



MEMORANDUM

TO:

Myriam Tawadros

Senior Associate

KPMB Architects

351 King Street East, Suite 1200

Toronto, ON M5A 0L6

FROM:

Vuk Uskokovic, P.Eng.

PROJECT:

6126-23

4095 Tomken Road – Westminster United Church

DATE:

August 11, 2023

**RE: 4095 TOMKEN ROAD, MISSISSAUGA (WESTMINSTER UC) OPA/ZBA SUBMISSION #1
RESPONSE TO COMMENTS**

1.0 INTRODUCTION

BA Group is retained by KPMB Architects to provide urban transportation consulting services in relation to a Zoning By-law Amendment application being made to the City of Mississauga, for the construction of a residential infill development located at 4094 Tomken Road, herein referred to as the “Site”.

The Site is located in the south-west quadrant of the Tomken Road / Rathburn Road East intersection. The Site is bounded by Rathburn Road East to the north, Tomken Road to the east, and residential properties to the west and south.

1.1 Background

In October 2022, BA Group prepared a report titled “4095 Tomken Road, City of Mississauga – Westminster United Church – Urban Transportation Considerations – Zoning By-law Amendment Application” (herein referred to as “2022 TIS”) dated October 14, 2022, which was submitted to the City of Mississauga and the Region of Peel as part of the October 2022 Engineering Submission.

1.2 This Memo

This memorandum provides a response to the transportation-related comments received from the City of Mississauga spanning January 20, 2023, and March 23, 2023. Details related to these comments are discussed further in this letter.

Accompanying figures are attached in **Appendix A**.

1.3 Development Programme

The transportation related elements of the proposed Development Programme have remained largely consistent with the previous application.

2.0 RESPONSE TO COMMENTS

2.1 Traffic Review – Kate Vassiyev (February 17, 2023)

Comment 81 – Traffic Impact Study

A Traffic Impact Study prepared by BA Consulting Group dated October 2022 was submitted in support of the proposed development. Based on the information provided to date, staff provide the following comments:

(A) The report should be stamped and signed by professional Transportation Engineer.

(B) Section 2.1. Figure 3. Area Road Network. Please revise as Rathburn Rd E & Tomken Rd are Major Collector Roads.

(C) Section 8.2. Existing Traffic Volumes. Any new traffic counts are to be compared to pre-pandemic counts to ensure that there are no major discrepancies. Please contact Tyler Xuereb from Transportation Planning Section (tyler.xuereb@mississauga.ca, Ext. 4783) for historical AADT data and Turning Movement Counts.

(D) Section 8.3.2. Corridor Growth. Growth rates provided by the City's staff should be used in the analysis.

(E) The TIS shall include a section in the report to address Community Impacts. This section shall include summary statements outlining the resulting traffic increases to the critical streets, movements and intersections.

Comments or concerns from the community through future public meetings and engagements that are related to traffic shall also be addressed in this section.

Response

- (A) This response to comments memorandum amending the traffic conclusions presented in the 2022 TIS is stamped and signed by a Licensed Professional Engineer in the Province of Ontario (P.Eng.). It is noted, however, that as per the Professional Engineers Ontario (PEO) *Use of the Professional Engineer's Seal Guidelines* (March 2022), the seal by itself is not a guarantee by a practitioner of a successful outcome of a project, since the outcome in part depends on factors beyond the control of a practitioner. The seal is not, and should not be considered, a certification mark or warranty of correctness. The use of the P.Eng. seal on a document is not a guarantee of accuracy, rather it simply certifies that the document was prepared by a Professional Engineer.
- (B) **Figure 3** has been revised to include the appropriate road nomenclature of Rathburn Road E and Tomken Road. Refer to **Appendix A** for the updated figure.

(C) As agreed upon in correspondence with the City of Mississauga, updated existing weekday traffic counts were conducted in March of 2022 and compared to pre-pandemic (December 2019) turning movements counts at the intersection of Tomken Road / Burnhamthorpe Road E provided by the City of Mississauga. Raw traffic count data in December 2019 in addition to March and May 2022 traffic count data utilized within the 2022 TIS are provided in **Appendix B**.

December 2019 weekday AM and PM traffic volumes are observed to be higher than that of the respective March 2022 existing weekday AM and PM volumes at Tomken Road / Burnhamthorpe Road E. As such, adjustments have been made to existing traffic volumes presented in **Figure 7** to respond to these changes and forecast “effective 2022” existing volumes as presented in **Figure 8**. Specifically, the following methodology has been adopted:

- **Step 1:** Assume existing traffic volumes from the 2022 TIS (**Figure 7**);
- **Step 2:** Factor up weekday AM and PM volumes at Tomken Road / Burnhamthorpe Road E to that of December 2019 counts and extend Tomken Road adjustments to study area intersections along the corridor. Intersection movements throughout the study area not impacted by adjustments along Tomken Road or Burnhamthorpe Road E have been factored up by the average of the Tomken Road and Burnhamthorpe Road E adjustments in each peak hour;
- **Step 3:** As there are no Sunday traffic counts available in December 2019, turning movements at Tomken Road / Burnhamthorpe Road E in the SUN scenario have been adjusted in alignment with the average of the AM and PM adjustment factors. Similar to weekday scenarios, intersection movements throughout the study area not impacted by adjustments along Tomken Road or Burnhamthorpe Road E have been factored up by the average of the Tomken Road and Burnhamthorpe Road E adjustments; and,
- **Step 4:** Growth rates provided by the City as shown in **Table 1** have been utilized to scale adjusted 2019 traffic volumes to 2022 in alignment with the timeline of the 2022 TIS; forecasting “effective 2022” existing volumes (**Figure 8**). Growth in the Sunday scenario has been adopted as the average of weekday AM and PM growth rates.

Table 1 City of Mississauga’s Compounded Annual Growth Rates (2022 to 2027)

Corridor	AM Peak Hour		PM Peak Hour		Sunday Peak Hour ¹	
	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
Tomken Road	1.00%	2.00%	2.00%	1.00%	1.50%	1.50%
Burnhamthorpe Road E	0.50%	0.50%	0.50%	0.00%	0.50%	0.25%
Rathburn Road	1.00%	0.50%	1.00%	0.50%	1.00%	0.50%

Notes:

1. Sunday peak hour growth rates represent the average of weekday AM and PM peak hour growth rates.

Revised future background and future total traffic volume projections which consider the revision to existing traffic volumes are presented in **Figure 9** and **Figure 11**, respectively. Corridor growth from 2022 until the 2027 development horizon are based upon corridor growth rates provided by the City as shown in **Table 1**.

Revised traffic operations analysis results and their corresponding Synchro 11 worksheets for each of the study area intersections are presented in **Appendix C** and **Appendix D**, respectively. Based on the foregoing, site related traffic volumes can be reasonably accommodated by the area road network. All signalized and unsignalized intersections operate at appropriate levels of service (LOS E or better).

- (D) The revised traffic volume projections and operations analysis results discussed in comment response 81 (C) utilize growth rates provided by the City of Mississauga as shown in **Table 1**. Growth in the Sunday scenario has been adopted as the average of weekday AM and PM growth rates.

Comment 82 – Site Access

- (a) The proposed access points of Tomken Road should be consolidated.*
- (b) The access of Rathburn Road East has insufficient throat length. The Owner/Applicant should ensure that sufficient throat length is provided and there is no queuing within municipal right-of-way.*
- (c) The Owner shall ensure the proposed access provides sufficient sight lines such that views are not obstructed*
- (d) The Owner shall provide for a sufficient corner clearance from the roadway to the access point.*

Response

- a) The second Tomken Road access point has been removed.
- b) The accessible parking adjacent to the northeast building have been removed, and the driveway access has been changed to closed off to general traffic. The access would serve only moving vehicles for the northeast building and would be opened for scheduled moving times at pre-scheduled times. As such the throat length is not consequential as the driveway will not function as an access for general circulation for most of the time. The access point is needed to accommodate servicing of the northeast building for moving operations.
- c) Sight Distance Diagrams are attached in **Appendix E**. The driveways locations are generally consistent with existing drive ways on the site. The Rathburn Road East access is proposed to remain in the same location as the existing access as per existing site lines. The proposed Tomken Road access is approximately 25m to the south of the existing setback. There are no horizontal curves in the close vicinity of the site, there are also no significant vertical road changes along the roads accessing the site Therefore the sightlines on the new drive way are generally consistent with the sightlines of the existing driveway conditions.
- d) The Rathburn Road East driveway is located as per the existing driveway access to the site which aligns with a private driveway on the north side of Rathburn. The Rathburn Road East access is shifted south from the existing which increases clearance from the Tomken Road and Rathburn Road East intersection.

Comment 83 – Internal Site Circulation

- (a) Turning movement diagrams will be required to depict the internal site circulation.*
- (b) Additional provisions to aid in the safety and operation of these features may be required.*
- (c) Detailed turning movements are to be provided for ingress and egress through the access point(s) for the site.*
- (d) Confirmation from Fire and Emergency Services that the internal road is acceptable from an emergency response perspective.*
- (e) Confirmation from the Region of Peel that the internal road is acceptable from a waste collection perspective.*
- (f) A turn around facility may be required as a result of the above in addition to providing sufficient snow storage for the proposed development.*

Response

- a) Turning movement diagrams were submitted in the previous report, and updated diagrams are attached in **Appendix F**.
- b) Noted.
- c) Turning movement diagrams were submitted in the previous report, and updated diagrams are attached in **Appendix F**.
- d) Noted
- e) Noted.
- f) Noted.

2.2 Parking (February 21, 2023)

Comment 77

Staff recommended rates are those within the City's amended Zoning By-law 0225-2007; these newly updated rates have been carefully researched, and are tailored to Mississauga's context, reflecting the City's existing and most recent parking needs.

Response

Noted. BA Group is in on-going discussions with City of Mississauga regarding the proposed parking ratios.

Comment 78

The Transportation Study (TS) dated October 2022 does not satisfy the requirements from the City's Parking Terms of Reference. The applicant is required to survey 5-6 days over 2-consecutive weeks, and confirm surveying parameters, methodology, and surveying dates/times with staff prior to conducting the parking surveys. Each application must stand on its own merit, although in accordance with the City's Parking Terms of Reference, satisfactory information must be submitted for staff to validate parking requirements for the proposed site as well as the parking demands.

Response

BA Group is in on-going discussions with City of Mississauga staff regarding the proposed parking ratios which are as yet unresolved. Further updates will be provided as part of a subsequent application or addendum to this report.

Comment 79

Staff commend the Applicant for considering the provision of TDM measures on-site; however staff request further and concrete details in regards to the implementation of these measures.

Response

Details regarding implementation of TDM measures for the site will be finalized as part of the Site Plan Approval process. It is noted that the site is forecast to generate fewer than 100 trips and as such, according to the City of Mississauga TIS Guidelines, a fully detailed TDM plan is not required. The TIS guidelines specifies that for a site generating fewer than 100 trips, a TDM statement outlining the proposed measures is sufficient.

Comment 80

Municipal Parking Staff advise that the Applicant contact TDM Staff in the Transportation Planning section (tdm@mississauga.ca) to provide comment on the proposed TDM measures. Staff request the Applicant coordinate with TDM Staff in the Transportation Planning section, in order to discuss the considered TDM measures as well as specific details and commitments as to how the TDM measures will be provided and implemented on-site.

Response

It is noted that the site is forecast to generate fewer than 100 trips and as such, according to the City of Mississauga TIS Guidelines, a fully detailed TDM plan is not required. The TIS guidelines specifies that for a site generating fewer than 100 trips, a TDM statement outlining the proposed measures is sufficient.

* * * * *

We trust the foregoing is in order and provides an appropriate presentation of updated information related to the revised application being made to the City of Mississauga.

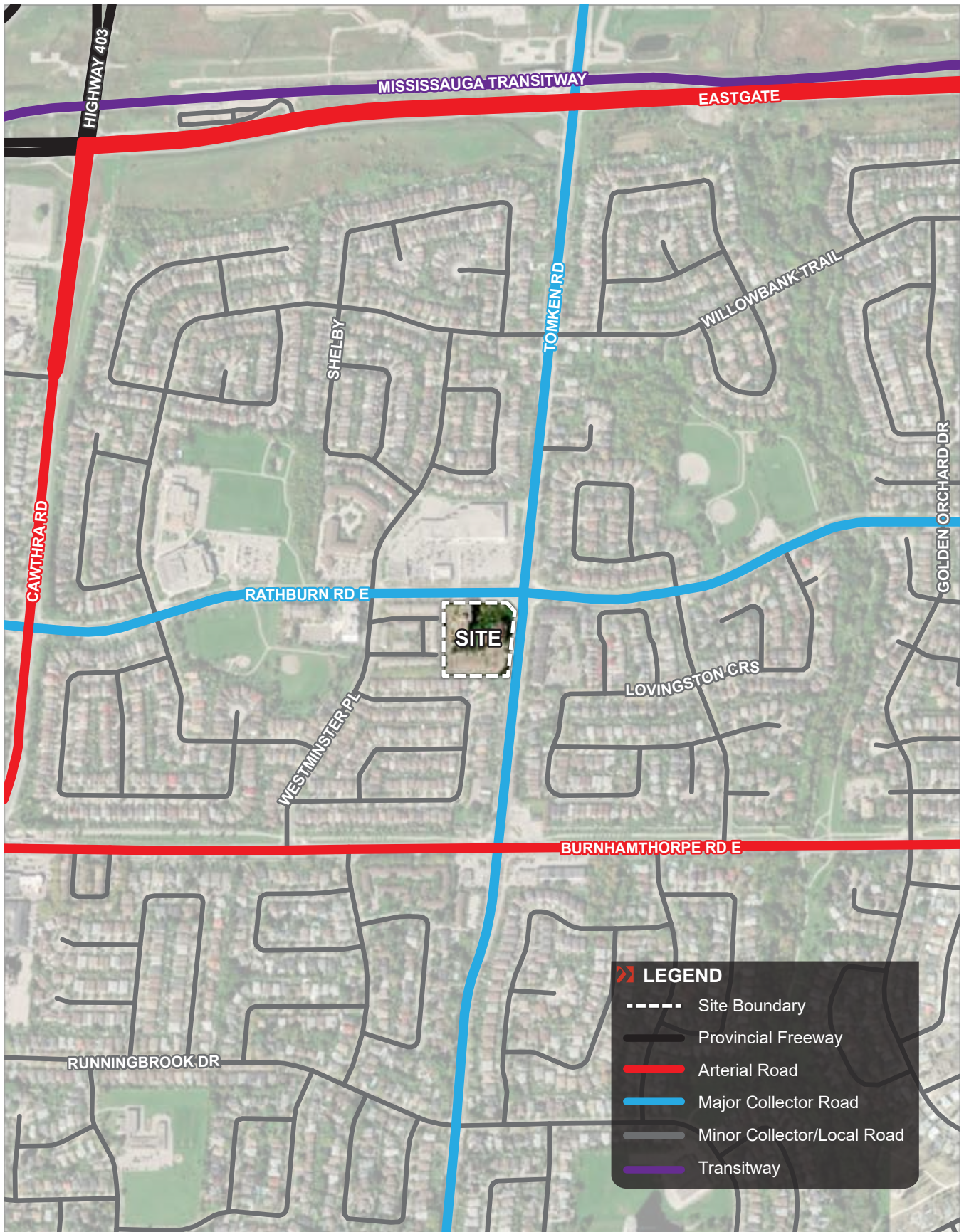
If you have any questions, comments or require anything further please don't hesitate to contact us.

Sincerely,
BA Consulting Group Ltd.



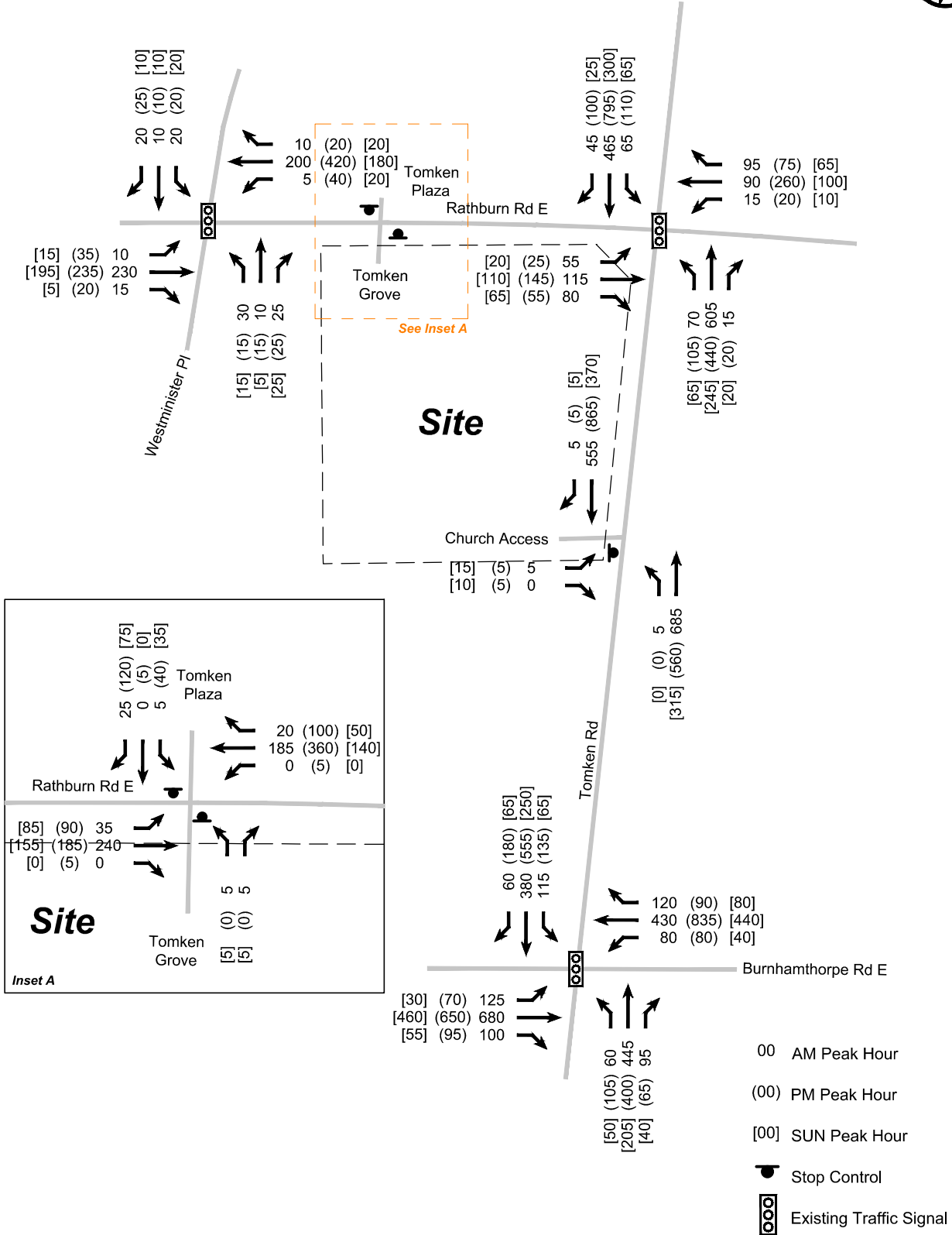
Vuk Uskokovic, P.Eng.
Associate

**Appendix A:
Revised Report Figures**



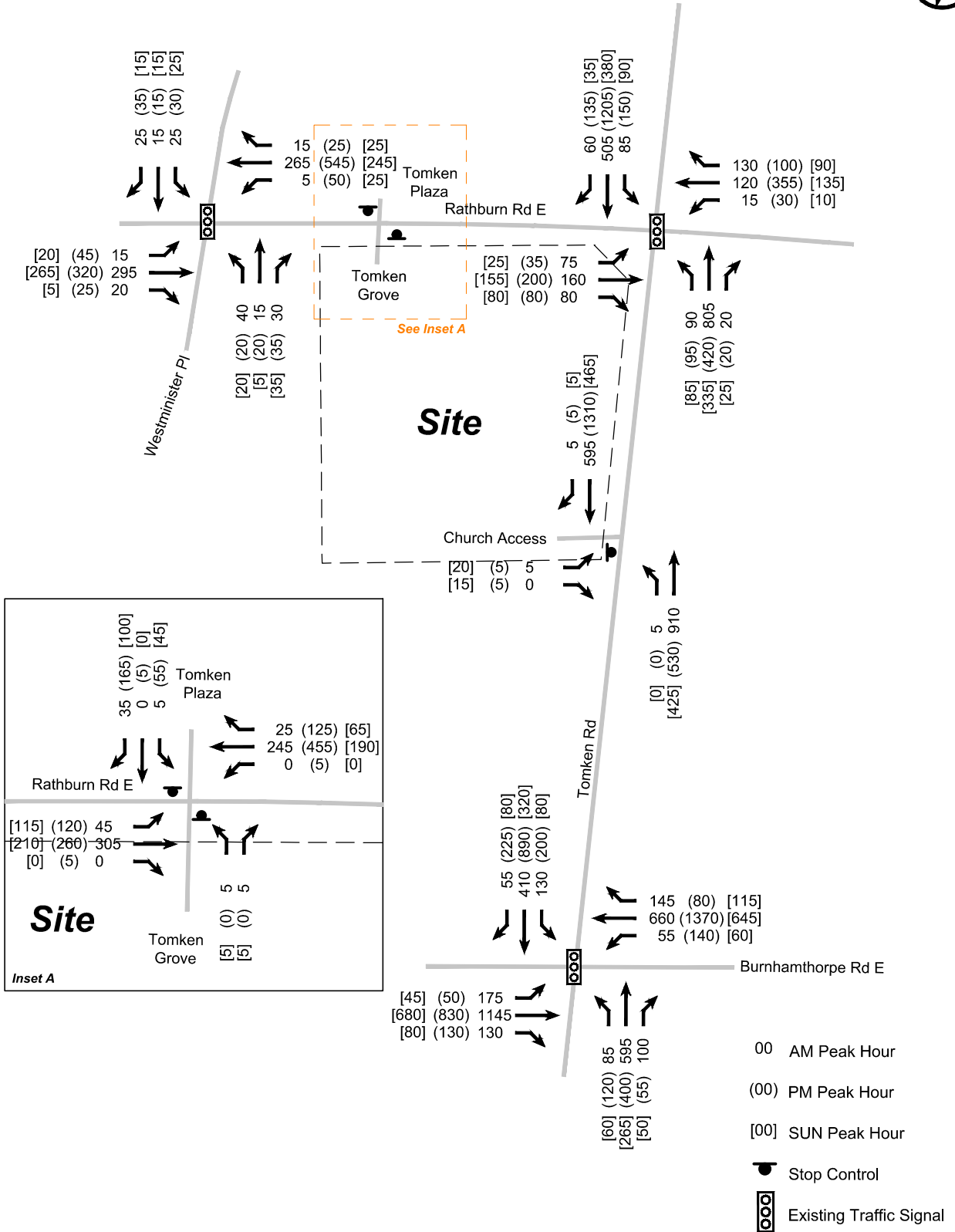
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FIGURE 3 AREA ROAD NETWORK



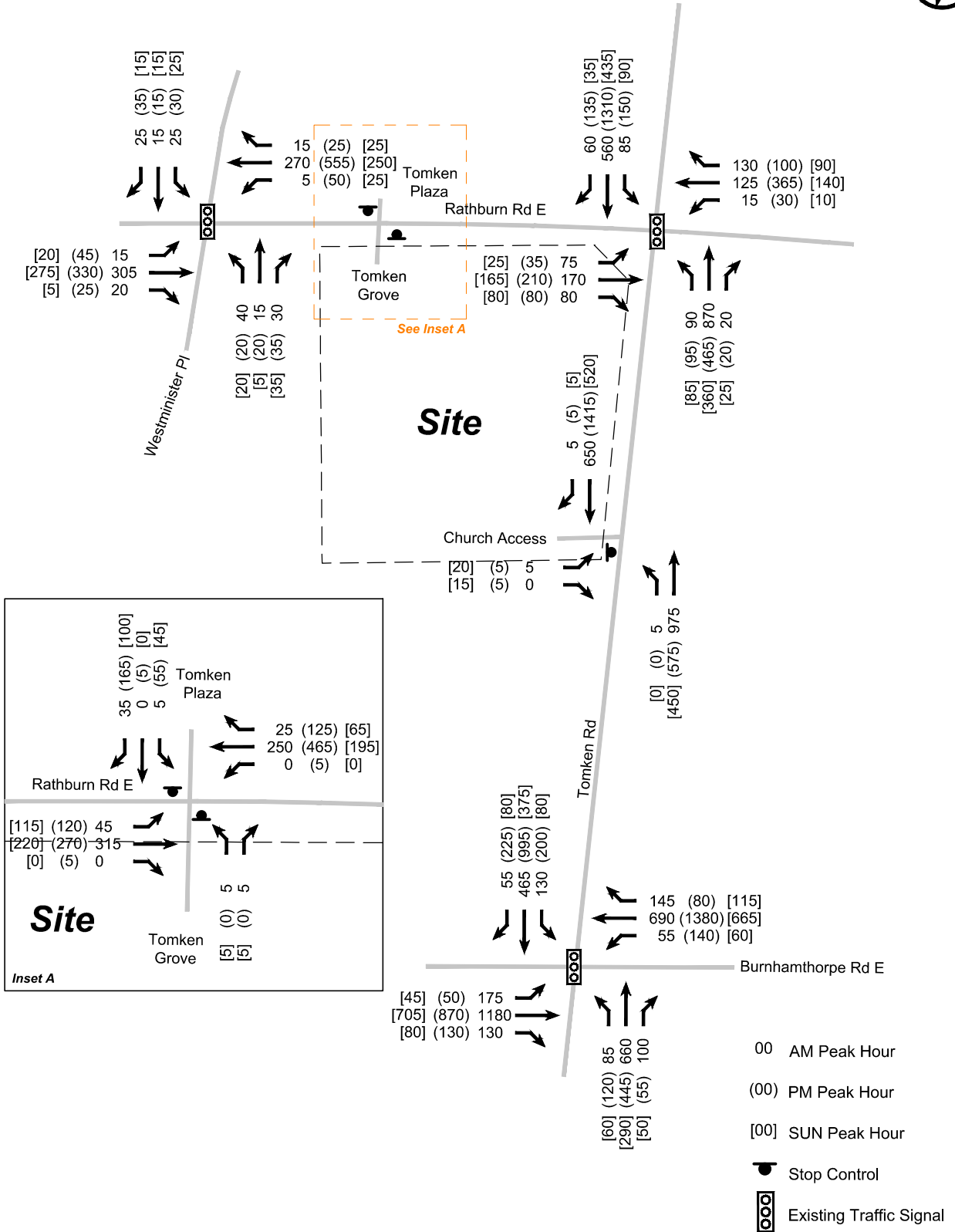
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FIGURE 7 BASE EXISTING TRAFFIC VOLUMES



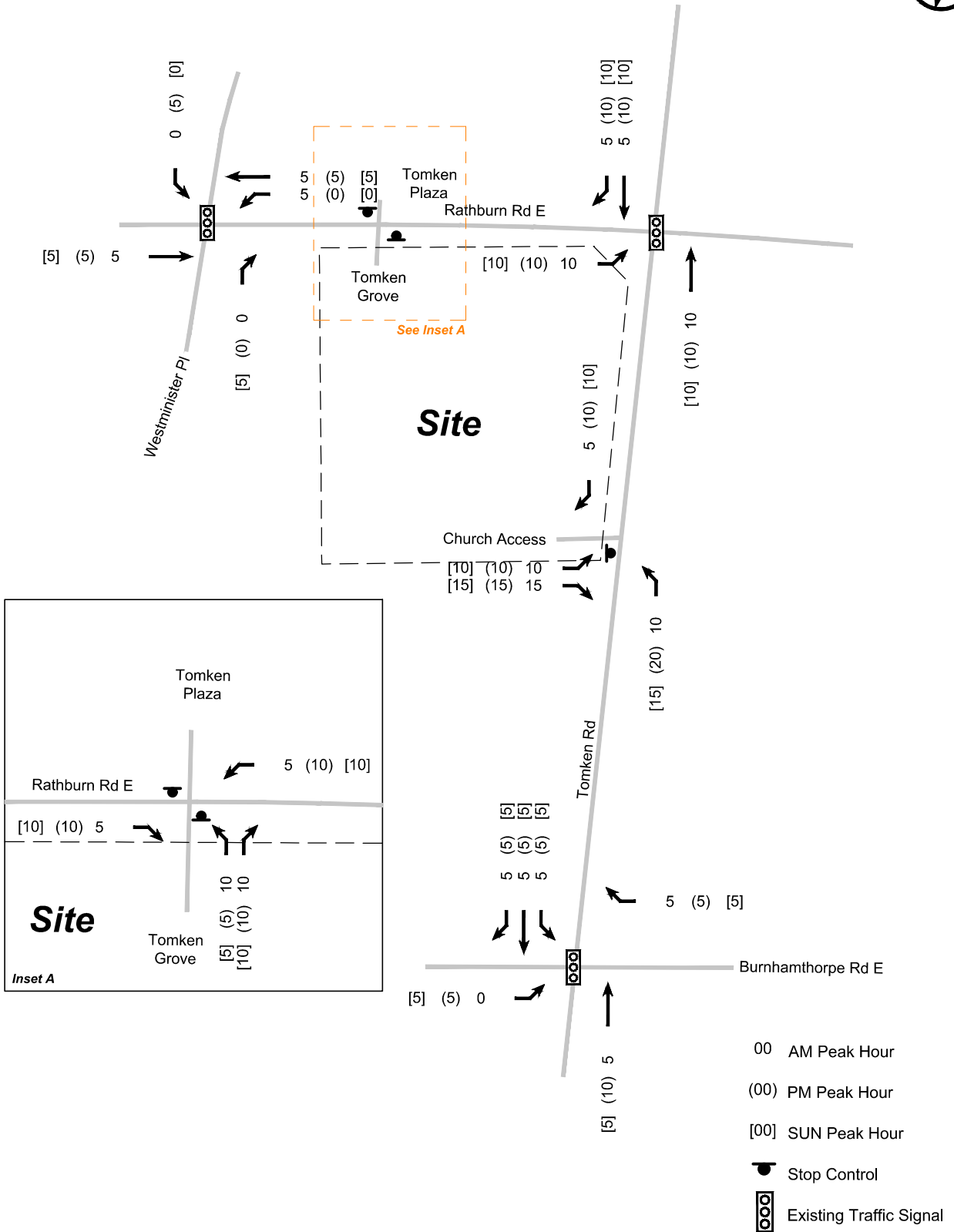
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FIGURE 8 ADJUSTED EXISTING TRAFFIC VOLUMES



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FIGURE 9 FUTURE BACKGROUND TRAFFIC VOLUMES



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FIGURE 10 FUTURE SITE TRAFFIC VOLUMES

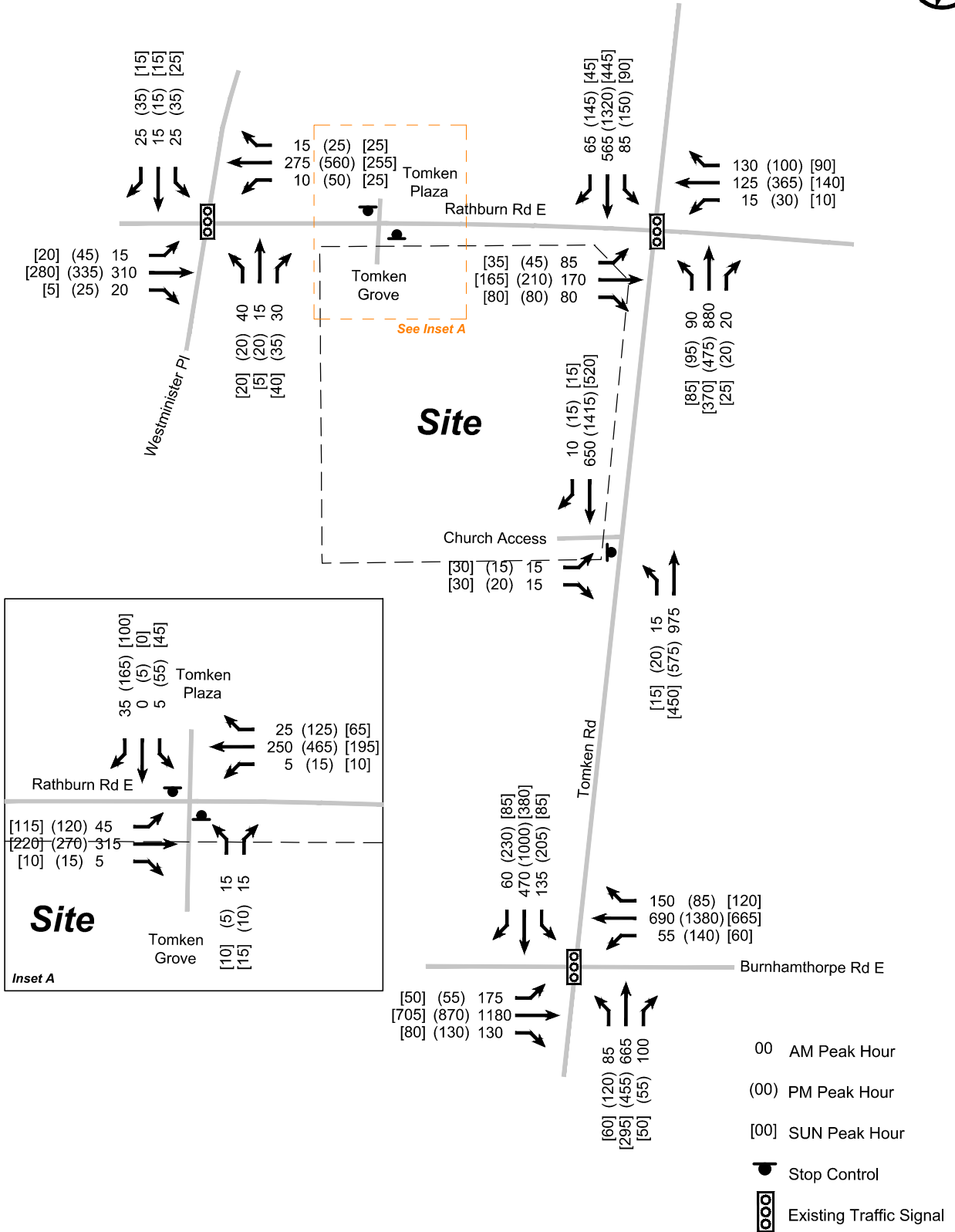


FIGURE 11 FUTURE TOTAL TRAFFIC VOLUMES

Appendix B: Turning Movement Counts



Turning Movements Report - AM Period

Location..... BURNHAMTHORPE RD E @ TOMKEN RD

Municipality..... Mississauga

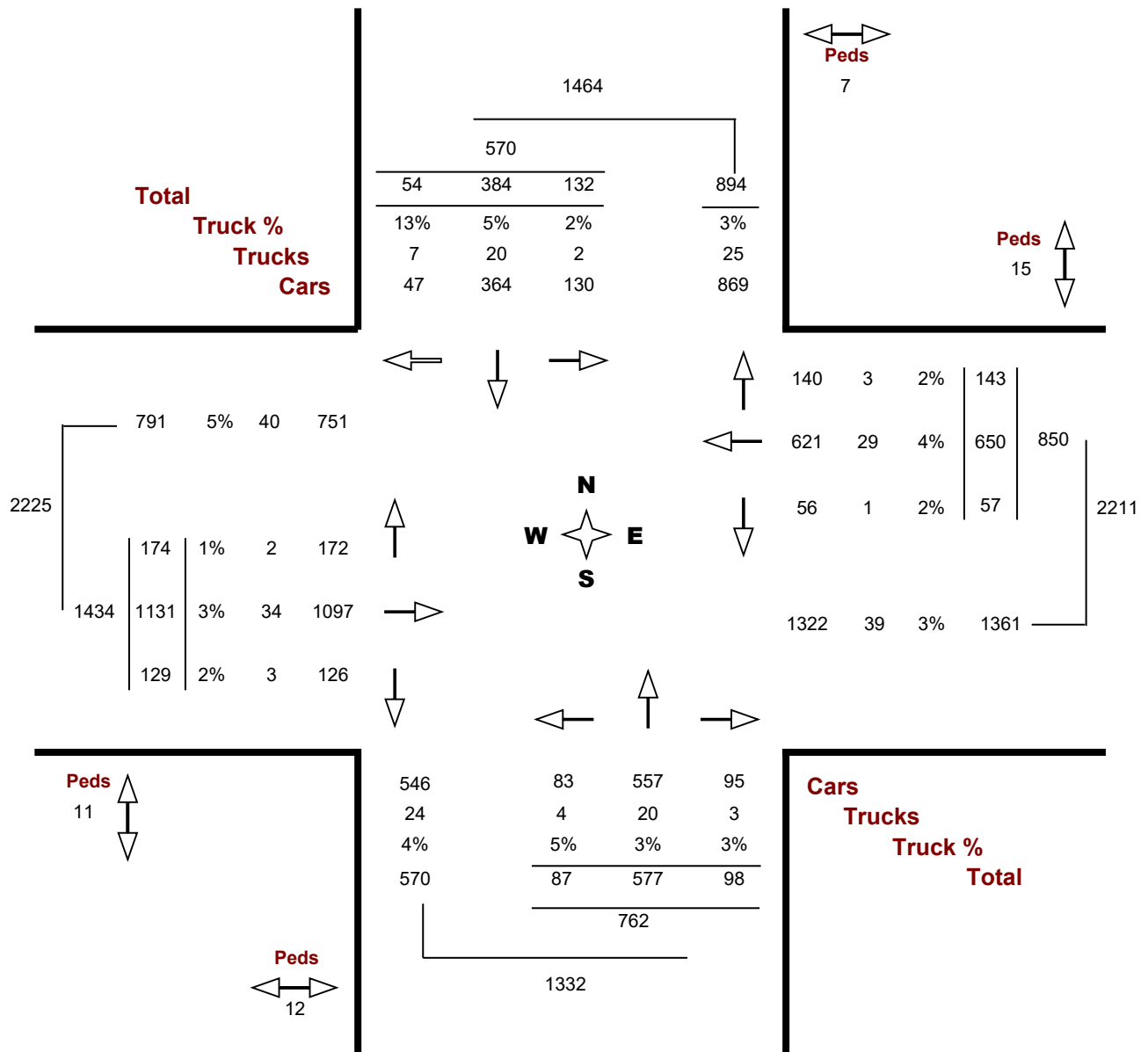
GeoID..... 349915

Count Date..... Wednesday, 11 December, 2019

Peak Hour..... 07:45 AM — 08:45 AM

Road 1 BURNHAMTHORPE RD E

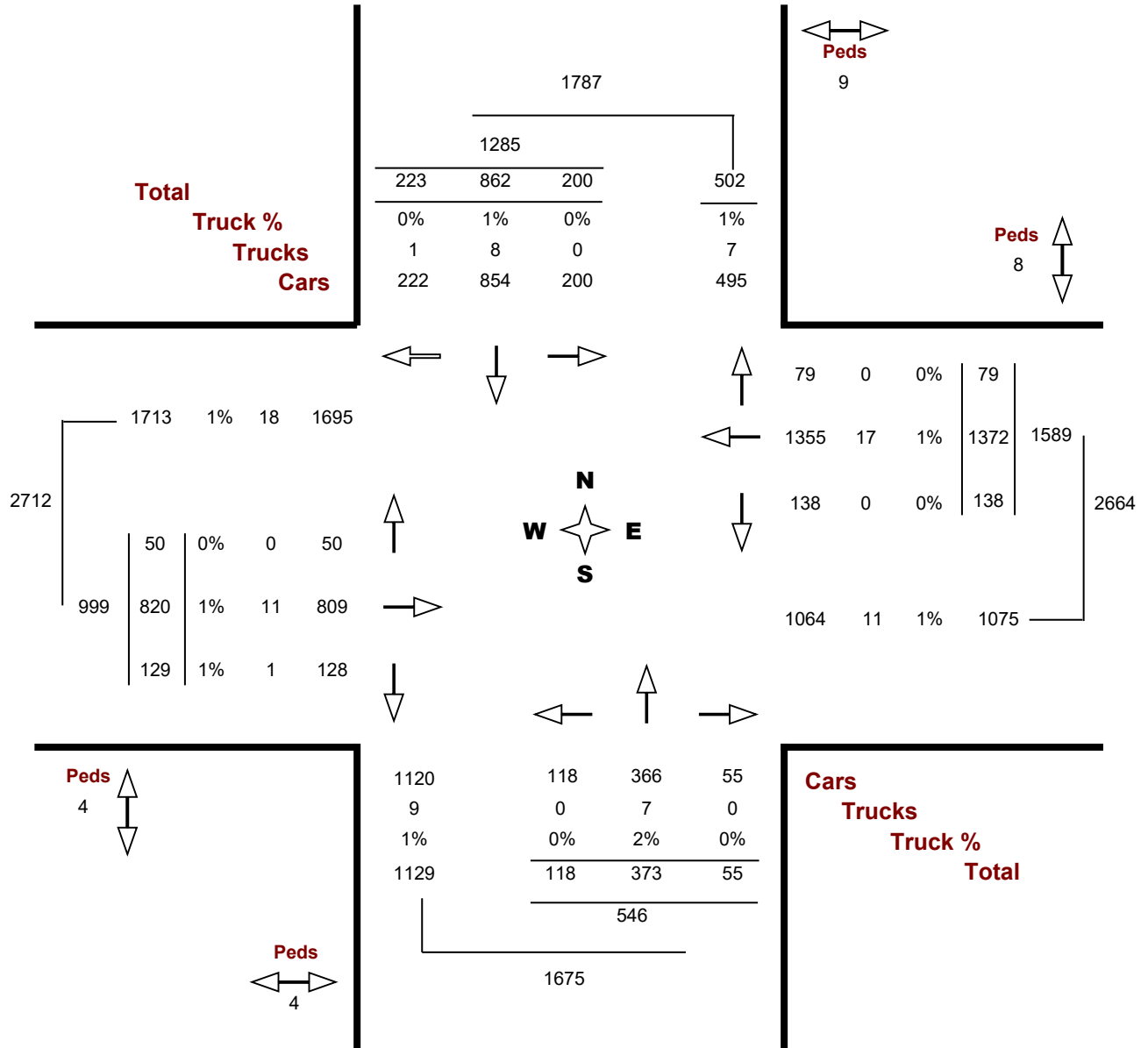
Road 2 TOMKEN RD





Turning Movements Report - PM Period

Location..... BURNHAMTHORPE RD E @ TOMKEN RD
Municipality..... Mississauga **GeoID.....** 349915
Count Date..... Wednesday, 11 December, 2019 **Peak Hour.....** 04:45 PM — 05:45 PM
Road 1 BURNHAMTHORPE RD E **Road 2** TOMKEN RD





Turning Movement Count (5 . TOMKEN RD & BURNHAMTHORPE RD E)

Start Time	N Approach TOMKEN RD						E Approach BURNHAMTHORPE RD E						S Approach TOMKEN RD						W Approach BURNHAMTHORPE RD E						Int. Total (15 min)	Int. Total (1 hr)	
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total			
07:00:00	4	31	13	0	0	48	20	64	5	0	0	89	7	54	3	0	1	64	3	78	10	0	1	91	292		
07:15:00	4	27	11	0	7	42	10	65	5	0	7	80	9	65	3	0	2	77	8	112	23	0	1	143	342		
07:30:00	12	75	19	0	12	106	35	72	6	0	6	113	7	115	3	0	1	125	9	140	35	0	1	184	528		
07:45:00	22	110	38	0	7	170	31	79	18	0	7	128	16	131	8	0	2	155	27	150	50	0	4	227	680	1842	
08:00:00	21	117	27	0	12	165	32	102	32	0	14	166	24	68	15	0	2	107	46	193	20	0	0	259	697	2247	
08:15:00	13	88	24	0	3	125	20	117	15	0	4	152	34	141	23	0	2	198	16	185	17	0	2	218	693	2598	
08:30:00	8	65	26	1	7	100	23	134	16	0	3	173	19	81	12	0	5	112	13	154	24	0	5	191	576	2646	
08:45:00	13	82	21	0	3	116	24	128	15	0	5	167	16	88	18	0	1	122	18	166	33	0	2	217	622	2588	
09:00:00	14	83	22	0	5	119	36	127	12	0	2	175	22	77	16	0	0	115	12	118	15	0	1	145	554	2445	
09:15:00	12	53	19	0	2	84	23	113	7	0	1	143	10	48	4	0	0	62	9	121	21	0	1	151	440	2192	
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09:45:00	14	37	16	0	3	67	17	95	7	0	2	119	7	37	13	0	8	57	11	111	17	0	1	139	382	1788	
BREAK																											
16:00:00	36	130	27	0	5	193	24	188	18	0	0	230	11	104	25	0	2	140	19	149	7	0	1	175	738		
16:15:00	32	123	20	0	4	175	28	213	15	0	5	256	14	85	28	0	10	127	21	128	21	1	6	171	729		
16:30:00	40	127	35	0	6	202	24	196	10	0	7	230	13	105	27	0	2	145	16	162	13	0	2	191	768		
16:45:00	34	140	32	0	3	206	29	215	23	0	6	267	16	88	22	0	4	126	15	160	16	0	2	191	790	3025	
17:00:00	48	105	25	0	14	178	24	226	26	0	9	276	18	99	27	0	3	144	32	161	19	0	2	212	810	3097	
17:15:00	52	189	42	0	1	283	22	170	13	0	4	205	11	113	28	0	1	152	23	162	13	1	0	199	839	3207	
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19:45:00	12	50	16	0	3	78	23	99	13	0	3	135	10	48	15	0	4	73	13	98	12	0	3	123	409	1780	
Grand Total	623	2455	652	1	145	3731	630	3937	376	0	121	4943	398	2252	456	1	65	3107	465	3825	495	2	43	4787	16568	-	
Approach%	16.7%	65.8%	17.5%	0%	-	-	12.7%	79.6%	7.6%	0%	-	-	12.8%	72.5%	14.7%	0%	-	-	9.7%	79.9%	10.3%	0%	-	-	-	-	
Totals %	3.8%	14.8%	3.9%	0%	-	22.5%	3.8%	23.8%	2.3%	0%	-	29.8%	2.4%	13.6%	2.8%	0%	-	18.8%	2.8%	23.1%	3%	0%	-	28.9%	-	-	
Heavy	6	80	6	0	-	-	11	131	3	0	-	-	12	80	7	0	-	-	9	118	10	0	-	-	-	-	
Heavy %	1%	3.3%	0.9%	0%	-	-	1.7%	3.3%	0.8%	0%	-	-	3%	3.6%	1.5%	0%	-	-	1.9%	3.1%	2%	0%	-	-	-	-	
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 07:45 AM - 08:45 AM Weather: Mist (4.68 °C)

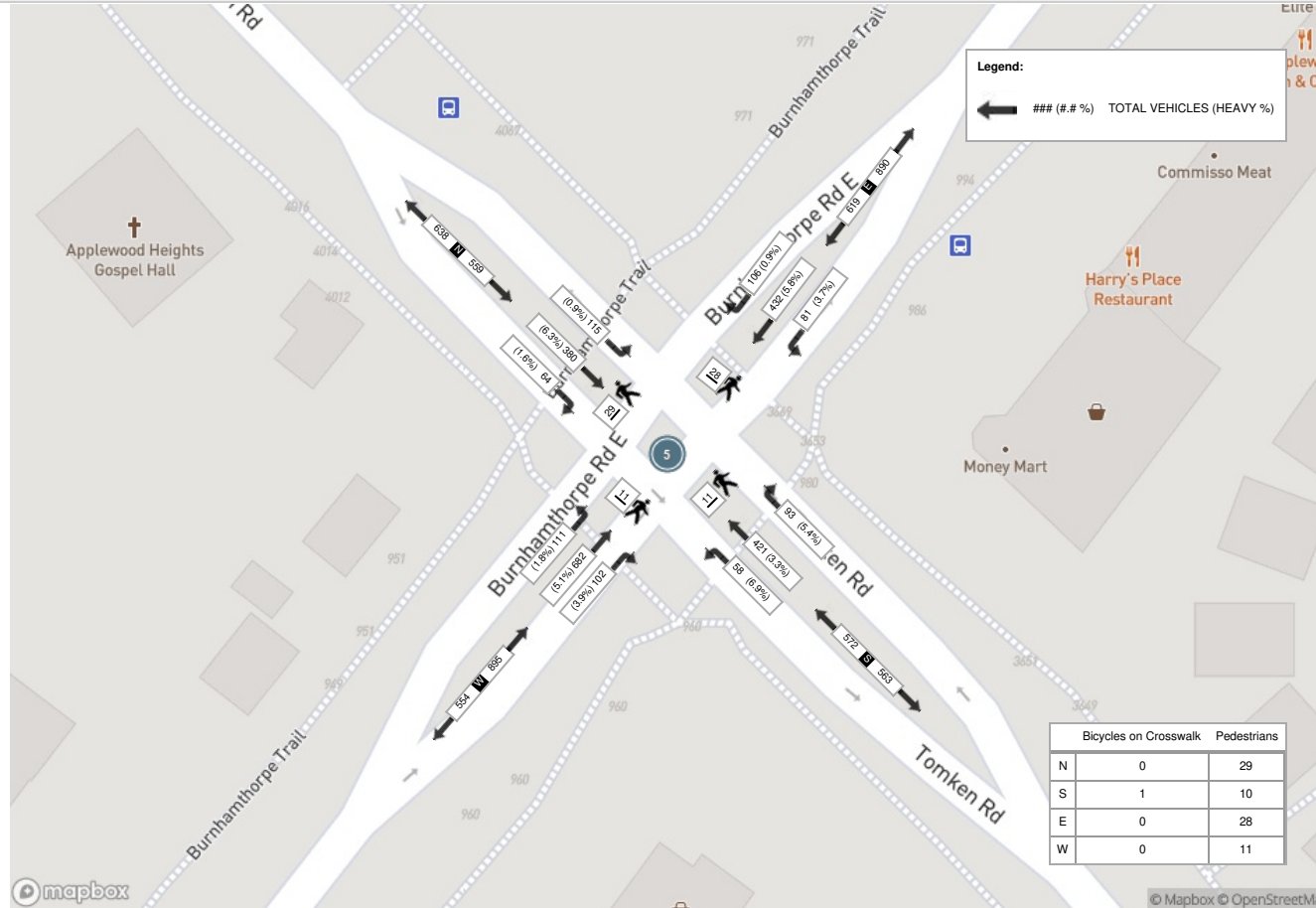
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	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total		
07:45:00	22	110	38	0	7	170	31	79	18	0	7	128	16	131	8	0	2	155	27	150	50	0	4	227	680	
08:00:00	21	117	27	0	12	165	32	102	32	0	14	166	24	68	15	0	2	107	46	193	20	0	0	259	697	
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Grand Total	64	380	115	1	29	560	106	432	81	0	28	619	93	421	58	0	11	572	102	682	111	0	11	895	2646	
Approach%	11.4%	67.9%	20.5%	0.2%	-	-	17.1%	69.8%	13.1%	0%	-	-	16.3%	73.6%	10.1%	0%	-	-	11.4%	76.2%	12.4%	0%	-	-	-	
Totals %	2.4%	14.4%	4.3%	0%	21.2%	21.2%	4%	16.3%	3.1%	0%	23.4%	23.4%	3.5%	15.9%	2.2%	0%	21.6%	21.6%	3.9%	25.8%	4.2%	0%	33.8%	33.8%	-	
PHF	0.73	0.81	0.76	0.25	0.82	0.82	0.83	0.81	0.63	0	0.89	0.89	0.68	0.75	0.63	0	0.72	0.72	0.55	0.88	0.56	0	0.86	0.86	-	
Heavy	1	24	1	0	26	26	1	25	3	0	29	29	5	14	4	0	23	23	4	35	2	0	41	41	-	
Heavy %	1.6%	6.3%	0.9%	0%	4.6%	4.6%	0.9%	5.8%	3.7%	0%	4.7%	4.7%	5.4%	3.3%	6.9%	0%	4%	4%	3.9%	5.1%	1.8%	0%	4.6%	4.6%	-	
Lights	63	356	114	1	534	534	105	407	78	0	590	590	88	407	54	0	549	549	98	647	109	0	854	854	-	
Lights %	98.4%	93.7%	99.1%	100%	95.4%	95.4%	99.1%	94.2%	96.3%	0%	95.3%	95.3%	94.6%	96.7%	93.1%	0%	96%	96%	96.1%	94.9%	98.2%	0%	95.4%	95.4%	-	
Single-Unit Trucks	0	4	0	0	4	4	0	8	2	0	10	10	0	2	0	0	2	2	1	16	0	0	17	17	-	
Single-Unit Trucks %	0%	1.1%	0%	0%	0.7%	0.7%	0%	1.9%	2.5%	0%	1.6%	1.6%	0%	0.5%	0%	0%	0.3%	0.3%	1%	2.3%	0%	0%	1.9%	1.9%	-	
Buses	1	20	1	0	22	22	1	15	1	0	17	17	5	12	4	0	21	21	3	17	2	0	22	22	-	
Buses %	1.6%	5.3%	0.9%	0%	3.9%	3.9%	0.9%	3.5%	1.2%	0%	2.7%	2.7%	5.4%	2.9%	6.9%	0%	3.7%	3.7%	2.9%	2.5%	1.8%	0%	2.5%	2.5%	-	
Articulated Trucks	0	0	0	0	0	0	0	2	0	0	2	2	0	0	0	0	0	0	0	2	0	0	0	2	2	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.3%	0.3%	0%	0%	0%	0%	0%	0%	0%	0.3%	0%	0%	0%	0.2%	0.2%	-
Pedestrians	-	-	-	-	29	29	-	-	-	-	28	28	-	-	-	-	10	10	-	-	-	-	11	11	11	-
Pedestrians%	-	-	-	-	36.7%	36.7%	-	-	-	-	35.4%	35.4%	-	-	-	-	12.7%	12.7%	-	-	-	-	13.9%	13.9%	13.9%	-
Bicycles on Crosswalk	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	1	1	-	-	-	-	0	0	0	-
Bicycles on Crosswalk%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-	-	-	-	1.3%	1.3%	-	-	-	-	0%	0%	0%	-



