

**TRAFFIC IMPACT STUDY**

**GLENELG PHASE 3**

**DUNDALK  
GREY COUNTY, ONTARIO**

**PREPARED FOR:**

**DUNDALK VILLAGE TWO INC.**

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<b>Revision Number</b>	<b>Date</b>	<b>Comments</b>
Rev. 0	August 2022	First submission to Township and County
Rev. 1	August 2023	Revised to incorporate changes to the Draft Plan and address agency comments.

## 1.0 Executive Summary

C. F. Crozier & Associates Inc. (Crozier) was retained by Flato Dundalk Meadows Inc. to undertake a Traffic Impact Study (TIS) to support a Draft Plan of Subdivision Application for Glenelg Phase 3, which is located in the north end of the Community of Dundalk, Township of Southgate, County of Grey. The Subject Property is located northeast of Phase 2 of the Glenelg Residential Development.

An original TIS was submitted in August 2022, and a subsequent letter and comment response matrix was submitted to address first submission comments. Second submission comments were provided by Triton Engineering, dated July 10, 2023. This TIS Update has been prepared to address the second submission comments and incorporate changes to the Draft Plan.

The proposed Draft Plan prepared by MHBC, August 14, 2023, consists of 300 single detached dwelling units, 24 semi-detached units, 75 townhouse units, 1 future residential lot, and a school that can accommodate 700 students.

Access to the Subject Property is proposed by three connections to the external road network: one through the White Rose Phase 3 Development and two through Glenelg Phase 1. Bradley Street is proposed to be extended northerly into the Subject Property after the construction of the White Rose Phase 3 development. Street A and Street C are proposed to extend westerly from the Subject Property to Corbett Street in Glenelg Phase 2, which has further connections to the two Glenelg Phase 1 site accesses.

The TIS analyzes the following intersections:

- Glenelg Street and Ida Street
- Dundalk Street and Glenelg Street
- Ida Street and Main Street
- Dundalk Street and Main Street
- Main Street and Osprey Street
- Main Street and Owen Sound Street
- Osprey Street and Bradley Street
- Bradley Street and Grey Street
- Osprey Street and Grey Street

Intersection analysis of the existing traffic volumes indicates that all study intersections are operating at a Level of Service (LOS) "B" or better during the weekday a.m. and p.m. peak hours. The study intersections have capacity for increases in traffic volumes.

Per the agreed upon Terms of Reference and for consistency with the original report, horizon years of 2027 and 2032 were assessed which represent five and ten years from the original study date and traffic data collection. A growth rate of 1.5 percent compounded annually was used to forecast the future total traffic volumes. Several background developments have been considered for the assessment of the background conditions. These developments include Glenelg Phase 1, Glenelg Phase 2, the unoccupied Edgewood Greens units, and White Rose Phase 3. A sensitivity analysis investigated the impacts of the Eco Parkway extension and associated industrial lands.

Under 2032 future background conditions, the study area intersections are generally expected to operate at LOS "C" or better, with the exception of the southbound movement at the Dundalk Street and Main Street intersection. The movement is forecast to operate with a LOS "E" and a v/c of 0.70 during the weekday a.m. peak hour.

The proposed development is estimated to generate 613 and 420 total two-way primary trips during the weekday a.m. and p.m. peak hours, respectively.

Under 2032 future total conditions, the study area intersections are generally expected to operate at LOS "C" or better, with the exception of the following movements which are forecast to operate at LOS "E" or LOS "F" during at least one peak hour:

- Dundalk Street and Main Street: Southbound approach
- Osprey Street and Main Street: Southbound approach
- Owen Sound Street and Main Street: Southbound approach

A traffic signal is warranted at the Main Street and Osprey Street intersection under 2032 future total conditions. With implementation of the traffic signal, operations of the intersection are forecast to operate at LOS "C" or better. It is expected that if traffic signals are introduced at the Osprey Street and Main Street intersection, drivers turning left on Main Street will reroute to this location from nearby intersections. This is expected to improve the operations of the Main Street intersections with Dundalk Street and Owen Sound Street.

As requested in the Terms of Reference, a scenario analyzing the impacts of the Glenelg Phase 3 development with inclusion of the Eco Parkway extension and surrounding industrial lands was completed. The scenario with the Eco Parkway extension and the proposed industrial development lands are estimated to produce 1,376 and 1,266 external two-way trips in the a.m. and p.m. peak hours, respectively. The Eco Parkway extension is anticipated to reroute 30% of volumes on Main Street around downtown Dundalk.

Under 2032 future background conditions with inclusion of the Eco Parkway extension:

- The detoured traffic is forecast to slightly improve the p.m. peak hour operations and slightly decrease the a.m. peak hour operations at the intersections of Main Street with Dundalk Street, Osprey Street, and Owen Sound Street compared to general future background conditions.
- The southbound movement at the Dundalk Street and Main Street intersection is forecast to operate with a LOS "E" and a v/c of 0.74 during the weekday a.m. peak hour.

Under 2032 future total conditions with inclusion of the Eco Parkway extension:

- Minor increases in delay are noted on the Main Street intersections with Dundalk Street, Osprey Street, and Owen Sound Street during the a.m. peak hour and minor decreases in delay are noted during the p.m. peak hour.
- The critical movements noted under 2032 future total conditions without the Eco Parkway extensions are forecast to continue to occur.
- A traffic signal continues to be warranted at the Main Street and Osprey Street intersection.

Based on the conclusions, it is recommended that the review agency continues to monitor the study area intersections for poor operations as the background developments and the Subject Property develop. Should poor operations occur at the Main Street and Osprey Street intersection, a traffic signal should be considered regardless if the Eco Parkway extension is constructed.

The results and recommendations contained within this report are based on the inclusion of the school block. Should the School Board forego the construction of a school in this location, a signal would not be warranted at the Osprey Street and Main Street intersection and the overall intersection operations would be improved, as described in the original TIS (Crozier, August 2022).

The analysis contained within this report was prepared using the Draft Plan prepared by MHBC August 14, 2023. Any minor revisions to the development draft are not expected to affect the conclusions contained in this report.

In conclusion, the proposed development can be supported from a transportation operations and safety perspective with the noted recommendations.

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## 2.0 Introduction

### 2.1 Background

C. F. Crozier & Associates Inc. (Crozier) was retained by Flato Dundalk Meadows Inc. (Client) to undertake a Traffic Impact Study (TIS) to support a Draft Plan of Subdivision Application for Glenelg Phase 3 (Subject Property) located in the west end of the Community of Dundalk, Township of Southgate, County of Grey. The Subject Property is located northeast of Phase 2 of the Glenelg Residential Development.

The original TIS was submitted in August 2022, and a subsequent letter and comment response matrix was submitted to address first submission comments. Second submission comments were provided by Triton Engineering dated July 10, 2023. This TIS Update has been prepared to address the second submission comments and incorporate changes to the Draft Plan.

### 2.2 Development Proposal

The most recent Draft Plan for Glenelg Phase 3 includes 300 single detached dwelling units, 24 semi-detached units, 75 townhouse units, 1 future residential lot, and a school that can accommodate 700 students. It is noted that the school block replaces approximately 60 residential units. Should the School Board decide not to move forward with a school in this location, an additional 60 residential units could be accommodated in its place. The original TIS, prepared in August 2022, assessed the impacts of the development without the school block. **Appendix A** contains excerpts from the original TIS so as to provide a reference to the anticipated trip generation and intersection operations without the school block.

Access to the Subject Property is proposed by three connections to the external road network; one through the White Rose Phase 3 Development and two through Glenelg Phase 1. Bradley Street is proposed to be extended northerly into the Subject Property after the construction of the White Rose Phase 3 development. Street A and Street C are proposed to extend westerly from the Subject Property to Corbett Street in Glenelg Phase 2, which has further connections to the two Glenelg Phase 1 site accesses.

**Figure 1** contains the Draft Plan prepared by MHBC dated August 14<sup>th</sup>, 2023.

### 2.3 Purpose and Scope

The purpose of the study is to assess the impacts of the proposed residential development on the boundary road network and to recommend the required remedial measures to mitigate the transportation impacts.

The scope of the study includes:

- Determine and assess the existing, future background, and future total traffic operations of the study area road network.
- Forecast the trip generation and distribution of the proposed development.
- Assess and if necessary, recommend, changes in intersection traffic control.

The Township of Southgate peer reviewer confirmed the scope and assumptions noted in this report during pre-study consultations. **Appendix B** contains the Terms of Reference correspondence and the comment response matrix to address second submission comments.

### 3.0 Existing Traffic Conditions

#### 3.1 Development Lands

The Subject Property, which is approximately 33.27 ha, is currently vacant and is bound by existing residential land uses to the south, future residential developments to the west, and vacant agricultural land to the east and north. **Figure 2** illustrates the Site Location.

#### 3.2 Study Intersections

The following intersections have been included in the study area and were analysed under existing, future background, and future total traffic volume conditions:

- Glenelg Street and Ida Street
- Dundalk Street and Glenelg Street
- Ida Street and Main Street
- Dundalk Street and Main Street
- Main Street and Osprey Street
- Main Street and Owen Sound Street
- Osprey Street and Bradley Street
- Bradley Street and Grey Street
- Osprey Street and Grey Street

#### 3.3 Boundary Road Network

**Table 1** summarizes the characteristics of the boundary road network as illustrated in the Township of Southgate "Official Plan". For the purposes of this report, Ida Street, Dundalk Street, and Osprey Street are assumed to run north-south while Main Street and Glenelg Street are assumed to run east-west. **Figure 3** illustrates the existing traffic controls and lane configurations of the study intersections.

**Table 1: Boundary Road Network**

Road	Direction	Lanes	Posted Speed (km/h)	Classification	Jurisdiction	Pedestrian Facilities	Cycling Facilities
Ida Street	North-south	2	40 km/h	Local Road	Township of Southgate	None	None
Glenelg Street	East-west	2	40 km/h	Local Road	Township of Southgate	One side sidewalk	None
Grey Road 9/ Main Street	East-west	2	40 km/h	County Highway	County of Grey	Two side (McDowell to Dundalk Street, one side asphalt mountable curb from Dundalk Street to Ida Street)	Paved Shoulder west of Dundalk Street and east of Artemisia Street
Dundalk Street	North-south	2	Assumed 40 km/h	Local Road	Township of Southgate	None	Grey county CP rail trail to east of road
Grey Street	East-west	2	Assumed 40 km/h	Local Road	Township of Southgate	Sidewalk from Glenelg Street to CP Rail Trail	None
Osprey Street	North-south	2	Assumed 40 km/h	Local Road	Township of Southgate	One side sidewalk (Main Street to Bradley Street)	
Owen Sound Street	Skewed, assumed North-south	2	Assumed 40 km/h	Local Road	Township of Southgate	One side sidewalk	Paved shoulder one side
Bradley Street/ Toronto Street	East-west	2	Assumed 40 km/h	Local Road	Township of Southgate	One side sidewalk (to 70 m east of Osprey Street)	

### 3.4 Active Transportation

Sidewalk and cycling facilities are summarized in **Table 1**. Grey Bruce Regional Transit operates two peak hour period routes with the nearest stop located at the Dundalk Arena (approximately 1 km east of the site). Route 1 operates primarily on Highway 10 from Dundalk to Owen Sound. Route 2 operates on Highway 10 from Dundalk into Orangeville.

### 3.5 Traffic Data

Turning movement counts at the study intersections were undertaken by Spectrum Traffic Data Inc. from 6:00 a.m. to 10:00 a.m. and from 3:00 p.m. to 7:00 p.m. on Tuesday June 7, 2022. The intersections of Bradley Street and Grey Street and Osprey Street and Grey Street were added to this submission based on comments provided by Triton Engineering. Turning movement counts at the two additional intersections were undertaken by Spectrum Traffic Data Inc. from 6:00 a.m. to 10:00 a.m. and from 3:00 p.m. to 7:00 p.m. on Tuesday July 25, 2023. **Appendix C** contains the turning movement count data. **Figure 4** illustrates the balanced existing traffic volumes.

Peak hour factors (PHF) associated with the weekday a.m. and p.m. peak hours were calculated for each study area intersection based on the existing traffic volumes. **Table 2** summarizes the PHFs used at each intersection in the operations analysis. The Synchro default peak hour factor of 0.92 was used for the new intersection of the Site Access and Glenelg Street which is consistent with nearby review agency guidelines for proposed intersections.

**Table 2: Peak Hour Factors**

Intersection	Peak Hour	Peak Hour Factor
Ida Street and Glenelg Street	Weekday A.M. 7:45 A.M. – 8:45 A.M.	0.76
	Weekday P.M. 4:45 P.M. – 5:45 P.M.	0.80
Dundalk Street and Glenelg Street /Grey Street	Weekday A.M. 8:15 A.M. – 9:15 A.M.	0.75
	Weekday P.M. 3:00 P.M. – 4:00 P.M.	0.89
Ida Street and Grey Road 9 (Main Street)	Weekday A.M. 8:00 A.M. – 9:00 A.M.	0.82
	Weekday P.M. 3:45 P.M. – 4:45 P.M.	0.95
Dundalk Street and Main Street	Weekday A.M. 8:15 A.M. – 9:15 A.M.	0.72
	Weekday P.M. 3:45 P.M. – 4:45 P.M.	0.95
Osprey Street and Main Street	Weekday A.M. 8:15 A.M. – 9:15 A.M.	0.77
	Weekday P.M. 3:00 P.M. – 4:00 P.M.	0.90
Osprey Street and Toronto Street/Bradley Street	Weekday A.M. 8:30 A.M. – 9:30 A.M.	0.65
	Weekday P.M. 3:15 P.M. – 4:15 P.M.	0.70
Owen Sound Street and Main Street	Weekday A.M. 8:30 A.M. – 9:30 A.M.	0.82
	Weekday P.M. 3:15 P.M. – 4:15 P.M.	0.88
Bradley Street and Grey Street	Weekday A.M. 7:00 A.M. – 8:00 A.M.	0.64
	Weekday P.M. 3:00 P.M. – 4:00 P.M.	0.75
Osprey Street and Grey Street	Weekday A.M. 7:00 A.M. – 8:00 A.M.	0.75
	Weekday P.M. 5:30 P.M. – 6:30 P.M.	0.83

### 3.6 Intersection Operations

The operations of the study intersections were analyzed using existing traffic volumes and Synchro 11. Level of Service (LOS) definitions have been included in **Appendix D**. Detailed capacity analysis worksheets are included in **Appendix E**. **Table 3** summarizes the existing traffic operations.

**Table 3: Existing Traffic Operations**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay (seconds)	Critical v/c ratio <sup>2</sup>
Ida Street and Glenelg Street	Stop (T-intersection)	A.M.	A	8.8 s	0.02 (WB)
		P.M.	A	8.7 s	0.03 (WB)
Dundalk Street and Glenelg/Grey Street	Stop (T-intersection <sup>3</sup> )	A.M.	A	8.6 s	0.02 (NB)
		P.M.	A	8.7 s	0.02 (NB)
Ida Street and Grey Road 9 (Main Street)	Stop (Two-way)	A.M.	B	11.7 s	0.06 (NB)
		P.M.	B	11.2 s	0.11 (NB)
Dundalk Street and Main Street	Stop (T-intersection)	A.M.	B	11.3 s	0.10 (SB)
		P.M.	B	10.6 s	0.06 (SB)
Osprey Street and Main Street	Stop (Two-way)	A.M.	B	12.9 s	0.07 (SB)
		P.M.	B	12.5 s	0.05 (SB)
Osprey Street and Toronto Street/Bradley Street	Stop (All-way)	A.M.	A	7.1 s	0.05 (WB)
		P.M.	A	7.1 s	0.08 (NB)
Owen Sound Street and Main Street	Stop (T-intersection)	A.M.	B	12.8 s	0.09 (SB)
		P.M.	B	13.2 s	0.10 (SB)
Bradley Street and Grey Street	Stop (T-intersection)	A.M.	A	8.6 s	0.01 (NB)
		P.M.	A	8.6 s	0.01 (NB)
Osprey Street and Grey Street	Stop (T-intersection)	A.M.	A	8.6 s	0.01 (NB)
		P.M.	A	8.6 s	0.01 (NB)

Note 1: The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM2000). The Level of Service of all-way stop-controlled intersection is based on the average delay per vehicle.

Note 2: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. In addition, all v/c ratios for movements greater than 0.85 are outlined and highlighted. For all-way stop control, the Degree Utilization was noted as the v/c ratio is not provided by HCM.

Note 3: To remain consistent with the Glenelg Phase 2 TIS, the volumes on the west approach of Grey Street were shifted so the intersection could be analyzed as a T-intersection. The simulation software cannot assess the existing 4-legged intersection.

To remain consistent with the Glenelg Phase 2 TIS, the traffic volumes to/from the west leg of Grey Street were shifted to Glenelg Street to allow the intersection to be assessed using modelling software. The modelling software is unable to interpret an intersection with two free-flow legs on the north side of the intersection and two stop-controlled legs on the south side. It is noted the west leg of Grey Street has very low traffic volumes as it serves a few private residences and a municipal operations yard.

The study area intersections are estimated to operate at an acceptable level of service (LOS "B" or better) and no critical movements are noted under existing traffic conditions. The maximum control delay is estimated to be 13.2 seconds (Southbound movement at Owen Sound Street and Main Street) and the largest volume-to-capacity (v/c) ratio is estimated to be 0.11 (northbound movement at Ida Street and Grey Road 9). These metrics show that the study intersections have reserve capacity for future increases in traffic volumes.

## 4.0 Future Background Conditions

### 4.1 Horizon Years

As confirmed with Township peer reviewer, Triton, during pre-study consultations, horizon years of 2027 and 2032 were assessed which represent five and ten years from the original study date and traffic data collection.

### 4.2 Growth Rate

To remain consistent with the Glenelg Phase 1 TIS, the Glenelg Phase 2 TIS, and the Edgewood Greens TIS, a growth rate of 1.5 percent was used to forecast future traffic volumes on the boundary road network.

It is acknowledged that Grey County Transportation Master Plan (Cole Engineering Group and C.C. Tatham & Associates, 2014) used a growth rate of 1.0 percent.

### 4.3 Boundary Road Network Improvements

Based on a review of Southgate's Development Charges Background Study and published planned roadworks, mostly minor roadworks that would not impact the findings of this report (ie. no changes to lane configurations or traffic control) were listed except for Eco Parkway. The impacts of implementing Eco Parkway and the associated development lands were assessed in an additional scenario as requested by Township peer reviewer during pre-study consultation in **Section 7.0** of this study. **Appendix F** contains excerpts from the Eco Parkway TIS titled "Industrial Access Road Grey Road 9 and Ida Street Traffic Impact Study" (Triton Engineering, September 2020).

Based on a review of Grey County's Development Charges, Capital Works Schedule and Transportation Master Plan, the planned urban rehab for Main Street from Ida Street to Artemesia Street scheduled for 2023 was the only identified improvement that may impact the study area road network. It was assumed that this work would not impact the findings of this report (ie. no changes to lane configurations or traffic control).

Given the anticipated future capacity constraints at the Ida Street and Main Street/Grey Road 9 intersection with the inclusion of nearby future developments, the Township has confirmed that a roundabout is the preferred future form of traffic control at this location to accommodate future traffic demand. It is assumed that the roundabout will be constructed by 2027. **Appendix G** contains an overlay of the proposed roundabout over the existing Ida Street and Main Street/Grey Road 9

intersection. It is noted that the design is still conceptual in nature as additional land will need to be acquired to accommodate the roundabout.

#### 4.4 Background Developments

The background developments identified for inclusion in this study by the Township peer reviewer during pre-study consultation are summarized in **Table 4**. **Figure 5** to **Figure 9** illustrates the forecast background development traffic for each identified background development. **Figure 10** illustrates the forecast traffic volumes of all background developments.

**Table 4: Background Developments**

Background Development	Number of Units	Opening Horizon Year of Analysis	Reference
Edgewood Greens	275 <sup>1</sup> Single Detached Dwelling Units and 157 <sup>1</sup> Townhouse Dwelling Units	Assumed 2027	C. F. Crozier & Associates Inc. (February 2021)
Glenelg Phase 1	118 Single Detached dwelling Units and 65 Townhouse Dwelling Units	Assumed 2027	C. F. Crozier & Associates Inc. (September 2020)
Glenelg Phase 2	89 Single detached dwelling units and 66 Townhouse Dwelling Units	2025	C. F. Crozier & Associates Inc. (September 2020)
White Rose Phase 3	88 Single Family Detached, 66 Townhouse Dwelling Units, and 66 Senior Adult Housing	2025	Triton Engineering Services Limited (September 2020)

Note<sup>1</sup>: The development team identified the number of closed units as these trips are included in the existing traffic volumes.

##### 4.4.1. Edgewood Greens

Edgewood Greens Development is a mixed-use development located southeast of Glenelg Phase 3. The development is still under construction; however, many of the residential units are currently occupied. Updated residential trip generation rates were estimated for the unoccupied units using the Institute of Transportation Engineers (ITE) Trip Generation Manual 11<sup>th</sup> Edition. The commercial trip generation estimates were copied from the Edgewood Greens TIS update (Crozier, February 2021). The development is assumed to be built-out prior to the 2027 horizon year. **Table 5** summarizes the trip generation estimates.

**Table 5: Edgewood Greens Trip Generation**

Land Use	Units/GFA	Peak Hour	Trip Type	Trips Generated		
				Inbound	Outbound	Total
LUC 210: Single Family Detached Housing <sup>1</sup>	275 Units	A.M.	Primary	49	138	187
		P.M.		162	95	257
LUC 215: Attached Multifamily Housing <sup>1</sup>	157 Units	A.M.	Primary	24	52	76
		P.M.		51	39	90
LUC 820: Shopping Centre <sup>2</sup>	15,586 ft <sup>2</sup>	A.M.	Primary	10	7	17
			Pass-by	0	0	0
		P.M.	Primary	21	23	44
			Pass-by	11	12	23
<b>Total</b>		<b>A.M.</b>	<b>Primary</b>	<b>82</b>	<b>198</b>	<b>280</b>
			<b>Pass-by</b>	<b>0</b>	<b>0</b>	<b>0</b>
		<b>P.M.</b>	<b>Primary</b>	<b>55</b>	<b>82</b>	<b>134</b>
			<b>Pass-by</b>	<b>11</b>	<b>11</b>	<b>12</b>

Note 1: The trip generation for the residential units was updated with the fitted curve equations noted in the ITE Trip Generation Manual 11<sup>th</sup> Edition for the unoccupied unit count.

Note 2: The trip generation for the commercial block was adopted from the fitted curve equation given in ITE Trip Generation Manual 10<sup>th</sup> Edition as per the Edgewood Greens, Traffic Impact Study Update (Crozier, January 2020).

The trips generated by the Edgewood Greens development were assigned to the boundary road network based on the distribution described in the Edgewood Greens TIS update (Crozier, February 2021). Most trips are expected to travel to/from Highway 10 with some trips assigned to the west of Dundalk at the intersection of Osprey Street and Main Street. To extend the trip distribution past Ida Street it was assumed that the trips assigned to Main Street would continue straight on Main Street at the intersection with Ida Street and the intersection with Dundalk Street.

Relevant excerpts from the Edgewood Greens TIS update (Crozier, February 2021) have been included in **Appendix F**. The trip assignment for Edgewood Greens development is illustrated in **Figure 5** and **Figure 6**.

#### 4.4.2. Glenelg Phase 1

Glenelg Phase 1 is a residential development located on to the west side of Glenelg Phase 3. The development is proposed to consist of 118 single detached dwelling units and 65 townhouse dwelling units and access is proposed though two all-move accesses to Glenelg Street. However, it is noted that the traffic study was analyzed with only one full move access. To remain consistent with the Glenelg Phase 1 TIS, the Glenelg Phase 2 TIS and this study assigned the site-generated traffic to the one access. It was assumed the development would be completed prior to the 2027 horizon year. **Table 6** summarizes the trip generation estimates noted in the Glenelg Phase 2 TIS Study (Crozier, September 2020).



**Table 6: Glenelg Phase 1 Trip Generation**

Development	Unit Type	Number of Units	Roadway Peak Hour	Number of Trips		
				Inbound	Outbound	Total
Glenelg Phase 1	LUC 210: Single Family Detached Housing	118	Weekday A.M.	22	67	89
			Weekday P.M.	75	44	119
	LUC 220: Multifamily Housing (Low-Rise)	65	Weekday A.M.	7	25	32
			Weekday P.M.	25	15	40
<b>Total</b>			<b>Weekday A.M.</b>	<b>29</b>	<b>92</b>	<b>121</b>
			<b>Weekday P.M.</b>	<b>100</b>	<b>59</b>	<b>159</b>

The Glenelg Phase 1 trip distribution and trip assignment was taken from the Glenelg Phase 2 TIS (Crozier, September 2020). Traffic volumes were balanced through the study area intersections that were not included in the Glenelg Phase 2 TIS. **Appendix F** contains the Glenelg Phase 2 TIS excerpts. The trip assignment for Glenelg Phase 1 is illustrated in **Figure 7**.

4.4.3. Glenelg Phase 2

The Glenelg Phase 2 development is located to the west of Glenelg Phase 3. Glenelg Phase 2 connects to Glenelg Street through Glenelg Phase 1. Based on Glenelg Phase 2 Traffic Impact Study (Crozier, September 2020), the development is proposed to include 89 single detached dwelling units and 66 townhouse dwelling units. It is noted the unit counts are conservative as the number of units has been reduced to allow for the construction of future roadways not illustrated in the draft plan referenced by the Glenelg Phase 2 TIS. The unit count in the Glenelg Phase 2 TIS is overstated by 2 single detached dwelling units and 4 townhouse dwelling units. **Table 7** summarizes the trip generation estimates.

**Table 7: Glenelg Phase 2 Trip Generation**

Use	Peak Hour	Number of Trips		
		Inbound	Outbound	Total
LUC 210: Single Family Detached Housing (89 Units)	Weekday A.M.	17	51	68
	Weekday P.M.	57	34	91
LUC 220: Multifamily Housing (Low-Rise) (66 Units)	Weekday A.M.	7	25	32
	Weekday P.M.	26	15	41
<b>Total</b>	<b>Weekday A.M.</b>	<b>24</b>	<b>76</b>	<b>100</b>
	<b>Weekday P.M.</b>	<b>83</b>	<b>49</b>	<b>132</b>

*Note: The trip generation above was adopted from the fitted curve equation given in ITE Trip Generation Manual 10<sup>th</sup> Edition as per the Glenelg Phase 2 Traffic Impact Study (Crozier, September 2020).*

The trip assignment was taken from the Glenelg Phase 2 TIS (Crozier, September 2020). Traffic volumes were balanced through the study area intersections that were not included in the Glenelg Phase 2 TIS. **Figure 8** illustrates the Glenelg Phase 2 trip assignment.

#### 4.4.4. White Rose Phase 3

The White Rose Phase 3 development is located to the south of the Subject Property. Based on the White Rose Phase 3 Traffic Impact Study (Triton Engineering Services, September 2020), the development is proposed to consist of 33 single detached dwelling units, 24 townhouse dwelling units, and 34 seniors dwelling units. **Table 8** summarizes the trip generation estimates.

**Table 8: White Rose Phase 3 Trip Generation**

Use	Peak Hour	Number of Trips		
		Inbound	Outbound	Total
LUC 210: Single Family Detached Housing (89 Units)	Weekday A.M.	8	23	31
	Weekday P.M.	23	13	36
LUC 230: Residential Condominium/ Townhouse (66 Units)	Weekday A.M.	3	14	17
	Weekday P.M.	13	6	19
LUC 252: Senior Adult Housing (Attached) (66 Units)	Weekday A.M.	2	3	5
	Weekday P.M.	5	1	6
<b>Total</b>	<b>Weekday A.M.</b>	<b>13</b>	<b>40</b>	<b>53</b>
	<b>Weekday P.M.</b>	<b>41</b>	<b>20</b>	<b>61</b>

*Note: The trip generation above was adopted from the fitted curve equation given in ITE Trip Generation Manual 10<sup>th</sup> Edition as per the White Rose Phase 3 TIS (Triton, September 2020).*

The trips assignment for the White Rose Phase 3 was taken from the White Rose Phase 3 TIS. Traffic volumes were balanced through the study area intersections that were not included in the White Rose Phase 3 TIS. **Figure 9** illustrates the White Rose Phase 3 trip assignment and **Appendix F** contains White Rose TIS Excerpts.

### 4.5 Intersection Operations

The operations of the study intersections were analyzed based on the 2027 and 2032 future background traffic volumes. The background volumes, which include the generalized background growth and the identified background developments, are illustrated in **Figure 11** and **Figure 12** for the 2027 and 2032 horizon years, respectively. **Appendix D** contains the Level of Service definitions and **Appendix E** contains the detailed capacity analysis worksheets. Error! Reference source not found. and Error! Reference source not found. summarize the 2027 and 2032 future background traffic operations, respectively.

**Table 9: 2027 Future Background Traffic Operations**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay	Critical v/c ratio <sup>2</sup>
Ida Street and Glenelg Street	Stop (T-intersection)	A.M.	A	9.1 s	0.07 (WB)
		P.M.	A	9.1 s	0.06 (WB)
Dundalk Street and Glenelg/Grey Street	Stop (T-intersection)	A.M.	B	11.0 s	0.11 (NB)
		P.M.	B	10.7 s	0.21 (NB)
Ida Street and Grey Road 9 (Main Street)	Roundabout	A.M.	A	1.5 s	N/A
		P.M.	A	1.2 s	N/A
Dundalk Street and Main Street	Stop (T-intersection)	A.M.	D	31.5 s	0.64 (SB)
		P.M.	C	16.2 s	0.28 (SB)
Osprey Street and Main Street	Stop (Two-way)	A.M.	C	23.1 s	0.27 (NB)
		P.M.	C	20.8 s	0.19 (NB)
Glenelg Street and Glenelg Site Access	Stop (T-intersection)	A.M.	A	9.8 s	0.20 (SB)
		P.M.	B	10.7 s	0.16 (SB)
Osprey Street and Toronto Street/Bradley Street	Stop (All-way)	A.M.	A	7.4 s	0.11 (WB)
		P.M.	A	7.4 s	0.14 (NB)
Owen Sound Street and Main Street	Stop (T-intersection)	A.M.	C	18.1 s	0.18 (SB)
		P.M.	C	19.8 s	0.21 (SB)
Bradley Street and Grey Street	Stop (T-intersection)	A.M.	A	8.9 s	0.03 (EB)
		P.M.	A	9.0 s	0.06 (EB)
Osprey Street and Grey Street	Stop (T-intersection)	A.M.	A	8.7 s	0.02 (NB)
		P.M.	A	8.9 s	0.06 (NB)

Note <sup>1</sup>: The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000). The Level of Service of all-way stop-controlled intersection is based on the average delay per vehicle.

Note <sup>2</sup>: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. All v/c ratios for movements greater than 0.85 are outlined and highlighted. For all-way stop control, the Degree Utilization was noted as the v/c ratio is not provided by HCM.

**Table 10: 2032 Future Background Traffic Operations**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay	Critical v/c ratio <sup>2</sup>
Ida Street and Glenelg Street	Stop (T-intersection)	A.M.	A	9.1 s	0.07 (WB)
		P.M.	A	9.2 s	0.07 (WB)
Dundalk Street and Glenelg/Grey Street	Stop (T-intersection)	A.M.	B	11.1 s	0.12 (NB)
		P.M.	B	10.8 s	0.21 (NB)
Ida Street and Grey Road 9 (Main Street)	Roundabout	A.M.	A	1.5 s	N/A
		P.M.	A	1.3 s	N/A
Dundalk Street and Main Street	Stop (T-intersection)	A.M.	<b>E</b>	<b>37.4 s (SB)</b>	0.70 (SB)
		P.M.	C	17.0 s	0.30 (SB)
Osprey Street and Main Street	Stop (Two-way)	A.M.	C	25.2 s	0.30 (NB)
		P.M.	C	22.0 s	0.20 (NB)
Glenelg Street and Glenelg Site Access	Stop (T-intersection)	A.M.	B	9.8 s	0.20 (SB)
		P.M.	B	10.7 s	0.16 (SB)
Osprey Street and Toronto Street/Bradley Street	Stop (All-way)	A.M.	A	7.5 s	0.11 (WB)
		P.M.	A	7.4 s	0.14 (NB)
Owen Sound Street and Main Street	Stop (T-intersection)	A.M.	C	19.3 s	0.21 (SB)
		P.M.	C	21.3 s	0.24 (SB)
Bradley Street and Grey Street	Stop (T-intersection)	A.M.	A	9.0 s	0.03 (EB)
		P.M.	A	9.0 s	0.06 (NB)
Osprey Street and Grey Street	Stop (T-intersection)	A.M.	A	8.7 s	0.02 (NB)
		P.M.	A	8.8 s	0.04 (NB)

Note 1: The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000). The Level of Service of all-way stop-controlled intersection is based on the average delay per vehicle.

Note 2: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. All v/c ratios for movements greater than 0.85 are outlined and highlighted. For all-way stop control, the Degree Utilization was noted as the v/c ratio is not provided by HCM.

The study intersections are forecast to continue operating with a LOS "C" or better in the weekday a.m. and p.m. peak hours under 2032 future background traffic volume conditions, except for the intersection of Dundalk Street and Main Street. The southbound movement on Dundalk Street is considered critical and is forecast to operate at a LOS "E" during the weekday a.m. peak hour. It is noted that existing peak hour factors (PHF) were applied to future traffic conditions, which range from 0.65 to 0.82 during the a.m. peak hour. As traffic volumes increase, the PHF will likely increase. Due to the large number of future nearby background developments that are expected to be constructed, it is recommended the road authority continues to monitor the traffic operations of the study intersections.

The Glenelg Phase 1 Site Access is anticipated to operate with a LOS “B” with a maximum control delay of 10.7 seconds and a maximum v/c ratio of 0.20(SB). The metrics indicate that the site access has reserve capacity for increases in traffic volumes.

## 5.0 Site Generated Traffic

### 5.1 Trip Generation

Development of the subject property will result in additional vehicles on the boundary road network above background conditions. The trip generation of the development was forecast using the fitted curve equations provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11<sup>th</sup> Edition. Per the most recent draft plan, the development is proposed to consist of 300 single detached dwelling units, 24 semi-detached units, 75 townhouse units, 1 future residential lot, and a school that can accommodate 700 students. Accordingly, LUC 210 “Single-Family Detached Housing”, LUC 215 “Single Family Attached Housing”, and LUC 520 “Elementary School” were used to forecast the trips generated by the site. **Table 11** summarizes the trip generation of the Subject Property. **Appendix H** contains relevant excerpts from the ITE Trip Generation Manual.

To remain conservative, LUC 210 was used to forecast the trip generated by the semi-detached units and the future residential lot. As Glenelg phase 1, 2, and 3 are expected to encompass approximately 30% of the catchment area for the school, the trip generation of the school was reduced by 30% as these trips are not expected to enter the study area road network.

**Table 11: Site Trip Generation**

	Peak Hour	Number of Trips		
		Inbound	Outbound	Total
LUC 210 'Single Family Homes' (325 Units)	Weekday A.M.	56	161	217
	Weekday P.M.	190	111	301
LUC 215 'Single Family Attached Housing' (70 Units)	Weekday A.M.	10	23	33
	Weekday P.M.	23	18	41
LUC 520 'Elementary School' (700 Students)	Weekday A.M.	196	167	363
	Weekday P.M.	36	42	78
<b>TOTAL</b>	<b>Weekday A.M.</b>	<b>262</b>	<b>351</b>	<b>613</b>
	<b>Weekday P.M.</b>	<b>249</b>	<b>171</b>	<b>420</b>

It is noted that the addition of the school block results in an increase in trips of 328 vehicles in the a.m. peak hour and 31 vehicles in the p.m. peak hour when compared to the original TIS (August 2022). **Appendix A** contains excerpts from the original TIS for comparison.

### 5.2 Trip Distribution and Assignment

Trips generated by the residential land uses of Glenelg Phase 3 were distributed to the boundary road network similar to what was applied in the Glenelg Phase 1 TIS and Glenelg Phase 2 TIS. **Figure 13** illustrates the future traffic control and lane configuration of the study area road network.

Based on discussions with Triton staff, the trip assignment was revised to reflect a larger percentage of site-generated trips using Osprey Street instead of Bradley Street south of Grey Street. It was assumed that this travel path would be encouraged by the designation of Osprey Street as a collector road and traffic calming measures would be considered on Bradley Street south of Grey

Street. Further details and a mutually agreed-upon modified cross-section for Grey Street and Osprey Street will be assessed through detailed design.

The trip distribution was based on Transportation Tomorrow Survey (TTS) data. The TTS is a comprehensive survey of transportation characteristics in the Golden Horseshoe, and Simcoe County areas. TTS data is unavailable for the Community of Dundalk; however, data was available for the Township of Melancthon which is adjacent to Dundalk. This data is considered representative of the subject area.

TTS Data has been included in **Appendix I**. The trip distribution is as follows:

- 10 % to/from the north on Ida Street
  - 5 % Via Glenelg Phase 1 Site Access
  - 5 % Via Grey Street
- 10 % to/from the west on Grey Road 9 (Main Street) via Ida Street and via Grey Street
- 60 % to/from the south on Highway 10 via Bradley Street
  - 60 % westbound right movements at Owen Sound Street
  - 30 % southbound left movements at Owen Sound Street and 30% southbound left
- 20 % to/from Dundalk (downtown)
  - 15 % to/from the west on Toronto Street
  - 5 % to/from the west on Main Street at Dundalk Street

It is noted that 20% of the site-generated traffic volumes are expected to travel through the community outside of the study area road network. **Figure 14** illustrates the trip distribution for the residential land uses.

The trip generated by the school were assigned to the study area road network based on the location of the population of the nearby area. It is noted that approximately 15% of trips are expected to have an origin and destination between study area intersections. **Figure 15** illustrates the trip distribution for the school.

The Subject Property is proposed to connect to the boundary road network through the Bradley Street extension and two accesses through Glenelg Phase 1. The Subject Property will directly connect to Glenelg Phase 2 which then connects to the Glenelg Phase 1 accesses. Glenelg Phase 3 was analyzed with the Bradley Street extension and one access through Glenelg Phase 1. This provides a conservative analysis as two accesses have already been constructed for Glenelg Phase 1.

**Figure 16** and **Figure 17** illustrates the trip assignment for the residential land uses and school, respectively. **Figure 18** illustrates the trip assignment for the Subject Property.

## 6.0 Total Future Conditions

### 6.1 Basis of Assessment

The total traffic volumes consist of the site-generated and background traffic volumes. **Figure 19** and **Figure 20** illustrate the 2027 and 2032 total traffic weekday a.m. and p.m. traffic volumes, respectively.

### 6.2 Signal Justification

A signal warrant analysis was undertaken for the Main Street intersections at Dundalk Street and Osprey Street using 2032 future total traffic conditions. The analysis followed the procedures specified in Chapter 4 of the “Ontario Traffic Manual – Book 12” (OTM Book 12), March 2012 for Justification 1 (Minimum Vehicle Volume), Justification 2 (Delay to Cross Traffic), and Justification 3 (Volume/Delay Combination). The future total peak hour volumes were assigned to the 8-hours based on the percentage of the peak hour traffic volumes established from the existing 8-hour traffic data.

The results of the signal warrant analyses are summarized in **Table 12** and **Table 13**. The warrant sheets have been included in **Appendix J**.

**Table 12: Main at Dundalk Street - Signal Warrant Analysis Results**

Justification		Section Percent	Signal Justified
1. Minimum Vehicular Volume	A. Total Volume	86%	No
	B. Crossing volume	44%	
2. Delay to Cross Traffic	A. Main Road	78%	No
	B. Crossing Road	94%	
3. Combination	A. Justification 1	44%	No
	B. Justification 2	78%	

Note: Dundalk Street and Main Street is a “T” intersection which requires the minimum section percentage requirements to be increased by 50%.

**Table 13: Main at Osprey Street - Signal Warrant Analysis Results**

Justification		Section Percent	Signal Justified
1. Minimum Vehicular Volume	A. Total Volume	96%	No
	B. Crossing volume	93%	
2. Delay to Cross Traffic	A. Main Road	81%	No
	B. Crossing Road	100%	
3. Combination	A. Justification 1	93%	Yes
	B. Justification 2	81%	

The results indicate that a traffic signal is warranted at the Main Street and Osprey Street intersection under 2032 future total conditions. The inclusion of a signal at Osprey Street would be expected to both improve delay for vehicles turning onto Main Street and provide a protected pedestrian crossing location for those travelling toward the school located in the Subject Property from south of Main Street. As previously noted, this signal warrant analysis is based on the inclusion of the proposed school block. Should the School Board decide not to proceed with a school in this location, intersection operations would be improved and signals would not be warranted. **Appendix A** contains excerpts from the original TIS for reference.

### 6.3 Intersection Operations

The operations of the study intersections were analyzed based on the 2027 and 2032 total traffic volumes illustrated in **Figures 15** and **Figure 16**. **Table 14** and **Table 15** outline the 2027 and 2032 horizon year future total traffic Levels of Service, respectively. Level of Service definitions have been included in **Appendix D** and detailed capacity analyses worksheets are included in **Appendix E**.

