

MEMORANDUM

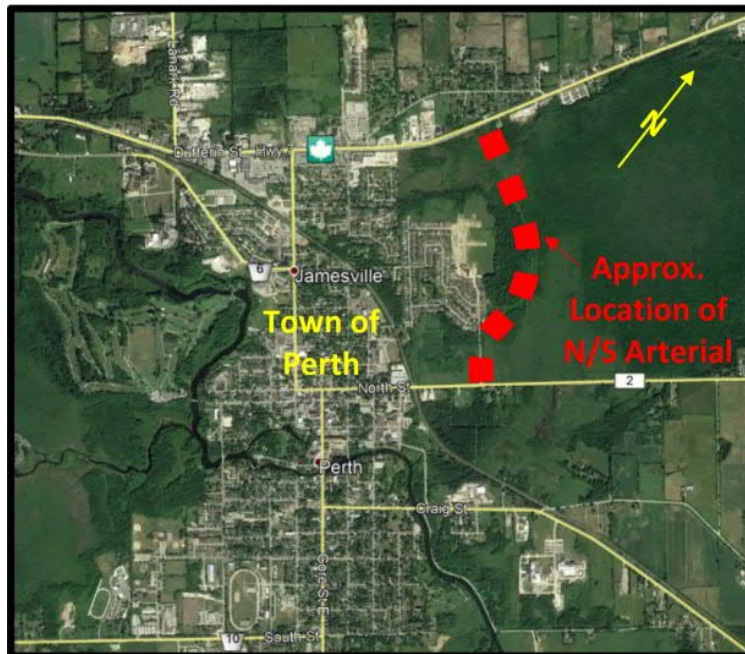
MEMORANDUM

To: Perthmore Development LTD
From: William Sherwin (MP Traffic), Bryan Lee (MP Traffic), Thomas Gryz (MP Traffic)
Date: Thursday, March 12, 2020
Re: Sensitivity Analysis of New Arterial

Introduction

McIntosh Perry Consulting Engineers Ltd. (MP) has been retained by Perthmore Development Limited to assist in the development of a Traffic Impact Study (TIS) for the proposed development in the Town of Perth, Ontario. This study is prepared to discuss the need for an arterial roadway connecting Highway 7 and County Road 10, Drummond Concession 2, as mentioned in the Lanark County Transportation Master Plan. The sensitivity analysis will review the number of dwelling units that can be accommodated in the proposed Perthmore subdivision, without the need for the arterial road. The proposed development is anticipated to include a mix of semi-detached, single-family dwellings, multiple stacked townhouses and higher density residential uses over a total development area of 36,800m². **Figure 1** illustrates the approximate location of the proposed arterial.

Figure 1. Approximate Location of Proposed Arterial



Analysis Assumptions

The assumptions of the sensitivity analysis are as follows:

- The proposed development consists of only single-family detached homes, as single-family detached homes generate the most trips per dwelling of residential uses. As such, this will result in the most conservative number of dwellings.
- Estimation of trip ends and dwelling units uses the methodologies and data for Single-Family Detached Housing (LU210) from the Institute of Transportation Engineers (ITE) Trip Generation 10th Edition;
- Existing conditions are maintained throughout the analysis including:
 - no improvements to roadway corridors;
 - no additions of auxiliary lanes; and,
 - no changes to intersection controls such as stop control, signalization or roundabouts.
 - With the exemption of the addition of the proposed intersection at Highway 7 once the trigger is met.
- Existing traffic characteristics are maintained including:
 - peak hour factor;
 - commercial percentages;
 - pedestrian movements; and,
 - traffic directional splits.
- For the purposes of this analysis, unacceptable operations are classified as when the critical approach has a LOS of E or worse, or a v/c over 0.9;
- Both AM and PM peak hours were analyzed for the existing 2020, the horizon 2030 and the horizon 2040 scenarios;
- An exponential growth factor of 2.5% was used for background development growth. The township of Perth conducted a Study project in 2014 (Growth Management Strategy – Town of Perth) which indicated a total population growth of 4,640 people by the year of 2041 from the current 5,860 people as of 2014. This increase is a growth rate of 79% which translates to an annual exponential growth rate of 2.18%. The Lanark County Sustainable Communities Official Plan showed the total population increasing from 5,860 (2014) to 7,615 in 2031, this translates to a growth rate of 30% and a yearly exponential growth rate of 1.55%. Therefore, 2.5% was used to account for any new or potential future developments within the vicinity of the subjected development.
- Additional vehicle trips based on any known adjacent developments were not included in this analysis; and,
- Analysis was focused at two intersections including:
 - Perthmore St / Drummond Concession 2; and,

- Highway 7 / Future Bypass. The future bypass is assumed to be a two-lane urban arterial with 60km/h speed limit and stop-controlled at Highway 7.

TMC data was acquired from the MTO for the intersection of HWY 7 and Drummond Street (Nov 29, 2016) as well MP collected TMC data for the intersection of Perthmore Street and Drummond Concession 2 (May 5, 2019). TMC data is attached in [Appendix A](#).

Methodology

MP followed the methodology as stated in the Terms of Reference that was reviewed / approved by the Town of Perth's traffic engineering peer reviewer.

MP began the analysis by determining the number of residential units that would trigger the failure of the intersection of Perthmore Street and Drummond Concession 2. This represents the number of residential units that the intersection can accommodate before experiencing unacceptable operations. Once the trigger is met, there is a need of a new intersection at Highway 7 and Future bypass. The intersection will be connected to the northern part of the development. This was accomplished by incrementally increasing the total vehicle trips until unacceptable operations were observed. The total number of dwellings was then back calculated using the ITE Trip Generation fitted curve equation for the respective peak hours. The same approach is used to determine the maximum number of dwelling units that can be accommodated before failure is experienced at the Highway 7 / Future bypass intersection. The combined number of residential units is the maximum number of residential dwelling units as part of the Perthmore subdivision that can be supported by the intersections before the new arterial is to be built connecting Highway 7 to Drummond Concession 2. As the full buildout year is currently unknown, it is anticipated that as more time passes, the background traffic will continue to grow and in turn it will reduce the development generated trips required to trigger the need of a new arterial connecting Perthmore Street and Drummond Concession 2. As such, MP analyzed the network throughout three horizons; the 2020 existing year, the 2030 horizon year and the 2040 horizon year. The purpose was to develop a range of maximum dwellings units to trigger the need for a north south arterial as a function of time.

All analysis was done using Synchro 10. Synchro 10 output sheets can be found in [Appendix B](#).

Trip distribution was based on the existing turning movement counts and ITE Trip Generation data for directional (in/out) distribution.

Level of Service (LOS) criteria for an unsignalized intersection is determined by the average total delay for applicable movements on each approach. Based on Highway Capacity Manual (HCM) 6th Edition, the LOS categories are illustrated in [Table 1](#).

Table 1: Definition of LOS for an Unsignalized Intersection

Level of Service	Average Total Delay (Seconds)	v/c Ratio
A	< 10.0	< 1.0
B	10 to 15	< 1.0
C	15 to 25	< 1.0
D	25 to 35	< 1.0
E	35 to 50	< 1.0
F	> 50	> 1.0

Results

This section summarizes the results of the sensitivity analysis. All results are for the most critical approach of each intersection. For the intersection of Perthmore Street and Drummond Concession 2, the critical movements are the southbound left turn on Perthmore Street and the eastbound left turn from Drummond Concession 2. For the intersection of Hwy 7 and the future bypass, the critical movements are the northbound left turn lane on the bypass, and the westbound left turn from Highway 7.

Table 2 shows the maximum number of trips generated and the respective dwellings that would allow the intersection of Perthmore Street and Drummond Concession 2 to operate at a level of service of D or better and when the intersection would operate unacceptably for the 2020 existing, the 2030 horizon and the 2040 horizon scenarios.

Table 2. Trips Generated and Related Dwellings (Perthmore Street and Drummond Concession 2)

2020				
Trips	LOS	v/c	Delay (s)	Dwellings
535	D	0.853	34.6	747
540	E	0.865	36.2	754
2030				
Trips	LOS	v/c	Delay (s)	Dwellings
480	D	0.835	34	504
485	E	0.843	35	510
2040				
Trips	LOS	v/c	Delay (s)	Dwellings
410	D	0.816	34.4	428
415	E	0.828	35.8	433

Table 2 above shows that the intersection of Perthmore and Drummond Concession 2 is anticipated to fail under the 2020 existing conditions once 540 trips are generated resulting in 754 dwellings. The maximum number of trips generated to ensure the intersection operates at a LOS of D or better is 535 resulting in 747 dwellings. During the 2030 horizon conditions is expected to fail once 485 trips are generate, resulting in 510 dwellings. The maximum number of trips generated to ensure the intersection operate at a LOS of D or better is 480 trips resulting in 485 dwellings. During the 2040 horizon conditions is expected to fail once 415 trips are generate, resulting in 433 dwellings. The maximum number of trips generated to ensure the intersection operate at a LOS of D or better is 410 trips resulting in 428 dwellings. All operations are anticipated during the AM peak hour as this is the most critical scenario.

Table 3 shows the maximum number of trips generated and the respective dwellings that would allow the new intersection of Highway 7 and the future bypass to operate at a level of service of D or better and when the intersection would operate unacceptably for the 2020 existing, the 2030 horizon and the 2040 horizon scenarios.

