



**51 Hawkesville Road,
St. Jacobs, ON**

Transportation Impact Study

Paradigm Transportation Solutions Limited

2025-12
230598



Project Summary

**Project Number:**

230598

Date and Version:

2025-12

2.0

Client:**Polocorp Inc.**

379 Queen Street South
Kitchener, ON N2G 1W6

Mike Puopolo
Chief Operating Officer

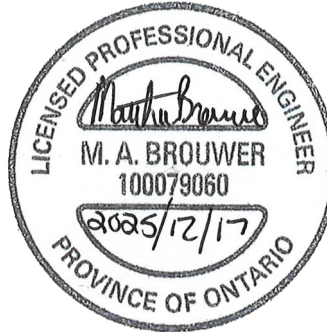
Consultant Project Team

Matt Brouwer, P.Eng.
Andrew Orr, EIT
Jim Mallett, P.Eng., PTOE

**Paradigm Transportation
Solutions Limited**

5A-150 Pinebush Road
Cambridge ON N1R 8J8
p: 519.896.3163
905.381.2229
416.479.9684
www.ptsl.com

51 Hawkesville Road, St. Jacobs, ON Transportation Impact Study

**Disclaimer**

This document has been prepared for the titled project or named part thereof (the "project") and except for approval and commenting municipalities and agencies in their review and approval of this project, should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authorization of Paradigm Transportation Solutions Limited being obtained. Paradigm Transportation Solutions Limited accepts no responsibility or liability for the consequence of this document being used for a purpose other than the project for which it was commissioned. Any person using or relying on the document for such other purpose agrees and will by such use or reliance be taken to confirm their agreement to indemnify Paradigm Transportation Solutions Limited for all loss or damage resulting there from. Paradigm Transportation Solutions Limited accepts no responsibility or liability for this document to any party other than the person by whom it was commissioned and the approval and commenting municipalities and agencies for the project.

To the extent that this report is based on information supplied by other parties, Paradigm Transportation Solutions Limited accepts no liability for any loss or damage suffered by the client, whether through contract or tort, stemming from any conclusions based on data supplied by parties other than Paradigm Transportation Solutions Limited and used by Paradigm Transportation Solutions Limited in preparing this report.

© 1998 Paradigm Transportation Solutions Limited. All rights reserved.

Executive Summary

Content

Polocorp Inc retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Study for a proposed residential development located at 51 Hawkesville Road in St. Jacobs, Ontario.

This Transportation Impact Study (TIS) includes an analysis of existing traffic conditions, a description of the proposed development, traffic forecasts for a five-year horizon, and any recommendations required to manage future traffic conditions.

Development Concept

The subject site is proposed to be developed into 65 medium density units, 58 street townhouse units,, and 16 single-family detached homes.

Vehicle access is proposed via two-all moves connections to Hawkesville Road.

Conclusions

Based on the investigations carried out, it is concluded that:

- ▶ **Existing Traffic Conditions:** The study area intersections are currently operating within acceptable levels of service and no critical movements during the AM and PM peak hours.
- ▶ **Development Trip Generation:** The development is forecast to generate approximately 71 and 82 trips during the AM and PM peak hours, respectively.
- ▶ **Background and Total Traffic Conditions:** The study area intersections are forecast to operate at acceptable levels of service similar to existing traffic conditions without any critical movements noted during the AM and PM peak hours.
- ▶ **Left-Turn Lane Warrant:** Westbound left-turn lanes are not warranted along Hawkesville Road at both site accesses.
- ▶ **Railway Crossing Assessment:** The existing railway crossing along Hawkesville Road to the west of the site will not need a gated warning system. Although, the existing railway crossing warning system should be left in place.



Recommendations

Based on the findings of this study, it is recommended that the development be considered for approval with no conditions related to off-site transportation improvements.



Contents

1	Introduction	1
1.1	Overview	1
1.2	Study Area	1
2	Existing Conditions	3
2.1	Road Characteristics	3
2.2	Active Transportation	6
2.3	Transit Service.....	6
2.4	Traffic Volumes	10
2.5	Traffic Operations	13
3	Development Concept	16
3.1	Development Description	16
3.2	Site Trip Generation	18
4	Evaluation of Future Traffic Conditions	22
4.1	Background Horizon	22
4.1.1	Background Traffic Volumes	22
4.1.2	Background Traffic Operations	22
4.2	Total Traffic Horizon	26
4.2.1	Total Traffic Volumes	26
4.2.2	Total Traffic Operations	26
5	Remedial Measures.....	30
5.1	Left-Turn Lanes	30
5.2	Railway Crossing Assessment	30
6	Conclusions and Recommendations	32
6.1	Conclusions.....	32
6.2	Recommendations	32

Appendices

Appendix A	Traffic Data
Appendix B	Base Year Operations
Appendix C	Background Development Traffic Volumes
Appendix D	Background Traffic Operations
Appendix E	Total Traffic Operations
Appendix F	Left-Turn Lane Warrant Nomographs



Figures

Figure 1.1:	Location of Subject Site	2
Figure 2.1:	Existing Lane Configurations and Traffic Control	5
Figure 2.2:	Existing Cycling Network.....	7
Figure 2.3:	Proposed Cycling Network	8
Figure 2.4:	Transit Network	9
Figure 2.5a:	Base Year Traffic Volumes (AM Peak Hour)	11
Figure 2.5b:	Base Year Traffic Volumes (PM Peak Hour)	12
Figure 3.1:	Concept Plan.....	17
Figure 3.2a:	Site Generated Traffic Volumes (AM Peak Hour)	20
Figure 3.2b:	Site Generated Traffic Volumes (PM Peak Hour)	21
Figure 4.1a:	Background Traffic Volumes (AM Peak Hour)	23
Figure 4.1b:	Background Traffic Volumes (PM Peak Hour)	24
Figure 4.2a:	Total Traffic Volumes (AM Peak Hour)	27
Figure 4.2b:	Total Traffic Volumes (PM Peak Hour)	28

Tables

Table 2.1:	Base Year Operations	15
Table 3.1:	Forecast Site-Generated Trips.....	18
Table 3.2:	Trip Distribution.....	18
Table 4.1:	Background Operations	25
Table 4.2:	Total Operations	29
Table 5.1:	Left-Turn Lane Warrant Summary.....	30
Table 5.2:	Railway Crossing Improvements Assessment	31



1 Introduction

1.1 Overview

Polocorp Inc retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Study for a proposed residential development located at 51 Hawkesville Road in St. Jacobs, Ontario. **Figure 1.1** illustrates the location of the subject site.

This study reviews the forecast impacts of the site-generated traffic on the surrounding road network and identifies any required remedial measures. The scope of the study includes:

- ▶ Assessing current traffic and site conditions within the study area;
- ▶ Forecasting future non-development (background) traffic growth;
- ▶ Forecasting site-generated traffic;
- ▶ Analysing future traffic impacts on the surrounding road network for five-years after the study; and
- ▶ Recommending any necessary mitigation.

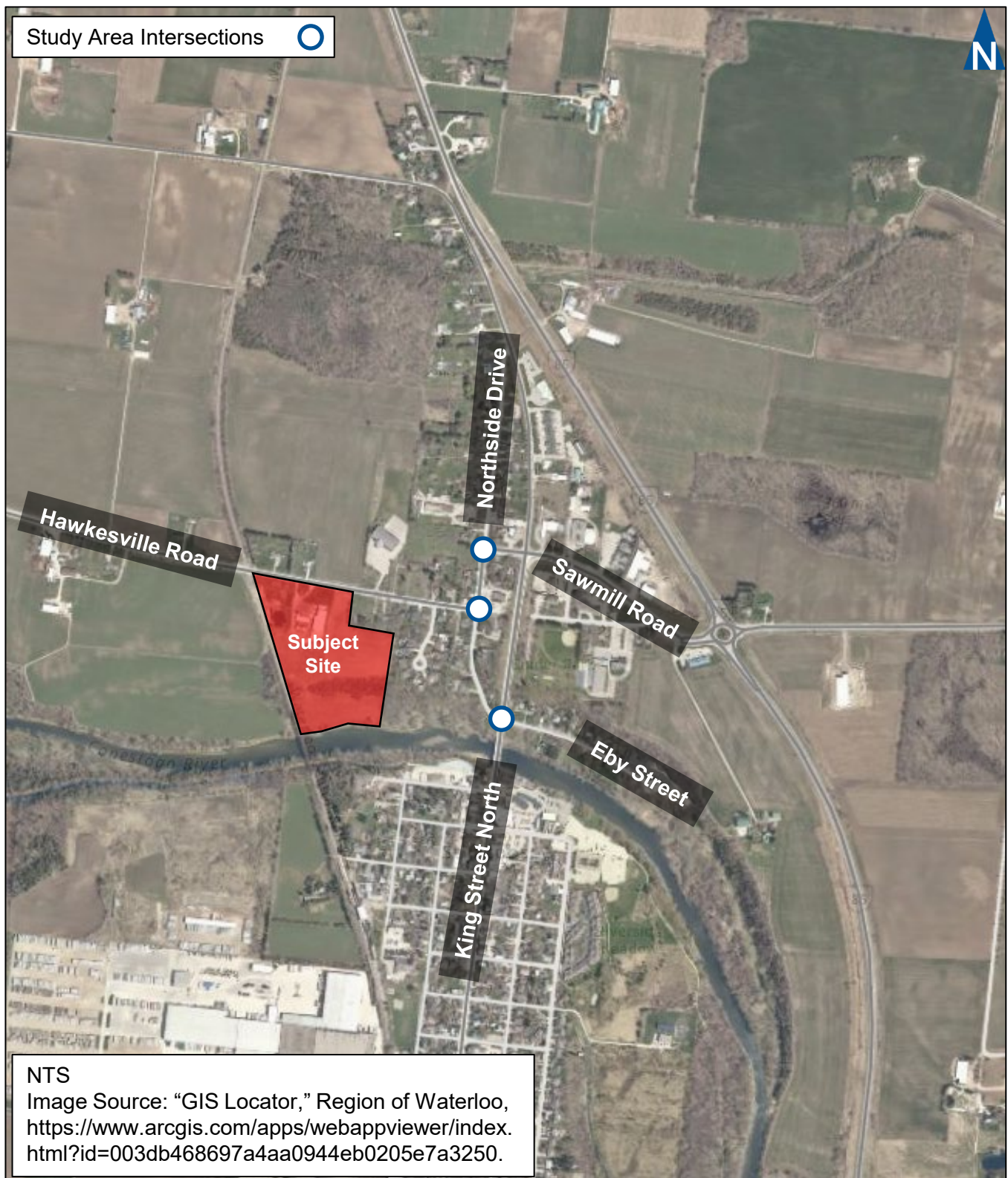
The study scope was sent to Waterloo Region and Woolwich Township staff in December 2023. The Region of Waterloo indicated that they did not require a TIS for this development. The Township of Woolwich did not provide input into the proposed scope.

1.2 Study Area

The intersections assessed in this study include:

- ▶ Northside Drive and Sawmill Road (unsignalized);
- ▶ Northside Drive and Hawkesville Road (unsignalized);
- ▶ Northside Drive/Eby Street and King Street North (unsignalized); and
- ▶ Two Site Accesses to Hawkesville Road via Street A and Street B (assumed unsignalized).





2 Existing Conditions

2.1 Road Characteristics

The roadways of interest within the study area include Northside Drive, Sawmill Road, Hawkesville Road, King Street North, and Eby Street. These roadways are generally described as follows¹²:

- ▶ **King Street North** is a two-lane, 50 km/h road within the study area. North of Sawmill Road, the roadway is classified as a collector and there are no sidewalks provided on either side of the roadway. Between Sawmill Road and Northside Drive/Eby Street, the roadway is classified as regional and there is a sidewalk provided on the east side of the roadway. South of Northside Drive/Eby Street, the roadway remains classified as regional and sidewalks are provided on both sides of the roadway;
- ▶ **Hawkesville Road** is a two-lane, 50 km/h regional road within the study area. Between Northside Drive and the Calvary United Church Driveway, sidewalks are provided on both sides of the roadway. West of the Calvary United Church Driveway, there are no sidewalks on either side of the roadway;
- ▶ **Sawmill Road** is a two-lane, 50 km/h regional road within the study area. East of the bus stop in front of the Woolwich Community Health Centre, there are no sidewalks on either side of the roadway. Between Northside Drive and the bus stop in front of the Woolwich Community Health Centre, there is a sidewalk on the south side of the roadway;
- ▶ **Northside Drive** is a two-lane, 50 km/h road within the study area. North of Sawmill Road, the roadway is classified as local and there are no sidewalks provided on either side of the roadway. Between Hawkesville Road and Sawmill Road, the roadway is classified as regional and there are sidewalks provided on both sides of the roadway. South of Hawkesville Road, the roadway is classified as local and there is a sidewalk provided on the west side of the roadway; and
- ▶ **Eby Street** is a two-lane 50 km/h local road within the study area. There is a sidewalk provided only on one side of the roadway.

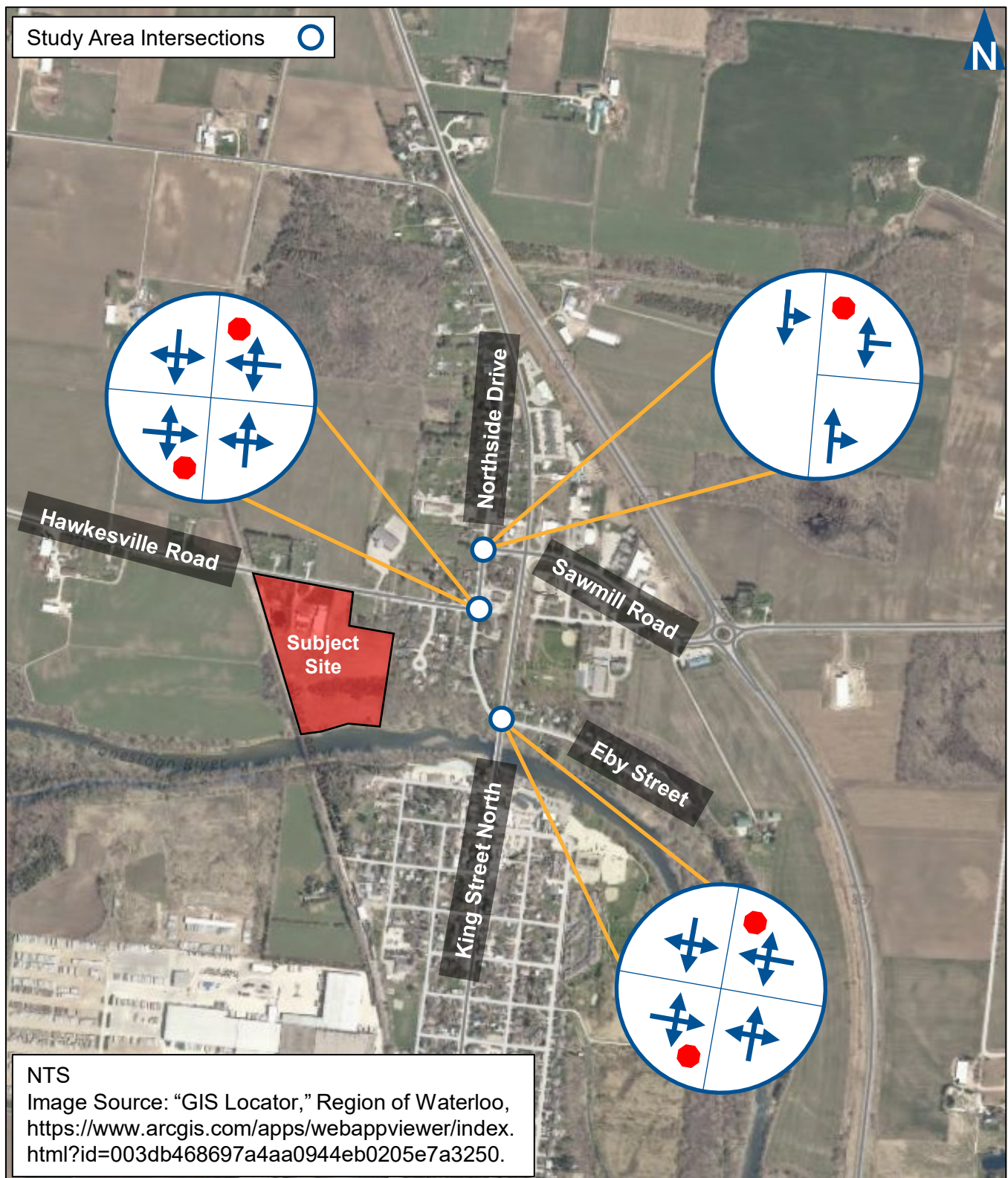
¹ Township of Woolwich, *Official Plan: Map 15.1 – Township of Woolwich Road Hierarchy*, (Elmira: Township of Woolwich, 2022).

² Region of Waterloo, *Official Plan: Map 3b – Township of Woolwich Urban Area*, (Kitchener: Region of Waterloo, 2015).



Figure 2.1 details the existing traffic control and lane configurations at the study area intersections.





2.2 Active Transportation

Figure 2.2 and **Figure 2.3** illustrate the existing and proposed cycling network in the vicinity of the subject site, respectively.

The existing infrastructure includes:

- ▶ Cycle lanes running along King Street North; and
- ▶ Paved shoulders running along Hawkesville Road, Sawmill Road, and Northside Drive between Hawkesville Road and Sawmill Road.

The identified improvements include:

- ▶ An extension of the paved shoulders running along Hawkesville Road approximately between the Conestogo River crossing and Kressler Road/Ament Line.

2.3 Transit Service

Grand River Transit³ operates one route near the study area:

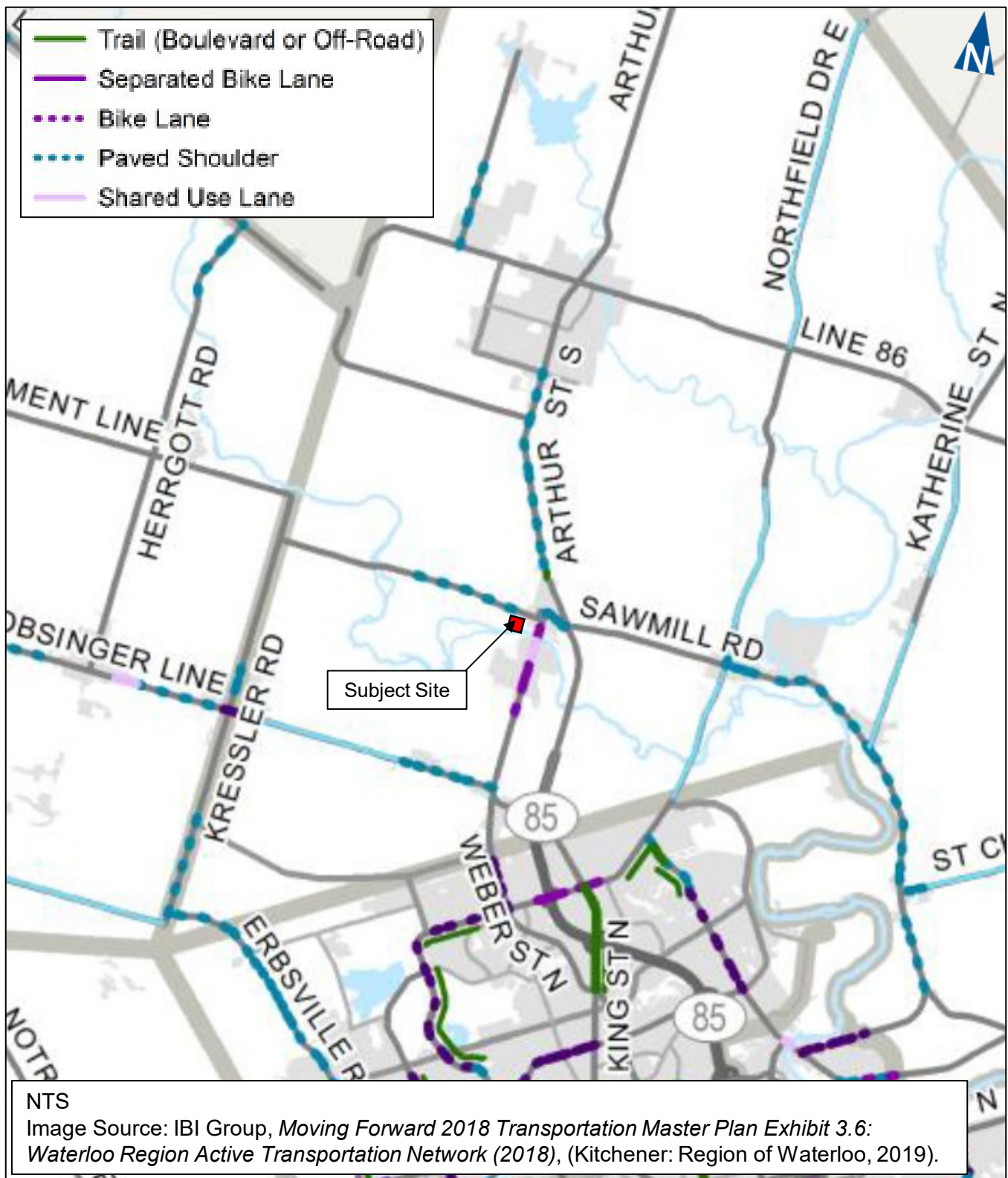
- ▶ **Route 21 (Elmira)** operates between Conestoga Mall in Waterloo and the intersection of Church Street at Arthur Street in Elmira. On weekdays, this route operates from 5:50 AM to 10:10 PM with headways approximately between 30 to 50 minutes. On Saturday, this route operates from 6:35 AM to 7:45 PM with 30-minute headways. On Sunday, this route operates 6:55 AM to 7:15 PM with 30-minute headways.

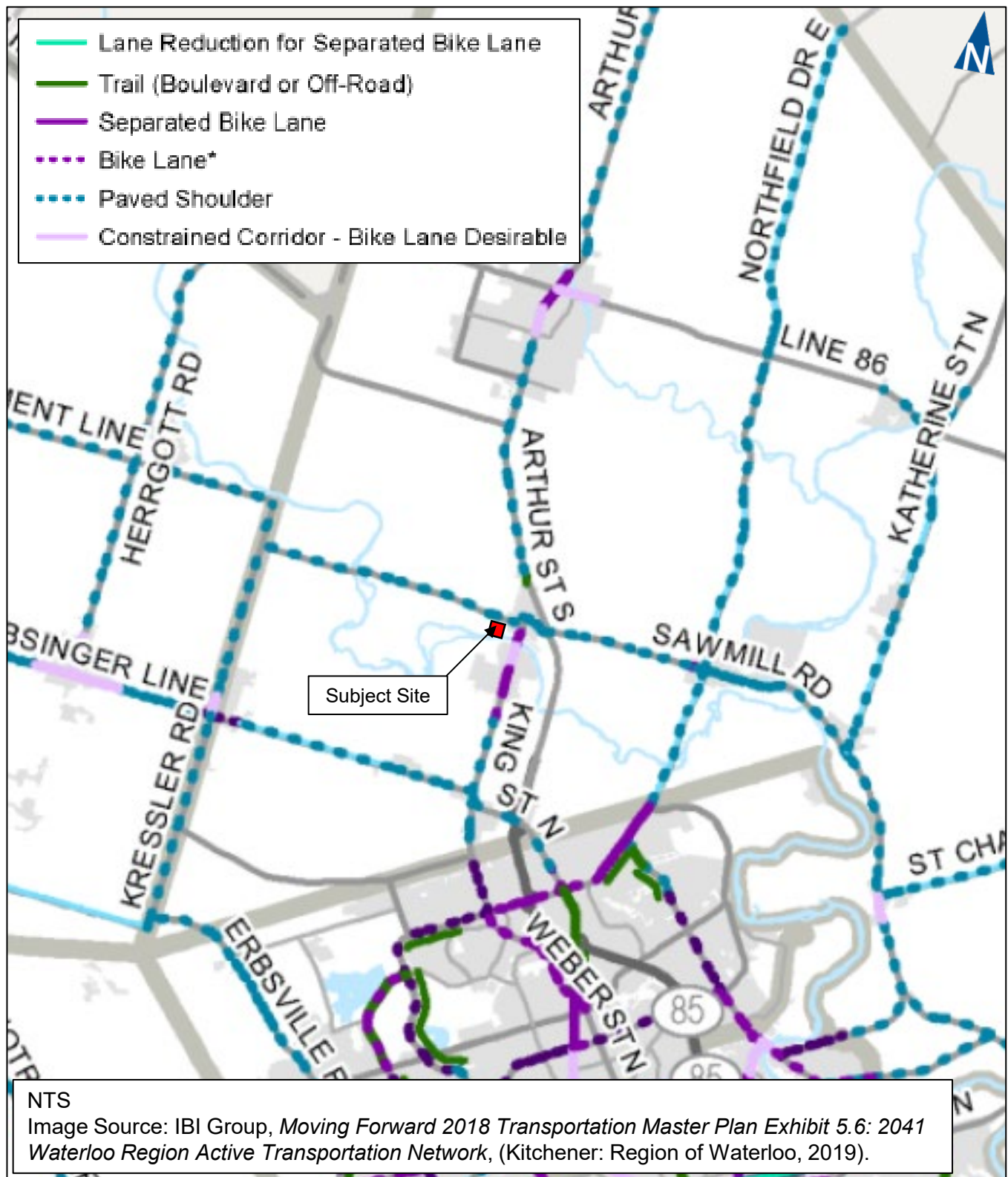
The closest transit stops to the subject site are located on the north and south sides of Sawmill Road in front of the Woolwich Community Health Centre (about a 10-minute walk).