**Table 14: 2027 Future Total Levels of Service**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay	Critical v/c ratio <sup>2</sup>
Ida Street and Glenelg Street	Stop (T-intersection)	A.M.	B	10.6 s	0.23 (WB)
		P.M.	B	9.9 s	0.13 (WB)
Dundalk Street and Glenelg/Grey Street	Stop (T-intersection)	A.M.	B	13.5 s	0.22 (NB)
		P.M.	B	11.9 s	0.26 (NB)
Ida Street and Grey Road 9 (Main Street)	Roundabout	A.M.	A	1.6 s	N/A
		P.M.	A	1.3 s	N/A
Dundalk Street and Main Street	Stop (T-intersection)	A.M.	<b>E</b>	<b>42.5 s</b>	0.77 (SB)
		P.M.	C	16.9 s	0.31 (SB)
Osprey Street and Main Street	Stop (Two-way)	A.M.	<b>F</b>	<b>52.0 s (SB)</b>	0.74 (SB)
		P.M.	D	26.5 s	0.35 (SB)
Glenelg Street and Glenelg Site Access	Stop (T-intersection)	A.M.	B	11.5 s	0.27 (SB)
		P.M.	B	11.7 s	0.19 (SB)
Osprey Street and Toronto Street/Bradley Street	Stop (All-way)	A.M.	B	11.1 s	0.43 (SB)
		P.M.	B	10.3 s	0.41 (NB)
Owen Sound Street and Main Street	Stop (T-intersection)	A.M.	<b>E</b>	<b>40.6 s</b>	0.65 (SB)
		P.M.	D	31.7 s	0.48 (SB)
Bradley Street and Grey Street	Stop (T-intersection)	A.M.	C	20.8 s	0.62 (EB)
		P.M.	B	13.3 s	0.44 (EB)
Osprey Street and Grey Street	Stop (T-intersection)	A.M.	B	10.7 s	0.21 (NB)
		P.M.	B	10.2 s	0.25 (NB)

Note 1: The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000). The Level of Service of all-way stop-controlled intersection is based on the average delay per vehicle.

Note 2: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. All v/c ratios for movements greater than 0.85 are outlined and highlighted. For all-way stop control, the Degree Utilization was noted as the v/c ratio is not provided by HCM.



**Table 15: 2032 Future Total Levels of Service**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay	Critical v/c ratio <sup>2</sup>
Ida Street and Glenelg Street	Stop (T-intersection)	A.M.	B	10.7 s	0.23 (WB)
		P.M.	B	10.0 s	0.14 (WB)
Dundalk Street and Glenelg/Grey Street	Stop (T-intersection)	A.M.	C	13.7 s	0.23 (NB)
		P.M.	B	12.0 s	0.26 (NB)
Ida Street and Grey Road 9 (Main Street)	Roundabout	A.M.	A	1.7 s	N/A
		P.M.	A	1.3 s	N/A
Dundalk Street and Main Street	Stop (T-intersection)	A.M.	<b>F</b>	<b>53.0 s (SB)</b>	<b>0.89 (SB)</b>
		P.M.	C	17.7 s	0.33 (SB)
Osprey Street and Main Street	Stop (Two-way)	A.M.	<b>F</b>	<b>65.6 s (SB)</b>	0.81 (SB)
		P.M.	D	29.0 s	0.38 (SB)
	Signal <sup>3</sup>	A.M.	C	32.3 s	0.72 (SB)
		P.M.	C	28.9 s	0.56 (SB)
Glenelg Street and Glenelg Site Access	Stop (T-intersection)	A.M.	B	11.5 s	0.27 (SB)
		P.M.	B	11.7 s	0.19 (SB)
Osprey Street and Toronto Street/Bradley Street	Stop (All-way)	A.M.	A	10.1 s	0.34 (NB)
		P.M.	B	10.4 s	0.41 (NB)
Owen Sound Street and Main Street	Stop (T-intersection)	A.M.	<b>E</b>	<b>47.4 s (SB)</b>	0.70 (SB)
		P.M.	<b>E</b>	<b>35.6 s (SB)</b>	0.52 (SB)
Bradley Street and Grey Street	Stop (T-intersection)	A.M.	B	21.1 s	0.62 (EB)
		P.M.	A	13.3 s	0.44 (EB)
Osprey Street and Grey Street	Stop (T-intersection)	A.M.	B	10.7 s	0.21 (NB)
		P.M.	A	10.3 s	0.25 (NB)

Note 1: The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000). The Level of Service of all-way stop-controlled intersection is based on the average delay per vehicle.

Note 2: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. All v/c ratios for movements greater than 0.85 are outlined and highlighted. For all-way stop control, the Degree Utilization was noted as the v/c ratio is not provided by HCM.

Note 3: For comparison to unsignalized results, the movement experiencing the maximum delay and v/c was identified.

The intersections are generally forecast to operate at acceptable levels of service during the weekday a.m. and p.m. peak hours with minor increases in delay and v/c ratios noted with the addition of site-generated traffic volumes.

The following critical movements are noted:

- Dundalk Street and Main Street: Southbound approach
- Osprey Street and Main Street: Southbound approach
- Owen Sound Street and Main Street: Southbound approach

The southbound approach at the Dundalk Street and Main Street intersection is forecast to operate at LOS "F" during the weekday a.m. peak hour. The critical southbound movement is forecast to experience an increase in control delay of 15.6 seconds and an increase in v/c of 0.19 over future background conditions. As previously noted, a traffic signal is not warranted at the study area intersections and poor operations are forecast under background conditions. Due to multiple proposed developments in the area, it is recommended that the road authority continue to monitor the operations of the intersection.

The southbound approach at the Osprey Street and Main Street intersection is forecast to operate at LOS "F" during the weekday a.m. peak hour. The critical southbound movement is forecast to experience an increase in control delay of 40.4 seconds and an increase in v/c of 0.51 over future background conditions. As previously noted, a traffic signal is warranted at this location. If a traffic signal is implemented, all movements are forecast to operate at LOS "C" or better during the a.m. and p.m. peak hours and no critical movements are noted.

The southbound approach at the Owen Sound Street and Main Street intersection is forecast to operate at LOS "F" during the weekday a.m. and p.m. peak hours. The southbound movement is forecast to experience an increase in the control delay of up to 28.1 s and an increase in the v/c ratio of up to 0.49 when compared to the future background operations during the a.m. and p.m. peak hours. Due to multiple proposed developments in the area, it is recommended that the road authority continue to monitor the operations of the intersection.

It is noted that if traffic signals are introduced at the Osprey Street and Main Street intersection, it is expected that drivers turning left on Main Street will reroute to this location from nearby intersections. This is expected to improve the operations of the Main Street intersections with Dundalk Street and Owen Sound Street.

## 7.0 Scenario: Eco Parkway

The Eco Parkway extension is an industrial access road running east-west parallel to Main Street from Highway 10 to Ida Street. The industrial access road will be classified as an arterial roadway. The lands on both sides of Eco Parkway have been designated for industrial use. A Traffic Impact Study for the Eco Parkway (formally Industrial Access Road) was completed by Triton Engineering as part of the environmental assessment (September 2017). **Attachment F** contains the Eco Parkway TIS excerpts. It is recognized that the TIS referred to the proposed roadway as Industrial Access Road, however, the most recent naming is Eco Parkway.

### 7.1 Redistribution of Existing Volumes

Construction of the Eco Parkway extension will provide a bypass to Dundalk and is expected to reroute existing traffic. For the purposes of their study and to remain consistent with the environmental assessment, this study and Triton engineering assumed that 30% of the traffic on Grey Road 9 through Dundalk would use Eco Parkway to bypass the community. Triton also assumed that truck traffic currently going through Dundalk would use Eco Parkway to bypass Main Street or access the industrial lands.

To remain consistent with the Triton Industrial Road TIS, existing traffic volumes, which includes background traffic growth, were redistributed as follows:

- 30 % of southbound left vehicles will complete southbound through movements
- 30 % of eastbound through vehicles will complete eastbound right movements
- 30 % of westbound through vehicles will complete northbound left movements
- 30 % of westbound right vehicles will complete northbound through movements

Trips from the background developments were not re-distributed based on the Eco Parkway construction because most of the developments are located to the east of Eco Parkway and would use Main Street. It should be noted that most new developments are residential while the proposed site is industrial, therefore some synergies will most likely occur however this was not investigated. Trips may have been counted in both the industrial site generated trips and background development generated trips to ensure a conservative analysis. **Figure 21** illustrates the adjusted vehicular volumes.

## 7.2 Eco Parkway Site Generated Trips

The development of the industrial area serviced by the Eco Parkway extension is anticipated to result in new trips to the boundary road network. The full build out of the Eco Parkway extension industrial lands was assumed to be completed prior to the 2032 horizon year, so the trip generation associated with full build-out has been used in this analysis.

The Institute of Transportation Engineers (ITE) Trip Generation Manual, 8<sup>th</sup> Edition (ITE code 130 - Industrial Park) was used in the Tritons TIS (September 2017). ITE Code 130 - Industrial Park provided a conservative trip generation for the unknown types of development surrounding the Eco Parkway Extension and is consistent with the Eco Parkway TIS. The trips were estimated using an area of 259.75 acres and Triton Engineering assumed that all trips generated were primary trips.

**Table 16** summarizes the trip generation of the site. The trip generation identified in the Eco Parkway TIS was used in this analysis. **Appendix F** contains relevant excerpts from the Triton Engineering Industrial Eco Parkway TIS (September 2017).

**Table 16: Eco Parkway Industrial Lands Trip Generation**

Peak Hour	Number of Trips		
	Inbound	Outbound	Total
Weekday A.M.	1,142	234	1,376
Weekday P.M.	266	1,000	1,266

The development of the industrial lands surrounding the Eco Parkway extension is estimated to generate approximately 1,376 and 1,266 two-way trips in the a.m. and p.m. peak hours, respectively. The trips were assigned to the road network consistent with the Triton TIS. In the Industrial Eco Parkway TIS, Triton assumed 70% of trips would travel towards Highway 10 on the Eco Parkway extension and the remainder would travel into Dundalk.

**Figure 22** illustrates the forecast traffic volumes of all the background developments, including the Eco Parkway Industrial Lands site generated traffic. **Figure 23** illustrates the 2032 future background traffic volumes.

### 7.3 Eco Parkway Future Background Scenario

The operations of the study intersections were analyzed based on the 2032 future background traffic volumes. **Appendix D** contains the Level of Service definitions and **Appendix E** contains the detailed capacity analysis worksheets. **Table 17** outlines the 2032 future background traffic operations.

**Table 17: Eco Parkway Scenario - 2032 Future Background Levels of Service**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay	Critical v/c ratio <sup>2</sup>
Ida Street and Grey Road 9 (Main Street)	Roundabout	A.M.	A	2.7 s	N/A
		P.M.	A	2.8 s	N/A
Dundalk Street and Main Street	Stop (T-intersection)	A.M.	<b>E</b>	<b>43.5 s</b>	0.74 (SB)
		P.M.	C	16.5 s	0.29 (SB)
Osprey Street and Main Street	Stop (Two-way)	A.M.	D	26.6 s	0.31 (NB)
		P.M.	C	21.5 s	0.20 (NB)
Owen Sound Street and Main Street	Stop (T-intersection)	A.M.	C	20.1 s	0.22 (SB)
		P.M.	C	20.8 s	0.24 (SB)

Note <sup>1</sup>: The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000). The Level of Service of all-way stop-controlled intersection is based on the average delay per vehicle.

Note <sup>2</sup>: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. All v/c ratios for movements greater than 0.85 are outlined and highlighted. For all-way stop control, the Degree Utilization was noted as the v/c ratio is not provided by HCM.

The study intersections were forecast to continue operating with a LOS "C" or better in the weekday a.m. and p.m. peak hours under 2032 future background traffic volume conditions, except for the intersection of Dundalk Street and Main Street. The detoured traffic is forecast to slightly improve the p.m. peak hour operations and slightly decrease the a.m. peak hour operations at the intersections of Main Street with Dundalk Street, Osprey Street, and Owen Sound Street compared to general future background conditions.

The southbound movement on Dundalk Street is considered critical and is forecast to operate at a LOS "E" during the weekday a.m. peak hour. It is noted that existing PHF were applied to future traffic conditions, which range from 0.65 to 0.82 during the a.m. peak hour. As traffic volumes increase, the PHF will likely increase. Due to the large number of future nearby background developments that are expected to be constructed, it is recommended the road authority continues to monitor the traffic operations of the study intersections.

### 7.4 Eco Parkway Future Total Scenario

The operations of the study intersections were analyzed based on the 2032 total traffic volumes illustrated in **Figure 24**, which includes 2032 future background traffic volumes and the estimated trips assignment of the Subject Property. **Table 18** outlines the 2032 horizon year future total traffic Levels of Service. Levels of Service definitions have been included in **Appendix D** and detailed capacity analyses worksheets are included in **Appendix E**.

**Table 18: Eco Parkway Scenario - 2032 Future Total Levels of Service**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay	Critical v/c ratio <sup>2</sup>
Ida Street and Grey Road 9 (Main Street)	Roundabout	A.M.	A	3.0 s	N/A
		P.M.	A	3.0 s	N/A
Dundalk Street and Main Street	Stop (T-intersection)	A.M.	<b>F</b>	<b>65.0 s (SB)</b>	<b>0.89 (SB)</b>
		P.M.	C	17.2 s	0.32 (SB)
Osprey Street and Main Street	Stop (Two-way)	A.M.	<b>F</b>	<b>76.6 s (SB)</b>	<b>0.86 (SB)</b>
		P.M.	D	27.8 s	0.37 (SB)
	Signal <sup>3</sup>	A.M.	C	30.6 s	0.71 (SB)
		P.M.	C	28.9 s	0.56 (SB)
Owen Sound Street and Main Street	Stop (T-intersection)	A.M.	<b>F</b>	<b>52.7 s (SB)</b>	0.73 (SB)
		P.M.	D	34.3 s	0.51 (SB)

Note 1: The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000). The Level of Service of all-way stop-controlled intersection is based on the average delay per vehicle.

Note 2: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. All v/c ratios for movements greater than 0.85 are outlined and highlighted. For all-way stop control, the Degree Utilization was noted as the v/c ratio is not provided by HCM.

Note 3: For comparison to unsignalized results, the movement experiencing the maximum delay and v/c was identified.

Generally, minor increases in delays are noted on the Main Street intersections with Dundalk Street, Osprey Street, and Owen Sound Street with the inclusion of the Eco Parkway extension during the a.m. peak hour and minor decreases in the p.m. peak hour, when compared to the 2032 future total conditions discussed in Section 6.3. While rerouting existing traffic reduced the background growth volumes, the inclusion of the traffic generated by the Eco Parkway industrial lands resulted in a general increase in traffic during the a.m. peak hour. The critical movements identified in Section 6.3 continue to be critical with the inclusion of the Eco Parkway extension.

An updated signal warrant analysis was undertaken for the Main Street intersections at Dundalk Street and Osprey Street using 2032 future total traffic conditions with inclusion of the Eco Parkway extension. The results indicate that a traffic signal is warranted at the Main Street and Osprey Street intersection under 2032 future total conditions. As previously noted, this analysis is based on the inclusion of the proposed school block. Should the School Board decide not to proceed with a school in this location, signals would not be warranted.

## 8.0 Conclusions and Recommendations

The detailed analysis contained within this report resulted in the following key findings:

- Intersection analysis of the existing traffic volumes indicates that all study intersections are operating at a Level of Service (LOS) "B" or better during the weekday a.m. and p.m. peak hours. The study intersections have capacity for increases in traffic volumes.
- Several background developments have been considered for the assessment of the background conditions. These developments include Glenelg Phase 1, Glenelg Phase 2, the unoccupied Edgewood Greens units, and White Rose Phase 3. Consideration was also given to the development of the industrial lands surrounding the proposed Eco Parkway extension which will be discussed later in the conclusions.
- Under 2032 future background conditions, the study area intersections are generally expected to operate at LOS "C" or better, with the exception of the southbound movement at the Dundalk Street and Main Street intersection. The movement is forecast to operate with a LOS "E" and a v/c of 0.70 during the weekday a.m. peak hour.
- The proposed development is estimated to generate 613 and 420 total two-way primary trips during the weekday a.m. and p.m. peak hours, respectively.
- Under 2032 future total conditions, the study area intersections are generally expected to operate at LOS "C" or better, with the exception of the following movements which are forecast to operate at LOS "E" or LOS "F" during at least one peak hour:
  - Dundalk Street and Main Street: Southbound approach
  - Osprey Street and Main Street: Southbound approach
  - Owen Sound Street and Main Street: Southbound approach

A traffic signal is warranted at the Main Street and Osprey Street intersection under 2032 future total conditions. It is expected that if traffic signals are introduced at the Osprey Street and Main Street intersection, drivers turning left on Main Street will reroute to this location from nearby intersections. This is expected to improve the operations of the Main Street intersections with Dundalk Street and Owen Sound Street.

- As requested in the Terms of Reference, a scenario analyzing the impacts of the Glenelg Phase 3 development with inclusion of the Eco Parkway extension and surrounding industrial lands was completed. The scenario with the Eco Parkway extension and the proposed industrial development lands are estimated to produce 1,376 and 1,266 external two-way trips in the a.m. and p.m. peak hours, respectively. The Eco Parkway extension is anticipated to reroute 30% of volumes on Main Street around downtown Dundalk.
- Under 2032 future background conditions with inclusion of the Eco Parkway extension:
  - The detoured traffic is forecast to slightly improve the p.m. peak hour operations and slightly decrease the a.m. peak hour operations at the intersections of Main Street with Dundalk Street, Osprey Street, and Owen Sound Street compared to general future background conditions.
  - The southbound movement at the Dundalk Street and Main Street intersection is forecast to operate with a LOS "E" and a v/c of 0.74 during the weekday a.m. peak hour.

- Under 2032 future total conditions with inclusion of the Eco Parkway extension:
  - Minor increases in delay are noted on the Main Street intersections with Dundalk Street, Osprey Street, and Owen Sound Street during the a.m. peak hour and minor decreases in delay are noted during the p.m. peak hour.
  - The critical movements noted under 2032 future total conditions without the Eco Parkway extensions are forecast to continue to occur.
  - A traffic signal continues to be warranted at the Main Street and Osprey Street intersection.

Based on the conclusions, it is recommended that the review agency continues to monitor the study area intersections for poor operations as the background developments and the Subject Property develop. Should poor operations occur at the Main Street and Osprey Street intersection, a traffic signal should be considered regardless if the Eco Parkway extension is constructed.

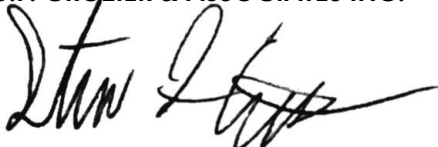
The results and recommendations contained within this report are based on the inclusion of the school block. Should the School Board forego the construction of a school in this location, a signal would not be warranted at the intersection of Osprey Street and Main Street and the overall intersection operations would be improved, as described in the original TIS (Crozier, August 2022).

The analysis contained within this report was prepared using the Draft Plan prepared by MHBC August 14<sup>th</sup>, 2023. Any minor revisions to the development draft are not expected to affect the conclusions contained in this report.

In conclusion, the proposed development can be supported from a transportation operations and safety perspective with the noted recommendations.

Respectfully submitted,

**C.F. CROZIER & ASSOCIATES INC.**



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SH/mf.sa

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# APPENDIX A

## Glenelg Phase 3 TIS Excerpts (Crozier, August 2022)



**TRAFFIC IMPACT STUDY**

**GLENELG PHASE 3**

**DUNDALK  
GREY COUNTY, ONTARIO**

**PREPARED FOR:  
DUNDALK VILLAGE TWO INC.**

**PREPARED BY:  
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**1<sup>ST</sup> SUBMISSION: AUGUST 2022**

**CFCA FILE NO. 1060-6220**

The material in this report reflects best judgment in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. C.F. Crozier and Associates Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.



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REVISION NUMBER	DATE	COMMENTS
Rev. 0	August 2022	First submission to Township and County

## 1.0 Executive Summary

C. F. Crozier and Associates Inc. was retained by Flato Dundalk Meadows Inc. to undertake a Traffic Impact Study (TIS) to support a Draft Plan of Subdivision Application for Glenelg Phase 3, which is located in the north end of the Community of Dundalk, Township of Southgate, County of Grey. The Subject Property is located northeast of Phase 2 of the Glenelg Residential Development.

The proposed Draft Plan prepared by MHBC, August 18<sup>th</sup>, 2022, consists of 369 single detached dwelling units, 72 townhouse dwelling units, and 18 semi-detached dwelling units.

The residential development is proposed to connect to the boundary road network through one access in the White Rose Phase 3 development (Bradley Street Extension) and two accesses through Glenelg Phase 1. The Subject Property will directly connect to Corbet Street in Glenelg Phase 2 which connects to the two accesses in Glenelg Phase 1.

The TIS analyzes the following intersections:

- Glenelg Street and Ida Street
- Dundalk Street and Glenelg Street
- Ida Street and Main Street
- Dundalk Street and Main Street
- Main Street and Osprey Street
- Main Street and Owen Sound Street
- Osprey Street and Bradley Street

Intersection analysis of the existing traffic volumes indicates that all study intersections are operating at a Level of Service (LOS) "B" or better during the weekday a.m. and p.m. peak hours. The study intersections have capacity for increases in traffic volumes.

Per the agreed upon Terms of Reference, horizon years of 2027 and 2032 were assessed which represent five and ten years from the study date. A growth rate of 1.5 percent compounded annually was used to forecast the future total traffic volumes. Several background developments have been considered for the assessment of the background conditions. These developments include Glenelg Phase 1, Glenelg Phase 2, the unoccupied Edgewood Greens units, and White Rose Phase 3. A sensitivity analysis investigated the impacts of the Eco Parkway extension and associated industrial lands.

Intersection analysis of the 2032 future background traffic volumes indicates the following:

- The southbound movement at the Dundalk Street and Main Street intersection is forecast to operate with a LOS "E" during the weekday a.m. and p.m. peak hours. A maximum volume-to-capacity ratio of 0.70 (SB) and control delay 37.4 seconds are forecast.
- The remaining study intersections are forecast to operate at a LOS "C" or better.

The proposed development is estimated to generate 285 and 389 total two-way primary trips during the weekday a.m. and p.m. peak hours, respectively.

Intersection analysis of the 2032 future total traffic volumes indicates the following:

- The study intersections are forecast to continue operating with a LOS "B" or better in the weekday a.m. and p.m. peak hours under 2032 future background traffic volume conditions,

except for the intersections of: Dundalk Street and Main Street, Osprey Street and Main Street, and Owen Sound Street and Main Street.

- The intersection of Dundalk Street and Main Street is forecast to operate with an LOS "E" or better in the weekday a.m. and p.m. peak periods, respectively. A maximum control delay of 40.0 seconds, and a maximum volume-to-capacity ratio of 0.73 (SB).
  - When compared to 2032 future background operations, an increase in control delay of 2.6 seconds and the volume-to-capacity ratio is forecast to increase by 0.03.
- The intersection of Osprey Street and Main Street is forecast to operate with an LOS "D" in the weekday a.m. and p.m. peak periods, respectively. A maximum control delay of 34.8 seconds, and a maximum volume-to-capacity ratio of 0.52 (SB).
  - When compared to 2032 future background operations, an increase in control delay of 9.6 seconds and a maximum change of 0.22 in the volume-to-capacity ratio is forecast.
- The intersection of Owen Sound Street and Main Street is forecast to operate with an LOS "E" or better in the weekday a.m. and p.m. peak periods, respectively. A maximum control delay of 35.2 seconds and a maximum volume-to-capacity ratio of 0.55 (SB) are forecast.
  - When compared to 2032 future background operations, an increase in control delay of 14.0 seconds and a maximum change of 0.31 in the volume-to-capacity ratio is forecast.

As requested in the Terms of reference, a scenario analyzing the impacts of the Glenelg Phase 3 development with both the Eco Parkway extension and development of surrounding industrial lands was completed. The Eco Parkway extension and the proposed industrial development lands are estimated to produce 1,376 and 1,266 external two-way trips in the a.m. and p.m. peak hours, respectively. The Eco Parkway extension is also anticipated to reroute 30% of traffic volumes on Main Street around downtown Dundalk.

In the future background scenario with the Eco Parkway extension, the following results were established:

- The study intersections are forecast to operate at a LOS "E" or better except for the northbound movement at the Ida Street and Main Street intersection.
- The northbound movement intersection of Ida Street and Main Street is forecast to operate with a LOS "F", 177.0 seconds of delay, and a volume to capacity ratio of 1.28.

With the addition of Glenelg Phase 3 traffic to the Eco Parkway Scenario, the intersection of Ida Street and Main Street is forecast to operate with a maximum of 254.7 seconds of delay and a volume to capacity ratio of 1.46. Signalization is not warranted based on the future total volumes. If the Road Authority decides to implement signalization, the intersection is forecast to operate at LOS "B" with a v/c ratio of less than 0.79 for all movements under future total conditions. If the Road Authority decides to implement a roundabout, it is forecast that a roundabout would operate at LOS "A" with a 95<sup>th</sup> percentile queue length of 1 vehicle or less under the Eco Parkway future total volumes.

The analysis contained within this report was prepared using the Draft Plan prepared by MHBC on August 18<sup>th</sup>, 2022. Any minor revisions to the development draft are not expected to affect the conclusions contained in this report.

In conclusion, the proposed development can be supported from a transportation operations and safety perspective, with the noted recommendations.

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## 2.0 Introduction

### 2.1 Background

C. F. Crozier and Associates Inc. (Crozier) was retained by Flato Dundalk Meadows Inc. (Client) to undertake a Traffic Impact Study (TIS) to support a Draft Plan of Subdivision Application for Glenelg Phase 3 (Subject Property) located in the west end of the Community of Dundalk, Township of Southgate, County of Grey. The Subject Property is located northeast of Phase 2 of the Glenelg Residential Development.

### 2.2 Development Proposal

The most recent Draft Plan for Glenelg Phase 3 includes 369 single detached dwelling units, 72 townhouse dwelling units, and 18 semi-detached dwelling units.

Access to the subject property is proposed by three connections to the external road network; one through the White Rose Phase 3 Development (Bradley Street Extension) and two through Glenelg Phase 1. Street A and Street B are proposed to extend westerly from the subject property to Corbett Street in Glenelg Phase 2, which has further connections to the two Glenelg Phase 1 site accesses. Bradley Street is proposed to be extended northerly into the subject property after the construction of the White Rose Phase 3 development.

**Figure 1** contains the Draft Plan prepared by MHBC dated August 18<sup>th</sup>, 2022.

### 2.3 Purpose and Scope

The purpose of the study is to assess the impacts of the proposed residential development on the boundary road network and to recommend the required remedial measures to mitigate the transportation impacts.

The scope of the study includes:

- Determine and assess the existing, future background, and future total traffic operations of the boundary road network.
- Forecast the trip generation and distribution of the proposed development.
- Assess and if necessary, recommend, changes in intersection traffic control.

The Township of Southgate peer reviewer confirmed the scope and assumptions noted in this report during pre-study consultations. **Appendix A** contains the Terms of Reference correspondence.

## 3.0 Existing Traffic Conditions

### 3.1 Development Lands

The subject property is currently vacant and is bound by existing residential land uses to the south, future residential developments to the west, and vacant agricultural land to the east and north. The subject property is approximately 33.27 ha, of which approximately 24.54 ha are proposed to be developed.

**Figure 2** illustrates the Site Location Plan.



## 5.0 Site Generated Traffic

### 5.1 Trip Generation

Development of the subject property will result in additional vehicles on the boundary road network above background conditions. The trip generation of the development was forecast using the fitted curve equations provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11<sup>th</sup> Edition. Per the most recent draft plan, the development is proposed to consist of 369 single detached dwelling units, 72 townhouse dwelling units, and 18 semi-detached dwelling. Accordingly, LUC 210 "Single-Family Detached Housing", and LUC 215 "Single Family Attached Housing" were used to forecast trips generated by the site. **Table 10** summarizes the residential trip generation of the subject property. **Appendix F** contains relevant excerpts from the ITE Trip Generation Manual.

**Table 10: Site Trip Generation**

	Peak Hour	Number of Trips		
		Inbound	Outbound	Total
LUC 210 'Single Family Homes' (369 Units)	Weekday A.M.	63	181	244
	Weekday P.M.	214	125	339
LUC 215 'Single Family Attached Housing' (90 Units)	Weekday A.M.	13	28	41
	Weekday P.M.	28	22	50
<b>TOTAL</b>	<b>Weekday A.M.</b>	<b>76</b>	<b>209</b>	<b>285</b>
	<b>Weekday P.M.</b>	<b>242</b>	<b>147</b>	<b>389</b>

### 5.2 Trip Distribution and Assignment

Trips generated by Glenelg Phase 3 were distributed to the boundary road network similar to what was applied in the Glenelg Phase 1 TIS and Glenelg Phase 2 TIS. The trip distribution was based on Transportation Tomorrow Survey (TTS) data. The TTS is a comprehensive survey of transportation characteristics in the Golden Horseshoe, and Simcoe County areas. TTS data is unavailable for the Community of Dundalk; however, data was available for the Township of Melancthon which is adjacent to Dundalk. This data is considered representative of the subject area.

TTS Data has been included in **Appendix J**. The trip distribution is as follows:

- 10 % to/from the north on Ida Street
  - 5 % Via Glenelg Phase 1 Site Access
  - 5 % Via Grey Street
- 10 % to/from the west on Grey Road 9 (Main Street) via Ida Street and via Grey Street
- 60 % to/from the south on Highway 10 via Bradley Street
  - 60 % westbound right movements at Owen Sound Street
  - 30 % southbound left movements at Owen Sound Street and 30% southbound left
- 20 % to/from Dundalk (downtown)
  - 15 % to/from the west on Toronto Street
  - 5 % to/from the west on Main Street at Dundalk Street

It is noted that 20% of the site-generated traffic volumes are expected to travel through the community outside of the study area road network.

The Subject Property is proposed to connect to the boundary road network through the Bradley Street extension and two accesses through Glenelg Phase 1. The Subject Property will directly

connect to Glenelg Phase 2 which then connects to the Glenelg Phase 1 accesses. Glenelg Phase 3 was analyzed with the Bradley Street extension and one access through Glenelg Phase 1. This provides a conservative analysis as two accesses have already been constructed for Glenelg Phase 1.

The trips generated by the proposed development were assigned to the boundary road network per the distributions illustrated in **Figure 13**. **Figure 14** illustrates the site-generated trip assignment.

## 6.0 Total Future Conditions

### 6.1 Basis of Assessment

The total traffic volumes consist of the site-generated and background traffic volumes. **Figure 15** and **Figure 16** illustrate the 2027 and 2032 total traffic weekday a.m. and p.m. traffic volumes, respectively.

### 6.2 Signal Justification

A signal warrant analysis was undertaken for the Dundalk Street and Main Street intersection and at the Owen Sound Street and Main Street intersection using the 2032 future total traffic volumes. The analysis followed the procedures specified in Chapter 4 of the “Ontario Traffic Manual – Book 12” (OTM Book 12), March 2012 for Justification 1 (Minimum Vehicle Volume), Justification 2 (Delay to Cross Traffic), and Justification 3 (Volume/Delay Combination). The future total peak hour volumes were assigned to the 8-hours based on the percentage of the peak hour traffic volumes established from the existing 8-hour traffic data.

The results of the signal warrant analyses are summarized in **Table 11** and **Table 12** the warrant sheets have been included in **Appendix G**.

**Table 11: Dundalk Street - Signal Warrant Analysis Results**

Justification		Section Percent	Signal Justified
1. Minimum Vehicular Volume	A. Total Volume	48%	No
	B. Crossing volume	12%	
2. Delay to Cross Traffic	A. Main Road	44%	No
	B. Crossing Road	27%	
3. Combination	A. Justification 1	12%	No
	B. Justification 2	27%	

Note<sup>1</sup>: Dundalk Street and Main Street is a “T” intersection which requires the minimum section percentage requirements to be increased by 50%.

**Table 12: Owen Sound Street - Signal Warrant Analysis Results**

Justification		Section Percent	Signal Justified
1. Minimum Vehicular Volume	A. Total Volume	95%	No
	B. Crossing volume	36%	
2. Delay to Cross Traffic	A. Main Road	93%	No
	B. Crossing Road	99%	
3. Combination	A. Justification 1	36%	No
	B. Justification 2	93%	

Note<sup>1</sup>: Owen Sound Street and Main Street is a “T” intersection which requires the minimum section percentage requirements to be increased by 50%.

The results indicate that the Dundalk Street and Main Street intersection and the Owen Sound Street and Main Street intersection do not meet the OTM Book 12 signal warrant requirements.

### 6.3 Intersection Operations

The operations of the study intersections were analyzed based on the 2027 and 2032 total traffic volumes illustrated in **Figures 15** and **Figure 16**. **Table 13** and **Table 14** outline the 2027 and 2032 horizon year future total traffic Levels of Service, respectively. Level of Service definitions have been included in **Appendix C** and detailed capacity analyses worksheets are included in **Appendix D**.

**Table 13: 2027 Future Total Levels of Service**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay	Critical v/c ratio <sup>2</sup>
Ida Street and Glenelg Street	Stop (T-intersection)	A.M.	A	9.5 s	0.13 (WB)
		P.M.	A	9.7 s	0.11 (WB)
Dundalk Street and Glenelg/Grey Street	Stop (T-intersection)	A.M.	B	11.7 s	0.13 (NB)
		P.M.	B	11.6 s	0.24 (NB)
Ida Street and Grey Road 9 (Main Street)	Stop (Two-way)	A.M.	B	12.2 s	0.14 (SB)
		P.M.	B	14.0 s	0.18 (NB)
Dundalk Street and Main Street	Stop (T-intersection)	A.M.	D	33.5 s	0.67 (SB)
		P.M.	C	16.8 s	0.30 (SB)
Osprey Street and Main Street	Stop (Two-way)	A.M.	D	30.6 s	0.48 (SB)
		P.M.	C	24.6 s	0.29 (SB)
Glenelg Street and Glenelg Site Access	Stop (T-intersection)	A.M.	B	10.5 s	0.23 (SB)
		P.M.	B	11.2 s	0.18 (SB)
Osprey Street and Toronto Street/Bradley Street	Stop (All-way)	A.M.	A	9.7 s	0.41 (WB)
		P.M.	A	9.6 s	0.39 (NB)
Owen Sound Street and Main Street	Stop (T-intersection)	A.M.	D	29.0 s	0.51 (SB)
		P.M.	D	31.4 s	0.48 (SB)

Note 1: The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000). The Level of Service of all-way stop-controlled intersection is based on the average delay per vehicle.

Note 2: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. All v/c ratios for movements greater than 0.85 are outlined and highlighted.

**Table 14: 2032 Future Total Levels of Service**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay	Critical v/c ratio <sup>2</sup>
Ida Street and Glenelg Street	Stop (T-intersection)	A.M.	A	9.5 s	0.13 (WB)
		P.M.	A	9.8 s	0.11 (WB)
Dundalk Street and Glenelg/Grey Street	Stop (T-intersection)	A.M.	B	11.8 s	0.14 (NB)
		P.M.	B	11.7 s	0.25 (NB)
Ida Street and Grey Road 9 (Main Street)	Stop (Two-way)	A.M.	B	12.5 s	0.15 (SB)
		P.M.	B	14.6 s	0.20 (NB)
Dundalk Street and Main Street	Stop (T-intersection)	A.M.	E	40.0 s	0.73 (SB)
		P.M.	C	17.6 s	0.32 (SB)
Osprey Street and Main Street	Stop (Two-way)	A.M.	D	34.8 s	0.52 (SB)
		P.M.	D	26.7 s	0.32 (SB)
Glenelg Street and Glenelg Site Access	Stop (T-intersection)	A.M.	B	10.5 s	0.23 (SB)
		P.M.	B	11.3 s	0.18 (SB)
Osprey Street and Toronto Street/Bradley Street	Stop (All-way)	A.M.	A	9.7 s	0.42 (WB)
		P.M.	A	9.7 s	0.30 (WB)
Owen Sound Street and Main Street	Stop (T-intersection)	A.M.	D	32.7 s	0.55 (SB)
		P.M.	E	35.2 s	0.52 (SB)

Note 1: The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000). The Level of Service of all-way stop-controlled intersection is based on the average delay per vehicle.

Note 2: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. All v/c ratios for movements greater than 0.85 are outlined and highlighted.

The intersections are generally forecast to operate at acceptable levels of service during the weekday a.m. and p.m. peak hours with minor increases in delay and v/c ratios noted with the addition of site-generated traffic volumes. The following critical movements are noted:

- Dundalk Street and Main Street: Southbound approach.
- Owen Sound Street and Main Street: Southbound approach.

The southbound approach at the Dundalk Street and Main Street intersection is forecast to operate at LOS "E" during the weekday a.m. peak hour. The critical southbound movement is forecast to experience an increase in control delay of up to 2.6 seconds and an increase in v/c ratio of up to 0.03 over future background conditions. As previously noted, traffic signals are not warranted at the study area intersections and poor operations are forecast under background conditions. Due to multiple proposed developments in the area, it is recommended that the road authority continue to monitor the operations of the intersection.

The southbound approach at the Owen Sound Street and Main Street intersection is forecast to operate at LOS "E" during the weekday p.m. peak hour. The critical southbound movement is

forecast to experience an increase in the control delay of up to 14.0 seconds and an increase in the v/c ratio of up to 0.31 when compared to the future background operations. Due to multiple proposed developments in the area, it is recommended that the road authority continue to monitor the operations of the intersection.

The Glenelg Site Access intersection with Glenelg Street is forecast to operate at LOS "B" during the weekday a.m. and p.m. peak hours. The maximum control delay is anticipated to increase by 0.8 s and the maximum volume to capacity ratio is expected to increase by 0.03 with the addition of site-generated traffic volumes when compared to the future background operations.

#### **6.4 Qualitative Impacts on Connecting Roadways**

After development of Glenelg Phase 3, Bradley Street and Grey Street are forecast to operate well within the capacities of a local roadway. The forecast total traffic volumes on Bradley Street are between 150-200 and the forecast total traffic volumes on Grey Street are between 85-100. Local roadways typically operate with 400 vehicles hour per lane or less during the a.m. and p.m. peak hours.

Residents of Glenelg Phase 3 will be able to access Main Street using non-vehicular methods of travel by at least one of the nearby existing roadways. It is assumed that the proposed roadways that are part of White Rose Phase 3 and Glenelg Phase 3 will provide sidewalk connections to existing sidewalks on Tod Crescent, Artemisia Street, and Corbett Street. As many of the existing roadways near the subject property do not have existing continuous sidewalks, such as on Bradley Street, it is recommended that the Township includes sidewalks on at least one side of the road during future reconstruction projects.

Corbett Street (formerly Street A) will be classified as a local roadway. Corbett Street is planned to provide a sidewalk connection to the recently constructed sidewalks in Glenelg Phase 1. It is assumed that Glenelg Phase 3 will provide sidewalk connections from the proposed residential units to Corbett Street. It is anticipated that the proposed development will result in 15 and 18 additional two-way trips on Corbet Street in the a.m. and p.m. peak hours, respectively. This is anticipated to have negligible impacts on the neighbourhood.

### **7.0 Scenario: Eco Parkway**

The Eco Parkway extension is an industrial access road running east-west parallel to Main Street from Highway 10 to Ida Street. The industrial access road will be classed as an arterial roadway. The lands on both sides of Eco Parkway have been designated for industrial use. A Traffic Impact Study for the Eco Parkway (formally Industrial Access Road) was completed by Triton Engineering as part of the environmental assessment (September 2017). **Attachment F** contains the Eco Parkway TIS excerpts. It is recognized that the TIS referred to the proposed roadway as Industrial Access Road however the most recent naming is Eco Parkway.

#### **7.1 Redistribution of Existing Volumes**

Construction of the Eco Parkway extension will provide a bypass to Dundalk and is expected to reroute existing traffic. For the purposes of their study and to remain consistent with the environmental assessment, this study and Triton engineering assumed that 30% of the traffic on Grey Road 9 through Dundalk would use Eco Parkway to bypass the community. Triton also assumed that truck traffic currently going through Dundalk would use Eco Parkway to bypass Main Street or access the industrial lands.

To remain consistent with the Triton Industrial Road TIS, existing traffic volumes, which includes background traffic growth, were redistributed as follows:

- 30 % of southbound left vehicles will complete southbound through movements
- 30 % of eastbound through vehicles will complete eastbound right movements
- 30 % of westbound through vehicles will complete northbound left movements
- 30 % of westbound right vehicles will complete northbound through movements

Trips from the background developments were not re-distributed based on the Eco Parkway construction because most of the developments are located to the east of Eco Parkway and would use Main Street. It should be noted that most new developments are residential while the proposed site is industrial, therefore some synergies will most likely occur however this was not investigated. Trips may have been counted in both the industrial site generated trips and background development generated trips this was done to ensure a conservative analysis. **Figure 17** illustrates the combined adjusted vehicular volumes.

## 7.2 Eco Parkway Site Generated Trips

The development of the industrial area serviced by the Eco Parkway extension is anticipated to result in new trips to the boundary road network. The full build out of the Eco Parkway extension industrial lands was assumed to be completed prior to the 2032 horizon year, so the trip generation associated with full build-out has been used in this analysis.

The Institute of Transportation Engineers (ITE) Trip Generation Manual, 8<sup>th</sup> Edition (ITE code 130 - Industrial Park) was used in the Tritons TIS (September 2017). ITE Code 130 - Industrial Park provided a conservative trip generation for the unknown types of development surrounding the Eco Parkway Extension and is consistent with the Eco Parkway TIS. The trips were estimated using an area of 259.75 acres and Triton Engineering assumed that all trips generated were primary trips.

**Table 15** summarizes the trip generation of the site. The trip generation identified in the Eco Parkway TIS was used in this analysis. **Appendix E** contains relevant excerpts from the Triton Engineering Industrial Eco Parkway TIS (September 2017).

**Table 15: Eco Parkway Industrial Lands Trip Generation**

Peak Hour	Number of Trips		
	Inbound	Outbound	Total
Weekday A.M.	1,142	234	1,376
Weekday P.M.	266	1,000	1,266

The development of the industrial lands surrounding the Eco Parkway extension is estimated to generate approximately 1,376 and 1,266 two-way trips in the a.m. and p.m. peak hours, respectively. The trips were assigned to the road network consistent with the Triton TIS. In the Industrial Eco Parkway TIS, Triton assumed 70% of trips would travel towards Highway 10 on the Eco Parkway extension and the remainder would travel into Dundalk. **Figure 18** contains the Eco Parkway Industrial Lands Site Generated Traffic.

