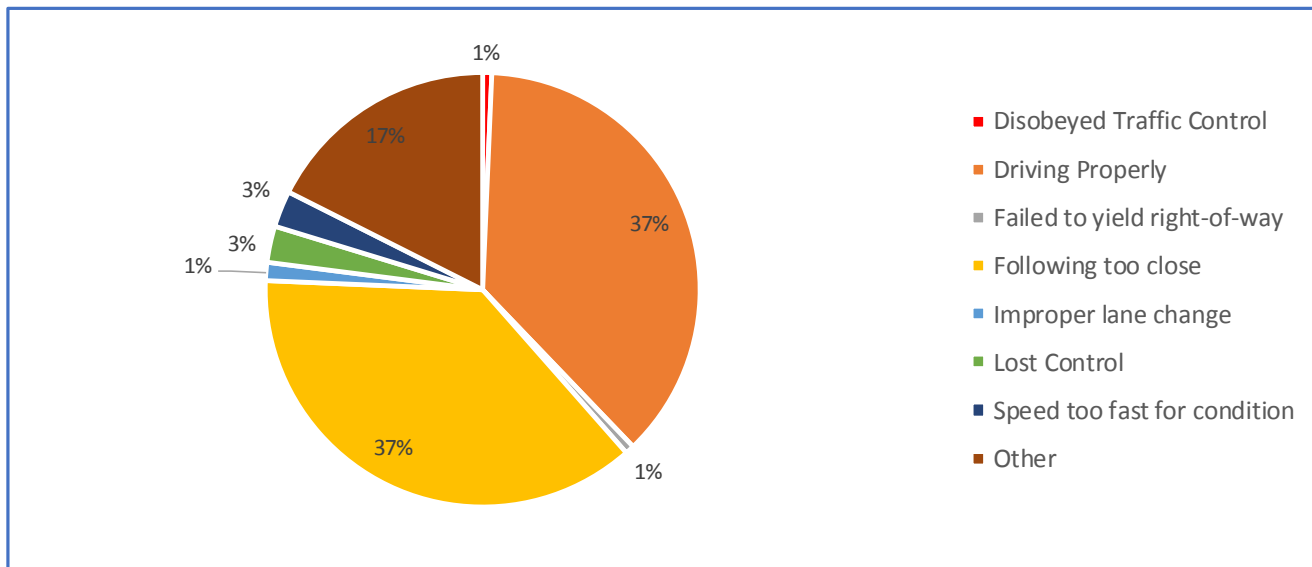
Figure 4 presents a summary of the collisions by impact type that occurred at the intersection of Adelaide Street North with Fanshawe Park Road.

Figure 4: Adelaide St. N & Fanshawe Park Rd. - Percentage of Collisions by Impact Type



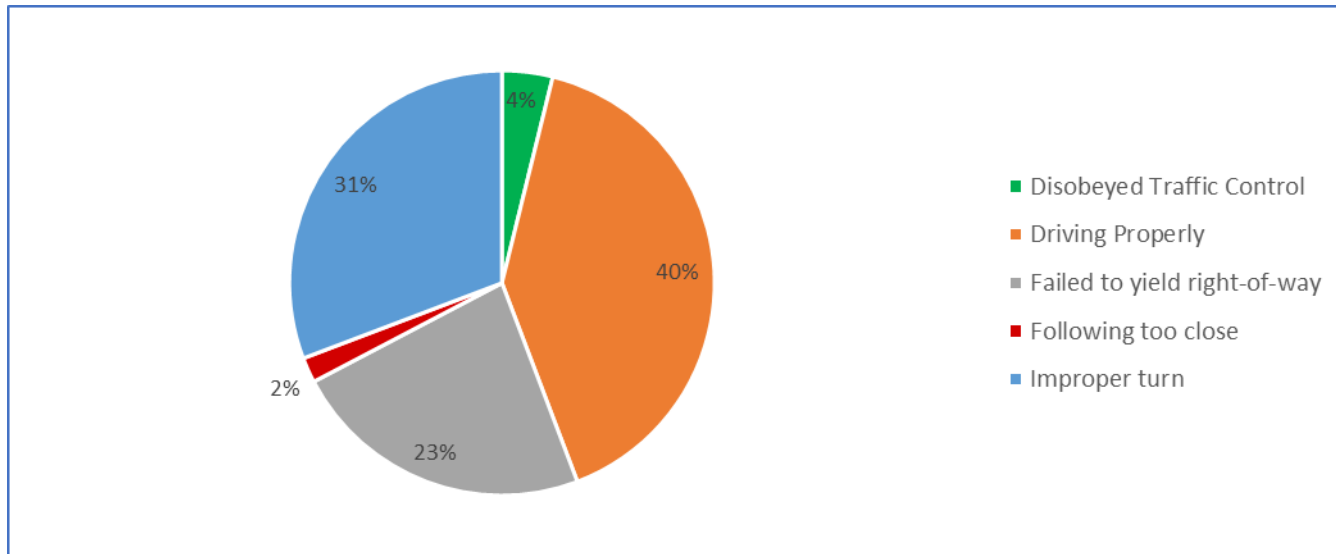
As presented in **Figure 4**, 62% of the 238 collisions that occurred at this intersection were rear-end collisions while 21% were turning movement collisions. 8% of total collisions were sideswipe while 6% were angle and 2% were documented as ‘other’ collisions. 1% of the total collisions were classified as single motor vehicle. Based on the high percentage of rear-end collisions at the intersection, this type of collision was reviewed further to determine if there are any discernable trends. A review of the rear- end and turning movement collisions by driver actions are presented in **Figure 5** and **Figure 6**, respectively.

Figure 5: Adelaide St. N & Fanshawe Park Rd. – Rear End Collisions by Driver Action



A closer look at the rear-end collisions presented in **Figure 5** indicates that approximately (37%) were the result of following too close and 37% were while driving properly. 17% were classified as other while 3% each were the result of speed to fast for condition and losing control, respectively.

Figure 6: Adelaide St. N & Fanshawe Park Rd. – Turning Movement Collisions by Driver Action



A review of the turning movement collisions by driver action in **Figure 6** indicate that 40% of the collisions were recorded as driving properly. 31% were recorded as an improper turn, 23% failing to yield the right of way and 4% recorded as disobeying traffic control. 2% of the turning movement collisions were recorded as following too close.

A review of the current intersection lane configurations revealed that the existing dedicated left turn lanes on all approaches are offset from one another in such a way that creates line of sight issues for vehicles wishing to turn left at the intersection during the permitted phase. When waiting to turn left from offset turning lanes (turning lanes which are not head on with one another), it can be difficult to see oncoming traffic through vehicles waiting to turn left from the opposite turn lane. This results in drivers creeping into the oncoming lane to see beyond left turning vehicles resulting in angle and turning movement collisions. This intersection could potentially see a reduction in these types of collisions with the implementation of zero or positive offset left turn lanes at each approach. This can be implemented through either the revision of lane width markings within the intersection functional area or realigning the intersection lane configurations.

4. FUTURE (2029 AND 2039) TRAFFIC CONDITIONS

4.1 FUTURE BACKGROUND GROWTH (2029 & 2039) TRAFFIC VOLUMES

The future background (2029) and (2039) traffic volumes were established by applying a 1.0% per annum growth rate to the existing (2018) traffic volumes. This growth rate was recommended by City staff based on the recent planning model outputs for the 2039 horizon and assumed to be consistent with the study area. The resulting weekday AM and PM peak hour traffic volumes under background (2029) and (2039) conditions are presented in **Appendix E**.

4.1.1 PROPOSED DEVELOPMENTS SITE TRAFFIC VOLUMES

There are several proposed developments located along Sunningdale Road as well as Adelaide Street immediately north and south of Sunningdale Road. The City has provided the Applewood Subdivision Traffic Impact Study, September 2008 which contains site traffic volumes from the majority of these developments. The traffic volumes associated with these developments have been utilized in establishing the future total traffic volumes for the Adelaide Street corridor. A brief summary of the proposed developments included within the Applewood TIS are as follows:

- Stoney Creek Subdivision – proposed mix of commercial and residential land uses;
- Adelaide SE Commercial/Sunningdale Commercial Inc. – proposed shopping centre;
- Powell Lands – proposed residential land use;
- Comfort Lands – proposed residential and commercial land uses; and
- Drewlo Lands (Sunningdale) – proposed residential land use.

Since the completion of the Applewood Subdivision TIS, some parts of the Stoney Creek Subdivision development and Powell Lands development have been built. The trips from the built portions are assumed to be captured by existing traffic data. As a result, a portion of the trips generated from these developments has been subtracted from the total Applewood TIS site traffic volumes.

The resulting traffic volumes generated by these developments were added to the roadway network and included in the future traffic analysis. The weekday AM and PM total peak hour volumes for these developments are presented in **Appendix F**.

4.1.2 PROPOSED DEVELOPMENT SITE ACCESSES

As outlined in the Applewood Subdivision TIS there are two accesses proposed to service the development as well as the Stoney Creek and Comfort Lands developments. Site Access A as it is named in the report, is located along Adelaide Street north of Sunningdale Road. The access will create a new four leg intersection along Adelaide Street servicing the Applewood (west side of Adelaide Street), Stoney Creek and Comfort Lands developments (east side of Adelaide Street). The proposed access will be stop control for the east west movements and left turn lanes were recommended for each approach within the Applewood Subdivision TIS.

The second proposed access is located along Sunningdale Road and will be the north leg of the existing Sunningdale Road and Blackwater Road intersection creating a four-leg intersection. This access will also contain dedicated left turn lanes on all approaches and is recommended for signalization within the Applewood Subdivision TIS.

4.2 FUTURE (2029 & 2039) TOTAL TRAFFIC VOLUMES

The future total (2029) and (2039) traffic volumes were established by combining the background (2029) and (2039) traffic volumes with the site generated traffic of the proposed and future potential developments outlined in Sections 4.1.1. The resulting future total (2029) and (2039) traffic volumes for the AM and PM peak hours are presented in **Appendix G**.

4.3 SIGNAL WARRANT ANALYSIS, FUTURE (2029 & 2039) TRAFFIC CONDITIONS

Signal warrant analyses for the unsignalized and future proposed intersections within the study area were performed using OTM Book 12 – Traffic Signals guidelines under the future total (2029 & 2039) traffic conditions. The manual outlines the following justification criteria based on traffic volumes which need to be met by certain thresholds for a traffic control signal to be warranted.

Justification 1 - Minimum Vehicle Volumes

- A. Total Volumes (Main Road)
- B. Crossing Volumes (Minor Road)

Justification 2 - Delay to Cross Traffic

- A. Main Road
- B. Crossing Road

Justification 3 - Combination of Volume / Delay

- A. Justification 1A and 1B
- B. Justification 2A and 2B

Justification 7 – Projected Volumes (Average Hourly Volume)

- A. Justification 1A and 1B
- B. Justification 2A and 2B

As outlined in section 4.10 of the OTM manual, in the case of future projected volumes, for an intersection where both intersecting roads exist and the analysis is based on full eight-hour count estimates, a traffic signal installation is warranted if Justification 1 (both 1A and 1B) or Justification 2 (both 2A and 2B) is 100% satisfied. If 100% satisfaction is not achieved but the justifications are at least 80% satisfied, then the lesser value of both Justification 1 (1A or 1B) and Justification 2 (2A or 2B) can be used in the assessment of Justification 3, a combination of Volume / Delay.

In the case of future projected volumes, for an intersection where one road and/or both roads are future and the analysis is based on average hourly volume, a traffic signal installation is warranted if Justification 7 is 150% satisfied.

Based on the criteria mentioned above the following signal warrant justifications were used for the existing unsignalized and future proposed intersections using future (2029 & 2039) intersection volumes:

Justifications 1, 2 to be met to 100% or Justification 3 – to be met to 80%

- Adelaide Street & Blackwater Road.

Justification 7 – to be met to 150%

- Sunningdale Road & Blackwater Road; and
- Adelaide Street & Proposed Street A.

The signal warrant analysis results for each of the intersection under future total (2029) and (2039) are shown in **Tables 9** and **10** respectively. All signal warrant analysis sheets along with volumes can be found in **Appendix H**.

Table 9: Future (2029) Traffic Conditions – Signal Warrant Analysis Summary

Intersection	Justification	Compliance		Signal Justified	
				Yes	No
Justifications 1, 2 to be met to 100% or Justification 3 – to be met to 80%					
Adelaide St. & Blackwater Rd.	1. Minimum Vehicular Volumes	A. Total Volumes	100%		✓
		B. Crossing Volumes	93%		
	2. Delay to Cross Traffic	A. Main Road	100%	✓	
		B. Crossing Road	100%		
	3. Combination	A. Justification 1	93%	✓	
		B. Justification 2	100%		
Justifications 7 – to be met to 150%					
Sunningdale Rd. & Blackwater Rd.	7-1. Minimum Vehicular Volumes	A. Total Volumes	150%	✓	
		B. Crossing Volumes	150%		
	7-2. Delay to Cross Traffic	A. Main Road	150%	✓	
		B. Crossing Road	150%		
Adelaide St. & Street A	7-1. Minimum Vehicular Volumes	A. Total Volumes	96%		✓
		B. Crossing Volumes	114%		
	7-2. Delay to Cross Traffic	A. Main Road	69%		✓
		B. Crossing Road	104%		

Based on the signal warrant results presented in **Table 9**, the unsignalized intersections of Adelaide Street and Sunningdale Road with Blackwater Road are warranted for signalization under future total (2029) traffic conditions.

However, the intersection of Adelaide Street with the proposed Street A does not meet the warrants. As a result, the warrant analysis for this intersection was repeated under future total (2039) traffic conditions.

Table 10: Future (2039) Traffic Conditions – Signal Warrant Analysis Summary

Intersection	Justification	Compliance		Signal Justified	
				Yes	No
Justifications 7 – to be met to 150%					
Adelaide St. & Street A	7-1. Minimum Vehicular Volumes	A. Total Volumes	100%		✓
		B. Crossing Road	114%		
	7-2. Delay to Cross Traffic	A. Main Road	73%		✓
		B. Crossing Road	104%		

The results of the signal warrant analysis presented in **Table 10** for the future proposed intersection of Adelaide Street and Street A indicates that a signal is still not warranted under future total (2039) traffic conditions.

4.4 FUTURE (2029) TRAFFIC CONDITIONS LANE CAPACITY ANALYSIS, DO NOTHING

Corridor lane capacity analysis for the future (2029) do nothing traffic conditions was undertaken using the estimated mid-block link volumes and a theoretical lane capacity of 850 vehicles per hour per lane. The future (2029) traffic volumes utilized can be seen in **Appendix G**. The lane capacity analysis results are presented in **Tables 11** and **Table 12**, for the AM and PM peak hours, respectively.

Table 11: Future (2029) AM Peak Hour Lane Capacity Analysis – Do Nothing Option

ROADWAY SECTION	NORTHBOUND			SOUTHBOUND		
	VOLUME*	CAPACITY	V/C	VOLUME*	CAPACITY	V/C
North of Sunningdale Rd. E	460	850	0.54	680	850	0.80
between Sunningdale Rd. E & Blackwater Rd.	770	850	0.91	1,225	850	1.44
between Blackwater Rd. & Phillbrook Dr. / Grenfell Dr.	695	850	0.82	1,455	850	1.71
between Phillbrook Dr. / Grenfell Dr. & The Home Depot Plaza	695	850	0.82	1,830	850	2.15
Immediately north of Fanshawe Park Rd.	790	1,700	0.46	1,950	1,700	1.15

* value rounded to nearest 5

Table 12: Future (2029) PM Peak Hour Link Volume Capacity Analysis – Do Nothing Option

ROADWAY SECTION	NORTHBOUND			SOUTHBOUND		
	VOLUME*	CAPACITY	V/C	VOLUME*	CAPACITY	V/C
North of Sunningdale Rd. E	705	850	0.83	630	850	0.74
between Sunningdale Rd. E & Blackwater Rd.	1,455	850	1.71	1,145	850	1.35
between Blackwater Rd. & Phillbrook Dr. / Grenfell Dr.	1,580	850	1.85	1,180	850	1.39
between Phillbrook Dr. / Grenfell Dr. & The Home Depot Plaza	1,950	850	2.29	1,375	850	1.62
Immediately north of Fanshawe Park Rd.	2,015	1,700	1.18	1,355	1,700	0.80

* value rounded to nearest 5

The results of the future (2029) do-nothing corridor lane capacity analysis indicates there are several sections within the Adelaide Street North corridor which are forecast to operate approaching capacity or above capacity.

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As presented in **Tables 11** and **Table 12**, the southbound direction is critical during the AM peak hour while both northbound and southbound directions are critical during the PM peak hour.

These results indicate that additional through lanes are required for the Adelaide Street North corridor in order to accommodate future (2029) traffic demands.

4.5 FUTURE PROPOSED ROADWAY IMPROVEMENTS

4.5.1 PLANNED ROADWAY WIDENINGS

A review of the Sunningdale Road Improvements Environmental Study Report, May 2013 and the City of London's 2030 Transportation Master Plan, May 2013 identifies widenings for both Sunningdale Road and Fanshawe Park Road.

The Sunningdale ESR recommends that Sunningdale Road be widened from 2 to 4 through lanes within a 10-year planning horizon. This is also consistent with recommendations noted in the City's 2030 Transportation Master Plan document and through discussions with the City, this widening is scheduled for 2025. The 2030 Transportation Master Plan also recommends that Fanshawe Park Road be widened from Wonderland Road to Clarke Road from 4 to 6 through lanes within a 10 to 15 years planning horizon. However, the City of London May 2019 Development Charges Background Study indicates that this widening will not occur until beyond the ultimate 2039 horizon year of this study.

As a result, only the recommended roadway widening for Sunningdale Road has been incorporated into all future analysis scenarios completed. To be consistent with 2019 Development Charges Background Study, the existing lane configurations for the intersection of Adelaide Street with Fanshawe Park Road were maintained.

4.5.2 PROPOSED TRAFFIC CONTROL IMPROVEMENTS

Based on the signal warrant analysis results presented in **Table 9**, the intersection of Sunningdale Road and Blackwater Road meets warrants for signalization by 2029. As roadway widening improvements for Sunningdale Road are scheduled to occur in 2025, it is anticipated that this traffic control improvement would be implemented during the proposed Sunningdale Road improvements. As a result, the intersection of Sunningdale Road and Blackwater Road has been analyzed under traffic signal control for all future analysis scenarios.

4.6 FUTURE (2029) INTERSECTION OPERATIONS – DO NOTHING

Capacity analyses were completed for the signalized and unsignalized intersections within the corridor utilizing only the improvements outlined in Section 4.5.1 and 4.5.2. Only intersection signal timing plans were optimized including cycle length based on the traffic growth. The lane configurations used for this analysis are presented in **Figure 7**.

The results of the Synchro analysis completed are summarized in **Table 13**. The Synchro output sheets are placed in **Appendix I**. As completed previously, any movements containing V/C ratios equal to/greater than 0.90 or contain LOS E or worse, and/or included queues that exceeds the available storage have been highlighted in red within the table.

Figure 7: Future (2029) & (2039) Lane Configurations - Do Nothing

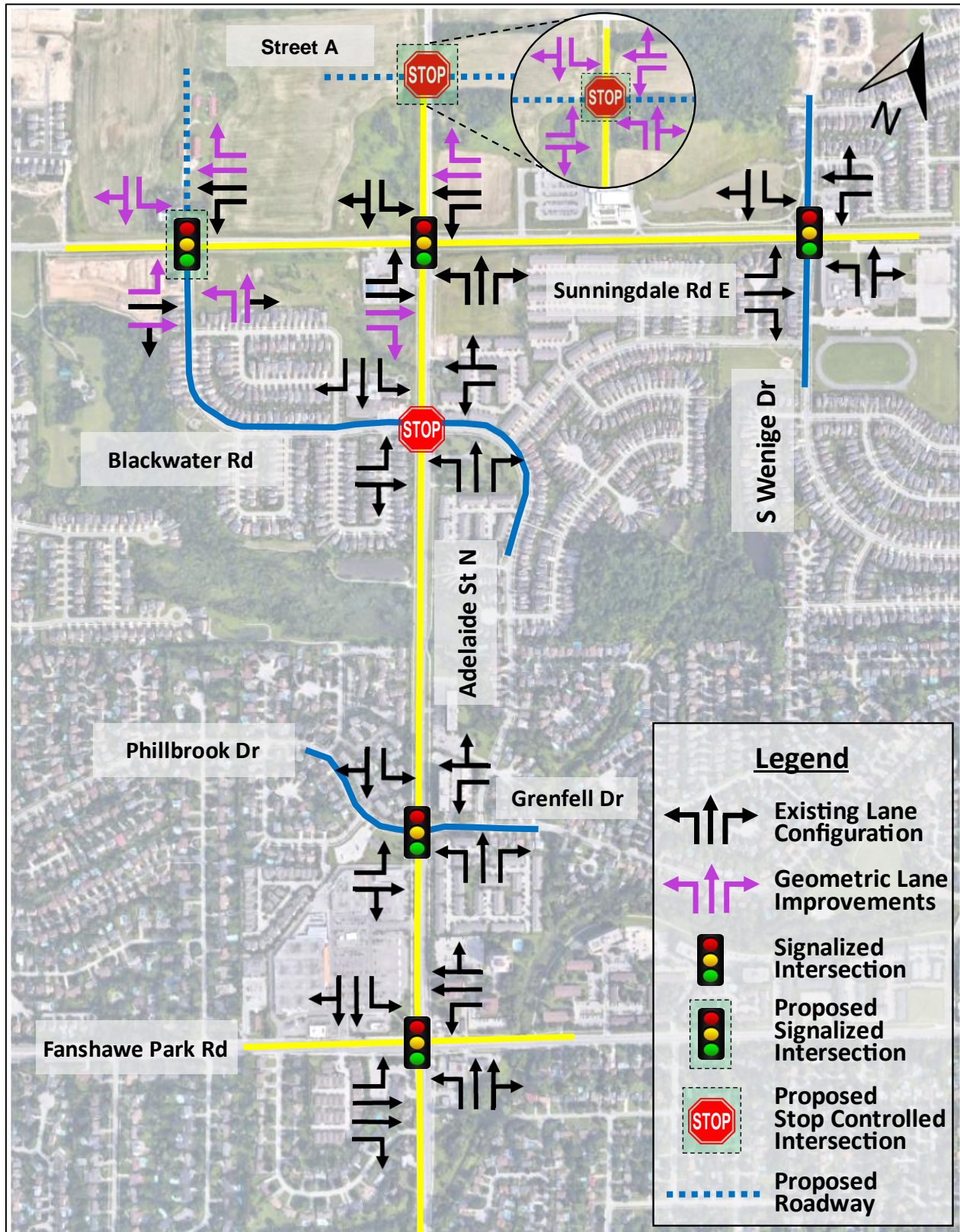


Table 13: Future (2029) Traffic Intersection Operation Results – Do Nothing

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
Adelaide St. N & Street A (Unsignalized)	E [42]	-	-	E [48]	-	-
EBL	C [25]	0.28	8	F [111]	0.62	21
EBT&R	B [14]	0.42	16	B [14]	0.30	10
WBL	F [360]	1.51	81	F [838]	2.31	70
WBT&R	B [10]	0.02	1	B [11]	0.01	0
NBL	A [8]	0.05	1	A [9]	0.23	7
NBT&R	A [0]	0.25	0	A [0]	0.33	0
SBL	A [8]	0.00	0	A [9]	0.02	0
SBT&R	A [0]	0.20	0	A [0]	0.29	0
South Wenige Dr. & Sunningdale Rd. E (Signalized)	C [22]	0.86	-	D [37]	0.90	-
EBL	A [5]	0.14	9	F [101]	0.97	70
EBT	C [23]	0.90	339	A [9]	0.58	104
EBR	A [5]	0.04	3	A [5]	0.07	4
WBL	A [7]	0.14	4	A [10]	0.15	12
WBT&R	A [8]	0.50	79	D [48]	1.00	371
NBL	E [66]	0.68	54	D [52]	0.47	41
NBT&R	D [44]	0.11	18	D [43]	0.05	11
SBL	D [44]	0.12	13	D [50]	0.39	34
SBT&R	D [44]	0.13	20	D [43]	0.06	12
Adelaide St. N & Sunningdale Rd. E (Signalized)	D [48]	1.11	-	F [83]	1.35	-
EBL	C [34]	0.52	41	D [38]	0.42	18
EBTT	D [49]	0.92	142	E [60]	0.91	126
EBR	D [43]	0.77	121	D [40]	0.38	38
WBL	F [106]	1.04	69	F [102]	1.03	85
WBTT	C [25]	0.48	70	F [81]	1.03	184

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
WBR	C [20]	0.03	4	C [32]	0.04	3
NBL	F [103]	1.06	106	F [247]	1.44	257
NBT	B [19]	0.37	64	C [22]	0.62	137
NBR	B [16]	0.14	13	B [15]	0.24	25
SBL	C [34]	0.46	44	D [41]	0.46	39
SBT&R	E [68]	0.98	196	F [92]	1.04	214
Blackwater Rd. & Sunningdale Rd. E (Signalized)	B [18]	0.78	-	C [25]	0.89	-
EBL	B [13]	0.40	16	D [48]	0.87	58
EBTT&R	C [22]	0.87	104	B [13]	0.54	72
WBL	B [12]	0.20	7	B [17]	0.22	13
WBTT	B [14]	0.60	54	C [30]	0.89	143
WBR	B [10]	0.09	8	B [16]	0.24	15
NBL	B [16]	0.34	24	C [24]	0.13	14
NBT&R	B [13]	0.08	9	C [22]	0.03	2
SBL	C [23]	0.68	62	D [47]	0.83	99
SBT&R	B [14]	0.24	21	C [23]	0.09	6
Adelaide St. N & Blackwater Rd. (Unsignalized)	F [491]	-	-	Err	-	-
EBL	F [964]	1.20	16	F [Err]	Err	Err
EBT&R	F [79]	0.56	20	F [Err]	6.45	Err
WBL	F [Err]	14.31	Err	F [Err]	Err	Err
WBT&R	E [35]	0.42	15	F [Err]	5.09	Err
NBL	B [15]	0.06	1	B [14]	0.12	3
NBT	A [0]	0.39	0	A [0]	0.90	0
NBR	A [0]	0.04	0	A [0]	0.08	0
SBL	A [9]	0.03	1	C [16]	0.18	5
SBT	A [0]	0.76	0	A [0]	0.67	0
SBR	A [0]	0.01	0	A [0]	0.02	0

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
Adelaide St. N & Phillbrook Dr. / Grenfell Dr. (Signalized)	F [109]	1.26	-	F [93]	1.22	-
EBL	C [35]	0.14	18	D [39]	0.16	18
EBT&R	D [49]	0.47	62	D [40]	0.27	34
WBL	F [147]	1.14	123	E [80]	0.89	84
WBT&R	C [35]	0.17	26	D [39]	0.16	22
NBL	E [56]	0.64	27	F [121]	1.03	62
NBT	B [13]	0.52	98	F [136]	1.25	575
NBR	A [8]	0.07	6	A [7]	0.24	25
SBL	A [8]	0.04	4	D [46]	0.58	26
SBT&R	F [167]	1.31	560	E [68]	1.07	410
Adelaide St. N & Fanshawe Park Rd. (Signalized)	F [118]	1.38	-	F [181]	1.83	-
EBL	D [45]	0.73	39	F [376]	1.72	170
EBTT	F [110]	1.12	205	C [33]	0.59	95
EBR	D [39]	0.80	130	C [22]	0.55	84
WBL	F [184]	1.24	90	C [28]	0.52	30
WBTT&R	D [44]	0.77	112	F [163]	1.26	268
NBL	F [314]	1.58	166	F [387]	1.75	245
NBTT&R	D [42]	0.72	99	F [204]	1.35	312
SBL	D [49]	0.92	120	F [353]	1.66	152
SBTT&R	F [188]	1.32	314	F [138]	1.18	209

* rounded values, Err - no calculation available.

As presented in **Table 13** under the future (2029) do nothing analysis scenario, the signalized intersections of Adelaide Street North with Sunningdale Road East and Fanshawe Park Road are forecast to have several critical movements and capacity constraints. The unsignalized intersection of Blackwater Road with Adelaide Street North, and Adelaide Street North with Street A also have critical movements and capacity constraints. The other study area intersections are forecast to operate well.

4.7 FUTURE (2039) TRAFFIC CONDITIONS LANE CAPACITY ANALYSIS, DO NOTHING

Corridor lane capacity analysis for the future (2039) do-nothing traffic conditions was undertaken using the estimated mid-block link volumes and a lane capacity of 850 vehicles per hour per lane. The future (2029) traffic volumes utilized can be seen in **Appendix G**. The analysis results are presented in **Table 14** and **Table 15**, for the AM and PM peak Hours, respectively.

Table 14: Future (2039) AM Peak Hour Lane Capacity Analysis – Do Nothing Option

ROADWAY SECTION	NORTHBOUND			SOUTHBOUND		
	VOLUME*	CAPACITY	V/C	VOLUME*	CAPACITY	V/C
North of Sunningdale Rd. E	490	850	0.58	710	850	0.83
between Sunningdale Rd. E & Blackwater Rd.	830	850	0.98	1,280	850	1.50
between Blackwater Rd. & Phillbrook Dr. / Grenfell Dr.	745	850	0.88	1,535	850	1.80
between Phillbrook Dr. / Grenfell Dr. & The Home Depot Plaza	750	850	0.88	1,950	850	2.44
Immediately north of Fanshawe Park Rd.	850	1,700	0.50	2,080	1,700	1.30

* value rounded to nearest 5

Table 15: Future (2039) PM Peak Hour Lane Capacity Analysis – Do Nothing Option

ROADWAY SECTION	NORTHBOUND			SOUTHBOUND		
	VOLUME*	CAPACITY	V/C	VOLUME*	CAPACITY	V/C
North of Sunningdale Rd. E	740	850	0.87	665	850	0.78
between Sunningdale Rd. E & Blackwater Rd.	1,530	850	1.80	1,210	850	1.42
between Blackwater Rd. & Phillbrook Dr. / Grenfell Dr.	1,665	850	1.96	1,245	850	1.46
between Phillbrook Dr. / Grenfell Dr. & The Home Depot Plaza	2,080	850	2.45	1,465	850	1.72
Immediately north of Fanshawe Park Rd.	2,145	1,700	1.26	1,445	1,700	0.85

* value rounded to nearest 5

The results of the future (2039) do-nothing corridor lane capacity analysis indicates there are several sections within the Adelaide Street North corridor which are forecast to operate approaching capacity or above capacity. As presented in **Tables 14** and **Table 15**, the northbound and southbound directions are critical during both AM and PM peak hours.

These results indicate that additional through lanes are required for the Adelaide Street North corridor in order to accommodate future (2039) traffic demands.

4.8 FUTURE (2039) INTERSECTION OPERATIONS – DO NOTHING

Intersection capacity analyses were completed for the signalized and unsignalized intersections using the future (2039) traffic volumes with only the improvements outlined in Section 4.5.1 and 4.5.2. The lane configurations used for this analysis are presented in **Figure 7**.

The results of the Synchro analysis are presented in **Table 16**. The Synchro output sheets are provided in **Appendix J**. As completed previously, any movements containing V/C ratios equal to/greater than 0.90 or contain LOS E or worse, and/or includes queues that exceeds the available storage have been highlighted in red within the table.

Table 16: Future (2039) Traffic Intersection Operation Results – Do Nothing

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
Adelaide St. N & Street A (Unsignalized)	F [52]	-	-	F [61]	-	-
EBL	D [28]	0.31	10	F [155]	0.75	25
EBT&R	B [14]	0.43	17	B [14]	0.31	10
WBL	F [482]	1.77	90	F [1132]	2.87	75
WBT&R	B [11]	0.02	1	B [11]	0.01	0
NBL	A [8]	0.05	1	A [10]	0.24	7
NBT&R	A [0]	0.27	0	A [0]	0.35	0
SBL	A [8]	0.00	0	A [9]	0.02	0
SBT&R	A [0]	0.22	0	A [0]	0.31	0
South Wenige Dr. & Sunningdale Rd. E (Signalized)	C [28]	0.94	-	D [49]	0.96	-
EBL	A [6]	0.17	10	F [105]	0.99	78
EBT	C [34]	0.97	383	A [10]	0.62	117
EBR	A [5]	0.05	4	A [5]	0.08	5
WBL	B [18]	0.30	7	B [11]	0.18	13
WBT&R	A [9]	0.54	90	E [73]	1.08	414
NBL	E [78]	0.79	64	D [54]	0.51	45
NBT&R	D [44]	0.13	19	D [43]	0.06	12
SBL	D [44]	0.13	14	D [51]	0.44	38

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
SBT&R	D [44]	0.14	21	D [43]	0.07	13
Adelaide St. N & Sunningdale Rd. E (Signalized)	E [57]	1.19	-	F [97]	1.41	-
EBL	D [36]	0.57	43	D [38]	0.44	19
EBTT	E [64]	0.99	162	E [74]	0.99	143
EBR	D [47]	0.83	133	D [41]	0.45	49
WBL	F [131]	1.12	77	F [130]	1.12	96
WBTT	C [25]	0.52	77	F [108]	1.11	204
WBR	C [20]	0.04	5	C [32]	0.04	3
NBL	F [130]	1.14	118	F [268]	1.49	268
NBT	B [20]	0.40	69	C [23]	0.65	147
NBR	B [17]	0.17	16	B [16]	0.27	30
SBL	C [35]	0.48	46	D [42]	0.48	40
SBT&R	E [79]	1.02	209	F [111]	1.10	231
Blackwater Rd. & Sunningdale Rd. E (Signalized)	B [19]	0.82	-	C [28]	0.90	-
EBL	B [13]	0.43	17	D [52]	0.88	59
EBTT&R	C [23]	0.90	115	B [13]	0.58	81
WBL	B [11]	0.22	7	B [17]	0.26	14
WBTT	B [14]	0.63	58	D [36]	0.94	172
WBR	A [10]	0.09	8	B [16]	0.24	15
NBL	B [17]	0.38	27	C [24]	0.14	15
NBT&R	B [14]	0.09	10	C [23]	0.04	5
SBL	C [26]	0.71	65	D [49]	0.84	100
SBT&R	B [15]	0.26	22	C [23]	0.09	7
Adelaide St. N & Blackwater Rd. (Unsignalized)	F [520]	-	-	Err	-	-
EBL	F [2191]	18.9	19	F [Err]	Err	Err
EBT&R	F [128]	0.77	29	F [Err]	12.53	Err

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
WBL	F [Err]	30.66	Err	F [Err]	Err	Err
WBT&R	F [66]	0.65	27	F [Err]	9.39	Err
NBL	C [16]	0.07	2	C [15]	0.15	4
NBT	A [0]	0.42	0	A [0]	0.94	0
NBR	A [0]	0.04	0	A [0]	0.09	0
SBL	A [9]	0.03	1	C [18]	0.21	6
SBT	A [0]	0.80	0	A [0]	0.71	0
SBR	A [0]	0.01	0	A [0]	0.02	0
Adelaide St. N & Phillbrook Dr. / Grenfell Dr. (Signalized)	F [140]	1.36	-	F [122]	1.30	-
EBL	C [33]	0.14	19	D [39]	0.17	20
EBT&R	D [37]	0.50	70	D [40]	0.30	38
WBL	F [160]	1.19	135	F [95]	0.96	97
WBT&R	C [33]	0.18	28	D [39]	0.16	24
NBL	E [63]	0.68	29	F [163]	1.16	72
NBT	B [16]	0.58	117	F [177]	1.34	619
NBR	A [9]	0.09	8	A [8]	0.27	28
SBL	A [9]	0.05	5	E [55]	0.64	28
SBT&R	F [225]	1.44	613	F [100]	1.15	447
Adelaide St. N & Fanshawe Park Rd. (Signalized)	F [146]	1.52	-	F [218]	2.02	-
EBL	E [78]	0.90	49	F [413]	1.80	180
EBTT	F [144]	1.21	228	C [35]	0.66	108
EBR	D [49]	0.89	155	C [24]	0.63	100
WBL	F [234]	1.37	102	C [34]	0.64	32
WBTT&R	D [48]	0.85	127	F [208]	1.36	299
NBL	F [386]	1.75	186	F [511]	2.03	280
NBTT&R	D [46]	0.81	107	F [251]	1.46	346

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
SBL	E [76]	1.00	149	F [401]	1.77	165
SBT&R	F [228]	1.41	344	F [155]	1.23	225

* rounded values, Err - no calculation available.

As presented in **Table 16**, several of the study area intersections are forecasted to operate poorly. With no improvements to the corridor or intersections, there are critical movements and capacity constraints that cannot be improved further with adjusted signal timings.

4.9 FUTURE (2029) TRAFFIC CONDITIONS LANE CAPACITY ANALYSIS, WITH IMPROVEMENTS

Based on the results of both the (2029) and (2039) lane capacity analysis, additional through lanes are required for the Adelaide Street corridor. As a result, corridor lane capacity analysis was repeated under the future (2029) traffic conditions with the total lane capacity of 1,700 vehicles per hour for two lanes including additional through lanes throughout the corridor. The results of this analysis are presented in **Table 17** and **Table 18**, for the AM and PM peak Hours, respectively. The future (2029) and (2039) traffic volumes can be seen in **Appendix G**.

Table 17: Future (2029) AM Peak Hour Lane Capacity Analysis – With Improvements

ROADWAY SECTION	NORTHBOUND			SOUTHBOUND		
	VOLUME*	CAPACITY	V/C	VOLUME*	CAPACITY	V/C
North of Sunningdale Rd. E	460	850	0.54	680	850	0.80
between Sunningdale Rd. E & Blackwater Rd.	770	1,700	0.45	1,225	1,700	0.72
between Blackwater Rd. & Phillbrook Dr. / Grenfell Dr.	695	1,700	0.41	1,455	1,700	0.86
between Phillbrook Dr. / Grenfell Dr. & The Home Depot Plaza	695	1,700	0.41	1,830	1,700	1.08
Immediately north of Fanshawe Park Rd.	790	1,700	0.46	1,950	1,700	1.15

* value rounded to nearest 5

Table 18: Future (2029) PM Peak Hour Link Volume Capacity Analysis – With Improvements

ROADWAY SECTION	NORTHBOUND			SOUTHBOUND		
	VOLUME*	CAPACITY	V/C	VOLUME*	CAPACITY	V/C
North of Sunningdale Rd. E	705	850	0.83	630	850	0.74
between Sunningdale Rd. E & Blackwater Rd.	1,455	1,700	0.86	1,145	1,700	0.67

ROADWAY SECTION	NORTHBOUND			SOUTHBOUND		
	VOLUME*	CAPACITY	V/C	VOLUME*	CAPACITY	V/C
between Blackwater Rd. & Phillbrook Dr. / Grenfell Dr.	1,580	1,700	0.93	1,180	1,700	0.69
between Phillbrook Dr. / Grenfell Dr. & The Home Depot Plaza	1,950	1,700	1.15	1,375	1,700	0.81
Immediately north of Fanshawe Park Rd.	2,015	1,700	1.18	1,355	1,700	0.80

* value rounded to nearest 5

Under future (2029) traffic conditions with the addition of through lanes on the Adelaide Street North corridor, there are several sections within the corridor which are still forecast to operate approaching capacity or above capacity. As presented in **Tables 17** and **Table 18**, the majority of capacity constraints highlighted under the future (2029) do-nothing scenario have been alleviated, with the exception of northbound and southbound directions (at the south end of the study area) during the PM and AM peak hours respectively.

4.10 FUTURE (2029) INTERSECTION OPERATIONS WITH IMPROVEMENTS

Intersection capacity analyses were completed for the study area intersections using the future (2029) traffic volumes determined under Section 4.2 with the implementation of additional through lane capacity identified. The intersection of Blackwater Road with Adelaide Street North was also analyzed as traffic signals based on the results of the signal warrant analysis conducted under Section 4.3.

In addition to these improvements noted above, additional northbound, southbound, eastbound and westbound through lanes plus dedicated right turn lanes for the northbound, southbound and westbound approaches of Adelaide Street and Fanshawe Park Road were incorporated into the analysis based on recommendations from the Applewood TIS.

All of the improvements mentioned as part of this analysis are also in addition to the improvements outlined under Section 4.5.1 and 4.5.2. The lane configurations used for this analysis are presented in **Figure 8**. The results of this analysis are presented in **Table 19**. The Synchro analysis output sheets are provided in **Appendix K**.

Figure 8: Future (2029) & (2039) Lane Configurations - With Improvements

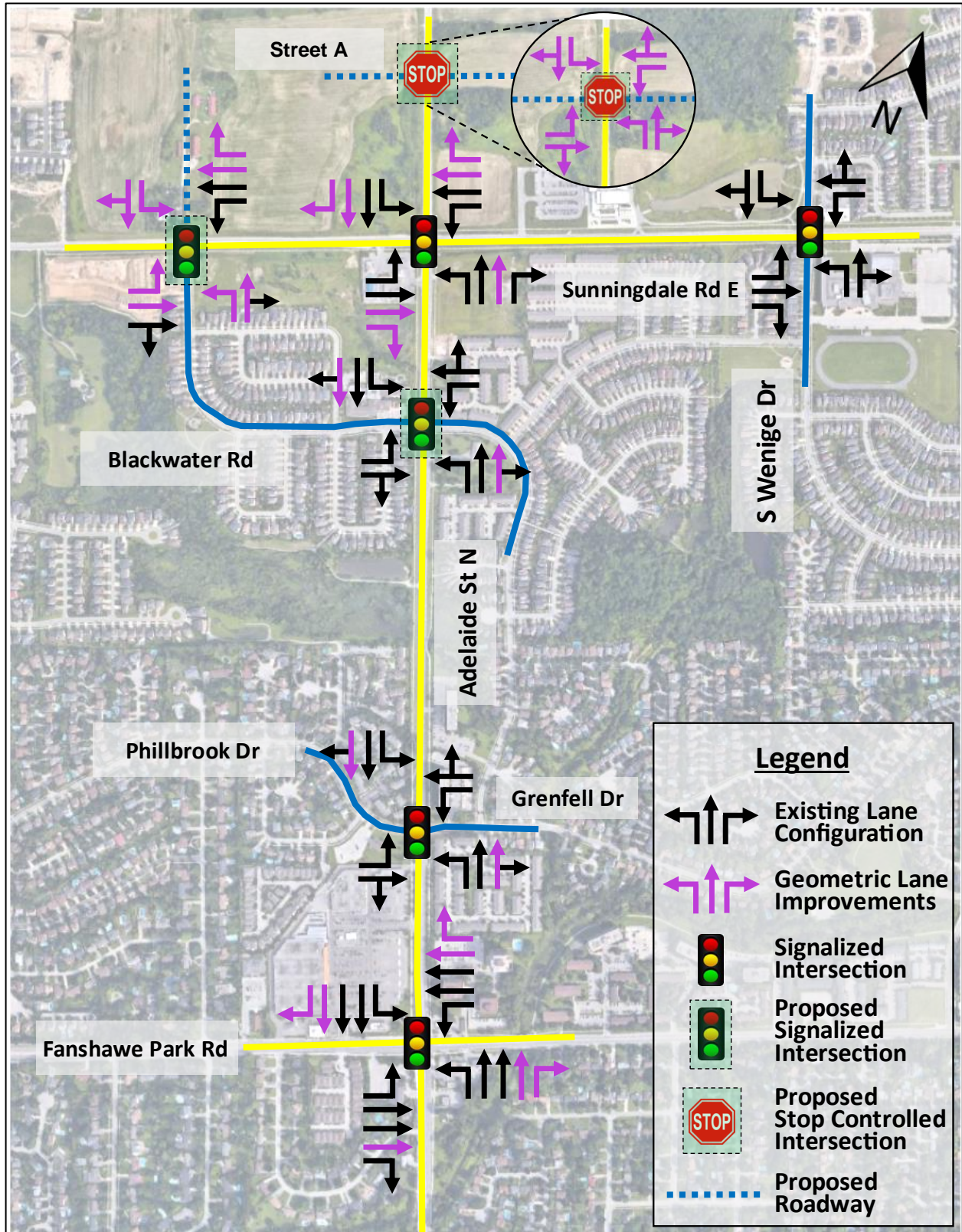


Table 19: Future (2029) Traffic Intersection Operation Results – With Improvements

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
Adelaide St. N & Street A (Unsignalized)	E [41]	-	-	E [43]	-	-
EBL	C [25]	0.28	18	F [101]	0.59	20
EBT&R	B [14]	0.42	16	B [14]	0.30	10
WBL	F [358]	1.51	81	F [744]	2.13	68
WBT&R	B [10]	0.02	1	B [11]	0.01	0
NBL	A [8]	0.05	1	A [9]	0.23	7
NBT&R	A [0]	0.25	0	A [0]	0.33	0
SBL	A [8]	0.00	0	A [9]	0.02	0
SBT&R	A [0]	0.20	0	A [0]	0.29	0
South Wenige Dr. & Sunningdale Rd. E (Signalized)	C [22]	0.86	-	D [37]	0.90	-
EBL	A [5]	0.14	9	F [101]	0.97	70
EBT	C [23]	0.90	339	A [9]	0.58	104
EBR	A [5]	0.04	3	A [5]	0.07	4
WBL	A [7]	0.14	4	A [10]	0.15	12
WBT&R	A [8]	0.50	79	D [48]	1.00	371
NBL	E [66]	0.68	54	D [52]	0.47	41
NBT&R	D [44]	0.11	18	D [43]	0.05	11
SBL	D [44]	0.12	13	D [50]	0.39	34
SBT&R	D [44]	0.13	20	D [43]	0.06	12
Adelaide St. N & Sunningdale Rd. E (Signalized)	C [31]	0.87	-	D [47]	1.02	-
EBL	B [18]	0.37	20	D [36]	0.46	17
EBTT	C [33]	0.83	103	D [48]	0.82	109
EBR	C [32]	0.74	105	D [36]	0.32	28
WBL	D [43]	0.84	49	E [60]	0.90	73
WBTT	C [25]	0.56	64	D [48]	0.90	160

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
WBR	B [20]	0.03	0	C [28]	0.04	0
NBL	C [35]	0.82	60	E [74]	1.02	208
NBTT	C [28]	0.36	37	C [26]	0.43	73
NBR	C [26]	0.13	16	C [24]	0.23	25
SBL	C [23]	0.38	28	D [39]	0.44	22
SBTT	C [35]	0.63	60	E [58]	0.79	76
SBR	C [27]	0.04	0	D [43]	0.07	0
Blackwater Rd. & Sunningdale Rd. E (Signalized)	B [18]	0.78	-	C [25]	0.89	-
EBL	B [13]	0.40	16	D [48]	0.87	58
EBTT&R	C [22]	0.87	104	B [13]	0.54	72
WBL	B [12]	0.20	7	B [17]	0.22	13
WBTT	B [14]	0.60	54	C [30]	0.89	143
WBR	B [10]	0.09	8	B [16]	0.24	15
NBL	B [16]	0.34	24	C [24]	0.13	14
NBT&R	B [13]	0.08	9	C [22]	0.03	2
SBL	C [23]	0.68	62	D [47]	0.83	99
SBT&R	B [14]	0.24	21	C [23]	0.09	6
Adelaide St. N & Blackwater Rd. (Signalized)	A [8]	0.55	-	A [7]	0.60	-
EBL	C [25]	0.06	5	C [32]	0.11	6
EBT&R	C [25]	0.11	10	C [32]	0.08	10
WBL	C [31]	0.59	26	C [35]	0.43	17
WBT&R	C [25]	0.07	10	C [32]	0.16	12
NBL	A [5]	0.10	4	A [4]	0.17	7
NBTT&R	A [5]	0.31	30	A [6]	0.62	80
SBL	A [4]	0.05	4	B [12]	0.43	17
SBTT&R	A [6]	0.54	66	A [4]	0.44	45

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
Adelaide St. N & Phillbrook Dr. / Grenfell Dr. (Signalized)	B [18]	0.82	-	B [19]	0.89	-
EBL	B [20]	0.12	12	C [26]	0.15	13
EBT&R	C [23]	0.46	43	C [27]	0.20	20
WBL	D [43]	0.84	69	D [40]	0.73	50
WBT&R	B [20]	0.14	16	C [26]	0.14	16
NBL	C [22]	0.40	16	B [12]	0.51	21
NBTT&R	B [10]	0.38	43	B [17]	0.87	222
SBL	A [8]	0.05	4	C [26]	0.41	18
SBTT&R	B [17]	0.80	134	B [18]	0.70	119
Adelaide St. N & Fanshawe Park Rd. (Signalized)	D [44]	1.01	-	E [61]	1.14	-
EBL	C [28]	0.47	30	F [117]	1.09	158
EBTTT	D [46]	0.86	104	D [38]	0.45	72
EBR	C [30]	0.75	115	B [17]	0.48	8
WBL	F [80]	0.97	72	D [42]	0.55	36
WBTTT	C [35]	0.49	57	E [74]	0.97	147
WBR	C [30]	0.08	14	D [47]	0.29	37
NBL	F [83]	1.01	123	F [109]	1.09	224
NBTTT	C [32]	0.42	50	D [51]	0.89	164
NBR	C [28]	0.05	4	C [33]	0.11	17
SBL	C [34]	0.85	82	F [107]	1.05	140
SBTTT	D [50]	0.94	134	D [55]	0.76	97
SBR	C [32]	0.39	46	D [46]	0.22	29

* rounded values.

Based on the results of the synchro analysis presented in **Table 19**, many of the critical movements found at intersections under the future (2029) do-nothing scenario have been alleviated. However, there are still remaining critical movements at the signalized intersections of Adelaide Street North with Sunningdale Road East and Fanshawe Park Road, and at the unsignalized intersection of Adelaide Street North with Street A.

Northbound left turn movements for both the Sunningdale Road and Fanshawe Park Road intersections will exhibit 95th percentile queues greater than 200m.

4.10.1 FUTURE (2029) SENSITIVITY ANALYSIS OF DUAL LEFT TURN LANES AT ADELAIDE STREET & FANSHAWE PARK ROAD

Based on the left turn critical movements and heavy left turn volumes present at Adelaide Street and Fanshawe Park Road, traffic operations analysis was repeated under the future (2029) traffic conditions with the addition of protected dual left turn lanes on the northbound and eastbound approaches of this intersection. This was completed to determine if these critical movements could be alleviated with the improvement. The results of this analysis are presented in **Table 20**. Synchro analysis reports can be seen in **Appendix K**.

Table 20: Future (2029) Traffic Intersection Operation Results – With Improvements Including Dual Left Turn Lanes

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
Adelaide St. N & Fanshawe Park Rd. (Signalized)	D [41]	0.95	-	D [49]	0.94	-
EBLL	D [50]	0.51	23	F [92]	0.97	75
EBTTT	D [42]	0.82	102	C [33]	0.46	64
EBR	D [35]	0.79	121	C [22]	0.55	84
WBL	E [59]	0.90	68	C [32]	0.50	32
WBTTT	C [34]	0.48	56	D [49]	0.84	111
WBR	C [29]	0.08	12	D [36]	0.20	21
NBLL	E [65]	0.87	64	E [68]	0.92	97
NBTTT	C [33]	0.44	50	D [52]	0.94	155
NBR	C [29]	0.05	1	C [30]	0.09	14
SBL	D [45]	0.91	95	F [94]	1.03	122
SBTTT	D [44]	0.90	125	D [40]	0.62	79
SBR	C [31]	0.38	45	D [37]	0.38	49

* rounded values

Based on the results of the synchro analysis presented in **Table 20**, the proposed implementation of northbound and eastbound dual left turn lanes has improved the critical movements including queues found at Adelaide Street North and Fanshawe Park Road, under the future (2029) with improvements scenario. However, there are still some critical movements that remain at this intersection.

Estimated 95th percentile queues will reduce from approximately 158 metres to 75 metres during the PM peak hour for the eastbound left turn movement while for the northbound left turn movement queues are reduced from 224 metres to 97 metres with the dual left turn lane options.

4.11 FUTURE (2039) TRAFFIC CONDITIONS LANE CAPACITY ANALYSIS, WITH IMPROVEMENTS

Corridor lane capacity analysis was completed under the future (2039) traffic conditions with a total lane capacity of 1,700 vehicles per hour to represent additional through lanes throughout the study corridor. The results of this analysis are presented in **Tables 21** and **22**, for the AM and PM peak Hours, respectively. The future (2039) traffic volumes can be seen in **Appendix G**.

Table 21: Future (2039) AM Peak Hour Lane Capacity Analysis – With Improvements

ROADWAY SECTION	NORTHBOUND			SOUTHBOUND		
	VOLUME*	CAPACITY	V/C	VOLUME*	CAPACITY	V/C
North of Sunningdale Rd. E	490	850	0.58	710	850	0.83
between Sunningdale Rd. E & Blackwater Rd.	830	1,700	0.49	1,280	1,700	0.75
between Blackwater Rd. & Phillbrook Dr. / Grenfell Dr.	745	1,700	0.44	1,535	1,700	0.90
between Phillbrook Dr. / Grenfell Dr. & The Home Depot Plaza	750	1,700	0.44	1,950	1,700	1.15
Immediately north of Fanshawe Park Rd.	850	1,700	0.50	2,080	1,700	1.22

* value rounded to nearest 5

Table 22: Future (2039) PM Peak Hour Link Volume Capacity Analysis – With Improvements

ROADWAY SECTION	NORTHBOUND			SOUTHBOUND		
	VOLUME*	CAPACITY	V/C	VOLUME*	CAPACITY	V/C
North of Sunningdale Rd. E	740	850	0.87	665	850	0.78
between Sunningdale Rd. E & Blackwater Rd.	1,530	1,700	0.90	1,210	1,700	0.71
between Blackwater Rd. & Phillbrook Dr. / Grenfell Dr.	1,665	1,700	0.98	1,245	1,700	0.73
between Phillbrook Dr. / Grenfell Dr. & The Home Depot Plaza	2,080	1,700	1.22	1,465	1,700	0.86
Immediately north of Fanshawe Park Rd.	2,145	1,700	1.26	1,445	1,700	0.85

* value rounded to nearest 5

Similar to the future (2029) with improvements results, under future (2039) with improvements traffic conditions, the additional through lane within the corridor has alleviated some capacity constraints as presented

in **Tables 21** and **Table 22**. However, there are still sections in the northbound and southbound directions which operate with capacity issues during both peak periods.

4.12 FUTURE (2039) INTERSECTION OPERATIONS WITH IMPROVEMENTS

The results of intersection capacity analyses completed under the future (2039) with improvements traffic conditions including the implementation of additional through lanes along Adelaide Street, and the improvements outlined in under section 4.10 and 4.5.1 are presented in **Table 23**. The Synchro analysis output sheets are provided in **Appendix L**.

Table 23: Future (2039) Traffic Intersection Operation Results – With Improvements

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
Adelaide St. N & Street A (Unsignalized)	F [51]	-	-	E [53]	-	-
EBL	D [28]	0.31	10	F [135]	0.69	24
EBT&R	B [14]	0.43	17	B [14]	0.31	10
WBL	F [478]	1.76	90	F [975]	2.57	72
WBT&R	B [11]	0.02	1	B [11]	0.02	0
NBL	A [8]	0.05	1	A [10]	0.24	7
NBT&R	A [0]	0.27	0	A [0]	0.35	0
SBL	A [8]	0.00	0	A [9]	0.02	0
SBT&R	A [0]	0.22	0	A [0]	0.31	0
South Wenige Dr. & Sunningdale Rd. E (Signalized)	C [28]	0.94	-	D [49]	0.96	-
EBL	A [6]	0.17	10	F [105]	0.99	77
EBT	C [34]	0.97	383	A [10]	0.62	117
EBR	A [5]	0.05	4	A [5]	0.08	5
WBL	B [18]	0.30	7	B [11]	0.18	13
WBT&R	A [9]	0.54	89	E [73]	1.08	414
NBL	E [78]	0.79	64	D [54]	0.51	45
NBT&R	D [44]	0.13	19	D [43]	0.06	12
SBL	D [44]	0.13	14	D [51]	0.44	38

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
SBT&R	D [44]	0.14	21	D [43]	0.07	13
Adelaide St. N & Sunningdale Rd. E (Signalized)	C [34]	0.96	-	D [54]	1.12	-
EBL	B [19]	0.41	21	D [37]	0.48	17
EBTT	D [37]	0.89	125	D [51]	0.87	127
EBR	C [35]	0.78	115	D [36]	0.34	29
WBL	E [58]	0.91	56	F [101]	1.04	92
WBTT	C [25]	0.60	71	E [56]	0.95	180
WBR	B [20]	0.04	0	C [28]	0.04	0
NBL	D [50]	0.91	73	F [95]	1.08	226
NBTT	C [29]	0.39	39	C [27]	0.46	77
NBR	C [27]	0.15	17	C [25]	0.28	34
SBL	C [23]	0.40	28	D [40]	0.46	22
SBTT	D [36]	0.66	62	E [63]	0.85	87
SBR	C [27]	0.05	1	D [43]	0.07	1
Blackwater Rd. & Sunningdale Rd. E (Signalized)	B [19]	0.82	-	C [28]	0.90	-
EBL	B [13]	0.43	17	D [52]	0.88	59
EBTT&R	C [23]	0.90	115	B [13]	0.58	81
WBL	B [11]	0.22	7	B [17]	0.26	14
WBTT	B [14]	0.63	58	D [36]	0.94	172
WBR	A [10]	0.09	8	B [16]	0.24	15
NBL	B [17]	0.38	27	C [24]	0.14	15
NBT&R	B [14]	0.09	10	C [23]	0.04	5
SBL	C [26]	0.71	65	D [49]	0.84	100
SBT&R	B [15]	0.26	22	C [23]	0.09	7
Adelaide St. N & Blackwater Rd. (Signalized)	A [9]	0.58	-	A [7]	0.63	-
EBL	C [25]	0.06	5	C [32]	0.11	6

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
EBT&R	C [25]	0.16	12	C [32]	0.08	11
WBL	C [32]	0.62	28	C [35]	0.46	19
WBT&R	C [25]	0.08	11	C [32]	0.22	14
NBL	A [5]	0.12	5	A [5]	0.21	8
NBTT&R	A [5]	0.34	34	A [6]	0.66	91
SBL	A [4]	0.05	4	B [18]	0.54	28
SBTT&R	A [7]	0.57	74	A [4]	0.46	50
Adelaide St. N & Phillbrook Dr. / Grenfell Dr. (Signalized)	C [22]	0.89	-	C [24]	0.95	-
EBL	B [19]	0.13	13	C [26]	0.15	14
EBT&R	C [22]	0.48	49	C [26]	0.21	22
WBL	D [52]	0.90	83	D [44]	0.79	56
WBT&R	B [19]	0.14	17	C [26]	0.14	17
NBL	C [26]	0.45	18	B [17]	0.62	34
NBTT&R	B [12]	0.42	47	C [24]	0.94	246
SBL	A [9]	0.06	5	C [29]	0.45	20
SBTT&R	C [22]	0.88	165	C [21]	0.76	130
Adelaide St. N & Fanshawe Park Rd. (Signalized)	D [53]	1.11	-	E [72]	1.29	-
EBL	C [29]	0.54	32	F [197]	1.29	182
EBTTT	D [52]	0.93	122	D [39]	0.50	82
EBR	D [36]	0.83	136	B [18]	0.54	93
WBL	F [110]	1.07	83	D [43]	0.61	40
WBTTT	D [36]	0.54	63	E [77]	0.99	160
WBR	C [30]	0.09	14	D [46]	0.33	44
NBL	F [117]	1.12	142	F [146]	1.19	258
NBTTT	C [32]	0.46	54	E [60]	0.96	191
NBR	C [28]	0.06	6	C [34]	0.13	21

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
SBL	D [46]	0.93	105	F [115]	1.08	151
SBTTC	E [65]	1.01	151	E [57]	0.82	105
SBR	C [33]	0.45	54	D [48]	0.38	50

* rounded values

Based on the results of the synchro analysis presented in **Table 23**, many of the critical movements found at intersections under the future (2039) do-nothing scenario have been alleviated. However, there are still remaining critical movements at the signalized intersections of Adelaide Street North with Sunningdale Road East and Fanshawe Park Road, and at the unsignalized intersection of Adelaide Street North with Street A. Northbound left turn movements for both the Sunningdale Road and Fanshawe Park Road intersections will exhibit 95th percentile queues greater than 225 metres.

4.12.1 FUTURE (2039) SENSITIVITY ANALYSIS OF DUAL LEFT TURN LANES AT ADELAIDE STREET & FANSHAWE PARK ROAD

As under the future (2029) with improvements scenario there are critical left turn movements and heavy left turn volumes present at Adelaide Street and Fanshawe Park Road under future (2039) conditions as well. A sensitivity analysis was performed for this intersection with the addition of protected dual left turn lanes on the northbound and eastbound approaches of this intersection to determine if these movements could be improved. The results of this analysis are presented in **Table 24**. The Synchro analysis reports can be seen in **Appendix L**.

Table 24: Future (2039) Traffic Intersection Operation Results – With Improvements Including Dual Left Turn Lanes

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
Adelaide St. N & Fanshawe Park Rd. (Signalized)	D [49]	1.05	-	E [57]	1.01	-
EBLL	D [51]	0.53	25	F [105]	1.02	80
EBTTT	D [46]	0.88	112	C [34]	0.50	71
EBR	D [44]	0.88	143	C [23]	0.62	98
WBL	F [85]	0.99	79	D [36]	0.60	35
WBTTT	C [35]	0.53	62	D [55]	0.92	131
WBR	C [29]	0.09	14	D [36]	0.22	24
NBLL	E [80]	0.95	74	F [88]	1.01	113

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
NBTTT	C [33]	0.47	55	E [67]	1.01	176
NBR	C [29]	0.06	3	C [30]	0.11	17
SBL	E [68]	1.00	117	F [115]	1.10	134
SBTTT	D [54]	0.97	146	D [41]	0.67	85
SBR	C [32]	0.43	52	D [38]	0.43	56

* rounded values.

Based on the results of the synchro analysis presented in **Table 24**, the proposed implementation of northbound and eastbound dual left turn lanes has improved the critical movements found at Adelaide Street North and Fanshawe Park Road, under the previous future (2039) with improvements scenario. Estimated 95th percentile queues during the PM peak hour will reduce from approximately 181 metres to 80 metres and 258 metres to 113 metres for the eastbound and northbound dual left turn lane options, respectively. However, there are still some critical movements that remain at this intersection.

4.13 FUTURE (2029 & 2039) TRAFFIC CONDITIONS WITH PROPOSED ROUNDABOUT CONTROL AT ADELAIDE STREET AND SUNNINGDALE ROAD INTERSECTION

The Sunningdale ESR recommended that the intersection of Adelaide Street North and Sunningdale Road be converted from signalized traffic control to a two-lane roundabout traffic control option. For the purpose of this study, an analysis of the intersection under roundabout operations was performed to determine if this type of control can accommodate the future (2029 & 2039) traffic volumes anticipated for the study corridor.

4.13.1 ROUNDABOUT GEOMETRY REQUIREMENTS

The capacity of a roundabout is generally driven by the amount of conflicting traffic volumes (vehicles travelling along the circulatory roadway) that is available at each roundabout entry. High conflicting volumes reduce the number of opportunities for vehicles to enter the roundabout and therefore reduce the capacity of a particular approach leg. Conversely, where low conflicting traffic volumes are present, the approach leg will have a higher capacity and allow for a higher number of vehicles to enter the roundabout. Each approach leg of the roundabout is evaluated individually to determine the number of entering lanes that are required based upon the conflicting flow rates. The number of lanes within the circulatory roadway are lanes needed to provide lane continuity through the roundabout intersection.

A National Cooperative Highway Research Program (NCHRP) Report 672 (Second Edition) titled “*Roundabouts: An Informational Guide*” published by the Transportation Research Board (TRB) in cooperation with the U.S. Department of Transportation, provides guidelines in order to determine the roundabout entry lane requirements based on the entering and conflicting volumes at the roundabout approach legs. The volume threshold for determining the roundabout entry lane requirements are shown in **Table 25**.

Table 25: Volume Threshold for Determining Roundabout Entry Lane Requirements

VOLUME RANGE (SUM OF ENTERING AND CONFLICTING VOLUMES)	NUMBER OF LANES REQUIRED
0 to 1, 000 veh/h	<ul style="list-style-type: none"> • Single-lane entry likely to be sufficient
1,000 to 1, 300 veh/h	<ul style="list-style-type: none"> • Two-lane entry may be needed • Single-lane may be sufficient based upon more detailed analysis
1,300 to 1, 800 veh/h	<ul style="list-style-type: none"> • Two-lane entry likely to be sufficient
Above 1, 800 veh/h	<ul style="list-style-type: none"> • More than two entering lanes may be required • A more detailed capacity evaluation should be conducted to verify lane numbers and arrangements

Source: NCHRP Report 672 (Exhibit 3-14), veh/h = PCUs/h

In order to determine the number of entry lanes at the roundabout approach legs, the sum of the entering and conflicting traffic volumes for the (2029 and 2039) future total traffic conditions for the AM and PM were used. **Figures 9 and 10** illustrate the approach leg entering (at the approach leg) and conflicting (inside the circle) volumes for both the horizon year peak hours converted into passenger car units (PCUs) by using an equivalency factor of 2 passenger cars for a heavy vehicle. The proposed roundabout entry lane requirement analyses are shown in **Tables 26 and 27**.