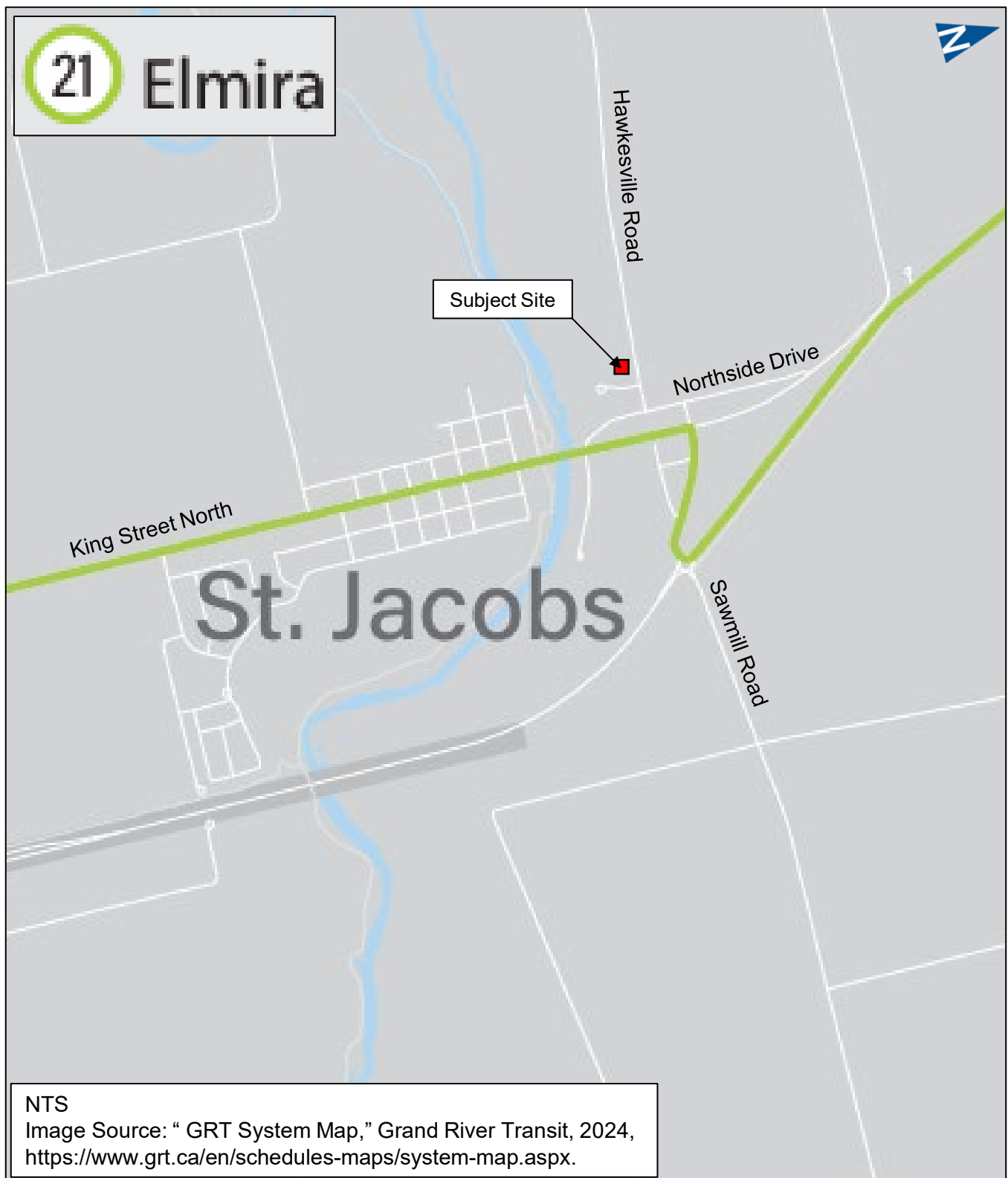
Figure 2.4 illustrates the existing transit network.

³ "Grand River Transit System Map," Region of Waterloo, 2024, <https://www.grt.ca/en/schedules-maps/system-map.aspx>.









2.4 Traffic Volumes

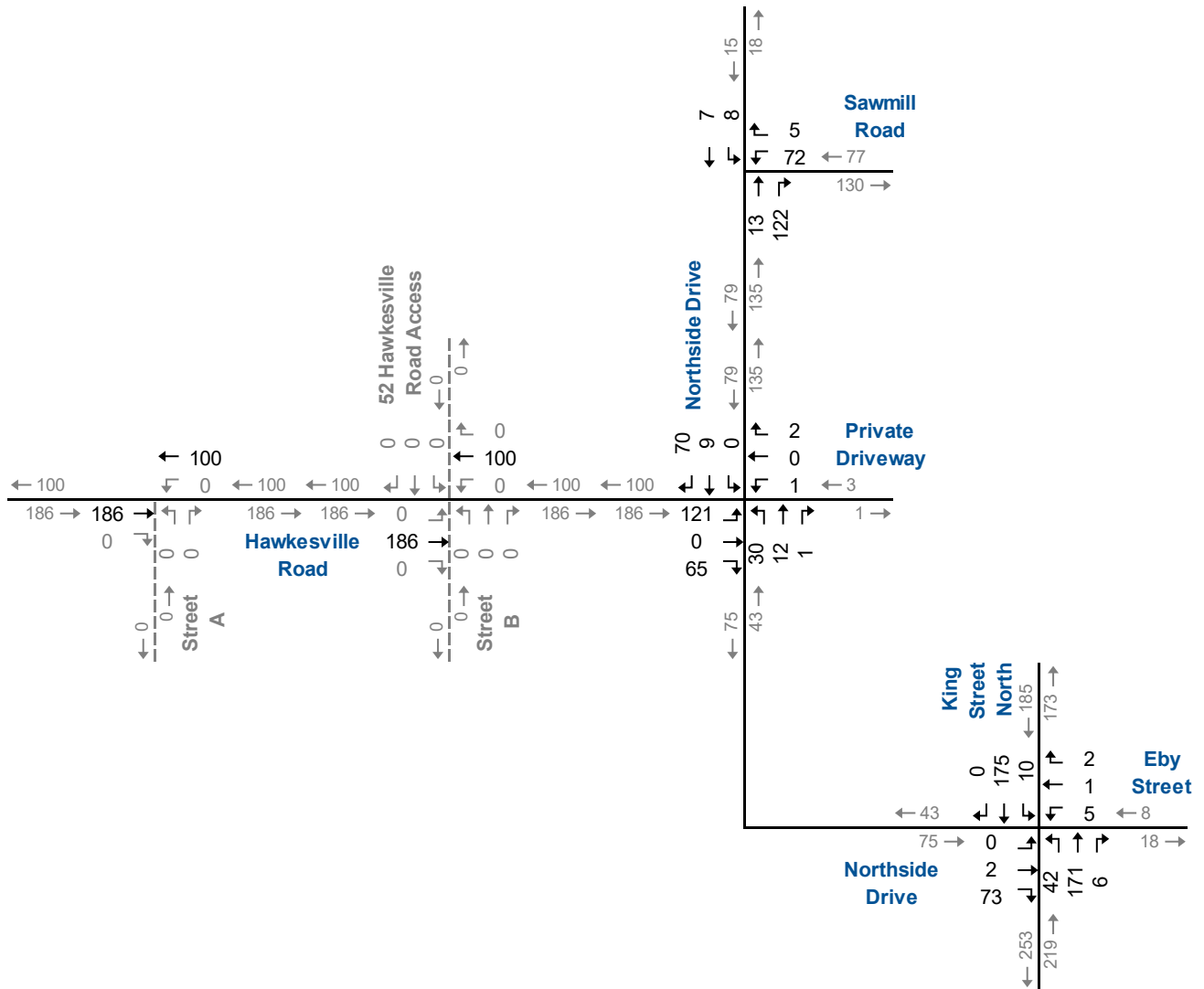
Paradigm undertook turning movement counts at the study area intersections in January 2024.

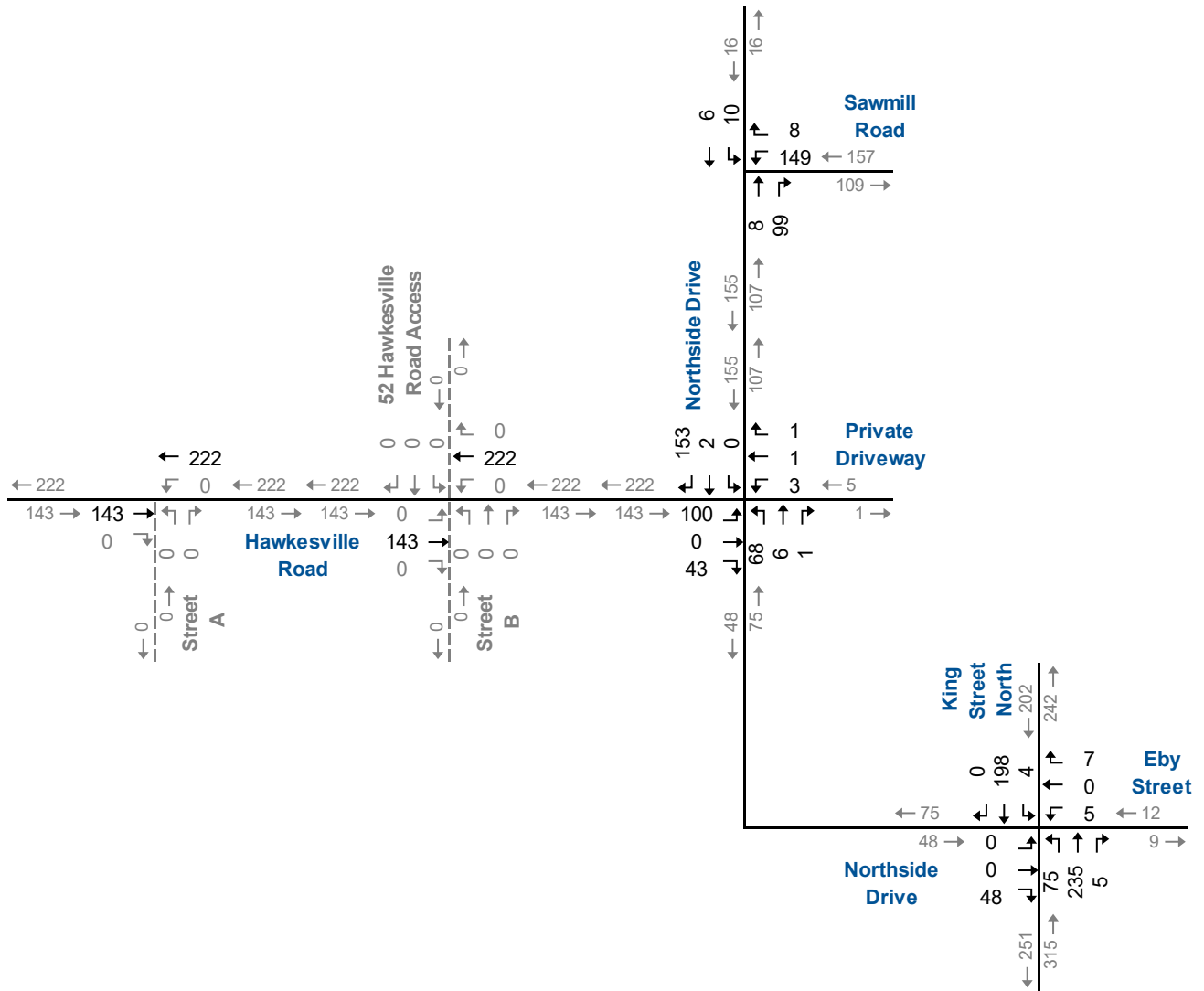
Volume balancing was completed along Northside Drive between Sawmill Road and King Street North.

Figure 2.5a and **Figure 2.5b** illustrate the adjusted base year weekday AM and PM peak hour traffic volumes, respectively.

Appendix A contains the observed traffic counts for the study area intersections.







2.5 Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the average delay experienced by drivers at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles intending to make a particular movement, compared to the estimated capacity for that movement. The capacity is based on a number of criteria related to the opposing traffic flows and intersection geometry.

The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds for signalized intersections, 50 seconds for unsignalized intersections or when the volume to capacity ratio is greater than 1.0, the movement is classed as LOS F and remedial measures are usually implemented if they are feasible. LOS E is usually used as a guideline for the determination of road improvement needs on through lanes, while LOS F may be acceptable for left-turn movements at peak times, depending on delays.

The operations of the study intersections were evaluated using the existing lane configurations, traffic controls, and the base year traffic peak hour volumes.

The level of service conditions on the existing road network have been assessed using Synchro. As noted in the Region of Waterloo TIS guidelines⁴, movements are considered critical under the following conditions:

- ▶ Estimated 95th percentile queue length for an exclusive movement exceeds the available storage space;
- ▶ Exclusive turning lanes are inaccessible because of queue lengths in adjacent through lanes;
- ▶ Estimated 95th percentile queue length for an individual movement will block an existing access; and
- ▶ The average control delay for individual movements is greater than 55 seconds.

Intersections are considered critical under the following conditions:

- ▶ An unsignalized intersection has an average control delay larger than 35 seconds (LOS E or F); and

⁴ Region of Waterloo, *Transportation Impact Study Guidelines*, (Kitchener: Region of Waterloo, 2014).



- ▶ A signalized intersection has an average control delay larger than 55 seconds (LOS E or F).

Table 2.1 summarizes the existing intersection operations. The entries in the table indicating the AM and PM peak hour level of service (LOS), volume to capacity ratios (V/C), and 95th percentile queues experienced.

All study area intersections are forecast to operate at acceptable levels of service with no specific problem movements during the weekday AM and PM peak hours.

Appendix B contains the detailed Synchro reports.



TABLE 2.1: BASE YEAR OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Northside Drive & Hawkesville Road/Private Driveway	TWSC	LOS Delay V/C Q	< < < <	B 10 0.21 6	> > > >	B 10	< < < <	A 9 0.00 0	> > > >	A 9	A 8 0.02 1	A 0 0.00 0	A 5	A 0 0.00 0	A 0 0.00 0	A 0			
	Northside Drive & Sawmill Road	TWSC	LOS Delay V/C Q					A 10 0.09 2		> > > >	A 10		A 0 0.00 0	A 0	A 8 0.01 0	A 0		A 4		
	King Street North & Northside Drive/Eby Street	TWSC	LOS Delay V/C Q	< < < <	A 10 0.09 2	> > > >	A 10	< < < <	B 13 0.02 1	> > > >	B 13	A 8 0.03 1	A 0 0.00 0	A 2	A 8 0.01 0	A 0 0.00 0	A 0			
PM Peak Hour	Northside Drive & Hawkesville Road/Private Driveway	TWSC	LOS Delay V/C Q	< < < <	B 11 0.19 5	> > > >	B 11	< < < <	B 10 0.01 0	> > > >	B 10	A 8 0.05 2	A 0 0.00 0	A 7	A 0 0.00 0	A 0 0.00 0	A 0			
	Northside Drive & Sawmill Road	TWSC	LOS Delay V/C Q					A 10 0.17 4		> > > >	A 10		A 0 0.00 0	A 0	A 8 0.01 0	A 0		A 5		
	King Street North & Northside Drive/Eby Street	TWSC	LOS Delay V/C Q	< < < <	A 10 0.06 2	> > > >	A 10	< < < <	B 12 0.02 1	> > > >	B 12	A 8 0.06 2	A 0 0.00 0	A 2	A 8 0.00 0	A 0 0.00 0	A 0			

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

TWSC - Two-Way Stop Control

</> - Shared Movement



3 Development Concept

3.1 Development Description

The subject site is located at 51 Hawkesville Road in St. Jacobs, Ontario.

The subject site is proposed to be developed into 65 medium density units, 58 street townhouse units,, and 16 single-family detached homes.

Vehicle access is proposed via two all-moves connections to Hawkesville Road.

Figure 3.1 shows the proposed development concept.





3.2 Site Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation manual⁵ methods forecast site-generated trips. The following Land Use Codes (LUC) were used to estimate the site trip generation:

- ▶ LUC 220 (Multi-Family Housing, Low-Rise);
- ▶ LUC 215 (Single-Family Attached Housing); and
- ▶ LUC 210 (Single-Family Detached Housing).

Table 3.1 summarizes the forecast site-generated trips indicating 71 AM peak hour and 82 PM peak hour trips. No reductions for alternative modes of transportation were used in the calculation.

TABLE 3.1: FORECAST SITE-GENERATED TRIPS

LUC	Unit Type	Number of Units	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
220	Medium Density	65	9	27	36	24	15	39
215	Street Townhouse	58	5	14	19	14	11	25
210	Detached House	16	4	12	16	11	7	18
Total Trip Generation			18	53	71	49	33	82

LUC 220 – AM: $T = 0.35(X) + 12.93$ | PM: $T = 0.48(X) + 7.35$

LUC 215 – AM: $T = 0.59(X) - 15.25$ | PM: $T = 0.57(X) - 7.84$

LUC 210 – AM: $T = 0.67(X) + 5.59$ | PM: $\ln(T) = 0.92 \ln(X) + 0.33$

The trip distribution used for this study was based on the existing distribution and 2016 Transportation Tomorrow Survey (TTS) data.⁶ The trip distribution for this study is appropriate because 70% of trips travel along Sawmill Road leading to Highway 85 that conveniently connects future residents to urbanized areas in Kitchener-Waterloo. The trip distribution is shown in **Table 3.2**.

TABLE 3.2: TRIP DISTRIBUTION

Origin/Destination	In/Out
North via Northside Drive	1%
South via King Street North	20%
East via Sawmill Road	70%
West via Hawkesville Road	9%
Total	100%

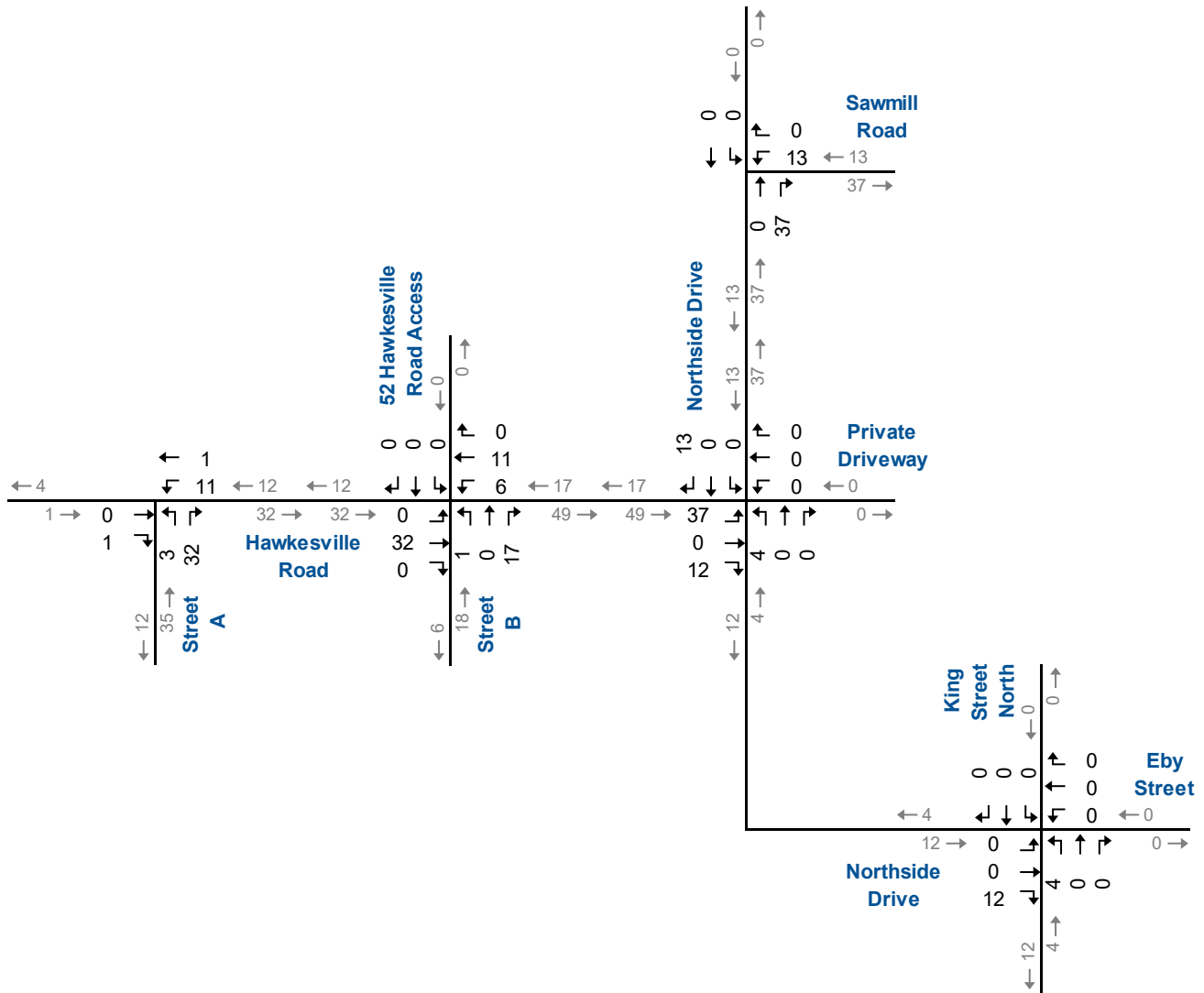
⁵ Institute of Transportation Engineers, *Trip Generation Manual*, 12th ed., (Washington DC: ITE, 2025).

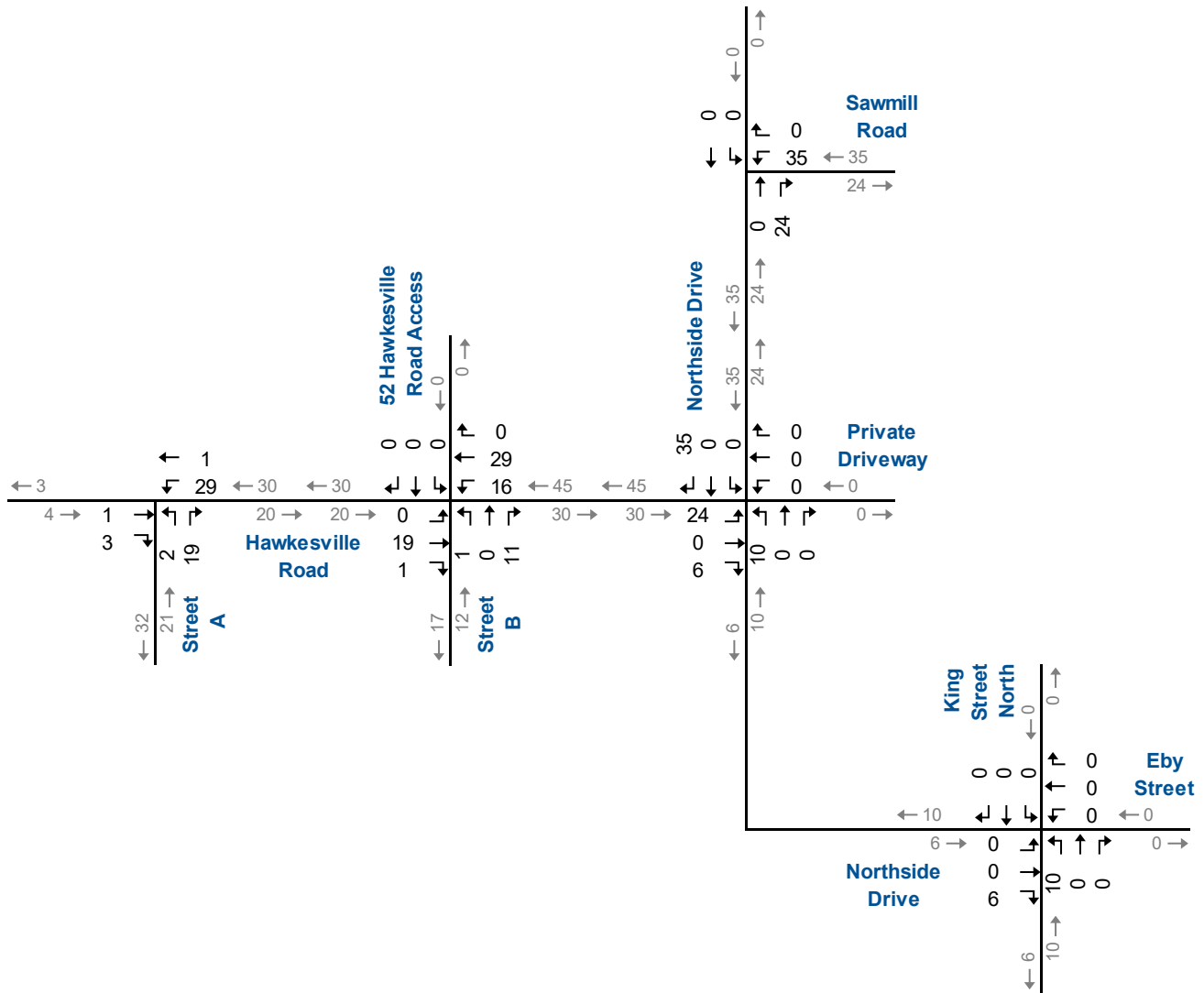
⁶ Data Management Group, *Transportation Tomorrow Survey 2016*, University of Toronto, 2016, <http://www.transportationtomorrow.on.ca/>



Figure 3.2a and **Figure 3.2b** illustrate the AM and PM peak hour trip assignment, respectively.