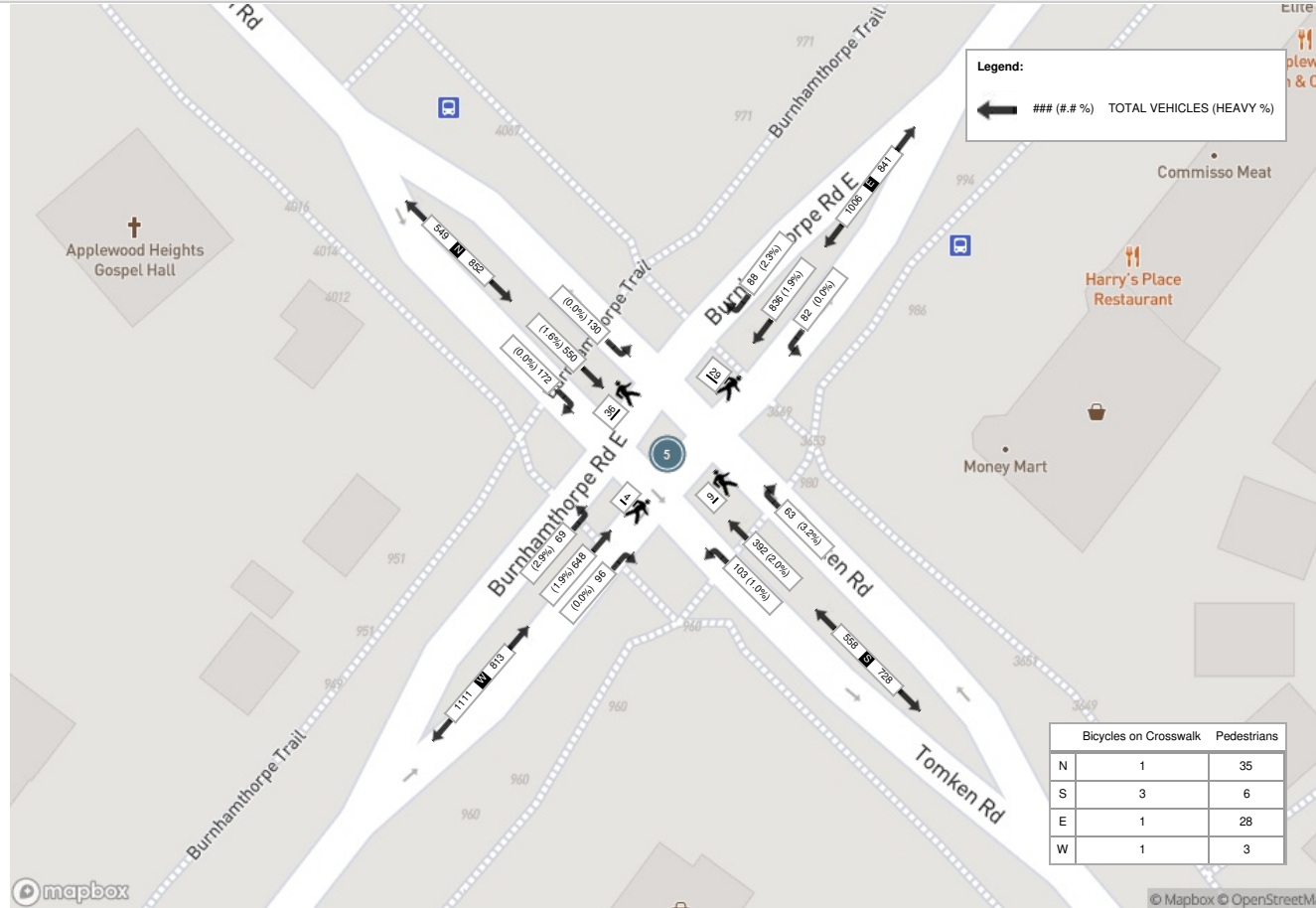
Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (10.64 °C)

Start Time	N Approach TOMKEN RD						E Approach BURNHAMTHORPE RD E						S Approach TOMKEN RD						W Approach BURNHAMTHORPE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	34	140	32	0	3	206	29	215	23	0	6	267	16	88	22	0	4	126	15	160	16	0	2	191	790
17:00:00	48	105	25	0	14	178	24	226	26	0	9	276	18	99	27	0	3	144	32	161	19	0	2	212	810
17:15:00	52	189	42	0	1	283	22	170	13	0	4	205	11	113	28	0	1	152	23	162	13	1	0	199	839
17:30:00	38	116	31	0	18	185	13	225	20	0	10	258	18	92	26	0	1	136	26	165	21	0	0	212	791
Grand Total	172	550	130	0	36	852	88	836	82	0	29	1006	63	392	103	0	9	558	96	648	69	1	4	814	3230
Approach%	20.2%	64.6%	15.3%	0%	-	-	8.7%	83.1%	8.2%	0%	-	-	11.3%	70.3%	18.5%	0%	-	-	11.8%	79.6%	8.5%	0.1%	-	-	-
Totals %	5.3%	17%	4%	0%	26.4%	26.4%	2.7%	25.9%	2.5%	0%	31.1%	31.1%	2%	12.1%	3.2%	0%	17.3%	17.3%	3%	20.1%	2.1%	0%	25.2%	25.2%	-
PHF	0.83	0.73	0.77	0	0.75	0.75	0.76	0.92	0.79	0	0.91	0.91	0.88	0.87	0.92	0	0.92	0.92	0.75	0.98	0.82	0.25	0.96	0.96	-
Heavy	0	9	0	0	9	9	2	16	0	0	18	18	2	8	1	0	11	11	0	12	2	0	14	14	-
Heavy %	0%	1.6%	0%	0%	1.1%	1.1%	2.3%	1.9%	0%	0%	1.8%	1.8%	3.2%	2%	1%	0%	2%	2%	0%	1.9%	2.9%	0%	1.7%	1.7%	-
Lights	172	541	130	0	843	843	86	820	82	0	988	988	61	384	102	0	547	547	96	636	67	1	800	800	-
Lights %	100%	98.4%	100%	0%	98.9%	98.9%	97.7%	98.1%	100%	0%	98.2%	98.2%	96.8%	98%	99%	0%	98%	98%	100%	98.1%	97.1%	100%	98.3%	98.3%	-
Single-Unit Trucks	0	2	0	0	2	2	2	6	0	0	8	8	2	2	1	0	5	5	0	4	2	0	6	6	-
Single-Unit Trucks %	0%	0.4%	0%	0%	0.2%	0.2%	2.3%	0.7%	0%	0%	0.8%	0.8%	3.2%	0.5%	1%	0%	0.9%	0.9%	0%	0.6%	2.9%	0%	0.7%	0.7%	-
Buses	0	7	0	0	7	7	0	9	0	0	9	9	0	6	0	0	6	6	0	7	0	0	7	7	-
Buses %	0%	1.3%	0%	0%	0.8%	0.8%	0%	1.1%	0%	0%	0.9%	0.9%	0%	1.5%	0%	0%	1.1%	1.1%	0%	1.1%	0%	0%	0.9%	0.9%	-
Articulated Trucks	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	1	1	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0.1%	0%	0%	0.1%	0.1%	0%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0.1%	0.1%	-
Pedestrians	-	-	-	-	35	-	-	-	-	-	28	-	-	-	-	-	6	-	-	-	-	-	3	-	-
Pedestrians%	-	-	-	-	44.9%	-	-	-	-	-	35.9%	-	-	-	-	-	7.7%	-	-	-	-	-	3.8%	-	-
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	1	-	-
Bicycles on Crosswalk%	-	-	-	-	1.3%	-	-	-	-	-	1.3%	-	-	-	-	-	3.8%	-	-	-	-	-	1.3%	-	-

Peak Hour: 07:45 AM - 08:45 AM Weather: Mist (4.68 °C)



Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (10.64 °C)





Turning Movement Count (5 . TOMKEN RD & BURNHAMTHORPE RD E)

Start Time	N Approach TOMKEN RD						E Approach BURNHAMTHORPE RD E						S Approach TOMKEN RD						W Approach BURNHAMTHORPE RD E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
08:00:00	2	14	6	0	1	22	8	40	6	0	0	54	4	12	3	0	0	19	4	39	2	0	0	45	140	
08:15:00	3	21	3	0	2	27	4	33	7	0	0	44	7	17	3	0	0	27	9	29	6	0	1	44	142	
08:30:00	7	14	6	0	1	27	12	46	2	0	0	60	1	24	1	0	0	26	7	26	4	0	2	37	150	
08:45:00	4	25	12	0	0	41	10	32	2	0	0	44	4	25	6	0	0	35	4	49	7	0	1	60	180	612
09:00:00	7	23	8	0	0	38	4	70	5	0	0	79	6	21	5	0	0	32	7	76	7	0	0	90	239	711
09:15:00	5	34	12	0	0	51	13	58	3	0	0	74	12	43	5	0	1	60	13	92	8	0	1	113	298	867
09:30:00	10	41	9	0	3	60	4	59	8	0	2	71	6	33	4	0	1	43	7	73	12	0	0	92	266	983
09:45:00	10	48	10	0	0	68	10	88	7	0	0	105	2	23	5	0	1	30	13	101	22	0	1	136	339	1142
10:00:00	6	44	13	0	1	63	11	78	5	0	0	94	6	28	7	0	0	41	16	84	5	0	1	105	303	1206
10:15:00	11	51	12	0	1	74	8	97	5	0	0	110	10	27	7	0	2	44	11	109	9	0	2	129	357	1265
10:30:00	7	30	15	0	1	52	16	90	4	0	1	110	7	39	5	0	2	51	19	102	11	0	0	132	345	1344
10:45:00	19	44	16	0	0	79	18	106	7	0	3	131	7	60	21	0	0	88	16	98	5	0	1	119	417	1422
11:00:00	12	35	8	0	1	55	16	107	8	0	0	131	12	47	3	0	1	62	19	113	7	0	0	139	387	1506
11:15:00	11	45	16	0	5	72	12	122	4	0	4	138	13	45	14	0	0	72	13	105	7	0	0	125	407	1556
11:30:00	15	71	18	0	1	104	19	94	18	0	0	131	7	51	9	0	3	67	5	113	10	0	3	128	430	1641
11:45:00	25	53	13	0	2	91	17	104	9	0	0	130	12	50	8	0	1	70	16	102	6	0	0	124	415	1639
12:00:00	15	80	22	0	0	117	32	121	8	0	0	161	9	58	18	0	4	85	22	138	6	0	0	166	529	1781
12:15:00	19	76	17	0	0	112	17	136	8	0	1	161	13	49	17	0	2	79	20	141	13	0	1	174	526	1900
12:30:00	9	83	19	0	3	111	18	147	7	0	1	172	10	54	15	0	0	79	8	155	14	0	0	177	539	2009
12:45:00	15	82	20	0	2	117	24	135	13	0	1	172	20	66	22	0	0	108	16	135	8	0	0	159	556	2150
13:00:00	11	52	14	0	1	77	24	119	13	0	0	156	15	66	10	0	1	91	22	170	11	0	2	203	527	2148
13:15:00	24	85	24	0	1	133	24	137	10	0	0	171	15	75	18	0	2	108	19	139	9	0	0	167	579	2201
13:30:00	12	74	16	0	4	102	25	122	11	0	0	158	10	58	12	0	1	80	20	149	12	0	0	181	521	2183
13:45:00	8	61	23	0	1	92	17	150	10	0	1	177	18	56	8	0	1	82	21	156	13	0	0	190	541	2168
14:00:00	15	73	29	0	0	117	16	131	4	0	1	151	14	69	19	0	0	102	17	139	11	0	2	167	537	2178
14:15:00	9	58	23	0	2	90	22	166	13	0	0	201	13	56	6	0	1	75	16	143	9	0	0	168	534	2133
14:30:00	14	64	20	0	3	98	19	156	12	0	1	187	4	66	20	0	1	90	18	155	12	0	2	185	560	2172
14:45:00	22	80	18	0	2	120	14	135	17	0	1	166	12	53	13	0	3	78	12	130	11	0	1	153	517	2148
Grand Total	327	1461	422	0	38	2210	434	2879	226	0	17	3539	269	1271	284	0	28	1824	390	3061	257	0	21	3708	11281	-
Approach%	14.8%	66.1%	19.1%	0%	-	-	12.3%	81.4%	6.4%	0%	-	-	14.7%	69.7%	15.6%	0%	-	-	10.5%	82.6%	6.9%	0%	-	-	-	-
Totals %	2.9%	13%	3.7%	0%	-	19.6%	3.8%	25.5%	2%	0%	-	31.4%	2.4%	11.3%	2.5%	0%	-	16.2%	3.5%	27.1%	2.3%	0%	-	32.9%	-	-
Heavy	3	6	1	0	-	-	1	22	0	0	-	-	1	2	2	0	-	-	0	24	0	0	-	-	-	-
Heavy %	0.9%	0.4%	0.2%	0%	-	-	0.2%	0.8%	0%	0%	-	-	0.4%	0.2%	0.7%	0%	-	-	0%	0.8%	0%	0%	-	-	-	-
Bicycles	0	1	0	0	-	-	0	0	0	0	-	-	0	0	0	0	-	-	0	1	0	0	-	-	-	-
Bicycle %	0%	0.1%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	-	-



Peak Hour: 12:30 PM - 01:30 PM Weather: Light Snow (1.59 °C)

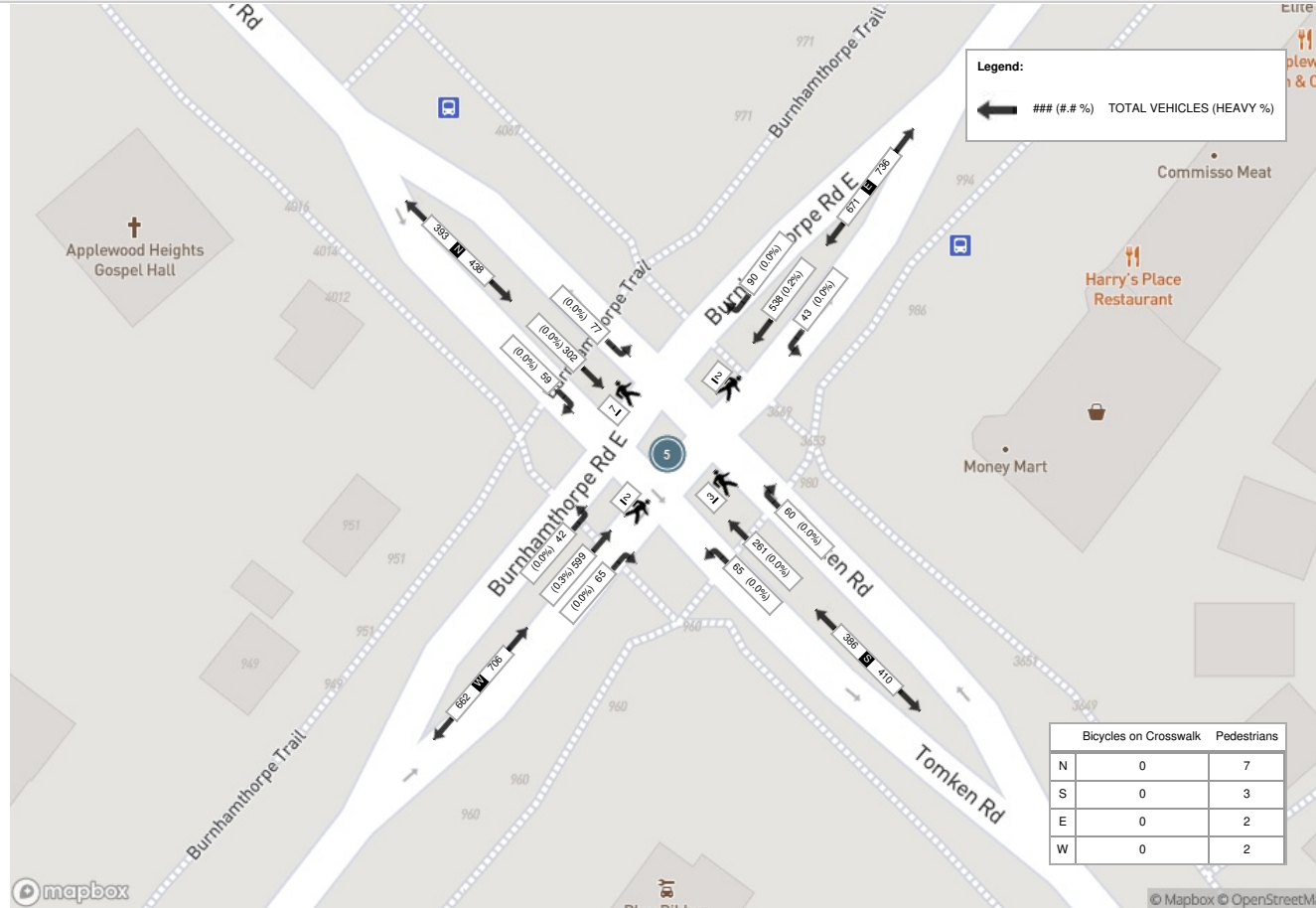
Start Time	N Approach TOMKEN RD						E Approach BURNHAMTHORPE RD E						S Approach TOMKEN RD						W Approach BURNHAMTHORPE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
12:30:00	9	83	19	0	3	111	18	147	7	0	1	172	10	54	15	0	0	79	8	155	14	0	0	177	539
12:45:00	15	82	20	0	2	117	24	135	13	0	1	172	20	66	22	0	0	108	16	135	8	0	0	159	556
13:00:00	11	52	14	0	1	77	24	119	13	0	0	156	15	66	10	0	1	91	22	170	11	0	2	203	527
13:15:00	24	85	24	0	1	133	24	137	10	0	0	171	15	75	18	0	2	108	19	139	9	0	0	167	579
Grand Total	59	302	77	0	7	438	90	538	43	0	2	671	60	261	65	0	3	386	65	599	42	0	2	706	2201
Approach%	13.5%	68.9%	17.6%	0%	-	-	13.4%	80.2%	6.4%	0%	-	-	15.5%	67.6%	16.8%	0%	-	-	9.2%	84.8%	5.9%	0%	-	-	-
Totals %	2.7%	13.7%	3.5%	0%	19.9%	4.1%	24.4%	2%	0%	30.5%	2.7%	11.9%	3%	0%	17.5%	3%	27.2%	1.9%	0%	32.1%	-	-	-	-	-
PHF	0.61	0.89	0.8	0	0.82	0.94	0.91	0.83	0	0.98	0.75	0.87	0.74	0	0.89	0.74	0.88	0.75	0	0.87	-	-	-	-	-
Heavy	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	-
Heavy %	0%	0%	0%	0%	0%	0%	0%	0.2%	0%	0.1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.3%	0%	0%	0%	0.3%	-
Lights	59	302	77	0	438	90	537	43	0	670	60	261	65	0	386	65	597	42	0	704	-	-	-	-	-
Lights %	100%	100%	100%	0%	100%	100%	99.8%	100%	0%	99.9%	100%	100%	100%	0%	100%	100%	99.7%	100%	0%	99.7%	-	-	-	-	-
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	-
Buses %	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0.1%	0%	0%	0%	0%	0%	0%	0%	0%	0.3%	0%	0%	0%	0%	0.3%	-
Pedestrians	-	-	-	-	7	-	-	-	-	2	-	-	-	-	3	-	-	-	-	2	-	-	-	-	-
Pedestrians %	-	-	-	-	50%	-	-	-	-	14.3%	-	-	-	-	21.4%	-	-	-	-	14.3%	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-
Bicycles on Crosswalk %	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-
Bicycles on Road	0	1	0	0	0	-	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	-	-
Bicycles on Road %	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-



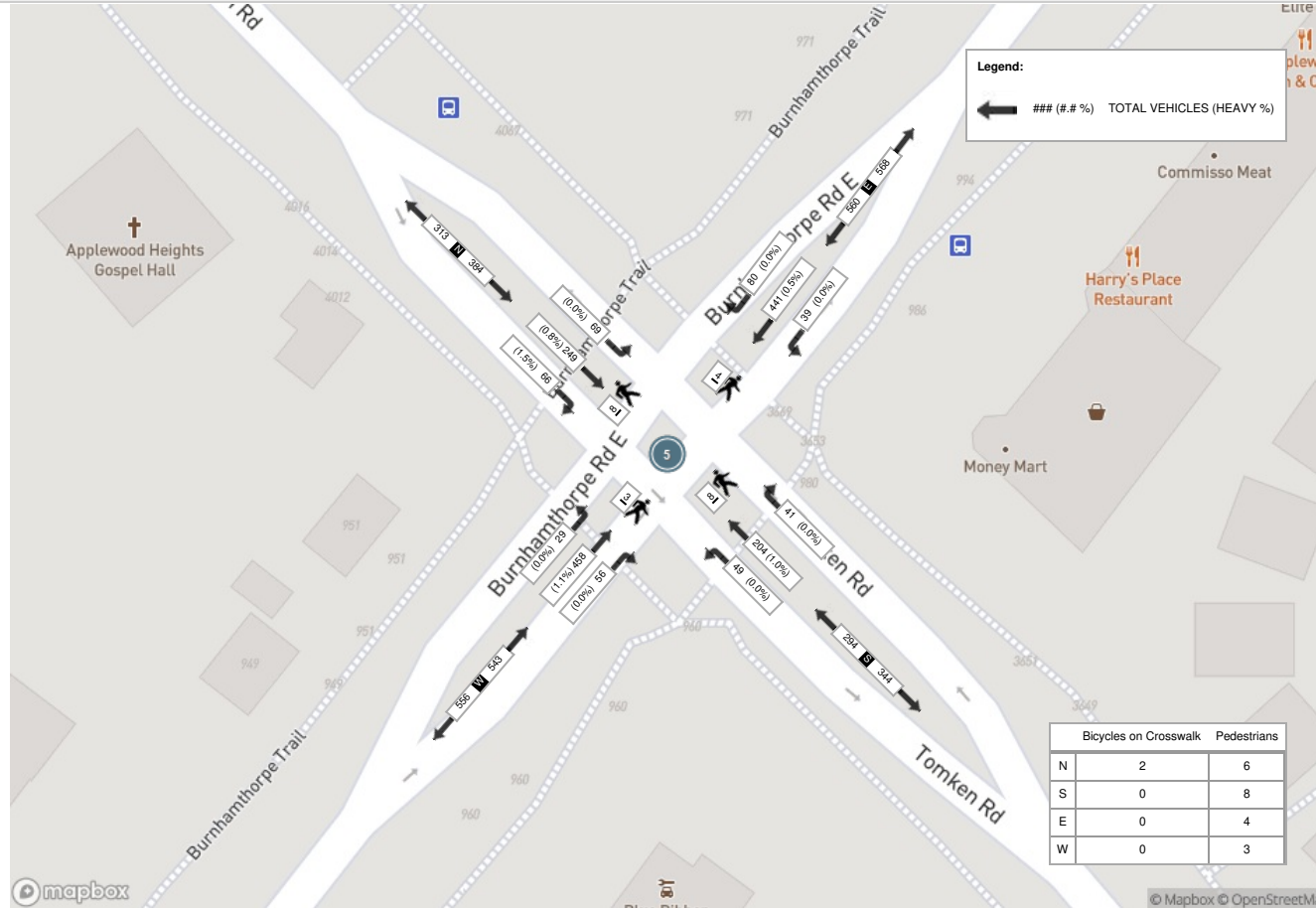
Selected Hour: 11:15 AM - 12:15 PM Weather:

Start Time	N Approach TOMKEN RD						E Approach BURNHAMTHORPE RD E						S Approach TOMKEN RD						W Approach BURNHAMTHORPE RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
11:15:00	11	45	16	0	5	72	12	122	4	0	4	138	13	45	14	0	0	72	13	105	7	0	0	125	407
11:30:00	15	71	18	0	1	104	19	94	18	0	0	131	7	51	9	0	3	67	5	113	10	0	3	128	430
11:45:00	25	53	13	0	2	91	17	104	9	0	0	130	12	50	8	0	1	70	16	102	6	0	0	124	415
12:00:00	15	80	22	0	0	117	32	121	8	0	0	161	9	58	18	0	4	85	22	138	6	0	0	166	529
Grand Total	66	249	69	0	8	384	80	441	39	0	4	560	41	204	49	0	8	294	56	458	29	0	3	543	1781
Approach%	17.2%	64.8%	18%	0%		-	14.3%	78.8%	7%	0%		-	13.9%	69.4%	16.7%	0%		-	10.3%	84.3%	5.3%	0%		-	-
Totals %	3.7%	14%	3.9%	0%		21.6%	4.5%	24.8%	2.2%	0%		31.4%	2.3%	11.5%	2.8%	0%		16.5%	3.1%	25.7%	1.6%	0%		30.5%	-
PHF	0.66	0.78	0.78	0		0.82	0.63	0.9	0.54	0		0.87	0.79	0.88	0.68	0		0.86	0.64	0.83	0.73	0		0.82	-
Heavy	1	2	0	0		3	0	2	0	0		2	0	2	0	0		2	0	5	0	0		5	-
Heavy %	1.5%	0.8%	0%	0%		0.8%	0%	0.5%	0%	0%		0.4%	0%	1%	0%	0%		0.7%	0%	1.1%	0%	0%		0.9%	-
Lights	65	247	69	0		381	80	439	39	0		558	41	202	49	0		292	56	453	29	0		538	-
Lights %	98.5%	99.2%	100%	0%		99.2%	100%	99.5%	100%	0%		99.6%	100%	99%	100%	0%		99.3%	100%	98.9%	100%	0%		99.1%	-
Single-Unit Trucks	1	2	0	0		3	0	0	0	0		0	0	1	0	0		1	0	3	0	0		3	-
Single-Unit Trucks %	1.5%	0.8%	0%	0%		0.8%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.3%	0%	0.7%	0%	0%		0.6%	-
Buses	0	0	0	0		0	0	2	0	0		2	0	1	0	0		1	0	2	0	0		2	-
Buses %	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.4%	0%	0.5%	0%	0%		0.3%	0%	0.4%	0%	0%		0.4%	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	4	-	-	-	-	-	8	-	-	-	-	-	3	-	-
Pedestrians %	-	-	-	-	26.1%	-	-	-	-	-	17.4%	-	-	-	-	-	34.8%	-	-	-	-	-	13%	-	-
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk %	-	-	-	-	8.7%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road %	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-

Peak Hour: 12:30 PM - 01:30 PM Weather: Light Snow (1.59 °C)



Selected Hour: 11:15 AM - 12:15 PM Weather:





Turning Movement Count (4 . TOMKEN RD & WESTMINSTER CHURCH ACCESS)

Start Time	N Approach TOMKEN RD					S Approach TOMKEN RD					W Approach WESTMINSTER CHURCH ACCESS					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	0	43	0	0	43	82	1	0	0	83	1	0	0	0	1	127	
07:15:00	2	53	0	0	55	99	0	0	0	99	0	1	0	0	1	155	
07:30:00	2	102	0	1	104	186	0	0	0	186	1	2	0	3	3	293	
07:45:00	0	174	0	0	174	200	1	0	0	201	0	1	0	3	1	376	951
08:00:00	0	175	0	0	175	134	2	0	0	136	1	1	0	1	2	313	1137
08:15:00	2	102	0	0	104	174	1	0	0	175	0	2	0	0	2	281	1263
08:30:00	4	102	0	0	106	136	1	0	0	137	0	1	0	0	1	244	1214
08:45:00	7	114	0	0	121	140	1	0	0	141	3	4	0	1	7	269	1107
09:00:00	3	114	0	0	117	130	0	0	0	130	2	2	0	1	4	251	1045
09:15:00	1	85	0	0	86	93	1	0	0	94	1	1	0	1	2	182	946
09:30:00	1	89	0	0	90	71	0	0	0	71	0	1	0	0	1	162	864
09:45:00	1	72	0	0	73	78	0	0	0	78	1	1	0	3	2	153	748
BREAK																	
16:00:00	0	190	0	0	190	135	2	0	0	137	2	7	0	2	9	336	
16:15:00	0	183	0	0	183	133	0	0	0	133	0	2	0	1	2	318	
16:30:00	1	210	0	0	211	139	0	0	0	139	0	0	0	4	0	350	
16:45:00	1	187	0	0	188	127	0	0	0	127	1	0	0	6	1	316	1320
17:00:00	0	199	0	0	199	148	0	0	0	148	1	1	0	1	2	349	1333
17:15:00	1	270	0	0	271	147	0	0	0	147	1	4	0	0	5	423	1438
17:30:00	2	213	0	0	215	126	0	0	0	126	1	0	0	1	1	342	1430
17:45:00	1	167	0	0	168	128	0	0	0	128	0	0	0	0	0	296	1410
18:00:00	0	139	0	0	139	148	0	0	0	148	0	0	0	2	0	287	1348
18:15:00	0	153	0	0	153	113	0	1	0	114	0	0	0	0	0	267	1192
18:30:00	0	123	0	0	123	98	1	0	0	99	0	1	0	1	1	223	1073
18:45:00	0	130	0	0	130	75	0	0	0	75	0	0	0	1	0	205	982
19:00:00	0	94	0	0	94	101	0	0	0	101	0	0	0	2	0	195	890
19:15:00	0	93	0	0	93	79	0	0	0	79	0	0	0	2	0	172	795
19:30:00	0	83	0	0	83	73	0	0	0	73	0	0	0	3	0	156	728
19:45:00	1	89	0	0	90	83	0	0	0	83	1	0	0	4	1	174	697
Grand Total	30	3748	0	1	3778	3376	11	1	0	3388	17	32	0	43	49	7215	-
Approach%	0.8%	99.2%	0%		-	99.6%	0.3%	0%		-	34.7%	65.3%	0%		-	-	-
Totals %	0.4%	51.9%	0%		52.4%	46.8%	0.2%	0%		47%	0.2%	0.4%	0%		0.7%	-	-
Heavy	0	91	0		-	101	0	0		-	0	1	0		-	-	-



Turning Movement Count
Location Name: TOMKEN RD & WESTMINSTER CHURCH ACCESS
Date: Thu, Mar 24, 2022 Deployment Lead: Tasos Issaakidis

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Heavy %	0%	2.4%	0%	-	3%	0%	0%	-	0%	3.1%	0%	-	-	-
Bicycles	0	0	0	-	0	0	0	-	1	0	0	-	-	-
Bicycle %	0%	0%	0%	-	0%	0%	0%	-	5.9%	0%	0%	-	-	-



Peak Hour: 07:30 AM - 08:30 AM Weather: Mist (4.68 °C)

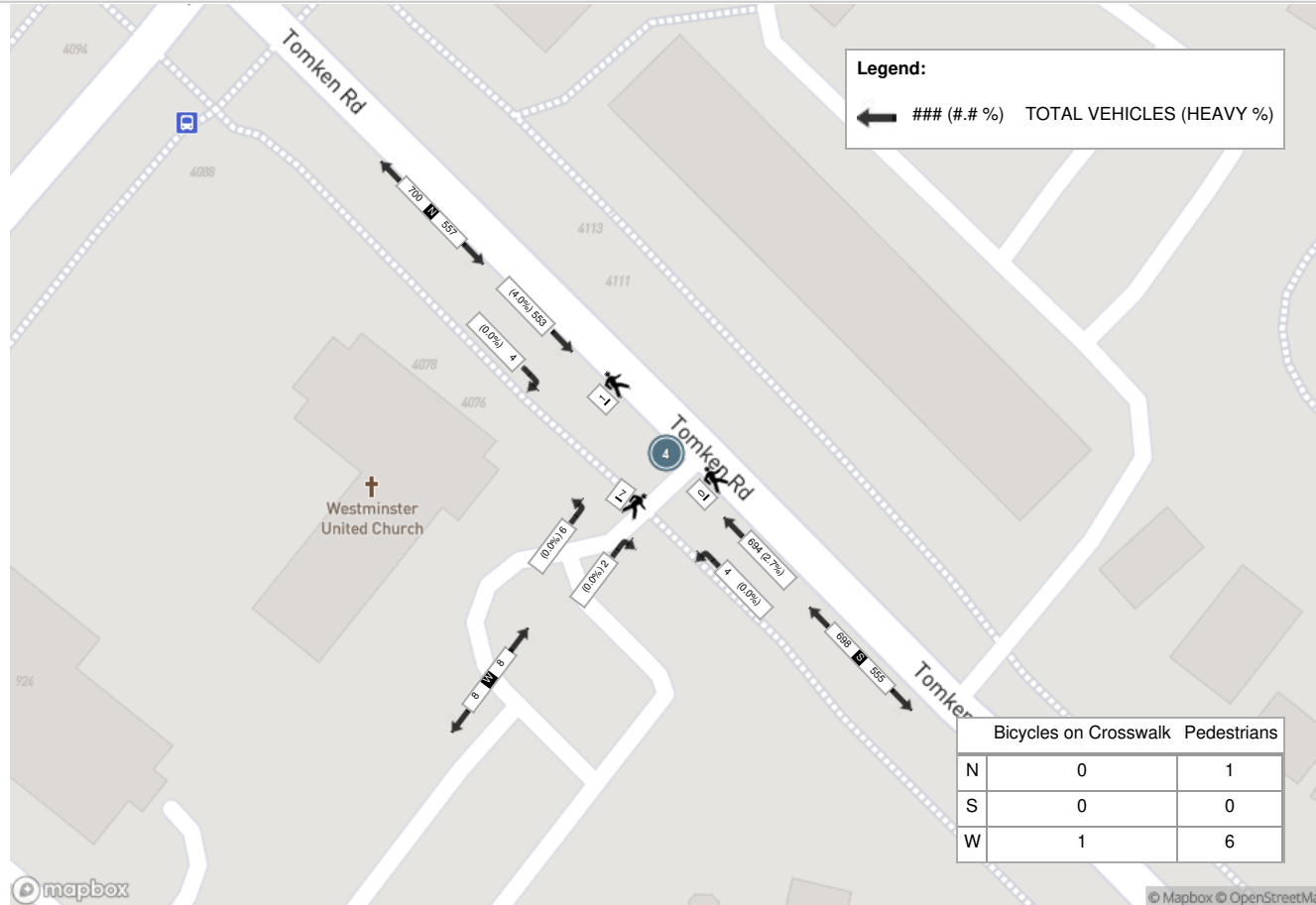
Start Time	N Approach TOMKEN RD					S Approach TOMKEN RD					W Approach WESTMINSTER CHURCH ACCESS					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
07:30:00	2	102	0	1	104	186	0	0	0	186	1	2	0	3	3	293
07:45:00	0	174	0	0	174	200	1	0	0	201	0	1	0	3	1	376
08:00:00	0	175	0	0	175	134	2	0	0	136	1	1	0	1	2	313
08:15:00	2	102	0	0	104	174	1	0	0	175	0	2	0	0	2	281
Grand Total	4	553	0	1	557	694	4	0	0	698	2	6	0	7	8	1263
Approach%	0.7%	99.3%	0%		-	99.4%	0.6%	0%		-	25%	75%	0%		-	-
Totals %	0.3%	43.8%	0%		44.1%	54.9%	0.3%	0%		55.3%	0.2%	0.5%	0%		0.6%	-
PHF	0.5	0.79	0		0.8	0.87	0.5	0		0.87	0.5	0.75	0		0.67	-
Heavy	0	22	0		22	19	0	0		19	0	0	0		0	-
Heavy %	0%	4%	0%		3.9%	2.7%	0%	0%		2.7%	0%	0%	0%		0%	-
Lights	4	531	0		535	675	4	0		679	2	6	0		8	-
Lights %	100%	96%	0%		96.1%	97.3%	100%	0%		97.3%	100%	100%	0%		100%	-
Single-Unit Trucks	0	3	0		3	1	0	0		1	0	0	0		0	-
Single-Unit Trucks %	0%	0.5%	0%		0.5%	0.1%	0%	0%		0.1%	0%	0%	0%		0%	-
Buses	0	18	0		18	18	0	0		18	0	0	0		0	-
Buses %	0%	3.3%	0%		3.2%	2.6%	0%	0%		2.6%	0%	0%	0%		0%	-
Articulated Trucks	0	1	0		1	0	0	0		0	0	0	0		0	-
Articulated Trucks %	0%	0.2%	0%		0.2%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	6	-	-
Pedestrians%	-	-	-	12.5%	-	-	-	-	0%	-	-	-	-	75%	-	-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
Bicycles on Crosswalk%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	12.5%	-	-
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-



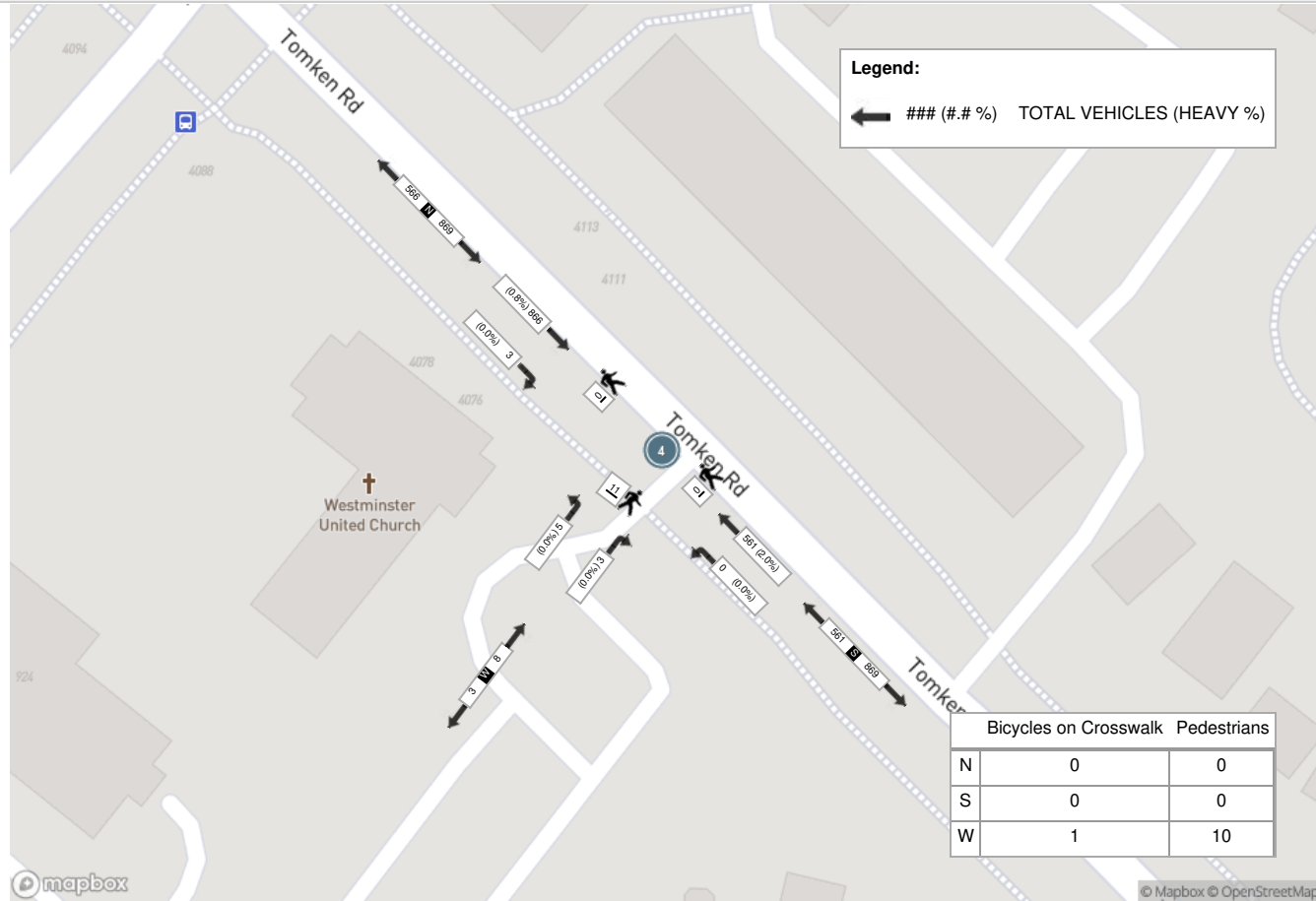
Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (10.64 °C)

Start Time	N Approach TOMKEN RD					S Approach TOMKEN RD					W Approach WESTMINSTER CHURCH ACCESS					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
16:30:00	1	210	0	0	211	139	0	0	0	139	0	0	0	4	0	350
16:45:00	1	187	0	0	188	127	0	0	0	127	1	0	0	6	1	316
17:00:00	0	199	0	0	199	148	0	0	0	148	1	1	0	1	2	349
17:15:00	1	270	0	0	271	147	0	0	0	147	1	4	0	0	5	423
Grand Total	3	866	0	0	869	561	0	0	0	561	3	5	0	11	8	1438
Approach%	0.3%	99.7%	0%		-	100%	0%	0%		-	37.5%	62.5%	0%		-	-
Totals %	0.2%	60.2%	0%		60.4%	39%	0%	0%		39%	0.2%	0.3%	0%		0.6%	-
PHF	0.75	0.8	0		0.8	0.95	0	0		0.95	0.75	0.31	0		0.4	-
Heavy	0	7	0		7	11	0	0		11	0	0	0		0	-
Heavy %	0%	0.8%	0%		0.8%	2%	0%	0%		2%	0%	0%	0%		0%	-
Lights	3	859	0		862	550	0	0		550	3	5	0		8	-
Lights %	100%	99.2%	0%		99.2%	98%	0%	0%		98%	100%	100%	0%		100%	-
Single-Unit Trucks	0	1	0		1	3	0	0		3	0	0	0		0	-
Single-Unit Trucks %	0%	0.1%	0%		0.1%	0.5%	0%	0%		0.5%	0%	0%	0%		0%	-
Buses	0	6	0		6	7	0	0		7	0	0	0		0	-
Buses %	0%	0.7%	0%		0.7%	1.2%	0%	0%		1.2%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0		0	1	0	0		1	0	0	0		0	-
Articulated Trucks %	0%	0%	0%		0%	0.2%	0%	0%		0.2%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	0		-	-	-	10		-	-
Pedestrians%	-	-	-	0%	-	-	-	0%		-	-	-	90.9%		-	-
Bicycles on Crosswalk	-	-	-	0	-	-	-	0		-	-	-	1		-	-
Bicycles on Crosswalk%	-	-	-	0%	-	-	-	0%		-	-	-	9.1%		-	-
Bicycles on Road	0	0	0	0	-	0	0	0		-	1	0	0		-	-
Bicycles on Road%	-	-	-	0%	-	-	-	0%		-	-	-	0%		-	-

Peak Hour: 07:30 AM - 08:30 AM Weather: Mist (4.68 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (10.64 °C)





Turning Movement Count (4 . TOMKEN RD & WESTMINSTER CHURCH ACCESS)

Start Time	N Approach TOMKEN RD					S Approach TOMKEN RD					W Approach WESTMINSTER CHURCH ACCESS					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
08:00:00	1	23	0	0	24	22	0	0	0	22	0	0	0	0	0	46	
08:15:00	1	24	0	0	25	26	0	0	0	26	0	0	0	0	0	51	
08:30:00	0	29	0	0	29	40	0	0	0	40	0	0	0	2	0	69	
08:45:00	0	38	0	0	38	40	0	0	0	40	0	0	0	0	0	78	244
09:00:00	2	45	0	0	47	34	1	0	0	35	0	0	0	0	0	82	280
09:15:00	1	47	0	0	48	63	2	0	0	65	0	0	0	0	0	113	342
09:30:00	6	61	0	0	67	44	1	0	0	45	0	0	0	2	0	112	385
09:45:00	6	76	0	2	82	54	2	0	0	56	0	0	0	3	0	138	445
10:00:00	2	70	0	0	72	46	0	0	0	46	0	0	0	0	0	118	481
10:15:00	0	67	0	0	67	43	0	0	0	43	0	0	0	1	0	110	478
10:30:00	0	57	0	0	57	67	0	0	0	67	0	0	0	0	0	124	490
10:45:00	1	73	0	0	74	82	0	0	0	82	0	0	0	0	0	156	508
11:00:00	1	55	0	0	56	73	0	0	0	73	0	1	0	1	1	130	520
11:15:00	1	86	0	0	87	65	0	0	0	65	1	3	0	1	4	156	566
11:30:00	1	85	0	0	86	76	0	0	0	76	0	5	0	1	5	167	609
11:45:00	0	90	0	0	90	81	0	0	0	81	5	3	0	0	8	179	632
12:00:00	1	109	0	0	110	93	0	0	0	93	3	4	0	0	7	210	712
12:15:00	4	112	0	0	116	78	0	0	0	78	0	2	0	1	2	196	752
12:30:00	0	110	0	0	110	85	0	0	0	85	1	1	0	1	2	197	782
12:45:00	1	115	0	0	116	85	0	0	0	85	0	0	0	0	0	201	804
13:00:00	1	86	0	0	87	113	0	0	0	113	0	0	0	3	0	200	794
13:15:00	2	119	0	0	121	112	1	0	0	113	0	0	0	2	0	234	832
13:30:00	0	97	0	0	97	91	0	0	0	91	1	0	0	3	1	189	824
13:45:00	0	109	0	0	109	92	0	0	0	92	0	0	0	2	0	201	824
14:00:00	0	107	0	1	107	92	0	0	0	92	0	0	0	5	0	199	823
14:15:00	0	88	0	0	88	89	0	0	0	89	0	1	0	1	1	178	767
14:30:00	1	98	0	0	99	94	1	0	0	95	0	0	0	1	0	194	772
14:45:00	0	112	0	0	112	78	1	0	0	79	3	0	0	0	3	194	765
Grand Total	33	2188	0	3	2221	1958	9	0	0	1967	14	20	0	30	34	4222	-
Approach%	1.5%	98.5%	0%		-	99.5%	0.5%	0%		-	41.2%	58.8%	0%		-	-	-
Totals %	0.8%	51.8%	0%		52.6%	46.4%	0.2%	0%		46.6%	0.3%	0.5%	0%		0.8%	-	-
Heavy	0	10	0		-	3	0	0		-	0	0	0		-	-	-
Heavy %	0%	0.5%	0%		-	0.2%	0%	0%		-	0%	0%	0%		-	-	-



Turning Movement Count
Location Name: TOMKEN RD & WESTMINSTER CHURCH ACCESS
Date: Sun, Apr 03, 2022 Deployment Lead: Tasos Issaakidis

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Bicycles	0	1	0	-	0	0	0	-	0	0	0	-	-	-
Bicycle %	0%	0%	0%	-	0%	0%	0%	-	0%	0%	0%	-	-	-



Peak Hour: 12:30 PM - 01:30 PM Weather: Light Snow (1.59 °C)

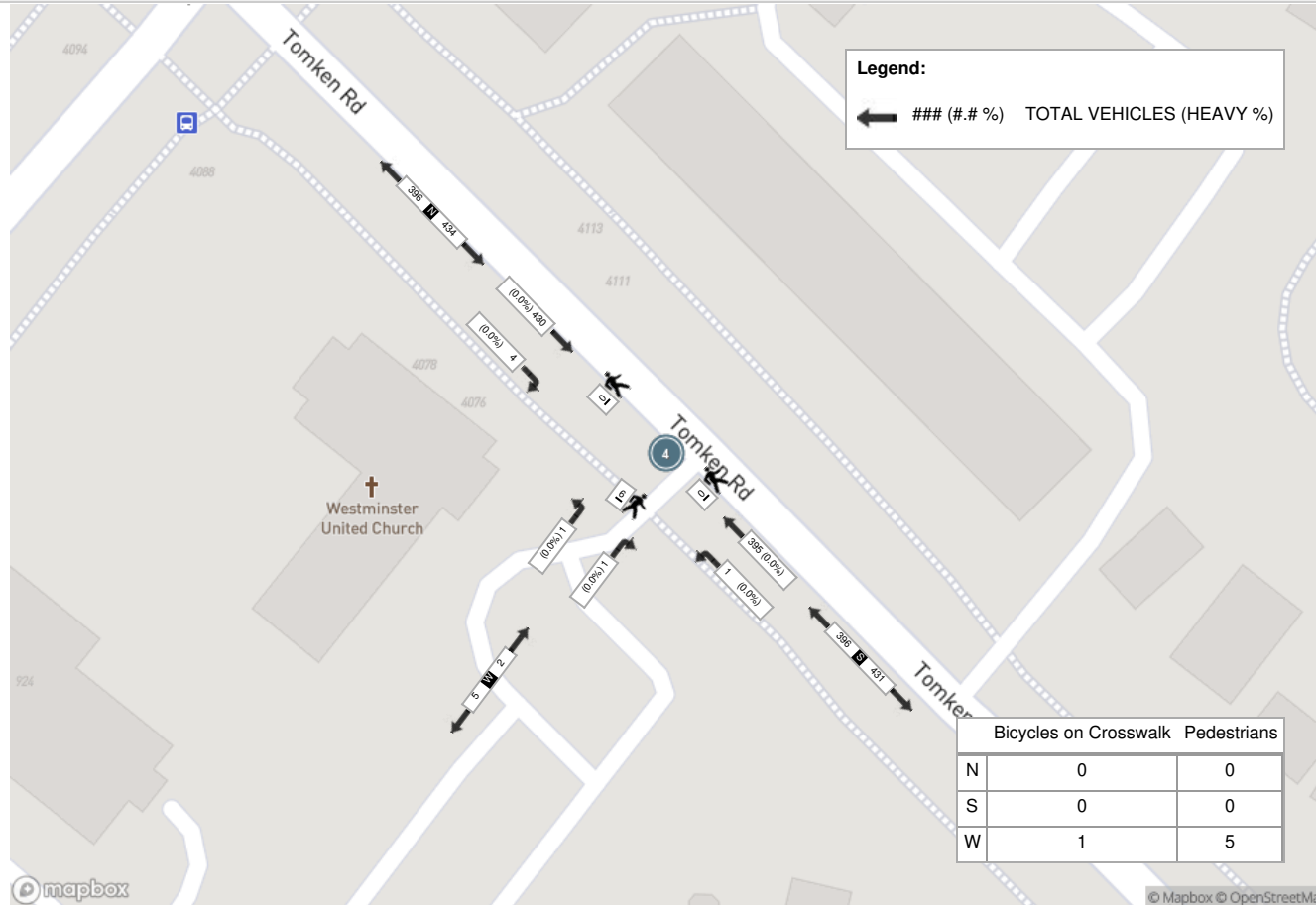
Start Time	N Approach TOMKEN RD					S Approach TOMKEN RD					W Approach WESTMINSTER CHURCH ACCESS					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
12:30:00	0	110	0	0	110	85	0	0	0	85	1	1	0	1	2	197
12:45:00	1	115	0	0	116	85	0	0	0	85	0	0	0	0	0	201
13:00:00	1	86	0	0	87	113	0	0	0	113	0	0	0	3	0	200
13:15:00	2	119	0	0	121	112	1	0	0	113	0	0	0	2	0	234
Grand Total	4	430	0	0	434	395	1	0	0	396	1	1	0	6	2	832
Approach%	0.9%	99.1%	0%		-	99.7%	0.3%	0%		-	50%	50%	0%		-	-
Totals %	0.5%	51.7%	0%		52.2%	47.5%	0.1%	0%		47.6%	0.1%	0.1%	0%		0.2%	-
PHF	0.5	0.9	0		0.9	0.87	0.25	0		0.88	0.25	0.25	0		0.25	-
Heavy	0	0	0		0	0	0	0		0	0	0	0		0	-
Heavy %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Lights	4	430	0		434	395	1	0		396	1	1	0		2	-
Lights %	100%	100%	0%		100%	100%	100%	0%		100%	100%	100%	0%		100%	-
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	0	0		0	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Buses	0	0	0		0	0	0	0		0	0	0	0		0	-
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	5	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	83.3%	-	-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
Bicycles on Crosswalk%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	16.7%	-	-
Bicycles on Road	0	1	0	0	-	0	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-