## 7.3 Eco Parkway Future Background Scenario

The operations of the study intersections were analyzed based on the 2032 future background traffic volumes illustrated in **Figure 19**. **Appendix C** contains the Level of Service definitions and **Appendix D** contains the detailed capacity analysis worksheets. **Table 16** outlines the 2032 future background

traffic operations.

**Table 16: Eco Parkway Scenario - 2032 Future Background Levels of Service**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay	Critical v/c ratio <sup>2</sup>
Ida Street and Grey Road 9 (Main Street)	Stop (Two-way)	A.M.	F	55.3 s	0.74 (NB)
		P.M.	F	177.0 s	<b>1.28 (NB)</b>
Dundalk Street and Main Street	Stop (T-intersection)	A.M.	E	44.4 s	0.75 (SB)
		P.M.	C	16.6 s	0.29 (SB)
Osprey Street and Main Street	Stop (Two-way)	A.M.	C	21.6 s	0.32 (NB)
		P.M.	C	22.0 s	0.20 (NB)
Owen Sound Street and Main Street	Stop (T-intersection)	A.M.	C	20.6 s	0.26 (SB)
		P.M.	C	21.1 s	0.25 (SB)

Note <sup>1</sup>: The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000). The Level of Service of all-way stop-controlled intersection is based on the average delay per vehicle.

Note <sup>2</sup>: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. All v/c ratios for movements greater than 0.85 are outlined and highlighted.

The study intersections are forecast to operate with a LOS "E" or better in the weekday a.m. and p.m. peak hours under 2032 future background traffic volumes conditions, except for the intersection of Ida Street and Main Street which is expected to operate at a LOS "F" during the weekday peak hours. The construction of the Eco Parkway extension is anticipated to detour traffic volumes from Main Street to Ida Street. The detoured traffic is forecast to slightly improve the p.m. peak hour operations and slightly reduce the a.m. peak hour operations at the intersections of Main Street with Dundalk Street, Osprey Street, and Owen Sound Street compared to general future background conditions.

The stop-controlled intersection of Ida Street and Main Street is expected to have a maximum control delay of 177.0 seconds (NB) and a maximum volume-to-capacity ratio of 1.28 (NB). When compared to the future background operations, this is a 163.4 second increase in delay which is caused by the increase in traffic from the proposed Eco Parkway extension and industrial lands. Potential mitigation measures are further discussed later in the report.

These metrics indicate that the boundary road network, with the exception of the Ida Street and Main Street intersection, have reserve capacity for increases in traffic volumes.

## 7.4 Eco Parkway Future Total Scenario

The operations of the study intersections were analyzed based on the 2032 total traffic volumes illustrated in **Figure 20**, which is based on the combined traffic volumes in **Figure 19** with the site generated traffic illustrated in **Figure 14**. **Table 18** outlines the 2032 horizon year future total traffic Levels of Service. Levels of Service definitions have been included in **Appendix C** and detailed capacity analyses worksheets are included in **Appendix D**.

**Table 17: Eco Parkway Scenario - 2032 Future Total Levels of Service**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay	Critical v/c ratio <sup>2</sup>
Ida Street and Grey Road 9 (Main Street)	Stop (Two-way)	A.M.	F	71.9 s	0.82 (NB)
		P.M.	F	254.7 s	<b>1.46 (NB)</b>
Dundalk Street and Main Street	Stop (T-intersection)	A.M.	E	48.1s	0.79 (SB)
		P.M.	C	17.1 s	0.32 (SB)
Osprey Street and Main Street	Stop (Two-way)	A.M.	E	38.9 s	0.56 (SB)
		P.M.	D	26.0 s	0.31 (SB)
Owen Sound Street and Main Street	Stop (T-intersection)	A.M.	E	35.8 s	0.58 (SB)
		P.M.	D	34.1 s	0.51 (SB)

Note 1: The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000). The Level of Service of all-way stop-controlled intersection is based on the average delay per vehicle.

Note 2: The critical v/c ratio is the maximum v/c ratio for movements at the intersection. All v/c ratios for movements greater than 0.85 are outlined and highlighted.

The intersections are forecast to operate with a LOS "E" or better in the weekday a.m. and p.m. peak hours under 2032 future total traffic volume conditions, except for the intersection of Ida Street and Main Street. The northbound movement is forecast to operate at a LOS "F" during the weekday peak hours. Traffic signals are not warranted, and poor operations are forecast under future background conditions of the Eco Parkway Scenario as well. With multiple background developments proposed in the area, it is recommended that the road authority continue to monitor the operations at this intersection.

The southbound approach at the Dundalk Street and Main Street intersection is forecast to operate at a LOS "E" under future background conditions with and without the proposed Eco Parkway extension. A maximum volume to capacity ratio of 0.79 is forecast for the southbound movements which represents an increase of 0.04 when compared to the scenario's future background operations. Due to multiple proposed developments in the area, it is recommended that the road authority continue to monitor the operations of the intersection.

The southbound approach at the Osprey Street and Main Street intersection is forecast to operate at a LOS "E" under future total conditions with the proposed Eco Parkway extension. A maximum volume to capacity ratio of 0.56 is forecast for the southbound movements which represents an increase of 0.24 when compared to the scenario's future background operations. Due to multiple proposed developments in the area, it is recommended that the road authority continue to monitor the operations of the intersection.

The southbound approach at the Owen Sound Street and Main Street intersection is forecast to operate at a LOS "E" or better under future total conditions with and without the proposed Eco Parkway extension. It is noted that with the addition of the industrial developments adjacent to the Eco Parkway extension, the maximum volume to capacity ratio is forecast to be 0.58. This represents an increase of the v/c ratio by a maximum of 0.03 when compared to the scenario's future background operations. Due to multiple proposed developments in the area, it is recommended that the road authority continue to monitor the operations of the intersection.



#### 7.4.1. Eco Parkway Future Total Scenario – Potential Improvement Measures

With the introduction of the Eco Parkway extension and full build-out of the industrial lands, the intersection of Ida Street and Main Street is forecast to operate at a LOS "F" under 2032 future background conditions. It is acknowledged that these metrics are associated with assumptions relating to 10 years of growth, multiple background developments, and expected trip distributions.

Consideration was given to implementing a roundabout at the Ida Street and Main Street intersection to alleviate poor operations. Township staff indicated a roundabout was preferred over signalization to mitigate poor intersection operations at this location. Using Arcady analysis software, it is forecast that a roundabout would operate at a LOS "A" with a 95<sup>th</sup> percentile queue length of 1 vehicle or less. **Attachment H** contains an overlay of a potential roundabout over the existing Ida Street and County Road 9 intersection. It is noted that additional land will be required to accommodate the roundabout and is presented as conceptual at this time.

Traffic signal warrants indicate that signalization of the intersection of Ida Street and Main Street is not warranted. However, improvements may be needed to address poor operations with the build-out of the Eco Parkway extension and industrial lands. Should the road authority proceed with signalizing the intersection, the intersection is forecast to operate at a LOS "B" with a v/c of less than 0.82 for all movements. In the signalized Eco Parkway scenario, no critical movements are noted with the addition of the Glenelg Phase 3 site generated traffic.

## 8.0 Conclusions

The detailed analysis contained within this report resulted in the following key findings:

- Intersection analysis of the existing traffic volumes indicates that all study intersections are operating at a Level of Service (LOS) "B" or better during the weekday a.m. and p.m. peak hours. The study intersections have capacity for increases in traffic volumes.
- Several background developments have been considered for the assessment of the background conditions. These developments include Glenelg Phase 1, Glenelg Phase 2, the unoccupied Edgewood Greens units, and White Rose Phase 3. Consideration was also given to the development of the industrial lands surrounding the proposed Eco Parkway extension in a Scenario, the findings will be summarized later in the conclusions.
- Intersection analysis of the 2032 future background traffic volumes indicates the following:
  - The southbound movement at the Dundalk Street and Main Street intersection is forecast to operate with a LOS "E" during the weekday a.m. and p.m. peak hours.
    - A maximum volume-to-capacity ratio of 0.70 (SB) and control delay 37.4 seconds are forecast.
  - The remaining study intersections are forecast to operate at a LOS "C" or better.
- The proposed development is estimated to generate 285 and 389 total two-way primary trips during the weekday a.m. and p.m. peak hours, respectively.
- Intersection analysis of the 2032 future total traffic volumes indicates the following:
  - The study intersections are forecast to continue operating with a LOS "B" or better in the weekday a.m. and p.m. peak hours under 2032 future background traffic volume conditions, except for the intersections of: Dundalk Street and Main Street, Osprey

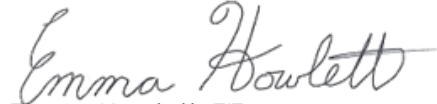
- Street and Main Street, and Owen Sound Street and Main Street. The intersection of Dundalk Street and Main Street is forecast to operate with an LOS "E" or better in the weekday a.m. and p.m. peak periods, respectively. A maximum control delay of 40.0 seconds, and a maximum volume-to-capacity ratio of 0.73 (SB).
- When compared to 2032 future background operations, an increase in control delay of 2.6 seconds and the volume-to-capacity ratio is forecast to increase by 0.03.
  - The intersection of Osprey Street and Main Street is forecast to operate with an LOS "D" in the weekday a.m. and p.m. peak periods, respectively. A maximum control delay of 34.8 seconds, and a maximum volume-to-capacity ratio of 0.52 (SB).
    - When compared to 2032 future background operations, an increase in control delay of 9.6 seconds and a maximum change of 0.22 in the volume-to-capacity ratio is forecast.
  - The intersection of Owen Sound Street and Main Street is forecast to operate with an LOS "E" or better in the weekday a.m. and p.m. peak periods, respectively. A maximum control delay of 35.2 seconds and a maximum volume-to-capacity ratio of 0.55 (SB) are forecast.
    - When compared to 2032 future background operations, an increase in control delay of 14.0 seconds and a maximum change of 0.31 in the volume-to-capacity ratio is forecast.
- As requested in the Terms of Reference, a scenario analyzing the impacts of the Glenelg Phase 3 development with both the Eco Parkway extension and development of surrounding industrial lands was completed. The Scenario with the Eco Parkway extension and the proposed industrial development lands are estimated to produce 1376 and 1266 external two-way trips in the a.m. and p.m. peak hours, respectively. The Eco Parkway extension is also anticipated to reroute 30% of volumes on Main Street around downtown Dundalk.
  - In the scenario with the Eco Parkway extension that excludes the Glenelg Phase 3 Land site generated traffic:
    - The study intersections are forecast to operate at a LOS "E" or better except for the northbound movement at the Ida Street and Main Street intersection.
    - The northbound movement intersection of Ida Street and Main Street is forecast to operate with a LOS "F", 177.0 seconds of delay, and a volume to capacity ratio of 1.28.
  - With the addition of Glenelg Phase 3 traffic to the Eco Parkway Scenario:
    - The intersection of Ida Street and Main Street is forecast to operate with 254.7 seconds of delay and a volume to capacity ratio of 1.46.
      - Signalization is not warranted based on the future total volumes.
      - If the Road Authority decides to implement signalization, the intersection is forecast to operate at LOS "B" with a v/c ratio of less than 0.79 for all movements under future total conditions. In the signalized Eco Parkway scenario, there is no change in the critical volume-to-capacity ratio with the addition of the Glenelg Phase 3 site generated traffic.
      - Consideration was given to implementing a roundabout, it is forecast that a roundabout would operate at LOS "A" with a 95th percentile queue length of 1 vehicle or less under the Eco Parkway future total volumes.

The analysis contained within this report was prepared using the Draft Plan prepared by MHBC August 18<sup>th</sup>, 2022. Any minor revisions to the development draft is not expected to affect the conclusions contained in this report.

In conclusion, the proposed development can be supported from a transportation operations and safety perspective with the noted recommendations.

Respectfully submitted,

**C.F. CROZIER & ASSOCIATES INC.**



Emma Howlett, EIT  
Engineering Intern, Transportation

**C.F. CROZIER & ASSOCIATES INC.**



Madeleine Ferguson, P.Eng.  
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Project Engineer, Transportation

MF/sh.eh

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# APPENDIX B

## Terms of Reference and Comment Matrix

## Emma Howlett

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**From:** Dustin Lyttle <dlyttle@tritoneng.on.ca>  
**Sent:** June 27, 2022 8:29 AM  
**To:** Emma Howlett  
**Subject:** RE: Glenelg Phase 3 - Dundalk North Subdivision

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Hi Emma,

That 2017 TIS you have referenced is the most recent. Essentially, they were done at the same time. Since the EA was schedule B, there is no ESR however the TIS is part of the Project File and contains all traffic work.

Thanks,  
Dustin Lyttle

---

**From:** Emma Howlett <ehowlett@cfcrozier.ca>  
**Sent:** June 23, 2022 3:50 PM  
**To:** Dustin Lyttle <dlyttle@tritoneng.on.ca>  
**Subject:** RE: Glenelg Phase 3 - Dundalk North Subdivision

Hi Dustin,

Thank you for your quick response.

We will look into a scenario for Eco park way completion, I found the 2017 Eco Parkway (Dundalk Industrial) TIS.

I understand the EA was completed after the TIS, would you have a copy of the EA or a more recent study that we should reference?

Cheers,

**Emma Howlett**, EIT | Engineering Intern  
1 First Street, Suite 200 | Collingwood, ON L9Y 1A1  
T: 705.446.3510



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**From:** Dustin Lyttle <[dlyttle@tritoneng.on.ca](mailto:dlyttle@tritoneng.on.ca)>  
**Sent:** June 23, 2022 7:58 AM  
**To:** Emma Howlett <[ehowlett@cfcrozier.ca](mailto:ehowlett@cfcrozier.ca)>  
**Subject:** RE: Glenelg Phase 3 - Dundalk North Subdivision

Hi Emma,

No problem, please see attached TIS for White Rose Phase 3.

If you need anything else, please let me know.

Thanks,  
Dustin Lyttle

---

**From:** Emma Howlett <[ehowlett@cfcrozier.ca](mailto:ehowlett@cfcrozier.ca)>  
**Sent:** June 22, 2022 2:20 PM  
**To:** Dustin Lyttle <[dlyttle@tritoneng.on.ca](mailto:dlyttle@tritoneng.on.ca)>  
**Subject:** RE: Glenelg Phase 3 - Dundalk North Subdivision

Hi Dustin,

Thank you for your quick response we have collected traffic data.

Would you have happen to have the Traffic Impact Study for White Rose Phase 3?

If not we have the site plan for our SWM works, I can use the associated trip generation and our distribution to include this in our analysis.

Cheers,

**Emma Howlett**, EIT | Engineering Intern  
1 First Street, Suite 200 | Collingwood, ON L9Y 1A1  
T: 705.446.3510



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**From:** Dustin Lyttle <[dlyttle@tritoneng.on.ca](mailto:dlyttle@tritoneng.on.ca)>  
**Sent:** May 31, 2022 1:36 PM

**To:** Emma Howlett <[ehowlett@cfcrozier.ca](mailto:ehowlett@cfcrozier.ca)>  
**Subject:** RE: Glenelg Phase 3 - Dundalk North Subdivision

Hi Emma,

See comments below for your consideration.

If you have any questions please let me know.

Thanks,  
Dustin Lyttle

---

**From:** Emma Howlett <[ehowlett@cfcrozier.ca](mailto:ehowlett@cfcrozier.ca)>  
**Sent:** May 30, 2022 12:26 PM  
**To:** Dustin Lyttle <[dlyttle@tritoneng.on.ca](mailto:dlyttle@tritoneng.on.ca)>  
**Subject:** RE: Glenelg Phase 3 - Dundalk North Subdivision

Hello Dustin,

We would like to commission traffic counts this week if possible ( so the counts are completed before school lets out for the summer).

Would you be able to confirm the study locations?

Thank you,

**Emma Howlett**, EIT | Engineering Intern  
1 First Street, Suite 200 | Collingwood, ON L9Y 1A1  
T: 705.446.3510



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**From:** Emma Howlett  
**Sent:** May 26, 2022 4:02 PM  
**To:** [dlyttle@tritoneng.on.ca](mailto:dlyttle@tritoneng.on.ca)  
**Cc:** Kerianne Hagan <[khagan@cfcrozier.ca](mailto:khagan@cfcrozier.ca)>; Dina Al-Rubaye <[dal-Rubaye@cfcrozier.ca](mailto:dal-Rubaye@cfcrozier.ca)>  
**Subject:** FW: Glenelg Phase 3

Good Afternoon Dustin,

C.F. Crozier & Associates has been retained to prepare a Traffic Impact Study (TIS) to review the traffic impacts and potential mitigations required to support the Dundalk North Subdivision in the Village of Dundalk, Township of Southgate, County of Grey. The site is proposed to connect to Glenelg Phase 2 and the future Bradley Street extension.

The Terms of Reference are as follows:

#### Traffic Data/Study Intersections

Now that Covid-19 restrictions have been lifted, traffic counts will be collected at the following intersections:

- Glenelg Street and Ida Street
- Dundalk Street and Glenelg Street
- Ida Street and Main Street
- Dundalk Street and Main Street
- Main Street and Osprey Street **[DCL] The eastbound traffic from Osprey Street is known to use Owen Sound Street. Therefore, Main St / Owen Sound St should also be counted.**
- **[DCL] Bradley Street and Osprey Street**

#### Analysis Periods and Scenarios

Analysis of weekday a.m. and p.m. peak hours will be used to capture the peak hours associated with the residential development. **[DCL] OK**

It has been assumed that the proposed development will be completed within 5 years. Accordingly, the horizon years of 2023 and 2028 will be analyzed, representing 5 and 10 years from the study date **[DCL] OK**

#### Background Growth

A growth rate of 1.5% per year will be applied to the boundary road network as consistent with previous studies undertaken in Dundalk. **[DCL] OK**

#### Background Developments

There are several ongoing developments within the Village of Dundalk. Unoccupied units from Flato's developments of Dundalk North and East ("Edgewood Greens") as well as Glenelg Phase 1 and 2 will be considered as background developments. **[DCL] This should also consider White Rose Phase 3.**

#### Trip Generation

Trip generation will be established based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11<sup>th</sup> Edition. **[DCL] OK**

#### Trip Distribution

Trips will be distributed to the boundary road network based on a review of the Transportation Tomorrow Survey data from 2016 from the abutting Township of Melancthon, a review of existing travel patterns, and a review of previously assumed distributions. **[DCL] We ask that two scenarios be considered; with and without the Industrial Road (Eco Parkway) extension to Hwy 10.**

**[DCL] In addition to the above comments we ask the impact on the existing streets be considered:**

#### Impact on Existing Connecting Streets

**Report to fully address the impact on connecting streets including Bradley Street. This includes capacity, standards, pedestrian safety, and neighbourhood impacts.**

We trust that the above is acceptable.

Should you have any questions or concerns, please feel free to contact us.



Thank you,

<b>Glenelg Phase 3 - Comment Response Matrix</b>			
<b>COMMENT #</b>	<b>COMMENT</b>	<b>RESPONSE from Triton (2nd Sub)</b>	<b>RESPONSE (3rd Sub)</b>
<b>Comments on First Submission Draft Plan Submission - Triton Engineering Services Ltd. (December 12, 2022)</b>			
<b>Traffic Impact Study</b>			
1.1	Traffic counts were undertaken at all the intersections identified in the Terms of Reference comments, and were done on June 7, 2022. These are considered to be representative, and were not taken during periods when significant Covid-19 restrictions were in place.	No action required.	Acknowledged.
1.2	Figure 3 shows the existing traffic controls on a plan that is schematic, but shows the general lay-out of the streets, including angles. The rest of the figures (4 through 20) were done on a right-angle schematic, which does not aid understanding, and in particular, does not well represent the alignment of Bradley Street into the proposed subdivision. These figures should be revised to the lay-out of figure 2, with the addition of the new development for greater clarity.	An additional figure was provided. Addressed.	Acknowledged.
1.3	Site Trip Distribution and Assignment appears to follow reasonable assumptions, but Figures 13 and 14 should be expanded to show the proposed development and assumptions for trips in and out of the development on each of its connecting roads.	Previous Glenelg phases were added to Figures 13 and 14 which is helpful. Although not commented on in the First Submission comments, we question why no traffic was assigned to the intersection of Grey Street and Osprey Street, as the distance to Main Street appears similar to Bradley Street, and some drivers may choose this route.	Acknowledged.
1.4	Section 6.4 Qualitative Impacts on Connecting Roadways is not sufficient. Bradley Street is identified to have future traffic volumes of 150-200 but this is not identified as being peak, one way or two way. The figures indicate pm peak two-way traffic volumes of over 400 vph, which represents an AADT of over 4,000 vpd. Crozier identified 400 vehicles per lane as being "typical" for local streets, but this represents an AADT of approximately 8,000 vpd. The TAC Geometric Guide identifies that Local Residential Streets have AADT of up to 1,000 vpd, and Residential Collectors of up to 8,000 vpd. Since Bradley is a local residential street, and has not been constructed to a Collector standard, volumes of over 4,000 vpd are not appropriate. Further, the street has a right-angle corner, and does not have sidewalks for the full length.	The impact of this substantial increase in traffic on Bradley Street has not been satisfactorily addressed, other than to acknowledge that a sidewalk should be provided on Bradley Street to Toronto Street. Bradley Street may need to be reconstructed to a Collector Road standard.	Based on further discussions with Triton staff, the TIS was updated to reflect a larger proportion of vehicles utilizing Grey Street and Osprey Street, diverting away from Bradley Street. The intersections of Bradley Street and Grey Street as well as Grey Street and Osprey Street were added to the scope of the study.  Further details will be discussed and assessed through detailed design, however it is understood that a mutually agreed-upon modified cross-section for Grey Street/Osprey Street will need to be created to incorporate the collector road elements within the existing 20 m ROW. Additionally, traffic calming measures could be applied to Bradley Street, south of Grey Street to deter users and encourage alternate routes.
1.5	Scenario: Eco Parkway Crozier were asked to also consider the impact of the future connection of Eco Parkway. The intent was not to analyze the connection, but rather to determine if this future connection would impact the trip distribution and assumptions in the long term. Crozier did not redistribute any of the site traffic as part of their assessment. While it is acknowledged that the proposed southbound primary route would likely continue to be Main Street to Highway 10, Eco Parkway would provide an alternative route that would avoid travel through downtown and possibly lengthy left turns onto Main in the AM peak hour. As such, some traffic may choose to use Glenelg to Ida to Eco Parkway. A review of this potential partial re-distribution should be provided.	Crozier have responded that traffic from the development is unlikely to use Eco Parkway as an alternative route. We agree that this volume would not be significant. Addressed.	Acknowledged.
1.6	The Draft Plan shows that Street A could potentially connect to the east in the future. There is no discussion of this in the TIS. It should be identified whether this would potentially result in an alternative connection to Highway 10 in the future which would alleviate traffic on the adjacent local streets, or potentially introduce more traffic if this connection cannot be provided in future. If Street A is potentially a future Residential Collector, it should have a ROW greater than 20m. Further, if this will function as a Residential Collector, there are numerous closely spaced intersections proposed.	Crozier advised that this future connection is uncertain. Given its importance in understanding future traffic volumes and distribution, this needs to be better understood. The required road configuration including ROW width, sidewalks and/or multi-use trail on both sides, possible bike lanes should be established within the context of the future development of the lands to the east of Phase 3.	Acknowledged. Street A has been widened to a 22 m minor collector road from the eastern intersection with Street E, to the eastern limits of the property. The exact cross-section elements will be confirmed through detailed design in conjunction with Town and Triton staff.
1.7	Both Street A and Street B are shown connecting to Glenelg Phase 2, which requires crossing the Rail Trail. While connectivity between the developments is important, safe crossing of the rail trail needs to be addressed.	To be addressed in Detail Design.	Acknowledged.

Glenelg Phase 3 - Comment Response Matrix		
COMMENT #	COMMENT (2nd Submission)	RESPONSE (3rd Submission)
Comments on Second Submission TIS (Crozier, Aug 2022) - Triton Engineering Services Ltd. (July 10, 2023)		
Comments Related to Second Submission		
2.1	The letter addresses the possible inclusion of a public school site on Block 317. It is forecast that this could increase traffic by 474 trips in the AM peak, and 48 trips in the PM peak. Crozier advised that a further TIS will be required to fully assess traffic impacts. This will add to the already substantial increase in traffic volumes on neighbouring streets. See additional comments below.	The TIS Update (Crozier, August 2023) has been revised to include the traffic generated by the school block. It is noted that given the expected population of the Glenelg Phase 1-3 subdivisions, a portion of trips was assumed to remain internal to the site. The remaining trips were distributed to other neighbourhoods north of Main Street, as well as south east and west towards the existing residential areas and the Edgewood Greens subdivision. Exact details can be referenced in Section 5, with trip distribution and assignments of the school block in Figure 15 and 17.
Summary Comments		
	<p>The lack of a Collector Road system in this area means that traffic volumes will increase on existing residential streets well beyond the accepted thresholds for local streets. The TIS has distributed most of the traffic to Bradley Street. This examination of the "worst case" scenario is accepted practice in preparing a TIS, but a further analysis is required to look at how traffic may distribute differently to reduce the impact on this street.</p> <p>This phase may represent the threshold at which development can proceed without the provision of a new connection to Highway 10. In this regard, MTO should be consulted to determine what criteria will be required for approval of a future connection.</p> <p>Issues that should be addressed prior to approval of Phase 3 Draft Plan include:</p> <ul style="list-style-type: none"> <li>• Status/conditions of a future connection to Highway 10</li> <li>• Potential future extension of Highpoint Street</li> <li>• Designation of Collector Roads. Osprey/Grey may be an option to Bradley</li> <li>• Road standards for internal collector roads, including active transportation</li> <li>• Reconstruction of existing local roads to collector road standards</li> <li>• Measures to reduce traffic infiltration on local roads</li> </ul>	<p>Acknowledged. The timing/status of the future connection to Highway 10 is still unknown, however, as described in the previous responses, Street A has been widened to a 22 m minor collector road from the eastern intersection with Street E, to the eastern limits of the property. The exact cross-section elements will be confirmed through detailed design in conjunction with Town and Triton staff.</p> <p>The analysis has been revised to include the school block, and assigns more traffic to Osprey Street and Grey Street. The cross-section for future upgrades will be determined through consultation with Town and Triton staff to ensure desired elements can be accommodated within the existing ROW. Traffic calming measures on Bradley Street could be implemented to deter infiltration. This can be assessed further through detailed design.</p>

# APPENDIX C

## Traffic Data



Turning Movement Count (2 . DUNDALK ST & GLENELG ST)

Start Time	N Approach GLENELG ST						E Approach GREY ST S						S Approach DUNDALK ST						W Approach GREY ST S						Int. Total (15 min)	Int. Total (1 hr)	
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total			
06:00:00	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	
06:15:00	0	2	0	0	0	2	0	1	1	0	0	2	0	1	0	0	0	1	0	0	0	0	0	0	5		
06:30:00	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	2		
06:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	0	3	10	
07:00:00	0	3	0	0	1	3	3	0	0	0	0	3	0	4	1	0	0	5	0	0	0	0	1	0	11	21	
07:15:00	0	0	1	0	0	1	6	0	1	0	0	7	0	1	0	0	0	1	0	0	1	0	0	1	10	26	
07:30:00	0	1	1	0	0	2	5	0	1	0	0	6	1	5	0	0	0	6	0	0	0	0	0	0	14	38	
07:45:00	1	3	2	0	0	6	4	0	1	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	11	46	
08:00:00	0	0	1	0	0	1	3	0	2	0	0	5	1	1	0	0	0	2	0	0	1	0	0	1	9	44	
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09:30:00	0	1	5	0	0	6	5	0	0	0	0	5	0	0	1	0	0	1	0	1	0	0	0	1	13	59	
09:45:00	0	4	6	0	0	10	3	0	0	0	0	3	0	0	0	1	0	1	0	0	0	0	0	0	14	46	
***BREAK***																											
15:00:00	0	1	3	0	0	4	3	0	6	0	0	9	4	5	0	0	0	9	0	0	0	0	0	0	0	22	
15:15:00	0	2	6	0	3	8	5	0	3	0	0	8	3	0	0	0	0	3	0	0	0	0	0	0	0	19	
15:30:00	0	2	5	0	0	7	6	1	0	0	0	7	3	1	0	0	0	4	2	0	0	0	0	2	20		
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16:00:00	0	2	2	0	0	4	5	1	0	0	0	6	0	1	0	0	0	1	1	0	0	0	1	1	12	68	
16:15:00	0	0	1	0	0	1	3	0	0	0	0	3	2	1	0	0	0	3	0	0	0	0	0	0	7	56	
16:30:00	0	1	2	0	0	3	6	0	0	0	0	6	0	3	1	0	1	4	2	0	0	0	0	2	15	51	
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18:45:00	0	1	2	0	0	3	1	0	2	0	0	3	0	1	0	0	0	1	0	0	0	0	0	0	7	27	
<b>Grand Total</b>	<b>2</b>	<b>42</b>	<b>84</b>	<b>0</b>	<b>4</b>	<b>128</b>	<b>100</b>	<b>5</b>	<b>42</b>	<b>1</b>	<b>2</b>	<b>148</b>	<b>31</b>	<b>41</b>	<b>8</b>	<b>1</b>	<b>3</b>	<b>81</b>	<b>11</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>2</b>	<b>15</b>	<b>372</b>	<b>-</b>	
<b>Approach%</b>	1.6%	32.8%	65.6%	0%	-	-	67.6%	3.4%	28.4%	0.7%	-	-	38.3%	50.6%	9.9%	1.2%	-	73.3%	6.7%	20%	0%	-	-	-	-	-	
<b>Totals %</b>	0.5%	11.3%	22.6%	0%	34.4%	-	26.9%	1.3%	11.3%	0.3%	39.8%	-	8.3%	11%	2.2%	0.3%	21.8%	3%	0.3%	0.8%	0%	4%	-	-	-	-	
<b>Heavy</b>	2	2	5	0	-	-	3	0	0	0	-	-	0	3	3	0	-	0	0	3	0	-	-	-	-	-	
<b>Heavy %</b>	100%	4.8%	6%	0%	-	-	3%	0%	0%	0%	-	-	0%	7.3%	37.5%	0%	-	0%	0%	100%	0%	-	-	-	-	-	
<b>Bicycles</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Bicycle %</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Peak Hour: 08:15 AM - 09:15 AM Weather: Overcast Clouds (16.73 °C)**

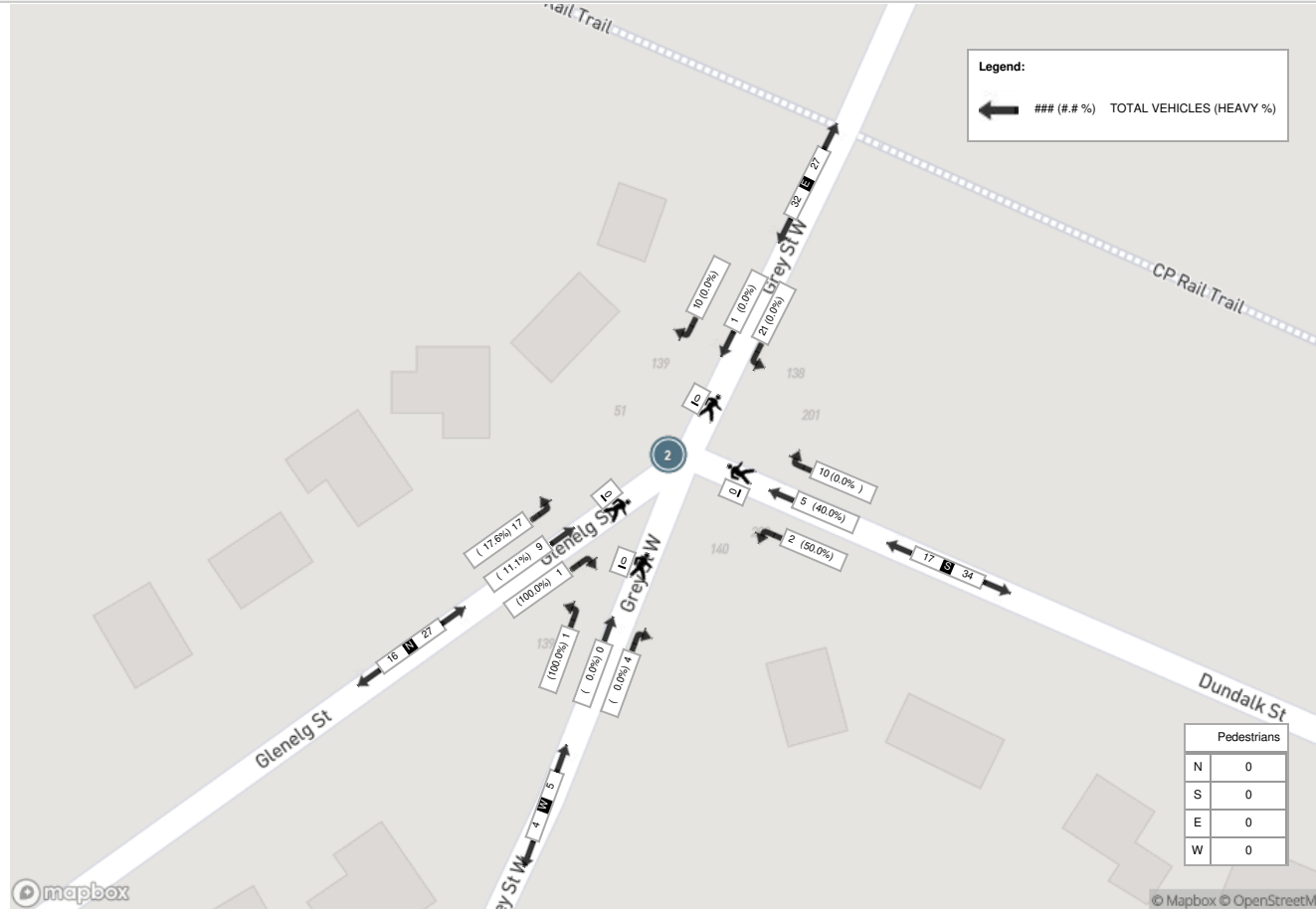
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<b>Approach%</b>	3.7%	33.3%	63%	0%	-	-	31.3%	3.1%	65.6%	0%	-	-	58.8%	29.4%	11.8%	0%	-	80%	0%	20%	0%	-	-	-	-
<b>Totals %</b>	1.2%	11.1%	21%	0%	33.3%	12.3%	1.2%	25.9%	0%	39.5%	12.3%	6.2%	2.5%	0%	21%	4.9%	0%	1.2%	0%	6.2%	-	-	-	-	-
<b>PHF</b>	0.25	0.56	0.61	0	0.68	0.63	0.25	0.44	0	0.57	0.42	0.63	0.5	0	0.61	0.5	0	0.25	0	0.63	-	-	-	-	-
<b>Heavy</b>	1	1	3	0	5	0	0	0	0	0	0	0	2	1	0	3	0	0	1	0	1	0	1	-	
<b>Heavy %</b>	100%	11.1%	17.6%	0%	18.5%	0%	0%	0%	0%	0%	0%	0%	40%	50%	0%	17.6%	0%	0%	100%	0%	20%	0%	20%	-	
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<b>Lights %</b>	0%	88.9%	82.4%	0%	81.5%	100%	100%	100%	0%	100%	100%	60%	50%	0%	82.4%	100%	0%	0%	0%	80%	0%	0%	80%	-	
<b>Single-Unit Trucks</b>	1	1	0	0	2	0	0	0	0	0	0	2	1	0	3	0	0	1	0	1	0	0	1	-	
<b>Single-Unit Trucks %</b>	100%	11.1%	0%	0%	7.4%	0%	0%	0%	0%	0%	0%	40%	50%	0%	17.6%	0%	0%	100%	0%	20%	0%	0%	20%	-	
<b>Buses</b>	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	
<b>Buses %</b>	0%	0%	17.6%	0%	11.1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	
<b>Articulated Trucks</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	
<b>Articulated Trucks %</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	
<b>Pedestrians</b>	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	
<b>Pedestrians%</b>	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	



**Peak Hour: 03:00 PM - 04:00 PM Weather: Overcast Clouds (12.76 °C)**

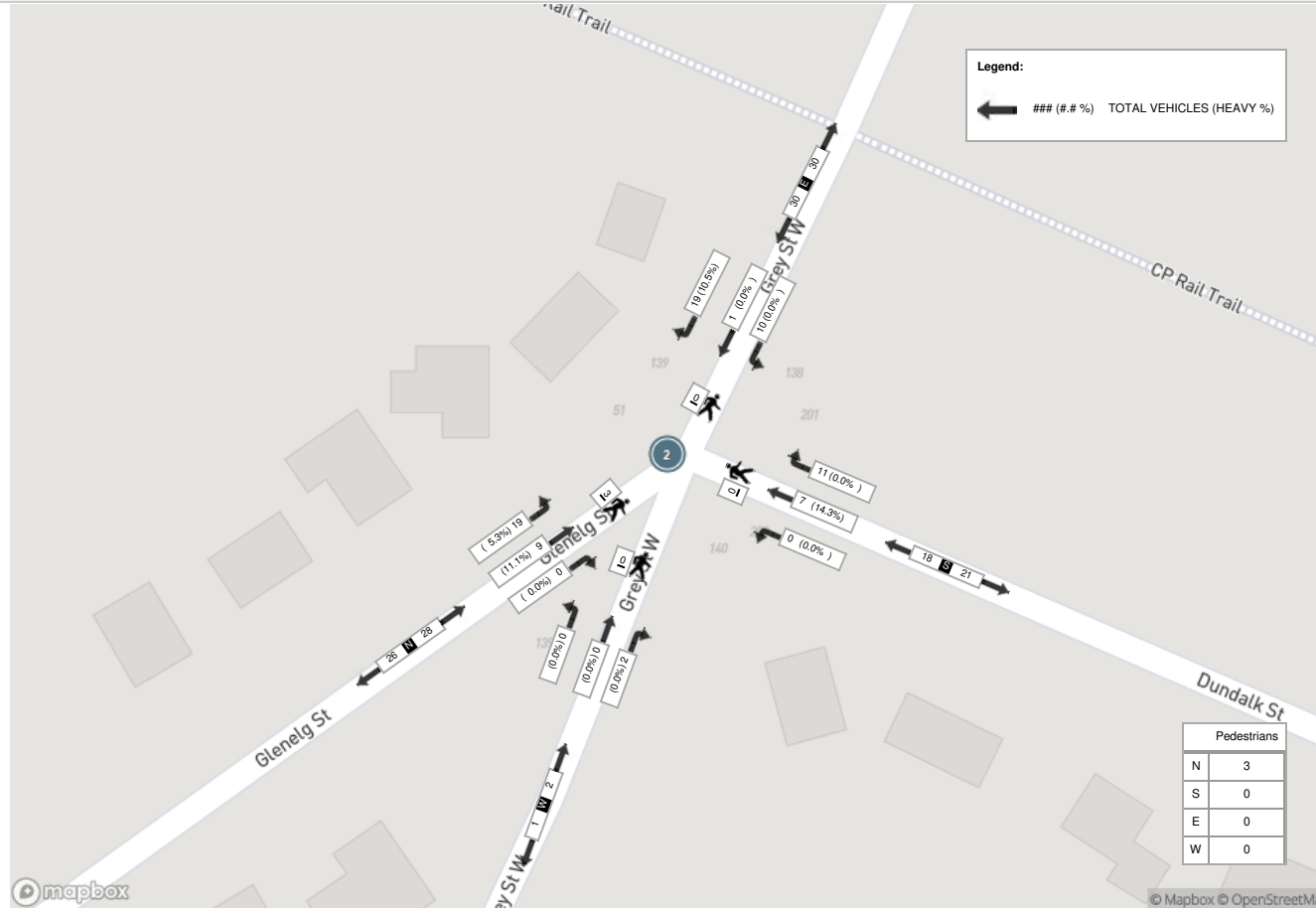
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15:30:00	0	2	5	0	0	7	6	1	0	0	0	7	3	1	0	0	0	4	2	0	0	0	0	20	
15:45:00	0	4	5	0	0	9	5	0	1	0	0	6	1	1	0	0	0	2	0	0	0	0	0	17	
<b>Grand Total</b>	<b>0</b>	<b>9</b>	<b>19</b>	<b>0</b>	<b>3</b>	<b>28</b>	<b>19</b>	<b>1</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>11</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>78</b>	
<b>Approach%</b>	0%	32.1%	67.9%	0%	-	-	63.3%	3.3%	33.3%	0%	-	-	61.1%	38.9%	0%	0%	-	100%	0%	0%	0%	-	-	-	
<b>Totals %</b>	0%	11.5%	24.4%	0%	35.9%	24.4%	1.3%	12.8%	0%	38.5%	14.1%	9%	0%	0%	23.1%	2.6%	0%	0%	0%	2.6%	-	-	-	-	
<b>PHF</b>	0	0.56	0.79	0	0.78	0.79	0.25	0.42	0	0.83	0.69	0.35	0	0	0.5	0.25	0	0	0	0.25	-	-	-	-	
<b>Heavy</b>	0	1	1	0	2	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	-	
<b>Heavy %</b>	0%	11.1%	5.3%	0%	7.1%	10.5%	0%	0%	0%	6.7%	0%	14.3%	0%	0%	5.6%	0%	0%	0%	0%	0%	-	-	-	-	
<b>Lights</b>	0	8	18	0	26	17	1	10	0	28	11	6	0	0	17	2	0	0	0	2	-	-	-	-	
<b>Lights %</b>	0%	88.9%	94.7%	0%	92.9%	89.5%	100%	100%	0%	93.3%	100%	85.7%	0%	0%	94.4%	100%	0%	0%	0%	100%	-	-	-	-	
<b>Single-Unit Trucks</b>	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	-	-	-	-	
<b>Single-Unit Trucks %</b>	0%	11.1%	0%	0%	3.6%	0%	0%	0%	0%	0%	0%	14.3%	0%	0%	5.6%	0%	0%	0%	0%	0%	-	-	-	-	
<b>Buses</b>	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	-	-	-	-	
<b>Buses %</b>	0%	0%	0%	0%	0%	10.5%	0%	0%	0%	6.7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-	-	-	
<b>Articulated Trucks</b>	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	
<b>Articulated Trucks %</b>	0%	0%	5.3%	0%	3.6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-	-	-	
<b>Pedestrians</b>	-	-	-	-	3	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	
<b>Pedestrians%</b>	-	-	-	-	100%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	