4 Evaluation of Future Traffic Conditions

The assessment of the future traffic conditions contained in this section includes the future traffic forecasts as an intersection operational analysis. A five-year horizon has been assessed to determine the impact of the subject site.

The background traffic volumes reflect an annual growth rate of 2.5% per annum applied to the existing volumes.

In addition to the generalized background traffic growth, the following development was also included in the background traffic volumes:

- ▶ 52 Hawkesville Road⁷: The development is located directly north of the subject site. The development consists of a mix of residential uses (409 units in total – subject to change) and is forecast to generate 228 and 278 trips during the AM and PM peak hours, respectively. The development proposes two full moves accesses (one to Hawkesville Road and one to Northside Drive) with the Hawkesville Road access proposed to directly align with Street B.

Appendix C contains the background development traffic volumes.

4.1 Background Horizon

4.1.1 Background Traffic Volumes

Figure 4.1a and **Figure 4.1b** illustrate the forecast background traffic volumes for the weekday AM and PM peak hours, respectively.

4.1.2 Background Traffic Operations

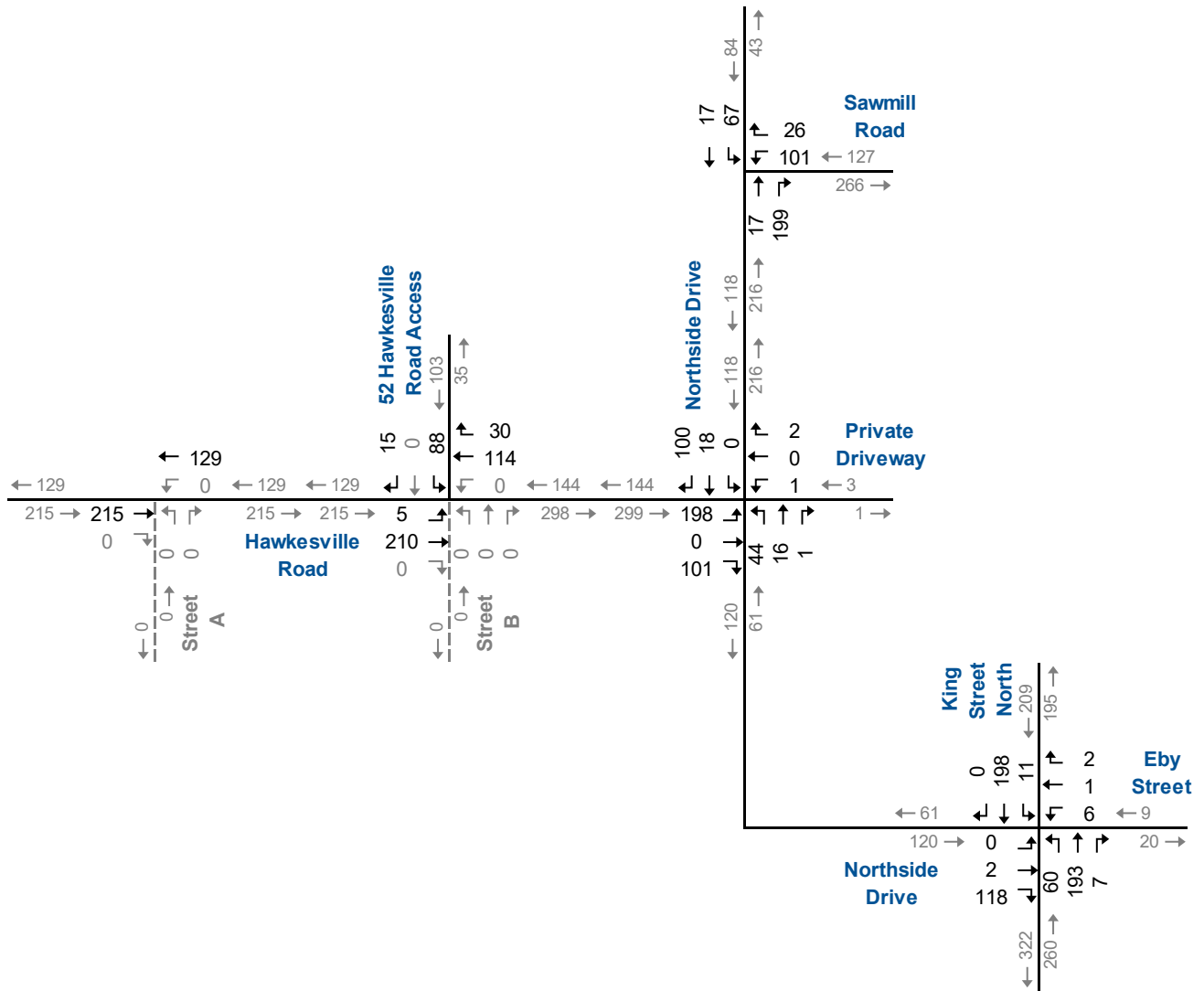
The study area intersection operations analysis for the forecast background traffic scenario followed the same methodology used for the existing traffic conditions. **Table 4.1** details the level of service conditions.

All study area intersections are forecast to operate at acceptable levels of service with no critical movements during the weekday AM and PM peak hours.

Appendix D contains the supporting detailed Synchro reports.

⁷ Paradigm Transportation Solutions Limited, *Residential Subdivision 52 Hawkesville Road, St. Jacobs Transportation Impact Study*, (Cambridge: PTSL, 2025).





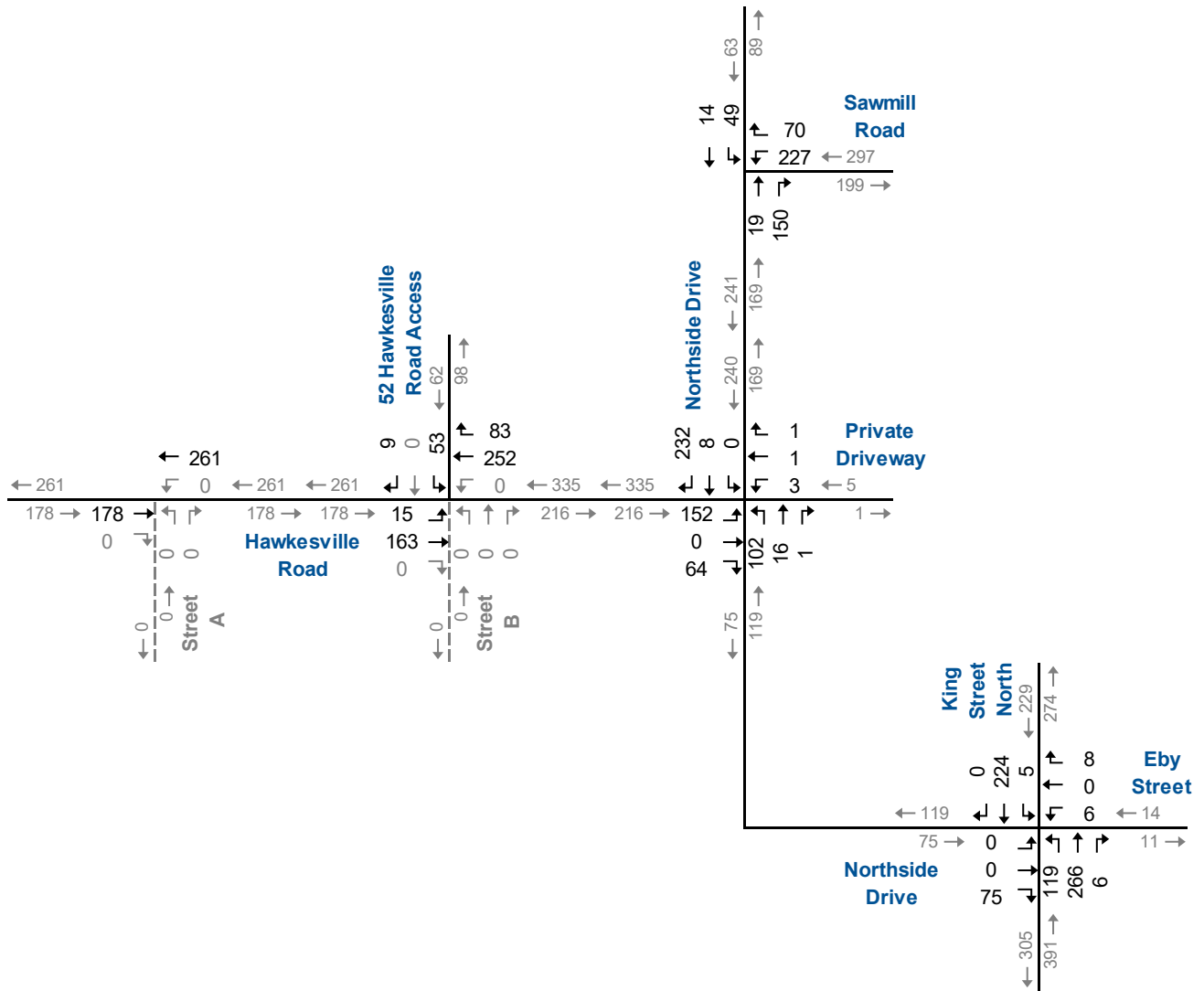


TABLE 4.1: BACKGROUND OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Northside Drive & Hawkesville Road/Private Driveway	TWSC	LOS Delay V/C Q	< 12 < 0.37 < 13	B > > >	B 12	< 12 < 0.00 < 0	A > > >	A 9	< 9 > > >	A 9	A 8 0.03 1	A 0 0.00 0	A 0 0.00 0	A 5	A 0 0.00 0	A 0 0.00 0	A 0 0.00 0	A 0	
	Northside Drive & Sawmill Road	TWSC	LOS Delay V/C Q				B 11 0.18 5		> > >	B 11		A 0 0.00 0	A 0 0.00 0	A 0	A 8 0.05 2	A 0 0.00 0			A 6	
	King Street North & Northside Drive/Eby Street	TWSC	LOS Delay V/C Q	< 10 < 0.15 < 4	B > > >	B 10	< 10 < 0.02 < 1	B > > >	B 14	A 8 0.04 1	A 0 0.00 0	A 0 0.00 0	A 2	A 8 0.01 0	A 0 0.00 0	A 0 0.00 0		A 0		
	Hawkesville Road & 52 Hawkesville Road Access	TWSC	LOS Delay V/C Q	A 8 0.00 0	A 0 0.00 0		A 0	A 0 0.00 0	A 0 0.00 0	A 0					B 11 0.15 4		> > >	B 11		
PM Peak Hour	Northside Drive & Hawkesville Road/Private Driveway	TWSC	LOS Delay V/C Q	< 14 < 0.34 < 11	B > > >	B 14	< 14 < 0.01 < 0	B > > >	B 11	A 8 0.08 2	A 0 0.00 0	A 0 0.00 0	A 7	A 0 0.00 0	A 0 0.00 0	A 0 0.00 0		A 0		
	Northside Drive & Sawmill Road	TWSC	LOS Delay V/C Q				B 12 0.38 14		> > >	B 12		A 0 0.00 0	A 0 0.00 0	A 0	A 8 0.04 1	A 0 0.00 0		A 6		
	King Street North & Northside Drive/Eby Street	TWSC	LOS Delay V/C Q	< 10 < 0.09 < 2	A > > >	A 10	< 10 < 0.03 < 1	B > > >	B 14	A 8 0.09 2	A 0 0.00 0	A 0 0.00 0	A 2	A 8 0.00 0	A 0 0.00 0	A 0 0.00 0		A 0		
	Hawkesville Road & 52 Hawkesville Road Access	TWSC	LOS Delay V/C Q	A 8 0.01 0	A 0 0.00 0		A 1	A 0 0.00 0	A 0 0.00 0	A 0					B 12 0.11 3		> > >	B 12		

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

TWSC - Two-Way Stop Control

</> - Shared Movement



4.2 Total Traffic Horizon

4.2.1 Total Traffic Volumes

Figure 4.2a and **Figure 4.2b** illustrate the forecast total (background + site traffic) traffic volumes, respectively.

4.2.2 Total Traffic Operations

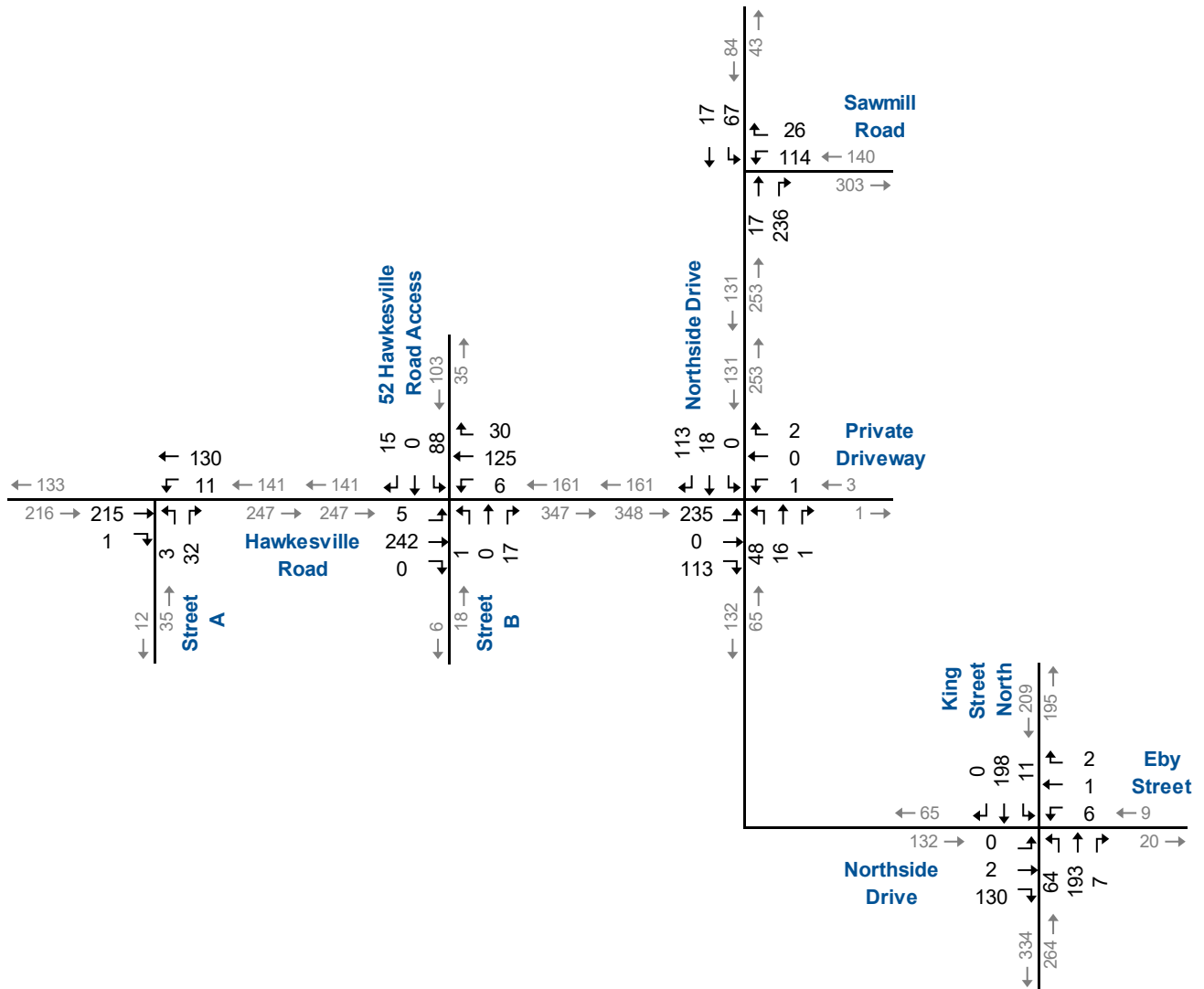
The study area intersection operations analysis for the future total traffic scenario followed the same methodology used for the existing and background traffic conditions. **Table 4.2** details the level of service conditions for the weekday AM and PM peak hours.

All study area intersections are forecast to operate at acceptable levels of service with no critical movements during the weekday AM and PM peak hours.

With the addition of the site generated traffic volumes, the approach delays (not including the site access approaches) at the study area intersections increase by two seconds or less during the AM and PM peak hours.

Appendix E contains the supporting detailed Synchro reports.





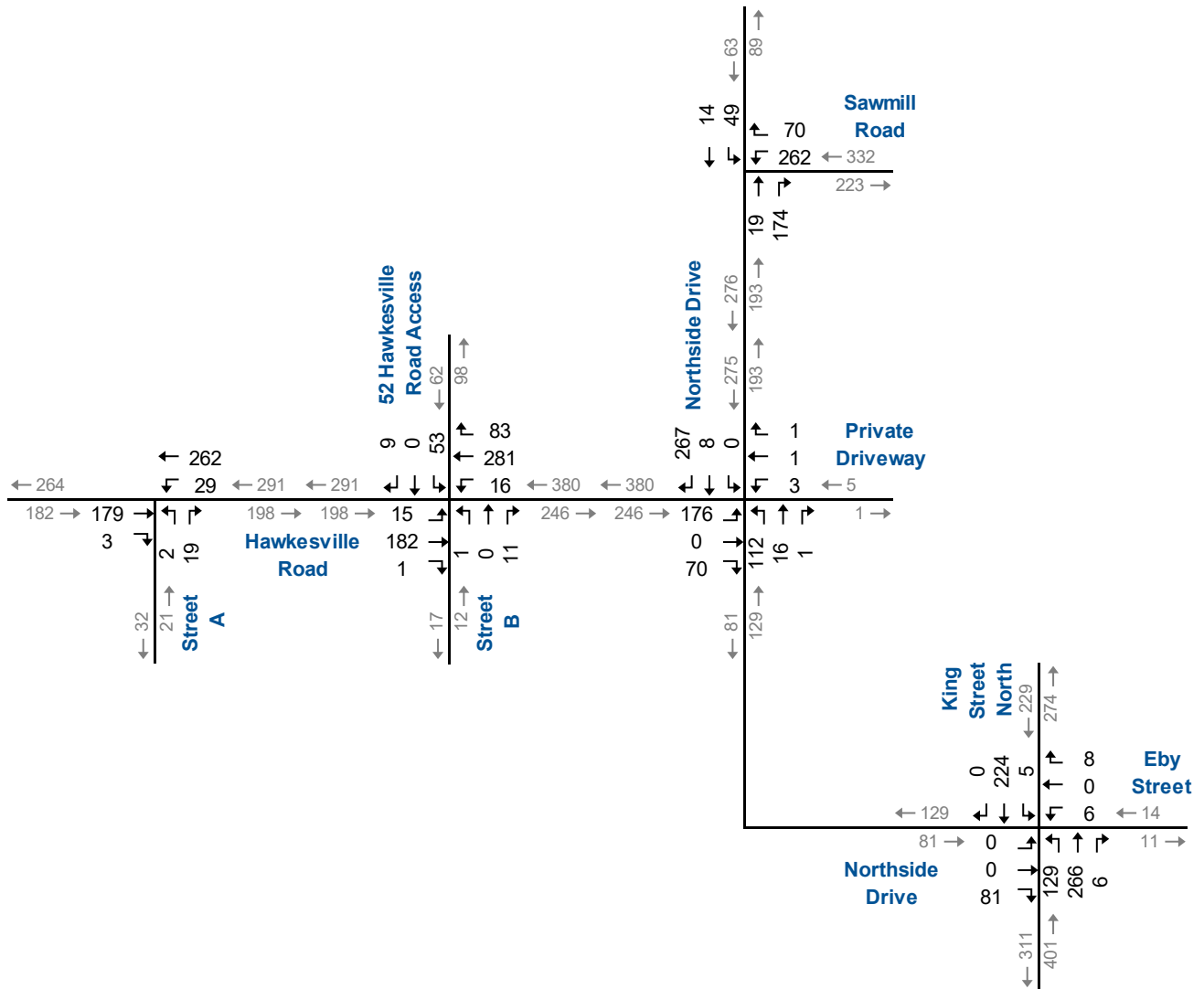


TABLE 4.2: TOTAL OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Northside Drive & Hawkesville Road/Private Driveway	TWSC	LOS Delay V/C Q	< < < <	B 13 0.44 16	> > > >	B 13	< < < <	A 9 0.00 0	> > > >	A 9	A 8 0.03 1	A 0 0.00 0	A 0 0.00 0	A 6	A 0 0.00 0	A 0 0.00 0	A 0		
	Northside Drive & Sawmill Road	TWSC	LOS Delay V/C Q					B 12 0.21 6		> > > >	B 12		A 0 0.00 0	A 0 0.00 0	A 0	A 8 0.05 2	A 0 0.00 0		A 6	
	King Street North & Northside Drive/Eby Street	TWSC	LOS Delay V/C Q	< < < <	B 10 0.16 4	> > > >	B 10	< < < <	B 14 0.02 1	> > > >	B 14	A 8 0.05 1	A 0 0.00 0	A 0 0.00 0	A 2	A 8 0.01 0	A 0 0.00 0	A 0		
	Street A & Hawkesville Road	TWSC	LOS Delay V/C Q		A 0 0.00 0	A 0 0.00 0	A 0	A 8 0.01 0	A 0 0.00 0		A 1	A 10 0.04 1		> > > >	A 10					
	Street B/52 Hawkesville Road Access & Hawkesville Road	TWSC	LOS Delay V/C Q	A 8 0.00 0	A 0 0.00 0	A 0 0.00 0	A 0	A 8 0.01 0	A 0 0.00 0	A 0 0.00 0	A 0	< < < <	A 10 0.02 1	> > > >	A 10	< < < <	B 13 0.18 4	> > > >	B 13	
PM Peak Hour	Northside Drive & Hawkesville Road/Private Driveway	TWSC	LOS Delay V/C Q	< < < <	C 15 0.41 15	> > > >	C 15	< < < <	B 11 0.01 0	> > > >	B 11	A 8 0.09 2	A 0 0.00 0	A 0 0.00 0	A 7	A 0 0.00 0	A 0 0.00 0	A 0		
	Northside Drive & Sawmill Road	TWSC	LOS Delay V/C Q					B 13 0.43 16		> > > >	B 13		A 0 0.00 0	A 0 0.00 0	A 0	A 8 0.04 1	A 0 0.00 0		A 6	
	King Street North & Northside Drive/Eby Street	TWSC	LOS Delay V/C Q	< < < <	A 10 0.10 2	> > > >	A 10	< < < <	B 14 0.03 1	> > > >	B 14	A 8 0.10 2	A 0 0.00 0	A 0 0.00 0	A 3	A 8 0.00 0	A 0 0.00 0	A 0		
	Street A & Hawkesville Road	TWSC	LOS Delay V/C Q		A 0 0.00 0	A 0 0.00 0	A 0	A 8 0.02 1	A 0 0.00 0		A 1	A 10 0.03 1		> > > >	A 10					
	Street B/52 Hawkesville Road Access & Hawkesville Road	TWSC	LOS Delay V/C Q	A 8 0.01 0	A 0 0.00 0	A 0 0.00 0	A 1	A 8 0.01 0	A 0 0.00 0	A 0 0.00 0	A 0	< < < <	A 10 0.01 0	> > > >	A 10	< < < <	B 14 0.14 4	> > > >	B 14	

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

TWSC - Two-Way Stop Control

</> - Shared Movement



5 Remedial Measures

5.1 Left-Turn Lanes

The intersections of Hawkesville Road at Street A and Hawkesville Road at Street B were assessed to determine if the projected traffic volumes warrant installation of left-turn lanes. The warrants for left-turn lanes follow the requirements in the Ministry of Transportation's (MTO) Design Supplement for the TAC Guide⁸. A design speed of 60 km/h (10 km/h over the posted speed limit) was used for Hawkesville Road.