Figure 9: Future (2029) Roundabout Entering Volumes (PCU's/h) - Adelaide Street & Sunningdale Road Intersection

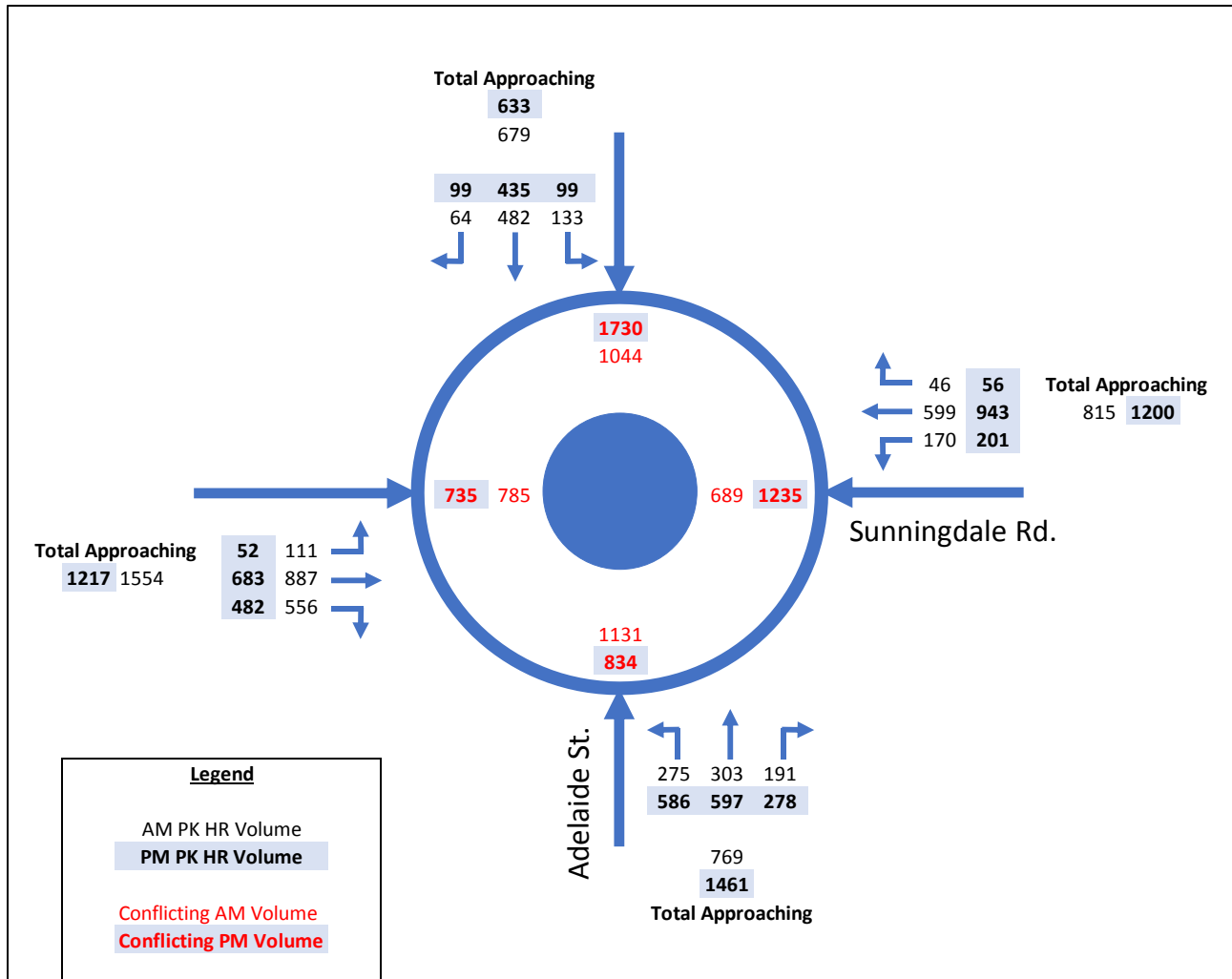


Table 26: Future (2029) Roundabout Entry Lane Requirements - Adelaide Street & Sunningdale Road Intersection

APPROACHES	VOLUMES (PCUS)	AM PEAK HOUR	PM PEAK HOUR	REMARKS
East	Ve	815	1200	<ul style="list-style-type: none"> More than two entering lanes may be required. A more detailed capacity evaluation should be conducted to verify lane numbers and arrangements.
	Vc	689	1235	
	Total	1504	2435	
North	Ve	679	633	<ul style="list-style-type: none"> More than two entering lanes may be required. A more detailed capacity evaluation should be conducted to verify lane numbers and arrangements.
	Vc	1044	1730	
	Total	1723	2363	

APPROACHES	VOLUMES (PCUS)	AM PEAK HOUR	PM PEAK HOUR	REMARKS
West	Ve	1554	1217	<ul style="list-style-type: none"> More than two entering lanes may be required. A more detailed capacity evaluation should be conducted to verify lane numbers and arrangements.
	Vc	785	735	
	Total	2339	1952	
South	Ve	769	1461	<ul style="list-style-type: none"> More than two entering lanes may be required. A more detailed capacity evaluation should be conducted to verify lane numbers and arrangements.
	Vc	1131	834	
	Total	1900	2295	

* values highlighted indicate entering and conflicting traffic volumes over 1,800 veh/h, Ve = Entering Vehicles, Vc = Conflicting Vehicles

Figure 10: Future (2039) Roundabout Entering Volumes (PCU's/h) - Adelaide Street & Sunningdale Road Intersection

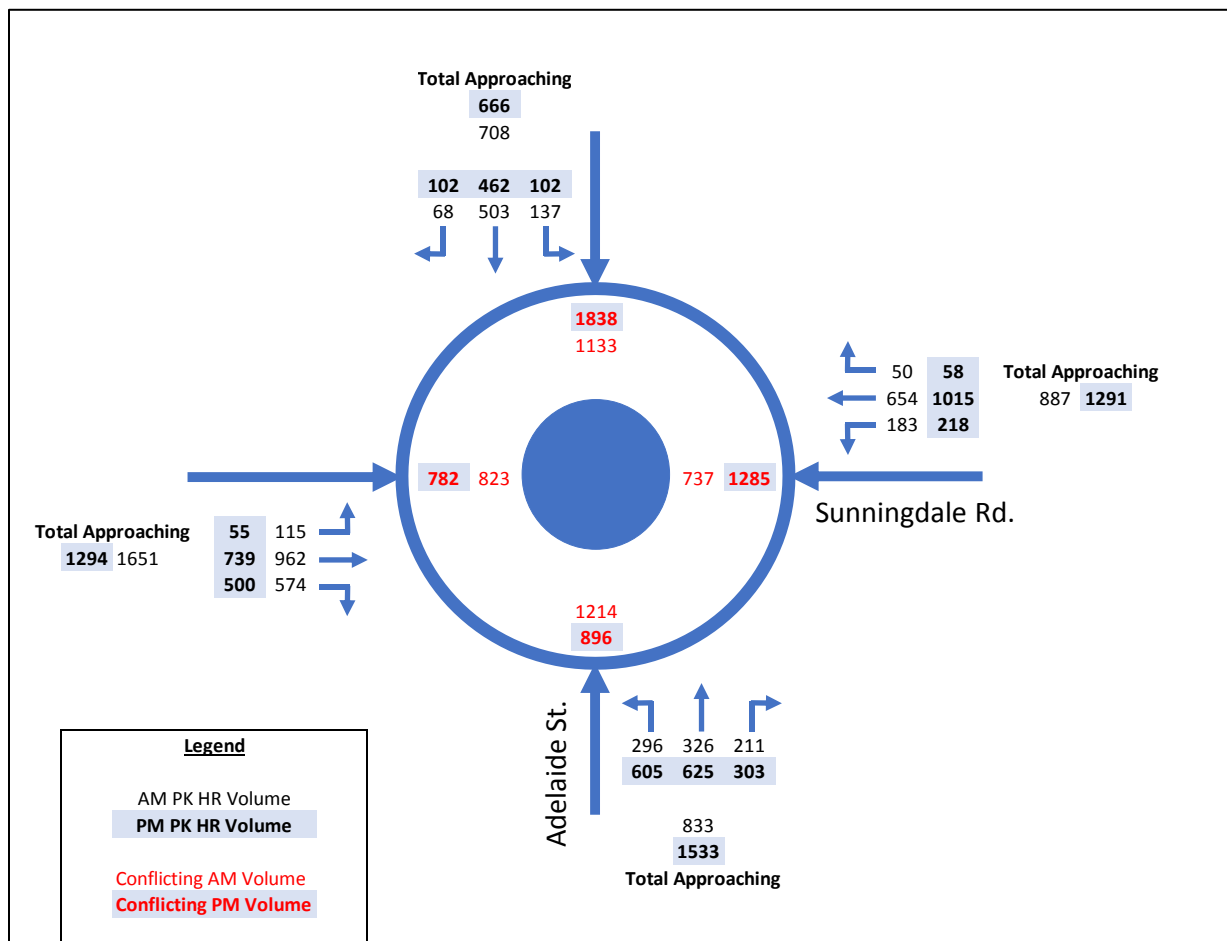


Table 27: Future (2039) Roundabout Entry Lane Requirements - Adelaide Street & Sunningdale Road Intersection

APPROACHES	VOLUMES (PCUS)	AM PEAK HOUR	PM PEAK HOUR	REMARKS
East	Ve	887	1291	<ul style="list-style-type: none"> More than two entering lanes may be required. A more detailed capacity evaluation should be conducted to verify lane numbers and arrangements.
	Vc	737	1285	
	Total	1624	2576	
North	Ve	708	666	<ul style="list-style-type: none"> More than two entering lanes may be required. A more detailed capacity evaluation should be conducted to verify lane numbers and arrangements.
	Vc	1133	1838	
	Total	1841	2504	
West	Ve	1651	1294	<ul style="list-style-type: none"> More than two entering lanes may be required. A more detailed capacity evaluation should be conducted to verify lane numbers and arrangements.
	Vc	823	782	
	Total	2474	2076	
South	Ve	833	1533	<ul style="list-style-type: none"> More than two entering lanes may be required. A more detailed capacity evaluation should be conducted to verify lane numbers and arrangements.
	Vc	1214	896	
	Total	2047	2429	

* values highlighted indicate entering and conflicting traffic volumes over 1,800 veh/h, Ve = Entering Vehicles, Vc = Conflicting Vehicles

As presented in **Table 26** and **Table 27**, based on the future (2029 & 2039) traffic conditions, the roundabout lane requirement analysis indicates that the sum of the entering and conflicting traffic volumes will exceed 1,800 vehicles per hour during both peak periods. Therefore, more than two entering lanes may be required at each of the roundabout approaches.

4.13.2 OPERATIONAL ANALYSIS

As noted in the previous section, based on the sum of the entering and conflicting volumes at the intersection, more than two lanes would be required at each of the roundabout approaches. However, roundabouts generally require more area to accommodate than traditional intersections, particularly if vehicles larger than typical passenger cars or small trucks are required. As a result, a three-lane roundabout would require significant area to accommodate. In addition, the safety advantages of roundabouts with more than two entry lanes decreases for pedestrians and cyclist given the high traffic flows and greater design detail is required to ensure adequate operational performance and safety.

Given the anticipated developments proposed within the area of the intersection, the Applewood subdivision on the northwest quadrant, the Stoney Creek and Comfort Lands on northeast quadrant, the Community Centre located east of the intersection and the commercial/retail developments located in the southeast and southwest quadrants of this intersection, it is anticipated that there will be significant pedestrian activity at this intersection in the future. Therefore, in order to provide minimum pedestrian crossing distances at this

intersection, a roundabout consisting of two-lane entry at all approaches including circulating lanes was assumed in the operation analysis.

The roundabout operation analysis for the Adelaide Street and Sunningdale Road intersection were conducted using Sidra Intersection 7 software. This software uses the Highway Capacity Manual (HCM) methodologies and can be used as an aid for design and evaluation of various type of intersections including roundabout. The Sidra Intersection 7 software allows operation analysis for roundabouts in order to provide the estimates of capacity and performance statistics (delay, LOS, queue length).

The following parameters were used for operational analysis purposes:

- Inscribed Circle Diameter = 50m
- Island Diameter = 30m (including apron width)
- Total Circulating Width = 10m
- Number of Circulating Lanes = 2
- Minimum Approach Lane Width = 4m
- Saturation Flow Rate = 1,900 Veh/h/l
- Peak Hour Factor = 0.92

A summary of the operational analysis results for Adelaide Street and Sunningdale Road under roundabout control including average approach delays, LOS, and 95th percentile queue lengths is presented in **Table 28** and **Table 29** for both future (2029 and 2039) total traffic condition during the AM and PM peak hours, respectively. The Sidra software output sheets are provided in **Appendix M**.

Table 28: Future (2029) Roundabout Operation Results – Adelaide Street North and Sunningdale Road East

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
Adelaide St. N & Sunningdale Rd. E	F [73]	1.34	–	F [94]	1.33	–
EBL	F [166]	1.34	536	C [24]	0.95	105
EBT	F [165]	1.34	594	C [23]	0.95	109
EBR	F [164]	1.34	594	C [21]	0.95	109
EB Approach	F [165]	1.34	594	C [23]	0.95	109
WBL	A [7]	0.63	29	F [109]	1.20	296
WBT	A [7]	0.63	29	F [107]	1.20	327
WBR	A [6]	0.63	30	F [106]	1.20	327
WB Approach	A [7]	0.63	30	F [108]	1.20	327
NBL	B [12]	0.73	36	F [165]	1.33	513
NBT	B [11]	0.73	36	F [163]	1.33	555
NBR	B [10]	0.73	36	F [162]	1.33	555

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
NB Approach	B [11]	0.73	36	F [163]	1.33	555
SBL	C [16]	0.77	35	E [46]	0.97	68
SBT	B [15]	0.77	36	E [43]	0.97	73
SBR	B [14]	0.77	36	E [41]	0.97	73
SB Approach	B [15]	0.77	36	E [43]	0.97	73

* rounded values

Table 29: Future (2039) Roundabout Operation Results – Adelaide Street North and Sunningdale Road East

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
Adelaide St. N & Sunningdale Rd. E	F [100]	1.47	–	F [129]	1.45	–
EBL	F [227]	1.47	695	F [47]	1.04	181
EBT	F [226]	1.47	775	F [46]	1.04	191
EBR	F [225]	1.47	775	F [44]	1.04	191
EB Approach	F [226]	1.47	775	E [45]	1.04	191
WBL	A [9]	0.72	38	F [134]	1.26	370
WBT	A [9]	0.72	38	F [132]	1.26	410
WBR	A [8]	0.72	38	F [131]	1.26	410
WB Approach	A [9]	0.72	38	F [133]	1.26	410
NBL	B [13]	0.78	43	F [224]	1.47	656
NBT	B [12]	0.78	43	F [222]	1.47	714
NBR	B [12]	0.78	43	F [222]	1.47	714
NB Approach	B [12]	0.78	43	F [223]	1.47	714
SBL	C [24]	0.87	49	F [70]	1.06	105
SBT	C [22]	0.87	51	F [67]	1.06	116
SBR	C [21]	0.87	51	F [64]	1.06	116
SB Approach	C [23]	0.87	51	F [67]	1.06	116

* rounded values

As presented in **Table 28** and **Table 29** under both future (2029 and 2039) analysis scenarios, the roundabout option at Sunningdale Road East and Adelaide Street North is forecast to have significant delays, capacity constraints, and very large queues during both peak periods as compared to signalized control. The following findings are noted:

1. Significant delays and queues for the eastbound approach in the AM peak hour with 95th percentile queues reaching 594 metres and delays of 165 seconds under future (2029) traffic conditions;
2. The westbound and northbound approaches in the PM peak hour under future (2029) traffic conditions experience 95th percentile queues of 327 and 555 metres respectively and delay of approximately 108 and 163 seconds respectively;
3. Significant delays and queues for the eastbound approach in the AM and PM peak hours with 95th percentile queues reaching 775 and 253 metres respectively. Delays for this approach also reach 226 and 70 seconds under future (2039) traffic conditions for the AM and PM peak hours respectively;
4. The westbound and northbound approaches in the PM peak hour under future (2039) traffic conditions experience 95th percentile queues of 410 and 714 metres respectively and delay of approximately 133 and 223 seconds respectively; and
5. Delays and queues for the southbound approach in the PM peak hour with 95th percentile queues reaching 116 metres with delay of 67 seconds under future (2039) traffic conditions.

Based on the analysis conducted reviewing the feasibility of roundabout traffic control at the intersection of Adelaide Street and Sunningdale Road, a roundabout should not be carried forward for consideration at this location. The entry lane geometric requirements and operational analysis indicate that a roundabout of more than two lanes will be required to support future (2029 & 2039) traffic volumes. However, roundabouts with more than two lanes require a significant portion of land to develop and the safety advantages for pedestrians and cyclist at roundabouts of this size decreases given the high traffic flows and greater design detail required to ensure adequate operations.

4.14 FUTURE (2029 & 2039) TRAFFIC CONDITIONS BASED ON THE CITY OF LONDON MAY 2019 DEVELOPMENT CHARGES PLAN

As part of the City approved May 2019 DC Plan, the timing for the proposed road widening of Fanshawe Park Road from 4 to 6 lanes are deferred beyond the current 20-year horizon of this study and operation analyses were repeated with the following changes:

1. Additional eastbound, westbound, northbound and southbound through lanes at the intersection of Adelaide Street North with Fanshawe Park Road were removed: and
2. An exclusive southbound right turn lane was converted as shared with through lane at the intersection of Adelaide Street with Sunningdale Road.

The analysis results conducted for the future (2029) and (2039) horizon years are presented in **Tables 30** and **31**. Synchro output sheets are provided in **Appendix N**.

Table 30: Future (2029) Traffic Intersection Operation Results – Based on City's 2019 DC Plan

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
Adelaide St. N & Sunningdale Rd. E (Signalized)	C [32]	0.83	–	D [48]	1.08	–
EBL	C [27]	0.41	27	D [37]	0.46	17
EBTT	D [46]	0.88	137	D [51]	0.85	112
EBR	A [1]	0.39	0	A [1]	0.32	0
WBL	D [46]	0.81	62	F [89]	0.99	81
WBTT	C [31]	0.54	80	E [57]	0.95	168
WBR	C [25]	0.03	0	C [30]	0.04	0
NBL	C [31]	0.75	66	F [82]	1.04	215
NBTT	C [29]	0.27	42	C [25]	0.42	71
NBR	C [27]	0.13	16	C [23]	0.24	27
SBL	C [28]	0.38	33	D [37]	0.42	21
SBTT&R	D [41]	0.62	86	E [63]	0.88	98
Adelaide St. N & Fanshawe Park Rd. (Signalized)	F [82]	1.28	-	F [111]	1.50	-
EBL	C [29]	0.54	31	F [281]	1.48	185
EBTT	F [86]	1.06	198	D [41]	0.62	113
EBR	C [33]	0.74	121	C [21]	0.52	90
WBL	F [184]	1.24	90	C [35]	0.53	35
WBTT	D [38]	0.63	91	F [97]	1.07	226
WBR	C [30]	0.08	10	D [41]	0.33	48
NBL	F [240]	1.41	158	F [234]	1.39	257
NBTT	D [41]	0.66	87	F [138]	1.19	305
NBR	C [33]	0.05	0	C [31]	0.12	20
SBL	D [44]	0.91	115	F [246]	1.41	164
SBTT	F [116]	1.15	241	E [66]	0.93	159
SBR	C [31]	0.39	53	D [44]	0.40	57

* rounded values

Table 31: Future (2039) Traffic Intersection Operation Results – Based on City's 2019 DC Plan

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
Adelaide St. N & Sunningdale Rd. E (Signalized)	C [34]	0.90	–	D [55]	1.10	–
EBL	C [25]	0.42	26	D [38]	0.48	17
EBTT	D [47]	0.90	151	E [59]	0.92	135
EBR	A [1]	0.40	0	A [1]	0.34	0
WBL	D [49]	0.83	67	F [83]	0.98	89
WBTT	C [29]	0.55	85	E [61]	0.97	184
WBR	C [23]	0.04	0	C [29]	0.04	0
NBL	D [44]	0.86	94	F [96]	1.09	226
NBTT	C [32]	0.32	47	C [27]	0.46	77
NBR	C [30]	0.15	18	C [24]	0.25	26
SBL	C [31]	0.43	35	D [38]	0.44	22
SBTT&R	D [49]	0.75	93	F [83]	0.99	112
Adelaide St. N & Fanshawe Park Rd. (Signalized)	F [104]	1.41	-	F [136]	1.61	-
EBL	C [34]	0.64	33	F [312]	1.56	197
EBTT	F [116]	1.14	221	D [43]	0.69	127
EBR	D [39]	0.83	144	C [23]	0.58	107
WBL	F [234]	1.37	102	D [40]	0.66	38
WBTT	D [40]	0.69	103	F [135]	1.17	258
WBR	C [30]	0.09	12	D [41]	0.37	53
NBL	F [303]	1.56	179	F [298]	1.54	293
NBTT	D [43]	0.73	95	F [176]	1.28	338
NBR	C [33]	0.06	1	C [32]	0.15	25
SBL	E [68]	0.99	141	F [286]	1.50	178
SBTT	F [151]	1.23	267	E [80]	0.99	177
SBR	C [32]	0.44	61	D [45]	0.45	65

* rounded values.

Based on the results of the synchro analysis presented in **Table 30** and **Table 31**, the intersections of Adelaide Street North at Sunningdale Road East and Fanshawe Park North are forecast to operate above capacity, with the exception of Adelaide Street North at Sunningdale Road East during the AM peak period under (2029) conditions, forecast to operate near capacity. The removal of the east-west through lanes at Fanshawe Park Road and Adelaide Street will increase capacity constraints and consequently increase overall delays as well.

By comparing (2039) operation analysis results presented in **Table 29** for the roundabout control option and in **Table 31** under signalized control for the Adelaide Street and Sunningdale Road intersection, it is recommended that signalized control be maintained in the future at this intersection. A review of the future volumes presented in the Sunningdale Road ESR revealed that volumes estimated in the Applewood TIS were not carried in the traffic analysis.

4.14.1 FUTURE (2029 & 2039) SENSITIVITY ANALYSIS OF DUAL LEFT TURN LANES AT ADELAIDE STREET & FANSHAWE PARK ROAD UNDER CITY'S 2019 DC PLAN SCENARIO

Traffic operations analysis was repeated under the future (2029 & 2039) traffic conditions based on the City's 2019 Development Charges Plan with the addition of dual left turn lanes at the northbound and eastbound approaches of Adelaide Street North and Fanshawe Park Road. The results of this analysis are presented in **Table 32** and **Table 33**. The Synchro output sheets are provided in **Appendix N**.

Table 32: Future (2029) Traffic Intersection Operation Results – Based on City's 2019 DC Plan Including Dual Left Turn Lanes

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
Adelaide St. N & Fanshawe Park Rd. (Signalized)	E [77]	1.24	-	F [91]	1.23	-
EBLL	E [64]	0.67	28	F [259]	1.40	90
EBTT	E [62]	0.98	186	D [36]	0.64	100
EBR	C [35]	0.75	123	C [21]	0.55	82
WBL	F [236]	1.37	94	C [32]	0.57	31
WBTT	D [37]	0.61	90	F [80]	1.04	194
WBR	C [29]	0.08	9	C [34]	0.33	42
NBLL	F [224]	1.32	87	E [68]	0.92	97
NBTT	D [42]	0.67	87	F [132]	1.19	266
NBR	C [33]	0.05	0	C [27]	0.13	20
SBL	E [56]	0.96	124	F [253]	1.44	144
SBTT	F [104]	1.12	237	E [57]	0.92	140
SBR	C [30]	0.40	55	D [38]	0.43	56

* rounded values, # - volume for 95th percentile cycle exceeds capacity.

Table 33: Future (2039) Traffic Intersection Operation Results – Based on City’s 2019 DC Plan Including Dual Left Turn Lanes

INTERSECTION/ MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*	LOS [DELAY (S)*]	V/C	95TH TILE QUEUE (M)*
Adelaide St. N & Fanshawe Park Rd. (Signalized)	F [98]	1.35	-	F [112]	1.32	-
EBLL	E [67]	0.71	31	F [288]	1.47	95
EBTT	F [82]	1.06	210	D [38]	0.71	112
EBR	D [41]	0.84	147	C [22]	0.61	96
WBL	F [294]	1.51	106	D [41]	0.71	38
WBTT	D [39]	0.68	101	F [115]	1.14	222
WBR	C [29]	0.09	11	C [35]	0.36	47
NBLL	F [282]	1.46	98	F [88]	1.01	113
NBTT	D [44]	0.73	95	F [170]	1.28	296
NBR	C [33]	0.06	0	C [27]	0.15	22
SBL	F [89]	1.06	149	F [297]	1.54	157
SBTT	F [138]	1.20	264	E [71]	0.99	155
SBR	C [31]	0.45	63	D [39]	0.48	62

* rounded values

Based on the results of the synchro analysis presented in **Table 32** and **Table 33**, the proposed implementation of northbound and eastbound dual left turn lanes has improved the delays and queues for the critical movements found at Adelaide Street North and Fanshawe Park Road under both the previous future (2029 & 2039) 2019 DC Plans scenarios. Estimated 95th percentile queues during the (2039) PM peak hour will reduce from approximately 185 metres to 95 metres and 257 metres to 113 metres for the eastbound and northbound dual left turn lane options, respectively. However, the intersection is still forecast to operate above capacity during both peak periods under each horizon year. It is recommended that eastbound and northbound dual left turn lanes be provided at this intersection.

5. ESTIMATE OF EXISTING AND FUTURE AVERAGE DAILY TRAFFIC VOLUMES ALONG ADELAIDE STREET NORTH

Average daily traffic (ADT) volumes between each mid-block section along Adelaide Street North were estimated under existing (2018) and future (2029 & 2039) traffic conditions. The estimated volumes are presented in **Table 34**.

Table 34: Existing (2018) and Future (2029 & 2039) Estimated Two-way ADT Volumes along Adelaide Street North

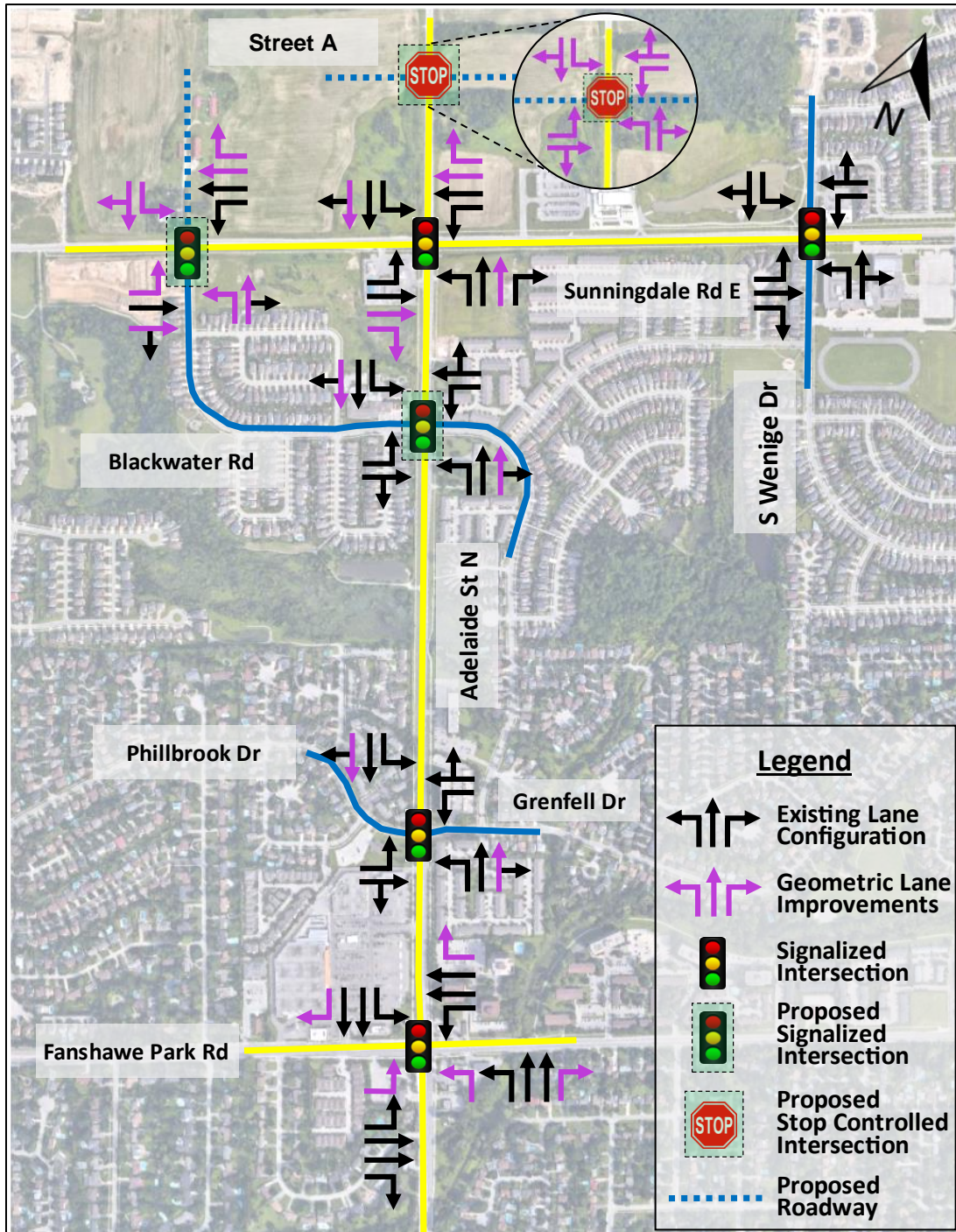
NO.	MIDBLOCK LOCATION	EXISTING (2018)	2029	2039
1	Between Sunningdale Rd. E and Blackwater Rd.	14,000	26,100	27,450
2	Between Blackwater Rd. and Phillbrook Dr./Grenfell Dr.	14,000	27,600	29,150
3	Between Phillbrook Dr./Grenfell Dr. and Fanshawe Park Rd.	20,000	33,900	36,100

Table 34 shows that the estimated two-way ADT volumes along Adelaide Street North under existing (2018) conditions vary from approximately 14,000 to 20,000 vehicles. These ADT volumes are estimated to increase varying from 26,100 to 33,900 vehicles and 27,450 to 36,100 vehicles in 2029 and 2039, respectively.

6. PREFERRED INTERSECTION AND CORRIDOR LANE CONFIGURATIONS

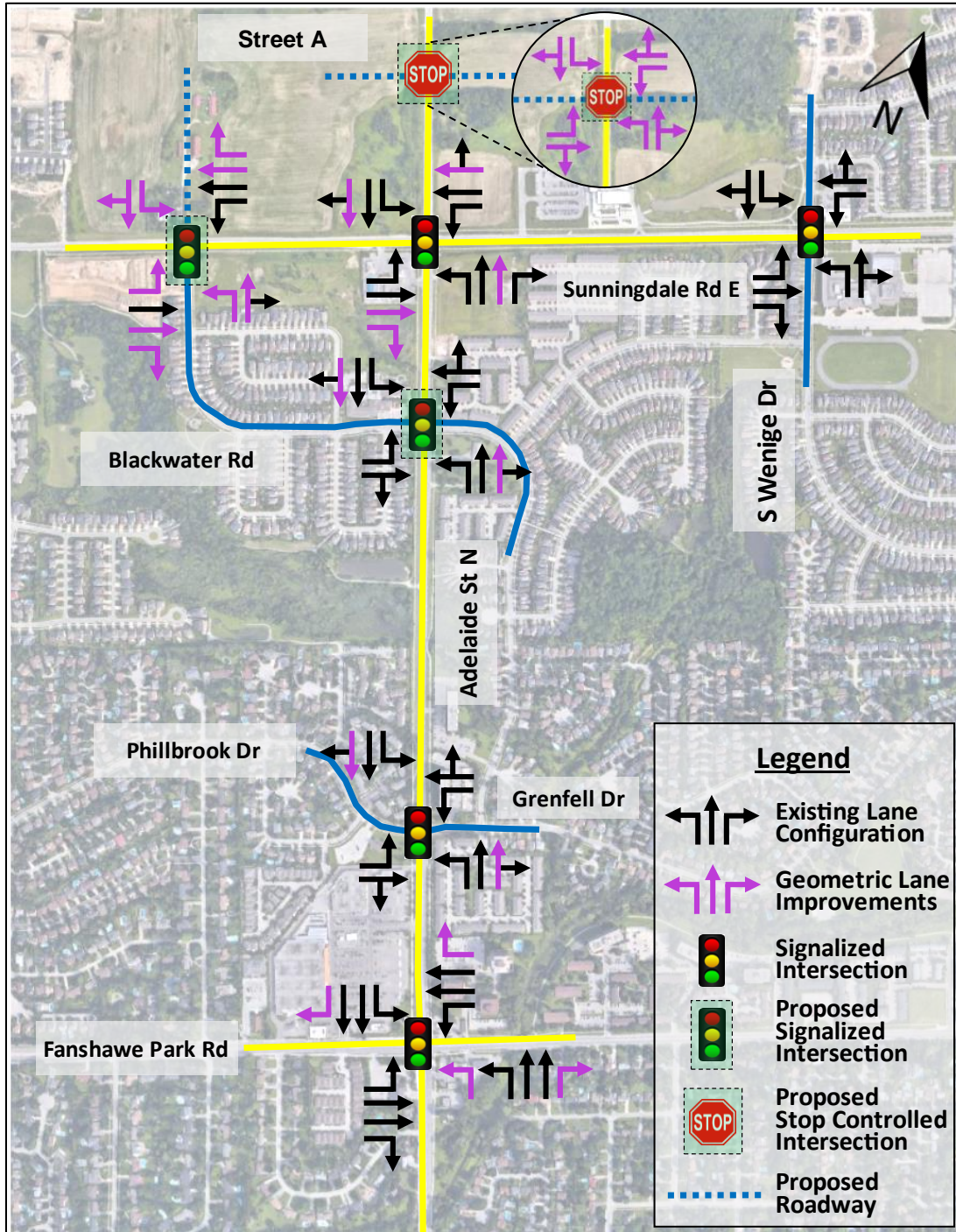
Based on the results of the future total (2029) and (2039) traffic analysis presented in Section 4.14 considering the City of London May 2019 DC Plan, preferred intersection and corridor lane configurations have been established to accommodate the forecasted traffic growth within the study area. The preferred intersection and corridor lane configurations are presented in **Figure 11**.

Figure 11: Preferred Intersection Lane Configurations



However, following design considerations of lane requirements for the recommended alternative and discussions with the City, some of the recommended lanes have not been carried forward in the preliminary design due to significant property constraints and both technical and economic factors. As a result, the recommended intersection and corridor lane configurations are presented in **Figure 12**.

Figure 12: Recommended Intersection Lane Configurations



7. SUMMARY OF ANALYSIS AND RECOMMENDATIONS

The results of the Transportation and Traffic Analysis completed for the Adelaide Street North corridor as part of the Adelaide Street North Environmental Assessment are summarized below. This included a review of the existing (2018) and future (2029) and (2039) traffic operations as well as a review of historical collisions from 2010 to 2017.

Existing (2018) Traffic Conditions

- A review of the existing corridor capacity indicates the section of Adelaide Street North, between Phillbrook Drive / Grenfell Drive & The Home Depot Plaza Entrance, is over capacity for the southbound direction during the AM peak hour. During the PM peak hour in the northbound direction this section along with the section immediately north of Fanshawe Park Road is over capacity. Respectively, multiple sections along Adelaide Street North are approaching capacity in the southbound traffic during the AM peak hour and northbound traffic during the PM peak hour.
- There are several critical movements present at the signalized intersection of Adelaide Street North and Fanshawe Park Road. Critical movements are also present at both unsignalized intersections of Blackwater Road with Sunningdale Road East and Adelaide Street North.

Safety Performance Assessment

- A total of 311 collisions occurred within the study area based on the 7 years of historical data. 58% (181 of 311) of the total collisions were rear-end, 18% (57 of 311) were turning movement, 11% (34 of 311) were angle, while sideswipe accounted for 7% (22 of 311), and the remainder were classified as 'other' or 'SMV';
- A significant percentage of the collisions occurred at the signalized intersection of Adelaide Street North and Fanshawe Park Road with a total of 238 (77%) recorded collisions over the 7 years; and
- A review of the current intersection lane configurations of Adelaide Street North and Fanshawe Park Road revealed that the existing dedicated left turn lanes on all approaches are a negative offset from one another. Retrofitting the current left turn lanes from negative offset to zero or positive offset at each approach could potentially reduce the amount of turning movement collisions.

Future Proposed Roadway Improvements

As outlined in the City of London's 2030 Transportation Master Plan Update May 2013 and the Sunningdale ESR, there are several roadways recommended to be widened within the study area as follows:

- Sunningdale Road be widened from 2 to 4 through lanes within a 10-year planning horizon, based on recommendation from the Sunningdale ESR and City's 2030 TMP.

As a result, only the proposed widening of Sunningdale Road has been incorporated into the future intersection traffic analyses.

Future (2029 & 2039) Traffic Conditions, Do Nothing

- A corridor lane capacity review under future (2029) and (2039) traffic conditions indicates additional through lanes are required in both the northbound and southbound directions of Adelaide Street North, to accommodate the future forecast traffic volumes;
- Signal warrant analysis conducted for the unsignalized intersections of Blackwater Road with Sunningdale Road East and Adelaide Street North indicates that these intersections are warranted for signalization under future (2029) and (2039) do nothing traffic conditions; and
- Under future (2029) and (2039) do nothing traffic conditions the study area intersections cannot accommodate the future travel demands and additional lane capacity is required.

Future (2039) Traffic Conditions, With Improvements

- Based on the future (2029) and (2039) lane capacity analysis, the implementation of an additional through lane in the northbound and southbound directions will alleviate the majority of capacity issues within the corridor; and
- Based on the future (2029) and (2039) intersection operation results, the majority of intersections within the study corridor are forecast to operate satisfactorily with the implementation of an additional through lane. However, there are still some critical movements that remain at the signalized intersections of Adelaide Street North with Sunningdale Road East and Fanshawe Park Road.

Future (2029 & 2039) With Improvements Sensitivity Analysis of Dual Left Turn Lanes at Adelaide Street and Fanshawe Park Road

- Under the future (2029 & 2039) traffic conditions, a sensitivity analysis with the implementation of northbound and eastbound dual left turn lanes at Adelaide Street North and Fanshawe Park Road has improved the critical movements with shorter queues at the respective movements. However, there are still some critical movements that remain at the signalized intersection.

Future (2029 & 2039) Proposed Roundabout Option at Adelaide Street and Sunningdale Road

- Based on future (2029 & 2039) traffic volumes, the roundabout lane requirement analysis indicates that the sum of the entering and conflicting traffic volumes will exceed 1,800 vehicles per hour during both peak periods. Therefore, more than two entering lanes would be required at each of the roundabout approaches;
- Under future (2029 and 2039) traffic conditions, the intersection of Adelaide Street North and Sunningdale Road East and is forecast to operate with significant delays, capacity constraints, and very long queues under a two-lane roundabout traffic control compared to signalized intersection control; and
- Although based on the roundabout lane requirement and capacity analysis results indicating the need for a roundabout larger than two lanes, a roundabout of this size would require significant land area and creates challenges for pedestrian movements.

Future (2029 & 2039) Traffic Conditions, Based on the 2019 Development Charges Background Study

As part of the City's May 2019 DC plan, the timing for the proposed road widening of Fanshawe Park Road from 4 to 6 lanes will be deferred beyond the current 20-year horizon of this study.

- Based on the corridor and intersection adjustments outlined as part of the City's May 2019 DC Plan, under future (2029) and (2039) traffic conditions both Adelaide Street North at Sunningdale Road East and Fanshawe Park North are forecast to operate above capacity, with the exception of Adelaide Street North at Sunningdale Road East during the AM peak period under (2029 and 2039) conditions which is forecast to operate satisfactorily.

Future (2029 & 2039) Sensitivity Analysis of Dual Left Turn Lanes, Based on the 2019 Development Charges Plan

- Under the future (2029) and (2039) traffic conditions based on the 2019 DC plan recommendations, a sensitivity analysis of northbound and eastbound dual left turn lanes at Adelaide Street North and Fanshawe Park Road has improved the critical movements with shorter queues at the respective movements. However, the intersection is still forecast to operate above capacity during both peak periods for each horizon year.

Preferred Lane Configurations

By comparing operation analysis results undertaken for the roundabout and signalized control options for the Adelaide Street and Sunningdale Road intersection based on the City's 2019 DC Plan, it is recommended that signalized control be maintained in the future at this intersection. It is also recommended that eastbound and northbound dual left turn lanes in addition to auxiliary right turning lanes at the intersection of Adelaide Street with Fanshawe Park Road be provided. The preferred intersection and corridor lane configurations for the Adelaide Street North Environmental Assessment study area are displayed in **Figure 11**.

However, following design considerations of lane requirements for the recommended alternative and discussions with the City, some of the recommended lanes have not been carried forward in the preliminary design due to significant property constraints and both technical and economic factors. The recommended intersection and corridor lane configurations for the Adelaide Street North Environmental Assessment study area are displayed in **Figure 12**.

Transportation & Traffic Analysis

Adelaide Street North Class Environmental Assessment

The Corporation of the City of London
300 Dufferin Ave.
London, ON
N6A 4L9

PARSONS

APPENDIX A

Existing 2015 and 2017 Turning Movement Count Data



Turning Movements Report - AM Period

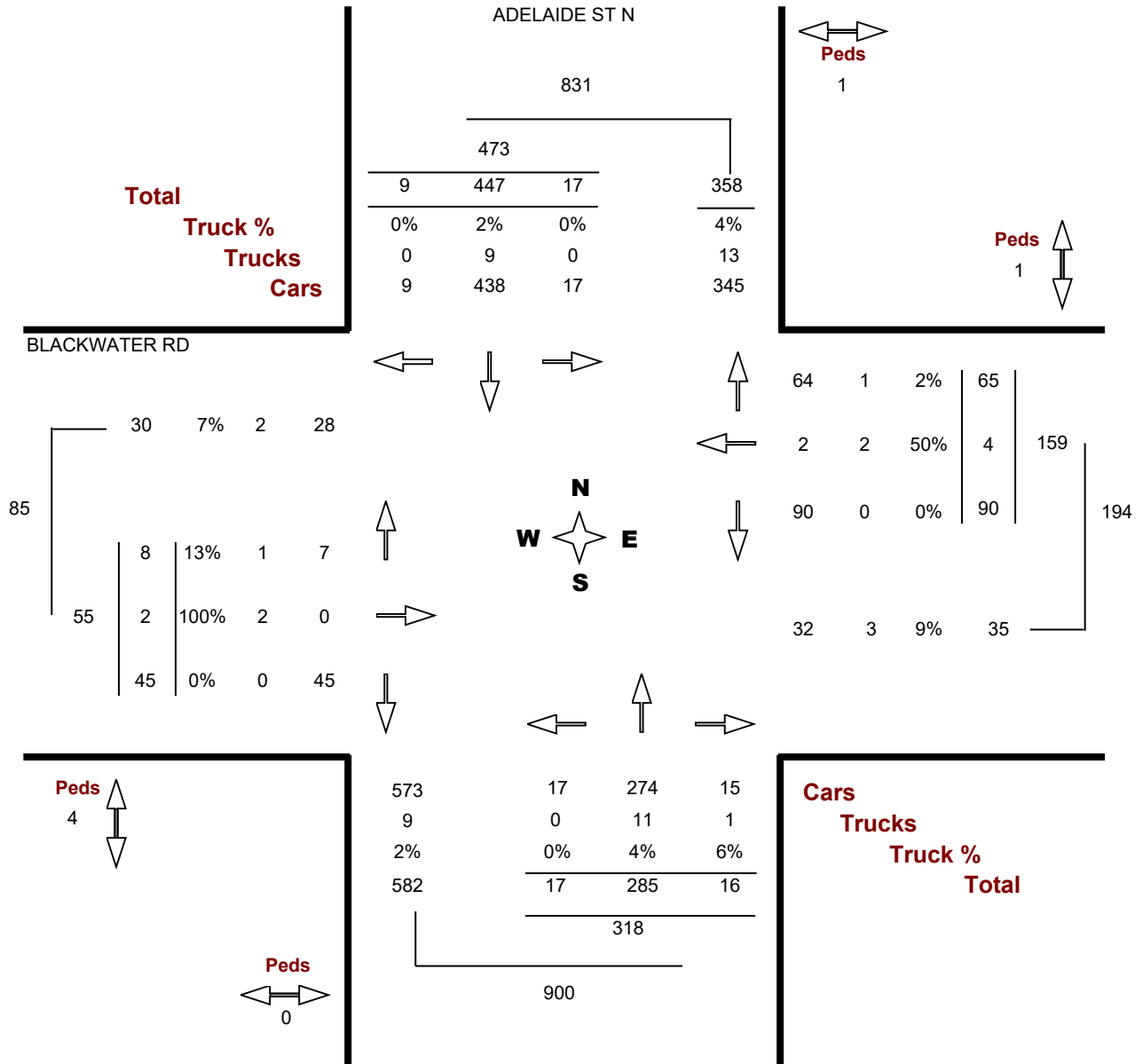
Location..... ADELAIDE ST N @ BLACKWATER RD

Municipality..... LONDON

GeoID..... INT102

Count Date..... Thursday, 01 October, 2015

Peak Hour..... 07:45 AM — 08:45 AM





Turning Movements Report - MD Period

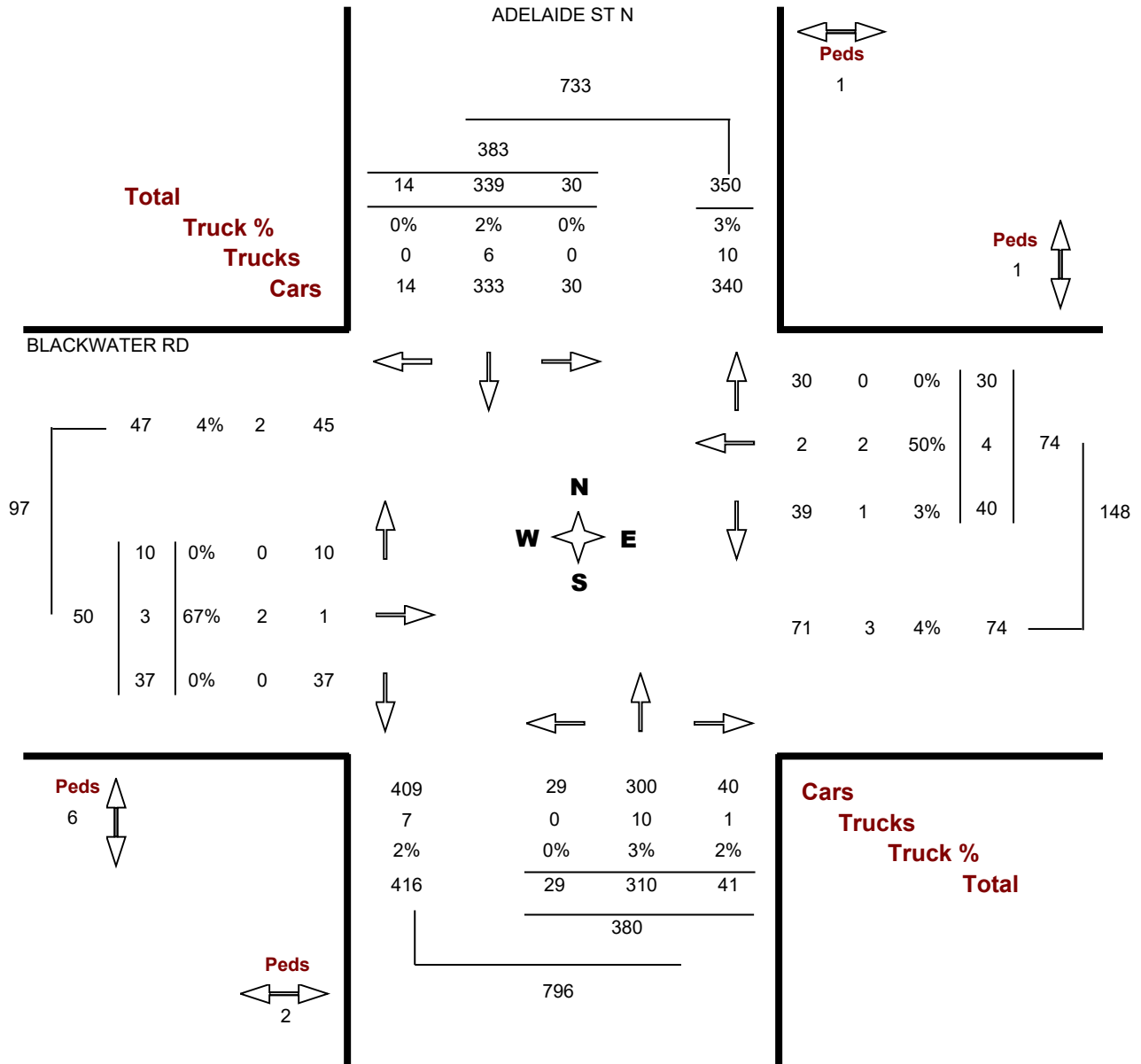
Location..... ADELAIDE ST N @ BLACKWATER RD

Municipality..... LONDON

GeoID..... INT102

Count Date..... Thursday, 01 October, 2015

Peak Hour..... 11:30 AM — 12:30 PM





Turning Movements Report - PM Period

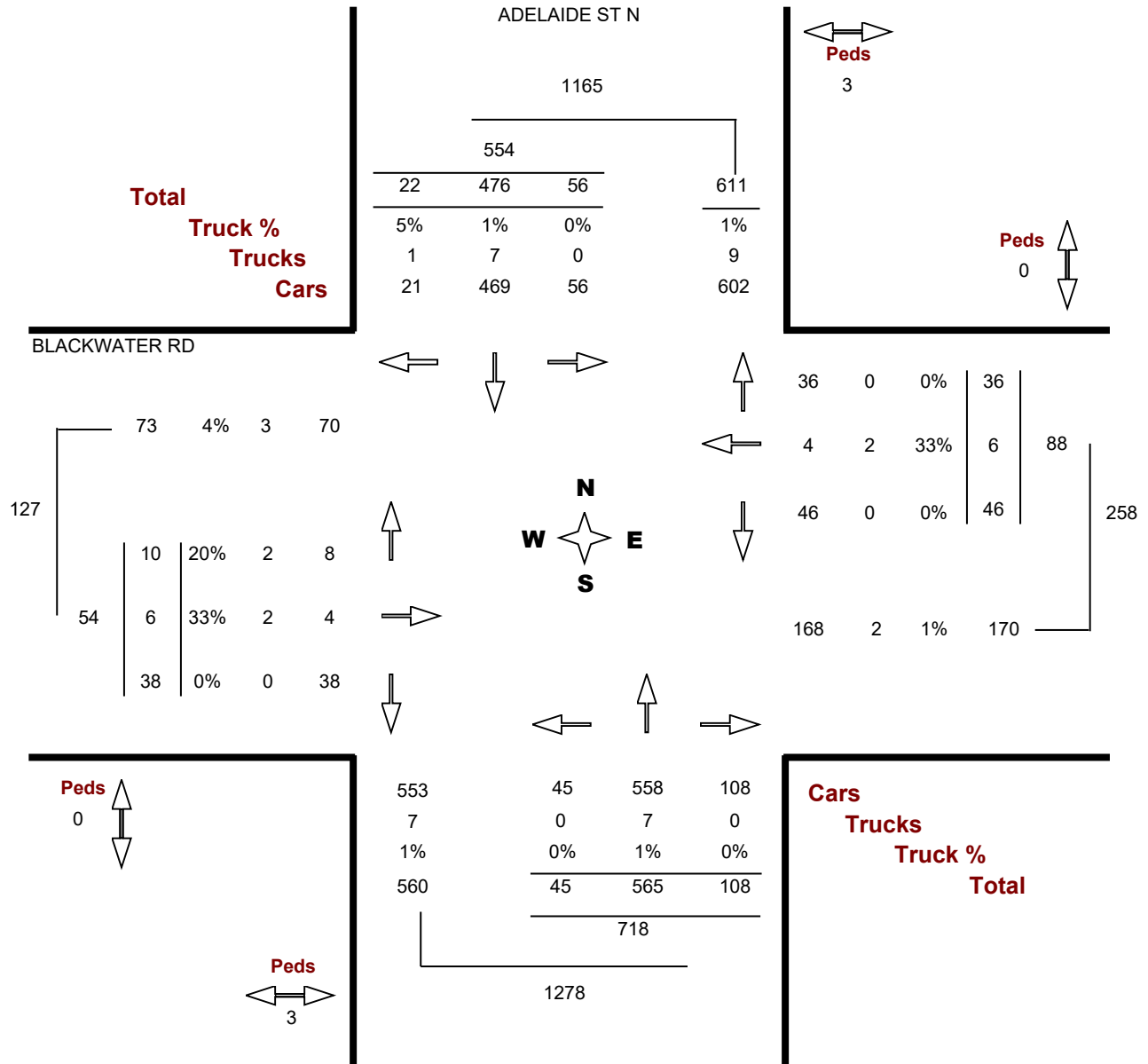
Location..... ADELAIDE ST N @ BLACKWATER RD

Municipality..... LONDON

GeoID..... INT102

Count Date..... Thursday, 01 October, 2015

Peak Hour..... 04:45 PM — 05:45 PM





Turning Movements Report - AM Period

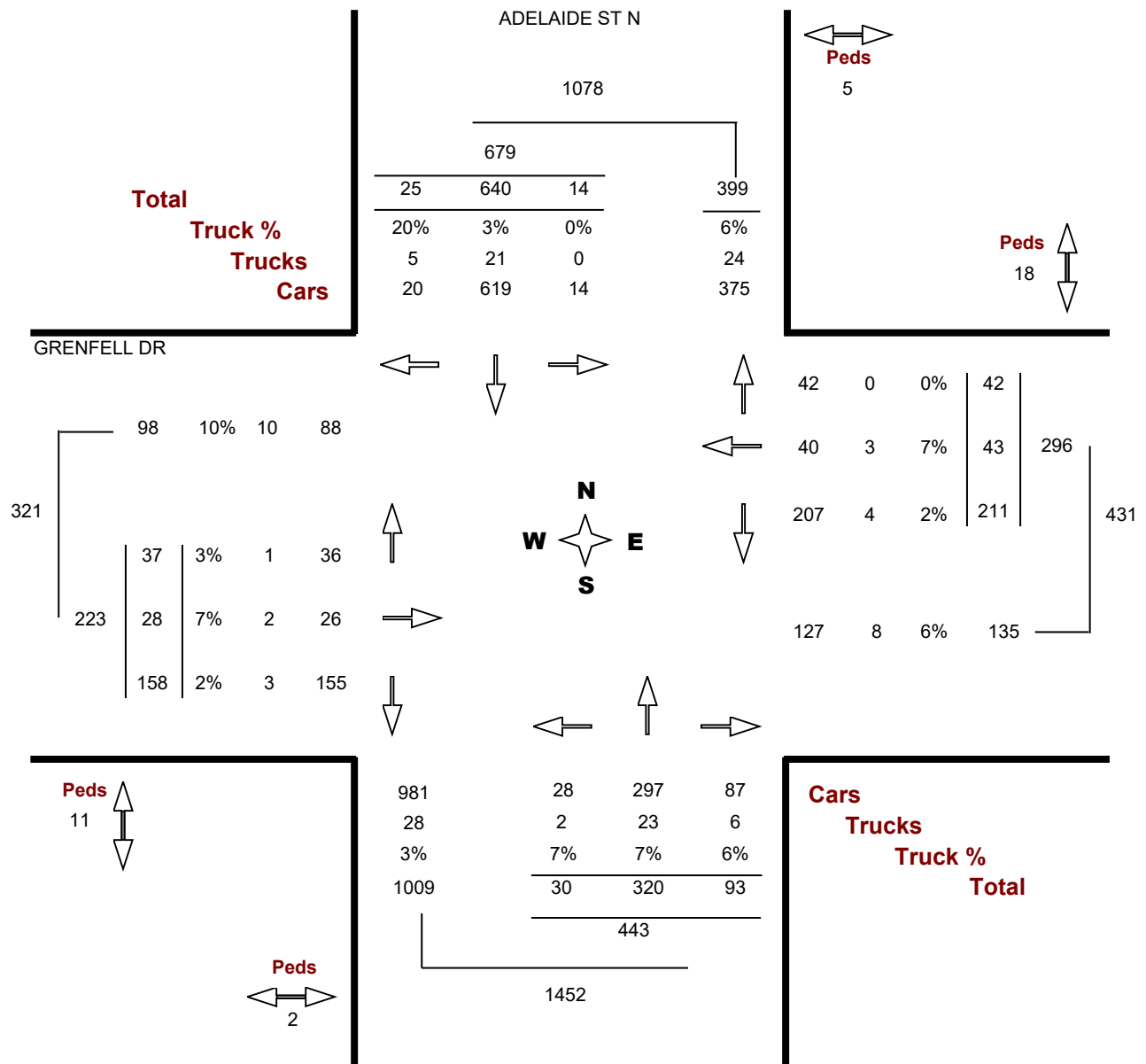
Location..... ADELAIDE ST N @ GRENFELL DR

Municipality..... LONDON

GeoID..... INT258

Count Date..... Thursday, 23 June, 2016

Peak Hour..... 07:45 AM — 08:45 AM





Turning Movements Report - MD Period

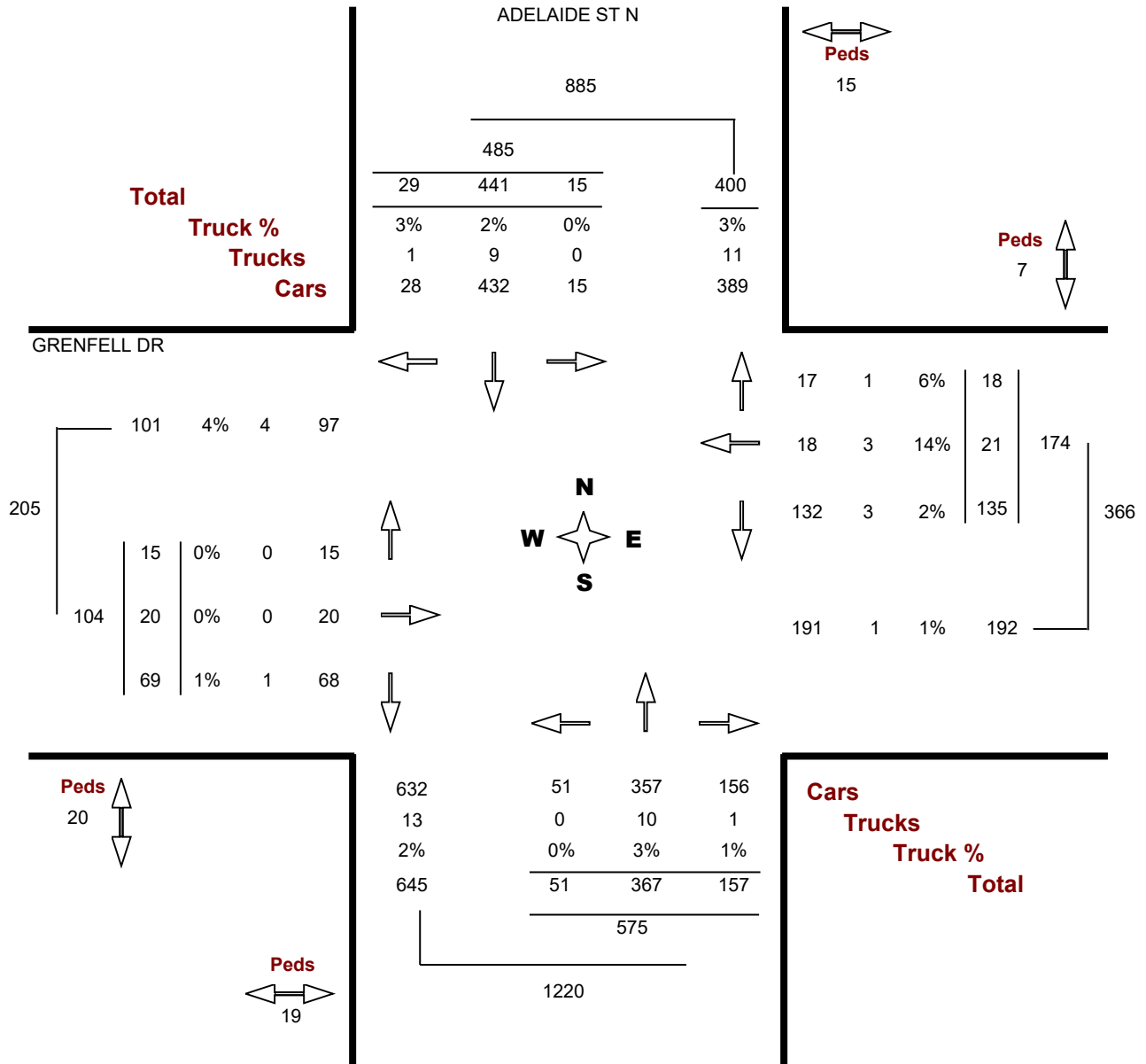
Location..... ADELAIDE ST N @ GRENFELL DR

Municipality..... LONDON

GeoID..... INT258

Count Date..... Thursday, 23 June, 2016

Peak Hour..... 11:15 AM — 12:15 PM





Turning Movements Report - PM Period

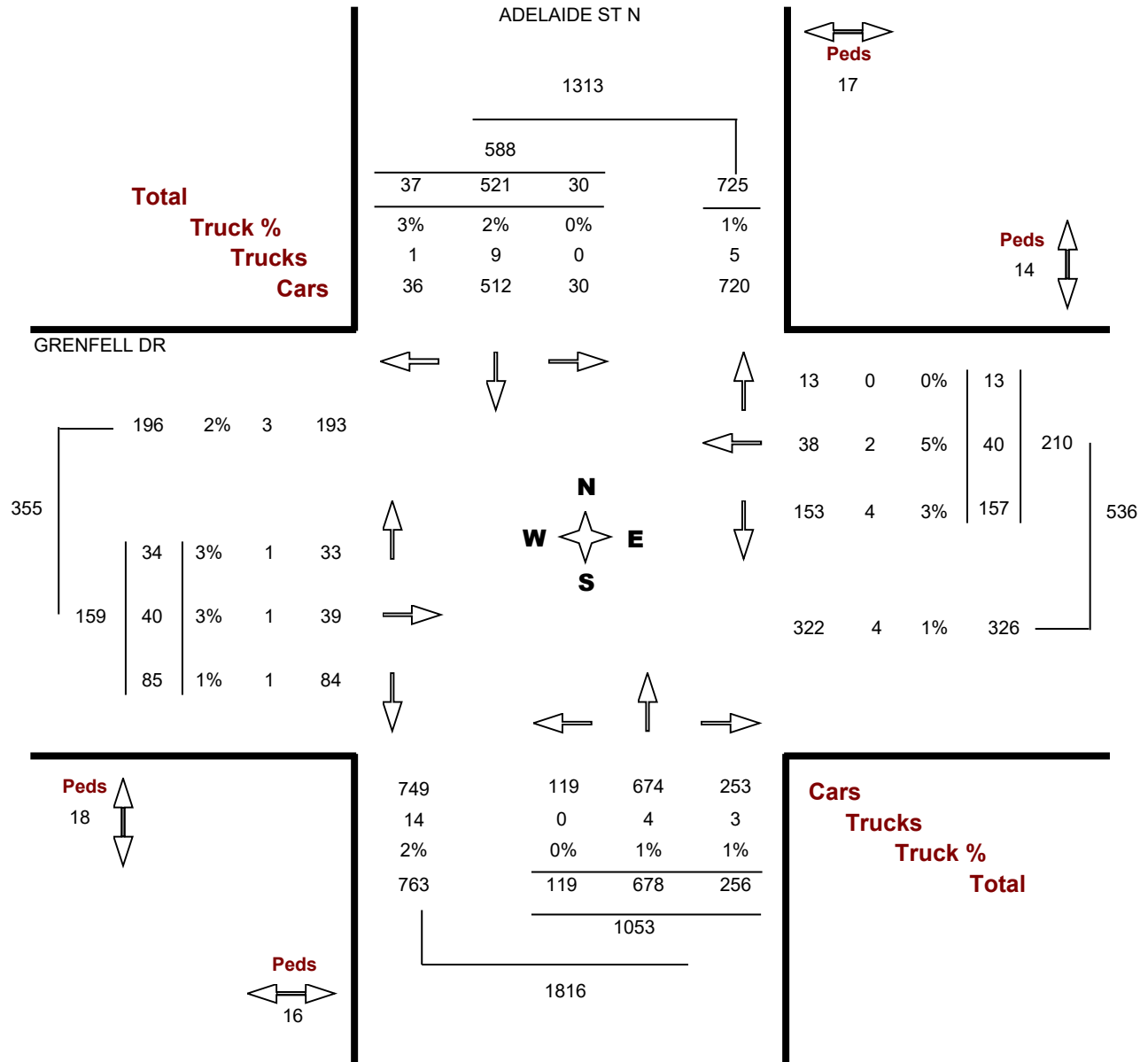
Location..... ADELAIDE ST N @ GRENFELL DR