Peak Hour: 08:15 AM - 09:15 AM Weather: Overcast Clouds (16.73 °C)





Peak Hour: 03:00 PM - 04:00 PM Weather: Overcast Clouds (12.76 °C)





**Turning Movement Count (4 . DUNDALK ST & MAIN ST)**

Start Time	N Approach DUNDALK ST					E Approach MAIN ST (GREY RD 9)					W Approach MAIN ST (GREY RD 9)					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	UTurn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	0	0	0	0	0	18	0	0	18	25	0	0	0	25	43	
06:15:00	1	1	0	0	2	4	26	0	0	30	16	0	0	0	16	48	
06:30:00	0	1	0	0	1	1	25	0	0	26	28	0	0	0	28	55	
06:45:00	1	2	0	0	3	5	18	0	0	23	29	0	0	0	29	55	201
07:00:00	3	3	0	1	6	2	21	0	0	23	24	1	0	0	25	54	212
07:15:00	1	0	0	0	1	1	30	0	0	31	40	1	0	0	41	73	237
07:30:00	3	2	0	0	5	6	24	0	0	30	34	2	0	0	36	71	253
07:45:00	2	3	0	1	5	0	29	0	0	29	36	3	0	0	39	73	271
08:00:00	4	1	0	0	5	3	24	0	2	27	34	3	0	0	37	69	286
08:15:00	4	3	0	4	7	8	33	0	0	41	38	5	0	1	43	91	304
08:30:00	6	5	0	5	11	4	54	0	0	58	52	4	0	0	56	125	358
08:45:00	17	1	0	1	18	6	44	0	1	50	89	9	0	0	98	166	451
09:00:00	6	2	0	0	8	2	35	0	0	37	49	2	0	0	51	96	478
09:15:00	1	2	0	1	3	1	21	0	0	22	33	2	0	0	35	60	447
09:30:00	3	2	0	1	5	6	25	0	1	31	38	0	0	0	38	74	396
09:45:00	2	4	0	0	6	4	30	0	1	34	38	5	0	0	43	83	313
***BREAK***																	
15:00:00	9	5	0	0	14	2	45	0	0	47	47	8	0	0	55	116	
15:15:00	3	2	0	24	5	2	39	1	0	42	67	8	0	0	75	122	
15:30:00	0	8	0	6	8	3	30	0	0	33	40	2	0	0	42	83	
15:45:00	5	6	0	1	11	1	49	0	0	50	40	4	0	0	44	105	426
16:00:00	11	3	0	1	14	1	41	0	2	42	57	2	0	0	59	115	425
16:15:00	4	1	0	4	5	2	57	0	0	59	51	3	0	2	54	118	421
16:30:00	6	6	0	0	12	4	49	0	0	53	44	3	0	0	47	112	450
16:45:00	4	4	0	1	8	5	40	0	0	45	46	1	0	0	47	100	445
17:00:00	7	5	0	2	12	3	44	0	0	47	44	0	0	0	44	103	433
17:15:00	9	1	0	1	10	5	40	0	0	45	53	1	0	1	54	109	424
17:30:00	3	2	0	3	5	1	37	0	0	38	46	2	0	0	48	91	403
17:45:00	0	5	0	0	5	0	42	0	0	42	36	3	0	0	39	86	389
18:00:00	4	0	0	1	4	3	25	0	0	28	30	0	0	0	30	62	348
18:15:00	0	2	0	3	2	4	13	0	0	17	33	0	0	0	33	52	291
18:30:00	1	4	0	1	5	5	27	0	0	32	28	5	0	0	33	70	270
18:45:00	1	5	0	1	6	5	22	0	0	27	32	5	0	1	37	70	254



Grand Total	121	91	0	63	212	99	1057	1	7	1157	1297	84	0	5	1381	2750	-
Approach%	57.1%	42.9%	0%		-	8.6%	91.4%	0.1%		-	93.9%	6.1%	0%		-	-	-
Totals %	4.4%	3.3%	0%		7.7%	3.6%	38.4%	0%		42.1%	47.2%	3.1%	0%		50.2%	-	-
Heavy	5	5	0		-	3	114	0		-	125	5	0		-	-	-
Heavy %	4.1%	5.5%	0%		-	3%	10.8%	0%		-	9.6%	6%	0%		-	-	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	-	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	-	-



**Peak Hour: 08:15 AM - 09:15 AM Weather: Overcast Clouds (16.73 °C)**

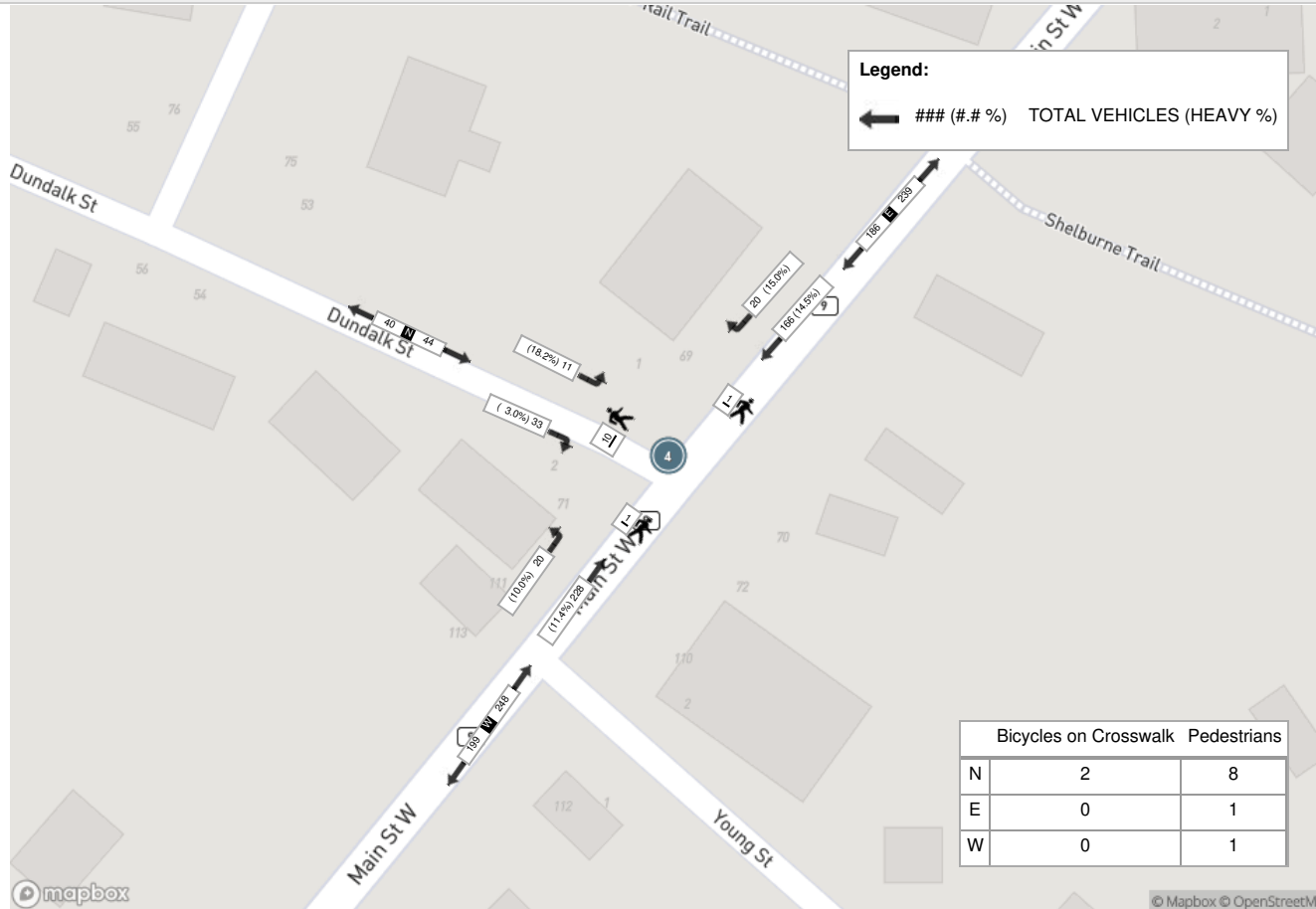
Start Time	N Approach DUNDALK ST					E Approach MAIN ST (GREY RD 9)					W Approach MAIN ST (GREY RD 9)					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
08:15:00	4	3	0	4	7	8	33	0	0	41	38	5	0	1	43	91
08:30:00	6	5	0	5	11	4	54	0	0	58	52	4	0	0	56	125
08:45:00	17	1	0	1	18	6	44	0	1	50	89	9	0	0	98	166
09:00:00	6	2	0	0	8	2	35	0	0	37	49	2	0	0	51	96
<b>Grand Total</b>	<b>33</b>	<b>11</b>	<b>0</b>	<b>10</b>	<b>44</b>	<b>20</b>	<b>166</b>	<b>0</b>	<b>1</b>	<b>186</b>	<b>228</b>	<b>20</b>	<b>0</b>	<b>1</b>	<b>248</b>	<b>478</b>
<b>Approach%</b>	75%	25%	0%	-	-	10.8%	89.2%	0%	-	-	91.9%	8.1%	0%	-	-	-
<b>Totals %</b>	6.9%	2.3%	0%	9.2%	9.2%	4.2%	34.7%	0%	38.9%	38.9%	47.7%	4.2%	0%	51.9%	51.9%	-
<b>PHF</b>	0.49	0.55	0	0.61	0.61	0.63	0.77	0	0.8	0.8	0.64	0.56	0	0.63	0.63	-
<b>Heavy</b>	1	2	0	3	3	3	24	0	27	27	26	2	0	28	28	-
<b>Heavy %</b>	3%	18.2%	0%	6.8%	6.8%	15%	14.5%	0%	14.5%	14.5%	11.4%	10%	0%	11.3%	11.3%	-
<b>Lights</b>	32	9	0	41	41	17	142	0	159	159	202	18	0	220	220	-
<b>Lights %</b>	97%	81.8%	0%	93.2%	93.2%	85%	85.5%	0%	85.5%	85.5%	88.6%	90%	0%	88.7%	88.7%	-
<b>Single-Unit Trucks</b>	0	1	0	1	1	3	8	0	11	11	19	2	0	21	21	-
<b>Single-Unit Trucks %</b>	0%	9.1%	0%	2.3%	2.3%	15%	4.8%	0%	5.9%	5.9%	8.3%	10%	0%	8.5%	8.5%	-
<b>Buses</b>	1	0	0	1	1	0	7	0	7	7	4	0	0	4	4	-
<b>Buses %</b>	3%	0%	0%	2.3%	2.3%	0%	4.2%	0%	3.8%	3.8%	1.8%	0%	0%	1.6%	1.6%	-
<b>Articulated Trucks</b>	0	1	0	1	1	0	9	0	9	9	3	0	0	3	3	-
<b>Articulated Trucks %</b>	0%	9.1%	0%	2.3%	2.3%	0%	5.4%	0%	4.8%	4.8%	1.3%	0%	0%	1.2%	1.2%	-
<b>Bicycles on Road</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
<b>Bicycles on Road %</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
<b>Pedestrians</b>	-	-	-	8	-	-	-	-	1	-	-	-	-	1	-	-
<b>Pedestrians%</b>	-	-	-	66.7%	-	-	-	-	8.3%	-	-	-	-	8.3%	-	-
<b>Bicycles on Crosswalk</b>	-	-	-	2	-	-	-	-	0	-	-	-	-	0	-	-
<b>Bicycles on Crosswalk%</b>	-	-	-	16.7%	-	-	-	-	0%	-	-	-	-	0%	-	-



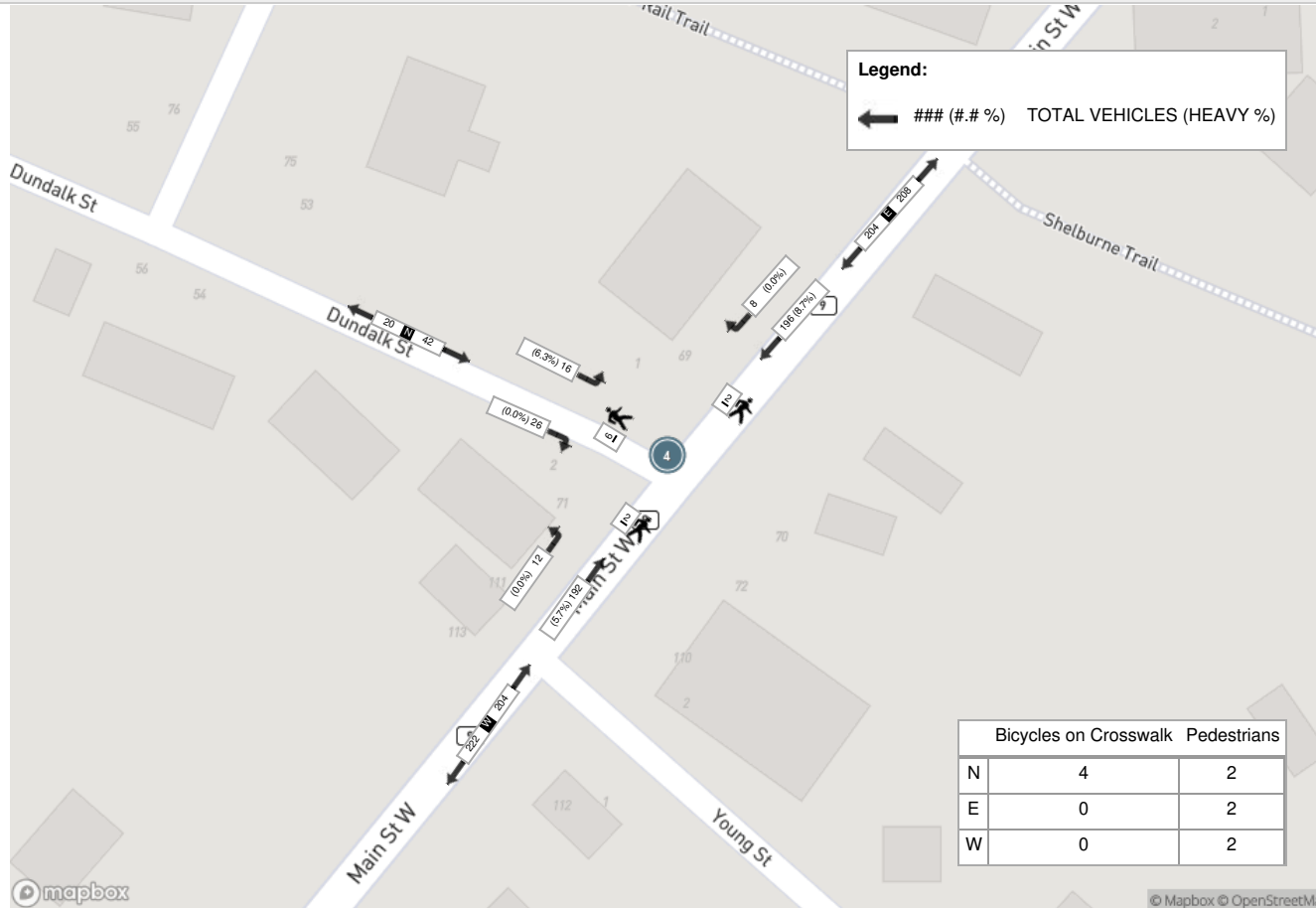
**Peak Hour: 03:45 PM - 04:45 PM Weather: Overcast Clouds (12.76 °C)**

Start Time	N Approach DUNDALK ST					E Approach MAIN ST (GREY RD 9)					W Approach MAIN ST (GREY RD 9)					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
15:45:00	5	6	0	1	11	1	49	0	0	50	40	4	0	0	44	105
16:00:00	11	3	0	1	14	1	41	0	2	42	57	2	0	0	59	115
16:15:00	4	1	0	4	5	2	57	0	0	59	51	3	0	2	54	118
16:30:00	6	6	0	0	12	4	49	0	0	53	44	3	0	0	47	112
<b>Grand Total</b>	<b>26</b>	<b>16</b>	<b>0</b>	<b>6</b>	<b>42</b>	<b>8</b>	<b>196</b>	<b>0</b>	<b>2</b>	<b>204</b>	<b>192</b>	<b>12</b>	<b>0</b>	<b>2</b>	<b>204</b>	<b>450</b>
<b>Approach%</b>	61.9%	38.1%	0%	-	-	3.9%	96.1%	0%	-	-	94.1%	5.9%	0%	-	-	-
<b>Totals %</b>	5.8%	3.6%	0%	9.3%	9.3%	1.8%	43.6%	0%	45.3%	45.3%	42.7%	2.7%	0%	45.3%	45.3%	-
<b>PHF</b>	0.59	0.67	0	0.75	0.75	0.5	0.86	0	0.86	0.86	0.84	0.75	0	0.86	0.86	-
<b>Heavy</b>	0	1	0	1	1	0	17	0	17	17	11	0	0	11	11	-
<b>Heavy %</b>	0%	6.3%	0%	2.4%	2.4%	0%	8.7%	0%	8.3%	8.3%	5.7%	0%	0%	5.4%	5.4%	-
<b>Lights</b>	26	15	0	41	41	8	179	0	187	187	181	12	0	193	193	-
<b>Lights %</b>	100%	93.8%	0%	97.6%	97.6%	100%	91.3%	0%	91.7%	91.7%	94.3%	100%	0%	94.6%	94.6%	-
<b>Single-Unit Trucks</b>	0	0	0	0	0	0	9	0	9	9	4	0	0	4	4	-
<b>Single-Unit Trucks %</b>	0%	0%	0%	0%	0%	0%	4.6%	0%	4.4%	4.4%	2.1%	0%	0%	2%	2%	-
<b>Buses</b>	0	0	0	0	0	0	1	0	1	1	3	0	0	3	3	-
<b>Buses %</b>	0%	0%	0%	0%	0%	0%	0.5%	0%	0.5%	0.5%	1.6%	0%	0%	1.5%	1.5%	-
<b>Articulated Trucks</b>	0	1	0	1	1	0	7	0	7	7	4	0	0	4	4	-
<b>Articulated Trucks %</b>	0%	6.3%	0%	2.4%	2.4%	0%	3.6%	0%	3.4%	3.4%	2.1%	0%	0%	2%	2%	-
<b>Bicycles on Road</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
<b>Bicycles on Road %</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
<b>Pedestrians</b>	-	-	-	2	-	-	-	-	2	-	-	-	-	2	-	-
<b>Pedestrians%</b>	-	-	-	20%	-	-	-	-	20%	-	-	-	-	20%	-	-
<b>Bicycles on Crosswalk</b>	-	-	-	4	-	-	-	-	0	-	-	-	-	0	-	-
<b>Bicycles on Crosswalk%</b>	-	-	-	40%	-	-	-	-	0%	-	-	-	-	0%	-	-

Peak Hour: 08:15 AM - 09:15 AM Weather: Overcast Clouds (16.73 °C)



Peak Hour: 03:45 PM - 04:45 PM Weather: Overcast Clouds (12.76 °C)





**Turning Movement Count (1 . GLENELG ST & IDA ST)**

Start Time	N Approach IDA ST					E Approach GLENELG ST					S Approach IDA ST					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	UTurn S:S	Peds S:	Approach Total		
06:00:00	2	0	0	0	2	0	0	0	0	0	0	1	0	0	1	3	
06:15:00	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	2	
06:30:00	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	2	
06:45:00	2	1	0	0	3	0	0	0	0	0	1	3	0	0	4	7	14
07:00:00	5	1	0	0	6	1	0	0	0	1	2	4	0	0	6	13	24
07:15:00	3	1	0	0	4	0	2	0	0	2	0	3	0	0	3	9	31
07:30:00	2	0	0	0	2	0	2	0	0	2	0	2	0	0	2	6	35
07:45:00	5	1	0	0	6	2	2	0	0	4	2	2	0	0	4	14	42
08:00:00	3	0	0	0	3	1	0	0	0	1	1	1	0	0	2	6	35
08:15:00	5	5	0	0	10	0	2	0	0	2	2	1	0	0	3	15	41
08:30:00	3	1	0	0	4	3	1	0	0	4	4	5	0	0	9	17	52
08:45:00	4	2	0	0	6	2	1	0	0	3	1	2	0	0	3	12	50
09:00:00	0	0	0	0	0	2	0	0	0	2	2	1	0	0	3	5	49
09:15:00	2	2	0	0	4	0	1	0	0	1	1	2	0	0	3	8	42
09:30:00	3	2	0	0	5	1	0	0	0	1	0	1	0	0	1	7	32
09:45:00	5	2	0	0	7	0	1	0	0	1	2	2	0	0	4	12	32
***BREAK***																	
15:00:00	4	1	0	0	5	4	1	0	0	5	1	6	0	0	7	17	
15:15:00	3	2	0	0	5	2	4	0	0	6	6	1	0	0	7	18	
15:30:00	1	2	0	0	3	5	4	0	0	9	1	8	0	0	9	21	
15:45:00	3	2	0	0	5	3	5	0	0	8	0	2	0	0	2	15	71
16:00:00	1	0	0	0	1	2	2	0	0	4	1	3	0	0	4	9	63
16:15:00	4	0	0	1	4	3	3	0	0	6	0	5	0	0	5	15	60
16:30:00	3	0	0	0	3	4	4	0	0	8	3	6	0	0	9	20	59
16:45:00	3	0	0	0	3	2	1	0	0	3	0	2	0	0	2	8	52
17:00:00	3	4	0	0	7	3	5	0	0	8	2	6	0	0	8	23	66
17:15:00	6	4	0	0	10	2	1	0	0	3	4	4	0	0	8	21	72
17:30:00	4	1	0	0	5	4	2	0	0	6	1	10	0	0	11	22	74
17:45:00	2	0	0	0	2	0	1	0	0	1	0	2	0	0	2	5	71
18:00:00	3	0	0	0	3	2	0	0	0	2	1	5	0	0	6	11	59
18:15:00	2	2	0	0	4	2	2	0	0	4	0	2	0	0	2	10	48
18:30:00	2	1	0	0	3	2	0	0	0	2	3	1	0	0	4	9	35
18:45:00	1	0	0	0	1	2	0	0	0	2	3	5	0	0	8	11	41





Grand Total	91	38	0	1	129	54	47	0	0	101	44	99	0	0	143	373	-
<b>Approach%</b>	70.5%	29.5%	0%		-	53.5%	46.5%	0%		-	30.8%	69.2%	0%		-	-	-
<b>Totals %</b>	24.4%	10.2%	0%		34.6%	14.5%	12.6%	0%		27.1%	11.8%	26.5%	0%		38.3%	-	-
<b>Heavy</b>	7	2	0		-	4	3	0		-	5	12	0		-	-	-
<b>Heavy %</b>	7.7%	5.3%	0%		-	7.4%	6.4%	0%		-	11.4%	12.1%	0%		-	-	-
<b>Bicycles</b>	-	-	-		-	-	-	-		-	-	-	-		-	-	-
<b>Bicycle %</b>	-	-	-		-	-	-	-		-	-	-	-		-	-	-



**Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (16.73 °C)**

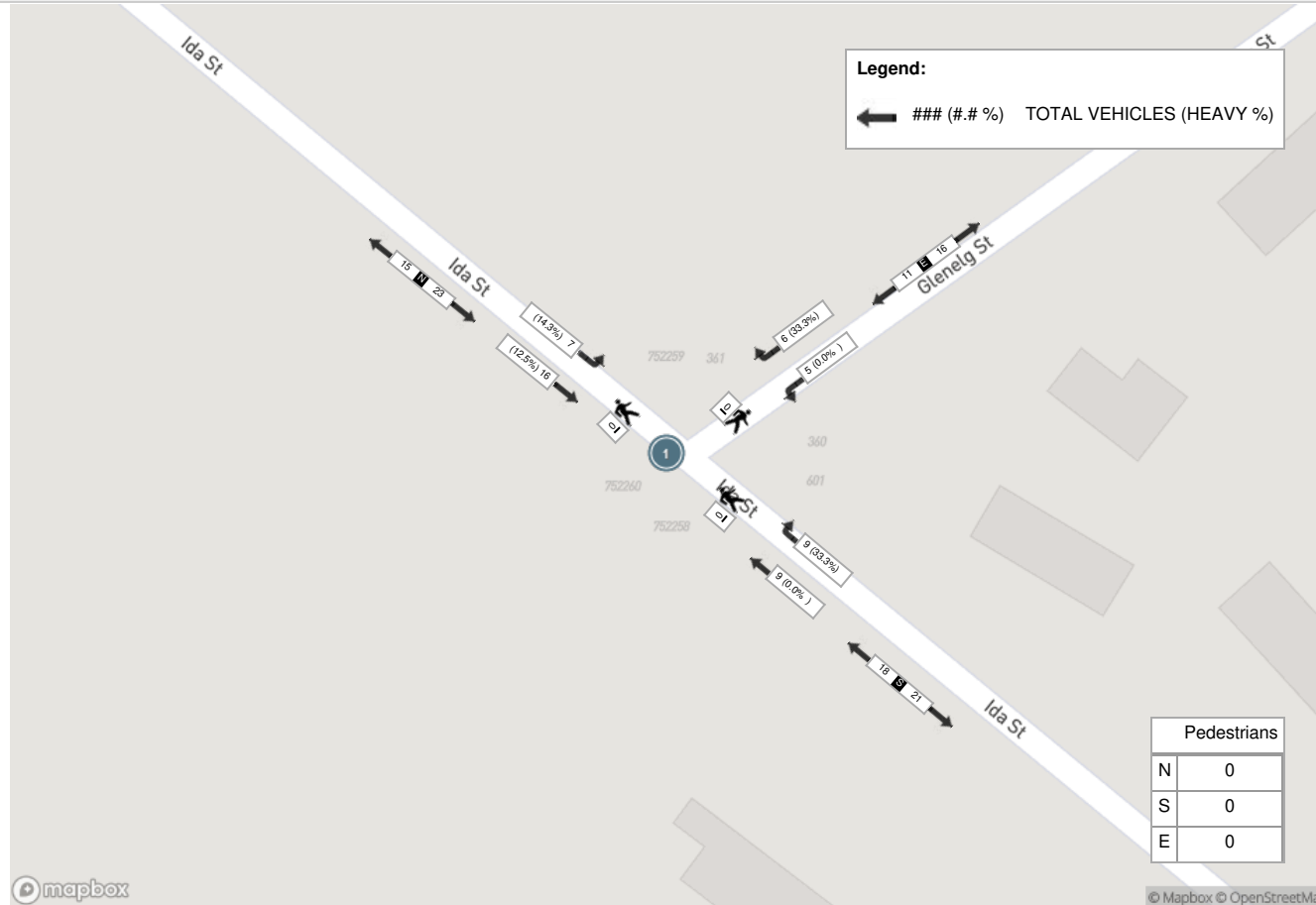
Start Time	N Approach IDA ST					E Approach GLENELG ST					S Approach IDA ST					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
07:45:00	5	1	0	0	6	2	2	0	0	4	2	2	0	0	4	14
08:00:00	3	0	0	0	3	1	0	0	0	1	1	1	0	0	2	6
08:15:00	5	5	0	0	10	0	2	0	0	2	2	1	0	0	3	15
08:30:00	3	1	0	0	4	3	1	0	0	4	4	5	0	0	9	17
<b>Grand Total</b>	<b>16</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>23</b>	<b>6</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>9</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>52</b>
<b>Approach%</b>	69.6%	30.4%	0%		-	54.5%	45.5%	0%		-	50%	50%	0%		-	-
<b>Totals %</b>	30.8%	13.5%	0%		44.2%	11.5%	9.6%	0%		21.2%	17.3%	17.3%	0%		34.6%	-
<b>PHF</b>	0.8	0.35	0		0.58	0.5	0.63	0		0.69	0.56	0.45	0		0.5	-
<b>Heavy</b>	2	1	0		3	2	0	0		2	3	0	0		3	-
<b>Heavy %</b>	12.5%	14.3%	0%		13%	33.3%	0%	0%		18.2%	33.3%	0%	0%		16.7%	-
<b>Lights</b>	14	6	0		20	4	5	0		9	6	9	0		15	-
<b>Lights %</b>	87.5%	85.7%	0%		87%	66.7%	100%	0%		81.8%	66.7%	100%	0%		83.3%	-
<b>Single-Unit Trucks</b>	1	0	0		1	2	0	0		2	1	0	0		1	-
<b>Single-Unit Trucks %</b>	6.3%	0%	0%		4.3%	33.3%	0%	0%		18.2%	11.1%	0%	0%		5.6%	-
<b>Buses</b>	1	1	0		2	0	0	0		0	2	0	0		2	-
<b>Buses %</b>	6.3%	14.3%	0%		8.7%	0%	0%	0%		0%	22.2%	0%	0%		11.1%	-
<b>Articulated Trucks</b>	0	0	0		0	0	0	0		0	0	0	0		0	-
<b>Articulated Trucks %</b>	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
<b>Bicycles on Road</b>	0	0	0		0	0	0	0		0	0	0	0		0	-
<b>Bicycles on Road %</b>	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
<b>Pedestrians</b>	-	-	-	0	-	-	-	0		-	-	-	-	0	-	-
<b>Pedestrians%</b>	-	-	-	0%	-	-	-	0%		-	-	-	-	0%	-	-



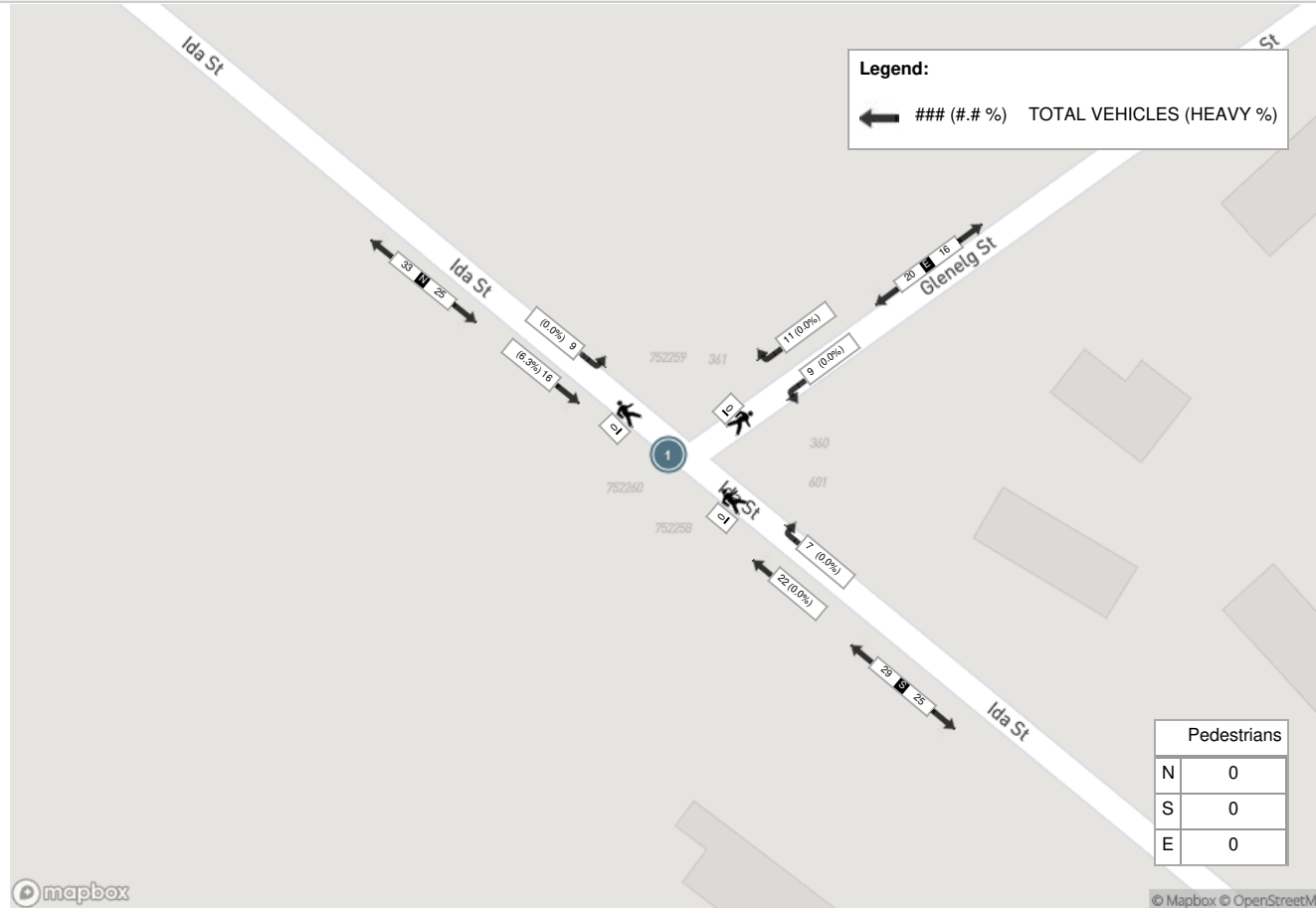
**Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (12.76 °C)**

Start Time	N Approach IDA ST					E Approach GLENELG ST					S Approach IDA ST					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
16:45:00	3	0	0	0	3	2	1	0	0	3	0	2	0	0	2	8
17:00:00	3	4	0	0	7	3	5	0	0	8	2	6	0	0	8	23
17:15:00	6	4	0	0	10	2	1	0	0	3	4	4	0	0	8	21
17:30:00	4	1	0	0	5	4	2	0	0	6	1	10	0	0	11	22
<b>Grand Total</b>	<b>16</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>25</b>	<b>11</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>7</b>	<b>22</b>	<b>0</b>	<b>0</b>	<b>29</b>	<b>74</b>
<b>Approach%</b>	64%	36%	0%		-	55%	45%	0%		-	24.1%	75.9%	0%		-	-
<b>Totals %</b>	21.6%	12.2%	0%		33.8%	14.9%	12.2%	0%		27%	9.5%	29.7%	0%		39.2%	-
<b>PHF</b>	0.67	0.56	0		0.63	0.69	0.45	0		0.63	0.44	0.55	0		0.66	-
<b>Heavy</b>	1	0	0		1	0	0	0		0	0	0	0		0	-
<b>Heavy %</b>	6.3%	0%	0%		4%	0%	0%	0%		0%	0%	0%	0%		0%	-
<b>Lights</b>	15	9	0		24	11	9	0		20	7	22	0		29	-
<b>Lights %</b>	93.8%	100%	0%		96%	100%	100%	0%		100%	100%	100%	0%		100%	-
<b>Single-Unit Trucks</b>	1	0	0		1	0	0	0		0	0	0	0		0	-
<b>Single-Unit Trucks %</b>	6.3%	0%	0%		4%	0%	0%	0%		0%	0%	0%	0%		0%	-
<b>Buses</b>	0	0	0		0	0	0	0		0	0	0	0		0	-
<b>Buses %</b>	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
<b>Articulated Trucks</b>	0	0	0		0	0	0	0		0	0	0	0		0	-
<b>Articulated Trucks %</b>	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
<b>Bicycles on Road</b>	0	0	0		0	0	0	0		0	0	0	0		0	-
<b>Bicycles on Road %</b>	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
<b>Pedestrians</b>	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
<b>Pedestrians%</b>	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-

Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (16.73 °C)



Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (12.76 °C)





Turning Movement Count (3 . IDA ST & MAIN ST)

Start Time	N Approach IDA ST						E Approach MAIN ST (GREY RD 9)						S Approach IDA ST						W Approach MAIN ST (GREY RD 9)						Int. Total (15 min)	Int. Total (1 hr)	
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total			
06:00:00	0	2	1	0	0	3	0	13	1	0	0	14	1	0	2	0	0	3	8	16	1	0	0	25	45		
06:15:00	0	2	0	0	0	2	0	20	5	0	0	25	0	0	3	0	0	3	5	9	0	0	0	14	44		
06:30:00	0	0	1	0	0	1	0	22	3	0	0	25	2	0	3	0	0	5	2	16	1	0	0	19	50		
06:45:00	1	1	1	0	0	3	4	12	5	0	6	21	6	3	5	0	0	14	3	15	0	0	0	18	56	195	
07:00:00	0	1	3	0	0	4	1	12	4	0	0	17	8	3	5	0	0	16	4	8	2	0	0	14	51	201	
07:15:00	1	5	2	0	0	8	3	16	6	0	0	25	4	0	1	0	0	5	8	25	0	0	0	33	71	228	
07:30:00	0	6	2	0	0	8	1	22	5	0	0	28	3	1	3	0	0	7	3	20	2	0	0	25	68	246	
07:45:00	4	2	5	0	0	11	1	16	3	0	0	20	3	2	3	0	0	8	7	26	2	0	0	35	74	264	
08:00:00	0	1	2	0	0	3	0	15	7	0	1	22	7	1	4	0	0	12	2	30	1	0	0	33	70	283	
08:15:00	2	5	2	0	0	9	0	12	8	0	0	20	4	0	1	0	0	5	4	31	2	0	0	37	71	283	
08:30:00	0	2	4	0	0	6	7	21	13	0	0	41	7	1	3	0	0	11	6	29	1	0	1	36	94	309	
08:45:00	1	3	4	0	0	8	3	16	8	0	1	27	6	0	3	0	0	9	5	24	1	0	0	30	74	309	
09:00:00	0	0	1	0	0	1	2	18	6	0	0	26	9	2	3	0	0	14	4	23	0	0	0	27	68	307	
09:15:00	1	1	1	0	0	3	1	19	4	0	0	24	6	1	0	0	0	7	4	21	0	0	0	25	59	295	
09:30:00	1	2	1	0	0	4	2	18	5	0	0	25	7	0	6	0	0	13	2	29	1	0	0	32	74	275	
09:45:00	0	2	4	0	0	6	2	17	10	0	0	29	7	2	1	0	0	10	5	27	0	0	0	32	77	278	
***BREAK***																											
15:00:00	1	3	1	0	0	5	3	25	6	0	0	34	10	3	5	0	0	18	0	31	2	0	0	33	90		
15:15:00	3	2	3	0	0	8	4	28	16	0	0	48	7	5	4	0	0	16	5	20	0	0	0	25	97		
15:30:00	3	4	1	0	0	8	3	19	5	0	0	27	8	5	7	0	0	20	7	21	2	0	0	30	85		
15:45:00	5	3	1	0	0	9	1	31	8	0	0	40	11	1	8	0	0	20	3	24	0	0	0	27	96	368	
16:00:00	1	1	1	0	2	3	3	31	7	0	0	41	6	3	5	0	0	14	5	32	1	0	0	38	96	374	
16:15:00	0	3	4	0	0	7	2	37	10	0	1	49	8	3	5	0	0	16	2	24	2	0	0	28	100	377	
16:30:00	2	1	3	0	1	6	3	34	7	0	2	44	13	7	4	0	1	24	4	23	4	0	0	31	105	397	
16:45:00	1	2	3	0	1	6	3	22	9	0	1	34	8	2	2	0	0	12	3	24	0	0	0	27	79	380	
17:00:00	2	3	3	0	1	8	4	28	9	0	0	41	10	3	8	0	0	21	6	26	1	0	0	33	103	387	
17:15:00	3	4	1	0	0	8	3	35	3	0	0	41	11	4	7	0	0	22	0	33	3	0	0	36	107	394	
17:30:00	1	2	3	0	0	6	4	25	0	0	0	29	7	8	1	0	0	16	4	29	1	0	0	34	85	374	
17:45:00	2	0	3	0	0	5	2	20	5	0	0	27	5	1	4	0	0	10	3	25	0	0	0	28	70	365	
18:00:00	0	1	3	0	0	4	1	25	0	0	0	26	4	4	5	0	0	13	3	15	2	0	0	20	63	325	
18:15:00	0	1	2	0	0	3	0	13	2	0	0	15	2	3	7	0	0	12	2	30	1	0	0	33	63	281	
18:30:00	2	0	0	0	0	2	1	16	4	0	0	21	8	4	1	0	0	13	1	19	1	0	0	21	57	253	
18:45:00	0	0	3	0	0	3	3	13	2	0	0	18	1	4	2	0	0	7	0	24	1	0	0	25	53	236	
<b>Grand Total</b>	<b>37</b>	<b>65</b>	<b>69</b>	<b>0</b>	<b>5</b>	<b>171</b>	<b>67</b>	<b>671</b>	<b>186</b>	<b>0</b>	<b>12</b>	<b>924</b>	<b>199</b>	<b>76</b>	<b>121</b>	<b>0</b>	<b>1</b>	<b>396</b>	<b>120</b>	<b>749</b>	<b>35</b>	<b>0</b>	<b>1</b>	<b>904</b>	<b>2395</b>	<b>-</b>	
<b>Approach%</b>	21.6%	38%	40.4%	0%	-	-	7.3%	72.6%	20.1%	0%	-	-	50.3%	19.2%	30.6%	0%	-	-	13.3%	82.9%	3.9%	0%	-	-	-	-	
<b>Totals %</b>	1.5%	2.7%	2.9%	0%	-	7.1%	2.8%	28%	7.8%	0%	-	38.6%	8.3%	3.2%	5.1%	0%	-	16.5%	5%	31.3%	1.5%	0%	-	37.7%	-	-	
<b>Heavy</b>	5	3	2	0	-	-	4	67	61	0	-	-	39	4	20	0	-	-	19	75	9	0	-	-	-	-	
<b>Heavy %</b>	13.5%	4.6%	2.9%	0%	-	-	6%	10%	32.8%	0%	-	-	19.6%	5.3%	16.5%	0%	-	-	15.8%	10%	25.7%	0%	-	-	-	-	
<b>Bicycles</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Bicycle %</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (16.73 °C)**