The percentages of left-turning vehicles in the approaching volume were rounded to the nearest 5%, as nomographs are only provided for 5% increments. This apparent requirement is due to the nature of the warrant procedure that assumes a minimum of 5% of left turning vehicles in the advancing volume. Therefore, left-turn lanes are not warranted for any left turning volume less than 5%.

Table 5.1 summarizes the left-turn lane warrant for the intersections of Hawkesville Road at Street A and Hawkesville Road at Street B. The warrant analysis suggests that westbound left-turn lanes are not warranted at both intersections.

TABLE 5.1: LEFT-TURN LANE WARRANT SUMMARY

Roadway	Hawkesville Road			
	Street A		Street B	
Intersection	Westbound		Westbound	
Approach Direction	60 km/h		60 km/h	
Design Speed	Total 2029		Total 2029	
Horizon	AM		PM	
Peak Hour	141	291	161	380
Advancing Volume	216	182	247	198
Opposing Volume	11	29	6	16
Left Turning Traffic	8%	10%	4%	4%
% of Left Turning Traffic	9A-7	9A-7	9A-7	9A-7
Figure Used*	No	No	No	No
Warranted	-	-	-	-
Storage Length Required				

*Ontario Ministry of Transportation, *MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads*, (Toronto: Queens Printer for Ontario, 2020).

Appendix F contains the left-turn lane warrant nomographs.

5.2 Railway Crossing Assessment

The available separation distances between the site accesses and the existing rail crossing to the west of the site along Hawkesville Road were assessed based on requirements outlined in the Transport

⁸ Ontario Ministry of Transportation, *MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads*, (Toronto: Queen's Printer for Ontario, 2020).



Canada Grade Crossing Standards.⁹ It is noted that both site accesses connecting to Hawkesville Road meet the minimum required distance of 30 m¹⁰ from the nearest railroad by providing approximately 130 m (via Street A) and 210 m (via Steet B) of separation.

Additionally, the existing railway crossing along Hawkesville Road to the west of the site was also assessed for crossing improvements based on daily roadway and railway traffic.¹¹ As indicated by Region of Waterloo staff, a maximum of 36 trains per week (approximately 6 trains per day) are expected to travel through the Hawesville Road railway crossing to the west of the subject site.

Table 5.2 summarizes the need for railway crossing improvements. It is noted that the existing railway crossing along Hawkesville Road to the west of the site will not need a gated warning system as the roadway-railway cross-product is smaller than 50,000 under existing and future traffic conditions. Although, the existing railway crossing warning system should be left in place.

TABLE 5.2: RAILWAY CROSSING IMPROVEMENTS ASSESSMENT

Condition	PM Peak	Daily Roadway Traffic	Daily Railway Traffic	Roadway-Railway Cross-Product	Improvements Needed
Existing	365	3,650	6	21,900	No gated warning system needed
Background	439	4,390	6	26,340	
Total	446	4,460	6	26,760	

⁹ Transport Canada, *Grade Crossing Handbook*, (Ottawa: Transport Canada, 2023).

¹⁰ Ibid. 11.1 Proximity to an intersection.

¹¹ Ibid. Article 9 Warning System Specifications.



6 Conclusions and Recommendations

6.1 Conclusions

Based on the investigations carried out, it is concluded that:

- ▶ **Existing Traffic Conditions:** The study area intersections are currently operating within acceptable levels of service and no critical movements during the AM and PM peak hours.
- ▶ **Development Trip Generation:** The development is forecast to generate approximately 71 and 82 trips during the AM and PM peak hours, respectively.
- ▶ **Background and Total Traffic Conditions:** The study area intersections are forecast to operate at acceptable levels of service similar to existing traffic conditions without any critical movements noted during the AM and PM peak hours.
- ▶ **Left-Turn Lane Warrant:** Westbound left-turn lanes are not warranted along Hawkesville Road at both site accesses.
- ▶ **Railway Crossing Assessment:** The existing railway crossing along Hawkesville Road to the west of the site will not need a gated warning system. Although, the existing railway crossing warning system should be left in place.

6.2 Recommendations

Based on the findings of this study, it is recommended that the development be considered for approval with no conditions related to off-site transportation improvements.



Appendix A

Traffic Data





Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Northside Drive & Hawkesville Road
Site Code: 230598
Start Date: 01/11/2024
Page No: 1

Turning Movement Data

Start Time	Hawkesville Road Eastbound						Driveway Westbound						Northside Drive Northbound						Northside Drive Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	12	0	6	0	0	18	0	0	0	0	0	0	10	4	0	0	0	14	0	0	12	0	0	12	44
7:15 AM	26	0	9	0	3	35	0	0	0	0	0	0	9	4	0	0	0	13	1	0	11	0	0	12	60
7:30 AM	31	2	21	0	0	54	0	0	1	0	0	1	5	2	1	0	1	8	0	0	15	0	0	15	78
7:45 AM	31	0	23	0	1	54	0	0	0	0	0	0	9	1	0	0	0	10	0	2	21	0	0	23	87
Hourly Total	100	2	59	0	4	161	0	0	1	0	0	1	33	11	1	0	1	45	1	2	59	0	0	62	269
8:00 AM	27	0	19	0	0	46	0	0	1	0	1	1	3	3	1	0	1	7	0	0	9	0	0	9	63
8:15 AM	31	0	16	0	0	47	1	0	0	0	1	1	4	2	0	0	0	6	0	4	10	0	0	14	68
8:30 AM	32	0	10	0	0	42	0	0	0	0	0	0	5	3	0	0	0	8	0	4	20	0	0	24	74
8:45 AM	29	0	20	0	0	49	0	0	1	0	0	1	13	4	0	0	0	17	0	1	25	0	0	26	93
Hourly Total	119	0	65	0	0	184	1	0	2	0	2	3	25	12	1	0	1	38	0	9	64	0	0	73	298
9:00 AM	20	1	9	0	3	30	0	0	2	0	0	2	7	2	2	0	0	11	0	5	10	0	0	15	58
9:15 AM	16	0	8	0	0	24	0	0	1	0	0	1	6	1	1	0	0	8	1	3	21	0	0	25	58
9:30 AM	26	0	8	0	0	34	0	1	1	0	0	2	8	1	2	0	0	11	0	5	13	0	0	18	65
9:45 AM	13	0	7	0	2	20	0	0	0	0	0	0	6	0	1	0	0	7	0	0	16	0	0	16	43
Hourly Total	75	1	32	0	5	108	0	1	4	0	0	5	27	4	6	0	0	37	1	13	60	0	0	74	224
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	18	1	5	0	3	24	0	0	1	0	1	1	5	2	0	0	0	7	0	2	18	0	0	20	52
11:45 AM	16	0	9	0	0	25	0	2	1	0	0	3	6	0	1	0	0	7	1	0	14	0	0	15	50
Hourly Total	34	1	14	0	3	49	0	2	2	0	1	4	11	2	1	0	0	14	1	2	32	0	0	35	102
12:00 PM	17	0	5	0	2	22	2	0	0	0	1	2	8	2	0	0	0	10	1	1	15	0	0	17	51
12:15 PM	14	0	15	0	0	29	0	0	1	0	0	1	7	3	2	0	0	12	0	3	16	0	0	19	61
12:30 PM	21	0	6	0	0	27	0	0	0	0	1	0	11	5	0	0	0	16	0	4	20	0	0	24	67
12:45 PM	14	1	6	0	0	21	0	0	1	0	0	1	5	2	0	0	0	7	3	2	10	0	0	15	44
Hourly Total	66	1	32	0	2	99	2	0	2	0	2	4	31	12	2	0	0	45	4	10	61	0	0	75	223
1:00 PM	12	0	5	0	0	17	0	1	0	0	0	1	3	4	0	0	0	7	0	2	9	0	0	11	36
1:15 PM	18	1	7	0	0	26	0	0	0	0	0	0	5	3	0	0	0	8	0	2	20	0	0	22	56
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	30	1	12	0	0	43	0	1	0	0	0	1	8	7	0	0	0	15	0	4	29	0	0	33	92
3:00 PM	19	0	9	0	0	28	1	0	2	0	0	3	24	7	1	0	0	32	1	2	5	0	0	8	71
3:15 PM	17	1	4	0	1	22	0	0	0	0	0	0	11	4	0	0	0	15	0	2	20	0	0	22	59
3:30 PM	16	0	5	0	2	21	0	0	0	0	0	0	12	2	0	0	0	14	0	2	21	0	0	23	58
3:45 PM	19	0	9	0	0	28	0	1	1	0	0	2	17	1	1	0	0	19	0	0	26	1	2	27	76
Hourly Total	71	1	27	0	3	99	1	1	3	0	0	5	64	14	2	0	0	80	1	6	72	1	2	80	264
4:00 PM	28	1	9	0	0	38	0	0	1	0	0	1	15	1	0	0	0	16	0	5	23	0	0	28	83
4:15 PM	21	1	5	0	0	27	1	1	2	0	0	4	14	1	2	0	0	17	0	0	29	0	0	29	77

4:30 PM	19	0	10	0	0	29	1	0	0	0	1	1	25	0	1	0	1	26	0	0	32	0	0	32	88
4:45 PM	19	0	7	0	2	26	0	0	0	0	3	0	18	2	0	0	1	20	0	1	48	0	0	49	95
Hourly Total	87	2	31	0	2	120	2	1	3	0	4	6	72	4	3	0	2	79	0	6	132	0	0	138	343
5:00 PM	23	0	14	0	0	37	0	1	0	0	1	1	13	3	0	0	0	16	0	1	27	0	0	28	82
5:15 PM	33	0	12	0	0	45	2	0	1	0	0	3	11	1	0	0	0	12	0	0	44	0	0	44	104
5:30 PM	20	0	6	0	0	26	0	0	0	0	0	0	14	0	0	0	0	14	0	0	30	0	0	30	70
5:45 PM	14	0	5	0	0	19	0	0	0	0	0	0	4	1	0	0	0	5	0	0	14	0	0	14	38
Hourly Total	90	0	37	0	0	127	2	1	1	0	1	4	42	5	0	0	0	47	0	1	115	0	0	116	294
Grand Total	672	9	309	0	19	990	8	7	18	0	10	33	313	71	16	0	4	400	8	53	624	1	2	686	2109
Approach %	67.9	0.9	31.2	0.0	-	-	24.2	21.2	54.5	0.0	-	-	78.3	17.8	4.0	0.0	-	-	1.2	7.7	91.0	0.1	-	-	-
Total %	31.9	0.4	14.7	0.0	-	46.9	0.4	0.3	0.9	0.0	-	1.6	14.8	3.4	0.8	0.0	-	19.0	0.4	2.5	29.6	0.0	-	32.5	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Cars & Light Goods	606	7	295	0	-	908	8	6	17	0	-	31	300	66	16	0	-	382	7	51	568	1	-	627	1948
% Cars & Light Goods	90.2	77.8	95.5	-	-	91.7	100.0	85.7	94.4	-	-	93.9	95.8	93.0	100.0	-	-	95.5	87.5	96.2	91.0	100.0	-	91.4	92.4
Buses	6	1	2	0	-	9	0	1	0	0	-	1	3	3	0	0	-	6	1	0	1	0	-	2	18
% Buses	0.9	11.1	0.6	-	-	0.9	0.0	14.3	0.0	-	-	3.0	1.0	4.2	0.0	-	-	1.5	12.5	0.0	0.2	0.0	-	0.3	0.9
Single-Unit Trucks	42	1	10	0	-	53	0	0	1	0	-	1	7	2	0	0	-	9	0	2	40	0	-	42	105
% Single-Unit Trucks	6.3	11.1	3.2	-	-	5.4	0.0	0.0	5.6	-	-	3.0	2.2	2.8	0.0	-	-	2.3	0.0	3.8	6.4	0.0	-	6.1	5.0
Articulated Trucks	17	0	1	0	-	18	0	0	0	0	-	0	1	0	0	0	-	1	0	0	15	0	-	15	34
% Articulated Trucks	2.5	0.0	0.3	-	-	1.8	0.0	0.0	0.0	-	-	0.0	0.3	0.0	0.0	-	-	0.3	0.0	0.0	2.4	0.0	-	2.2	1.6
Bicycles on Road	1	0	1	0	-	2	0	0	0	0	-	0	2	0	0	0	-	2	0	0	0	0	-	0	4
% Bicycles on Road	0.1	0.0	0.3	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.6	0.0	0.0	-	-	0.5	0.0	0.0	0.0	0.0	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	19	-	-	-	-	-	10	-	-	-	-	-	4	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Turning Movement Data Plot



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

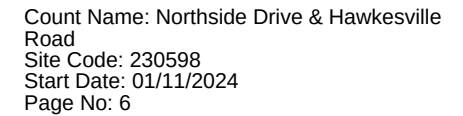
Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Northside Drive & Hawkesville Road
Site Code: 230598
Start Date: 01/11/2024
Page No: 4

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Hawkesville Road Eastbound						Driveway Westbound						Northside Drive Northbound						Northside Drive Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:00 AM	27	0	19	0	0	46	0	0	1	0	1	1	3	3	1	0	1	7	0	0	9	0	0	9	63
8:15 AM	31	0	16	0	0	47	1	0	0	0	1	1	4	2	0	0	0	6	0	4	10	0	0	14	68
8:30 AM	32	0	10	0	0	42	0	0	0	0	0	0	5	3	0	0	0	8	0	4	20	0	0	24	74
8:45 AM	29	0	20	0	0	49	0	0	1	0	0	1	13	4	0	0	0	17	0	1	25	0	0	26	93
Total	119	0	65	0	0	184	1	0	2	0	2	3	25	12	1	0	1	38	0	9	64	0	0	73	298
Approach %	64.7	0.0	35.3	0.0	-	-	33.3	0.0	66.7	0.0	-	-	65.8	31.6	2.6	0.0	-	-	0.0	12.3	87.7	0.0	-	-	-
Total %	39.9	0.0	21.8	0.0	-	61.7	0.3	0.0	0.7	0.0	-	1.0	8.4	4.0	0.3	0.0	-	12.8	0.0	3.0	21.5	0.0	-	24.5	-
PHF	0.930	0.000	0.813	0.000	-	0.939	0.250	0.000	0.500	0.000	-	0.750	0.481	0.750	0.250	0.000	-	0.559	0.000	0.563	0.640	0.000	-	0.702	0.801
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	108	0	61	0	-	169	1	0	2	0	-	3	23	12	1	0	-	36	0	9	60	0	-	69	277
% Cars & Light Goods	90.8	-	93.8	-	-	91.8	100.0	-	100.0	-	-	100.0	92.0	100.0	100.0	-	-	94.7	-	100.0	93.8	-	-	94.5	93.0
Buses	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Buses	0.0	-	1.5	-	-	0.5	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.3
Single-Unit Trucks	11	0	3	0	-	14	0	0	0	0	-	0	2	0	0	0	-	2	0	0	1	0	-	1	17
% Single-Unit Trucks	9.2	-	4.6	-	-	7.6	0.0	-	0.0	-	-	0.0	8.0	0.0	0.0	-	-	5.3	-	0.0	1.6	-	-	1.4	5.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	3	0	-	3	3
% Articulated Trucks	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	0.0	4.7	-	-	4.1	1.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% 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	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	0	-	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Turning Movement Peak Hour Data Plot (8:00 AM)



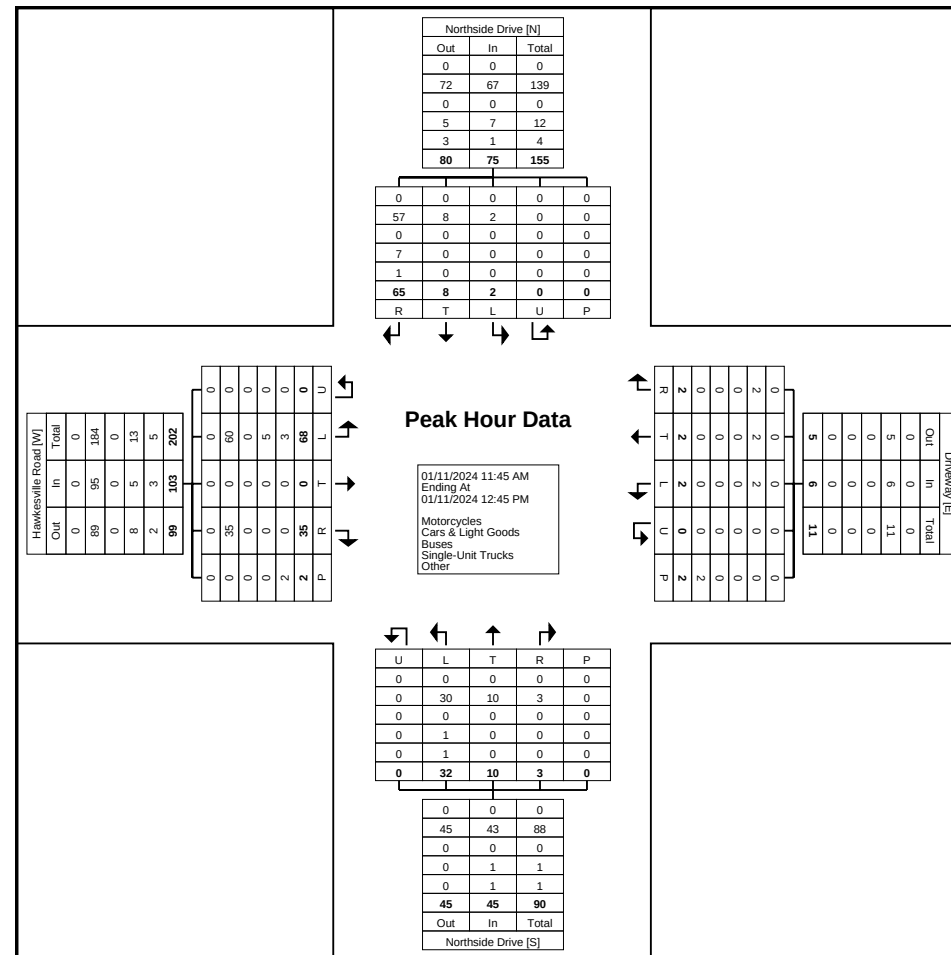
Start Time	Hawkesville Road Eastbound						Driveway Westbound						Northside Drive Northbound						Northside Drive Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
11:45 AM	16	0	9	0	0	25	0	2	1	0	0	3	6	0	1	0	0	7	1	0	14	0	0	15	50
12:00 PM	17	0	5	0	2	22	2	0	0	0	1	2	8	2	0	0	0	10	1	1	15	0	0	17	51
12:15 PM	14	0	15	0	0	29	0	0	1	0	0	1	7	3	2	0	0	12	0	3	16	0	0	19	61
12:30 PM	21	0	6	0	0	27	0	0	0	0	1	0	11	5	0	0	0	16	0	4	20	0	0	24	67
Total	68	0	35	0	2	103	2	2	2	0	2	6	32	10	3	0	0	45	2	8	65	0	0	75	229
Approach %	66.0	0.0	34.0	0.0	-	-	33.3	33.3	33.3	0.0	-	-	71.1	22.2	6.7	0.0	-	-	2.7	10.7	86.7	0.0	-	-	-
Total %	29.7	0.0	15.3	0.0	-	45.0	0.9	0.9	0.9	0.0	-	2.6	14.0	4.4	1.3	0.0	-	19.7	0.9	3.5	28.4	0.0	-	32.8	-
PHF	0.810	0.000	0.583	0.000	-	0.888	0.250	0.250	0.500	0.000	-	0.500	0.727	0.500	0.375	0.000	-	0.703	0.500	0.500	0.813	0.000	-	0.781	0.854
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	60	0	35	0	-	95	2	2	2	0	-	6	30	10	3	0	-	43	2	8	57	0	-	67	211
% Cars & Light Goods	88.2	-	100.0	-	-	92.2	100.0	100.0	100.0	-	-	100.0	93.8	100.0	100.0	-	-	95.6	100.0	100.0	87.7	-	-	89.3	92.1
Buses	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	0.0	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	5	0	0	0	-	5	0	0	0	0	-	0	1	0	0	0	-	1	0	0	7	0	-	7	13
% Single-Unit Trucks	7.4	-	0.0	-	-	4.9	0.0	0.0	0.0	-	-	0.0	3.1	0.0	0.0	-	-	2.2	0.0	0.0	10.8	-	-	9.3	5.7
Articulated Trucks	3	0	0	0	-	3	0	0	0	0	-	0	1	0	0	0	-	1	0	0	1	0	-	1	5
% Articulated Trucks	4.4	-	0.0	-	-	2.9	0.0	0.0	0.0	-	-	0.0	3.1	0.0	0.0	-	-	2.2	0.0	0.0	1.5	-	-	1.3	2.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% 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	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Northside Drive & Hawkesville Road
Site Code: 230598
Start Date: 01/11/2024
Page No: 7



Turning Movement Peak Hour Data Plot (11:45 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Northside Drive & Hawkesville Road
Site Code: 230598
Start Date: 01/11/2024
Page No: 8

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Hawkesville Road Eastbound						Driveway Westbound						Northside Drive Northbound						Northside Drive Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:30 PM	19	0	10	0	0	29	1	0	0	0	1	1	25	0	1	0	1	26	0	0	32	0	0	32	88
4:45 PM	19	0	7	0	2	26	0	0	0	0	3	0	18	2	0	0	1	20	0	1	48	0	0	49	95
5:00 PM	23	0	14	0	0	37	0	1	0	0	1	1	13	3	0	0	0	16	0	1	27	0	0	28	82
5:15 PM	33	0	12	0	0	45	2	0	1	0	0	3	11	1	0	0	0	12	0	0	44	0	0	44	104
Total	94	0	43	0	2	137	3	1	1	0	5	5	67	6	1	0	2	74	0	2	151	0	0	153	369
Approach %	68.6	0.0	31.4	0.0	-	-	60.0	20.0	20.0	0.0	-	-	90.5	8.1	1.4	0.0	-	-	0.0	1.3	98.7	0.0	-	-	-
Total %	25.5	0.0	11.7	0.0	-	37.1	0.8	0.3	0.3	0.0	-	1.4	18.2	1.6	0.3	0.0	-	20.1	0.0	0.5	40.9	0.0	-	41.5	-
PHF	0.712	0.000	0.768	0.000	-	0.761	0.375	0.250	0.250	0.000	-	0.417	0.670	0.500	0.250	0.000	-	0.712	0.000	0.500	0.786	0.000	-	0.781	0.887
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	93	0	40	0	-	133	3	1	1	0	-	5	65	5	1	0	-	71	0	2	145	0	-	147	356
% Cars & Light Goods	98.9	-	93.0	-	-	97.1	100.0	100.0	100.0	-	-	100.0	97.0	83.3	100.0	-	-	95.9	-	100.0	96.0	-	-	96.1	96.5
Buses	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	1
% Buses	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	1.5	0.0	0.0	-	-	1.4	-	0.0	0.0	-	-	0.0	0.3
Single-Unit Trucks	0	0	2	0	-	2	0	0	0	0	-	0	1	1	0	0	-	2	0	0	5	0	-	5	9
% Single-Unit Trucks	0.0	-	4.7	-	-	1.5	0.0	0.0	0.0	-	-	0.0	1.5	16.7	0.0	-	-	2.7	-	0.0	3.3	-	-	3.3	2.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	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	-	-	0.0	-	0.0	0.7	-	-	0.7	0.3
Bicycles on Road	1	0	1	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	2
% Bicycles on Road	1.1	-	2.3	-	-	1.5	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	5	-	-	-	-	-	2	-	-	-	-	0	-	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Turning Movement Peak Hour Data Plot (4:30 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Northside Drive & King Street N
Site Code: 230598
Start Date: 01/11/2024
Page No: 1