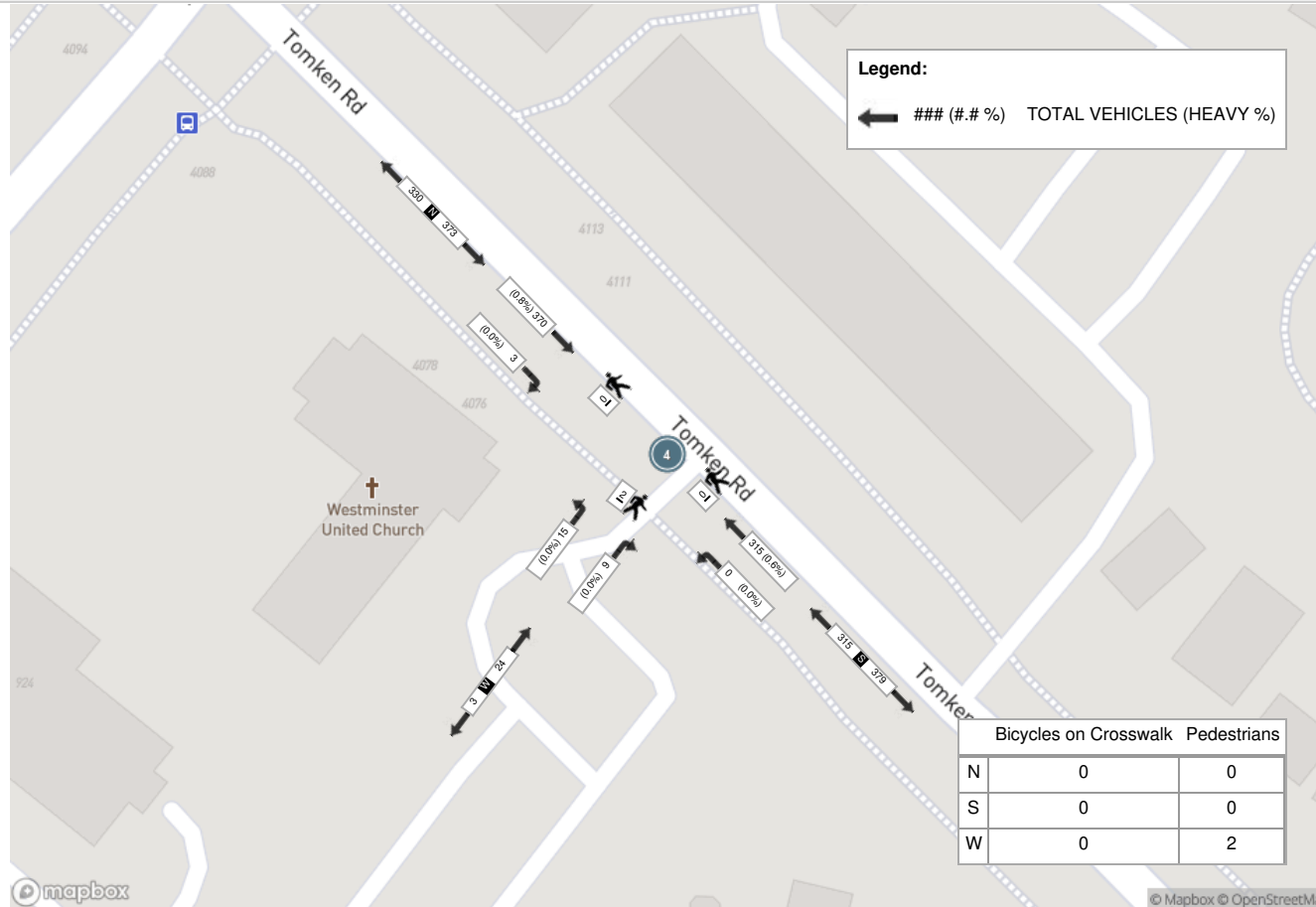
Selected Hour: 11:15 AM - 12:15 PM Weather:

Start Time	N Approach TOMKEN RD					S Approach TOMKEN RD					W Approach WESTMINSTER CHURCH ACCESS					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
11:15:00	1	86	0	0	87	65	0	0	0	65	1	3	0	1	4	156
11:30:00	1	85	0	0	86	76	0	0	0	76	0	5	0	1	5	167
11:45:00	0	90	0	0	90	81	0	0	0	81	5	3	0	0	8	179
12:00:00	1	109	0	0	110	93	0	0	0	93	3	4	0	0	7	210
Grand Total	3	370	0	0	373	315	0	0	0	315	9	15	0	2	24	712
Approach%	0.8%	99.2%	0%	-	-	100%	0%	0%	-	-	37.5%	62.5%	0%	-	-	-
Totals %	0.4%	52%	0%	52.4%	52.4%	44.2%	0%	0%	44.2%	44.2%	1.3%	2.1%	0%	3.4%	3.4%	-
PHF	0.75	0.85	0	0.85	0.85	0.85	0	0	0.85	0.85	0.45	0.75	0	0.75	0.75	-
Heavy	0	3	0	3	3	2	0	0	2	2	0	0	0	0	0	-
Heavy %	0%	0.8%	0%	0.8%	0.8%	0.6%	0%	0%	0.6%	0.6%	0%	0%	0%	0%	0%	-
Lights	3	367	0	370	370	313	0	0	313	313	9	15	0	24	24	-
Lights %	100%	99.2%	0%	99.2%	99.2%	99.4%	0%	0%	99.4%	99.4%	100%	100%	0%	100%	100%	-
Single-Unit Trucks	0	3	0	3	3	1	0	0	1	1	0	0	0	0	0	-
Single-Unit Trucks %	0%	0.8%	0%	0.8%	0.8%	0.3%	0%	0%	0.3%	0.3%	0%	0%	0%	0%	0%	-
Buses	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	-
Buses %	0%	0%	0%	0%	0%	0.3%	0%	0%	0.3%	0.3%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	100%	-	-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-

Peak Hour: 12:30 PM - 01:30 PM Weather: Light Snow (1.59 °C)



Selected Hour: 11:15 AM - 12:15 PM Weather:





Turning Movement Count (3 . RATHBURN RD E & TOMKEN RD)

Start Time	N Approach TOMKEN RD						E Approach RATHBURN RD E						S Approach TOMKEN RD						W Approach RATHBURN RD E						Int. Total (15 min)	Int. Total (1 hr)	
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total			
07:00:00	6	36	7	0	0	49	9	7	0	0	0	16	2	77	5	0	0	84	7	10	5	0	0	22	171		
07:15:00	6	47	4	0	4	57	15	15	2	0	1	32	2	94	4	0	0	100	6	12	6	0	3	24	213		
07:30:00	6	90	14	0	2	110	24	22	3	0	2	49	3	174	6	0	3	183	11	19	16	0	4	46	388		
07:45:00	17	151	19	0	1	187	22	9	5	0	2	36	6	187	16	0	2	209	23	26	17	0	3	66	498	1270	
08:00:00	10	134	16	0	3	160	31	29	4	0	2	64	5	103	24	0	2	132	34	36	12	0	3	82	438	1537	
08:15:00	11	90	17	0	1	118	20	25	2	0	0	47	5	150	24	0	2	179	13	20	10	0	2	43	387	1711	
08:30:00	3	86	15	0	3	104	26	23	3	0	2	52	9	112	9	1	4	131	15	32	11	0	2	58	345	1668	
08:45:00	10	100	22	0	3	132	24	27	5	0	3	56	4	128	19	0	1	151	15	25	16	0	2	56	395	1565	
09:00:00	5	102	22	1	2	130	18	11	2	0	1	31	0	107	19	0	0	126	12	25	3	0	5	40	327	1454	
09:15:00	5	73	15	0	2	93	14	20	2	0	4	36	3	86	9	0	2	98	12	28	9	0	1	49	276	1343	
09:30:00	8	77	18	0	1	103	19	18	2	0	1	39	0	59	15	0	0	74	10	16	4	0	2	30	246	1244	
09:45:00	4	60	17	0	1	81	19	23	4	0	0	46	5	69	7	0	0	81	10	18	5	0	4	33	241	1090	
BREAK																											
16:00:00	22	176	19	0	5	217	14	48	4	0	2	66	7	116	19	0	0	142	7	27	7	0	6	41	466		
16:15:00	12	164	18	0	4	194	23	62	5	0	0	90	4	105	22	0	3	131	11	45	13	0	2	69	484		
16:30:00	29	197	27	0	4	253	22	58	3	0	5	83	5	122	16	0	4	143	10	35	3	0	10	48	527		
16:45:00	25	173	31	0	4	229	19	62	7	0	2	88	3	97	28	0	0	128	10	36	6	0	7	52	497	1974	
17:00:00	27	189	20	0	5	236	20	70	3	0	3	93	8	112	31	0	0	151	8	40	9	0	7	57	537	2045	
17:15:00	17	235	30	0	6	282	14	69	6	0	6	89	6	111	29	0	0	146	24	34	8	0	0	66	583	2144	
17:30:00	17	185	28	0	6	230	25	58	7	0	3	90	4	110	18	0	5	132	19	39	7	0	8	65	517	2134	
17:45:00	12	141	24	0	7	177	21	37	1	0	4	59	4	101	22	0	3	127	15	28	2	0	3	45	408	2045	
18:00:00	12	119	27	0	3	158	22	50	5	0	1	77	4	106	29	0	3	139	14	43	8	0	5	65	439	1947	
18:15:00	24	137	29	0	3	190	17	54	4	0	6	75	5	92	24	0	3	121	12	31	8	0	3	51	437	1801	
18:30:00	6	110	19	0	1	135	7	42	2	0	4	51	1	71	21	0	5	93	12	26	6	0	1	44	323	1607	
18:45:00	8	118	22	0	5	148	11	28	2	0	5	41	5	67	10	0	3	82	9	31	9	0	2	49	320	1519	
19:00:00	13	81	17	0	5	111	11	23	6	0	1	40	3	78	20	0	0	101	7	25	3	0	2	35	287	1367	
19:15:00	4	77	15	0	3	96	18	37	1	0	1	56	2	54	13	0	4	69	14	30	7	0	6	51	272	1202	
19:30:00	10	71	7	0	0	88	13	18	3	0	0	34	2	64	15	0	0	81	11	19	6	0	3	36	239	1118	
19:45:00	10	73	19	0	2	102	10	24	3	0	2	37	1	66	17	0	1	84	14	30	5	0	4	49	272	1070	
Grand Total	339	3292	538	1	86	4170	508	969	96	0	63	1573	108	2818	491	1	50	3418	365	786	221	0	100	1372	10533	-	
Approach%	8.1%	78.9%	12.9%	0%	-	-	32.3%	61.6%	6.1%	0%	-	-	3.2%	82.4%	14.4%	0%	-	-	26.6%	57.3%	16.1%	0%	-	-	-	-	-
Totals %	3.2%	31.3%	5.1%	0%	-	39.6%	4.8%	9.2%	0.9%	0%	-	14.9%	1%	26.8%	4.7%	0%	-	32.5%	3.5%	7.5%	2.1%	0%	-	13%	-	-	
Heavy	3	76	7	0	-	-	13	38	0	0	-	-	2	93	6	0	-	-	12	35	3	0	-	-	-	-	-
Heavy %	0.9%	2.3%	1.3%	0%	-	-	2.6%	3.9%	0%	0%	-	-	1.9%	3.3%	1.2%	0%	-	-	3.3%	4.5%	1.4%	0%	-	-	-	-	-
Bicycles	0	0	0	0	-	-	0	1	0	0	-	-	0	0	0	0	-	-	0	0	0	0	-	-	-	-	-
Bicycle %	0%	0%	0%	0%	-	-	0%	0.1%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	-	-	-



Peak Hour: 07:30 AM - 08:30 AM Weather: Mist (4.68 °C)

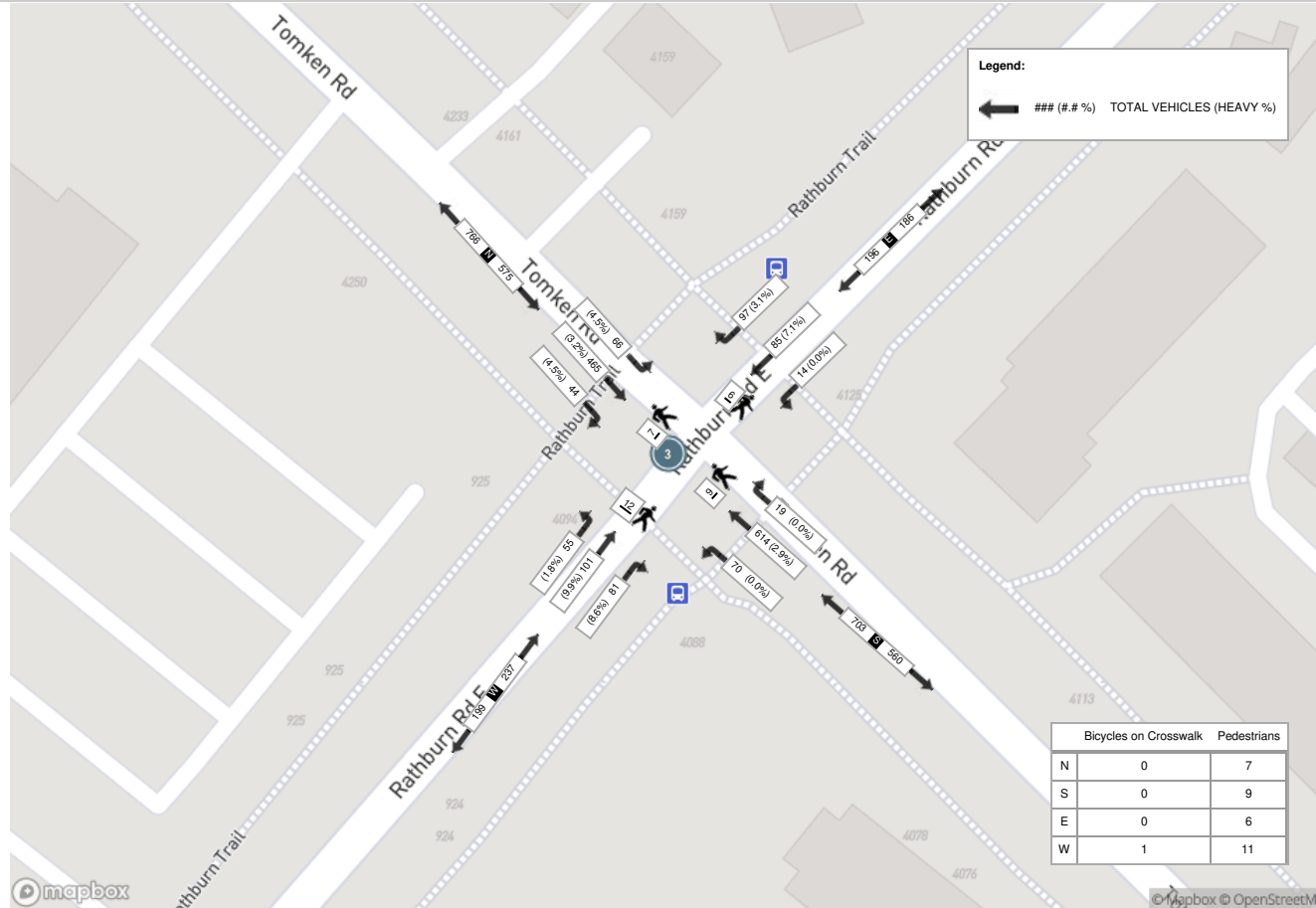
Start Time	N Approach TOMKEN RD						E Approach RATHBURN RD E						S Approach TOMKEN RD						W Approach RATHBURN RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:30:00	6	90	14	0	2	110	24	22	3	0	2	49	3	174	6	0	3	183	11	19	16	0	4	46	388
07:45:00	17	151	19	0	1	187	22	9	5	0	2	36	6	187	16	0	2	209	23	26	17	0	3	66	498
08:00:00	10	134	16	0	3	160	31	29	4	0	2	64	5	103	24	0	2	132	34	36	12	0	3	82	438
08:15:00	11	90	17	0	1	118	20	25	2	0	0	47	5	150	24	0	2	179	13	20	10	0	2	43	387
Grand Total	44	465	66	0	7	575	97	85	14	0	6	196	19	614	70	0	9	703	81	101	55	0	12	237	1711
Approach%	7.7%	80.9%	11.5%	0%	-	-	49.5%	43.4%	7.1%	0%	-	-	2.7%	87.3%	10%	0%	-	-	34.2%	42.6%	23.2%	0%	-	-	-
Totals %	2.6%	27.2%	3.9%	0%	33.6%	33.6%	5.7%	5%	0.8%	0%	11.5%	11.5%	1.1%	35.9%	4.1%	0%	41.1%	41.1%	4.7%	5.9%	3.2%	0%	13.9%	13.9%	-
PHF	0.65	0.77	0.87	0	0.77	0.77	0.78	0.73	0.7	0	0.77	0.77	0.79	0.82	0.73	0	0.84	0.84	0.6	0.7	0.81	0	0.72	0.72	-
Heavy	2	15	3	0	20	20	3	6	0	0	9	9	0	18	0	0	18	18	7	10	1	0	18	18	-
Heavy %	4.5%	3.2%	4.5%	0%	3.5%	3.5%	3.1%	7.1%	0%	0%	4.6%	4.6%	0%	2.9%	0%	0%	2.6%	2.6%	8.6%	9.9%	1.8%	0%	7.6%	7.6%	-
Lights	42	450	63	0	555	555	94	79	14	0	187	187	19	596	70	0	685	685	74	91	54	0	219	219	-
Lights %	95.5%	96.8%	95.5%	0%	96.5%	96.5%	96.9%	92.9%	100%	0%	95.4%	95.4%	100%	97.1%	100%	0%	97.4%	97.4%	91.4%	90.1%	98.2%	0%	92.4%	92.4%	-
Single-Unit Trucks	0	2	1	0	3	3	1	1	0	0	2	2	0	1	0	0	1	1	1	0	0	0	1	1	-
Single-Unit Trucks %	0%	0.4%	1.5%	0%	0.5%	0.5%	1%	1.2%	0%	0%	1%	1%	0%	0.2%	0%	0%	0.1%	0.1%	1.2%	0%	0%	0%	0.4%	0.4%	-
Buses	2	13	2	0	17	17	2	5	0	0	7	7	0	17	0	0	17	17	5	10	1	0	16	16	-
Buses %	4.5%	2.8%	3%	0%	3%	3%	2.1%	5.9%	0%	0%	3.6%	3.6%	0%	2.8%	0%	0%	2.4%	2.4%	6.2%	9.9%	1.8%	0%	6.8%	6.8%	-
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1.2%	0%	0%	0%	0.4%	0.4%	-
Pedestrians	-	-	-	-	7	7	-	-	-	-	6	6	-	-	-	-	9	9	-	-	-	-	11	11	-
Pedestrians%	-	-	-	-	20.6%	20.6%	-	-	-	-	17.6%	17.6%	-	-	-	-	26.5%	26.5%	-	-	-	-	32.4%	32.4%	-
Bicycles on Crosswalk	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	1	1	-
Bicycles on Crosswalk%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-	-	-	-	2.9%	2.9%	-
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Bicycles on Road%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-



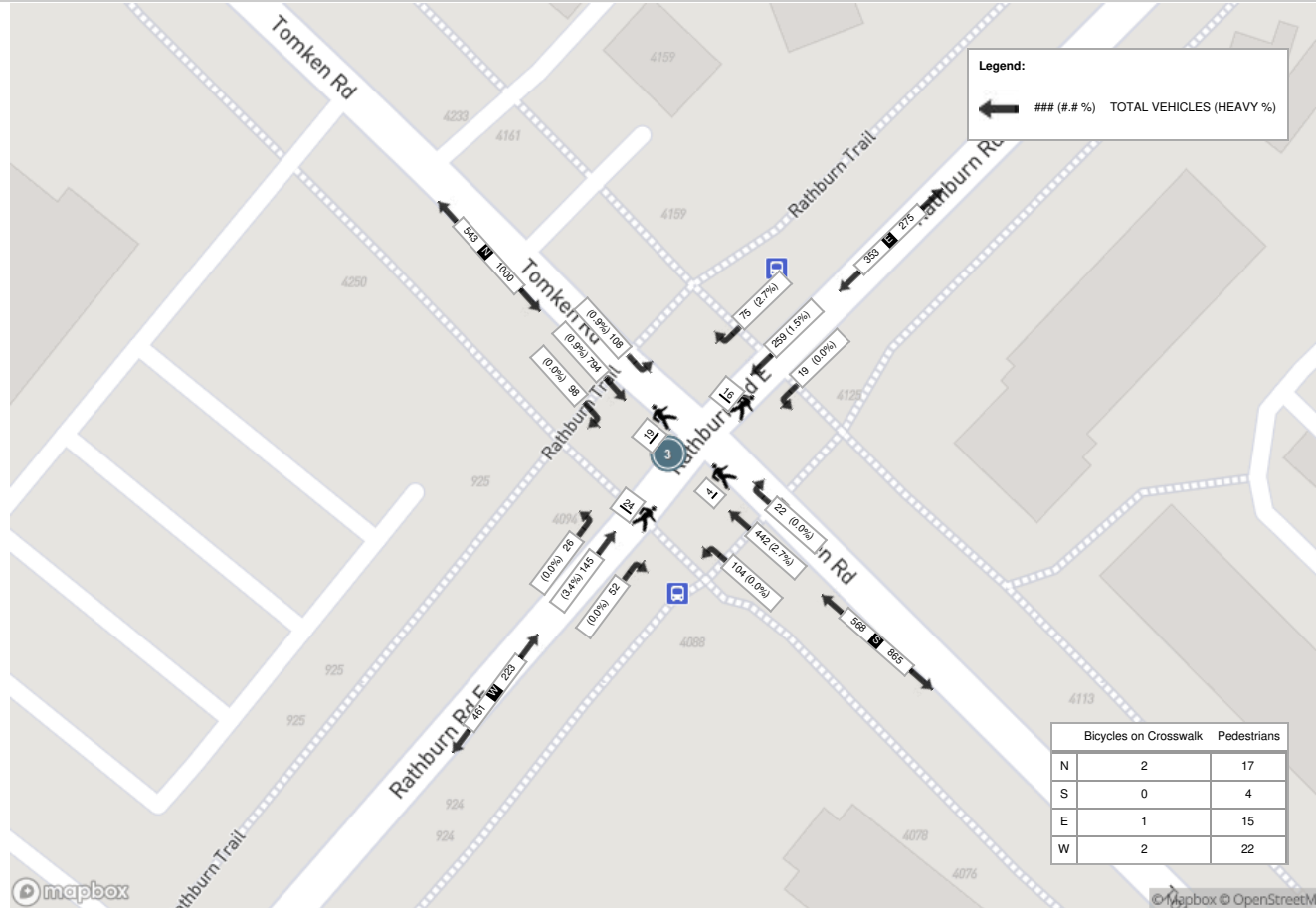
Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (10.64 °C)

Start Time	N Approach TOMKEN RD						E Approach RATHBURN RD E						S Approach TOMKEN RD						W Approach RATHBURN RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:30:00	29	197	27	0	4	253	22	58	3	0	5	83	5	122	16	0	4	143	10	35	3	0	10	48	527
16:45:00	25	173	31	0	4	229	19	62	7	0	2	88	3	97	28	0	0	128	10	36	6	0	7	52	497
17:00:00	27	189	20	0	5	236	20	70	3	0	3	93	8	112	31	0	0	151	8	40	9	0	7	57	537
17:15:00	17	235	30	0	6	282	14	69	6	0	6	89	6	111	29	0	0	146	24	34	8	0	0	66	583
Grand Total	98	794	108	0	19	1000	75	259	19	0	16	353	22	442	104	0	4	568	52	145	26	0	24	223	2144
Approach%	9.8%	79.4%	10.8%	0%	-	-	21.2%	73.4%	5.4%	0%	-	-	3.9%	77.8%	18.3%	0%	-	-	23.3%	65%	11.7%	0%	-	-	-
Totals %	4.6%	37%	5%	0%	46.6%	46.6%	3.5%	12.1%	0.9%	0%	16.5%	16.5%	1%	20.6%	4.9%	0%	26.5%	26.5%	2.4%	6.8%	1.2%	0%	10.4%	10.4%	-
PHF	0.84	0.84	0.87	0	0.89	0.89	0.85	0.93	0.68	0	0.95	0.95	0.69	0.91	0.84	0	0.94	0.94	0.54	0.91	0.72	0	0.84	0.84	-
Heavy	0	7	1	0	8	8	2	4	0	0	6	6	0	12	0	0	12	12	0	5	0	0	5	5	-
Heavy %	0%	0.9%	0.9%	0%	0.8%	0.8%	2.7%	1.5%	0%	0%	1.7%	1.7%	0%	2.7%	0%	0%	2.1%	2.1%	0%	3.4%	0%	0%	2.2%	2.2%	-
Lights	98	787	107	0	992	992	73	255	19	0	347	347	22	430	104	0	556	556	52	140	26	0	218	218	-
Lights %	100%	99.1%	99.1%	0%	99.2%	99.2%	97.3%	98.5%	100%	0%	98.3%	98.3%	100%	97.3%	100%	0%	97.9%	97.9%	100%	96.6%	100%	0%	97.8%	97.8%	-
Single-Unit Trucks	0	2	1	0	3	3	2	0	0	0	2	2	0	3	0	0	3	3	0	2	0	0	2	2	-
Single-Unit Trucks %	0%	0.3%	0.9%	0%	0.3%	0.3%	2.7%	0%	0%	0%	0.6%	0.6%	0%	0.7%	0%	0%	0.5%	0.5%	0%	1.4%	0%	0%	0.9%	0.9%	-
Buses	0	5	0	0	5	5	0	4	0	0	4	4	0	8	0	0	8	8	0	3	0	0	3	3	-
Buses %	0%	0.6%	0%	0%	0.5%	0.5%	0%	1.5%	0%	0%	1.1%	1.1%	0%	1.8%	0%	0%	1.4%	1.4%	0%	2.1%	0%	0%	1.3%	1.3%	-
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0.2%	0.2%	0%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	-	17	17	-	-	-	-	15	15	-	-	-	-	4	4	-	-	-	-	22	22	-
Pedestrians%	-	-	-	-	27%	27%	-	-	-	-	23.8%	23.8%	-	-	-	-	6.3%	6.3%	-	-	-	-	34.9%	34.9%	-
Bicycles on Crosswalk	-	-	-	-	2	2	-	-	-	-	1	1	-	-	-	-	0	0	-	-	-	-	2	2	-
Bicycles on Crosswalk%	-	-	-	-	3.2%	3.2%	-	-	-	-	1.6%	1.6%	-	-	-	-	0%	0%	-	-	-	-	3.2%	3.2%	-
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Bicycles on Road%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-

Peak Hour: 07:30 AM - 08:30 AM Weather: Mist (4.68 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (10.64 °C)





Turning Movement Count (3 . RATHBURN RD E & TOMKEN RD)

Start Time	N Approach TOMKEN RD						E Approach RATHBURN RD E						S Approach TOMKEN RD						W Approach RATHBURN RD E						Int. Total (15 min)	Int. Total (1 hr)	
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total			
08:00:00	1	20	3	0	1	24	10	3	2	0	2	15	1	13	8	0	1	22	3	2	2	0	1	7	68		
08:15:00	1	20	5	0	2	26	8	5	1	0	1	14	1	18	7	0	0	26	4	4	0	0	0	8	74		
08:30:00	4	24	4	0	1	32	11	10	1	0	0	22	1	31	9	0	0	41	6	7	2	0	0	15	110		
08:45:00	1	30	8	0	1	39	13	4	1	0	0	18	3	33	5	0	0	41	7	10	2	0	0	19	117	369	
09:00:00	6	38	10	0	1	54	12	13	1	0	0	26	2	28	6	0	2	36	10	25	3	0	0	38	154	455	
09:15:00	5	39	14	0	2	58	13	14	2	0	0	29	6	40	17	0	0	63	7	17	8	0	0	32	182	563	
09:30:00	7	52	14	0	0	73	14	18	2	0	0	34	3	32	7	0	1	42	13	21	3	0	0	37	186	639	
09:45:00	7	65	11	0	2	83	8	10	5	0	0	23	3	47	6	0	1	56	12	16	5	0	2	33	195	717	
10:00:00	5	59	13	0	1	77	13	14	1	0	2	28	3	33	11	0	0	47	11	18	0	0	0	29	181	744	
10:15:00	3	56	10	0	2	69	9	29	0	0	0	38	3	33	6	0	1	42	12	22	3	0	1	37	186	748	
10:30:00	6	47	19	0	0	72	20	24	1	0	0	45	1	53	14	0	0	68	8	32	5	0	0	45	230	792	
10:45:00	4	57	23	0	2	84	18	36	3	0	3	57	1	66	15	0	3	82	15	22	4	0	4	41	264	861	
11:00:00	7	50	18	0	1	75	15	16	4	0	0	35	3	63	8	0	1	74	3	17	2	0	1	22	206	886	
11:15:00	12	72	16	0	2	100	9	30	4	0	1	43	1	49	18	0	1	68	9	25	5	0	0	39	250	950	
11:30:00	4	70	14	0	2	88	22	18	4	0	0	44	3	64	14	0	0	81	15	21	5	0	0	41	254	974	
11:45:00	5	74	21	0	3	100	18	27	2	0	1	47	2	66	17	0	2	85	13	20	8	0	6	41	273	983	
12:00:00	4	83	16	0	6	103	15	27	2	0	2	44	8	67	14	0	2	89	25	42	4	0	8	71	307	1084	
12:15:00	12	99	17	0	1	128	14	24	1	0	1	39	0	72	16	0	1	88	16	24	5	0	2	45	300	1134	
12:30:00	10	89	21	0	3	120	20	33	2	0	3	55	1	71	14	0	2	86	20	36	8	0	2	64	325	1205	
12:45:00	10	109	17	0	3	136	19	36	0	0	1	55	4	62	21	0	1	87	7	29	9	0	0	45	323	1255	
13:00:00	10	77	19	0	5	106	23	33	3	0	1	59	4	93	14	0	5	111	7	14	4	0	6	25	301	1249	
13:15:00	10	105	23	0	2	138	10	27	6	0	0	43	3	95	16	0	2	114	13	33	6	0	2	52	347	1296	
13:30:00	8	84	17	0	3	109	16	26	2	0	5	44	1	80	11	0	0	92	9	34	7	0	2	50	295	1266	
13:45:00	13	96	18	0	2	127	24	34	5	0	2	63	3	77	11	0	1	91	11	30	16	0	6	57	338	1281	
14:00:00	3	80	14	0	4	97	16	32	4	0	2	52	2	77	16	0	2	95	23	55	2	0	5	80	324	1304	
14:15:00	8	74	20	0	5	102	23	46	1	0	0	70	4	73	13	0	0	90	10	39	7	0	4	56	318	1275	
14:30:00	13	87	22	0	1	122	15	32	3	0	3	50	3	78	13	0	2	94	9	31	11	0	2	51	317	1297	
14:45:00	13	90	17	0	4	120	19	35	5	0	0	59	2	59	15	0	0	76	17	29	1	0	1	47	302	1261	
Grand Total	192	1846	424	0	62	2462	427	656	68	0	30	1151	72	1573	342	0	31	1987	315	675	137	0	55	1127	6727	-	
Approach%	7.8%	75%	17.2%	0%	-	-	37.1%	57%	5.9%	0%	-	-	3.6%	79.2%	17.2%	0%	-	-	28%	59.9%	12.2%	0%	-	-	-	-	-
Totals %	2.9%	27.4%	6.3%	0%	-	36.6%	6.3%	9.8%	1%	0%	-	17.1%	1.1%	23.4%	5.1%	0%	-	29.5%	4.7%	10%	2%	0%	-	16.8%	-	-	
Heavy	2	9	1	0	-	-	1	13	0	0	-	-	0	3	0	0	-	-	1	13	0	0	-	-	-	-	-
Heavy %	1%	0.5%	0.2%	0%	-	-	0.2%	2%	0%	0%	-	-	0%	0.2%	0%	0%	-	-	0.3%	1.9%	0%	0%	-	-	-	-	-
Bicycles	0	0	0	0	-	-	0	0	0	0	-	-	0	1	0	0	-	-	1	1	0	0	-	-	-	-	-
Bicycle %	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0.1%	0%	0%	-	-	0.3%	0.1%	0%	0%	-	-	-	-	-



Peak Hour: 01:15 PM - 02:15 PM Weather: Light Snow (1.59 °C)

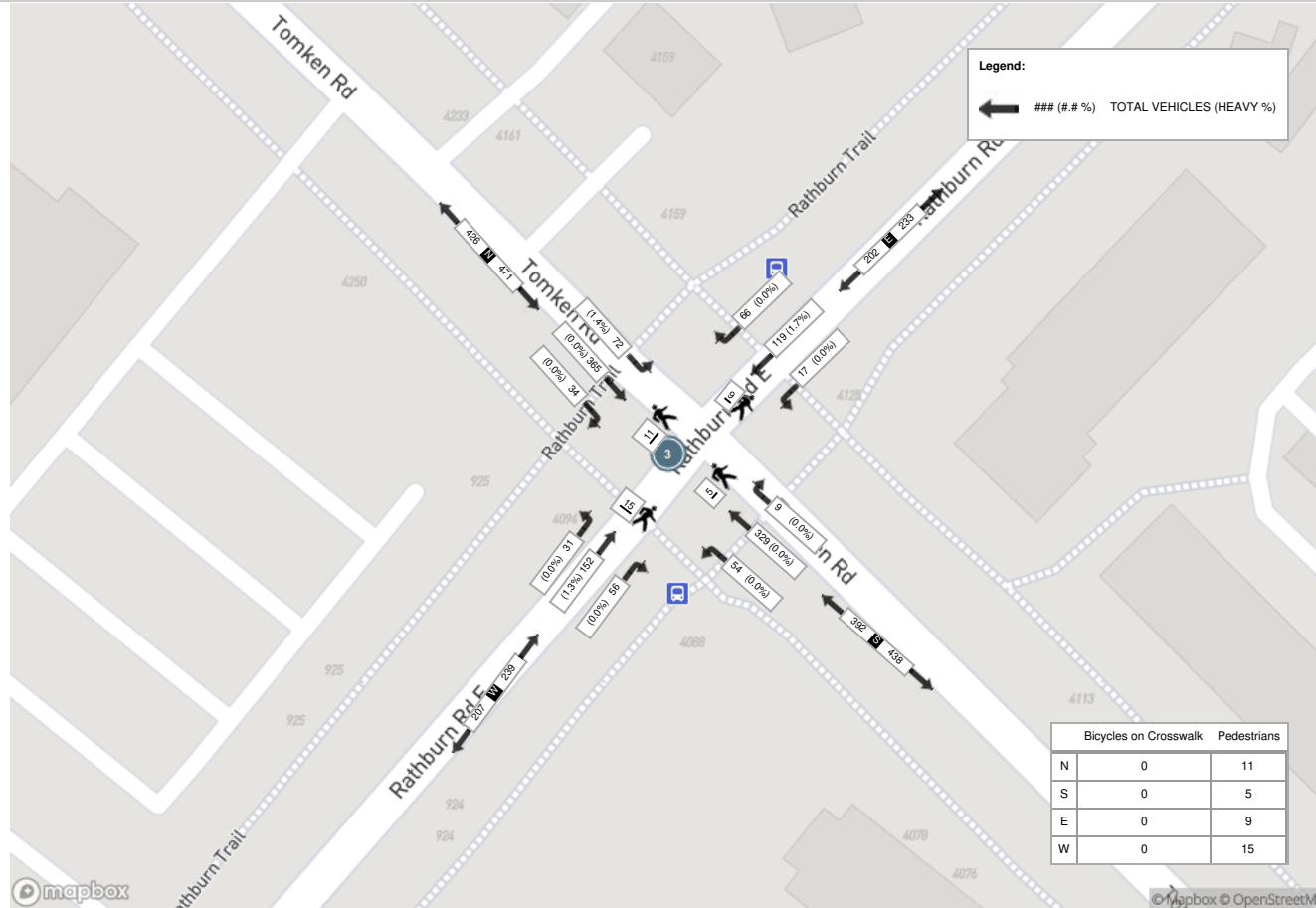
Start Time	N Approach TOMKEN RD						E Approach RATHBURN RD E						S Approach TOMKEN RD						W Approach RATHBURN RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
13:15:00	10	105	23	0	2	138	10	27	6	0	0	43	3	95	16	0	2	114	13	33	6	0	2	52	347
13:30:00	8	84	17	0	3	109	16	26	2	0	5	44	1	80	11	0	0	92	9	34	7	0	2	50	295
13:45:00	13	96	18	0	2	127	24	34	5	0	2	63	3	77	11	0	1	91	11	30	16	0	6	57	338
14:00:00	3	80	14	0	4	97	16	32	4	0	2	52	2	77	16	0	2	95	23	55	2	0	5	80	324
Grand Total	34	365	72	0	11	471	66	119	17	0	9	202	9	329	54	0	5	392	56	152	31	0	15	239	1304
Approach%	7.2%	77.5%	15.3%	0%		-	32.7%	58.9%	8.4%	0%		-	2.3%	83.9%	13.8%	0%		-	23.4%	63.6%	13%	0%		-	-
Totals %	2.6%	28%	5.5%	0%		36.1%	5.1%	9.1%	1.3%	0%		15.5%	0.7%	25.2%	4.1%	0%		30.1%	4.3%	11.7%	2.4%	0%		18.3%	-
PHF	0.65	0.87	0.78	0		0.85	0.69	0.88	0.71	0		0.8	0.75	0.87	0.84	0		0.86	0.61	0.69	0.48	0		0.75	-
Heavy	0	0	1	0		1	0	2	0	0		2	0	0	0	0		0	0	2	0	0		2	-
Heavy %	0%	0%	1.4%	0%		0.2%	0%	1.7%	0%	0%		1%	0%	0%	0%	0%		0%	0%	1.3%	0%	0%		0.8%	-
Lights	34	365	71	0		470	66	117	17	0		200	9	329	54	0		392	56	150	31	0		237	-
Lights %	100%	100%	98.6%	0%		99.8%	100%	98.3%	100%	0%		99%	100%	100%	100%	0%		100%	100%	98.7%	100%	0%		99.2%	-
Single-Unit Trucks	0	0	1	0		1	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	-
Single-Unit Trucks %	0%	0%	1.4%	0%		0.2%	0%	0.8%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Buses	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	2	0	0		2	-
Buses %	0%	0%	0%	0%		0%	0%	0.8%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	1.3%	0%	0%		0.8%	-
Pedestrians	-	-	-	-	11	-	-	-	-	-	9	-	-	-	-	-	5	-	-	-	-	-	15	-	-
Pedestrians%	-	-	-	-	27.5%	-	-	-	-	-	22.5%	-	-	-	-	-	12.5%	-	-	-	-	-	37.5%	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



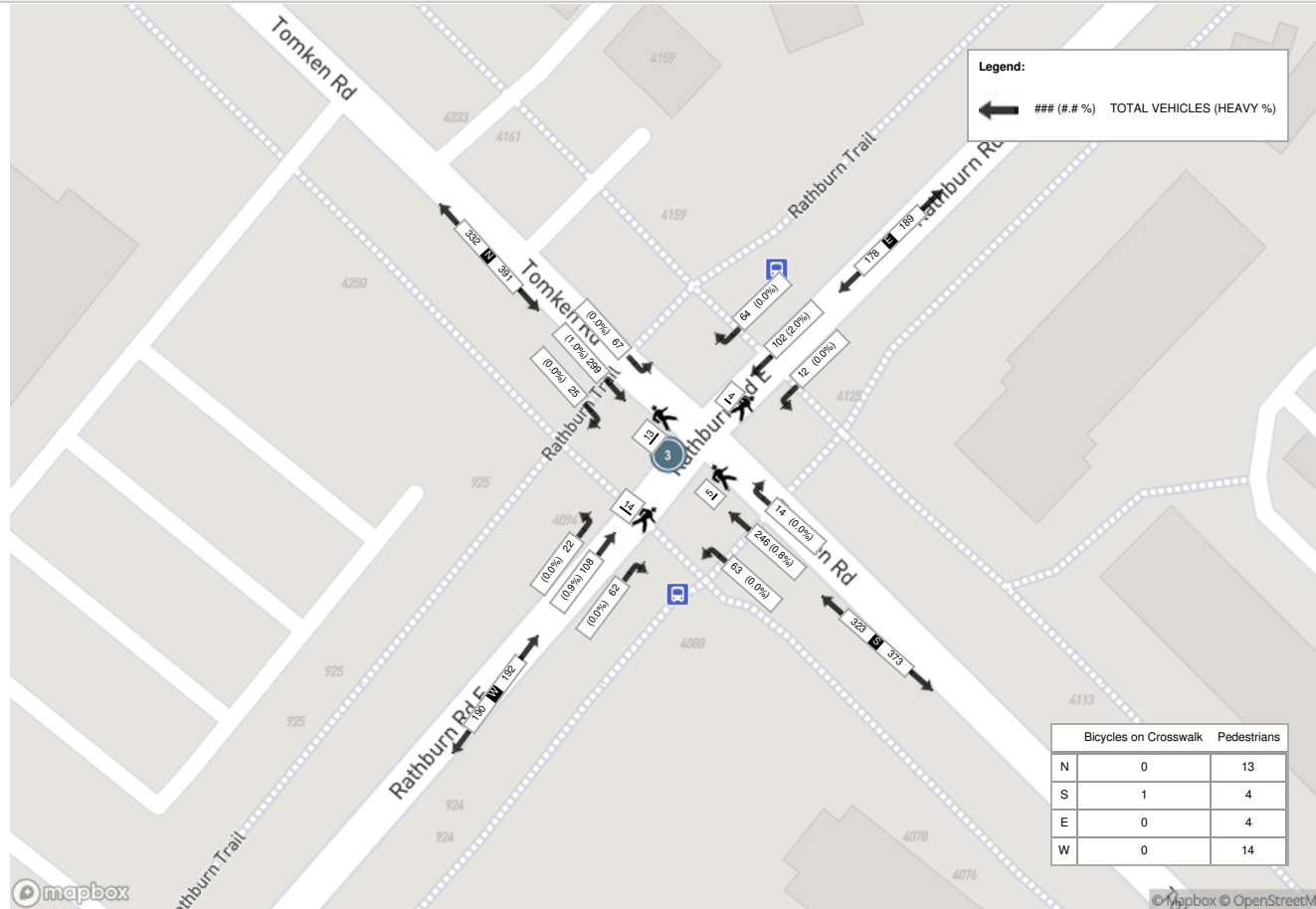
Selected Hour: 11:15 AM - 12:15 PM Weather:

Start Time	N Approach TOMKEN RD						E Approach RATHBURN RD E						S Approach TOMKEN RD						W Approach RATHBURN RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
11:15:00	12	72	16	0	2	100	9	30	4	0	1	43	1	49	18	0	1	68	9	25	5	0	0	39	250
11:30:00	4	70	14	0	2	88	22	18	4	0	0	44	3	64	14	0	0	81	15	21	5	0	0	41	254
11:45:00	5	74	21	0	3	100	18	27	2	0	1	47	2	66	17	0	2	85	13	20	8	0	6	41	273
12:00:00	4	83	16	0	6	103	15	27	2	0	2	44	8	67	14	0	2	89	25	42	4	0	8	71	307
Grand Total	25	299	67	0	13	391	64	102	12	0	4	178	14	246	63	0	5	323	62	108	22	0	14	192	1084
Approach%	6.4%	76.5%	17.1%	0%		-	36%	57.3%	6.7%	0%		-	4.3%	76.2%	19.5%	0%		-	32.3%	56.3%	11.5%	0%		-	-
Totals %	2.3%	27.6%	6.2%	0%		36.1%	5.9%	9.4%	1.1%	0%		16.4%	1.3%	22.7%	5.8%	0%		29.8%	5.7%	10%	2%	0%		17.7%	-
PHF	0.52	0.9	0.8	0		0.95	0.73	0.85	0.75	0		0.95	0.44	0.92	0.88	0		0.91	0.62	0.64	0.69	0		0.68	-
Heavy	0	3	0	0		3	0	2	0	0		2	0	2	0	0		2	0	1	0	0		1	-
Heavy %	0%	1%	0%	0%		0.8%	0%	2%	0%	0%		1.1%	0%	0.8%	0%	0%		0.6%	0%	0.9%	0%	0%		0.5%	-
Lights	25	296	67	0		388	64	100	12	0		176	14	244	63	0		321	62	107	22	0		191	-
Lights %	100%	99%	100%	0%		99.2%	100%	98%	100%	0%		98.9%	100%	99.2%	100%	0%		99.4%	100%	99.1%	100%	0%		99.5%	-
Single-Unit Trucks	0	3	0	0		3	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	-
Single-Unit Trucks %	0%	1%	0%	0%		0.8%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.3%	0%	0%	0%	0%		0%	-
Buses	0	0	0	0		0	0	2	0	0		2	0	1	0	0		1	0	1	0	0		1	-
Buses %	0%	0%	0%	0%		0%	0%	2%	0%	0%		1.1%	0%	0.4%	0%	0%		0.3%	0%	0.9%	0%	0%		0.5%	-
Pedestrians	-	-	-	-	13	-	-	-	-	4	-	-	-	-	-	4	-	-	-	-	-	14	-	-	-
Pedestrians %	-	-	-	-	36.1%	-	-	-	-	11.1%	-	-	-	-	-	11.1%	-	-	-	-	-	38.9%	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-
Bicycles on Crosswalk %	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	2.8%	-	-	-	-	-	0%	-	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	-
Bicycles on Road %	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-

Peak Hour: 01:15 PM - 02:15 PM Weather: Light Snow (1.59 °C)



Selected Hour: 11:15 AM - 12:15 PM Weather:





Turning Movement Count (2 . RATHBURN RD E & TOMKEN PLAZA / TOMKEN GROVE)

Start Time	N Approach TOMKEN PLAZA						E Approach RATHBURN RD E						S Approach TOMKEN GROVE						W Approach RATHBURN RD E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	2	0	0	0	0	2	1	17	0	0	0	18	1	0	0	0	0	1	0	20	9	0	0	29	50	
07:15:00	2	0	0	0	1	2	0	23	0	0	0	23	1	0	0	0	1	1	0	26	1	1	0	28	54	
07:30:00	3	0	1	0	1	4	4	30	0	0	0	34	0	0	1	0	0	1	0	46	9	0	0	55	94	
07:45:00	6	0	1	0	4	7	5	35	0	0	0	40	2	0	1	0	3	3	0	68	8	0	0	76	126	324
08:00:00	7	0	2	0	1	9	3	63	0	0	0	66	2	1	1	0	1	4	0	76	8	0	0	84	163	437
08:15:00	7	1	0	0	3	8	10	47	2	0	3	59	0	0	1	0	4	1	1	41	12	0	2	54	122	505
08:30:00	13	1	4	0	3	18	7	25	0	0	0	32	1	0	2	0	3	3	1	52	9	0	0	62	115	526
08:45:00	10	0	4	0	2	14	10	46	2	0	2	58	0	0	2	0	3	2	0	53	16	0	1	69	143	543
09:00:00	15	0	3	0	1	18	10	25	0	0	1	35	1	0	1	0	4	2	2	38	17	0	4	57	112	492
09:15:00	14	0	4	0	2	18	9	26	0	0	2	35	0	0	0	0	2	0	1	42	9	0	1	52	105	475
09:30:00	12	0	5	0	2	17	10	30	1	0	0	41	2	0	1	0	1	3	1	27	26	0	0	54	115	475
09:45:00	15	0	1	0	2	16	8	26	0	0	0	34	1	0	1	0	1	2	1	32	10	0	0	43	95	427
BREAK																										
16:00:00	34	0	12	0	5	46	8	81	0	0	0	89	0	0	0	0	1	0	1	33	27	0	1	61	196	
16:15:00	27	0	6	0	3	33	14	83	0	0	0	97	2	1	1	0	2	4	2	58	14	0	1	74	208	
16:30:00	28	2	7	0	7	37	21	80	1	0	0	102	0	0	0	0	3	0	1	46	22	0	0	69	208	
16:45:00	24	1	4	0	3	29	29	82	1	0	2	112	0	0	1	0	2	1	1	46	27	0	0	74	216	828
17:00:00	38	0	17	0	2	55	24	106	1	0	0	131	1	0	0	0	2	1	3	40	20	0	0	63	250	882
17:15:00	27	1	14	0	2	42	24	90	1	0	0	115	1	0	1	0	3	2	1	51	22	0	0	74	233	907
17:30:00	31	0	10	0	3	41	15	77	0	0	0	92	0	0	2	0	6	2	0	51	19	0	2	70	205	904
17:45:00	20	0	8	0	8	28	14	55	3	0	0	72	1	0	1	0	2	2	2	40	21	0	1	63	165	853
18:00:00	30	0	11	0	2	41	23	68	1	1	1	93	1	0	1	0	1	2	1	48	13	0	1	62	198	801
18:15:00	30	0	12	0	0	42	23	75	2	0	0	100	3	0	0	0	1	3	0	40	18	0	0	58	203	771
18:30:00	23	0	5	0	0	28	16	48	2	0	0	66	0	0	1	0	4	1	0	37	24	0	0	61	156	722
18:45:00	21	0	5	0	2	26	8	41	2	0	1	51	2	0	0	0	2	2	1	42	15	0	0	58	137	694
19:00:00	21	0	12	0	4	33	14	43	0	0	0	57	0	0	2	0	1	2	0	22	18	0	0	40	132	628
19:15:00	26	0	8	0	3	34	12	42	0	0	0	54	0	0	1	0	1	1	2	42	19	0	0	63	152	577
19:30:00	28	0	8	0	2	36	8	36	0	0	1	44	1	0	0	0	0	1	1	33	13	0	0	47	128	549
19:45:00	15	0	7	0	5	22	16	30	0	0	2	46	3	0	0	0	1	3	1	35	18	0	0	54	125	537
Grand Total	529	6	171	0	73	706	346	1430	19	1	15	1796	26	2	22	0	55	50	24	1185	444	1	14	1654	4206	-
Approach%	74.9%	0.8%	24.2%	0%	-	-	19.3%	79.6%	1.1%	0.1%	-	-	52%	4%	44%	0%	-	-	1.5%	71.6%	26.8%	0.1%	-	-	-	-
Totals %	12.6%	0.1%	4.1%	0%	-	16.8%	8.2%	34%	0.5%	0%	-	42.7%	0.6%	0%	0.5%	0%	-	1.2%	0.6%	28.2%	10.6%	0%	-	39.3%	-	-
Heavy	3	0	0	0	-	-	2	45	0	0	-	-	0	0	0	0	-	-	0	51	1	0	-	-	-	-
Heavy %	0.6%	0%	0%	0%	-	-	0.6%	3.1%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	4.3%	0.2%	0%	-	-	-	-
Bicycles	1	0	0	0	-	-	0	1	0	0	-	-	0	0	0	0	-	-	0	0	0	0	-	-	-	-
Bicycle %	0.2%	0%	0%	0%	-	-	0%	0.1%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	-	-