Municipality..... LONDON

GeoID..... INT258

Count Date..... Thursday, 23 June, 2016

Peak Hour..... 04:30 PM — 05:30 PM





Turning Movements Report - AM Period

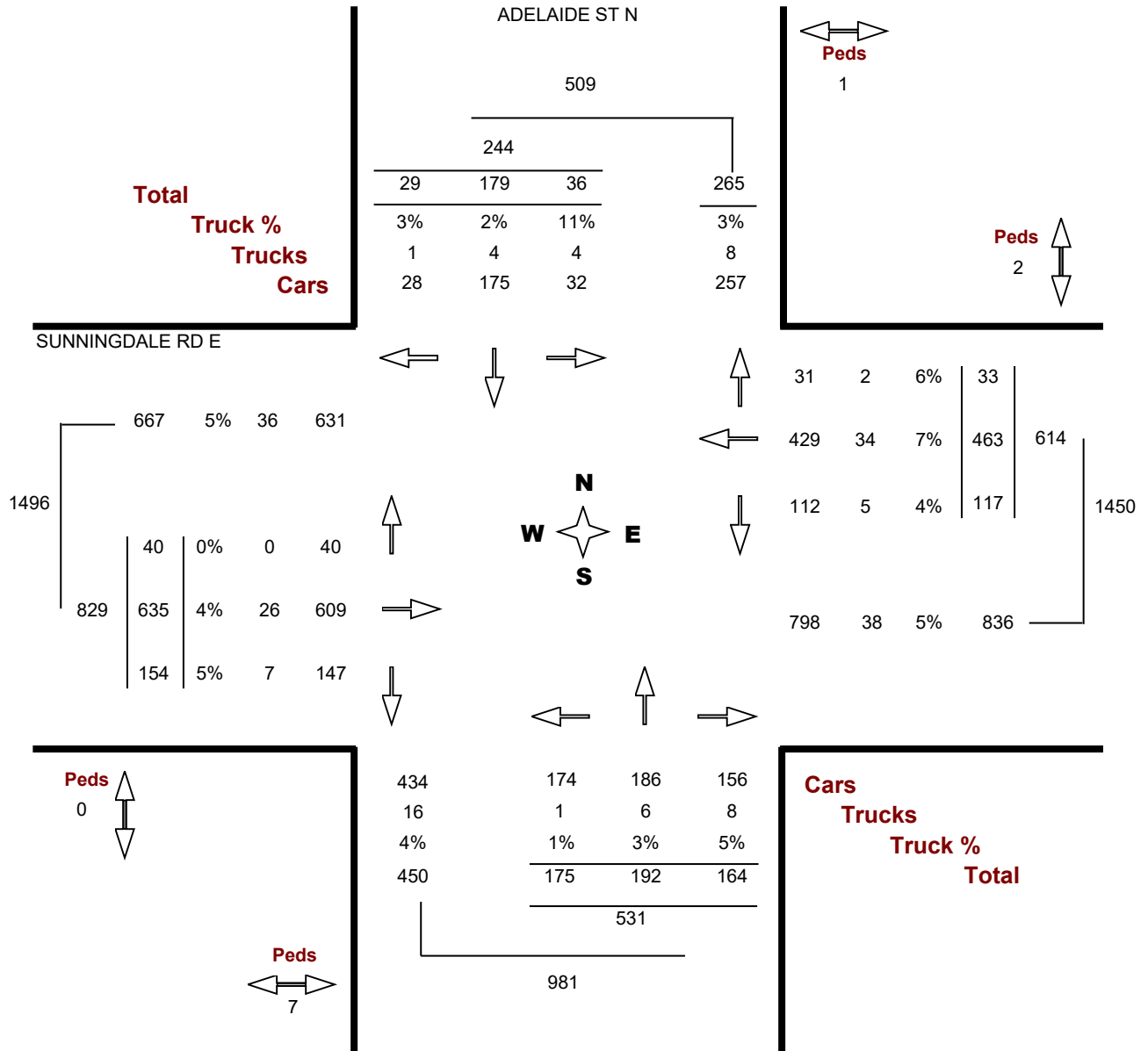
Location..... ADELAIDE ST N @ SUNNINGDALE RD E

Municipality..... LONDON

GeoID..... INT71

Count Date..... Monday, 25 September, 2017

Peak Hour..... 07:30 AM — 08:30 AM





Turning Movements Report - MD Period

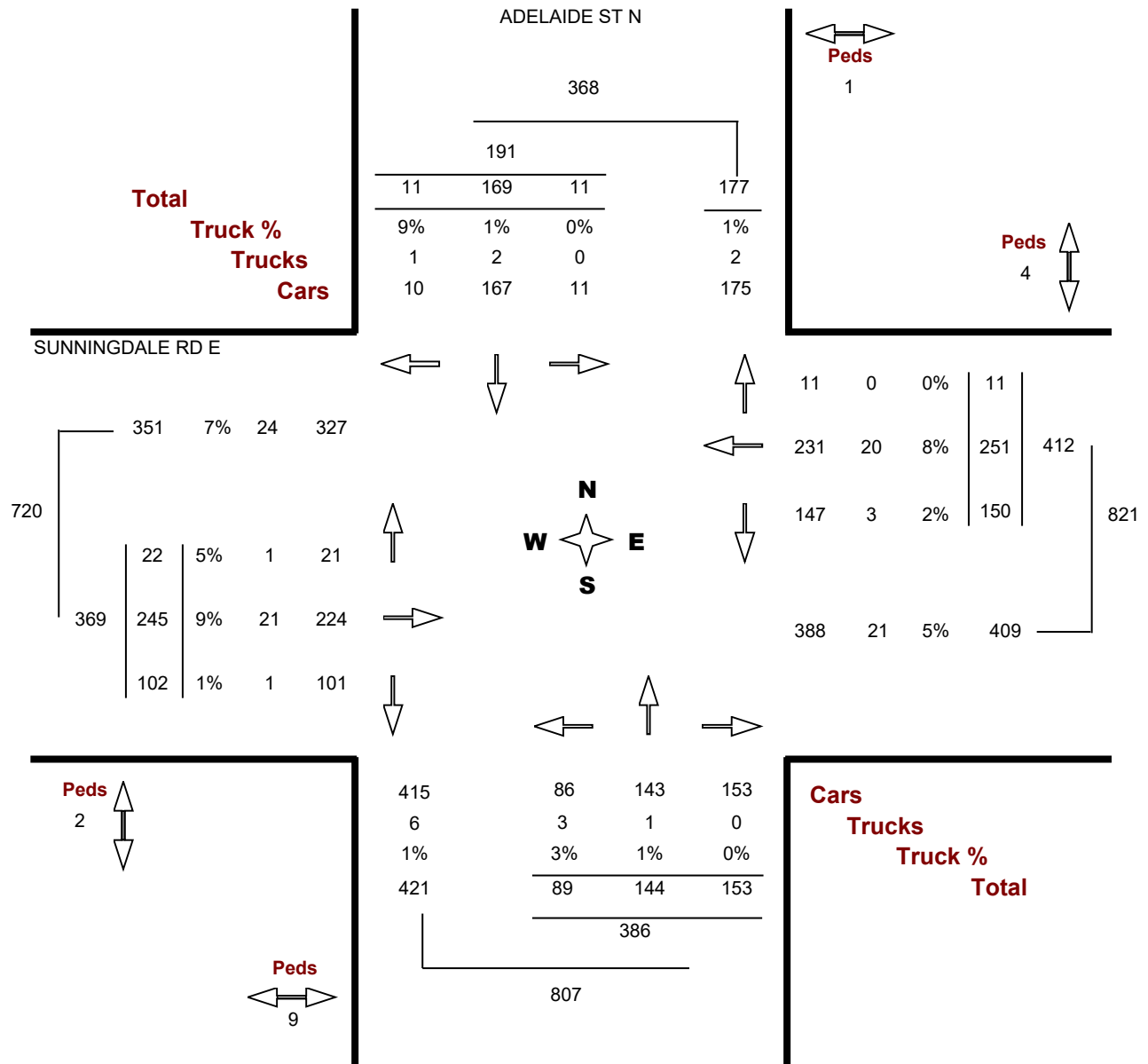
Location..... ADELAIDE ST N @ SUNNINGDALE RD E

Municipality..... LONDON

GeoID..... INT71

Count Date..... Monday, 25 September, 2017

Peak Hour..... 11:15 AM — 12:15 PM





Turning Movements Report - PM Period

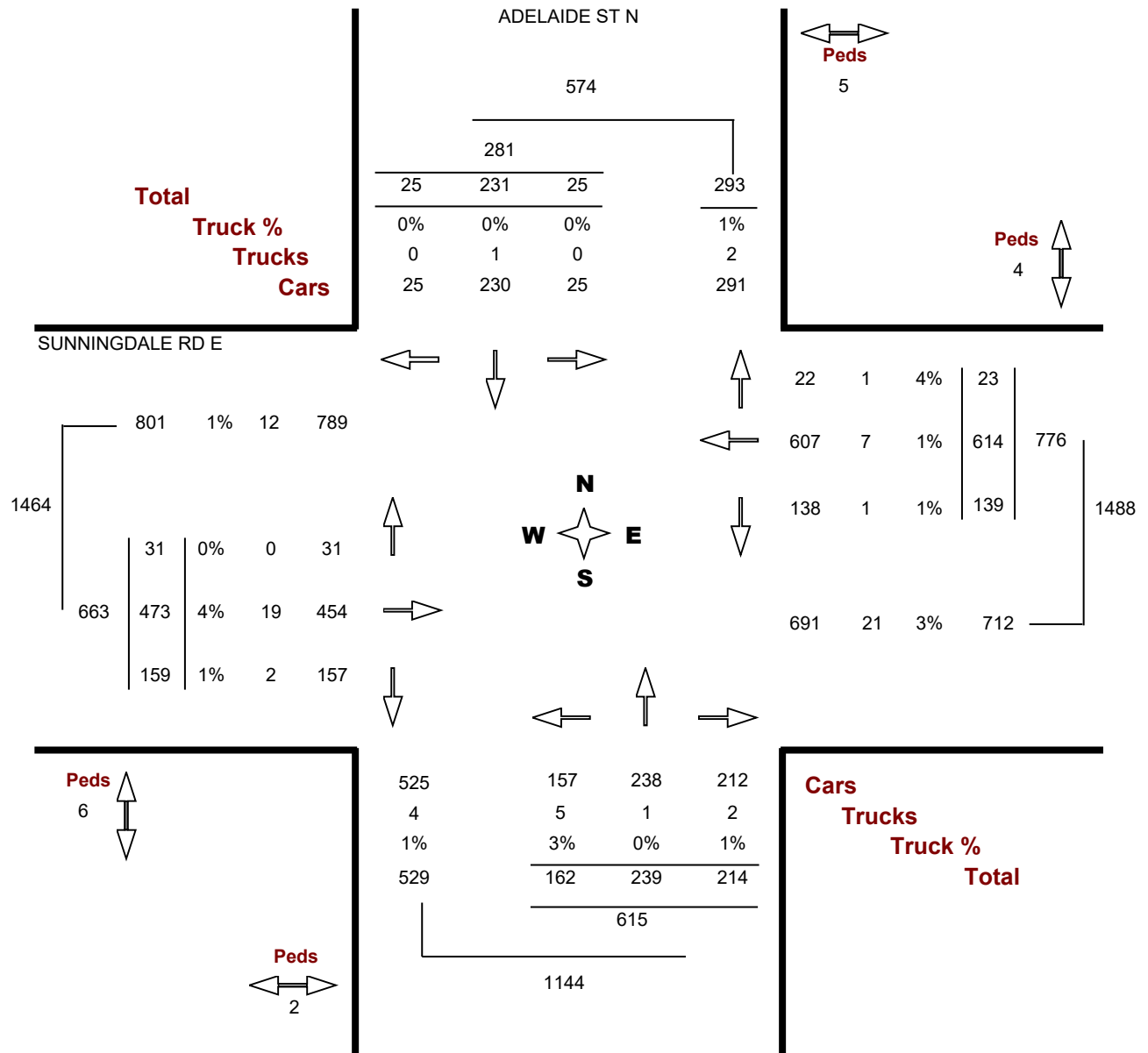
Location..... ADELAIDE ST N @ SUNNINGDALE RD E

Municipality..... LONDON

GeoID..... INT71

Count Date..... Monday, 25 September, 2017

Peak Hour..... 04:30 PM — 05:30 PM





Turning Movements Report - AM Period

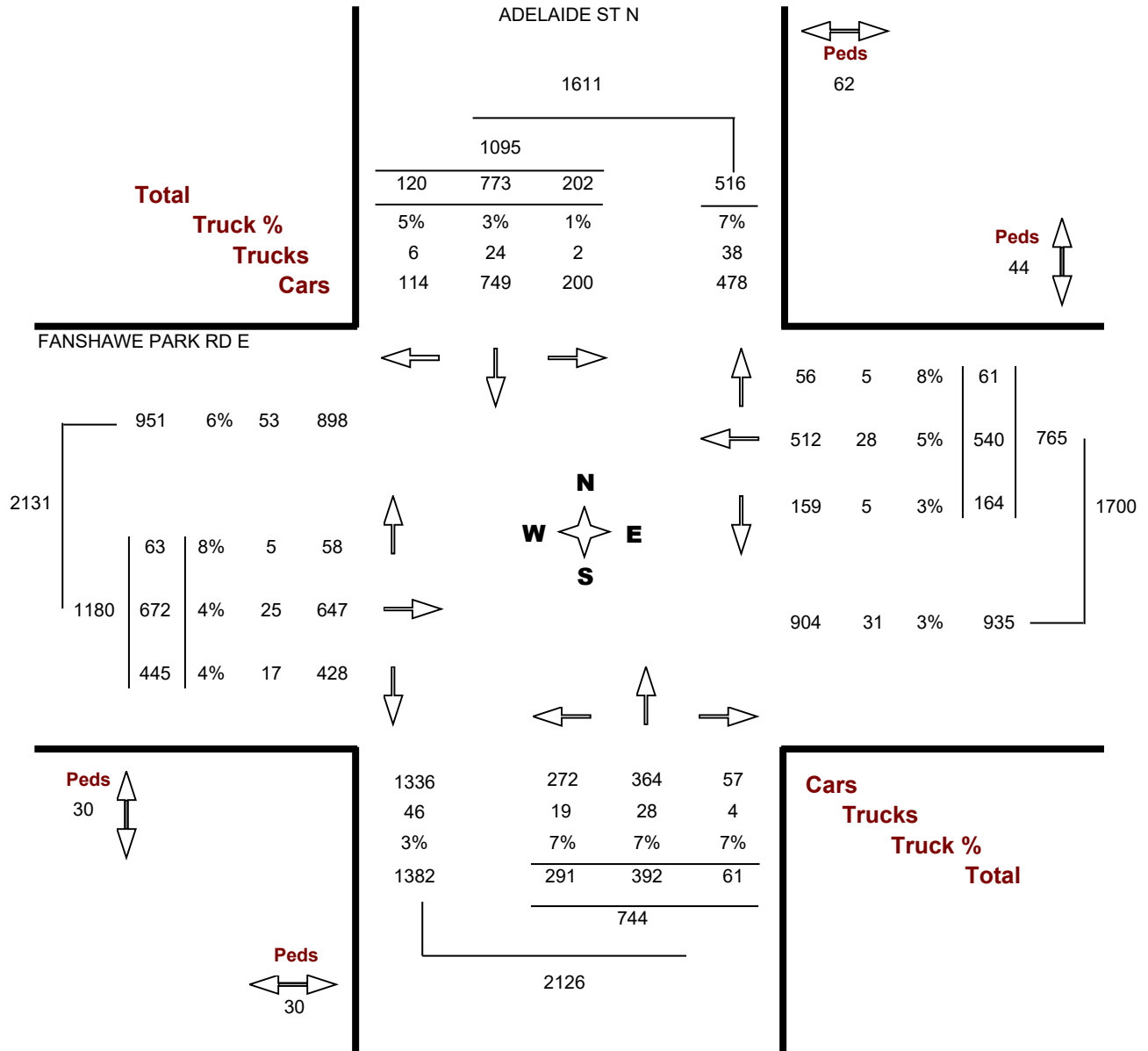
Location..... ADELAIDE ST N @ FANSHAWE PARK RD E

Municipality..... LONDON

GeoID..... INT337

Count Date..... Tuesday, 29 September, 2015

Peak Hour..... 07:45 AM — 08:45 AM





Turning Movements Report - MD Period

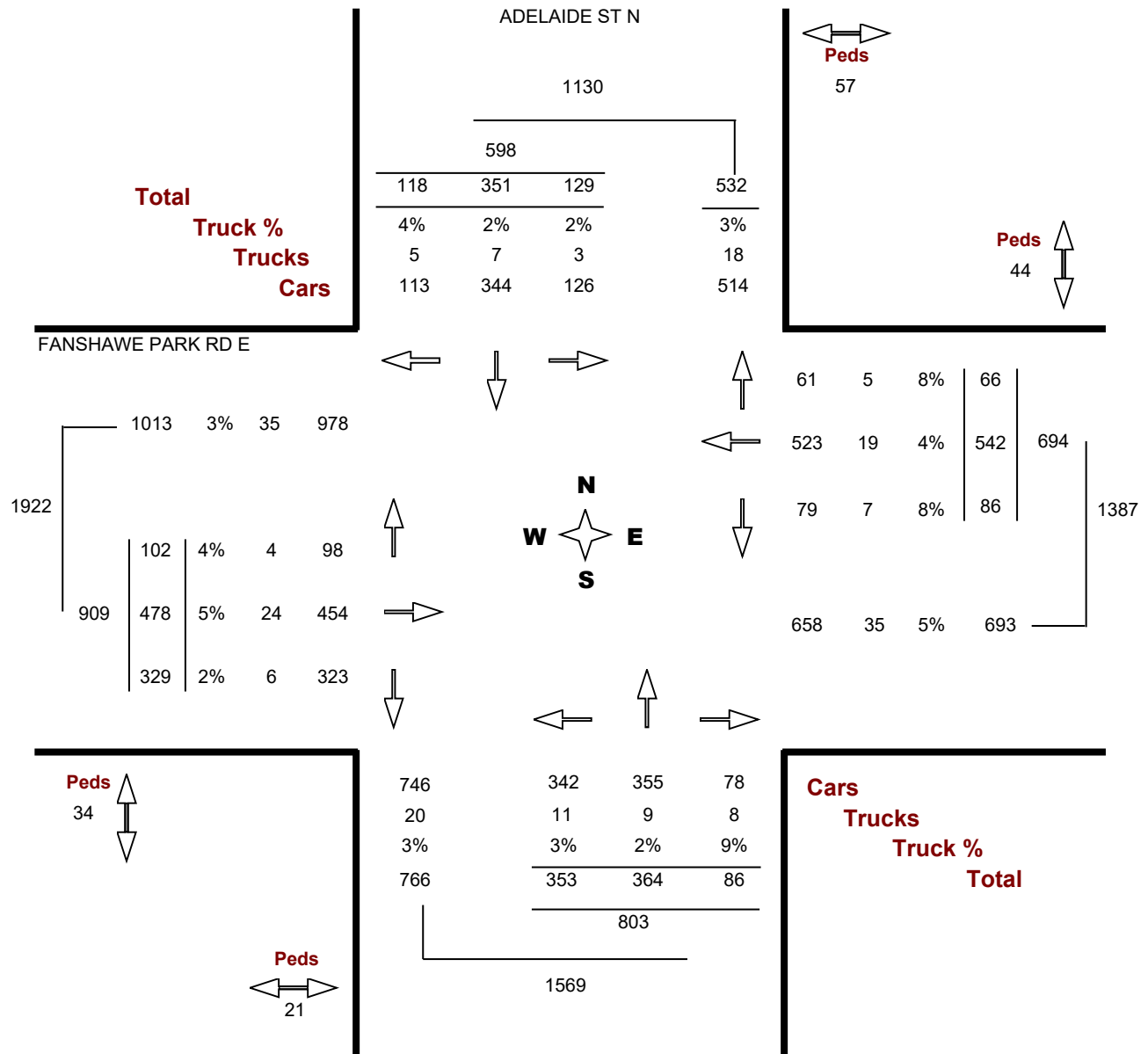
Location..... ADELAIDE ST N @ FANSHAWE PARK RD E

Municipality..... LONDON

GeoID..... INT337

Count Date..... Tuesday, 29 September, 2015

Peak Hour..... 12:00 PM — 01:00 PM





Turning Movements Report - PM Period

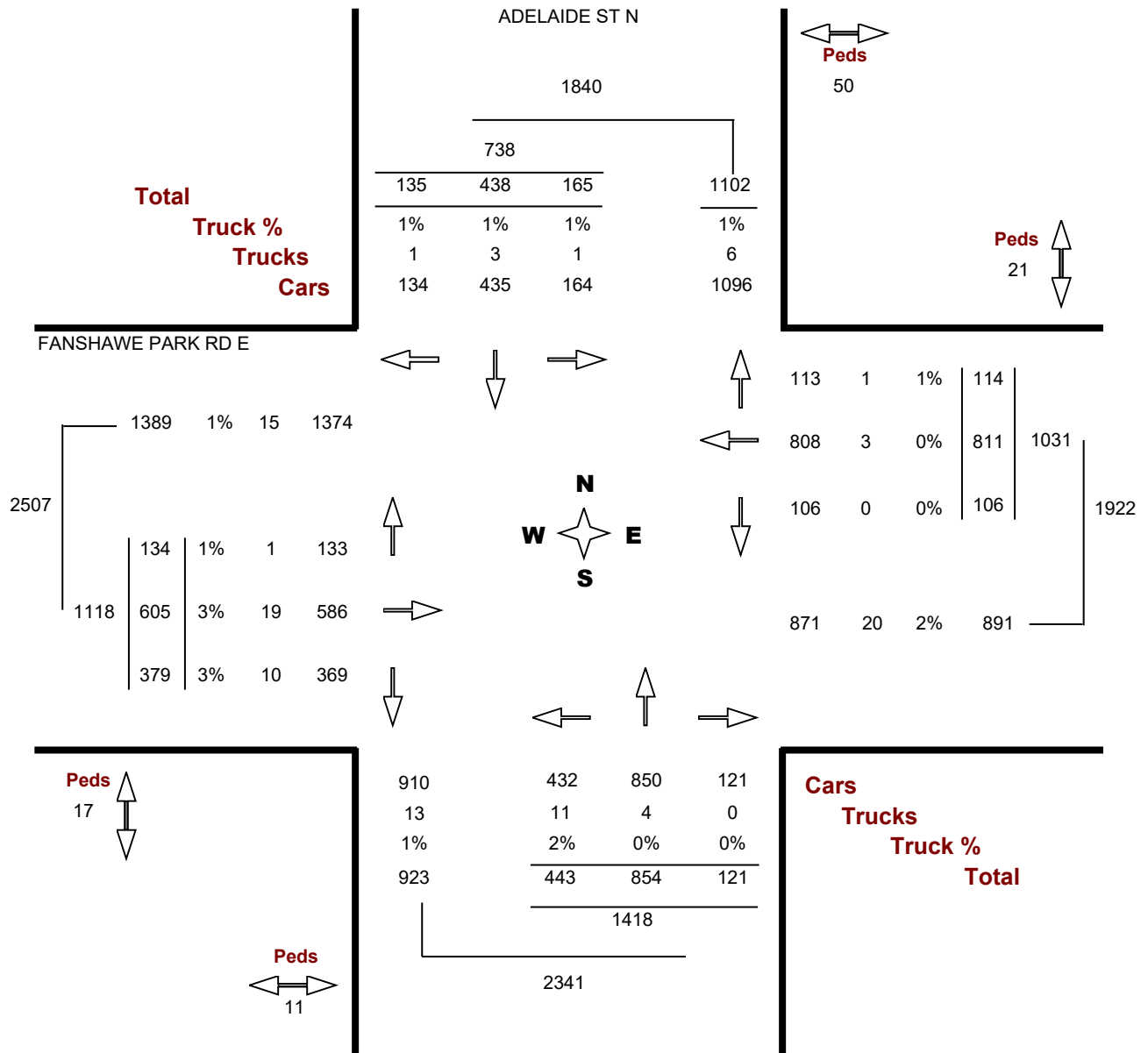
Location..... ADELAIDE ST N @ FANSHAWE PARK RD E

Municipality..... LONDON

GeoID..... INT337

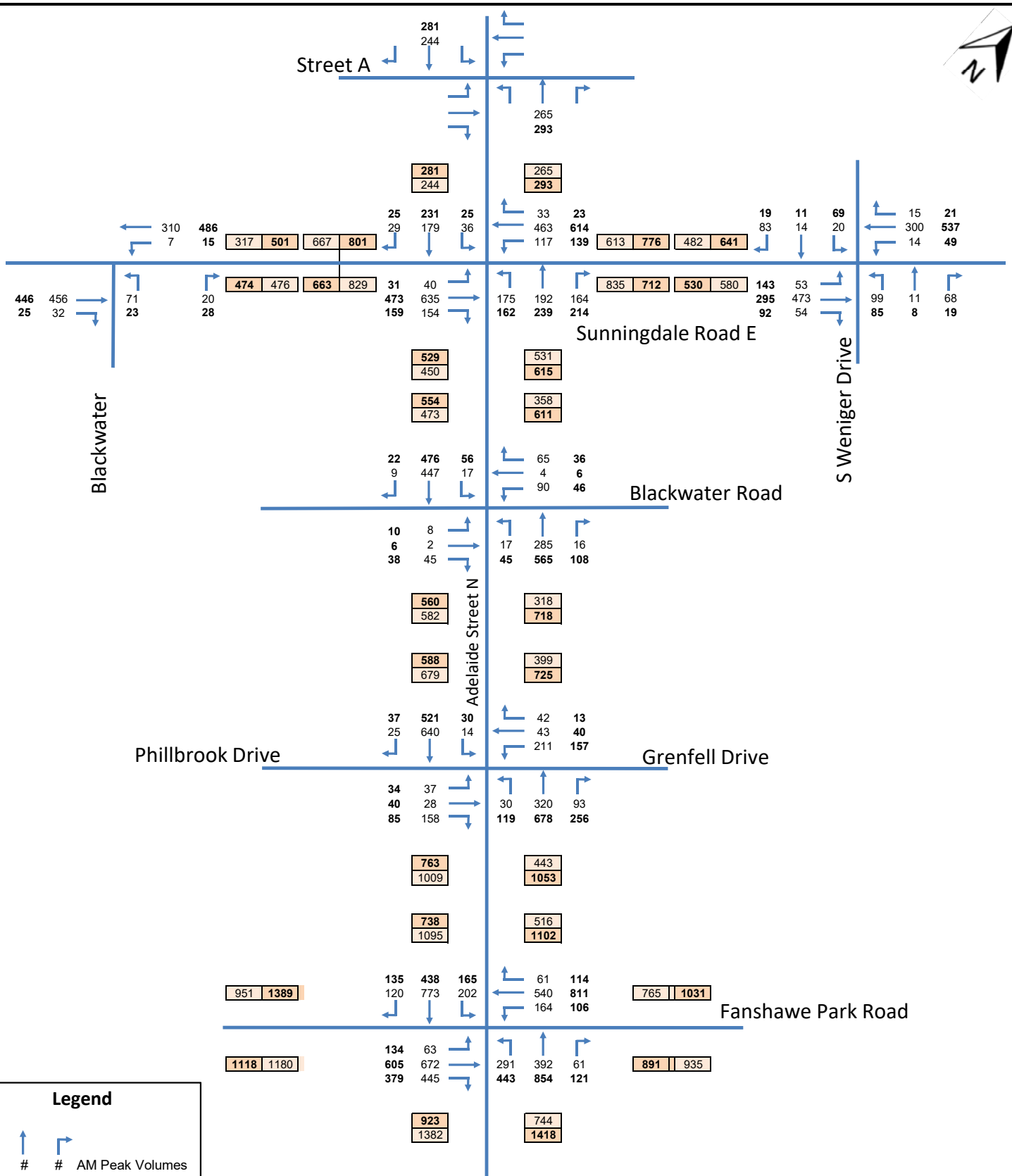
Count Date..... Tuesday, 29 September, 2015

Peak Hour..... 04:45 PM — 05:45 PM



APPENDIX B

Existing (2018) Weekday AM and PM
Traffic Volumes



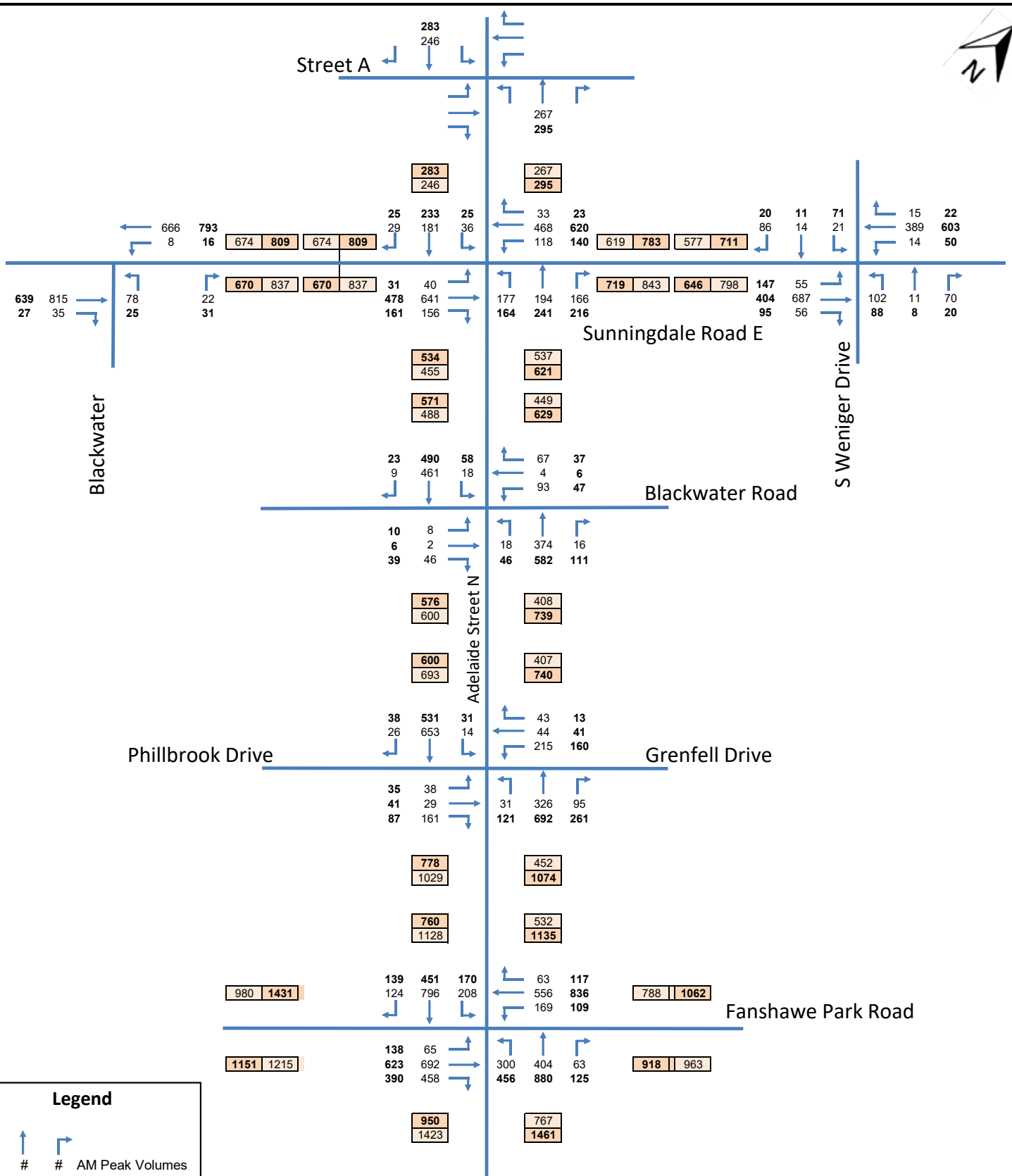
Legend

↙	↑	↘	#	#	#	AM Peak Volumes
↙	↑	↘	#	#	#	PM Peak Volumes

NOT TO SCALE

Existing (2018) Unadjusted AM & PM Traffic Volumes
Adelaide Street EA Study





Legend

AM Peak Volumes
 # PM Peak Volumes
 # AM Peak Volumes
 # PM Peak Volumes

NOT TO SCALE

Existing (2018) Adjusted AM & PM Traffic Volumes
Adelaide Street EA Study

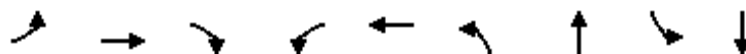


APPENDIX C

Existing (2018) Weekday AM and PM Traffic Analysis
Synchro Output sheets

Adelaide Street North EA
7: South Wenige Drive & Sunningdale Road E

Existing 2018 Traffic Analysis
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	747	61	15	439	111	88	23	108
v/c Ratio	0.14	0.77	0.07	0.07	0.46	0.32	0.18	0.06	0.20
Control Delay	9.5	20.2	2.7	9.4	12.2	23.6	7.7	19.5	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.5	20.2	2.7	9.4	12.2	23.6	7.7	19.5	7.2
Queue Length 50th (m)	3.8	75.8	0.0	0.9	34.2	12.0	1.2	2.3	1.5
Queue Length 95th (m)	9.5	120.9	4.7	3.7	54.7	24.8	10.5	7.2	11.7
Internal Link Dist (m)		644.3			305.2		276.5		132.8
Turn Bay Length (m)	120.0		120.0	90.0		30.0		30.0	
Base Capacity (vph)	444	970	876	202	960	347	478	392	546
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.77	0.07	0.07	0.46	0.32	0.18	0.06	0.20

Intersection Summary

Adelaide Street North EA
7: South Wenige Drive & Sunningdale Road E

Existing 2018 Traffic Analysis
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	687	56	14	389	15	102	11	70	21	14	86
Future Volume (vph)	55	687	56	14	389	15	102	11	70	21	14	86
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	1795	1570	1706	1774		1644	1455		1825	1645	
Flt Permitted	0.44	1.00	1.00	0.21	1.00		0.69	1.00		0.70	1.00	
Satd. Flow (perm)	822	1795	1570	375	1774		1190	1455		1345	1645	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	747	61	15	423	16	111	12	76	23	15	93
RTOR Reduction (vph)	0	0	28	0	2	0	0	54	0	0	66	0
Lane Group Flow (vph)	60	747	33	15	437	0	111	34	0	23	42	0
Heavy Vehicles (%)	4%	7%	4%	7%	7%	27%	11%	27%	13%	0%	0%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	40.0	40.0	40.0	40.0	40.0		21.6	21.6		21.6	21.6	
Effective Green, g (s)	40.0	40.0	40.0	40.0	40.0		21.6	21.6		21.6	21.6	
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.54		0.29	0.29		0.29	0.29	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	444	970	848	202	958		347	424		392	480	
v/s Ratio Prot		c0.42			0.25			0.02			0.03	
v/s Ratio Perm	0.07		0.02	0.04			c0.09			0.02		
v/c Ratio	0.14	0.77	0.04	0.07	0.46		0.32	0.08		0.06	0.09	
Uniform Delay, d1	8.4	13.4	8.0	8.1	10.4		20.5	19.0		18.9	19.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	5.9	0.1	0.7	1.6		2.4	0.4		0.3	0.4	
Delay (s)	9.1	19.3	8.1	8.9	11.9		22.9	19.4		19.2	19.4	
Level of Service	A	B	A	A	B		C	B		B	B	
Approach Delay (s)		17.8			11.8			21.3			19.4	
Approach LOS		B			B			C			B	

Intersection Summary

HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	74.0	Sum of lost time (s)	12.4
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Adelaide Street North EA
 8: Adelaide Street N & Sunningdale Road E

Existing 2018 Traffic Analysis
 AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	43	867	128	545	192	211	180	39	229
v/c Ratio	0.10	0.97	0.73	0.52	0.70	0.41	0.32	0.15	0.45
Control Delay	13.6	48.9	36.4	13.5	46.8	31.4	6.0	28.2	31.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.6	48.9	36.4	13.5	46.8	31.4	6.0	28.2	31.0
Queue Length 50th (m)	4.0	144.9	8.8	53.7	31.7	31.8	0.0	5.5	33.7
Queue Length 95th (m)	9.8	#230.0	#33.8	79.5	#62.8	52.0	14.9	13.6	55.1
Internal Link Dist (m)		393.8		644.3		302.9			213.8
Turn Bay Length (m)	110.0		70.0		150.0		130.0	75.0	
Base Capacity (vph)	433	906	176	1065	274	509	555	263	508
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.96	0.73	0.51	0.70	0.41	0.32	0.15	0.45

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA
8: Adelaide Street N & Sunningdale Road E

Existing 2018 Traffic Analysis
AM Peak Hour

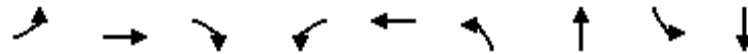


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	641	156	118	468	33	177	194	166	36	181	29
Future Volume (vph)	40	641	156	118	468	33	177	194	166	36	181	29
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.8	6.8		4.0	6.8		6.3	6.3	6.3	6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1825	1790		1755	1779		1807	1865	1555	1644	1841	
Flt Permitted	0.45	1.00		0.08	1.00		0.53	1.00	1.00	0.56	1.00	
Satd. Flow (perm)	865	1790		147	1779		1004	1865	1555	966	1841	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	697	170	128	509	36	192	211	180	39	197	32
RTOR Reduction (vph)	0	9	0	0	3	0	0	0	131	0	6	0
Lane Group Flow (vph)	43	858	0	128	542	0	192	211	49	39	223	0
Heavy Vehicles (%)	0%	4%	5%	4%	7%	6%	1%	3%	5%	11%	2%	3%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8		7	4			2				6
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	46.3	46.3		55.3	55.3		25.7	25.7	25.7	25.7	25.7	
Effective Green, g (s)	46.3	46.3		55.3	55.3		25.7	25.7	25.7	25.7	25.7	
Actuated g/C Ratio	0.49	0.49		0.59	0.59		0.27	0.27	0.27	0.27	0.27	
Clearance Time (s)	6.8	6.8		4.0	6.8		6.3	6.3	6.3	6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	425	880		171	1045		274	509	424	263	502	
v/s Ratio Prot		c0.48		c0.04	0.30			0.11			0.12	
v/s Ratio Perm	0.05			0.40			c0.19		0.03	0.04		
v/c Ratio	0.10	0.97		0.75	0.52		0.70	0.41	0.12	0.15	0.44	
Uniform Delay, d1	12.8	23.3		19.5	11.5		30.7	28.0	25.7	25.9	28.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	24.1		16.3	0.4		13.9	2.5	0.6	1.2	2.8	
Delay (s)	12.9	47.4		35.8	11.9		44.7	30.5	26.2	27.1	31.1	
Level of Service	B	D		D	B		D	C	C	C	C	
Approach Delay (s)		45.8			16.5			33.9			30.5	
Approach LOS		D			B			C			C	

Intersection Summary		
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.87	C
Actuated Cycle Length (s)	94.1	Sum of lost time (s)
Intersection Capacity Utilization	90.3%	17.1
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		E

Adelaide Street North EA
 13: Adelaide Street N & Fanshawe Park Road

Existing 2018 Traffic Analysis
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	71	752	498	184	672	326	507	226	1000
v/c Ratio	0.31	0.83	0.61	0.86	0.67	0.87	0.40	0.48	0.96
Control Delay	25.3	48.1	20.4	61.2	38.0	51.2	25.7	18.3	58.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	48.1	20.4	61.2	38.0	51.2	25.7	18.3	58.1
Queue Length 50th (m)	9.5	80.7	62.9	26.4	67.4	51.4	40.4	24.6	109.7
Queue Length 95th (m)	18.9	#105.4	96.4	#60.1	87.8	#99.0	54.9	38.4	#152.5
Internal Link Dist (m)		353.7			309.9		228.2		200.6
Turn Bay Length (m)	90.0		110.0	60.0		190.0		95.0	
Base Capacity (vph)	230	901	826	213	1010	381	1256	480	1039
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.83	0.60	0.86	0.67	0.86	0.40	0.47	0.96

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA
13: Adelaide Street N & Fanshawe Park Road

Existing 2018 Traffic Analysis
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	692	458	169	556	63	300	404	63	208	796	124
Future Volume (vph)	65	692	458	169	556	63	300	404	63	208	796	124
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.9	4.0	4.0	6.9		4.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1690	3510	1570	1772	3414		1706	3343		1807	3463	
Flt Permitted	0.27	1.00	1.00	0.15	1.00		0.11	1.00		0.47	1.00	
Satd. Flow (perm)	485	3510	1570	274	3414		197	3343		885	3463	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	752	498	184	604	68	326	439	68	226	865	135
RTOR Reduction (vph)	0	0	42	0	8	0	0	11	0	0	11	0
Lane Group Flow (vph)	71	752	456	184	664	0	326	496	0	226	989	0
Heavy Vehicles (%)	8%	4%	4%	3%	5%	8%	7%	7%	7%	1%	3%	5%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	33.7	28.9	48.3	40.1	32.1		55.9	40.7		43.7	32.5	
Effective Green, g (s)	33.7	28.9	48.3	40.1	32.1		55.9	40.7		43.7	32.5	
Actuated g/C Ratio	0.31	0.26	0.44	0.36	0.29		0.51	0.37		0.40	0.29	
Clearance Time (s)	4.0	6.9	4.0	4.0	6.9		4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	200	920	688	208	994		365	1234		444	1021	
v/s Ratio Prot	0.02	0.21	0.12	c0.06	0.19		c0.16	0.15		0.05	c0.29	
v/s Ratio Perm	0.09		0.17	c0.26			0.30			0.15		
v/c Ratio	0.35	0.82	0.66	0.88	0.67		0.89	0.40		0.51	0.97	
Uniform Delay, d1	28.1	38.2	24.5	27.4	34.4		30.9	25.7		22.9	38.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	8.0	2.4	32.8	3.6		23.0	0.2		0.9	20.6	
Delay (s)	29.2	46.2	26.9	60.3	37.9		53.9	25.9		23.9	59.0	
Level of Service	C	D	C	E	D		D	C		C	E	
Approach Delay (s)		38.0			42.7			36.9			52.5	
Approach LOS		D			D			D			D	

Intersection Summary

HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.2	Sum of lost time (s)	21.4
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Adelaide Street North EA
 16: Adelaide Street N & Phillbrook Drive/Grenfell Drive

Existing 2018 Traffic Analysis
 AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	41	207	234	95	34	354	103	15	738
v/c Ratio	0.11	0.37	0.67	0.18	0.21	0.40	0.13	0.03	0.81
Control Delay	13.8	8.9	26.9	8.6	15.0	12.5	3.4	10.4	24.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.8	8.9	26.9	8.6	15.0	12.5	3.4	10.4	24.4
Queue Length 50th (m)	3.0	6.9	20.3	3.5	1.8	21.1	0.0	0.7	58.4
Queue Length 95th (m)	8.1	18.8	38.9	11.1	8.9	50.1	7.3	4.0	#150.5
Internal Link Dist (m)		249.6		201.4		129.7			673.9
Turn Bay Length (m)	70.0		65.0		60.0		50.0	65.0	
Base Capacity (vph)	605	822	552	827	165	880	808	492	906
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.25	0.42	0.11	0.21	0.40	0.13	0.03	0.81

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA
16: Adelaide Street N & Phillbrook Drive/Grenfell Drive

Existing 2018 Traffic Analysis
AM Peak Hour



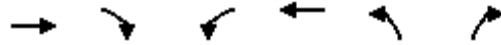
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	29	161	215	44	43	31	326	95	14	653	26
Future Volume (vph)	38	29	161	215	44	43	31	326	95	14	653	26
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		5.6	5.6	5.6	5.6	5.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.87		1.00	0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1772	1632		1789	1718		1706	1795	1541	1825	1843	
Flt Permitted	0.70	1.00		0.63	1.00		0.19	1.00	1.00	0.52	1.00	
Satd. Flow (perm)	1297	1632		1183	1718		336	1795	1541	1002	1843	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	41	32	175	234	48	47	34	354	103	15	710	28
RTOR Reduction (vph)	0	80	0	0	33	0	0	0	52	0	2	0
Lane Group Flow (vph)	41	127	0	234	62	0	34	354	51	15	736	0
Heavy Vehicles (%)	3%	7%	2%	2%	7%	0%	7%	7%	6%	0%	3%	20%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2				2
Permitted Phases	4			4			2		2	2		
Actuated Green, G (s)	16.6	16.6		16.6	16.6		27.6	27.6	27.6	27.6	27.6	
Effective Green, g (s)	16.6	16.6		16.6	16.6		27.6	27.6	27.6	27.6	27.6	
Actuated g/C Ratio	0.30	0.30		0.30	0.30		0.49	0.49	0.49	0.49	0.49	
Clearance Time (s)	6.3	6.3		6.3	6.3		5.6	5.6	5.6	5.6	5.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	383	482		350	508		165	883	758	492	906	
v/s Ratio Prot		0.08			0.04			0.20			c0.40	
v/s Ratio Perm	0.03			c0.20			0.10		0.03	0.01		
v/c Ratio	0.11	0.26		0.67	0.12		0.21	0.40	0.07	0.03	0.81	
Uniform Delay, d1	14.4	15.1		17.3	14.4		8.1	9.0	7.5	7.3	12.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.3		4.8	0.1		2.8	1.4	0.2	0.1	7.9	
Delay (s)	14.5	15.4		22.1	14.5		10.9	10.4	7.7	7.5	19.9	
Level of Service	B	B		C	B		B	B	A	A	B	
Approach Delay (s)		15.2			19.9			9.8			19.7	
Approach LOS		B			B			A			B	

Intersection Summary

HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	11.9
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Adelaide Street North EA
3: Blackwater Road & Sunningdale Road E























Existing 2018 Traffic Analysis
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	
Traffic Volume (veh/h)	815	35	8	666	78	22
Future Volume (Veh/h)	815	35	8	666	78	22
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	886	38	9	724	85	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			924		1647	905
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			924		1647	905
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		21	93
cM capacity (veh/h)			739		108	335
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	924	9	724	109		
Volume Left	0	9	0	85		
Volume Right	38	0	0	24		
cSH	1700	739	1700	127		
Volume to Capacity	0.54	0.01	0.43	0.86		
Queue Length 95th (m)	0.0	0.3	0.0	40.9		
Control Delay (s)	0.0	9.9	0.0	111.4		
Lane LOS	A		F			
Approach Delay (s)	0.0	0.1	111.4			
Approach LOS			F			
Intersection Summary						
Average Delay			6.9			
Intersection Capacity Utilization			57.3%	ICU Level of Service	B	
Analysis Period (min)			15			

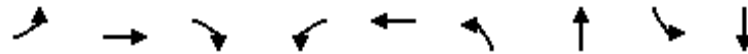
Adelaide Street North EA
9: Adelaide Street N & Blackwater Road

Existing 2018 Traffic Analysis
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	2	46	93	4	67	18	374	16	18	461	9
Future Volume (Veh/h)	8	2	46	93	4	67	18	374	16	18	461	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	2	50	101	4	73	20	407	17	20	501	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume												
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol												
tC, single (s)												
tC, 2 stage (s)												
tF (s)												
p0 queue free %												
cM capacity (veh/h)												
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3		
Volume Total	9	52	101	77	20	407	17	20	501	10		
Volume Left	9	0	101	0	20	0	0	20	0	0		
Volume Right	0	50	0	73	0	0	17	0	0	10		
cSH	160	528	183	574	1058	1700	1700	1146	1700	1700		
Volume to Capacity	0.06	0.10	0.55	0.13	0.02	0.24	0.01	0.02	0.29	0.01		
Queue Length 95th (m)	1.3	2.5	21.9	3.5	0.4	0.0	0.0	0.4	0.0	0.0		
Control Delay (s)	28.8	12.6	46.5	12.2	8.5	0.0	0.0	8.2	0.0	0.0		
Lane LOS	D	B	E	B	A			A				
Approach Delay (s)	14.9		31.7		0.4			0.3				
Approach LOS	B		D									
Intersection Summary												
Average Delay												
Intersection Capacity Utilization												
Analysis Period (min)												

Adelaide Street North EA
 7: South Wenige Drive & Sunningdale Road E

Existing 2018 Traffic Analysis
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	160	439	103	54	679	96	31	77	34
v/c Ratio	0.60	0.44	0.11	0.12	0.67	0.23	0.06	0.20	0.07
Control Delay	23.8	12.0	2.3	9.3	16.3	21.8	10.9	21.4	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	12.0	2.3	9.3	16.3	21.8	10.9	21.4	11.3
Queue Length 50th (m)	14.0	34.2	0.0	3.4	62.4	10.1	0.9	8.0	1.2
Queue Length 95th (m)	#42.1	54.1	5.9	8.6	97.5	21.1	6.5	17.8	7.0
Internal Link Dist (m)		644.3			305.2		276.5		132.8
Turn Bay Length (m)	120.0		120.0	90.0		30.0		30.0	
Base Capacity (vph)	265	998	930	452	1015	412	480	393	522
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.44	0.11	0.12	0.67	0.23	0.06	0.20	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA
7: South Wenige Drive & Sunningdale Road E

Existing 2018 Traffic Analysis
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	404	95	50	603	22	88	8	20	71	11	20
Future Volume (vph)	147	404	95	50	603	22	88	8	20	71	11	20
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1807	1847	1633	1789	1875		1825	1592		1738	1735	
Flt Permitted	0.26	1.00	1.00	0.44	1.00		0.73	1.00		0.74	1.00	
Satd. Flow (perm)	491	1847	1633	838	1875		1412	1592		1348	1735	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	160	439	103	54	655	24	96	9	22	77	12	22
RTOR Reduction (vph)	0	0	47	0	2	0	0	16	0	0	16	0
Lane Group Flow (vph)	160	439	56	54	677	0	96	15	0	77	18	0
Heavy Vehicles (%)	1%	4%	0%	2%	2%	0%	0%	0%	11%	5%	0%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	40.0	40.0	40.0	40.0	40.0		21.6	21.6		21.6	21.6	
Effective Green, g (s)	40.0	40.0	40.0	40.0	40.0		21.6	21.6		21.6	21.6	
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.54		0.29	0.29		0.29	0.29	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	265	998	882	452	1013		412	464		393	506	
v/s Ratio Prot		0.24			c0.36			0.01			0.01	
v/s Ratio Perm	0.33		0.03	0.06			c0.07			0.06		
v/c Ratio	0.60	0.44	0.06	0.12	0.67		0.23	0.03		0.20	0.04	
Uniform Delay, d1	11.6	10.2	8.1	8.4	12.2		19.9	18.7		19.7	18.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.8	1.4	0.1	0.5	3.5		1.3	0.1		1.1	0.1	
Delay (s)	21.4	11.7	8.2	8.9	15.7		21.2	18.9		20.8	18.9	
Level of Service	C	B	A	A	B		C	B		C	B	
Approach Delay (s)		13.4			15.2			20.7			20.2	
Approach LOS		B			B			C			C	

Intersection Summary		
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service B
HCM 2000 Volume to Capacity ratio	0.52	
Actuated Cycle Length (s)	74.0	Sum of lost time (s) 12.4
Intersection Capacity Utilization	68.1%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

Adelaide Street North EA
 8: Adelaide Street N & Sunningdale Road E

Existing 2018 Traffic Analysis
 PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	34	695	152	699	178	262	235	27	280
v/c Ratio	0.14	0.92	0.66	0.69	0.62	0.43	0.35	0.09	0.47
Control Delay	16.8	42.0	25.1	19.0	37.7	27.1	5.0	23.4	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	42.0	25.1	19.0	37.7	27.1	5.0	23.4	27.2
Queue Length 50th (m)	3.3	101.0	10.9	78.8	26.3	36.1	0.0	3.3	38.1
Queue Length 95th (m)	9.4	#168.0	#23.6	116.6	#53.5	57.8	15.6	9.4	61.2
Internal Link Dist (m)		393.8		644.3		302.9			213.8
Turn Bay Length (m)	110.0		70.0		150.0		130.0	75.0	
Base Capacity (vph)	268	838	230	1095	287	603	668	311	598
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.83	0.66	0.64	0.62	0.43	0.35	0.09	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA
8: Adelaide Street N & Sunningdale Road E

Existing 2018 Traffic Analysis
PM Peak Hour



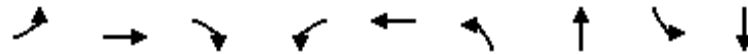
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	478	161	140	620	23	164	241	216	25	233	25
Future Volume (vph)	31	478	161	140	620	23	164	241	216	25	233	25
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.8	6.8		4.0	6.8		6.3	6.3	6.3	6.3	6.3	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1825	1790		1807	1890		1772	1921	1617	1825	1893	
Flt Permitted	0.30	1.00		0.11	1.00		0.49	1.00	1.00	0.52	1.00	
Satd. Flow (perm)	582	1790		209	1890		913	1921	1617	991	1893	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	520	175	152	674	25	178	262	235	27	253	27
RTOR Reduction (vph)	0	14	0	0	1	0	0	0	161	0	4	0
Lane Group Flow (vph)	34	681	0	152	698	0	178	262	74	27	276	0
Heavy Vehicles (%)	0%	4%	1%	1%	1%	4%	3%	0%	1%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		8		7	4			2				6
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	35.4	35.4		45.4	45.4		26.8	26.8	26.8	26.8	26.8	
Effective Green, g (s)	35.4	35.4		45.4	45.4		26.8	26.8	26.8	26.8	26.8	
Actuated g/C Ratio	0.42	0.42		0.53	0.53		0.31	0.31	0.31	0.31	0.31	
Clearance Time (s)	6.8	6.8		4.0	6.8		6.3	6.3	6.3	6.3	6.3	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	241	742		223	1005		286	603	508	311	594	
v/s Ratio Prot		c0.38		0.05	c0.37			0.14			0.15	
v/s Ratio Perm	0.06			0.31			c0.19		0.05	0.03		
v/c Ratio	0.14	0.92		0.68	0.69		0.62	0.43	0.15	0.09	0.46	
Uniform Delay, d1	15.5	23.6		16.2	14.8		24.9	23.2	21.0	20.6	23.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	16.1		8.3	2.1		9.8	2.3	0.6	0.5	2.6	
Delay (s)	15.8	39.7		24.5	16.9		34.7	25.5	21.6	21.2	26.1	
Level of Service	B	D		C	B		C	C	C	C	C	
Approach Delay (s)		38.6			18.2			26.6			25.7	
Approach LOS		D			B			C			C	

Intersection Summary

HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	85.3	Sum of lost time (s)	17.1
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Adelaide Street North EA
 13: Adelaide Street N & Fanshawe Park Road

Existing 2018 Traffic Analysis
 PM Peak Hour



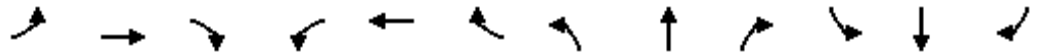
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	150	677	424	118	1036	496	1093	185	641
v/c Ratio	0.90	0.62	0.42	0.44	0.92	0.98	0.82	0.80	0.82
Control Delay	76.6	40.8	10.6	28.9	54.6	69.7	41.4	54.2	54.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.6	40.8	10.6	28.9	54.6	69.7	41.4	54.2	54.2
Queue Length 50th (m)	23.4	76.6	35.9	18.0	130.4	102.5	126.6	26.7	76.7
Queue Length 95th (m)	#63.4	100.5	61.3	32.0	#178.8	#174.6	153.2	#60.2	98.0
Internal Link Dist (m)		353.7			309.9		228.2		204.2
Turn Bay Length (m)	90.0		110.0	60.0		190.0		95.0	
Base Capacity (vph)	166	1089	1019	273	1131	515	1459	240	903
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.62	0.42	0.43	0.92	0.96	0.75	0.77	0.71

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA
13: Adelaide Street N & Fanshawe Park Road

Existing 2018 Traffic Analysis
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	623	390	109	836	117	456	880	125	170	451	139
Future Volume (vph)	138	623	390	109	836	117	456	880	125	170	451	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.9	4.0	4.0	6.9		4.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1807	3544	1585	1825	3579		1789	3582		1807	3486	
Flt Permitted	0.10	1.00	1.00	0.24	1.00		0.14	1.00		0.15	1.00	
Satd. Flow (perm)	198	3544	1585	463	3579		271	3582		282	3486	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	150	677	424	118	909	127	496	957	136	185	490	151
RTOR Reduction (vph)	0	0	58	0	8	0	0	9	0	0	24	0
Lane Group Flow (vph)	150	677	366	118	1028	0	496	1084	0	185	617	0
Heavy Vehicles (%)	1%	3%	3%	0%	0%	1%	2%	0%	0%	1%	1%	1%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	45.4	38.4	68.6	47.0	39.2		61.2	45.9		38.3	27.0	
Effective Green, g (s)	45.4	38.4	68.6	47.0	39.2		61.2	45.9		38.3	27.0	
Actuated g/C Ratio	0.36	0.31	0.55	0.38	0.31		0.49	0.37		0.31	0.22	
Clearance Time (s)	4.0	6.9	4.0	4.0	6.9		4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	162	1090	871	259	1124		500	1317		224	754	
v/s Ratio Prot	c0.05	0.19	0.10	0.03	c0.29		c0.24	0.30		0.07	0.18	
v/s Ratio Perm	0.28		0.13	0.14			c0.25			0.18		
v/c Ratio	0.93	0.62	0.42	0.46	0.91		0.99	0.82		0.83	0.82	
Uniform Delay, d1	32.4	37.0	16.5	27.0	41.2		35.7	35.8		34.3	46.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	49.0	2.7	0.3	1.3	12.8		38.0	4.3		21.3	6.9	
Delay (s)	81.4	39.6	16.8	28.3	54.0		73.7	40.1		55.6	53.5	
Level of Service	F	D	B	C	D		E	D		E	D	
Approach Delay (s)		36.9			51.4			50.6			54.0	
Approach LOS		D			D			D			D	

Intersection Summary

HCM 2000 Control Delay	47.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	124.8	Sum of lost time (s)	21.4
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Adelaide Street North EA
 16: Adelaide Street N & Phillbrook Drive/Grenfell Drive

Existing 2018 Traffic Analysis
 PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	38	140	174	59	132	752	284	34	618
v/c Ratio	0.12	0.29	0.58	0.13	0.39	0.73	0.28	0.15	0.61
Control Delay	15.1	7.9	25.5	12.4	13.8	17.4	2.5	10.4	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	7.9	25.5	12.4	13.8	17.4	2.5	10.4	13.3
Queue Length 50th (m)	2.7	3.2	14.1	3.2	6.4	47.6	0.5	1.4	35.0
Queue Length 95th (m)	8.0	12.9	28.6	9.5	23.6	#131.7	11.2	7.1	85.1
Internal Link Dist (m)		249.6		201.4		126.1			673.9
Turn Bay Length (m)	70.0		65.0		60.0		50.0	65.0	
Base Capacity (vph)	636	855	591	853	337	1032	1002	232	1015
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.16	0.29	0.07	0.39	0.73	0.28	0.15	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA
16: Adelaide Street N & Phillbrook Drive/Grenfell Drive

Existing 2018 Traffic Analysis
PM Peak Hour



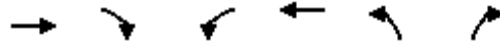
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	41	87	160	41	13	121	692	261	31	531	38
Future Volume (vph)	35	41	87	160	41	13	121	692	261	31	531	38
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		5.6	5.6	5.6	5.6	5.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.90		1.00	0.96		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1772	1698		1772	1785		1825	1902	1617	1825	1863	
Flt Permitted	0.72	1.00		0.67	1.00		0.32	1.00	1.00	0.22	1.00	
Satd. Flow (perm)	1340	1698		1245	1785		620	1902	1617	428	1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	45	95	174	45	14	132	752	284	34	577	41
RTOR Reduction (vph)	0	72	0	0	11	0	0	0	124	0	3	0
Lane Group Flow (vph)	38	68	0	174	48	0	132	752	160	34	615	0
Heavy Vehicles (%)	3%	3%	1%	3%	5%	0%	0%	1%	1%	0%	2%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2				2
Permitted Phases	4			4			2		2	2		
Actuated Green, G (s)	13.2	13.2		13.2	13.2		30.0	30.0	30.0	30.0	30.0	
Effective Green, g (s)	13.2	13.2		13.2	13.2		30.0	30.0	30.0	30.0	30.0	
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.54	0.54	0.54	0.54	0.54	
Clearance Time (s)	6.3	6.3		6.3	6.3		5.6	5.6	5.6	5.6	5.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	321	406		298	427		337	1035	880	233	1014	
v/s Ratio Prot		0.04			0.03			c0.40				0.33
v/s Ratio Perm	0.03			c0.14			0.21		0.10	0.08		
v/c Ratio	0.12	0.17		0.58	0.11		0.39	0.73	0.18	0.15	0.61	
Uniform Delay, d1	16.4	16.6		18.5	16.4		7.3	9.5	6.3	6.2	8.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.2		2.9	0.1		3.4	4.5	0.5	1.3	2.7	
Delay (s)	16.6	16.8		21.4	16.5		10.7	13.9	6.8	7.5	11.2	
Level of Service	B	B		C	B		B	B	A	A	B	
Approach Delay (s)		16.7			20.2			11.8			11.0	
Approach LOS		B			C			B			B	

Intersection Summary

HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	11.9
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Adelaide Street North EA
3: Blackwater Road & Sunningdale Road E























Existing 2018 Traffic Analysis
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	639	27	16	793	25	31
Future Volume (Veh/h)	639	27	16	793	25	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	695	29	17	862	27	34
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			724	1606		710
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			724	1606		710
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			98	76		92
cM capacity (veh/h)			879	112		429
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	724	17	862	61		
Volume Left	0	17	0	27		
Volume Right	29	0	0	34		
cSH	1700	879	1700	190		
Volume to Capacity	0.43	0.02	0.51	0.32		
Queue Length 95th (m)	0.0	0.4	0.0	10.0		
Control Delay (s)	0.0	9.2	0.0	32.7		
Lane LOS	A		D			
Approach Delay (s)	0.0	0.2	32.7			
Approach LOS					D	
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			51.7%	ICU Level of Service		A
Analysis Period (min)	15					

Adelaide Street North EA
9: Adelaide Street N & Blackwater Road

Existing 2018 Traffic Analysis
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	6	39	47	6	37	46	582	111	58	490	23
Future Volume (Veh/h)	10	6	39	47	6	37	46	582	111	58	490	23
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	7	42	51	7	40	50	633	121	63	533	25
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												327
pX, platoon unblocked	0.95	0.95	0.95	0.95	0.95		0.95					
vC, conflicting volume	1436	1513	533	1438	1417	633	558			754		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1432	1514	479	1434	1412	633	505			754		
tC, single (s)	7.3	6.8	6.2	7.1	6.8	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.3	3.3	3.5	4.3	3.3	2.2			2.2		
p0 queue free %	86	92	92	39	93	92	95			93		
cM capacity (veh/h)	76	86	560	84	99	483	1013			865		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3		
Volume Total	11	49	51	47	50	633	121	63	533	25		
Volume Left	11	0	51	0	50	0	0	63	0	0		
Volume Right	0	42	0	40	0	0	121	0	0	25		
cSH	76	312	84	307	1013	1700	1700	865	1700	1700		
Volume to Capacity	0.14	0.16	0.61	0.15	0.05	0.37	0.07	0.07	0.31	0.01		
Queue Length 95th (m)	3.6	4.2	21.0	4.1	1.2	0.0	0.0	1.8	0.0	0.0		
Control Delay (s)	59.9	18.7	98.6	18.9	8.7	0.0	0.0	9.5	0.0	0.0		
Lane LOS	F	C	F	C	A			A				
Approach Delay (s)	26.2		60.4		0.5			1.0				
Approach LOS	D		F									
Intersection Summary												
Average Delay			5.4									
Intersection Capacity Utilization			53.2%		ICU Level of Service				A			
Analysis Period (min)			15									