Turning Movement Data

Start Time	Northside Drive Eastbound						Eby Street Westbound						King Street N Northbound						King Street N Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	0	5	0	0	5	1	0	0	0	0	1	11	41	1	0	0	53	0	26	1	0	0	27	86
7:15 AM	0	0	10	0	0	10	0	0	2	0	0	2	14	31	0	0	1	45	1	33	0	0	0	34	91
7:30 AM	0	1	18	0	0	19	0	0	0	0	0	0	6	28	0	0	0	34	0	24	0	0	0	24	77
7:45 AM	0	0	25	0	0	25	2	0	1	0	0	3	10	38	0	0	0	48	3	48	0	0	0	51	127
Hourly Total	0	1	58	0	0	59	3	0	3	0	0	6	41	138	1	0	1	180	4	131	1	0	0	136	381
8:00 AM	0	0	19	0	0	19	0	0	0	0	0	0	6	37	2	0	0	45	2	38	0	0	0	40	104
8:15 AM	0	0	21	0	0	21	0	0	1	0	0	1	4	34	0	0	0	38	1	37	0	0	0	38	98
8:30 AM	0	1	11	0	0	12	0	0	0	0	0	0	6	49	2	0	0	57	4	36	0	0	0	40	109
8:45 AM	0	1	18	0	0	19	2	1	1	0	1	4	16	37	2	0	0	55	2	54	0	0	0	56	134
Hourly Total	0	2	69	0	0	71	2	1	2	0	1	5	32	157	6	0	0	195	9	165	0	0	0	174	445
9:00 AM	0	0	15	0	0	15	1	0	1	0	0	2	11	44	1	0	0	56	3	51	0	0	0	54	127
9:15 AM	0	0	12	0	0	12	2	0	0	0	0	2	9	41	1	0	0	51	1	34	0	0	0	35	100
9:30 AM	0	0	13	0	0	13	3	0	0	0	0	3	11	34	1	0	0	46	0	42	0	0	0	42	104
9:45 AM	0	0	7	0	0	7	2	0	2	0	0	4	8	36	2	0	0	46	2	48	0	0	0	50	107
Hourly Total	0	0	47	0	0	47	8	0	3	0	0	11	39	155	5	0	0	199	6	175	0	0	0	181	438
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	0	1	6	0	0	7	1	0	0	0	2	1	7	44	1	0	0	52	2	30	0	0	0	32	92
11:45 AM	0	0	9	0	0	9	0	0	2	0	2	2	6	37	0	0	0	43	0	38	1	0	0	39	93
Hourly Total	0	1	15	0	0	16	1	0	2	0	4	3	13	81	1	0	0	95	2	68	1	0	0	71	185
12:00 PM	0	0	9	0	1	9	1	0	2	0	0	3	10	38	1	1	1	50	2	35	0	0	0	37	99
12:15 PM	0	0	19	0	0	19	1	0	5	0	0	6	14	41	1	0	0	56	1	47	0	0	0	48	129
12:30 PM	0	0	11	1	0	12	0	0	3	0	1	3	13	35	1	0	0	49	0	37	0	0	0	37	101
12:45 PM	0	0	8	0	0	8	0	0	1	0	1	1	7	49	0	0	0	56	1	35	0	0	0	36	101
Hourly Total	0	0	47	1	1	48	2	0	11	0	2	13	44	163	3	1	1	211	4	154	0	0	0	158	430
1:00 PM	0	0	8	0	1	8	4	0	1	0	0	5	3	50	0	0	1	53	3	28	1	0	0	32	98
1:15 PM	0	0	9	0	0	9	2	0	1	0	0	3	8	41	0	0	0	49	0	43	0	0	0	43	104
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	17	0	1	17	6	0	2	0	0	8	11	91	0	0	1	102	3	71	1	0	0	75	202
3:00 PM	1	0	12	0	0	13	0	0	1	0	1	1	30	91	1	0	0	122	0	39	0	0	0	39	175
3:15 PM	0	0	5	0	0	5	0	0	0	0	0	0	12	56	1	0	0	69	0	42	0	0	0	42	116
3:30 PM	0	0	8	0	0	8	1	0	1	0	0	2	15	53	1	0	2	69	1	37	0	0	0	38	117
3:45 PM	0	0	8	0	0	8	0	0	2	0	4	2	16	53	1	1	1	71	2	49	0	0	0	51	132
Hourly Total	1	0	33	0	0	34	1	0	4	0	5	5	73	253	4	1	3	331	3	167	0	0	0	170	540
4:00 PM	0	1	13	0	0	14	1	0	3	0	1	4	14	56	3	0	0	73	0	39	0	0	0	39	130
4:15 PM	0	0	7	0	0	7	1	1	1	0	2	3	16	54	2	0	0	72	3	44	0	0	0	47	129

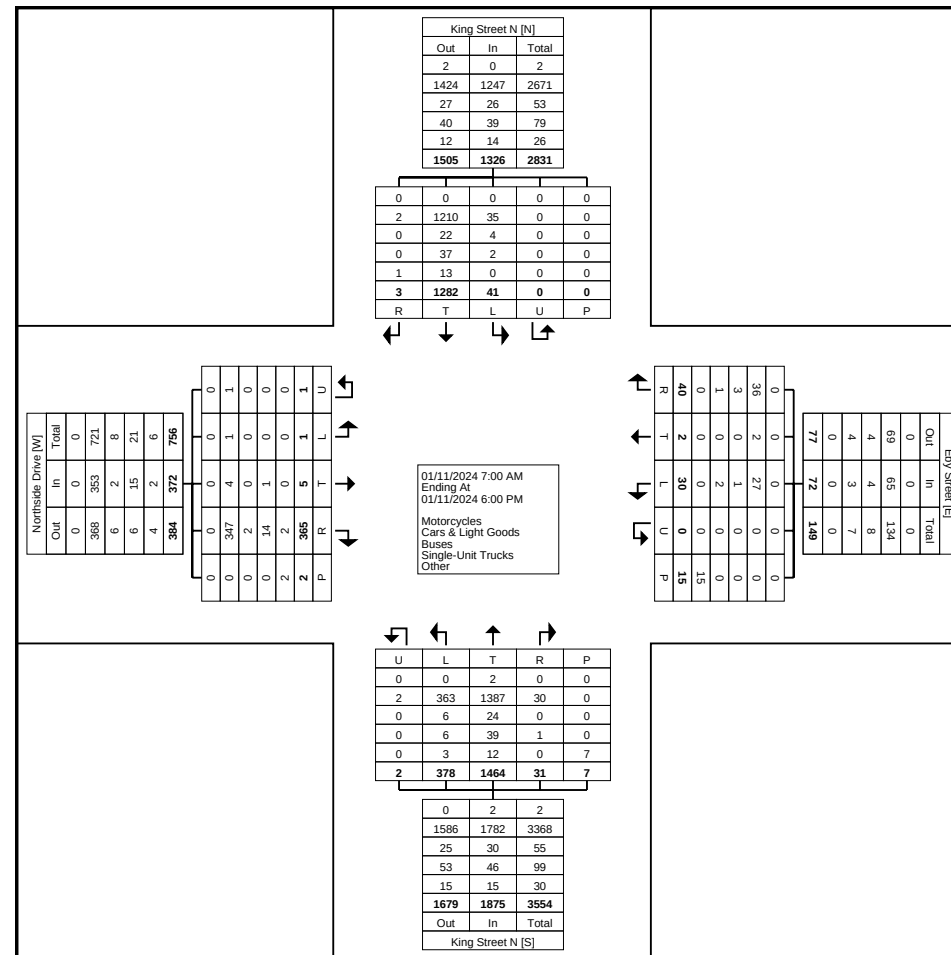
4:30 PM	0	0	8	0	0	8	1	0	3	0	0	4	26	74	2	0	0	102	1	46	0	0	0	47	161
4:45 PM	0	0	10	0	0	10	0	0	3	0	0	3	21	45	0	0	0	66	2	46	0	0	0	48	127
Hourly Total	0	1	38	0	0	39	3	1	10	0	3	14	77	229	7	0	0	313	6	175	0	0	0	181	547
5:00 PM	0	0	15	0	0	15	2	0	0	0	0	2	16	67	0	0	0	83	0	55	0	0	0	55	155
5:15 PM	0	0	14	0	0	14	2	0	1	0	0	3	12	49	3	0	1	64	1	51	0	0	0	52	133
5:30 PM	0	0	7	0	0	7	0	0	1	0	0	1	14	44	1	0	0	59	3	31	0	0	0	34	101
5:45 PM	0	0	5	0	0	5	0	0	1	0	0	1	6	37	0	0	0	43	0	39	0	0	0	39	88
Hourly Total	0	0	41	0	0	41	4	0	3	0	0	7	48	197	4	0	1	249	4	176	0	0	0	180	477
Grand Total	1	5	365	1	2	372	30	2	40	0	15	72	378	1464	31	2	7	1875	41	1282	3	0	0	1326	3645
Approach %	0.3	1.3	98.1	0.3	-	-	41.7	2.8	55.6	0.0	-	-	20.2	78.1	1.7	0.1	-	-	3.1	96.7	0.2	0.0	-	-	-
Total %	0.0	0.1	10.0	0.0	-	10.2	0.8	0.1	1.1	0.0	-	2.0	10.4	40.2	0.9	0.1	-	51.4	1.1	35.2	0.1	0.0	-	36.4	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	2
% Motorcycles	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	0.0	-	0.1	0.0	0.0	0.0	-	-	0.0	0.1
Cars & Light Goods	1	4	347	1	-	353	27	2	36	0	-	65	363	1387	30	2	-	1782	35	1210	2	0	-	1247	3447
% Cars & Light Goods	100.0	80.0	95.1	100.0	-	94.9	90.0	100.0	90.0	-	-	90.3	96.0	94.7	96.8	100.0	-	95.0	85.4	94.4	66.7	-	-	94.0	94.6
Buses	0	0	2	0	-	2	1	0	3	0	-	4	6	24	0	0	-	30	4	22	0	0	-	26	62
% Buses	0.0	0.0	0.5	0.0	-	0.5	3.3	0.0	7.5	-	-	5.6	1.6	1.6	0.0	0.0	-	1.6	9.8	1.7	0.0	-	-	2.0	1.7
Single-Unit Trucks	0	1	14	0	-	15	2	0	1	0	-	3	6	39	1	0	-	46	2	37	0	0	-	39	103
% Single-Unit Trucks	0.0	20.0	3.8	0.0	-	4.0	6.7	0.0	2.5	-	-	4.2	1.6	2.7	3.2	0.0	-	2.5	4.9	2.9	0.0	-	-	2.9	2.8
Articulated Trucks	0	0	1	0	-	1	0	0	0	0	-	0	1	10	0	0	-	11	0	10	1	0	-	11	23
% Articulated Trucks	0.0	0.0	0.3	0.0	-	0.3	0.0	0.0	0.0	-	-	0.0	0.3	0.7	0.0	0.0	-	0.6	0.0	0.8	33.3	-	-	0.8	0.6
Bicycles on Road	0	0	1	0	-	1	0	0	0	0	-	0	2	2	0	0	-	4	0	3	0	0	-	3	8
% Bicycles on Road	0.0	0.0	0.3	0.0	-	0.3	0.0	0.0	0.0	-	-	0.0	0.5	0.1	0.0	0.0	-	0.2	0.0	0.2	0.0	-	-	0.2	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	15	-	-	-	-	-	7	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cdowness@pts1.com

Count Name: Northside Drive & King Street N
Site Code: 230598
Start Date: 01/11/2024
Page No: 3



Turning Movement Data Plot

[illegible]

Turning Movement Peak Hour Data Plot (8:30 AM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Northside Drive & King Street N
Site Code: 230598
Start Date: 01/11/2024
Page No: 6

Turning Movement Peak Hour Data (12:00 PM)

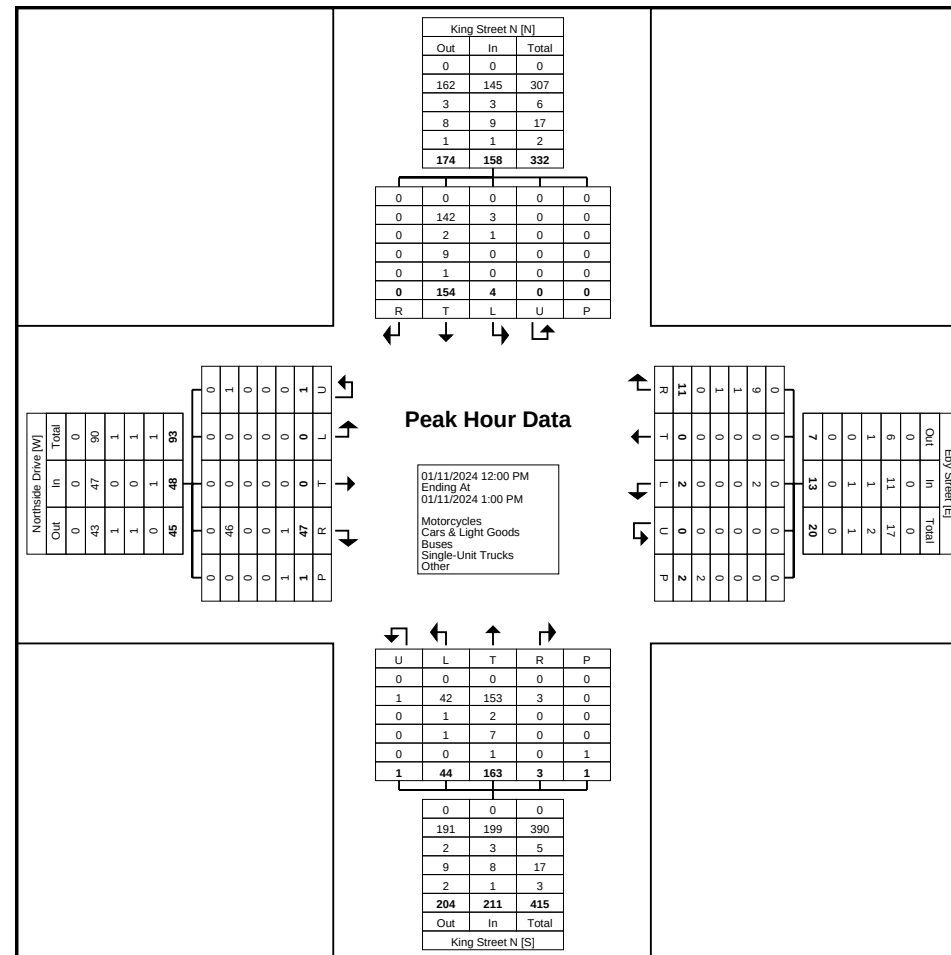
Start Time	Northside Drive Eastbound						Eby Street Westbound						King Street N Northbound						King Street N Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:00 PM	0	0	9	0	1	9	1	0	2	0	0	3	10	38	1	1	1	50	2	35	0	0	0	37	99
12:15 PM	0	0	19	0	0	19	1	0	5	0	0	6	14	41	1	0	0	56	1	47	0	0	0	48	129
12:30 PM	0	0	11	1	0	12	0	0	3	0	1	3	13	35	1	0	0	49	0	37	0	0	0	37	101
12:45 PM	0	0	8	0	0	8	0	0	1	0	1	1	7	49	0	0	0	56	1	35	0	0	0	36	101
Total	0	0	47	1	1	48	2	0	11	0	2	13	44	163	3	1	1	211	4	154	0	0	0	158	430
Approach %	0.0	0.0	97.9	2.1	-	-	15.4	0.0	84.6	0.0	-	-	20.9	77.3	1.4	0.5	-	-	2.5	97.5	0.0	0.0	-	-	-
Total %	0.0	0.0	10.9	0.2	-	11.2	0.5	0.0	2.6	0.0	-	3.0	10.2	37.9	0.7	0.2	-	49.1	0.9	35.8	0.0	0.0	-	36.7	-
PHF	0.000	0.000	0.618	0.250	-	0.632	0.500	0.000	0.550	0.000	-	0.542	0.786	0.832	0.750	0.250	-	0.942	0.500	0.819	0.000	0.000	-	0.823	0.833
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	-	-	0.0	0.0	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	-	0.0	0.0
Cars & Light Goods	0	0	46	1	-	47	2	0	9	0	-	11	42	153	3	1	-	199	3	142	0	0	-	145	402
% Cars & Light Goods	-	-	97.9	100.0	-	97.9	100.0	-	81.8	-	-	84.6	95.5	93.9	100.0	100.0	-	94.3	75.0	92.2	-	-	-	91.8	93.5
Buses	0	0	0	0	-	0	0	0	1	0	-	1	1	2	0	0	-	3	1	2	0	0	-	3	7
% Buses	-	-	0.0	0.0	-	0.0	0.0	-	9.1	-	-	7.7	2.3	1.2	0.0	0.0	-	1.4	25.0	1.3	-	-	-	1.9	1.6
Single-Unit Trucks	0	0	0	0	-	0	0	0	1	0	-	1	1	7	0	0	-	8	0	9	0	0	-	9	18
% Single-Unit Trucks	-	-	0.0	0.0	-	0.0	0.0	-	9.1	-	-	7.7	2.3	4.3	0.0	0.0	-	3.8	0.0	5.8	-	-	-	5.7	4.2
Articulated Trucks	0	0	1	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	0	1	0	0	-	1	3
% Articulated Trucks	-	-	2.1	0.0	-	2.1	0.0	-	0.0	-	-	0.0	0.0	0.6	0.0	0.0	-	0.5	0.0	0.6	-	-	-	0.6	0.7
Bicycles on Road	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	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Northside Drive & King Street N
Site Code: 230598
Start Date: 01/11/2024
Page No: 7



Turning Movement Peak Hour Data Plot (12:00 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Northside Drive & King Street N
Site Code: 230598
Start Date: 01/11/2024
Page No: 8

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Northside Drive Eastbound						Eby Street Westbound						King Street N Northbound						King Street N Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:30 PM	0	0	8	0	0	8	1	0	3	0	0	4	26	74	2	0	0	102	1	46	0	0	0	47	161
4:45 PM	0	0	10	0	0	10	0	0	3	0	0	3	21	45	0	0	0	66	2	46	0	0	0	48	127
5:00 PM	0	0	15	0	0	15	2	0	0	0	0	2	16	67	0	0	0	83	0	55	0	0	0	55	155
5:15 PM	0	0	14	0	0	14	2	0	1	0	0	3	12	49	3	0	1	64	1	51	0	0	0	52	133
Total	0	0	47	0	0	47	5	0	7	0	0	12	75	235	5	0	1	315	4	198	0	0	0	202	576
Approach %	0.0	0.0	100.0	0.0	-	-	41.7	0.0	58.3	0.0	-	-	23.8	74.6	1.6	0.0	-	-	2.0	98.0	0.0	0.0	-	-	-
Total %	0.0	0.0	8.2	0.0	-	8.2	0.9	0.0	1.2	0.0	-	2.1	13.0	40.8	0.9	0.0	-	54.7	0.7	34.4	0.0	0.0	-	35.1	-
PHF	0.000	0.000	0.783	0.000	-	0.783	0.625	0.000	0.583	0.000	-	0.750	0.721	0.794	0.417	0.000	-	0.772	0.500	0.900	0.000	0.000	-	0.918	0.894
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	-	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0
Cars & Light Goods	0	0	45	0	-	45	5	0	7	0	-	12	72	229	5	0	-	306	4	190	0	0	-	194	557
% Cars & Light Goods	-	-	95.7	-	-	95.7	100.0	-	100.0	-	-	100.0	96.0	97.4	100.0	-	-	97.1	100.0	96.0	-	-	-	96.0	96.7
Buses	0	0	0	0	-	0	0	0	0	0	-	0	1	2	0	0	-	3	0	2	0	0	-	2	5
% Buses	-	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	1.3	0.9	0.0	-	-	1.0	0.0	1.0	-	-	-	1.0	0.9
Single-Unit Trucks	0	0	2	0	-	2	0	0	0	0	-	0	2	3	0	0	-	5	0	3	0	0	-	3	10
% Single-Unit Trucks	-	-	4.3	-	-	4.3	0.0	-	0.0	-	-	0.0	2.7	1.3	0.0	-	-	1.6	0.0	1.5	-	-	-	1.5	1.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	1	0	0	-	1	2
% Articulated Trucks	-	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.4	0.0	-	-	0.3	0.0	0.5	-	-	-	0.5	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	2
% Bicycles on Road	-	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.0	-	-	-	1.0	0.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Turning Movement Peak Hour Data Plot (4:30 PM)



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Northside Drive & Sawmill Road
Site Code: 230598
Start Date: 01/11/2024
Page No: 1

Turning Movement Data

Start Time	Sawmill Road Westbound					Northside Drive Northbound					Northside Drive Southbound					Int. Total
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
7:00 AM	11	1	0	0	12	1	16	1	0	18	3	0	0	0	3	33
7:15 AM	12	0	0	0	12	4	25	0	1	29	1	1	0	0	2	43
7:30 AM	15	0	0	0	15	2	32	0	0	34	1	1	0	0	2	51
7:45 AM	23	0	0	2	23	0	32	0	0	32	2	2	0	0	4	59
Hourly Total	61	1	0	2	62	7	105	1	1	113	7	4	0	0	11	186
8:00 AM	10	1	0	0	11	2	30	0	0	32	0	1	0	0	1	44
8:15 AM	12	2	0	1	14	2	32	0	0	34	1	4	0	0	5	53
8:30 AM	21	1	0	0	22	4	29	0	0	33	4	2	0	0	6	61
8:45 AM	29	1	0	0	30	5	31	0	0	36	3	0	0	0	3	69
Hourly Total	72	5	0	1	77	13	122	0	0	135	8	7	0	0	15	227
9:00 AM	12	1	0	0	13	3	20	0	0	23	0	2	0	2	2	38
9:15 AM	22	0	0	0	22	1	17	0	0	18	2	3	0	0	5	45
9:30 AM	18	3	0	0	21	1	28	0	0	29	1	2	0	0	3	53
9:45 AM	16	2	0	0	18	1	12	0	0	13	3	0	0	0	3	34
Hourly Total	68	6	0	0	74	6	77	0	0	83	6	7	0	2	13	170
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	18	2	0	0	20	2	19	0	0	21	4	1	0	0	5	46
11:45 AM	17	4	0	0	21	0	19	0	0	19	1	2	0	0	3	43
Hourly Total	35	6	0	0	41	2	38	0	0	40	5	3	0	0	8	89
12:00 PM	18	1	0	0	19	2	20	0	0	22	5	0	0	0	5	46
12:15 PM	16	3	0	0	19	3	17	0	0	20	0	3	0	0	3	42
12:30 PM	24	1	1	1	26	3	22	0	0	25	5	0	0	0	5	56
12:45 PM	13	0	0	0	13	1	15	0	0	16	2	3	0	0	5	34
Hourly Total	71	5	1	1	77	9	74	0	0	83	12	6	0	0	18	178
1:00 PM	11	2	0	0	13	2	14	0	0	16	0	1	0	0	1	30
1:15 PM	18	1	0	0	19	1	20	0	0	21	0	2	0	0	2	42
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	29	3	0	0	32	3	34	0	0	37	0	3	0	0	3	72
3:00 PM	7	3	0	0	10	2	25	0	0	27	1	0	0	0	1	38
3:15 PM	21	2	0	0	23	2	20	0	0	22	1	1	0	0	2	47
3:30 PM	22	0	0	0	22	1	16	0	0	17	1	1	0	0	2	41
3:45 PM	29	4	0	0	33	1	21	0	0	22	1	2	0	2	3	58
Hourly Total	79	9	0	0	88	6	82	0	0	88	4	4	0	2	8	184
4:00 PM	24	2	0	0	26	0	26	0	0	26	3	1	0	0	4	56
4:15 PM	29	0	0	0	29	1	24	0	0	25	3	0	0	0	3	57
4:30 PM	31	1	0	1	32	0	18	0	0	18	4	1	0	0	5	55