Peak Hour: 08:00 AM - 09:00 AM Weather: Mist (4.68 °C)

Start Time	N Approach TOMKEN PLAZA						E Approach RATHBURN RD E						S Approach TOMKEN GROVE						W Approach RATHBURN RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	7	0	2	0	1	9	3	63	0	0	0	66	2	1	1	0	1	4	0	76	8	0	0	84	163
08:15:00	7	1	0	0	3	8	10	47	2	0	3	59	0	0	1	0	4	1	1	41	12	0	2	54	122
08:30:00	13	1	4	0	3	18	7	25	0	0	0	32	1	0	2	0	3	3	1	52	9	0	0	62	115
08:45:00	10	0	4	0	2	14	10	46	2	0	2	58	0	0	2	0	3	2	0	53	16	0	1	69	143
Grand Total	37	2	10	0	9	49	30	181	4	0	5	215	3	1	6	0	11	10	2	222	45	0	3	269	543
Approach%	75.5%	4.1%	20.4%	0%	-	-	14%	84.2%	1.9%	0%	-	-	30%	10%	60%	0%	-	-	0.7%	82.5%	16.7%	0%	-	-	-
Totals %	6.8%	0.4%	1.8%	0%	9%	9%	5.5%	33.3%	0.7%	0%	39.6%	39.6%	0.6%	0.2%	1.1%	0%	1.8%	1.8%	0.4%	40.9%	8.3%	0%	49.5%	49.5%	-
PHF	0.71	0.5	0.63	0	0.68	0.68	0.75	0.72	0.5	0	0.81	0.81	0.38	0.25	0.75	0	0.63	0.63	0.5	0.73	0.7	0	0.8	0.8	-
Heavy	0	0	0	0	0	0	0	8	0	0	8	8	0	0	0	0	0	0	0	12	0	0	12	12	-
Heavy %	0%	0%	0%	0%	0%	0%	0%	4.4%	0%	0%	3.7%	3.7%	0%	0%	0%	0%	0%	0%	0%	5.4%	0%	0%	4.5%	4.5%	-
Lights	37	2	10	0	9	49	30	173	4	0	5	207	3	1	6	0	10	10	2	210	45	0	3	257	-
Lights %	100%	100%	100%	0%	100%	100%	100%	95.6%	100%	0%	100%	96.3%	100%	100%	100%	0%	100%	100%	100%	94.6%	100%	0%	100%	95.5%	-
Single-Unit Trucks	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	2	0	0	2	2	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0.6%	0%	0%	0.5%	0.5%	0%	0%	0%	0%	0%	0%	0%	0.9%	0%	0%	0.7%	0.7%	-
Buses	0	0	0	0	0	0	0	7	0	0	7	7	0	0	0	0	0	0	0	10	0	0	10	10	-
Buses %	0%	0%	0%	0%	0%	0%	0%	3.9%	0%	0%	3.3%	3.3%	0%	0%	0%	0%	0%	0%	0%	4.5%	0%	0%	3.7%	3.7%	-
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	-	9	-	-	-	-	-	5	-	-	-	-	-	11	-	-	-	-	-	3	-	-
Pedestrians%	-	-	-	-	32.1%	-	-	-	-	-	17.9%	-	-	-	-	-	39.3%	-	-	-	-	-	10.7%	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (10.64 °C)

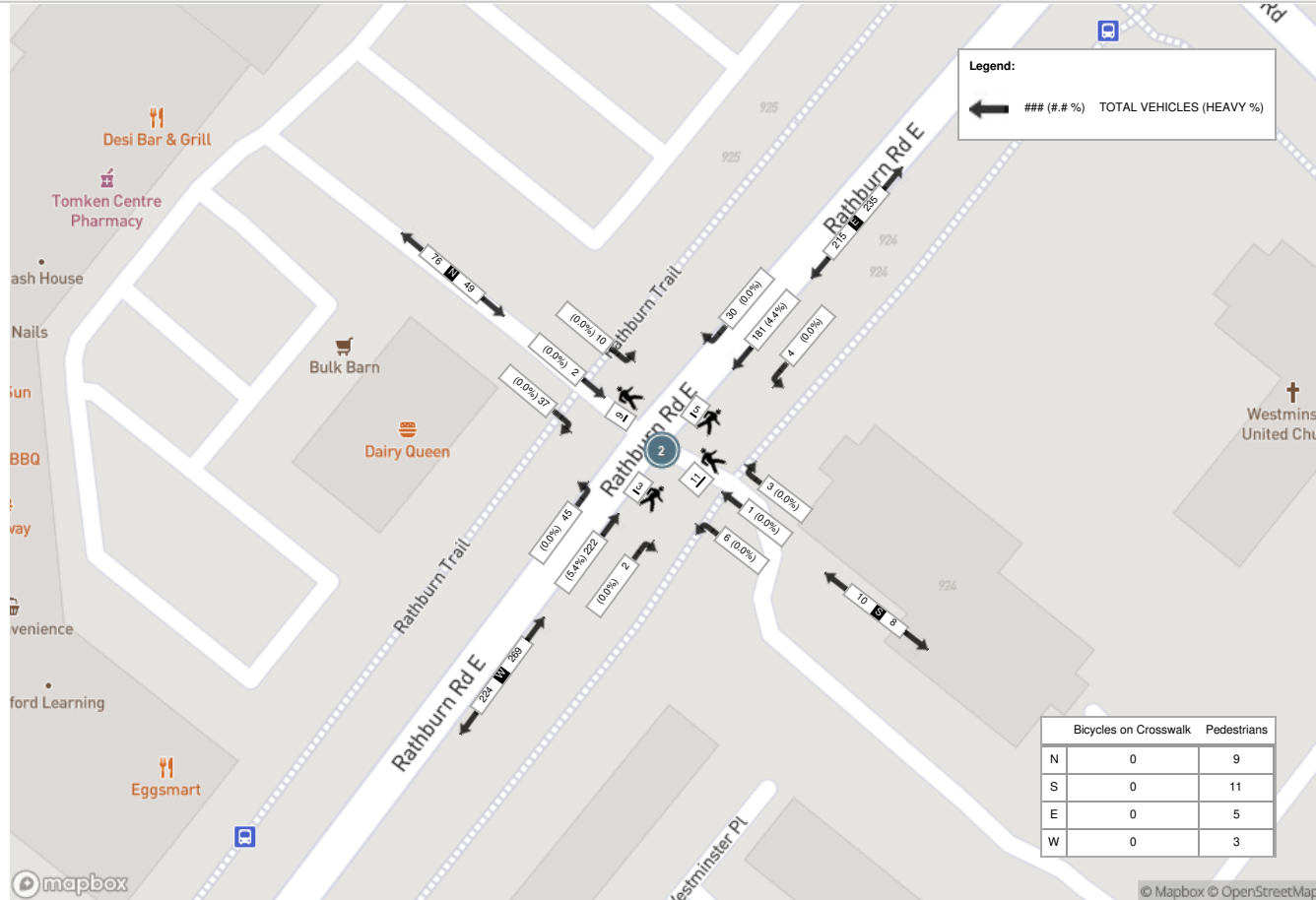
Start Time	N Approach TOMKEN PLAZA						E Approach RATHBURN RD E						S Approach TOMKEN GROVE						W Approach RATHBURN RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:30:00	28	2	7	0	7	37	21	80	1	0	0	102	0	0	0	0	3	0	1	46	22	0	0	69	208
16:45:00	24	1	4	0	3	29	29	82	1	0	2	112	0	0	1	0	2	1	1	46	27	0	0	74	216
17:00:00	38	0	17	0	2	55	24	106	1	0	0	131	1	0	0	0	2	1	3	40	20	0	0	63	250
17:15:00	27	1	14	0	2	42	24	90	1	0	0	115	1	0	1	0	3	2	1	51	22	0	0	74	233
Grand Total	117	4	42	0	14	163	98	358	4	0	2	460	2	0	2	0	10	4	6	183	91	0	0	280	907
Approach%	71.8%	2.5%	25.8%	0%	-	-	21.3%	77.8%	0.9%	0%	-	-	50%	0%	50%	0%	-	-	2.1%	65.4%	32.5%	0%	-	-	-
Totals %	12.9%	0.4%	4.6%	0%	18%	18%	10.8%	39.5%	0.4%	0%	50.7%	50.7%	0.2%	0%	0.2%	0%	0.4%	0.4%	0.7%	20.2%	10%	0%	30.9%	30.9%	-
PHF	0.77	0.5	0.62	0	0.74	0.74	0.84	0.84	0.84	1	0.88	0.88	0.5	0	0.5	0	0.5	0.5	0.5	0.9	0.84	0	0.95	0.95	-
Heavy	1	0	0	0	1	1	0	4	0	0	4	4	0	0	0	0	0	0	0	5	1	0	6	6	-
Heavy %	0.9%	0%	0%	0%	0.6%	0.6%	0%	1.1%	0%	0%	0.9%	0.9%	0%	0%	0%	0%	0%	0%	0%	2.7%	1.1%	0%	2.1%	2.1%	-
Lights	116	4	42	0	162	162	98	354	4	0	456	456	2	0	2	0	4	4	6	178	90	0	274	274	-
Lights %	99.1%	100%	100%	0%	99.4%	99.4%	100%	98.9%	100%	0%	99.1%	99.1%	100%	0%	100%	0%	100%	100%	100%	97.3%	98.9%	0%	97.9%	97.9%	-
Single-Unit Trucks	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	3	-
Single-Unit Trucks %	0.9%	0%	0%	0%	0.6%	0.6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1.1%	1.1%	0%	1.1%	1.1%	-
Buses	0	0	0	0	0	0	0	4	0	0	4	4	0	0	0	0	0	0	0	3	0	0	3	3	-
Buses %	0%	0%	0%	0%	0%	0%	0%	1.1%	0%	0%	0.9%	0.9%	0%	0%	0%	0%	0%	0%	0%	1.6%	0%	0%	1.1%	1.1%	-
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	-	13	-	-	-	-	-	2	-	-	-	-	-	9	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	50%	-	-	-	-	-	7.7%	-	-	-	-	-	34.6%	-	-	-	-	-	0%	-	-
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	3.8%	-	-	-	-	-	0%	-	-	-	-	-	3.8%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



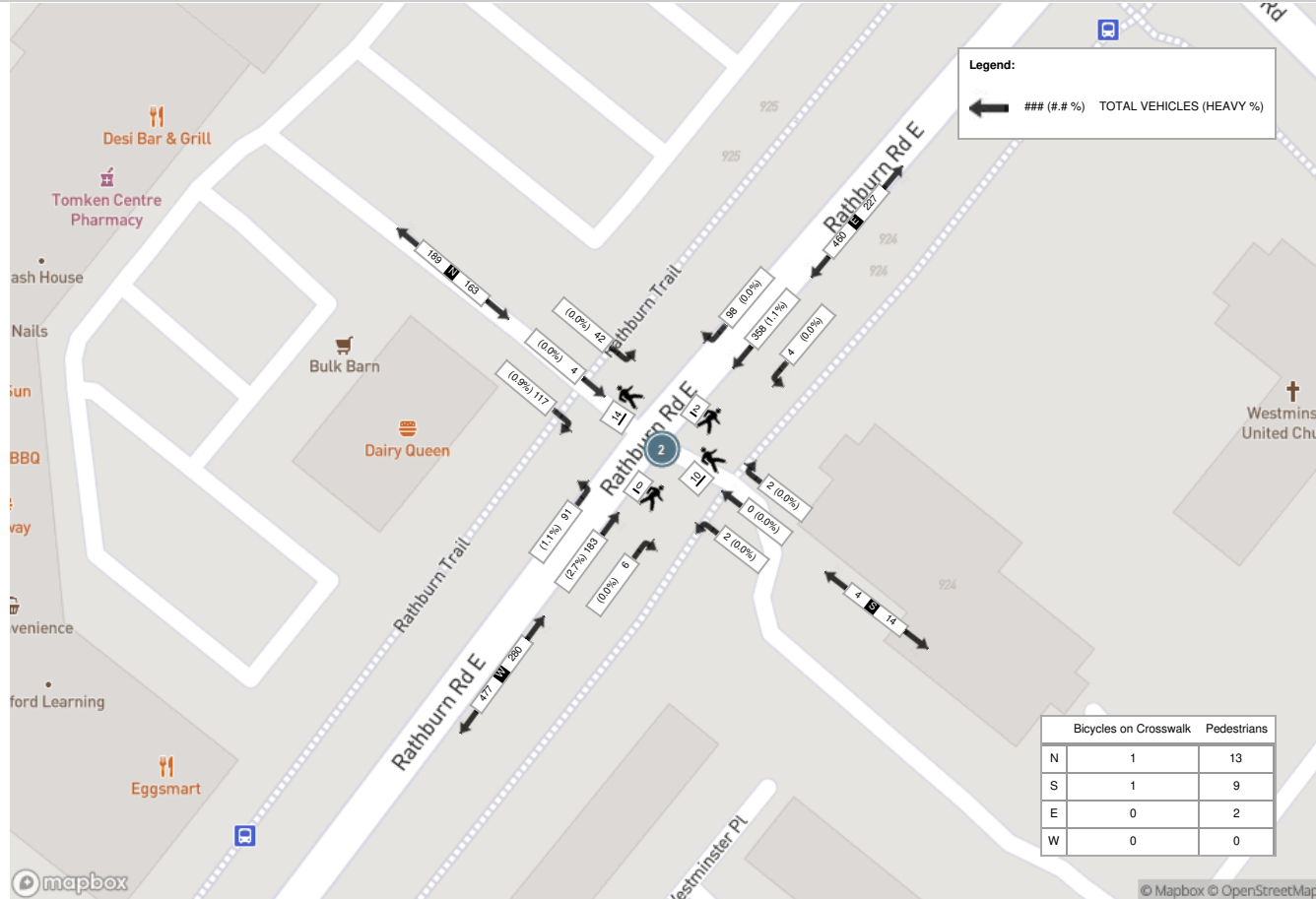
Selected Hour: 07:30 AM - 08:30 AM Weather:

Start Time	N Approach TOMKEN PLAZA						E Approach RATHBURN RD E						S Approach TOMKEN GROVE						W Approach RATHBURN RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:30:00	3	0	1	0	1	4	4	30	0	0	0	34	0	0	1	0	0	1	0	46	9	0	0	55	94
07:45:00	6	0	1	0	4	7	5	35	0	0	0	40	2	0	1	0	3	3	0	68	8	0	0	76	126
08:00:00	7	0	2	0	1	9	3	63	0	0	0	66	2	1	1	0	1	4	0	76	8	0	0	84	163
08:15:00	7	1	0	0	3	8	10	47	2	0	3	59	0	0	1	0	4	1	1	41	12	0	2	54	122
Grand Total	23	1	4	0	9	28	22	175	2	0	3	199	4	1	4	0	8	9	1	231	37	0	2	269	505
Approach%	82.1%	3.6%	14.3%	0%	-	-	11.1%	87.9%	1%	0%	-	-	44.4%	11.1%	44.4%	0%	-	-	0.4%	85.9%	13.8%	0%	-	-	-
Totals %	4.6%	0.2%	0.8%	0%	5.5%	5.5%	4.4%	34.7%	0.4%	0%	39.4%	39.4%	0.8%	0.2%	0.8%	0%	1.8%	1.8%	0.2%	45.7%	7.3%	0%	53.3%	53.3%	-
PHF	0.82	0.25	0.5	0	0.78	0.78	0.55	0.69	0.25	0	0.75	0.75	0.5	0.25	1	0	0.56	0.56	0.25	0.76	0.77	0	0.8	0.8	-
Heavy	1	0	0	0	1	1	0	9	0	0	9	9	0	0	0	0	0	0	0	19	0	0	19	19	-
Heavy %	4.3%	0%	0%	0%	3.6%	3.6%	0%	5.1%	0%	0%	4.5%	4.5%	0%	0%	0%	0%	0%	0%	0%	8.2%	0%	0%	7.1%	7.1%	-
Lights	22	1	4	0	27	27	22	166	2	0	190	190	4	1	4	0	9	9	1	212	37	0	250	250	-
Lights %	95.7%	100%	100%	0%	96.4%	96.4%	100%	94.9%	100%	0%	95.5%	95.5%	100%	100%	100%	0%	100%	100%	100%	91.8%	100%	0%	92.9%	92.9%	-
Single-Unit Trucks	1	0	0	0	1	1	0	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	1	1	-
Single-Unit Trucks %	4.3%	0%	0%	0%	3.6%	3.6%	0%	0.6%	0%	0%	0.5%	0.5%	0%	0%	0%	0%	0%	0%	0%	0.4%	0%	0%	0.4%	0.4%	-
Buses	0	0	0	0	0	0	0	8	0	0	8	8	0	0	0	0	0	0	0	17	0	0	17	17	-
Buses %	0%	0%	0%	0%	0%	0%	0%	4.6%	0%	0%	4%	4%	0%	0%	0%	0%	0%	0%	0%	7.4%	0%	0%	6.3%	6.3%	-
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.4%	0%	0%	0.4%	0.4%	-
Pedestrians	-	-	-	-	8	8	-	-	-	-	3	3	-	-	-	-	8	8	-	-	-	-	2	2	-
Pedestrians%	-	-	-	-	36.4%	36.4%	-	-	-	-	13.6%	13.6%	-	-	-	-	36.4%	36.4%	-	-	-	-	9.1%	9.1%	-
Bicycles on Crosswalk	-	-	-	-	1	1	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-
Bicycles on Crosswalk%	-	-	-	-	4.5%	4.5%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Bicycles on Road%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-

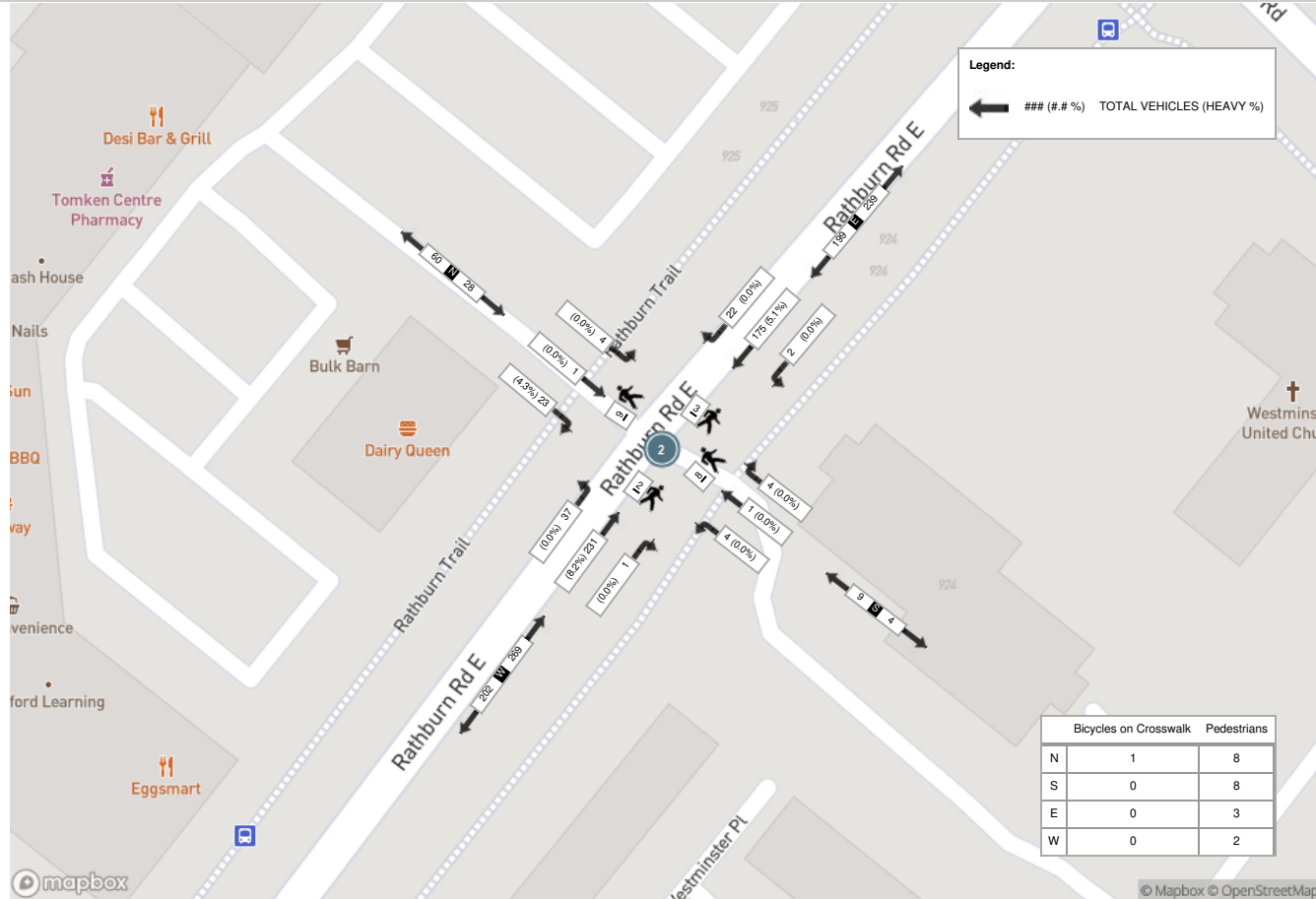
Peak Hour: 08:00 AM - 09:00 AM Weather: Mist (4.68 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (10.64 °C)



Selected Hour: 07:30 AM - 08:30 AM Weather:





Turning Movement Count (2 . RATHBURN RD E & TOMKEN PLAZA / TOMKEN GROVE)

Start Time	N Approach TOMKEN PLAZA						E Approach RATHBURN RD E						S Approach TOMKEN GROVE						W Approach RATHBURN RD E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
08:00:00	2	0	1	0	0	3	3	7	1	0	0	11	2	0	0	0	2	2	1	4	10	0	1	15	31	
08:15:00	4	0	1	0	2	5	6	7	1	0	0	14	0	0	1	0	0	1	0	10	7	0	0	17	37	
08:30:00	4	0	4	0	1	8	7	16	0	0	0	23	0	0	1	0	2	1	0	9	7	0	1	16	48	
08:45:00	7	0	2	0	2	9	3	6	1	0	1	10	0	0	0	0	0	0	1	18	17	0	0	36	55	171
09:00:00	7	0	6	0	0	13	4	18	1	0	0	23	0	0	1	0	2	1	1	32	8	0	0	41	78	218
09:15:00	7	0	3	0	1	10	8	30	0	0	1	38	0	0	1	0	0	1	0	29	6	0	0	35	84	265
09:30:00	4	0	3	0	0	7	10	18	0	1	0	29	1	0	0	0	1	1	0	31	18	0	0	49	86	303
09:45:00	15	0	5	0	3	20	6	18	0	1	0	25	2	0	0	0	1	2	0	26	19	0	1	45	92	340
10:00:00	6	0	2	0	0	8	10	22	0	0	0	32	0	0	1	0	0	1	1	28	14	0	1	43	84	346
10:15:00	15	0	5	0	0	20	7	29	1	0	0	37	1	0	0	0	1	1	0	29	15	0	0	44	102	364
10:30:00	21	0	6	0	0	27	8	35	1	0	1	44	0	0	0	0	0	0	0	45	18	0	1	63	134	412
10:45:00	14	0	2	0	2	16	14	40	0	0	2	54	1	0	1	0	0	2	1	34	15	0	1	50	122	442
11:00:00	24	0	6	0	1	30	6	27	0	0	1	33	0	0	0	0	3	0	0	18	19	0	1	37	100	458
11:15:00	16	0	7	0	2	23	12	43	0	0	0	55	0	1	3	0	1	4	0	28	15	0	0	43	125	481
11:30:00	15	0	11	0	2	26	12	28	0	0	1	40	1	0	1	0	0	2	1	30	15	0	0	46	114	461
11:45:00	18	0	9	0	2	27	16	33	1	0	0	50	1	0	0	0	0	1	0	38	27	0	0	65	143	482
12:00:00	28	0	8	0	1	36	10	35	0	0	1	45	0	0	0	0	0	0	0	56	27	0	0	83	164	546
12:15:00	15	0	9	0	1	24	11	40	0	0	1	51	0	0	1	0	0	1	1	42	20	0	1	63	139	560
12:30:00	23	0	8	0	2	31	13	42	1	0	0	56	0	1	0	0	0	1	0	50	22	1	0	73	161	607
12:45:00	14	1	7	0	3	22	12	57	1	0	1	70	1	0	0	0	2	1	3	38	15	0	0	56	149	613
13:00:00	19	0	2	0	2	21	14	41	0	0	1	55	1	0	0	0	0	1	1	21	18	0	0	40	117	566
13:15:00	26	0	9	0	3	35	11	42	1	0	0	54	1	0	1	0	1	2	0	42	21	0	1	63	154	581
13:30:00	21	0	8	0	3	29	10	35	0	1	0	46	2	0	0	0	0	2	0	43	19	0	0	62	139	559
13:45:00	14	0	3	0	1	17	15	41	1	0	0	57	1	0	0	0	1	1	0	49	16	0	0	65	140	550
14:00:00	21	1	10	0	2	32	16	36	0	0	1	52	1	0	0	0	3	1	2	73	24	0	1	99	184	617
14:15:00	25	0	7	0	6	32	15	48	0	0	1	63	1	1	0	0	2	2	0	43	29	0	2	72	169	632
14:30:00	21	0	8	0	3	29	12	50	1	0	1	63	0	0	1	0	1	1	2	46	21	0	0	69	162	655
14:45:00	16	0	7	0	2	23	15	44	0	0	0	59	0	0	3	0	0	3	2	38	20	0	0	60	145	660
Grand Total	422	2	159	0	47	583	286	888	12	3	14	1189	17	3	16	0	23	36	17	950	482	1	12	1450	3258	-
Approach%	72.4%	0.3%	27.3%	0%	-	-	24.1%	74.7%	1%	0.3%	-	-	47.2%	8.3%	44.4%	0%	-	-	1.2%	65.5%	33.2%	0.1%	-	-	-	-
Totals %	13%	0.1%	4.9%	0%	-	17.9%	8.8%	27.3%	0.4%	0.1%	-	36.5%	0.5%	0.1%	0.5%	0%	-	1.1%	0.5%	29.2%	14.8%	0%	-	44.5%	-	-
Heavy	0	0	0	0	-	-	0	15	0	0	-	-	0	0	0	0	-	-	0	12	1	0	-	-	-	-
Heavy %	0%	0%	0%	0%	-	-	0%	1.7%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	1.3%	0.2%	0%	-	-	-	-
Bicycles	0	0	1	0	-	-	1	0	0	0	-	-	0	0	0	0	-	-	0	1	0	0	-	-	-	-
Bicycle %	0%	0%	0.6%	0%	-	-	0.3%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0.1%	0%	0%	-	-	-	-



Peak Hour: 02:00 PM - 03:00 PM Weather: Light Snow (1.59 °C)

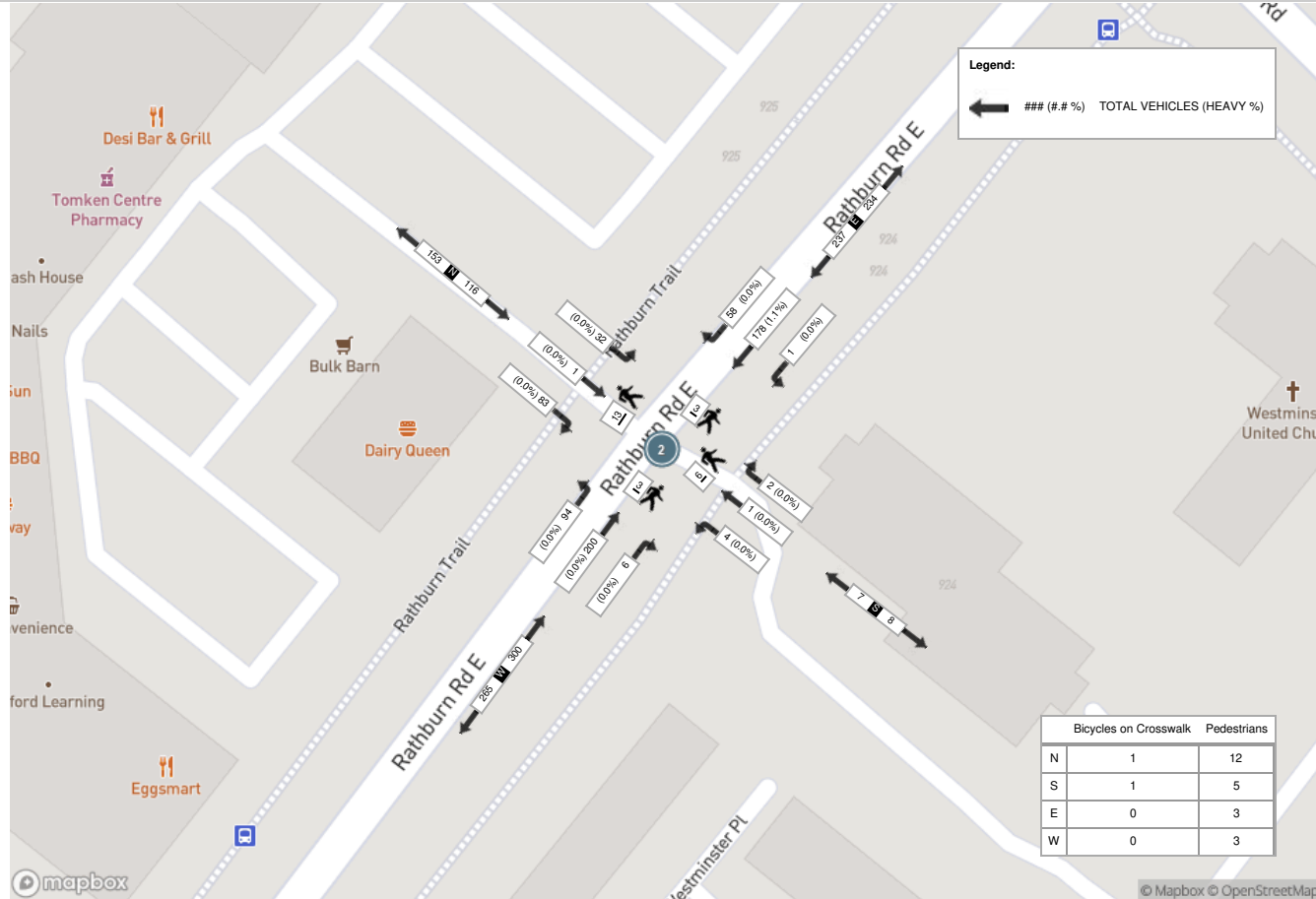
Start Time	N Approach TOMKEN PLAZA						E Approach RATHBURN RD E						S Approach TOMKEN GROVE						W Approach RATHBURN RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
14:00:00	21	1	10	0	2	32	16	36	0	0	1	52	1	0	0	0	3	1	2	73	24	0	1	99	184
14:15:00	25	0	7	0	6	32	15	48	0	0	1	63	1	1	0	0	2	2	0	43	29	0	2	72	169
14:30:00	21	0	8	0	3	29	12	50	1	0	1	63	0	0	1	0	1	1	2	46	21	0	0	69	162
14:45:00	16	0	7	0	2	23	15	44	0	0	0	59	0	0	3	0	0	3	2	38	20	0	0	60	145
Grand Total	83	1	32	0	13	116	58	178	1	0	3	237	2	1	4	0	6	7	6	200	94	0	3	300	660
Approach%	71.6%	0.9%	27.6%	0%	-	-	24.5%	75.1%	0.4%	0%	-	-	28.6%	14.3%	57.1%	0%	-	2%	66.7%	31.3%	0%	-	-	-	-
Totals %	12.6%	0.2%	4.8%	0%	17.6%	17.6%	8.8%	27%	0.2%	0%	35.9%	35.9%	0.3%	0.2%	0.6%	0%	1.1%	0.9%	30.3%	14.2%	0%	45.5%	45.5%	-	-
PHF	0.83	0.25	0.8	0	0.91	0.91	0.91	0.89	0.25	0	0.94	0.94	0.5	0.25	0.33	0	0.58	0.75	0.68	0.81	0	0.76	0.76	-	-
Heavy	0	0	0	0	0	0	0	2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	-
Heavy %	0%	0%	0%	0%	0%	0%	0%	1.1%	0%	0%	0.8%	0.8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Lights	83	1	32	0	116	116	58	176	1	0	235	235	2	1	4	0	7	6	200	94	0	3	300	-	
Lights %	100%	100%	100%	0%	100%	100%	100%	98.9%	100%	0%	99.2%	99.2%	100%	100%	100%	0%	100%	100%	100%	100%	0%	100%	100%	-	
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Buses	0	0	0	0	0	0	0	2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	-
Buses %	0%	0%	0%	0%	0%	0%	0%	1.1%	0%	0%	0.8%	0.8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	-	12	-	-	-	-	3	-	-	-	-	-	5	-	-	-	-	-	3	-	-	-
Pedestrians %	-	-	-	-	48%	-	-	-	-	12%	-	-	-	-	20%	-	-	-	-	-	-	12%	-	-	-
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-
Bicycles on Crosswalk %	-	-	-	-	4%	-	-	-	-	0%	-	-	-	-	4%	-	-	-	-	-	-	0%	-	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	-	-	0	0	0	0	-	0	0	0	0	0	0	-	-
Bicycles on Road %	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	-	0%	-	-	-



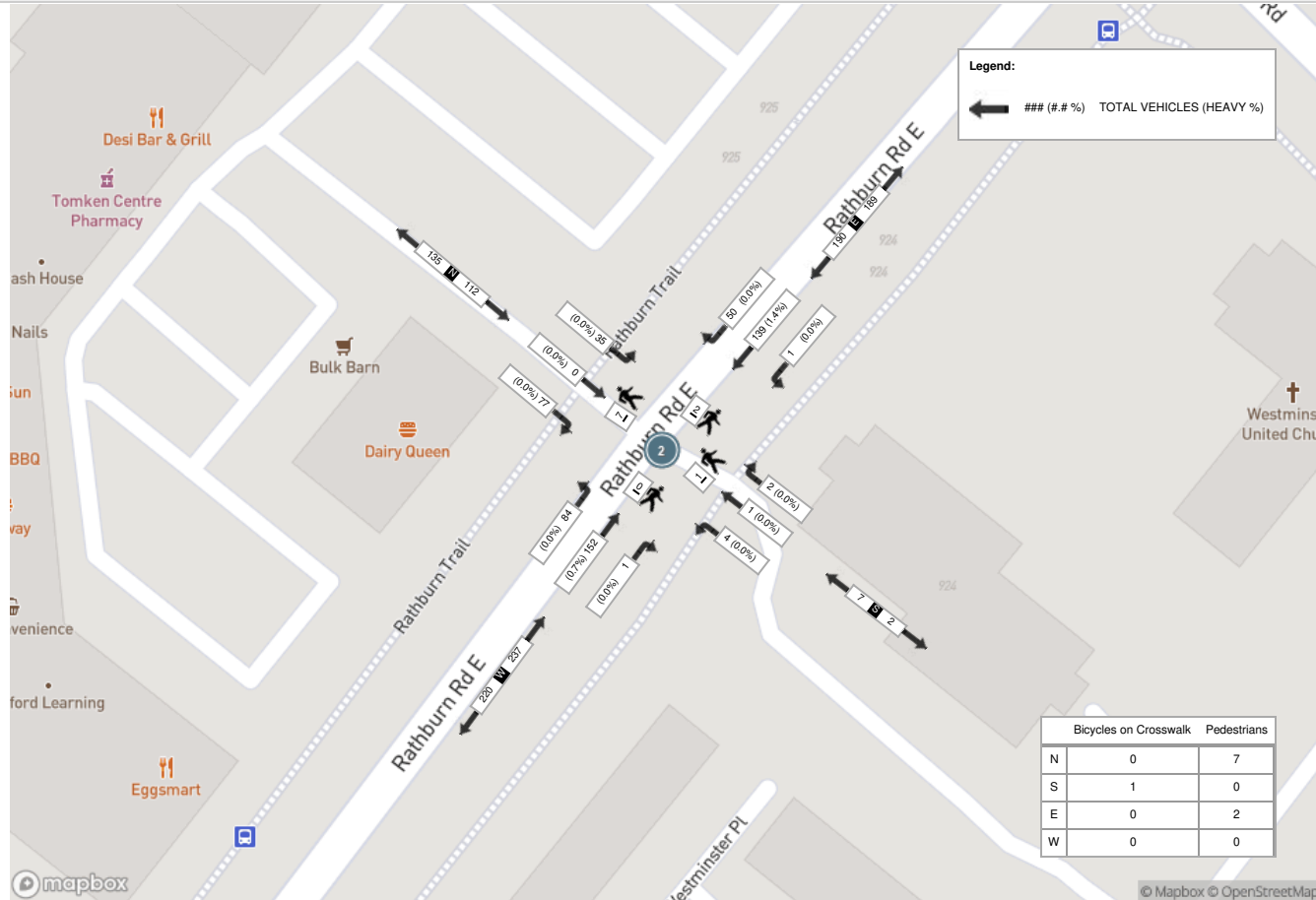
Selected Hour: 11:15 AM - 12:15 PM Weather:

Start Time	N Approach TOMKEN PLAZA						E Approach RATHBURN RD E						S Approach TOMKEN GROVE						W Approach RATHBURN RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
11:15:00	16	0	7	0	2	23	12	43	0	0	0	55	0	1	3	0	1	4	0	28	15	0	0	43	125
11:30:00	15	0	11	0	2	26	12	28	0	0	1	40	1	0	1	0	0	2	1	30	15	0	0	46	114
11:45:00	18	0	9	0	2	27	16	33	1	0	0	50	1	0	0	0	0	1	0	38	27	0	0	65	143
12:00:00	28	0	8	0	1	36	10	35	0	0	1	45	0	0	0	0	0	0	0	56	27	0	0	83	164
Grand Total	77	0	35	0	7	112	50	139	1	0	2	190	2	1	4	0	1	7	1	152	84	0	0	237	546
Approach%	68.8%	0%	31.3%	0%	-	-	26.3%	73.2%	0.5%	0%	-	-	28.6%	14.3%	57.1%	0%	-	-	0.4%	64.1%	35.4%	0%	-	-	-
Totals %	14.1%	0%	6.4%	0%	20.5%	20.5%	9.2%	25.5%	0.2%	0%	34.8%	34.8%	0.4%	0.2%	0.7%	0%	1.3%	1.3%	0.2%	27.8%	15.4%	0%	43.4%	43.4%	-
PHF	0.69	0	0.8	0	0.78	0.78	0.78	0.81	0.25	0	0.86	0.86	0.5	0.25	0.33	0	0.44	0.44	0.25	0.68	0.78	0	0.71	0.71	-
Heavy	0	0	0	0	0	0	0	2	0	0	2	2	0	0	0	0	0	0	0	1	0	0	1	1	-
Heavy %	0%	0%	0%	0%	0%	0%	0%	1.4%	0%	0%	1.1%	1.1%	0%	0%	0%	0%	0%	0%	0%	0.7%	0%	0%	0.4%	0.4%	-
Lights	77	0	35	0	7	112	50	137	1	0	2	188	2	1	4	0	7	7	1	151	84	0	0	236	-
Lights %	100%	0%	100%	0%	100%	100%	100%	98.6%	100%	0%	98.9%	98.9%	100%	100%	100%	0%	100%	100%	100%	99.3%	100%	0%	99.6%	99.6%	-
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Buses	0	0	0	0	0	0	0	2	0	0	2	2	0	0	0	0	0	0	0	1	0	0	1	1	-
Buses %	0%	0%	0%	0%	0%	0%	0%	1.4%	0%	0%	1.1%	1.1%	0%	0%	0%	0%	0%	0%	0%	0.7%	0%	0%	0.4%	0.4%	-
Pedestrians	-	-	-	-	7	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians %	-	-	-	-	70%	-	-	-	-	-	20%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
Bicycles on Crosswalk %	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	10%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	-
Bicycles on Road %	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-

Peak Hour: 02:00 PM - 03:00 PM Weather: Light Snow (1.59 °C)



Selected Hour: 11:15 AM - 12:15 PM Weather:





Turning Movement Count (1 . RATHBURN RD E & WESTMINSTER PL)

Start Time	N Approach WESTMINSTER PL						E Approach RATHBURN RD E						S Approach WESTMINSTER PL						W Approach RATHBURN RD E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	4	1	2	0	0	7	1	20	1	0	0	22	5	0	8	0	1	13	2	21	1	0	0	24	66	
07:15:00	3	2	1	0	2	6	3	19	3	0	2	25	6	2	2	0	2	10	2	20	5	0	4	27	68	
07:30:00	5	2	3	0	0	10	0	31	3	0	0	34	8	1	3	0	0	12	0	44	2	0	1	46	102	
07:45:00	7	1	8	0	8	16	2	37	3	0	0	42	8	0	5	0	4	13	2	59	7	0	1	68	139	375
08:00:00	2	3	7	0	2	12	1	67	3	0	1	71	5	2	7	0	2	14	6	73	1	0	0	80	177	486
08:15:00	3	2	0	0	2	5	3	51	1	0	2	55	8	4	4	0	3	16	1	46	1	0	2	48	124	542
08:30:00	7	6	4	0	4	17	6	32	2	0	2	40	6	2	5	0	11	13	2	52	6	0	5	60	130	570
08:45:00	6	1	7	0	1	14	1	54	3	0	3	58	4	3	13	0	6	20	6	62	4	0	4	72	164	595
09:00:00	3	0	2	0	4	5	2	36	4	0	0	42	4	2	4	0	1	10	3	46	7	0	2	56	113	531
09:15:00	5	4	5	0	6	14	5	31	4	0	5	40	2	0	3	0	1	5	1	45	4	0	4	50	109	516
09:30:00	4	4	3	0	9	11	3	35	5	0	1	43	8	3	2	0	3	13	1	42	2	0	6	45	112	498
09:45:00	2	1	1	0	2	4	4	34	3	0	4	41	3	0	2	0	2	5	1	40	3	0	1	44	94	428
BREAK																										
16:00:00	2	1	0	0	9	3	10	93	8	0	5	111	9	4	3	0	1	16	8	47	6	0	1	61	191	
16:15:00	5	4	6	0	3	15	11	83	10	0	3	104	3	3	3	0	2	9	8	68	4	0	2	80	208	
16:30:00	4	3	6	0	2	13	6	101	10	0	4	117	2	3	4	0	2	9	6	59	8	0	3	73	212	
16:45:00	6	2	6	0	5	14	6	91	8	0	4	105	6	3	5	0	5	14	3	62	7	0	3	72	205	816
17:00:00	4	3	4	0	0	11	7	126	13	0	7	146	5	7	4	0	2	16	6	57	11	0	3	74	247	872
17:15:00	12	4	3	0	4	19	5	102	10	0	3	117	10	3	2	0	3	15	5	61	7	0	3	73	224	888
17:30:00	5	2	0	0	7	7	13	87	9	0	11	109	5	4	6	0	7	15	6	66	3	0	6	75	206	882
17:45:00	7	3	2	0	5	12	6	62	4	0	5	72	8	5	4	0	3	17	4	47	3	0	0	54	155	832
18:00:00	3	1	2	0	5	6	7	81	10	0	4	98	10	2	5	0	1	17	3	49	2	0	3	54	175	760
18:15:00	3	3	5	0	2	11	11	87	10	0	2	108	10	3	3	0	1	16	4	43	4	0	0	51	186	722
18:30:00	5	1	2	0	2	8	6	61	3	0	3	70	4	2	3	0	3	9	4	55	2	0	0	61	148	664
18:45:00	11	2	4	0	2	17	4	53	5	0	1	62	6	4	4	0	2	14	6	50	2	0	1	58	151	660
19:00:00	2	4	0	0	4	6	4	55	7	0	5	66	4	0	3	0	1	7	4	40	1	0	1	45	124	609
19:15:00	5	6	2	0	3	13	7	57	5	0	2	69	5	5	3	0	1	13	2	49	3	0	3	54	149	572
19:30:00	2	1	1	0	4	4	8	49	6	0	4	63	4	5	2	0	3	11	9	44	1	0	1	54	132	556
19:45:00	2	0	6	0	6	8	3	36	7	0	6	46	4	4	5	0	2	13	4	42	5	0	7	51	118	523
Grand Total	129	67	92	0	103	288	145	1671	160	0	89	1976	162	76	117	0	75	355	109	1389	112	0	67	1610	4229	-
Approach%	44.8%	23.3%	31.9%	0%	-	-	7.3%	84.6%	8.1%	0%	-	-	45.6%	21.4%	33%	0%	-	-	6.8%	86.3%	7%	0%	-	-	-	-
Totals %	3.1%	1.6%	2.2%	0%	-	6.8%	3.4%	39.5%	3.8%	0%	-	46.7%	3.8%	1.8%	2.8%	0%	-	8.4%	2.6%	32.8%	2.6%	0%	-	38.1%	-	-
Heavy	2	4	2	0	-	-	2	44	4	0	-	-	4	0	4	0	-	-	2	48	4	0	-	-	-	-
Heavy %	1.6%	6%	2.2%	0%	-	-	1.4%	2.6%	2.5%	0%	-	-	2.5%	0%	3.4%	0%	-	-	1.8%	3.5%	3.6%	0%	-	-	-	-
Bicycles	0	0	0	0	-	-	0	1	0	0	-	-	0	1	0	0	-	-	0	0	0	0	-	-	-	-
Bicycle %	0%	0%	0%	0%	-	-	0%	0.1%	0%	0%	-	-	0%	1.3%	0%	0%	-	-	0%	0%	0%	0%	-	-	-	-



Peak Hour: 08:00 AM - 09:00 AM Weather: Mist (4.68 °C)

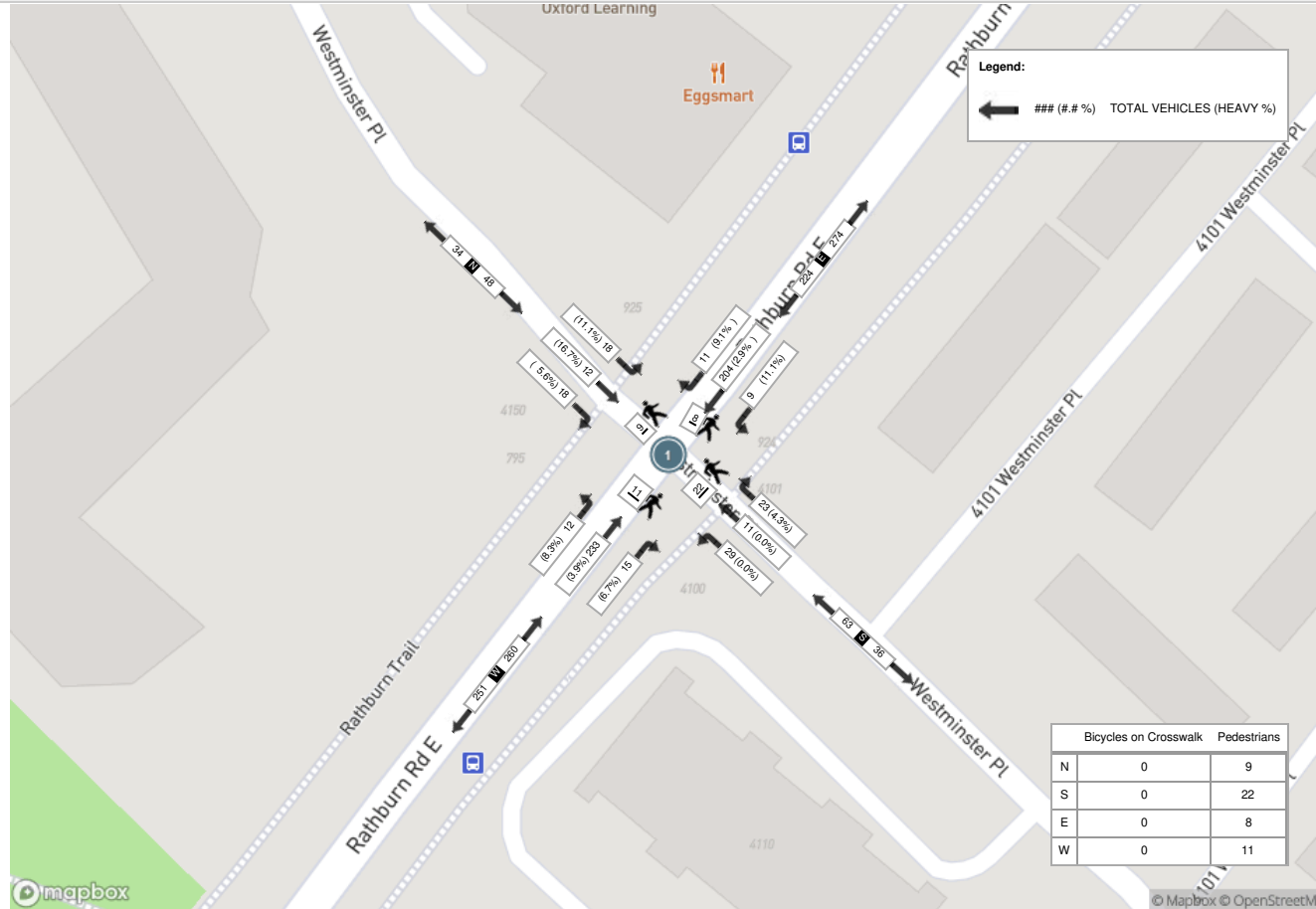
Start Time	N Approach WESTMINSTER PL						E Approach RATHBURN RD E						S Approach WESTMINSTER PL						W Approach RATHBURN RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	2	3	7	0	2	12	1	67	3	0	1	71	5	2	7	0	2	14	6	73	1	0	0	80	177
08:15:00	3	2	0	0	2	5	3	51	1	0	2	55	8	4	4	0	3	16	1	46	1	0	2	48	124
08:30:00	7	6	4	0	4	17	6	32	2	0	2	40	6	2	5	0	11	13	2	52	6	0	5	60	130
08:45:00	6	1	7	0	1	14	1	54	3	0	3	58	4	3	13	0	6	20	6	62	4	0	4	72	164
Grand Total	18	12	18	0	9	48	11	204	9	0	8	224	23	11	29	0	22	63	15	233	12	0	11	260	595
Approach%	37.5%	25%	37.5%	0%	-	-	4.9%	91.1%	4%	0%	-	-	36.5%	17.5%	46%	0%	-	5.8%	89.6%	4.6%	0%	-	-	-	
Totals %	3%	2%	3%	0%	8.1%	8.1%	1.8%	34.3%	1.5%	0%	37.6%	37.6%	3.9%	1.8%	4.9%	0%	10.6%	2.5%	39.2%	2%	0%	43.7%	43.7%	-	
PHF	0.64	0.5	0.64	0	0.71	0.71	0.46	0.76	0.75	0	0.79	0.79	0.72	0.69	0.56	0	0.79	0.63	0.8	0.5	0	0.81	0.81	-	
Heavy	1	2	2	0	5	5	1	6	1	0	8	8	1	0	0	0	1	1	9	1	0	11	11	-	
Heavy %	5.6%	16.7%	11.1%	0%	10.4%	10.4%	9.1%	2.9%	11.1%	0%	3.6%	3.6%	4.3%	0%	0%	0%	1.6%	6.7%	3.9%	8.3%	0%	4.2%	4.2%	-	
Lights	17	10	16	0	43	43	10	198	8	0	216	216	22	11	29	0	62	14	224	11	0	249	249	-	
Lights %	94.4%	83.3%	88.9%	0%	89.6%	89.6%	90.9%	97.1%	88.9%	0%	96.4%	96.4%	95.7%	100%	100%	0%	98.4%	93.3%	96.1%	91.7%	0%	95.8%	95.8%	-	
Single-Unit Trucks	1	0	1	0	2	2	0	1	0	0	1	1	0	0	0	0	0	0	1	0	0	0	1	1	-
Single-Unit Trucks %	5.6%	0%	5.6%	0%	4.2%	4.2%	0%	0.5%	0%	0%	0.4%	0.4%	0%	0%	0%	0%	0%	0%	0.4%	0%	0%	0%	0.4%	0.4%	-
Buses	0	2	1	0	3	3	1	5	1	0	7	7	1	0	0	0	1	1	8	1	0	10	10	-	
Buses %	0%	16.7%	5.6%	0%	6.3%	6.3%	9.1%	2.5%	11.1%	0%	3.1%	3.1%	4.3%	0%	0%	0%	1.6%	6.7%	3.4%	8.3%	0%	3.8%	3.8%	-	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	-	9	9	-	-	-	8	8	8	8	-	-	-	22	-	-	-	-	11	11	11	-
Pedestrians%	-	-	-	-	18%	18%	-	-	-	16%	16%	16%	16%	-	-	-	44%	-	-	-	-	22%	22%	22%	-
Bicycles on Crosswalk	-	-	-	-	0	0	-	-	-	0	0	0	0	-	-	-	0	-	-	-	-	0	0	0	-
Bicycles on Crosswalk%	-	-	-	-	0%	0%	-	-	-	0%	0%	0%	0%	-	-	-	0%	-	-	-	-	0%	0%	0%	-
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Bicycles on Road%	-	-	-	-	0%	0%	-	-	-	0%	0%	0%	0%	-	-	-	0%	-	-	-	-	0%	0%	0%	-