Start Time	N Approach IDA ST						E Approach MAIN ST (GREY RD 9)						S Approach IDA ST						W Approach MAIN ST (GREY RD 9)						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	0	1	2	0	0	3	0	15	7	0	1	22	7	1	4	0	0	12	2	30	1	0	0	33	70
08:15:00	2	5	2	0	0	9	0	12	8	0	0	20	4	0	1	0	0	5	4	31	2	0	0	37	71
08:30:00	0	2	4	0	0	6	7	21	13	0	0	41	7	1	3	0	0	11	6	29	1	0	1	36	94
08:45:00	1	3	4	0	0	8	3	16	8	0	1	27	6	0	3	0	0	9	5	24	1	0	0	30	74
<b>Grand Total</b>	<b>3</b>	<b>11</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>26</b>	<b>10</b>	<b>64</b>	<b>36</b>	<b>0</b>	<b>2</b>	<b>110</b>	<b>24</b>	<b>2</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>37</b>	<b>17</b>	<b>114</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>136</b>	<b>309</b>
<b>Approach%</b>	11.5%	42.3%	46.2%	0%	-	-	9.1%	58.2%	32.7%	0%	-	-	64.9%	5.4%	29.7%	0%	-	-	12.5%	83.8%	3.7%	0%	-	-	-
<b>Totals %</b>	1%	3.6%	3.9%	0%	8.4%	8.4%	3.2%	20.7%	11.7%	0%	35.6%	35.6%	7.8%	0.6%	3.6%	0%	12%	12%	5.5%	36.9%	1.6%	0%	44%	44%	-
<b>PHF</b>	0.38	0.55	0.75	0	0.72	0.72	0.36	0.76	0.69	0	0.67	0.67	0.86	0.5	0.69	0	0.77	0.77	0.71	0.92	0.63	0	0.92	0.92	-
<b>Heavy</b>	0	1	1	0	2	2	1	9	19	0	29	29	6	0	1	0	7	7	6	20	1	0	27	27	-
<b>Heavy %</b>	0%	9.1%	8.3%	0%	7.7%	7.7%	10%	14.1%	52.8%	0%	26.4%	26.4%	25%	0%	9.1%	0%	18.9%	18.9%	35.3%	17.5%	20%	0%	19.9%	19.9%	-
<b>Lights</b>	3	10	11	0	24	24	9	55	17	0	81	81	18	2	10	0	30	30	11	94	4	0	109	109	-
<b>Lights %</b>	100%	90.9%	91.7%	0%	92.3%	92.3%	90%	85.9%	47.2%	0%	73.6%	73.6%	75%	100%	90.9%	0%	81.1%	81.1%	64.7%	82.5%	80%	0%	80.1%	80.1%	-
<b>Single-Unit Trucks</b>	0	0	1	0	1	1	0	3	5	0	8	8	4	0	0	0	4	4	0	15	0	0	15	15	-
<b>Single-Unit Trucks %</b>	0%	0%	8.3%	0%	3.8%	3.8%	0%	4.7%	13.9%	0%	7.3%	7.3%	16.7%	0%	0%	0%	10.8%	10.8%	0%	13.2%	0%	0%	11%	11%	-
<b>Buses</b>	0	1	0	0	1	1	1	1	11	0	13	13	1	0	0	0	1	1	2	2	1	0	5	5	-
<b>Buses %</b>	0%	9.1%	0%	0%	3.8%	3.8%	10%	1.6%	30.6%	0%	11.8%	11.8%	4.2%	0%	0%	0%	2.7%	2.7%	11.8%	1.8%	20%	0%	3.7%	3.7%	-
<b>Articulated Trucks</b>	0	0	0	0	0	0	0	5	3	0	8	8	1	0	1	0	2	2	4	3	0	0	7	7	-
<b>Articulated Trucks %</b>	0%	0%	0%	0%	0%	0%	0%	7.8%	8.3%	0%	7.3%	7.3%	4.2%	0%	9.1%	0%	5.4%	5.4%	23.5%	2.6%	0%	0%	5.1%	5.1%	-
<b>Pedestrians</b>	-	-	-	-	0	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
<b>Pedestrians%</b>	-	-	-	-	0%	-	-	-	-	66.7%	-	-	-	-	-	0%	-	-	-	-	-	-	33.3%	-	-
<b>Bicycles on Crosswalk</b>	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
<b>Bicycles on Crosswalk%</b>	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	-	0%	-	-

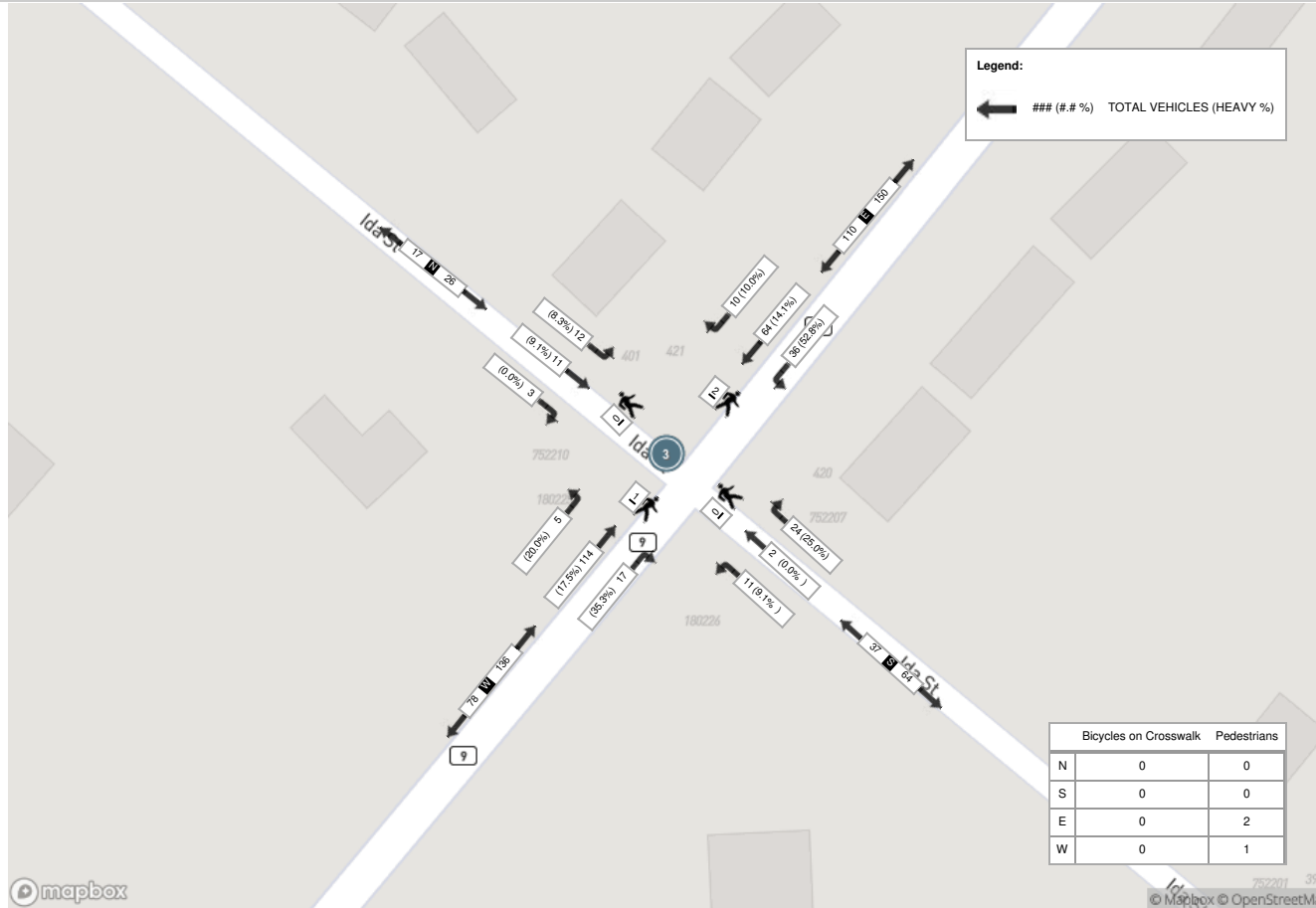


**Peak Hour: 03:45 PM - 04:45 PM Weather: Overcast Clouds (12.76 °C)**

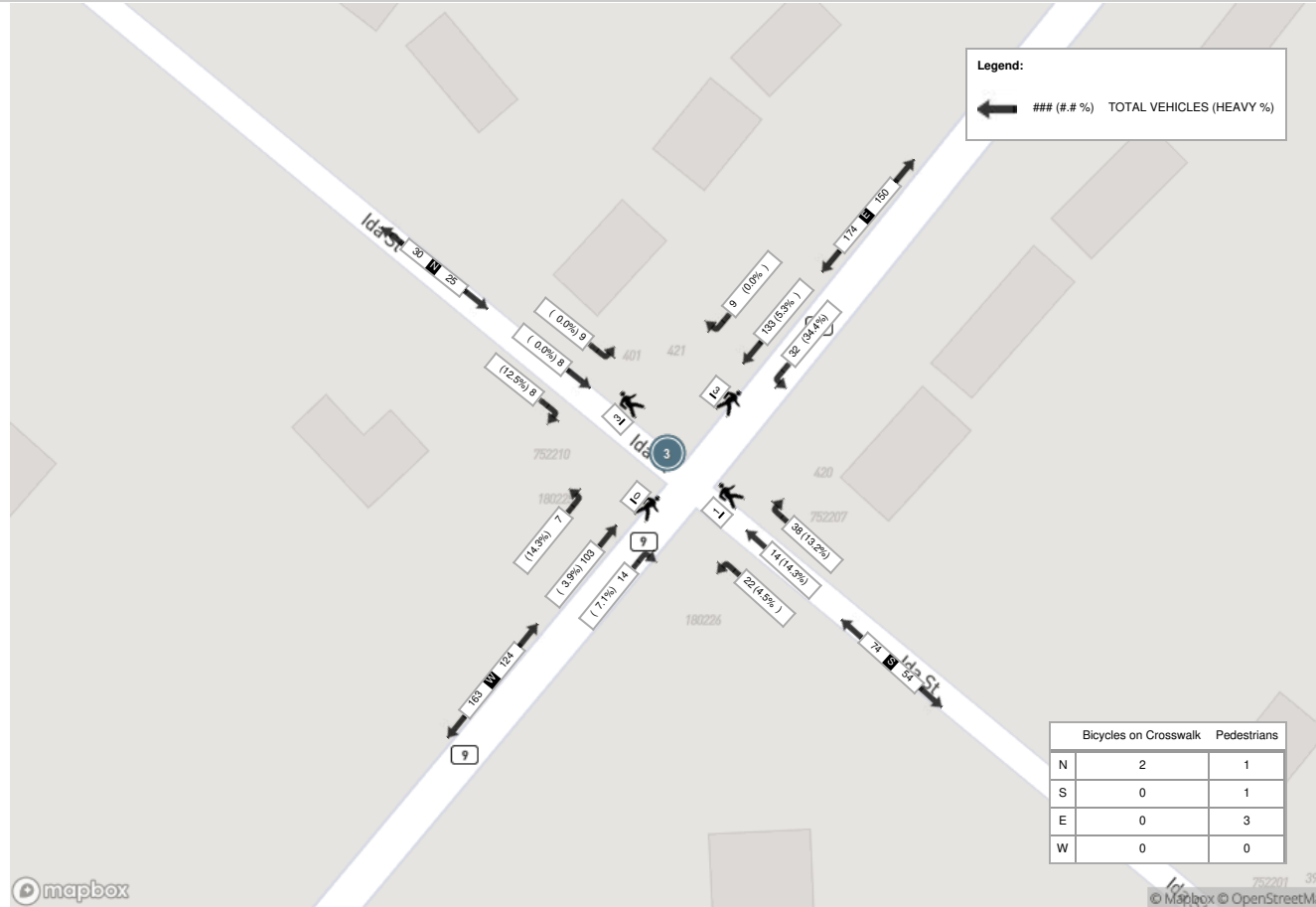
Start Time	N Approach IDA ST						E Approach MAIN ST (GREY RD 9)						S Approach IDA ST						W Approach MAIN ST (GREY RD 9)						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
15:45:00	5	3	1	0	0	9	1	31	8	0	0	40	11	1	8	0	0	20	3	24	0	0	0	27	96
16:00:00	1	1	1	0	2	3	3	31	7	0	0	41	6	3	5	0	0	14	5	32	1	0	0	38	96
16:15:00	0	3	4	0	0	7	2	37	10	0	1	49	8	3	5	0	0	16	2	24	2	0	0	28	100
16:30:00	2	1	3	0	1	6	3	34	7	0	2	44	13	7	4	0	1	24	4	23	4	0	0	31	105
<b>Grand Total</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>0</b>	<b>3</b>	<b>25</b>	<b>9</b>	<b>133</b>	<b>32</b>	<b>0</b>	<b>3</b>	<b>174</b>	<b>38</b>	<b>14</b>	<b>22</b>	<b>0</b>	<b>1</b>	<b>74</b>	<b>14</b>	<b>103</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>124</b>	<b>397</b>
<b>Approach%</b>	32%	32%	36%	0%	-	-	5.2%	76.4%	18.4%	0%	-	-	51.4%	18.9%	29.7%	0%	-	-	11.3%	83.1%	5.6%	0%	-	-	-
<b>Totals %</b>	2%	2%	2.3%	0%	6.3%	6.3%	2.3%	33.5%	8.1%	0%	43.8%	43.8%	9.6%	3.5%	5.5%	0%	18.6%	18.6%	3.5%	25.9%	1.8%	0%	31.2%	31.2%	-
<b>PHF</b>	0.4	0.67	0.56	0	0.69	0.69	0.75	0.9	0.8	0	0.89	0.89	0.73	0.5	0.69	0	0.77	0.77	0.7	0.8	0.44	0	0.82	0.82	-
<b>Heavy</b>	1	0	0	0	1	1	0	7	11	0	18	18	5	2	1	0	8	8	1	4	1	0	6	6	-
<b>Heavy %</b>	12.5%	0%	0%	0%	4%	4%	0%	5.3%	34.4%	0%	10.3%	10.3%	13.2%	14.3%	4.5%	0%	10.8%	10.8%	7.1%	3.9%	14.3%	0%	4.8%	4.8%	-
<b>Lights</b>	7	8	9	0	24	24	9	126	21	0	156	156	33	12	21	0	66	66	13	99	6	0	118	118	-
<b>Lights %</b>	87.5%	100%	100%	0%	96%	96%	100%	94.7%	65.6%	0%	89.7%	89.7%	86.8%	85.7%	95.5%	0%	89.2%	89.2%	92.9%	96.1%	85.7%	0%	95.2%	95.2%	-
<b>Single-Unit Trucks</b>	0	0	0	0	0	0	0	3	6	0	9	9	2	1	0	0	3	3	0	1	1	0	2	2	-
<b>Single-Unit Trucks %</b>	0%	0%	0%	0%	0%	0%	0%	2.3%	18.8%	0%	5.2%	5.2%	5.3%	7.1%	0%	0%	4.1%	4.1%	0%	1%	14.3%	0%	1.6%	1.6%	-
<b>Buses</b>	1	0	0	0	1	1	0	2	0	0	2	2	0	1	0	0	1	1	0	3	0	0	3	3	-
<b>Buses %</b>	12.5%	0%	0%	0%	4%	4%	0%	1.5%	0%	0%	1.1%	1.1%	0%	7.1%	0%	0%	1.4%	1.4%	0%	2.9%	0%	0%	2.4%	2.4%	-
<b>Articulated Trucks</b>	0	0	0	0	0	0	0	2	5	0	7	7	3	0	1	0	4	4	1	0	0	0	1	1	-
<b>Articulated Trucks %</b>	0%	0%	0%	0%	0%	0%	0%	1.5%	15.6%	0%	4%	4%	7.9%	0%	4.5%	0%	5.4%	5.4%	7.1%	0%	0%	0%	0.8%	0.8%	-
<b>Pedestrians</b>	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	0	-	-
<b>Pedestrians%</b>	-	-	-	-	14.3%	-	-	-	-	-	42.9%	-	-	-	-	-	14.3%	-	-	-	-	-	0%	-	-
<b>Bicycles on Crosswalk</b>	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
<b>Bicycles on Crosswalk%</b>	-	-	-	-	28.6%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (16.73 °C)



Peak Hour: 03:45 PM - 04:45 PM Weather: Overcast Clouds (12.76 °C)





Turning Movement Count (5 . MAIN ST & OSPREY ST)

Start Time	N Approach OSPREY ST						E Approach MAIN ST						S Approach OSPREY ST						W Approach MAIN ST						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	0	6	0	0	6	0	17	0	0	0	17	2	0	0	0	0	2	0	30	0	0	0	30	55	
06:15:00	0	0	1	0	0	1	0	23	1	0	0	24	1	0	2	0	0	3	0	24	0	0	0	24	52	
06:30:00	0	0	7	0	0	7	0	22	3	0	0	25	0	0	1	0	0	1	0	32	0	0	0	32	65	
06:45:00	0	0	3	0	1	3	0	23	1	0	0	24	0	0	0	0	0	0	1	37	0	0	3	38	65	237
07:00:00	0	1	7	0	0	8	0	26	2	0	0	28	3	1	1	0	0	5	0	40	0	0	1	40	81	263
07:15:00	1	0	9	0	0	10	0	31	2	0	1	33	1	0	2	0	3	3	0	38	0	0	0	38	84	295
07:30:00	0	0	1	0	0	1	0	30	1	0	0	31	0	1	1	0	0	2	1	41	1	0	0	43	77	307
07:45:00	1	0	4	0	1	5	0	33	1	0	0	34	1	0	1	0	0	2	0	34	2	0	0	36	77	319
08:00:00	0	0	7	0	0	7	1	34	0	0	0	35	2	0	0	0	0	2	0	35	1	0	0	36	80	318
08:15:00	1	1	3	0	0	5	2	41	2	0	0	45	1	0	2	0	4	3	0	33	1	0	2	34	87	321
08:30:00	6	2	4	0	2	12	0	51	2	0	0	53	1	0	3	0	0	4	3	50	1	0	1	54	123	367
08:45:00	2	0	2	0	3	4	0	44	1	0	0	45	6	1	5	0	0	12	6	80	7	0	0	93	154	444
09:00:00	1	1	4	0	2	6	0	44	2	0	0	46	3	0	2	0	0	5	3	48	1	0	0	52	109	473
09:15:00	0	0	5	0	0	5	1	28	1	0	0	30	3	0	1	0	0	4	1	35	1	0	0	37	76	462
09:30:00	0	1	1	0	1	2	1	36	1	0	0	38	1	1	0	0	0	2	1	44	1	1	0	47	89	428
09:45:00	2	1	5	0	0	8	1	34	3	0	0	38	0	0	0	0	0	0	0	35	3	0	0	38	84	358
***BREAK***																										
15:00:00	2	1	0	0	1	3	0	53	3	0	1	56	5	2	1	0	1	8	0	50	4	0	0	54	121	
15:15:00	2	0	5	0	6	7	1	46	3	0	2	50	2	2	1	0	0	5	7	59	5	0	4	71	133	
15:30:00	3	1	3	0	9	7	0	39	0	0	1	39	5	2	0	0	3	7	1	56	4	0	0	61	114	
15:45:00	1	0	3	0	2	4	1	59	2	0	3	62	3	0	0	0	6	3	1	42	1	0	0	44	113	481
16:00:00	1	2	2	0	1	5	0	45	3	0	3	48	7	1	3	0	0	11	2	46	4	1	0	53	117	477
16:15:00	1	1	2	0	8	4	0	64	2	0	2	66	2	1	4	0	0	7	1	46	2	0	0	49	126	470
16:30:00	1	0	3	0	5	4	0	56	1	0	0	57	1	0	0	0	0	1	2	44	2	0	1	48	110	466
16:45:00	0	0	3	0	3	3	0	48	2	0	0	50	1	1	1	0	0	3	2	44	4	0	0	50	106	459
17:00:00	0	0	2	0	7	2	0	53	4	0	0	57	2	0	0	0	2	2	2	55	0	0	2	57	118	460
17:15:00	1	2	3	0	2	6	1	52	2	0	0	55	4	0	1	0	1	5	0	46	1	0	0	47	113	447
17:30:00	0	0	1	0	1	1	0	42	1	0	0	43	6	1	0	0	0	7	0	48	3	0	0	51	102	439
17:45:00	2	0	0	0	5	2	1	48	4	0	0	53	3	0	1	0	0	4	3	33	5	0	0	41	100	433
18:00:00	0	0	1	0	1	1	0	31	4	0	0	35	3	2	0	0	0	5	1	32	0	0	0	33	74	389
18:15:00	2	0	6	0	0	8	1	25	0	0	0	26	2	1	1	0	0	4	2	35	2	0	0	39	77	353
18:30:00	0	2	4	0	1	6	0	42	2	0	3	44	2	1	0	0	0	3	1	25	0	0	0	26	79	330
18:45:00	1	1	4	0	0	6	0	29	5	0	0	34	2	1	0	0	1	3	1	40	2	0	0	43	86	316
<b>Grand Total</b>	<b>31</b>	<b>17</b>	<b>111</b>	<b>0</b>	<b>62</b>	<b>159</b>	<b>11</b>	<b>1249</b>	<b>61</b>	<b>0</b>	<b>16</b>	<b>1321</b>	<b>75</b>	<b>19</b>	<b>34</b>	<b>0</b>	<b>21</b>	<b>128</b>	<b>42</b>	<b>1337</b>	<b>58</b>	<b>2</b>	<b>14</b>	<b>1439</b>	<b>3047</b>	<b>-</b>
<b>Approach%</b>	19.5%	10.7%	69.8%	0%	-	-	0.8%	94.5%	4.6%	0%	-	-	58.6%	14.8%	26.6%	0%	-	-	2.9%	92.9%	4%	0.1%	-	-	-	-
<b>Totals %</b>	1%	0.6%	3.6%	0%	5.2%	5.2%	0.4%	41%	2%	0%	43.4%	43.4%	2.5%	0.6%	1.1%	0%	4.2%	4.2%	1.4%	43.9%	1.9%	0.1%	47.2%	-	-	-
<b>Heavy</b>	0	0	2	0	-	-	0	124	2	0	-	-	4	1	2	0	-	-	0	131	1	0	-	-	-	-
<b>Heavy %</b>	0%	0%	1.8%	0%	-	-	0%	9.9%	3.3%	0%	-	-	5.3%	5.3%	5.9%	0%	-	-	0%	9.8%	1.7%	0%	-	-	-	-
<b>Bicycles</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Bicycle %</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Peak Hour: 08:15 AM - 09:15 AM Weather: Overcast Clouds (16.73 °C)**

Start Time	N Approach OSPREY ST						E Approach MAIN ST						S Approach OSPREY ST						W Approach MAIN ST						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:15:00	1	1	3	0	0	5	2	41	2	0	0	45	1	0	2	0	4	3	0	33	1	0	2	34	87
08:30:00	6	2	4	0	2	12	0	51	2	0	0	53	1	0	3	0	0	4	3	50	1	0	1	54	123
08:45:00	2	0	2	0	3	4	0	44	1	0	0	45	6	1	5	0	0	12	6	80	7	0	0	93	154
09:00:00	1	1	4	0	2	6	0	44	2	0	0	46	3	0	2	0	0	5	3	48	1	0	0	52	109
<b>Grand Total</b>	<b>10</b>	<b>4</b>	<b>13</b>	<b>0</b>	<b>7</b>	<b>27</b>	<b>2</b>	<b>180</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>189</b>	<b>11</b>	<b>1</b>	<b>12</b>	<b>0</b>	<b>4</b>	<b>24</b>	<b>12</b>	<b>211</b>	<b>10</b>	<b>0</b>	<b>3</b>	<b>233</b>	<b>473</b>
<b>Approach%</b>	37%	14.8%	48.1%	0%	-	-	1.1%	95.2%	3.7%	0%	-	-	45.8%	4.2%	50%	0%	-	-	5.2%	90.6%	4.3%	0%	-	-	-
<b>Totals %</b>	2.1%	0.8%	2.7%	0%	5.7%	5.7%	0.4%	38.1%	1.5%	0%	40%	40%	2.3%	0.2%	2.5%	0%	5.1%	2.5%	44.6%	2.1%	0%	49.3%	49.3%	-	-
<b>PHF</b>	0.42	0.5	0.81	0	0.56	0.56	0.25	0.88	0.88	0	0.89	0.89	0.46	0.25	0.6	0	0.5	0.5	0.66	0.36	0	0.63	0.63	-	-
<b>Heavy</b>	0	0	1	0	1	1	0	26	0	0	26	26	2	0	1	0	3	0	29	0	0	29	29	-	-
<b>Heavy %</b>	0%	0%	7.7%	0%	3.7%	3.7%	0%	14.4%	0%	0%	13.8%	13.8%	18.2%	0%	8.3%	0%	12.5%	0%	13.7%	0%	0%	12.4%	12.4%	-	-
<b>Lights</b>	10	4	12	0	26	26	2	154	7	0	163	163	9	1	11	0	21	12	182	10	0	204	204	-	-
<b>Lights %</b>	100%	100%	92.3%	0%	96.3%	96.3%	100%	85.6%	100%	0%	86.2%	86.2%	81.8%	100%	91.7%	0%	87.5%	100%	86.3%	100%	0%	87.6%	87.6%	-	-
<b>Single-Unit Trucks</b>	0	0	0	0	0	0	0	11	0	0	11	11	0	0	0	0	0	0	21	0	0	21	21	-	-
<b>Single-Unit Trucks %</b>	0%	0%	0%	0%	0%	0%	0%	6.1%	0%	0%	5.8%	5.8%	0%	0%	0%	0%	0%	0%	10%	0%	0%	9%	9%	-	-
<b>Buses</b>	0	0	1	0	1	1	0	6	0	0	6	6	2	0	1	0	3	0	4	0	0	4	4	-	-
<b>Buses %</b>	0%	0%	7.7%	0%	3.7%	3.7%	0%	3.3%	0%	0%	3.2%	3.2%	18.2%	0%	8.3%	0%	12.5%	0%	1.9%	0%	0%	1.7%	1.7%	-	-
<b>Articulated Trucks</b>	0	0	0	0	0	0	0	9	0	0	9	9	0	0	0	0	0	0	4	0	0	4	4	-	-
<b>Articulated Trucks %</b>	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	4.8%	4.8%	0%	0%	0%	0%	0%	0%	1.9%	0%	0%	1.7%	1.7%	-	-
<b>Pedestrians</b>	-	-	-	-	6	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	3	-	-	-
<b>Pedestrians%</b>	-	-	-	-	42.9%	-	-	-	-	0%	-	-	-	-	-	28.6%	-	-	-	-	-	21.4%	-	-	-
<b>Bicycles on Crosswalk</b>	-	-	-	-	1	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-
<b>Bicycles on Crosswalk%</b>	-	-	-	-	7.1%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-



**Peak Hour: 03:00 PM - 04:00 PM Weather: Overcast Clouds (12.76 °C)**

Start Time	N Approach OSPREY ST						E Approach MAIN ST						S Approach OSPREY ST						W Approach MAIN ST						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
15:00:00	2	1	0	0	1	3	0	53	3	0	1	56	5	2	1	0	1	8	0	50	4	0	0	54	121
15:15:00	2	0	5	0	6	7	1	46	3	0	2	50	2	2	1	0	0	5	7	59	5	0	4	71	133
15:30:00	3	1	3	0	9	7	0	39	0	0	1	39	5	2	0	0	3	7	1	56	4	0	0	61	114
15:45:00	1	0	3	0	2	4	1	59	2	0	3	62	3	0	0	0	6	3	1	42	1	0	0	44	113
<b>Grand Total</b>	<b>8</b>	<b>2</b>	<b>11</b>	<b>0</b>	<b>18</b>	<b>21</b>	<b>2</b>	<b>197</b>	<b>8</b>	<b>0</b>	<b>7</b>	<b>207</b>	<b>15</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>10</b>	<b>23</b>	<b>9</b>	<b>207</b>	<b>14</b>	<b>0</b>	<b>4</b>	<b>230</b>	<b>481</b>
<b>Approach%</b>	38.1%	9.5%	52.4%	0%	-	-	1%	95.2%	3.9%	0%	-	-	65.2%	26.1%	8.7%	0%	-	-	3.9%	90%	6.1%	0%	-	-	-
<b>Totals %</b>	1.7%	0.4%	2.3%	0%	4.4%	4.4%	0.4%	41%	1.7%	0%	43%	43%	3.1%	1.2%	0.4%	0%	4.8%	4.8%	1.9%	43%	2.9%	0%	47.8%	47.8%	-
<b>PHF</b>	0.67	0.5	0.55	0	0.75	0.75	0.5	0.83	0.67	0	0.83	0.83	0.75	0.75	0.5	0	0.72	0.72	0.32	0.88	0.7	0	0.81	0.81	-
<b>Heavy</b>	0	0	0	0	0	0	0	24	1	0	0	25	1	0	1	0	2	2	0	24	1	0	0	25	-
<b>Heavy %</b>	0%	0%	0%	0%	0%	0%	0%	12.2%	12.5%	0%	0%	12.1%	6.7%	0%	50%	0%	8.7%	8.7%	0%	11.6%	7.1%	0%	0%	10.9%	-
<b>Lights</b>	8	2	11	0	0	21	2	173	7	0	0	182	14	6	1	0	21	21	9	183	13	0	0	205	-
<b>Lights %</b>	100%	100%	100%	0%	0%	100%	100%	87.8%	87.5%	0%	0%	87.9%	93.3%	100%	50%	0%	91.3%	91.3%	100%	88.4%	92.9%	0%	0%	89.1%	-
<b>Single-Unit Trucks</b>	0	0	0	0	0	0	0	11	0	0	0	11	1	0	0	0	1	1	0	12	0	0	0	12	-
<b>Single-Unit Trucks %</b>	0%	0%	0%	0%	0%	0%	0%	5.6%	0%	0%	0%	5.3%	6.7%	0%	0%	0%	4.3%	4.3%	0%	5.8%	0%	0%	0%	5.2%	-
<b>Buses</b>	0	0	0	0	0	0	0	5	1	0	0	6	0	0	1	0	1	1	0	3	1	0	0	4	-
<b>Buses %</b>	0%	0%	0%	0%	0%	0%	0%	2.5%	12.5%	0%	0%	2.9%	0%	0%	50%	0%	4.3%	4.3%	0%	1.4%	7.1%	0%	0%	1.7%	-
<b>Articulated Trucks</b>	0	0	0	0	0	0	0	8	0	0	0	8	0	0	0	0	0	0	0	9	0	0	0	9	-
<b>Articulated Trucks %</b>	0%	0%	0%	0%	0%	0%	0%	4.1%	0%	0%	0%	3.9%	0%	0%	0%	0%	0%	0%	0%	4.3%	0%	0%	0%	3.9%	-
<b>Pedestrians</b>	-	-	-	-	17	-	-	-	-	-	7	-	-	-	-	-	10	-	-	-	-	-	4	-	-
<b>Pedestrians%</b>	-	-	-	-	43.6%	-	-	-	-	-	17.9%	-	-	-	-	-	25.6%	-	-	-	-	-	10.3%	-	-
<b>Bicycles on Crosswalk</b>	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
<b>Bicycles on Crosswalk%</b>	-	-	-	-	2.6%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-

Peak Hour: 08:15 AM - 09:15 AM Weather: Overcast Clouds (16.73 °C)



Peak Hour: 03:00 PM - 04:00 PM Weather: Overcast Clouds (12.76 °C)





**Turning Movement Count (7 . MAIN ST & OWEN SOUND ST)**

Start Time	N Approach OWEN SOUND ST					E Approach MAIN ST					W Approach MAIN ST					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	UTurn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	5	0	0	5	3	17	0	0	20	39	0	0	0	39	64	
06:15:00	0	5	0	0	5	1	19	0	0	20	25	0	0	0	25	50	
06:30:00	0	1	0	0	1	3	29	0	0	32	41	0	0	0	41	74	
06:45:00	0	9	0	0	9	1	22	0	0	23	42	1	0	0	43	75	263
07:00:00	0	2	0	0	2	5	28	0	0	33	47	0	0	0	47	82	281
07:15:00	0	4	0	2	4	5	35	0	0	40	48	0	0	0	48	92	323
07:30:00	0	8	0	0	8	5	30	0	0	35	41	0	0	0	41	84	333
07:45:00	0	4	0	1	4	7	34	0	0	41	40	0	0	0	40	85	343
08:00:00	1	3	0	0	4	8	37	2	0	47	45	0	0	0	45	96	357
08:15:00	0	5	0	0	5	3	44	0	0	47	40	0	0	0	40	92	357
08:30:00	0	5	0	2	5	11	54	0	0	65	57	0	0	0	57	127	400
08:45:00	0	11	0	1	11	15	45	0	0	60	78	1	0	0	79	150	465
09:00:00	0	5	0	1	5	10	46	0	0	56	53	1	0	0	54	115	484
09:15:00	0	14	0	0	14	8	30	0	0	38	45	1	0	0	46	98	490
09:30:00	0	3	0	0	3	9	37	0	0	46	43	1	0	0	44	93	456
09:45:00	0	8	0	0	8	7	39	0	0	46	49	0	0	0	49	103	409
***BREAK***																	
15:00:00	1	3	0	3	4	8	54	0	0	62	61	0	0	3	61	127	
15:15:00	0	16	0	5	16	24	54	0	0	78	64	0	0	0	64	158	
15:30:00	1	11	0	9	12	16	42	0	0	58	58	2	0	0	60	130	
15:45:00	1	7	0	8	8	14	55	0	0	69	52	0	0	0	52	129	544
16:00:00	1	8	0	0	9	22	50	0	0	72	55	1	0	0	56	137	554
16:15:00	1	9	0	4	10	16	64	0	0	80	45	3	0	0	48	138	534
16:30:00	0	9	0	1	9	13	55	0	0	68	45	0	0	0	45	122	526
16:45:00	0	10	0	5	10	10	54	0	0	64	52	0	0	0	52	126	523
17:00:00	0	9	0	9	9	24	56	0	0	80	56	3	0	0	59	148	534
17:15:00	0	10	0	2	10	20	56	0	0	76	50	3	0	0	53	139	535
17:30:00	0	14	0	1	14	12	39	0	0	51	51	1	0	0	52	117	530
17:45:00	2	6	0	2	8	17	51	0	0	68	33	3	0	0	36	112	516
18:00:00	4	11	0	1	15	19	29	0	0	48	32	3	0	0	35	98	466
18:15:00	2	7	0	0	9	23	26	0	0	49	40	3	0	0	43	101	428
18:30:00	0	7	0	4	7	19	42	0	0	61	31	0	0	0	31	99	410
18:45:00	0	11	0	2	11	20	33	0	0	53	40	7	0	2	47	111	409





Grand Total	14	240	0	63	254	378	1306	2	0	1686	1498	34	0	5	1532	3472	-
Approach%	5.5%	94.5%	0%		-	22.4%	77.5%	0.1%		-	97.8%	2.2%	0%		-	-	-
Totals %	0.4%	6.9%	0%		7.3%	10.9%	37.6%	0.1%		48.6%	43.1%	1%	0%		44.1%	-	-
Heavy	0	2	0		-	10	125	0		-	135	0	0		-	-	-
Heavy %	0%	0.8%	0%		-	2.6%	9.6%	0%		-	9%	0%	0%		-	-	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	-	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	-	-



**Peak Hour: 08:30 AM - 09:30 AM Weather: Overcast Clouds (16.73 °C)**

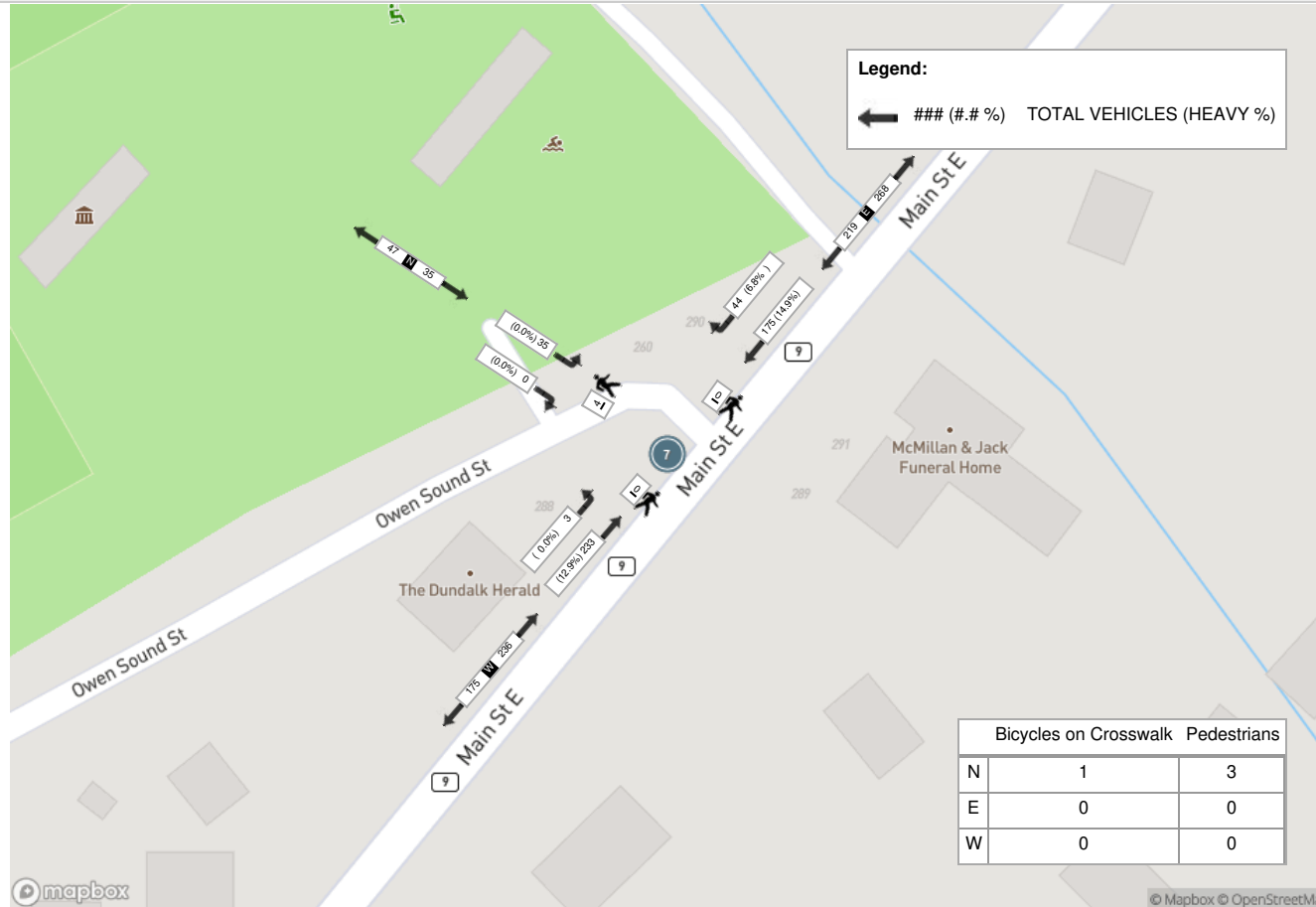
Start Time	N Approach OWEN SOUND ST					E Approach MAIN ST					W Approach MAIN ST					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
08:30:00	0	5	0	2	5	11	54	0	0	65	57	0	0	0	57	127
08:45:00	0	11	0	1	11	15	45	0	0	60	78	1	0	0	79	150
09:00:00	0	5	0	1	5	10	46	0	0	56	53	1	0	0	54	115
09:15:00	0	14	0	0	14	8	30	0	0	38	45	1	0	0	46	98
<b>Grand Total</b>	<b>0</b>	<b>35</b>	<b>0</b>	<b>4</b>	<b>35</b>	<b>44</b>	<b>175</b>	<b>0</b>	<b>0</b>	<b>219</b>	<b>233</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>236</b>	<b>490</b>
<b>Approach%</b>	0%	100%	0%	-	-	20.1%	79.9%	0%	-	-	98.7%	1.3%	0%	-	-	-
<b>Totals %</b>	0%	7.1%	0%	7.1%	7.1%	9%	35.7%	0%	44.7%	44.7%	47.6%	0.6%	0%	48.2%	48.2%	-
<b>PHF</b>	0	0.63	0	0.63	0.63	0.73	0.81	0	0.84	0.84	0.75	0.75	0	0.75	0.75	-
<b>Heavy</b>	0	0	0	0	0	3	26	0	29	29	30	0	0	30	30	-
<b>Heavy %</b>	0%	0%	0%	0%	0%	6.8%	14.9%	0%	13.2%	13.2%	12.9%	0%	0%	12.7%	12.7%	-
<b>Lights</b>	0	35	0	35	35	41	149	0	190	190	203	3	0	206	206	-
<b>Lights %</b>	0%	100%	0%	100%	100%	93.2%	85.1%	0%	86.8%	86.8%	87.1%	100%	0%	87.3%	87.3%	-
<b>Single-Unit Trucks</b>	0	0	0	0	0	1	10	0	11	11	16	0	0	16	16	-
<b>Single-Unit Trucks %</b>	0%	0%	0%	0%	0%	2.3%	5.7%	0%	5%	5%	6.9%	0%	0%	6.8%	6.8%	-
<b>Buses</b>	0	0	0	0	0	2	4	0	6	6	8	0	0	8	8	-
<b>Buses %</b>	0%	0%	0%	0%	0%	4.5%	2.3%	0%	2.7%	2.7%	3.4%	0%	0%	3.4%	3.4%	-
<b>Articulated Trucks</b>	0	0	0	0	0	0	12	0	12	12	6	0	0	6	6	-
<b>Articulated Trucks %</b>	0%	0%	0%	0%	0%	0%	6.9%	0%	5.5%	5.5%	2.6%	0%	0%	2.5%	2.5%	-
<b>Pedestrians</b>	-	-	-	3	-	-	-	-	0	-	-	-	-	0	-	-
<b>Pedestrians%</b>	-	-	-	75%	-	-	-	-	0%	-	-	-	-	0%	-	-
<b>Bicycles on Crosswalk</b>	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
<b>Bicycles on Crosswalk%</b>	-	-	-	25%	-	-	-	-	0%	-	-	-	-	0%	-	-