APPENDIX D

Historical Traffic Collisions Data

Collision Details Report

From: January 1, 2010 **To:** January 1, 2018

Location ADELAIDE ST N @ SUNNINGDALE RD E

Municipality..... LONDON

Traffic Control.... Traffic signal

Total Collisions.... 29

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuvre	Vehicle type	First Event	Driver Action	No. Ped
10-124638s	2010-Nov-15, Mon,12:15	Clear	Sideswipe	Non-reportable	West	Dry	Other	Tow truck	Other motor vehicle	Other	
Comments:					West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
11-57307s	2011-May-31, Tue,08:00	Clear	Rear end	Non-reportable	East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
12-044352s	2012-Apr-19, Thu,17:20	Clear	Turning movement	Non-reportable	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
12-083796	2012-Jul-21, Sat,20:06	Clear	Angle	Fatal injury	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	
Comments:					West	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly	
12-98324s	2012-Aug-27, Mon,11:05	Rain	Rear end	Non-reportable	South	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close	
12-98493s	2012-Aug-27, Mon,13:00	Rain	Rear end	Non-reportable	South	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					South	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	
13-008850	2013-Jan-25, Fri,18:25	Clear	SMV other		North	Slush	Going ahead	Automobile, station wagon	Skidding/sliding	Driving properly	
Comments:											
13-42394s	2013-Apr-28, Sun,19:09	Rain	Angle		West	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					South	Wet	Going ahead	Automobile, station wagon	Skidding/sliding	Driving properly	
13-58945s	2013-Jun-09, Sun,17:30	Clear	Rear end		East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					East		Stopped	Automobile, station wagon		Driving properly	

14-006036	2014-Jan-17, Fri,16:07	Clear	Angle	Non-fatal injury	West	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control
Comments:					North	Wet	Going ahead	Passenger van	Other motor vehicle	Driving properly
14-008971	2014-Jan-25, Sat,15:20	Snow	Angle	P.D. only	North	Slush	Turning right	Snow plow	Other motor vehicle	Improper turn
Comments:					West	Slush	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
14-020971s	2014-Feb-27, Thu,09:30	Snow	Rear end	P.D. only	South	Ice	Going ahead	Automobile, station wagon	Other motor vehicle	Speed too fast for condition
Comments:					South	Packed snow	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
14-45374s	2014-May-03, Sat,12:00	Rain	Rear end	Non-reportable	West	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					West	Wet	Going ahead	Pick-up truck	Other motor vehicle	Other
14-112299s	2014-Oct-07, Tue,16:55	Clear	Rear end	Non-reportable	South	Wet	Stopped	Pick-up truck	Other motor vehicle	Driving properly
Comments:					South	Wet	Slowing or stopping	Truck-other	Other motor vehicle	Speed too fast for condition
15-21925s	2015-Feb-27, Fri,22:15	Clear	Angle	Non-reportable	South	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control
Comments:					West	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly
15-127511s	2015-Nov-24, Tue,11:00	Clear	Rear end	Non-reportable	West	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Other
Comments:					West	Dry	Stopped	Unknown	Other motor vehicle	Driving properly
16-51835s	2016-May-24, Tue,17:10	Clear	Rear end	Non-reportable	West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					West	Dry				
16-92872s	2016-Sep-02, Fri,12:30	Clear	Rear end	Non-reportable	West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Other
Comments:					West	Dry	Slowing or stopping	Pick-up truck	Other motor vehicle	Driving properly
16-99735s	2016-Sep-19, Mon,08:19	Clear	Rear end	Non-reportable	North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Dry				
16-113345s	2016-Oct-24, Mon,14:20	Rain	Rear end	Non-reportable	South	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					South	Wet	Going ahead	Passenger van	Other motor vehicle	Speed too fast for condition

16-115831s	2016-Oct-31, Mon,08:15	Clear	Rear end	Non-reportable East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Other
16-117208s	2016-Nov-02, Wed,16:00	Rain	Turning movement	Non-reportable West	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-20460s	2017-Feb-27, Mon,11:15	Clear	Other	Non-reportable East	Dry	Going ahead	Delivery van	Other motor vehicle	Driving properly
Comments:				East	Dry	Going ahead	Truck - dump	Other motor vehicle	Driving properly
17-42850s	2017-Apr-29, Sat,10:45	Clear	Rear end	Non-reportable East	Dry	Going ahead	Motorcycle	Other motor vehicle	Other
Comments:				East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-850523s	2017-May-24, Wed,08:30	Clear	Turning movement	Non-reportable East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
17-851142s	2017-Jun-19, Mon,15:00	Clear	Rear end	Non-reportable West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Following too close
Comments:				West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-852051s	2017-Aug-02, Wed,16:45	Clear	Rear end	Non-reportable East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Following too close
Comments:				West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	
17-853843s	2017-Oct-19, Thu,19:37	Clear	Rear end	Non-reportable West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other
Comments:				West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-855051s	2017-Nov-29, Wed,17:00	Clear	Sideswipe	Non-reportable North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Dry	Changing lanes	Passenger van	Other motor vehicle	Driving properly

Collision Details Report

From: January 1, 2010 **To:** January 1, 2018

Location ADELAIDE ST N @ BLACKWATER RD

Municipality..... LONDON

Traffic Control.... Stop sign

Total Collisions.... 12

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuvre	Vehicle type	First Event	Driver Action	No. Ped
10-58912	2010-Jun-01, Tue,09:34	Clear	Rear end	Non-fatal injury	North	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Other	
Comments:					North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
10-93892s	2010-Aug-29, Sun,13:00	Clear	Other	Non-reportable	West	Dry	Reversing	Pick-up truck	Other motor vehicle	Driving properly	
Comments:					West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
10-137211s	2010-Dec-19, Sun,23:00	Clear	Turning movement	Non-reportable	North	Wet	Going ahead	Automobile, station wagon			
Comments:					North	Wet	Turning right				
11-6996	2011-Jan-20, Thu,07:59	Clear	Angle	Non-fatal injury	West	Wet	Turning left	Passenger van	Other motor vehicle	Failed to yield right-of-way	
Comments:					North	Wet	Going ahead	Passenger van	Other motor vehicle	Driving properly	
12-144595s	2012-Dec-19, Wed,21:40	Rain	Angle	Non-reportable	West	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way	
Comments:					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
12-145207	2012-Dec-21, Fri,14:18	Clear	SMV unattended vehicle	Non-fatal injury	North	Wet	Turning left	Automobile, station wagon	Pedestrian	Improper turn	
Comments:						Wet					
16-12579s	2016-Feb-05, Fri,15:45	Clear	Angle	Non-reportable	West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way	
Comments:					North	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly	
16-88193	2016-Aug-21, Sun,14:00	Clear	Rear end	Non-fatal injury	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other	
Comments:					South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
16-128215s	2016-Dec-03, Sat,15:00	Other	Angle	Non-reportable	West	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way	
Comments:					North	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	

16-131991s	2016-Dec-13, Tue, 18:10	Snow	Rear end	Non-reportable East	Loose snow	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:				East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-4017s	2017-Jan-12, Thu, 11:30	Rain	Angle	Non-reportable North	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				West	Wet	Turning left	Delivery van	Other motor vehicle	Driving properly
17-132959	2017-Dec-28, Thu, 19:57	Clear	Angle	Non-fatal injury West	Wet	Turning right	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:				North	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly

Collision Details Report

From: January 1, 2010 **To:** January 1, 2018

Location ADELAIDE ST N @ GRENFELL DR

Municipality..... LONDON

Traffic Control.... Traffic signal

Total Collisions.... 19

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuvre	Vehicle type	First Event	Driver Action	No. Ped
10-10748s	2010-Jan-29, Fri,09:55	Snow	Rear end	Non-reportable	North	Slush	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					North	Wet	Stopped	Pick-up truck	Other motor vehicle	Driving properly	
10-35163s	2010-Apr-01, Thu,18:20	Clear	Turning movement	Non-reportable	South	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly	
Comments:					North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly	
10-54409s	2010-May-20, Thu,16:45	Clear	Angle	Non-reportable	West	Dry	Going ahead	Other	Other motor vehicle	Driving properly	
Comments:					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
10-84680	2010-Aug-05, Thu,19:12	Clear	Turning movement	Non-fatal injury	South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn	
Comments:					North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
11-91377	2011-Aug-21, Sun,17:57	Clear	SMV unattended vehicle	Non-fatal injury	West	Dry	Going ahead	Automobile, station wagon	Cyclist	Driving properly	
Comments:						Dry	Going ahead	Bicycle	Other motor vehicle	Failed to yield right-of-way	
12-058500s	2012-May-23, Wed,16:15	Clear	Rear end	Non-reportable	North	Dry	Stopped		Other motor vehicle	Driving properly	
Comments:					North	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Improper lane change	
12-139076	2012-Dec-04, Tue,18:28	Clear	Turning movement	Non-fatal injury	East	Wet	Turning left	Passenger van	Other motor vehicle	Improper turn	
Comments:					West	Wet	Going ahead	Truck-other	Other motor vehicle	Other	
12-141801s	2012-Dec-12, Wed,07:50	Clear	Rear end	Non-reportable	East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle		
15-000519	2015-Jan-02, Fri,11:05	Clear	Angle	Non-fatal injury	East	Dry	Making "U" turn	Automobile, station wagon	Other motor vehicle	Improper turn	
Comments:					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	

15-122787	2015-Nov-12, Thu,22:35	Clear	SMV other	P.D. only	North	Dry	Overtaking	Automobile, station wagon	Pole (utility, power)	Exceeding speed limit
Comments:										
16-13631s	2016-Feb-08, Mon,18:30	Snow	Rear end	Non-reportable	North	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments: special case										
					North		Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
16-58944s	2016-Jun-10, Fri,16:20	Clear	Rear end	Non-reportable	South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:										
					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
16-105911s	2016-Oct-04, Tue,17:45	Clear	Sideswipe	Non-reportable	North	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:										
					North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-108824s	2016-Oct-12, Wed,16:20	Clear	Rear end	Non-reportable	South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:										
					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other
16-130232	2016-Dec-09, Fri,15:15	Snow	Angle	Non-fatal injury	East	Loose snow	Turning right	Automobile, station wagon	Other motor vehicle	Speed too fast for condition
Comments:										
					South	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-60200	2017-Jun-16, Fri,09:25	Clear	Angle	Non-fatal injury	East	Dry	Going ahead	Automobile, station wagon	Cyclist	Improper turn
Comments:										
					North	Dry	Going ahead	Bicycle	Other motor vehicle	Other
17-852747s	2017-Sep-07, Thu,17:50	Clear	Rear end	Non-reportable	South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:										
					South	Dry	Stopped	Pick-up truck	Other motor vehicle	Following too close
17-852766s	2017-Sep-08, Fri,13:00	Clear	Angle	Non-reportable	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:										
					North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control
17-854601s	2017-Nov-14, Tue,08:40	Clear	Rear end	Non-reportable	East	Dry	Stopped	Passenger van	Other motor vehicle	Driving properly
Comments:										
					East	Dry				

Collision Details Report

From: January 1, 2010 **To:** January 1, 2018

Location ADELAIDE ST N @ FANSHAWE PARK RD E

Municipality..... LONDON

Traffic Control.... Traffic signal

Total Collisions.... 238

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuvre	Vehicle type	First Event	Driver Action	No. Ped
10-2170s	2010-Jan-06, Wed,18:25	Fog, mist, smoke, dust	Rear end	Non-reportable	East	Ice	Slowing or stopping	Other	Other motor vehicle	Driving properly	
					East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
10-5523	2010-Jan-15, Fri,14:13	Clear	Turning movement	Non-fatal injury	South	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn	
					North	Wet	Going ahead	Passenger van	Other motor vehicle	Driving properly	
10-10090s	2010-Jan-26, Tue,16:35	Clear	Rear end	Non-reportable	East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
					East	Wet	Turning right	Automobile, station wagon	Other motor vehicle	Following too close	
10-10149s	2010-Jan-27, Wed,16:20	Clear	Turning movement	Non-reportable	North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly	
					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
10-16857s	2010-Feb-13, Sat,21:40	Clear	Rear end	Non-reportable	North	Wet	Reversing	Automobile, station wagon	Other motor vehicle	Driving properly	
					North	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
10-20558s	2010-Feb-24, Wed,16:30	Clear	Rear end	Non-reportable	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
					South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
10-23945s	2010-Mar-05, Fri,12:00	Clear	Turning movement	Non-reportable	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
					South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way	
10-37672	2010-Apr-08, Thu,08:58	Rain	Angle	Non-fatal injury	East	Wet	Turning right	Automobile, station wagon	Curb	Other	
					South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
10-37874s	2010-Apr-08, Thu,16:15	Clear	Rear end	Non-reportable	East	Wet	Other	Municipal transit bus	Other motor vehicle	Driving properly	
					East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	

10-38223s	2010-Apr-09, Fri,14:30	Clear	Rear end	Non-reportable West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other
10-42936s	2010-Apr-21, Wed,14:10	Clear	Rear end	Non-reportable South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:				South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
10-43193	2010-Apr-22, Thu,08:30	Clear	Rear end	Non-fatal injury North	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Other
Comments:				North	Dry	Stopped	Pick-up truck	Other motor vehicle	Driving properly
10-54026	2010-May-19, Wed,18:23	Clear	Rear end	Non-fatal injury East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Lost control
Comments:				East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
10-60125s	2010-Jun-04, Fri,08:05	Clear	Turning movement	Non-reportable West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
10-71503s	2010-Jul-02, Fri,16:52	Clear	Turning movement	Non-reportable West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
10-78565s	2010-Jul-21, Wed,07:40	Clear	Angle	Non-reportable South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
10-84273	2010-Aug-04, Wed,18:10	Clear	Rear end	P.D. only West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	
10-90335s	2010-Aug-20, Fri,16:30	Clear	Rear end	Non-reportable North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
10-100907s	2010-Sep-16, Thu,09:40	Rain	Rear end	Non-reportable North	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
10-103344s	2010-Sep-22, Wed,08:00	Rain	Rear end	Non-reportable East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Wet	Going ahead	Passenger van	Other motor vehicle	Following too close

10-104868	2010-Sep-25, Sat,20:25	Fog, mist, smoke, dust	Rear end	Non-fatal injury	East	Wet	Going ahead	Passenger van	Other motor vehicle	Speed too fast for condition
Comments:					East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
10-105671	2010-Sep-27, Mon,22:33	Rain	Turning movement	P.D. only	West	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:					East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
10-109218	2010-Oct-07, Thu,08:18	Clear	Rear end	P.D. only	North	Dry	Stopped	Passenger van	Other motor vehicle	Driving properly
Comments:					North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
10-123708	2010-Nov-12, Fri,20:35	Clear	Turning movement	Non-fatal injury	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
10-130237s	2010-Nov-30, Tue,17:00	Rain	Turning movement	Non-reportable	East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					West	Wet	Turning left	Truck - closed	Other motor vehicle	Driving properly
10-133487s	2010-Dec-08, Wed,08:45	Snow	Rear end	Non-reportable	East	Slush	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:					East	Loose snow	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
10-134689s	2010-Dec-13, Mon,08:48	Clear	Sideswipe	Non-reportable	East	Ice	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					East	Ice	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Speed too fast for condition
10-134852s	2010-Dec-13, Mon,09:00	Clear	Rear end	Non-reportable	South	Ice	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					South	Ice	Stopped	Passenger van	Other motor vehicle	Driving properly
10-140008s	2010-Dec-29, Wed,16:00	Clear	Angle	Non-reportable	East	Wet	Turning right	Truck-other	Other motor vehicle	Driving properly
Comments:					South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
11-3796s	2011-Jan-11, Tue,12:15	Clear	Turning movement	Non-reportable	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					South	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
11-11086s	2011-Jan-31, Mon,08:45	Clear	Rear end	Non-reportable	East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close

11-13113s	2011-Feb-05, Sat, 18:30	Snow	Rear end	Non-reportable North	Loose snow	Stopped	Other	Other motor vehicle	Driving properly
Comments:				North	Loose snow	Slowing or stopping	Intercity bus	Other motor vehicle	Driving properly
11-17367s	2011-Feb-16, Wed, 11:45	Clear	Turning movement	Non-reportable South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
11-34751s	2011-Apr-02, Sat, 14:00	Clear	Rear end	Non-reportable West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				West	Dry	Going ahead	Delivery van	Other motor vehicle	Following too close
11-41604s	2011-Apr-20, Wed, 16:30	Clear	Rear end	Non-reportable East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
11-44975	2011-Apr-29, Fri, 21:40	Clear	Turning movement	Non-fatal injury East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
11-46152s	2011-May-02, Mon, 17:30	Clear	Rear end	Non-reportable East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:				East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
11-49031s	2011-May-10, Tue, 16:20	Clear	Sideswipe	Non-reportable South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
11-53097s	2011-May-21, Sat, 14:15	Clear	Rear end	Non-reportable North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
11-54577s	2011-May-25, Wed, 12:00	Clear	Sideswipe	Non-reportable North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Dry	Going ahead	Delivery van	Other motor vehicle	Following too close
11-61553s	2011-Jun-10, Fri, 18:30	Clear	Rear end	Non-reportable East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
11-62618s	2011-Jun-13, Mon, 15:35	Clear	Rear end	Non-reportable North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly

11-76101	2011-Jul-17, Sun,19:10	Clear	Rear end	Non-fatal injury	South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	
11-97628s	2011-Sep-04, Sun,20:10	Clear	Approaching	Non-reportable	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
11-102750s	2011-Sep-15, Thu,18:10	Clear	Rear end	Non-reportable	North	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly
Comments:					North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
11-108816s	2011-Sep-27, Tue,06:50	Clear	Rear end	Non-reportable	South	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
Comments:					South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
11-109878s	2011-Sep-30, Fri,22:15	Rain	Rear end	Non-reportable	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					South	Wet	Turning right	Automobile, station wagon	Other motor vehicle	Driving properly
11-113428s	2011-Oct-09, Sun,16:15	Clear	Rear end	Non-reportable	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
11-117075s	2011-Oct-17, Mon,18:30	Clear	Rear end	Non-reportable	East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
11-121801s	2011-Oct-28, Fri,18:30	Clear	Rear end	Non-reportable	North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North					
11-127540s	2011-Nov-11, Fri,17:30	Clear	Rear end	Non-reportable	West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
11-131477	2011-Nov-21, Mon,06:45	Clear	Other	Non-fatal injury	North	Dry	Going ahead	Automobile, station wagon	Curb	Driving properly
Comments:					South	Dry	Turning left	Truck - closed		Improper turn
11-140514	2011-Dec-12, Mon,08:55	Clear	Rear end	Non-fatal injury	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other
Comments:					East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly

11-147245s	2011-Dec-29, Thu,17:30	Rain	Rear end	Non-reportable East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Slush	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
12-612s	2012-Jan-02, Mon,14:40	Snow	Rear end	Non-reportable East	Ice	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Ice	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
12-3240s	2012-Jan-09, Mon,15:35	Clear	Rear end	Non-reportable West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				West	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
12-7926	2012-Jan-20, Fri,11:10	Clear	Rear end	Non-fatal injury North	Wet	Going ahead	Delivery van	Other motor vehicle	Following too close
Comments:				North	Wet	Slowing or stopping	Passenger van	Other motor vehicle	Driving properly
12-15277s	2012-Feb-01, Wed,10:45	Clear		Non-reportable					
Comments:									
12-16292s	2012-Feb-09, Thu,18:00	Snow	Angle	Non-reportable West	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Packed snow	Stopped	Pick-up truck	Other motor vehicle	Driving properly
12-16618	2012-Feb-11, Sat,15:42	Snow	Rear end	Non-fatal injury East	Loose snow	Turning right	Automobile, station wagon	Other motor vehicle	Lost control
Comments:				East	Loose snow	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
12-20908s	2012-Feb-23, Thu,09:00	Clear	Rear end	Non-reportable East	Wet	Slowing or stopping	Passenger van	Other motor vehicle	Following too close
Comments:				East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
12-025756	2012-Mar-06, Tue,18:28	Clear	Turning movement	Non-fatal injury West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
12-035006s	2012-Mar-28, Wed,07:40	Clear	Rear end	Non-reportable East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Slowing or stopping	Pick-up truck	Other motor vehicle	Driving properly
12-036287	2012-Mar-31, Sat,01:50	Clear	Rear end	P.D. only North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other
Comments:				North	Dry	Stopped	Pick-up truck	Other motor vehicle	Driving properly

12-043340s	2012-Apr-17, Tue, 10:45	Clear	Rear end	Non-reportable North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
12-059759s	2012-May-26, Sat, 17:05	Clear	Turning movement	Non-reportable North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North		Going ahead	Automobile, station wagon		Driving properly
12-71351s	2012-Jun-21, Thu, 18:20	Clear	Rear end	Non-reportable North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
12-83627	2012-Jul-21, Sat, 11:15	Clear	Angle	Non-fatal injury West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control
Comments:				North	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly
12-85629s	2012-Jul-26, Thu, 15:10	Clear	Rear end	Non-reportable North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
12-87130	2012-Jul-30, Mon, 10:45	Clear	Sideswipe	Non-fatal injury North	Dry	Turning right	Pick-up truck	Cyclist	Failed to yield right-of-way
Comments:				North	Dry	Going ahead	Bicycle	Other motor vehicle	Driving properly
12-92914s	2012-Aug-13, Mon, 18:45	Rain	Angle	Non-reportable North	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				West	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
12-93183s	2012-Aug-14, Tue, 14:30	Clear	Rear end	Non-reportable North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other
12-97266s	2012-Aug-24, Fri, 16:30	Clear	Rear end	Non-reportable East	Dry	Stopped	Pick-up truck	Other motor vehicle	Driving properly
Comments:				East	Dry	Turning right	Automobile, station wagon	Other motor vehicle	Driving properly
12-108486	2012-Sep-19, Wed, 22:48	Clear	Angle	Non-fatal injury North	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control
Comments:				West	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
12-110267s	2012-Sep-24, Mon, 14:45	Clear	Rear end	Non-reportable North	Dry	Stopped	Passenger van	Other motor vehicle	Driving properly
Comments:				North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close

12-118029s	2012-Oct-13, Sat,15:25	Rain	Turning movement	Non-reportable	West	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
12-126195	2012-Nov-02, Fri,13:00	Clear	Turning movement	Non-fatal injury	South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
12-131536s	2012-Nov-15, Thu,11:05	Clear	Rear end	Non-reportable	West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					West	Dry	Turning right	Automobile, station wagon	Other motor vehicle	Driving properly
12-134929s	2012-Nov-23, Fri,17:15	Snow	Rear end	Non-reportable	North	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
12-142002s	2012-Dec-12, Wed,15:45	Clear	Turning movement	Non-reportable	North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
13-007467	2013-Jan-21, Mon,19:55	Clear	Rear end	Non-fatal injury	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:					South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
13-010381	2013-Jan-30, Wed,09:40	Clear	Rear end		West	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					West	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
13-17417s	2013-Feb-19, Tue,09:00	Clear	Rear end	P.D. only	North	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Other
Comments:					North	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
13-17946s	2013-Feb-20, Wed,07:30	Snow	Turning movement	P.D. only	East	Loose snow	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					West	Loose snow	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
13-17795s	2013-Feb-20, Wed,09:00	Clear	Rear end	P.D. only	East	Slush	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					East	Slush	Going ahead	Automobile, station wagon		Following too close
13-43467s	2013-May-01, Wed,16:30	Clear	Turning movement	P.D. only	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly

13-70687	2013-Jul-08, Mon,17:30	Rain	Other	Non-fatal injury	East	Wet	Going ahead	Automobile, station wagon	Cyclist	Other	
Comments:					East	Wet	Going ahead	Bicycle	Skidding/sliding		
13-072950	2013-Jul-14, Sun,16:53	Clear	SMV other	Fatal injury	East	Dry	Going ahead	Automobile, station wagon	Pedestrian	Driving properly	1
Comments:											
13-78685s	2013-Jul-28, Sun,17:00	Clear	Rear end	P.D. only	North	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					North						
13-095936s	2013-Sep-11, Wed,16:40	Clear	Rear end	P.D. only	East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					East	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle		
13-099133	2013-Sep-19, Thu,19:00	Clear	Turning movement	Non-fatal injury	North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					West	Dry	Turning left	Passenger van	Other motor vehicle	Failed to yield right-of- way	
13-106701	2013-Oct-08, Tue,17:20	Clear	Turning movement	Non-fatal injury	West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn	
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
13-109706	2013-Oct-16, Wed,19:11	Clear	Rear end	Non-fatal injury	East	Dry	Stopped		Other motor vehicle	Driving properly	
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other	
13-111378s	2013-Oct-19, Sat,08:00	Clear	Rear end		East	Dry	Stopped	Pick-up truck	Other motor vehicle	Driving properly	
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other	
13-116667s	2013-Nov-03, Sun,07:50	Clear	Turning movement	P.D. only	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn	
13-123573s	2013-Nov-21, Thu,21:00	Rain	Rear end	P.D. only	East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Following too close	
Comments:					East	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	
13-129484s	2013-Dec-08, Sun,12:00	Clear	Rear end	P.D. only	West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close	

13-135238s	2013-Dec-26, Thu,08:04	Snow	Other	P.D. only	East	Ice	Changing lanes	Automobile, station wagon	Curb	Lost control
Comments:					West		Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
14-005241s	2014-Jan-15, Wed,13:15	Clear	Rear end	P.D. only	East	Dry	Slowing or stopping	Passenger van	Skidding/sliding	Driving properly
Comments:					East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Following too close
14-009816	2014-Jan-28, Tue,07:55	Clear	Rear end	P.D. only	West	Dry	Turning right	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
14-021300s	2014-Feb-28, Fri,08:20	Clear	Rear end	P.D. only	South	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
Comments:					South		Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
14-021977s	2014-Mar-01, Sat,16:45	Snow	Rear end	P.D. only	East	Wet	Slowing or stopping	Automobile, station wagon	Skidding/sliding	Speed too fast for condition
Comments:					East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
14-026467s	2014-Mar-13, Thu,15:35	Clear	Rear end	P.D. only	North	Dry	Slowing or stopping	Pick-up truck	Other motor vehicle	Driving properly
Comments:					North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Lost control
14-026474s	2014-Mar-13, Thu,16:15	Clear	Rear end	P.D. only	South	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
Comments:					South	Wet	Stopped	Pick-up truck	Other motor vehicle	Driving properly
14-026746s	2014-Mar-13, Thu,16:15	Clear	Rear end	P.D. only	South	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
Comments:					South	Wet	Stopped	Passenger van	Other motor vehicle	Driving properly
14-028864	2014-Mar-20, Thu,06:15	Snow	Angle	Non-fatal injury	West	Wet	Going ahead	Bicycle	Other motor vehicle	Other
Comments:					South	Wet	Turning left	Automobile, station wagon	Cyclist	Driving properly
14-036777	2014-Apr-10, Thu,13:12	Clear	Rear end	P.D. only	East	Dry	Going ahead	Pick-up truck	Other motor vehicle	Disobeyed traffic control
Comments:					East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
14-43223s	2014-Apr-28, Mon,07:30	Clear	Rear end	Non-reportable	North	Dry	Stopped	Delivery van	Other motor vehicle	Driving properly
Comments:					North	Dry	Going ahead	Pick-up truck	Other motor vehicle	Following too close

14-48073s	2014-May-09, Fri,16:00	Rain	Rear end	Non-reportable	South	Wet	Slowing or stopping	Passenger van	Skidding/sliding	Speed too fast for condition
Comments:					South	Wet	Stopped	Pick-up truck	Other motor vehicle	Driving properly
14-52457	2014-May-21, Wed,10:58	Clear	Turning movement	Non-fatal injury	East	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Improper turn
14-63870	2014-Jun-16, Mon,12:55	Clear	Rear end	P.D. only	West	Dry	Going ahead	Delivery van	Other motor vehicle	Other
Comments:					West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
14-071754	2014-Jul-04, Fri,16:22	Clear	Turning movement	Non-fatal injury	North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	
Comments:					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
14-72692s	2014-Jul-06, Sun,17:10	Clear	Rear end	P.D. only	East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					East	Dry				
14-72837s	2014-Jul-07, Mon,07:35	Clear	Rear end	Non-reportable	East	Wet	Slowing or stopping	Pick-up truck	Other motor vehicle	Following too close
Comments:					East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
14-74372	2014-Jul-10, Thu,20:23	Clear	Rear end	Non-fatal injury	North	Dry	Going ahead	Passenger van	Other motor vehicle	Other
Comments:					North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
14-95910	2014-Aug-30, Sat,14:38	Clear	Rear end	Non-fatal injury	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other
Comments:					North	Dry	Stopped	Automobile, station wagon		Driving properly
14-97069s	2014-Sep-02, Tue,12:30	Rain	Turning movement	Non-reportable	North	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
Comments:					South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
14-103117s	2014-Sep-15, Mon,17:00	Clear	Rear end	Non-reportable	South	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
Comments:					South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
14-106792s	2014-Sep-24, Wed,18:00	Clear	Rear end	Non-reportable	West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close

14-110643s	2014-Oct-02, Thu,15:20	Clear	Rear end	Non-reportable East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
14-118882s	2014-Oct-24, Fri,12:00	Clear	Rear end	Non-reportable North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other
14-120210s	2014-Oct-28, Tue,09:00	Clear	Angle	Non-reportable East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:				North	Wet	Turning right	Automobile, station wagon	Other motor vehicle	Driving properly
14-126132s	2014-Nov-12, Wed,10:25	Clear	Rear end	Non-reportable South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				South	Dry				
14-132335s	2014-Nov-27, Thu,19:30	Snow	Rear end	Non-reportable South	Loose snow	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				South	Loose snow	Unknown	Unknown	Other motor vehicle	
14-134917	2014-Dec-05, Fri,09:50	Clear	Angle	Non-fatal injury East	Dry	Going ahead	Automobile, station wagon	Cyclist	Failed to yield right-of-way
Comments:				South	Dry	Slowing or stopping	Bicycle	Other motor vehicle	Driving properly
14-141229	2014-Dec-22, Mon,14:40	Clear	Rear end	Non-fatal injury West	Dry	Going ahead	Pick-up truck	Other motor vehicle	Other
Comments:				West	Dry	Stopped	Automobile, station wagon		Driving properly
15-536s	2015-Jan-02, Fri,09:20	Clear	Rear end	Non-reportable East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Unknown	Unknown	Other motor vehicle	Following too close
15-000635s	2015-Jan-02, Fri,16:01	Clear	Sideswipe	Non-reportable East	Dry	Changing lanes	Pick-up truck	Other motor vehicle	Improper lane change
Comments:				East		Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15-13811	2015-Feb-06, Fri,09:41	Clear	Angle	Non-fatal injury West	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Wet	Going ahead	Police vehicle	Other motor vehicle	Failed to yield right-of-way
15-23093	2015-Mar-02, Mon,09:00	Clear	Rear end	Non-fatal injury South	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
Comments:				South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly

15-23919	2015-Mar-05, Thu,12:10	Clear	Rear end	Non-fatal injury	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:					East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
15-26282s	2015-Mar-11, Wed,16:00	Clear	Turning movement	Non-reportable	West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15-27128s	2015-Mar-13, Fri,17:30	Clear	Rear end	Non-reportable	West	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:	special case				West		Stopped	Pick-up truck	Other motor vehicle	Driving properly
15-30342s	2015-Mar-22, Sun,10:10	Clear	Turning movement	Non-reportable	North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
Comments:					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15-35897s	2015-Apr-04, Sat,11:00	Clear	Rear end	Non-reportable	West	Dry	Stopped	Passenger van	Other motor vehicle	Driving properly
Comments:					West	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
15-35384	2015-Apr-04, Sat,13:30	Clear	Rear end	Non-fatal injury	North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	
Comments:					North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
15-36790s	2015-Apr-08, Wed,15:38	Clear	Rear end	Non-reportable	North	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:					North	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15-47390s	2015-May-05, Tue,17:00	Clear	Rear end	Non-reportable	East	Wet	Slowing or stopping	Pick-up truck	Other motor vehicle	Following too close
Comments:					East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
15-51007s	2015-May-14, Thu,19:00	Clear	Turning movement	Non-reportable	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
15-54026s	2015-May-22, Fri,13:15	Clear	Rear end	Non-reportable	North	Dry	Stopped	Pick-up truck	Other motor vehicle	Driving properly
Comments:					North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
15-58657s	2015-Jun-02, Tue,17:30	Clear	Rear end	Non-reportable	North	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Improper lane change

15-59322s	2015-Jun-04, Thu,11:15	Clear	Rear end	Non-reportable North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Dry	Going ahead	Pick-up truck	Other motor vehicle	Following too close
15-59447s	2015-Jun-04, Thu,15:15	Clear	Rear end	Non-reportable North	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
Comments:				North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
15-67495s	2015-Jun-24, Wed,09:05	Clear	Rear end	Non-reportable East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
15-71752s	2015-Jul-04, Sat,16:30	Clear	Rear end	Non-reportable North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other
Comments:				North	Dry	Stopped	Unknown	Other motor vehicle	
15-71723	2015-Jul-04, Sat,16:54	Clear	Rear end	Non-fatal injury South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:				South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
15-72070s	2015-Jul-05, Sun,15:50	Clear	Rear end	Non-reportable East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
15-74796s	2015-Jul-12, Sun,14:25	Clear	Rear end	Non-reportable South	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Other
Comments:				South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
15-79570	2015-Jul-24, Fri,11:50	Clear	Other	P.D. only East	Dry	Merging	Automobile, station wagon		Failed to yield right-of-way
Comments:				East	Dry	Going ahead	Automobile, station wagon	Ran off road	Driving properly
15-81604s	2015-Jul-29, Wed,14:40	Clear	Turning movement	Non-reportable South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
15-89163	2015-Aug-17, Mon,21:17	Clear	Turning movement	Non-fatal injury West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
Comments:				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control
15-90270s	2015-Aug-20, Thu,16:45	Clear	Rear end	Non-reportable South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other

15-91268s	2015-Aug-23, Sun,11:20	Clear	Rear end	Non-reportable	East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
15-97504s	2015-Sep-08, Tue,07:28	Clear	Rear end	Non-reportable	East	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Other
Comments:					East		Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
15-97905	2015-Sep-09, Wed,08:00	Rain	Rear end	P.D. only	South	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
Comments:					South	Wet	Going ahead		Other motor vehicle	Driving properly
15-98687s	2015-Sep-10, Thu,16:15	Clear	Rear end	Non-reportable	North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other
15-101201	2015-Sep-17, Thu,11:42	Clear	Rear end	Non-fatal injury	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:					East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
15-104124	2015-Sep-24, Thu,13:35	Clear	Rear end	P.D. only	East	Dry	Slowing or stopping	Pick-up truck	Other motor vehicle	
Comments:					East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
15-109809s	2015-Oct-08, Thu,09:15	Clear	Rear end	Non-reportable	South	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
Comments:					South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
15-110974	2015-Oct-11, Sun,06:26	Clear	Turning movement	Non-fatal injury	North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:					South		Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15-117402s	2015-Oct-28, Wed,18:45	Rain	Rear end	Non-reportable	North	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Wet	Changing lanes	Automobile, station wagon	Other motor vehicle	Improper lane change
15-119506	2015-Nov-03, Tue,13:16	Clear	Turning movement	Non-fatal injury	West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:					East	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly
15-120417s	2015-Nov-05, Thu,14:00	Clear	Turning movement	Non-reportable	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Dry	Turning left	Unknown	Other motor vehicle	Driving properly

15-126120s	2015-Nov-20, Fri,12:00	Clear	Rear end	Non-reportable North	Dry	Stopped	Passenger van	Other motor vehicle	Driving properly	
Comments:				North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close	
15-126555s	2015-Nov-21, Sat,13:30	Clear	Rear end	Non-reportable East	Wet	Slowing or stopping	Pick-up truck	Other motor vehicle	Driving properly	
Comments:				East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
15-137261	2015-Dec-21, Mon,06:39	Rain	SMV other	Non-fatal injury West	Wet	Going ahead	Automobile, station wagon	Pedestrian	Improper turn	1
Comments:										
15-138401	2015-Dec-24, Thu,07:40	Clear	Angle	Non-fatal injury South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn	
Comments:	Cable box			East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
15-138594	2015-Dec-24, Thu,17:52	Clear	Turning movement	Non-fatal injury West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn	
Comments:				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
16-2149	2016-Jan-07, Thu,08:08	Clear	Turning movement	Non-fatal injury South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way	1
Comments:				North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
16-2353s	2016-Jan-07, Thu,16:30	Clear	Rear end	Non-reportable South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:				South	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close	
16-2861s	2016-Jan-08, Fri,17:30	Rain	Rear end	Non-reportable North	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:				North	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Following too close	
16-8769s	2016-Jan-26, Tue,08:30	Clear	Rear end	Non-reportable East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close	
16-9170s	2016-Jan-26, Tue,15:15	Clear	Rear end	Non-reportable North	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:				North	Wet	Going ahead	Pick-up truck	Other motor vehicle	Following too close	
16-21451s	2016-Mar-02, Wed,09:10	Clear	Rear end	Non-reportable West	Ice	Slowing or stopping	Automobile, station wagon	Skidding/sliding	Lost control	
Comments:				West	Ice	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	

16-23263s	2016-Mar-07, Mon,17:00	Clear	Turning movement	Non-reportable	East	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-25655s	2016-Mar-14, Mon,10:30	Clear	Rear end	Non-reportable	West	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					West	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-26490s	2016-Mar-16, Wed,16:15	Clear	Rear end	Non-reportable	East	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Speed too fast for condition
Comments:					East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-28278s	2016-Mar-21, Mon,14:00	Clear	Rear end	Non-reportable	South	Dry	Stopped	Passenger van	Other motor vehicle	Driving properly
Comments:					South	Dry	Going ahead	Pick-up truck	Other motor vehicle	Other
16-29358s	2016-Mar-24, Thu,13:40	Rain	Angle	Non-reportable	East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Wet				
16-31734s	2016-Mar-31, Thu,14:00	Rain	Sideswipe	Non-reportable	North	Wet	Going ahead	Truck - closed	Other motor vehicle	Driving properly
Comments:					North	Wet	Changing lanes	Automobile, station wagon	Other motor vehicle	Driving properly
16-44958s	2016-May-06, Fri,16:00	Clear	Rear end	Non-reportable	East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
16-45408s	2016-May-07, Sat,19:00	Clear	Rear end	Non-reportable	East	Dry	Going ahead	Municipal transit bus	Other motor vehicle	Other
Comments:					East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
16-50240s	2016-May-20, Fri,13:15	Clear	Turning movement	Non-reportable	South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-51828	2016-May-24, Tue,18:50	Clear	Turning movement	Non-fatal injury	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control
Comments:					North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn
16-52576	2016-May-26, Thu,15:00	Clear	Sideswipe	Non-fatal injury	East	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Improper lane change
Comments:					East	Dry	Going ahead	Municipal transit bus	Other motor vehicle	Driving properly

16-53466s	2016-May-28, Sat,14:35	Clear	Rear end	Non-reportable West	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-53878s	2016-May-29, Sun,13:00	Clear	Rear end	Non-reportable North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Other
16-56535s	2016-Jun-04, Sat,14:00	Clear	Rear end	Non-reportable East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Following too close
16-66104	2016-Jun-27, Mon,19:55	Clear	Turning movement	Non-fatal injury North	Dry	Turning left	Automobile, station wagon	Cyclist	Improper turn
Comments:				South	Dry	Going ahead	Bicycle	Other motor vehicle	Driving properly
16-68509s	2016-Jul-03, Sun,10:30	Clear	Rear end	Non-reportable South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				South	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
16-69252s	2016-Jul-05, Tue,11:18	Clear	Rear end	Non-reportable North	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Other
Comments:				North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-69749s	2016-Jul-06, Wed,11:00	Clear	Sideswipe	Non-reportable East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry				
16-73647s	2016-Jul-15, Fri,14:30	Clear	Turning movement	Non-reportable West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
16-86467s	2016-Aug-16, Tue,15:20	Clear	Turning movement	Non-reportable North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
16-90994s	2016-Aug-28, Sun,17:20	Clear	Sideswipe	Non-reportable South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-96530s	2016-Sep-11, Sun,11:45	Clear	Rear end	Non-reportable South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				South	Dry	Turning right	Automobile, station wagon	Other motor vehicle	Other

16-102352s	2016-Sep-25, Sun,21:48	Clear	Turning movement	Non-reportable West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
16-102714s	2016-Sep-26, Mon,19:40	Clear	Rear end	Non-reportable North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Dry	Slowing or stopping	Pick-up truck	Other motor vehicle	Following too close
16-105930s	2016-Oct-04, Tue,19:40	Clear	Turning movement	Non-reportable North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-121493s	2016-Nov-15, Tue,14:00	Clear	Rear end	Non-reportable North	Dry	Going ahead	Pick-up truck	Other motor vehicle	Other
Comments:				North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-124754s	2016-Nov-23, Wed,16:40	Snow	Sideswipe	Non-reportable South	Loose snow	Turning right	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				South	Loose snow	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-124972	2016-Nov-25, Fri,07:38	Clear	Sideswipe	Non-fatal injury South	Wet	Going ahead	Bicycle	Other motor vehicle	Other
Comments:				South	Wet	Turning right	Automobile, station wagon	Cyclist	Driving properly
16-126173s	2016-Nov-28, Mon,12:15	Clear	Rear end	Non-reportable North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:				North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-127418s	2016-Dec-01, Thu,17:30	Clear	Rear end	Non-reportable East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
16-127942s	2016-Dec-02, Fri,22:25	Rain	Sideswipe	Non-reportable South	Wet	Slowing or stopping	Passenger van	Other motor vehicle	Driving properly
Comments:				South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-133147s	2016-Dec-17, Sat,17:05	Other	Turning movement	Non-reportable East	Ice	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				West	Ice	Turning left	Pick-up truck	Other motor vehicle	Driving properly
16-134785s	2016-Dec-22, Thu,15:00	Clear	Turning movement	Non-reportable West	Dry	Turning left	Pick-up truck	Other motor vehicle	Driving properly
Comments:				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly

16-135416	2016-Dec-24, Sat,14:33	Clear	Sideswipe	Non-reportable East	Wet	Going ahead	Passenger van	Other motor vehicle	Improper lane change
Comments:				East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-1008s	2017-Jan-03, Tue,15:50	Clear	Rear end	Non-reportable South	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				South	Wet	Slowing or stopping	Pick-up truck	Other motor vehicle	Following too close
17-2833s	2017-Jan-09, Mon,07:40	Clear	Rear end	Non-reportable East	Slush	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-5097s	2017-Jan-15, Sun,14:25	Clear	Rear end	Non-reportable East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
17-6965s	2017-Jan-20, Fri,19:00	Rain	Sideswipe	Non-reportable West	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				West	Wet	Changing lanes	Automobile, station wagon	Other motor vehicle	Improper lane change
17-15489	2017-Feb-13, Mon,15:33	Clear	Rear end	Non-fatal injury East	Dry	Going ahead	Pick-up truck	Other motor vehicle	Following too close
Comments:				East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-16720s	2017-Feb-16, Thu,17:30	Clear	Rear end	Non-reportable North	Dry	Other	Unknown	Other motor vehicle	Other
Comments:				North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-20165s	2017-Feb-26, Sun,13:15	Clear	Turning movement	Non-reportable South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
17-25241s	2017-Mar-12, Sun,16:55	Clear	Rear end	Non-reportable East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-46008	2017-May-08, Mon,18:30	Clear	Rear end	P.D. only South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	
Comments:				South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-850319s	2017-May-15, Mon,14:25	Clear	Rear end	Non-reportable East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly

17-850754s	2017-Jun-03, Sat, 17:10	Clear	Turning movement	Non-reportable	North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					South	Dry	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
17-850951s	2017-Jun-12, Mon, 15:45	Clear	Rear end	Non-reportable	North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Dry	Going ahead	Passenger van	Other motor vehicle	Other
17-851101s	2017-Jun-17, Sat, 13:00	Rain	Rear end	Non-reportable	East	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					East	Wet				
17-851476s	2017-Jul-05, Wed, 11:00	Clear	Rear end	Non-reportable	West	Dry	Slowing or stopping	Pick-up truck	Other motor vehicle	Following too close
Comments:					West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-851798s	2017-Jul-20, Thu, 17:00	Clear	Turning movement	Non-reportable	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Dry	Turning left			
17-851803s	2017-Jul-20, Thu, 17:00	Clear	Rear end	Non-reportable	North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
17-100738	2017-Sep-29, Fri, 14:50	Clear	Rear end	P.D. only	West	Dry	Stopped	Ambulance	Other motor vehicle	Driving properly
Comments:					West	Dry	Going ahead	Passenger van	Other motor vehicle	
17-853783s	2017-Oct-17, Tue, 14:45	Clear	Sideswipe	Non-reportable	West	Dry	Going ahead	Delivery van	Other motor vehicle	Driving properly
Comments:					West	Dry	Merging	Automobile, station wagon	Other motor vehicle	Driving properly
17-853810s	2017-Oct-18, Wed, 17:15	Clear	Rear end	Non-reportable	West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-854006s	2017-Oct-24, Tue, 15:40	Clear	Sideswipe	Non-reportable	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					South	Dry	Turning right		Other motor vehicle	Driving properly
17-854335s	2017-Nov-04, Sat, 18:00	Rain	Turning movement	Non-reportable	South	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Wet	Going ahead	Passenger van	Other motor vehicle	Driving properly

17-854428s	2017-Nov-08, Wed,13:30	Clear	Angle	Non-reportable	West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					South	Dry	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
17-854754s	2017-Nov-19, Sun,08:50	Rain	Turning movement	Non-reportable	South	Wet	Going ahead	Passenger van	Other motor vehicle	Following too close
Comments:					North	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
17-854834s	2017-Nov-22, Wed,13:30	Clear	Rear end	Non-reportable	East	Dry	Stopped	Pick-up truck	Other motor vehicle	Driving properly
Comments:					East	Dry				
17-855039s	2017-Nov-29, Wed,17:30	Clear	Rear end	Non-reportable	West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					West	Dry				
17-855254s	2017-Dec-07, Thu,08:00	Clear	Sideswipe	Non-reportable	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					East	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly
17-855637s	2017-Dec-13, Wed,19:00	Snow	Rear end	Non-reportable	North	Ice	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					North	Ice				
17-132383	2017-Dec-26, Tue,18:53	Clear	Turning movement	Non-fatal injury	West	Loose snow	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of- way
Comments:					East	Loose snow	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
17-856090s	2017-Dec-30, Sat,15:00	Snow	Sideswipe	Non-reportable	West	Loose snow	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					West	Loose snow	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-856093s	2017-Dec-30, Sat,18:08	Clear	Rear end	Non-reportable	East	Loose snow	Going ahead	Pick-up truck	Other motor vehicle	Driving properly
Comments:					East	Loose snow	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly

Collision Details Report

From: January 1, 2010 **To:** January 1, 2018

Location BLACKWATER RD @ SUNNINGDALE RD E

Municipality..... LONDON

Traffic Control.... Stop sign

Total Collisions.... 3

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuver	Vehicle type	First Event	Driver Action	No. Ped
17-424	2017-Jan-02, Mon,08:51	Clear	Angle	Non-fatal injury	South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way	
					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
17-13254s	2017-Feb-06, Mon,18:30	Clear	Rear end	Non-reportable	North	Dry	Other	Automobile, station wagon	Other motor vehicle	Other	
					North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
17-45987	2017-May-08, Mon,17:40	Clear	Angle	P.D. only	West	Dry	Going ahead	Bicycle	Other motor vehicle	Other	
					South	Dry	Turning right	Automobile, station wagon	Cyclist	Driving properly	

Collision Details Report

From: January 1, 2010 **To:** January 1, 2018

Location SOUTH WENIGE DR @ SUNNINGDALE RD E

Municipality..... LONDON

Traffic Control.... Traffic signal

Total Collisions.... 10

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuvre	Vehicle type	First Event	Driver Action	No. Ped
10-21740s	2010-Feb-26, Fri,15:00	Snow	Rear end	Non-reportable	North	Slush	Going ahead	Passenger van	Other motor vehicle	Driving properly	
Comments:					North	Wet	Stopped	Pick-up truck	Other motor vehicle	Driving properly	
11-19499s	2011-Feb-21, Mon,08:45	Clear	SMV other	Non-reportable	East	Loose snow	Going ahead	Automobile, station wagon	Other	Driving properly	
Comments:											
11-114734s	2011-Oct-12, Wed,17:15	Rain	Angle	Non-reportable	East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					North	Wet	Turning left	Passenger van	Other motor vehicle	Driving properly	
13-102588s	2013-Sep-28, Sat,00:55	Clear	Rear end		South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
Comments:					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other	
14-47223s	2014-May-08, Thu,12:30	Clear	Sideswipe	Non-reportable	East	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly	
Comments:					East	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn	
15-94767s	2015-Sep-01, Tue,11:15	Clear	Rear end	Non-reportable	East	Dry	Slowing or stopping	Pick-up truck	Other motor vehicle	Following too close	
Comments:					East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
15-106011s	2015-Sep-28, Mon,15:45	Clear	Rear end	Non-reportable	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close	
Comments:					East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	
16-89279s	2016-Aug-24, Wed,07:42	Clear	Angle	Non-reportable	North	Dry	Turning left	Passenger van	Other motor vehicle	Failed to yield right-of-way	
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
16-92469	2016-Sep-01, Thu,12:54	Clear	SMV other	P.D. only	West	Dry	Going ahead	Automobile, station wagon	Ran off road	Lost control	
Comments:											

17-851519s	2017-Jul-07, Fri,06:40	Clear	Turning movement	Non-reportable West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				East	Dry	Overtaking	Pick-up truck	Other motor vehicle	Improper passing

Collision Details Report

From: January 1, 2010 **To:** January 1, 2018

Location ADELAIDE ST N btwn BLACKWATER RD & SUNNINGDALE RD E

Municipality..... LONDON

Traffic Control.... No control

Total Collisions.... 6

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuvre	Vehicle type	First Event	Driver Action	No. Ped
10-46968s	2010-May-01, Sat,10:45	Clear	Turning movement	Non-reportable	North	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
					South	Wet	Making "U" turn	Automobile, station wagon	Other motor vehicle	Driving properly	
10-275s	2010-Dec-31, Fri,16:00	Other	Rear end	Non-reportable	North	Wet	Changing lanes	Automobile, station wagon	Other motor vehicle	Driving properly	
					North	Wet	Going ahead	Other	Other motor vehicle	Driving properly	
11-62972s	2011-Jun-15, Wed,08:15	Clear	SMV other	Non-reportable	North	Dry	Going ahead	Automobile, station wagon	Animal - wild	Driving properly	
15-77540s	2015-Jul-18, Sat,13:00	Clear	Sideswipe	Non-reportable	North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
						Dry		Unknown	Other motor vehicle		
15-123236	2015-Nov-13, Fri,07:29	Clear	Turning movement	Non-fatal injury	North	Dry	Turning left	Passenger van	Other motor vehicle	Failed to yield right-of-way	
					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
17-854620s	2017-Nov-14, Tue,17:45	Clear	Rear end	Non-reportable	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
					North		Stopped		Other motor vehicle	Driving properly	

Collision Details Report

From: January 1, 2010 **To:** January 1, 2018

Location ADELAIDE ST N btwn FANSHAWE PARK RD E & GRENFELL DR

Municipality..... LONDON

Traffic Control.... No control

Total Collisions.... 28

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuvre	Vehicle type	First Event	Driver Action	No. Ped
11-22654s	2011-Feb-28, Mon,17:00	Clear	Turning movement	Non-reportable	East	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly	
					West	Dry	Stopped	Passenger van	Other motor vehicle	Driving properly	
11-137122s	2011-Dec-04, Sun,12:10	Rain	Turning movement	Non-reportable	North	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly	
					South	Wet	Going ahead	Passenger van	Other motor vehicle	Driving properly	
11-137626	2011-Dec-05, Mon,18:45	Rain	SMV unattended vehicle	Non-fatal injury	South	Wet	Going ahead	Automobile, station wagon	Pedestrian	Driving properly	
						Wet	Going ahead				
11-139664s	2011-Dec-10, Sat,12:30	Clear	Rear end	Non-reportable	North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
					North	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	
12-62294s	2012-Jun-01, Fri,14:30	Rain	Rear end	Non-reportable	South	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	
					South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
13-011479	2013-Feb-01, Fri,22:15	Clear	Turning movement		North	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
					South	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn	
13-42056s	2013-Apr-28, Sun,12:00	Clear	Sideswipe	P.D. only	North	Dry	Turning right	Automobile, station wagon	Other motor vehicle	Driving properly	
					North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
13-46556s	2013-May-09, Thu,08:10	Clear	Sideswipe		South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
					South		Changing lanes	Automobile, station wagon	Other motor vehicle	Improper lane change	
13-47057s	2013-May-10, Fri,08:40	Rain	Rear end		South	Wet	Slowing or stopping	Pick-up truck	Skidding/sliding		
					South		Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	

13-66437	2013-Jun-28, Fri,12:56	Rain	Angle	P.D. only	West	Wet	Going ahead		Other motor vehicle	Failed to yield right-of-way
Comments:					North	Wet	Going ahead		Other motor vehicle	Driving properly
14-001276s	2014-Jan-03, Fri,17:30	Clear	Sideswipe	P.D. only	South	Slush	Changing lanes	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					South					
14-012727	2014-Feb-04, Tue,17:48	Clear	Angle	Non-fatal injury	West	Slush	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
Comments:					North	Slush	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
14-117214s	2014-Oct-20, Mon,18:30	Clear	Rear end	Non-reportable	East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:					East		Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
15-39401s	2015-Apr-13, Mon,08:45	Clear	Rear end	Non-reportable	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close
Comments:					North					
15-41030	2015-Apr-19, Sun,13:54	Clear	Angle	Non-fatal injury	East	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
Comments:					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15-62886s	2015-Jun-12, Fri,16:30	Clear	Rear end	Non-reportable	South	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
Comments:					South		Stopped	Unknown	Other motor vehicle	Driving properly
15-107514s	2015-Oct-02, Fri,11:00	Clear	Angle	Non-reportable	East	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
Comments:					North		Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
15-122841	2015-Nov-12, Thu,07:01	Rain	SMV other	Non-fatal injury	South	Wet	Going ahead	Automobile, station wagon	Pedestrian	Driving properly
Comments:										1
16-51085s	2016-May-22, Sun,15:00	Clear	Angle	Non-reportable	East	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
Comments:					South		Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-57390s	2016-Jun-06, Mon,18:15	Rain	Angle	Non-reportable	East	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
Comments:					South		Going ahead		Other motor vehicle	Driving properly

16-74116s	2016-Jul-16, Sat,17:40	Clear	Rear end	Non-reportable North	Dry	Slowing or stopping	Unknown	Other motor vehicle	Following too close
Comments:				North		Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-85213s	2016-Aug-13, Sat,15:00	Rain	Angle	Non-reportable East	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
Comments:				South		Going ahead	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
16-105055	2016-Oct-02, Sun,16:30	Clear	Sideswipe	Other South	Dry	Turning right	Automobile, station wagon	Other motor vehicle	Improper turn
Comments:				South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-106962s	2016-Oct-07, Fri,09:30	Clear	Rear end	Non-reportable South	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close
Comments:				South		Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
16-109895s	2016-Oct-15, Sat,12:00	Clear	Angle	Non-reportable East	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
Comments:				South		Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
16-110243s	2016-Oct-16, Sun,13:00	Fog, mist, smoke, dust	Rear end	Non-reportable South	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				South	Wet	Slowing or stopping	Pick-up truck	Other motor vehicle	Following too close
17-851852s	2017-Jul-22, Sat,15:50	Clear	Rear end	Non-reportable South	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				South		Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-853232s	2017-Sep-26, Tue,13:15	Clear	Angle	Non-reportable East	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way
Comments:				South		Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly

Collision Details Report

From: January 1, 2010 **To:** January 1, 2018

Location ADELAIDE ST N btwn BLACKWATER RD & GRENFELL DR

Municipality..... LONDON

Traffic Control.... No control

Total Collisions.... 14

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuvre	Vehicle type	First Event	Driver Action	No. Ped
11-46311	2011-May-03, Tue,07:56	Rain	Rear end	Non-fatal injury	South	Wet	Going ahead	Passenger van	Other motor vehicle	Speed too fast for condition	
Comments:					South	Wet	Slowing or stopping	Passenger van	Other motor vehicle	Driving properly	
11-46400	2011-May-03, Tue,11:35	Rain	SMV other	Non-fatal injury	North	Wet	Going ahead	Automobile, station wagon	Skidding/sliding	Speed too fast for condition	
Comments:						Wet					
12-048537	2012-Apr-30, Mon,00:04	Clear	SMV other	P.D. only	North	Dry	Going ahead	Automobile, station wagon	Animal - wild	Driving properly	
Comments:						Dry					
12-87693	2012-Jul-31, Tue,15:30	Clear	Rear end	Non-fatal injury	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close	
Comments:					North	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	
13-005776	2013-Jan-16, Wed,20:30	Clear	SMV other		South	Dry	Going ahead	Automobile, station wagon	Animal - wild	Driving properly	
Comments:										deer	
13-65826	2013-Jun-27, Thu,01:40	Clear	Approaching	Other	South	Dry	Unknown	Unknown	Other motor vehicle		
Comments:					North	Dry	Going ahead	Passenger van	Ran off road	Driving properly	
13-092488s	2013-Sep-03, Tue,08:15	Rain	Approaching		South	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Lost control	
Comments:					North		Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
13-122832s	2013-Nov-19, Tue,19:00	Clear	SMV other		North	Dry	Going ahead	Delivery van	Animal - wild	Driving properly	
Comments:										Deer	
13-123388s	2013-Nov-21, Thu,18:20	Rain	SMV other		South	Wet	Going ahead	Automobile, station wagon	Animal - wild	Driving properly	
Comments:										Deer	
15-104695s	2015-Sep-25, Fri,17:00	Clear	Sideswipe	Non-reportable	North	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Following too close	
Comments:					North		Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	

17-851011s	2017-Jun-14, Wed,17:30	Clear	Approaching	Non-reportable North	Dry	Going ahead	Passenger van	Other motor vehicle	Other
Comments:				South		Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
17-71016	2017-Jul-14, Fri,17:11	Clear	Rear end	Non-fatal injury South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other
Comments:				South	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly
17-854595s	2017-Nov-13, Mon,17:30	Clear	Sideswipe	Non-reportable South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				South		Going ahead	Pick-up truck	Other motor vehicle	Other
17-855632s	2017-Dec-17, Sun,01:00	Clear	Sideswipe	Non-reportable North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly
Comments:				North		Turning left	Automobile, station wagon	Other motor vehicle	Improper turn

Collision Details Report

From: January 1, 2010 **To:** January 1, 2018

Location ADELAIDE ST N btwn CITY LIMITS & SUPERIOR DR

Municipality..... LONDON

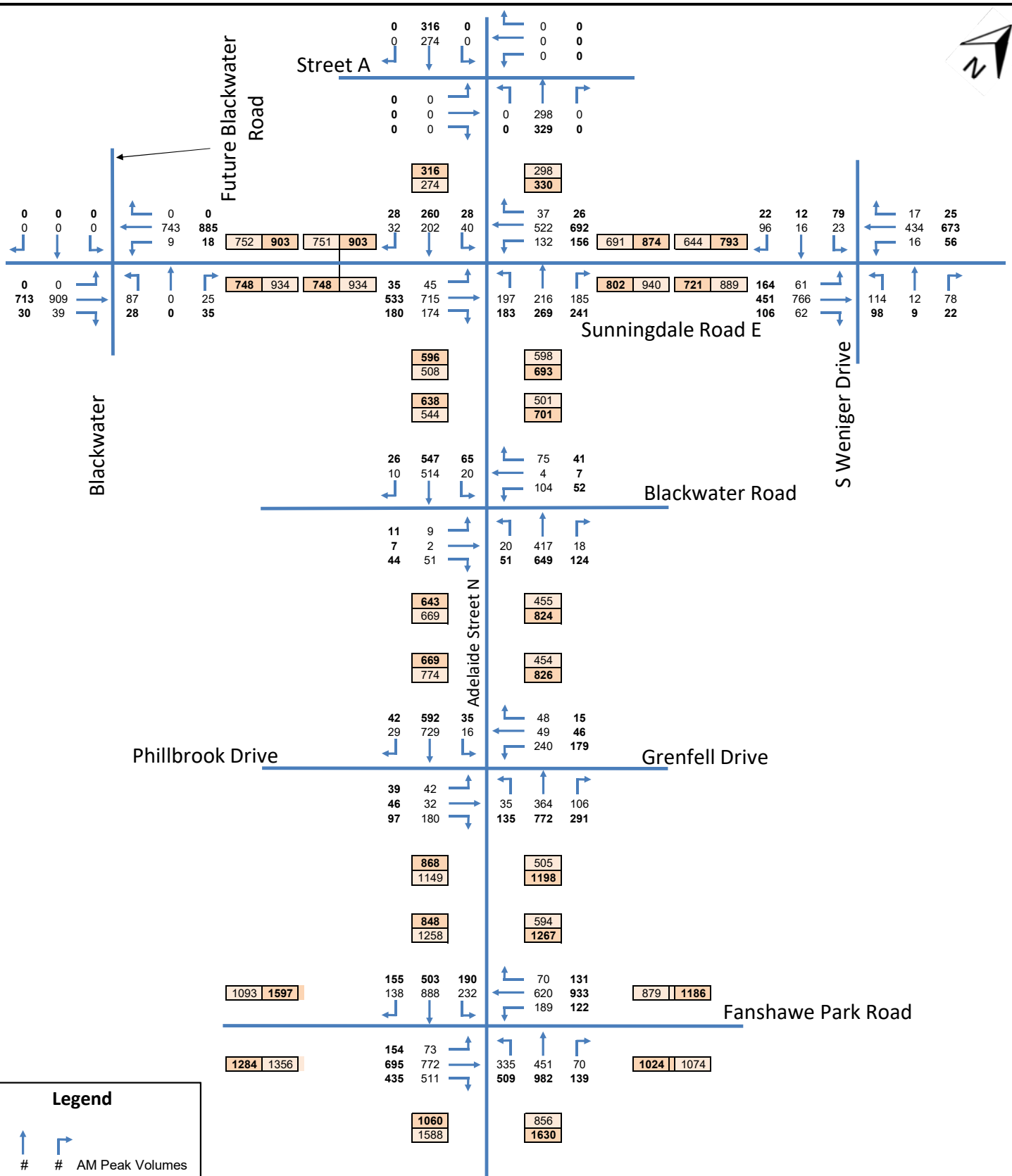
Traffic Control.... No control

Total Collisions.... 8

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuver	Vehicle type	First Event	Driver Action	No. Ped
10-115627s	2010-Oct-23, Sat,07:15	Clear	SMV other	Non-reportable	North	Dry	Going ahead	Automobile, station wagon	Animal - wild	Driving properly	
Comments:											
12-145634s	2012-Dec-22, Sat,19:00	Clear	SMV other	Non-reportable	North	Dry	Slowing or stopping	Automobile, station wagon	Animal - wild	Driving properly	
Comments:											
13-38687s	2013-Apr-19, Fri,06:20	Rain	SMV other	P.D. only	South	Wet	Going ahead	Automobile, station wagon	Animal - wild	Driving properly	
Comments: deer											
13-117391s	2013-Nov-04, Mon,18:30	Clear	SMV other		North	Dry	Going ahead	Automobile, station wagon	Animal - wild	Driving properly	
Comments: Deer											
13-132377s	2013-Dec-16, Mon,17:35	Clear	SMV other	P.D. only	South	Dry	Going ahead	Automobile, station wagon	Animal - wild	Driving properly	
Comments: Deer											
15-120601	2015-Nov-06, Fri,00:14	Rain	SMV other	P.D. only	South	Wet	Going ahead	Pick-up truck	Animal - wild	Driving properly	
Comments: Deer											
15-120216s	2015-Nov-06, Fri,04:00	Clear	SMV other	Non-reportable	South	Dry	Going ahead	Automobile, station wagon	Animal - wild	Driving properly	
Comments: Deer											
16-117443s	2016-Nov-14, Mon,07:45	Fog, mist, smoke, dust	SMV other	Non-reportable	South	Dry	Going ahead	Automobile, station wagon	Animal - wild	Driving properly	
Comments: DEER											