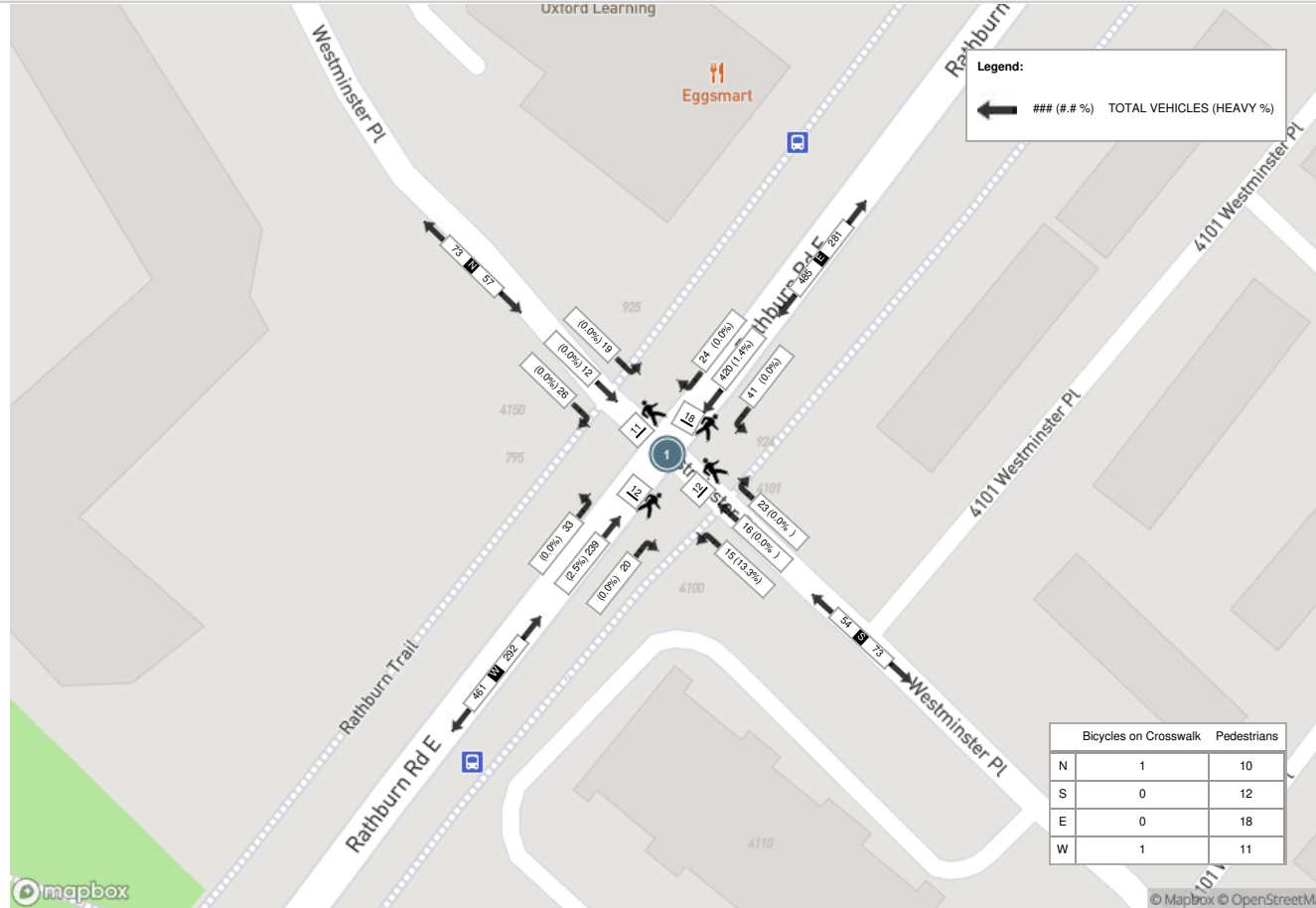
Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (10.64 °C)

Start Time	N Approach WESTMINSTER PL						E Approach RATHBURN RD E						S Approach WESTMINSTER PL						W Approach RATHBURN RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:30:00	4	3	6	0	2	13	6	101	10	0	4	117	2	3	4	0	2	9	6	59	8	0	3	73	212
16:45:00	6	2	6	0	5	14	6	91	8	0	4	105	6	3	5	0	5	14	3	62	7	0	3	72	205
17:00:00	4	3	4	0	0	11	7	126	13	0	7	146	5	7	4	0	2	16	6	57	11	0	3	74	247
17:15:00	12	4	3	0	4	19	5	102	10	0	3	117	10	3	2	0	3	15	5	61	7	0	3	73	224
Grand Total	26	12	19	0	11	57	24	420	41	0	18	485	23	16	15	0	12	54	20	239	33	0	12	292	888
Approach%	45.6%	21.1%	33.3%	0%	-	-	4.9%	86.6%	8.5%	0%	-	42.6%	29.6%	27.8%	0%	-	6.8%	81.8%	11.3%	0%	-	-	-	-	-
Totals %	2.9%	1.4%	2.1%	0%	6.4%	6.4%	2.7%	47.3%	4.6%	0%	54.6%	2.6%	1.8%	1.7%	0%	6.1%	2.3%	26.9%	3.7%	0%	32.9%	-	-	-	-
PHF	0.54	0.75	0.79	0	0.75	0.75	0.86	0.83	0.79	0	0.83	0.58	0.57	0.75	0	0.84	0.83	0.96	0.75	0	0.99	-	-	-	-
Heavy	0	0	0	0	0	0	0	6	0	0	6	0	0	2	0	2	0	6	0	0	6	0	0	6	-
Heavy %	0%	0%	0%	0%	0%	0%	0%	1.4%	0%	0%	1.2%	0%	0%	13.3%	0%	3.7%	0%	2.5%	0%	0%	2.1%	-	-	-	-
Lights	26	12	19	0	57	57	24	414	41	0	479	23	16	13	0	52	20	233	33	0	286	-	-	-	-
Lights %	100%	100%	100%	0%	100%	100%	100%	98.6%	100%	0%	98.8%	100%	100%	86.7%	0%	96.3%	100%	97.5%	100%	0%	97.9%	-	-	-	-
Single-Unit Trucks	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	4	0	0	4	0	0	4	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0.2%	0%	0%	0.2%	0%	0%	6.7%	0%	1.9%	0%	1.7%	0%	0%	1.4%	-	-	-	-
Buses	0	0	0	0	0	0	0	5	0	0	5	0	0	1	0	1	0	2	0	0	2	0	0	2	-
Buses %	0%	0%	0%	0%	0%	0%	0%	1.2%	0%	0%	1%	0%	0%	6.7%	0%	1.9%	0%	0.8%	0%	0%	0.7%	-	-	-	-
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-	-	-
Pedestrians	-	-	-	-	10	-	-	-	-	-	18	-	-	-	-	12	-	-	-	-	11	-	-	-	-
Pedestrians%	-	-	-	-	18.9%	-	-	-	-	-	34%	-	-	-	-	22.6%	-	-	-	-	20.8%	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-	-	-
Bicycles on Crosswalk%	-	-	-	-	1.9%	-	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	1.9%	-	-	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	-	0	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Mist (4.68 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (10.64 °C)





Turning Movement Count (1 . RATHBURN RD E & WESTMINSTER PL)

Start Time	N Approach WESTMINSTER PL						E Approach RATHBURN RD E						S Approach WESTMINSTER PL						W Approach RATHBURN RD E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
08:00:00	0	1	1	0	0	2	2	7	0	0	0	9	3	3	0	0	1	6	0	10	0	0	0	10	27	
08:15:00	1	1	3	0	2	5	3	9	0	0	1	12	3	2	1	0	0	6	0	9	0	0	0	9	32	
08:30:00	3	0	1	0	1	4	2	18	0	0	2	20	2	0	3	0	2	5	1	13	1	0	0	15	44	
08:45:00	3	0	1	0	2	4	1	11	1	0	0	13	7	0	2	0	0	9	0	30	1	0	0	31	57	160
09:00:00	0	1	4	0	0	5	3	17	3	0	2	23	2	4	0	0	1	6	0	34	3	0	1	37	71	204
09:15:00	2	4	2	0	1	8	4	34	3	0	2	41	4	0	3	0	1	7	1	29	2	0	0	32	88	260
09:30:00	2	2	7	0	0	11	2	17	3	0	1	22	6	3	0	0	1	9	1	36	2	0	0	39	81	297
09:45:00	3	0	2	0	4	5	3	26	3	0	1	32	4	2	5	0	0	11	0	42	0	0	0	42	90	330
10:00:00	4	1	2	0	2	7	4	19	6	0	1	29	3	0	3	0	0	6	2	35	4	0	0	41	83	342
10:15:00	7	1	7	0	0	15	2	39	5	0	0	46	6	2	3	0	0	11	4	31	1	0	0	36	108	362
10:30:00	2	1	3	0	0	6	4	48	4	0	3	56	4	3	3	0	0	10	3	56	4	0	0	63	135	416
10:45:00	1	2	5	0	0	8	4	44	6	0	0	54	5	6	4	0	0	15	3	41	4	0	2	48	125	451
11:00:00	2	1	3	0	4	6	6	40	6	0	1	52	9	2	3	0	3	14	3	27	2	0	2	32	104	472
11:15:00	2	3	4	0	1	9	11	46	4	0	4	61	4	3	3	0	4	10	1	34	2	0	0	37	117	481
11:30:00	4	1	4	0	2	9	1	39	5	0	1	45	6	3	5	0	1	14	2	37	1	0	3	40	108	454
11:45:00	3	2	4	0	0	9	4	42	5	0	9	51	9	1	4	0	2	14	1	51	7	0	0	59	133	462
12:00:00	3	2	5	0	2	10	4	51	8	0	6	63	5	0	3	0	4	8	3	72	5	0	1	80	161	519
12:15:00	4	0	3	0	0	7	3	48	5	0	1	56	5	4	5	0	0	14	4	57	3	0	0	64	141	543
12:30:00	4	2	7	0	6	13	2	50	10	0	2	62	12	3	4	0	0	19	5	53	4	0	1	62	156	591
12:45:00	10	1	4	0	3	15	10	55	6	0	0	71	5	2	5	0	2	12	5	47	4	0	1	56	154	612
13:00:00	4	2	3	0	5	9	3	49	6	0	2	58	7	1	5	0	3	13	5	30	5	0	0	40	120	571
13:15:00	9	2	4	0	4	15	9	56	5	0	3	70	6	3	3	0	2	12	4	53	4	0	2	61	158	588
13:30:00	2	1	5	0	2	8	3	47	6	0	2	56	6	2	3	0	2	11	6	59	4	0	4	69	144	576
13:45:00	2	1	1	0	2	4	7	48	1	0	0	56	11	2	3	0	0	16	2	46	2	0	0	50	126	548
14:00:00	3	2	5	0	4	10	5	46	5	0	1	56	7	7	5	0	3	19	3	87	6	0	2	96	181	609
14:15:00	6	0	4	0	4	10	7	58	6	0	1	71	13	2	3	0	2	18	7	55	2	0	1	64	163	614
14:30:00	6	1	0	0	4	7	11	58	5	0	5	74	13	3	1	0	3	17	4	56	4	0	2	64	162	632
14:45:00	8	3	8	0	4	19	6	52	5	0	3	63	4	3	5	0	3	12	1	47	2	0	1	50	144	650
Grand Total	100	38	102	0	59	240	126	1074	122	0	54	1322	171	66	87	0	40	324	71	1177	79	0	23	1327	3213	-
Approach%	41.7%	15.8%	42.5%	0%	-	-	9.5%	81.2%	9.2%	0%	-	-	52.8%	20.4%	26.9%	0%	-	-	5.4%	88.7%	6%	0%	-	-	-	-
Totals %	3.1%	1.2%	3.2%	0%	7.5%	7.5%	3.9%	33.4%	3.8%	0%	41.1%	41.1%	5.3%	2.1%	2.7%	0%	10.1%	10.1%	2.2%	36.6%	2.5%	0%	41.3%	41.3%	-	-
Heavy	2	0	1	0	-	-	1	14	0	0	-	-	1	1	0	0	-	-	0	13	0	0	-	-	-	-
Heavy %	2%	0%	1%	0%	-	-	0.8%	1.3%	0%	0%	-	-	0.6%	1.5%	0%	0%	-	-	0%	1.1%	0%	0%	-	-	-	-
Bicycles	0	0	0	0	-	-	0	0	0	0	-	-	0	0	0	0	-	-	0	1	0	0	-	-	-	-
Bicycle %	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	-	-	0%	0.1%	0%	0%	-	-	-	-



Peak Hour: 02:00 PM - 03:00 PM Weather: Light Snow (1.59 °C)

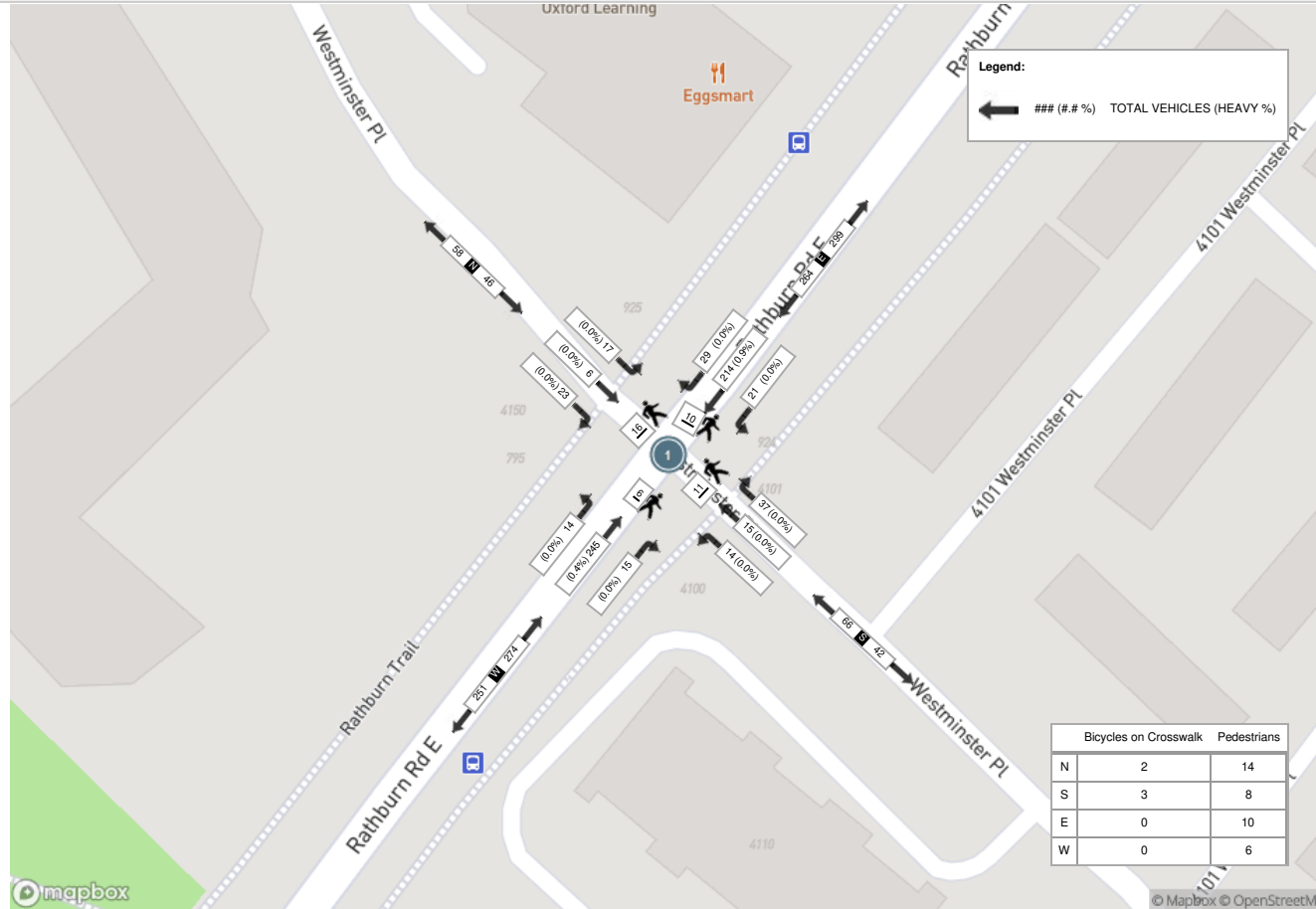
Start Time	N Approach WESTMINSTER PL						E Approach RATHBURN RD E						S Approach WESTMINSTER PL						W Approach RATHBURN RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
14:00:00	3	2	5	0	4	10	5	46	5	0	1	56	7	7	5	0	3	19	3	87	6	0	2	96	181
14:15:00	6	0	4	0	4	10	7	58	6	0	1	71	13	2	3	0	2	18	7	55	2	0	1	64	163
14:30:00	6	1	0	0	4	7	11	58	5	0	5	74	13	3	1	0	3	17	4	56	4	0	2	64	162
14:45:00	8	3	8	0	4	19	6	52	5	0	3	63	4	3	5	0	3	12	1	47	2	0	1	50	144
Grand Total	23	6	17	0	16	46	29	214	21	0	10	264	37	15	14	0	11	66	15	245	14	0	6	274	650
Approach%	50%	13%	37%	0%	-	-	11%	81.1%	8%	0%	-	-	56.1%	22.7%	21.2%	0%	-	-	5.5%	89.4%	5.1%	0%	-	-	-
Totals %	3.5%	0.9%	2.6%	0%	7.1%	7.1%	4.5%	32.9%	3.2%	0%	40.6%	40.6%	5.7%	2.3%	2.2%	0%	10.2%	10.2%	2.3%	37.7%	2.2%	0%	42.2%	42.2%	-
PHF	0.72	0.5	0.53	0	0.61	0.61	0.66	0.92	0.88	0	0.89	0.89	0.71	0.54	0.7	0	0.87	0.87	0.54	0.7	0.58	0	0.71	0.71	-
Heavy	0	0	0	0	0	0	0	2	0	0	2	2	0	0	0	0	0	0	0	1	0	0	1	1	-
Heavy %	0%	0%	0%	0%	0%	0%	0%	0.9%	0%	0%	0.8%	0.8%	0%	0%	0%	0%	0%	0%	0%	0.4%	0%	0%	0.4%	0.4%	-
Lights	23	6	17	0	46	46	29	212	21	0	262	262	37	15	14	0	66	66	15	244	14	0	273	273	-
Lights %	100%	100%	100%	0%	100%	100%	100%	99.1%	100%	0%	99.2%	99.2%	100%	100%	100%	0%	100%	100%	100%	99.6%	100%	0%	99.6%	99.6%	-
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Buses	0	0	0	0	0	0	0	2	0	0	2	2	0	0	0	0	0	0	0	1	0	0	1	1	-
Buses %	0%	0%	0%	0%	0%	0%	0%	0.9%	0%	0%	0.8%	0.8%	0%	0%	0%	0%	0%	0%	0%	0.4%	0%	0%	0.4%	0.4%	-
Pedestrians	-	-	-	-	14	-	-	-	-	-	10	-	-	-	-	-	8	-	-	-	-	-	6	-	-
Pedestrians %	-	-	-	-	32.6%	-	-	-	-	-	23.3%	-	-	-	-	-	18.6%	-	-	-	-	-	14%	-	-
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-
Bicycles on Crosswalk %	-	-	-	-	4.7%	-	-	-	-	-	0%	-	-	-	-	-	7%	-	-	-	-	-	0%	-	-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road %	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



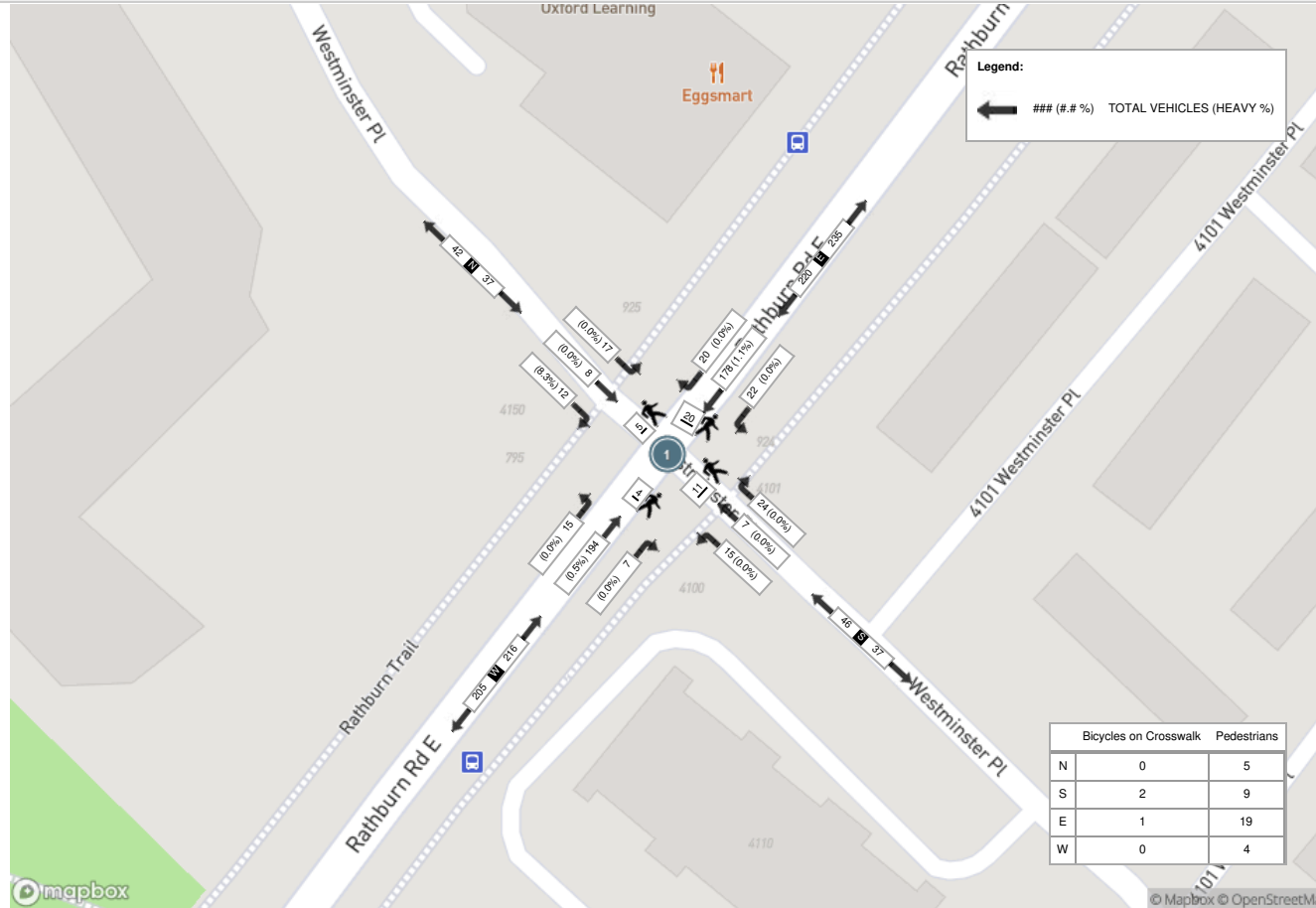
Selected Hour: 11:15 AM - 12:15 PM Weather:

Start Time	N Approach WESTMINSTER PL						E Approach RATHBURN RD E						S Approach WESTMINSTER PL						W Approach RATHBURN RD E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
11:15:00	2	3	4	0	1	9	11	46	4	0	4	61	4	3	3	0	4	10	1	34	2	0	0	37	117
11:30:00	4	1	4	0	2	9	1	39	5	0	1	45	6	3	5	0	1	14	2	37	1	0	3	40	108
11:45:00	3	2	4	0	0	9	4	42	5	0	9	51	9	1	4	0	2	14	1	51	7	0	0	59	133
12:00:00	3	2	5	0	2	10	4	51	8	0	6	63	5	0	3	0	4	8	3	72	5	0	1	80	161
Grand Total	12	8	17	0	5	37	20	178	22	0	20	220	24	7	15	0	11	46	7	194	15	0	4	216	519
Approach%	32.4%	21.6%	45.9%	0%	-	-	9.1%	80.9%	10%	0%	-	-	52.2%	15.2%	32.6%	0%	-	-	3.2%	89.8%	6.9%	0%	-	-	-
Totals %	2.3%	1.5%	3.3%	0%	7.1%	7.1%	3.9%	34.3%	4.2%	0%	42.4%	42.4%	4.6%	1.3%	2.9%	0%	8.9%	8.9%	1.3%	37.4%	2.9%	0%	41.6%	41.6%	-
PHF	0.75	0.67	0.85	0	0.93	0.93	0.45	0.87	0.69	0	0.87	0.87	0.67	0.58	0.75	0	0.82	0.82	0.58	0.67	0.54	0	0.68	0.68	-
Heavy	1	0	0	0	1	1	0	2	0	0	2	2	0	0	0	0	0	0	0	1	0	0	1	1	-
Heavy %	8.3%	0%	0%	0%	2.7%	2.7%	0%	1.1%	0%	0%	0.9%	0.9%	0%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.5%	0.5%	-
Lights	11	8	17	0	36	36	20	176	22	0	218	218	24	7	15	0	46	46	7	193	15	0	215	215	-
Lights %	91.7%	100%	100%	0%	97.3%	97.3%	100%	98.9%	100%	0%	99.1%	99.1%	100%	100%	100%	0%	100%	100%	100%	99.5%	100%	0%	99.5%	99.5%	-
Single-Unit Trucks	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Single-Unit Trucks %	8.3%	0%	0%	0%	2.7%	2.7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Buses	0	0	0	0	0	0	0	2	0	0	2	2	0	0	0	0	0	0	0	1	0	0	1	1	-
Buses %	0%	0%	0%	0%	0%	0%	0%	1.1%	0%	0%	0.9%	0.9%	0%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.5%	0.5%	-
Pedestrians	-	-	-	-	5	5	-	-	-	19	19	19	-	-	-	9	9	9	-	-	-	4	4	4	-
Pedestrians %	-	-	-	-	12.5%	12.5%	-	-	-	47.5%	47.5%	47.5%	-	-	-	22.5%	22.5%	22.5%	-	-	-	10%	10%	10%	-
Bicycles on Crosswalk	-	-	-	-	0	0	-	-	-	1	1	1	-	-	-	2	2	2	-	-	-	0	0	0	-
Bicycles on Crosswalk %	-	-	-	-	0%	0%	-	-	-	2.5%	2.5%	2.5%	-	-	-	5%	5%	5%	-	-	-	0%	0%	0%	-
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	-
Bicycles on Road %	-	-	-	-	0%	0%	-	-	-	0%	0%	0%	-	-	-	0%	0%	0%	-	-	-	0%	0%	0%	-

Peak Hour: 02:00 PM - 03:00 PM Weather: Light Snow (1.59 °C)



Selected Hour: 11:15 AM - 12:15 PM Weather:



Appendix C: Traffic Operations Analysis

Table C-1 Signalized Intersection Analysis

Movement	Adjusted Existing Traffic		Future Background Traffic		Future Total Traffic	
	V/C	LOS	V/C	LOS	V/C	LOS
Tomken Road / Burnhamthorpe Road E²						
EBL	0.32 (0.24) [0.09]	B (C) [A]	0.33 (0.26) [0.10]	B (C) [A]	0.33 (0.29) [0.11]	B (C) [A]
EBT	0.55 (0.44) [0.28]	C (C) [B]	0.58 (0.45) [0.29]	C (C) [B]	0.58 (0.46) [0.29]	C (C) [B]
EBR	0.09 (0.08) [0.05]	B (B) [A]	0.09 (0.08) [0.05]	B (B) [A]	0.09 (0.08) [0.05]	B (B) [A]
WBL	0.31 (0.53) [0.13]	D (D) [A]	0.34 (0.56) [0.13]	D (D) [A]	0.34 (0.56) [0.13]	D (D) [A]
WBT	0.48 (0.89) [0.26]	D (D) [B]	0.53 (0.87) [0.27]	D (D) [B]	0.53 (0.87) [0.27]	D (D) [B]
WBR	0.10 (0.06) [0.07]	C (C) [A]	0.10 (0.06) [0.07]	C (C) [A]	0.10 (0.07) [0.08]	C (C) [A]
NBL ²	0.39 (0.59) [0.37]	D (D) [E]	0.31 (0.67) [0.37]	D (D) [E]	0.32 (0.67) [0.37]	D (D) [E]
NBT	0.69 (0.35) [0.46]	E (D) [E]	0.72 (0.39) [0.48]	E (D) [E]	0.72 (0.40) [0.49]	E (D) [E]
NBR	0.07 (0.04) [0.03]	D (D) [E]	0.09 (0.04) [0.03]	D (D) [E]	0.09 (0.04) [0.03]	D (D) [E]
SBL	0.52 (0.51) [0.28]	D (D) [D]	0.55 (0.55) [0.28]	D (D) [D]	0.57 (0.57) [0.30]	D (D) [D]
SBT	0.35 (0.78) [0.35]	D (D) [D]	0.46 (0.87) [0.40]	D (E) [D]	0.47 (0.87) [0.40]	D (E) [D]
SBR	0.04 (0.24) [0.05]	D (D) [D]	0.04 (0.27) [0.05]	D (D) [D]	0.04 (0.28) [0.06]	D (D) [D]
Overall	0.58 (0.77) [0.31]	C (D) [C]	0.61 (0.81) [0.33]	D (D) [C]	0.62 (0.81) [0.33]	D (D) [C]

Note:

- 00 (00) [00]: Weekday morning peak hour (Weekday afternoon peak hour) [Sunday midday peak hour]
- Protected northbound left turn phase added in future background and future total (AM peak)

Movement	Adjusted Existing Traffic		Future Background Traffic		Future Total Traffic	
	V/C	LOS	V/C	LOS	V/C	LOS
Tomken Road / Rathburn Road E						
EBL	0.49 (0.28) [0.17]	D (D) [D]	0.49 (0.29) [0.16]	D (D) [D]	0.53 (0.37) [0.23]	E (E) [D]
EBTR	0.33 (0.33) [0.33]	D (D) [D]	0.37 (0.34) [0.34]	D (D) [D]	0.36 (0.34) [0.34]	D (D) [D]
WBL	0.09 (0.15) [0.07]	D (D) [D]	0.09 (0.15) [0.07]	D (D) [D]	0.09 (0.15) [0.07]	D (D) [D]
WBTR	0.29 (0.58) [0.28]	D (D) [D]	0.29 (0.59) [0.29]	D (D) [D]	0.28 (0.59) [0.29]	D (D) [D]
NBL	0.14 (0.29) [0.11]	A (B) [A]	0.15 (0.33) [0.12]	A (B) [A]	0.15 (0.33) [0.12]	A (B) [A]
NBT	0.30 (0.26) [0.12]	A (C) [A]	0.32 (0.27) [0.13]	A (C) [A]	0.33 (0.28) [0.13]	A (C) [A]
NBR	0.01 (0.01) [0.02]	A (C) [A]	0.01 (0.01) [0.02]	A (B) [A]	0.01 (0.01) [0.02]	A (B) [A]
SBL	0.19 (0.18) [0.11]	A (A) [A]	0.21 (0.19) [0.12]	A (A) [A]	0.21 (0.19) [0.12]	A (A) [A]
SBT	0.19 (0.53) [0.14]	A (B) [A]	0.21 (0.57) [0.16]	A (B) [A]	0.21 (0.58) [0.16]	A (B) [A]
SBR	0.04 (0.12) [0.02]	A (B) [A]	0.04 (0.12) [0.02]	A (B) [A]	0.04 (0.13) [0.03]	A (B) [A]
Overall	0.33 (0.52) [0.17]	B (C) [C]	0.35 (0.55) [0.19]	B (C) [C]	0.37 (0.56) [0.19]	B (C) [B]
Rathburn Road E / Westminster Place						
EBL	0.02 (0.08) [0.03]	A (A) [A]	0.02 (0.08) [0.03]	A (A) [A]	0.02 (0.08) [0.03]	A (A) [A]
EBTR	0.13 (0.14) [0.11]	A (A) [A]	0.13 (0.14) [0.11]	A (A) [A]	0.13 (0.14) [0.11]	A (A) [A]
WBL	0.01 (0.07) [0.03]	A (A) [A]	0.01 (0.07) [0.03]	A (A) [A]	0.02 (0.07) [0.03]	A (A) [A]
WBTR	0.11 (0.22) [0.10]	A (A) [A]	0.11 (0.23) [0.11]	A (A) [A]	0.12 (0.23) [0.11]	A (A) [A]
NBL	0.20 (0.12) [0.10]	C (C) [C]	0.20 (0.12) [0.10]	C (C) [C]	0.20 (0.11) [0.10]	C (C) [C]
NBTR	0.08 (0.10) [0.04]	C (C) [C]	0.08 (0.10) [0.04]	C (C) [C]	0.08 (0.10) [0.05]	C (C) [C]
SBL	0.14 (0.15) [0.13]	C (C) [C]	0.14 (0.15) [0.13]	C (C) [C]	0.14 (0.18) [0.13]	C (C) [C]
SBTR	0.08 (0.08) [0.07]	C (C) [C]	0.08 (0.08) [0.07]	C (C) [C]	0.08 (0.08) [0.07]	C (C) [C]
Overall	0.14 (0.21) [0.11]	A (A) [A]	0.14 (0.22) [0.11]	A (A) [A]	0.15 (0.22) [0.11]	A (A) [A]

Note:

1. 00 (00) [00]: Weekday morning peak hour (Weekday afternoon peak hour) [Sunday midday peak hour]

Table C-2 Unsignalized Intersection Analysis

Movement	Adjusted Existing Traffic		Future Background Traffic		Future Total Traffic	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Tomken Road / Westminster Church Access						
EBLR	14.7 (15.8) [11.5]	B (C) [B]	15.3 (16.4) [11.7]	C (C) [B]	13.1 (17.1) [12.1]	B (C) [B]
NBLT	0.2 (-) ² [-] ²	A (-) ² [-] ²	0.2 (-) ² [-] ²	A (-) ² [-] ²	0.5 (1.6) [0.9]	A (A) [A]
Rathburn Road E / Tomken Plaza / Tomken Grove						
EBLT	2.0 (4.7) [4.6]	A (A) [A]	2.0 (4.6) [4.5]	A (A) [A]	2.0 (4.6) [4.5]	A (A) [A]
WBLT	- ² (0.2) [-] ²	- ² (A) [-] ²	- ² (0.2) [-] ²	- ² (A) [-] ²	0.3 (0.6) [0.8]	A (A) [A]
NBLTR	12.0 (-) ² [13.1]	B (-) ² [B]	12.1 (-) ² [13.3]	B (-) ² [B]	12.6 (13.9) [12.9]	B (B) [B]
SBLTR	10.0 (15.3) [12.5]	A (C) [B]	10.0 (15.5) [12.6]	A (C) [B]	10.1 (16.2) [13.0]	B (C) [B]

Note:













1. 00 (00) [00]: Weekday morning peak hour (Weekday afternoon peak hour) [Sunday midday peak hour]
2. Zero volumes counted for movement

**Appendix D:
Synchro Worksheets**

Queues

1: Tomken Road & Burnhamthorpe Road E

Adjusted Existing AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	175	1145	130	55	660	145	85	595	100	130	410	55
v/c Ratio	0.32	0.55	0.14	0.31	0.48	0.21	0.39	0.69	0.24	0.50	0.35	0.10
Control Delay	15.5	21.7	2.8	38.9	37.1	5.0	54.6	58.7	8.6	40.0	39.3	7.4
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	15.5	21.7	2.8	38.9	37.1	5.0	54.6	58.7	8.6	40.0	39.3	7.4
Queue Length 50th (m)	20.9	103.3	0.0	11.0	75.2	0.0	21.0	84.0	0.0	25.9	47.1	0.0
Queue Length 95th (m)	36.1	138.1	9.2	23.1	92.0	12.8	34.7	96.2	13.0	37.3	55.5	8.5
Internal Link Dist (m)		244.3			229.6			356.2			284.7	
Turn Bay Length (m)	135.0		100.0	70.0		40.0	90.0		90.0	60.0		60.0
Base Capacity (vph)	553	2066	942	178	1377	690	300	1196	543	264	1506	680
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	0.32	0.55	0.14	0.31	0.48	0.21	0.28	0.50	0.18	0.49	0.27	0.08
Intersection Summary												

HCM Signalized Intersection Capacity Analysis











1: Tomken Road & Burnhamthorpe Road E

Adjusted Existing AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	1145	130	55	660	145	85	595	100	130	410	55
Future Volume (vph)	175	1145	130	55	660	145	85	595	100	130	410	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	1.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	5.0
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
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	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	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)	1745	3476	1497	1712	3444	1508	1657	3544	1415	1764	3444	1485
Flt Permitted	0.28	1.00	1.00	0.25	1.00	1.00	0.51	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	522	3476	1497	447	3444	1508	892	3544	1415	365	3444	1485
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	1145	130	55	660	145	85	595	100	130	410	55
RTOR Reduction (vph)	0	0	53	0	0	87	0	0	76	0	0	36
Lane Group Flow (vph)	175	1145	77	55	660	58	85	595	25	130	410	19
Confl. Peds. (#/hr)	29		11	11		29	11		28	28		11
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	5%	4%	4%	6%	1%	7%	3%	5%	1%	6%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	7
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2			6			4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	93.1	93.1	93.1	62.0	62.0	62.0	36.7	36.7	36.7	52.4	52.4	52.4
Effective Green, g (s)	95.1	95.1	95.1	64.0	64.0	64.0	39.2	39.2	39.2	54.4	54.9	54.9
Actuated g/C Ratio	0.59	0.59	0.59	0.40	0.40	0.40	0.25	0.25	0.25	0.34	0.34	0.34
Clearance Time (s)	3.0	7.0	7.0	7.0	7.0	7.0	7.5	7.5	7.5	3.0	7.5	7.5
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	540	2066	889	178	1377	603	218	868	346	252	1181	509
v/s Ratio Prot	0.06	c0.33			0.19			c0.17		c0.05	0.12	
v/s Ratio Perm	0.13		0.05	0.12		0.04	0.10		0.02	0.13		0.01
v/c Ratio	0.32	0.55	0.09	0.31	0.48	0.10	0.39	0.69	0.07	0.52	0.35	0.04
Uniform Delay, d1	16.1	19.6	13.9	32.9	35.6	30.0	50.4	54.8	46.4	39.3	39.2	35.0
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	1.6	1.1	0.2	4.5	1.2	0.3	2.4	2.9	0.2	3.5	0.4	0.1
Delay (s)	17.7	20.7	14.1	37.3	36.8	30.3	52.8	57.7	46.6	42.9	39.6	35.0
Level of Service	B	C	B	D	D	C	D	E	D	D	D	D
Approach Delay (s)		19.7			35.8			55.8			39.9	
Approach LOS		B			D			E			D	
Intersection Summary												
HCM 2000 Control Delay			34.4									C
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			160.0						12.0			
Intersection Capacity Utilization			93.4%									F
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 2: Tomken Road & Tomken Site Access

Adjusted Existing AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	0	5	910	595	5
Future Volume (Veh/h)	5	0	5	910	595	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	0	5	910	595	5
Pedestrians	7				1	
Lane Width (m)	3.7				3.7	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				309	118	
pX, platoon unblocked	0.87	0.97	0.97			
vC, conflicting volume	1070	307	607			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	601	210	521			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	375	770	1013			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	5	308	607	397	203	
Volume Left	5	5	0	0	0	
Volume Right	0	0	0	0	5	
cSH	375	1013	1700	1700	1700	
Volume to Capacity	0.01	0.00	0.36	0.23	0.12	
Queue Length 95th (m)	0.3	0.1	0.0	0.0	0.0	
Control Delay (s)	14.7	0.2	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	14.7	0.1		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay	0.1					
Intersection Capacity Utilization	38.6%			ICU Level of Service	A	
Analysis Period (min)	15					

Queues

3: Tomken Road & Rathburn Road E

Adjusted Existing AM Peak Hour

























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	75	240	15	250	90	805	20	85	505	60
v/c Ratio	0.49	0.40	0.09	0.40	0.14	0.30	0.02	0.19	0.19	0.05
Control Delay	56.5	31.1	43.5	27.3	7.6	7.1	1.6	8.8	6.4	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	31.1	43.5	27.3	7.6	7.1	1.6	8.8	6.4	2.4
Queue Length 50th (m)	16.8	17.3	3.4	16.6	4.6	25.1	0.0	4.6	14.2	0.0
Queue Length 95th (m)	23.0	22.6	7.4	22.1	18.5	67.2	1.6	19.5	39.8	5.5
Internal Link Dist (m)		85.4		255.6		94.1			295.9	
Turn Bay Length (m)	45.0		45.0		60.0		35.0	40.0		30.0
Base Capacity (vph)	399	1418	419	1462	657	2688	1188	446	2688	1146
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.17	0.04	0.17	0.14	0.30	0.02	0.19	0.19	0.05

Intersection Summary

HCM Signalized Intersection Capacity Analysis

3: Tomken Road & Rathburn Road E

















Adjusted Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	160	80	15	120	130	90	805	20	85	505	60
Future Volume (vph)	75	160	80	15	120	130	90	805	20	85	505	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1742	3103		1775	3158		1779	3544	1556	1693	3544	1492
Flt Permitted	0.49	1.00		0.51	1.00		0.46	1.00	1.00	0.33	1.00	1.00
Satd. Flow (perm)	903	3103		947	3158		866	3544	1556	588	3544	1492
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	75	160	80	15	120	130	90	805	20	85	505	60
RTOR Reduction (vph)	0	66	0	0	95	0	0	0	5	0	0	14
Lane Group Flow (vph)	75	174	0	15	155	0	90	805	15	85	505	46
Confl. Peds. (#/hr)	7		9	9		7	6		12	12		6
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	2%	10%	9%	0%	7%	3%	0%	3%	0%	5%	3%	5%
Bus Blockages (#/hr)	0	6	0	0	3	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			6		6		2
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	21.3	21.3		21.3	21.3		104.2	104.2	104.2	104.2	104.2	104.2
Effective Green, g (s)	23.8	23.8		23.8	23.8		106.2	106.2	106.2	106.2	106.2	106.2
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.76	0.76	0.76	0.76	0.76	0.76
Clearance Time (s)	7.5	7.5		7.5	7.5		7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	153	527		160	536		656	2688	1180	446	2688	1131
v/s Ratio Prot		0.06			0.05			c0.23			0.14	
v/s Ratio Perm	c0.08			0.02			0.10		0.01	0.14		0.03
v/c Ratio	0.49	0.33		0.09	0.29		0.14	0.30	0.01	0.19	0.19	0.04
Uniform Delay, d1	52.6	51.1		49.0	50.7		4.6	5.3	4.1	4.8	4.8	4.2
Progression Factor	0.93	0.91		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.1	0.8		0.5	0.6		0.4	0.3	0.0	0.9	0.2	0.1
Delay (s)	54.0	47.3		49.5	51.4		5.0	5.6	4.1	5.7	4.9	4.3
Level of Service	D	D		D	D		A	A	A	A	A	A
Approach Delay (s)		48.9			51.2			5.5			5.0	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay			17.3				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			75.1%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

4: Rathburn Site Access/Tomken Plaza & Rathburn Road E

Adjusted Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	305	0	0	245	25	5	0	5	5	0	35
Future Volume (Veh/h)	45	305	0	0	245	25	5	0	5	5	0	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	45	305	0	0	245	25	5	0	5	5	0	35
Pedestrians		3			2			8			9	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		141			109							
pX, platoon unblocked												
vC, conflicting volume	279			313			564	682	162	516	670	147
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	279			313			564	682	162	516	670	147
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			99	100	99	99	100	96
cM capacity (veh/h)	1285			1250			378	356	853	423	362	858
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	198	152	122	148	10	40						
Volume Left	45	0	0	0	5	5						
Volume Right	0	0	0	25	5	35						
cSH	1285	1700	1250	1700	524	760						
Volume to Capacity	0.04	0.09	0.00	0.09	0.02	0.05						
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.4	1.2						
Control Delay (s)	2.0	0.0	0.0	0.0	12.0	10.0						
Lane LOS	A				B	A						
Approach Delay (s)	1.1		0.0		12.0	10.0						
Approach LOS					B	A						
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			34.0%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

5: Westminster PI & Rathburn Road E

Adjusted Existing AM Peak Hour























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	15	315	5	280	40	45	25	40
v/c Ratio	0.02	0.12	0.01	0.10	0.15	0.13	0.11	0.12
Control Delay	7.3	5.1	6.2	4.1	21.6	10.7	20.6	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	5.1	6.2	4.1	21.6	10.7	20.6	11.4
Queue Length 50th (m)	0.4	4.8	0.2	5.6	4.3	1.6	2.7	1.6
Queue Length 95th (m)	3.6	17.4	1.3	14.7	7.9	6.1	5.7	5.8
Internal Link Dist (m)		206.7		116.5		125.9		93.7
Turn Bay Length (m)	50.0		40.0		25.0		20.0	
Base Capacity (vph)	772	2639	719	2686	565	705	506	662
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	0.12	0.01	0.10	0.07	0.06	0.05	0.06

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Westminster PI & Rathburn Road E

Adjusted Existing AM Peak Hour













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	295	20	5	265	15	40	15	30	25	15	25
Future Volume (vph)	15	295	20	5	265	15	40	15	30	25	15	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.90		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1640	3418		1578	3477		1774	1661		1595	1563	
Flt Permitted	0.58	1.00		0.56	1.00		0.73	1.00		0.73	1.00	
Satd. Flow (perm)	1001	3418		931	3477		1365	1661		1222	1563	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	295	20	5	265	15	40	15	30	25	15	25
RTOR Reduction (vph)	0	4	0	0	3	0	0	26	0	0	21	0
Lane Group Flow (vph)	15	311	0	5	277	0	40	19	0	25	19	0
Confl. Peds. (#/hr)	9		22	22		9	8		11	11		8
Heavy Vehicles (%)	8%	4%	7%	11%	3%	9%	0%	0%	4%	11%	17%	6%
Bus Blockages (#/hr)	0	6	0	0	3	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	48.6	48.6		48.6	48.6		9.4	9.4		9.4	9.4	
Effective Green, g (s)	49.6	49.6		49.6	49.6		10.4	10.4		10.4	10.4	
Actuated g/C Ratio	0.71	0.71		0.71	0.71		0.15	0.15		0.15	0.15	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	709	2421		659	2463		202	246		181	232	
v/s Ratio Prot		c0.09			0.08			0.01			0.01	
v/s Ratio Perm	0.01			0.01			c0.03			0.02		
v/c Ratio	0.02	0.13		0.01	0.11		0.20	0.08		0.14	0.08	
Uniform Delay, d1	3.0	3.3		3.0	3.2		26.1	25.7		25.9	25.7	
Progression Factor	1.00	1.00		0.85	0.89		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.0	0.1		1.0	0.3		0.7	0.3	
Delay (s)	3.1	3.4		2.6	3.0		27.2	26.0		26.6	26.0	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		3.4			2.9			26.5			26.2	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			7.7				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.14									
Actuated Cycle Length (s)			70.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			43.9%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

1: Tomken Road & Burnhamthorpe Road E





























Adjusted Existing PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	50	830	130	140	1370	80	120	400	55	200	890	225
v/c Ratio	0.24	0.44	0.15	0.53	0.89	0.12	0.57	0.35	0.11	0.49	0.78	0.38
Control Delay	20.0	24.2	3.3	42.7	50.3	7.0	38.2	42.4	5.3	33.2	54.4	14.5
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	20.0	24.2	3.3	42.7	50.3	7.0	38.2	42.4	5.3	33.2	54.4	14.5
Queue Length 50th (m)	6.8	79.3	0.0	30.0	193.1	1.3	20.6	46.1	0.0	36.0	121.4	14.1
Queue Length 95th (m)	13.3	95.3	9.8	52.5	223.0	10.9	32.9	59.4	6.8	52.8	144.2	34.8
Internal Link Dist (m)		244.3			229.6			356.2			284.7	
Turn Bay Length (m)	135.0		100.0	70.0		40.0	90.0		90.0	60.0		60.0
Base Capacity (vph)	212	1905	890	263	1543	679	214	1207	531	409	1207	618
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	0.24	0.44	0.15	0.53	0.89	0.12	0.56	0.33	0.10	0.49	0.74	0.36
Intersection Summary												

HCM Signalized Intersection Capacity Analysis











1: Tomken Road & Burnhamthorpe Road E

Adjusted Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	50	830	130	140	1370	80	120	400	55	200	890	225
Future Volume (vph)	50	830	130	140	1370	80	120	400	55	200	890	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	1.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	5.0
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
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	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	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)	1733	3579	1559	1779	3579	1480	1767	3579	1440	1774	3579	1526
Flt Permitted	0.06	1.00	1.00	0.33	1.00	1.00	0.11	1.00	1.00	0.42	1.00	1.00
Satd. Flow (perm)	104	3579	1559	610	3579	1480	206	3579	1440	777	3579	1526
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	830	130	140	1370	80	120	400	55	200	890	225
RTOR Reduction (vph)	0	0	61	0	0	41	0	0	38	0	0	106
Lane Group Flow (vph)	50	830	69	140	1370	39	120	400	17	200	890	119
Confl. Peds. (#/hr)	36		9	9		36	4		29	29		4
Confl. Bikes (#/hr)			3			1			1			1
Heavy Vehicles (%)	3%	2%	0%	0%	2%	2%	1%	2%	3%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	7
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2			6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	83.2	83.2	83.2	67.0	67.0	67.0	58.9	48.3	48.3	59.7	48.7	48.7
Effective Green, g (s)	85.2	85.2	85.2	69.0	69.0	69.0	62.9	50.8	50.8	63.7	51.2	51.2
Actuated g/C Ratio	0.53	0.53	0.53	0.43	0.43	0.43	0.39	0.32	0.32	0.40	0.32	0.32
Clearance Time (s)	3.0	7.0	7.0	7.0	7.0	7.0	3.0	7.5	7.5	3.0	7.5	7.5
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	210	1905	830	263	1543	638	203	1136	457	390	1145	488
v/s Ratio Prot	0.02	c0.23			c0.38		c0.05	0.11		c0.04	c0.25	
v/s Ratio Perm	0.10		0.04	0.23		0.03	0.19		0.01	0.16		0.08
v/c Ratio	0.24	0.44	0.08	0.53	0.89	0.06	0.59	0.35	0.04	0.51	0.78	0.24
Uniform Delay, d1	29.1	22.8	18.3	33.6	41.9	26.6	35.8	42.0	37.7	33.0	49.2	40.1
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	2.7	0.7	0.2	7.5	8.0	0.2	4.6	0.4	0.1	2.3	4.0	0.5
Delay (s)	31.8	23.5	18.5	41.1	49.9	26.8	40.4	42.4	37.8	35.3	53.2	40.7
Level of Service	C	C	B	D	D	C	D	D	D	D	D	D
Approach Delay (s)		23.3			48.0			41.5			48.3	
Approach LOS		C			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			41.7								HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			160.0							12.0		
Intersection Capacity Utilization			96.2%								ICU Level of Service	F
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 2: Tomken Road & Tomken Site Access