Table 3 Trips Generated and Related Dwellings (Highway 7 and Future Bypass)

2020				
Trips	LOS	v/c	Delay (s)	Dwellings
385	D	0.58	34.6	401
390	E	0.59	36	406
2030				
Trips	LOS	v/c	Delay (s)	Dwellings
280	D	0.49	34	288
285	E	0.50	35	293
2040				
Trips	LOS	v/c	Delay (s)	Dwellings
170	D	0.37	34.6	171
175	E	0.38	35.40	176

Table 3 above shows that the intersection of Highway 7 and the proposed arterial is expected to fail under the 2020 existing conditions once 390 trips are generated resulting in 406 dwellings. The maximum number of trips generated to ensure the intersection operate at a LOS of D or better is 385 trips resulting in 401 dwellings. During the 2030 horizon conditions is expected to fail once 285 trips are generate, resulting in 293 dwellings. The maximum number of trips generated to ensure the intersection operate at a LOS of D or better is 280 trips resulting in 288 dwellings. During the 2040 horizon conditions is expected to fail once 175 trips are generate, resulting in 176 dwellings. The maximum number of trips generated to ensure the intersection operate at a LOS of D or better is 170 trips resulting in 171 dwellings. All operations are anticipated during the PM peak hour as this is the most critical scenario.

Calculations of all trip generation intervals for the sensitivity analysis can be found in [Appendix C](#)

Table 4 Shows the maximum number of dwellings that can be accommodated by the two intersections.

Table 4. Maximum Dwellings.

	Existing 2020		Horizon 2030		Horizon 2040	
	Perthmore St @ Drummond Concession 2	HWY 7 @ Proposed New Arterial	Perthmore St @ Drummond Concession 2	HWY 7 @ Proposed New Arterial	Perthmore St @ Drummond Concession 2	HWY 7 @ Proposed New Arterial
Maximum Trips added	535	385	480	280	410	170
Maximum Dwellings	747	401	504	288	428	171
Total Dwellings	1148		792		599	

Table 4 shows that the intersection of Perthmore Street and Drummond Concession 2 can accommodate an addition of 747 dwellings during the existing 2020 scenario, 504 during the horizon 2030 scenario, and 428 dwellings during the horizon 2040 scenario before operating unacceptably and the trigger is met for the need of a new intersection at Highway 7 / Future bypass. The intersection will be connected to the northern part of the development. The proposed intersection of Highway 7 and the Future bypass can accommodate 401 dwellings during the existing 2020 scenario, 288 dwellings during the horizon 2030 scenario, and 171 dwellings during the horizon 2040 scenario before operating unacceptably. The two intersections are able to support a total of 920 trips, (1148 new single-family homes, or equivalent) during the existing 2020 scenario, a total of 760 trips, (792 new single-family homes, or equivalent) during the horizon 2030 scenario, and , a total of 580 trips, (599 new single-family homes, or equivalent) during the horizon 2040 conditions before the new arterial is required or intersection improvements should be considered.

Summary and Recommendation

- Analysis focused on the two intersections, Perthmore St / Drummond Concession 2 and Highway 7 / future bypass.
- Network impacts were not analyzed as defined in the scope.
- MP utilized a Background growth factor of 2.5% to analyze the 2020 existing conditions and the 2030 horizon conditions.
- The southern intersection of Perthmore Street and Drummond Concession 2 can support a range from 410 development generated trips (428 single family dwellings or equivalent) to 535 trips (747 single family dwellings or equivalent) before the trigger is met to construct the northern intersection of Highway 7 and the future bypass.
- The northern intersection of Highway 7 and the Future Bypass can support an additional range of 170 development generated trips (171 single family dwellings or equivalent) to 385 development generated trips (401 single family dwellings or equivalent).

- The network can support a total range of 580 development generated trips (599 single family dwellings or equivalent) to 920 development generated trips (1148 single family dwelling or equivalent) before the development triggers the requirement for the new arterial to be built.

-End of Report-

Prepared by,



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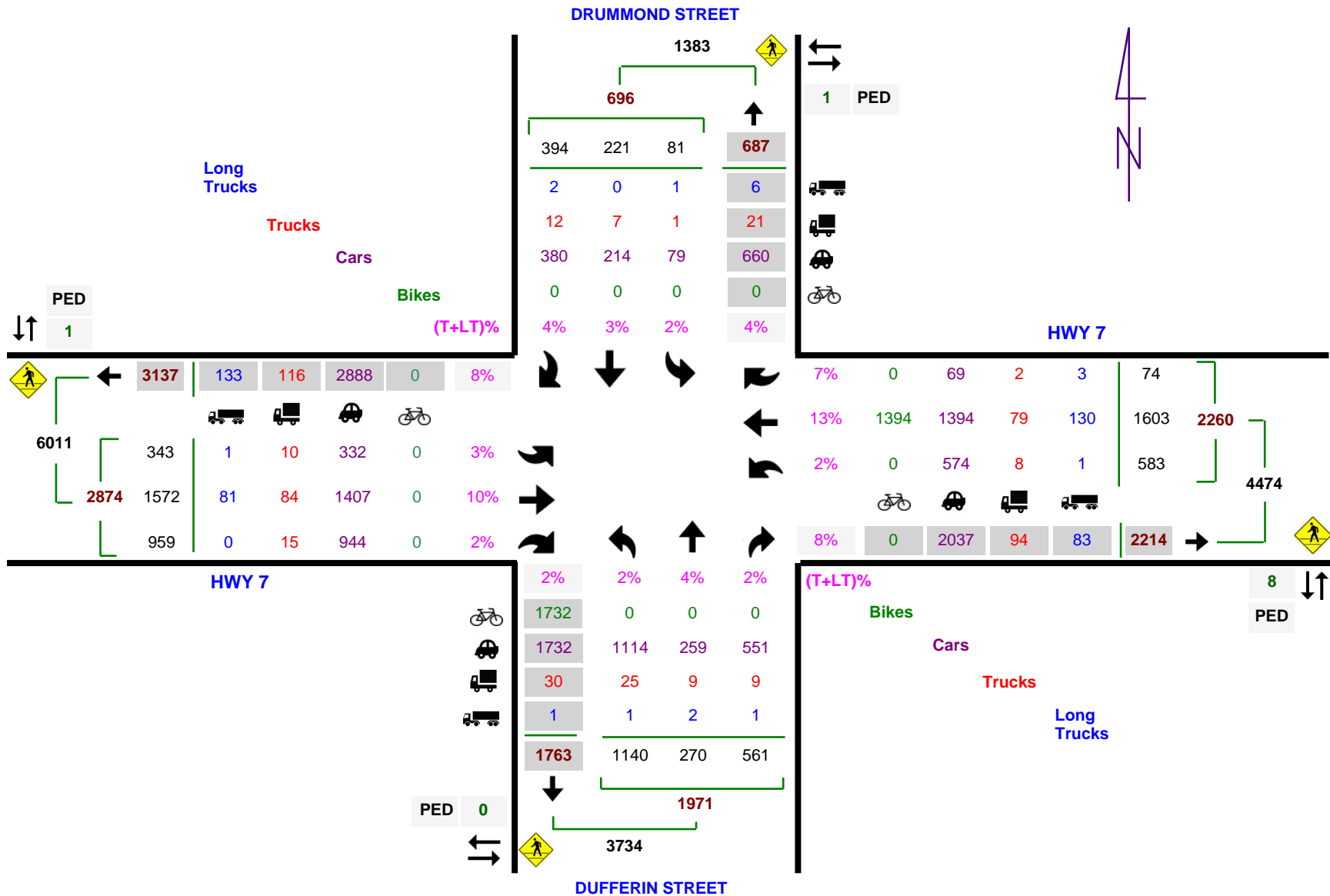
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APPENDIX A: TMC DATA





TVIS II - Traffic Volume Information System
Turning Movement 15 Minute Report

Description: **HWY 7 @ DRUMMOND STREET/DUFFERIN STREET**

Region: **EAST**

Survey Type: **TM – Intersection**

Hwy: **7**

Start Date: **29-Nov-2016 (Tue)**

I/C Side:

LHRS: **14070**

End Date: **29-Nov-2016 (Tue)**

Int. Type: **Four Leg**

Offset: **10.070**

Schedule Summary: **TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00**

Start Time	Major Road Approaches														Minor Road Approaches														Total Veh.																	
	East HWY 7							West HWY 7							North DRUMMOND STREET							South DUFFERIN STREET																								
	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped																
f	h	g	f	h	g	f	h	g	f		h	g	f	h	g	f	h	g	f		h	g	f	h	g	f	h	g	f		h	g														
Period 3																																														
15:00	15	59	6	0	3	0	0	5	0	1	16	60	39	1	5	1	0	1	0	0	5	10	23	0	0	0	0	0	0	0	0	57	13	18	1	0	0	0	0	0	0	338				
15:15	16	58	5	1	7	0	0	1	1	1	14	61	40	0	2	0	0	2	0	0	4	10	21	0	0	0	0	0	0	0	0	49	8	17	1	0	1	1	1	0	0	321				
15:30	25	53	4	1	3	0	0	11	0	0	9	62	38	0	3	1	0	2	0	0	3	12	12	0	0	1	0	0	1	0	0	47	15	17	0	0	0	0	1	1	0	322				
15:45	19	53	1	0	2	0	0	10	0	0	12	51	34	0	2	0	0	3	0	0	2	12	14	0	0	0	0	0	0	0	0	33	7	23	2	0	0	0	0	0	0	280				
16:00	20	49	0	0	1	0	0	2	0	0	13	49	33	0	2	0	0	1	0	0	4	11	15	0	0	0	0	0	0	0	0	59	14	30	1	0	1	0	0	0	0	305				
16:15	24	56	0	0	1	0	1	2	0	0	8	66	29	0	4	0	0	3	0	0	6	4	19	0	0	0	0	0	0	0	0	40	9	28	0	0	0	0	0	0	0	300				
16:30	30	48	5	0	3	0	0	1	0	1	8	59	38	0	2	1	0	0	0	0	1	8	8	0	0	0	0	0	0	1	0	0	0	0	0	41	8	28	0	0	1	0	0	0	0	290
16:45	32	53	2	0	2	0	0	2	0	0	10	60	21	0	2	0	1	1	0	0	4	11	16	0	0	0	1	0	0	0	0	48	7	13	1	1	0	0	0	0	0	288				
17:00	29	57	1	0	0	0	0	2	0	0	10	55	40	0	1	0	0	4	0	0	1	7	10	0	1	0	0	0	0	0	0	50	3	16	0	0	1	0	0	0	0	288				
17:15	22	49	1	0	1	0	0	4	0	0	7	53	29	0	2	0	0	4	0	0	2	9	5	0	0	0	0	0	0	0	0	31	6	17	0	0	0	0	0	0	0	242				
17:30	16	55	1	0	1	0	0	4	0	0	5	41	25	0	0	0	0	0	0	0	0	3	17	0	0	0	0	0	0	0	0	33	8	9	0	0	0	0	0	0	0	218				
17:45	25	51	0	0	0	0	0	1	0	0	5	47	21	0	2	0	0	3	0	0	0	2	11	0	0	0	0	0	0	0	0	28	0	5	0	0	0	0	0	0	0	201				