APPENDIX E

Background (2029 and 2039)
Weekday AM and PM Traffic Volumes



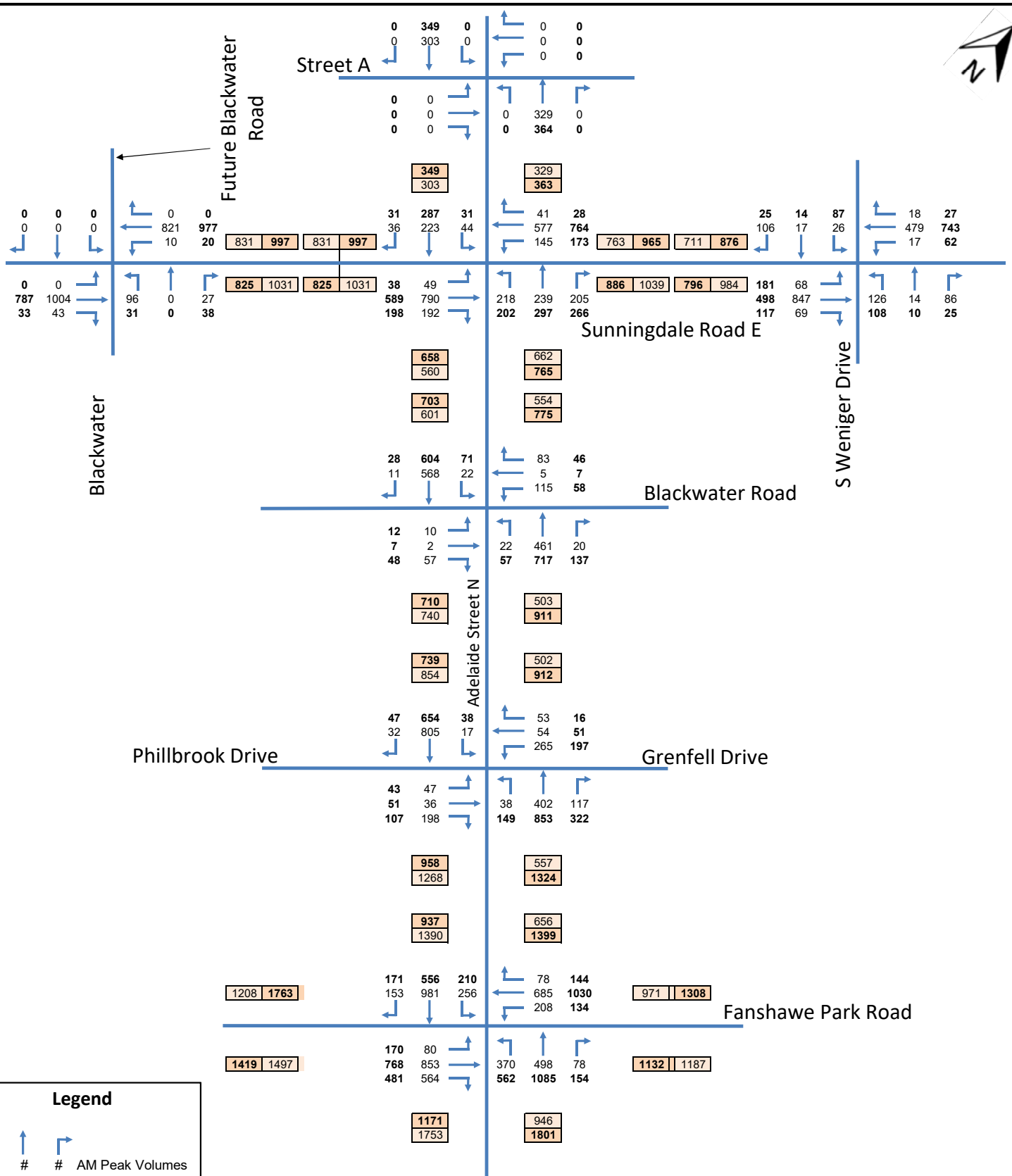
Legend

AM Peak Volumes
 # PM Peak Volumes
 # AM Peak Volumes
 # PM Peak Volumes

NOT TO SCALE

Background (2029) AM & PM Traffic Volumes
Adelaide Street EA Study





Legend

AM Peak Volumes
 # PM Peak Volumes
 # AM Peak Volumes
 # PM Peak Volumes

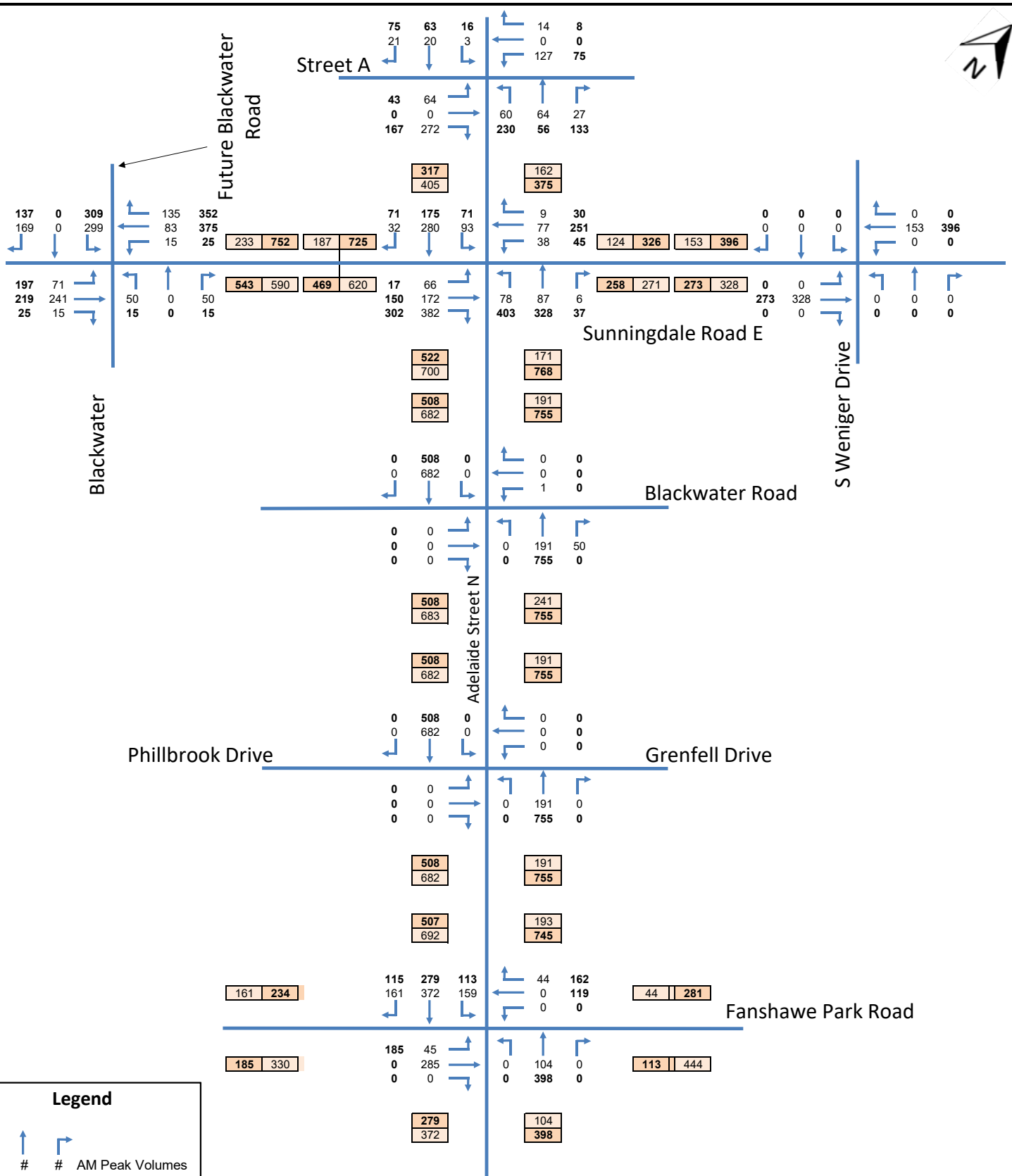
NOT TO SCALE

Background (2039) AM & PM Traffic Volumes
Adelaide Street EA Study



APPENDIX F

Proposed Development Site Trips



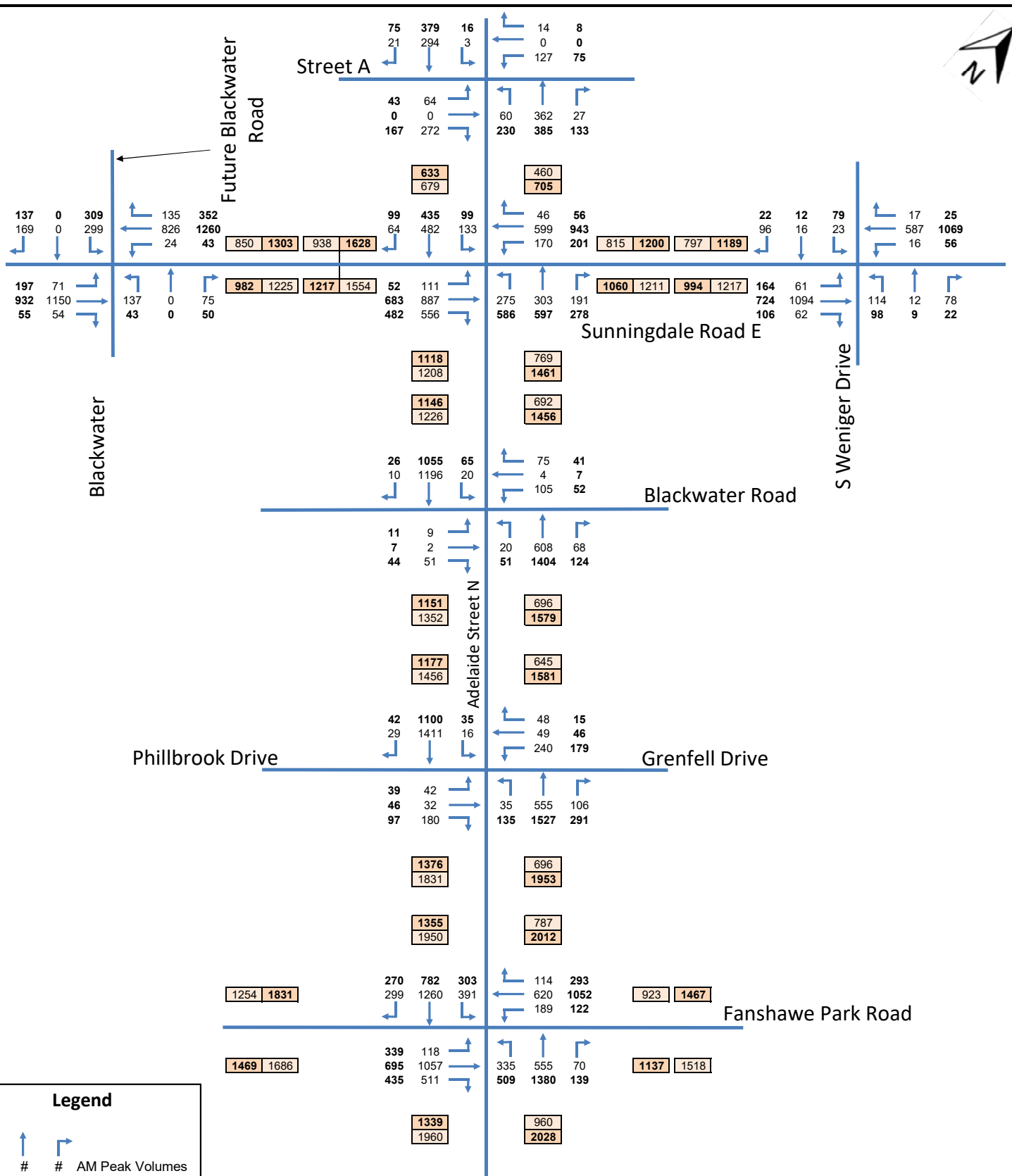
NOT TO SCALE

Total Development Site Trips - Applewood TIS
Adelaide Street EA Study



APPENDIX G

Future (2029 and 2039)
Weekday AM and PM Traffic Volumes



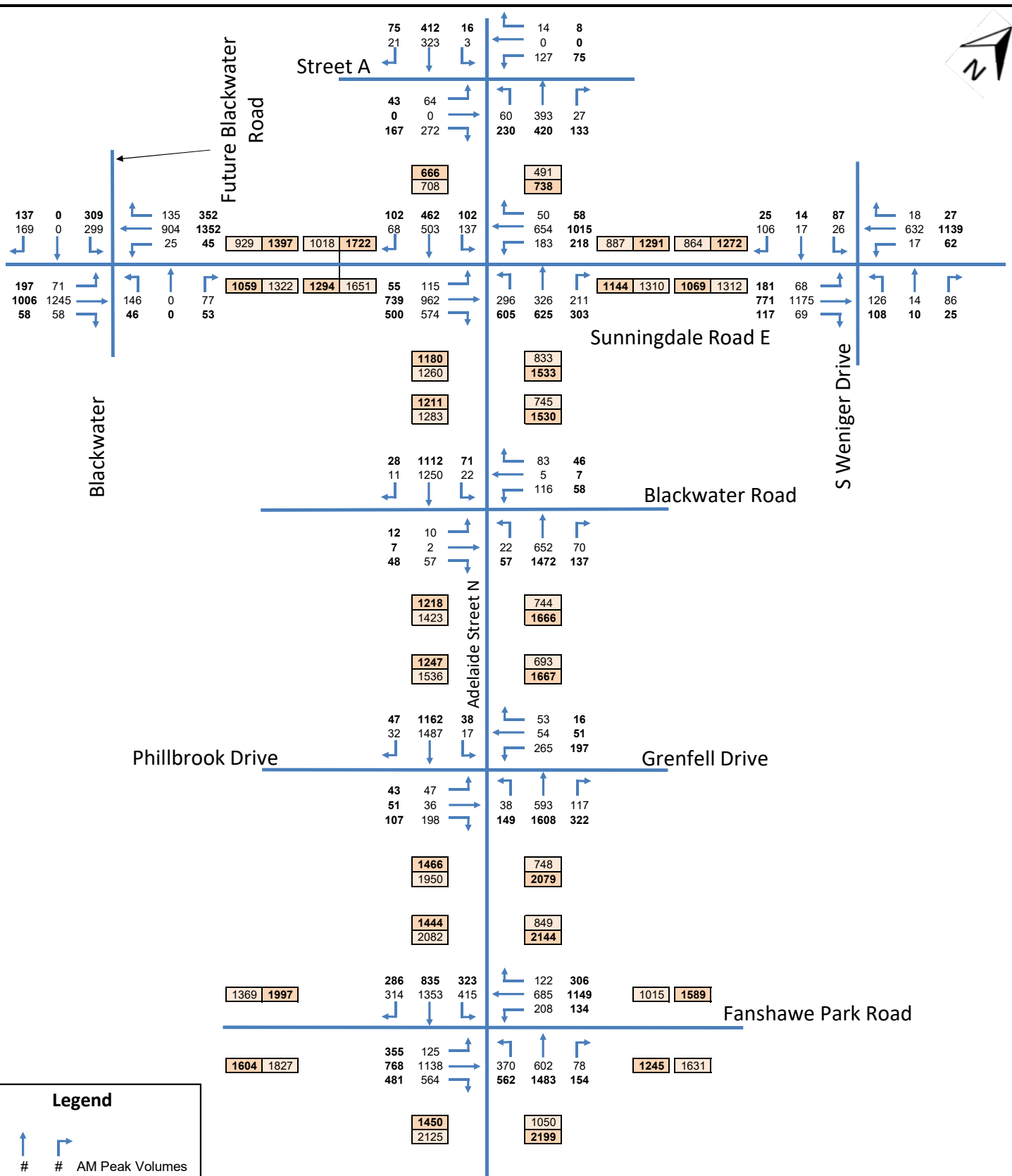
Legend

AM Peak Volumes
 # PM Peak Volumes
 # AM Peak Volumes
 # PM Peak Volumes

NOT TO SCALE

Future (2029) AM & PM Traffic Volumes
Adelaide Street EA Study





Legend

←	↑	↘	#	#	#	AM Peak Volumes
←	↑	↘	#	#	#	PM Peak Volumes

NOT TO SCALE

Future (2039) AM & PM Traffic Volumes
Adelaide Street EA Study



APPENDIX H

Signal Warrant Analysis Sheets

Signalization Warrant
 Adelaide Street N & Blackwater Road
 Future 2029 Traffic Conditions

WARRANT	DESCRIPTION	MINIMUM REQUIREMENT FOR 2 LANE HIGHWAYS		COMPLIANCE		
		FLOW RATE		SECTIONAL		(4) ENTIRE %
				NUMERICAL	%	
1 MINIMUM VEHICULAR VOLUME	A. VEHICLE VOLUME, ALL APPROACHES PER HOUR FOR 8 HOURS, AND	720	800	100	93	
	B. VEHICLE VOLUME, ALONG MINOR STREETS, PER HOUR FOR SAME, 8 HOURS.	170	740	93		
2 DELAY TO CROSS TRAFFIC	A. VEHICLE VOLUME, ALONG ARTERY. PER HOUR FOR 8 HOURS, AND	720	800	100	100	
	B. COMBINED VEHICLE AND PEDESTRIAN VOLUME CROSSING ARTERY FROM MINOR STREETS, PER HOUR FOR SAME 8 HOURS.	75	800	100		
3 ACCIDENT HAZARD	A. TOTAL REPORTED ACCIDENTS OF TYPES SUSCEPTIBLE TO CORRECTION BY A TRAFFIC SIGNAL WITHIN A 12 MONTH PERIOD, AND	No. accidents	Warrant Value	Avg. No. Accidents	0	
		0	5	0.00		
	B. ADEQUATE TRIAL OF LESS RESTRICTIVE REMEDIES, WHERE SATISFACTORY OBSERVANCE AND ENFORCEMENT HAVE FAILED TO REDUCE THE NUMBER OF ACCIDENTS, AND	yes OR no		no		0
	C. FULFILLMENT OF EITHER OF THE ABOVE WARRANTS Minimum Vehicular Volume or Delay to Cross Traffic to the Extent of 80% or more	yes OR no		no	0	
4 COMBINATION WARRANT	TWO OR MORE OF ABOVE WARRANTS {NUMBERS 1, 2, 3, OR 4} SATISFIED TO THE EXTENT OF 80% OR MORE.	YES or NO		YES		

TRAFFIC SIGNAL WARRANT ANALYSIS (Justification 7)

Minimum Warrants for Installation of traffic signals for roadways with two or more lanes

Sunningdale Road E & Blackwater Road

Future 2029 Traffic Conditions

MAJOR STREET : **Adelaide Street North** DIRECTION NS OR EW) **NS**
 MINOR STREET : **Street A** DIRECTION NS OR EW) **EW**

RESTRICTED FLOW CONDITIONS (URBAN)

WARRANT 1 - MINIMUM VEHICULAR VOLUME (Average Hour)

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				Compliance			
	1		2 or More		Sectional			Entire %
	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	SELECTED FLOW RATE	Numerical	%	
All Approaches	480	720 X	600	900	720	1581	220%	179%
Along Minor Streets	120	170 X	120	170	170	305	179%	

For T intersections warrant should be increased by 50%

Yes/No
 Yes
 No
 T Intersection ?

WARRANT 2 - DELAY TO CROSS TRAFFIC (Average Hour)

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				Compliance			
	1		2 or More		Sectional			Entire %
	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	SELECTED FLOW RATE	Numerical	%	
Along Major Streets	480	720 X	600	900	720	1276	177%	177%
Traffic Crossing Major Street	50	75 X	120	170	75	197	263%	

Note: Warrant based on 50% of peak hour volume and confirming whether it exceeds 150% of Warrant.

TRAFFIC SIGNAL WARRANT ANALYSIS (Justification 7)

Minimum Warrants for Installation of traffic signals for roadways with two or more lanes

Adealide Street North & Street A

Future 2029 Traffic Conditions

MAJOR STREET : **Adelaide Street North** DIRECTION NS OR EW) **NS**
 MINOR STREET : **Street A** DIRECTION NS OR EW) **EW**

RESTRICTED FLOW CONDITIONS (URBAN)

WARRANT 1 - MINIMUM VEHICULAR VOLUME (Average Hour)

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				Compliance			
	1		2 or More		Sectional			Entire %
	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	SELECTED FLOW RATE	Numerical	%	
All Approaches	480	720 X	600	900	720	691	96%	96%
Along Minor Streets	120	170 X	120	170	170	194	114%	

For T intersections warrant should be increased by 50% Yes/No
No
T Intersection ?

WARRANT 2 - DELAY TO CROSS TRAFFIC (Average Hour)

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				Compliance			
	1		2 or More		Sectional			Entire %
	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	SELECTED FLOW RATE	Numerical	%	
Along Major Streets	480	720 X	600	900	720	497	69%	69%
Traffic Crossing Major Street	50	75 X	120	170	75	78	104%	

Note: Warrant based on 50% of peak hour volume and confirming whether it exceeds 150% of Warrant.

TRAFFIC SIGNAL WARRANT ANALYSIS (Justification 7)

Minimum Warrants for Installation of traffic signals for roadways with two or more lanes

Adealide Street North & Street A

Future 2039 Traffic Conditions

MAJOR STREET : **Adelaide Street North** DIRECTION NS OR EW) **NS**
 MINOR STREET : **Street A** DIRECTION NS OR EW) **EW**

RESTRICTED FLOW CONDITIONS (URBAN)

WARRANT 1 - MINIMUM VEHICULAR VOLUME (Average Hour)

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				Compliance			
	1		2 or More		Sectional			Entire %
	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	SELECTED FLOW RATE	Numerical	%	
All Approaches	480	720 X	600	900	720	723	100%	100%
Along Minor Streets	120	170 X	120	170	170	194	114%	

For T intersections warrant should be increased by 50%

Yes/No

No

T Intersection ?

WARRANT 2 - DELAY TO CROSS TRAFFIC (Average Hour)

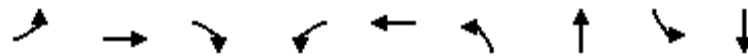
APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				Compliance			
	1		2 or More		Sectional			Entire %
	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	SELECTED FLOW RATE	Numerical	%	
Along Major Streets	480	720 X	600	900	720	529	73%	73%
Traffic Crossing Major Street	50	75 X	120	170	75	78	104%	

Note: Warrant based on 50% of peak hour volume and confirming whether it exceeds 150% of Warrant.

APPENDIX I

Future (2029) Do Nothing Weekday AM and PM
Traffic Analysis Synchro Output Sheets

Adelaide Street North EA Future 2029 Traffic Analysis with Timing Improvements Only
 7: South Wenige Drive & Sunningdale Road E AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	66	1189	67	17	656	124	98	25	121
v/c Ratio	0.14	0.90	0.06	0.14	0.50	0.68	0.32	0.12	0.34
Control Delay	5.5	24.3	1.2	7.9	8.3	66.7	15.0	44.5	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	24.3	1.2	7.9	8.3	66.7	15.0	44.5	14.3
Queue Length 50th (m)	4.0	193.7	0.0	1.0	56.8	27.8	2.6	5.1	3.4
Queue Length 95th (m)	8.5	#339.0	3.4	3.9	79.2	#54.0	17.6	13.2	19.9
Internal Link Dist (m)		503.0			305.2		276.5		132.8
Turn Bay Length (m)	120.0		120.0	90.0		30.0		30.0	
Base Capacity (vph)	483	1316	1169	119	1305	183	308	217	355
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.90	0.06	0.14	0.50	0.68	0.32	0.12	0.34

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA Future 2029 Traffic Analysis with Timing Improvements Only
 7: South Wenige Drive & Sunningdale Road E AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	1094	62	16	587	17	114	12	78	23	16	96
Future Volume (vph)	61	1094	62	16	587	17	114	12	78	23	16	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	1795	1570	1706	1779		1644	1455		1825	1645	
Flt Permitted	0.36	1.00	1.00	0.09	1.00		0.65	1.00		0.69	1.00	
Satd. Flow (perm)	660	1795	1570	163	1779		1126	1455		1332	1645	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	1189	67	17	638	18	124	13	85	25	17	104
RTOR Reduction (vph)	0	0	18	0	1	0	0	71	0	0	87	0
Lane Group Flow (vph)	66	1189	49	17	655	0	124	27	0	25	34	0
Heavy Vehicles (%)	4%	7%	4%	7%	7%	27%	11%	27%	13%	0%	0%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	88.0	88.0	88.0	88.0	88.0		19.6	19.6		19.6	19.6	
Effective Green, g (s)	88.0	88.0	88.0	88.0	88.0		19.6	19.6		19.6	19.6	
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73		0.16	0.16		0.16	0.16	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	484	1316	1151	119	1304		183	237		217	268	
v/s Ratio Prot		c0.66			0.37			0.02			0.02	
v/s Ratio Perm	0.10		0.03	0.10			c0.11			0.02		
v/c Ratio	0.14	0.90	0.04	0.14	0.50		0.68	0.11		0.12	0.13	
Uniform Delay, d1	4.7	12.6	4.4	4.8	6.8		47.2	42.8		42.8	42.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	10.3	0.1	2.5	1.4		18.4	1.0		1.1	1.0	
Delay (s)	5.3	23.0	4.5	7.3	8.1		65.6	43.8		43.9	43.9	
Level of Service	A	C	A	A	A		E	D		D	D	
Approach Delay (s)		21.2			8.1			55.9			43.9	
Approach LOS		C			A			E			D	
Intersection Summary												
HCM 2000 Control Delay			22.1				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			12.4		
Intersection Capacity Utilization			80.9%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	121	964	604	185	651	50	299	329	208	145	594
v/c Ratio	0.52	0.92	0.85	1.01	0.48	0.08	1.05	0.37	0.24	0.46	0.98
Control Delay	41.5	51.3	27.5	95.8	25.9	2.6	94.4	19.5	3.2	35.1	69.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.5	51.3	27.5	95.8	25.9	2.6	94.4	19.5	3.2	35.1	69.3
Queue Length 50th (m)	21.5	104.9	54.7	-25.3	53.6	0.0	-52.9	43.1	0.7	24.5	124.5
Queue Length 95th (m)	41.2	#142.2	#120.5	#69.3	69.8	4.3	#106.3	64.0	12.5	43.8	#196.1
Internal Link Dist (m)		393.8			117.3			302.9			213.8
Turn Bay Length (m)	110.0		110.0	70.0			150.0		130.0	75.0	
Base Capacity (vph)	232	1053	712	183	1364	659	286	896	852	317	606
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.92	0.85	1.01	0.48	0.08	1.05	0.37	0.24	0.46	0.98

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

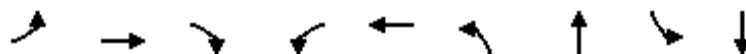
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Adelaide Street North EA Future 2029 Traffic Analysis with Timing Improvements Only
 8: Adelaide Street N & Sunningdale Road E AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	111	887	556	170	599	46	275	303	191	133	482	64	
Future Volume (vph)	111	887	556	170	599	46	275	303	191	133	482	64	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.8	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	6.3	6.3		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00		
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1825	3510	1555	1755	3411	1541	1807	1865	1555	1644	1848		
Flt Permitted	0.40	1.00	1.00	0.11	1.00	1.00	0.10	1.00	1.00	0.56	1.00		
Satd. Flow (perm)	777	3510	1555	200	3411	1541	191	1865	1555	973	1848		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	121	964	604	185	651	50	299	329	208	145	524	70	
RTOR Reduction (vph)	0	0	246	0	0	30	0	0	105	0	4	0	
Lane Group Flow (vph)	121	964	358	185	651	20	299	329	103	145	590	0	
Heavy Vehicles (%)	0%	4%	5%	4%	7%	6%	1%	3%	5%	11%	2%	3%	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		
Protected Phases		8		7	4		5	2			6		
Permitted Phases	8		8	4		4	2		2	6			
Actuated Green, G (s)	33.0	33.0	33.0	44.0	44.0	44.0	52.9	52.9	52.9	35.9	35.9		
Effective Green, g (s)	33.0	33.0	33.0	44.0	44.0	44.0	52.9	52.9	52.9	35.9	35.9		
Actuated g/C Ratio	0.30	0.30	0.30	0.40	0.40	0.40	0.48	0.48	0.48	0.33	0.33		
Clearance Time (s)	6.8	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	6.3	6.3		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	233	1053	466	178	1364	616	282	896	747	317	603		
v/s Ratio Prot		0.27		c0.07	0.19		c0.12	0.18			0.32		
v/s Ratio Perm	0.16		0.23	c0.35		0.01	c0.38		0.07	0.15			
v/c Ratio	0.52	0.92	0.77	1.04	0.48	0.03	1.06	0.37	0.14	0.46	0.98		
Uniform Delay, d1	31.9	37.2	35.0	27.8	24.5	20.1	32.2	18.0	15.9	29.3	36.7		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	2.0	12.0	7.5	78.2	0.3	0.0	70.4	1.2	0.4	4.7	31.7		
Delay (s)	33.9	49.2	42.5	106.0	24.7	20.1	102.6	19.2	16.3	34.0	68.4		
Level of Service	C	D	D	F	C	C	F	B	B	C	E		
Approach Delay (s)		45.7			41.4			48.3			61.6		
Approach LOS		D			D			D			E		
Intersection Summary													
HCM 2000 Control Delay			48.1		HCM 2000 Level of Service						D		
HCM 2000 Volume to Capacity ratio			1.11										
Actuated Cycle Length (s)			110.0		Sum of lost time (s)						21.1		
Intersection Capacity Utilization			96.0%		ICU Level of Service						F		
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	128	1149	555	205	798	364	679	425	1695
v/c Ratio	0.70	1.12	0.73	1.21	0.78	1.56	0.73	0.90	1.32
Control Delay	46.7	106.7	28.1	162.3	43.5	296.9	44.4	46.8	180.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.7	106.7	28.1	162.3	43.5	296.9	44.4	46.8	180.1
Queue Length 50th (m)	19.0	~163.9	86.2	~41.4	88.2	~107.3	76.7	66.1	~270.5
Queue Length 95th (m)	#38.9	#205.2	130.0	#89.7	111.7	#166.1	98.6	#120.2	#313.5
Internal Link Dist (m)		353.7			209.7		228.2		202.1
Turn Bay Length (m)	90.0		110.0	60.0		190.0		95.0	
Base Capacity (vph)	182	1026	764	170	1029	234	936	492	1288
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	1.12	0.73	1.21	0.78	1.56	0.73	0.86	1.32

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	1057	511	189	620	114	335	555	70	391	1260	299
Future Volume (vph)	118	1057	511	189	620	114	335	555	70	391	1260	299
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.9	4.0	4.0	6.9		4.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1690	3510	1570	1772	3380		1706	3354		1807	3429	
Flt Permitted	0.17	1.00	1.00	0.11	1.00		0.12	1.00		0.19	1.00	
Satd. Flow (perm)	310	3510	1570	207	3380		216	3354		366	3429	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	128	1149	555	205	674	124	364	603	76	425	1370	325
RTOR Reduction (vph)	0	0	64	0	13	0	0	8	0	0	17	0
Lane Group Flow (vph)	128	1149	491	205	785	0	364	671	0	425	1678	0
Heavy Vehicles (%)	8%	4%	4%	3%	5%	8%	7%	7%	7%	1%	3%	5%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	41.1	35.1	47.1	43.1	36.1		45.2	33.2		60.5	44.5	
Effective Green, g (s)	41.1	35.1	47.1	43.1	36.1		45.2	33.2		60.5	44.5	
Actuated g/C Ratio	0.34	0.29	0.39	0.36	0.30		0.38	0.28		0.50	0.37	
Clearance Time (s)	4.0	6.9	4.0	4.0	6.9		4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	175	1026	616	165	1016		230	927		464	1271	
v/s Ratio Prot	0.04	0.33	0.08	c0.07	0.23		c0.16	0.20		0.18	c0.49	
v/s Ratio Perm	0.21		0.23	c0.37			c0.44			0.28		
v/c Ratio	0.73	1.12	0.80	1.24	0.77		1.58	0.72		0.92	1.32	
Uniform Delay, d1	30.8	42.5	32.2	34.4	38.2		32.4	39.3		26.0	37.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.6	67.1	7.1	149.8	5.7		281.9	2.8		22.6	149.7	
Delay (s)	45.3	109.6	39.3	184.2	43.9		314.4	42.1		48.6	187.5	
Level of Service	D	F	D	F	D		F	D		D	F	
Approach Delay (s)		83.8			72.6			137.1			159.6	
Approach LOS		F			E			F			F	

Intersection Summary

HCM 2000 Control Delay	118.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.4
Intersection Capacity Utilization	120.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	46	231	261	105	38	603	115	17	1566
v/c Ratio	0.14	0.51	1.14	0.22	0.64	0.52	0.11	0.04	1.31
Control Delay	36.0	35.1	143.4	23.4	65.4	13.4	1.7	8.1	169.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.0	35.1	143.4	23.4	65.4	13.4	1.7	8.1	169.0
Queue Length 50th (m)	8.4	37.4	~71.6	11.9	5.0	70.2	0.0	1.4	~477.3
Queue Length 95th (m)	18.3	62.4	#123.1	26.3	#27.0	97.8	6.2	4.1	#559.5
Internal Link Dist (m)		249.6		201.4		128.2			673.9
Turn Bay Length (m)	70.0		65.0		60.0		50.0	65.0	
Base Capacity (vph)	328	451	229	469	59	1157	1034	430	1195
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.51	1.14	0.22	0.64	0.52	0.11	0.04	1.31

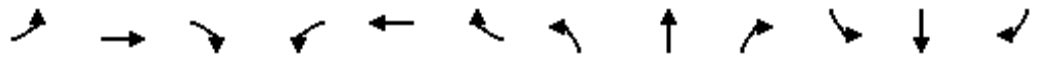
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.










Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

















































Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	32	180	240	49	48	35	555	106	16	1411	29
Future Volume (vph)	42	32	180	240	49	48	35	555	106	16	1411	29
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		5.6	5.6	5.6	5.6	5.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.87		1.00	0.93		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1772	1632		1789	1718		1706	1795	1541	1825	1853	
Flt Permitted	0.69	1.00		0.48	1.00		0.05	1.00	1.00	0.35	1.00	
Satd. Flow (perm)	1285	1632		899	1718		93	1795	1541	667	1853	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	35	196	261	53	52	38	603	115	17	1534	32
RTOR Reduction (vph)	0	33	0	0	30	0	0	0	41	0	1	0
Lane Group Flow (vph)	46	198	0	261	75	0	38	603	74	17	1565	0
Heavy Vehicles (%)	3%	7%	2%	2%	7%	0%	7%	7%	6%	0%	3%	20%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2				2
Permitted Phases	4			4			2		2	2		
Actuated Green, G (s)	30.7	30.7		30.7	30.7		77.4	77.4	77.4	77.4	77.4	
Effective Green, g (s)	30.7	30.7		30.7	30.7		77.4	77.4	77.4	77.4	77.4	
Actuated g/C Ratio	0.26	0.26		0.26	0.26		0.65	0.65	0.65	0.65	0.65	
Clearance Time (s)	6.3	6.3		6.3	6.3		5.6	5.6	5.6	5.6	5.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	328	417		229	439		59	1157	993	430	1195	
v/s Ratio Prot		0.12			0.04			0.34				c0.84
v/s Ratio Perm	0.04			c0.29			0.41		0.05	0.03		
v/c Ratio	0.14	0.47		1.14	0.17		0.64	0.52	0.07	0.04	1.31	
Uniform Delay, d1	34.5	37.8		44.6	34.8		12.9	11.4	7.9	7.8	21.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.9		102.3	0.2		43.4	1.7	0.1	0.2	145.5	
Delay (s)	34.7	38.7		146.9	34.9		56.4	13.1	8.1	7.9	166.8	
Level of Service	C	D		F	C		E	B	A	A	F	
Approach Delay (s)		38.0			114.8			14.5			165.1	
Approach LOS		D			F			B			F	
Intersection Summary												
HCM 2000 Control Delay			109.0			HCM 2000 Level of Service			F			
HCM 2000 Volume to Capacity ratio			1.26									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			11.9			
Intersection Capacity Utilization			117.3%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	77	1309	26	898	147	149	82	325	184
v/c Ratio	0.40	0.88	0.21	0.61	0.19	0.34	0.13	0.67	0.29
Control Delay	19.3	24.0	15.7	15.2	2.9	16.8	6.9	25.0	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	24.0	15.7	15.2	2.9	16.8	6.9	25.0	10.2
Queue Length 50th (m)	5.5	64.7	1.7	37.6	0.0	11.7	1.9	29.5	8.5
Queue Length 95th (m)	16.1	#103.8	6.7	53.6	8.0	24.4	9.0	#61.9	20.5
Internal Link Dist (m)		412.2		393.8			184.6		108.9
Turn Bay Length (m)	80.0		100.0		90.0	20.0			
Base Capacity (vph)	198	1533	129	1522	784	439	617	482	626
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.85	0.20	0.59	0.19	0.34	0.13	0.67	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.






















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (vph)	71	1150	54	24	826	135	137	0	75	299	0	169
Future Volume (vph)	71	1150	54	24	826	135	137	0	75	299	0	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3489		1789	3476	1601	1789	1601		1789	1601	
Flt Permitted	0.24	1.00		0.16	1.00	1.00	0.64	1.00		0.70	1.00	
Satd. Flow (perm)	454	3489		297	3476	1601	1208	1601		1325	1601	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	1250	59	26	898	147	149	0	82	325	0	184
RTOR Reduction (vph)	0	6	0	0	0	84	0	35	0	0	44	0
Lane Group Flow (vph)	77	1303	0	26	898	63	149	47	0	325	140	0
Heavy Vehicles (%)	2%	4%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	25.4	25.4		25.4	25.4	25.4	21.6	21.6		21.6	21.6	
Effective Green, g (s)	25.4	25.4		25.4	25.4	25.4	21.6	21.6		21.6	21.6	
Actuated g/C Ratio	0.43	0.43		0.43	0.43	0.43	0.36	0.36		0.36	0.36	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	194	1491		127	1486	684	439	582		481	582	
v/s Ratio Prot		c0.37			0.26			0.03			0.09	
v/s Ratio Perm	0.17			0.09		0.04	0.12			c0.25		
v/c Ratio	0.40	0.87		0.20	0.60	0.09	0.34	0.08		0.68	0.24	
Uniform Delay, d1	11.7	15.5		10.7	13.1	10.1	13.7	12.4		15.9	13.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	6.0		0.8	0.7	0.1	2.1	0.3		7.4	1.0	
Delay (s)	13.1	21.5		11.5	13.8	10.2	15.8	12.7		23.4	14.2	
Level of Service	B	C		B	B	B	B	B		C	B	
Approach Delay (s)		21.1			13.3			14.7			20.0	
Approach LOS		C			B			B			C	
Intersection Summary												
HCM 2000 Control Delay			17.8									B
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			59.4						12.4			
Intersection Capacity Utilization			79.5%									D
Analysis Period (min)			15									
c Critical Lane Group												

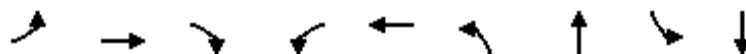
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	2	51	105	4	75	20	608	68	20	1196	10
Future Volume (Veh/h)	9	2	51	105	4	75	20	608	68	20	1196	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	2	55	114	4	82	22	661	74	22	1300	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												327
pX, platoon unblocked	0.67	0.67	0.67	0.67	0.67		0.67					
vC, conflicting volume	2133	2123	1300	2105	2060	661	1311			735		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2442	2428	1202	2401	2334	661	1219			735		
tC, single (s)	7.2	7.5	6.2	7.1	7.0	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.9	3.3	3.5	4.5	3.3	2.2			2.2		
p0 queue free %	0	80	64	0	76	82	94			97		
cM capacity (veh/h)	8	10	153	8	16	462	389			879		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3		
Volume Total	10	57	114	86	22	661	74	22	1300	11		
Volume Left	10	0	114	0	22	0	0	22	0	0		
Volume Right	0	55	0	82	0	0	74	0	0	11		
cSH	8	101	8	204	389	1700	1700	879	1700	1700		
Volume to Capacity	1.20	0.56	14.31	0.42	0.06	0.39	0.04	0.03	0.76	0.01		
Queue Length 95th (m)	15.5	19.9	Err	14.7	1.4	0.0	0.0	0.6	0.0	0.0		
Control Delay (s)	964.4	78.8	Err	35.0	14.8	0.0	0.0	9.2	0.0	0.0		
Lane LOS	F	F	F	E	B			A				
Approach Delay (s)	211.0		5714.5		0.4			0.2				
Approach LOS	F		F									
Intersection Summary												
Average Delay			491.1									
Intersection Capacity Utilization			82.1%		ICU Level of Service				E			
Analysis Period (min)			15									

Adelaide Street North EA
10: Adelaide Street N & Street A

Future 2029 Traffic Analysis with Timing Improvements Only

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	0	272	127	0	14	60	362	27	3	294	21
Future Volume (Veh/h)	64	0	272	127	0	14	60	362	27	3	294	21
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	0	296	138	0	15	65	393	29	3	320	23
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked	0.88	0.88		0.88	0.88	0.88		238			0.88	
vC, conflicting volume	876	890	332	1160	886	408	343				422	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	791	807	332	1113	803	260	343				276	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	72	100	58	0	100	98	95				100	
cM capacity (veh/h)	254	262	710	91	263	686	1216				1133	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	70	296	138	15	65	422	3	343				
Volume Left	70	0	138	0	65	0	3	0				
Volume Right	0	296	0	15	0	29	0	23				
cSH	254	710	91	686	1216	1700	1133	1700				
Volume to Capacity	0.28	0.42	1.51	0.02	0.05	0.25	0.00	0.20				
Queue Length 95th (m)	8.3	15.7	81.2	0.5	1.3	0.0	0.1	0.0				
Control Delay (s)	24.5	13.6	359.8	10.4	8.1	0.0	8.2	0.0				
Lane LOS	C	B	F	B	A		A					
Approach Delay (s)	15.7		325.5		1.1		0.1					
Approach LOS	C		F									
Intersection Summary												
Average Delay			41.5									
Intersection Capacity Utilization			61.2%		ICU Level of Service				B			
Analysis Period (min)			15									



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	178	787	115	61	1189	107	34	86	37
v/c Ratio	0.96	0.58	0.09	0.15	1.00	0.47	0.12	0.39	0.12
Control Delay	86.5	9.5	1.0	10.1	48.6	53.0	22.3	50.9	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.5	9.5	1.0	10.1	48.6	53.0	22.3	50.9	23.1
Queue Length 50th (m)	26.0	75.4	0.0	5.4	259.5	23.1	2.0	18.3	2.6
Queue Length 95th (m)	#70.2	104.3	4.4	11.7	#370.9	41.1	11.1	34.4	12.2
Internal Link Dist (m)		503.0			305.2		276.5		132.8
Turn Bay Length (m)	120.0		120.0	90.0		30.0		30.0	
Base Capacity (vph)	185	1354	1228	399	1190	229	280	219	303
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.58	0.09	0.15	1.00	0.47	0.12	0.39	0.12

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA Future 2029 Traffic Analysis with Timing Improvements Only
 7: South Wenige Drive & Sunningdale Road E PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	724	106	56	1069	25	98	9	22	79	12	22
Future Volume (vph)	164	724	106	56	1069	25	98	9	22	79	12	22
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1807	1847	1633	1789	1878		1825	1594		1738	1734	
Flt Permitted	0.05	1.00	1.00	0.33	1.00		0.73	1.00		0.73	1.00	
Satd. Flow (perm)	95	1847	1633	630	1878		1408	1594		1345	1734	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	178	787	115	61	1162	27	107	10	24	86	13	24
RTOR Reduction (vph)	0	0	31	0	1	0	0	20	0	0	20	0
Lane Group Flow (vph)	178	787	84	61	1188	0	107	14	0	86	17	0
Heavy Vehicles (%)	1%	4%	0%	2%	2%	0%	0%	0%	11%	5%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4				8
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	88.0	88.0	88.0	76.0	76.0		19.6	19.6		19.6	19.6	
Effective Green, g (s)	88.0	88.0	88.0	76.0	76.0		19.6	19.6		19.6	19.6	
Actuated g/C Ratio	0.73	0.73	0.73	0.63	0.63		0.16	0.16		0.16	0.16	
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	183	1354	1197	399	1189		229	260		219	283	
v/s Ratio Prot	c0.06	0.43			0.63			0.01			0.01	
v/s Ratio Perm	c0.64		0.05	0.10			c0.08			0.06		
v/c Ratio	0.97	0.58	0.07	0.15	1.00		0.47	0.05		0.39	0.06	
Uniform Delay, d1	42.3	7.4	4.5	8.9	22.0		45.5	42.4		44.9	42.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	58.2	1.8	0.1	0.8	26.0		6.7	0.4		5.2	0.4	
Delay (s)	100.5	9.3	4.6	9.7	47.9		52.2	42.8		50.1	42.8	
Level of Service	F	A	A	A	D		D	D		D	D	
Approach Delay (s)		23.8			46.1			49.9			47.9	
Approach LOS		C			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			37.1			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.4			
Intersection Capacity Utilization			92.6%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	57	742	524	218	1025	61	637	649	302	108	581
v/c Ratio	0.36	0.93	0.70	1.00	1.03	0.12	1.42	0.62	0.31	0.45	1.03
Control Delay	31.8	65.1	10.1	92.7	78.5	1.9	230.7	21.8	5.4	41.6	87.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.8	65.1	10.1	92.7	78.5	1.9	230.7	21.8	5.4	41.6	87.9
Queue Length 50th (m)	8.7	90.7	4.8	36.7	~143.1	0.0	~186.8	100.1	10.3	20.6	~145.3
Queue Length 95th (m)	17.8	#126.4	38.4	#85.2	#183.6	2.7	#257.1	137.2	24.7	38.9	#213.5
Internal Link Dist (m)		393.8			117.3			302.9			213.8
Turn Bay Length (m)	110.0		110.0	70.0			150.0		130.0	75.0	
Base Capacity (vph)	160	795	751	218	999	508	449	1051	978	238	562
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.93	0.70	1.00	1.03	0.12	1.42	0.62	0.31	0.45	1.03

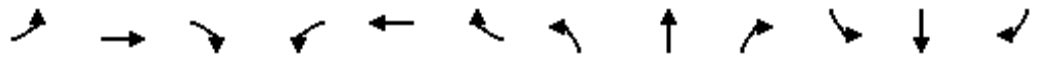
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

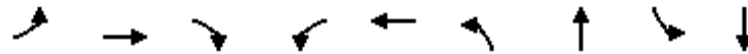
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	683	482	201	943	56	586	597	278	99	435	99
Future Volume (vph)	52	683	482	201	943	56	586	597	278	99	435	99
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	6.3	6.3	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1825	3510	1617	1807	3614	1570	1772	1921	1617	1825	1868	
Flt Permitted	0.14	1.00	1.00	0.12	1.00	1.00	0.10	1.00	1.00	0.42	1.00	
Satd. Flow (perm)	274	3510	1617	238	3614	1570	188	1921	1617	804	1868	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	742	524	218	1025	61	637	649	302	108	473	108
RTOR Reduction (vph)	0	0	383	0	0	44	0	0	94	0	7	0
Lane Group Flow (vph)	57	742	141	218	1025	17	637	649	208	108	574	0
Heavy Vehicles (%)	0%	4%	1%	1%	1%	4%	3%	0%	1%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	3	8		7	4		5	2			6	
Permitted Phases	8		8	4		4	2		2	6		
Actuated Green, G (s)	32.8	28.0	28.0	42.0	33.2	33.2	65.7	65.7	65.7	35.7	35.7	
Effective Green, g (s)	32.8	28.0	28.0	42.0	33.2	33.2	65.7	65.7	65.7	35.7	35.7	
Actuated g/C Ratio	0.27	0.23	0.23	0.35	0.27	0.27	0.54	0.54	0.54	0.30	0.30	
Clearance Time (s)	4.0	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	6.3	6.3	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	136	813	374	212	993	431	443	1044	879	237	552	
v/s Ratio Prot	0.02	0.21		c0.08	c0.28		c0.31	0.34			0.31	
v/s Ratio Perm	0.10		0.09	0.27		0.01	c0.47		0.13	0.13		
v/c Ratio	0.42	0.91	0.38	1.03	1.03	0.04	1.44	0.62	0.24	0.46	1.04	
Uniform Delay, d1	35.5	45.2	39.1	32.9	43.8	32.1	37.6	19.0	14.4	34.6	42.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.1	14.5	0.6	69.4	37.2	0.0	209.6	2.8	0.6	6.2	49.0	
Delay (s)	37.6	59.7	39.7	102.3	81.0	32.1	247.2	21.8	15.1	40.8	91.6	
Level of Service	D	E	D	F	F	C	F	C	B	D	F	
Approach Delay (s)		50.8			82.2			110.9			83.6	
Approach LOS		D			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	83.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	120.8	Sum of lost time (s)	21.1
Intersection Capacity Utilization	109.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	368	755	473	133	1461	553	1651	329	1143
v/c Ratio	1.69	0.59	0.52	0.50	1.25	1.73	1.35	1.62	1.18
Control Delay	352.4	33.7	16.2	26.6	154.9	365.9	197.0	325.1	129.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	352.4	33.7	16.2	26.6	154.9	365.9	197.0	325.1	129.0
Queue Length 50th (m)	~110.9	75.6	56.2	17.6	~224.5	~177.3	~269.3	~95.1	~166.6
Queue Length 95th (m)	#170.2	95.4	84.0	29.5	#267.6	#245.1	#312.3	#151.9	#208.6
Internal Link Dist (m)		353.7			209.7		228.2		202.1
Turn Bay Length (m)	90.0		110.0	60.0		190.0		95.0	
Base Capacity (vph)	218	1272	914	268	1168	320	1221	203	970
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.69	0.59	0.52	0.50	1.25	1.73	1.35	1.62	1.18























Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	339	695	435	122	1052	293	509	1380	139	303	782	270
Future Volume (vph)	339	695	435	122	1052	293	509	1380	139	303	782	270
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.9	4.0	4.0	6.9		4.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1807	3544	1585	1825	3523		1789	3600		1807	3475	
Flt Permitted	0.09	1.00	1.00	0.26	1.00		0.11	1.00		0.12	1.00	
Satd. Flow (perm)	177	3544	1585	506	3523		206	3600		234	3475	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	368	755	473	133	1143	318	553	1500	151	329	850	293
RTOR Reduction (vph)	0	0	34	0	21	0	0	7	0	0	28	0
Lane Group Flow (vph)	368	755	439	133	1440	0	553	1644	0	329	1115	0
Heavy Vehicles (%)	1%	3%	3%	0%	0%	1%	2%	0%	0%	1%	1%	1%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	53.1	43.1	60.1	45.1	39.1		53.5	40.5		41.5	32.5	
Effective Green, g (s)	53.1	43.1	60.1	45.1	39.1		53.5	40.5		41.5	32.5	
Actuated g/C Ratio	0.44	0.36	0.50	0.38	0.33		0.45	0.34		0.35	0.27	
Clearance Time (s)	4.0	6.9	4.0	4.0	6.9		4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	214	1272	793	256	1147		316	1215		198	941	
v/s Ratio Prot	c0.14	0.21	0.08	0.03	0.41		c0.25	0.46		0.12	0.32	
v/s Ratio Perm	c0.62		0.20	0.17			c0.53			0.45		
v/c Ratio	1.72	0.59	0.55	0.52	1.26		1.75	1.35		1.66	1.18	
Uniform Delay, d1	33.1	31.3	20.7	25.8	40.5		36.2	39.8		34.0	43.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	342.8	2.0	0.8	1.8	122.2		350.3	164.5		319.0	93.9	
Delay (s)	375.9	33.4	21.5	27.6	162.7		386.5	204.3		353.1	137.6	
Level of Service	F	C	C	C	F		F	F		F	F	
Approach Delay (s)		108.8			151.4			250.0			185.8	
Approach LOS		F			F			F			F	
Intersection Summary												
HCM 2000 Control Delay			180.5			HCM 2000 Level of Service			F			
HCM 2000 Volume to Capacity ratio			1.83									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			21.4			
Intersection Capacity Utilization			134.4%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	42	155	195	66	147	1660	317	38	1242
v/c Ratio	0.16	0.39	0.89	0.18	1.02	1.25	0.27	0.58	1.07
Control Delay	40.1	22.8	84.9	33.2	105.1	139.3	4.4	54.5	69.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.1	22.8	84.9	33.2	105.1	139.3	4.4	54.5	69.5
Queue Length 50th (m)	8.1	14.6	44.1	10.4	~20.8	~494.6	13.7	5.1	~329.6
Queue Length 95th (m)	17.9	33.5	#83.5	22.4	#62.1	#575.0	24.5	#25.8	#410.3
Internal Link Dist (m)		249.6		201.4		128.2			673.9
Turn Bay Length (m)	70.0		65.0		60.0		50.0	65.0	
Base Capacity (vph)	294	438	242	404	144	1329	1171	66	1165
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.35	0.81	0.16	1.02	1.25	0.27	0.58	1.07

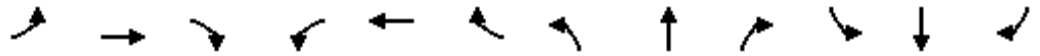
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.










95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	46	97	179	46	15	135	1527	292	35	1100	42
Future Volume (vph)	39	46	97	179	46	15	135	1527	292	35	1100	42
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		4.0	5.6	5.6	5.6	5.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.90		1.00	0.96		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1772	1698		1772	1784		1825	1902	1617	1825	1872	
Flt Permitted	0.71	1.00		0.59	1.00		0.05	1.00	1.00	0.05	1.00	
Satd. Flow (perm)	1332	1698		1094	1784		100	1902	1617	105	1872	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	50	105	195	50	16	147	1660	317	38	1196	46
RTOR Reduction (vph)	0	64	0	0	10	0	0	0	41	0	1	0
Lane Group Flow (vph)	42	91	0	195	56	0	147	1660	276	38	1241	0
Heavy Vehicles (%)	3%	3%	1%	3%	5%	0%	0%	1%	1%	0%	2%	3%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		8			4		5	2				6
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	23.5	23.5		23.5	23.5		82.2	82.2	82.2	73.2	73.2	
Effective Green, g (s)	23.5	23.5		23.5	23.5		82.2	82.2	82.2	73.2	73.2	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.70	0.70	0.70	0.62	0.62	
Clearance Time (s)	6.3	6.3		6.3	6.3		4.0	5.6	5.6	5.6	5.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	266	339		218	356		143	1329	1130	65	1165	
v/s Ratio Prot		0.05			0.03		0.04	c0.87			0.66	
v/s Ratio Perm	0.03			c0.18			0.68		0.17	0.36		
v/c Ratio	0.16	0.27		0.89	0.16		1.03	1.25	0.24	0.58	1.07	
Uniform Delay, d1	38.9	39.8		45.8	38.9		38.1	17.7	6.4	13.2	22.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	0.4		33.7	0.2		82.9	118.5	0.5	33.1	45.6	
Delay (s)	39.2	40.2		79.6	39.1		120.9	136.2	6.9	46.3	67.8	
Level of Service	D	D		E	D		F	F	A	D	E	
Approach Delay (s)		40.0			69.3			115.9			67.1	
Approach LOS		D			E			F			E	























Intersection Summary		
HCM 2000 Control Delay	92.7	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	1.22	F
Actuated Cycle Length (s)	117.6	Sum of lost time (s)
Intersection Capacity Utilization	124.3%	15.9
Analysis Period (min)	15	ICU Level of Service
		H
c Critical Lane Group		

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	214	1073	47	1370	383	47	54	336	149
v/c Ratio	0.86	0.54	0.22	0.89	0.42	0.13	0.10	0.83	0.24
Control Delay	49.0	13.3	19.4	32.0	3.4	24.5	1.4	48.8	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	13.3	19.4	32.0	3.4	24.5	1.4	48.8	2.5
Queue Length 50th (m)	19.7	56.0	4.9	110.4	0.0	5.9	0.0	54.2	0.0
Queue Length 95th (m)	#58.1	72.4	12.8	#142.6	15.1	14.1	1.8	#99.2	6.3
Internal Link Dist (m)		412.2		393.8			184.6		108.9
Turn Bay Length (m)	80.0		100.0		90.0	20.0			
Base Capacity (vph)	249	2016	219	1581	915	361	535	405	616
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.53	0.21	0.87	0.42	0.13	0.10	0.83	0.24

Intersection Summary





















95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			 					
Traffic Volume (vph)	197	932	55	43	1260	352	43	0	50	309	0	137	
Future Volume (vph)	197	932	55	43	1260	352	43	0	50	309	0	137	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85		1.00	0.85		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1789	3516		1789	3614	1601	1738	1555		1789	1601		
Flt Permitted	0.09	1.00		0.27	1.00	1.00	0.66	1.00		0.72	1.00		
Satd. Flow (perm)	179	3516		502	3614	1601	1212	1555		1359	1601		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	214	1013	60	47	1370	383	47	0	54	336	0	149	
RTOR Reduction (vph)	0	5	0	0	0	219	0	38	0	0	105	0	
Lane Group Flow (vph)	214	1068	0	47	1370	164	47	16	0	336	44	0	
Heavy Vehicles (%)	2%	3%	2%	2%	1%	2%	5%	2%	5%	2%	2%	2%	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA		
Protected Phases	3	8			4			2				6	
Permitted Phases	8			4		4	2			6			
Actuated Green, G (s)	50.2	50.2		38.2	38.2	38.2	26.6	26.6		26.6	26.6		
Effective Green, g (s)	50.2	50.2		38.2	38.2	38.2	26.6	26.6		26.6	26.6		
Actuated g/C Ratio	0.56	0.56		0.43	0.43	0.43	0.30	0.30		0.30	0.30		
Clearance Time (s)	4.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	245	1978		214	1547	685	361	463		405	477		
v/s Ratio Prot	c0.08	0.30			0.38			0.01				0.03	
v/s Ratio Perm	c0.41			0.09		0.10	0.04			c0.25			
v/c Ratio	0.87	0.54		0.22	0.89	0.24	0.13	0.03		0.83	0.09		
Uniform Delay, d1	21.2	12.2		16.1	23.5	16.2	22.9	22.2		29.2	22.6		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	27.2	0.3		0.5	6.5	0.2	0.7	0.1		17.6	0.4		
Delay (s)	48.4	12.6		16.6	30.0	16.4	23.6	22.3		46.8	23.0		
Level of Service	D	B		B	C	B	C	C		D	C		
Approach Delay (s)		18.5			26.7			22.9			39.5		
Approach LOS		B			C			C			D		
Intersection Summary													
HCM 2000 Control Delay			25.4									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.89										
Actuated Cycle Length (s)			89.2									Sum of lost time (s)	16.4
Intersection Capacity Utilization			86.0%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	7	44	52	7	41	51	1404	124	65	1055	26
Future Volume (Veh/h)	11	7	44	52	7	41	51	1404	124	65	1055	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	8	48	57	8	45	55	1526	135	71	1147	28
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume												
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol												
tC, single (s)												
tC, 2 stage (s)												
tF (s)												
p0 queue free %												
cM capacity (veh/h)												
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3		
Volume Total	12	56	57	53	55	1526	135	71	1147	28		
Volume Left	12	0	57	0	55	0	0	71	0	0		
Volume Right	0	48	0	45	0	0	135	0	0	28		
cSH	0	9	0	10	462	1700	1700	393	1700	1700		
Volume to Capacity	Err	6.45	Err	5.09	0.12	0.90	0.08	0.18	0.67	0.02		
Queue Length 95th (m)	Err	Err	Err	Err	3.1	0.0	0.0	4.9	0.0	0.0		
Control Delay (s)	Err	Err	Err	Err	13.8	0.0	0.0	16.2	0.0	0.0		
Lane LOS	F	F	F	F	B			C				
Approach Delay (s)	Err		Err		0.4			0.9				
Approach LOS	F		F									
Intersection Summary												
Average Delay												
Intersection Capacity Utilization												
Analysis Period (min)												

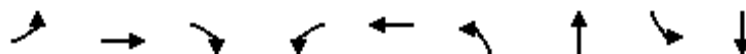
Adelaide Street North EA
10: Adelaide Street N & Street A

Future 2029 Traffic Analysis with Timing Improvements Only
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	0	167	75	0	8	230	385	133	16	379	75
Future Volume (Veh/h)	43	0	167	75	0	8	230	385	133	16	379	75
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	47	0	182	82	0	9	250	418	145	17	412	82
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked	0.79	0.79		0.79	0.79	0.79				0.79		
vC, conflicting volume	1414	1550	453	1618	1518	490	494			563		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1392	1563	453	1649	1523	229	494			320		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	38	100	70	0	100	99	77			98		
cM capacity (veh/h)	76	67	607	36	71	644	1070			985		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	47	182	82	9	250	563	17	494				
Volume Left	47	0	82	0	250	0	17	0				
Volume Right	0	182	0	9	0	145	0	82				
cSH	76	607	36	644	1070	1700	985	1700				
Volume to Capacity	0.62	0.30	2.31	0.01	0.23	0.33	0.02	0.29				
Queue Length 95th (m)	21.1	9.5	69.6	0.3	6.9	0.0	0.4	0.0				
Control Delay (s)	110.7	13.5	838.2	10.7	9.4	0.0	8.7	0.0				
Lane LOS	F	B	F	B	A		A					
Approach Delay (s)	33.4		756.4		2.9		0.3					
Approach LOS	D		F									
Intersection Summary												
Average Delay			48.0									
Intersection Capacity Utilization			65.1%		ICU Level of Service				C			
Analysis Period (min)			15									

APPENDIX J






















Future (2039) Do Nothing Weekday AM and PM
Traffic Analysis Synchro Output Sheets



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	74	1277	75	18	707	137	108	28	133
v/c Ratio	0.17	0.97	0.06	0.31	0.54	0.79	0.34	0.13	0.37
Control Delay	5.9	34.7	1.1	21.0	8.9	78.7	15.1	44.8	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.9	34.7	1.1	21.0	8.9	78.7	15.1	44.8	14.0
Queue Length 50th (m)	4.7	243.3	0.0	1.3	64.2	31.3	3.0	5.7	3.6
Queue Length 95th (m)	9.7	#382.6	3.6	7.2	89.5	#64.1	19.0	14.3	20.8
Internal Link Dist (m)		503.0			305.2		276.5		132.8
Turn Bay Length (m)	120.0		120.0	90.0		30.0		30.0	
Base Capacity (vph)	447	1316	1171	59	1305	174	315	215	364
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.97	0.06	0.31	0.54	0.79	0.34	0.13	0.37

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	1175	69	17	632	18	126	14	86	26	17	106
Future Volume (vph)	68	1175	69	17	632	18	126	14	86	26	17	106
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	1795	1570	1706	1778		1644	1455		1825	1644	
Flt Permitted	0.33	1.00	1.00	0.05	1.00		0.62	1.00		0.69	1.00	
Satd. Flow (perm)	610	1795	1570	82	1778		1067	1455		1320	1644	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	1277	75	18	687	20	137	15	93	28	18	115
RTOR Reduction (vph)	0	0	20	0	1	0	0	78	0	0	96	0
Lane Group Flow (vph)	74	1277	55	18	706	0	137	30	0	28	37	0
Heavy Vehicles (%)	4%	7%	4%	7%	7%	27%	11%	27%	13%	0%	0%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	88.0	88.0	88.0	88.0	88.0		19.6	19.6		19.6	19.6	
Effective Green, g (s)	88.0	88.0	88.0	88.0	88.0		19.6	19.6		19.6	19.6	
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73		0.16	0.16		0.16	0.16	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	447	1316	1151	60	1303		174	237		215	268	
v/s Ratio Prot		c0.71			0.40			0.02			0.02	
v/s Ratio Perm	0.12		0.04	0.22			c0.13			0.02		
v/c Ratio	0.17	0.97	0.05	0.30	0.54		0.79	0.13		0.13	0.14	
Uniform Delay, d1	4.9	14.8	4.4	5.5	7.1		48.2	42.9		42.9	43.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	18.7	0.1	12.4	1.6		29.3	1.1		1.2	1.1	
Delay (s)	5.7	33.5	4.5	17.8	8.7		77.5	44.0		44.2	44.0	
Level of Service	A	C	A	B	A		E	D		D	D	
Approach Delay (s)		30.5			8.9			62.7			44.1	
Approach LOS		C			A			E			D	
Intersection Summary												
HCM 2000 Control Delay			28.3				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		12.4			
Intersection Capacity Utilization			91.9%				ICU Level of Service		F			
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	125	1046	624	199	711	54	322	354	229	149	621
v/c Ratio	0.57	0.99	0.89	1.09	0.52	0.08	1.13	0.40	0.27	0.48	1.02
Control Delay	44.5	65.1	32.3	117.6	26.7	3.2	119.6	20.0	4.3	36.0	79.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	65.1	32.3	117.6	26.7	3.2	119.6	20.0	4.3	36.0	79.5
Queue Length 50th (m)	22.6	117.5	63.7	-31.2	59.9	0.0	-63.4	47.1	3.4	25.4	-141.1
Queue Length 95th (m)	43.3	#162.2	#133.4	#77.0	77.4	5.1	#118.2	69.4	16.1	45.6	#209.0
Internal Link Dist (m)		393.8			117.3			302.9			213.8
Turn Bay Length (m)	110.0		110.0	70.0			150.0		130.0	75.0	
Base Capacity (vph)	219	1053	705	183	1364	659	286	896	850	310	607
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.99	0.89	1.09	0.52	0.08	1.13	0.40	0.27	0.48	1.02

Intersection Summary

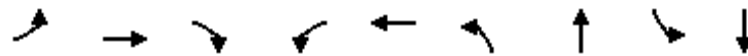
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	962	574	183	654	50	296	326	211	137	503	68
Future Volume (vph)	115	962	574	183	654	50	296	326	211	137	503	68
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.8	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	6.3	6.3	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1825	3510	1555	1755	3411	1541	1807	1865	1555	1644	1848	
Flt Permitted	0.38	1.00	1.00	0.11	1.00	1.00	0.10	1.00	1.00	0.55	1.00	
Satd. Flow (perm)	733	3510	1555	200	3411	1541	191	1865	1555	950	1848	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	1046	624	199	711	54	322	354	229	149	547	74
RTOR Reduction (vph)	0	0	239	0	0	32	0	0	103	0	5	0
Lane Group Flow (vph)	125	1046	385	199	711	22	322	354	126	149	616	0
Heavy Vehicles (%)	0%	4%	5%	4%	7%	6%	1%	3%	5%	11%	2%	3%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		8		7	4		5	2			6	
Permitted Phases	8		8	4		4	2		2	6		
Actuated Green, G (s)	33.0	33.0	33.0	44.0	44.0	44.0	52.9	52.9	52.9	35.9	35.9	
Effective Green, g (s)	33.0	33.0	33.0	44.0	44.0	44.0	52.9	52.9	52.9	35.9	35.9	
Actuated g/C Ratio	0.30	0.30	0.30	0.40	0.40	0.40	0.48	0.48	0.48	0.33	0.33	
Clearance Time (s)	6.8	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	6.3	6.3	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	219	1053	466	178	1364	616	282	896	747	310	603	
v/s Ratio Prot		0.30		c0.07	0.21		c0.13	0.19			0.33	
v/s Ratio Perm	0.17		0.25	c0.37		0.01	c0.41		0.08	0.16		
v/c Ratio	0.57	0.99	0.83	1.12	0.52	0.04	1.14	0.40	0.17	0.48	1.02	
Uniform Delay, d1	32.5	38.4	35.8	28.5	25.0	20.1	32.4	18.3	16.1	29.6	37.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.6	26.0	11.4	102.7	0.4	0.0	97.5	1.3	0.5	5.3	42.3	
Delay (s)	36.1	64.4	47.3	131.1	25.4	20.1	129.9	19.6	16.6	34.9	79.4	
Level of Service	D	E	D	F	C	C	F	B	B	C	E	
Approach Delay (s)		56.5			46.9			58.1			70.8	
Approach LOS		E			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			57.2									E
HCM 2000 Volume to Capacity ratio			1.19									
Actuated Cycle Length (s)			110.0							21.1		
Intersection Capacity Utilization			101.3%									G
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	136	1237	613	226	878	402	739	451	1812
v/c Ratio	0.87	1.21	0.80	1.33	0.85	1.71	0.81	0.99	1.41
Control Delay	71.8	139.6	32.8	209.0	48.1	362.7	48.1	70.7	218.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.8	139.6	32.8	209.0	48.1	362.7	48.1	70.7	218.3
Queue Length 50th (m)	20.3	~186.6	103.5	-52.4	100.5	~124.5	84.3	82.7	~301.0
Queue Length 95th (m)	#49.2	#228.4	154.8	#101.7	#126.5	#185.8	107.4	#149.2	#344.0
Internal Link Dist (m)		353.7			209.7		228.2		202.1
Turn Bay Length (m)	90.0		110.0	60.0		190.0		95.0	
Base Capacity (vph)	157	1026	764	170	1029	235	916	454	1289
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	1.21	0.80	1.33	0.85	1.71	0.81	0.99	1.41

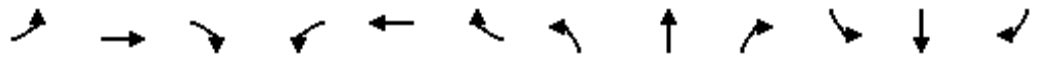
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	1138	564	208	685	122	370	602	78	415	1353	314
Future Volume (vph)	125	1138	564	208	685	122	370	602	78	415	1353	314
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.9	4.0	4.0	6.9		4.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1690	3510	1570	1772	3383		1706	3352		1807	3431	
Flt Permitted	0.13	1.00	1.00	0.11	1.00		0.12	1.00		0.15	1.00	
Satd. Flow (perm)	230	3510	1570	207	3383		221	3352		288	3431	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	1237	613	226	745	133	402	654	85	451	1471	341
RTOR Reduction (vph)	0	0	64	0	12	0	0	9	0	0	17	0
Lane Group Flow (vph)	136	1237	549	226	866	0	402	730	0	451	1795	0
Heavy Vehicles (%)	8%	4%	4%	3%	5%	8%	7%	7%	7%	1%	3%	5%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	41.1	35.1	47.1	43.1	36.1		44.5	32.5		60.5	44.5	
Effective Green, g (s)	41.1	35.1	47.1	43.1	36.1		44.5	32.5		60.5	44.5	
Actuated g/C Ratio	0.34	0.29	0.39	0.36	0.30		0.37	0.27		0.50	0.37	
Clearance Time (s)	4.0	6.9	4.0	4.0	6.9		4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	151	1026	616	165	1017		230	907		449	1272	
v/s Ratio Prot	0.04	0.35	0.09	c0.08	0.26		c0.17	0.22		0.20	c0.52	
v/s Ratio Perm	0.26		0.26	c0.41			c0.47			0.31		
v/c Ratio	0.90	1.21	0.89	1.37	0.85		1.75	0.81		1.00	1.41	
Uniform Delay, d1	33.1	42.5	34.1	34.4	39.4		32.3	40.8		32.6	37.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	45.2	101.9	15.1	200.0	9.0		353.9	5.3		43.6	189.8	
Delay (s)	78.3	144.3	49.2	234.4	48.4		386.2	46.1		76.2	227.5	
Level of Service	E	F	D	F	D		F	D		E	F	
Approach Delay (s)		110.4			86.5			165.9			197.4	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	146.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.4
Intersection Capacity Utilization	128.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	51	254	288	117	41	645	127	18	1651
v/c Ratio	0.14	0.53	1.19	0.23	0.68	0.58	0.13	0.05	1.44
Control Delay	33.8	36.3	155.9	22.6	72.8	16.2	2.2	9.5	225.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	36.3	155.9	22.6	72.8	16.2	2.2	9.5	225.3
Queue Length 50th (m)	9.0	44.1	~81.4	13.5	5.9	84.2	0.8	1.6	~531.3
Queue Length 95th (m)	19.2	70.3	#134.8	28.4	#28.9	117.2	7.8	4.6	#613.1
Internal Link Dist (m)		249.6		201.4		128.2			673.9
Turn Bay Length (m)	70.0		65.0		60.0		50.0	65.0	
Base Capacity (vph)	357	481	243	511	60	1112	1000	367	1149
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.53	1.19	0.23	0.68	0.58	0.13	0.05	1.44

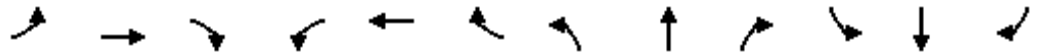
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.










Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

















































Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	36	198	265	54	53	38	593	117	17	1487	32
Future Volume (vph)	47	36	198	265	54	53	38	593	117	17	1487	32
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		5.6	5.6	5.6	5.6	5.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.87		1.00	0.93		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1772	1632		1789	1718		1706	1795	1541	1825	1853	
Flt Permitted	0.68	1.00		0.46	1.00		0.05	1.00	1.00	0.31	1.00	
Satd. Flow (perm)	1272	1632		868	1718		97	1795	1541	591	1853	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	39	215	288	59	58	41	645	127	18	1616	35
RTOR Reduction (vph)	0	23	0	0	29	0	0	0	45	0	1	0
Lane Group Flow (vph)	51	231	0	288	88	0	41	645	82	18	1650	0
Heavy Vehicles (%)	3%	7%	2%	2%	7%	0%	7%	7%	6%	0%	3%	20%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2				2
Permitted Phases	4			4			2		2	2		
Actuated Green, G (s)	33.7	33.7		33.7	33.7		74.4	74.4	74.4	74.4	74.4	
Effective Green, g (s)	33.7	33.7		33.7	33.7		74.4	74.4	74.4	74.4	74.4	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Clearance Time (s)	6.3	6.3		6.3	6.3		5.6	5.6	5.6	5.6	5.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	357	458		243	482		60	1112	955	366	1148	
v/s Ratio Prot		0.14			0.05			0.36				c0.89
v/s Ratio Perm	0.04			c0.33			0.42		0.05	0.03		
v/c Ratio	0.14	0.50		1.19	0.18		0.68	0.58	0.09	0.05	1.44	
Uniform Delay, d1	32.3	36.2		43.1	32.7		15.0	13.5	9.2	8.9	22.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.9		117.1	0.2		48.3	2.2	0.2	0.3	201.9	
Delay (s)	32.5	37.0		160.2	32.9		63.4	15.7	9.3	9.2	224.7	
Level of Service	C	D		F	C		E	B	A	A	F	
Approach Delay (s)		36.3			123.4			17.1			222.4	
Approach LOS		D			F			B			F	
Intersection Summary												
HCM 2000 Control Delay			139.8									F
HCM 2000 Volume to Capacity ratio			1.36									
Actuated Cycle Length (s)			120.0								11.9	
Intersection Capacity Utilization			124.2%									H
Analysis Period (min)			15									
c Critical Lane Group												

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	77	1416	27	983	147	159	84	325	184
v/c Ratio	0.43	0.90	0.21	0.63	0.18	0.38	0.14	0.72	0.31
Control Delay	20.7	25.4	15.4	14.9	2.7	18.3	7.4	28.3	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	25.4	15.4	14.9	2.7	18.3	7.4	28.3	11.6
Queue Length 50th (m)	5.4	70.8	1.7	41.1	0.0	12.9	2.1	30.4	9.6
Queue Length 95th (m)	16.9	#114.6	6.9	58.3	7.7	26.7	9.6	#64.6	22.2
Internal Link Dist (m)		412.2		393.8			184.6		108.9
Turn Bay Length (m)	80.0		100.0		90.0	20.0			
Base Capacity (vph)	180	1580	126	1569	803	415	587	454	590
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.90	0.21	0.63	0.18	0.38	0.14	0.72	0.31

Intersection Summary





















95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

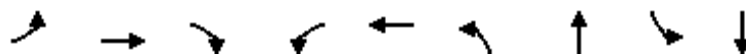
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 				
Traffic Volume (vph)	71	1245	58	25	904	135	146	0	77	299	0	169
Future Volume (vph)	71	1245	58	25	904	135	146	0	77	299	0	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Flt	1.00	0.99		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3489		1789	3476	1601	1789	1601		1789	1601	
Flt Permitted	0.21	1.00		0.15	1.00	1.00	0.64	1.00		0.70	1.00	
Satd. Flow (perm)	399	3489		281	3476	1601	1208	1601		1323	1601	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	1353	63	27	983	147	159	0	84	325	0	184
RTOR Reduction (vph)	0	6	0	0	0	81	0	36	0	0	39	0
Lane Group Flow (vph)	77	1410	0	27	983	66	159	48	0	325	145	0
Heavy Vehicles (%)	2%	4%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		8			4			2			6	
Permitted Phases	8			4		4	2			6		
Actuated Green, G (s)	26.8	26.8		26.8	26.8	26.8	20.6	20.6		20.6	20.6	
Effective Green, g (s)	26.8	26.8		26.8	26.8	26.8	20.6	20.6		20.6	20.6	
Actuated g/C Ratio	0.45	0.45		0.45	0.45	0.45	0.34	0.34		0.34	0.34	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	178	1563		125	1557	717	416	551		455	551	
v/s Ratio Prot		c0.40			0.28			0.03			0.09	
v/s Ratio Perm	0.19			0.10		0.04	0.13			c0.25		
v/c Ratio	0.43	0.90		0.22	0.63	0.09	0.38	0.09		0.71	0.26	
Uniform Delay, d1	11.3	15.3		10.1	12.7	9.5	14.8	13.2		17.0	14.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	7.6		0.9	0.8	0.1	2.7	0.3		9.2	1.2	
Delay (s)	13.0	22.9		11.0	13.5	9.6	17.4	13.6		26.3	15.3	
Level of Service	B	C		B	B	A	B	B		C	B	
Approach Delay (s)		22.4			13.0			16.1			22.3	
Approach LOS		C			B			B			C	
Intersection Summary												
HCM 2000 Control Delay			18.7									B
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			59.8							12.4		
Intersection Capacity Utilization			82.4%									E
Analysis Period (min)			15									
c Critical Lane Group												

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	2	57	116	5	83	22	652	70	22	1250	11
Future Volume (Veh/h)	10	2	57	116	5	83	22	652	70	22	1250	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	2	62	126	5	90	24	709	76	24	1359	12
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume												
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol												
tC, single (s)												
tC, 2 stage (s)												
tF (s)												
p0 queue free %												
cM capacity (veh/h)												
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3		
Volume Total	11	64	126	95	24	709	76	24	1359	12		
Volume Left	11	0	126	0	24	0	0	24	0	0		
Volume Right	0	62	0	90	0	0	76	0	0	12		
cSH	4	84	4	147	352	1700	1700	843	1700	1700		
Volume to Capacity	2.51	0.77	30.66	0.65	0.07	0.42	0.04	0.03	0.80	0.01		
Queue Length 95th (m)	18.9	29.1	Err	27.0	1.7	0.0	0.0	0.7	0.0	0.0		
Control Delay (s)	2190.9	128.1	Err	65.9	16.0	0.0	0.0	9.4	0.0	0.0		
Lane LOS	F	F	F	F	C			A				
Approach Delay (s)	430.7		5729.1		0.5			0.2				
Approach LOS	F		F									
Intersection Summary												
Average Delay			519.6									
Intersection Capacity Utilization			85.5%		ICU Level of Service						E	
Analysis Period (min)			15									

Adelaide Street North EA
10: Adelaide Street N & Street A

Future 2039 Traffic Analysis with Timing Improvements Only
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	0	272	127	0	14	60	393	27	3	323	21
Future Volume (Veh/h)	64	0	272	127	0	14	60	393	27	3	323	21
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	0	296	138	0	15	65	427	29	3	351	23
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked	0.86	0.86		0.86	0.86	0.86					0.86	
vC, conflicting volume	940	954	362	1224	952	442	374				456	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	853	869	362	1181	866	276	374				293	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	69	100	57	0	100	98	95				100	
cM capacity (veh/h)	226	236	682	78	237	660	1184				1097	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	70	296	138	15	65	456	3	374				
Volume Left	70	0	138	0	65	0	3	0				
Volume Right	0	296	0	15	0	29	0	23				
cSH	226	682	78	660	1184	1700	1097	1700				
Volume to Capacity	0.31	0.43	1.77	0.02	0.05	0.27	0.00	0.22				
Queue Length 95th (m)	9.6	16.7	90.1	0.5	1.3	0.0	0.1	0.0				
Control Delay (s)	28.0	14.3	481.9	10.6	8.2	0.0	8.3	0.0				
Lane LOS	D	B	F	B	A		A					
Approach Delay (s)	16.9		435.7		1.0		0.1					
Approach LOS	C		F									
Intersection Summary												
Average Delay			51.8									
Intersection Capacity Utilization			62.9%		ICU Level of Service				B			
Analysis Period (min)			15									



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	838	127	67	1267	117	38	95	42
v/c Ratio	0.98	0.62	0.10	0.18	1.08	0.51	0.13	0.44	0.14
Control Delay	89.5	10.3	0.9	11.1	73.7	54.7	21.8	52.3	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.5	10.3	0.9	11.1	73.7	54.7	21.8	52.3	23.1
Queue Length 50th (m)	30.4	84.3	0.0	6.2	~333.5	25.5	2.2	20.4	3.0
Queue Length 95th (m)	#77.5	117.0	4.6	13.4	#414.2	44.6	12.0	37.5	13.0
Internal Link Dist (m)		503.0			305.2		276.5		132.8
Turn Bay Length (m)	120.0		120.0	90.0		30.0		30.0	
Base Capacity (vph)	201	1354	1231	363	1175	228	282	218	306
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.62	0.10	0.18	1.08	0.51	0.13	0.44	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	771	117	62	1139	27	108	10	25	87	14	25
Future Volume (vph)	181	771	117	62	1139	27	108	10	25	87	14	25
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1807	1847	1633	1789	1878		1825	1592		1738	1736	
Flt Permitted	0.05	1.00	1.00	0.31	1.00		0.73	1.00		0.73	1.00	
Satd. Flow (perm)	96	1847	1633	582	1878		1402	1592		1340	1736	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	838	127	67	1238	29	117	11	27	95	15	27
RTOR Reduction (vph)	0	0	34	0	1	0	0	23	0	0	23	0
Lane Group Flow (vph)	197	838	93	67	1266	0	117	15	0	95	19	0
Heavy Vehicles (%)	1%	4%	0%	2%	2%	0%	0%	0%	11%	5%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4				8
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	88.0	88.0	88.0	75.0	75.0		19.6	19.6		19.6	19.6	
Effective Green, g (s)	88.0	88.0	88.0	75.0	75.0		19.6	19.6		19.6	19.6	
Actuated g/C Ratio	0.73	0.73	0.73	0.62	0.62		0.16	0.16		0.16	0.16	
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	198	1354	1197	363	1173		228	260		218	283	
v/s Ratio Prot	c0.07	0.45			c0.67			0.01				0.01
v/s Ratio Perm	0.65		0.06	0.12			c0.08			0.07		
v/c Ratio	0.99	0.62	0.08	0.18	1.08		0.51	0.06		0.44	0.07	
Uniform Delay, d1	43.1	7.8	4.5	9.5	22.5		45.8	42.4		45.2	42.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	62.2	2.1	0.1	1.1	50.5		8.0	0.4		6.2	0.5	
Delay (s)	105.2	9.9	4.7	10.7	73.0		53.9	42.8		51.4	42.9	
Level of Service	F	A	A	B	E		D	D		D	D	
Approach Delay (s)		25.5			69.9			51.2			48.8	
Approach LOS		C			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	49.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	60	803	543	237	1103	63	658	679	329	111	613
v/c Ratio	0.38	1.01	0.73	1.09	1.10	0.12	1.47	0.65	0.34	0.48	1.09
Control Delay	32.3	80.7	12.4	116.6	102.3	2.2	250.4	22.6	6.3	42.8	104.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.3	80.7	12.4	116.6	102.3	2.2	250.4	22.6	6.3	42.8	104.6
Queue Length 50th (m)	9.2	~101.6	10.4	-45.6	~163.3	0.0	~197.3	107.2	13.8	21.4	~161.4
Queue Length 95th (m)	18.5	#142.9	49.3	#96.1	#204.3	3.4	#268.1	146.7	30.1	40.1	#230.7
Internal Link Dist (m)		393.8			117.3			302.9			213.8
Turn Bay Length (m)	110.0		110.0	70.0			150.0		130.0	75.0	
Base Capacity (vph)	160	795	743	218	999	508	449	1051	977	232	562
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	1.01	0.73	1.09	1.10	0.12	1.47	0.65	0.34	0.48	1.09

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

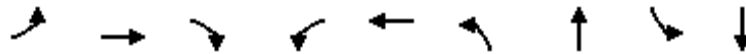
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	739	500	218	1015	58	605	625	303	102	462	102
Future Volume (vph)	55	739	500	218	1015	58	605	625	303	102	462	102
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	6.3	6.3	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1825	3510	1617	1807	3614	1570	1772	1921	1617	1825	1869	
Flt Permitted	0.14	1.00	1.00	0.12	1.00	1.00	0.10	1.00	1.00	0.41	1.00	
Satd. Flow (perm)	274	3510	1617	238	3614	1570	188	1921	1617	781	1869	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	803	543	237	1103	63	658	679	329	111	502	111
RTOR Reduction (vph)	0	0	375	0	0	46	0	0	93	0	6	0
Lane Group Flow (vph)	60	803	168	237	1103	17	658	679	236	111	607	0
Heavy Vehicles (%)	0%	4%	1%	1%	1%	4%	3%	0%	1%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	3	8		7	4		5	2			6	
Permitted Phases	8		8	4		4	2		2	6		
Actuated Green, G (s)	32.8	28.0	28.0	42.0	33.2	33.2	65.7	65.7	65.7	35.7	35.7	
Effective Green, g (s)	32.8	28.0	28.0	42.0	33.2	33.2	65.7	65.7	65.7	35.7	35.7	
Actuated g/C Ratio	0.27	0.23	0.23	0.35	0.27	0.27	0.54	0.54	0.54	0.30	0.30	
Clearance Time (s)	4.0	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	6.3	6.3	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	136	813	374	212	993	431	443	1044	879	230	552	
v/s Ratio Prot	0.02	0.23		c0.09	0.31		c0.32	0.35			0.32	
v/s Ratio Perm	0.10		0.10	c0.30		0.01	c0.49		0.15	0.14		
v/c Ratio	0.44	0.99	0.45	1.12	1.11	0.04	1.49	0.65	0.27	0.48	1.10	
Uniform Delay, d1	35.6	46.2	39.8	33.4	43.8	32.1	37.6	19.4	14.7	35.0	42.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.3	28.2	0.9	97.1	64.0	0.0	230.2	3.1	0.7	7.1	68.2	
Delay (s)	37.9	74.4	40.7	130.4	107.8	32.2	267.8	22.6	15.5	42.0	110.8	
Level of Service	D	E	D	F	F	C	F	C	B	D	F	
Approach Delay (s)		59.8			108.2			118.0			100.2	
Approach LOS		E			F			F			F	

Intersection Summary		
HCM 2000 Control Delay	97.2	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	1.41	F
Actuated Cycle Length (s)	120.8	Sum of lost time (s)
Intersection Capacity Utilization	114.1%	21.1
Analysis Period (min)	15	ICU Level of Service
		H
c Critical Lane Group		



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	386	835	523	146	1582	611	1779	351	1219
v/c Ratio	1.77	0.66	0.58	0.62	1.35	2.00	1.46	1.73	1.22
Control Delay	388.0	35.2	18.4	32.9	197.8	485.9	241.7	371.4	145.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	388.0	35.2	18.4	32.9	197.8	485.9	241.7	371.4	145.5
Queue Length 50th (m)	~119.8	86.1	67.6	19.4	~256.3	~209.9	~302.8	~106.2	~182.7
Queue Length 95th (m)	#180.1	107.6	100.2	32.3	#299.3	#279.7	#345.8	#164.6	#225.3
Internal Link Dist (m)		353.7			209.7		228.2		202.1
Turn Bay Length (m)	90.0		110.0	60.0		190.0		95.0	
Base Capacity (vph)	218	1272	902	237	1169	305	1221	203	998
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.77	0.66	0.58	0.62	1.35	2.00	1.46	1.73	1.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	355	768	481	134	1149	306	562	1483	154	323	835	286
Future Volume (vph)	355	768	481	134	1149	306	562	1483	154	323	835	286
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.9	4.0	4.0	6.9		4.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1807	3544	1585	1825	3527		1789	3599		1807	3476	
Flt Permitted	0.09	1.00	1.00	0.22	1.00		0.11	1.00		0.12	1.00	
Satd. Flow (perm)	177	3544	1585	417	3527		201	3599		227	3476	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	386	835	523	146	1249	333	611	1612	167	351	908	311
RTOR Reduction (vph)	0	0	35	0	20	0	0	7	0	0	28	0
Lane Group Flow (vph)	386	835	488	146	1562	0	611	1772	0	351	1191	0
Heavy Vehicles (%)	1%	3%	3%	0%	0%	1%	2%	0%	0%	1%	1%	1%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	53.1	43.1	59.1	45.1	39.1		53.5	40.5		42.5	33.5	
Effective Green, g (s)	53.1	43.1	59.1	45.1	39.1		53.5	40.5		42.5	33.5	
Actuated g/C Ratio	0.44	0.36	0.49	0.38	0.33		0.45	0.34		0.35	0.28	
Clearance Time (s)	4.0	6.9	4.0	4.0	6.9		4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	214	1272	780	227	1149		301	1214		198	970	
v/s Ratio Prot	c0.15	0.24	0.08	0.03	0.44		c0.27	0.49		0.13	0.34	
v/s Ratio Perm	c0.65		0.22	0.21			c0.63			0.49		
v/c Ratio	1.80	0.66	0.63	0.64	1.36		2.03	1.46		1.77	1.23	
Uniform Delay, d1	33.1	32.2	22.3	27.4	40.5		36.0	39.8		33.4	43.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	379.7	2.7	1.6	6.1	167.4		475.0	211.6		367.5	111.7	
Delay (s)	412.8	34.9	23.9	33.5	207.8		511.0	251.3		400.8	154.9	
Level of Service	F	C	C	C	F		F	F		F	F	
Approach Delay (s)		115.2			193.1			317.7			209.9	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	218.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.4
Intersection Capacity Utilization	142.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	47	171	214	72	162	1748	350	41	1314
v/c Ratio	0.17	0.40	0.96	0.18	1.14	1.34	0.30	0.64	1.15
Control Delay	40.1	24.0	98.6	33.3	144.1	179.6	4.9	63.3	101.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.1	24.0	98.6	33.3	144.1	179.6	4.9	63.3	101.8
Queue Length 50th (m)	9.1	17.7	50.0	11.5	~28.3	~537.7	15.9	5.8	~365.5
Queue Length 95th (m)	19.7	38.1	#97.0	24.1	#71.6	#618.5	28.1	#27.8	#446.7
Internal Link Dist (m)		249.6		201.4		128.2			673.9
Turn Bay Length (m)	70.0		65.0		60.0		50.0	65.0	
Base Capacity (vph)	287	432	226	397	142	1305	1154	64	1144
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.40	0.95	0.18	1.14	1.34	0.30	0.64	1.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.










Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	51	107	197	51	16	149	1608	322	38	1162	47
Future Volume (vph)	43	51	107	197	51	16	149	1608	322	38	1162	47
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		4.0	5.6	5.6	5.6	5.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.90		1.00	0.96		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1772	1698		1772	1785		1825	1902	1617	1825	1872	
Flt Permitted	0.71	1.00		0.56	1.00		0.05	1.00	1.00	0.05	1.00	
Satd. Flow (perm)	1324	1698		1042	1785		100	1902	1617	105	1872	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	55	116	214	55	17	162	1748	350	41	1263	51
RTOR Reduction (vph)	0	64	0	0	9	0	0	0	45	0	1	0
Lane Group Flow (vph)	47	107	0	214	63	0	162	1748	305	41	1313	0
Heavy Vehicles (%)	3%	3%	1%	3%	5%	0%	0%	1%	1%	0%	2%	3%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		8			4		5	2				6
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	25.6	25.6		25.6	25.6		82.1	82.1	82.1	73.1	73.1	
Effective Green, g (s)	25.6	25.6		25.6	25.6		82.1	82.1	82.1	73.1	73.1	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.69	0.69	0.69	0.61	0.61	
Clearance Time (s)	6.3	6.3		6.3	6.3		4.0	5.6	5.6	5.6	5.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	283	363		223	382		140	1305	1109	64	1144	
v/s Ratio Prot		0.06			0.04		0.05	c0.92			0.70	
v/s Ratio Perm	0.04			c0.21			0.74		0.19	0.39		
v/c Ratio	0.17	0.30		0.96	0.16		1.16	1.34	0.27	0.64	1.15	
Uniform Delay, d1	38.3	39.4		46.5	38.3		38.0	18.8	7.2	14.9	23.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	0.5		48.3	0.2		124.5	158.0	0.6	40.2	77.0	
Delay (s)	38.6	39.9		94.8	38.5		162.5	176.8	7.9	55.0	100.2	
Level of Service	D	D		F	D		F	F	A	E	F	
Approach Delay (s)		39.6			80.6			149.6			98.9	
Approach LOS		D			F			F			F	
Intersection Summary												
HCM 2000 Control Delay			122.3									F
HCM 2000 Volume to Capacity ratio			1.30									
Actuated Cycle Length (s)			119.6								15.9	
Intersection Capacity Utilization			130.5%									H
ICU Level of Service												
Analysis Period (min)			15									
c Critical Lane Group												

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	214	1156	49	1470	383	50	58	336	149
v/c Ratio	0.87	0.58	0.26	0.94	0.42	0.14	0.11	0.84	0.24
Control Delay	50.9	13.9	20.9	37.5	3.3	24.7	3.2	50.2	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.9	13.9	20.9	37.5	3.3	24.7	3.2	50.2	2.6
Queue Length 50th (m)	20.1	62.5	5.2	124.0	0.0	6.3	0.0	54.2	0.0
Queue Length 95th (m)	#58.8	80.5	14.0	#171.8	15.1	15.0	4.7	#99.5	6.8
Internal Link Dist (m)		412.2		393.8			184.6		108.9
Turn Bay Length (m)	80.0		100.0		90.0	20.0			
Base Capacity (vph)	246	1997	190	1566	910	357	519	400	609
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.58	0.26	0.94	0.42	0.14	0.11	0.84	0.24

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	197	1006	58	45	1352	352	46	0	53	309	0	137	
Future Volume (vph)	197	1006	58	45	1352	352	46	0	53	309	0	137	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00		
Flt	1.00	0.99		1.00	1.00	0.85	1.00	0.85		1.00	0.85		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1789	3517		1789	3614	1601	1738	1555		1789	1601		
Flt Permitted	0.09	1.00		0.23	1.00	1.00	0.66	1.00		0.72	1.00		
Satd. Flow (perm)	175	3517		439	3614	1601	1212	1555		1355	1601		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	214	1093	63	49	1470	383	50	0	58	336	0	149	
RTOR Reduction (vph)	0	5	0	0	0	217	0	41	0	0	105	0	
Lane Group Flow (vph)	214	1151	0	49	1470	166	50	17	0	336	44	0	
Heavy Vehicles (%)	2%	3%	2%	2%	1%	2%	5%	2%	5%	2%	2%	2%	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA		
Protected Phases	3	8			4			2				6	
Permitted Phases	8			4		4	2			6			
Actuated Green, G (s)	51.0	51.0		39.0	39.0	39.0	26.6	26.6		26.6	26.6		
Effective Green, g (s)	51.0	51.0		39.0	39.0	39.0	26.6	26.6		26.6	26.6		
Actuated g/C Ratio	0.57	0.57		0.43	0.43	0.43	0.30	0.30		0.30	0.30		
Clearance Time (s)	4.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	242	1992		190	1566	693	358	459		400	473		
v/s Ratio Prot	c0.08	0.33			c0.41			0.01			0.03		
v/s Ratio Perm	0.42			0.11		0.10	0.04			c0.25			
v/c Ratio	0.88	0.58		0.26	0.94	0.24	0.14	0.04		0.84	0.09		
Uniform Delay, d1	22.5	12.6		16.3	24.4	16.1	23.3	22.6		29.7	23.0		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	29.4	0.4		0.7	11.1	0.2	0.8	0.2		18.7	0.4		
Delay (s)	51.8	13.0		17.0	35.5	16.3	24.1	22.7		48.5	23.4		
Level of Service	D	B		B	D	B	C	C		D	C		
Approach Delay (s)		19.0			31.2			23.4			40.7		
Approach LOS		B			C			C			D		
Intersection Summary													
HCM 2000 Control Delay			27.8		HCM 2000 Level of Service						C		
HCM 2000 Volume to Capacity ratio			0.90										
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					16.4			
Intersection Capacity Utilization			88.6%		ICU Level of Service					E			
Analysis Period (min)			15										
c Critical Lane Group													

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	7	48	58	7	46	57	1472	137	71	1112	28
Future Volume (Veh/h)	12	7	48	58	7	46	57	1472	137	71	1112	28
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	8	52	63	8	50	62	1600	149	77	1209	30
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												327
pX, platoon unblocked	0.65	0.65	0.65	0.65	0.65		0.65					
vC, conflicting volume	3141	3236	1209	3143	3117	1600	1239			1749		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4036	4183	1050	4039	3999	1600	1097			1749		
tC, single (s)	7.3	6.8	6.2	7.1	6.8	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.3	3.3	3.5	4.3	3.3	2.2			2.2		
p0 queue free %	0	0	71	0	0	62	85			79		
cM capacity (veh/h)	0	1	180	0	1	132	417			363		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3		
Volume Total	13	60	63	58	62	1600	149	77	1209	30		
Volume Left	13	0	63	0	62	0	0	77	0	0		
Volume Right	0	52	0	50	0	0	149	0	0	30		
cSH	0	5	0	6	417	1700	1700	363	1700	1700		
Volume to Capacity	Err	12.53	Err	9.39	0.15	0.94	0.09	0.21	0.71	0.02		
Queue Length 95th (m)	Err	Err	Err	Err	3.9	0.0	0.0	6.0	0.0	0.0		
Control Delay (s)	Err	Err	Err	Err	15.1	0.0	0.0	17.5	0.0	0.0		
Lane LOS	F	F	F	F	C			C				
Approach Delay (s)	Err		Err		0.5			1.0				
Approach LOS	F		F									
Intersection Summary												
Average Delay			Err									
Intersection Capacity Utilization			94.0%		ICU Level of Service				F			
Analysis Period (min)			15									

Adelaide Street North EA
10: Adelaide Street N & Street A

Future 2039 Traffic Analysis with Timing Improvements Only

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	0	167	75	0	8	230	420	133	16	412	75
Future Volume (Veh/h)	43	0	167	75	0	8	230	420	133	16	412	75
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	47	0	182	82	0	9	250	457	145	17	448	82
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked	0.77	0.77		0.77	0.77	0.77					0.77	
vC, conflicting volume	1489	1625	489	1694	1594	530	530				602	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1486	1661	489	1750	1621	247	530				340	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	25	100	69	0	100	99	76				98	
cM capacity (veh/h)	63	56	579	29	59	613	1037				944	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	47	182	82	9	250	602	17	530				
Volume Left	47	0	82	0	250	0	17	0				
Volume Right	0	182	0	9	0	145	0	82				
cSH	63	579	29	613	1037	1700	944	1700				
Volume to Capacity	0.75	0.31	2.87	0.01	0.24	0.35	0.02	0.31				
Queue Length 95th (m)	25.2	10.2	74.5	0.3	7.2	0.0	0.4	0.0				
Control Delay (s)	155.0	14.0	1132.1	11.0	9.6	0.0	8.9	0.0				
Lane LOS	F	B	F	B	A		A					
Approach Delay (s)	43.0		1021.2		2.8		0.3					
Approach LOS	E		F									
Intersection Summary												
Average Delay			61.3									
Intersection Capacity Utilization			66.8%		ICU Level of Service					C		
Analysis Period (min)			15									

APPENDIX K

Future (2029) With Improvements Weekday AM and PM
Traffic Analysis Synchro Output Sheets



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	77	1309	26	898	147	149	82	325	184
v/c Ratio	0.40	0.88	0.21	0.61	0.19	0.34	0.13	0.67	0.29
Control Delay	19.3	24.0	15.7	15.2	2.9	16.8	6.9	25.0	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	24.0	15.7	15.2	2.9	16.8	6.9	25.0	10.2
Queue Length 50th (m)	5.5	64.7	1.7	37.6	0.0	11.7	1.9	29.5	8.5
Queue Length 95th (m)	16.1	#103.8	6.7	53.6	8.0	24.4	9.0	#61.9	20.5
Internal Link Dist (m)		412.2		393.8			184.6		108.9
Turn Bay Length (m)	80.0		100.0		90.0	20.0			
Base Capacity (vph)	198	1533	129	1522	784	439	617	482	626
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.85	0.20	0.59	0.19	0.34	0.13	0.67	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



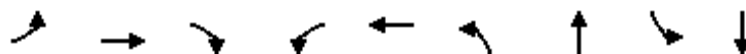
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	1150	54	24	826	135	137	0	75	299	0	169
Future Volume (vph)	71	1150	54	24	826	135	137	0	75	299	0	169
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3489		1789	3476	1601	1789	1601		1789	1601	
Flt Permitted	0.24	1.00		0.16	1.00	1.00	0.64	1.00		0.70	1.00	
Satd. Flow (perm)	454	3489		297	3476	1601	1208	1601		1325	1601	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	1250	59	26	898	147	149	0	82	325	0	184
RTOR Reduction (vph)	0	6	0	0	0	84	0	35	0	0	44	0
Lane Group Flow (vph)	77	1303	0	26	898	63	149	47	0	325	140	0
Heavy Vehicles (%)	2%	4%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	25.4	25.4		25.4	25.4	25.4	21.6	21.6		21.6	21.6	
Effective Green, g (s)	25.4	25.4		25.4	25.4	25.4	21.6	21.6		21.6	21.6	
Actuated g/C Ratio	0.43	0.43		0.43	0.43	0.43	0.36	0.36		0.36	0.36	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	194	1491		127	1486	684	439	582		481	582	
v/s Ratio Prot		c0.37			0.26			0.03			0.09	
v/s Ratio Perm	0.17			0.09		0.04	0.12			c0.25		
v/c Ratio	0.40	0.87		0.20	0.60	0.09	0.34	0.08		0.68	0.24	
Uniform Delay, d1	11.7	15.5		10.7	13.1	10.1	13.7	12.4		15.9	13.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	6.0		0.8	0.7	0.1	2.1	0.3		7.4	1.0	
Delay (s)	13.1	21.5		11.5	13.8	10.2	15.8	12.7		23.4	14.2	
Level of Service	B	C		B	B	B	B	B		C	B	
Approach Delay (s)		21.1			13.3			14.7			20.0	
Approach LOS		C			B			B			C	

Intersection Summary

HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	12.4
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Adelaide Street North EA
7: South Wenige Drive & Sunningdale Road E

Future 2029 Traffic Analysis with Improvements
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	66	1189	67	17	656	124	98	25	121
v/c Ratio	0.14	0.90	0.06	0.14	0.50	0.68	0.32	0.12	0.34
Control Delay	5.5	24.3	1.2	7.9	8.3	66.7	15.0	44.5	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	24.3	1.2	7.9	8.3	66.7	15.0	44.5	14.3
Queue Length 50th (m)	4.0	193.7	0.0	1.0	56.8	27.8	2.6	5.1	3.4
Queue Length 95th (m)	8.5	#339.0	3.4	3.9	79.2	#54.0	17.6	13.2	19.9
Internal Link Dist (m)		503.0			305.2		276.5		132.8
Turn Bay Length (m)	120.0		120.0	90.0		30.0		30.0	
Base Capacity (vph)	483	1316	1169	119	1305	183	308	217	355
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.90	0.06	0.14	0.50	0.68	0.32	0.12	0.34

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Adelaide Street North EA
7: South Wenige Drive & Sunningdale Road E

Future 2029 Traffic Analysis with Improvements
AM Peak Hour

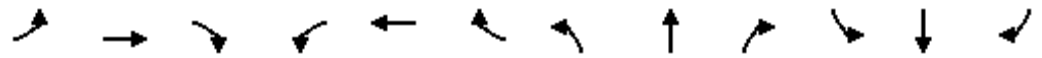


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	1094	62	16	587	17	114	12	78	23	16	96
Future Volume (vph)	61	1094	62	16	587	17	114	12	78	23	16	96
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	1795	1570	1706	1779		1644	1455		1825	1645	
Flt Permitted	0.36	1.00	1.00	0.09	1.00		0.65	1.00		0.69	1.00	
Satd. Flow (perm)	660	1795	1570	163	1779		1126	1455		1332	1645	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	1189	67	17	638	18	124	13	85	25	17	104
RTOR Reduction (vph)	0	0	18	0	1	0	0	71	0	0	87	0
Lane Group Flow (vph)	66	1189	49	17	655	0	124	27	0	25	34	0
Heavy Vehicles (%)	4%	7%	4%	7%	7%	27%	11%	27%	13%	0%	0%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	88.0	88.0	88.0	88.0	88.0		19.6	19.6		19.6	19.6	
Effective Green, g (s)	88.0	88.0	88.0	88.0	88.0		19.6	19.6		19.6	19.6	
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73		0.16	0.16		0.16	0.16	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	484	1316	1151	119	1304		183	237		217	268	
v/s Ratio Prot		c0.66			0.37			0.02			0.02	
v/s Ratio Perm	0.10		0.03	0.10			c0.11			0.02		
v/c Ratio	0.14	0.90	0.04	0.14	0.50		0.68	0.11		0.12	0.13	
Uniform Delay, d1	4.7	12.6	4.4	4.8	6.8		47.2	42.8		42.8	42.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	10.3	0.1	2.5	1.4		18.4	1.0		1.1	1.0	
Delay (s)	5.3	23.0	4.5	7.3	8.1		65.6	43.8		43.9	43.9	
Level of Service	A	C	A	A	A		E	D		D	D	
Approach Delay (s)		21.2			8.1			55.9			43.9	
Approach LOS		C			A			E			D	
Intersection Summary												
HCM 2000 Control Delay			22.1				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			12.4		
Intersection Capacity Utilization			80.9%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Adelaide Street North EA
 8: Adelaide Street N & Sunningdale Road E

Future 2029 Traffic Analysis with Improvements

AM Peak Hour



























Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	121	964	604	185	651	50	299	329	208	145	524	70
v/c Ratio	0.35	0.83	0.82	0.81	0.56	0.08	0.79	0.36	0.37	0.36	0.63	0.15
Control Delay	15.8	35.2	22.7	44.0	26.1	0.3	35.9	28.7	6.2	19.5	35.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.8	35.2	22.7	44.0	26.1	0.3	35.9	28.7	6.2	19.5	35.0	0.7
Queue Length 50th (m)	11.0	79.5	43.5	17.5	47.2	0.0	34.8	24.6	0.0	15.5	43.1	0.0
Queue Length 95th (m)	20.3	103.3	#104.5	#48.6	63.7	0.0	#59.8	36.5	15.9	27.7	59.7	0.0
Internal Link Dist (m)		393.8			117.3			302.9			103.8	
Turn Bay Length (m)	110.0		110.0	70.0			150.0		130.0	75.0		75.0
Base Capacity (vph)	346	1187	746	227	1192	627	379	918	556	412	830	477
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.81	0.81	0.81	0.55	0.08	0.79	0.36	0.37	0.35	0.63	0.15

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

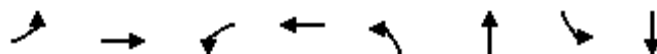
Adelaide Street North EA
8: Adelaide Street N & Sunningdale Road E

Future 2029 Traffic Analysis with Improvements
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	887	556	170	599	46	275	303	191	133	482	64
Future Volume (vph)	111	887	556	170	599	46	275	303	191	133	482	64
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3510	1555	1755	3411	1541	1807	3544	1555	1644	3579	1585
Flt Permitted	0.32	1.00	1.00	0.13	1.00	1.00	0.29	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)	618	3510	1555	242	3411	1541	550	3544	1555	957	3579	1585
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	121	964	604	185	651	50	299	329	208	145	524	70
RTOR Reduction (vph)	0	0	223	0	0	33	0	0	154	0	0	54
Lane Group Flow (vph)	121	964	381	185	651	17	299	329	54	145	524	16
Heavy Vehicles (%)	0%	4%	5%	4%	7%	6%	1%	3%	5%	11%	2%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	35.5	29.5	29.5	37.5	30.5	30.5	34.1	23.1	23.1	29.3	20.7	20.7
Effective Green, g (s)	35.5	29.5	29.5	37.5	30.5	30.5	34.1	23.1	23.1	29.3	20.7	20.7
Actuated g/C Ratio	0.40	0.33	0.33	0.42	0.34	0.34	0.38	0.26	0.26	0.33	0.23	0.23
Clearance Time (s)	4.0	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	326	1159	513	220	1165	526	364	916	402	380	829	367
v/s Ratio Prot	0.02	0.27		c0.07	0.19		c0.10	0.09		0.04	0.15	
v/s Ratio Perm	0.12		0.24	c0.29		0.01	c0.21		0.03	0.09		0.01
v/c Ratio	0.37	0.83	0.74	0.84	0.56	0.03	0.82	0.36	0.13	0.38	0.63	0.04
Uniform Delay, d1	17.6	27.6	26.5	19.4	23.9	19.6	21.1	27.1	25.4	22.1	30.9	26.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	5.2	5.8	24.1	0.6	0.0	13.8	1.1	0.7	0.6	3.6	0.2
Delay (s)	18.3	32.8	32.3	43.4	24.5	19.6	34.9	28.1	26.1	22.7	34.5	26.8
Level of Service	B	C	C	D	C	B	C	C	C	C	C	C
Approach Delay (s)		31.6			28.2			30.0			31.5	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			30.5									C
HCM 2000 Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			89.3							21.1		
Intersection Capacity Utilization			80.1%									D
Analysis Period (min)			15									
c Critical Lane Group												

Adelaide Street North EA
 9: Adelaide Street N & Blackwater Road

Future 2029 Traffic Analysis with Improvements
 AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	10	57	114	86	22	735	22	1311
v/c Ratio	0.05	0.20	0.51	0.26	0.09	0.30	0.04	0.52
Control Delay	22.3	13.4	32.4	8.9	6.5	5.2	5.3	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.3	13.4	32.4	8.9	6.5	5.2	5.3	7.0
Queue Length 50th (m)	1.0	2.0	12.4	0.4	0.8	16.3	0.8	37.7
Queue Length 95th (m)	4.5	10.1	25.7	10.1	4.0	29.9	3.5	65.5
Internal Link Dist (m)		279.8		304.6		673.9		302.9
Turn Bay Length (m)	30.0		50.0		120.0		120.0	
Base Capacity (vph)	493	678	572	702	239	2460	507	2544
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.08	0.20	0.12	0.09	0.30	0.04	0.52
Intersection Summary								

Adelaide Street North EA
9: Adelaide Street N & Blackwater Road

Future 2029 Traffic Analysis with Improvements
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↕	
Traffic Volume (vph)	9	2	51	105	4	75	20	608	68	20	1196	10
Future Volume (vph)	9	2	51	105	4	75	20	608	68	20	1196	10
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		5.6	5.6		5.6	5.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.86		1.00	0.86		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1615	1587		1825	1579		1825	3450		1825	3575	
Flt Permitted	0.70	1.00		0.72	1.00		0.17	1.00		0.37	1.00	
Satd. Flow (perm)	1192	1587		1383	1579		336	3450		713	3575	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	2	55	114	4	82	22	661	74	22	1300	11
RTOR Reduction (vph)	0	32	0	0	71	0	0	7	0	0	1	0
Lane Group Flow (vph)	10	25	0	114	15	0	22	728	0	22	1310	0
Heavy Vehicles (%)	13%	100%	0%	0%	50%	2%	0%	4%	6%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.2	9.2		9.2	9.2		44.8	44.8		44.8	44.8	
Effective Green, g (s)	9.2	9.2		9.2	9.2		44.8	44.8		44.8	44.8	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.68	0.68		0.68	0.68	
Clearance Time (s)	6.3	6.3		6.3	6.3		5.6	5.6		5.6	5.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	166	221		193	220		228	2345		484	2430	
v/s Ratio Prot		0.02			0.01			0.21			c0.37	
v/s Ratio Perm	0.01			c0.08			0.07			0.03		
v/c Ratio	0.06	0.11		0.59	0.07		0.10	0.31		0.05	0.54	
Uniform Delay, d1	24.6	24.8		26.6	24.6		3.6	4.3		3.5	5.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		4.8	0.1		0.8	0.3		0.2	0.9	
Delay (s)	24.8	25.0		31.4	24.8		4.5	4.6		3.7	6.2	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		25.0			28.5			4.6			6.2	
Approach LOS		C			C			A			A	

Intersection Summary

HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	65.9	Sum of lost time (s)	11.9
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Adelaide Street North EA
 13: Adelaide Street N & Fanshawe Park Road

Future 2029 Traffic Analysis with Improvements
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	128	1149	555	205	674	124	364	603	76	425	1370	325
v/c Ratio	0.44	0.86	0.68	0.94	0.49	0.25	1.00	0.42	0.14	0.83	0.94	0.54
Control Delay	26.5	46.3	22.7	73.2	34.9	6.8	77.9	32.7	2.2	32.6	51.7	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.5	46.3	22.7	73.2	34.9	6.8	77.9	32.7	2.2	32.6	51.7	15.0
Queue Length 50th (m)	17.3	86.2	75.6	28.9	44.5	0.0	-62.7	38.5	0.0	55.1	105.0	18.3
Queue Length 95th (m)	30.1	103.7	115.0	#71.6	56.5	13.5	#122.9	49.7	3.7	#82.4	#133.9	46.0
Internal Link Dist (m)		353.7			209.7			228.2			202.1	
Turn Bay Length (m)	90.0		110.0	60.0			190.0		95.0	95.0		95.0
Base Capacity (vph)	290	1334	822	218	1373	505	364	1431	529	525	1458	598
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.86	0.68	0.94	0.49	0.25	1.00	0.42	0.14	0.81	0.94	0.54

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

































Queue shown is maximum after two cycles.

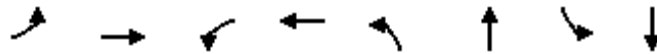
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Adelaide Street North EA
13: Adelaide Street N & Fanshawe Park Road

Future 2029 Traffic Analysis with Improvements
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			  			  	
Traffic Volume (vph)	118	1057	511	189	620	114	335	555	70	391	1260	299
Future Volume (vph)	118	1057	511	189	620	114	335	555	70	391	1260	299
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1690	5043	1570	1772	4995	1512	1706	4902	1526	1807	5092	1555
Flt Permitted	0.32	1.00	1.00	0.13	1.00	1.00	0.12	1.00	1.00	0.36	1.00	1.00
Satd. Flow (perm)	576	5043	1570	246	4995	1512	224	4902	1526	691	5092	1555
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	128	1149	555	205	674	124	364	603	76	425	1370	325
RTOR Reduction (vph)	0	0	42	0	0	90	0	0	54	0	0	153
Lane Group Flow (vph)	128	1149	513	205	674	34	364	603	22	425	1370	172
Heavy Vehicles (%)	8%	4%	4%	3%	5%	8%	7%	7%	7%	1%	3%	5%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	36.9	29.1	48.1	39.3	30.3	30.3	51.1	32.1	32.1	49.9	31.5	31.5
Effective Green, g (s)	36.9	29.1	48.1	39.3	30.3	30.3	51.1	32.1	32.1	49.9	31.5	31.5
Actuated g/C Ratio	0.34	0.26	0.44	0.36	0.28	0.28	0.46	0.29	0.29	0.45	0.29	0.29
Clearance Time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	272	1334	686	212	1375	416	360	1430	445	500	1458	445
v/s Ratio Prot	0.03	0.23	0.13	c0.08	0.13		c0.17	0.12		0.14	0.27	
v/s Ratio Perm	0.12		0.20	c0.27		0.02	c0.30		0.01	0.24		0.11
v/c Ratio	0.47	0.86	0.75	0.97	0.49	0.08	1.01	0.42	0.05	0.85	0.94	0.39
Uniform Delay, d1	26.4	38.5	25.9	28.6	33.4	29.5	32.4	31.5	28.0	21.6	38.3	31.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	7.5	4.5	51.8	1.3	0.4	50.3	0.2	0.0	12.8	11.9	0.6
Delay (s)	27.7	46.0	30.4	80.4	34.6	29.9	82.7	31.7	28.0	34.4	50.2	32.1
Level of Service	C	D	C	F	C	C	F	C	C	C	D	C
Approach Delay (s)		40.0			43.4			49.2			44.2	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			43.7		HCM 2000 Level of Service					D		
HCM 2000 Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			110.0		Sum of lost time (s)				21.4			
Intersection Capacity Utilization			91.6%		ICU Level of Service				F			
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	231	261	105	38	718	17	1566
v/c Ratio	0.12	0.48	0.84	0.20	0.40	0.39	0.05	0.81
Control Delay	19.8	23.2	49.3	11.9	28.0	10.5	9.9	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	23.2	49.3	11.9	28.0	10.5	9.9	19.0
Queue Length 50th (m)	4.8	24.4	34.5	5.5	3.2	29.2	1.1	96.3
Queue Length 95th (m)	11.9	43.2	#69.3	15.7	#16.2	43.2	4.2	133.7
Internal Link Dist (m)		249.6		201.4		128.2		673.9
Turn Bay Length (m)	70.0		65.0		60.0		65.0	
Base Capacity (vph)	456	592	382	644	95	1858	369	1944
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.39	0.68	0.16	0.40	0.39	0.05	0.81

Intersection Summary

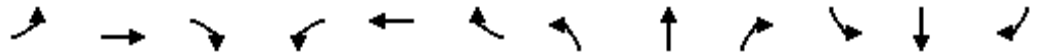
95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA

Future 2029 Traffic Analysis with Improvements

16: Adelaide Street N & Phillbrook Drive/Grenfell Drive

AM Peak Hour

































Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	32	180	240	49	48	35	555	106	16	1411	29
Future Volume (vph)	42	32	180	240	49	48	35	555	106	16	1411	29
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		5.6	5.6		5.6	5.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.87		1.00	0.93		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1772	1632		1789	1718		1706	3334		1825	3521	
Flt Permitted	0.69	1.00		0.57	1.00		0.10	1.00		0.35	1.00	
Satd. Flow (perm)	1285	1632		1074	1718		173	3334		669	3521	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	35	196	261	53	52	38	603	115	17	1534	32
RTOR Reduction (vph)	0	13	0	0	37	0	0	18	0	0	2	0
Lane Group Flow (vph)	46	218	0	261	68	0	38	700	0	17	1564	0
Heavy Vehicles (%)	3%	7%	2%	2%	7%	0%	7%	7%	6%	0%	3%	20%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	21.8	21.8		21.8	21.8		41.6	41.6		41.6	41.6	
Effective Green, g (s)	21.8	21.8		21.8	21.8		41.6	41.6		41.6	41.6	
Actuated g/C Ratio	0.29	0.29		0.29	0.29		0.55	0.55		0.55	0.55	
Clearance Time (s)	6.3	6.3		6.3	6.3		5.6	5.6		5.6	5.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	372	472		310	497		95	1841		369	1945	
v/s Ratio Prot		0.13			0.04			0.21			c0.44	
v/s Ratio Perm	0.04			c0.24			0.22			0.03		
v/c Ratio	0.12	0.46		0.84	0.14		0.40	0.38		0.05	0.80	
Uniform Delay, d1	19.7	21.9		25.1	19.8		9.7	9.5		7.7	13.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.7		18.3	0.1		12.1	0.6		0.2	3.7	
Delay (s)	19.9	22.6		43.4	19.9		21.8	10.1		8.0	17.2	
Level of Service	B	C		D	B		C	B		A	B	
Approach Delay (s)		22.2			36.7			10.7			17.1	
Approach LOS		C			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			18.4								B	
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			75.3						11.9			
Intersection Capacity Utilization			81.2%								D	
Analysis Period (min)			15									
c Critical Lane Group												

Adelaide Street North EA
10: Adelaide Street N & Street A

Future 2029 Traffic Analysis with Improvements

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	0	272	127	0	14	60	362	27	3	294	21
Future Volume (Veh/h)	64	0	272	127	0	14	60	362	27	3	294	21
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	0	296	138	0	15	65	393	29	3	320	23
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked	0.89	0.89		0.89	0.89	0.89					0.89	
vC, conflicting volume	876	890	332	1160	886	408	343				422	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	795	811	332	1116	807	267	343				283	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	72	100	58	0	100	98	95				100	
cM capacity (veh/h)	253	262	710	91	263	684	1216				1133	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	70	296	138	15	65	422	3	343				
Volume Left	70	0	138	0	65	0	3	0				
Volume Right	0	296	0	15	0	29	0	23				
cSH	253	710	91	684	1216	1700	1133	1700				
Volume to Capacity	0.28	0.42	1.51	0.02	0.05	0.25	0.00	0.20				
Queue Length 95th (m)	8.3	15.7	81.1	0.5	1.3	0.0	0.1	0.0				
Control Delay (s)	24.5	13.6	358.2	10.4	8.1	0.0	8.2	0.0				
Lane LOS	C	B	F	B	A		A					
Approach Delay (s)	15.7		324.1		1.1		0.1					
Approach LOS	C		F									
Intersection Summary												
Average Delay			41.3									
Intersection Capacity Utilization			61.2%		ICU Level of Service				B			
Analysis Period (min)			15									

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	214	1073	47	1370	383	47	54	336	149
v/c Ratio	0.86	0.54	0.22	0.89	0.42	0.13	0.10	0.83	0.24
Control Delay	49.0	13.3	19.4	32.0	3.4	24.5	1.4	48.8	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	13.3	19.4	32.0	3.4	24.5	1.4	48.8	2.5
Queue Length 50th (m)	19.7	56.0	4.9	110.4	0.0	5.9	0.0	54.2	0.0
Queue Length 95th (m)	#58.1	72.4	12.8	#142.6	15.1	14.1	1.8	#99.2	6.3
Internal Link Dist (m)		412.2		393.8			184.6		108.9
Turn Bay Length (m)	80.0		100.0		90.0	20.0			
Base Capacity (vph)	249	2016	219	1581	915	361	535	405	616
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.53	0.21	0.87	0.42	0.13	0.10	0.83	0.24

Intersection Summary

























95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA

Future 2029 Traffic Analysis with Improvements

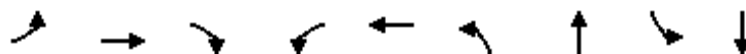
3: Blackwater Road/Future Blackwater Road & Sunningdale Road E

PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			 					
Traffic Volume (vph)	197	932	55	43	1260	352	43	0	50	309	0	137	
Future Volume (vph)	197	932	55	43	1260	352	43	0	50	309	0	137	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85		1.00	0.85		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1789	3516		1789	3614	1601	1738	1555		1789	1601		
Flt Permitted	0.09	1.00		0.27	1.00	1.00	0.66	1.00		0.72	1.00		
Satd. Flow (perm)	179	3516		502	3614	1601	1212	1555		1359	1601		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	214	1013	60	47	1370	383	47	0	54	336	0	149	
RTOR Reduction (vph)	0	5	0	0	0	219	0	38	0	0	105	0	
Lane Group Flow (vph)	214	1068	0	47	1370	164	47	16	0	336	44	0	
Heavy Vehicles (%)	2%	3%	2%	2%	1%	2%	5%	2%	5%	2%	2%	2%	
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA		
Protected Phases	3	8			4			2				6	
Permitted Phases	8			4		4	2			6			
Actuated Green, G (s)	50.2	50.2		38.2	38.2	38.2	26.6	26.6		26.6	26.6		
Effective Green, g (s)	50.2	50.2		38.2	38.2	38.2	26.6	26.6		26.6	26.6		
Actuated g/C Ratio	0.56	0.56		0.43	0.43	0.43	0.30	0.30		0.30	0.30		
Clearance Time (s)	4.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	245	1978		214	1547	685	361	463		405	477		
v/s Ratio Prot	c0.08	0.30			0.38			0.01				0.03	
v/s Ratio Perm	c0.41			0.09		0.10	0.04			c0.25			
v/c Ratio	0.87	0.54		0.22	0.89	0.24	0.13	0.03		0.83	0.09		
Uniform Delay, d1	21.2	12.2		16.1	23.5	16.2	22.9	22.2		29.2	22.6		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	27.2	0.3		0.5	6.5	0.2	0.7	0.1		17.6	0.4		
Delay (s)	48.4	12.6		16.6	30.0	16.4	23.6	22.3		46.8	23.0		
Level of Service	D	B		B	C	B	C	C		D	C		
Approach Delay (s)		18.5			26.7			22.9			39.5		
Approach LOS		B			C			C			D		
Intersection Summary													
HCM 2000 Control Delay			25.4									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.89										
Actuated Cycle Length (s)			89.2									Sum of lost time (s)	16.4
Intersection Capacity Utilization			86.0%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

Adelaide Street North EA
7: South Wenige Drive & Sunningdale Road E

Future 2029 Traffic Analysis with Improvements
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	178	787	115	61	1189	107	34	86	37
v/c Ratio	0.96	0.58	0.09	0.15	1.00	0.47	0.12	0.39	0.12
Control Delay	86.5	9.5	1.0	10.1	48.6	53.0	22.3	50.9	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.5	9.5	1.0	10.1	48.6	53.0	22.3	50.9	23.1
Queue Length 50th (m)	26.0	75.4	0.0	5.4	259.5	23.1	2.0	18.3	2.6
Queue Length 95th (m)	#70.2	104.3	4.4	11.7	#370.9	41.1	11.1	34.4	12.2
Internal Link Dist (m)		503.0			305.2		276.5		132.8
Turn Bay Length (m)	120.0		120.0	90.0		30.0		30.0	
Base Capacity (vph)	185	1354	1228	399	1190	229	280	219	303
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.58	0.09	0.15	1.00	0.47	0.12	0.39	0.12

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Adelaide Street North EA
7: South Wenige Drive & Sunningdale Road E

Future 2029 Traffic Analysis with Improvements
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	724	106	56	1069	25	98	9	22	79	12	22
Future Volume (vph)	164	724	106	56	1069	25	98	9	22	79	12	22
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1807	1847	1633	1789	1878		1825	1594		1738	1734	
Flt Permitted	0.05	1.00	1.00	0.33	1.00		0.73	1.00		0.73	1.00	
Satd. Flow (perm)	95	1847	1633	630	1878		1408	1594		1345	1734	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	178	787	115	61	1162	27	107	10	24	86	13	24
RTOR Reduction (vph)	0	0	31	0	1	0	0	20	0	0	20	0
Lane Group Flow (vph)	178	787	84	61	1188	0	107	14	0	86	17	0
Heavy Vehicles (%)	1%	4%	0%	2%	2%	0%	0%	0%	11%	5%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4				8
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	88.0	88.0	88.0	76.0	76.0		19.6	19.6		19.6	19.6	
Effective Green, g (s)	88.0	88.0	88.0	76.0	76.0		19.6	19.6		19.6	19.6	
Actuated g/C Ratio	0.73	0.73	0.73	0.63	0.63		0.16	0.16		0.16	0.16	
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	183	1354	1197	399	1189		229	260		219	283	
v/s Ratio Prot	c0.06	0.43			0.63			0.01			0.01	
v/s Ratio Perm	c0.64		0.05	0.10			c0.08			0.06		
v/c Ratio	0.97	0.58	0.07	0.15	1.00		0.47	0.05		0.39	0.06	
Uniform Delay, d1	42.3	7.4	4.5	8.9	22.0		45.5	42.4		44.9	42.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	58.2	1.8	0.1	0.8	26.0		6.7	0.4		5.2	0.4	
Delay (s)	100.5	9.3	4.6	9.7	47.9		52.2	42.8		50.1	42.8	
Level of Service	F	A	A	A	D		D	D		D	D	
Approach Delay (s)		23.8			46.1			49.9			47.9	
Approach LOS		C			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			37.1			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.4			
Intersection Capacity Utilization			92.6%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

Adelaide Street North EA
 8: Adelaide Street N & Sunningdale Road E

Future 2029 Traffic Analysis with Improvements
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	57	742	524	218	1025	61	637	649	302	108	473	108
v/c Ratio	0.39	0.84	0.66	0.88	0.89	0.10	1.00	0.43	0.37	0.41	0.78	0.26
Control Delay	30.4	51.6	7.4	59.3	49.7	0.3	67.2	26.4	6.3	24.7	57.9	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	51.6	7.4	59.3	49.7	0.3	67.2	26.4	6.3	24.7	57.9	1.6
Queue Length 50th (m)	8.1	86.6	0.0	34.0	122.1	0.0	-133.1	57.3	7.0	12.4	56.9	0.0
Queue Length 95th (m)	16.5	109.3	28.1	#73.2	#160.3	0.0	#207.9	73.3	25.4	21.8	#75.9	0.4
Internal Link Dist (m)		393.8			117.3			302.9			111.2	
Turn Bay Length (m)	110.0		110.0	70.0			150.0		130.0	75.0		75.0
Base Capacity (vph)	145	921	811	249	1153	595	634	1505	815	266	605	420
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.81	0.65	0.88	0.89	0.10	1.00	0.43	0.37	0.41	0.78	0.26

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA
8: Adelaide Street N & Sunningdale Road E

Future 2029 Traffic Analysis with Improvements
PM Peak Hour











Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↑↑	↗	↘	↑↑	↗
Traffic Volume (vph)	52	683	482	201	943	56	586	597	278	99	435	99
Future Volume (vph)	52	683	482	201	943	56	586	597	278	99	435	99
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3510	1617	1807	3614	1570	1772	3650	1617	1825	3650	1633
Flt Permitted	0.13	1.00	1.00	0.14	1.00	1.00	0.20	1.00	1.00	0.41	1.00	1.00
Satd. Flow (perm)	249	3510	1617	264	3614	1570	377	3650	1617	778	3650	1633
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	742	524	218	1025	61	637	649	302	108	473	108
RTOR Reduction (vph)	0	0	389	0	0	42	0	0	149	0	0	90
Lane Group Flow (vph)	57	742	135	218	1025	19	637	649	153	108	473	18
Heavy Vehicles (%)	0%	4%	1%	1%	1%	4%	3%	0%	1%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	34.9	30.9	30.9	45.9	37.9	37.9	60.7	49.0	49.0	27.4	19.7	19.7
Effective Green, g (s)	34.9	30.9	30.9	45.9	37.9	37.9	60.7	49.0	49.0	27.4	19.7	19.7
Actuated g/C Ratio	0.29	0.26	0.26	0.38	0.32	0.32	0.51	0.41	0.41	0.23	0.16	0.16
Clearance Time (s)	4.0	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	125	906	417	243	1144	497	622	1494	661	245	600	268
v/s Ratio Prot	0.02	0.21		c0.08	0.28		c0.32	0.18		0.03	0.13	
v/s Ratio Perm	0.12		0.08	c0.26		0.01	c0.20		0.09	0.07		0.01
v/c Ratio	0.46	0.82	0.32	0.90	0.90	0.04	1.02	0.43	0.23	0.44	0.79	0.07
Uniform Delay, d1	33.0	41.8	35.9	28.7	39.0	28.3	31.5	25.4	23.1	37.8	48.0	42.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6	5.8	0.5	31.6	9.3	0.0	42.3	0.9	0.8	1.3	10.1	0.5
Delay (s)	35.7	47.6	36.4	60.4	48.3	28.3	73.8	26.3	23.9	39.1	58.1	42.7
Level of Service	D	D	D	E	D	C	E	C	C	D	E	D
Approach Delay (s)		42.7			49.4			44.9			52.7	
Approach LOS		D			D			D			D	

Intersection Summary		
HCM 2000 Control Delay	46.6	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	1.02	D
Actuated Cycle Length (s)	119.7	Sum of lost time (s)
Intersection Capacity Utilization	92.3%	21.1
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		F

Adelaide Street North EA
 9: Adelaide Street N & Blackwater Road






















Future 2029 Traffic Analysis with Improvements

PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	12	56	57	53	55	1661	71	1175
v/c Ratio	0.09	0.25	0.37	0.26	0.17	0.60	0.41	0.42
Control Delay	29.6	14.1	36.8	19.1	5.2	6.1	14.3	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	14.1	36.8	19.1	5.2	6.1	14.3	4.5
Queue Length 50th (m)	1.5	1.0	7.3	2.7	1.9	48.4	3.1	27.3
Queue Length 95th (m)	5.9	10.2	17.4	11.8	6.6	79.5	17.4	45.1
Internal Link Dist (m)		279.8		304.6		673.9		302.9
Turn Bay Length (m)	30.0		50.0		120.0		120.0	
Base Capacity (vph)	399	583	477	571	331	2781	172	2796
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.10	0.12	0.09	0.17	0.60	0.41	0.42
Intersection Summary								

Adelaide Street North EA
9: Adelaide Street N & Blackwater Road

Future 2029 Traffic Analysis with Improvements
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	7	44	52	7	41	51	1404	124	65	1055	26
Future Volume (vph)	11	7	44	52	7	41	51	1404	124	65	1055	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		5.6	5.6		5.6	5.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.87		1.00	0.87		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1521	1599		1825	1597		1825	3573		1825	3598	
Flt Permitted	0.72	1.00		0.72	1.00		0.22	1.00		0.11	1.00	
Satd. Flow (perm)	1157	1599		1384	1597		426	3573		221	3598	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	8	48	57	8	45	55	1526	135	71	1147	28
RTOR Reduction (vph)	0	43	0	0	28	0	0	4	0	0	1	0
Lane Group Flow (vph)	12	13	0	57	25	0	55	1657	0	71	1174	0
Heavy Vehicles (%)	20%	33%	0%	0%	33%	0%	0%	1%	0%	0%	1%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2				6
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	7.4	7.4		7.4	7.4		57.6	57.6		57.6	57.6	
Effective Green, g (s)	7.4	7.4		7.4	7.4		57.6	57.6		57.6	57.6	
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.75	0.75		0.75	0.75	
Clearance Time (s)	6.3	6.3		6.3	6.3		5.6	5.6		5.6	5.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	111	153		133	153		319	2676		165	2694	
v/s Ratio Prot		0.01			0.02			0.46			0.33	
v/s Ratio Perm	0.01			0.04			0.13			0.32		
v/c Ratio	0.11	0.08		0.43	0.16		0.17	0.62		0.43	0.44	
Uniform Delay, d1	31.7	31.7		32.8	31.9		2.8	4.5		3.6	3.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.2		2.2	0.5		1.2	1.1		8.0	0.5	
Delay (s)	32.2	31.9		35.0	32.4		4.0	5.6		11.6	4.1	
Level of Service	C	C		C	C		A	A		B	A	
Approach Delay (s)		31.9			33.7			5.5			4.5	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			6.7				HCM 2000 Level of Service				A	
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			76.9				Sum of lost time (s)			11.9		
Intersection Capacity Utilization			71.1%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

Adelaide Street North EA
 13: Adelaide Street N & Fanshawe Park Road

Future 2029 Traffic Analysis with Improvements
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	368	755	473	133	1143	318	553	1500	151	329	850	293
v/c Ratio	1.07	0.45	0.46	0.52	0.97	0.55	1.08	0.89	0.24	1.04	0.77	0.52
Control Delay	107.5	37.7	13.1	35.9	73.9	12.2	101.8	52.6	7.3	101.3	56.8	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.5	37.7	13.1	35.9	73.9	12.2	101.8	52.6	7.3	101.3	56.8	9.9
Queue Length 50th (m)	-95.9	60.1	55.3	22.4	116.1	9.4	-153.0	144.1	1.9	-80.1	81.4	3.6
Queue Length 95th (m)	#158.2	72.7	79.6	36.2	#146.5	37.4	#223.5	163.8	17.4	#140.2	97.3	28.6
Internal Link Dist (m)		353.7			209.7			228.2				202.1
Turn Bay Length (m)	90.0		110.0	60.0			190.0		95.0	95.0		95.0
Base Capacity (vph)	343	1688	1025	257	1175	576	511	1702	624	317	1126	568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.07	0.45	0.46	0.52	0.97	0.55	1.08	0.88	0.24	1.04	0.75	0.52

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

































Queue shown is maximum after two cycles.