Adjusted Existing PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	5	0	530	1310	5
Future Volume (Veh/h)	5	5	0	530	1310	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	5	0	530	1310	5
Pedestrians	11					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				309	118	
pX, platoon unblocked	0.85	0.81	0.81			
vC, conflicting volume	1588	668	1326			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	935	122	934			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	100			
cM capacity (veh/h)	225	732	595			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	10	177	353	873	442	
Volume Left	5	0	0	0	0	
Volume Right	5	0	0	0	5	
cSH	344	595	1700	1700	1700	
Volume to Capacity	0.03	0.00	0.21	0.51	0.26	
Queue Length 95th (m)	0.6	0.0	0.0	0.0	0.0	
Control Delay (s)	15.8	0.0	0.0	0.0	0.0	
Lane LOS	C					
Approach Delay (s)	15.8	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay	0.1					
Intersection Capacity Utilization	46.4%			ICU Level of Service	A	
Analysis Period (min)	15					

Queues

3: Tomken Road & Rathburn Road E

Adjusted Existing PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	35	280	30	455	95	420	20	150	1205	135
v/c Ratio	0.28	0.36	0.15	0.59	0.28	0.26	0.03	0.18	0.53	0.14
Control Delay	52.4	40.7	41.9	48.2	11.0	23.3	0.1	7.1	17.0	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.4	40.7	41.9	48.2	11.0	23.3	0.1	7.1	17.0	8.0
Queue Length 50th (m)	7.8	28.1	6.4	53.1	5.5	33.6	0.0	9.0	79.0	6.7
Queue Length 95th (m)	17.5	39.7	12.4	57.4	16.0	44.2	0.0	24.0	142.9	21.3
Internal Link Dist (m)		85.4		255.6		94.1			295.9	
Turn Bay Length (m)	45.0		45.0		60.0		35.0	40.0		30.0
Base Capacity (vph)	193	1188	314	1184	420	1645	742	839	2286	1000
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.24	0.10	0.38	0.23	0.26	0.03	0.18	0.53	0.14

Intersection Summary

HCM Signalized Intersection Capacity Analysis

3: Tomken Road & Rathburn Road E

















Adjusted Existing PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	200	80	30	355	100	95	420	20	150	1205	135
Future Volume (vph)	35	200	80	30	355	100	95	420	20	150	1205	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.96		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3378		1781	3402		1784	3544	1533	1757	3614	1548
Flt Permitted	0.30	1.00		0.49	1.00		0.23	1.00	1.00	0.46	1.00	1.00
Satd. Flow (perm)	562	3378		919	3402		438	3544	1533	845	3614	1548
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	200	80	30	355	100	95	420	20	150	1205	135
RTOR Reduction (vph)	0	37	0	0	22	0	0	0	11	0	0	21
Lane Group Flow (vph)	35	243	0	30	433	0	95	420	9	150	1205	114
Confl. Peds. (#/hr)	19		4	4		19	16		24	24		16
Confl. Bikes (#/hr)						2			1			2
Heavy Vehicles (%)	0%	3%	0%	0%	2%	3%	0%	3%	0%	1%	1%	0%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	28.2	28.2		28.2	28.2		70.9	63.1	63.1	97.3	86.5	86.5
Effective Green, g (s)	30.7	30.7		30.7	30.7		74.9	65.1	65.1	99.3	88.5	88.5
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.54	0.46	0.46	0.71	0.63	0.63
Clearance Time (s)	7.5	7.5		7.5	7.5		3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	123	740		201	746		328	1647	712	815	2284	978
v/s Ratio Prot		0.07			c0.13		c0.02	0.12		0.04	c0.33	
v/s Ratio Perm	0.06			0.03			0.13		0.01	0.09		0.07
v/c Ratio	0.28	0.33		0.15	0.58		0.29	0.26	0.01	0.18	0.53	0.12
Uniform Delay, d1	45.5	46.0		44.1	48.9		16.0	22.7	20.2	6.6	14.2	10.2
Progression Factor	1.10	1.07		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.7	0.5		0.7	1.8		0.5	0.4	0.0	0.5	0.9	0.2
Delay (s)	52.8	49.8		44.8	50.7		16.5	23.1	20.2	7.1	15.1	10.5
Level of Service	D	D		D	D		B	C	C	A	B	B
Approach Delay (s)		50.1			50.3			21.8			13.9	
Approach LOS		D			D			C			B	
Intersection Summary												
HCM 2000 Control Delay			25.7				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)				11.0	
Intersection Capacity Utilization			81.1%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

4: Rathburn Site Access/Tomken Plaza & Rathburn Road E

Adjusted Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	260	5	5	455	125	0	0	0	55	5	165
Future Volume (Veh/h)	120	260	5	5	455	125	0	0	0	55	5	165
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	120	260	5	5	455	125	0	0	0	55	5	165
Pedestrians		2						10			14	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		141			109							
pX, platoon unblocked	0.90						0.90	0.90		0.90	0.90	0.90
vC, conflicting volume	594			275			920	1116	142	912	1056	306
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	323			275			685	904	142	676	837	2
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			100			100	100	100	80	98	83
cM capacity (veh/h)	1102			1289			221	218	878	274	238	961
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	250	135	232	352	0	225						
Volume Left	120	0	5	0	0	55						
Volume Right	0	5	0	125	0	165						
cSH	1102	1700	1289	1700	1700	572						
Volume to Capacity	0.11	0.08	0.00	0.21	0.02	0.39						
Queue Length 95th (m)	2.6	0.0	0.1	0.0	0.0	13.0						
Control Delay (s)	4.7	0.0	0.2	0.0	0.0	15.3						
Lane LOS	A		A		A	C						
Approach Delay (s)	3.0		0.1		0.0	15.3						
Approach LOS					A	C						
Intersection Summary												
Average Delay			3.9									
Intersection Capacity Utilization			52.2%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

5: Westminster PI & Rathburn Road E

Adjusted Existing PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	45	345	50	570	20	55	30	50
v/c Ratio	0.07	0.13	0.06	0.21	0.09	0.15	0.12	0.14
Control Delay	7.0	5.0	6.4	5.3	20.3	11.1	21.1	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	5.0	6.4	5.3	20.3	11.1	21.1	10.4
Queue Length 50th (m)	1.3	5.2	0.8	4.8	2.1	2.1	3.2	1.6
Queue Length 95th (m)	8.1	18.8	12.4	49.2	4.9	6.9	6.4	6.3
Internal Link Dist (m)		206.7		116.5		125.9		93.7
Turn Bay Length (m)	50.0		40.0		25.0		20.0	
Base Capacity (vph)	633	2696	785	2757	492	731	556	719
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	0.07	0.13	0.06	0.21	0.04	0.08	0.05	0.07
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

5: Westminster PI & Rathburn Road E













Adjusted Existing PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	320	25	50	545	25	20	20	35	30	15	35
Future Volume (vph)	45	320	25	50	545	25	20	20	35	30	15	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		0.99	1.00	
Fr _t	1.00	0.99		1.00	0.99		1.00	0.90		1.00	0.90	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1773	3476		1768	3558		1559	1714		1770	1687	
Fl _t Permitted	0.44	1.00		0.54	1.00		0.72	1.00		0.72	1.00	
Satd. Flow (perm)	817	3476		1013	3558		1189	1714		1343	1687	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	320	25	50	545	25	20	20	35	30	15	35
RTOR Reduction (vph)	0	4	0	0	2	0	0	30	0	0	30	0
Lane Group Flow (vph)	45	341	0	50	568	0	20	25	0	30	20	0
Confl. Peds. (#/hr)	11		12	12		11	18		12	12		18
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	0%	3%	0%	0%	1%	0%	13%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	48.8	48.8		48.8	48.8		9.2	9.2		9.2	9.2	
Effective Green, g (s)	49.8	49.8		49.8	49.8		10.2	10.2		10.2	10.2	
Actuated g/C Ratio	0.71	0.71		0.71	0.71		0.15	0.15		0.15	0.15	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	581	2472		720	2531		173	249		195	245	
v/s Ratio Prot		0.10			c0.16			0.01			0.01	
v/s Ratio Perm	0.06			0.05			0.02			c0.02		
v/c Ratio	0.08	0.14		0.07	0.22		0.12	0.10		0.15	0.08	
Uniform Delay, d ₁	3.1	3.2		3.1	3.5		26.0	25.9		26.1	25.9	
Progression Factor	1.00	1.00		1.06	1.08		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	0.3	0.1		0.2	0.2		0.6	0.4		0.8	0.3	
Delay (s)	3.3	3.3		3.4	3.9		26.6	26.3		26.9	26.2	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		3.3			3.9			26.4			26.4	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			6.7				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.21									
Actuated Cycle Length (s)			70.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			56.4%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

1: Tomken Road & Burnhamthorpe Road E

Adjusted Existing SUN Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	45	680	80	60	645	115	60	265	50	80	320	80
v/c Ratio	0.09	0.28	0.07	0.13	0.26	0.10	0.37	0.46	0.17	0.26	0.35	0.18
Control Delay	12.1	11.6	2.8	12.3	11.4	2.5	63.5	62.0	12.7	42.8	48.5	7.6
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	12.1	11.6	2.8	12.3	11.4	2.5	63.5	62.0	12.7	42.8	48.5	7.6
Queue Length 50th (m)	3.9	35.6	0.0	5.3	33.4	0.0	16.4	38.7	0.0	18.3	41.7	0.0
Queue Length 95th (m)	12.6	68.3	7.3	16.3	64.4	8.5	25.5	43.4	9.8	25.1	44.2	10.3
Internal Link Dist (m)		244.3			229.6			356.2			284.7	
Turn Bay Length (m)	135.0		100.0	70.0		40.0	90.0		90.0	60.0		60.0
Base Capacity (vph)	488	2468	1092	468	2468	1102	415	1445	658	315	1807	811
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	0.09	0.28	0.07	0.13	0.26	0.10	0.14	0.18	0.08	0.25	0.18	0.10
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

1: Tomken Road & Burnhamthorpe Road E

Adjusted Existing SUN Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	680	80	60	645	115	60	265	50	80	320	80
Future Volume (vph)	45	680	80	60	645	115	60	265	50	80	320	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.5	5.0	5.0	1.0	5.0	5.0
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
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	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	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)	1779	3614	1563	1779	3614	1562	1781	3614	1571	1783	3614	1542
Flt Permitted	0.38	1.00	1.00	0.37	1.00	1.00	0.56	1.00	1.00	0.42	1.00	1.00
Satd. Flow (perm)	714	3614	1563	685	3614	1562	1046	3614	1571	797	3614	1542
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	680	80	60	645	115	60	265	50	80	320	80
RTOR Reduction (vph)	0	0	25	0	0	36	0	0	42	0	0	60
Lane Group Flow (vph)	45	680	55	60	645	79	60	265	8	80	320	20
Confl. Peds. (#/hr)	8		8	8		8	3		4	4		3
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	1%	0%	0%	1%	2%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		2			6			4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	107.3	107.3	107.3	107.3	107.3	107.3	23.2	23.2	23.2	38.2	38.2	38.2
Effective Green, g (s)	109.3	109.3	109.3	109.3	109.3	109.3	25.2	25.7	25.7	40.2	40.7	40.7
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.68	0.68	0.16	0.16	0.16	0.25	0.25	0.25
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.5	7.5	7.5	3.0	7.5	7.5
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	487	2468	1067	467	2468	1067	164	580	252	286	919	392
v/s Ratio Prot		c0.19			0.18			c0.07		0.02	c0.09	
v/s Ratio Perm	0.06		0.03	0.09		0.05	0.06		0.01	0.05		0.01
v/c Ratio	0.09	0.28	0.05	0.13	0.26	0.07	0.37	0.46	0.03	0.28	0.35	0.05
Uniform Delay, d1	8.6	9.9	8.3	8.8	9.8	8.5	60.3	60.8	56.7	47.1	48.8	45.1
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	0.4	0.3	0.1	0.6	0.3	0.1	2.9	1.2	0.1	1.1	0.5	0.1
Delay (s)	8.9	10.2	8.4	9.4	10.0	8.6	63.1	62.0	56.8	48.3	49.3	45.2
Level of Service	A	B	A	A	B	A	E	E	E	D	D	D
Approach Delay (s)		9.9			9.8			61.5			48.4	
Approach LOS		A			A			E			D	
Intersection Summary												
HCM 2000 Control Delay			25.1				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			160.0				Sum of lost time (s)				11.0	
Intersection Capacity Utilization			78.5%				ICU Level of Service				D	
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: Tomken Road & Tomken Site Access

Adjusted Existing SUN Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	15	0	425	465	5
Future Volume (Veh/h)	20	15	0	425	465	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	20	15	0	425	465	5
Pedestrians	2					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				309	118	
pX, platoon unblocked	0.96	0.98	0.98			
vC, conflicting volume	682	237	472			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	491	185	424			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	98	100			
cM capacity (veh/h)	489	815	1123			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	35	142	283	310	160	
Volume Left	20	0	0	0	0	
Volume Right	15	0	0	0	5	
cSH	590	1123	1700	1700	1700	
Volume to Capacity	0.06	0.00	0.17	0.18	0.09	
Queue Length 95th (m)	1.3	0.0	0.0	0.0	0.0	
Control Delay (s)	11.5	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	11.5	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay	0.4					
Intersection Capacity Utilization	23.0%			ICU Level of Service	A	
Analysis Period (min)	15					

Queues

3: Tomken Road & Rathburn Road E

Adjusted Existing SUN Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	25	235	10	225	85	335	25	90	380	35
v/c Ratio	0.17	0.40	0.07	0.38	0.11	0.12	0.02	0.11	0.14	0.03
Control Delay	49.4	37.0	43.7	30.9	6.8	5.7	2.2	6.8	5.7	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.4	37.0	43.7	30.9	6.8	5.7	2.2	6.8	5.7	2.9
Queue Length 50th (m)	6.0	20.8	2.3	16.8	3.7	7.7	0.0	4.0	8.9	0.0
Queue Length 95th (m)	12.5	28.8	5.6	21.3	17.2	26.3	2.5	17.9	29.7	4.2
Internal Link Dist (m)		85.4		255.6		94.1			295.9	
Turn Bay Length (m)	45.0		45.0		60.0		35.0	40.0		30.0
Base Capacity (vph)	338	1239	329	1229	760	2789	1205	789	2789	1220
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.19	0.03	0.18	0.11	0.12	0.02	0.11	0.14	0.03

Intersection Summary

HCM Signalized Intersection Capacity Analysis

3: Tomken Road & Rathburn Road E

















Adjusted Existing SUN Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	155	80	10	135	90	85	335	25	90	380	35
Future Volume (vph)	25	155	80	10	135	90	85	335	25	90	380	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.95		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3406		1779	3345		1780	3614	1552	1767	3614	1571
Flt Permitted	0.52	1.00		0.50	1.00		0.53	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)	967	3406		943	3345		986	3614	1552	1023	3614	1571
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	155	80	10	135	90	85	335	25	90	380	35
RTOR Reduction (vph)	0	61	0	0	76	0	0	0	6	0	0	8
Lane Group Flow (vph)	25	174	0	10	149	0	85	335	19	90	380	27
Confl. Peds. (#/hr)	13		5	5		13	4		14	14		4
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	1%	0%	0%	1%	0%
Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			6		6		2
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	19.5	19.5		19.5	19.5		106.0	106.0	106.0	106.0	106.0	106.0
Effective Green, g (s)	22.0	22.0		22.0	22.0		108.0	108.0	108.0	108.0	108.0	108.0
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.77	0.77	0.77	0.77	0.77	0.77
Clearance Time (s)	7.5	7.5		7.5	7.5		7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	151	535		148	525		760	2787	1197	789	2787	1211
v/s Ratio Prot		c0.05			0.04			0.09			c0.11	
v/s Ratio Perm	0.03			0.01			0.09		0.01	0.09		0.02
v/c Ratio	0.17	0.33		0.07	0.28		0.11	0.12	0.02	0.11	0.14	0.02
Uniform Delay, d1	51.1	52.4		50.3	52.1		4.0	4.0	3.7	4.0	4.1	3.7
Progression Factor	1.04	1.02		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.7		0.4	0.6		0.3	0.1	0.0	0.3	0.1	0.0
Delay (s)	53.9	54.2		50.7	52.7		4.3	4.1	3.7	4.3	4.2	3.8
Level of Service	D	D		D	D		A	A	A	A	A	A
Approach Delay (s)		54.2			52.6			4.1			4.2	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay			21.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.17									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			72.5%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

4: Rathburn Site Access/Tomken Plaza & Rathburn Road E

Adjusted Existing SUN Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	210	0	0	190	65	5	0	5	45	0	100
Future Volume (Veh/h)	115	210	0	0	190	65	5	0	5	45	0	100
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	115	210	0	0	190	65	5	0	5	45	0	100
Pedestrians		2						1			7	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		141			109							
pX, platoon unblocked												
vC, conflicting volume	262			211			638	703	106	570	670	136
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	262			211			638	703	106	570	670	136
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			100			98	100	99	88	100	89
cM capacity (veh/h)	1306			1370			300	330	933	375	345	887
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	220	105	95	160	10	145						
Volume Left	115	0	0	0	5	45						
Volume Right	0	0	0	65	5	100						
cSH	1306	1700	1370	1700	454	623						
Volume to Capacity	0.09	0.06	0.00	0.09	0.02	0.23						
Queue Length 95th (m)	2.0	0.0	0.0	0.0	0.5	6.3						
Control Delay (s)	4.6	0.0	0.0	0.0	13.1	12.5						
Lane LOS	A				B	B						
Approach Delay (s)	3.1		0.0		13.1	12.5						
Approach LOS					B	B						
Intersection Summary												
Average Delay			4.0									
Intersection Capacity Utilization			37.9%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

5: Westminster PI & Rathburn Road E

Adjusted Existing SUN Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	20	270	25	270	20	40	25	30
v/c Ratio	0.02	0.10	0.03	0.10	0.08	0.12	0.10	0.09
Control Delay	7.0	5.1	7.6	5.4	20.1	8.5	20.7	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	5.1	7.6	5.4	20.1	8.5	20.7	13.3
Queue Length 50th (m)	0.5	4.0	1.7	9.8	2.1	0.5	2.7	1.6
Queue Length 95th (m)	4.4	15.3	5.4	17.5	4.9	5.0	5.6	5.2
Internal Link Dist (m)		206.7		116.5		125.9		93.7
Turn Bay Length (m)	50.0		40.0		25.0		20.0	
Base Capacity (vph)	849	2786	845	2756	565	702	567	706
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	0.10	0.03	0.10	0.04	0.06	0.04	0.04

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Westminster PI & Rathburn Road E













Adjusted Existing SUN Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	265	5	25	245	25	20	5	35	25	15	15
Future Volume (vph)	20	265	5	25	245	25	20	5	35	25	15	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.87		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1777	3588		1767	3544		1758	1645		1780	1685	
Flt Permitted	0.59	1.00		0.59	1.00		0.74	1.00		0.73	1.00	
Satd. Flow (perm)	1095	3588		1089	3544		1365	1645		1369	1685	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	265	5	25	245	25	20	5	35	25	15	15
RTOR Reduction (vph)	0	1	0	0	6	0	0	30	0	0	13	0
Lane Group Flow (vph)	20	269	0	25	264	0	20	10	0	25	17	0
Confl. Peds. (#/hr)	5		11	11		5	20		4	4		20
Confl. Bikes (#/hr)			2						1			
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	8%
Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	49.0	49.0		49.0	49.0		9.0	9.0		9.0	9.0	
Effective Green, g (s)	50.0	50.0		50.0	50.0		10.0	10.0		10.0	10.0	
Actuated g/C Ratio	0.71	0.71		0.71	0.71		0.14	0.14		0.14	0.14	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	782	2562		777	2531		195	235		195	240	
v/s Ratio Prot		c0.08			0.07			0.01			0.01	
v/s Ratio Perm	0.02			0.02			0.01			c0.02		
v/c Ratio	0.03	0.11		0.03	0.10		0.10	0.04		0.13	0.07	
Uniform Delay, d1	2.9	3.1		2.9	3.1		26.1	25.9		26.2	26.0	
Progression Factor	1.00	1.00		1.22	1.24		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.1	0.1		0.5	0.2		0.6	0.3	
Delay (s)	3.0	3.2		3.7	3.9		26.6	26.0		26.8	26.2	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		3.2			3.9			26.2			26.5	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			7.3				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.11									
Actuated Cycle Length (s)			70.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			45.9%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

1: Tomken Road & Burnhamthorpe Road E

Future Background AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	175	1180	130	55	690	145	85	660	100	130	465	55
v/c Ratio	0.32	0.58	0.14	0.34	0.53	0.22	0.30	0.72	0.23	0.53	0.46	0.11
Control Delay	16.3	23.3	2.9	43.4	41.0	5.4	33.9	57.9	11.0	40.3	47.4	5.3
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	16.3	23.3	2.9	43.4	41.0	5.4	33.9	57.9	11.0	40.3	47.4	5.3
Queue Length 50th (m)	21.5	111.2	0.0	11.5	83.0	0.0	16.2	93.1	2.4	25.4	59.0	0.0
Queue Length 95th (m)	36.7	146.4	9.4	24.4	101.2	13.4	25.6	105.7	15.2	36.8	69.3	6.7
Internal Link Dist (m)		244.3			229.6			356.2			284.7	
Turn Bay Length (m)	135.0		100.0	70.0		40.0	90.0		90.0	60.0		60.0
Base Capacity (vph)	542	2029	928	161	1291	656	288	1151	519	245	1226	572
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	0.32	0.58	0.14	0.34	0.53	0.22	0.30	0.57	0.19	0.53	0.38	0.10
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

1: Tomken Road & Burnhamthorpe Road E

Future Background AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	1180	130	55	690	145	85	660	100	130	465	55
Future Volume (vph)	175	1180	130	55	690	145	85	660	100	130	465	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	1.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	5.0
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
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	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	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)	1746	3476	1497	1712	3444	1508	1665	3544	1415	1765	3444	1485
Flt Permitted	0.25	1.00	1.00	0.24	1.00	1.00	0.39	1.00	1.00	0.17	1.00	1.00
Satd. Flow (perm)	466	3476	1497	432	3444	1508	686	3544	1415	316	3444	1485
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	1180	130	55	690	145	85	660	100	130	465	55
RTOR Reduction (vph)	0	0	54	0	0	91	0	0	66	0	0	39
Lane Group Flow (vph)	175	1180	76	55	690	54	85	660	34	130	465	16
Confl. Peds. (#/hr)	29		11	11		29	11		28	28		11
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	5%	4%	4%	6%	1%	7%	3%	5%	1%	6%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	7
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2			6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	91.4	91.4	91.4	58.0	58.0	58.0	46.2	39.2	39.2	54.1	44.1	44.1
Effective Green, g (s)	93.4	93.4	93.4	60.0	60.0	60.0	50.2	41.7	41.7	56.1	46.6	46.6
Actuated g/C Ratio	0.58	0.58	0.58	0.38	0.38	0.38	0.31	0.26	0.26	0.35	0.29	0.29
Clearance Time (s)	3.0	7.0	7.0	7.0	7.0	7.0	3.0	7.5	7.5	3.0	7.5	7.5
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	531	2029	873	162	1291	565	270	923	368	236	1003	432
v/s Ratio Prot	0.07	c0.34			0.20		0.02	c0.19		c0.05	0.14	
v/s Ratio Perm	0.13		0.05	0.13		0.04	0.08		0.02	0.14		0.01
v/c Ratio	0.33	0.58	0.09	0.34	0.53	0.10	0.31	0.72	0.09	0.55	0.46	0.04
Uniform Delay, d1	17.3	21.0	14.6	35.8	39.1	32.4	39.9	53.8	44.8	38.7	46.5	40.6
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	1.7	1.2	0.2	5.6	1.6	0.3	0.7	3.3	0.2	4.7	0.7	0.1
Delay (s)	18.9	22.2	14.8	41.4	40.7	32.8	40.6	57.0	45.0	43.3	47.2	40.7
Level of Service	B	C	B	D	D	C	D	E	D	D	D	D
Approach Delay (s)		21.2			39.4			54.0			45.9	
Approach LOS		C			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			36.7								HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			160.0							12.0		
Intersection Capacity Utilization			94.1%								ICU Level of Service	F
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Tomken Road & Tomken Site Access

Future Background AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	0	5	975	650	5
Future Volume (Veh/h)	5	0	5	975	650	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	0	5	975	650	5
Pedestrians	7				1	
Lane Width (m)	3.7				3.7	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				309	118	
pX, platoon unblocked	0.85	0.96	0.96			
vC, conflicting volume	1158	334	662			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	626	219	561			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	99			
cM capacity (veh/h)	355	754	972			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	5	330	650	433	222	
Volume Left	5	5	0	0	0	
Volume Right	0	0	0	0	5	
cSH	355	972	1700	1700	1700	
Volume to Capacity	0.01	0.01	0.38	0.25	0.13	
Queue Length 95th (m)	0.3	0.1	0.0	0.0	0.0	
Control Delay (s)	15.3	0.2	0.0	0.0	0.0	
Lane LOS	C	A				
Approach Delay (s)	15.3	0.1		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay	0.1					
Intersection Capacity Utilization	40.4%			ICU Level of Service	A	
Analysis Period (min)	15					

Queues

3: Tomken Road & Rathburn Road E

Future Background AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	75	250	15	255	90	870	20	85	560	60
v/c Ratio	0.49	0.42	0.09	0.40	0.15	0.32	0.02	0.21	0.21	0.05
Control Delay	56.5	35.4	43.5	26.4	7.8	7.4	1.6	9.1	6.6	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	35.4	43.5	26.4	7.8	7.4	1.6	9.1	6.6	2.4
Queue Length 50th (m)	16.0	19.2	3.4	16.4	4.7	28.1	0.0	4.7	16.2	0.0
Queue Length 95th (m)	22.0	23.6	7.4	22.0	18.7	73.9	1.6	20.0	44.4	5.5
Internal Link Dist (m)		85.4		255.6		94.1			295.9	
Turn Bay Length (m)	45.0		45.0		60.0		35.0	40.0		30.0
Base Capacity (vph)	350	1261	362	1315	616	2680	1185	412	2680	1143
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.20	0.04	0.19	0.15	0.32	0.02	0.21	0.21	0.05

Intersection Summary

HCM Signalized Intersection Capacity Analysis

3: Tomken Road & Rathburn Road E

















Future Background AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	170	80	15	125	130	90	870	20	85	560	60
Future Volume (vph)	75	170	80	15	125	130	90	870	20	85	560	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1742	3110		1775	3162		1779	3544	1556	1693	3544	1492
Flt Permitted	0.49	1.00		0.49	1.00		0.44	1.00	1.00	0.31	1.00	1.00
Satd. Flow (perm)	893	3110		923	3162		815	3544	1556	545	3544	1492
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	75	170	80	15	125	130	90	870	20	85	560	60
RTOR Reduction (vph)	0	54	0	0	99	0	0	0	5	0	0	15
Lane Group Flow (vph)	75	196	0	15	156	0	90	870	15	85	560	45
Confl. Peds. (#/hr)	7		9	9		7	6		12	12		6
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	2%	10%	9%	0%	7%	3%	0%	3%	0%	5%	3%	5%
Bus Blockages (#/hr)	0	6	0	0	3	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			6				2
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	21.6	21.6		21.6	21.6		103.9	103.9	103.9	103.9	103.9	103.9
Effective Green, g (s)	24.1	24.1		24.1	24.1		105.9	105.9	105.9	105.9	105.9	105.9
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.76	0.76	0.76	0.76	0.76	0.76
Clearance Time (s)	7.5	7.5		7.5	7.5		7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	153	535		158	544		616	2680	1177	412	2680	1128
v/s Ratio Prot		0.06			0.05			c0.25			0.16	
v/s Ratio Perm	c0.08			0.02			0.11		0.01	0.16		0.03
v/c Ratio	0.49	0.37		0.09	0.29		0.15	0.32	0.01	0.21	0.21	0.04
Uniform Delay, d1	52.4	51.2		48.8	50.5		4.7	5.5	4.2	4.9	4.9	4.3
Progression Factor	0.93	0.92		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.1	0.9		0.5	0.6		0.5	0.3	0.0	1.1	0.2	0.1
Delay (s)	53.9	48.2		49.3	51.1		5.2	5.8	4.2	6.1	5.1	4.4
Level of Service	D	D		D	D		A	A	A	A	A	A
Approach Delay (s)		49.5			51.0			5.7			5.2	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay			17.2				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			75.3%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

4: Rathburn Site Access/Tomken Plaza & Rathburn Road E

Future Background AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	315	0	0	250	25	5	0	5	5	0	35
Future Volume (Veh/h)	45	315	0	0	250	25	5	0	5	5	0	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	45	315	0	0	250	25	5	0	5	5	0	35
Pedestrians		3			2			8			9	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		141			109							
pX, platoon unblocked												
vC, conflicting volume	284			323			576	697	168	526	684	150
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	284			323			576	697	168	526	684	150
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			99	100	99	99	100	96
cM capacity (veh/h)	1280			1240			370	349	846	416	355	855
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	202	158	125	150	10	40						
Volume Left	45	0	0	0	5	5						
Volume Right	0	0	0	25	5	35						
cSH	1280	1700	1240	1700	515	755						
Volume to Capacity	0.04	0.09	0.00	0.09	0.02	0.05						
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.4	1.2						
Control Delay (s)	2.0	0.0	0.0	0.0	12.1	10.0						
Lane LOS	A				B	B						
Approach Delay (s)	1.1		0.0		12.1	10.0						
Approach LOS					B	B						
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			34.3%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

5: Westminster PI & Rathburn Road E

Future Background AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	15	325	5	285	40	45	25	40
v/c Ratio	0.02	0.12	0.01	0.11	0.15	0.13	0.11	0.12
Control Delay	7.3	5.1	5.8	3.6	21.6	10.7	20.6	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	5.1	5.8	3.6	21.6	10.7	20.6	11.4
Queue Length 50th (m)	0.4	5.0	0.2	5.5	4.3	1.6	2.7	1.6
Queue Length 95th (m)	3.6	17.8	1.0	9.7	7.9	6.1	5.7	5.8
Internal Link Dist (m)		206.7		116.5		125.9		93.7
Turn Bay Length (m)	50.0		40.0		25.0		20.0	
Base Capacity (vph)	768	2642	711	2686	546	682	488	640
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	0.12	0.01	0.11	0.07	0.07	0.05	0.06
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

5: Westminster PI & Rathburn Road E

Future Background AM Peak Hour

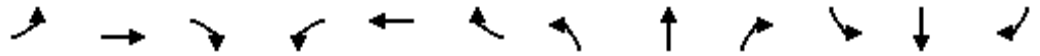
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	305	20	5	270	15	40	15	30	25	15	25
Future Volume (vph)	15	305	20	5	270	15	40	15	30	25	15	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		0.99	1.00		0.99	1.00	
Fr _t	1.00	0.99		1.00	0.99		1.00	0.90		1.00	0.91	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1640	3419		1579	3478		1774	1661		1595	1563	
Fl _t Permitted	0.58	1.00		0.56	1.00		0.73	1.00		0.73	1.00	
Satd. Flow (perm)	996	3419		923	3478		1365	1661		1222	1563	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	305	20	5	270	15	40	15	30	25	15	25
RTOR Reduction (vph)	0	4	0	0	3	0	0	26	0	0	21	0
Lane Group Flow (vph)	15	321	0	5	282	0	40	19	0	25	19	0
Confl. Peds. (#/hr)	9		22	22		9	8		11	11		8
Heavy Vehicles (%)	8%	4%	7%	11%	3%	9%	0%	0%	4%	11%	17%	6%
Bus Blockages (#/hr)	0	6	0	0	3	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	48.6	48.6		48.6	48.6		9.4	9.4		9.4	9.4	
Effective Green, g (s)	49.6	49.6		49.6	49.6		10.4	10.4		10.4	10.4	
Actuated g/C Ratio	0.71	0.71		0.71	0.71		0.15	0.15		0.15	0.15	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	705	2422		654	2464		202	246		181	232	
v/s Ratio Prot		c0.09			0.08			0.01			0.01	
v/s Ratio Perm	0.02			0.01			c0.03			0.02		
v/c Ratio	0.02	0.13		0.01	0.11		0.20	0.08		0.14	0.08	
Uniform Delay, d1	3.0	3.3		3.0	3.2		26.1	25.7		25.9	25.7	
Progression Factor	1.00	1.00		0.79	0.78		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.0	0.1		1.0	0.3		0.7	0.3	
Delay (s)	3.1	3.4		2.4	2.6		27.2	26.0		26.6	26.0	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		3.4			2.6			26.5			26.2	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			7.5				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.14									
Actuated Cycle Length (s)			70.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			43.9%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

1: Tomken Road & Burnhamthorpe Road E

Future Background PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	50	870	130	140	1380	80	120	445	55	200	995	225
v/c Ratio	0.26	0.45	0.15	0.56	0.87	0.11	0.66	0.39	0.11	0.52	0.87	0.39
Control Delay	19.5	23.9	3.1	43.8	47.5	6.7	48.9	44.0	5.5	34.9	60.0	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	19.5	23.9	3.1	43.8	47.5	6.7	48.9	44.0	5.5	34.9	60.0	17.8
Queue Length 50th (m)	6.5	81.1	0.0	30.1	190.8	1.3	21.3	53.5	0.0	37.2	143.8	18.6
Queue Length 95th (m)	12.7	96.6	9.4	53.8	220.2	10.6	#39.7	68.3	7.0	54.7	169.4	40.5
Internal Link Dist (m)		244.3			229.6			356.2			284.7	
Turn Bay Length (m)	135.0		100.0	70.0		40.0	90.0		90.0	60.0		60.0
Base Capacity (vph)	195	1914	894	248	1588	696	183	1140	505	384	1163	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	0.26	0.45	0.15	0.56	0.87	0.11	0.66	0.39	0.11	0.52	0.86	0.38

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

1: Tomken Road & Burnhamthorpe Road E

Future Background PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	870	130	140	1380	80	120	445	55	200	995	225
Future Volume (vph)	50	870	130	140	1380	80	120	445	55	200	995	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	1.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	5.0
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
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	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	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)	1733	3579	1559	1780	3579	1480	1767	3579	1440	1776	3579	1526
Flt Permitted	0.06	1.00	1.00	0.30	1.00	1.00	0.08	1.00	1.00	0.37	1.00	1.00
Satd. Flow (perm)	101	3579	1559	561	3579	1480	149	3579	1440	699	3579	1526
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	870	130	140	1380	80	120	445	55	200	995	225
RTOR Reduction (vph)	0	0	60	0	0	40	0	0	38	0	0	93
Lane Group Flow (vph)	50	870	70	140	1380	40	120	445	17	200	995	132
Confl. Peds. (#/hr)	36		9	9		36	4		29	29		4
Confl. Bikes (#/hr)			3			1			1			1
Heavy Vehicles (%)	3%	2%	0%	0%	2%	2%	1%	2%	3%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	7
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2			6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	83.6	83.6	83.6	69.0	69.0	69.0	57.9	47.9	47.9	59.9	48.9	48.9
Effective Green, g (s)	85.6	85.6	85.6	71.0	71.0	71.0	61.9	50.4	50.4	63.9	51.4	51.4
Actuated g/C Ratio	0.53	0.53	0.53	0.44	0.44	0.44	0.39	0.31	0.31	0.40	0.32	0.32
Clearance Time (s)	3.0	7.0	7.0	7.0	7.0	7.0	3.0	7.5	7.5	3.0	7.5	7.5
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	192	1914	834	248	1588	656	178	1127	453	366	1149	490
v/s Ratio Prot	0.02	c0.24			c0.39		c0.05	0.12		c0.04	c0.28	
v/s Ratio Perm	0.12		0.04	0.25		0.03	0.21		0.01	0.17		0.09
v/c Ratio	0.26	0.45	0.08	0.56	0.87	0.06	0.67	0.39	0.04	0.55	0.87	0.27
Uniform Delay, d1	28.9	22.9	18.1	33.0	40.3	25.4	38.0	42.9	38.0	33.1	51.1	40.3
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	3.3	0.8	0.2	9.0	6.7	0.2	12.4	0.5	0.1	2.9	7.7	0.6
Delay (s)	32.2	23.6	18.3	42.0	47.0	25.6	50.4	43.3	38.1	36.1	58.7	41.0
Level of Service	C	C	B	D	D	C	D	D	D	D	E	D
Approach Delay (s)		23.4			45.5			44.2			52.7	
Approach LOS		C			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			42.6								HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			160.0							12.0		
Intersection Capacity Utilization			96.9%								ICU Level of Service	F
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 2: Tomken Road & Tomken Site Access

Future Background PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	5	0	575	1415	5
Future Volume (Veh/h)	5	5	0	575	1415	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	5	0	575	1415	5
Pedestrians	11					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				309	118	
pX, platoon unblocked	0.83	0.78	0.78			
vC, conflicting volume	1716	721	1431			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	968	93	999			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	100			
cM capacity (veh/h)	209	739	544			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	10	192	383	943	477	
Volume Left	5	0	0	0	0	
Volume Right	5	0	0	0	5	
cSH	326	544	1700	1700	1700	
Volume to Capacity	0.03	0.00	0.23	0.55	0.28	
Queue Length 95th (m)	0.7	0.0	0.0	0.0	0.0	
Control Delay (s)	16.4	0.0	0.0	0.0	0.0	
Lane LOS	C					
Approach Delay (s)	16.4	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay	0.1					
Intersection Capacity Utilization	49.3%			ICU Level of Service	A	
Analysis Period (min)	15					

Queues

3: Tomken Road & Rathburn Road E

Future Background PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	35	290	30	465	95	465	20	150	1310	135
v/c Ratio	0.29	0.37	0.15	0.60	0.31	0.27	0.03	0.19	0.57	0.14
Control Delay	54.5	43.1	41.8	48.3	11.5	22.5	0.1	7.3	17.6	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.5	43.1	41.8	48.3	11.5	22.5	0.1	7.3	17.6	7.8
Queue Length 50th (m)	8.2	30.5	6.4	54.4	5.6	36.7	0.0	9.2	90.8	6.8
Queue Length 95th (m)	18.3	42.5	12.4	58.9	16.0	47.6	0.0	24.0	156.3	20.6
Internal Link Dist (m)		85.4		255.6		94.1			295.9	
Turn Bay Length (m)	45.0		45.0		60.0		35.0	40.0		30.0
Base Capacity (vph)	188	1188	308	1185	313	1696	776	797	2288	1000
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.24	0.10	0.39	0.30	0.27	0.03	0.19	0.57	0.14

Intersection Summary

HCM Signalized Intersection Capacity Analysis

3: Tomken Road & Rathburn Road E

















Future Background PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	210	80	30	365	100	95	465	20	150	1310	135
Future Volume (vph)	35	210	80	30	365	100	95	465	20	150	1310	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.96		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1771	3383		1781	3405		1784	3544	1533	1758	3614	1548
Flt Permitted	0.29	1.00		0.48	1.00		0.19	1.00	1.00	0.43	1.00	1.00
Satd. Flow (perm)	549	3383		899	3405		364	3544	1533	798	3614	1548
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	210	80	30	365	100	95	465	20	150	1310	135
RTOR Reduction (vph)	0	33	0	0	21	0	0	0	10	0	0	21
Lane Group Flow (vph)	35	257	0	30	444	0	95	465	10	150	1310	114
Confl. Peds. (#/hr)	19		4	4		19	16		24	24		16
Confl. Bikes (#/hr)						2			1			2
Heavy Vehicles (%)	0%	3%	0%	0%	2%	3%	0%	3%	0%	1%	1%	0%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	28.5	28.5		28.5	28.5		72.3	65.0	65.0	97.0	86.7	86.7
Effective Green, g (s)	31.0	31.0		31.0	31.0		76.3	67.0	67.0	99.0	88.7	88.7
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.54	0.48	0.48	0.71	0.63	0.63
Clearance Time (s)	7.5	7.5		7.5	7.5		3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	121	749		199	753		292	1696	733	776	2289	980
v/s Ratio Prot		0.08			c0.13		c0.02	0.13		0.04	c0.36	
v/s Ratio Perm	0.06			0.03			0.16		0.01	0.09		0.07
v/c Ratio	0.29	0.34		0.15	0.59		0.33	0.27	0.01	0.19	0.57	0.12
Uniform Delay, d1	45.3	45.9		43.9	48.8		15.4	21.9	19.2	6.8	14.7	10.1
Progression Factor	1.15	1.11		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.6		0.7	1.8		0.7	0.4	0.0	0.6	1.0	0.2
Delay (s)	54.9	51.4		44.6	50.6		16.1	22.3	19.2	7.4	15.8	10.4
Level of Service	D	D		D	D		B	C	B	A	B	B
Approach Delay (s)		51.8			50.3			21.2			14.5	
Approach LOS		D			D			C			B	
Intersection Summary												
HCM 2000 Control Delay			25.8				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			11.0		
Intersection Capacity Utilization			84.0%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

4: Rathburn Site Access/Tomken Plaza & Rathburn Road E

Future Background PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	270	5	5	465	125	0	0	0	55	5	165
Future Volume (Veh/h)	120	270	5	5	465	125	0	0	0	55	5	165
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	120	270	5	5	465	125	0	0	0	55	5	165
Pedestrians		2						10			14	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		141			109							
pX, platoon unblocked	0.90						0.90	0.90		0.90	0.90	0.90
vC, conflicting volume	604			285			934	1136	148	926	1076	311
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	324			285			693	919	148	685	852	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			100			100	100	100	80	98	83
cM capacity (veh/h)	1097			1278			217	213	872	269	233	961
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	255	140	238	358	0	225						
Volume Left	120	0	5	0	0	55						
Volume Right	0	5	0	125	0	165						
cSH	1097	1700	1278	1700	1700	566						
Volume to Capacity	0.11	0.08	0.00	0.21	0.02	0.40						
Queue Length 95th (m)	2.6	0.0	0.1	0.0	0.0	13.3						
Control Delay (s)	4.6	0.0	0.2	0.0	0.0	15.5						
Lane LOS	A		A		A	C						
Approach Delay (s)	3.0		0.1		0.0	15.5						
Approach LOS					A	C						
Intersection Summary												
Average Delay			3.9									
Intersection Capacity Utilization			52.7%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

5: Westminster PI & Rathburn Road E

Future Background PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	45	355	50	580	20	55	30	50
v/c Ratio	0.07	0.13	0.06	0.21	0.09	0.15	0.12	0.14
Control Delay	7.0	5.0	5.9	4.8	20.3	11.1	21.1	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	5.0	5.9	4.8	20.3	11.1	21.1	10.4
Queue Length 50th (m)	1.3	5.3	0.8	5.1	2.1	2.1	3.2	1.6
Queue Length 95th (m)	8.1	19.3	12.0	50.3	4.9	6.9	6.4	6.3
Internal Link Dist (m)		206.7		116.5		125.9		93.7
Turn Bay Length (m)	50.0		40.0		25.0		20.0	
Base Capacity (vph)	628	2696	777	2760	475	707	537	696
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	0.07	0.13	0.06	0.21	0.04	0.08	0.06	0.07
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

5: Westminster PI & Rathburn Road E













Future Background PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	330	25	50	555	25	20	20	35	30	15	35
Future Volume (vph)	45	330	25	50	555	25	20	20	35	30	15	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		0.99	1.00	
Fr _t	1.00	0.99		1.00	0.99		1.00	0.90		1.00	0.90	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1774	3477		1768	3558		1559	1714		1770	1687	
Fl _t Permitted	0.43	1.00		0.54	1.00		0.72	1.00		0.72	1.00	
Satd. Flow (perm)	809	3477		1004	3558		1189	1714		1343	1687	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	330	25	50	555	25	20	20	35	30	15	35
RTOR Reduction (vph)	0	4	0	0	2	0	0	30	0	0	30	0
Lane Group Flow (vph)	45	351	0	50	578	0	20	25	0	30	20	0
Confl. Peds. (#/hr)	11		12	12		11	18		12	12		18
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	0%	3%	0%	0%	1%	0%	13%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	48.8	48.8		48.8	48.8		9.2	9.2		9.2	9.2	
Effective Green, g (s)	49.8	49.8		49.8	49.8		10.2	10.2		10.2	10.2	
Actuated g/C Ratio	0.71	0.71		0.71	0.71		0.15	0.15		0.15	0.15	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	575	2473		714	2531		173	249		195	245	
v/s Ratio Prot		0.10			c0.16			0.01			0.01	
v/s Ratio Perm	0.06			0.05			0.02			c0.02		
v/c Ratio	0.08	0.14		0.07	0.23		0.12	0.10		0.15	0.08	
Uniform Delay, d ₁	3.1	3.2		3.1	3.5		26.0	25.9		26.1	25.9	
Progression Factor	1.00	1.00		0.97	0.97		1.00	1.00		1.00	1.00	
Incremental Delay, d ₂	0.3	0.1		0.2	0.2		0.6	0.4		0.8	0.3	
Delay (s)	3.4	3.4		3.2	3.6		26.6	26.3		26.9	26.2	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		3.4			3.6			26.4			26.4	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			6.5				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.22									
Actuated Cycle Length (s)			70.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			56.4%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

1: Tomken Road & Burnhamthorpe Road E

Future Background SUN Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	45	705	80	60	665	115	60	290	50	80	375	80
v/c Ratio	0.10	0.29	0.07	0.13	0.27	0.11	0.37	0.49	0.17	0.27	0.40	0.17
Control Delay	12.4	11.9	2.8	12.7	11.8	2.5	63.5	62.0	12.6	42.4	49.0	7.5
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	12.4	11.9	2.8	12.7	11.8	2.5	63.5	62.0	12.6	42.4	49.0	7.5
Queue Length 50th (m)	4.0	38.3	0.0	5.5	35.6	0.0	16.4	42.3	0.0	18.1	49.3	0.0
Queue Length 95th (m)	12.7	71.3	7.3	16.4	66.6	8.5	25.7	47.2	9.8	25.1	51.5	10.3
Internal Link Dist (m)		244.3			229.6			356.2			284.7	
Turn Bay Length (m)	135.0		100.0	70.0		40.0	90.0		90.0	60.0		60.0
Base Capacity (vph)	472	2451	1086	449	2451	1095	350	1287	591	308	1648	747
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	0.10	0.29	0.07	0.13	0.27	0.11	0.17	0.23	0.08	0.26	0.23	0.11
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

1: Tomken Road & Burnhamthorpe Road E










Future Background SUN Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	705	80	60	665	115	60	290	50	80	375	80
Future Volume (vph)	45	705	80	60	665	115	60	290	50	80	375	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.5	5.0	5.0	1.0	5.0	5.0
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
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	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	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)	1779	3614	1563	1779	3614	1562	1781	3614	1571	1783	3614	1542
Flt Permitted	0.37	1.00	1.00	0.35	1.00	1.00	0.53	1.00	1.00	0.40	1.00	1.00
Satd. Flow (perm)	696	3614	1563	663	3614	1562	992	3614	1571	744	3614	1542
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	705	80	60	665	115	60	290	50	80	375	80
RTOR Reduction (vph)	0	0	26	0	0	37	0	0	42	0	0	59
Lane Group Flow (vph)	45	705	54	60	665	78	60	290	8	80	375	21
Confl. Peds. (#/hr)	8		8	8		8	3		4	4		3
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	1%	0%	0%	1%	2%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		2			6			4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	106.5	106.5	106.5	106.5	106.5	106.5	24.0	24.0	24.0	39.0	39.0	39.0
Effective Green, g (s)	108.5	108.5	108.5	108.5	108.5	108.5	26.0	26.5	26.5	41.0	41.5	41.5
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.68	0.68	0.16	0.17	0.17	0.26	0.26	0.26
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.5	7.5	7.5	3.0	7.5	7.5
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	471	2450	1059	449	2450	1059	161	598	260	281	937	399
v/s Ratio Prot		c0.20			0.18			c0.08		0.02	c0.10	
v/s Ratio Perm	0.06		0.03	0.09		0.05	0.06		0.01	0.05		0.01
v/c Ratio	0.10	0.29	0.05	0.13	0.27	0.07	0.37	0.48	0.03	0.28	0.40	0.05
Uniform Delay, d1	8.9	10.3	8.6	9.1	10.2	8.7	59.7	60.6	56.0	46.6	49.0	44.5
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	0.4	0.3	0.1	0.6	0.3	0.1	3.0	1.3	0.1	1.2	0.6	0.1
Delay (s)	9.3	10.6	8.7	9.7	10.4	8.9	62.8	61.9	56.1	47.7	49.6	44.6
Level of Service	A	B	A	A	B	A	E	E	E	D	D	D
Approach Delay (s)		10.3			10.2			61.3			48.5	
Approach LOS		B			B			E			D	
Intersection Summary												
HCM 2000 Control Delay			25.9			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			160.0	Sum of lost time (s)					11.0			
Intersection Capacity Utilization			79.9%	ICU Level of Service			D					
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 2: Tomken Road & Tomken Site Access

Future Background SUN Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	15	0	450	520	5
Future Volume (Veh/h)	20	15	0	450	520	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	20	15	0	450	520	5
Pedestrians	2					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				309	118	
pX, platoon unblocked	0.95	0.97	0.97			
vC, conflicting volume	750	264	527			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	519	194	464			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	98	100			
cM capacity (veh/h)	467	799	1079			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	35	150	300	347	178	
Volume Left	20	0	0	0	0	
Volume Right	15	0	0	0	5	
cSH	568	1079	1700	1700	1700	
Volume to Capacity	0.06	0.00	0.18	0.20	0.10	
Queue Length 95th (m)	1.4	0.0	0.0	0.0	0.0	
Control Delay (s)	11.7	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	11.7	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay	0.4					
Intersection Capacity Utilization	24.5%			ICU Level of Service	A	
Analysis Period (min)	15					

Queues

3: Tomken Road & Rathburn Road E

Future Background SUN Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	25	245	10	230	85	360	25	90	435	35
v/c Ratio	0.16	0.41	0.07	0.38	0.12	0.13	0.02	0.12	0.16	0.03
Control Delay	46.4	35.7	43.5	31.3	7.0	5.8	2.2	6.9	5.9	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.4	35.7	43.5	31.3	7.0	5.8	2.2	6.9	5.9	2.9
Queue Length 50th (m)	6.0	22.2	2.3	17.4	3.9	8.6	0.0	4.1	10.7	0.0
Queue Length 95th (m)	9.0	20.1	5.6	22.0	17.3	28.2	2.5	18.0	34.0	4.2
Internal Link Dist (m)		85.4		255.6		94.1			295.9	
Turn Bay Length (m)	45.0		45.0		60.0		35.0	40.0		30.0
Base Capacity (vph)	395	1456	380	1439	719	2780	1201	768	2780	1216
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.17	0.03	0.16	0.12	0.13	0.02	0.12	0.16	0.03