Description: **HWY 7 @ DRUMMOND STREET/DUFFERIN STREET**

Region: **EAST**

Survey Type: **TM – Intersection**

Hwy: **7**

Start Date: **29-Nov-2016 (Tue)**

I/C Side:

LHRS: **14070**

End Date: **29-Nov-2016 (Tue)**

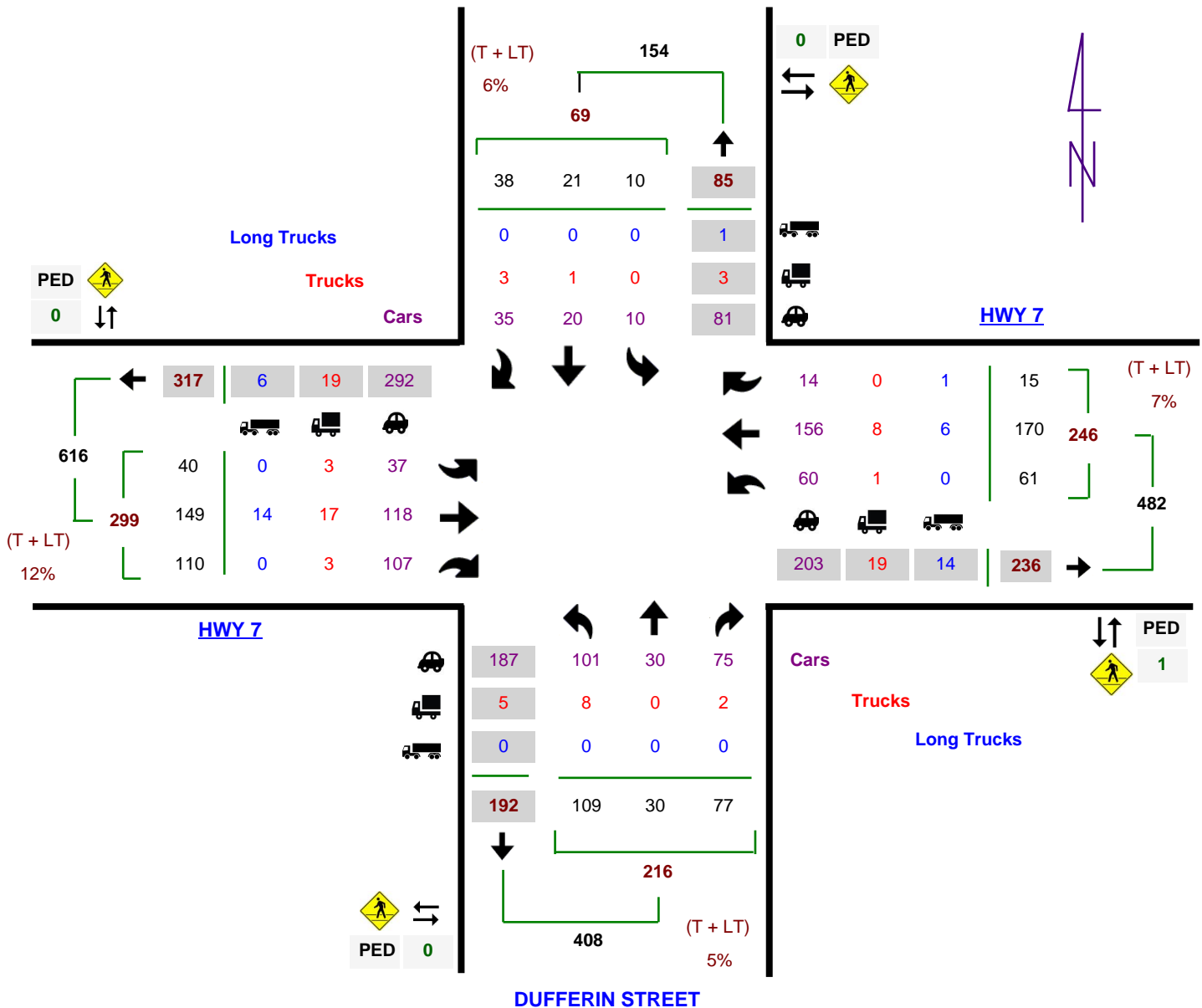
Int. Type: **Four Leg**

Offset: **10.070**

Schedule Summary: **TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00**

AM Peak Hour Report - Start Time: 07:45

DRUMMOND STREET



Description: **HWY 7 @ DRUMMOND STREET/DUFFERIN STREET**

Region: **EAST**

Survey Type: **TM – Intersection**

Hwy: **7**

Start Date: **29-Nov-2016 (Tue)**

I/C Side:

LHRS: **14070**

End Date: **29-Nov-2016 (Tue)**

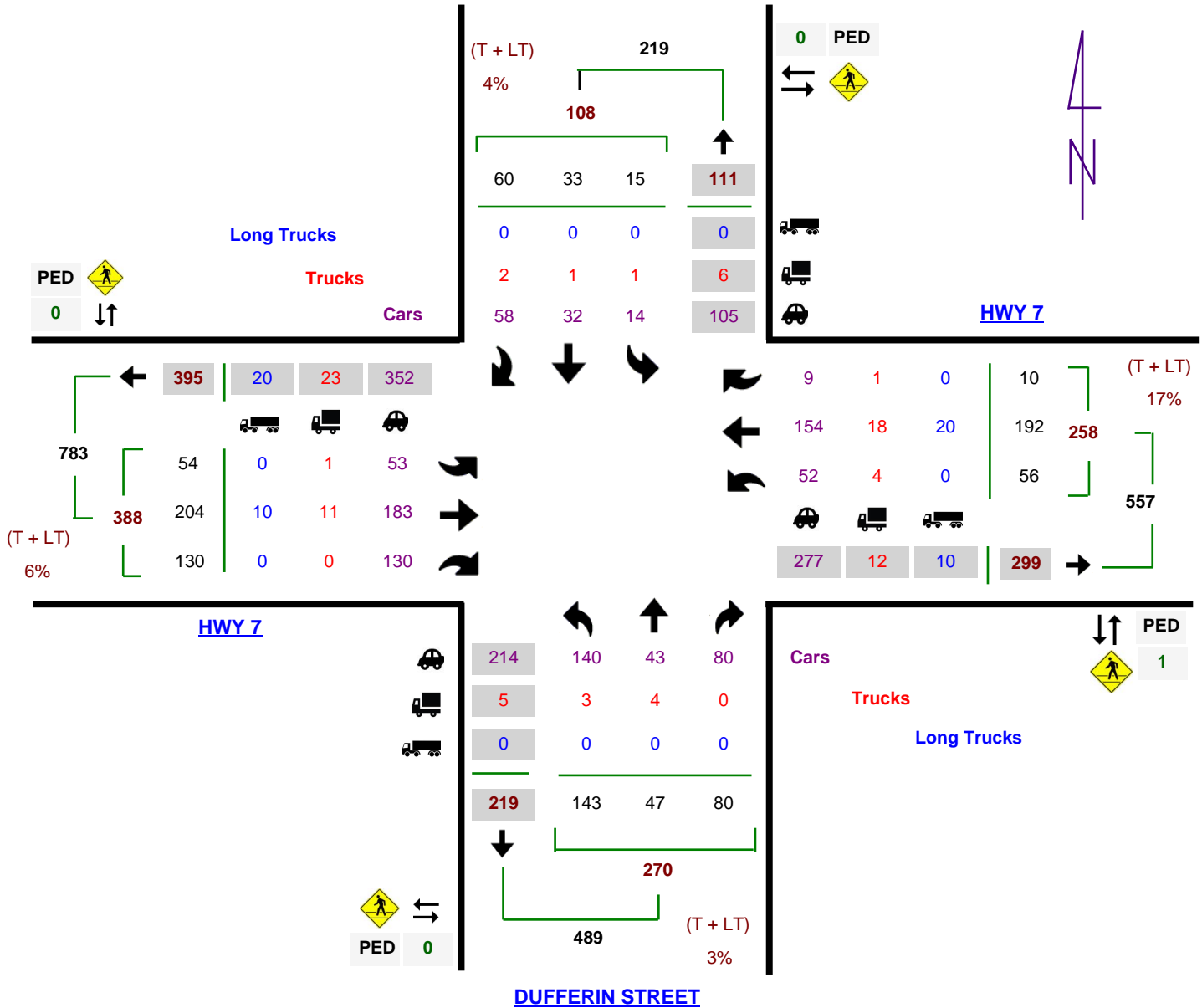
Int. Type: **Four Leg**

Offset: **10.070**

Schedule Summary: **TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00**

Midday Peak Hour Report - Start Time: 11:00

DRUMMOND STREET



Description: **HWY 7 @ DRUMMOND STREET/DUFFERIN STREET**

Region: **EAST**

Survey Type: **TM – Intersection**

Hwy: **7**

Start Date: **29-Nov-2016 (Tue)**

I/C Side:

LHRS: **14070**

End Date: **29-Nov-2016 (Tue)**

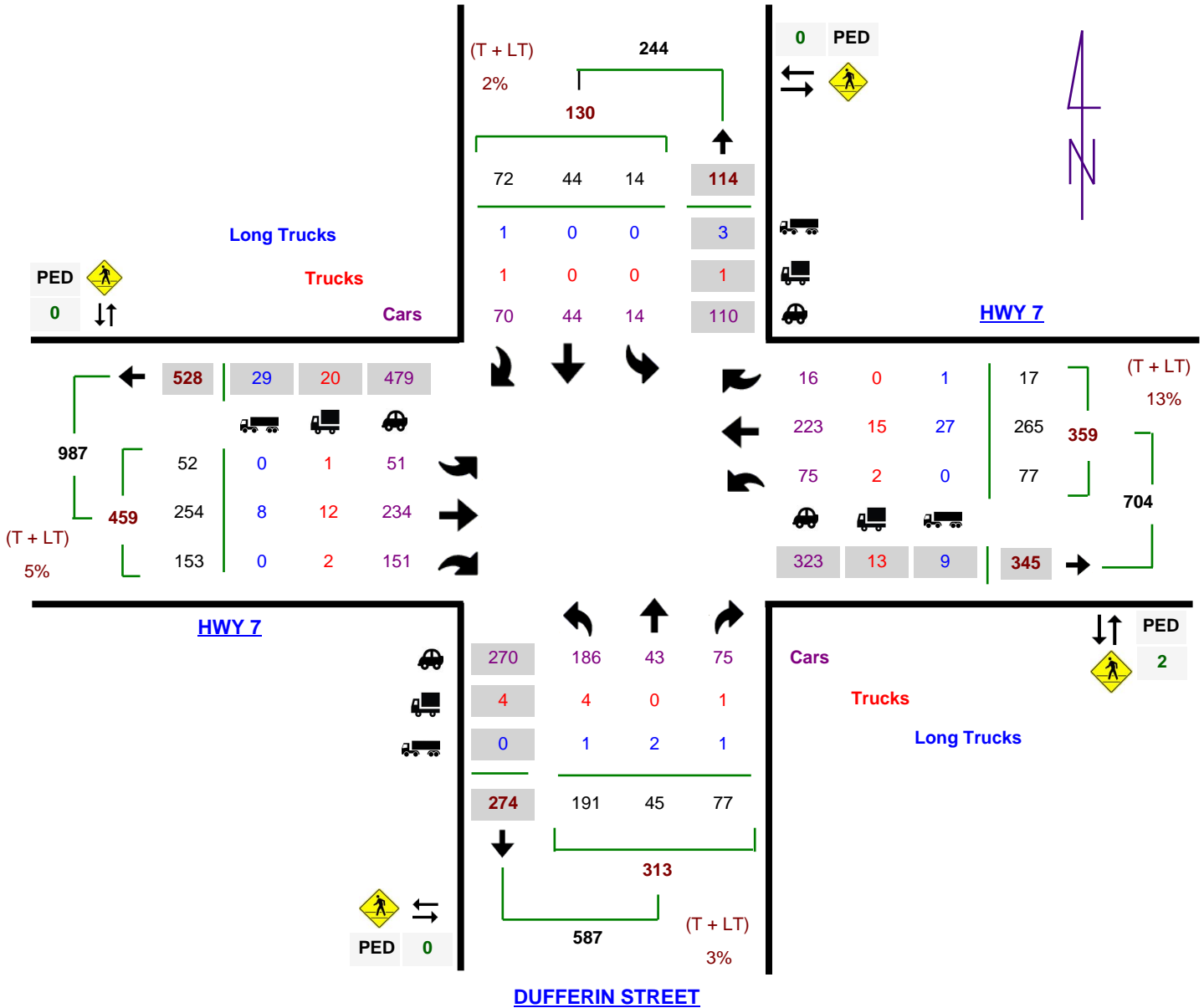
Int. Type: **Four Leg**

Offset: **10.070**

Schedule Summary: **TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00**

PM Peak Hour Report - Start Time: 15:00

DRUMMOND STREET





TVIS II - Traffic Volume Information System

AdHoc Turning Movement Total Count and Peak Summary Report

Ministry of Transportation

Description: **HWY 7 @ DRUMMOND STREET/DUFFERIN STREET**

Region: **EAST**

Survey Type: **TM – Intersection**

Hwy: **7**

Start Date: **29-Nov-2016 (Tue)**

I/C Side:

LHRS: **14070**

End Date: **29-Nov-2016 (Tue)**

Int. Type: **Four Leg**

Offset: **10.070**

Schedule Summary: **TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00**

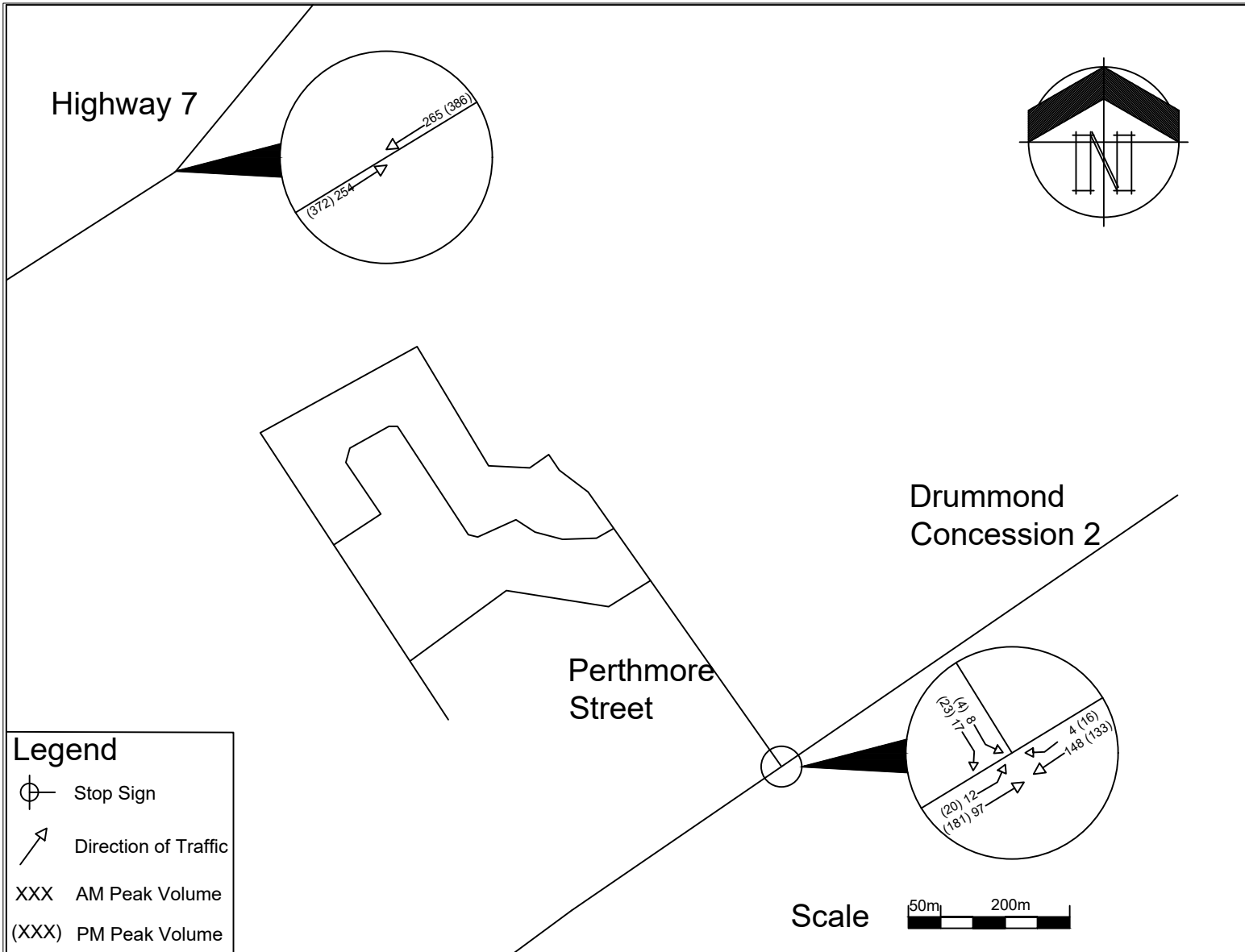
Total Count		Number of hours: 8				
DRUMMOND STREET						
Ped. 1	Total Vehicles	4% (T+LT)	3% (T+LT)	2% (T+LT)	#	Ped. 1
	394	221	81	687		HWY 7
!	3137	8	i	9	<	74
						7% (T+LT)
3% (T+LT)	343	..		!	1603	13% (T+LT)
10% (T+LT)	1572	"		>	583	2% (T+LT)
2% (T+LT)	959	?	:	#	;	2214
HWY 7	1763	1140	270	561	Total Vehicles	Ped. 8
Ped. 0	i	2% (T+LT)	4% (T+LT)	2% (T+LT)		
DUFFERIN STREET						

AM Peak Hour Report		Start Time: 07:45				
DRUMMOND STREET						
Ped. 0	Total Vehicles	8% (T+LT)	5% (T+LT)	0% (T+LT)	#	Ped. 0
	38	21	10	85		HWY 7
!	317	8	i	9	<	15
						7% (T+LT)
8% (T+LT)	40	..		!	170	8% (T+LT)
21% (T+LT)	149	"		>	61	2% (T+LT)
3% (T+LT)	110	?	:	#	;	236
HWY 7	192	109	30	77	Total Vehicles	Ped. 1
Ped. 0	i	7% (T+LT)	0% (T+LT)	3% (T+LT)		
DUFFERIN STREET						