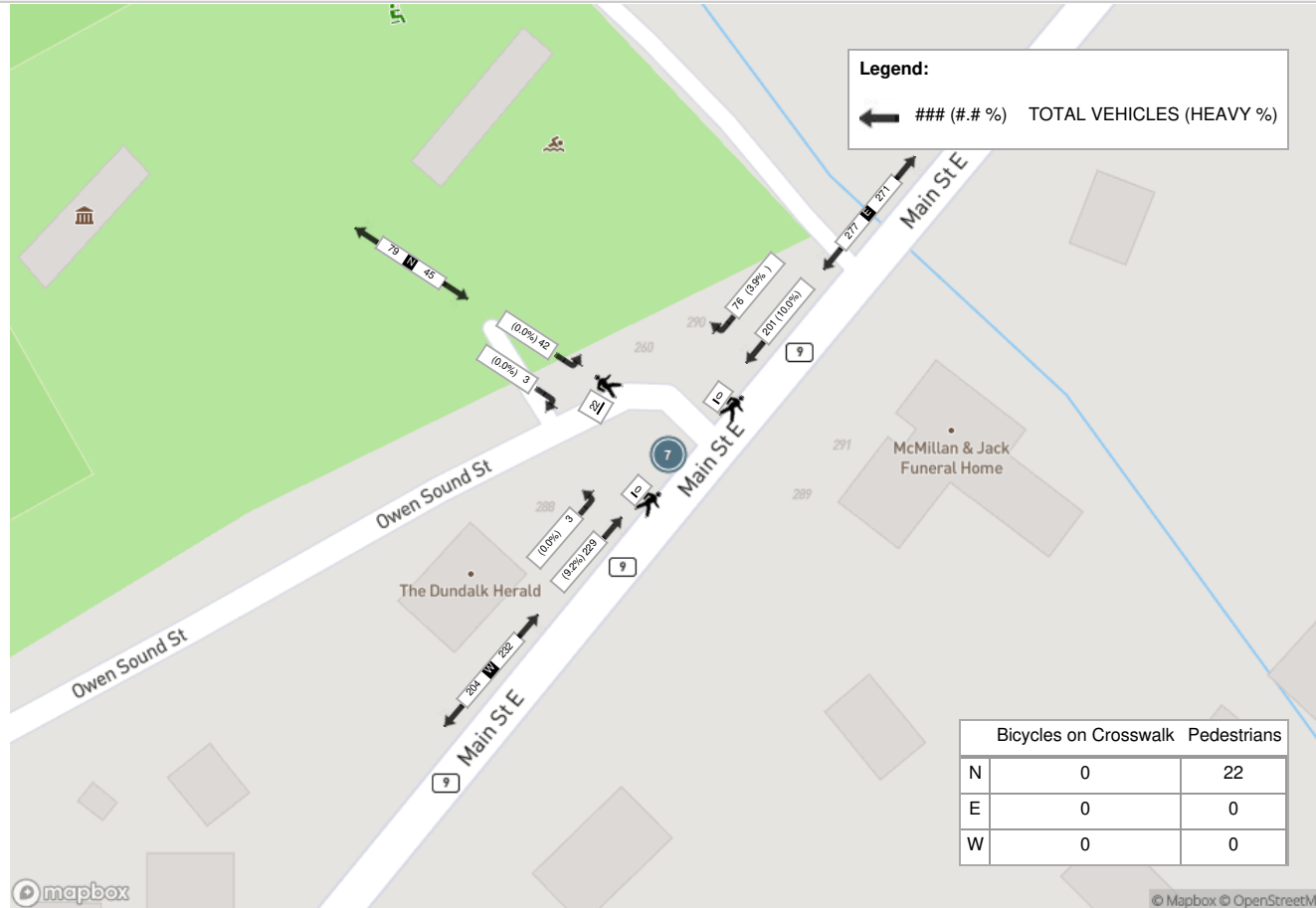
**Peak Hour: 03:15 PM - 04:15 PM Weather: Overcast Clouds (12.76 °C)**

Start Time	N Approach OWEN SOUND ST					E Approach MAIN ST					W Approach MAIN ST					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
15:15:00	0	16	0	5	16	24	54	0	0	78	64	0	0	0	64	158
15:30:00	1	11	0	9	12	16	42	0	0	58	58	2	0	0	60	130
15:45:00	1	7	0	8	8	14	55	0	0	69	52	0	0	0	52	129
16:00:00	1	8	0	0	9	22	50	0	0	72	55	1	0	0	56	137
<b>Grand Total</b>	<b>3</b>	<b>42</b>	<b>0</b>	<b>22</b>	<b>45</b>	<b>76</b>	<b>201</b>	<b>0</b>	<b>0</b>	<b>277</b>	<b>229</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>232</b>	<b>554</b>
<b>Approach%</b>	6.7%	93.3%	0%	-	-	27.4%	72.6%	0%	-	-	98.7%	1.3%	0%	-	-	-
<b>Totals %</b>	0.5%	7.6%	0%	-	8.1%	13.7%	36.3%	0%	-	50%	41.3%	0.5%	0%	-	41.9%	-
<b>PHF</b>	0.75	0.66	0	-	0.7	0.79	0.91	0	-	0.89	0.89	0.38	0	-	0.91	-
<b>Heavy</b>	0	0	0	-	0	3	20	0	-	23	21	0	0	-	21	-
<b>Heavy %</b>	0%	0%	0%	-	0%	3.9%	10%	0%	-	8.3%	9.2%	0%	0%	-	9.1%	-
<b>Lights</b>	3	42	0	-	45	73	181	0	-	254	208	3	0	-	211	-
<b>Lights %</b>	100%	100%	0%	-	100%	96.1%	90%	0%	-	91.7%	90.8%	100%	0%	-	90.9%	-
<b>Single-Unit Trucks</b>	0	0	0	-	0	0	9	0	-	9	8	0	0	-	8	-
<b>Single-Unit Trucks %</b>	0%	0%	0%	-	0%	0%	4.5%	0%	-	3.2%	3.5%	0%	0%	-	3.4%	-
<b>Buses</b>	0	0	0	-	0	3	4	0	-	7	4	0	0	-	4	-
<b>Buses %</b>	0%	0%	0%	-	0%	3.9%	2%	0%	-	2.5%	1.7%	0%	0%	-	1.7%	-
<b>Articulated Trucks</b>	0	0	0	-	0	0	7	0	-	7	9	0	0	-	9	-
<b>Articulated Trucks %</b>	0%	0%	0%	-	0%	0%	3.5%	0%	-	2.5%	3.9%	0%	0%	-	3.9%	-
<b>Pedestrians</b>	-	-	-	22	-	-	-	0	-	-	-	-	-	0	-	-
<b>Pedestrians%</b>	-	-	-	100%	-	-	-	0%	-	-	-	-	-	0%	-	-
<b>Bicycles on Crosswalk</b>	-	-	-	0	-	-	-	0	-	-	-	-	-	0	-	-
<b>Bicycles on Crosswalk%</b>	-	-	-	0%	-	-	-	0%	-	-	-	-	-	0%	-	-

Peak Hour: 08:30 AM - 09:30 AM Weather: Overcast Clouds (16.73 °C)



Peak Hour: 03:15 PM - 04:15 PM Weather: Overcast Clouds (12.76 °C)





Turning Movement Count (6 . TORONTO ST & OSPREY ST)

Start Time	N Approach OSPREY ST						E Approach TORONTO ST						S Approach OSPREY ST						W Approach TORONTO ST						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	3	0	0	0	3	0	0	4	0	0	4	1	1	1	0	0	3	1	0	0	0	0	1	11	
06:15:00	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	2	
06:30:00	0	2	0	0	0	2	0	0	3	0	0	3	1	1	0	0	0	2	2	0	0	0	0	2	9	
06:45:00	0	4	0	0	0	4	0	0	4	0	1	4	0	0	0	0	0	0	1	0	0	0	0	1	9	31
07:00:00	0	2	0	0	0	2	0	0	5	0	0	5	1	2	0	0	0	3	0	0	0	0	0	0	10	30
07:15:00	0	3	0	0	0	3	0	1	7	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	11	39
07:30:00	0	2	0	0	0	2	0	0	3	0	0	3	1	1	0	0	0	2	0	0	0	0	0	0	7	37
07:45:00	0	0	0	0	0	0	0	0	5	0	0	5	3	3	0	0	0	6	1	0	0	0	0	1	12	40
08:00:00	0	2	0	0	0	2	1	2	6	0	0	9	2	2	0	0	0	4	1	1	0	0	1	2	17	47
08:15:00	1	2	0	0	4	3	0	1	4	0	1	5	2	0	0	0	0	2	0	1	0	0	1	1	11	47
08:30:00	1	3	0	0	0	4	1	1	5	0	3	7	1	1	0	0	3	2	0	0	0	0	3	0	13	53
08:45:00	0	2	0	0	0	2	0	2	5	0	0	7	7	6	2	0	0	15	0	1	1	0	0	2	26	67
09:00:00	0	1	0	0	0	1	0	1	6	0	0	7	1	1	0	0	0	2	0	0	0	0	0	0	10	60
09:15:00	0	3	0	0	0	3	0	0	6	0	0	6	7	2	0	0	0	9	1	0	0	0	0	1	19	68
09:30:00	0	1	0	0	0	1	0	0	3	0	0	3	3	2	1	0	0	6	0	1	0	0	0	1	11	66
09:45:00	0	2	0	0	0	2	0	1	3	0	0	4	4	2	1	0	0	7	0	0	0	0	0	0	13	53
***BREAK***																										
15:00:00	0	0	0	0	0	0	0	0	1	0	0	1	5	0	0	0	0	5	1	1	0	0	0	2	8	
15:15:00	0	3	0	0	3	3	0	2	7	0	5	9	12	4	4	0	0	20	0	1	0	0	0	1	33	
15:30:00	0	0	0	0	3	0	0	0	5	0	4	5	10	4	0	0	0	14	1	1	0	0	0	2	21	
15:45:00	0	3	0	0	0	3	1	0	4	0	2	5	7	3	0	0	0	10	0	2	0	0	0	2	20	82
16:00:00	0	0	0	0	0	0	0	2	2	0	0	4	10	3	1	0	0	14	0	1	0	0	0	1	19	93
16:15:00	0	0	0	0	0	0	0	0	5	0	0	5	9	4	1	0	0	14	1	0	0	0	0	1	20	80
16:30:00	0	2	0	0	1	2	0	0	3	0	4	3	4	1	0	0	0	5	0	1	0	0	0	1	11	70
16:45:00	1	2	0	0	0	3	0	1	5	0	0	6	6	5	1	0	1	12	0	0	0	0	1	0	21	71
17:00:00	0	0	0	0	0	0	0	0	3	0	0	3	4	4	3	0	1	11	0	0	0	0	1	0	14	66
17:15:00	0	3	0	0	0	3	0	1	6	0	1	7	4	5	1	0	0	10	1	4	0	0	0	5	25	71
17:30:00	0	2	0	0	0	2	0	2	1	0	0	3	4	0	2	0	1	6	0	1	0	0	1	1	12	72
17:45:00	0	1	0	0	0	1	0	1	3	0	0	4	11	2	0	1	0	14	0	0	0	0	0	0	19	70
18:00:00	0	2	0	0	1	2	0	1	2	0	0	3	6	2	1	0	0	9	1	0	0	0	0	1	15	71
18:15:00	0	3	0	0	0	3	0	0	4	0	1	4	5	5	0	0	0	10	0	0	0	0	0	0	17	63
18:30:00	0	0	0	0	3	0	0	0	9	0	1	9	4	2	0	0	0	6	0	0	0	0	2	0	15	66
18:45:00	0	1	0	0	0	1	0	0	3	0	0	3	7	2	1	1	0	11	0	0	0	0	0	0	15	62
<b>Grand Total</b>	<b>3</b>	<b>54</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>57</b>	<b>3</b>	<b>20</b>	<b>132</b>	<b>0</b>	<b>23</b>	<b>155</b>	<b>142</b>	<b>71</b>	<b>20</b>	<b>2</b>	<b>6</b>	<b>235</b>	<b>12</b>	<b>16</b>	<b>1</b>	<b>0</b>	<b>10</b>	<b>29</b>	<b>476</b>	<b>-</b>
<b>Approach%</b>	5.3%	94.7%	0%	0%	-	-	1.9%	12.9%	85.2%	0%	-	-	60.4%	30.2%	8.5%	0.9%	-	41.4%	55.2%	3.4%	0%	-	-	-	-	-
<b>Totals %</b>	0.6%	11.3%	0%	0%	12%	-	0.6%	4.2%	27.7%	0%	32.6%	-	29.8%	14.9%	4.2%	0.4%	49.4%	2.5%	3.4%	0.2%	0%	6.1%	-	-	-	-
<b>Heavy</b>	1	1	0	0	-	-	0	0	0	0	-	-	1	2	1	0	-	0	0	0	0	-	-	-	-	-
<b>Heavy %</b>	33.3%	1.9%	0%	0%	-	-	0%	0%	0%	0%	-	-	0.7%	2.8%	5%	0%	-	0%	0%	0%	0%	-	-	-	-	-
<b>Bicycles</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Bicycle %</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Peak Hour: 08:30 AM - 09:30 AM Weather: Overcast Clouds (16.73 °C)**

Start Time	N Approach OSPREY ST						E Approach TORONTO ST						S Approach OSPREY ST						W Approach TORONTO ST						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:30:00	1	3	0	0	0	4	1	1	5	0	3	7	1	1	0	0	3	2	0	0	0	0	3	0	13
08:45:00	0	2	0	0	0	2	0	2	5	0	0	7	7	6	2	0	0	15	0	1	1	0	0	2	26
09:00:00	0	1	0	0	0	1	0	1	6	0	0	7	1	1	0	0	0	2	0	0	0	0	0	0	10
09:15:00	0	3	0	0	0	3	0	0	6	0	0	6	7	2	0	0	0	9	1	0	0	0	0	1	19
<b>Grand Total</b>	<b>1</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>1</b>	<b>4</b>	<b>22</b>	<b>0</b>	<b>3</b>	<b>27</b>	<b>16</b>	<b>10</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>28</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>68</b>
<b>Approach%</b>	10%	90%	0%	0%	-	-	3.7%	14.8%	81.5%	0%	-	-	57.1%	35.7%	7.1%	0%	-	-	33.3%	33.3%	33.3%	0%	-	-	-
<b>Totals %</b>	1.5%	13.2%	0%	0%	14.7%	-	1.5%	5.9%	32.4%	0%	39.7%	-	23.5%	14.7%	2.9%	0%	41.2%	-	1.5%	1.5%	1.5%	0%	4.4%	-	-
<b>PHF</b>	0.25	0.75	0	0	0.63	-	0.25	0.5	0.92	0	0.96	-	0.57	0.42	0.25	0	0.47	-	0.25	0.25	0.25	0	0.38	-	-
<b>Heavy</b>	0	1	0	0	1	-	0	0	0	0	0	-	0	1	0	0	1	-	0	0	0	0	0	-	-
<b>Heavy %</b>	0%	11.1%	0%	0%	10%	-	0%	0%	0%	0%	0%	-	0%	10%	0%	0%	3.6%	-	0%	0%	0%	0%	0%	-	-
<b>Lights</b>	1	8	0	0	9	-	1	4	22	0	27	-	16	9	2	0	27	-	1	1	1	0	3	-	-
<b>Lights %</b>	100%	88.9%	0%	0%	90%	-	100%	100%	100%	0%	100%	-	100%	90%	100%	0%	96.4%	-	100%	100%	100%	0%	100%	-	-
<b>Single-Unit Trucks</b>	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
<b>Single-Unit Trucks %</b>	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	-
<b>Buses</b>	0	1	0	0	1	-	0	0	0	0	0	-	0	1	0	0	1	-	0	0	0	0	0	-	-
<b>Buses %</b>	0%	11.1%	0%	0%	10%	-	0%	0%	0%	0%	0%	-	0%	10%	0%	0%	3.6%	-	0%	0%	0%	0%	0%	-	-
<b>Bicycles on Road</b>	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
<b>Bicycles on Road %</b>	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	-
<b>Pedestrians</b>	-	-	-	-	0	-	-	-	-	3	-	-	-	-	-	3	-	-	-	-	-	-	3	-	-
<b>Pedestrians%</b>	-	-	-	-	0%	-	-	-	-	33.3%	-	-	-	-	33.3%	-	-	-	-	-	-	-	33.3%	-	-

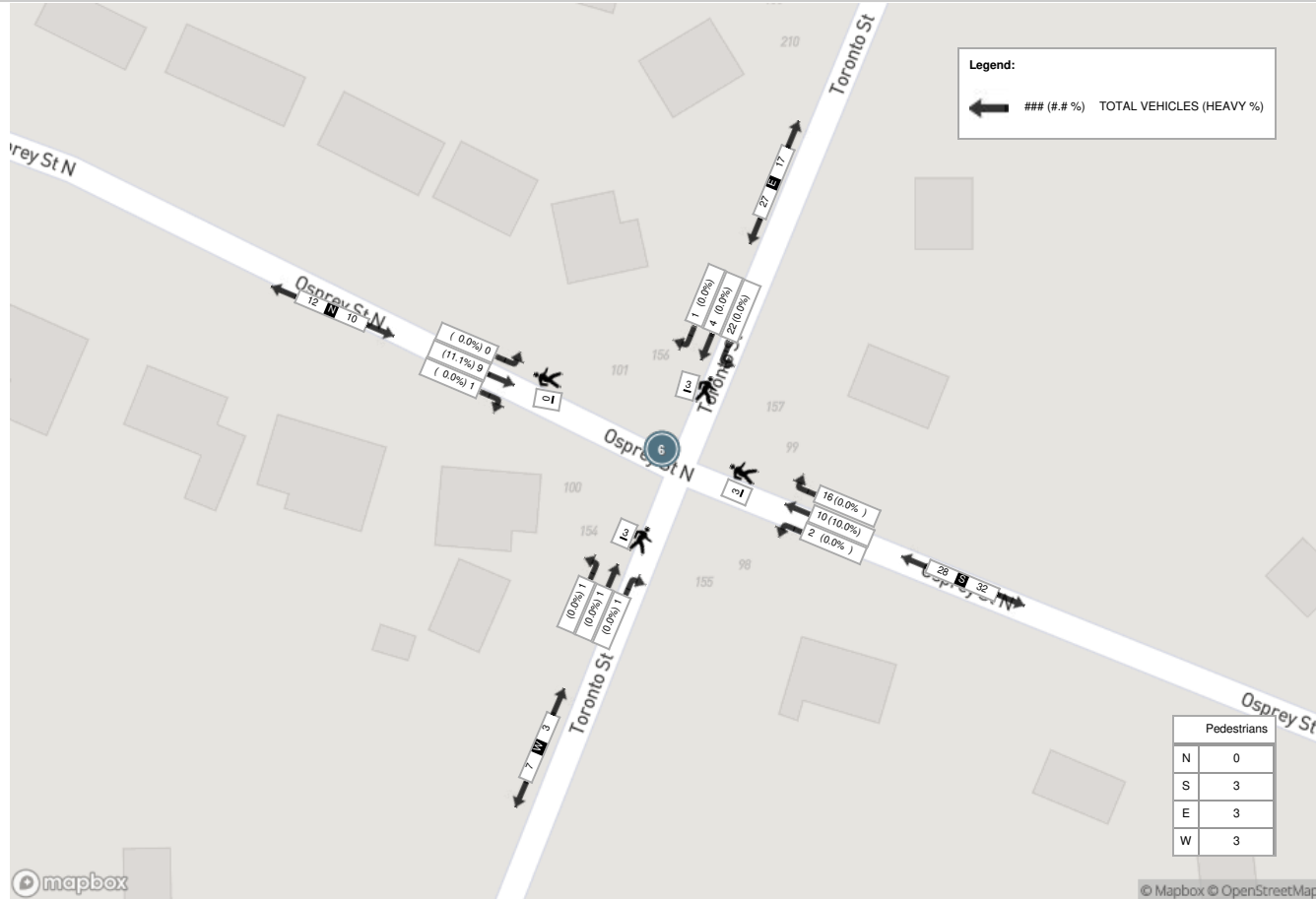


**Peak Hour: 03:15 PM - 04:15 PM Weather: Overcast Clouds (12.76 °C)**

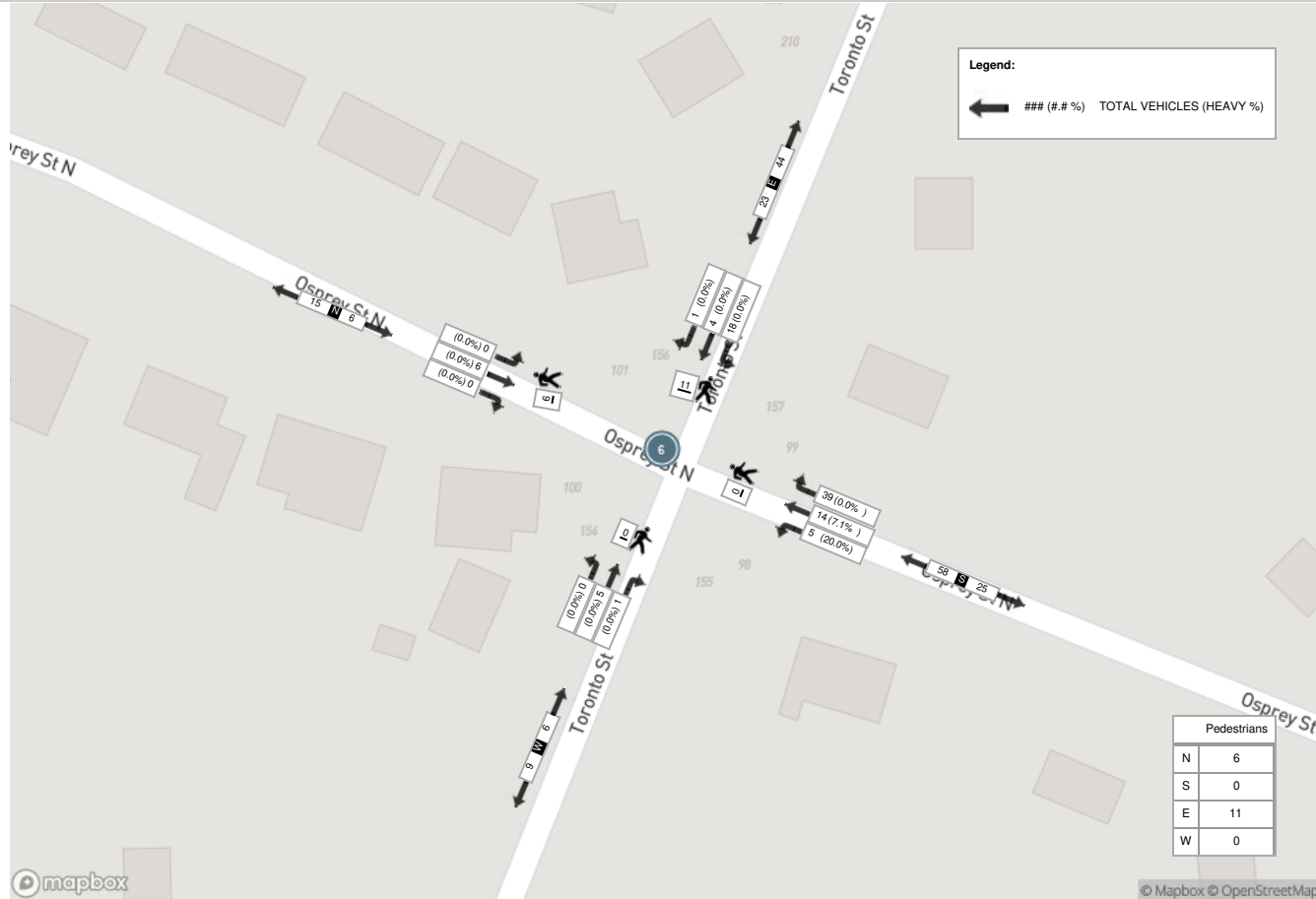
Start Time	N Approach OSPREY ST						E Approach TORONTO ST						S Approach OSPREY ST						W Approach TORONTO ST						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
15:15:00	0	3	0	0	3	3	0	2	7	0	5	9	12	4	4	0	0	20	0	1	0	0	0	1	33
15:30:00	0	0	0	0	3	0	0	0	5	0	4	5	10	4	0	0	0	14	1	1	0	0	0	2	21
15:45:00	0	3	0	0	0	3	1	0	4	0	2	5	7	3	0	0	0	10	0	2	0	0	0	2	20
16:00:00	0	0	0	0	0	0	0	2	2	0	0	4	10	3	1	0	0	14	0	1	0	0	0	1	19
<b>Grand Total</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>6</b>	<b>1</b>	<b>4</b>	<b>18</b>	<b>0</b>	<b>11</b>	<b>23</b>	<b>39</b>	<b>14</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>58</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>93</b>
<b>Approach%</b>	0%	100%	0%	0%	-	-	4.3%	17.4%	78.3%	0%	-	-	67.2%	24.1%	8.6%	0%	-	16.7%	83.3%	0%	0%	-	-	-	
<b>Totals %</b>	0%	6.5%	0%	0%	6.5%	6.5%	1.1%	4.3%	19.4%	0%	24.7%	24.7%	41.9%	15.1%	5.4%	0%	62.4%	1.1%	5.4%	0%	0%	6.5%	-	-	
<b>PHF</b>	0	0.5	0	0	0.5	0.5	0.25	0.5	0.64	0	0.64	0.64	0.81	0.88	0.31	0	0.73	0.25	0.63	0	0	0.75	-	-	
<b>Heavy</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	-	
<b>Heavy %</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7.1%	20%	0%	3.4%	0%	0%	0%	0%	0%	0%	-	
<b>Lights</b>	0	6	0	0	6	6	1	4	18	0	23	23	39	13	4	0	56	1	5	0	0	6	-		
<b>Lights %</b>	0%	100%	0%	0%	100%	100%	100%	100%	100%	0%	100%	100%	100%	92.9%	80%	0%	96.6%	100%	100%	0%	0%	100%	-		
<b>Single-Unit Trucks</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	
<b>Single-Unit Trucks %</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	
<b>Buses</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	-	
<b>Buses %</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7.1%	20%	0%	3.4%	0%	0%	0%	0%	0%	0%	-	
<b>Bicycles on Road</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	
<b>Bicycles on Road %</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	
<b>Pedestrians</b>	-	-	-	-	6	-	-	-	-	-	11	-	-	-	-	0	-	-	-	-	-	0	-	-	
<b>Pedestrians%</b>	-	-	-	-	35.3%	-	-	-	-	-	64.7%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	



Peak Hour: 08:30 AM - 09:30 AM Weather: Overcast Clouds (16.73 °C)



Peak Hour: 03:15 PM - 04:15 PM Weather: Overcast Clouds (12.76 °C)





**Turning Movement Count (1 . GREY ST N & BRADLEY ST)**

Start Time	E Approach BRADLEY ST					S Approach GREY ST N					W Approach BRADLEY ST					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	UTurn W:W	Peds W:	Approach Total		
06:00:00	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2	
06:15:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	
06:30:00	1	0	0	0	1	0	2	0	0	2	2	0	0	1	2	5	
06:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
07:00:00	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0	4	10
07:15:00	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4	13
07:30:00	0	1	0	2	1	1	1	0	0	2	3	1	0	0	4	7	15
07:45:00	0	1	0	0	1	0	1	0	0	1	1	0	0	0	1	3	18
08:00:00	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	2	16
08:15:00	0	1	0	0	1	0	1	0	0	1	1	0	0	0	1	3	15
08:30:00	1	0	0	0	1	0	0	0	0	0	2	1	0	0	3	4	12
08:45:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	10
09:00:00	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	3	11
09:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
09:30:00	2	1	0	0	3	1	0	0	0	1	1	0	0	0	1	5	9
09:45:00	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	3	11
***BREAK***																	
15:00:00	0	2	0	0	2	2	3	0	0	5	1	1	0	0	2	9	
15:15:00	2	1	0	0	3	0	1	0	2	1	2	1	0	0	3	7	
15:30:00	0	2	0	0	2	0	0	0	0	0	2	2	0	0	4	6	
15:45:00	0	1	0	0	1	0	1	0	0	1	2	1	0	1	3	5	27
16:00:00	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0	4	22
16:15:00	1	1	0	0	2	1	0	0	0	1	0	1	0	0	1	4	19
16:30:00	0	1	0	0	1	5	0	0	0	5	1	1	0	0	2	8	21
16:45:00	1	1	0	0	2	1	1	0	0	2	0	0	0	0	0	4	20
17:00:00	0	1	0	0	1	1	1	0	0	2	0	0	0	0	0	3	19
17:15:00	0	1	0	0	1	1	1	0	0	2	0	0	0	0	0	3	18
17:30:00	0	2	0	0	2	2	0	0	0	2	1	0	0	0	1	5	15
17:45:00	1	0	0	0	1	4	1	0	0	5	0	0	0	0	0	6	17
18:00:00	0	1	0	0	1	1	1	0	0	2	0	0	0	0	0	3	17
18:15:00	0	1	0	0	1	3	1	0	0	4	0	0	0	0	0	5	19
18:30:00	1	1	0	0	2	1	0	0	0	1	0	0	0	1	0	3	17
18:45:00	1	0	0	0	1	2	0	0	0	2	0	0	0	0	0	3	14



Grand Total	13	32	0	2	45	28	17	0	2	45	22	13	0	3	35	125	-
<b>Approach%</b>	28.9%	71.1%	0%		-	62.2%	37.8%	0%		-	62.9%	37.1%	0%		-	-	-
<b>Totals %</b>	10.4%	25.6%	0%		36%	22.4%	13.6%	0%		36%	17.6%	10.4%	0%		28%	-	-
<b>Heavy</b>	0	1	0		-	0	0	0		-	0	0	0		-	-	-
<b>Heavy %</b>	0%	3.1%	0%		-	0%	0%	0%		-	0%	0%	0%		-	-	-
<b>Bicycles</b>	-	-	-		-	-	-	-		-	-	-	-		-	-	-
<b>Bicycle %</b>	-	-	-		-	-	-	-		-	-	-	-		-	-	-



**Peak Hour: 07:00 AM - 08:00 AM Weather: Scattered Clouds (15.08 °C)**

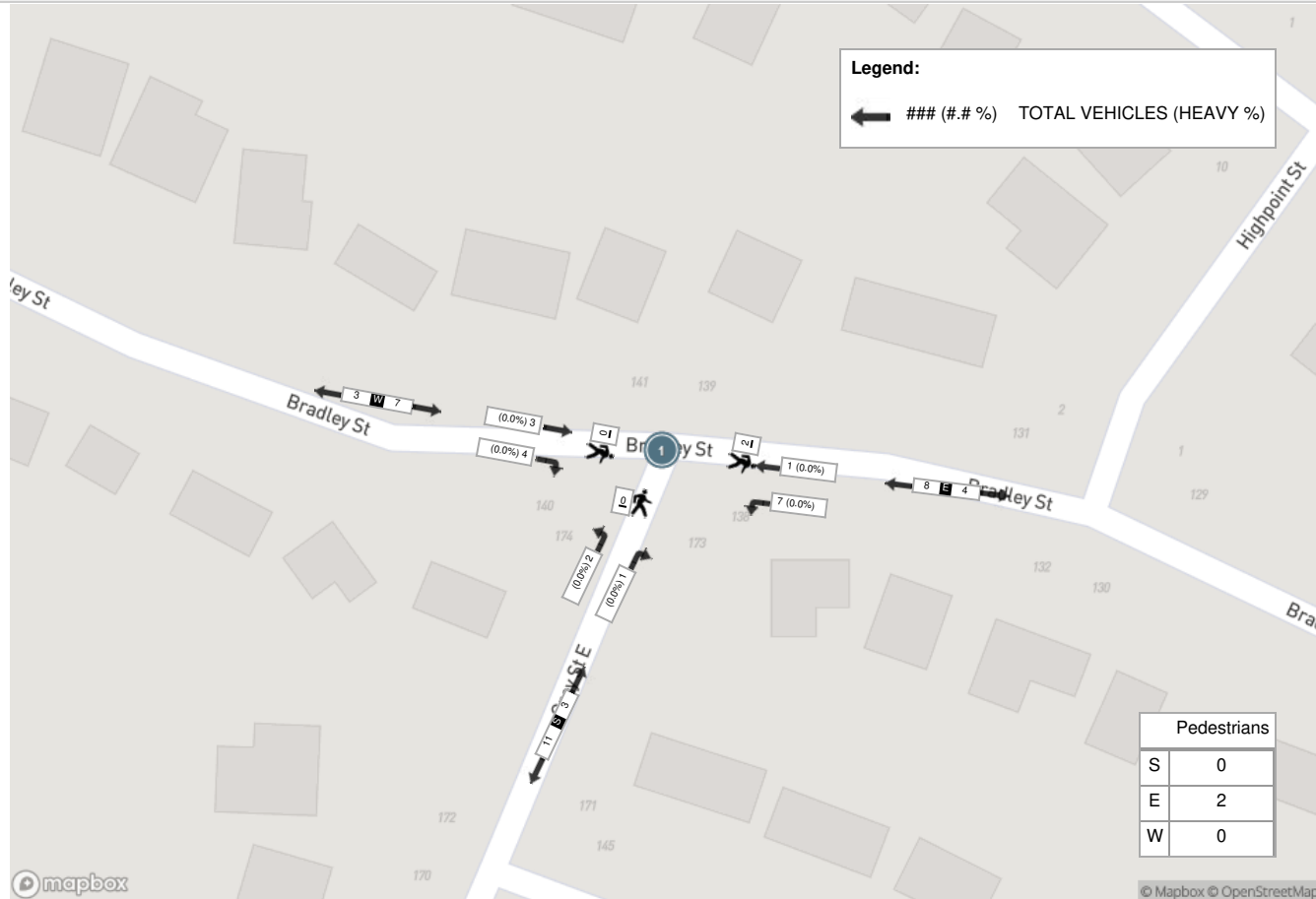
Start Time	E Approach BRADLEY ST					S Approach GREY ST N					W Approach BRADLEY ST					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
07:00:00	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0	4
07:15:00	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
07:30:00	0	1	0	2	1	1	1	0	0	2	3	1	0	0	4	7
07:45:00	0	1	0	0	1	0	1	0	0	1	1	0	0	0	1	3
<b>Grand Total</b>	<b>1</b>	<b>7</b>	<b>0</b>	<b>2</b>	<b>8</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>18</b>
<b>Approach%</b>	12.5%	87.5%	0%	-	-	33.3%	66.7%	0%	-	-	57.1%	42.9%	0%	-	-	-
<b>Totals %</b>	5.6%	38.9%	0%	-	44.4%	5.6%	11.1%	0%	-	16.7%	22.2%	16.7%	0%	-	38.9%	-
<b>PHF</b>	0.25	0.58	0	-	0.5	0.25	0.5	0	-	0.38	0.33	0.38	0	-	0.44	-
<b>Heavy</b>	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	-
<b>Heavy %</b>	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	-
<b>Lights</b>	1	7	0	-	8	1	2	0	-	3	4	3	0	-	7	-
<b>Lights %</b>	100%	100%	0%	-	100%	100%	100%	0%	-	100%	100%	100%	0%	-	100%	-
<b>Buses</b>	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	-
<b>Buses %</b>	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	-
<b>Bicycles on Road</b>	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	-
<b>Bicycles on Road %</b>	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	-
<b>Pedestrians</b>	-	-	-	2	-	-	-	0	-	-	-	-	0	-	-	-
<b>Pedestrians%</b>	-	-	-	100%	-	-	-	0%	-	-	-	-	0%	-	-	-



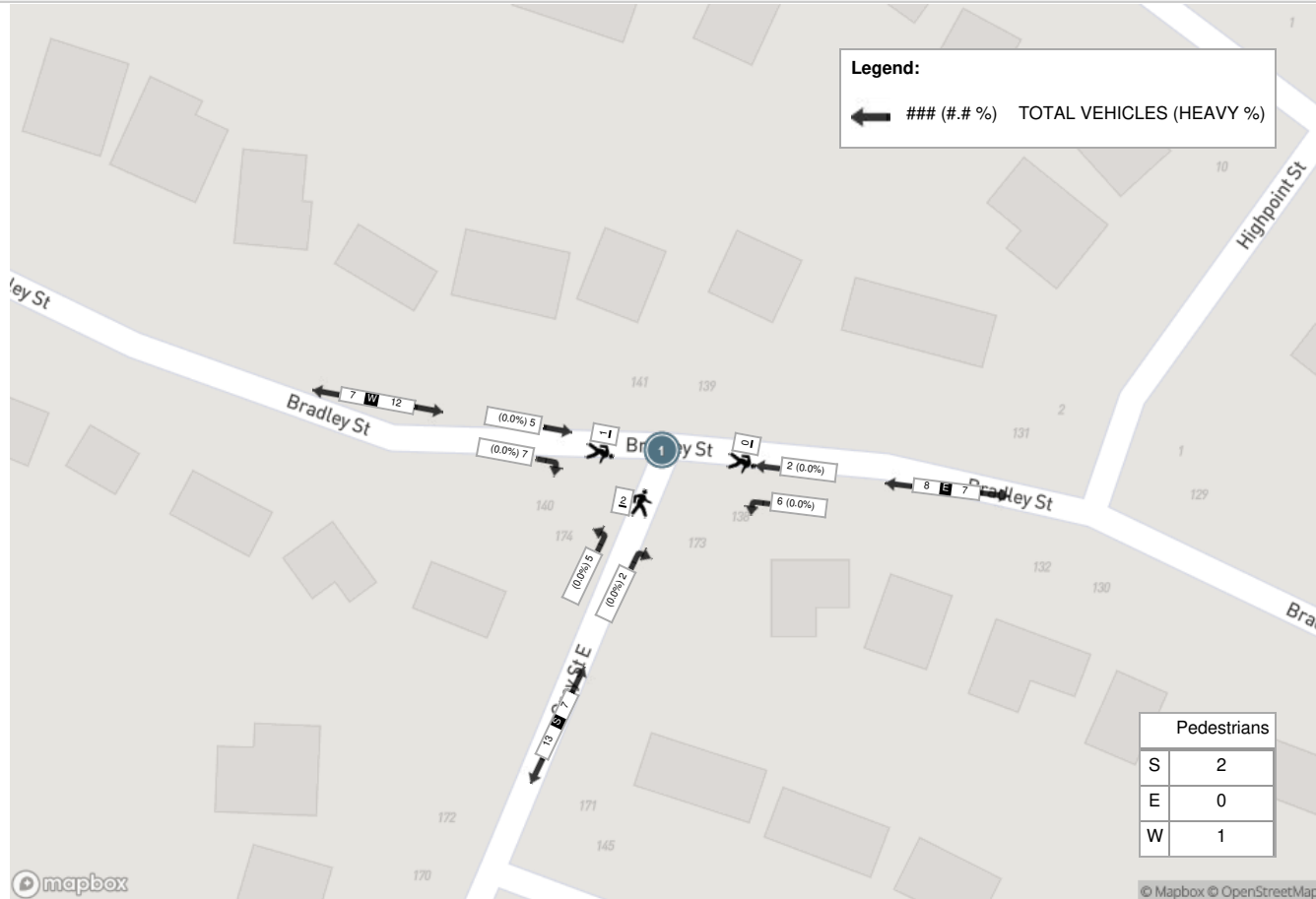
**Peak Hour: 03:00 PM - 04:00 PM Weather: Clear Sky (26.49 °C)**

Start Time	E Approach BRADLEY ST					S Approach GREY ST N					W Approach BRADLEY ST					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
15:00:00	0	2	0	0	2	2	3	0	0	5	1	1	0	0	2	9
15:15:00	2	1	0	0	3	0	1	0	2	1	2	1	0	0	3	7
15:30:00	0	2	0	0	2	0	0	0	0	0	2	2	0	0	4	6
15:45:00	0	1	0	0	1	0	1	0	0	1	2	1	0	1	3	5
<b>Grand Total</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>2</b>	<b>7</b>	<b>7</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>12</b>	<b>27</b>
<b>Approach%</b>	25%	75%	0%	-	-	28.6%	71.4%	0%	-	-	58.3%	41.7%	0%	-	-	-
<b>Totals %</b>	7.4%	22.2%	0%	-	29.6%	7.4%	18.5%	0%	-	25.9%	25.9%	18.5%	0%	-	44.4%	-
<b>PHF</b>	0.25	0.75	0	-	0.67	0.25	0.42	0	-	0.35	0.88	0.63	0	-	0.75	-
<b>Heavy</b>	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	-
<b>Heavy %</b>	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	-
<b>Lights</b>	2	6	0	-	8	2	5	0	-	7	7	4	0	-	11	-
<b>Lights %</b>	100%	100%	0%	-	100%	100%	100%	0%	-	100%	100%	80%	0%	-	91.7%	-
<b>Buses</b>	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	-
<b>Buses %</b>	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	-
<b>Bicycles on Road</b>	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	-
<b>Bicycles on Road %</b>	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	20%	0%	-	8.3%	-
<b>Pedestrians</b>	-	-	-	0	-	-	-	-	2	-	-	-	-	1	-	-
<b>Pedestrians%</b>	-	-	-	0%	-	-	-	-	66.7%	-	-	-	-	33.3%	-	-