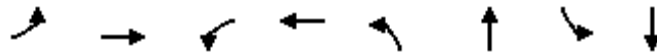
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Adelaide Street North EA
13: Adelaide Street N & Fanshawe Park Road

Future 2029 Traffic Analysis with Improvements
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			  			  	
Traffic Volume (vph)	339	695	435	122	1052	293	509	1380	139	303	782	270
Future Volume (vph)	339	695	435	122	1052	293	509	1380	139	303	782	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1807	5092	1585	1825	5245	1617	1789	5245	1633	1807	5193	1617
Flt Permitted	0.11	1.00	1.00	0.35	1.00	1.00	0.13	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	216	5092	1585	679	5245	1617	240	5245	1633	254	5193	1617
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	368	755	473	133	1143	318	553	1500	151	329	850	293
RTOR Reduction (vph)	0	0	27	0	0	214	0	0	96	0	0	218
Lane Group Flow (vph)	368	755	446	133	1143	104	553	1500	55	329	850	75
Heavy Vehicles (%)	1%	3%	3%	0%	0%	1%	2%	0%	0%	1%	1%	1%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	57.3	46.3	81.3	38.3	31.3	31.3	68.9	44.9	44.9	49.9	29.9	29.9
Effective Green, g (s)	57.3	46.3	81.3	38.3	31.3	31.3	68.9	44.9	44.9	49.9	29.9	29.9
Actuated g/C Ratio	0.41	0.33	0.58	0.27	0.22	0.22	0.49	0.32	0.32	0.36	0.21	0.21
Clearance Time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	339	1688	923	243	1175	362	506	1686	525	313	1112	346
v/s Ratio Prot	c0.17	0.15	0.12	0.03	0.22		c0.27	0.29		0.15	0.16	
v/s Ratio Perm	c0.27		0.16	0.12		0.06	c0.27		0.03	0.22		0.05
v/c Ratio	1.09	0.45	0.48	0.55	0.97	0.29	1.09	0.89	0.11	1.05	0.76	0.22
Uniform Delay, d1	43.4	36.6	16.9	39.7	53.7	44.9	41.4	45.0	33.2	41.6	51.5	45.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	73.7	0.9	0.4	2.5	20.5	2.0	67.7	6.2	0.1	64.9	3.2	0.3
Delay (s)	117.1	37.5	17.3	42.2	74.2	46.9	109.0	51.2	33.3	106.5	54.7	45.5
Level of Service	F	D	B	D	E	D	F	D	C	F	D	D
Approach Delay (s)		49.9			66.1			64.5			64.5	
Approach LOS		D			E			E			E	
Intersection Summary												
HCM 2000 Control Delay			61.4									E
HCM 2000 Volume to Capacity ratio			1.14									
Actuated Cycle Length (s)			139.6						21.4			
Intersection Capacity Utilization			100.4%									G
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	155	195	66	147	1977	38	1242
v/c Ratio	0.15	0.34	0.73	0.17	0.51	0.87	0.41	0.70
Control Delay	26.1	12.0	46.0	20.9	13.6	19.1	32.9	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.1	12.0	46.0	20.9	13.6	19.1	32.9	19.6
Queue Length 50th (m)	5.3	6.3	28.4	6.3	7.5	116.6	3.6	75.5
Queue Length 95th (m)	12.9	20.4	49.8	15.7	20.8	#222.3	#18.3	119.0
Internal Link Dist (m)		249.6		201.4		128.2		673.9
Turn Bay Length (m)	70.0		65.0		60.0		65.0	
Base Capacity (vph)	425	613	392	581	303	2261	93	1774
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.25	0.50	0.11	0.49	0.87	0.41	0.70

Intersection Summary

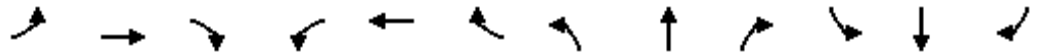
95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA

Future 2029 Traffic Analysis with Improvements

16: Adelaide Street N & Phillbrook Drive/Grenfell Drive

PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	46	97	179	46	15	135	1527	292	35	1100	42
Future Volume (vph)	39	46	97	179	46	15	135	1527	292	35	1100	42
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		4.0	5.6		5.6	5.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.96		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1772	1698		1772	1784		1825	3527		1825	3557	
Flt Permitted	0.71	1.00		0.66	1.00		0.12	1.00		0.10	1.00	
Satd. Flow (perm)	1332	1698		1228	1784		222	3527		188	3557	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	50	105	195	50	16	147	1660	317	38	1196	46
RTOR Reduction (vph)	0	82	0	0	13	0	0	15	0	0	3	0
Lane Group Flow (vph)	42	73	0	195	53	0	147	1962	0	38	1239	0
Heavy Vehicles (%)	3%	3%	1%	3%	5%	0%	0%	1%	1%	0%	2%	3%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		5	2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	17.8	17.8		17.8	17.8		52.3	52.3		40.9	40.9	
Effective Green, g (s)	17.8	17.8		17.8	17.8		52.3	52.3		40.9	40.9	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.64	0.64		0.50	0.50	
Clearance Time (s)	6.3	6.3		6.3	6.3		4.0	5.6		5.6	5.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	289	368		266	387		286	2249		93	1774	
v/s Ratio Prot		0.04			0.03		0.05	c0.56			0.35	
v/s Ratio Perm	0.03			c0.16			0.28			0.20		
v/c Ratio	0.15	0.20		0.73	0.14		0.51	0.87		0.41	0.70	
Uniform Delay, d1	26.0	26.3		29.9	25.9		10.3	12.1		12.9	15.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3		10.0	0.2		1.6	5.0		12.8	2.3	
Delay (s)	26.2	26.5		39.9	26.1		11.8	17.2		25.7	18.1	
Level of Service	C	C		D	C		B	B		C	B	
Approach Delay (s)		26.5			36.4			16.8			18.3	
Approach LOS		C			D			B			B	





















Intersection Summary

HCM 2000 Control Delay	19.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	15.9
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Adelaide Street North EA
10: Adelaide Street N & Street A

Future 2029 Traffic Analysis with Improvements













PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	0	167	75	0	8	230	385	133	16	379	75
Future Volume (Veh/h)	43	0	167	75	0	8	230	385	133	16	379	75
Sign Control	Stop		Stop				Free				Free	
Grade	0%		0%				0%				0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	47	0	182	82	0	9	250	418	145	17	412	82
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked	0.85	0.85		0.85	0.85	0.85				0.85		
vC, conflicting volume	1414	1550	453	1618	1518	490	494			563		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1399	1559	453	1640	1522	310	494			396		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	41	100	70	0	100	99	77			98		
cM capacity (veh/h)	80	72	607	39	76	619	1070			987		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	47	182	82	9	250	563	17	494				
Volume Left	47	0	82	0	250	0	17	0				
Volume Right	0	182	0	9	0	145	0	82				
cSH	80	607	39	619	1070	1700	987	1700				
Volume to Capacity	0.59	0.30	2.13	0.01	0.23	0.33	0.02	0.29				
Queue Length 95th (m)	19.9	9.5	67.6	0.3	6.9	0.0	0.4	0.0				
Control Delay (s)	100.6	13.5	744.0	10.9	9.4	0.0	8.7	0.0				
Lane LOS	F	B	F	B	A		A					
Approach Delay (s)	31.3		671.5		2.9		0.3					
Approach LOS	D		F									
Intersection Summary												
Average Delay			43.1									
Intersection Capacity Utilization			65.1%		ICU Level of Service				C			
Analysis Period (min)			15									

Adelaide Street North EA
 13: Adelaide Street N & Fanshawe Park Road

Future 2029 Traffic Analysis with Dual Left Turns

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	128	1149	555	205	674	124	364	603	76	425	1370	325
v/c Ratio	0.51	0.82	0.71	0.87	0.48	0.24	0.87	0.44	0.14	0.89	0.90	0.53
Control Delay	55.9	42.6	25.6	58.2	34.0	5.6	68.7	33.7	0.7	41.8	46.1	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.9	42.6	25.6	58.2	34.0	5.6	68.7	33.7	0.7	41.8	46.1	14.4
Queue Length 50th (m)	13.8	84.3	79.0	27.6	44.1	0.0	40.0	38.8	0.0	58.3	103.0	18.1
Queue Length 95th (m)	23.3	101.5	120.9	#68.3	56.1	11.7	#64.4	50.1	0.6	#94.8	#124.7	45.2
Internal Link Dist (m)		353.7			209.7			228.2			202.1	
Turn Bay Length (m)	90.0		110.0	60.0			190.0		95.0	95.0		95.0
Base Capacity (vph)	268	1408	781	235	1418	525	421	1378	527	480	1523	614
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.82	0.71	0.87	0.48	0.24	0.86	0.44	0.14	0.89	0.90	0.53



































Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA
13: Adelaide Street N & Fanshawe Park Road

Future 2029 Traffic Analysis with Dual Left Turns













AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	 	  			  		 	  			  		
Traffic Volume (vph)	118	1057	511	189	620	114	335	555	70	391	1260	299	
Future Volume (vph)	118	1057	511	189	620	114	335	555	70	391	1260	299	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5	
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3278	5043	1570	1772	4995	1512	3309	4902	1526	1807	5092	1555	
Flt Permitted	0.95	1.00	1.00	0.13	1.00	1.00	0.95	1.00	1.00	0.33	1.00	1.00	
Satd. Flow (perm)	3278	5043	1570	239	4995	1512	3309	4902	1526	626	5092	1555	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	128	1149	555	205	674	124	364	603	76	425	1370	325	
RTOR Reduction (vph)	0	0	50	0	0	89	0	0	55	0	0	149	
Lane Group Flow (vph)	128	1149	505	205	674	35	364	603	21	425	1370	176	
Heavy Vehicles (%)	8%	4%	4%	3%	5%	8%	7%	7%	7%	1%	3%	5%	
Turn Type	Prot	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2	7	1	6		7	4		3	8		
Permitted Phases			2	6		6			4	8		8	
Actuated Green, G (s)	8.5	30.7	44.6	41.2	31.2	31.2	13.9	30.8	30.8	49.9	32.9	32.9	
Effective Green, g (s)	8.5	30.7	44.6	41.2	31.2	31.2	13.9	30.8	30.8	49.9	32.9	32.9	
Actuated g/C Ratio	0.08	0.28	0.41	0.37	0.28	0.28	0.13	0.28	0.28	0.45	0.30	0.30	
Clearance Time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	253	1408	637	229	1418	429	418	1373	427	466	1524	465	
v/s Ratio Prot	0.04	0.23	0.10	c0.08	0.13		0.11	0.12		c0.14	0.27		
v/s Ratio Perm			0.22	c0.25		0.02			0.01	c0.27		0.11	
v/c Ratio	0.51	0.82	0.79	0.90	0.48	0.08	0.87	0.44	0.05	0.91	0.90	0.38	
Uniform Delay, d1	48.7	37.0	28.6	26.6	32.6	28.9	47.1	32.5	28.9	22.6	36.9	30.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.6	5.3	6.7	32.7	1.1	0.4	17.6	0.2	0.0	22.0	7.4	0.5	
Delay (s)	50.3	42.3	35.3	59.2	33.7	29.2	64.8	32.7	28.9	44.6	44.3	30.9	
Level of Service	D	D	D	E	C	C	E	C	C	D	D	C	
Approach Delay (s)		40.7			38.4			43.6			42.3		
Approach LOS		D			D			D			D		
Intersection Summary													
HCM 2000 Control Delay			41.4		HCM 2000 Level of Service						D		
HCM 2000 Volume to Capacity ratio			0.95										
Actuated Cycle Length (s)			109.9		Sum of lost time (s)						23.4		
Intersection Capacity Utilization			83.5%		ICU Level of Service						E		
Analysis Period (min)			15										
c Critical Lane Group													

Adelaide Street North EA
 13: Adelaide Street N & Fanshawe Park Road

Future 2029 Traffic Analysis with Dual Left Turns

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	368	755	473	133	1143	318	553	1500	151	329	850	293
v/c Ratio	0.97	0.46	0.52	0.47	0.84	0.49	0.92	0.94	0.25	1.02	0.62	0.53
Control Delay	93.0	33.1	16.3	29.0	48.8	6.5	70.6	53.2	5.6	88.2	41.2	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	93.0	33.1	16.3	29.0	48.8	6.5	70.6	53.2	5.6	88.2	41.2	18.3
Queue Length 50th (m)	45.2	51.3	56.2	18.8	93.7	0.0	66.5	125.9	0.0	-62.9	64.8	22.0
Queue Length 95th (m)	#75.0	63.5	84.0	31.6	111.2	21.4	#97.3	#155.4	14.2	#121.5	79.2	49.2
Internal Link Dist (m)		353.7			209.7			228.2			202.1	
Turn Bay Length (m)	90.0		110.0	60.0			190.0		95.0	95.0		95.0
Base Capacity (vph)	379	1659	914	283	1359	654	607	1595	603	323	1372	557
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.46	0.52	0.47	0.84	0.49	0.91	0.94	0.25	1.02	0.62	0.53

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

























95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Adelaide Street North EA
13: Adelaide Street N & Fanshawe Park Road

Future 2029 Traffic Analysis with Dual Left Turns

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	339	695	435	122	1052	293	509	1380	139	303	782	270
Future Volume (vph)	339	695	435	122	1052	293	509	1380	139	303	782	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3506	5092	1585	1825	5245	1617	3471	5245	1633	1807	5193	1617
Flt Permitted	0.95	1.00	1.00	0.35	1.00	1.00	0.95	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	3506	5092	1585	679	5245	1617	3471	5245	1633	240	5193	1617
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	368	755	473	133	1143	318	553	1500	151	329	850	293
RTOR Reduction (vph)	0	0	34	0	0	236	0	0	105	0	0	130
Lane Group Flow (vph)	368	755	439	133	1143	82	553	1500	46	329	850	163
Heavy Vehicles (%)	1%	3%	3%	0%	0%	1%	2%	0%	0%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases			2	6		6			4	8		8
Actuated Green, G (s)	13.0	39.1	59.9	37.1	31.1	31.1	20.8	36.5	36.5	48.7	31.7	31.7
Effective Green, g (s)	13.0	39.1	59.9	37.1	31.1	31.1	20.8	36.5	36.5	48.7	31.7	31.7
Actuated g/C Ratio	0.11	0.33	0.50	0.31	0.26	0.26	0.17	0.30	0.30	0.41	0.26	0.26
Clearance Time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	379	1659	791	267	1359	419	601	1595	496	319	1371	427
v/s Ratio Prot	c0.10	0.15	0.10	0.02	c0.22		0.16	c0.29		c0.15	0.16	
v/s Ratio Perm			0.18	0.13		0.05			0.03	c0.27		0.10
v/c Ratio	0.97	0.46	0.55	0.50	0.84	0.20	0.92	0.94	0.09	1.03	0.62	0.38
Uniform Delay, d1	53.3	32.0	20.8	30.9	42.1	34.7	48.8	40.7	29.9	35.0	38.8	36.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	38.4	0.9	0.8	1.5	6.4	1.0	19.5	11.3	0.1	58.7	0.8	0.6
Delay (s)	91.7	32.9	21.7	32.4	48.5	35.7	68.3	52.0	30.0	93.7	39.7	36.7
Level of Service	F	C	C	C	D	D	E	D	C	F	D	D
Approach Delay (s)		43.1			44.6			54.6			51.2	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			48.9				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		23.4			
Intersection Capacity Utilization			92.1%				ICU Level of Service		F			
Analysis Period (min)			15									
c Critical Lane Group												

APPENDIX L

Future (2039) With Improvements Weekday AM and PM
Traffic Analysis Synchro Output Sheets



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	77	1416	27	983	147	159	84	325	184
v/c Ratio	0.43	0.90	0.21	0.63	0.18	0.38	0.14	0.72	0.31
Control Delay	20.7	25.4	15.4	14.9	2.7	18.3	7.4	28.3	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	25.4	15.4	14.9	2.7	18.3	7.4	28.3	11.6
Queue Length 50th (m)	5.4	70.8	1.7	41.1	0.0	12.9	2.1	30.4	9.6
Queue Length 95th (m)	16.9	#114.6	6.9	58.3	7.7	26.7	9.6	#64.6	22.2
Internal Link Dist (m)		412.2		393.8			184.6		108.9
Turn Bay Length (m)	80.0		100.0		90.0	20.0			
Base Capacity (vph)	180	1580	126	1569	803	415	587	454	590
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.90	0.21	0.63	0.18	0.38	0.14	0.72	0.31

Intersection Summary

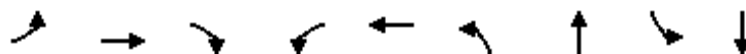
95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	1245	58	25	904	135	146	0	77	299	0	169
Future Volume (vph)	71	1245	58	25	904	135	146	0	77	299	0	169
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3489		1789	3476	1601	1789	1601		1789	1601	
Flt Permitted	0.21	1.00		0.15	1.00	1.00	0.64	1.00		0.70	1.00	
Satd. Flow (perm)	399	3489		281	3476	1601	1208	1601		1323	1601	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	1353	63	27	983	147	159	0	84	325	0	184
RTOR Reduction (vph)	0	6	0	0	0	81	0	36	0	0	39	0
Lane Group Flow (vph)	77	1410	0	27	983	66	159	48	0	325	145	0
Heavy Vehicles (%)	2%	4%	2%	2%	5%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		8			4			2				6
Permitted Phases	8			4		4	2			6		
Actuated Green, G (s)	26.8	26.8		26.8	26.8	26.8	20.6	20.6		20.6	20.6	
Effective Green, g (s)	26.8	26.8		26.8	26.8	26.8	20.6	20.6		20.6	20.6	
Actuated g/C Ratio	0.45	0.45		0.45	0.45	0.45	0.34	0.34		0.34	0.34	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	178	1563		125	1557	717	416	551		455	551	
v/s Ratio Prot		c0.40			0.28			0.03				0.09
v/s Ratio Perm	0.19			0.10		0.04	0.13			c0.25		
v/c Ratio	0.43	0.90		0.22	0.63	0.09	0.38	0.09		0.71	0.26	
Uniform Delay, d1	11.3	15.3		10.1	12.7	9.5	14.8	13.2		17.0	14.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	7.6		0.9	0.8	0.1	2.7	0.3		9.2	1.2	
Delay (s)	13.0	22.9		11.0	13.5	9.6	17.4	13.6		26.3	15.3	
Level of Service	B	C		B	B	A	B	B		C	B	
Approach Delay (s)		22.4			13.0			16.1			22.3	
Approach LOS		C			B			B			C	
Intersection Summary												
HCM 2000 Control Delay			18.7									B
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			59.8							12.4		
Intersection Capacity Utilization			82.4%									E
Analysis Period (min)			15									
c Critical Lane Group												

Adelaide Street North EA
7: South Wenige Drive & Sunningdale Road E

Future 2039 Traffic Analysis with Improvements
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	74	1277	75	18	707	137	108	28	133
v/c Ratio	0.17	0.97	0.06	0.31	0.54	0.79	0.34	0.13	0.37
Control Delay	5.9	34.7	1.1	21.0	8.9	78.7	15.1	44.8	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.9	34.7	1.1	21.0	8.9	78.7	15.1	44.8	14.0
Queue Length 50th (m)	4.7	243.3	0.0	1.3	64.2	31.3	3.0	5.7	3.6
Queue Length 95th (m)	9.7	#382.6	3.6	7.2	89.5	#64.1	19.0	14.3	20.8
Internal Link Dist (m)		503.0			305.2		276.5		132.8
Turn Bay Length (m)	120.0		120.0	90.0		30.0		30.0	
Base Capacity (vph)	447	1316	1171	59	1305	174	315	215	364
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.97	0.06	0.31	0.54	0.79	0.34	0.13	0.37

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Adelaide Street North EA
7: South Wenige Drive & Sunningdale Road E

Future 2039 Traffic Analysis with Improvements
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	1175	69	17	632	18	126	14	86	26	17	106
Future Volume (vph)	68	1175	69	17	632	18	126	14	86	26	17	106
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.87		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	1795	1570	1706	1778		1644	1455		1825	1644	
Flt Permitted	0.33	1.00	1.00	0.05	1.00		0.62	1.00		0.69	1.00	
Satd. Flow (perm)	610	1795	1570	82	1778		1067	1455		1320	1644	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	1277	75	18	687	20	137	15	93	28	18	115
RTOR Reduction (vph)	0	0	20	0	1	0	0	78	0	0	96	0
Lane Group Flow (vph)	74	1277	55	18	706	0	137	30	0	28	37	0
Heavy Vehicles (%)	4%	7%	4%	7%	7%	27%	11%	27%	13%	0%	0%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	88.0	88.0	88.0	88.0	88.0		19.6	19.6		19.6	19.6	
Effective Green, g (s)	88.0	88.0	88.0	88.0	88.0		19.6	19.6		19.6	19.6	
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73		0.16	0.16		0.16	0.16	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	447	1316	1151	60	1303		174	237		215	268	
v/s Ratio Prot		c0.71			0.40			0.02			0.02	
v/s Ratio Perm	0.12		0.04	0.22			c0.13			0.02		
v/c Ratio	0.17	0.97	0.05	0.30	0.54		0.79	0.13		0.13	0.14	
Uniform Delay, d1	4.9	14.8	4.4	5.5	7.1		48.2	42.9		42.9	43.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	18.7	0.1	12.4	1.6		29.3	1.1		1.2	1.1	
Delay (s)	5.7	33.5	4.5	17.8	8.7		77.5	44.0		44.2	44.0	
Level of Service	A	C	A	B	A		E	D		D	D	
Approach Delay (s)		30.5			8.9			62.7			44.1	
Approach LOS		C			A			E			D	

Intersection Summary

HCM 2000 Control Delay	28.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.4
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Adelaide Street North EA
8: Adelaide Street N & Sunningdale Road E

Future 2039 Traffic Analysis with Improvements
AM Peak Hour



























Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	125	1046	624	199	711	54	322	354	229	149	547	74
v/c Ratio	0.39	0.89	0.85	0.88	0.60	0.09	0.88	0.39	0.40	0.38	0.66	0.16
Control Delay	16.6	39.5	25.7	54.4	26.9	0.3	47.3	29.3	6.2	19.9	36.0	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.6	39.5	25.7	54.4	26.9	0.3	47.3	29.3	6.2	19.9	36.0	0.8
Queue Length 50th (m)	11.3	89.1	49.9	19.0	52.7	0.0	38.1	26.7	0.0	15.9	45.4	0.0
Queue Length 95th (m)	20.8	#125.2	#114.7	#55.5	70.5	0.0	#73.3	39.2	16.5	28.4	62.3	0.6
Internal Link Dist (m)		393.8			117.3			302.9			103.7	
Turn Bay Length (m)	110.0		110.0	70.0			150.0		130.0	75.0		75.0
Base Capacity (vph)	322	1179	738	226	1184	624	365	910	569	404	824	475
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.89	0.85	0.88	0.60	0.09	0.88	0.39	0.40	0.37	0.66	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

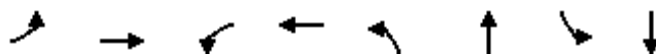
Adelaide Street North EA
8: Adelaide Street N & Sunningdale Road E

Future 2039 Traffic Analysis with Improvements
AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	115	962	574	183	654	50	296	326	211	137	503	68	
Future Volume (vph)	115	962	574	183	654	50	296	326	211	137	503	68	
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3	6.3	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1825	3510	1555	1755	3411	1541	1807	3544	1555	1644	3579	1585	
Flt Permitted	0.28	1.00	1.00	0.13	1.00	1.00	0.27	1.00	1.00	0.54	1.00	1.00	
Satd. Flow (perm)	547	3510	1555	238	3411	1541	510	3544	1555	934	3579	1585	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	125	1046	624	199	711	54	322	354	229	149	547	74	
RTOR Reduction (vph)	0	0	216	0	0	35	0	0	170	0	0	57	
Lane Group Flow (vph)	125	1046	408	199	711	19	322	354	59	149	547	17	
Heavy Vehicles (%)	0%	4%	5%	4%	7%	6%	1%	3%	5%	11%	2%	3%	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	3	8		7	4		5	2		1	6		
Permitted Phases	8		8	4		4	2		2	6		6	
Actuated Green, G (s)	36.1	30.1	30.1	38.1	31.1	31.1	34.1	23.1	23.1	29.3	20.7	20.7	
Effective Green, g (s)	36.1	30.1	30.1	38.1	31.1	31.1	34.1	23.1	23.1	29.3	20.7	20.7	
Actuated g/C Ratio	0.40	0.33	0.33	0.42	0.35	0.35	0.38	0.26	0.26	0.33	0.23	0.23	
Clearance Time (s)	4.0	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3	6.3	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	304	1175	520	218	1180	533	352	910	399	372	824	364	
v/s Ratio Prot	0.03	0.30		c0.07	0.21		c0.11	0.10		0.04	0.15		
v/s Ratio Perm	0.14		0.26	c0.31		0.01	c0.24		0.04	0.09		0.01	
v/c Ratio	0.41	0.89	0.78	0.91	0.60	0.04	0.91	0.39	0.15	0.40	0.66	0.05	
Uniform Delay, d1	17.7	28.3	27.0	20.1	24.3	19.5	22.7	27.6	25.8	22.5	31.4	26.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	8.7	7.6	37.7	0.9	0.0	27.4	1.3	0.8	0.7	4.2	0.2	
Delay (s)	18.6	37.0	34.6	57.8	25.2	19.5	50.1	28.8	26.6	23.2	35.6	27.2	
Level of Service	B	D	C	E	C	B	D	C	C	C	D	C	
Approach Delay (s)		34.9			31.6			35.8			32.4		
Approach LOS		C			C			D			C		
Intersection Summary													
HCM 2000 Control Delay			33.9									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.96										
Actuated Cycle Length (s)			89.9									Sum of lost time (s)	21.1
Intersection Capacity Utilization			84.6%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

Adelaide Street North EA
 9: Adelaide Street N & Blackwater Road

Future 2039 Traffic Analysis with Improvements
 AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	64	126	95	24	785	24	1371
v/c Ratio	0.06	0.22	0.53	0.28	0.11	0.32	0.05	0.54
Control Delay	22.1	15.5	32.8	8.6	7.2	5.6	5.7	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	15.5	32.8	8.6	7.2	5.6	5.7	7.7
Queue Length 50th (m)	1.1	3.4	13.9	0.5	0.9	18.5	0.9	41.8
Queue Length 95th (m)	4.7	12.1	28.0	10.6	4.6	34.1	3.9	73.6
Internal Link Dist (m)		279.8		304.6		673.9		302.9
Turn Bay Length (m)	30.0		50.0		120.0		120.0	
Base Capacity (vph)	486	674	565	702	214	2438	471	2520
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.09	0.22	0.14	0.11	0.32	0.05	0.54
Intersection Summary								

Adelaide Street North EA
9: Adelaide Street N & Blackwater Road

Future 2039 Traffic Analysis with Improvements
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	2	57	116	5	83	22	652	70	22	1250	11
Future Volume (vph)	10	2	57	116	5	83	22	652	70	22	1250	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		5.6	5.6		5.6	5.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.85		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1615	1592		1825	1577		1825	3452		1825	3574	
Flt Permitted	0.70	1.00		0.72	1.00		0.16	1.00		0.35	1.00	
Satd. Flow (perm)	1182	1592		1374	1577		304	3452		668	3574	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	2	62	126	5	90	24	709	76	24	1359	12
RTOR Reduction (vph)	0	26	0	0	77	0	0	7	0	0	1	0
Lane Group Flow (vph)	11	38	0	126	18	0	24	778	0	24	1370	0
Heavy Vehicles (%)	13%	100%	0%	0%	50%	2%	0%	4%	6%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	9.8	9.8		9.8	9.8		44.6	44.6		44.6	44.6	
Effective Green, g (s)	9.8	9.8		9.8	9.8		44.6	44.6		44.6	44.6	
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.67	0.67		0.67	0.67	
Clearance Time (s)	6.3	6.3		6.3	6.3		5.6	5.6		5.6	5.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	235		203	233		204	2322		449	2404	
v/s Ratio Prot		0.02			0.01			0.23			c0.38	
v/s Ratio Perm	0.01			c0.09			0.08			0.04		
v/c Ratio	0.06	0.16		0.62	0.08		0.12	0.34		0.05	0.57	
Uniform Delay, d1	24.3	24.7		26.5	24.4		3.9	4.6		3.7	5.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3		5.8	0.1		1.2	0.4		0.2	1.0	
Delay (s)	24.5	25.0		32.3	24.5		5.0	5.0		3.9	6.7	
Level of Service	C	C		C	C		A	A		A	A	
Approach Delay (s)		24.9			28.9			5.0			6.7	
Approach LOS		C			C			A			A	

Intersection Summary

HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	66.3	Sum of lost time (s)	11.9
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Adelaide Street North EA
 13: Adelaide Street N & Fanshawe Park Road

Future 2039 Traffic Analysis with Improvements
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	136	1237	613	226	745	133	402	654	85	451	1471	341
v/c Ratio	0.51	0.93	0.75	1.04	0.54	0.26	1.10	0.47	0.16	0.90	1.01	0.58
Control Delay	28.8	52.3	25.9	97.4	35.8	6.7	107.6	33.6	3.0	41.7	65.2	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.8	52.3	25.9	97.4	35.8	6.7	107.6	33.6	3.0	41.7	65.2	17.8
Queue Length 50th (m)	18.4	94.9	90.0	-35.1	50.1	0.0	-82.2	42.3	0.0	59.7	-117.4	24.4
Queue Length 95th (m)	31.7	#122.0	136.3	#82.6	62.9	14.1	#141.5	54.0	5.8	#105.2	#150.8	54.0
Internal Link Dist (m)		353.7			209.7			228.2			202.1	
Turn Bay Length (m)	90.0		110.0	60.0			190.0		95.0	95.0		95.0
Base Capacity (vph)	267	1334	822	218	1372	511	365	1406	522	502	1458	588
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.93	0.75	1.04	0.54	0.26	1.10	0.47	0.16	0.90	1.01	0.58

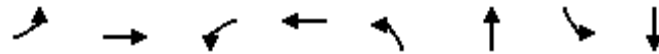
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA
13: Adelaide Street N & Fanshawe Park Road

Future 2039 Traffic Analysis with Improvements
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	1138	564	208	685	122	370	602	78	415	1353	314
Future Volume (vph)	125	1138	564	208	685	122	370	602	78	415	1353	314
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1690	5043	1570	1772	4995	1512	1706	4902	1526	1807	5092	1555
Flt Permitted	0.28	1.00	1.00	0.13	1.00	1.00	0.13	1.00	1.00	0.32	1.00	1.00
Satd. Flow (perm)	499	5043	1570	247	4995	1512	227	4902	1526	617	5092	1555
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	1237	613	226	745	133	402	654	85	451	1471	341
RTOR Reduction (vph)	0	0	42	0	0	96	0	0	61	0	0	143
Lane Group Flow (vph)	136	1237	571	226	745	37	402	654	24	451	1471	198
Heavy Vehicles (%)	8%	4%	4%	3%	5%	8%	7%	7%	7%	1%	3%	5%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	37.0	29.1	48.1	39.2	30.2	30.2	50.6	31.6	31.6	50.4	31.5	31.5
Effective Green, g (s)	37.0	29.1	48.1	39.2	30.2	30.2	50.6	31.6	31.6	50.4	31.5	31.5
Actuated g/C Ratio	0.34	0.26	0.44	0.36	0.27	0.27	0.46	0.29	0.29	0.46	0.29	0.29
Clearance Time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	253	1334	686	212	1371	415	359	1408	438	487	1458	445
v/s Ratio Prot	0.04	0.25	0.14	c0.09	0.15		c0.19	0.13		0.16	0.29	
v/s Ratio Perm	0.14		0.22	c0.29		0.02	c0.32		0.02	0.27		0.13
v/c Ratio	0.54	0.93	0.83	1.07	0.54	0.09	1.12	0.46	0.06	0.93	1.01	0.45
Uniform Delay, d1	26.6	39.4	27.4	29.9	34.0	29.7	32.5	32.2	28.4	22.2	39.2	32.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	12.5	8.5	80.4	1.6	0.4	84.0	0.2	0.1	23.6	25.8	0.7
Delay (s)	28.8	51.9	35.9	110.3	35.6	30.1	116.5	32.5	28.4	45.9	65.0	32.8
Level of Service	C	D	D	F	D	C	F	C	C	D	E	C
Approach Delay (s)		45.4			50.2			61.8			56.3	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			52.9									D
HCM 2000 Volume to Capacity ratio			1.11									
Actuated Cycle Length (s)			110.0							21.4		
Intersection Capacity Utilization			98.0%									F
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	51	254	288	117	41	772	18	1651
v/c Ratio	0.13	0.49	0.90	0.20	0.45	0.43	0.06	0.88
Control Delay	19.7	23.6	58.1	11.6	32.3	11.7	10.3	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.7	23.6	58.1	11.6	32.3	11.7	10.3	23.7
Queue Length 50th (m)	5.3	28.0	40.1	6.1	3.7	34.1	1.3	112.3
Queue Length 95th (m)	12.9	48.5	#82.8	16.9	#18.2	47.0	4.5	#165.2
Internal Link Dist (m)		249.6		201.4		128.2		673.9
Turn Bay Length (m)	70.0		65.0		60.0		65.0	
Base Capacity (vph)	437	570	350	628	91	1794	323	1877
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.45	0.82	0.19	0.45	0.43	0.06	0.88

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA

Future 2039 Traffic Analysis with Improvements

16: Adelaide Street N & Phillbrook Drive/Grenfell Drive

AM Peak Hour
























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	36	198	265	54	53	38	593	117	17	1487	32
Future Volume (vph)	47	36	198	265	54	53	38	593	117	17	1487	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		5.6	5.6		5.6	5.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.87		1.00	0.93		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1772	1632		1789	1718		1706	3332		1825	3520	
Flt Permitted	0.68	1.00		0.54	1.00		0.10	1.00		0.32	1.00	
Satd. Flow (perm)	1272	1632		1019	1718		173	3332		607	3520	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	39	215	288	59	58	41	645	127	18	1616	35
RTOR Reduction (vph)	0	10	0	0	40	0	0	20	0	0	2	0
Lane Group Flow (vph)	51	244	0	288	77	0	41	752	0	18	1649	0
Heavy Vehicles (%)	3%	7%	2%	2%	7%	0%	7%	7%	6%	0%	3%	20%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	24.5	24.5		24.5	24.5		41.5	41.5		41.5	41.5	
Effective Green, g (s)	24.5	24.5		24.5	24.5		41.5	41.5		41.5	41.5	
Actuated g/C Ratio	0.31	0.31		0.31	0.31		0.53	0.53		0.53	0.53	
Clearance Time (s)	6.3	6.3		6.3	6.3		5.6	5.6		5.6	5.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	400	513		320	540		92	1775		323	1875	
v/s Ratio Prot		0.15			0.04			0.23			c0.47	
v/s Ratio Perm	0.04			c0.28			0.24			0.03		
v/c Ratio	0.13	0.48		0.90	0.14		0.45	0.42		0.06	0.88	
Uniform Delay, d1	19.1	21.5		25.5	19.2		11.2	11.0		8.8	16.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.7		26.7	0.1		14.8	0.7		0.3	6.3	
Delay (s)	19.2	22.2		52.2	19.3		26.0	11.7		9.1	22.3	
Level of Service	B	C		D	B		C	B		A	C	
Approach Delay (s)		21.7			42.7			12.4			22.1	
Approach LOS		C			D			B			C	

Intersection Summary		
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.89	
Actuated Cycle Length (s)	77.9	Sum of lost time (s) 11.9
Intersection Capacity Utilization	86.1%	ICU Level of Service E
Analysis Period (min)	15	
c Critical Lane Group		

Adelaide Street North EA
10: Adelaide Street N & Street A

Future 2039 Traffic Analysis with Improvements

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	0	272	127	0	14	60	393	27	3	323	21
Future Volume (Veh/h)	64	0	272	127	0	14	60	393	27	3	323	21
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	0	296	138	0	15	65	427	29	3	351	23
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked	0.87	0.87		0.87	0.87	0.87					0.87	
vC, conflicting volume	940	954	362	1224	952	442	374				456	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	858	874	362	1184	871	286	374				303	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	69	100	57	0	100	98	95				100	
cM capacity (veh/h)	226	237	682	78	238	656	1184				1097	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	70	296	138	15	65	456	3	374				
Volume Left	70	0	138	0	65	0	3	0				
Volume Right	0	296	0	15	0	29	0	23				
cSH	226	682	78	656	1184	1700	1097	1700				
Volume to Capacity	0.31	0.43	1.76	0.02	0.05	0.27	0.00	0.22				
Queue Length 95th (m)	9.6	16.7	89.9	0.5	1.3	0.0	0.1	0.0				
Control Delay (s)	28.0	14.3	478.3	10.6	8.2	0.0	8.3	0.0				
Lane LOS	D	B	F	B	A		A					
Approach Delay (s)	16.9		432.5		1.0		0.1					
Approach LOS	C		F									
Intersection Summary												
Average Delay			51.4									
Intersection Capacity Utilization			62.9%		ICU Level of Service				B			
Analysis Period (min)			15									



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	214	1156	49	1470	383	50	58	336	149
v/c Ratio	0.87	0.58	0.26	0.94	0.42	0.14	0.11	0.84	0.24
Control Delay	50.9	13.9	20.9	37.5	3.3	24.7	3.2	50.2	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.9	13.9	20.9	37.5	3.3	24.7	3.2	50.2	2.6
Queue Length 50th (m)	20.1	62.5	5.2	124.0	0.0	6.3	0.0	54.2	0.0
Queue Length 95th (m)	#58.8	80.5	14.0	#171.8	15.1	15.0	4.7	#99.5	6.8
Internal Link Dist (m)		412.2		393.8			184.6		108.9
Turn Bay Length (m)	80.0		100.0		90.0	20.0			
Base Capacity (vph)	246	1997	190	1566	910	357	519	400	609
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.58	0.26	0.94	0.42	0.14	0.11	0.84	0.24

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA

Future 2039 Traffic Analysis with Improvements

3: Blackwater Road/Future Blackwater Road & Sunningdale Road E

PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	1006	58	45	1352	352	46	0	53	309	0	137
Future Volume (vph)	197	1006	58	45	1352	352	46	0	53	309	0	137
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	3517		1789	3614	1601	1738	1555		1789	1601	
Flt Permitted	0.09	1.00		0.23	1.00	1.00	0.66	1.00		0.72	1.00	
Satd. Flow (perm)	175	3517		439	3614	1601	1212	1555		1355	1601	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	1093	63	49	1470	383	50	0	58	336	0	149
RTOR Reduction (vph)	0	5	0	0	0	217	0	41	0	0	105	0
Lane Group Flow (vph)	214	1151	0	49	1470	166	50	17	0	336	44	0
Heavy Vehicles (%)	2%	3%	2%	2%	1%	2%	5%	2%	5%	2%	2%	2%
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	3	8			4			2				6
Permitted Phases	8			4		4	2			6		
Actuated Green, G (s)	51.0	51.0		39.0	39.0	39.0	26.6	26.6		26.6	26.6	
Effective Green, g (s)	51.0	51.0		39.0	39.0	39.0	26.6	26.6		26.6	26.6	
Actuated g/C Ratio	0.57	0.57		0.43	0.43	0.43	0.30	0.30		0.30	0.30	
Clearance Time (s)	4.0	6.0		6.0	6.0	6.0	6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	242	1992		190	1566	693	358	459		400	473	
v/s Ratio Prot	c0.08	0.33			c0.41			0.01				0.03
v/s Ratio Perm	0.42			0.11		0.10	0.04			c0.25		
v/c Ratio	0.88	0.58		0.26	0.94	0.24	0.14	0.04		0.84	0.09	
Uniform Delay, d1	22.5	12.6		16.3	24.4	16.1	23.3	22.6		29.7	23.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	29.4	0.4		0.7	11.1	0.2	0.8	0.2		18.7	0.4	
Delay (s)	51.8	13.0		17.0	35.5	16.3	24.1	22.7		48.5	23.4	
Level of Service	D	B		B	D	B	C	C		D	C	
Approach Delay (s)		19.0			31.2			23.4			40.7	
Approach LOS		B			C			C			D	

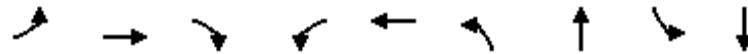
Intersection Summary

HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Adelaide Street North EA
7: South Wenige Drive & Sunningdale Road E

Future 2039 Traffic Analysis with Improvements

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	838	127	67	1267	117	38	95	42
v/c Ratio	0.98	0.62	0.10	0.18	1.08	0.51	0.13	0.44	0.14
Control Delay	89.5	10.3	0.9	11.1	73.7	54.7	21.8	52.3	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.5	10.3	0.9	11.1	73.7	54.7	21.8	52.3	23.1
Queue Length 50th (m)	30.4	84.3	0.0	6.2	~333.5	25.5	2.2	20.4	3.0
Queue Length 95th (m)	#77.5	117.0	4.6	13.4	#414.2	44.6	12.0	37.5	13.0
Internal Link Dist (m)		503.0			305.2		276.5		132.8
Turn Bay Length (m)	120.0		120.0	90.0		30.0		30.0	
Base Capacity (vph)	201	1354	1231	363	1175	228	282	218	306
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.62	0.10	0.18	1.08	0.51	0.13	0.44	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Adelaide Street North EA
7: South Wenige Drive & Sunningdale Road E

Future 2039 Traffic Analysis with Improvements

PM Peak Hour



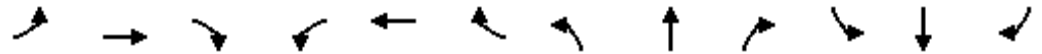
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	771	117	62	1139	27	108	10	25	87	14	25
Future Volume (vph)	181	771	117	62	1139	27	108	10	25	87	14	25
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1807	1847	1633	1789	1878		1825	1592		1738	1736	
Flt Permitted	0.05	1.00	1.00	0.31	1.00		0.73	1.00		0.73	1.00	
Satd. Flow (perm)	96	1847	1633	582	1878		1402	1592		1340	1736	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	838	127	67	1238	29	117	11	27	95	15	27
RTOR Reduction (vph)	0	0	34	0	1	0	0	23	0	0	23	0
Lane Group Flow (vph)	197	838	93	67	1266	0	117	15	0	95	19	0
Heavy Vehicles (%)	1%	4%	0%	2%	2%	0%	0%	0%	11%	5%	0%	0%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4				8
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)	88.0	88.0	88.0	75.0	75.0		19.6	19.6		19.6	19.6	
Effective Green, g (s)	88.0	88.0	88.0	75.0	75.0		19.6	19.6		19.6	19.6	
Actuated g/C Ratio	0.73	0.73	0.73	0.62	0.62		0.16	0.16		0.16	0.16	
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	198	1354	1197	363	1173		228	260		218	283	
v/s Ratio Prot	c0.07	0.45			c0.67			0.01			0.01	
v/s Ratio Perm	0.65		0.06	0.12			c0.08			0.07		
v/c Ratio	0.99	0.62	0.08	0.18	1.08		0.51	0.06		0.44	0.07	
Uniform Delay, d1	43.1	7.8	4.5	9.5	22.5		45.8	42.4		45.2	42.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	62.2	2.1	0.1	1.1	50.5		8.0	0.4		6.2	0.5	
Delay (s)	105.2	9.9	4.7	10.7	73.0		53.9	42.8		51.4	42.9	
Level of Service	F	A	A	B	E		D	D		D	D	
Approach Delay (s)		25.5			69.9			51.2			48.8	
Approach LOS		C			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	49.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.4
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Adelaide Street North EA
 8: Adelaide Street N & Sunningdale Road E

Future 2039 Traffic Analysis with Improvements

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	60	803	543	237	1103	63	658	679	329	111	502	111
v/c Ratio	0.42	0.89	0.66	1.02	0.94	0.10	1.07	0.46	0.41	0.44	0.84	0.27
Control Delay	31.1	55.6	7.4	93.3	56.0	0.3	86.6	27.1	8.4	25.5	62.5	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.1	55.6	7.4	93.3	56.0	0.3	86.6	27.1	8.4	25.5	62.5	1.9
Queue Length 50th (m)	8.5	95.5	0.0	-40.6	135.1	0.0	-155.0	60.6	12.4	12.8	61.1	0.0
Queue Length 95th (m)	17.1	#127.1	28.8	#92.1	#180.2	0.0	#225.7	77.4	33.6	22.2	#87.0	1.0
Internal Link Dist (m)		393.8			117.3			302.9			103.7	
Turn Bay Length (m)	110.0		110.0	70.0			150.0		130.0	75.0		75.0
Base Capacity (vph)	144	923	825	233	1168	601	617	1492	804	259	596	417
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.87	0.66	1.02	0.94	0.10	1.07	0.46	0.41	0.43	0.84	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Adelaide Street North EA
8: Adelaide Street N & Sunningdale Road E

Future 2039 Traffic Analysis with Improvements
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	739	500	218	1015	58	605	625	303	102	462	102
Future Volume (vph)	55	739	500	218	1015	58	605	625	303	102	462	102
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	3510	1617	1807	3614	1570	1772	3650	1617	1825	3650	1633
Flt Permitted	0.13	1.00	1.00	0.11	1.00	1.00	0.17	1.00	1.00	0.39	1.00	1.00
Satd. Flow (perm)	243	3510	1617	214	3614	1570	317	3650	1617	756	3650	1633
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	803	543	237	1103	63	658	679	329	111	502	111
RTOR Reduction (vph)	0	0	400	0	0	43	0	0	145	0	0	93
Lane Group Flow (vph)	60	803	143	237	1103	20	658	679	184	111	502	18
Heavy Vehicles (%)	0%	4%	1%	1%	1%	4%	3%	0%	1%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2		2	6		6
Actuated Green, G (s)	35.6	31.6	31.6	46.6	38.6	38.6	60.5	48.8	48.8	27.2	19.5	19.5
Effective Green, g (s)	35.6	31.6	31.6	46.6	38.6	38.6	60.5	48.8	48.8	27.2	19.5	19.5
Actuated g/C Ratio	0.30	0.26	0.26	0.39	0.32	0.32	0.50	0.41	0.41	0.23	0.16	0.16
Clearance Time (s)	4.0	6.8	6.8	4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	124	922	425	228	1160	504	607	1481	656	239	592	264
v/s Ratio Prot	0.02	0.23		c0.09	0.31		c0.33	0.19		0.03	0.14	
v/s Ratio Perm	0.13		0.09	c0.31		0.01	c0.21		0.11	0.08		0.01
v/c Ratio	0.48	0.87	0.34	1.04	0.95	0.04	1.08	0.46	0.28	0.46	0.85	0.07
Uniform Delay, d1	33.5	42.4	35.8	31.1	39.9	28.1	33.2	26.1	23.9	38.3	48.9	42.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	9.0	0.5	70.3	16.0	0.0	61.4	1.0	1.1	1.4	14.1	0.5
Delay (s)	36.5	51.4	36.3	101.4	55.9	28.1	94.5	27.1	25.0	39.7	63.0	43.2
Level of Service	D	D	D	F	E	C	F	C	C	D	E	D
Approach Delay (s)		44.9			62.3			53.3			56.4	
Approach LOS		D			E			D			E	

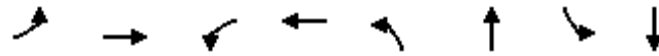
Intersection Summary

HCM 2000 Control Delay	53.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	120.2	Sum of lost time (s)	21.1
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Adelaide Street North EA
 9: Adelaide Street N & Blackwater Road

Future 2039 Traffic Analysis with Improvements

PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	13	60	63	58	62	1749	77	1239
v/c Ratio	0.10	0.26	0.39	0.28	0.20	0.63	0.53	0.45
Control Delay	29.6	13.7	37.2	22.1	6.0	6.7	24.2	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	13.7	37.2	22.1	6.0	6.7	24.2	4.8
Queue Length 50th (m)	1.6	1.0	8.1	4.0	2.3	54.4	4.0	30.3
Queue Length 95th (m)	6.3	10.5	18.8	13.6	8.0	90.5	#28.4	50.0
Internal Link Dist (m)		279.8		304.6		673.9		302.9
Turn Bay Length (m)	30.0		50.0		120.0		120.0	
Base Capacity (vph)	398	588	477	571	303	2762	146	2780
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.10	0.13	0.10	0.20	0.63	0.53	0.45

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA
9: Adelaide Street N & Blackwater Road

Future 2039 Traffic Analysis with Improvements
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↕	
Traffic Volume (vph)	12	7	48	58	7	46	57	1472	137	71	1112	28
Future Volume (vph)	12	7	48	58	7	46	57	1472	137	71	1112	28
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		5.6	5.6		5.6	5.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.87		1.00	0.87		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1521	1601		1825	1600		1825	3571		1825	3597	
Flt Permitted	0.72	1.00		0.72	1.00		0.20	1.00		0.10	1.00	
Satd. Flow (perm)	1151	1601		1379	1600		392	3571		191	3597	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	8	52	63	8	50	62	1600	149	77	1209	30
RTOR Reduction (vph)	0	47	0	0	23	0	0	5	0	0	1	0
Lane Group Flow (vph)	13	13	0	63	35	0	62	1744	0	77	1238	0
Heavy Vehicles (%)	20%	33%	0%	0%	33%	0%	0%	1%	0%	0%	1%	5%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			2				6
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	7.6	7.6		7.6	7.6		56.9	56.9		56.9	56.9	
Effective Green, g (s)	7.6	7.6		7.6	7.6		56.9	56.9		56.9	56.9	
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.74	0.74		0.74	0.74	
Clearance Time (s)	6.3	6.3		6.3	6.3		5.6	5.6		5.6	5.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	114	159		137	159		291	2659		142	2678	
v/s Ratio Prot		0.01			0.02			c0.49				0.34
v/s Ratio Perm	0.01			c0.05			0.16			0.40		
v/c Ratio	0.11	0.08		0.46	0.22		0.21	0.66		0.54	0.46	
Uniform Delay, d1	31.3	31.2		32.5	31.7		3.0	4.9		4.2	3.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.2		2.4	0.7		1.7	1.3		14.1	0.6	
Delay (s)	31.8	31.5		34.9	32.4		4.6	6.1		18.2	4.4	
Level of Service	C	C		C	C		A	A		B	A	
Approach Delay (s)		31.5			33.7			6.1			5.2	
Approach LOS		C			C			A			A	

Intersection Summary

HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	76.4	Sum of lost time (s)	11.9
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Adelaide Street North EA
 13: Adelaide Street N & Fanshawe Park Road

Future 2039 Traffic Analysis with Improvements

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	386	835	523	146	1249	333	611	1612	167	351	908	311
v/c Ratio	1.27	0.50	0.51	0.58	0.99	0.56	1.18	0.96	0.27	1.07	0.82	0.59
Control Delay	180.7	39.4	14.3	38.9	76.5	13.7	136.9	60.3	8.6	109.0	59.3	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	180.7	39.4	14.3	38.9	76.5	13.7	136.9	60.3	8.6	109.0	59.3	18.6
Queue Length 50th (m)	~117.9	68.2	65.6	25.0	127.2	13.7	~185.9	160.2	4.2	~89.7	88.4	19.0
Queue Length 95th (m)	#181.5	81.7	93.4	39.8	#160.0	43.5	#258.2	#191.2	20.6	#150.9	104.9	50.1
Internal Link Dist (m)		353.7			209.7			228.2				202.1
Turn Bay Length (m)	90.0		110.0	60.0			190.0		95.0	95.0		95.0
Base Capacity (vph)	303	1658	1023	252	1258	594	517	1685	623	329	1112	526
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.27	0.50	0.51	0.58	0.99	0.56	1.18	0.96	0.27	1.07	0.82	0.59

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

































Queue shown is maximum after two cycles.