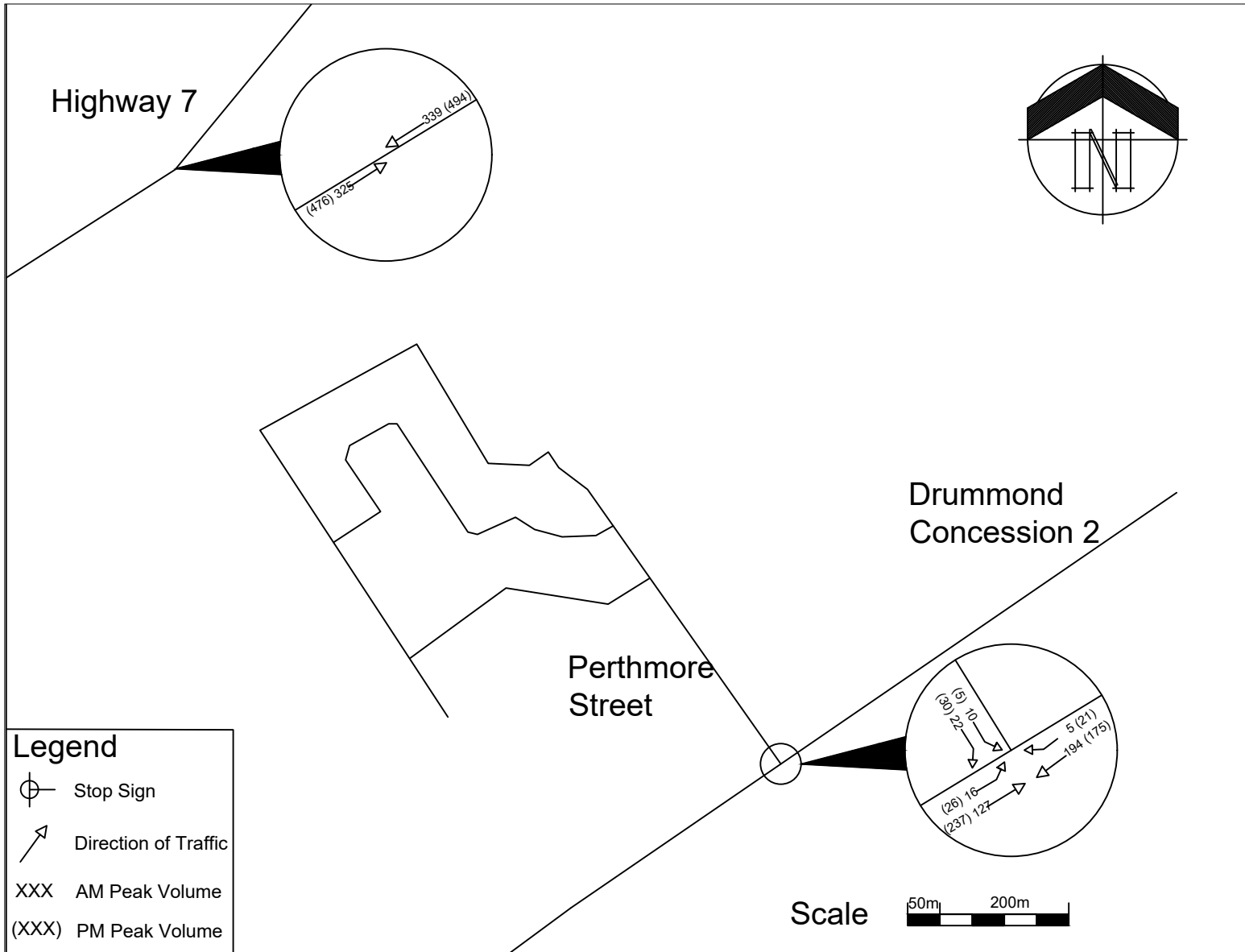
Midday Peak Hour Report		Start Time: 11:00				
DRUMMOND STREET						
Ped. 0	Total Vehicles	3% (T+LT)	3% (T+LT)	7% (T+LT)	#	Ped. 0
	60	33	15	111		HWY 7
!	395	8	i	9	<	10
						10% (T+LT)
2% (T+LT)	54	..		!	192	20% (T+LT)
10% (T+LT)	204	"		>	56	7% (T+LT)
0% (T+LT)	130	?	:	#	;	299
HWY 7	219	143	47	80	Total Vehicles	Ped. 1
Ped. 0	i	2% (T+LT)	9% (T+LT)	0% (T+LT)		
DUFFERIN STREET						

PM Peak Hour Report		Start Time: 15:00				
DRUMMOND STREET						
Ped. 0	Total Vehicles	3% (T+LT)	0% (T+LT)	0% (T+LT)	#	Ped. 0
	72	44	14	114		HWY 7
!	528	8	i	9	<	17
						6% (T+LT)
2% (T+LT)	52	..		!	265	16% (T+LT)
8% (T+LT)	254	"		>	77	3% (T+LT)
1% (T+LT)	153	?	:	#	;	345
HWY 7	274	191	45	77	Total Vehicles	Ped. 2
Ped. 0	i	3% (T+LT)	4% (T+LT)	3% (T+LT)		
DUFFERIN STREET						

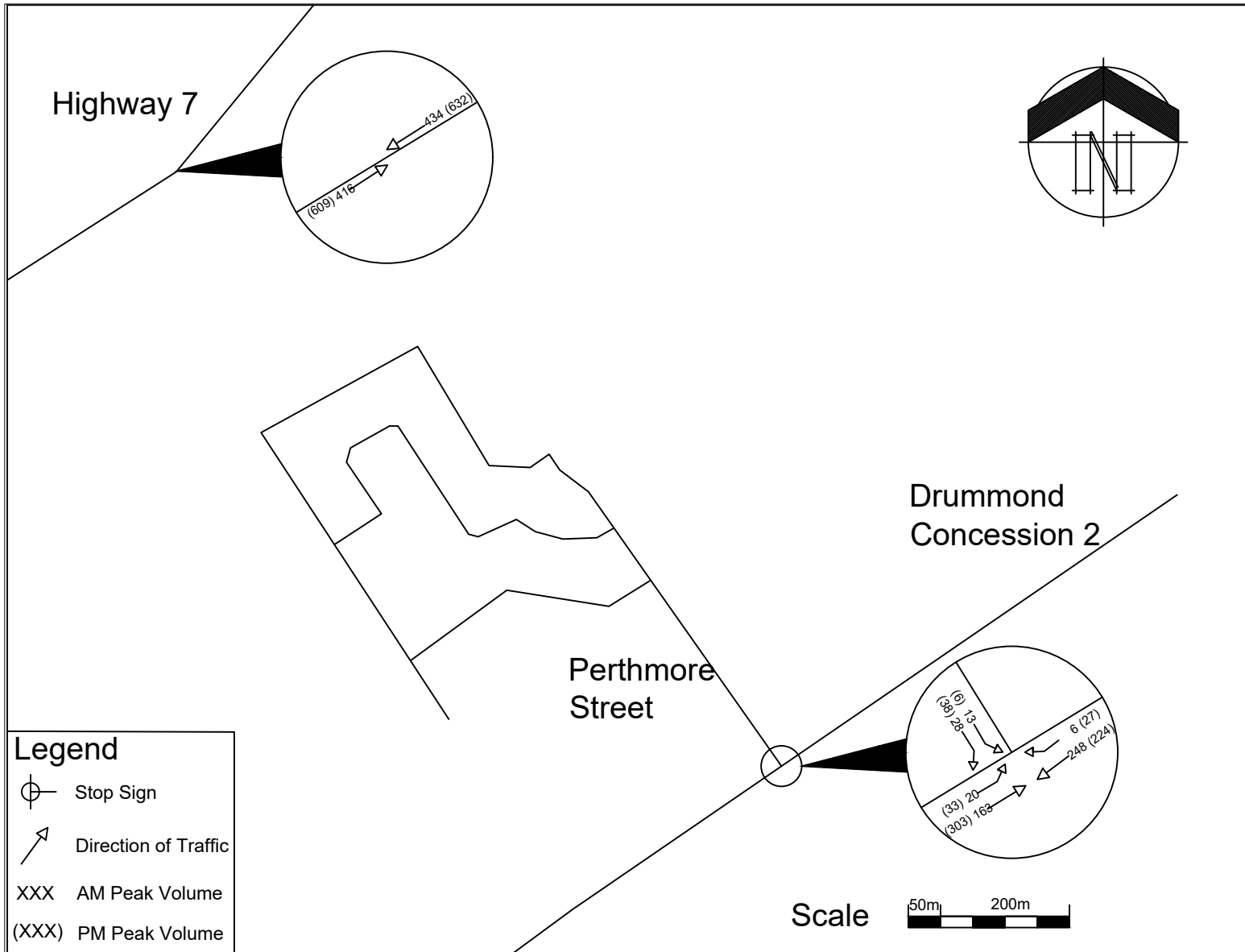
2020 Horizon Scenario - Background Traffic



2030 Horizon Scenario - Background Traffic



2040 Horizon Scenario - Background Traffic



APPENDIX B: SYNCHRO 10 OUTPUTS

Intersection						
Int Delay, s/veh	19.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	114	97	148	36	136	290
Future Vol, veh/h	114	97	148	36	136	290
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	330	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	84	84	78	78
Heavy Vehicles, %	50	9	1	25	0	12
Mvmt Flow	137	117	176	43	174	372

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	219	0	0	567	176
Stage 1	-	-	-	176	-
Stage 2	-	-	-	391	-
Critical Hdwy	4.6	-	-	6.4	6.32
Critical Hdwy Stg 1	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	5.4	-
Follow-up Hdwy	2.65	-	-	3.5	3.408
Pot Cap-1 Maneuver	1112	-	-	488	842
Stage 1	-	-	-	859	-
Stage 2	-	-	-	688	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1112	-	-	424	842
Mov Cap-2 Maneuver	-	-	-	424	-
Stage 1	-	-	-	746	-
Stage 2	-	-	-	688	-

Approach	EB	WB	SB
HCM Control Delay, s	4.7	0	34.6
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1112	-	-	-	640
HCM Lane V/C Ratio	0.124	-	-	-	0.853
HCM Control Delay (s)	8.7	0	-	-	34.6
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.4	-	-	-	9.6