Intersection Summary

HCM Signalized Intersection Capacity Analysis

3: Tomken Road & Rathburn Road E

















Future Background SUN Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	165	80	10	140	90	85	360	25	90	435	35
Future Volume (vph)	25	165	80	10	140	90	85	360	25	90	435	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.95		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3414		1779	3349		1780	3614	1552	1767	3614	1571
Flt Permitted	0.51	1.00		0.49	1.00		0.50	1.00	1.00	0.54	1.00	1.00
Satd. Flow (perm)	956	3414		918	3349		936	3614	1552	999	3614	1571
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	165	80	10	140	90	85	360	25	90	435	35
RTOR Reduction (vph)	0	61	0	0	76	0	0	0	6	0	0	8
Lane Group Flow (vph)	25	184	0	10	154	0	85	360	19	90	435	27
Confl. Peds. (#/hr)	13		5	5		13	4		14	14		4
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	1%	0%	0%	1%	0%
Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			6		6		2
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	19.8	19.8		19.8	19.8		105.7	105.7	105.7	105.7	105.7	105.7
Effective Green, g (s)	22.3	22.3		22.3	22.3		107.7	107.7	107.7	107.7	107.7	107.7
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.77	0.77	0.77	0.77	0.77	0.77
Clearance Time (s)	7.5	7.5		7.5	7.5		7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	152	543		146	533		720	2780	1193	768	2780	1208
v/s Ratio Prot		c0.05			0.05			0.10			c0.12	
v/s Ratio Perm	0.03			0.01			0.09		0.01	0.09		0.02
v/c Ratio	0.16	0.34		0.07	0.29		0.12	0.13	0.02	0.12	0.16	0.02
Uniform Delay, d1	50.8	52.3		50.0	51.9		4.1	4.1	3.8	4.1	4.2	3.8
Progression Factor	0.97	0.96		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.8		0.4	0.6		0.3	0.1	0.0	0.3	0.1	0.0
Delay (s)	50.5	51.2		50.4	52.5		4.4	4.2	3.8	4.4	4.4	3.8
Level of Service	D	D		D	D		A	A	A	A	A	A
Approach Delay (s)		51.2			52.4			4.2			4.3	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay			20.0				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.19									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			72.5%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

4: Rathburn Site Access/Tomken Plaza & Rathburn Road E

Future Background SUN Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	220	0	0	195	65	5	0	5	45	0	100
Future Volume (Veh/h)	115	220	0	0	195	65	5	0	5	45	0	100
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	115	220	0	0	195	65	5	0	5	45	0	100
Pedestrians		2						1			7	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		141			109							
pX, platoon unblocked												
vC, conflicting volume	267			221			650	718	111	580	686	139
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	267			221			650	718	111	580	686	139
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			100			98	100	99	88	100	89
cM capacity (veh/h)	1301			1359			294	323	927	369	338	883
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	225	110	98	162	10	145						
Volume Left	115	0	0	0	5	45						
Volume Right	0	0	0	65	5	100						
cSH	1301	1700	1359	1700	446	616						
Volume to Capacity	0.09	0.06	0.00	0.10	0.02	0.24						
Queue Length 95th (m)	2.0	0.0	0.0	0.0	0.5	6.4						
Control Delay (s)	4.5	0.0	0.0	0.0	13.3	12.6						
Lane LOS	A				B	B						
Approach Delay (s)	3.0		0.0		13.3	12.6						
Approach LOS					B	B						
Intersection Summary												
Average Delay			4.0									
Intersection Capacity Utilization			38.3%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

5: Westminster PI & Rathburn Road E

Future Background SUN Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	20	280	25	275	20	40	25	30
v/c Ratio	0.02	0.10	0.03	0.10	0.08	0.12	0.10	0.09
Control Delay	7.0	5.1	8.6	6.1	20.1	8.5	20.7	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	5.1	8.6	6.1	20.1	8.5	20.7	13.3
Queue Length 50th (m)	0.5	4.1	1.6	9.3	2.1	0.5	2.7	1.6
Queue Length 95th (m)	4.4	15.8	5.4	17.3	4.9	5.0	5.6	5.2
Internal Link Dist (m)		206.7		116.5		125.9		93.7
Turn Bay Length (m)	50.0		40.0		25.0		20.0	
Base Capacity (vph)	847	2786	838	2756	546	679	547	683
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	0.10	0.03	0.10	0.04	0.06	0.05	0.04

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Westminster PI & Rathburn Road E













Future Background SUN Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	275	5	25	250	25	20	5	35	25	15	15
Future Volume (vph)	20	275	5	25	250	25	20	5	35	25	15	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.87		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1777	3588		1768	3545		1758	1645		1780	1685	
Flt Permitted	0.58	1.00		0.58	1.00		0.74	1.00		0.73	1.00	
Satd. Flow (perm)	1090	3588		1079	3545		1365	1645		1369	1685	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	275	5	25	250	25	20	5	35	25	15	15
RTOR Reduction (vph)	0	1	0	0	6	0	0	30	0	0	13	0
Lane Group Flow (vph)	20	279	0	25	269	0	20	10	0	25	17	0
Confl. Peds. (#/hr)	5		11	11		5	20		4	4		20
Confl. Bikes (#/hr)			2						1			
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	8%
Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	49.0	49.0		49.0	49.0		9.0	9.0		9.0	9.0	
Effective Green, g (s)	50.0	50.0		50.0	50.0		10.0	10.0		10.0	10.0	
Actuated g/C Ratio	0.71	0.71		0.71	0.71		0.14	0.14		0.14	0.14	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	778	2562		770	2532		195	235		195	240	
v/s Ratio Prot		c0.08			0.08			0.01			0.01	
v/s Ratio Perm	0.02			0.02			0.01			c0.02		
v/c Ratio	0.03	0.11		0.03	0.11		0.10	0.04		0.13	0.07	
Uniform Delay, d1	2.9	3.1		2.9	3.1		26.1	25.9		26.2	26.0	
Progression Factor	1.00	1.00		1.38	1.41		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.1	0.1		0.5	0.2		0.6	0.3	
Delay (s)	3.0	3.2		4.1	4.4		26.6	26.0		26.8	26.2	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		3.2			4.4			26.2			26.5	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			7.4				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.11									
Actuated Cycle Length (s)			70.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			45.9%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

1: Tomken Road & Burnhamthorpe Road E





























Future Total AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	175	1180	130	55	690	150	85	665	100	135	470	60
v/c Ratio	0.32	0.58	0.14	0.34	0.53	0.23	0.30	0.72	0.23	0.55	0.47	0.12
Control Delay	16.4	23.4	3.0	43.4	41.0	5.3	33.8	57.9	11.0	41.0	47.3	6.5
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	16.4	23.4	3.0	43.4	41.0	5.3	33.8	57.9	11.0	41.0	47.3	6.5
Queue Length 50th (m)	21.6	111.6	0.0	11.5	83.0	0.0	16.2	93.8	2.4	26.4	59.6	0.0
Queue Length 95th (m)	36.8	147.0	9.4	24.4	101.2	13.6	25.5	106.4	15.1	38.0	70.0	7.9
Internal Link Dist (m)		244.3			229.6			356.2			284.7	
Turn Bay Length (m)	135.0		100.0	70.0		40.0	90.0		90.0	60.0		60.0
Base Capacity (vph)	539	2023	925	161	1291	659	287	1151	519	245	1226	572
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	0.32	0.58	0.14	0.34	0.53	0.23	0.30	0.58	0.19	0.55	0.38	0.10
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

1: Tomken Road & Burnhamthorpe Road E

Future Total AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	175	1180	130	55	690	150	85	665	100	135	470	60
Future Volume (vph)	175	1180	130	55	690	150	85	665	100	135	470	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	1.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	5.0
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
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	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	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)	1746	3476	1497	1712	3444	1508	1665	3544	1415	1765	3444	1485
Flt Permitted	0.25	1.00	1.00	0.24	1.00	1.00	0.39	1.00	1.00	0.17	1.00	1.00
Satd. Flow (perm)	466	3476	1497	432	3444	1508	679	3544	1415	313	3444	1485
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	175	1180	130	55	690	150	85	665	100	135	470	60
RTOR Reduction (vph)	0	0	54	0	0	94	0	0	66	0	0	42
Lane Group Flow (vph)	175	1180	76	55	690	56	85	665	34	135	470	18
Confl. Peds. (#/hr)	29		11	11		29	11		28	28		11
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	5%	4%	4%	6%	1%	7%	3%	5%	1%	6%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	7
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2			6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	91.2	91.2	91.2	58.0	58.0	58.0	46.4	39.4	39.4	54.3	44.3	44.3
Effective Green, g (s)	93.2	93.2	93.2	60.0	60.0	60.0	50.4	41.9	41.9	56.3	46.8	46.8
Actuated g/C Ratio	0.58	0.58	0.58	0.38	0.38	0.38	0.31	0.26	0.26	0.35	0.29	0.29
Clearance Time (s)	3.0	7.0	7.0	7.0	7.0	7.0	3.0	7.5	7.5	3.0	7.5	7.5
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	529	2024	872	162	1291	565	269	928	370	236	1007	434
v/s Ratio Prot	0.07	c0.34			0.20		0.02	c0.19		c0.05	0.14	
v/s Ratio Perm	0.13		0.05	0.13		0.04	0.08		0.02	0.15		0.01
v/c Ratio	0.33	0.58	0.09	0.34	0.53	0.10	0.32	0.72	0.09	0.57	0.47	0.04
Uniform Delay, d1	17.4	21.1	14.7	35.8	39.1	32.5	39.8	53.7	44.7	38.7	46.4	40.5
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	1.7	1.2	0.2	5.6	1.6	0.4	0.7	3.3	0.2	5.3	0.7	0.1
Delay (s)	19.0	22.4	14.9	41.4	40.7	32.8	40.5	57.0	44.9	43.9	47.1	40.6
Level of Service	B	C	B	D	D	C	D	E	D	D	D	D
Approach Delay (s)		21.3			39.4			53.9			45.9	
Approach LOS		C			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			36.8								HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			160.0							12.0		
Intersection Capacity Utilization			94.5%								ICU Level of Service	F
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Tomken Road & Tomken Site Access

Future Total AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	15	15	975	650	10
Future Volume (Veh/h)	15	15	15	975	650	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	15	15	975	650	10
Pedestrians	7				1	
Lane Width (m)	3.7				3.7	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				309	118	
pX, platoon unblocked	0.85	0.96	0.96			
vC, conflicting volume	1180	337	667			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	642	216	561			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	98	98			
cM capacity (veh/h)	344	755	970			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	30	340	650	433	227	
Volume Left	15	15	0	0	0	
Volume Right	15	0	0	0	10	
cSH	472	970	1700	1700	1700	
Volume to Capacity	0.06	0.02	0.38	0.25	0.13	
Queue Length 95th (m)	1.4	0.3	0.0	0.0	0.0	
Control Delay (s)	13.1	0.5	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	13.1	0.2		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			47.6%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues

3: Tomken Road & Rathburn Road E

Future Total AM Peak Hour

























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	250	15	255	90	880	20	85	565	65
v/c Ratio	0.53	0.41	0.09	0.39	0.15	0.33	0.02	0.21	0.21	0.06
Control Delay	58.2	34.7	42.7	26.6	8.0	7.7	1.6	9.5	6.8	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	34.7	42.7	26.6	8.0	7.7	1.6	9.5	6.8	2.4
Queue Length 50th (m)	18.4	19.0	3.3	16.6	5.0	30.0	0.0	5.0	17.2	0.1
Queue Length 95th (m)	24.6	23.8	7.4	22.3	18.8	74.8	1.6	20.1	44.9	5.7
Internal Link Dist (m)		85.4		255.6		94.1			295.9	
Turn Bay Length (m)	45.0		45.0		60.0		35.0	40.0		30.0
Base Capacity (vph)	354	1261	366	1314	607	2660	1176	403	2660	1136
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.20	0.04	0.19	0.15	0.33	0.02	0.21	0.21	0.06

Intersection Summary

HCM Signalized Intersection Capacity Analysis

3: Tomken Road & Rathburn Road E

















Future Total AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	170	80	15	125	130	90	880	20	85	565	65
Future Volume (vph)	85	170	80	15	125	130	90	880	20	85	565	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1742	3110		1775	3162		1779	3544	1556	1694	3544	1492
Flt Permitted	0.49	1.00		0.50	1.00		0.43	1.00	1.00	0.30	1.00	1.00
Satd. Flow (perm)	902	3110		932	3162		809	3544	1556	537	3544	1492
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	85	170	80	15	125	130	90	880	20	85	565	65
RTOR Reduction (vph)	0	53	0	0	96	0	0	0	5	0	0	16
Lane Group Flow (vph)	85	197	0	15	159	0	90	880	15	85	565	49
Confl. Peds. (#/hr)	7		9	9		7	6		12	12		6
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	2%	10%	9%	0%	7%	3%	0%	3%	0%	5%	3%	5%
Bus Blockages (#/hr)	0	6	0	0	3	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			6				2
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	22.4	22.4		22.4	22.4		103.1	103.1	103.1	103.1	103.1	103.1
Effective Green, g (s)	24.9	24.9		24.9	24.9		105.1	105.1	105.1	105.1	105.1	105.1
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.75	0.75	0.75	0.75	0.75	0.75
Clearance Time (s)	7.5	7.5		7.5	7.5		7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	160	553		165	562		607	2660	1168	403	2660	1120
v/s Ratio Prot		0.06			0.05			c0.25			0.16	
v/s Ratio Perm	c0.09			0.02			0.11		0.01	0.16		0.03
v/c Ratio	0.53	0.36		0.09	0.28		0.15	0.33	0.01	0.21	0.21	0.04
Uniform Delay, d1	52.3	50.5		48.1	49.8		4.9	5.8	4.4	5.2	5.2	4.5
Progression Factor	0.94	0.92		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.1	0.8		0.5	0.6		0.5	0.3	0.0	1.2	0.2	0.1
Delay (s)	55.1	47.4		48.6	50.4		5.4	6.1	4.4	6.4	5.4	4.6
Level of Service	E	D		D	D		A	A	A	A	A	A
Approach Delay (s)		49.4			50.3			6.0			5.4	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay			17.3				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			75.3%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

4: Rathburn Site Access/Tomken Plaza & Rathburn Road E

Future Total AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	315	5	5	250	25	15	0	15	5	0	35
Future Volume (Veh/h)	45	315	5	5	250	25	15	0	15	5	0	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	45	315	5	5	250	25	15	0	15	5	0	35
Pedestrians		3			2			8			9	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		141			109							
pX, platoon unblocked												
vC, conflicting volume	284			328			588	710	170	546	700	150
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	284			328			588	710	170	546	700	150
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			96	100	98	99	100	96
cM capacity (veh/h)	1280			1234			361	342	843	397	347	855
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	202	162	130	150	30	40						
Volume Left	45	0	5	0	15	5						
Volume Right	0	5	0	25	15	35						
cSH	1280	1700	1234	1700	506	747						
Volume to Capacity	0.04	0.10	0.00	0.09	0.06	0.05						
Queue Length 95th (m)	0.8	0.0	0.1	0.0	1.3	1.2						
Control Delay (s)	2.0	0.0	0.3	0.0	12.6	10.1						
Lane LOS	A		A		B	B						
Approach Delay (s)	1.1		0.2		12.6	10.1						
Approach LOS					B	B						
Intersection Summary												
Average Delay			1.7									
Intersection Capacity Utilization			35.9%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

5: Westminster PI & Rathburn Road E

Future Total AM Peak Hour























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	15	330	10	290	40	45	25	40
v/c Ratio	0.02	0.12	0.01	0.11	0.15	0.13	0.11	0.12
Control Delay	7.3	5.1	5.5	3.6	21.6	10.7	20.6	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	5.1	5.5	3.6	21.6	10.7	20.6	11.4
Queue Length 50th (m)	0.4	5.1	0.4	5.6	4.3	1.6	2.7	1.6
Queue Length 95th (m)	3.6	18.1	1.5	10.2	7.9	6.1	5.7	5.8
Internal Link Dist (m)		206.7		116.5		125.9		93.7
Turn Bay Length (m)	50.0		40.0		25.0		20.0	
Base Capacity (vph)	765	2642	709	2686	546	682	488	640
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	0.12	0.01	0.11	0.07	0.07	0.05	0.06

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Westminster PI & Rathburn Road E

Future Total AM Peak Hour













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	310	20	10	275	15	40	15	30	25	15	25
Future Volume (vph)	15	310	20	10	275	15	40	15	30	25	15	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.98	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.90		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1640	3420		1579	3479		1774	1661		1595	1563	
Flt Permitted	0.57	1.00		0.55	1.00		0.73	1.00		0.73	1.00	
Satd. Flow (perm)	991	3420		918	3479		1365	1661		1222	1563	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	310	20	10	275	15	40	15	30	25	15	25
RTOR Reduction (vph)	0	3	0	0	3	0	0	26	0	0	21	0
Lane Group Flow (vph)	15	327	0	10	287	0	40	19	0	25	19	0
Confl. Peds. (#/hr)	9		22	22		9	8		11	11		8
Heavy Vehicles (%)	8%	4%	7%	11%	3%	9%	0%	0%	4%	11%	17%	6%
Bus Blockages (#/hr)	0	6	0	0	3	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	48.6	48.6		48.6	48.6		9.4	9.4		9.4	9.4	
Effective Green, g (s)	49.6	49.6		49.6	49.6		10.4	10.4		10.4	10.4	
Actuated g/C Ratio	0.71	0.71		0.71	0.71		0.15	0.15		0.15	0.15	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	702	2423		650	2465		202	246		181	232	
v/s Ratio Prot		c0.10			0.08			0.01			0.01	
v/s Ratio Perm	0.02			0.01			c0.03			0.02		
v/c Ratio	0.02	0.13		0.02	0.12		0.20	0.08		0.14	0.08	
Uniform Delay, d1	3.0	3.3		3.0	3.2		26.1	25.7		25.9	25.7	
Progression Factor	1.00	1.00		0.79	0.78		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.0	0.1		1.0	0.3		0.7	0.3	
Delay (s)	3.1	3.4		2.4	2.6		27.2	26.0		26.6	26.0	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		3.4			2.6			26.5			26.2	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			7.4				HCM 2000 Level of Service				A	
HCM 2000 Volume to Capacity ratio			0.15									
Actuated Cycle Length (s)			70.0				Sum of lost time (s)				10.0	
Intersection Capacity Utilization			43.9%				ICU Level of Service				A	
Analysis Period (min)			15									

c Critical Lane Group

Queues

1: Tomken Road & Burnhamthorpe Road E

Future Total PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	55	870	130	140	1380	85	120	455	55	205	1000	230
v/c Ratio	0.28	0.45	0.15	0.56	0.87	0.12	0.66	0.40	0.11	0.54	0.87	0.39
Control Delay	20.0	24.0	3.1	43.8	47.5	7.5	48.9	44.1	5.5	35.5	60.3	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	20.0	24.0	3.1	43.8	47.5	7.5	48.9	44.1	5.5	35.5	60.3	17.8
Queue Length 50th (m)	7.2	81.1	0.0	30.1	190.8	2.1	21.3	54.9	0.0	38.3	144.8	19.2
Queue Length 95th (m)	13.7	96.6	9.4	53.8	220.2	11.7	#39.7	69.8	7.0	56.1	170.6	41.2
Internal Link Dist (m)		244.3			229.6			356.2			284.7	
Turn Bay Length (m)	135.0		100.0	70.0		40.0	90.0		90.0	60.0		60.0
Base Capacity (vph)	195	1913	894	248	1588	696	183	1140	505	380	1163	590
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	0.28	0.45	0.15	0.56	0.87	0.12	0.66	0.40	0.11	0.54	0.86	0.39

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

1: Tomken Road & Burnhamthorpe Road E

Future Total PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	870	130	140	1380	85	120	455	55	205	1000	230
Future Volume (vph)	55	870	130	140	1380	85	120	455	55	205	1000	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	1.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	5.0	1.0	5.0	5.0
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
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.95	1.00	1.00	0.96	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	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	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)	1733	3579	1559	1780	3579	1480	1767	3579	1440	1776	3579	1526
Flt Permitted	0.06	1.00	1.00	0.30	1.00	1.00	0.08	1.00	1.00	0.37	1.00	1.00
Satd. Flow (perm)	101	3579	1559	560	3579	1480	149	3579	1440	686	3579	1526
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	870	130	140	1380	85	120	455	55	205	1000	230
RTOR Reduction (vph)	0	0	61	0	0	40	0	0	38	0	0	95
Lane Group Flow (vph)	55	870	69	140	1380	45	120	455	17	205	1000	135
Confl. Peds. (#/hr)	36		9	9		36	4		29	29		4
Confl. Bikes (#/hr)			3			1			1			1
Heavy Vehicles (%)	3%	2%	0%	0%	2%	2%	1%	2%	3%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	7
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2			6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	83.5	83.5	83.5	69.0	69.0	69.0	58.0	48.0	48.0	60.0	49.0	49.0
Effective Green, g (s)	85.5	85.5	85.5	71.0	71.0	71.0	62.0	50.5	50.5	64.0	51.5	51.5
Actuated g/C Ratio	0.53	0.53	0.53	0.44	0.44	0.44	0.39	0.32	0.32	0.40	0.32	0.32
Clearance Time (s)	3.0	7.0	7.0	7.0	7.0	7.0	3.0	7.5	7.5	3.0	7.5	7.5
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	191	1912	833	248	1588	656	179	1129	454	362	1151	491
v/s Ratio Prot	0.02	c0.24			c0.39		c0.05	0.13		c0.05	c0.28	
v/s Ratio Perm	0.13		0.04	0.25		0.03	0.21		0.01	0.18		0.09
v/c Ratio	0.29	0.46	0.08	0.56	0.87	0.07	0.67	0.40	0.04	0.57	0.87	0.28
Uniform Delay, d1	29.1	22.9	18.2	33.0	40.3	25.5	37.9	42.9	37.9	33.2	51.1	40.4
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	3.8	0.8	0.2	9.0	6.7	0.2	12.2	0.5	0.1	3.3	7.8	0.6
Delay (s)	32.9	23.7	18.4	42.0	47.0	25.7	50.1	43.4	38.0	36.5	58.9	41.0
Level of Service	C	C	B	D	D	C	D	D	D	D	E	D
Approach Delay (s)		23.5			45.5			44.2			52.8	
Approach LOS		C			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			42.6								HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			160.0							12.0		
Intersection Capacity Utilization			97.3%								ICU Level of Service	F
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Tomken Road & Tomken Site Access

Future Total PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	20	20	575	1415	15
Future Volume (Veh/h)	15	20	20	575	1415	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	20	20	575	1415	15
Pedestrians	11					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.2					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				309	118	
pX, platoon unblocked	0.83	0.78	0.78			
vC, conflicting volume	1761	726	1441			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1004	90	1005			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	97	96			
cM capacity (veh/h)	191	741	540			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	35	212	383	943	487	
Volume Left	15	20	0	0	0	
Volume Right	20	0	0	0	15	
cSH	331	540	1700	1700	1700	
Volume to Capacity	0.11	0.04	0.23	0.55	0.29	
Queue Length 95th (m)	2.5	0.8	0.0	0.0	0.0	
Control Delay (s)	17.1	1.6	0.0	0.0	0.0	
Lane LOS	C	A				
Approach Delay (s)	17.1	0.6		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay	0.5					
Intersection Capacity Utilization	49.6%			ICU Level of Service	A	
Analysis Period (min)	15					

Queues

3: Tomken Road & Rathburn Road E

Future Total PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	45	290	30	465	95	475	20	150	1320	145
v/c Ratio	0.37	0.37	0.15	0.60	0.32	0.28	0.03	0.19	0.58	0.14
Control Delay	58.0	42.8	41.8	48.3	11.6	22.5	0.1	7.3	17.7	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.0	42.8	41.8	48.3	11.6	22.5	0.1	7.3	17.7	8.1
Queue Length 50th (m)	10.5	30.2	6.4	54.4	5.6	37.5	0.0	9.2	92.0	7.7
Queue Length 95th (m)	22.0	42.2	12.4	58.9	16.0	48.6	0.0	24.0	158.2	22.5
Internal Link Dist (m)		85.4		255.6		94.1			295.9	
Turn Bay Length (m)	45.0		45.0		60.0		35.0	40.0		30.0
Base Capacity (vph)	188	1188	308	1185	310	1696	776	792	2288	1000
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.24	0.10	0.39	0.31	0.28	0.03	0.19	0.58	0.14

Intersection Summary

HCM Signalized Intersection Capacity Analysis

3: Tomken Road & Rathburn Road E

















Future Total PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	210	80	30	365	100	95	475	20	150	1320	145
Future Volume (vph)	45	210	80	30	365	100	95	475	20	150	1320	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		1.0	5.0	5.0	1.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Fr _t	1.00	0.96		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1771	3383		1781	3405		1784	3544	1533	1758	3614	1548
Fl _t Permitted	0.29	1.00		0.48	1.00		0.19	1.00	1.00	0.43	1.00	1.00
Satd. Flow (perm)	549	3383		899	3405		358	3544	1533	787	3614	1548
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	210	80	30	365	100	95	475	20	150	1320	145
RTOR Reduction (vph)	0	33	0	0	21	0	0	0	10	0	0	21
Lane Group Flow (vph)	45	257	0	30	444	0	95	475	10	150	1320	124
Confl. Peds. (#/hr)	19		4	4		19	16		24	24		16
Confl. Bikes (#/hr)						2			1			2
Heavy Vehicles (%)	0%	3%	0%	0%	2%	3%	0%	3%	0%	1%	1%	0%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	28.5	28.5		28.5	28.5		72.3	65.0	65.0	97.0	86.7	86.7
Effective Green, g (s)	31.0	31.0		31.0	31.0		76.3	67.0	67.0	99.0	88.7	88.7
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.54	0.48	0.48	0.71	0.63	0.63
Clearance Time (s)	7.5	7.5		7.5	7.5		3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	121	749		199	753		289	1696	733	771	2289	980
v/s Ratio Prot		0.08			c0.13		c0.02	0.13		0.04	c0.37	
v/s Ratio Perm	0.08			0.03			0.16		0.01	0.09		0.08
v/c Ratio	0.37	0.34		0.15	0.59		0.33	0.28	0.01	0.19	0.58	0.13
Uniform Delay, d ₁	46.2	45.9		43.9	48.8		15.5	22.0	19.2	6.8	14.8	10.2
Progression Factor	1.14	1.10		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d ₂	4.0	0.6		0.7	1.8		0.7	0.4	0.0	0.6	1.1	0.3
Delay (s)	56.5	51.1		44.6	50.6		16.1	22.4	19.2	7.4	15.9	10.5
Level of Service	E	D		D	D		B	C	B	A	B	B
Approach Delay (s)		51.8			50.3			21.3			14.6	
Approach LOS		D			D			C			B	
Intersection Summary												
HCM 2000 Control Delay			25.8				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			11.0		
Intersection Capacity Utilization			89.1%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

4: Rathburn Site Access/Tomken Plaza & Rathburn Road E

Future Total PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	270	15	15	465	125	5	0	10	55	5	165
Future Volume (Veh/h)	120	270	15	15	465	125	5	0	10	55	5	165
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	120	270	15	15	465	125	5	0	10	55	5	165
Pedestrians		2						10			14	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		141			109							
pX, platoon unblocked	0.90						0.90	0.90		0.90	0.90	0.90
vC, conflicting volume	604			295			960	1162	152	956	1106	311
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	324			295			721	947	152	718	886	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			99			98	100	99	78	98	83
cM capacity (veh/h)	1097			1267			205	203	865	250	221	961
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	255	150	248	358	15	225						
Volume Left	120	0	15	0	5	55						
Volume Right	0	15	0	125	10	165						
cSH	1097	1700	1267	1700	418	543						
Volume to Capacity	0.11	0.09	0.01	0.21	0.04	0.41						
Queue Length 95th (m)	2.6	0.0	0.3	0.0	0.8	14.1						
Control Delay (s)	4.6	0.0	0.6	0.0	13.9	16.2						
Lane LOS	A		A		B	C						
Approach Delay (s)	2.9		0.2		13.9	16.2						
Approach LOS					B	C						
Intersection Summary												
Average Delay			4.1									
Intersection Capacity Utilization			55.9%		ICU Level of Service				B			
Analysis Period (min)			15									

Queues

5: Westminster PI & Rathburn Road E

Future Total PM Peak Hour
























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	45	360	50	585	20	55	35	50
v/c Ratio	0.07	0.13	0.06	0.21	0.09	0.15	0.14	0.14
Control Delay	7.1	5.1	6.0	4.9	20.2	11.0	21.4	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.1	5.1	6.0	4.9	20.2	11.0	21.4	10.3
Queue Length 50th (m)	1.3	5.5	0.8	5.3	2.1	2.1	3.8	1.6
Queue Length 95th (m)	8.1	19.6	11.5	49.9	4.9	6.9	7.2	6.3
Internal Link Dist (m)		206.7		116.5		125.9		93.7
Turn Bay Length (m)	50.0		40.0		25.0		20.0	
Base Capacity (vph)	622	2693	772	2754	475	707	537	696
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	0.07	0.13	0.06	0.21	0.04	0.08	0.07	0.07

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Westminster PI & Rathburn Road E













Future Total PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	45	335	25	50	560	25	20	20	35	35	15	35	
Future Volume (vph)	45	335	25	50	560	25	20	20	35	35	15	35	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0		
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.98		
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	1.00		0.99	1.00		
Frt	1.00	0.99		1.00	0.99		1.00	0.90		1.00	0.90		
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1774	3477		1768	3558		1559	1714		1770	1687		
Flt Permitted	0.43	1.00		0.54	1.00		0.72	1.00		0.72	1.00		
Satd. Flow (perm)	805	3477		999	3558		1189	1714		1343	1687		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	45	335	25	50	560	25	20	20	35	35	15	35	
RTOR Reduction (vph)	0	4	0	0	2	0	0	30	0	0	30	0	
Lane Group Flow (vph)	45	356	0	50	583	0	20	25	0	35	20	0	
Confl. Peds. (#/hr)	11		12	12		11	18		12	12		18	
Confl. Bikes (#/hr)						1						1	
Heavy Vehicles (%)	0%	3%	0%	0%	1%	0%	13%	0%	0%	0%	0%	0%	
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		2			6			4			8		
Permitted Phases	2			6			4			8			
Actuated Green, G (s)	48.7	48.7		48.7	48.7		9.3	9.3		9.3	9.3		
Effective Green, g (s)	49.7	49.7		49.7	49.7		10.3	10.3		10.3	10.3		
Actuated g/C Ratio	0.71	0.71		0.71	0.71		0.15	0.15		0.15	0.15		
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0		
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0		
Lane Grp Cap (vph)	571	2468		709	2526		174	252		197	248		
v/s Ratio Prot		0.10			c0.16			0.01			0.01		
v/s Ratio Perm	0.06			0.05			0.02			c0.03			
v/c Ratio	0.08	0.14		0.07	0.23		0.11	0.10		0.18	0.08		
Uniform Delay, d1	3.1	3.3		3.1	3.5		25.9	25.8		26.1	25.8		
Progression Factor	1.00	1.00		0.98	0.98		1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.3	0.1		0.2	0.2		0.6	0.4		0.9	0.3		
Delay (s)	3.4	3.4		3.2	3.7		26.5	26.2		27.0	26.1		
Level of Service	A	A		A	A		C	C		C	C		
Approach Delay (s)		3.4			3.6			26.3			26.5		
Approach LOS		A			A			C			C		
Intersection Summary													
HCM 2000 Control Delay			6.6				HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.22										
Actuated Cycle Length (s)			70.0				Sum of lost time (s)			10.0			
Intersection Capacity Utilization			56.5%				ICU Level of Service			B			
Analysis Period (min)			15										
c Critical Lane Group													

Queues

1: Tomken Road & Burnhamthorpe Road E





























Future Total SUN Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	50	705	80	60	665	120	60	295	50	85	380	85
v/c Ratio	0.11	0.29	0.07	0.13	0.27	0.11	0.37	0.49	0.17	0.28	0.40	0.18
Control Delay	12.5	12.0	2.8	12.7	11.9	2.5	62.6	62.0	12.5	42.6	48.9	7.4
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	12.5	12.0	2.8	12.7	11.9	2.5	62.6	62.0	12.5	42.6	48.9	7.4
Queue Length 50th (m)	4.5	38.4	0.0	5.5	35.8	0.0	16.3	43.1	0.0	19.3	50.0	0.0
Queue Length 95th (m)	14.0	71.3	7.3	16.4	66.6	8.6	25.6	48.0	9.8	26.4	52.2	10.5
Internal Link Dist (m)		244.3			229.6			356.2			284.7	
Turn Bay Length (m)	135.0		100.0	70.0		40.0	90.0		90.0	60.0		60.0
Base Capacity (vph)	470	2444	1082	448	2444	1094	351	1287	591	308	1648	749
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	0.11	0.29	0.07	0.13	0.27	0.11	0.17	0.23	0.08	0.28	0.23	0.11
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

1: Tomken Road & Burnhamthorpe Road E

Future Total SUN Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	50	705	80	60	665	120	60	295	50	85	380	85
Future Volume (vph)	50	705	80	60	665	120	60	295	50	85	380	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	5.0
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
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	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	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)	1779	3614	1563	1779	3614	1562	1781	3614	1571	1783	3614	1542
Flt Permitted	0.37	1.00	1.00	0.35	1.00	1.00	0.53	1.00	1.00	0.39	1.00	1.00
Satd. Flow (perm)	695	3614	1563	662	3614	1562	987	3614	1571	734	3614	1542
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	705	80	60	665	120	60	295	50	85	380	85
RTOR Reduction (vph)	0	0	26	0	0	39	0	0	42	0	0	63
Lane Group Flow (vph)	50	705	54	60	665	81	60	295	8	85	380	22
Confl. Peds. (#/hr)	8		8	8		8	3		4	4		3
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	1%	0%	0%	1%	2%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		2			6			4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Actuated Green, G (s)	106.2	106.2	106.2	106.2	106.2	106.2	24.2	24.2	24.2	39.3	39.3	39.3
Effective Green, g (s)	108.2	108.2	108.2	108.2	108.2	108.2	26.7	26.7	26.7	41.3	41.8	41.8
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.68	0.68	0.17	0.17	0.17	0.26	0.26	0.26
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.5	7.5	7.5	3.0	7.5	7.5
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	469	2443	1056	447	2443	1056	164	603	262	281	944	402
v/s Ratio Prot		c0.20			0.18			c0.08		0.03	c0.11	
v/s Ratio Perm	0.07		0.03	0.09		0.05	0.06		0.01	0.05		0.01
v/c Ratio	0.11	0.29	0.05	0.13	0.27	0.08	0.37	0.49	0.03	0.30	0.40	0.06
Uniform Delay, d1	9.0	10.4	8.7	9.2	10.3	8.8	59.1	60.5	55.8	46.5	48.8	44.3
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	0.5	0.3	0.1	0.6	0.3	0.1	2.9	1.3	0.1	1.3	0.6	0.1
Delay (s)	9.5	10.7	8.8	9.8	10.6	9.0	62.0	61.8	55.9	47.8	49.4	44.4
Level of Service	A	B	A	A	B	A	E	E	E	D	D	D
Approach Delay (s)		10.5			10.3			61.1			48.4	
Approach LOS		B			B			E			D	
Intersection Summary												
HCM 2000 Control Delay			26.1				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			160.0				Sum of lost time (s)				11.0	
Intersection Capacity Utilization			79.6%				ICU Level of Service				D	
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: Tomken Road & Tomken Site Access

Future Total SUN Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	30	15	450	520	15
Future Volume (Veh/h)	30	30	15	450	520	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	30	15	450	520	15
Pedestrians	2					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				309	118	
pX, platoon unblocked	0.95	0.97	0.97			
vC, conflicting volume	784	270	537			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	548	196	471			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	96	99			
cM capacity (veh/h)	441	796	1071			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	60	165	300	347	188	
Volume Left	30	15	0	0	0	
Volume Right	30	0	0	0	15	
cSH	568	1071	1700	1700	1700	
Volume to Capacity	0.11	0.01	0.18	0.20	0.11	
Queue Length 95th (m)	2.5	0.3	0.0	0.0	0.0	
Control Delay (s)	12.1	0.9	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	12.1	0.3		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay	0.8					
Intersection Capacity Utilization	33.5%			ICU Level of Service	A	
Analysis Period (min)	15					

Queues

3: Tomken Road & Rathburn Road E

Future Total SUN Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	35	245	10	230	85	370	25	90	445	45
v/c Ratio	0.23	0.41	0.07	0.38	0.12	0.13	0.02	0.12	0.16	0.04
Control Delay	48.9	35.8	43.5	31.3	7.0	5.8	2.2	6.9	5.9	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	35.8	43.5	31.3	7.0	5.8	2.2	6.9	5.9	2.7
Queue Length 50th (m)	8.5	22.2	2.3	17.4	3.9	8.8	0.0	4.1	11.0	0.0
Queue Length 95th (m)	11.4	20.2	5.6	22.0	17.4	29.0	2.5	18.0	34.8	4.8
Internal Link Dist (m)		85.4		255.6		94.1			295.9	
Turn Bay Length (m)	45.0		45.0		60.0		35.0	40.0		30.0
Base Capacity (vph)	395	1456	380	1439	712	2780	1201	761	2780	1219
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.17	0.03	0.16	0.12	0.13	0.02	0.12	0.16	0.04

Intersection Summary

HCM Signalized Intersection Capacity Analysis

3: Tomken Road & Rathburn Road E

















Future Total SUN Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	165	80	10	140	90	85	370	25	90	445	45
Future Volume (vph)	35	165	80	10	140	90	85	370	25	90	445	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.98
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.95		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3414		1779	3349		1780	3614	1552	1768	3614	1571
Flt Permitted	0.51	1.00		0.49	1.00		0.49	1.00	1.00	0.53	1.00	1.00
Satd. Flow (perm)	956	3414		918	3349		927	3614	1552	989	3614	1571
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	165	80	10	140	90	85	370	25	90	445	45
RTOR Reduction (vph)	0	61	0	0	76	0	0	0	6	0	0	10
Lane Group Flow (vph)	35	184	0	10	154	0	85	370	19	90	445	35
Confl. Peds. (#/hr)	13		5	5		13	4		14	14		4
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	1%	0%	0%	1%	0%
Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			6		6		2
Permitted Phases	4			8			6		6	2		2
Actuated Green, G (s)	19.8	19.8		19.8	19.8		105.7	105.7	105.7	105.7	105.7	105.7
Effective Green, g (s)	22.3	22.3		22.3	22.3		107.7	107.7	107.7	107.7	107.7	107.7
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.77	0.77	0.77	0.77	0.77	0.77
Clearance Time (s)	7.5	7.5		7.5	7.5		7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	152	543		146	533		713	2780	1193	760	2780	1208
v/s Ratio Prot		c0.05			0.05			0.10			c0.12	
v/s Ratio Perm	0.04			0.01			0.09		0.01	0.09		0.02
v/c Ratio	0.23	0.34		0.07	0.29		0.12	0.13	0.02	0.12	0.16	0.03
Uniform Delay, d1	51.4	52.3		50.0	51.9		4.1	4.2	3.8	4.1	4.2	3.8
Progression Factor	0.98	0.97		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.8		0.4	0.6		0.3	0.1	0.0	0.3	0.1	0.0
Delay (s)	51.7	51.3		50.4	52.5		4.4	4.3	3.8	4.4	4.4	3.9
Level of Service	D	D		D	D		A	A	A	A	A	A
Approach Delay (s)		51.3			52.4			4.3			4.3	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay			19.9				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.19									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			77.9%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

4: Rathburn Site Access/Tomken Plaza & Rathburn Road E

Future Total SUN Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	220	10	10	195	65	10	0	15	45	0	100
Future Volume (Veh/h)	115	220	10	10	195	65	10	0	15	45	0	100
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	115	220	10	10	195	65	10	0	15	45	0	100
Pedestrians		2						1			7	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.2						1.2			1.2	
Percent Blockage		0						0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		141			109							
pX, platoon unblocked												
vC, conflicting volume	267			231			676	743	116	610	716	139
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	267			231			676	743	116	610	716	139
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			99			96	100	98	87	100	89
cM capacity (veh/h)	1301			1348			280	311	920	345	322	883
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	225	120	108	162	25	145						
Volume Left	115	0	10	0	10	45						
Volume Right	0	10	0	65	15	100						
cSH	1301	1700	1348	1700	481	595						
Volume to Capacity	0.09	0.07	0.01	0.10	0.05	0.24						
Queue Length 95th (m)	2.0	0.0	0.2	0.0	1.1	6.6						
Control Delay (s)	4.5	0.0	0.8	0.0	12.9	13.0						
Lane LOS	A		A		B	B						
Approach Delay (s)	2.9		0.3		12.9	13.0						
Approach LOS					B	B						
Intersection Summary												
Average Delay			4.2									
Intersection Capacity Utilization			39.6%		ICU Level of Service				A			
Analysis Period (min)			15									

Queues

5: Westminster PI & Rathburn Road E

Future Total SUN Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	20	285	25	280	20	45	25	30
v/c Ratio	0.02	0.10	0.03	0.10	0.08	0.13	0.10	0.09
Control Delay	7.0	5.1	8.4	6.0	20.1	8.2	20.7	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	5.1	8.4	6.0	20.1	8.2	20.7	13.3
Queue Length 50th (m)	0.5	4.2	1.6	9.2	2.1	0.5	2.7	1.6
Queue Length 95th (m)	4.4	16.1	5.3	17.3	4.9	5.3	5.6	5.2
Internal Link Dist (m)		206.7		116.5		125.9		93.7
Turn Bay Length (m)	50.0		40.0		25.0		20.0	
Base Capacity (vph)	842	2786	834	2758	546	681	545	683
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	0.10	0.03	0.10	0.04	0.07	0.05	0.04

Intersection Summary

HCM Signalized Intersection Capacity Analysis

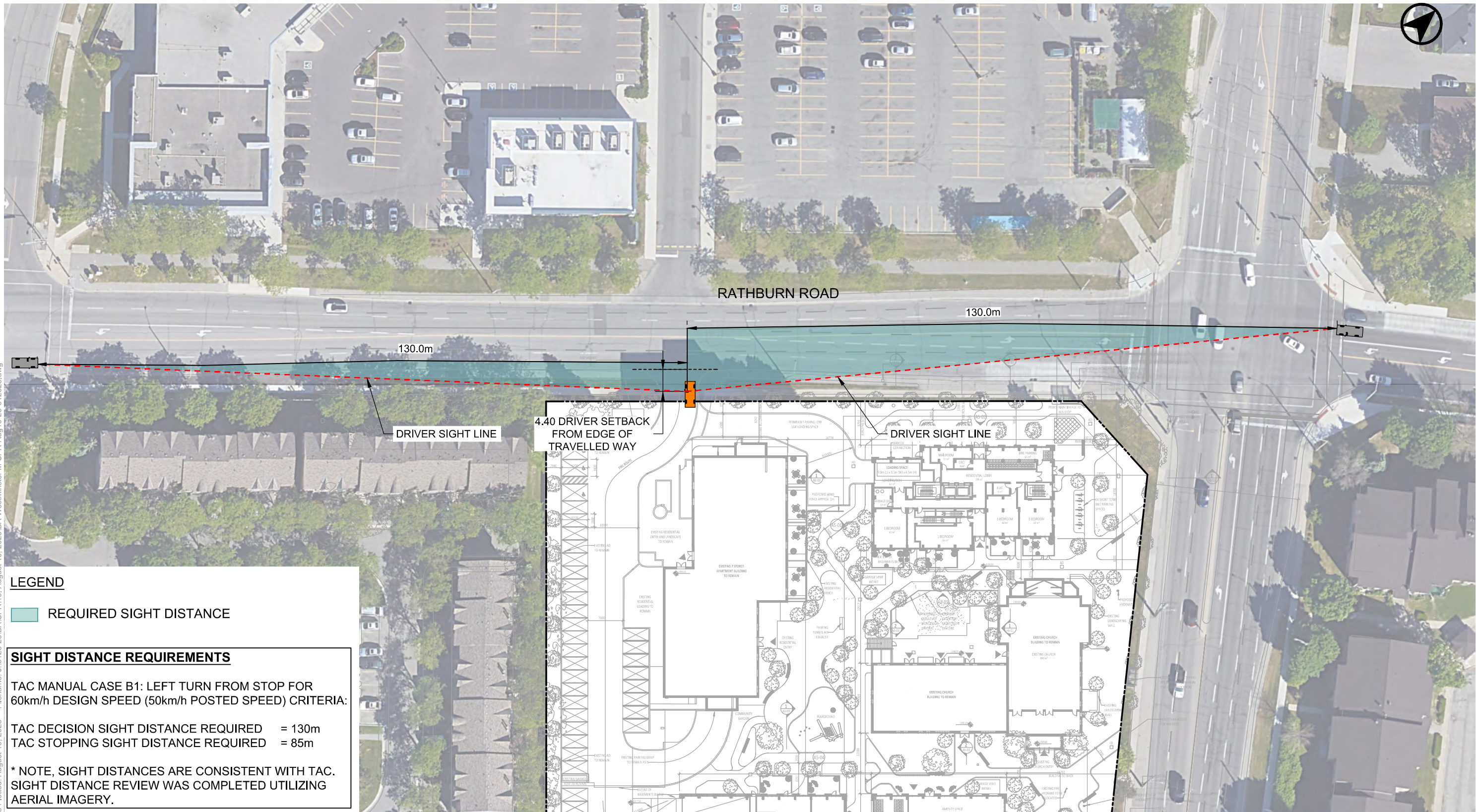
5: Westminster PI & Rathburn Road E

Future Total SUN Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	280	5	25	255	25	20	5	40	25	15	15
Future Volume (vph)	20	280	5	25	255	25	20	5	40	25	15	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7	3.5	3.7	3.7
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		0.99	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.87		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1777	3588		1768	3546		1758	1640		1780	1685	
Flt Permitted	0.58	1.00		0.58	1.00		0.74	1.00		0.73	1.00	
Satd. Flow (perm)	1085	3588		1074	3546		1365	1640		1363	1685	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	20	280	5	25	255	25	20	5	40	25	15	15
RTOR Reduction (vph)	0	1	0	0	5	0	0	34	0	0	13	0
Lane Group Flow (vph)	20	284	0	25	275	0	20	11	0	25	17	0
Confl. Peds. (#/hr)	5		11	11		5	20		4	4		20
Confl. Bikes (#/hr)			2						1			
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	8%
Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	49.0	49.0		49.0	49.0		9.0	9.0		9.0	9.0	
Effective Green, g (s)	50.0	50.0		50.0	50.0		10.0	10.0		10.0	10.0	
Actuated g/C Ratio	0.71	0.71		0.71	0.71		0.14	0.14		0.14	0.14	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	775	2562		767	2532		195	234		194	240	
v/s Ratio Prot		c0.08			0.08			0.01			0.01	
v/s Ratio Perm	0.02			0.02			0.01			c0.02		
v/c Ratio	0.03	0.11		0.03	0.11		0.10	0.05		0.13	0.07	
Uniform Delay, d1	2.9	3.1		2.9	3.1		26.1	25.9		26.2	26.0	
Progression Factor	1.00	1.00		1.35	1.38		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.1	0.1		0.5	0.2		0.6	0.3	
Delay (s)	3.0	3.2		4.0	4.4		26.6	26.1		26.8	26.2	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		3.2			4.3			26.2			26.5	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			7.5				HCM 2000 Level of Service			A		
HCM 2000 Volume to Capacity ratio			0.11									
Actuated Cycle Length (s)			70.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			45.9%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Appendix E: Sight Distance Diagrams

Date Plotted: August 10, 2023
Filename: J:\6126-23\BA\SPR10, August 10, 2023\BA-Westminster M-SPR-Aug10-23-612623.dwg



LEGEND

REQUIRED SIGHT DISTANCE

SIGHT DISTANCE REQUIREMENTS

TAC MANUAL CASE B1: LEFT TURN FROM STOP FOR 60km/h DESIGN SPEED (50km/h POSTED SPEED) CRITERIA:

TAC DECISION SIGHT DISTANCE REQUIRED = 130m
TAC STOPPING SIGHT DISTANCE REQUIRED = 85m

* NOTE, SIGHT DISTANCES ARE CONSISTENT WITH TAC. SIGHT DISTANCE REVIEW WAS COMPLETED UTILIZING AERIAL IMAGERY.

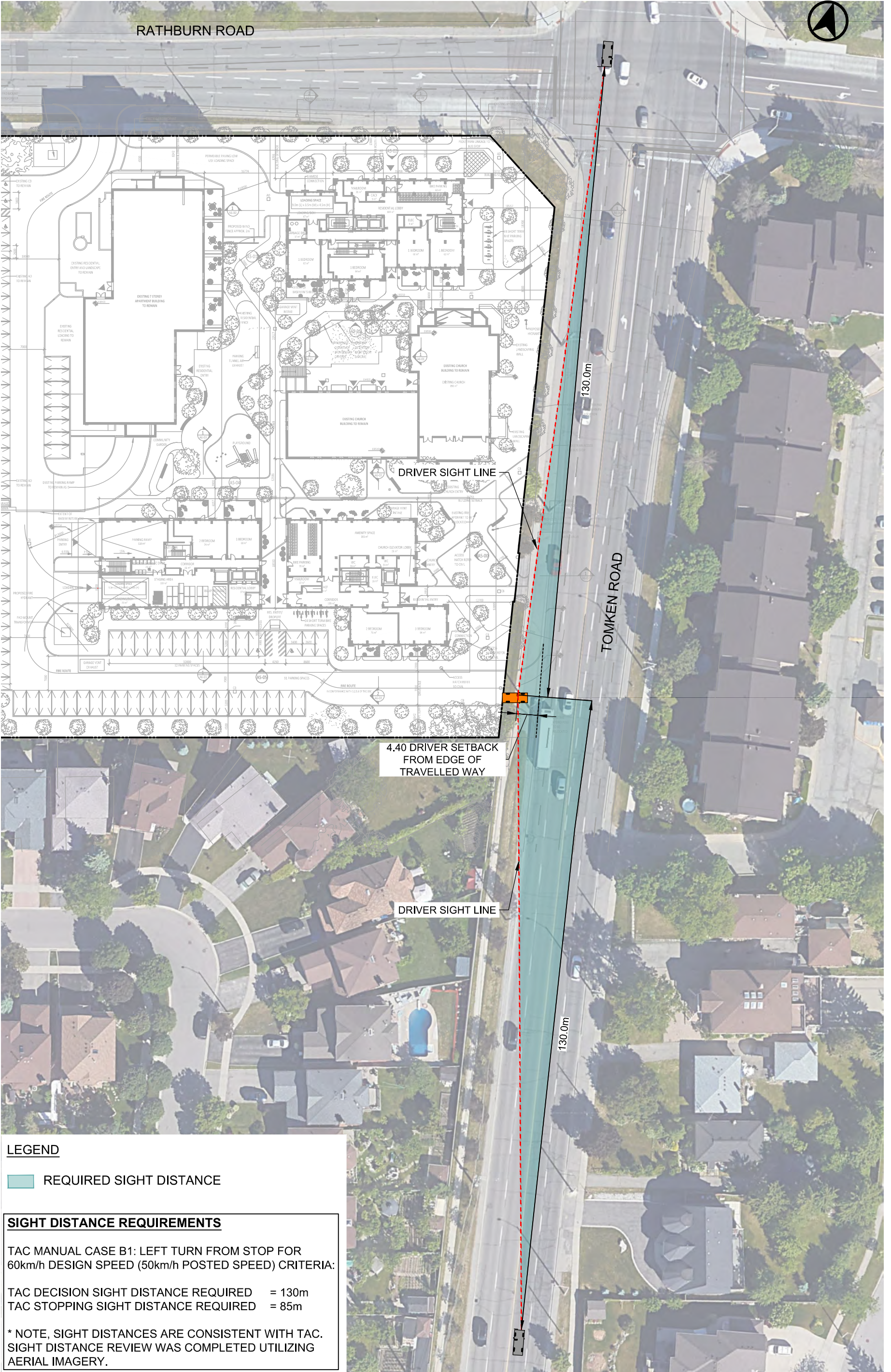


WESTMINSTER - MISSISSAUGA
SIGHT DISTANCE REVIEW
NORTH SITE ACCESS

Project: WESTMINSTER
Project No. 6126-23
Date: August 10, 2023
Revised: -

Scale 1:500

Drawing No. **SD-01**



LEGEND

REQUIRED SIGHT DISTANCE

SIGHT DISTANCE REQUIREMENTS

TAC MANUAL CASE B1: LEFT TURN FROM STOP FOR 60km/h DESIGN SPEED (50km/h POSTED SPEED) CRITERIA:

TAC DECISION SIGHT DISTANCE REQUIRED = 130m
 TAC STOPPING SIGHT DISTANCE REQUIRED = 85m

* NOTE, SIGHT DISTANCES ARE CONSISTENT WITH TAC. SIGHT DISTANCE REVIEW WAS COMPLETED UTILIZING AERIAL IMAGERY.