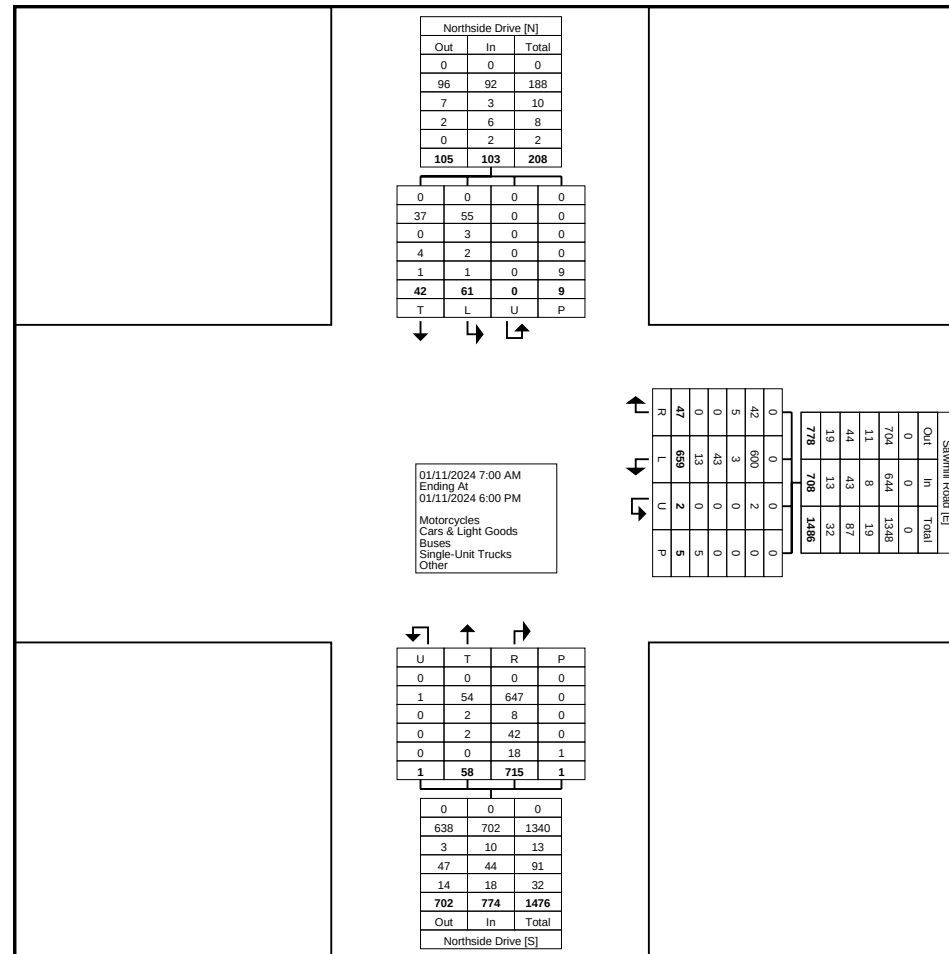
4:45 PM	48	1	1	0	50	2	22	0	0	24	2	1	0	1	3	77
Hourly Total	132	4	1	1	137	3	90	0	0	93	12	3	0	1	15	245
5:00 PM	29	4	0	0	33	3	25	0	0	28	0	3	0	0	3	64
5:15 PM	40	2	0	0	42	3	34	0	0	37	4	1	0	0	5	84
5:30 PM	29	0	0	0	29	0	22	0	0	22	0	1	0	2	1	52
5:45 PM	14	2	0	0	16	3	12	0	0	15	3	0	0	2	3	34
Hourly Total	112	8	0	0	120	9	93	0	0	102	7	5	0	4	12	234
Grand Total	659	47	2	5	708	58	715	1	1	774	61	42	0	9	103	1585
Approach %	93.1	6.6	0.3	-	-	7.5	92.4	0.1	-	-	59.2	40.8	0.0	-	-	-
Total %	41.6	3.0	0.1	-	44.7	3.7	45.1	0.1	-	48.8	3.8	2.6	0.0	-	6.5	-
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	600	42	2	-	644	54	647	1	-	702	55	37	0	-	92	1438
% Cars & Light Goods	91.0	89.4	100.0	-	91.0	93.1	90.5	100.0	-	90.7	90.2	88.1	-	-	89.3	90.7
Buses	3	5	0	-	8	2	8	0	-	10	3	0	0	-	3	21
% Buses	0.5	10.6	0.0	-	1.1	3.4	1.1	0.0	-	1.3	4.9	0.0	-	-	2.9	1.3
Single-Unit Trucks	43	0	0	-	43	2	42	0	-	44	2	4	0	-	6	93
% Single-Unit Trucks	6.5	0.0	0.0	-	6.1	3.4	5.9	0.0	-	5.7	3.3	9.5	-	-	5.8	5.9
Articulated Trucks	13	0	0	-	13	0	17	0	-	17	0	1	0	-	1	31
% Articulated Trucks	2.0	0.0	0.0	-	1.8	0.0	2.4	0.0	-	2.2	0.0	2.4	-	-	1.0	2.0
Bicycles on Road	0	0	0	-	0	0	1	0	-	1	1	0	0	-	1	2
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	-	0.1	1.6	0.0	-	-	1.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	0.0	-
Pedestrians	-	-	-	5	-	-	-	-	1	-	-	-	-	9	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



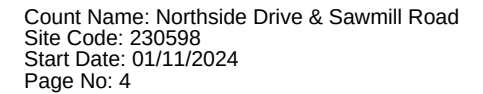
Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Northside Drive & Sawmill Road
Site Code: 230598
Start Date: 01/11/2024
Page No: 3



Turning Movement Data Plot



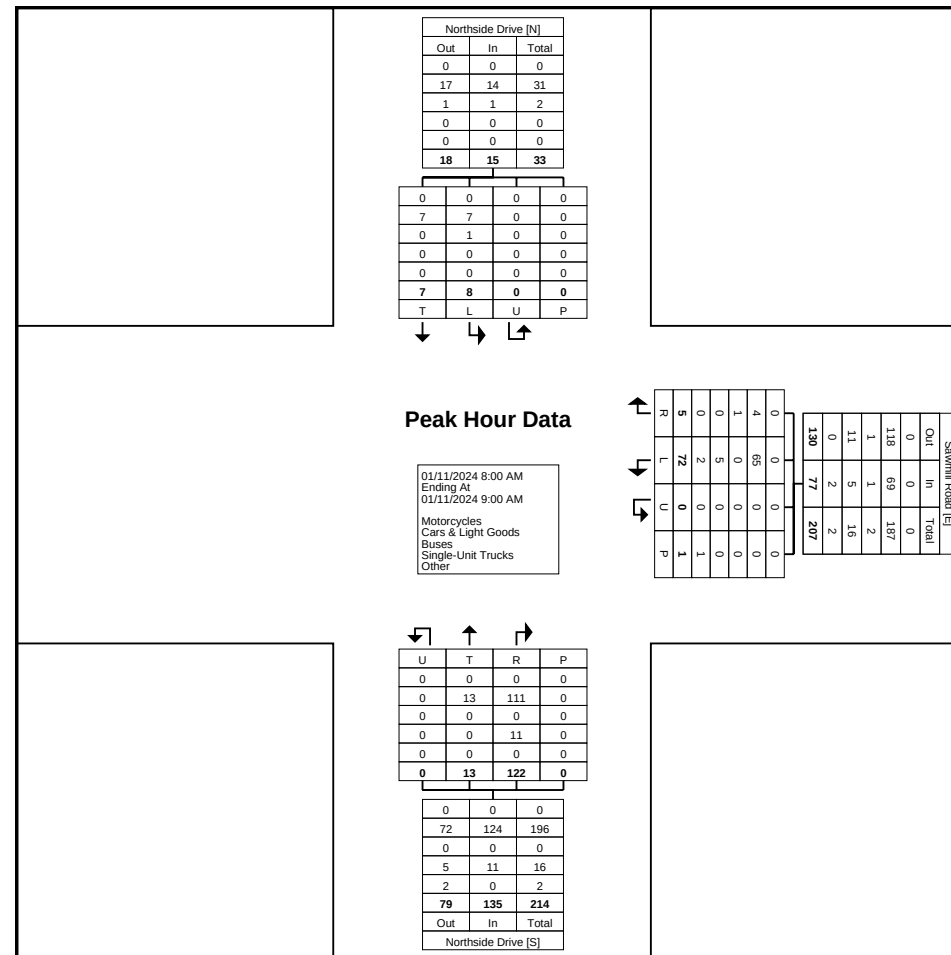
Start Time	Sawmill Road Westbound					Northside Drive Northbound					Northside Drive Southbound					Int. Total
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
8:00 AM	10	1	0	0	11	2	30	0	0	32	0	1	0	0	1	44
8:15 AM	12	2	0	1	14	2	32	0	0	34	1	4	0	0	5	53
8:30 AM	21	1	0	0	22	4	29	0	0	33	4	2	0	0	6	61
8:45 AM	29	1	0	0	30	5	31	0	0	36	3	0	0	0	3	69
Total	72	5	0	1	77	13	122	0	0	135	8	7	0	0	15	227
Approach %	93.5	6.5	0.0	-	-	9.6	90.4	0.0	-	-	53.3	46.7	0.0	-	-	-
Total %	31.7	2.2	0.0	-	33.9	5.7	53.7	0.0	-	59.5	3.5	3.1	0.0	-	6.6	-
PHF	0.621	0.625	0.000	-	0.642	0.650	0.953	0.000	-	0.938	0.500	0.438	0.000	-	0.625	0.822
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	65	4	0	-	69	13	111	0	-	124	7	7	0	-	14	207
% Cars & Light Goods	90.3	80.0	-	-	89.6	100.0	91.0	-	-	91.9	87.5	100.0	-	-	93.3	91.2
Buses	0	1	0	-	1	0	0	0	-	0	1	0	0	-	1	2
% Buses	0.0	20.0	-	-	1.3	0.0	0.0	-	-	0.0	12.5	0.0	-	-	6.7	0.9
Single-Unit Trucks	5	0	0	-	5	0	11	0	-	11	0	0	0	-	0	16
% Single-Unit Trucks	6.9	0.0	-	-	6.5	0.0	9.0	-	-	8.1	0.0	0.0	-	-	0.0	7.0
Articulated Trucks	2	0	0	-	2	0	0	0	-	0	0	0	0	-	0	2
% Articulated Trucks	2.8	0.0	-	-	2.6	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.9
Bicycles on Road	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	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-



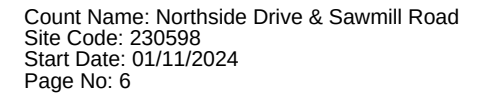
Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Northside Drive & Sawmill Road
Site Code: 230598
Start Date: 01/11/2024
Page No: 5



Turning Movement Peak Hour Data Plot (8:00 AM)

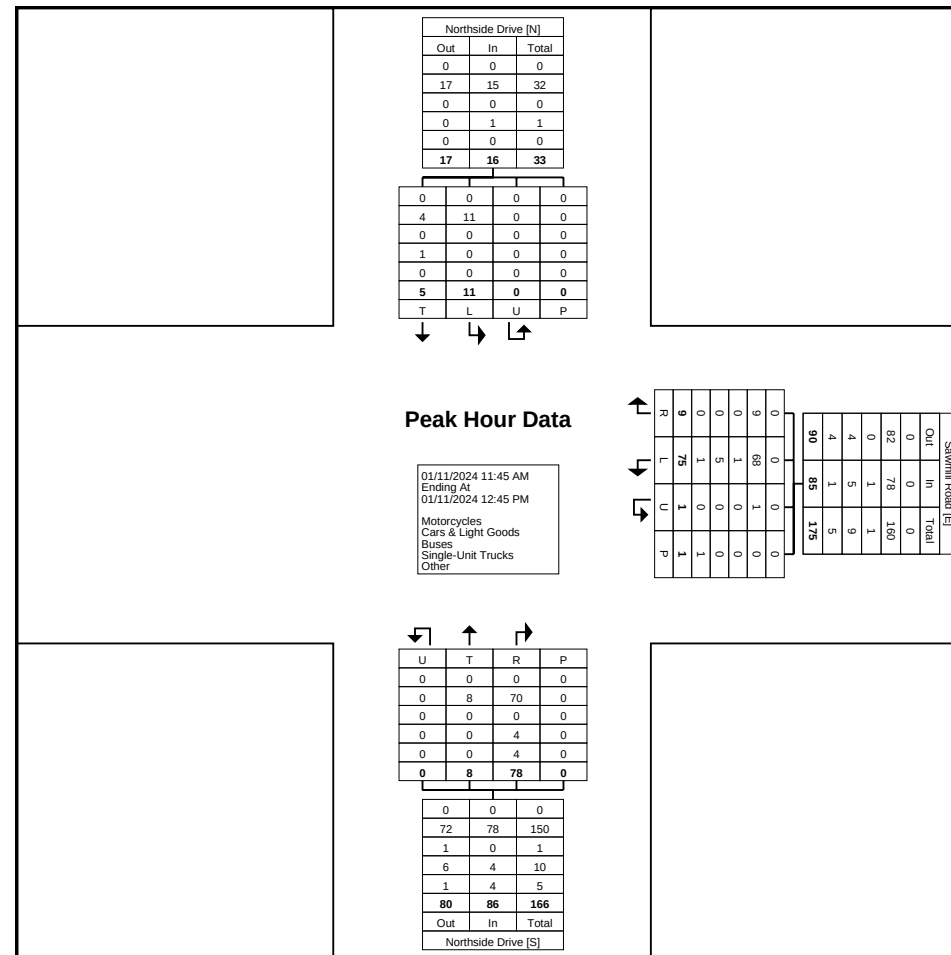




Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Northside Drive & Sawmill Road
Site Code: 230598
Start Date: 01/11/2024
Page No: 7



Turning Movement Peak Hour Data Plot (11:45 AM)

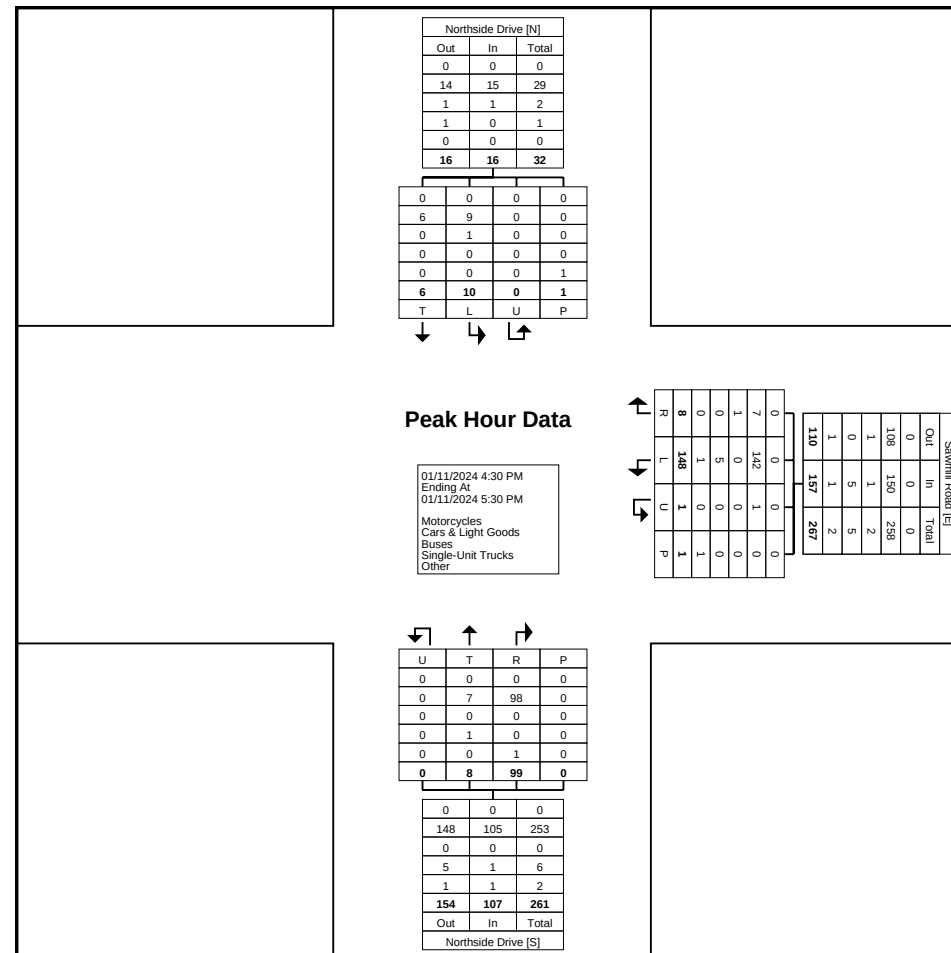
[illegible]



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@pts1.com

Count Name: Northside Drive & Sawmill Road
Site Code: 230598
Start Date: 01/11/2024
Page No: 9



Turning Movement Peak Hour Data Plot (4:30 PM)

Appendix B

Base Year Operations



Lanes, Volumes, Timings

51 Hawkesville Road, St. Jacobs TIS

1: Northside Drive & Hawkesville Road/Private Driveway

Base Year AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	0	65	1	0	2	30	12	1	0	9	70
Future Volume (vph)	121	0	65	1	0	2	30	12	1	0	9	70
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. 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
Ped Bike Factor												
Frt		0.953			0.910			0.997			0.880	
Flt Protected		0.968			0.984			0.966				
Satd. Flow (prot)	0	1310	0	0	1373	0	0	1398	0	0	1281	0
Flt Permitted		0.968			0.984			0.966				
Satd. Flow (perm)	0	1310	0	0	1373	0	0	1398	0	0	1281	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		311.3			56.8			107.9			137.6	
Travel Time (s)		22.4			4.1			7.8			9.9	
Confl. Peds. (#/hr)			1	1					2	2		
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
Heavy Vehicles (%)	9%	0%	6%	0%	0%	0%	8%	0%	0%	0%	0%	6%
Adj. Flow (vph)	121	0	65	1	0	2	30	12	1	0	9	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	186	0	0	3	0	0	43	0	0	79	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 36.3% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	121	0	65	1	0	2	30	12	1	0	9	70
Future Vol, veh/h	121	0	65	1	0	2	30	12	1	0	9	70
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	9	0	6	0	0	0	8	0	0	0	0	6
Mvmt Flow	121	0	65	1	0	2	30	12	1	0	9	70

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	118	119	45	153	154	15	79	0	0	15	0	0
Stage 1	44	44	-	75	75	-	-	-	-	-	-	-
Stage 2	74	75	-	78	79	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.5	6.26	7.1	6.5	6.2	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4	3.354	3.5	4	3.3	2.272	-	-	2.2	-	-
Pot Cap-1 Maneuver	842	775	1014	819	741	1070	1482	-	-	1616	-	-
Stage 1	953	862	-	939	836	-	-	-	-	-	-	-
Stage 2	918	836	-	936	833	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	828	758	1013	753	725	1068	1482	-	-	1613	-	-
Mov Cap-2 Maneuver	828	758	-	753	725	-	-	-	-	-	-	-
Stage 1	934	862	-	918	818	-	-	-	-	-	-	-
Stage 2	898	818	-	875	833	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.2		8.9		5.2		0	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1482	-	-	884 937	1613	-	-
HCM Lane V/C Ratio	0.02	-	-	0.21 0.003	-	-	-
HCM Control Delay (s)	7.5	0	-	10.2 8.9	0	-	-
HCM Lane LOS	A	A	-	B A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8 0	0	-	-

Lanes, Volumes, Timings
2: Northside Drive & Sawmill Road

51 Hawkesville Road, St. Jacobs TIS
Base Year AM

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	72	5	13	122	8	7
Future Volume (vph)	72	5	13	122	8	7
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.991		0.878			
Flt Protected	0.955					0.974
Satd. Flow (prot)	1493	0	1325	0	0	1486
Flt Permitted	0.955					0.974
Satd. Flow (perm)	1493	0	1325	0	0	1486
Link Speed (k/h)	50		50			50
Link Distance (m)	200.0		137.6			200.7
Travel Time (s)	14.4		9.9			14.5
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	20%	0%	9%	13%	0%
Adj. Flow (vph)	72	5	13	122	8	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	77	0	135	0	0	15
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	21.0%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	72	5	13	122	8	7
Future Vol, veh/h	72	5	13	122	8	7
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	20	0	9	13	0
Mvmt Flow	72	5	13	122	8	7
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	98	75	0	0	136	0
Stage 1	75	-	-	-	-	-
Stage 2	23	-	-	-	-	-
Critical Hdwy	6.5	6.4	-	-	4.23	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.48	-	-	2.317	-
Pot Cap-1 Maneuver	882	939	-	-	1383	-
Stage 1	928	-	-	-	-	-
Stage 2	979	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	876	938	-	-	1382	-
Mov Cap-2 Maneuver	876	-	-	-	-	-
Stage 1	927	-	-	-	-	-
Stage 2	973	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.5	0		4.1		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	880		1382	-	
HCM Lane V/C Ratio	-	0.088		0.006	-	
HCM Control Delay (s)	-	9.5		7.6	0	
HCM Lane LOS	-	A		A	A	
HCM 95th %tile Q(veh)	-	0.3		0	-	

Lanes, Volumes, Timings
3: King Street North & Northside Drive/Eby Street

51 Hawkesville Road, St. Jacobs TIS

Base Year AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2	73	5	1	2	42	171	6	10	175	0
Future Volume (vph)	0	2	73	5	1	2	42	171	6	10	175	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. 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
Ped Bike Factor												
Frt		0.869			0.966			0.996				
Flt Protected					0.970			0.991			0.997	
Satd. Flow (prot)	0	1282	0	0	1277	0	0	1396	0	0	1439	0
Flt Permitted					0.970			0.991			0.997	
Satd. Flow (perm)	0	1282	0	0	1277	0	0	1396	0	0	1439	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		161.3			149.2			149.7			236.4	
Travel Time (s)		11.6			10.7			10.8			17.0	
Confl. Peds. (#/hr)									1	1		
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
Heavy Vehicles (%)	0%	0%	4%	20%	0%	0%	7%	9%	0%	10%	6%	0%
Adj. Flow (vph)	0	2	73	5	1	2	42	171	6	10	175	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	75	0	0	8	0	0	219	0	0	185	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	42.1%											
Analysis Period (min)	15											
	ICU Level of Service A											

HCM 6th TWSC
3: King Street North & Northside Drive/Eby Street

51 Hawkesville Road, St. Jacobs TIS
Base Year AM

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	2	73	5	1	2	42	171	6	10	175	0
Future Vol, veh/h	0	2	73	5	1	2	42	171	6	10	175	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	4	20	0	0	7	9	0	10	6	0
Mvmt Flow	0	2	73	5	1	2	42	171	6	10	175	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	455	457	175	492	454	175	175	0	0	178	0	0
Stage 1	195	195	-	259	259	-	-	-	-	-	-	-
Stage 2	260	262	-	233	195	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.3	6.5	6.2	4.17	-	-	4.2	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.68	4	3.3	2.263	-	-	2.29	-	-
Pot Cap-1 Maneuver	519	503	863	459	505	874	1372	-	-	1351	-	-
Stage 1	811	743	-	708	697	-	-	-	-	-	-	-
Stage 2	749	695	-	731	743	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	500	481	863	405	483	873	1372	-	-	1350	-	-
Mov Cap-2 Maneuver	500	481	-	405	483	-	-	-	-	-	-	-
Stage 1	783	737	-	683	673	-	-	-	-	-	-	-
Stage 2	721	671	-	662	737	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.7		12.6		1.5		0.4					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1372	-	-	845	479	1350	-	-				
HCM Lane V/C Ratio	0.031	-	-	0.089	0.017	0.007	-	-				
HCM Control Delay (s)	7.7	0	-	9.7	12.6	7.7	0	-				
HCM Lane LOS	A	A	-	A	B	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.1	0	-	-				

Lanes, Volumes, Timings

51 Hawkesville Road, St. Jacobs TIS

1: Northside Drive & Hawkesville Road/Private Driveway

Base Year PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	0	43	3	1	1	68	6	1	0	2	153
Future Volume (vph)	100	0	43	3	1	1	68	6	1	0	2	153
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. 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
Ped Bike Factor												
Frt		0.959			0.973			0.998			0.867	
Flt Protected		0.966			0.971			0.957				
Satd. Flow (prot)	0	1399	0	0	1448	0	0	1407	0	0	1278	0
Flt Permitted		0.966			0.971			0.957				
Satd. Flow (perm)	0	1399	0	0	1448	0	0	1407	0	0	1278	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		311.3			56.8			107.9			137.6	
Travel Time (s)		22.4			4.1			7.8			9.9	
Confl. Peds. (#/hr)			2	2			2		5	5		2
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
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%	3%	17%	0%	0%	0%	4%
Adj. Flow (vph)	100	0	43	3	1	1	68	6	1	0	2	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	143	0	0	5	0	0	75	0	0	155	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 41.2%

ICU Level of Service A

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	0	43	3	1	1	68	6	1	0	2	153
Future Vol, veh/h	100	0	43	3	1	1	68	6	1	0	2	153
Conflicting Peds, #/hr	0	0	2	2	0	0	2	0	5	5	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	5	0	0	0	3	17	0	0	0	4
Mvmt Flow	100	0	43	3	1	1	68	6	1	0	2	153
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	225	229	83	250	305	12	157	0	0	12	0	0
Stage 1	81	81	-	148	148	-	-	-	-	-	-	-
Stage 2	144	148	-	102	157	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.25	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.345	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	735	674	968	708	612	1074	1417	-	-	1620	-	-
Stage 1	932	832	-	859	779	-	-	-	-	-	-	-
Stage 2	864	779	-	909	772	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	706	638	965	648	579	1070	1415	-	-	1614	-	-
Mov Cap-2 Maneuver	706	638	-	648	579	-	-	-	-	-	-	-
Stage 1	886	830	-	814	738	-	-	-	-	-	-	-
Stage 2	821	738	-	867	770	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.8		10.3		7		0					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1415	-	-	768	686	1614	-	-				
HCM Lane V/C Ratio	0.048	-	-	0.186	0.007	-	-	-				
HCM Control Delay (s)	7.7	0	-	10.8	10.3	0	-	-				
HCM Lane LOS	A	A	-	B	B	A	-	-				
HCM 95th %tile Q(veh)	0.2	-	-	0.7	0	0	-	-				