Intersection						
Int Delay, s/veh	12.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	254	58	53	265	169	165
Future Vol, veh/h	254	58	53	265	169	165
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	90	90	87	90	90
Heavy Vehicles, %	2	2	2	8	2	2
Mvmt Flow	295	64	59	305	188	183

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	359	0	750
Stage 1	-	-	-	-	327
Stage 2	-	-	-	-	423
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1200	-	379
Stage 1	-	-	-	-	731
Stage 2	-	-	-	-	661
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1200	-	357
Mov Cap-2 Maneuver	-	-	-	-	357
Stage 1	-	-	-	-	731
Stage 2	-	-	-	-	622

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	34.9
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	474	-	-	1200	-
HCM Lane V/C Ratio	0.783	-	-	0.049	-
HCM Control Delay (s)	34.9	-	-	8.2	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	7	-	-	0.2	-

Intersection						
Int Delay, s/veh	12.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	274	181	133	219	40	255
Future Vol, veh/h	274	181	133	219	40	255
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	330	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	83	83	68	68
Heavy Vehicles, %	20	2	0	0	25	0
Mvmt Flow	322	213	160	264	59	375

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	424	0	0	1017	160
Stage 1	-	-	-	160	-
Stage 2	-	-	-	857	-
Critical Hdwy	4.3	-	-	6.65	6.2
Critical Hdwy Stg 1	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	5.65	-
Follow-up Hdwy	2.38	-	-	3.725	3.3
Pot Cap-1 Maneuver	1045	-	-	239	890
Stage 1	-	-	-	816	-
Stage 2	-	-	-	380	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1045	-	-	156	890
Mov Cap-2 Maneuver	-	-	-	156	-
Stage 1	-	-	-	531	-
Stage 2	-	-	-	380	-

Approach	EB	WB	SB
HCM Control Delay, s	6	0	33
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1045	-	-	-	543
HCM Lane V/C Ratio	0.308	-	-	-	0.799
HCM Control Delay (s)	10	0	-	-	33
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	1.3	-	-	-	7.6

Intersection						
Int Delay, s/veh	5.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	372	119	123	386	73	69
Future Vol, veh/h	372	119	123	386	73	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	90	90	93	90	90
Heavy Vehicles, %	8	2	2	16	2	2
Mvmt Flow	400	132	137	415	81	77

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	532	0	1155 466
Stage 1	-	-	-	-	466 -
Stage 2	-	-	-	-	689 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1036	-	218 597
Stage 1	-	-	-	-	632 -
Stage 2	-	-	-	-	498 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1036	-	181 597
Mov Cap-2 Maneuver	-	-	-	-	181 -
Stage 1	-	-	-	-	632 -
Stage 2	-	-	-	-	412 -

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	34.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	274	-	-	1036	-
HCM Lane V/C Ratio	0.576	-	-	0.132	-
HCM Control Delay (s)	34.6	-	-	9	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	3.3	-	-	0.5	-

Intersection						
Int Delay, s/veh	17.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	107	127	194	34	125	267
Future Vol, veh/h	107	127	194	34	125	267
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	330	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	84	84	78	78
Heavy Vehicles, %	2	9	1	2	2	2
Mvmt Flow	129	153	231	40	160	342

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	271	0	0	642	231
Stage 1	-	-	-	231	-
Stage 2	-	-	-	411	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1292	-	-	438	808
Stage 1	-	-	-	807	-
Stage 2	-	-	-	669	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1292	-	-	390	808
Mov Cap-2 Maneuver	-	-	-	390	-
Stage 1	-	-	-	719	-
Stage 2	-	-	-	669	-

Approach	EB	WB	SB
HCM Control Delay, s	3.7	0	34
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1292	-	-	-	602
HCM Lane V/C Ratio	0.1	-	-	-	0.835
HCM Control Delay (s)	8.1	0	-	-	34
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.3	-	-	-	8.9

Intersection						
Int Delay, s/veh	9.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	325	46	43	339	135	131
Future Vol, veh/h	325	46	43	339	135	131
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	90	90	87	90	90
Heavy Vehicles, %	2	2	2	8	2	2
Mvmt Flow	378	51	48	390	150	146

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	429	0	890
Stage 1	-	-	-	-	404
Stage 2	-	-	-	-	486
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1130	-	313
Stage 1	-	-	-	-	674
Stage 2	-	-	-	-	618
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1130	-	296
Mov Cap-2 Maneuver	-	-	-	-	296
Stage 1	-	-	-	-	674
Stage 2	-	-	-	-	585

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	34.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	404	-	-	1130	-
HCM Lane V/C Ratio	0.732	-	-	0.042	-
HCM Control Delay (s)	34.6	-	-	8.3	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	5.7	-	-	0.1	-

Intersection						
Int Delay, s/veh	11.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	262	237	175	210	39	246
Future Vol, veh/h	262	237	175	210	39	246
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	330	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	83	83	68	68
Heavy Vehicles, %	2	2	0	0	2	0
Mvmt Flow	308	279	211	253	57	362

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	464	0	0	1106	211
Stage 1	-	-	-	211	-
Stage 2	-	-	-	895	-
Critical Hdwy	4.12	-	-	6.42	6.2
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.3
Pot Cap-1 Maneuver	1097	-	-	233	834
Stage 1	-	-	-	824	-
Stage 2	-	-	-	399	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1097	-	-	156	834
Mov Cap-2 Maneuver	-	-	-	156	-
Stage 1	-	-	-	550	-
Stage 2	-	-	-	399	-

Approach	EB	WB	SB
HCM Control Delay, s	5	0	34.1
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1097	-	-	-	523
HCM Lane V/C Ratio	0.281	-	-	-	0.801
HCM Control Delay (s)	9.6	0	-	-	34.1
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	1.2	-	-	-	7.6

Intersection						
Int Delay, s/veh	3.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	476	87	90	494	53	50
Future Vol, veh/h	476	87	90	494	53	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	90	90	93	90	90
Heavy Vehicles, %	8	2	2	16	2	2
Mvmt Flow	512	97	100	531	59	56

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	609	0	1292
Stage 1	-	-	-	-	561
Stage 2	-	-	-	-	731
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	970	-	180
Stage 1	-	-	-	-	571
Stage 2	-	-	-	-	476
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	970	-	154
Mov Cap-2 Maneuver	-	-	-	-	154
Stage 1	-	-	-	-	571
Stage 2	-	-	-	-	407

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	34
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	235	-	-	970	-
HCM Lane V/C Ratio	0.487	-	-	0.103	-
HCM Control Delay (s)	34	-	-	9.1	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	2.5	-	-	0.3	-

Intersection						
Int Delay, s/veh	14.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	98	163	248	31	111	237
Future Vol, veh/h	98	163	248	31	111	237
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	330	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	84	84	78	78
Heavy Vehicles, %	2	9	1	2	2	2
Mvmt Flow	118	196	295	37	142	304

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	332	0	0	727	295
Stage 1	-	-	-	295	-
Stage 2	-	-	-	432	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1227	-	-	391	744
Stage 1	-	-	-	755	-
Stage 2	-	-	-	655	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1227	-	-	349	744
Mov Cap-2 Maneuver	-	-	-	349	-
Stage 1	-	-	-	673	-
Stage 2	-	-	-	655	-

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	34.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1227	-	-	-	547
HCM Lane V/C Ratio	0.096	-	-	-	0.816
HCM Control Delay (s)	8.2	0	-	-	34.4
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.3	-	-	-	8.1

Intersection						
Int Delay, s/veh	6.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	416	34	31	434	99	96
Future Vol, veh/h	416	34	31	434	99	96
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	90	90	87	90	90
Heavy Vehicles, %	2	2	2	8	2	2
Mvmt Flow	484	38	34	499	110	107

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	522	0	1070 503
Stage 1	-	-	-	-	503 -
Stage 2	-	-	-	-	567 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1044	-	245 569
Stage 1	-	-	-	-	607 -
Stage 2	-	-	-	-	568 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1044	-	234 569
Mov Cap-2 Maneuver	-	-	-	-	234 -
Stage 1	-	-	-	-	607 -
Stage 2	-	-	-	-	542 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	34.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	330	-	-	1044	-
HCM Lane V/C Ratio	0.657	-	-	0.033	-
HCM Control Delay (s)	34.5	-	-	8.6	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	4.4	-	-	0.1	-

Intersection						
Int Delay, s/veh	10.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	235	303	224	188	35	222
Future Vol, veh/h	235	303	224	188	35	222
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	330	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	83	83	68	68
Heavy Vehicles, %	2	2	0	0	2	0
Mvmt Flow	276	356	270	227	51	326

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	497	0	0	1178	270
Stage 1	-	-	-	270	-
Stage 2	-	-	-	908	-
Critical Hdwy	4.12	-	-	6.42	6.2
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.3
Pot Cap-1 Maneuver	1067	-	-	211	774
Stage 1	-	-	-	775	-
Stage 2	-	-	-	393	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1067	-	-	143	774
Mov Cap-2 Maneuver	-	-	-	143	-
Stage 1	-	-	-	525	-
Stage 2	-	-	-	393	-

Approach	EB	WB	SB
HCM Control Delay, s	4.2	0	34.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1067	-	-	-	483
HCM Lane V/C Ratio	0.259	-	-	-	0.782
HCM Control Delay (s)	9.6	0	-	-	34.4
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	1	-	-	-	7

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	609	53	54	632	32	31
Future Vol, veh/h	609	53	54	632	32	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	90	90	93	90	90
Heavy Vehicles, %	8	2	2	16	2	2
Mvmt Flow	655	59	60	680	36	34