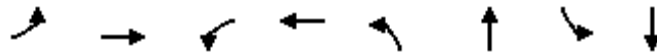
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Adelaide Street North EA
13: Adelaide Street N & Fanshawe Park Road

Future 2039 Traffic Analysis with Improvements
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			  			  	
Traffic Volume (vph)	355	768	481	134	1149	306	562	1483	154	323	835	286
Future Volume (vph)	355	768	481	134	1149	306	562	1483	154	323	835	286
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1807	5092	1585	1825	5245	1617	1789	5245	1633	1807	5193	1617
Flt Permitted	0.11	1.00	1.00	0.32	1.00	1.00	0.12	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	202	5092	1585	617	5245	1617	222	5245	1633	254	5193	1617
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	386	835	523	146	1249	333	611	1612	167	351	908	311
RTOR Reduction (vph)	0	0	24	0	0	206	0	0	98	0	0	180
Lane Group Flow (vph)	386	835	499	146	1249	127	611	1612	69	351	908	131
Heavy Vehicles (%)	1%	3%	3%	0%	0%	1%	2%	0%	0%	1%	1%	1%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	56.6	45.6	81.6	40.6	33.6	33.6	70.0	45.0	45.0	51.0	30.0	30.0
Effective Green, g (s)	56.6	45.6	81.6	40.6	33.6	33.6	70.0	45.0	45.0	51.0	30.0	30.0
Actuated g/C Ratio	0.40	0.33	0.58	0.29	0.24	0.24	0.50	0.32	0.32	0.36	0.21	0.21
Clearance Time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	299	1658	923	239	1258	388	513	1685	524	325	1112	346
v/s Ratio Prot	c0.17	0.16	0.14	0.03	0.24		c0.31	0.31		0.16	0.17	
v/s Ratio Perm	c0.35		0.18	0.15		0.08	c0.29		0.04	0.23		0.08
v/c Ratio	1.29	0.50	0.54	0.61	0.99	0.33	1.19	0.96	0.13	1.08	0.82	0.38
Uniform Delay, d1	43.2	38.1	17.8	38.7	53.1	43.9	42.1	46.5	33.6	42.4	52.4	47.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	153.7	1.1	0.6	4.6	23.7	2.2	104.0	13.0	0.1	72.9	4.7	0.7
Delay (s)	196.9	39.2	18.4	43.3	76.8	46.1	146.2	59.6	33.8	115.3	57.1	47.7
Level of Service	F	D	B	D	E	D	F	E	C	F	E	D
Approach Delay (s)		67.9			68.1			79.9			68.3	
Approach LOS		E			E			E			E	
Intersection Summary												
HCM 2000 Control Delay			71.9									E
HCM 2000 Volume to Capacity ratio			1.29									
Actuated Cycle Length (s)			140.0							21.4		
Intersection Capacity Utilization			107.0%									G
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	47	171	214	72	162	2098	41	1314
v/c Ratio	0.15	0.36	0.78	0.17	0.62	0.94	0.45	0.76
Control Delay	25.9	11.7	50.2	20.8	22.3	26.2	36.4	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	11.7	50.2	20.8	22.3	26.2	36.4	22.0
Queue Length 50th (m)	6.0	7.0	31.9	6.9	9.1	145.6	4.2	87.3
Queue Length 95th (m)	14.1	21.6	55.7	16.7	#33.6	#246.1	#19.9	129.6
Internal Link Dist (m)		249.6		201.4		128.2		673.9
Turn Bay Length (m)	70.0		65.0		60.0		65.0	
Base Capacity (vph)	415	612	372	573	272	2222	92	1735
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.28	0.58	0.13	0.60	0.94	0.45	0.76

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA

Future 2039 Traffic Analysis with Improvements

16: Adelaide Street N & Phillbrook Drive/Grenfell Drive






















PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	51	107	197	51	16	149	1608	322	38	1162	47
Future Volume (vph)	43	51	107	197	51	16	149	1608	322	38	1162	47
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3		6.3	6.3		4.0	5.6		5.6	5.6	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	0.96		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1772	1698		1772	1785		1825	3524		1825	3556	
Flt Permitted	0.71	1.00		0.63	1.00		0.09	1.00		0.10	1.00	
Satd. Flow (perm)	1324	1698		1184	1785		176	3524		189	3556	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	55	116	214	55	17	162	1748	350	41	1263	51
RTOR Reduction (vph)	0	89	0	0	13	0	0	16	0	0	3	0
Lane Group Flow (vph)	47	82	0	214	59	0	162	2082	0	41	1311	0
Heavy Vehicles (%)	3%	3%	1%	3%	5%	0%	0%	1%	1%	0%	2%	3%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		5	2			6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	19.2	19.2		19.2	19.2		52.2	52.2		40.6	40.6	
Effective Green, g (s)	19.2	19.2		19.2	19.2		52.2	52.2		40.6	40.6	
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.63	0.63		0.49	0.49	
Clearance Time (s)	6.3	6.3		6.3	6.3		4.0	5.6		5.6	5.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	305	391		272	411		260	2208		92	1733	
v/s Ratio Prot		0.05			0.03		0.06	c0.59			0.37	
v/s Ratio Perm	0.04			c0.18			0.33			0.22		
v/c Ratio	0.15	0.21		0.79	0.14		0.62	0.94		0.45	0.76	
Uniform Delay, d1	25.6	25.9		30.1	25.5		12.7	14.2		14.0	17.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3		13.9	0.2		4.6	9.7		14.8	3.1	
Delay (s)	25.8	26.2		44.0	25.7		17.3	23.9		28.8	20.5	
Level of Service	C	C		D	C		B	C		C	C	
Approach Delay (s)		26.1			39.4			23.4			20.7	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			23.8				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			83.3				Sum of lost time (s)			15.9		
Intersection Capacity Utilization			100.6%				ICU Level of Service			G		
Analysis Period (min)			15									
c	Critical Lane Group											













Adelaide Street North EA
10: Adelaide Street N & Street A

Future 2039 Traffic Analysis with Improvements
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	0	167	75	0	8	230	420	133	16	412	75
Future Volume (Veh/h)	43	0	167	75	0	8	230	420	133	16	412	75
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	47	0	182	82	0	9	250	457	145	17	448	82
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked	0.84	0.84		0.84	0.84	0.84				0.84		
vC, conflicting volume	1489	1625	489	1694	1594	530	530			602		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1487	1649	489	1731	1612	342	530			428		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	31	100	69	0	100	98	76			98		
cM capacity (veh/h)	68	62	579	32	65	587	1037			948		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	47	182	82	9	250	602	17	530				
Volume Left	47	0	82	0	250	0	17	0				
Volume Right	0	182	0	9	0	145	0	82				
cSH	68	579	32	587	1037	1700	948	1700				
Volume to Capacity	0.69	0.31	2.57	0.02	0.24	0.35	0.02	0.31				
Queue Length 95th (m)	23.5	10.2	72.2	0.4	7.2	0.0	0.4	0.0				
Control Delay (s)	134.5	14.0	974.9	11.2	9.6	0.0	8.9	0.0				
Lane LOS	F	B	F	B	A		A					
Approach Delay (s)	38.8		879.6		2.8		0.3					
Approach LOS	E		F									
Intersection Summary												
Average Delay			53.2									
Intersection Capacity Utilization			66.8%		ICU Level of Service					C		
Analysis Period (min)			15									

Adelaide Street North EA
 13: Adelaide Street N & Fanshawe Park Road

Future 2039 Traffic Analysis with Dual Left Turns
 AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	136	1237	613	226	745	133	402	654	85	451	1471	341
v/c Ratio	0.53	0.88	0.78	0.96	0.53	0.25	0.95	0.47	0.16	0.97	0.97	0.56
Control Delay	56.7	46.3	29.6	76.3	35.0	6.5	82.3	34.2	1.7	58.6	54.8	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.7	46.3	29.6	76.3	35.0	6.5	82.3	34.2	1.7	58.6	54.8	16.6
Queue Length 50th (m)	14.6	92.9	94.3	31.7	49.7	0.0	44.8	42.6	0.0	63.0	113.8	23.2
Queue Length 95th (m)	24.5	#111.5	143.3	#78.9	62.3	13.8	#74.1	54.5	2.7	#116.8	#145.5	52.2
Internal Link Dist (m)		353.7			209.7			228.2			202.1	
Turn Bay Length (m)	90.0		110.0	60.0			190.0		95.0	95.0		95.0
Base Capacity (vph)	268	1407	781	235	1414	524	421	1377	527	463	1522	607
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.88	0.78	0.96	0.53	0.25	0.95	0.47	0.16	0.97	0.97	0.56

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Adelaide Street North EA
13: Adelaide Street N & Fanshawe Park Road

Future 2039 Traffic Analysis with Dual Left Turns













AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	125	1138	564	208	685	122	370	602	78	415	1353	314	
Future Volume (vph)	125	1138	564	208	685	122	370	602	78	415	1353	314	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5	
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.91	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3278	5043	1570	1772	4995	1512	3309	4902	1526	1807	5092	1555	
Flt Permitted	0.95	1.00	1.00	0.13	1.00	1.00	0.95	1.00	1.00	0.30	1.00	1.00	
Satd. Flow (perm)	3278	5043	1570	240	4995	1512	3309	4902	1526	572	5092	1555	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	136	1237	613	226	745	133	402	654	85	451	1471	341	
RTOR Reduction (vph)	0	0	50	0	0	95	0	0	61	0	0	142	
Lane Group Flow (vph)	136	1237	563	226	745	38	402	654	24	451	1471	199	
Heavy Vehicles (%)	8%	4%	4%	3%	5%	8%	7%	7%	7%	1%	3%	5%	
Turn Type	Prot	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2	7	1	6		7	4		3	8		
Permitted Phases			2	6		6			4	8		8	
Actuated Green, G (s)	8.6	30.7	44.7	41.1	31.1	31.1	14.0	30.9	30.9	49.9	32.9	32.9	
Effective Green, g (s)	8.6	30.7	44.7	41.1	31.1	31.1	14.0	30.9	30.9	49.9	32.9	32.9	
Actuated g/C Ratio	0.08	0.28	0.41	0.37	0.28	0.28	0.13	0.28	0.28	0.45	0.30	0.30	
Clearance Time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	256	1407	637	228	1412	427	421	1377	428	450	1522	465	
v/s Ratio Prot	0.04	0.25	0.11	c0.09	0.15		0.12	0.13		c0.15	0.29		
v/s Ratio Perm			0.25	c0.28		0.02			0.02	c0.30		0.13	
v/c Ratio	0.53	0.88	0.88	0.99	0.53	0.09	0.95	0.47	0.06	1.00	0.97	0.43	
Uniform Delay, d1	48.8	37.9	30.2	27.6	33.3	29.0	47.7	32.8	28.9	24.5	38.0	31.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.1	8.1	13.8	56.9	1.4	0.4	32.2	0.3	0.1	43.0	15.7	0.6	
Delay (s)	50.9	46.0	44.0	84.6	34.7	29.4	79.9	33.1	28.9	67.5	53.7	31.6	
Level of Service	D	D	D	F	C	C	E	C	C	E	D	C	
Approach Delay (s)		45.7			44.3			49.3			53.1		
Approach LOS		D			D			D			D		
Intersection Summary													
HCM 2000 Control Delay			48.7									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			1.05										
Actuated Cycle Length (s)			110.0									Sum of lost time (s)	23.4
Intersection Capacity Utilization			88.9%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

Adelaide Street North EA
 13: Adelaide Street N & Fanshawe Park Road

Future 2039 Traffic Analysis with Dual Left Turns

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	386	835	523	146	1249	333	611	1612	167	351	908	311
v/c Ratio	1.02	0.50	0.57	0.57	0.92	0.51	1.01	1.01	0.28	1.08	0.67	0.56
Control Delay	103.8	33.9	17.7	33.2	54.9	7.2	87.6	66.8	6.7	107.0	42.4	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.8	33.9	17.7	33.2	54.9	7.2	87.6	66.8	6.7	107.0	42.4	20.6
Queue Length 50th (m)	~48.5	57.8	66.2	20.8	105.0	1.6	~75.6	~141.6	1.3	~75.3	70.2	26.6
Queue Length 95th (m)	#80.1	70.8	98.1	34.5	#131.0	24.2	#112.9	#175.7	16.7	#133.6	85.1	55.5
Internal Link Dist (m)		353.7			209.7			228.2			202.1	
Turn Bay Length (m)	90.0		110.0	60.0			190.0		95.0	95.0		95.0
Base Capacity (vph)	379	1659	914	258	1359	659	607	1595	607	324	1363	553
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.50	0.57	0.57	0.92	0.51	1.01	1.01	0.28	1.08	0.67	0.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

























Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Adelaide Street North EA
13: Adelaide Street N & Fanshawe Park Road

Future 2039 Traffic Analysis with Dual Left Turns
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	355	768	481	134	1149	306	562	1483	154	323	835	286
Future Volume (vph)	355	768	481	134	1149	306	562	1483	154	323	835	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3506	5092	1585	1825	5245	1617	3471	5245	1633	1807	5193	1617
Flt Permitted	0.95	1.00	1.00	0.31	1.00	1.00	0.95	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	3506	5092	1585	592	5245	1617	3471	5245	1633	242	5193	1617
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	386	835	523	146	1249	333	611	1612	167	351	908	311
RTOR Reduction (vph)	0	0	34	0	0	240	0	0	111	0	0	129
Lane Group Flow (vph)	386	835	489	146	1249	93	611	1612	56	351	908	182
Heavy Vehicles (%)	1%	3%	3%	0%	0%	1%	2%	0%	0%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases			2	6		6			4	8		8
Actuated Green, G (s)	13.0	39.1	60.1	37.1	31.1	31.1	21.0	36.5	36.5	48.5	31.5	31.5
Effective Green, g (s)	13.0	39.1	60.1	37.1	31.1	31.1	21.0	36.5	36.5	48.5	31.5	31.5
Actuated g/C Ratio	0.11	0.33	0.50	0.31	0.26	0.26	0.18	0.30	0.30	0.40	0.26	0.26
Clearance Time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	379	1659	793	244	1359	419	607	1595	496	319	1363	424
v/s Ratio Prot	c0.11	0.16	0.11	0.03	c0.24		0.18	c0.31		c0.16	0.17	
v/s Ratio Perm			0.20	0.15		0.06			0.03	c0.29		0.11
v/c Ratio	1.02	0.50	0.62	0.60	0.92	0.22	1.01	1.01	0.11	1.10	0.67	0.43
Uniform Delay, d1	53.5	32.6	21.6	31.6	43.2	34.9	49.5	41.8	30.1	35.2	39.6	36.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	51.0	1.1	1.4	3.9	11.4	1.2	38.2	25.2	0.1	80.0	1.2	0.7
Delay (s)	104.5	33.7	23.1	35.5	54.7	36.2	87.7	66.9	30.2	115.2	40.8	37.5
Level of Service	F	C	C	D	D	D	F	E	C	F	D	D
Approach Delay (s)		46.2			49.5			69.7			56.8	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			56.7		HCM 2000 Level of Service					E		
HCM 2000 Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				23.4			
Intersection Capacity Utilization			97.5%		ICU Level of Service				F			
Analysis Period (min)			15									
c Critical Lane Group												

APPENDIX M

Future (2029 and 2039) Weekday AM and PM
Roundabout Analysis Sidra Output Sheets

MOVEMENT SUMMARY

 Site: 101 [Adelaide St. & Sunningdale Rd. - 2029 AM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Adelaide St. N											
1	L2	299	11.0	0.731	11.8	LOS B	4.7	35.5	0.83	1.02	47.0
2	T1	329	2.0	0.731	10.6	LOS B	5.0	35.7	0.84	1.02	49.4
3	R2	208	3.0	0.731	10.2	LOS B	5.0	35.7	0.84	1.02	48.9
Approach		836	5.5	0.731	11.0	LOS B	5.0	35.7	0.84	1.02	48.4
East: Sunningdale Rd.											
4	L2	185	4.0	0.633	7.3	LOS A	4.0	29.3	0.78	0.90	51.1
5	T1	651	7.0	0.633	6.6	LOS A	4.0	29.3	0.77	0.88	52.3
6	R2	50	6.0	0.633	6.3	LOS A	4.0	29.5	0.77	0.88	51.6
Approach		886	6.3	0.633	6.7	LOS A	4.0	29.5	0.78	0.89	52.0
North: Adelaide St. N											
7	L2	145	1.0	0.765	15.9	LOS C	4.9	35.1	0.89	1.11	45.9
8	T1	524	3.0	0.765	14.5	LOS B	5.0	36.0	0.88	1.10	47.3
9	R2	70	5.0	0.765	13.6	LOS B	5.0	36.0	0.87	1.09	46.9
Approach		738	2.8	0.765	14.7	LOS B	5.0	36.0	0.88	1.10	47.0
West: Sunningdale Rd.											
10	L2	121	0.0	1.337	165.8	LOS F	74.4	536.1	1.00	4.11	16.4
11	T1	964	4.0	1.337	165.3	LOS F	81.6	594.3	1.00	4.20	16.3
12	R2	604	5.0	1.337	164.1	LOS F	81.6	594.3	1.00	4.40	16.1
Approach		1689	4.1	1.337	164.9	LOS F	81.6	594.3	1.00	4.26	16.3
All Vehicles		4149	4.6	1.337	73.4	LOS F	81.6	594.3	0.90	2.32	27.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: Z:\476793 Adelaide EA, London\Traffic Analysis\Sidra Analysis\Adelaide St. & Sunningdale Rd. (HCM 6).sip7

MOVEMENT SUMMARY

 Site: 101 [Adelaide St. & Sunningdale Rd. - 2029 PM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Adelaide St. N											
1	L2	637	11.0	1.332	164.5	LOS F	67.6	513.3	1.00	4.08	16.4
2	T1	649	2.0	1.332	162.6	LOS F	77.7	555.0	1.00	4.24	16.5
3	R2	302	3.0	1.332	162.3	LOS F	77.7	555.0	1.00	4.27	16.4
Approach		1588	5.8	1.332	163.3	LOS F	77.7	555.0	1.00	4.18	16.4
East: Sunningdale Rd.											
4	L2	218	3.0	1.198	108.9	LOS F	41.9	296.0	1.00	3.02	21.7
5	T1	1025	0.0	1.198	107.3	LOS F	46.6	326.7	1.00	3.13	21.9
6	R2	61	1.0	1.198	106.2	LOS F	46.6	326.7	1.00	3.19	21.8
Approach		1304	0.5	1.198	107.5	LOS F	46.6	326.7	1.00	3.11	21.9
North: Adelaide St. N											
7	L2	108	0.0	0.973	46.3	LOS E	9.7	68.1	0.99	1.60	33.8
8	T1	473	0.0	0.973	43.1	LOS E	10.4	72.7	0.99	1.61	34.8
9	R2	108	0.0	0.973	40.6	LOS E	10.4	72.7	0.99	1.63	35.1
Approach		688	0.0	0.973	43.2	LOS E	10.4	72.7	0.99	1.61	34.7
West: Sunningdale Rd.											
10	L2	57	0.0	0.952	23.8	LOS C	14.6	105.3	1.00	1.58	42.7
11	T1	742	4.0	0.952	23.3	LOS C	15.3	108.7	1.00	1.58	42.7
12	R2	524	1.0	0.952	21.4	LOS C	15.3	108.7	1.00	1.57	42.6
Approach		1323	2.6	0.952	22.6	LOS C	15.3	108.7	1.00	1.58	42.7
All Vehicles		4903	2.7	1.332	93.6	LOS F	77.7	555.0	1.00	2.83	23.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if $v/c > 1$ irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: Z:\476793 Adelaide EA, London\Traffic Analysis\Sidra Analysis\Adelaide St. & Sunningdale Rd. (HCM 6).sip7

MOVEMENT SUMMARY

 Site: 101 [Adelaide St. & Sunningdale Rd. - 2039 AM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Adelaide St. N											
1	L2	322	11.0	0.783	13.4	LOS B	5.6	42.5	0.86	1.09	46.1
2	T1	354	2.0	0.783	12.1	LOS B	6.0	42.9	0.87	1.09	48.5
3	R2	229	3.0	0.783	11.6	LOS B	6.0	42.9	0.87	1.09	48.0
Approach		905	5.5	0.783	12.4	LOS B	6.0	42.9	0.86	1.09	47.5
East: Sunningdale Rd.											
4	L2	199	4.0	0.717	9.3	LOS A	5.1	37.5	0.83	1.00	49.8
5	T1	711	7.0	0.717	8.5	LOS A	5.1	37.9	0.83	0.98	51.0
6	R2	54	6.0	0.717	8.0	LOS A	5.1	37.9	0.82	0.98	50.4
Approach		964	6.3	0.717	8.6	LOS A	5.1	37.9	0.83	0.99	50.7
North: Adelaide St. N											
7	L2	149	1.0	0.871	24.4	LOS C	6.9	49.0	0.94	1.31	41.7
8	T1	547	3.0	0.871	22.2	LOS C	7.0	50.7	0.94	1.30	43.1
9	R2	74	5.0	0.871	20.9	LOS C	7.0	50.7	0.93	1.30	43.0
Approach		770	2.8	0.871	22.5	LOS C	7.0	50.7	0.94	1.30	42.8
West: Sunningdale Rd.											
10	L2	125	0.0	1.474	226.6	LOS F	96.4	694.7	1.00	4.81	13.0
11	T1	1046	4.0	1.474	226.1	LOS F	106.4	774.5	1.00	4.92	12.9
12	R2	624	5.0	1.474	225.0	LOS F	106.4	774.5	1.00	5.18	12.7
Approach		1795	4.1	1.474	225.7	LOS F	106.4	774.5	1.00	5.01	12.9
All Vehicles		4434	4.6	1.474	99.7	LOS F	106.4	774.5	0.92	2.69	22.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: Z:\476793 Adelaide EA, London\Traffic Analysis\Sidra Analysis\Adelaide St. & Sunningdale Rd. (HCM 6).sip7

MOVEMENT SUMMARY

 Site: 101 [Adelaide St. & Sunningdale Rd. - 2039 PM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Adelaide St. N											
1	L2	658	11.0	1.466	224.1	LOS F	86.6	656.2	1.00	4.74	13.1
2	T1	679	2.0	1.466	222.3	LOS F	100.0	714.3	1.00	4.95	13.1
3	R2	329	3.0	1.466	221.9	LOS F	100.0	714.3	1.00	5.00	13.0
Approach		1666	5.7	1.466	223.0	LOS F	100.0	714.3	1.00	4.88	13.0
East: Sunningdale Rd.											
4	L2	237	3.0	1.258	133.8	LOS F	52.4	370.3	1.00	3.42	19.0
5	T1	1103	0.0	1.258	132.3	LOS F	58.5	409.9	1.00	3.55	19.1
6	R2	63	1.0	1.258	131.4	LOS F	58.5	409.9	1.00	3.64	19.0
Approach		1403	0.6	1.258	132.5	LOS F	58.5	409.9	1.00	3.54	19.1
North: Adelaide St. N											
7	L2	111	0.0	1.059	70.0	LOS F	15.0	104.9	1.00	1.92	27.9
8	T1	502	0.0	1.059	66.8	LOS F	16.6	115.9	1.00	1.96	28.6
9	R2	111	0.0	1.059	64.2	LOS F	16.6	115.9	1.00	2.00	28.7
Approach		724	0.0	1.059	66.9	LOS F	16.6	115.9	1.00	1.96	28.5
West: Sunningdale Rd.											
10	L2	60	0.0	1.044	46.5	LOS F	25.0	180.7	1.00	2.10	34.0
11	T1	803	4.0	1.044	45.9	LOS F	26.9	191.4	1.00	2.11	34.0
12	R2	543	1.0	1.044	43.8	LOS F	26.9	191.4	1.00	2.13	33.8
Approach		1407	2.7	1.044	45.1	LOS E	26.9	191.4	1.00	2.12	33.9
All Vehicles		5200	2.7	1.466	128.7	LOS F	100.0	714.3	1.00	3.36	19.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if $v/c > 1$ irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

SIDRA Standard Delay Model is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option is selected.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Organisation: PARSONS TRANSPORTATION GROUP | Processed: Friday, November 23, 2018 12:57:57 PM

Project: Z:\476793 Adelaide EA, London\Traffic Analysis\Sidra Analysis\Adelaide St. & Sunningdale Rd. (HCM 6).sip7













APPENDIX N

Future (2029 and 2039) Weekday AM and PM
Based on 2019 Development Charges Plan
Traffic Analysis Synchro Output Sheets

Adelaide Street North EA
8: Adelaide Street N & Sunningdale Road E

Future 2029 Traffic Analysis with Improvements

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	121	964	604	185	651	50	299	329	208	145	594	
v/c Ratio	0.39	0.88	0.39	0.80	0.54	0.08	0.73	0.27	0.31	0.37	0.63	
Control Delay	22.7	48.4	0.7	49.5	31.9	0.2	31.9	29.6	5.2	23.2	41.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	22.7	48.4	0.7	49.5	31.9	0.2	31.9	29.6	5.2	23.2	41.6	
Queue Length 50th (m)	15.6	110.4	0.0	25.3	62.3	0.0	44.6	29.9	0.0	19.8	65.2	
Queue Length 95th (m)	26.7	136.6	0.0	#62.1	80.1	0.0	66.1	41.7	16.0	33.0	86.4	
Internal Link Dist (m)		393.8			117.3			302.9			101.4	
Turn Bay Length (m)	110.0		110.0	70.0			150.0		130.0	75.0		
Base Capacity (vph)	313	1175	1555	232	1288	668	443	1202	664	401	949	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.39	0.82	0.39	0.80	0.51	0.07	0.67	0.27	0.31	0.36	0.63	

























Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Adelaide Street North EA
8: Adelaide Street N & Sunningdale Road E

Future 2029 Traffic Analysis with Improvements

AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	111	887	556	170	599	46	275	303	191	133	482	64	
Future Volume (vph)	111	887	556	170	599	46	275	303	191	133	482	64	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	6.8	4.0	4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1825	3510	1555	1755	3411	1541	1807	3544	1555	1644	3511		
Flt Permitted	0.34	1.00	1.00	0.10	1.00	1.00	0.24	1.00	1.00	0.55	1.00		
Satd. Flow (perm)	650	3510	1555	182	3411	1541	453	3544	1555	957	3511		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	121	964	604	185	651	50	299	329	208	145	524	70	
RTOR Reduction (vph)	0	0	0	0	0	32	0	0	137	0	8	0	
Lane Group Flow (vph)	121	964	604	185	651	18	299	329	71	145	586	0	
Heavy Vehicles (%)	0%	4%	5%	4%	7%	6%	1%	3%	5%	11%	2%	3%	
Turn Type	pm+pt	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		
Protected Phases	3	8		7	4		5	2		1	6		
Permitted Phases	8		Free	4		4	2		2	6			
Actuated Green, G (s)	42.7	36.7	117.3	51.7	41.7	41.7	52.5	39.8	39.8	40.2	31.5		
Effective Green, g (s)	42.7	36.7	117.3	51.7	41.7	41.7	52.5	39.8	39.8	40.2	31.5		
Actuated g/C Ratio	0.36	0.31	1.00	0.44	0.36	0.36	0.45	0.34	0.34	0.34	0.27		
Clearance Time (s)	4.0	6.8		4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	296	1098	1555	227	1212	547	398	1202	527	378	942		
v/s Ratio Prot	0.02	c0.27		c0.08	0.19		c0.11	0.09		0.03	0.17		
v/s Ratio Perm	0.13		0.39	0.28		0.01	c0.23		0.05	0.10			
v/c Ratio	0.41	0.88	0.39	0.81	0.54	0.03	0.75	0.27	0.13	0.38	0.62		
Uniform Delay, d1	25.6	38.2	0.0	26.0	30.1	24.6	23.1	28.2	26.8	27.8	37.7		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	0.9	8.1	0.7	19.7	0.5	0.0	7.8	0.6	0.5	0.7	3.1		
Delay (s)	26.5	46.3	0.7	45.7	30.6	24.7	30.9	28.8	27.3	28.4	40.8		
Level of Service	C	D	A	D	C	C	C	C	C	C	D		
Approach Delay (s)		28.6			33.4			29.2			38.3		
Approach LOS		C			C			C			D		
Intersection Summary													
HCM 2000 Control Delay			31.5		HCM 2000 Level of Service						C		
HCM 2000 Volume to Capacity ratio			0.83										
Actuated Cycle Length (s)			117.3		Sum of lost time (s)						21.1		
Intersection Capacity Utilization			82.1%		ICU Level of Service						E		
Analysis Period (min)			15										
c Critical Lane Group													

Adelaide Street North EA
 13: Adelaide Street N & Fanshawe Park Road

Future 2029 Traffic Analysis with Improvements
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	128	1149	555	205	674	124	364	603	76	425	1370	325
v/c Ratio	0.52	1.06	0.68	1.21	0.63	0.22	1.38	0.65	0.15	0.89	1.15	0.50
Control Delay	30.2	84.6	24.1	161.5	38.6	4.5	224.6	43.1	0.6	43.2	112.7	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.2	84.6	24.1	161.5	38.6	4.5	224.6	43.1	0.6	43.2	112.7	16.6
Queue Length 50th (m)	18.4	~156.3	80.3	~42.0	71.4	0.0	~99.3	67.1	0.0	62.2	~199.1	25.5
Queue Length 95th (m)	31.4	#197.6	121.2	#89.9	91.2	10.3	#158.1	86.9	0.0	#114.6	#241.1	52.6
Internal Link Dist (m)		353.7			209.7			228.2			202.1	
Turn Bay Length (m)	90.0		110.0	60.0		110.0	190.0		95.0	95.0		95.0
Base Capacity (vph)	247	1085	813	170	1074	564	263	921	517	487	1196	644
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	1.06	0.68	1.21	0.63	0.22	1.38	0.65	0.15	0.87	1.15	0.50

























Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA
13: Adelaide Street N & Fanshawe Park Road














Future 2029 Traffic Analysis with Improvements
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	1057	511	189	620	114	335	555	70	391	1260	299
Future Volume (vph)	118	1057	511	189	620	114	335	555	70	391	1260	299
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1690	3510	1570	1772	3476	1512	1706	3411	1526	1807	3544	1555
Flt Permitted	0.25	1.00	1.00	0.11	1.00	1.00	0.12	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	448	3510	1570	201	3476	1512	222	3411	1526	446	3544	1555
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	128	1149	555	205	674	124	364	603	76	425	1370	325
RTOR Reduction (vph)	0	0	60	0	0	86	0	0	55	0	0	119
Lane Group Flow (vph)	128	1149	495	205	674	38	364	603	21	425	1370	206
Heavy Vehicles (%)	8%	4%	4%	3%	5%	8%	7%	7%	7%	1%	3%	5%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	44.1	37.1	51.1	44.1	37.1	37.1	46.4	32.4	32.4	58.5	40.5	40.5
Effective Green, g (s)	44.1	37.1	51.1	44.1	37.1	37.1	46.4	32.4	32.4	58.5	40.5	40.5
Actuated g/C Ratio	0.37	0.31	0.43	0.37	0.31	0.31	0.39	0.27	0.27	0.49	0.34	0.34
Clearance Time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	237	1085	668	165	1074	467	258	920	412	468	1196	524
v/s Ratio Prot	0.03	0.33	0.09	c0.07	0.19		c0.16	0.18		0.17	c0.39	
v/s Ratio Perm	0.17		0.23	c0.38		0.03	c0.38		0.01	0.28		0.13
v/c Ratio	0.54	1.06	0.74	1.24	0.63	0.08	1.41	0.66	0.05	0.91	1.15	0.39
Uniform Delay, d1	26.9	41.5	28.9	33.8	35.5	29.4	33.8	38.8	32.4	22.9	39.8	30.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	44.4	4.4	149.8	2.8	0.3	206.3	1.7	0.1	21.1	75.7	0.5
Delay (s)	29.4	85.8	33.3	183.6	38.3	29.7	240.2	40.5	32.5	44.1	115.5	30.8
Level of Service	C	F	C	F	D	C	F	D	C	D	F	C
Approach Delay (s)		66.0			66.9			109.6			88.2	
Approach LOS		E			E			F			F	
Intersection Summary												
HCM 2000 Control Delay			81.6									F
HCM 2000 Volume to Capacity ratio			1.28									
Actuated Cycle Length (s)			120.0								21.4	
Intersection Capacity Utilization			110.9%									H
ICU Level of Service												
Analysis Period (min)			15									
c Critical Lane Group												

Adelaide Street North EA
 8: Adelaide Street N & Sunningdale Road E

Future 2029 Traffic Analysis with Improvements

PM Peak Hour

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBT	
Lane Group Flow (vph)	57	742	524	218	1025	61	637	649	302	108	581		
v/c Ratio	0.39	0.87	0.32	0.97	0.94	0.11	1.03	0.41	0.36	0.39	0.88		
Control Delay	31.6	54.9	0.5	82.2	57.5	0.4	74.9	24.8	6.7	23.2	61.1		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	31.6	54.9	0.5	82.2	57.5	0.4	74.9	24.8	6.7	23.2	61.1		
Queue Length 50th (m)	8.3	87.5	0.0	35.1	125.3	0.0	-144.6	55.4	8.6	11.9	68.5		
Queue Length 95th (m)	17.1	#111.5	0.0	#81.4	#168.1	0.0	#214.9	71.0	27.0	20.9	#98.4		
Internal Link Dist (m)		393.8			117.3			302.9				101.4	
Turn Bay Length (m)	110.0		110.0	70.0			150.0		130.0	75.0			
Base Capacity (vph)	145	892	1617	225	1090	570	621	1569	831	280	664		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.39	0.83	0.32	0.97	0.94	0.11	1.03	0.41	0.36	0.39	0.88		

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA
8: Adelaide Street N & Sunningdale Road E

Future 2029 Traffic Analysis with Improvements
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	52	683	482	201	943	56	586	597	278	99	435	99	
Future Volume (vph)	52	683	482	201	943	56	586	597	278	99	435	99	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	6.8	4.0	4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1825	3510	1617	1807	3614	1570	1772	3650	1617	1825	3548		
Flt Permitted	0.13	1.00	1.00	0.13	1.00	1.00	0.16	1.00	1.00	0.41	1.00		
Satd. Flow (perm)	258	3510	1617	244	3614	1570	290	3650	1617	778	3548		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	57	742	524	218	1025	61	637	649	302	108	473	108	
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	137	0	16	0	
Lane Group Flow (vph)	57	742	524	218	1025	18	637	649	165	108	565	0	
Heavy Vehicles (%)	0%	4%	1%	1%	1%	4%	3%	0%	1%	0%	0%	0%	
Turn Type	pm+pt	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		
Protected Phases	3	8		7	4		5	2		1	6		
Permitted Phases	8		Free	4		4	2		2	6			
Actuated Green, G (s)	33.8	29.8	119.6	43.8	35.8	35.8	62.7	51.1	51.1	29.3	21.7		
Effective Green, g (s)	33.8	29.8	119.6	43.8	35.8	35.8	62.7	51.1	51.1	29.3	21.7		
Actuated g/C Ratio	0.28	0.25	1.00	0.37	0.30	0.30	0.52	0.43	0.43	0.24	0.18		
Clearance Time (s)	4.0	6.8		4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	125	874	1617	220	1081	469	610	1559	690	257	643		
v/s Ratio Prot	0.02	0.21		c0.08	0.28		c0.32	0.18		0.03	0.16		
v/s Ratio Perm	0.11		0.32	c0.28		0.01	c0.22		0.10	0.08			
v/c Ratio	0.46	0.85	0.32	0.99	0.95	0.04	1.04	0.42	0.24	0.42	0.88		
Uniform Delay, d1	34.1	42.8	0.0	31.1	41.0	29.7	33.2	23.9	21.8	36.2	47.7		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	2.6	7.7	0.5	57.9	16.2	0.0	48.5	0.8	0.8	1.1	15.7		
Delay (s)	36.7	50.5	0.5	89.0	57.2	29.7	81.7	24.7	22.7	37.3	63.3		
Level of Service	D	D	A	F	E	C	F	C	C	D	E		
Approach Delay (s)		30.1			61.3			47.2			59.3		
Approach LOS		C			E			D			E		
Intersection Summary													
HCM 2000 Control Delay			48.0									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			1.08										
Actuated Cycle Length (s)			119.6									Sum of lost time (s)	21.1
Intersection Capacity Utilization			95.5%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													

Adelaide Street North EA
 13: Adelaide Street N & Fanshawe Park Road

Future 2029 Traffic Analysis with Improvements
 PM Peak Hour































Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	368	755	473	133	1143	318	553	1500	151	329	850	293
v/c Ratio	1.47	0.62	0.49	0.51	1.07	0.50	1.38	1.19	0.23	1.38	0.93	0.54
Control Delay	260.7	41.0	16.3	31.6	94.1	14.8	217.9	132.7	9.0	226.1	67.7	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	260.7	41.0	16.3	31.6	94.1	14.8	217.9	132.7	9.0	226.1	67.7	21.7
Queue Length 50th (m)	~123.0	91.5	62.2	21.5	~183.5	19.2	~186.6	~262.3	5.0	~103.8	121.6	27.3
Queue Length 95th (m)	#185.4	112.7	89.7	34.8	#225.8	47.6	#257.1	#305.0	20.3	#163.9	#158.9	56.7
Internal Link Dist (m)		353.7			209.7			228.2			202.1	
Turn Bay Length (m)	90.0		110.0	60.0		110.0	190.0		95.0	95.0		95.0
Base Capacity (vph)	251	1217	956	259	1071	634	402	1264	646	239	916	540
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.47	0.62	0.49	0.51	1.07	0.50	1.38	1.19	0.23	1.38	0.93	0.54

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA
13: Adelaide Street N & Fanshawe Park Road














Future 2029 Traffic Analysis with Improvements
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	339	695	435	122	1052	293	509	1380	139	303	782	270
Future Volume (vph)	339	695	435	122	1052	293	509	1380	139	303	782	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1807	3544	1585	1825	3650	1617	1789	3650	1633	1807	3614	1617
Flt Permitted	0.09	1.00	1.00	0.26	1.00	1.00	0.10	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	169	3544	1585	494	3650	1617	191	3650	1633	214	3614	1617
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	368	755	473	133	1143	318	553	1500	151	329	850	293
RTOR Reduction (vph)	0	0	32	0	0	160	0	0	81	0	0	131
Lane Group Flow (vph)	368	755	441	133	1143	158	553	1500	70	329	850	162
Heavy Vehicles (%)	1%	3%	3%	0%	0%	1%	2%	0%	0%	1%	1%	1%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	60.1	48.1	75.1	49.1	41.1	41.1	66.5	48.5	48.5	49.5	35.5	35.5
Effective Green, g (s)	60.1	48.1	75.1	49.1	41.1	41.1	66.5	48.5	48.5	49.5	35.5	35.5
Actuated g/C Ratio	0.43	0.34	0.54	0.35	0.29	0.29	0.48	0.35	0.35	0.35	0.25	0.25
Clearance Time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	248	1217	850	249	1071	474	398	1264	565	234	916	410
v/s Ratio Prot	c0.16	0.21	0.10	0.03	0.31		c0.27	0.41		0.14	0.24	
v/s Ratio Perm	c0.48		0.18	0.16		0.10	c0.39		0.04	0.35		0.10
v/c Ratio	1.48	0.62	0.52	0.53	1.07	0.33	1.39	1.19	0.12	1.41	0.93	0.40
Uniform Delay, d1	42.9	38.3	20.9	32.5	49.5	38.7	44.2	45.8	31.2	39.9	51.0	43.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	238.1	2.4	0.5	2.2	47.3	1.9	190.1	92.3	0.1	206.3	15.1	0.6
Delay (s)	281.0	40.7	21.4	34.7	96.8	40.6	234.3	138.0	31.3	246.1	66.1	44.0
Level of Service	F	D	C	C	F	D	F	F	C	F	E	D
Approach Delay (s)		90.4			80.4			154.9			101.9	
Approach LOS		F			F			F			F	
Intersection Summary												
HCM 2000 Control Delay			111.2									F
HCM 2000 Volume to Capacity ratio			1.50									
Actuated Cycle Length (s)			140.0							21.4		
Intersection Capacity Utilization			120.6%									H
Analysis Period (min)			15									
c Critical Lane Group												

Adelaide Street North EA
8: Adelaide Street N & Sunningdale Road E

Future 2039 Traffic Analysis with Improvements

AM Peak Hour

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT		
Lane Group Flow (vph)	125	1046	624	199	711	54	322	354	229	149	621		
v/c Ratio	0.40	0.90	0.40	0.82	0.55	0.08	0.85	0.32	0.36	0.40	0.76		
Control Delay	21.7	49.4	0.8	51.0	30.3	0.2	45.5	32.9	5.7	25.6	48.9		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	21.7	49.4	0.8	51.0	30.3	0.2	45.5	32.9	5.7	25.6	48.9		
Queue Length 50th (m)	15.4	121.2	0.0	28.8	67.1	0.0	51.0	34.0	0.0	21.3	72.3		
Queue Length 95th (m)	26.3	#150.8	0.0	#67.0	85.3	0.0	#94.2	47.1	17.6	35.4	93.4		
Internal Link Dist (m)		393.8			117.3			302.9					101.4
Turn Bay Length (m)	110.0		110.0	70.0			150.0		130.0	75.0			
Base Capacity (vph)	309	1220	1555	245	1360	698	400	1090	636	375	822		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.40	0.86	0.40	0.81	0.52	0.08	0.81	0.32	0.36	0.40	0.76		

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Adelaide Street North EA
8: Adelaide Street N & Sunningdale Road E

Future 2039 Traffic Analysis with Improvements
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	115	962	574	183	654	50	296	326	211	137	503	68	
Future Volume (vph)	115	962	574	183	654	50	296	326	211	137	503	68	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	6.8	4.0	4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1825	3510	1555	1755	3411	1541	1807	3544	1555	1644	3510		
Flt Permitted	0.32	1.00	1.00	0.09	1.00	1.00	0.18	1.00	1.00	0.54	1.00		
Satd. Flow (perm)	612	3510	1555	173	3411	1541	342	3544	1555	934	3510		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	125	1046	624	199	711	54	322	354	229	149	547	74	
RTOR Reduction (vph)	0	0	0	0	0	33	0	0	158	0	8	0	
Lane Group Flow (vph)	125	1046	624	199	711	21	322	354	71	149	613	0	
Heavy Vehicles (%)	0%	4%	5%	4%	7%	6%	1%	3%	5%	11%	2%	3%	
Turn Type	pm+pt	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		
Protected Phases	3	8		7	4		5	2		1	6		
Permitted Phases	8		Free	4		4	2		2	6			
Actuated Green, G (s)	44.8	38.8	117.5	54.7	44.7	44.7	49.7	36.2	36.2	36.7	27.2		
Effective Green, g (s)	44.8	38.8	117.5	54.7	44.7	44.7	49.7	36.2	36.2	36.7	27.2		
Actuated g/C Ratio	0.38	0.33	1.00	0.47	0.38	0.38	0.42	0.31	0.31	0.31	0.23		
Clearance Time (s)	4.0	6.8		4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	295	1159	1555	240	1297	586	375	1091	479	349	812		
v/s Ratio Prot	0.02	c0.30		c0.08	0.21		c0.14	0.10		0.03	0.17		
v/s Ratio Perm	0.14		0.40	0.30		0.01	c0.23		0.05	0.10			
v/c Ratio	0.42	0.90	0.40	0.83	0.55	0.04	0.86	0.32	0.15	0.43	0.75		
Uniform Delay, d1	24.4	37.5	0.0	28.4	28.5	22.9	26.1	31.3	29.5	30.5	42.0		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	1.0	9.9	0.8	20.5	0.5	0.0	17.4	0.8	0.6	0.8	6.4		
Delay (s)	25.3	47.4	0.8	48.9	29.0	22.9	43.5	32.0	30.1	31.4	48.5		
Level of Service	C	D	A	D	C	C	D	C	C	C	D		
Approach Delay (s)		29.7			32.7			35.6			45.2		
Approach LOS		C			C			D			D		
Intersection Summary													
HCM 2000 Control Delay			34.2									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.90										
Actuated Cycle Length (s)			117.5									Sum of lost time (s)	21.1
Intersection Capacity Utilization			86.8%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

Adelaide Street North EA
 13: Adelaide Street N & Fanshawe Park Road

Future 2039 Traffic Analysis with Improvements
 AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	136	1237	613	226	745	133	402	654	85	451	1471	341
v/c Ratio	0.62	1.14	0.75	1.33	0.69	0.24	1.53	0.73	0.17	0.97	1.23	0.54
Control Delay	35.7	112.8	27.7	208.3	40.5	5.4	283.7	46.0	1.1	62.2	146.4	19.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.7	112.8	27.7	208.3	40.5	5.4	283.7	46.0	1.1	62.2	146.4	19.4
Queue Length 50th (m)	19.7	~179.1	96.5	-52.5	81.1	0.0	~117.2	74.1	0.0	76.0	~225.1	32.1
Queue Length 95th (m)	33.1	#220.8	144.3	#101.8	102.6	12.3	#178.5	95.2	1.1	#141.1	#267.4	60.7
Internal Link Dist (m)		353.7			209.7			228.2			202.1	
Turn Bay Length (m)	90.0		110.0	60.0		110.0	190.0		95.0	95.0		95.0
Base Capacity (vph)	221	1085	813	170	1074	564	263	895	507	463	1196	634
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	1.14	0.75	1.33	0.69	0.24	1.53	0.73	0.17	0.97	1.23	0.54

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

























Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.












Adelaide Street North EA
13: Adelaide Street N & Fanshawe Park Road

Future 2039 Traffic Analysis with Improvements
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	1138	564	208	685	122	370	602	78	415	1353	314
Future Volume (vph)	125	1138	564	208	685	122	370	602	78	415	1353	314
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1690	3510	1570	1772	3476	1512	1706	3411	1526	1807	3544	1555
Flt Permitted	0.21	1.00	1.00	0.11	1.00	1.00	0.13	1.00	1.00	0.19	1.00	1.00
Satd. Flow (perm)	370	3510	1570	201	3476	1512	228	3411	1526	369	3544	1555
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	1237	613	226	745	133	402	654	85	451	1471	341
RTOR Reduction (vph)	0	0	60	0	0	92	0	0	63	0	0	110
Lane Group Flow (vph)	136	1237	553	226	745	41	402	654	22	451	1471	231
Heavy Vehicles (%)	8%	4%	4%	3%	5%	8%	7%	7%	7%	1%	3%	5%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	44.1	37.1	51.1	44.1	37.1	37.1	45.5	31.5	31.5	58.5	40.5	40.5
Effective Green, g (s)	44.1	37.1	51.1	44.1	37.1	37.1	45.5	31.5	31.5	58.5	40.5	40.5
Actuated g/C Ratio	0.37	0.31	0.43	0.37	0.31	0.31	0.38	0.26	0.26	0.49	0.34	0.34
Clearance Time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	212	1085	668	165	1074	467	258	895	400	455	1196	524
v/s Ratio Prot	0.04	0.35	0.10	c0.08	0.21		c0.18	0.19		0.19	c0.42	
v/s Ratio Perm	0.20		0.26	c0.42		0.03	c0.41		0.01	0.29		0.15
v/c Ratio	0.64	1.14	0.83	1.37	0.69	0.09	1.56	0.73	0.06	0.99	1.23	0.44
Uniform Delay, d1	27.5	41.5	30.5	33.8	36.5	29.4	33.6	40.4	33.1	28.7	39.8	30.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.5	74.5	8.3	200.0	3.7	0.4	269.3	3.1	0.1	39.7	111.0	0.6
Delay (s)	34.0	115.9	38.8	233.8	40.1	29.8	302.9	43.5	33.2	68.4	150.7	31.5
Level of Service	C	F	D	F	D	C	F	D	C	E	F	C
Approach Delay (s)		86.5			78.5			134.1			116.4	
Approach LOS		F			E			F			F	
Intersection Summary												
HCM 2000 Control Delay			103.9									F
HCM 2000 Volume to Capacity ratio			1.41									
Actuated Cycle Length (s)			120.0							21.4		
Intersection Capacity Utilization			118.7%									H
ICU Level of Service												
Analysis Period (min)			15									
c Critical Lane Group												

Adelaide Street North EA
8: Adelaide Street N & Sunningdale Road E

Future 2039 Traffic Analysis with Improvements
PM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	60	803	543	237	1103	63	658	679	329	111	613
v/c Ratio	0.42	0.94	0.34	0.96	0.97	0.11	1.07	0.45	0.40	0.41	0.98
Control Delay	32.0	64.4	0.6	76.8	60.4	0.4	88.0	26.9	6.1	24.0	79.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.0	64.4	0.6	76.8	60.4	0.4	88.0	26.9	6.1	24.0	79.3
Queue Length 50th (m)	8.7	98.0	0.0	39.1	~138.8	0.0	~155.0	60.6	7.0	12.5	74.3
Queue Length 95th (m)	17.4	#135.0	0.0	#88.5	#184.4	0.0	#225.7	77.2	26.1	21.8	#111.7
Internal Link Dist (m)		393.8			117.3			302.9			101.4
Turn Bay Length (m)	110.0		110.0	70.0			150.0		130.0	75.0	
Base Capacity (vph)	144	858	1617	248	1143	591	615	1501	829	281	626
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.94	0.34	0.96	0.97	0.11	1.07	0.45	0.40	0.40	0.98

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Adelaide Street North EA
8: Adelaide Street N & Sunningdale Road E

Future 2039 Traffic Analysis with Improvements

PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	55	739	500	218	1015	58	605	625	303	102	462	102	
Future Volume (vph)	55	739	500	218	1015	58	605	625	303	102	462	102	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	6.8	4.0	4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1825	3510	1617	1807	3614	1570	1772	3650	1617	1825	3551		
Flt Permitted	0.13	1.00	1.00	0.12	1.00	1.00	0.16	1.00	1.00	0.39	1.00		
Satd. Flow (perm)	257	3510	1617	224	3614	1570	303	3650	1617	756	3551		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	60	803	543	237	1103	63	658	679	329	111	502	111	
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	166	0	16	0	
Lane Group Flow (vph)	60	803	543	237	1103	20	658	679	163	111	597	0	
Heavy Vehicles (%)	0%	4%	1%	1%	1%	4%	3%	0%	1%	0%	0%	0%	
Turn Type	pm+pt	NA	Free	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		
Protected Phases	3	8		7	4		5	2		1	6		
Permitted Phases	8		Free	4		4	2		2	6			
Actuated Green, G (s)	33.9	29.9	120.6	45.9	37.9	37.9	61.6	49.3	49.3	28.9	20.6		
Effective Green, g (s)	33.9	29.9	120.6	45.9	37.9	37.9	61.6	49.3	49.3	28.9	20.6		
Actuated g/C Ratio	0.28	0.25	1.00	0.38	0.31	0.31	0.51	0.41	0.41	0.24	0.17		
Clearance Time (s)	4.0	6.8		4.0	6.8	6.8	4.0	6.3	6.3	4.0	6.3		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	124	870	1617	242	1135	493	605	1492	661	254	606		
v/s Ratio Prot	0.02	0.23		c0.10	0.31		c0.33	0.19		0.03	0.17		
v/s Ratio Perm	0.12		0.34	c0.27		0.01	c0.22		0.10	0.07			
v/c Ratio	0.48	0.92	0.34	0.98	0.97	0.04	1.09	0.46	0.25	0.44	0.99		
Uniform Delay, d1	34.8	44.2	0.0	31.5	40.8	28.7	33.6	25.9	23.4	37.1	49.9		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	3.0	15.1	0.6	51.4	20.1	0.0	62.7	1.0	0.9	1.2	33.2		
Delay (s)	37.8	59.3	0.6	82.9	60.9	28.8	96.3	26.9	24.3	38.3	83.0		
Level of Service	D	E	A	F	E	C	F	C	C	D	F		
Approach Delay (s)		35.7			63.2			53.8			76.2		
Approach LOS		D			E			D			E		
Intersection Summary													
HCM 2000 Control Delay			54.6									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			1.10										
Actuated Cycle Length (s)			120.6									Sum of lost time (s)	21.1
Intersection Capacity Utilization			99.6%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													

Adelaide Street North EA
 13: Adelaide Street N & Fanshawe Park Road

Future 2039 Traffic Analysis with Improvements
 PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	386	835	523	146	1249	333	611	1612	167	351	908	311
v/c Ratio	1.54	0.69	0.55	0.63	1.17	0.53	1.52	1.28	0.26	1.47	0.99	0.58
Control Delay	290.5	43.0	18.1	38.4	128.8	16.3	277.9	168.4	10.7	263.5	79.5	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	290.5	43.0	18.1	38.4	128.8	16.3	277.9	168.4	10.7	263.5	79.5	24.8
Queue Length 50th (m)	~133.5	104.3	75.1	23.8	~215.6	23.1	~220.4	~296.2	8.0	~116.7	132.7	33.6
Queue Length 95th (m)	#197.0	127.2	107.0	37.9	#258.2	53.1	#292.7	#338.5	24.6	#177.8	#176.7	64.7
Internal Link Dist (m)		353.7			209.7			228.2				202.1
Turn Bay Length (m)	90.0		110.0	60.0		110.0	190.0		95.0	95.0		95.0
Base Capacity (vph)	251	1217	952	230	1071	633	402	1264	646	239	916	536
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.54	0.69	0.55	0.63	1.17	0.53	1.52	1.28	0.26	1.47	0.99	0.58

























Intersection Summary













- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Adelaide Street North EA
13: Adelaide Street N & Fanshawe Park Road

Future 2039 Traffic Analysis with Improvements

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	355	768	481	134	1149	306	562	1483	154	323	835	286
Future Volume (vph)	355	768	481	134	1149	306	562	1483	154	323	835	286
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1807	3544	1585	1825	3650	1617	1789	3650	1633	1807	3614	1617
Flt Permitted	0.09	1.00	1.00	0.21	1.00	1.00	0.10	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	169	3544	1585	399	3650	1617	191	3650	1633	214	3614	1617
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	386	835	523	146	1249	333	611	1612	167	351	908	311
RTOR Reduction (vph)	0	0	27	0	0	159	0	0	81	0	0	127
Lane Group Flow (vph)	386	835	496	146	1249	174	611	1612	86	351	908	184
Heavy Vehicles (%)	1%	3%	3%	0%	0%	1%	2%	0%	0%	1%	1%	1%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	60.1	48.1	75.1	49.1	41.1	41.1	66.5	48.5	48.5	49.5	35.5	35.5
Effective Green, g (s)	60.1	48.1	75.1	49.1	41.1	41.1	66.5	48.5	48.5	49.5	35.5	35.5
Actuated g/C Ratio	0.43	0.34	0.54	0.35	0.29	0.29	0.48	0.35	0.35	0.35	0.25	0.25
Clearance Time (s)	4.0	6.9	4.0	4.0	6.9	6.9	4.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	248	1217	850	221	1071	474	398	1264	565	234	916	410
v/s Ratio Prot	c0.17	0.24	0.11	0.04	0.34		c0.30	0.44		0.15	0.25	
v/s Ratio Perm	c0.50		0.20	0.19		0.11	c0.43		0.05	0.38		0.11
v/c Ratio	1.56	0.69	0.58	0.66	1.17	0.37	1.54	1.28	0.15	1.50	0.99	0.45
Uniform Delay, d1	42.9	39.5	21.9	33.2	49.5	39.2	44.4	45.8	31.6	39.9	52.1	44.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	269.3	3.2	1.0	7.2	85.1	2.2	253.2	130.2	0.1	246.1	27.5	0.8
Delay (s)	312.2	42.6	22.9	40.4	134.6	41.3	297.6	175.9	31.7	286.0	79.6	44.8
Level of Service	F	D	C	D	F	D	F	F	C	F	E	D
Approach Delay (s)		96.4			108.7			196.9			118.8	
Approach LOS		F			F			F			F	
Intersection Summary												
HCM 2000 Control Delay			136.3									F
HCM 2000 Volume to Capacity ratio			1.61									
Actuated Cycle Length (s)			140.0							21.4		
Intersection Capacity Utilization			128.2%									H
ICU Level of Service												
Analysis Period (min)			15									
c Critical Lane Group												

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	128	1149	555	205	674	124	364	603	76	425	1370	325
v/c Ratio	0.67	0.98	0.69	1.32	0.61	0.21	1.32	0.67	0.15	0.94	1.12	0.50
Control Delay	72.9	61.8	25.1	208.1	37.5	3.5	211.2	44.1	0.6	52.7	101.8	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.9	61.8	25.1	208.1	37.5	3.5	211.2	44.1	0.6	52.7	101.8	17.6
Queue Length 50th (m)	15.5	140.2	81.8	-45.8	70.5	0.0	-57.1	67.1	0.0	64.6	-195.2	28.1
Queue Length 95th (m)	#28.1	#186.3	123.3	#93.6	90.1	8.6	#86.9	86.9	0.0	#124.3	#237.3	55.1
Internal Link Dist (m)		353.7			209.7			228.2			202.1	
Turn Bay Length (m)	90.0		110.0	60.0		110.0	110.0		95.0	95.0		95.0
Base Capacity (vph)	191	1172	800	155	1103	582	275	895	514	453	1225	646
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.98	0.69	1.32	0.61	0.21	1.32	0.67	0.15	0.94	1.12	0.50

Intersection Summary













~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	118	1057	511	189	620	114	335	555	70	391	1260	299	
Future Volume (vph)	118	1057	511	189	620	114	335	555	70	391	1260	299	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3278	3510	1570	1772	3476	1512	3309	3411	1526	1807	3544	1555	
Flt Permitted	0.95	1.00	1.00	0.10	1.00	1.00	0.95	1.00	1.00	0.23	1.00	1.00	
Satd. Flow (perm)	3278	3510	1570	196	3476	1512	3309	3411	1526	433	3544	1555	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	128	1149	555	205	674	124	364	603	76	425	1370	325	
RTOR Reduction (vph)	0	0	61	0	0	85	0	0	56	0	0	109	
Lane Group Flow (vph)	128	1149	494	205	674	39	364	603	20	425	1370	216	
Heavy Vehicles (%)	8%	4%	4%	3%	5%	8%	7%	7%	7%	1%	3%	5%	
Turn Type	Prot	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2	7	1	6		7	4		3	8		
Permitted Phases			2	6		6			4	8		8	
Actuated Green, G (s)	7.0	40.1	50.1	44.1	38.1	38.1	10.0	31.5	31.5	56.5	41.5	41.5	
Effective Green, g (s)	7.0	40.1	50.1	44.1	38.1	38.1	10.0	31.5	31.5	56.5	41.5	41.5	
Actuated g/C Ratio	0.06	0.33	0.42	0.37	0.32	0.32	0.08	0.26	0.26	0.47	0.35	0.35	
Clearance Time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	191	1172	655	150	1103	480	275	895	400	444	1225	537	
v/s Ratio Prot	0.04	0.33	0.06	c0.07	0.19		c0.11	0.18		c0.17	c0.39		
v/s Ratio Perm			0.25	c0.43		0.03			0.01	0.28		0.14	
v/c Ratio	0.67	0.98	0.75	1.37	0.61	0.08	1.32	0.67	0.05	0.96	1.12	0.40	
Uniform Delay, d1	55.4	39.6	29.7	34.4	34.7	28.7	55.0	39.6	33.1	24.4	39.2	29.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.9	22.0	4.9	201.6	2.5	0.3	168.7	2.0	0.1	31.6	64.7	0.5	
Delay (s)	64.3	61.5	34.6	236.0	37.2	29.0	223.7	41.7	33.1	55.9	103.9	30.3	
Level of Service	E	E	C	F	D	C	F	D	C	E	F	C	
Approach Delay (s)		53.6			76.8			104.6			83.0		
Approach LOS		D			E			F			F		
Intersection Summary													
HCM 2000 Control Delay			76.7									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.24										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	23.4
Intersection Capacity Utilization			102.7%									ICU Level of Service	G
Analysis Period (min)			15										
c Critical Lane Group													

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	368	755	473	133	1143	318	553	1500	151	329	850	293
v/c Ratio	1.40	0.64	0.51	0.55	1.04	0.49	0.92	1.19	0.24	1.41	0.92	0.55
Control Delay	243.8	36.8	15.7	30.9	79.5	13.0	70.6	128.8	8.8	235.4	59.5	22.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	243.8	36.8	15.7	30.9	79.5	13.0	70.6	128.8	8.8	235.4	59.5	22.4
Queue Length 50th (m)	-59.7	78.7	54.9	18.5	-153.1	16.1	66.5	-224.0	5.2	-87.6	103.2	27.5
Queue Length 95th (m)	#89.7	99.5	82.2	31.1	#194.4	42.1	#97.3	#266.3	19.5	#144.4	#139.9	55.7
Internal Link Dist (m)		353.7			209.7			228.2			202.1	
Turn Bay Length (m)	90.0		110.0	60.0		110.0	190.0		95.0	95.0		95.0
Base Capacity (vph)	262	1184	927	244	1098	644	607	1262	641	233	924	528
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.40	0.64	0.51	0.55	1.04	0.49	0.91	1.19	0.24	1.41	0.92	0.55

























Intersection Summary













~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	339	695	435	122	1052	293	509	1380	139	303	782	270
Future Volume (vph)	339	695	435	122	1052	293	509	1380	139	303	782	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3506	3544	1585	1825	3650	1617	3471	3650	1633	1807	3614	1617
Flt Permitted	0.95	1.00	1.00	0.25	1.00	1.00	0.95	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	3506	3544	1585	473	3650	1617	3471	3650	1633	248	3614	1617
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	368	755	473	133	1143	318	553	1500	151	329	850	293
RTOR Reduction (vph)	0	0	33	0	0	158	0	0	77	0	0	115
Lane Group Flow (vph)	368	755	440	133	1143	160	553	1500	74	329	850	178
Heavy Vehicles (%)	1%	3%	3%	0%	0%	1%	2%	0%	0%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases			2	6		6			4	8		8
Actuated Green, G (s)	9.0	40.1	60.9	42.1	36.1	36.1	20.8	41.5	41.5	41.7	30.7	30.7
Effective Green, g (s)	9.0	40.1	60.9	42.1	36.1	36.1	20.8	41.5	41.5	41.7	30.7	30.7
Actuated g/C Ratio	0.08	0.33	0.51	0.35	0.30	0.30	0.17	0.35	0.35	0.35	0.26	0.26
Clearance Time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	262	1184	804	233	1098	486	601	1262	564	229	924	413
v/s Ratio Prot	c0.10	c0.21	0.09	0.03	c0.31		0.16	c0.41		c0.13	0.24	
v/s Ratio Perm			0.18	0.17		0.10			0.05	c0.37		0.11
v/c Ratio	1.40	0.64	0.55	0.57	1.04	0.33	0.92	1.19	0.13	1.44	0.92	0.43
Uniform Delay, d1	55.5	33.8	20.1	28.2	42.0	32.6	48.8	39.2	26.9	33.3	43.5	37.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	203.4	2.6	0.8	3.4	38.4	1.8	19.5	93.1	0.1	219.6	13.8	0.7
Delay (s)	258.9	36.4	20.9	31.5	80.4	34.4	68.3	132.3	27.0	252.9	57.3	38.1
Level of Service	F	D	C	C	F	C	E	F	C	F	E	D
Approach Delay (s)		83.1			67.1			109.0			97.2	
Approach LOS		F			E			F			F	
Intersection Summary												
HCM 2000 Control Delay			90.7				HCM 2000 Level of Service			F		
HCM 2000 Volume to Capacity ratio			1.23									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		23.4			
Intersection Capacity Utilization			112.4%				ICU Level of Service		H			
Analysis Period (min)			15									
c Critical Lane Group												

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	136	1237	613	226	745	133	402	654	85	451	1471	341
v/c Ratio	0.71	1.06	0.77	1.46	0.68	0.23	1.46	0.73	0.17	1.04	1.20	0.53
Control Delay	76.0	81.2	28.8	262.3	39.3	4.4	265.5	46.0	0.7	81.0	134.0	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.0	81.2	28.8	262.3	39.3	4.4	265.5	46.0	0.7	81.0	134.0	20.1
Queue Length 50th (m)	16.4	-167.7	98.2	-56.3	80.0	0.0	-66.7	74.1	0.0	-85.4	-221.3	34.1
Queue Length 95th (m)	#30.6	#209.5	146.9	#105.6	101.2	10.5	#97.7	95.2	0.0	#148.7	#263.6	62.6
Internal Link Dist (m)		353.7			209.7			228.2			202.1	
Turn Bay Length (m)	90.0		110.0	60.0		110.0	190.0		95.0	95.0		95.0
Base Capacity (vph)	191	1172	800	155	1103	582	275	895	514	433	1225	638
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	1.06	0.77	1.46	0.68	0.23	1.46	0.73	0.17	1.04	1.20	0.53

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.













Adelaide Street North EA

Future 2039 Traffic Analysis DC Plan with Dual Left Turns

13: Adelaide Street N & Fanshawe Park Road

AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	125	1138	564	208	685	122	370	602	78	415	1353	314	
Future Volume (vph)	125	1138	564	208	685	122	370	602	78	415	1353	314	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3278	3510	1570	1772	3476	1512	3309	3411	1526	1807	3544	1555	
Flt Permitted	0.95	1.00	1.00	0.10	1.00	1.00	0.95	1.00	1.00	0.19	1.00	1.00	
Satd. Flow (perm)	3278	3510	1570	196	3476	1512	3309	3411	1526	369	3544	1555	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	136	1237	613	226	745	133	402	654	85	451	1471	341	
RTOR Reduction (vph)	0	0	61	0	0	91	0	0	63	0	0	101	
Lane Group Flow (vph)	136	1237	552	226	745	42	402	654	22	451	1471	240	
Heavy Vehicles (%)	8%	4%	4%	3%	5%	8%	7%	7%	7%	1%	3%	5%	
Turn Type	Prot	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	
Protected Phases	5	2	7	1	6		7	4		3	8		
Permitted Phases			2	6		6			4	8		8	
Actuated Green, G (s)	7.0	40.1	50.1	44.1	38.1	38.1	10.0	31.5	31.5	56.5	41.5	41.5	
Effective Green, g (s)	7.0	40.1	50.1	44.1	38.1	38.1	10.0	31.5	31.5	56.5	41.5	41.5	
Actuated g/C Ratio	0.06	0.33	0.42	0.37	0.32	0.32	0.08	0.26	0.26	0.47	0.35	0.35	
Clearance Time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	191	1172	655	150	1103	480	275	895	400	425	1225	537	
v/s Ratio Prot	0.04	0.35	0.07	c0.07	0.21		c0.12	0.19		c0.19	c0.42		
v/s Ratio Perm			0.28	c0.48		0.03			0.01	0.31		0.15	
v/c Ratio	0.71	1.06	0.84	1.51	0.68	0.09	1.46	0.73	0.06	1.06	1.20	0.45	
Uniform Delay, d1	55.5	40.0	31.4	34.9	35.6	28.8	55.0	40.4	33.1	28.3	39.2	30.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.8	42.2	9.6	259.4	3.3	0.4	226.8	3.1	0.1	60.8	98.4	0.6	
Delay (s)	67.3	82.2	41.0	294.3	38.9	29.1	281.8	43.5	33.2	89.1	137.7	31.0	
Level of Service	E	F	D	F	D	C	F	D	C	F	F	C	
Approach Delay (s)		68.5			90.0			126.7			111.9		
Approach LOS		E			F			F			F		
Intersection Summary													
HCM 2000 Control Delay			97.5		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.35										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						23.4		
Intersection Capacity Utilization			109.6%		ICU Level of Service						H		
Analysis Period (min)			15										
c Critical Lane Group													

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	386	835	523	146	1249	333	611	1612	167	351	908	311
v/c Ratio	1.47	0.71	0.56	0.68	1.14	0.52	1.01	1.28	0.26	1.50	0.99	0.59
Control Delay	271.2	38.7	17.0	40.3	112.1	14.2	87.6	165.3	9.9	272.8	72.0	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	271.2	38.7	17.0	40.3	112.1	14.2	87.6	165.3	9.9	272.8	72.0	24.5
Queue Length 50th (m)	-64.2	89.7	64.7	20.5	-180.5	19.0	-75.6	-252.9	7.1	-98.3	112.5	31.9
Queue Length 95th (m)	#94.8	112.1	96.1	#37.9	#222.0	46.6	#112.9	#295.5	22.3	#156.6	#155.1	61.6
Internal Link Dist (m)		353.7			209.7			228.2			202.1	
Turn Bay Length (m)	90.0		110.0	60.0		110.0	190.0		95.0	95.0		95.0
Base Capacity (vph)	262	1184	927	214	1098	643	607	1262	644	234	918	525
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.47	0.71	0.56	0.68	1.14	0.52	1.01	1.28	0.26	1.50	0.99	0.59

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	355	768	481	134	1149	306	562	1483	154	323	835	286
Future Volume (vph)	355	768	481	134	1149	306	562	1483	154	323	835	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3506	3544	1585	1825	3650	1617	3471	3650	1633	1807	3614	1617
Flt Permitted	0.95	1.00	1.00	0.20	1.00	1.00	0.95	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	3506	3544	1585	381	3650	1617	3471	3650	1633	249	3614	1617
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	386	835	523	146	1249	333	611	1612	167	351	908	311
RTOR Reduction (vph)	0	0	33	0	0	157	0	0	80	0	0	115
Lane Group Flow (vph)	386	835	490	146	1249	176	611	1612	87	351	908	196
Heavy Vehicles (%)	1%	3%	3%	0%	0%	1%	2%	0%	0%	1%	1%	1%
Turn Type	Prot	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2	7	1	6		7	4		3	8	
Permitted Phases			2	6		6			4	8		8
Actuated Green, G (s)	9.0	40.1	61.1	42.1	36.1	36.1	21.0	41.5	41.5	41.5	30.5	30.5
Effective Green, g (s)	9.0	40.1	61.1	42.1	36.1	36.1	21.0	41.5	41.5	41.5	30.5	30.5
Actuated g/C Ratio	0.08	0.33	0.51	0.35	0.30	0.30	0.18	0.35	0.35	0.35	0.25	0.25
Clearance Time (s)	5.0	6.9	5.0	4.0	6.9	6.9	5.0	6.5	6.5	4.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	262	1184	807	205	1098	486	607	1262	564	228	918	410
v/s Ratio Prot	c0.11	c0.24	0.11	0.04	c0.34		0.18	c0.44		c0.14	0.25	
v/s Ratio Perm			0.20	0.21		0.11			0.05	c0.39		0.12
v/c Ratio	1.47	0.71	0.61	0.71	1.14	0.36	1.01	1.28	0.15	1.54	0.99	0.48
Uniform Delay, d1	55.5	34.8	20.9	30.2	42.0	32.9	49.5	39.2	27.1	33.3	44.6	38.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	232.6	3.5	1.3	11.1	73.3	2.1	38.2	131.1	0.1	263.5	26.7	0.9
Delay (s)	288.1	38.3	22.2	41.3	115.3	35.0	87.7	170.3	27.3	296.8	71.3	38.9
Level of Service	F	D	C	D	F	C	F	F	C	F	E	D
Approach Delay (s)		88.8			93.6			139.2			115.3	
Approach LOS		F			F			F			F	
Intersection Summary												
HCM 2000 Control Delay			111.7			HCM 2000 Level of Service			F			
HCM 2000 Volume to Capacity ratio			1.32									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			23.4			
Intersection Capacity Utilization			119.4%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												