Lanes, Volumes, Timings
2: Northside Drive & Sawmill Road

51 Hawkesville Road, St. Jacobs TIS
Base Year PM

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	149	8	8	99	10	6
Future Volume (vph)	149	8	8	99	10	6
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.993		0.875			
Flt Protected	0.955					0.970
Satd. Flow (prot)	1585	0	1414	0	0	1490
Flt Permitted	0.955					0.970
Satd. Flow (perm)	1585	0	1414	0	0	1490
Link Speed (k/h)	50		50			50
Link Distance (m)	200.0		137.6			200.7
Travel Time (s)	14.4		9.9			14.5
Confl. Peds. (#/hr)		1		1	1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	13%	13%	0%	10%	0%
Adj. Flow (vph)	149	8	8	99	10	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	157	0	107	0	0	16
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	24.0%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	5.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	149	8	8	99	10	6
Future Vol, veh/h	149	8	8	99	10	6
Conflicting Peds, #/hr	0	1	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	4	13	13	0	10	0
Mvmt Flow	149	8	8	99	10	6
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	85	60	0	0	108	0
Stage 1	59	-	-	-	-	-
Stage 2	26	-	-	-	-	-
Critical Hdwy	6.44	6.33	-	-	4.2	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.417	-	-	2.29	-
Pot Cap-1 Maneuver	911	975	-	-	1434	-
Stage 1	959	-	-	-	-	-
Stage 2	991	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	904	973	-	-	1433	-
Mov Cap-2 Maneuver	904	-	-	-	-	-
Stage 1	958	-	-	-	-	-
Stage 2	984	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.8	0	4.7			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	907	1433	-	
HCM Lane V/C Ratio	-	-	0.173	0.007	-	
HCM Control Delay (s)	-	-	9.8	7.5	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0.6	0	-	

Lanes, Volumes, Timings
3: King Street North & Northside Drive/Eby Street

51 Hawkesville Road, St. Jacobs TIS

Base Year PM

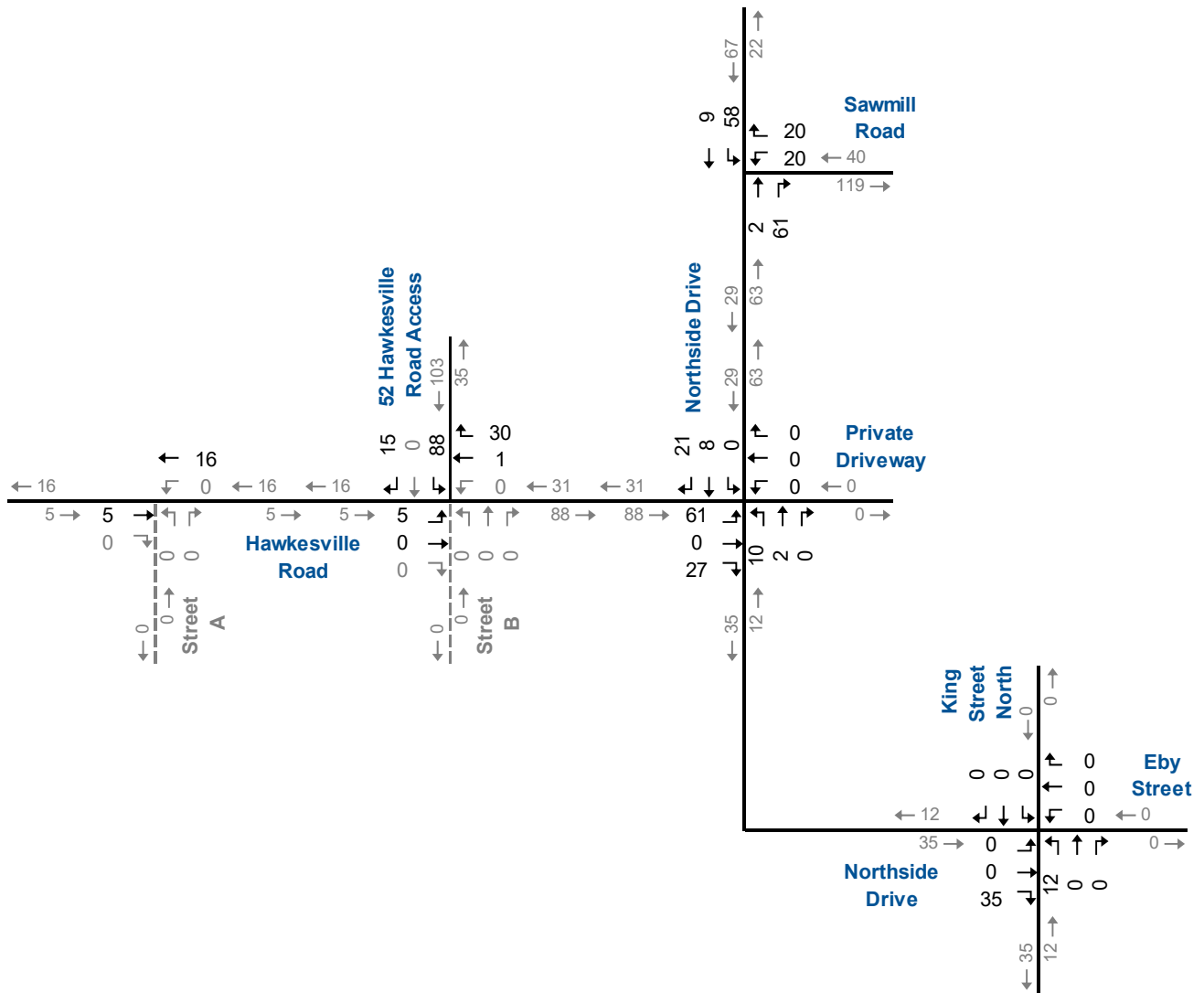
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	48	5	0	7	75	235	5	4	198	0
Future Volume (vph)	0	0	48	5	0	7	75	235	5	4	198	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. 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
Ped Bike Factor												
Frt		0.865			0.921			0.998				
Flt Protected					0.980			0.988			0.999	
Satd. Flow (prot)	0	1275	0	0	1383	0	0	1465	0	0	1488	0
Flt Permitted					0.980			0.988			0.999	
Satd. Flow (perm)	0	1275	0	0	1383	0	0	1465	0	0	1488	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		161.3			149.2			149.7			236.4	
Travel Time (s)		11.6			10.7			10.8			17.0	
Confl. Peds. (#/hr)			1	1								
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
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	4%	3%	0%	0%	3%	0%
Adj. Flow (vph)	0	0	48	5	0	7	75	235	5	4	198	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	12	0	0	315	0	0	202	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	50.1%											
Analysis Period (min)	15											
	ICU Level of Service A											

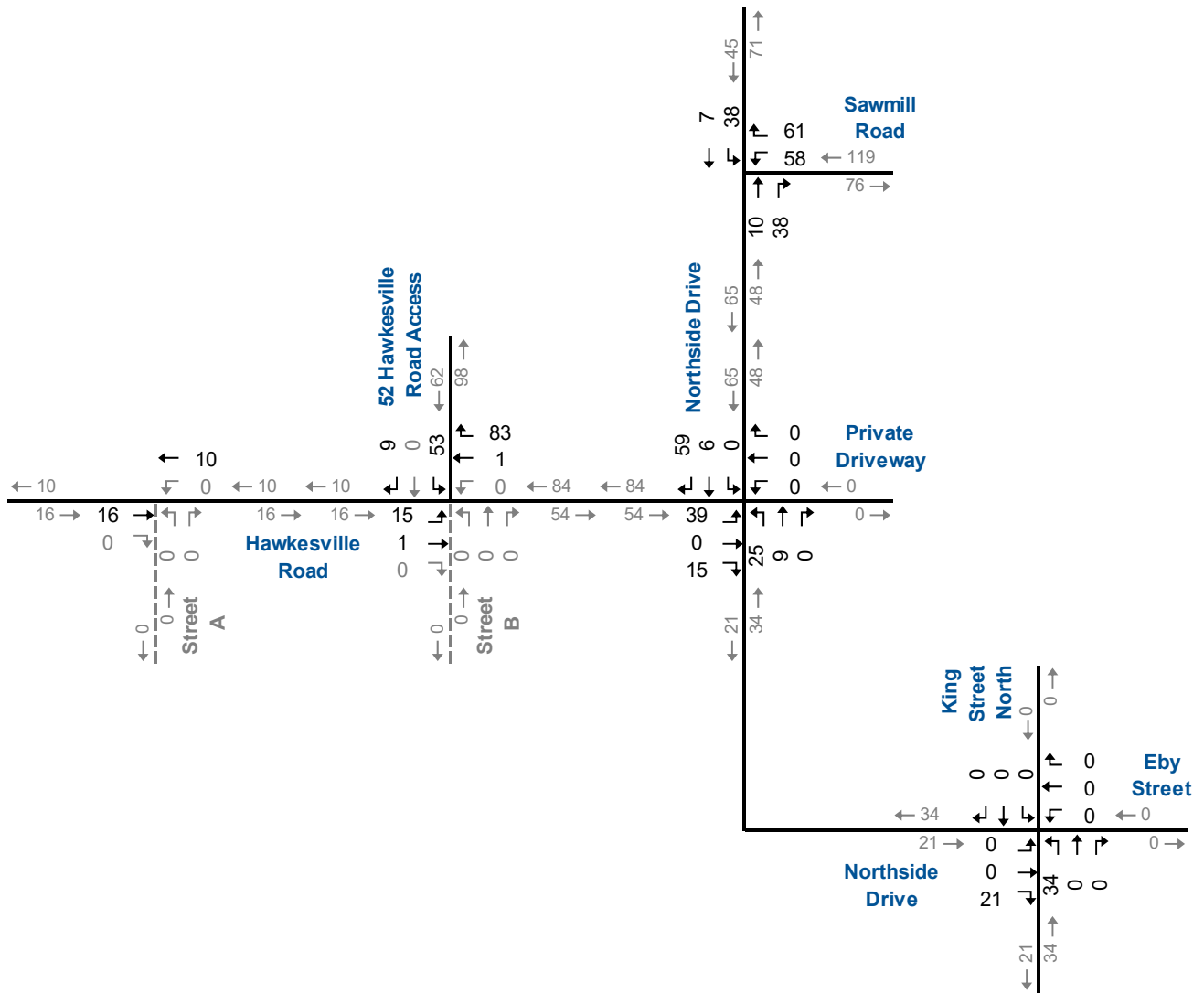
Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	48	5	0	7	75	235	5	4	198	0
Future Vol, veh/h	0	0	48	5	0	7	75	235	5	4	198	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	4	0	0	0	4	3	0	0	3	0
Mvmt Flow	0	0	48	5	0	7	75	235	5	4	198	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	597	596	199	619	594	238	198	0	0	240	0	0
Stage 1	206	206	-	388	388	-	-	-	-	-	-	-
Stage 2	391	390	-	231	206	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.1	6.5	6.2	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.5	4	3.3	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	418	420	837	404	421	806	1363	-	-	1339	-	-
Stage 1	801	735	-	640	612	-	-	-	-	-	-	-
Stage 2	637	611	-	776	735	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	393	392	836	361	393	806	1363	-	-	1339	-	-
Mov Cap-2 Maneuver	393	392	-	361	393	-	-	-	-	-	-	-
Stage 1	750	733	-	599	573	-	-	-	-	-	-	-
Stage 2	591	572	-	729	733	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.6		11.9		1.9		0.2					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1363	-	-	836	532	1339	-	-				
HCM Lane V/C Ratio	0.055	-	-	0.057	0.023	0.003	-	-				
HCM Control Delay (s)	7.8	0	-	9.6	11.9	7.7	0	-				
HCM Lane LOS	A	A	-	A	B	A	A	-				
HCM 95th %tile Q(veh)	0.2	-	-	0.2	0.1	0	-	-				

Appendix C

Background Development Traffic Volumes







Appendix D

Background Traffic Operations



Lanes, Volumes, Timings

51 Hawkesville Road, St. Jacobs TIS

1: Northside Drive & Hawkesville Road/Private Driveway

Background AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	198	0	101	1	0	2	44	16	1	0	18	100
Future Volume (vph)	198	0	101	1	0	2	44	16	1	0	18	100
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. 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
Ped Bike Factor												
Frt		0.954			0.910			0.998			0.886	
Flt Protected		0.968			0.984			0.965				
Satd. Flow (prot)	0	1311	0	0	1373	0	0	1396	0	0	1292	0
Flt Permitted		0.968			0.984			0.965				
Satd. Flow (perm)	0	1311	0	0	1373	0	0	1396	0	0	1292	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		287.0			56.8			107.9			137.6	
Travel Time (s)		20.7			4.1			7.8			9.9	
Confl. Peds. (#/hr)			1	1					2	2		
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
Heavy Vehicles (%)	9%	0%	6%	0%	0%	0%	8%	0%	0%	0%	0%	6%
Adj. Flow (vph)	198	0	101	1	0	2	44	16	1	0	18	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	299	0	0	3	0	0	61	0	0	118	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 45.3% ICU Level of Service A

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	8.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	198	0	101	1	0	2	44	16	1	0	18	100
Future Vol, veh/h	198	0	101	1	0	2	44	16	1	0	18	100
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	9	0	6	0	0	0	8	0	0	0	0	6
Mvmt Flow	198	0	101	1	0	2	44	16	1	0	18	100
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	172	175	69	126	225	19	118	0	0	19	0	0
Stage 1	68	68	-	107	107	-	-	-	-	-	-	-
Stage 2	104	107	-	19	118	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.5	6.26	7.1	6.5	6.2	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4	3.354	3.5	4	3.3	2.272	-	-	2.2	-	-
Pot Cap-1 Maneuver	776	722	983	853	678	1066	1434	-	-	1611	-	-
Stage 1	925	842	-	904	811	-	-	-	-	-	-	-
Stage 2	885	811	-	1005	802	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	750	699	982	740	656	1064	1434	-	-	1608	-	-
Mov Cap-2 Maneuver	750	699	-	740	656	-	-	-	-	-	-	-
Stage 1	925	842	-	875	785	-	-	-	-	-	-	-
Stage 2	856	784	-	901	802	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Ctrl Dly, s/v	11.95		8.89			5.48			0			
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1283	-	-	815	928	1608	-	-				
HCM Lane V/C Ratio	0.031	-	-	0.367	0.003	-	-	-				
HCM Ctrl Dly (s/v)	7.6	0	-	11.9	8.9	0	-	-				
HCM Lane LOS	A	A	-	B	A	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	1.7	0	0	-	-				

Lanes, Volumes, Timings
2: Northside Drive & Sawmill Road

51 Hawkesville Road, St. Jacobs TIS
Background AM

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	101	26	17	199	67	17
Future Volume (vph)	101	26	17	199	67	17
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.972		0.876			
Flt Protected	0.962					0.962
Satd. Flow (prot)	1457	0	1320	0	0	1422
Flt Permitted	0.962					0.962
Satd. Flow (perm)	1457	0	1320	0	0	1422
Link Speed (k/h)	50		50			50
Link Distance (m)	200.0		137.6			200.7
Travel Time (s)	14.4		9.9			14.5
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	20%	0%	9%	13%	0%
Adj. Flow (vph)	101	26	17	199	67	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	127	0	216	0	0	84
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	38.3%			ICU Level of Service A		
Analysis Period (min)	15					

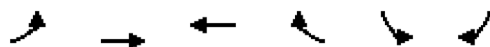
Intersection						
Int Delay, s/veh	4.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	101	26	17	199	67	17
Future Vol, veh/h	101	26	17	199	67	17
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	20	0	9	13	0
Mvmt Flow	101	26	17	199	67	17
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	269	118	0	0	217	0
Stage 1	118	-	-	-	-	-
Stage 2	151	-	-	-	-	-
Critical Hdwy	6.5	6.4	-	-	4.23	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.48	-	-	2.317	-
Pot Cap-1 Maneuver	704	888	-	-	1290	-
Stage 1	888	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	666	887	-	-	1289	-
Mov Cap-2 Maneuver	666	-	-	-	-	-
Stage 1	887	-	-	-	-	-
Stage 2	813	-	-	-	-	-
Approach	WB	NB	SB			
HCM Ctrl Dly, s/v	11.25	0	6.34			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	702	1277	-	
HCM Lane V/C Ratio	-	-	0.181	0.052	-	
HCM Ctrl Dly (s/v)	-	-	11.3	7.9	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.7	0.2	-	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2	118	6	1	2	60	193	7	11	198	0
Future Volume (vph)	0	2	118	6	1	2	60	193	7	11	198	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. 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
Ped Bike Factor												
Frt		0.867			0.970			0.996				
Flt Protected					0.968			0.989			0.997	
Satd. Flow (prot)	0	1279	0	0	1270	0	0	1394	0	0	1439	0
Flt Permitted					0.968			0.989			0.997	
Satd. Flow (perm)	0	1279	0	0	1270	0	0	1394	0	0	1439	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		161.3			149.2			149.7			236.4	
Travel Time (s)		11.6			10.7			10.8			17.0	
Confl. Peds. (#/hr)									1	1		
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
Heavy Vehicles (%)	0%	0%	4%	20%	0%	0%	7%	9%	0%	10%	6%	0%
Adj. Flow (vph)	0	2	118	6	1	2	60	193	7	11	198	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	120	0	0	9	0	0	260	0	0	209	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	49.6%											
Analysis Period (min)	15											
	ICU Level of Service A											

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	2	118	6	1	2	60	193	7	11	198	0
Future Vol, veh/h	0	2	118	6	1	2	60	193	7	11	198	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	4	20	0	0	7	9	0	10	6	0
Mvmt Flow	0	2	118	6	1	2	60	193	7	11	198	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	534	541	198	539	538	198	198	0	0	201	0	0
Stage 1	220	220	-	318	318	-	-	-	-	-	-	-
Stage 2	314	321	-	221	220	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.3	6.5	6.2	4.17	-	-	4.2	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.68	4	3.3	2.263	-	-	2.29	-	-
Pot Cap-1 Maneuver	460	451	838	427	453	849	1345	-	-	1325	-	-
Stage 1	787	725	-	657	658	-	-	-	-	-	-	-
Stage 2	702	655	-	742	725	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	431	424	838	343	426	848	1345	-	-	1324	-	-
Mov Cap-2 Maneuver	431	424	-	343	426	-	-	-	-	-	-	-
Stage 1	780	718	-	624	624	-	-	-	-	-	-	-
Stage 2	664	622	-	630	718	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	10.11		14.08		1.8		0.41					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	412	-	-	825	406	95	-	-				
HCM Lane V/C Ratio	0.045	-	-	0.146	0.022	0.008	-	-				
HCM Ctrl Dly (s/v)	7.8	0	-	10.1	14.1	7.7	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.1	0	-	-				

Lanes, Volumes, Timings
5: Hawkesville Road & 52 Hawkesville Road Access

51 Hawkesville Road, St. Jacobs TIS
Background AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	210	114	30	88	15
Future Volume (vph)	5	210	114	30	88	15
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.972		0.980	
Flt Protected		0.999			0.959	
Satd. Flow (prot)	0	1511	1497	0	1608	0
Flt Permitted		0.999			0.959	
Satd. Flow (perm)	0	1511	1497	0	1608	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		80.6	287.0		70.2	
Travel Time (s)		5.8	20.7		5.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	8%	7%	2%	2%	2%
Adj. Flow (vph)	5	210	114	30	88	15
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	215	144	0	103	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 30.3% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	210	114	30	88	15
Future Vol, veh/h	5	210	114	30	88	15
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	100	100	100	100	100	100
Heavy Vehicles, %	2	8	7	2	2	2
Mvmt Flow	5	210	114	30	88	15
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	144	0	-	0	349	129
Stage 1	-	-	-	-	129	-
Stage 2	-	-	-	-	220	-
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	1438	-	-	-	648	921
Stage 1	-	-	-	-	897	-
Stage 2	-	-	-	-	817	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1438	-	-	-	646	921
Mov Cap-2 Maneuver	-	-	-	-	646	-
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	817	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.17	0		11.29		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	42	-	-	-	675	
HCM Lane V/C Ratio	0.003	-	-	-	0.153	
HCM Ctrl Dly (s/v)	7.5	0	-	-	11.3	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.5	

Lanes, Volumes, Timings

51 Hawkesville Road, St. Jacobs TIS

1: Northside Drive & Hawkesville Road/Private Driveway

Background PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	0	64	3	1	1	102	16	1	0	8	232
Future Volume (vph)	152	0	64	3	1	1	102	16	1	0	8	232
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. 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
Ped Bike Factor												
Frt		0.960			0.973			0.999			0.869	
Flt Protected		0.966			0.971			0.959				
Satd. Flow (prot)	0	1401	0	0	1448	0	0	1400	0	0	1282	0
Flt Permitted		0.966			0.971			0.959				
Satd. Flow (perm)	0	1401	0	0	1448	0	0	1400	0	0	1282	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		287.0			56.8			107.9			137.6	
Travel Time (s)		20.7			4.1			7.8			9.9	
Confl. Peds. (#/hr)			2	2			2		5	5		2
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
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%	3%	17%	0%	0%	0%	4%
Adj. Flow (vph)	152	0	64	3	1	1	102	16	1	0	8	232
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	216	0	0	5	0	0	119	0	0	240	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 56.5% ICU Level of Service B

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	6.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	152	0	64	3	1	1	102	16	1	0	8	232
Future Vol, veh/h	152	0	64	3	1	1	102	16	1	0	8	232
Conflicting Peds, #/hr	0	0	2	2	0	0	2	0	5	5	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	5	0	0	0	3	17	0	0	0	4
Mvmt Flow	152	0	64	3	1	1	102	16	1	0	8	232
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	347	352	128	236	468	22	242	0	0	22	0	0
Stage 1	126	126	-	226	226	-	-	-	-	-	-	-
Stage 2	221	226	-	10	242	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.25	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.345	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	612	576	914	723	496	1062	1319	-	-	1607	-	-
Stage 1	883	796	-	782	721	-	-	-	-	-	-	-
Stage 2	786	721	-	1016	709	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	561	528	911	616	455	1058	1317	-	-	1600	-	-
Mov Cap-2 Maneuver	561	528	-	616	455	-	-	-	-	-	-	-
Stage 1	881	794	-	718	662	-	-	-	-	-	-	-
Stage 2	723	662	-	943	708	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	13.6		10.81		6.83		0					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1304	-	-	633	624	1600	-	-				
HCM Lane V/C Ratio	0.077	-	-	0.341	0.008	-	-	-				
HCM Ctrl Dly (s/v)	8	0	-	13.6	10.8	0	-	-				
HCM Lane LOS	A	A	-	B	B	A	-	-				
HCM 95th %tile Q(veh)	0.3	-	-	1.5	0	0	-	-				

Lanes, Volumes, Timings
2: Northside Drive & Sawmill Road

51 Hawkesville Road, St. Jacobs TIS
Background PM

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	227	70	19	150	49	14
Future Volume (vph)	227	70	19	150	49	14
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.968		0.880			
Flt Protected	0.963					0.963
Satd. Flow (prot)	1533	0	1415	0	0	1458
Flt Permitted	0.963					0.963
Satd. Flow (perm)	1533	0	1415	0	0	1458
Link Speed (k/h)	50		50			50
Link Distance (m)	200.0		137.6			200.7
Travel Time (s)	14.4		9.9			14.5
Confl. Peds. (#/hr)		1		1	1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	13%	13%	0%	10%	0%
Adj. Flow (vph)	227	70	19	150	49	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	297	0	169	0	0	63
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	44.1%			ICU Level of Service A		
Analysis Period (min)	15					