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	714	0	1485 685
Stage 1	-	-	-	-	685 -
Stage 2	-	-	-	-	800 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	886	-	137 448
Stage 1	-	-	-	-	500 -
Stage 2	-	-	-	-	442 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	886	-	122 448
Mov Cap-2 Maneuver	-	-	-	-	122 -
Stage 1	-	-	-	-	500 -
Stage 2	-	-	-	-	394 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	34.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	190	-	-	886	-
HCM Lane V/C Ratio	0.368	-	-	0.068	-
HCM Control Delay (s)	34.6	-	-	9.4	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.6	-	-	0.2	-

APPENDIX C: TRIP GENERATION INTERVALS

2020 AM Peak

Highway 7 at Future Bypass AM Peak							25/75 in/out		
	Hwy 7 EBT	Hwy 7 EBR	Hwy 7 WBT	Hwy 7 WBL	F.B NBL	F.B NBR			
Vehicles added out of 100 total	0.00	13.00	0.00	12.00	38.00	37.00	v/c	Max Delay (S)	LOS
Existing	254	0	265	0	0	0	n/a	0	A
100	254	13	265	12	38	37	0.152	12.7	B
200	254	26	265	24	76	74	0.317	15	C
300	254	39	265	36	114	111	0.497	19	C
400	254	52	265	48	152	148	0.69	27.4	D
500	254	65	265	60	190	185	0.902	51.1	F
Vehicles added out of 25 total	0.00	3.25	0.00	3.00	9.50	9.25	v/c	Max Delay (S)	LOS
400	254	52	265	48	152	148	0.69	27.4	D
425	254	55	265	51	162	157	0.745	31.5	D
450	254	59	265	54	171	167	0.797	36.5	E
Vehicles added out of 5 total	0.00	0.65	0.00	0.60	1.90	1.85	v/c	Max Delay (S)	LOS
425	254	55	265	51	162	157	0.745	31.5	D
430	254	56	265	52	163	159	0.749	31.9	D
435	254	57	265	52	165	161	0.763	33	D
440	254	57	265	53	167	163	0.774	34	D
445	254	58	265	53	169	165	0.783	34.9	D
450	254	59	265	54	171	167	0.797	36.5	E

NB - Northbound, EB - Eastbound, SB - Southbound, WB - Westbound
 R - Right-Turn, L - Left-Turn, T - Through

Trips ending: 445
 Dwelling Units: 620

2020 AM Peak

Perthmore Street at Drummond Concession 2 AM Peak							25/75 in/out		
	D.C.2 EBT	D.C.2 EBL	D.C.2 WBT	D.C.2 WBR	Perthmore SBL	Perthmore SBR			
Vehicles added out of 100	0.00	19.00	0.00	6.00	24.00	51.00	v/c	Max Delay (S)	LOS
Exiting	97	12	148	4	8	17	0.041	0.98	A
100	97	31	148	10	32	68	0.170	10.8	B
200	97	50	148	16	56	119	0.308	12.1	B
300	97	69	148	22	80	170	0.457	14.4	B
400	97	88	148	28	104	221	0.616	18.5	C
500	97	107	148	34	128	272	0.790	28.2	D
600	97	120	148	46	166	309	0.989	59.3	F
Vehicles added out of 25 total	0.00	4.75	0.00	1.50	6.00	12.75	v/c	Max Delay (S)	LOS
500	97	107	148	34	128	272	0.790	28.2	D
525	97	112	148	36	134	285	0.837	32.7	D
550	97	117	148	37	140	298	0.884	38.8	E
Vehicles added out of 5 total	0.00	0.95	0.00	0.30	1.20	2.55	v/c	Max Delay (S)	LOS
525	97	112	148	36	134	285	0.837	32.7	D
530	97	113	148	36	135	287	0.843	33.3	D
535	97	114	148	36	136	290	0.853	34.6	D
540	97	115	148	36	138	292	0.865	36.2	E

NB - Northbound, EB - Eastbound, SB - Southbound, WB - Westbound
R - Right-Turn, L - Left-Turn, T - Through

Trips ending: 535

Dwelling Units: 747

2020 PM Peak

Highway 7 at Future Bypass PM Peak					63/37 in/out				
	Hwy 7 EBT	Hwy 7 EBR	Hwy 7 WBT	Hwy 7 WBL	F.B NBL	F.B NBR			
Vehicles added out of 100 total	0.00	31.00	0.00	32.00	19.00	18.00	v/c	Max Delay (S)	LOS
Existing	372	0	386	0	0	0	N/a	0	A
100	372	31	386	32	19	18	0.10	15	C
200	372	62	386	64	38	36	0.22	18.2	C
300	372	93	386	96	57	54	0.38	23.7	C
400	372	124	386	128	76	72	0.61	37.6	E
Vehicles added out of 25 total	0.00	7.75	0.00	8.00	4.75	4.50	v/c	Max Delay (S)	LOS
300	372	93	386	96	57	54	0.38	23.7	C
325	372	101	386	104	62	59	0.43	26	D
350	372	109	386	112	67	63	0.48	28.4	D
375	372	116	386	120	71	68	0.53	31.9	D
400	372	124	386	128	76	72	0.61	37.6	E
Vehicles added out of 5 total	0.00	1.55	0.00	1.60	0.95	0.90	v/c	Max Delay (S)	LOS
375	372	116	386	120	71	68	0.53	31.9	D
380	372	118	386	122	72	68	0.54	32.5	D
385	372	119	386	123	73	69	0.58	34.6	D
390	372	121	386	125	74	70	0.59	36	E
NB - Northbound, EB - Eastbound, SB - Southbound, WB - Westbound									
R - Right-Turn, L - Left-Turn, T - Through									

Trips ending: 385
 Dwelling Units: 401

2020 PM Peak

Perthmore Street at Drummond Concession 2 PM Peak							63/37 in/out		
	D.C.2 EBT	D.C.2 EBL	D.C.2 WBT	D.C.2 WBR	Perthmore SBL	Perthmore SBR			
Vehicles added out of 100	0.00	35.00	0.00	28.00	5.00	32.00	v/c	Max Delay (S)	LOS
Existing	181	20	133	16	4	23	0.05	9.7	A
100	181	55	133	44	9	55	0.12	10.2	B
200	181	90	133	72	14	87	0.20	10.9	B
300	181	125	133	100	19	119	0.28	11.9	B
400	181	160	133	128	24	151	0.37	13.3	B
500	181	195	133	156	29	183	0.48	15.6	C
600	181	230	133	184	34	215	0.61	20	C
700	181	265	133	212	39	247	0.76	29.3	D
800	181	300	133	240	44	279	0.95	57.1	F
Vehicles added out of 25 total	0.00	8.75	0.00	7.00	1.25	8.00	v/c	Max Delay (S)	LOS
700	181	265	133	212	39	247	0.76	29.3	D
725	181	274	133	219	40	255	0.80	33	D
750	181	283	133	226	42	263	0.85	40	E
Vehicles added out of 25 total	0.00	1.75	0.00	1.40	0.25	1.60	v/c	Max Delay (S)	LOS
725	181	274	133	219	40	255	0.80	33	D
730	181	276	133	220	41	257	0.82	35.3	E
NB - Northbound, EB - Eastbound, SB - Southbound, WB - Westbound R - Right-Turn, L - Left-Turn, T - Through									

Trips ending: 725
 dwellings: 775

2030 AM Peak

Highway 7 at Future Bypass AM Peak							25/75 in/out		
	Hwy 7 EBT	Hwy 7 EBR	Hwy 7 WBT	Hwy 7 WBL	F.B NBL	F.B NBR			
Vehicles added out of 100 total	0.00	13.00	0.00	12.00	38.00	37.00	v/c	Max Delay (S)	LOS
Existing	325	0	339	0	0	0	n/a	0	A
100	325	13	339	12	38	37	0.183	14.7	B
200	325	26	339	24	76	74	0.383	18.3	C
300	325	39	339	36	114	111	0.612	26.5	D
400	325	52	339	48	152	148	0.838	46.4	E
Vehicles added out of 25 total	0.00	3.25	0.00	3.00	9.50	9.25	v/c	Max Delay (S)	LOS
300	325	39	339	36	114	111	0.612	26.5	D
325	325	42	339	39	124	120	0.661	29.3	D
350	325	46	339	42	133	130	0.722	33.8	D
375	325	49	339	45	143	139	0.781	39.5	E
Vehicles added out of 5 total	0.00	0.65	0.00	0.60	1.90	1.85	v/c	Max Delay (S)	LOS
350	325	46	339	42	133	130	0.722	33.8	D
355	325	46	339	43	135	131	0.732	34.6	D
360	325	47	339	43	137	133	0.743	35.6	E

NB - Northbound, EB - Eastbound, SB - Southbound, WB - Westbound
R - Right-Turn, L - Left-Turn, T - Through

Trips ending: 355
Dwelling Units: 493

2030 AM Peak

Perthmore Street at Drummond Concession 2 AM Peak							25/75 in/out		
	D.C.2 EBT	D.C.2 EBL	D.C.2 WBT	D.C.2 WBR	Perthmore SBL	Perthmore SBR			
Vehicles added out of 100	0.00	19.00	0.00	6.00	24.00	51.00	v/c	Max Delay (S)	LOS
Existing	127	16	194	5	10	22	0.058	10.4	B
100	127	35	194	11	34	73	0.201	11.6	B
200	127	54	194	17	58	124	0.271	13	B
300	127	73	194	23	82	175	0.510	16.2	C
400	127	92	194	29	106	226	0.684	22.4	C
500	127	111	194	35	130	277	0.874	39	E
Vehicles added out of 25 total	0.00	4.75	0.00	1.50	6.00	12.75	v/c	Max Delay (S)	LOS
400	127	92	194	29	106	226	0.684	22.4	C
425	127	97	194	31	112	239	0.732	25.1	D
450	127	102	194	32	118	252	0.778	28.5	D
475	127	106	194	34	124	264	0.825	33	D
500	127	111	194	35	130	277	0.874	39	E
Vehicles added out of 5 total	0.00	0.95	0.00	0.30	1.20	2.55	v/c	Max Delay (S)	LOS
475	127	106	194	34	124	264	0.825	33	D
480	127	107	194	34	125	267	0.835	34	D
485	127	108	194	34	126	269	0.843	35	E