Date Plotted: August 10, 2023 File: J:\6126-23\BA\SPR110_August_10_2023\BA-Westminster_M-SPR-Aug10-23-612623.dwg



**WESTMINSTER - MISSISSAUGA
SIGHT DISTANCE REVIEW
EAST SITE ACCESS**

Project: WESTMINSTER
 Project No. 6126-23
 Date: August 10, 2023
 Revised: --

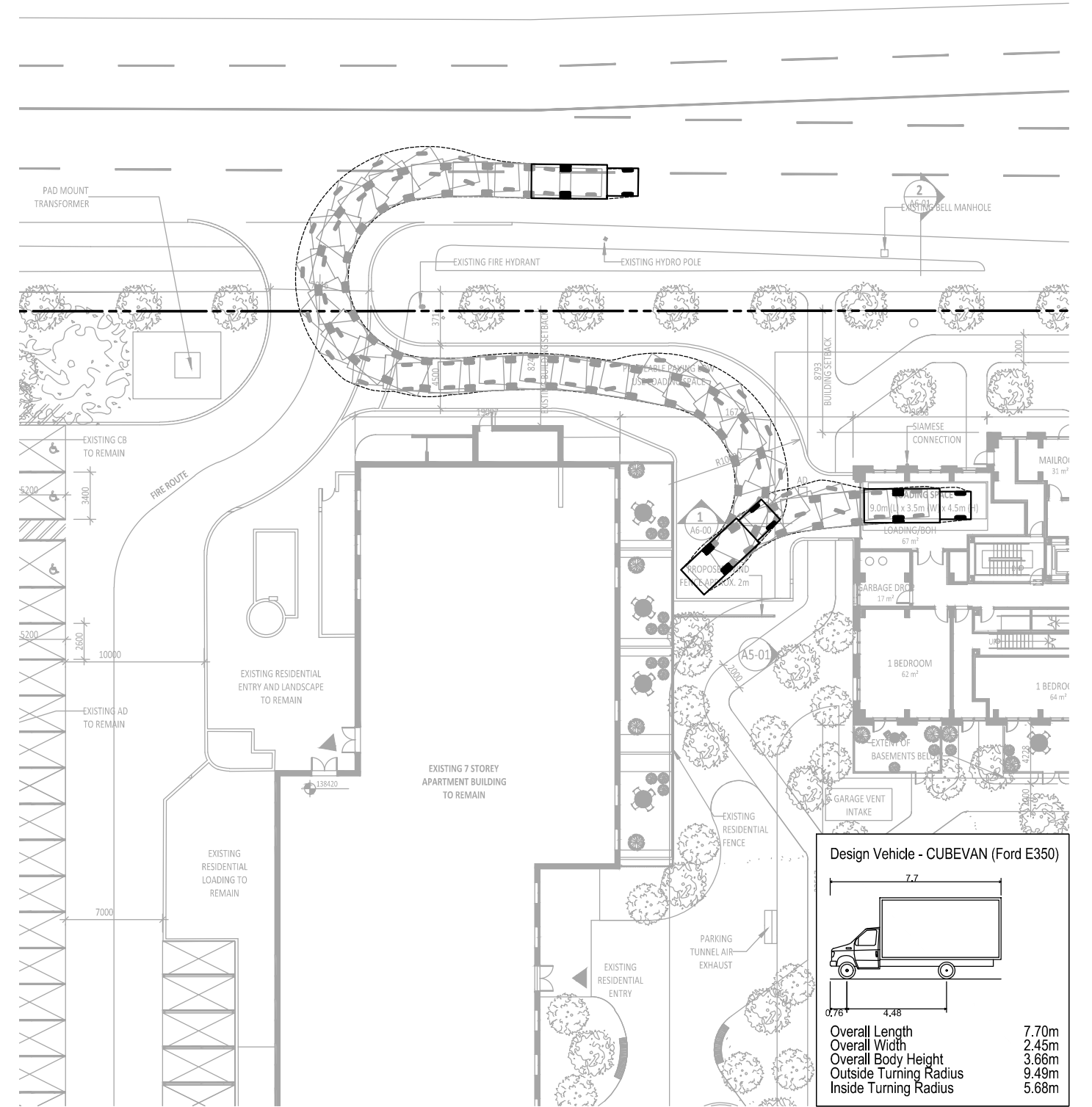
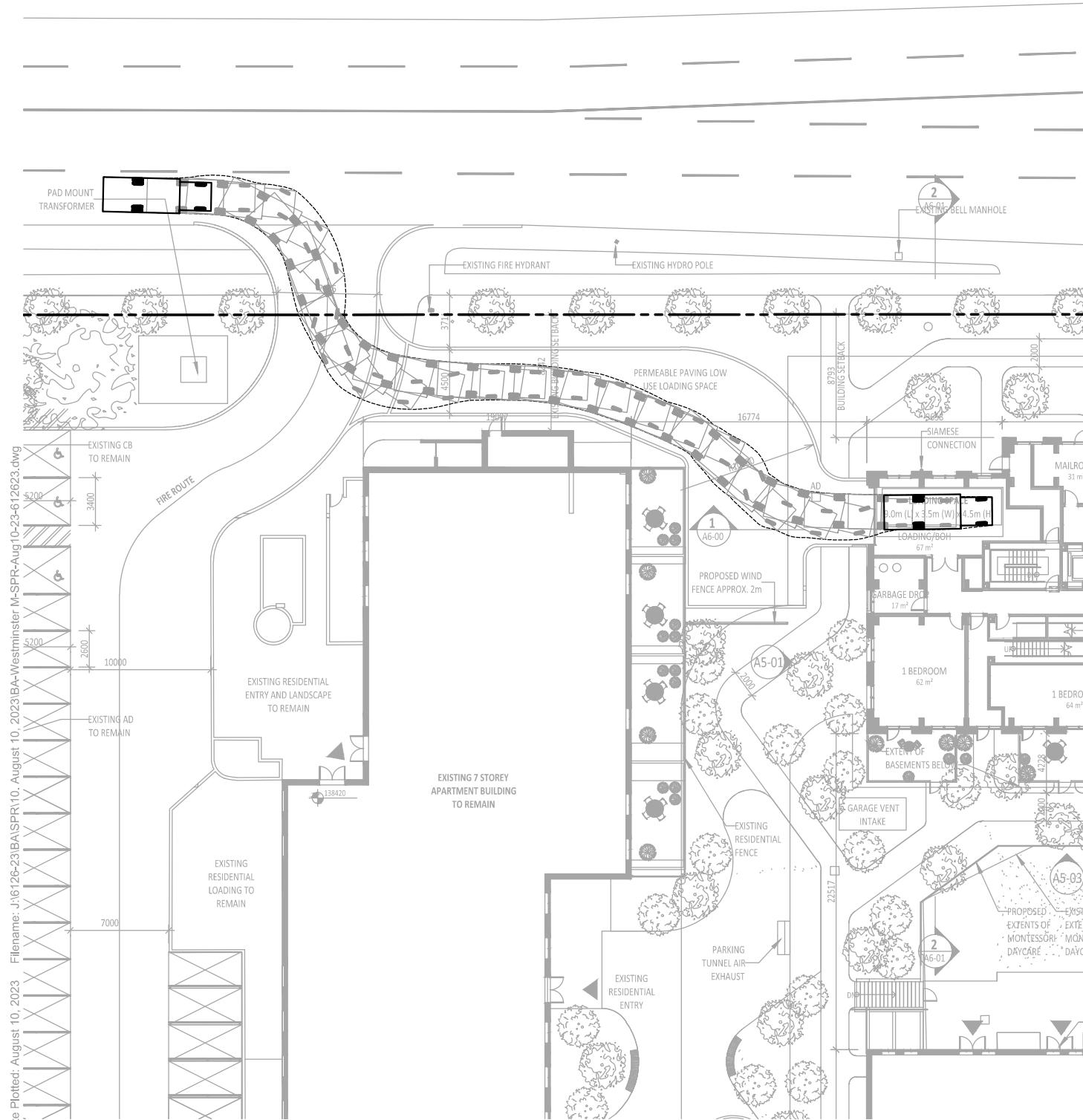
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Drawing No. **SD-02**

Appendix F: Turning Movement Diagrams

INBOUND RATHBURN ROAD

OUTBOUND RATHBURN ROAD



Design Vehicle - CUBEVAN (Ford E350)

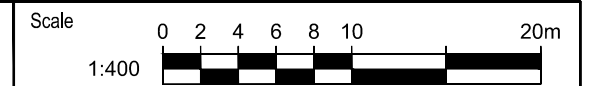
Overall Length	7.70m
Overall Width	2.45m
Overall Body Height	3.66m
Outside Turning Radius	9.49m
Inside Turning Radius	5.68m

Date Plotted: August 10, 2023 File: J:\6126-23\BA\SPR10, August 10, 2023\BA-Westminster M-SPR-Aug10-23-612623.dwg



WESTMINSTER - MISSISSAUGA VEHICLE MANOEUVRING DIAGRAM BUILDING 1 (NORTHEAST TOWER) LOADING - CUBE VAN

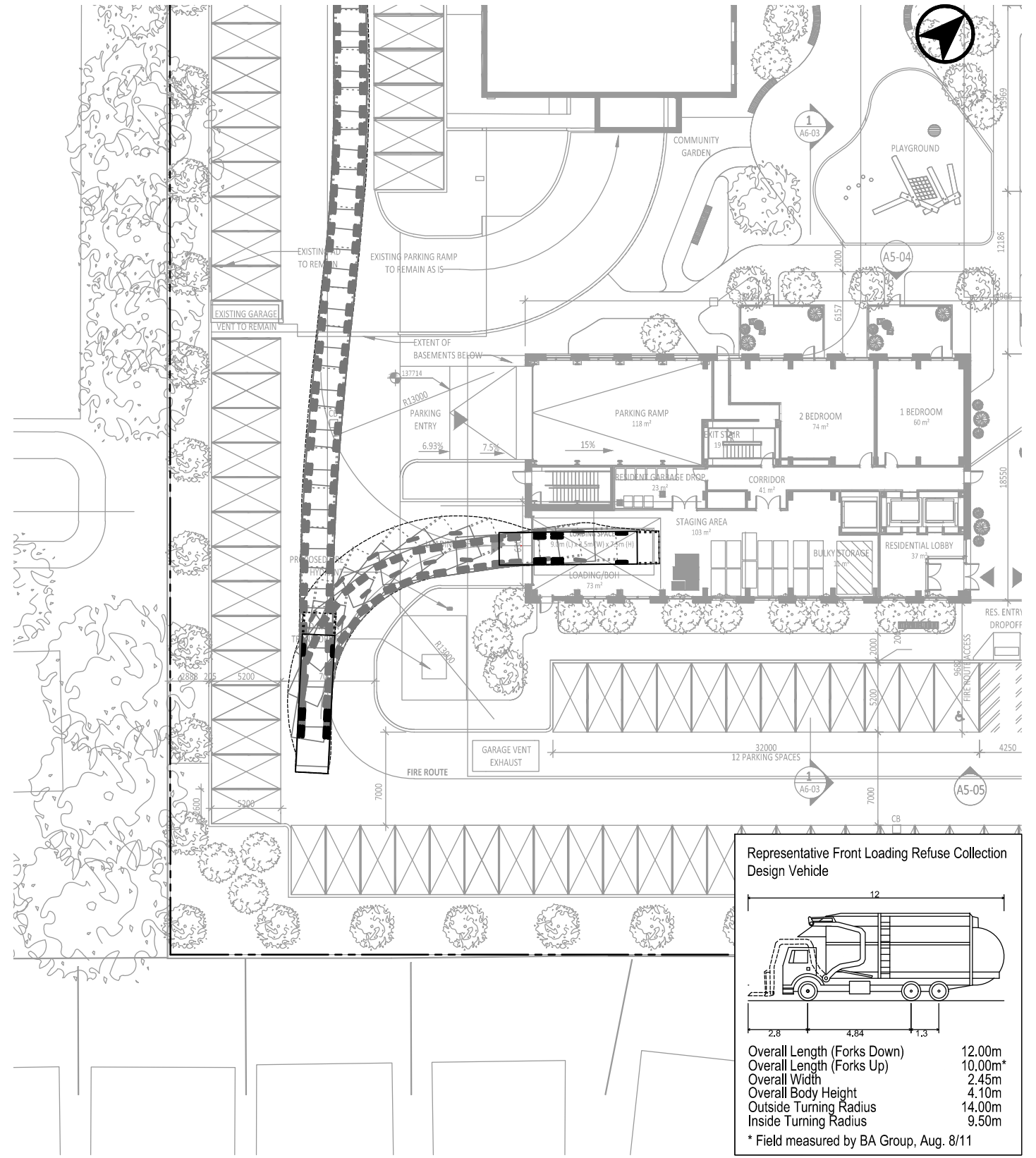
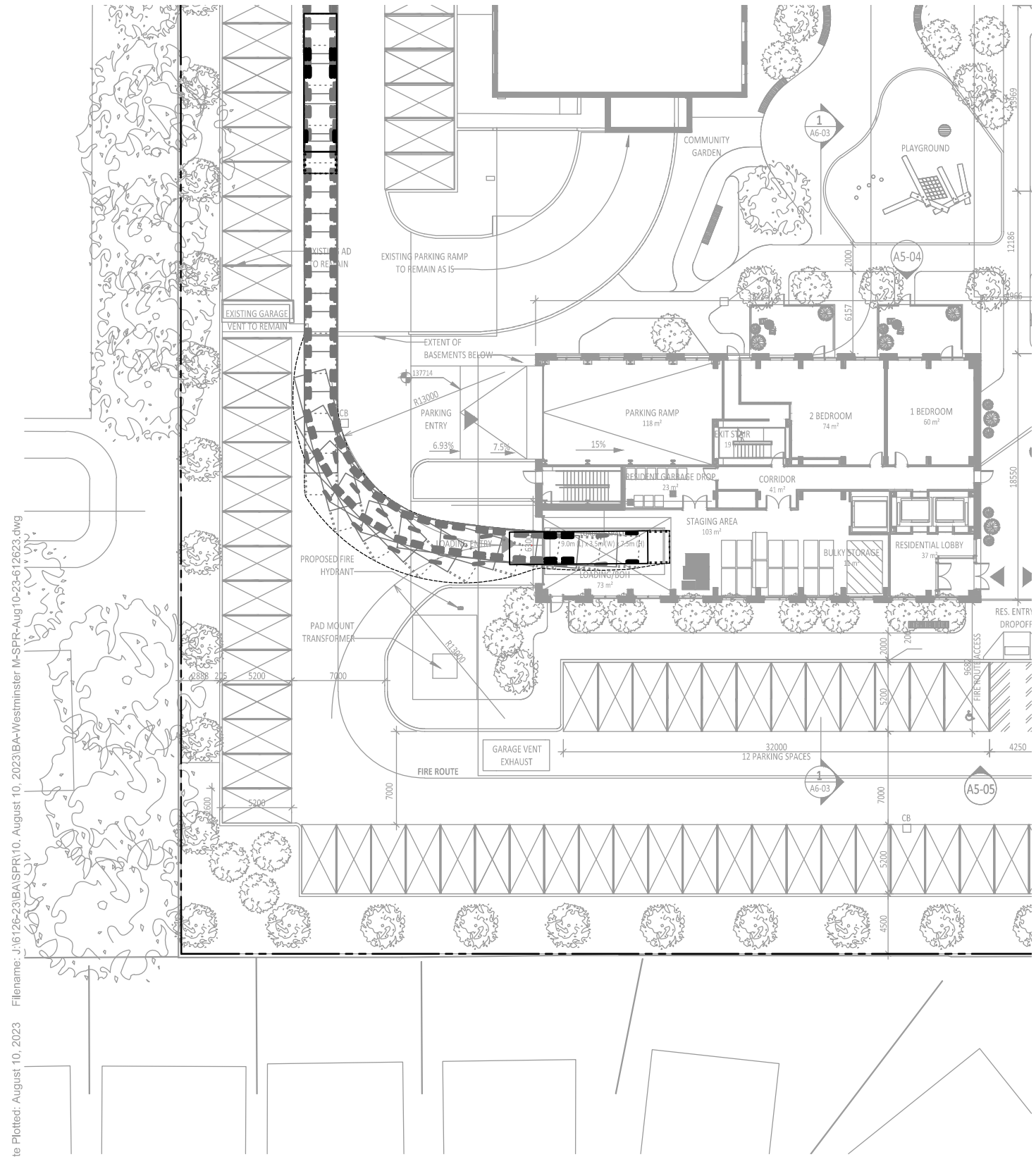
Project: WESTMINSTER
Project No. 6126-23
Date: August 10, 2023
Revised: -



Drawing No. **VMD-01**

INBOUND

OUTBOUND



Representative Front Loading Refuse Collection Design Vehicle

Overall Length (Forks Down)	12.00m
Overall Length (Forks Up)	10.00m*
Overall Width	2.45m
Overall Body Height	4.10m
Outside Turning Radius	14.00m
Inside Turning Radius	9.50m

* Field measured by BA Group, Aug. 8/11

Date Plotted: August 10, 2023 File: J:\6126-23\BA\SPR10, August 10, 2023\BA-Westminster M-SPR-Aug10-23-612623.dwg



WESTMINSTER - MISSISSAUGA
VEHICLE MANOEUVRING DIAGRAM
BUILDING 2 (SOUTH TOWER)
LOADING - FRONT LOADING GARBAGE TRUCK

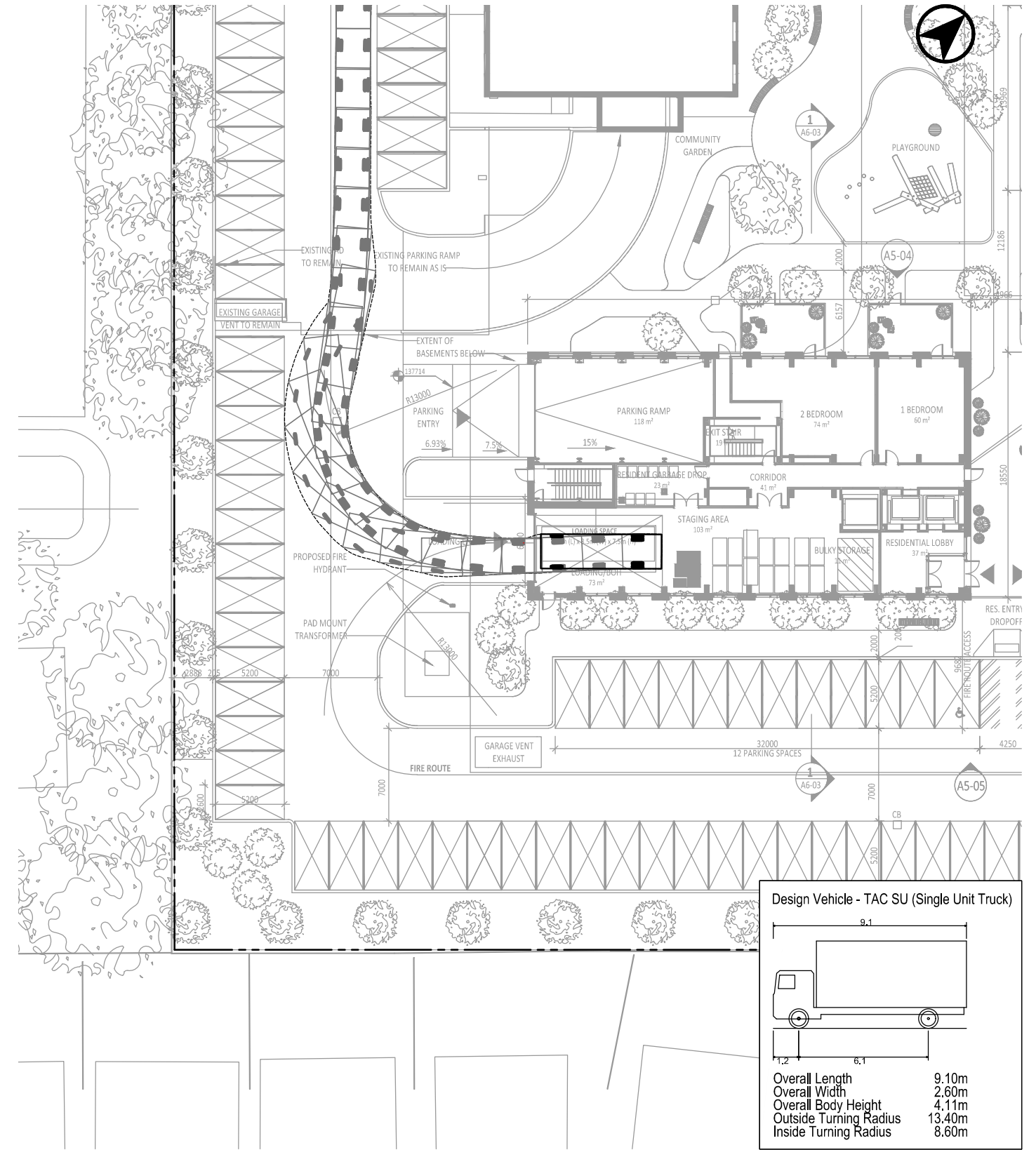
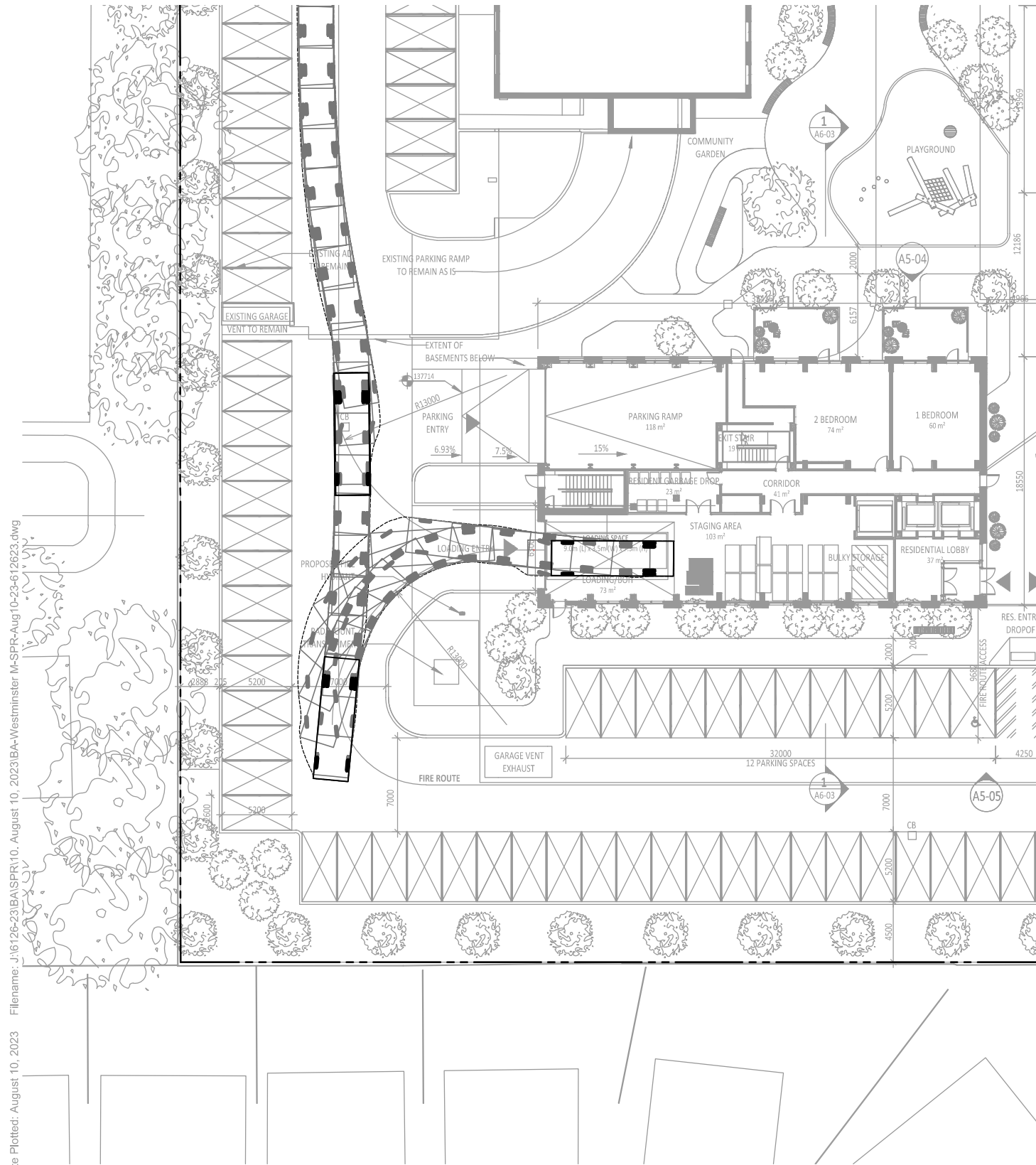
Project: WESTMINSTER
 Project No. 6126-23
 Date: August 10, 2023
 Revised: -

Scale 1:400

Drawing No. **VMD-02**

INBOUND

OUTBOUND



Design Vehicle - TAC SU (Single Unit Truck)

Overall Length 9.10m
 Overall Width 2.60m
 Overall Body Height 4.11m
 Outside Turning Radius 13.40m
 Inside Turning Radius 8.60m

Date Plotted: August 10, 2023 File: J:\6126-23\BA\SPR10, August 10, 2023\BA-Westminster M-SPR-Aug10-23-612623.dwg



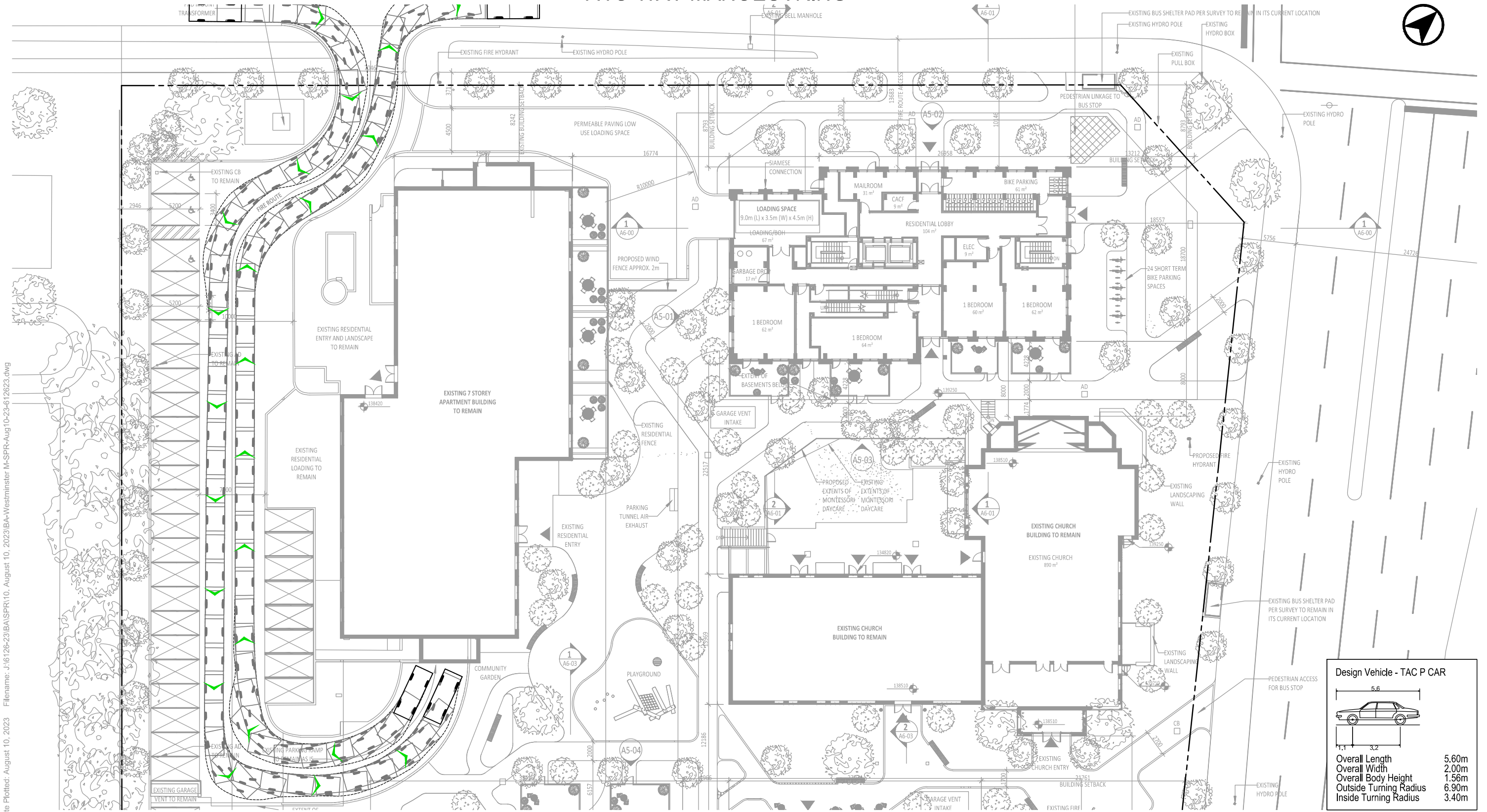
WESTMINSTER - MISSISSAUGA
VEHICLE MANOEUVRING DIAGRAM
BUILDING 2 (SOUTH TOWER)
LOADING - TAC SINGLE-UNIT (SU) VEHICLE

Project: WESTMINSTER
 Project No. 6126-23
 Date: August 10, 2023
 Revised: -

Scale 1:400

Drawing No. **VMD-03**

TWO-WAY MANOEUVRING



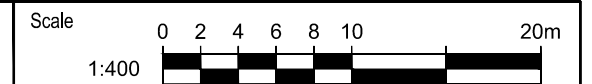
Design Vehicle - TAC P CAR	
Overall Length	5.60m
Overall Width	2.00m
Overall Body Height	1.56m
Outside Turning Radius	6.90m
Inside Turning Radius	3.40m

Date Plotted: August 10, 2023 File name: J:\6126-23\BA\SPR10, August 10, 2023\BA-Westminster M-SPR-Aug10-23-612623.dwg



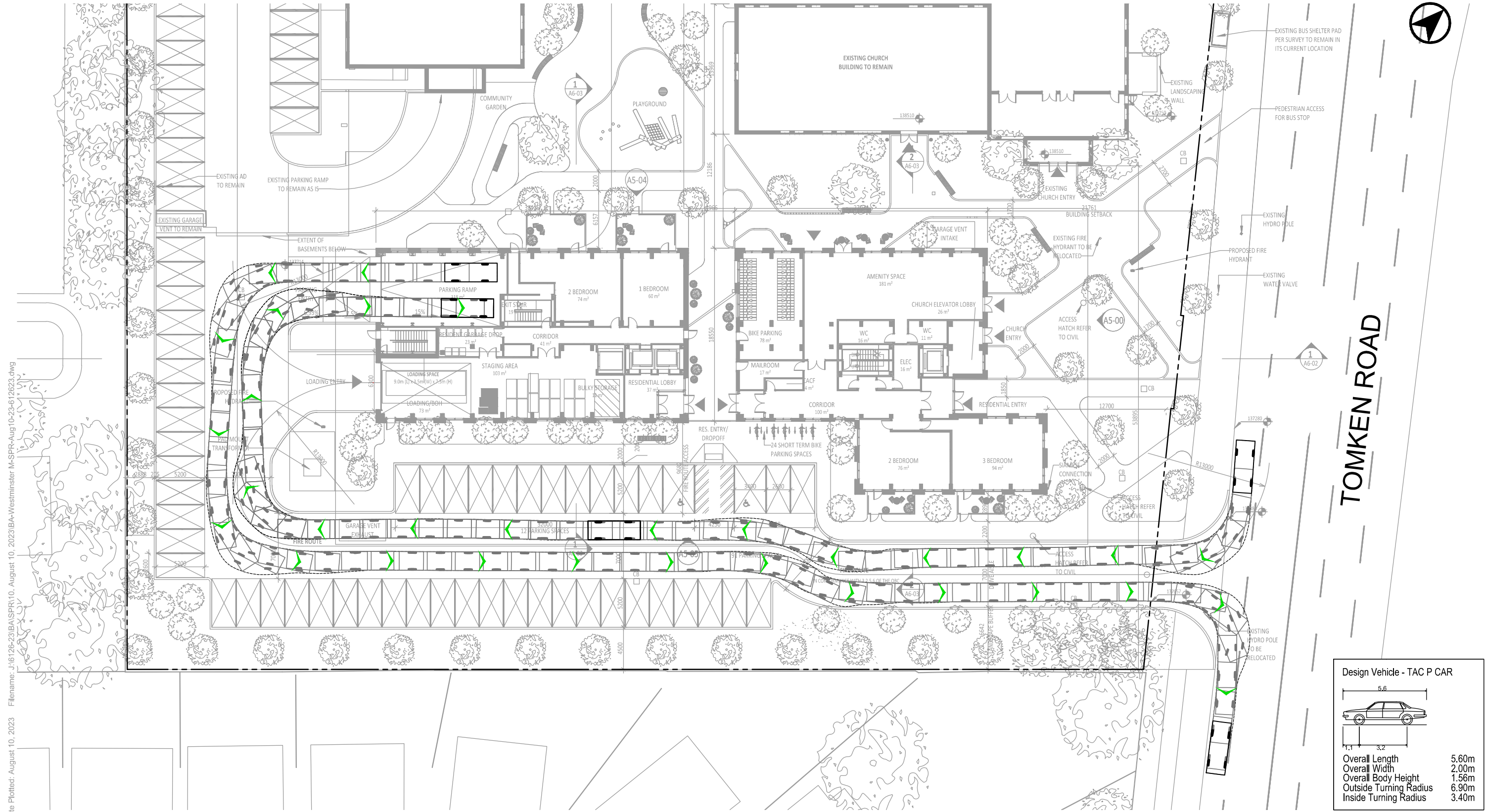
WESTMINSTER - MISSISSAUGA VEHICLE MANOEUVRING DIAGRAM BUILDING 1 (NORTHEAST TOWER) EXISTING PARKING RAMP - TAC P VEHICLE

Project: WESTMINSTER
Project No. 6126-23
Date: August 10, 2023
Revised: -



Drawing No. **VMD-04**

TWO-WAY MANOEUVRING



Design Vehicle - TAC P CAR

Overall Length	5.60m
Overall Width	2.00m
Overall Body Height	1.56m
Outside Turning Radius	6.90m
Inside Turning Radius	3.40m

Date Plotted: August 10, 2023 File: J:\6126-23\BA\SPR10, August 10, 2023\BA-Westminster M-SPR-Aug10-23-612623.dwg

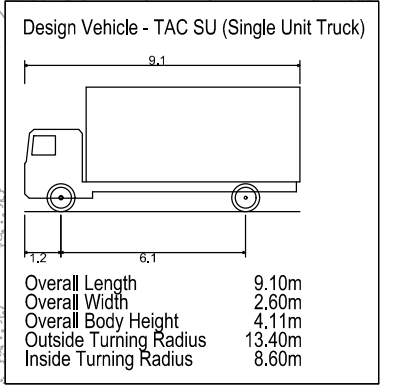
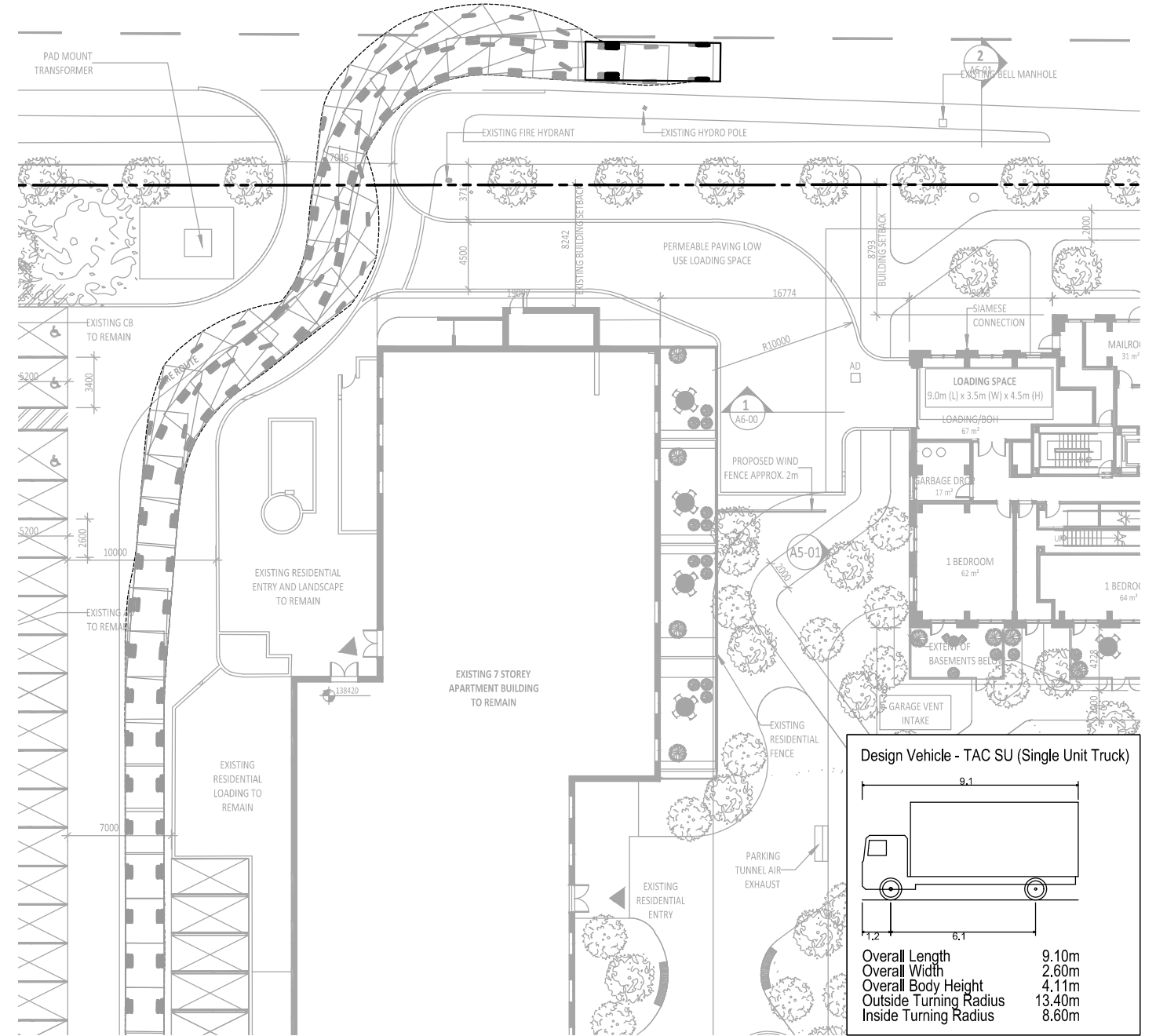
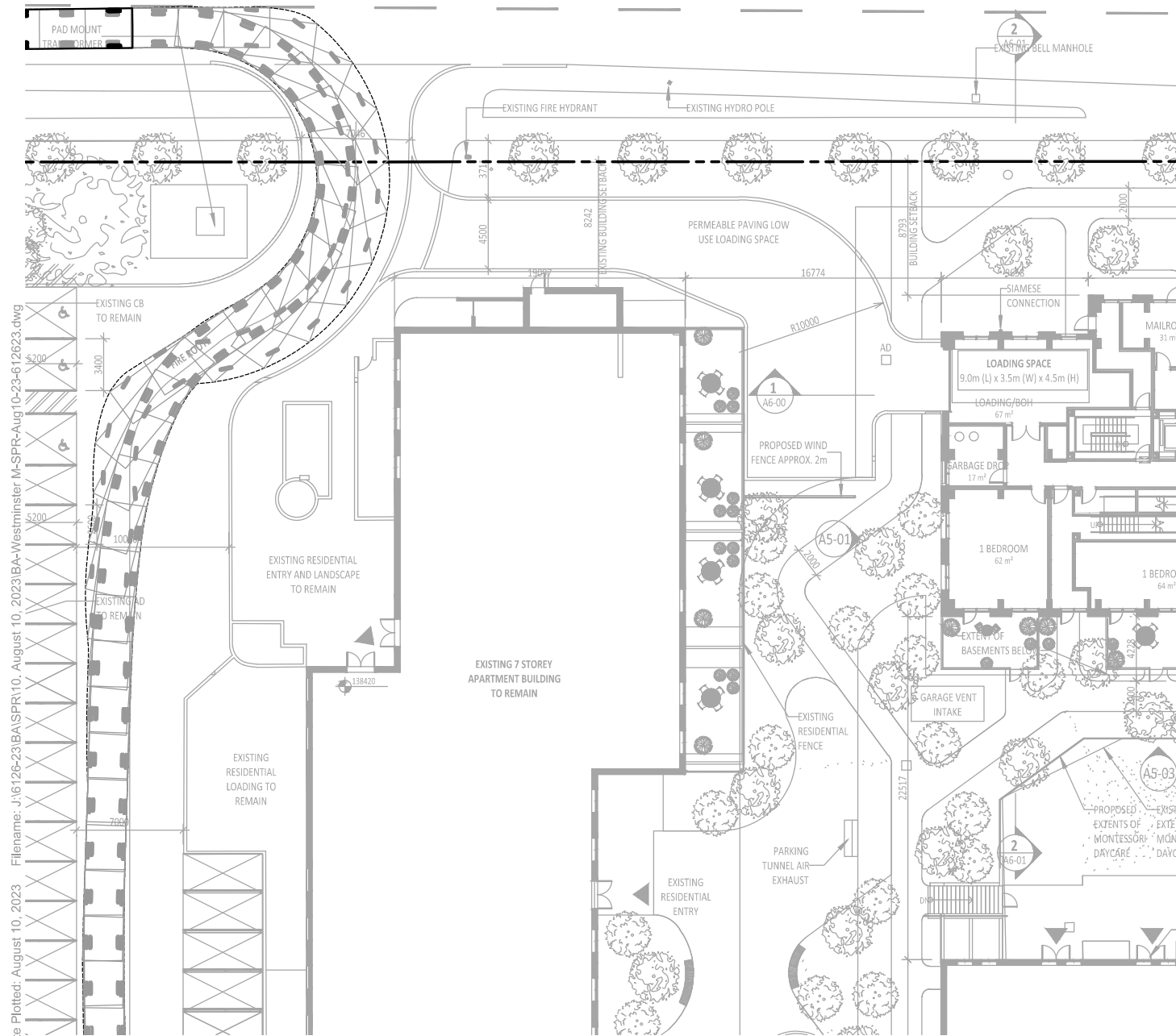
	WESTMINSTER - MISSISSAUGA VEHICLE MANOEUVRING DIAGRAM BUILDING 2 (SOUTH TOWER) PARKING RAMP - TAC P VEHICLE	Project: WESTMINSTER Project No. 6126-23 Date: August 10, 2023 Revised: -	Scale: 1:400 	Drawing No. VMD-05
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INBOUND

RATHBURN ROAD

OUTBOUND

RATHBURN ROAD

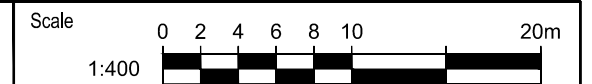


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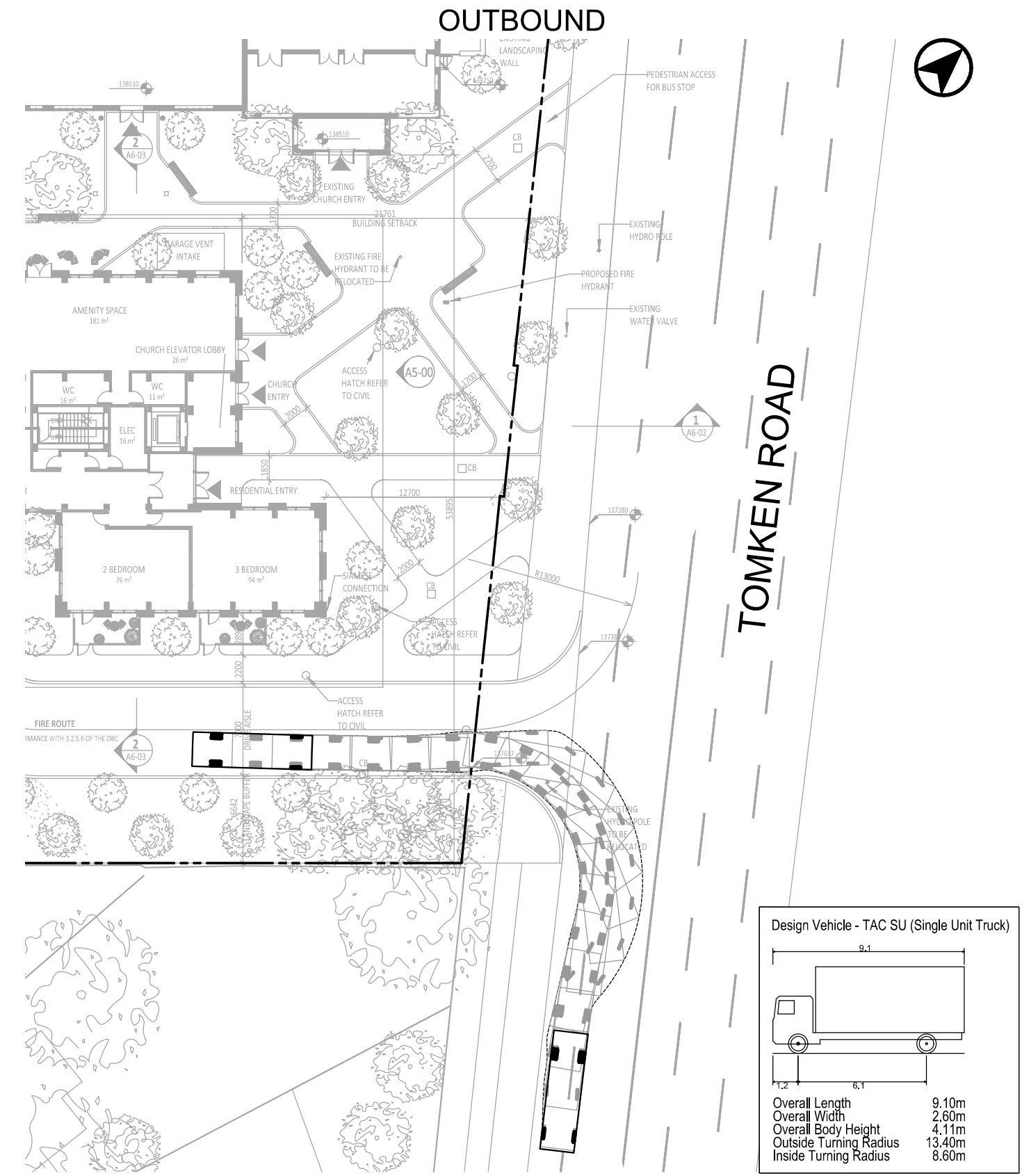
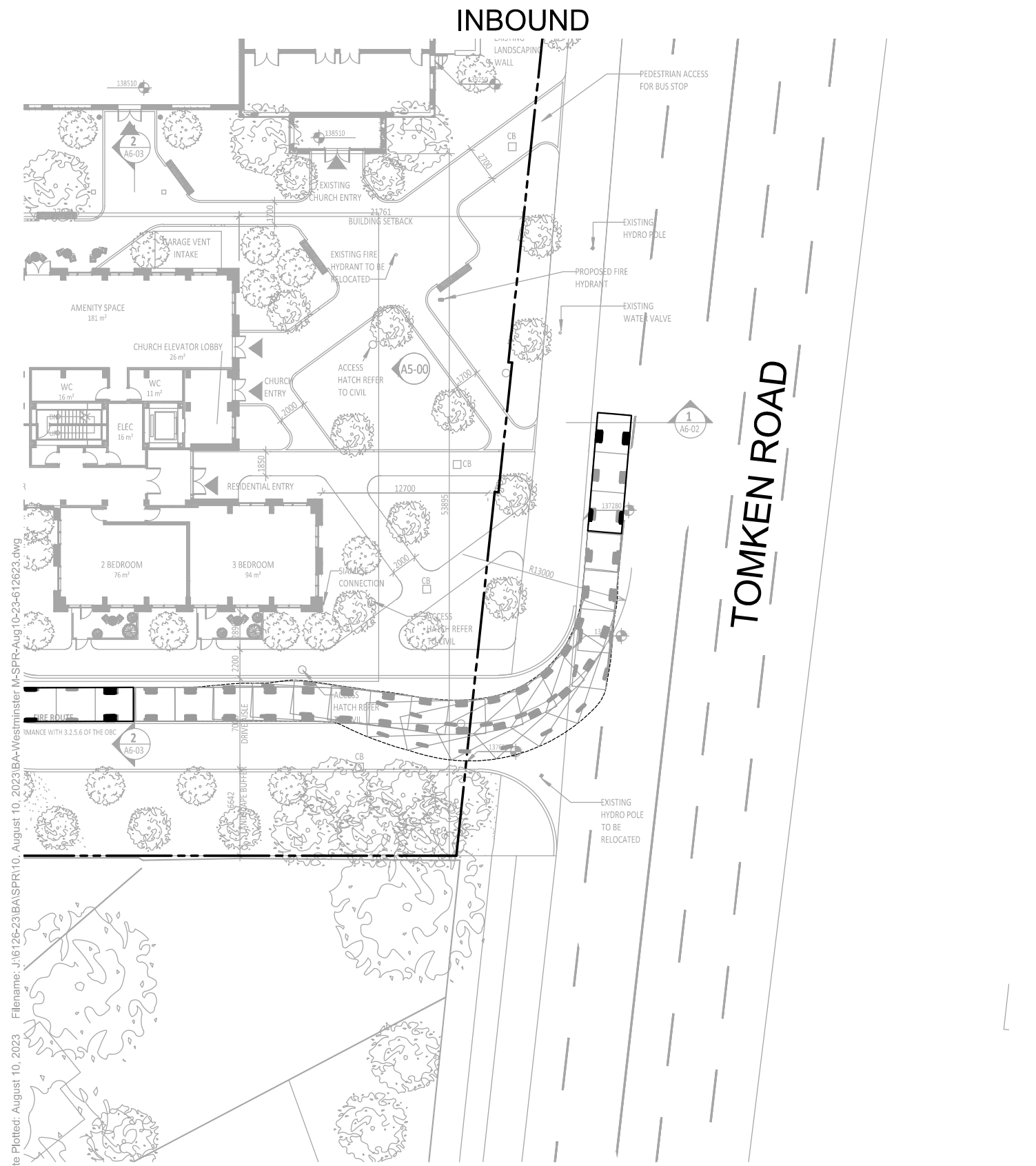


WESTMINSTER - MISSISSAUGA
VEHICLE MANOEUVRING DIAGRAM
BUILDING 1 (NORTHEAST TOWER)
NORTH SITE ACCESS - TAC SINGLE-UNIT (SU) VEHICLE

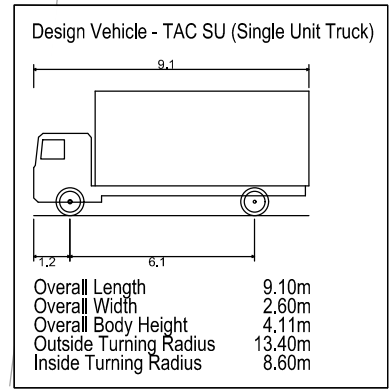
Project: WESTMINSTER
 Project No. 6126-23
 Date: August 10, 2023
 Revised: -



Drawing No. **VMD-06**



Date Plotted: August 10, 2023. Filename: J:\6126-23\BA\SPR10, August 10, 2023\BA-Westminster M-SPR-Aug10-23-612623.dwg



WESTMINSTER - MISSISSAUGA

VEHICLE MANOEUVRING DIAGRAM

BUILDING 1 (NORTHEAST TOWER)

EAST SITE ACCESS - TAC SINGLE-UNIT (SU) VEHICLE

Project: WESTMINSTER
 Project No. 6126-23
 Date: August 10, 2023
 Revised: -

Scale 1:400

Drawing No. **VMD-07**