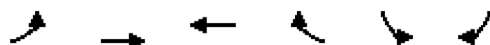
Intersection						
Int Delay, s/veh	7.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	227	70	19	150	49	14
Future Vol, veh/h	227	70	19	150	49	14
Conflicting Peds, #/hr	0	1	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	4	13	13	0	10	0
Mvmt Flow	227	70	19	150	49	14
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	207	96	0	0	170	0
Stage 1	95	-	-	-	-	-
Stage 2	112	-	-	-	-	-
Critical Hdwy	6.44	6.33	-	-	4.2	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.417	-	-	2.29	-
Pot Cap-1 Maneuver	777	931	-	-	1360	-
Stage 1	924	-	-	-	-	-
Stage 2	908	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	748	930	-	-	1359	-
Mov Cap-2 Maneuver	748	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Approach	WB	NB	SB			
HCM Ctrl Dly, s/v	12.36	0	6.03			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	784	1349	-	
HCM Lane V/C Ratio	-	-	0.379	0.036	-	
HCM Ctrl Dly (s/v)	-	-	12.4	7.7	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	1.8	0.1	-	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	75	6	0	8	119	266	6	5	224	0
Future Volume (vph)	0	0	75	6	0	8	119	266	6	5	224	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. 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
Ped Bike Factor												
Frt		0.865			0.923			0.998				
Flt Protected					0.979			0.985			0.999	
Satd. Flow (prot)	0	1275	0	0	1385	0	0	1459	0	0	1488	0
Flt Permitted					0.979			0.985			0.999	
Satd. Flow (perm)	0	1275	0	0	1385	0	0	1459	0	0	1488	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		161.3			149.2			149.7			236.4	
Travel Time (s)		11.6			10.7			10.8			17.0	
Confl. Peds. (#/hr)			1	1								
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
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	4%	3%	0%	0%	3%	0%
Adj. Flow (vph)	0	0	75	6	0	8	119	266	6	5	224	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	75	0	0	14	0	0	391	0	0	229	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	58.1%											
Analysis Period (min)	15											
	ICU Level of Service B											

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	75	6	0	8	119	266	6	5	224	0
Future Vol, veh/h	0	0	75	6	0	8	119	266	6	5	224	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	4	0	0	0	4	3	0	0	3	0
Mvmt Flow	0	0	75	6	0	8	119	266	6	5	224	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	738	744	225	742	741	269	224	0	0	272	0	0
Stage 1	234	234	-	507	507	-	-	-	-	-	-	-
Stage 2	504	510	-	235	234	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.1	6.5	6.2	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.5	4	3.3	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	336	345	809	334	347	775	1333	-	-	1303	-	-
Stage 1	774	715	-	552	543	-	-	-	-	-	-	-
Stage 2	554	541	-	773	715	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	296	308	809	270	309	775	1333	-	-	1303	-	-
Mov Cap-2 Maneuver	296	308	-	270	309	-	-	-	-	-	-	-
Stage 1	770	712	-	494	485	-	-	-	-	-	-	-
Stage 2	490	484	-	697	712	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	9.91		13.65		2.42		0.17					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	545	-	-	809	430	39	-	-				
HCM Lane V/C Ratio	0.089	-	-	0.093	0.033	0.004	-	-				
HCM Ctrl Dly (s/v)	8	0	-	9.9	13.7	7.8	0	-				
HCM Lane LOS	A	A	-	A	B	A	A	-				
HCM 95th %tile Q(veh)	0.3	-	-	0.3	0.1	0	-	-				

Lanes, Volumes, Timings
5: Hawkesville Road & 52 Hawkesville Road Access

51 Hawkesville Road, St. Jacobs TIS
Background PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	163	252	83	53	9
Future Volume (vph)	15	163	252	83	53	9
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.967		0.980	
Flt Protected		0.996			0.959	
Satd. Flow (prot)	0	1608	1524	0	1608	0
Flt Permitted		0.996			0.959	
Satd. Flow (perm)	0	1608	1524	0	1608	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		80.6	287.0		70.2	
Travel Time (s)		5.8	20.7		5.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	1%	4%	2%	2%	2%
Adj. Flow (vph)	15	163	252	83	53	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	178	335	0	62	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 34.6% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	163	252	83	53	9
Future Vol, veh/h	15	163	252	83	53	9
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	100	100	100	100	100	100
Heavy Vehicles, %	2	1	4	2	2	2
Mvmt Flow	15	163	252	83	53	9
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	335	0	-	0	487	294
Stage 1	-	-	-	-	294	-
Stage 2	-	-	-	-	193	-
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	1224	-	-	-	540	746
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	840	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1224	-	-	-	533	746
Mov Cap-2 Maneuver	-	-	-	-	533	-
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	840	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	0.67	0		12.29		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	152	-	-	-	556	
HCM Lane V/C Ratio	0.012	-	-	-	0.112	
HCM Ctrl Dly (s/v)	8	0	-	-	12.3	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

Appendix E

Total Traffic Operations



Lanes, Volumes, Timings

51 Hawkesville Road, St. Jacobs TIS

1: Northside Drive & Hawkesville Road/Private Driveway

Total AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	0	113	1	0	2	48	16	1	0	18	113
Future Volume (vph)	235	0	113	1	0	2	48	16	1	0	18	113
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. 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
Ped Bike Factor												
Frt		0.956			0.910			0.998			0.884	
Flt Protected		0.967			0.984			0.964				
Satd. Flow (prot)	0	1312	0	0	1373	0	0	1392	0	0	1288	0
Flt Permitted		0.967			0.984			0.964				
Satd. Flow (perm)	0	1312	0	0	1373	0	0	1392	0	0	1288	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		287.0			56.8			107.9			137.6	
Travel Time (s)		20.7			4.1			7.8			9.9	
Confl. Peds. (#/hr)			1	1					2	2		
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
Heavy Vehicles (%)	9%	0%	6%	0%	0%	0%	8%	0%	0%	0%	0%	6%
Adj. Flow (vph)	235	0	113	1	0	2	48	16	1	0	18	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	348	0	0	3	0	0	65	0	0	131	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	55.8%				ICU Level of Service B							
Analysis Period (min)	15											

Intersection												
Int Delay, s/veh	9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	235	0	113	1	0	2	48	16	1	0	18	113
Future Vol, veh/h	235	0	113	1	0	2	48	16	1	0	18	113
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	9	0	6	0	0	0	8	0	0	0	0	6
Mvmt Flow	235	0	113	1	0	2	48	16	1	0	18	113
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	187	190	76	134	246	19	131	0	0	19	0	0
Stage 1	75	75	-	115	115	-	-	-	-	-	-	-
Stage 2	112	115	-	19	131	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.5	6.26	7.1	6.5	6.2	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4	3.354	3.5	4	3.3	2.272	-	-	2.2	-	-
Pot Cap-1 Maneuver	759	709	975	843	660	1066	1418	-	-	1611	-	-
Stage 1	918	837	-	895	805	-	-	-	-	-	-	-
Stage 2	876	804	-	1005	792	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	732	684	974	718	637	1064	1418	-	-	1608	-	-
Mov Cap-2 Maneuver	732	684	-	718	637	-	-	-	-	-	-	-
Stage 1	918	837	-	863	776	-	-	-	-	-	-	-
Stage 2	845	776	-	888	792	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	12.99		8.94		5.63		0					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1314	-	-	796	917	1608	-	-				
HCM Lane V/C Ratio	0.034	-	-	0.437	0.003	-	-	-				
HCM Ctrl Dly (s/v)	7.6	0	-	13	8.9	0	-	-				
HCM Lane LOS	A	A	-	B	A	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	2.2	0	0	-	-				

Lanes, Volumes, Timings
2: Northside Drive & Sawmill Road

51 Hawkesville Road, St. Jacobs TIS
Total AM

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	114	26	17	236	67	17
Future Volume (vph)	114	26	17	236	67	17
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.975		0.874			
Flt Protected	0.961					0.962
Satd. Flow (prot)	1462	0	1316	0	0	1422
Flt Permitted	0.961					0.962
Satd. Flow (perm)	1462	0	1316	0	0	1422
Link Speed (k/h)	50		50			50
Link Distance (m)	200.0		137.6			200.7
Travel Time (s)	14.4		9.9			14.5
Confl. Peds. (#/hr)				1	1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	20%	0%	9%	13%	0%
Adj. Flow (vph)	114	26	17	236	67	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	140	0	253	0	0	84
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	41.7%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	4.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	114	26	17	236	67	17
Future Vol, veh/h	114	26	17	236	67	17
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	20	0	9	13	0
Mvmt Flow	114	26	17	236	67	17
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	287	136	0	0	254	0
Stage 1	136	-	-	-	-	-
Stage 2	151	-	-	-	-	-
Critical Hdwy	6.5	6.4	-	-	4.23	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.48	-	-	2.317	-
Pot Cap-1 Maneuver	687	867	-	-	1250	-
Stage 1	871	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	649	866	-	-	1249	-
Mov Cap-2 Maneuver	649	-	-	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	811	-	-	-	-	-
Approach	WB	NB	SB			
HCM Ctrl Dly, s/v	11.65	0	6.42			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	681	1237	-	
HCM Lane V/C Ratio	-	-	0.206	0.054	-	
HCM Ctrl Dly (s/v)	-	-	11.7	8	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.8	0.2	-	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2	130	6	1	2	64	193	7	11	198	0
Future Volume (vph)	0	2	130	6	1	2	64	193	7	11	198	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. 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
Ped Bike Factor												
Frt		0.867			0.970			0.996				
Flt Protected					0.968			0.988			0.997	
Satd. Flow (prot)	0	1279	0	0	1270	0	0	1393	0	0	1439	0
Flt Permitted					0.968			0.988			0.997	
Satd. Flow (perm)	0	1279	0	0	1270	0	0	1393	0	0	1439	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		161.3			149.2			149.7			236.4	
Travel Time (s)		11.6			10.7			10.8			17.0	
Confl. Peds. (#/hr)									1	1		
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
Heavy Vehicles (%)	0%	0%	4%	20%	0%	0%	7%	9%	0%	10%	6%	0%
Adj. Flow (vph)	0	2	130	6	1	2	64	193	7	11	198	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	132	0	0	9	0	0	264	0	0	209	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	50.8%											
Analysis Period (min)	15											
	ICU Level of Service A											

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	2	130	6	1	2	64	193	7	11	198	0
Future Vol, veh/h	0	2	130	6	1	2	64	193	7	11	198	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	4	20	0	0	7	9	0	10	6	0
Mvmt Flow	0	2	130	6	1	2	64	193	7	11	198	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	542	549	198	547	546	198	198	0	0	201	0	0
Stage 1	220	220	-	326	326	-	-	-	-	-	-	-
Stage 2	322	329	-	221	220	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.3	6.5	6.2	4.17	-	-	4.2	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.3	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.68	4	3.3	2.263	-	-	2.29	-	-
Pot Cap-1 Maneuver	455	446	838	422	448	849	1345	-	-	1325	-	-
Stage 1	787	725	-	651	652	-	-	-	-	-	-	-
Stage 2	695	650	-	742	725	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	424	418	838	332	420	848	1345	-	-	1324	-	-
Mov Cap-2 Maneuver	424	418	-	332	420	-	-	-	-	-	-	-
Stage 1	780	718	-	615	617	-	-	-	-	-	-	-
Stage 2	655	615	-	620	718	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	10.19		14.33		1.89		0.41	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	433	-	-	825	395	95	-
HCM Lane V/C Ratio	0.048	-	-	0.16	0.023	0.008	-
HCM Ctrl Dly (s/v)	7.8	0	-	10.2	14.3	7.7	0
HCM Lane LOS	A	A	-	B	B	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.1	0	-

Lanes, Volumes, Timings
4: Street A & Hawkesville Road

51 Hawkesville Road, St. Jacobs TIS
Total AM

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	215	1	11	130	3	32
Future Volume (vph)	215	1	11	130	3	32
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.877	
Flt Protected				0.996	0.996	
Satd. Flow (prot)	1510	0	0	1524	1495	0
Flt Permitted				0.996	0.996	
Satd. Flow (perm)	1510	0	0	1524	1495	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	132.4			80.6	79.4	
Travel Time (s)	9.5			5.8	5.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	2%	2%	7%	2%	2%
Adj. Flow (vph)	215	1	11	130	3	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	216	0	0	141	35	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.4%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	215	1	11	130	3	32
Future Vol, veh/h	215	1	11	130	3	32
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	100	100	100	100	100	100
Heavy Vehicles, %	8	2	2	7	2	2
Mvmt Flow	215	1	11	130	3	32
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	216	0	368	216
Stage 1	-	-	-	-	216	-
Stage 2	-	-	-	-	152	-
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	-	-	1354	-	632	824
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	876	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1354	-	627	824
Mov Cap-2 Maneuver	-	-	-	-	627	-
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	868	-
Approach	EB	WB		NB		
HCM Ctrl Dly, s/v	0	0.6		9.69		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	803	-	-	140	-	
HCM Lane V/C Ratio	0.044	-	-	0.008	-	
HCM Ctrl Dly (s/v)	9.7	-	-	7.7	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	242	0	6	125	30	1	0	17	88	0	15
Future Volume (vph)	5	242	0	6	125	30	1	0	17	88	0	15
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. 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
Frt					0.975			0.872			0.980	
Flt Protected		0.999			0.998			0.997			0.959	
Satd. Flow (prot)	0	1419	0	0	1409	0	0	1306	0	0	1412	0
Flt Permitted		0.999			0.998			0.997			0.959	
Satd. Flow (perm)	0	1419	0	0	1409	0	0	1306	0	0	1412	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		80.6			287.0			76.3			70.2	
Travel Time (s)		5.8			20.7			5.5			5.1	
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
Heavy Vehicles (%)	2%	8%	2%	2%	7%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	5	242	0	6	125	30	1	0	17	88	0	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	247	0	0	161	0	0	18	0	0	103	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 38.4%

ICU Level of Service A

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	242	0	6	125	30	1	0	17	88	0	15
Future Vol, veh/h	5	242	0	6	125	30	1	0	17	88	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	8	2	2	7	2	2	2	2	2	2	2
Mvmt Flow	5	242	0	6	125	30	1	0	17	88	0	15
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	155	0	0	242	0	0	389	419	242	404	404	140
Stage 1	-	-	-	-	-	-	252	252	-	152	152	-
Stage 2	-	-	-	-	-	-	137	167	-	252	252	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1425	-	-	1324	-	-	570	525	797	557	536	908
Stage 1	-	-	-	-	-	-	752	698	-	850	772	-
Stage 2	-	-	-	-	-	-	866	760	-	752	698	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1425	-	-	1324	-	-	555	520	797	540	531	908
Mov Cap-2 Maneuver	-	-	-	-	-	-	555	520	-	540	531	-
Stage 1	-	-	-	-	-	-	749	696	-	846	768	-
Stage 2	-	-	-	-	-	-	848	756	-	733	696	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.15			0.29			9.74			12.64		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	778	36	-	-	65	-	-	574				
HCM Lane V/C Ratio	0.023	0.004	-	-	0.005	-	-	0.179				
HCM Ctrl Dly (s/v)	9.7	7.5	0	-	7.7	0	-	12.6				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.6				

Lanes, Volumes, Timings

51 Hawkesville Road, St. Jacobs TIS

1: Northside Drive & Hawkesville Road/Private Driveway

Total PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	0	70	3	1	1	112	16	1	0	8	267
Future Volume (vph)	176	0	70	3	1	1	112	16	1	0	8	267
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. 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
Ped Bike Factor												
Frt		0.962			0.973			0.999			0.869	
Flt Protected		0.965			0.971			0.958				
Satd. Flow (prot)	0	1403	0	0	1448	0	0	1401	0	0	1282	0
Flt Permitted		0.965			0.971			0.958				
Satd. Flow (perm)	0	1403	0	0	1448	0	0	1401	0	0	1282	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		287.0			56.8			107.9			137.6	
Travel Time (s)		20.7			4.1			7.8			9.9	
Confl. Peds. (#/hr)			2	2			2		5	5		2
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
Heavy Vehicles (%)	0%	0%	5%	0%	0%	0%	3%	17%	0%	0%	0%	4%
Adj. Flow (vph)	176	0	70	3	1	1	112	16	1	0	8	267
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	246	0	0	5	0	0	129	0	0	275	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 62.6% ICU Level of Service B

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	176	0	70	3	1	1	112	16	1	0	8	267
Future Vol, veh/h	176	0	70	3	1	1	112	16	1	0	8	267
Conflicting Peds, #/hr	0	0	2	2	0	0	2	0	5	5	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	5	0	0	0	3	17	0	0	0	4
Mvmt Flow	176	0	70	3	1	1	112	16	1	0	8	267
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	384	390	146	256	523	22	277	0	0	22	0	0
Stage 1	144	144	-	246	246	-	-	-	-	-	-	-
Stage 2	241	246	-	10	277	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.25	7.1	6.5	6.2	4.13	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.345	3.5	4	3.3	2.227	-	-	2.2	-	-
Pot Cap-1 Maneuver	578	549	894	702	462	1062	1280	-	-	1607	-	-
Stage 1	864	782	-	763	707	-	-	-	-	-	-	-
Stage 2	767	706	-	1016	685	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	524	498	891	586	419	1058	1278	-	-	1600	-	-
Mov Cap-2 Maneuver	524	498	-	586	419	-	-	-	-	-	-	-
Stage 1	863	781	-	693	642	-	-	-	-	-	-	-
Stage 2	698	641	-	935	684	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	15.28		11.14		7.02		0					
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1266	-	-	594	592	1600	-	-				
HCM Lane V/C Ratio	0.088	-	-	0.414	0.008	-	-	-				
HCM Ctrl Dly (s/v)	8.1	0	-	15.3	11.1	0	-	-				
HCM Lane LOS	A	A	-	C	B	A	-	-				
HCM 95th %tile Q(veh)	0.3	-	-	2	0	0	-	-				

Lanes, Volumes, Timings
2: Northside Drive & Sawmill Road

51 Hawkesville Road, St. Jacobs TIS
Total PM

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	262	70	19	174	49	14
Future Volume (vph)	262	70	19	174	49	14
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.972		0.878			
Flt Protected	0.962					0.963
Satd. Flow (prot)	1541	0	1415	0	0	1458
Flt Permitted	0.962					0.963
Satd. Flow (perm)	1541	0	1415	0	0	1458
Link Speed (k/h)	50		50			50
Link Distance (m)	200.0		137.6			200.7
Travel Time (s)	14.4		9.9			14.5
Confl. Peds. (#/hr)		1		1	1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	13%	13%	0%	10%	0%
Adj. Flow (vph)	262	70	19	174	49	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	332	0	193	0	0	63
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	47.8%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	8.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	262	70	19	174	49	14
Future Vol, veh/h	262	70	19	174	49	14
Conflicting Peds, #/hr	0	1	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	4	13	13	0	10	0
Mvmt Flow	262	70	19	174	49	14

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	219	108	0
Stage 1	107	-	-
Stage 2	112	-	-
Critical Hdwy	6.44	6.33	-
Critical Hdwy Stg 1	5.44	-	-
Critical Hdwy Stg 2	5.44	-	-
Follow-up Hdwy	3.536	3.417	-
Pot Cap-1 Maneuver	765	917	-
Stage 1	912	-	-
Stage 2	908	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	736	915	-
Mov Cap-2 Maneuver	736	-	-
Stage 1	912	-	-
Stage 2	874	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	13.22	0	6.07
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	768	1321
HCM Lane V/C Ratio	-	-	0.433	0.037
HCM Ctrl Dly (s/v)	-	-	13.2	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	2.2	0.1

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	81	6	0	8	129	266	6	5	224	0
Future Volume (vph)	0	0	81	6	0	8	129	266	6	5	224	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. 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
Ped Bike Factor												
Frt		0.865			0.923			0.998				
Flt Protected					0.979			0.984			0.999	
Satd. Flow (prot)	0	1275	0	0	1385	0	0	1457	0	0	1488	0
Flt Permitted					0.979			0.984			0.999	
Satd. Flow (perm)	0	1275	0	0	1385	0	0	1457	0	0	1488	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		161.3			149.2			149.7			236.4	
Travel Time (s)		11.6			10.7			10.8			17.0	
Confl. Peds. (#/hr)			1	1								
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
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	4%	3%	0%	0%	3%	0%
Adj. Flow (vph)	0	0	81	6	0	8	129	266	6	5	224	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	81	0	0	14	0	0	401	0	0	229	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	58.8%											
Analysis Period (min)	15											
	ICU Level of Service B											

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	81	6	0	8	129	266	6	5	224	0
Future Vol, veh/h	0	0	81	6	0	8	129	266	6	5	224	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	4	0	0	0	4	3	0	0	3	0
Mvmt Flow	0	0	81	6	0	8	129	266	6	5	224	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	758	764	225	762	761	269	224	0	0	272	0	0
Stage 1	234	234	-	527	527	-	-	-	-	-	-	-
Stage 2	524	530	-	235	234	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.1	6.5	6.2	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.5	4	3.3	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	326	336	809	324	337	775	1333	-	-	1303	-	-
Stage 1	774	715	-	538	532	-	-	-	-	-	-	-
Stage 2	540	530	-	773	715	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	285	296	809	257	298	775	1333	-	-	1303	-	-
Mov Cap-2 Maneuver	285	296	-	257	298	-	-	-	-	-	-	-
Stage 1	770	712	-	477	471	-	-	-	-	-	-	-
Stage 2	474	469	-	692	712	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	9.95		13.96		2.57		0.17	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	577	-	-	809	416	39	-
HCM Lane V/C Ratio	0.097	-	-	0.1	0.034	0.004	-
HCM Ctrl Dly (s/v)	8	0	-	9.9	14	7.8	0
HCM Lane LOS	A	A	-	A	B	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.3	0.1	0	-

Lanes, Volumes, Timings
4: Street A & Hawkesville Road

51 Hawkesville Road, St. Jacobs TIS
Total PM

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	179	3	29	262	2	19
Future Volume (vph)	179	3	29	262	2	19
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998				0.878	
Flt Protected				0.995	0.995	
Satd. Flow (prot)	1612	0	0	1564	1495	0
Flt Permitted				0.995	0.995	
Satd. Flow (perm)	1612	0	0	1564	1495	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	132.4			80.6	79.4	
Travel Time (s)	9.5			5.8	5.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	2%	4%	2%	2%
Adj. Flow (vph)	179	3	29	262	2	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	182	0	0	291	21	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	42.1%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	179	3	29	262	2	19
Future Vol, veh/h	179	3	29	262	2	19
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	100	100	100	100	100	100
Heavy Vehicles, %	1	2	2	4	2	2
Mvmt Flow	179	3	29	262	2	19
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	182	0	501	181
Stage 1	-	-	-	-	181	-
Stage 2	-	-	-	-	320	-
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	-	-	1393	-	530	862
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	736	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1393	-	517	862
Mov Cap-2 Maneuver	-	-	-	-	517	-
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	718	-
Approach	EB	WB		NB		
HCM Ctrl Dly, s/v	0	0.76		9.56		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	811	-	-	179	-	
HCM Lane V/C Ratio	0.026	-	-	0.021	-	
HCM Ctrl Dly (s/v)	9.6	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	182	1	16	281	83	1	0	11	53	0	9
Future Volume (vph)	15	182	1	16	281	83	1	0	11	53	0	9
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. 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
Frt		0.999			0.971			0.876			0.980	
Flt Protected		0.996			0.998			0.996			0.959	
Satd. Flow (prot)	0	1509	0	0	1435	0	0	1311	0	0	1412	0
Flt Permitted		0.996			0.998			0.996			0.959	
Satd. Flow (perm)	0	1509	0	0	1435	0	0	1311	0	0	1412	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		80.6			287.0			76.3			70.2	
Travel Time (s)		5.8			20.7			5.5			5.1	
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
Heavy Vehicles (%)	2%	1%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	15	182	1	16	281	83	1	0	11	53	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	198	0	0	380	0	0	12	0	0	62	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 47.1%

ICU Level of Service A

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	182	1	16	281	83	1	0	11	53	0	9
Future Vol, veh/h	15	182	1	16	281	83	1	0	11	53	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	1	2	2	4	2	2	2	2	2	2	2
Mvmt Flow	15	182	1	16	281	83	1	0	11	53	0	9
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	364	0	0	183	0	0	526	609	183	567	568	323
Stage 1	-	-	-	-	-	-	213	213	-	355	355	-
Stage 2	-	-	-	-	-	-	313	396	-	212	213	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1195	-	-	1392	-	-	463	410	860	435	433	718
Stage 1	-	-	-	-	-	-	790	727	-	663	630	-
Stage 2	-	-	-	-	-	-	698	604	-	790	726	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1195	-	-	1392	-	-	444	398	860	417	420	718
Mov Cap-2 Maneuver	-	-	-	-	-	-	444	398	-	417	420	-
Stage 1	-	-	-	-	-	-	779	716	-	653	621	-
Stage 2	-	-	-	-	-	-	679	595	-	769	716	-
Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.61			0.32			9.58			14.42		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	798	136	-	-	72	-	-	444				
HCM Lane V/C Ratio	0.015	0.013	-	-	0.011	-	-	0.14				
HCM Ctrl Dly (s/v)	9.6	8.1	0	-	7.6	0	-	14.4				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.5				

Appendix F

Left-Turn Lane Warrant Nomographs