NB - Northbound, EB - Eastbound, SB - Southbound, WB - Westbound

R - Right-Turn, L - Left-Turn, T - Through

Trips ending: 480

dwelling: 504

2030 PM Peak

Highway 7 at Future Bypass PM Peak							63/37 in/out		
	Hwy 7 EBT	Hwy 7 EBR	Hwy 7 WBT	Hwy 7 WBL	F.B NBL	F.B NBR			
Vehicles added out of 100 total	0.00	31.00	0.00	32.00	19.00	18.00	v/c	Max Delay (S)	LOS
Existing	476	0	494	0	0	0	N/a	0	A
100	476	31	494	32	19	18	0.14	18.7	C
200	476	62	494	64	38	36	0.31	24.6	C
300	476	93	494	96	57	54	0.54	38.3	E
Vehicles added out of 25 total	0.00	7.75	0.00	8.00	4.75	4.50	v/c	Max Delay (S)	LOS
200	476	62	494	64	38	36	0.31	24.6	C
225	476	70	494	72	43	41	0.37	26.9	D
250	476	78	494	80	48	45	0.42	30	D
275	476	85	494	88	52	50	0.48	33.4	D
300	476	93	494	96	57	54	0.54	38.3	E
Vehicles added out of 5 total	0.00	1.55	0.00	1.60	0.95	0.90	v/c	Max Delay (S)	LOS
275	476	85	494	88	52	50	0.48	33.4	D
280	476	87	494	90	53	50	0.49	34	D
285	476	88	494	91	54	51	0.50	35	E

NB - Northbound, EB - Eastbound, SB - Southbound, WB - Westbound
R - Right-Turn, L - Left-Turn, T - Through

Trips ending: 280
Dwelling Units: 288

2030 PM Peak

Perthmore Street at Drummond Concession 2 PM Peak							63/37 in/out			
	D.C.2 EBT	D.C.2 EBL	D.C.2 WBT	D.C.2 WBR	Perthmore SBL	Perthmore SBR				
Vehicles added out of 100	0.00	35.00	0.00	28.00	5.00	32.00	v/c	Max Delay (S)	LOS	
Existing	237	26	175	21	5	30	0.07	10.2	B	
100	237	61	175	49	10	62	0.15	10.9	B	
200	237	96	175	77	15	94	0.23	11.6	B	
300	237	131	175	105	20	126	0.32	12.9	B	
400	237	166	175	133	25	158	0.42	14.7	B	
500	237	201	175	161	30	190	0.54	17.8	C	
600	237	236	175	189	35	222	0.68	24	C	
700	237	271	175	217	40	254	0.85	40	E	
Vehicles added out of 25 total	0.00	8.75	0.00	7.00	1.25	8.00	v/c	Max Delay (S)	LOS	
600	237	236	175	189	35	222	0.68	24	C	
625	237	245	175	196	36	230	0.72	26.4	D	
650	237	254	175	203	38	238	0.76	30.3	D	
675	237	262	175	210	39	246	0.80	34.1	D	
700	237	271	175	217	40	254	0.85	40	E	
Vehicles added out of 25 total	0.00	1.75	0.00	1.40	0.25	1.60	v/c	Max Delay (S)	LOS	
675	237	262	175	210	39	246	0.80	34.1	D	
680	237	264	175	211	39	248	0.81	35.3	E	

NB - Northbound, EB - Eastbound, SB - Southbound, WB - Westbound

R - Right-Turn, L - Left-Turn, T - Through

Trips ending: 675

dwelling: 719

2040 AM Peak

Highway 7 at Future Bypass AM Peak						25/75 in/out			
	Hwy 7 EBT	Hwy 7 EBR	Hwy 7 WBT	Hwy 7 WBL	F.B NBL	F.B NBR			
Vehicles added out of 100 total	0	13	0	12	38	37	v/c	Max Delay (S)	LOS
Existing	416	0	434	0	0	0	n/a	0	A
100	416	13	434	12	38	37	0.233	18.1	C
200	416	26	434	24	76	74	0.493	25.6	D
300	416	39	434	36	114	111	0.776	46.1	E
Vehicles added out of 25 total	0.00	3.25	0.00	3.00	9.50	9.25	v/c	Max Delay (S)	LOS
200	416	26	434	24	76	74	0.493	25.6	D
225	416	29	434	27	86	83	0.561	28.6	D
250	416	33	434	30	95	93	0.633	33	D
275	416	36	434	33	105	102	0.708	38.9	E
Vehicles added out of 5 total	0.00	0.65	0.00	0.60	1.90	1.85	v/c	Max Delay (S)	LOS
250	416	33	434	30	95	93	0.633	33	D
255	416	33	434	31	97	94	0.645	33.8	D
260	416	34	434	31	99	96	0.657	34.5	D
265	416	34	434	32	101	98	0.676	36.2	E

NB - Northbound, EB - Eastbound, SB - Southbound, WB - Westbound
R - Right-Turn, L - Left-Turn, T - Through

Trips ending: 260
Dwelling Units: 359

2040 AM Peak

Perthmore Street at Drummond Concession 2 AM Peak							25/75 in/out		
	D.C.2 EBT	D.C.2 EBL	D.C.2 WBT	D.C.2 WBR	Perthmore SBL	Perthmore SBR			
Vehicles added out of 100	0	19	0	6	24	51	v/c	Max Delay (S)	LOS
Exiting	163	20	248	6	13	28	0.082	11.1	B
100	163	39	248	12	37	79	0.241	12.7	B
200	163	58	248	18	61	130	0.412	15.2	C
300	163	77	248	24	85	181	0.596	20.2	C
400	163	96	248	30	109	232	0.798	32.6	D
500	163	115	248	36	133	283	1.018	72.1	F
Vehicles added out of 25 total	0.00	4.75	0.00	1.50	6.00	12.75	v/c	Max Delay (S)	LOS
400	163	96	248	30	109	232	0.798	32.6	D
425	163	101	248	32	115	245	0.852	38.7	E
Vehicles added out of 5 total	0.00	0.95	0.00	0.30	1.20	2.55	v/c	Max Delay (S)	LOS
400	163	96	248	30	109	232	0.798	32.6	D
405	163	97	248	31	110	235	0.809	33.7	D
410	163	98	248	31	111	237	0.816	34.4	D
415	163	99	248	31	112	240	0.828	35.8	E

NB - Northbound, EB - Eastbound, SB - Southbound, WB - Westbound
R - Right-Turn, L - Left-Turn, T - Through

Trips ending: 410
dwellings: 428

2040 PM Peak

Highway 7 at Future Bypass PM Peak							63/37 in/out		
	Hwy 7 EBT	Hwy 7 EBR	Hwy 7 WBT	Hwy 7 WBL	F.B NBL	F.B NBR			
Vehicles added out of 100 total	0.00	31.00	0.00	32.00	19.00	18.00	v/c	Max Delay (S)	LOS
Existing	609	0	632	0	0	0	N/a	0	A
100	609	31	632	32	19	18	0.20	26.1	D
200	609	62	632	64	38	36	0.46	40.8	E
Vehicles added out of 25 total	0.00	7.75	0.00	8.00	4.75	4.50	v/c	Max Delay (S)	LOS
100	609	31	632	32	19	18	0.20	26.1	D
125	609	39	632	40	24	23	0.26	28.60	D
150	609	47	632	48	29	27	0.32	32.10	D
175	609	54	632	56	33	32	0.38	35.40	E
Vehicles added out of 5 total	0.00	1.55	0.00	1.60	0.95	0.90	v/c	Max Delay (S)	LOS
150	609	47	632	48	29	27	0.32	32.10	D
155	609	48	632	50	29	28	0.33	32.3	D
160	609	50	632	51	30	29	0.34	32.7	D
165	609	51	632	53	31	30	0.36	33.9	D
170	609	53	632	54	32	31	0.37	34.6	D
175	609	60	632	62	37	35	0.38	35.40	E

NB - Northbound, EB - Eastbound, SB - Southbound, WB - Westbound
R - Right-Turn, L - Left-Turn, T - Through

Trips ending: 170
Dwelling Units: 171

2040 PM Peak

Perthmore Street at Drummond Concession 2 PM Peak							63/37 in/out			
	D.C.2 EBT	D.C.2 EBL	D.C.2 WBT	D.C.2 WBR	Perthmore SBL	Perthmore SBR				
Vehicles added out of 100	0	35	0	28	5	32	v/c	Max Delay (S)	LOS	
Existing	303	33	224	27	6	38	0.03	8.0	A	
100	303	68	224	55	11	70	0.18	11.7	B	
200	303	103	224	83	16	102	0.28	12.9	B	
300	303	138	224	111	21	134	0.38	14.8	B	
400	303	173	224	139	26	166	0.51	18	C	
500	303	208	224	167	31	198	0.65	24	C	
600	303	243	224	195	36	230	0.83	39.6	E	
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Vehicles added out of 25 total	0	9	0	7	1	8	v/c	Max Delay (S)	LOS	
500	303	208	224	167	31	198	0.65	24	C	
525	303	217	224	174	33	206	0.70	27.2	D	
550	303	226	224	181	34	214	0.74	30.3	D	
575	303	235	224	188	35	222	0.78	34.4	D	
600	303	243	224	195	36	230	0.83	39.6	E	
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Vehicles added out of 25 total	0	2	0	1	0	2	v/c	Max Delay (S)	LOS	
575	303	235	224	188	35	222	0.78	34.4	D	
680	303	236	224	189	35	224	0.80	36.6	E	

NB - Northbound, EB - Eastbound, SB - Southbound, WB - Westbound
R - Right-Turn, L - Left-Turn, T - Through

Trips ending: 575
dwellings: 608