Peak Hour: 07:00 AM - 08:00 AM Weather: Scattered Clouds (15.08 °C)



Peak Hour: 03:00 PM - 04:00 PM Weather: Clear Sky (26.49 °C)







Turning Movement Count (2 . GREY ST N & OSPREY ST N)

Start Time	N Approach GREY ST N						E Approach OSPREY ST N					S Approach GREY ST N					W Approach WEST DRIVEWAY					Int. Total (15 min)	Int. Total (1 hr)			
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N			UTurn W:W	Peds W:	Approach Total
06:00:00	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	3		
06:15:00	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1		
06:30:00	0	1	1	0	0	2	2	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	4		
06:45:00	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	0	0	3	11	
07:00:00	0	3	0	0	0	3	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	4	12	
07:15:00	0	2	0	0	0	2	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	4	15	
07:30:00	0	1	3	0	0	4	1	0	1	0	1	2	1	1	0	0	0	2	0	0	0	0	0	8	19	
07:45:00	0	1	1	0	0	2	1	0	1	0	0	2	4	0	0	0	0	4	0	0	0	0	0	8	24	
08:00:00	0	1	0	0	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	22	
08:15:00	0	1	1	0	0	2	0	0	2	0	0	2	0	1	0	0	0	1	0	0	0	0	0	5	23	
08:30:00	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	3	18	
08:45:00	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2	12	
09:00:00	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	12	
09:15:00	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	9	
09:30:00	0	1	1	0	0	2	0	0	1	0	0	1	0	1	0	0	0	1	0	0	0	0	0	4	10	
09:45:00	0	1	0	0	0	1	1	0	0	0	0	1	1	1	0	0	2	2	0	0	0	0	0	4	12	
***BREAK***																										
15:00:00	0	2	1	0	0	3	2	0	1	0	0	3	0	2	0	0	0	2	0	0	0	0	0	8		
15:15:00	0	3	0	0	0	3	1	0	0	0	2	1	1	0	0	0	0	1	1	0	0	0	1	6		
15:30:00	0	2	2	0	0	4	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	2	0	6		
15:45:00	0	1	1	0	0	2	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	3	23	
16:00:00	0	4	0	0	0	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	4	19	
16:15:00	0	1	0	0	0	1	0	0	1	0	0	1	1	1	0	0	1	2	0	0	0	0	0	4	17	
16:30:00	0	1	1	0	2	2	2	0	0	0	0	2	1	3	0	0	0	4	0	0	0	0	0	8	19	
16:45:00	0	1	0	0	0	1	1	0	3	0	0	4	1	1	0	0	0	2	0	0	0	0	0	7	23	
17:00:00	0	1	0	0	0	1	0	0	1	0	0	1	0	2	0	0	0	2	0	0	0	1	0	4	23	
17:15:00	0	1	0	0	0	1	1	0	2	0	0	3	0	2	0	0	0	2	0	0	0	0	0	6	25	
17:30:00	0	2	1	0	0	3	0	0	2	0	0	2	1	2	0	0	0	3	0	0	0	0	0	8	25	
17:45:00	0	0	0	0	0	0	1	0	0	0	2	1	0	4	0	0	0	4	0	0	0	0	0	5	23	
18:00:00	0	1	0	0	0	1	0	0	4	0	0	4	2	2	0	0	0	4	0	0	0	0	0	9	28	
18:15:00	0	1	0	0	0	1	0	0	2	0	0	2	1	4	0	0	0	5	0	0	0	0	0	8	30	
18:30:00	0	1	0	0	0	1	0	0	1	0	1	1	2	1	0	0	0	3	0	0	0	0	0	5	27	
18:45:00	0	0	0	0	0	0	0	0	1	0	1	1	0	2	0	0	0	2	0	0	0	0	0	3	25	
<b>Grand Total</b>	<b>0</b>	<b>39</b>	<b>16</b>	<b>0</b>	<b>3</b>	<b>55</b>	<b>15</b>	<b>0</b>	<b>28</b>	<b>0</b>	<b>10</b>	<b>43</b>	<b>20</b>	<b>32</b>	<b>1</b>	<b>0</b>	<b>53</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>153</b>	<b>-</b>	
<b>Approach%</b>	0%	70.9%	29.1%	0%	-	-	34.9%	0%	65.1%	0%	-	-	37.7%	60.4%	1.9%	0%	-	100%	0%	0%	0%	-	-	-	-	
<b>Totals %</b>	0%	25.5%	10.5%	0%	35.9%	35.9%	9.8%	0%	18.3%	0%	28.1%	28.1%	13.1%	20.9%	0.7%	0%	34.6%	1.3%	0%	0%	0%	1.3%	-	-	-	
<b>Heavy</b>	0	1	0	0	-	-	0	0	1	0	-	-	2	0	0	0	-	0	0	0	0	-	-	-	-	
<b>Heavy %</b>	0%	2.6%	0%	0%	-	-	0%	0%	3.6%	0%	-	-	10%	0%	0%	0%	-	0%	0%	0%	0%	-	-	-	-	
<b>Bicycles</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Bicycle %</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	



**Peak Hour: 07:00 AM - 08:00 AM Weather: Scattered Clouds (15.08 °C)**

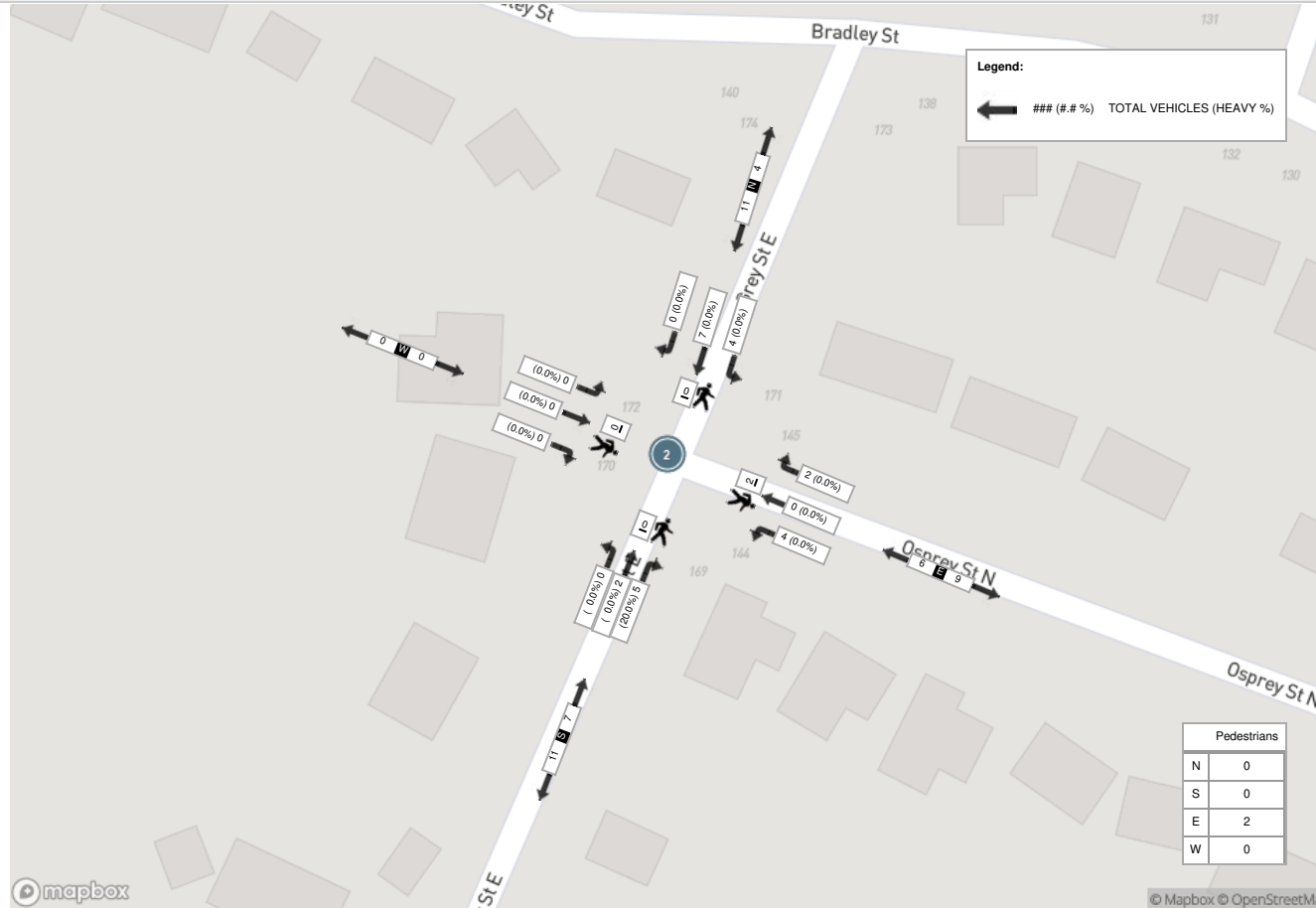
Start Time	N Approach GREY ST N						E Approach OSPREY ST N						S Approach GREY ST N						W Approach WEST DRIVEWAY						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:00:00	0	3	0	0	0	3	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4
07:15:00	0	2	0	0	0	2	0	0	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	4
07:30:00	0	1	3	0	0	4	1	0	1	0	1	2	1	1	0	0	0	2	0	0	0	0	0	0	8
07:45:00	0	1	1	0	0	2	1	0	1	0	0	2	4	0	0	0	0	4	0	0	0	0	0	0	8
<b>Grand Total</b>	0	7	4	0	0	11	2	0	4	0	2	6	5	2	0	0	0	7	0	0	0	0	0	0	24
<b>Approach%</b>	0%	63.6%	36.4%	0%		-	33.3%	0%	66.7%	0%		-	71.4%	28.6%	0%	0%		-	0%	0%	0%	0%		-	-
<b>Totals %</b>	0%	29.2%	16.7%	0%		45.8%	8.3%	0%	16.7%	0%		25%	20.8%	8.3%	0%	0%		29.2%	0%	0%	0%	0%		0%	-
<b>PHF</b>	0	0.58	0.33	0		0.69	0.5	0	1	0		0.75	0.31	0.5	0	0		0.44	0	0	0	0		0	-
<b>Heavy</b>	0	0	0	0		0	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	-
<b>Heavy %</b>	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	20%	0%	0%	0%		14.3%	0%	0%	0%	0%		0%	-
<b>Lights</b>	0	7	4	0		11	2	0	4	0		6	4	2	0	0		6	0	0	0	0		0	-
<b>Lights %</b>	0%	100%	100%	0%		100%	100%	0%	100%	0%		100%	80%	100%	0%	0%		85.7%	0%	0%	0%	0%		0%	-
<b>Single-Unit Trucks</b>	0	0	0	0		0	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	-
<b>Single-Unit Trucks %</b>	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	20%	0%	0%	0%		14.3%	0%	0%	0%	0%		0%	-
<b>Buses</b>	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
<b>Buses %</b>	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
<b>Bicycles on Road</b>	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
<b>Bicycles on Road %</b>	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
<b>Pedestrians</b>	-	-	-	-	0	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-
<b>Pedestrians%</b>	-	-	-	-	0%	-	-	-	-	100%	-	-	-	-	0%	-	-	-	-	-	-	0%	-	-	-



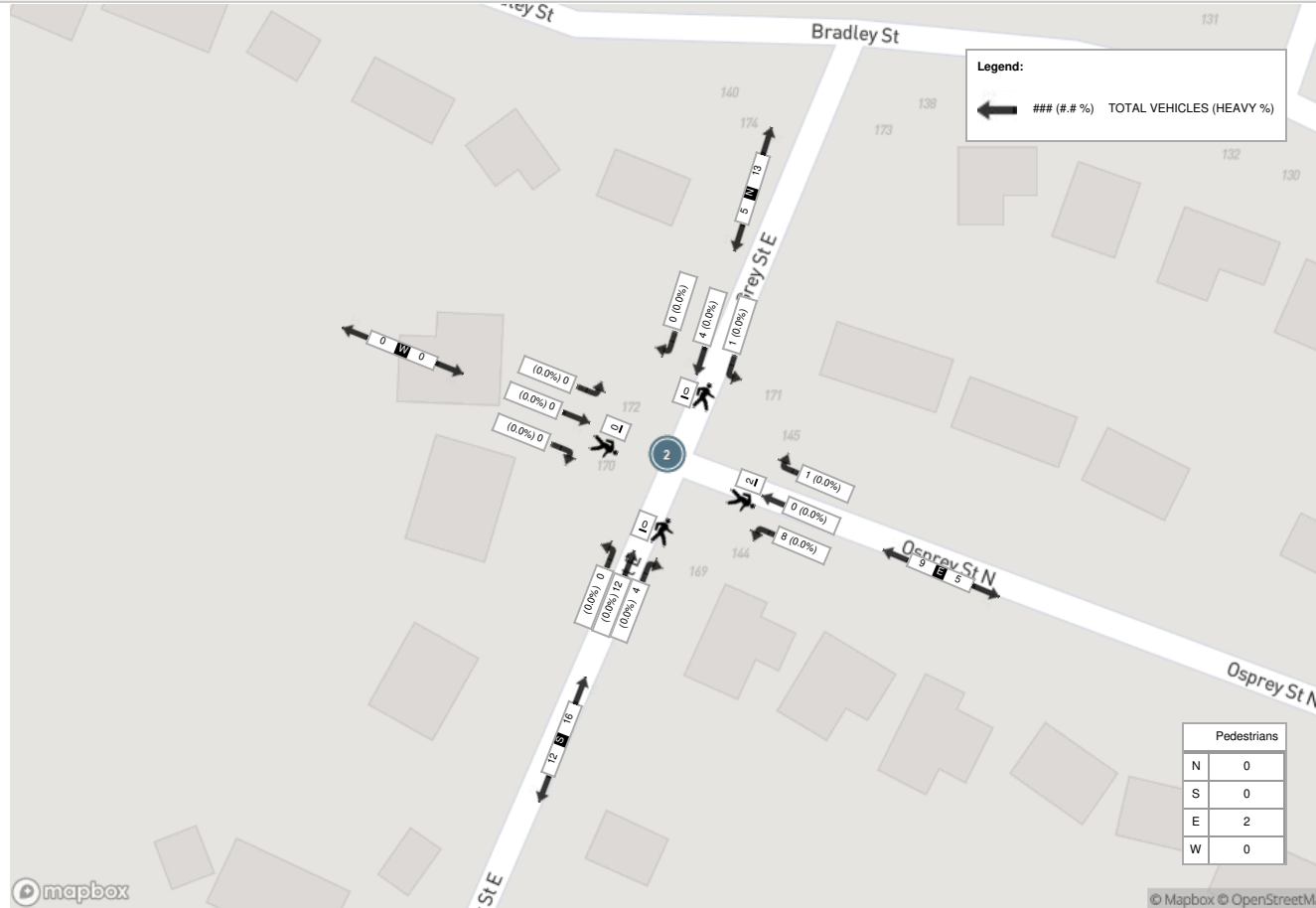
**Peak Hour: 05:30 PM - 06:30 PM Weather: Clear Sky (26.49 °C)**

Start Time	N Approach GREY ST N						E Approach OSPREY ST N						S Approach GREY ST N						W Approach WEST DRIVEWAY						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
17:30:00	0	2	1	0	0	3	0	0	2	0	0	2	1	2	0	0	0	3	0	0	0	0	0	0	8
17:45:00	0	0	0	0	0	0	1	0	0	0	2	1	0	4	0	0	0	4	0	0	0	0	0	0	5
18:00:00	0	1	0	0	0	1	0	0	4	0	0	4	2	2	0	0	0	4	0	0	0	0	0	0	9
18:15:00	0	1	0	0	0	1	0	0	2	0	0	2	1	4	0	0	0	5	0	0	0	0	0	0	8
<b>Grand Total</b>	0	4	1	0	0	5	1	0	8	0	2	9	4	12	0	0	0	16	0	0	0	0	0	0	30
<b>Approach%</b>	0%	80%	20%	0%	-	-	11.1%	0%	88.9%	0%	-	-	25%	75%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	-
<b>Totals %</b>	0%	13.3%	3.3%	0%	16.7%	16.7%	3.3%	0%	26.7%	0%	30%	30%	13.3%	40%	0%	0%	53.3%	0%	0%	0%	0%	0%	0%	0%	-
<b>PHF</b>	0	0.5	0.25	0	0.42	0.42	0.25	0	0.5	0	0.56	0.56	0.5	0.75	0	0	0.8	0	0	0	0	0	0	0	-
<b>Heavy</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
<b>Heavy %</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
<b>Lights</b>	0	3	1	0	0	4	1	0	8	0	9	9	3	9	0	0	12	0	0	0	0	0	0	0	-
<b>Lights %</b>	0%	75%	100%	0%	80%	80%	100%	0%	100%	0%	100%	100%	75%	75%	0%	0%	75%	0%	0%	0%	0%	0%	0%	0%	-
<b>Single-Unit Trucks</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
<b>Single-Unit Trucks %</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
<b>Buses</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
<b>Buses %</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
<b>Bicycles on Road</b>	0	1	0	0	0	1	0	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	0	0	-
<b>Bicycles on Road %</b>	0%	25%	0%	0%	20%	20%	0%	0%	0%	0%	0%	0%	25%	25%	0%	0%	25%	0%	0%	0%	0%	0%	0%	0%	-
<b>Pedestrians</b>	-	-	-	-	0	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-
<b>Pedestrians%</b>	-	-	-	-	0%	-	-	-	-	100%	-	-	-	-	0%	-	-	-	-	-	-	0%	-	-	-

Peak Hour: 07:00 AM - 08:00 AM Weather: Scattered Clouds (15.08 °C)



Peak Hour: 05:30 PM - 06:30 PM Weather: Clear Sky (26.49 °C)



mapbox

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# APPENDIX D

## Level of Service Definitions

## Level of Service Definitions

### Two-Way Stop Controlled Intersections

<b>Level of Service</b>	<b>Control Delay per Vehicle (seconds)</b>	<b>Interpretation</b>
A	$\leq 10$	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare.
B	$> 10$ and $\leq 15$	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	$> 15$ and $\leq 25$	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable.
D	$> 25$ and $\leq 35$	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street.
E	$> 35$ and $\leq 50$	POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable.
F	$> 50$	UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board










# APPENDIX E

## Detailed Capacity Analysis



Lanes, Volumes, Timings  
1: Ida Street & Glenelg Street

Existing AM










						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	6	9	9	7	16
Future Volume (vph)	5	6	9	9	7	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.928		0.932			
Flt Protected	0.977					0.985
Satd. Flow (prot)	1660	0	1469	0	0	1597
Flt Permitted	0.977					0.985
Satd. Flow (perm)	1660	0	1469	0	0	1597
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	0%	33%	0%	33%	14%	13%
Adj. Flow (vph)	7	8	12	12	9	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	0	24	0	0	30
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 1: Ida Street & Glenelg Street

Existing AM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	6	9	9	7	16
Future Volume (Veh/h)	5	6	9	9	7	16
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	7	8	12	12	9	21
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	57	18			24	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	57	18			24	
tC, single (s)	6.4	6.5			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.6			2.3	
p0 queue free %	99	99			99	
cM capacity (veh/h)	950	977			1516	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	15	24	30			
Volume Left	7	0	9			
Volume Right	8	12	0			
cSH	964	1700	1516			
Volume to Capacity	0.02	0.01	0.01			
Queue Length 95th (m)	0.4	0.0	0.1			
Control Delay (s)	8.8	0.0	2.2			
Lane LOS	A		A			
Approach Delay (s)	8.8	0.0	2.2			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			2.9			
Intersection Capacity Utilization			17.0%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 2: Dundalk Street & Glenelg Street/Grey Street N

Existing AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	17	14	21	11	8	10
Future Volume (vph)	17	14	21	11	8	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.5	3.5	3.1	4.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.939			0.927		
Flt Protected				0.968	0.978	
Satd. Flow (prot)	1474	0	0	1737	1542	0
Flt Permitted				0.968	0.978	
Satd. Flow (perm)	1474	0	0	1737	1542	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	263.8			320.3	411.0	
Travel Time (s)	23.7			28.8	37.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	17%	11%	0%	0%	50%	0%
Adj. Flow (vph)	23	19	28	15	11	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	0	0	43	24	0
Sign Control	Free			Free	Stop	

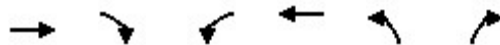
Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	18.4%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 2: Dundalk Street & Glenelg Street/Grey Street N

















Existing AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↘	↙
Traffic Volume (veh/h)	17	14	21	11	8	10
Future Volume (Veh/h)	17	14	21	11	8	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	23	19	28	15	11	13
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			42		104	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			42		104	32
tC, single (s)			4.1		6.9	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.0	3.3
p0 queue free %			98		99	99
cM capacity (veh/h)			1580		777	1047
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	42	43	24			
Volume Left	0	28	11			
Volume Right	19	0	13			
cSH	1700	1580	903			
Volume to Capacity	0.02	0.02	0.03			
Queue Length 95th (m)	0.0	0.4	0.6			
Control Delay (s)	0.0	4.8	9.1			
Lane LOS		A	A			
Approach Delay (s)	0.0	4.8	9.1			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			3.9			
Intersection Capacity Utilization			18.4%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
3: Ida Street & Grey Road 9/Main Street

Existing AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	114	17	36	64	10	11	2	24	12	11	3
Future Volume (vph)	5	114	17	36	64	10	11	2	24	12	11	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	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		0.983			0.988			0.911			0.983	
Flt Protected		0.998			0.984			0.985			0.977	
Satd. Flow (prot)	0	1757	0	0	1656	0	0	1622	0	0	1925	0
Flt Permitted		0.998			0.984			0.985			0.977	
Satd. Flow (perm)	0	1757	0	0	1656	0	0	1622	0	0	1925	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		788.4			805.6			914.0			590.7	
Travel Time (s)		71.0			72.5			82.3			53.2	
Confl. Peds. (#/hr)							1		2	2		1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	20%	18%	35%	53%	14%	10%	9%	0%	25%	8%	9%	0%
Adj. Flow (vph)	6	139	21	44	78	12	13	2	29	15	13	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	166	0	0	134	0	0	44	0	0	32	0
Sign Control		Free			Free			Stop			Stop	

















Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	27.3%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 3: Ida Street & Grey Road 9/Main Street

Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	114	17	36	64	10	11	2	24	12	11	3
Future Volume (Veh/h)	5	114	17	36	64	10	11	2	24	12	11	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	6	139	21	44	78	12	13	2	29	15	13	4
Pedestrians		1			2							
Lane Width (m)		4.8			4.8							
Walking Speed (m/s)		1.1			1.1							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	90			160			345	340	152	366	344	85
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	90			160			345	340	152	366	344	85
tC, single (s)	4.3			4.6			7.2	6.5	6.5	7.2	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.7			3.6	4.0	3.5	3.6	4.1	3.3
p0 queue free %	100			96			98	100	97	97	98	100
cM capacity (veh/h)	1399			1161			564	561	836	539	544	978
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	166	134	44	32								
Volume Left	6	44	13	15								
Volume Right	21	12	29	4								
cSH	1399	1161	717	573								
Volume to Capacity	0.00	0.04	0.06	0.06								
Queue Length 95th (m)	0.1	0.9	1.5	1.3								
Control Delay (s)	0.3	2.9	10.3	11.7								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.3	2.9	10.3	11.7								
Approach LOS			B	B								
<b>Intersection Summary</b>												
Average Delay			3.4									
Intersection Capacity Utilization			27.3%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 4: Main Street /Main Street & Dundalk Street

Existing AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	228	166	20	11	33
Future Volume (vph)	20	228	166	20	11	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.985		0.898	
Flt Protected		0.996			0.988	
Satd. Flow (prot)	0	1687	1609	0	1791	0
Flt Permitted		0.996			0.988	
Satd. Flow (perm)	0	1687	1609	0	1791	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	10			10	1	1
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	10%	11%	15%	15%	18%	3%
Adj. Flow (vph)	28	317	231	28	15	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	345	259	0	61	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.8%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 4: Main Street /Main Street & Dundalk Street

Existing AM



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	20	228	166	20	11	33
Future Volume (Veh/h)	20	228	166	20	11	33
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	28	317	231	28	15	46
Pedestrians		1	1		10	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	269				629	256
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	269				629	256
tC, single (s)	4.2				6.6	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.3
p0 queue free %	98				96	94
cM capacity (veh/h)	1235				407	770
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	345	259	61			
Volume Left	28	0	15			
Volume Right	0	28	46			
cSH	1235	1700	631			
Volume to Capacity	0.02	0.15	0.10			
Queue Length 95th (m)	0.5	0.0	2.4			
Control Delay (s)	0.9	0.0	11.3			
Lane LOS	A		B			
Approach Delay (s)	0.9	0.0	11.3			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			1.5			
Intersection Capacity Utilization			37.8%		ICU Level of Service	A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
5: Osprey Street & Main Street

Existing AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	211	12	7	180	2	12	1	11	13	4	10
Future Volume (vph)	10	211	12	7	180	2	12	1	11	13	4	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.993			0.998			0.939			0.950	
Flt Protected		0.998			0.998			0.975			0.976	
Satd. Flow (prot)	0	1708	0	0	1707	0	0	1532	0	0	1677	0
Flt Permitted		0.998			0.998			0.975			0.976	
Satd. Flow (perm)	0	1708	0	0	1707	0	0	1532	0	0	1677	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	7		4	4		7	3					3
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	14%	0%	0%	14%	0%	8%	0%	18%	8%	0%	0%
Adj. Flow (vph)	13	274	16	9	234	3	16	1	14	17	5	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	303	0	0	246	0	0	31	0	0	35	0
Sign Control		Free			Free			Stop			Stop	

















Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.8%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 5: Osprey Street & Main Street

Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	211	12	7	180	2	12	1	11	13	4	10
Future Volume (Veh/h)	10	211	12	7	180	2	12	1	11	13	4	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	13	274	16	9	234	3	16	1	14	17	5	13
Pedestrians		3						6			7	
Lane Width (m)		3.8						3.5			3.5	
Walking Speed (m/s)		1.1						1.1			1.1	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	244			296			586	576	288	583	582	246
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	244			296			586	576	288	583	582	246
tC, single (s)	4.1			4.1			7.2	6.5	6.4	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.5	3.6	4.0	3.3
p0 queue free %	99			99			96	100	98	96	99	98
cM capacity (veh/h)	1326			1270			391	419	711	395	415	791
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	303	246	31	35								
Volume Left	13	9	16	17								
Volume Right	16	3	14	13								
cSH	1326	1270	492	489								
Volume to Capacity	0.01	0.01	0.06	0.07								
Queue Length 95th (m)	0.2	0.2	1.5	1.7								
Control Delay (s)	0.4	0.3	12.8	12.9								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.4	0.3	12.8	12.9								
Approach LOS			B	B								
<b>Intersection Summary</b>												
Average Delay			1.7									
Intersection Capacity Utilization			26.8%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
6: Glenelg Street & Glenelg Access

Existing AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	16	11	0	0	0
Future Volume (vph)	0	16	11	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
<b>Fr</b>						
Flt Protected						
Satd. Flow (prot)	0	1842	1842	0	1842	0
Flt Permitted						
Satd. Flow (perm)	0	1842	1842	0	1842	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		456.0	263.8		80.1	
Travel Time (s)		41.0	23.7		7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	17	12	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	17	12	0	0	0
Sign Control		Free	Free		Stop	

**Intersection Summary**

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	6.7%
ICU Level of Service	A
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

## 6: Glenelg Street & Glenelg Access

















Existing AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	0	16	11	0	0	0
Future Volume (Veh/h)	0	16	11	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	17	12	0	0	0
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	12				29	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	12				29	12
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1607				986	1069
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	17	12	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1607	1700	1700			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			6.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
7: Osprey Street & Toronto Street/Bradley Street

Existing AM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1	1	22	4	1	2	10	16	0	9	1
Future Volume (vph)	1	1	1	22	4	1	2	10	16	0	9	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.4	3.5	3.5	4.4	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		0.955			0.994			0.922			0.983	
Flt Protected		0.984			0.961			0.997				
Satd. Flow (prot)	0	1944	0	0	1976	0	0	1669	0	0	1685	0
Flt Permitted		0.984			0.961			0.997				
Satd. Flow (perm)	0	1944	0	0	1976	0	0	1669	0	0	1685	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		109.8			83.2			292.8			220.5	
Travel Time (s)		9.9			7.5			26.4			19.8	
Confl. Peds. (#/hr)	3						3	3		3	3	3
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	11%	0%
Adj. Flow (vph)	2	2	2	34	6	2	3	15	25	0	14	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	0	0	42	0	0	43	0	0	16	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	15.4%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
7: Osprey Street & Toronto Street/Bradley Street

Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	1	1	1	22	4	1	2	10	16	0	9	1
Future Volume (vph)	1	1	1	22	4	1	2	10	16	0	9	1
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Hourly flow rate (vph)	2	2	2	34	6	2	3	15	25	0	14	2
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	6	42	43	16								
Volume Left (vph)	2	34	3	0								
Volume Right (vph)	2	2	25	2								
Hadj (s)	-0.13	0.13	-0.28	0.09								
Departure Headway (s)	3.9	4.2	3.7	4.1								
Degree Utilization, x	0.01	0.05	0.04	0.02								
Capacity (veh/h)	895	849	936	855								
Control Delay (s)	7.0	7.4	6.9	7.2								
Approach Delay (s)	7.0	7.4	6.9	7.2								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.1									
Level of Service			A									
Intersection Capacity Utilization			15.4%	ICU Level of Service	A							
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 8: Main Street/Main Street & Owen Sound Street

Existing AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	233	175	44	35	0
Future Volume (vph)	3	233	175	44	35	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.973			
Flt Protected		0.999			0.950	
Satd. Flow (prot)	0	1720	1667	0	2046	0
Flt Permitted		0.999			0.950	
Satd. Flow (perm)	0	1720	1667	0	2046	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		155.5	320.4		154.4	
Travel Time (s)		14.0	28.8		13.9	
Confl. Peds. (#/hr)	4					
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	13%	15%	7%	0%	0%
Adj. Flow (vph)	4	284	213	54	43	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	288	267	0	43	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.7%
ICU Level of Service	A
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

## 8: Main Street/Main Street & Owen Sound Street

Existing AM



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	3	233	175	44	35	0
Future Volume (Veh/h)	3	233	175	44	35	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	4	284	213	54	43	0
Pedestrians					4	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	271				536	244
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	271				536	244
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				91	100
cM capacity (veh/h)	1298				505	796
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	288	267	43			
Volume Left	4	0	43			
Volume Right	0	54	0			
cSH	1298	1700	505			
Volume to Capacity	0.00	0.16	0.09			
Queue Length 95th (m)	0.1	0.0	2.1			
Control Delay (s)	0.1	0.0	12.8			
Lane LOS	A		B			
Approach Delay (s)	0.1	0.0	12.8			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			1.0			
Intersection Capacity Utilization			24.7%		ICU Level of Service	A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
9: Osprey Street & Grey Street N

Existing AM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2	5	4	7	0	4	0	2	0	0	0
Future Volume (vph)	0	2	5	4	7	0	4	0	2	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	0.905						0.949					
Flt Protected							0.982			0.970		
Satd. Flow (prot)	0	1700	0	0	1845	0	0	1730	0	0	1879	0
Flt Permitted							0.982			0.970		
Satd. Flow (perm)	0	1700	0	0	1845	0	0	1730	0	0	1879	0
Link Speed (k/h)	40						40					
Link Distance (m)	320.3						60.9			220.5		
Travel Time (s)	28.8						5.5			19.8		
Confl. Peds. (#/hr)				2	2							
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	3	7	5	9	0	5	0	3	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	10	0	0	14	0	0	8	0	0	0	0
Sign Control	Free			Free			Stop			Stop		

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	14.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 9: Osprey Street & Grey Street N

Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2	5	4	7	0	4	0	2	0	0	0
Future Volume (Veh/h)	0	2	5	4	7	0	4	0	2	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	0	3	7	5	9	0	5	0	3	0	0	0
Pedestrians								2				
Lane Width (m)								3.5				
Walking Speed (m/s)								1.1				
Percent Blockage								0				
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	9			12			28	28	8	28	31	9
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	9			12			28	28	8	28	31	9
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	100	100	100
cM capacity (veh/h)	1624			1617			982	865	1077	980	862	1079
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	10	14	8	0								
Volume Left	0	5	5	0								
Volume Right	7	0	3	0								
cSH	1624	1617	1016	1700								
Volume to Capacity	0.00	0.00	0.01	0.00								
Queue Length 95th (m)	0.0	0.1	0.2	0.0								
Control Delay (s)	0.0	2.6	8.6	0.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	2.6	8.6	0.0								
Approach LOS			A	A								
<b>Intersection Summary</b>												
Average Delay			3.3									
Intersection Capacity Utilization			14.0%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
10: Bradley Street & Grey Street N

Existing AM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	1	7	1	3	4
Future Volume (vph)	2	1	7	1	3	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.946			0.926		
Flt Protected	0.971			0.959		
Satd. Flow (prot)	1726	0	0	1802	1740	0
Flt Permitted	0.971			0.959		
Satd. Flow (perm)	1726	0	0	1802	1740	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	60.9			199.9	109.3	
Travel Time (s)	5.5			18.0	9.8	
Confl. Peds. (#/hr)	2					
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	3	2	11	2	5	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	0	0	13	11	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.7%
	ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 10: Bradley Street & Grey Street N

Existing AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	7	1	3	4
Future Volume (Veh/h)	2	1	7	1	3	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	3	2	11	2	5	6
Pedestrians				2		
Lane Width (m)				3.5		
Walking Speed (m/s)				1.1		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	32	10	11			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	32	10	11			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	99			
cM capacity (veh/h)	980	1075	1621			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	5	13	11			
Volume Left	3	11	0			
Volume Right	2	0	6			
cSH	1016	1621	1700			
Volume to Capacity	0.00	0.01	0.01			
Queue Length 95th (m)	0.1	0.2	0.0			
Control Delay (s)	8.6	6.1	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.6	6.1	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			4.2			
Intersection Capacity Utilization			16.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
1: Ida Street & Glenelg Street

Existing PM












Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	11	22	7	9	16
Future Volume (vph)	9	11	22	7	9	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.924		0.967			
Flt Protected	0.978					0.983
Satd. Flow (prot)	1946	0	1776	0	0	1738
Flt Permitted	0.978					0.983
Satd. Flow (perm)	1946	0	1776	0	0	1738
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%
Adj. Flow (vph)	11	14	28	9	11	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	0	37	0	0	31
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	18.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 1: Ida Street & Glenelg Street

Existing PM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	11	22	7	9	16
Future Volume (Veh/h)	9	11	22	7	9	16
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	11	14	28	9	11	20
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	74	32			37	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	74	32			37	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			99	
cM capacity (veh/h)	928	1047			1587	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	25	37	31			
Volume Left	11	0	11			
Volume Right	14	9	0			
cSH	991	1700	1587			
Volume to Capacity	0.03	0.02	0.01			
Queue Length 95th (m)	0.6	0.0	0.2			
Control Delay (s)	8.7	0.0	2.6			
Lane LOS	A		A			
Approach Delay (s)	8.7	0.0	2.6			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			3.2			
Intersection Capacity Utilization			18.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 2: Dundalk Street & Glenelg Street/Grey Street N

Existing PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	19	11	10	20	7	11
Future Volume (vph)	19	11	10	20	7	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.5	3.5	3.1	4.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.951			0.919		
Flt Protected				0.984	0.980	
Satd. Flow (prot)	1544	0	0	1645	1782	0
Flt Permitted				0.984	0.980	
Satd. Flow (perm)	1544	0	0	1645	1782	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	263.8			320.3	411.0	
Travel Time (s)	23.7			28.8	37.0	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	16%	1%	0%	11%	14%	0%
Adj. Flow (vph)	21	12	11	22	8	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	0	0	33	20	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	18.3% ICU Level of Service A
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

## 2: Dundalk Street & Glenelg Street/Grey Street N

Existing PM



















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↘	↙
Traffic Volume (veh/h)	19	11	10	20	7	11
Future Volume (Veh/h)	19	11	10	20	7	11
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	21	12	11	22	8	12
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			33		71	27
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			33		71	27
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			99		99	99
cM capacity (veh/h)			1592		898	1054
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	33	33	20			
Volume Left	0	11	8			
Volume Right	12	0	12			
cSH	1700	1592	986			
Volume to Capacity	0.02	0.01	0.02			
Queue Length 95th (m)	0.0	0.2	0.5			
Control Delay (s)	0.0	2.5	8.7			
Lane LOS		A	A			
Approach Delay (s)	0.0	2.5	8.7			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			3.0			
Intersection Capacity Utilization			18.3%	ICU Level of Service	A	
Analysis Period (min)			15			



Lanes, Volumes, Timings  
3: Ida Street & Grey Road 9/Main Street

Existing PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	103	14	32	133	9	22	14	38	9	8	8
Future Volume (vph)	7	103	14	32	133	9	22	14	38	9	8	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	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		0.984			0.993			0.931			0.957	
Flt Protected		0.997			0.991			0.985			0.982	
Satd. Flow (prot)	0	2014	0	0	1924	0	0	1782	0	0	1943	0
Flt Permitted		0.997			0.991			0.985			0.982	
Satd. Flow (perm)	0	2014	0	0	1924	0	0	1782	0	0	1943	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		788.4			805.6			914.0			590.7	
Travel Time (s)		71.0			72.5			82.3			53.2	
Confl. Peds. (#/hr)	3		1	1		1			3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	14%	4%	7%	34%	5%	0%	5%	14%	13%	0%	0%	13%
Adj. Flow (vph)	7	108	15	34	140	9	23	15	40	9	8	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	130	0	0	183	0	0	78	0	0	25	0
Sign Control		Free			Free			Stop			Stop	

















Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.8%
ICU Level of Service	A
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

## 3: Ida Street & Grey Road 9/Main Street

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	103	14	32	133	9	22	14	38	9	8	8
Future Volume (Veh/h)	7	103	14	32	133	9	22	14	38	9	8	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	7	108	15	34	140	9	23	15	40	9	8	8
Pedestrians					3			1			3	
Lane Width (m)					4.8			4.8			4.8	
Walking Speed (m/s)					1.1			1.1			1.1	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	152			124			355	350	120	396	354	148
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	152			124			355	350	120	396	354	148
tC, single (s)	4.2			4.4			7.1	6.6	6.3	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.5			3.5	4.1	3.4	3.5	4.0	3.4
p0 queue free %	99			97			96	97	96	98	99	99
cM capacity (veh/h)	1354			1285			566	535	899	513	554	868
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	130	183	78	25								
Volume Left	7	34	23	9								
Volume Right	15	9	40	8								
cSH	1354	1285	689	607								
Volume to Capacity	0.01	0.03	0.11	0.04								
Queue Length 95th (m)	0.1	0.6	2.9	1.0								
Control Delay (s)	0.5	1.6	10.9	11.2								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.5	1.6	10.9	11.2								
Approach LOS			B	B								
<b>Intersection Summary</b>												
Average Delay			3.6									
Intersection Capacity Utilization			28.8%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 4: Main Street /Main Street & Dundalk Street

Existing PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	192	196	8	16	26
Future Volume (vph)	12	192	196	8	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.995		0.917	
Flt Protected		0.997			0.981	
Satd. Flow (prot)	0	1773	1720	0	1893	0
Flt Permitted		0.997			0.981	
Satd. Flow (perm)	0	1773	1720	0	1893	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	6			6	2	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	6%	9%	0%	6%	0%
Adj. Flow (vph)	13	202	206	8	17	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	215	214	0	44	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	30.6%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 4: Main Street /Main Street & Dundalk Street

















Existing PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	192	196	8	16	26
Future Volume (Veh/h)	12	192	196	8	16	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	13	202	206	8	17	27
Pedestrians		2	2		6	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	220				446	218
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	220				446	218
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	99				97	97
cM capacity (veh/h)	1351				552	819
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	215	214	44			
Volume Left	13	0	17			
Volume Right	0	8	27			
cSH	1351	1700	690			
Volume to Capacity	0.01	0.13	0.06			
Queue Length 95th (m)	0.2	0.0	1.5			
Control Delay (s)	0.5	0.0	10.6			
Lane LOS	A		B			
Approach Delay (s)	0.5	0.0	10.6			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			1.2			
Intersection Capacity Utilization			30.6%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
5: Osprey Street & Main Street

Existing PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	207	9	8	197	2	2	6	15	11	2	8
Future Volume (vph)	14	207	9	8	197	2	2	6	15	11	2	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.995			0.999			0.912			0.947	
Flt Protected		0.997			0.998			0.996			0.975	
Satd. Flow (prot)	0	1732	0	0	1730	0	0	1574	0	0	1735	0
Flt Permitted		0.997			0.998			0.996			0.975	
Satd. Flow (perm)	0	1732	0	0	1730	0	0	1574	0	0	1735	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	18		10	10		18	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	12%	0%	13%	12%	0%	50%	0%	7%	0%	0%	0%
Adj. Flow (vph)	16	230	10	9	219	2	2	7	17	12	2	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	256	0	0	230	0	0	26	0	0	23	0
Sign Control		Free			Free			Stop			Stop	

















Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.3%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 5: Osprey Street & Main Street

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	207	9	8	197	2	2	6	15	11	2	8
Future Volume (Veh/h)	14	207	9	8	197	2	2	6	15	11	2	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	16	230	10	9	219	2	2	7	17	12	2	9
Pedestrians		4			7			17			18	
Lane Width (m)		3.8			3.8			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			1			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	239			257			536	541	259	550	545	242
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	239			257			536	541	259	550	545	242
tC, single (s)	4.2			4.2			7.6	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			4.0	4.0	3.4	3.5	4.0	3.3
p0 queue free %	99			99			99	98	98	97	100	99
cM capacity (veh/h)	1278			1228			361	428	751	407	426	786
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	256	230	26	23								
Volume Left	16	9	2	12								
Volume Right	10	2	17	9								
cSH	1278	1228	584	504								
Volume to Capacity	0.01	0.01	0.04	0.05								
Queue Length 95th (m)	0.3	0.2	1.1	1.1								
Control Delay (s)	0.6	0.4	11.4	12.5								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.6	0.4	11.4	12.5								
Approach LOS			B	B								
<b>Intersection Summary</b>												
Average Delay			1.5									
Intersection Capacity Utilization			29.3%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
6: Glenelg Street & Glenelg Access

Existing PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↘	
Traffic Volume (vph)	0	16	20	0	0	0
Future Volume (vph)	0	16	20	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
<b>Fr</b>						
Flt Protected						
Satd. Flow (prot)	0	1842	1842	0	1842	0
Flt Permitted						
Satd. Flow (perm)	0	1842	1842	0	1842	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		456.0	263.8		80.1	
Travel Time (s)		41.0	23.7		7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	17	22	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	17	22	0	0	0
Sign Control		Free	Free		Stop	

**Intersection Summary**

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 6.7% ICU Level of Service A

Analysis Period (min) 15

# HCM Unsignalized Intersection Capacity Analysis

## 6: Glenelg Street & Glenelg Access

Existing PM



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	
Traffic Volume (veh/h)	0	16	20	0	0	0
Future Volume (Veh/h)	0	16	20	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	17	22	0	0	0
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	22				39	22
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	22				39	22
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1593				973	1055
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	17	22	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1593	1700	1700			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			6.7%	ICU Level of Service	A	
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 7: Osprey Street & Toronto Street/Bradley Street

Existing PM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	5	1	18	4	1	5	14	39	0	6	0
Future Volume (vph)	0	5	1	18	4	1	5	14	39	0	6	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.4	3.5	3.5	4.4	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		0.983			0.996			0.909				
Flt Protected					0.962			0.996				
Satd. Flow (prot)	0	2034	0	0	1982	0	0	1673	0	0	1879	0
Flt Permitted					0.962			0.996				
Satd. Flow (perm)	0	2034	0	0	1982	0	0	1673	0	0	1879	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		109.8			83.2			292.8			220.5	
Travel Time (s)		9.9			7.5			26.4			19.8	
Confl. Peds. (#/hr)									11	11		
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	7	1	26	6	1	7	20	56	0	9	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	8	0	0	33	0	0	83	0	0	9	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.6%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
7: Osprey Street & Toronto Street/Bradley Street

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	5	1	18	4	1	5	14	39	0	6	0
Future Volume (vph)	0	5	1	18	4	1	5	14	39	0	6	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	0	7	1	26	6	1	7	20	56	0	9	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	8	33	83	9								
Volume Left (vph)	0	26	7	0								
Volume Right (vph)	1	1	56	0								
Hadj (s)	-0.07	0.14	-0.36	0.00								
Departure Headway (s)	4.0	4.2	3.6	4.1								
Degree Utilization, x	0.01	0.04	0.08	0.01								
Capacity (veh/h)	865	829	965	869								
Control Delay (s)	7.1	7.4	7.0	7.1								
Approach Delay (s)	7.1	7.4	7.0	7.1								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.1									
Level of Service			A									
Intersection Capacity Utilization			24.6%	ICU Level of Service	A							
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 8: Main Street/Main Street & Owen Sound Street

Existing PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	229	201	76	42	3
Future Volume (vph)	3	229	201	76	42	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.963		0.992	
Flt Protected		0.999			0.955	
Satd. Flow (prot)	0	1782	1726	0	2040	0
Flt Permitted		0.999			0.955	
Satd. Flow (perm)	0	1782	1726	0	2040	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		155.5	320.4		154.4	
Travel Time (s)		14.0	28.8		13.9	
Confl. Peds. (#/hr)	22					
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	9%	10%	4%	0%	0%
Adj. Flow (vph)	3	260	228	86	48	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	263	314	0	51	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.2%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 8: Main Street/Main Street & Owen Sound Street

















Existing PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	229	201	76	42	3
Future Volume (Veh/h)	3	229	201	76	42	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	3	260	228	86	48	3
Pedestrians					22	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	336				559	293
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	336				559	293
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				90	100
cM capacity (veh/h)	1202				479	731
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	263	314	51			
Volume Left	3	0	48			
Volume Right	0	86	3			
cSH	1202	1700	489			
Volume to Capacity	0.00	0.18	0.10			
Queue Length 95th (m)	0.1	0.0	2.6			
Control Delay (s)	0.1	0.0	13.2			
Lane LOS	A		B			
Approach Delay (s)	0.1	0.0	13.2			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			1.1			
Intersection Capacity Utilization			25.2%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
9: Osprey Street & Grey Street N

Existing PM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	4	1	4	0	8	0	1	0	0	0
Future Volume (vph)	0	12	4	1	4	0	8	0	1	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	0.964						0.988					
Flt Protected							0.992			0.957		
Satd. Flow (prot)	0	1811	0	0	1864	0	0	1777	0	0	1566	0
Flt Permitted							0.992			0.957		
Satd. Flow (perm)	0	1811	0	0	1864	0	0	1777	0	0	1566	0
Link Speed (k/h)	40				40				40			
Link Distance (m)	320.3				60.9				220.5			
Travel Time (s)	28.8				5.5				19.8			
Confl. Peds. (#/hr)	2			2								
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%
Adj. Flow (vph)	0	14	5	1	5	0	10	0	1	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	19	0	0	6	0	0	11	0	0	0	0
Sign Control	Free				Free				Stop			

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	14.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 9: Osprey Street & Grey Street N

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	12	4	1	4	0	8	0	1	0	0	0
Future Volume (Veh/h)	0	12	4	1	4	0	8	0	1	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	0	14	5	1	5	0	10	0	1	0	0	0
Pedestrians								2				
Lane Width (m)								3.5				
Walking Speed (m/s)								1.1				
Percent Blockage								0				
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	5			21			26	26	18	24	28	5
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	5			21			26	26	18	24	28	5
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.7	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.2	3.3
p0 queue free %	100			100			99	100	100	100	100	100
cM capacity (veh/h)	1630			1605			987	870	1064	989	829	1084
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	19	6	11	0								
Volume Left	0	1	10	0								
Volume Right	5	0	1	0								
cSH	1630	1605	993	1700								
Volume to Capacity	0.00	0.00	0.01	0.00								
Queue Length 95th (m)	0.0	0.0	0.3	0.0								
Control Delay (s)	0.0	1.2	8.7	0.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	1.2	8.7	0.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay			2.8									
Intersection Capacity Utilization			14.0%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 10: Bradley Street & Grey Street N

Existing PM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	2	6	2	5	7
Future Volume (vph)	5	2	6	2	5	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.959			0.924		
Flt Protected	0.966			0.965		
Satd. Flow (prot)	1741	0	0	1813	1736	0
Flt Permitted	0.966			0.965		
Satd. Flow (perm)	1741	0	0	1813	1736	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	60.9			199.9	109.3	
Travel Time (s)	5.5			18.0	9.8	
Confl. Peds. (#/hr)	1		2		2	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	7	3	8	3	7	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	0	11	16	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	15.3%
	ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 10: Bradley Street & Grey Street N

Existing PM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	2	6	2	5	7
Future Volume (Veh/h)	5	2	6	2	5	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	7	3	8	3	7	9
Pedestrians	2				1	
Lane Width (m)	3.5				3.5	
Walking Speed (m/s)	1.1				1.1	
Percent Blockage	0				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	34	14	18			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	34	14	18			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	977	1071	1609			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	10	11	16			
Volume Left	7	8	0			
Volume Right	3	0	9			
cSH	1004	1609	1700			
Volume to Capacity	0.01	0.00	0.01			
Queue Length 95th (m)	0.2	0.1	0.0			
Control Delay (s)	8.6	5.3	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.6	5.3	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			3.9			
Intersection Capacity Utilization			15.3%	ICU Level of Service	A	
Analysis Period (min)			15			



Lanes, Volumes, Timings  
1: Ida Street & Glenelg Street

2027 FB AM












Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	23	27	10	16	14	18
Future Volume (vph)	23	27	10	16	14	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.926		0.917			
Flt Protected	0.978					0.979
Satd. Flow (prot)	1653	0	1399	0	0	1585
Flt Permitted	0.978					0.979
Satd. Flow (perm)	1653	0	1399	0	0	1585
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	0%	33%	0%	33%	14%	13%
Adj. Flow (vph)	30	36	13	21	18	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	0	34	0	0	42
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	18.4%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 1: Ida Street & Glenelg Street

2027 FB AM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	23	27	10	16	14	18
Future Volume (Veh/h)	23	27	10	16	14	18
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	30	36	13	21	18	24
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	84	24			34	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	84	24			34	
tC, single (s)	6.4	6.5			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.6			2.3	
p0 queue free %	97	96			99	
cM capacity (veh/h)	912	970			1503	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	66	34	42			
Volume Left	30	0	18			
Volume Right	36	21	0			
cSH	943	1700	1503			
Volume to Capacity	0.07	0.02	0.01			
Queue Length 95th (m)	1.7	0.0	0.3			
Control Delay (s)	9.1	0.0	3.2			
Lane LOS	A		A			
Approach Delay (s)	9.1	0.0	3.2			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			5.2			
Intersection Capacity Utilization			18.4%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 2: Dundalk Street & Glenelg Street/Grey Street N

2027 FB AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	45	126	29	24	43	13
Future Volume (vph)	45	126	29	24	43	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.5	3.5	3.1	4.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.901			0.969		
Flt Protected				0.973	0.963	
Satd. Flow (prot)	1436	0	0	1746	1408	0
Flt Permitted				0.973	0.963	
Satd. Flow (perm)	1436	0	0	1746	1408	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	263.8			323.7	411.0	
Travel Time (s)	23.7			29.1	37.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	17%	11%	0%	0%	50%	0%
Adj. Flow (vph)	60	168	39	32	57	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	228	0	0	71	74	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.8%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 2: Dundalk Street & Glenelg Street/Grey Street N

2027 FB AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	45	126	29	24	43	13
Future Volume (Veh/h)	45	126	29	24	43	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	60	168	39	32	57	17
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			228		254	144
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			228		254	144
tC, single (s)			4.1		6.9	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.0	3.3
p0 queue free %			97		91	98
cM capacity (veh/h)			1352		623	909
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	228	71	74			
Volume Left	0	39	57			
Volume Right	168	0	17			
cSH	1700	1352	672			
Volume to Capacity	0.13	0.03	0.11			
Queue Length 95th (m)	0.0	0.7	2.8			
Control Delay (s)	0.0	4.4	11.0			
Lane LOS		A	B			
Approach Delay (s)	0.0	4.4	11.0			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			3.0			
Intersection Capacity Utilization			26.8%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 3: Ida Street & Grey Road 9/Main Street

2027 FB AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	12	157	19	39	140	11	12	3	26	13	12	21
Future Volume (vph)	12	157	19	39	140	11	12	3	26	13	12	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	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		0.986			0.992			0.915			0.938	
Flt Protected		0.997			0.990			0.986			0.986	
Satd. Flow (prot)	0	1766	0	0	1736	0	0	1642	0	0	1904	0
Flt Permitted		0.997			0.990			0.986			0.986	
Satd. Flow (perm)	0	1766	0	0	1736	0	0	1642	0	0	1904	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		788.4			805.6			914.0			590.7	
Travel Time (s)		71.0			72.5			82.3			53.2	
Confl. Peds. (#/hr)							1		2	2		1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	20%	18%	35%	53%	14%	10%	9%	0%	25%	8%	9%	0%
Adj. Flow (vph)	15	191	23	48	171	13	15	4	32	16	15	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	229	0	0	232	0	0	51	0	0	57	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.9%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 3: Ida Street & Grey Road 9/Main Street

2027 FB AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	12	157	19	39	140	11	12	3	26	13	12	21
Future Volume (Veh/h)	12	157	19	39	140	11	12	3	26	13	12	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	15	191	23	48	171	13	15	4	32	16	15	26
Pedestrians		1			2							
Lane Width (m)		4.8			4.8							
Walking Speed (m/s)		1.1			1.1							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	184			214			540	512	204	542	518	178
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	184			214			540	512	204	542	518	178
tC, single (s)	4.3			4.6			7.2	6.5	6.5	7.2	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.7			3.6	4.0	3.5	3.6	4.1	3.3
p0 queue free %	99			96			96	99	96	96	96	97
cM capacity (veh/h)	1290			1105			399	442	779	402	427	869
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	229	232	51	57								
Volume Left	15	48	15	16								
Volume Right	23	13	32	26								
cSH	1290	1105	582	544								
Volume to Capacity	0.01	0.04	0.09	0.10								
Queue Length 95th (m)	0.3	1.0	2.2	2.7								
Control Delay (s)	0.6	2.1	11.8	12.4								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.6	2.1	11.8	12.4								
Approach LOS			B	B								
<b>Intersection Summary</b>												
Average Delay			3.4									
Intersection Capacity Utilization			31.9%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
4: Main Street & Dundalk Street

2027 FB AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	26	279	246	53	114	50
Future Volume (vph)	26	279	246	53	114	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.976		0.959	
Flt Protected		0.996			0.966	
Satd. Flow (prot)	0	1687	1595	0	1758	0
Flt Permitted		0.996			0.966	
Satd. Flow (perm)	0	1687	1595	0	1758	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	10			10	1	1
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	10%	11%	15%	15%	18%	3%
Adj. Flow (vph)	36	388	342	74	158	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	424	416	0	227	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	52.0%
	ICU Level of Service A
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

## 4: Main Street & Dundalk Street

2027 FB AM



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	26	279	246	53	114	50
Future Volume (Veh/h)	26	279	246	53	114	50
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	36	388	342	74	158	69
Pedestrians		1	1		10	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	426				850	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	426				850	390
tC, single (s)	4.2				6.6	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.3
p0 queue free %	97				47	89
cM capacity (veh/h)	1079				296	648
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	424	416	227			
Volume Left	36	0	158			
Volume Right	0	74	69			
cSH	1079	1700	355			
Volume to Capacity	0.03	0.24	0.64			
Queue Length 95th (m)	0.8	0.0	32.0			
Control Delay (s)	1.1	0.0	31.5			
Lane LOS	A		D			
Approach Delay (s)	1.1	0.0	31.5			
Approach LOS			D			
<b>Intersection Summary</b>						
Average Delay			7.1			
Intersection Capacity Utilization			52.0%		ICU Level of Service	A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
5: Osprey Street & Main Street /Main Street

















2027 FB AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	351	24	8	263	3	42	2	12	27	5	12
Future Volume (vph)	12	351	24	8	263	3	42	2	12	27	5	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.992			0.998			0.971			0.962	
Flt Protected		0.998			0.999			0.964			0.970	
Satd. Flow (prot)	0	1706	0	0	1707	0	0	1601	0	0	1671	0
Flt Permitted		0.998			0.999			0.964			0.970	
Satd. Flow (perm)	0	1706	0	0	1707	0	0	1601	0	0	1671	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	7		4	4		7	3					3
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	14%	0%	0%	14%	0%	8%	0%	18%	8%	0%	0%
Adj. Flow (vph)	16	456	31	10	342	4	55	3	16	35	6	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	503	0	0	356	0	0	74	0	0	57	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.2%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
5: Osprey Street & Main Street /Main Street

2027 FB AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	351	24	8	263	3	42	2	12	27	5	12
Future Volume (Veh/h)	12	351	24	8	263	3	42	2	12	27	5	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	16	456	31	10	342	4	55	3	16	35	6	16
Pedestrians		3						6			7	
Lane Width (m)		3.8						3.5			3.5	
Walking Speed (m/s)		1.1						1.1			1.1	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	353			493			896	882	478	892	896	354
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	353			493			896	882	478	892	896	354
tC, single (s)	4.1			4.1			7.2	6.5	6.4	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.5	3.6	4.0	3.3
p0 queue free %	99			99			77	99	97	85	98	98
cM capacity (veh/h)	1209			1075			237	277	553	239	272	688
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	503	356	74	57								
Volume Left	16	10	55	35								
Volume Right	31	4	16	16								
cSH	1209	1075	272	297								
Volume to Capacity	0.01	0.01	0.27	0.19								
Queue Length 95th (m)	0.3	0.2	8.2	5.3								
Control Delay (s)	0.4	0.3	23.1	20.0								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.4	0.3	23.1	20.0								
Approach LOS			C	C								
Intersection Summary												
Average Delay			3.2									
Intersection Capacity Utilization			36.2%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
6: Glenelg Street & Glenelg Access

2027 FB AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	11	19	16	42	135	33
Future Volume (vph)	11	19	16	42	135	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.901		0.973	
Flt Protected		0.982			0.961	
Satd. Flow (prot)	0	1809	1660	0	1722	0
Flt Permitted		0.982			0.961	
Satd. Flow (perm)	0	1809	1660	0	1722	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		456.0	263.8		80.1	
Travel Time (s)		41.0	23.7		7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	21	17	46	147	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	33	63	0	183	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.4%
Analysis Period (min)	15
	ICU Level of Service A

















HCM Unsignalized Intersection Capacity Analysis  
6: Glenelg Street & Glenelg Access

2027 FB AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	11	19	16	42	135	33
Future Volume (Veh/h)	11	19	16	42	135	33
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	21	17	46	147	36
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	63				85	40
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	63				85	40
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				84	97
cM capacity (veh/h)	1540				909	1031
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	33	63	183			
Volume Left	12	0	147			
Volume Right	0	46	36			
cSH	1540	1700	931			
Volume to Capacity	0.01	0.04	0.20			
Queue Length 95th (m)	0.2	0.0	5.5			
Control Delay (s)	2.7	0.0	9.8			
Lane LOS	A		A			
Approach Delay (s)	2.7	0.0	9.8			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			6.8			
Intersection Capacity Utilization		24.4%		ICU Level of Service		A
Analysis Period (min)			15			

7: Osprey Street/Osprey Street & Toronto Street/Bradley Street

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	2	31	5	2	3	18	20	0	29	6
Future Volume (vph)	4	2	2	31	5	2	3	18	20	0	29	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.4	3.5	3.5	4.4	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		0.966			0.993			0.935			0.977	
Flt Protected		0.976			0.961			0.996				
Satd. Flow (prot)	0	1931	0	0	1972	0	0	1735	0	0	1800	0
Flt Permitted		0.976			0.961			0.996				
Satd. Flow (perm)	0	1931	0	0	1972	0	0	1735	0	0	1800	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		109.8			83.2			292.8			220.5	
Travel Time (s)		9.9			7.5			26.4			19.8	
Confl. Peds. (#/hr)							3		3			
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Heavy Vehicles (%)	2%	0%	0%	0%	0%	2%	0%	2%	0%	2%	2%	2%
Adj. Flow (vph)	6	3	3	48	8	3	5	28	31	0	45	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	59	0	0	64	0	0	54	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	15.8%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 7: Osprey Street/Osprey Street & Toronto Street/Bradley Street

2027 FB AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	4	2	2	31	5	2	3	18	20	0	29	6
Future Volume (vph)	4	2	2	31	5	2	3	18	20	0	29	6
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Hourly flow rate (vph)	6	3	3	48	8	3	5	28	31	0	45	9

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	12	59	64	54
Volume Left (vph)	6	48	5	0
Volume Right (vph)	3	3	31	9
Hadj (s)	-0.03	0.13	-0.26	-0.07
Departure Headway (s)	4.2	4.3	3.9	4.1
Degree Utilization, x	0.01	0.07	0.07	0.06
Capacity (veh/h)	831	813	905	866
Control Delay (s)	7.2	7.6	7.1	7.3
Approach Delay (s)	7.2	7.6	7.1	7.3
Approach LOS	A	A	A	A

Intersection Summary

Delay	7.3
Level of Service	A
Intersection Capacity Utilization	15.8%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings  
8: Main Street & Owen Sound Street

2027 FB AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	387	258	56	51	0
Future Volume (vph)	4	387	258	56	51	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.976			
Flt Protected		0.999			0.950	
Satd. Flow (prot)	0	1719	1669	0	2046	0
Flt Permitted		0.999			0.950	
Satd. Flow (perm)	0	1719	1669	0	2046	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		155.5	320.4		159.9	
Travel Time (s)		14.0	28.8		14.4	
Confl. Peds. (#/hr)	4					
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	13%	15%	7%	0%	0%
Adj. Flow (vph)	5	472	315	68	62	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	477	383	0	62	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.6%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 8: Main Street & Owen Sound Street

2027 FB AM



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↶	
Traffic Volume (veh/h)	4	387	258	56	51	0
Future Volume (Veh/h)	4	387	258	56	51	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	5	472	315	68	62	0
Pedestrians					4	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	387				835	353
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387				835	353
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				82	100
cM capacity (veh/h)	1177				337	692
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	477	383	62			
Volume Left	5	0	62			
Volume Right	0	68	0			
cSH	1177	1700	337			
Volume to Capacity	0.00	0.23	0.18			
Queue Length 95th (m)	0.1	0.0	5.0			
Control Delay (s)	0.1	0.0	18.1			
Lane LOS	A		C			
Approach Delay (s)	0.1	0.0	18.1			
Approach LOS			C			
<b>Intersection Summary</b>						
Average Delay			1.3			
Intersection Capacity Utilization			33.6%	ICU Level of Service		A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 9: Osprey Street /Osprey Street & Grey Street N

2027 FB AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	6	6	28	18	0	5	0	12	0	0	0
Future Volume (vph)	0	6	6	28	18	0	5	0	12	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.932						0.906				
Flt Protected					0.971			0.985				
Satd. Flow (prot)	0	1717	0	0	1789	0	0	1644	0	0	1842	0
Flt Permitted					0.971			0.985				
Satd. Flow (perm)	0	1717	0	0	1789	0	0	1644	0	0	1842	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		323.7			65.9			220.5			53.1	
Travel Time (s)		29.1			5.9			19.8			4.8	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Adj. Flow (vph)	0	8	8	37	24	0	7	0	16	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	0	0	61	0	0	23	0	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	19.2%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 9: Osprey Street /Osprey Street & Grey Street N

2027 FB AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	0	6	6	28	18	0	5	0	12	0	0	0
Future Volume (Veh/h)	0	6	6	28	18	0	5	0	12	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	0	8	8	37	24	0	7	0	16	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	24			16			110	110	12	126	114	24
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	24			16			110	110	12	126	114	24
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			99	100	99	100	100	100
cM capacity (veh/h)	1591			1602			853	762	1069	820	758	1052
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total	16	61	23	0								
Volume Left	0	37	7	0								
Volume Right	8	0	16	0								
cSH	1591	1602	992	1700								
Volume to Capacity	0.00	0.02	0.02	0.00								
Queue Length 95th (m)	0.0	0.5	0.5	0.0								
Control Delay (s)	0.0	4.5	8.7	0.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	4.5	8.7	0.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay			4.7									
Intersection Capacity Utilization			19.2%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 10: Bradley Street & Grey Street N

2027 FB AM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	2	8	4	11	38
Future Volume (vph)	15	2	8	4	11	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984			0.905		
Flt Protected	0.958			0.967		
Satd. Flow (prot)	1736	0	0	1781	1667	0
Flt Permitted	0.958			0.967		
Satd. Flow (perm)	1736	0	0	1781	1667	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	65.9			127.5	111.2	
Travel Time (s)	5.9			11.5	10.0	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.92
Adj. Flow (vph)	23	3	13	6	17	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	0	19	58	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.3%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 10: Bradley Street & Grey Street N

2027 FB AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	2	8	4	11	38
Future Volume (Veh/h)	15	2	8	4	11	38
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.92
Hourly flow rate (vph)	23	3	12	6	17	41
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	68	38	58			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	68	38	58			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	100	99			
cM capacity (veh/h)	930	1035	1546			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	26	18	58			
Volume Left	23	12	0			
Volume Right	3	0	41			
cSH	941	1546	1700			
Volume to Capacity	0.03	0.01	0.03			
Queue Length 95th (m)	0.6	0.2	0.0			
Control Delay (s)	8.9	4.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.9	4.9	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			3.1			
Intersection Capacity Utilization			17.3%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 1: Ida Street & Glenelg Street

2027 FB PM












Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	21	25	24	27	32	18
Future Volume (vph)	21	25	24	27	32	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.927		0.928			
Flt Protected	0.978					0.969
Satd. Flow (prot)	1952	0	1704	0	0	1742
Flt Permitted	0.978					0.969
Satd. Flow (perm)	1952	0	1704	0	0	1742
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%
Adj. Flow (vph)	26	31	30	34	40	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	0	64	0	0	63
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	19.4%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 1: Ida Street & Glenelg Street

2027 FB PM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	21	25	24	27	32	18
Future Volume (Veh/h)	21	25	24	27	32	18
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	26	31	30	34	40	22
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	149	47			64	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	149	47			64	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	97			97	
cM capacity (veh/h)	826	1028			1551	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	57	64	62			
Volume Left	26	0	40			
Volume Right	31	34	0			
cSH	925	1700	1551			
Volume to Capacity	0.06	0.04	0.03			
Queue Length 95th (m)	1.5	0.0	0.6			
Control Delay (s)	9.1	0.0	4.8			
Lane LOS	A		A			
Approach Delay (s)	9.1	0.0	4.8			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			4.5			
Intersection Capacity Utilization			19.4%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 2: Dundalk Street & Glenelg Street/Grey Street N

2027 FB PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	41	82	14	51	127	18
Future Volume (vph)	41	82	14	51	127	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.5	3.5	3.1	4.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.910				0.983	
Flt Protected					0.989	0.958
Satd. Flow (prot)	1541	0	0	1634	1753	0
Flt Permitted					0.989	0.958
Satd. Flow (perm)	1541	0	0	1634	1753	0
Link Speed (k/h)	40				40	40
Link Distance (m)	263.8				323.7	411.0
Travel Time (s)	23.7				29.1	37.0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	16%	1%	0%	11%	14%	0%
Adj. Flow (vph)	46	92	16	57	143	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	138	0	0	73	163	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.8% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 2: Dundalk Street & Glenelg Street/Grey Street N

2027 FB PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	41	82	14	51	127	18
Future Volume (Veh/h)	41	82	14	51	127	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	46	92	16	57	143	20
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			138		181	92
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			138		181	92
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			99		82	98
cM capacity (veh/h)			1458		773	971
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	138	73	163			
Volume Left	0	16	143			
Volume Right	92	0	20			
cSH	1700	1458	793			
Volume to Capacity	0.08	0.01	0.21			
Queue Length 95th (m)	0.0	0.3	5.8			
Control Delay (s)	0.0	1.7	10.7			
Lane LOS			A	B		
Approach Delay (s)	0.0	1.7	10.7			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			5.0			
Intersection Capacity Utilization			28.8%	ICU Level of Service		A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
3: Ida Street & Grey Road 9/Main Street

2027 FB PM



















Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	27	191	16	35	198	10	24	16	41	10	9	20
Future Volume (vph)	27	191	16	35	198	10	24	16	41	10	9	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	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		0.991			0.994			0.932			0.931	
Flt Protected		0.994			0.993			0.986			0.987	
Satd. Flow (prot)	0	2014	0	0	1950	0	0	1785	0	0	1855	0
Flt Permitted		0.994			0.993			0.986			0.987	
Satd. Flow (perm)	0	2014	0	0	1950	0	0	1785	0	0	1855	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		788.4			805.6			914.0			590.7	
Travel Time (s)		71.0			72.5			82.3			53.2	
Confl. Peds. (#/hr)	3		1	1		1			3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	14%	4%	7%	34%	5%	0%	5%	14%	13%	0%	0%	13%
Adj. Flow (vph)	28	201	17	37	208	11	25	17	43	11	9	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	246	0	0	256	0	0	85	0	0	41	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.6%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 3: Ida Street & Grey Road 9/Main Street

2027 FB PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	191	16	35	198	10	24	16	41	10	9	20
Future Volume (Veh/h)	27	191	16	35	198	10	24	16	41	10	9	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	28	201	17	37	208	11	25	17	43	11	9	21
Pedestrians					3			1			3	
Lane Width (m)					4.8			4.8			4.8	
Walking Speed (m/s)					1.1			1.1			1.1	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	222			219			580	562	214	610	566	216
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	222			219			580	562	214	610	566	216
tC, single (s)	4.2			4.4			7.1	6.6	6.3	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.5			3.5	4.1	3.4	3.5	4.0	3.4
p0 queue free %	98			97			94	96	95	97	98	97
cM capacity (veh/h)	1274			1181			386	395	796	355	412	794
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	246	256	85	41								
Volume Left	28	37	25	11								
Volume Right	17	11	43	21								
cSH	1274	1181	525	517								
Volume to Capacity	0.02	0.03	0.16	0.08								
Queue Length 95th (m)	0.5	0.7	4.4	2.0								
Control Delay (s)	1.1	1.4	13.2	12.6								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.1	1.4	13.2	12.6								
Approach LOS			B	B								
<b>Intersection Summary</b>												
Average Delay			3.6									
Intersection Capacity Utilization			32.6%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 4: Main Street & Dundalk Street

2027 FB PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	27	283	264	120	83	37
Future Volume (vph)	27	283	264	120	83	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.958		0.958	
Flt Protected		0.996			0.967	
Satd. Flow (prot)	0	1774	1695	0	1915	0
Flt Permitted		0.996			0.967	
Satd. Flow (perm)	0	1774	1695	0	1915	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	6			6	2	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	6%	9%	0%	6%	0%
Adj. Flow (vph)	28	298	278	126	87	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	326	404	0	126	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	51.3%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 4: Main Street & Dundalk Street

















2027 FB PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	27	283	264	120	83	37
Future Volume (Veh/h)	27	283	264	120	83	37
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	28	298	278	126	87	39
Pedestrians		2	2		6	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	410				703	349
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	410				703	349
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	98				77	94
cM capacity (veh/h)	1151				385	693
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	326	404	126			
Volume Left	28	0	87			
Volume Right	0	126	39			
cSH	1151	1700	446			
Volume to Capacity	0.02	0.24	0.28			
Queue Length 95th (m)	0.6	0.0	8.7			
Control Delay (s)	0.9	0.0	16.2			
Lane LOS	A		C			
Approach Delay (s)	0.9	0.0	16.2			
Approach LOS			C			
<b>Intersection Summary</b>						
Average Delay			2.7			
Intersection Capacity Utilization			51.3%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
5: Osprey Street & Main Street /Main Street

2027 FB PM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	332	42	9	355	3	23	7	17	17	3	10
Future Volume (vph)	17	332	42	9	355	3	23	7	17	17	3	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.985			0.999			0.952			0.955	
Flt Protected		0.998			0.999			0.976			0.972	
Satd. Flow (prot)	0	1728	0	0	1732	0	0	1374	0	0	1744	0
Flt Permitted		0.998			0.999			0.976			0.972	
Satd. Flow (perm)	0	1728	0	0	1732	0	0	1374	0	0	1744	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	18		10	10		18	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	12%	0%	13%	12%	0%	50%	0%	7%	0%	0%	0%
Adj. Flow (vph)	19	369	47	10	394	3	26	8	19	19	3	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	435	0	0	407	0	0	53	0	0	33	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	40.5%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
5: Osprey Street & Main Street /Main Street

2027 FB PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	332	42	9	355	3	23	7	17	17	3	10
Future Volume (Veh/h)	17	332	42	9	355	3	23	7	17	17	3	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	19	369	47	10	394	3	26	8	19	19	3	11
Pedestrians		4			7			17			18	
Lane Width (m)		3.8			3.8			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			1			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	415			433			880	882	416	894	904	418
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	415			433			880	882	416	894	904	418
tC, single (s)	4.2			4.2			7.6	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			4.0	4.0	3.4	3.5	4.0	3.3
p0 queue free %	98			99			87	97	97	92	99	98
cM capacity (veh/h)	1100			1054			203	271	612	234	263	627
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	435	407	53	33								
Volume Left	19	10	26	19								
Volume Right	47	3	19	11								
cSH	1100	1054	281	300								
Volume to Capacity	0.02	0.01	0.19	0.11								
Queue Length 95th (m)	0.4	0.2	5.2	2.8								
Control Delay (s)	0.5	0.3	20.8	18.5								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.5	0.3	20.8	18.5								
Approach LOS			C	C								
Intersection Summary												
Average Delay			2.2									
Intersection Capacity Utilization			40.5%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
6: Glenelg Street & Glenelg Access

2027 FB PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↘	↙
Traffic Volume (vph)	37	22	24	212	86	22
Future Volume (vph)	37	22	24	212	86	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.879		0.972	
Flt Protected		0.970			0.962	
Satd. Flow (prot)	0	1787	1619	0	1722	0
Flt Permitted		0.970			0.962	
Satd. Flow (perm)	0	1787	1619	0	1722	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		456.0	263.8		80.1	
Travel Time (s)		41.0	23.7		7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	24	26	230	93	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	64	256	0	117	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.8%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
6: Glenelg Street & Glenelg Access

















2027 FB PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Volume (veh/h)	37	22	24	212	86	22
Future Volume (Veh/h)	37	22	24	212	86	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	24	26	230	93	24
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	256			245	141	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	256			245	141	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	97			87	97	
cM capacity (veh/h)	1309			721	907	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	64	256	117			
Volume Left	40	0	93			
Volume Right	0	230	24			
cSH	1309	1700	752			
Volume to Capacity	0.03	0.15	0.16			
Queue Length 95th (m)	0.7	0.0	4.2			
Control Delay (s)	5.0	0.0	10.7			
Lane LOS	A		B			
Approach Delay (s)	5.0	0.0	10.7			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			3.6			
Intersection Capacity Utilization			33.8%	ICU Level of Service	A	
Analysis Period (min)			15			



7: Osprey Street/Osprey Street & Toronto Street/Bradley Street

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	6	2	23	5	2	6	36	50	0	17	2
Future Volume (vph)	4	6	2	23	5	2	6	36	50	0	17	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.4	3.5	3.5	4.4	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		0.977			0.991			0.927			0.985	
Flt Protected		0.984			0.963			0.997				
Satd. Flow (prot)	0	1976	0	0	1972	0	0	1700	0	0	1814	0
Flt Permitted		0.984			0.963			0.997				
Satd. Flow (perm)	0	1976	0	0	1972	0	0	1700	0	0	1814	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		109.8			83.2			292.8			220.5	
Travel Time (s)		9.9			7.5			26.4			19.8	
Confl. Peds. (#/hr)	6								11	11		
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	2%	0%	0%	0%	0%	2%	20%	2%	0%	2%	2%	2%
Adj. Flow (vph)	6	9	3	33	7	3	9	51	71	0	24	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	0	0	43	0	0	131	0	0	27	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	21.7%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 7: Osprey Street/Osprey Street & Toronto Street/Bradley Street

2027 FB PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	4	6	2	23	5	2	6	36	50	0	17	2
Future Volume (vph)	4	6	2	23	5	2	6	36	50	0	17	2
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	6	9	3	33	7	3	9	51	71	0	24	3
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	18	43	131	27								
Volume Left (vph)	6	33	9	0								
Volume Right (vph)	3	3	71	3								
Hadj (s)	-0.02	0.11	-0.27	-0.03								
Departure Headway (s)	4.2	4.4	3.8	4.1								
Degree Utilization, x	0.02	0.05	0.14	0.03								
Capacity (veh/h)	810	795	924	850								
Control Delay (s)	7.3	7.6	7.4	7.3								
Approach Delay (s)	7.3	7.6	7.4	7.3								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.4									
Level of Service			A									
Intersection Capacity Utilization			21.7%	ICU Level of Service								A
Analysis Period (min)			15									

Lanes, Volumes, Timings  
8: Main Street & Owen Sound Street

2027 FB PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	361	359	108	53	5
Future Volume (vph)	5	361	359	108	53	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.969		0.988	
Flt Protected		0.999			0.957	
Satd. Flow (prot)	0	1782	1733	0	2036	0
Flt Permitted		0.999			0.957	
Satd. Flow (perm)	0	1782	1733	0	2036	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		155.5	320.4		159.9	
Travel Time (s)		14.0	28.8		14.4	
Confl. Peds. (#/hr)	22					
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	9%	10%	4%	0%	0%
Adj. Flow (vph)	6	410	408	123	60	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	416	531	0	66	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.5%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 8: Main Street & Owen Sound Street

















2027 FB PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	5	361	359	108	53	5
Future Volume (Veh/h)	5	361	359	108	53	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	6	410	408	123	60	6
Pedestrians					22	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	553				914	492
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	553				914	492
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				80	99
cM capacity (veh/h)	1000				296	566
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	416	531	66			
Volume Left	6	0	60			
Volume Right	0	123	6			
cSH	1000	1700	309			
Volume to Capacity	0.01	0.31	0.21			
Queue Length 95th (m)	0.1	0.0	6.0			
Control Delay (s)	0.2	0.0	19.8			
Lane LOS	A		C			
Approach Delay (s)	0.2	0.0	19.8			
Approach LOS			C			
<b>Intersection Summary</b>						
Average Delay			1.4			
Intersection Capacity Utilization			35.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 9: Osprey Street /Osprey Street & Grey Street N

2027 FB PM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	23	5	14	10	0	9	0	26	0	0	0
Future Volume (vph)	0	23	5	14	10	0	9	0	26	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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						0.899				
Flt Protected					0.972			0.987				
Satd. Flow (prot)	0	1796	0	0	1790	0	0	1634	0	0	1842	0
Flt Permitted					0.972			0.987				
Satd. Flow (perm)	0	1796	0	0	1790	0	0	1634	0	0	1842	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		323.7			65.9			220.5			53.1	
Travel Time (s)		29.1			5.9			19.8			4.8	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Adj. Flow (vph)	0	36	8	22	16	0	14	0	41	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	44	0	0	38	0	0	55	0	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	18.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 9: Osprey Street /Osprey Street & Grey Street N

2027 FB PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	23	5	14	10	0	9	0	26	0	0	0
Future Volume (Veh/h)	0	23	5	14	10	0	9	0	26	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	0	36	8	22	16	0	14	0	41	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	16			44			100	100	40	141	104	16
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	16			44			100	100	40	141	104	16
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			98	100	96	100	100	100
cM capacity (veh/h)	1602			1564			872	779	1031	787	775	1063
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	44	38	55	0								
Volume Left	0	22	14	0								
Volume Right	8	0	41	0								
cSH	1602	1564	985	1700								
Volume to Capacity	0.00	0.01	0.06	0.00								
Queue Length 95th (m)	0.0	0.3	1.3	0.0								
Control Delay (s)	0.0	4.3	8.9	0.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	4.3	8.9	0.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay			4.8									
Intersection Capacity Utilization			18.0%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 10: Bradley Street & Grey Street N

2027 FB PM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	3	7	10	9	25
Future Volume (vph)	40	3	7	10	9	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991			0.901		
Flt Protected	0.956			0.980		
Satd. Flow (prot)	1745			1805	1660	0
Flt Permitted	0.956			0.980		
Satd. Flow (perm)	1745			1805	1660	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	65.9			127.5	111.2	
Travel Time (s)	5.9			11.5	10.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Adj. Flow (vph)	53	4	9	13	12	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	0	0	22	45	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.8%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 10: Bradley Street & Grey Street N

2027 FB PM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	3	7	10	9	25
Future Volume (Veh/h)	40	3	7	10	9	25
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	53	4	9	13	12	33
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	60	28	45			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	60	28	45			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	100	99			
cM capacity (veh/h)	942	1046	1563			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	57	22	45			
Volume Left	53	9	0			
Volume Right	4	0	33			
cSH	949	1563	1700			
Volume to Capacity	0.06	0.01	0.03			
Queue Length 95th (m)	1.5	0.1	0.0			
Control Delay (s)	9.0	3.0	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.0	3.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			4.7			
Intersection Capacity Utilization			16.8%	ICU Level of Service	A	
Analysis Period (min)			15			



Lanes, Volumes, Timings  
1: Ida Street & Glenelg Street

2032 FB AM



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	23	27	11	17	15	19
Future Volume (vph)	23	27	11	17	15	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.926		0.917			
Flt Protected	0.978					0.978
Satd. Flow (prot)	1653	0	1402	0	0	1583
Flt Permitted	0.978					0.978
Satd. Flow (perm)	1653	0	1402	0	0	1583
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	0%	33%	0%	33%	14%	13%
Adj. Flow (vph)	30	36	14	22	20	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	0	36	0	0	45
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	18.5%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 1: Ida Street & Glenelg Street

2032 FB AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	23	27	11	17	15	19
Future Volume (Veh/h)	23	27	11	17	15	19
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	30	36	14	22	20	25
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	90	25			36	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	90	25			36	
tC, single (s)	6.4	6.5			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.6			2.3	
p0 queue free %	97	96			99	
cM capacity (veh/h)	903	968			1501	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	66	36	45			
Volume Left	30	0	20			
Volume Right	36	22	0			
cSH	938	1700	1501			
Volume to Capacity	0.07	0.02	0.01			
Queue Length 95th (m)	1.7	0.0	0.3			
Control Delay (s)	9.1	0.0	3.4			
Lane LOS	A		A			
Approach Delay (s)	9.1	0.0	3.4			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			5.1			
Intersection Capacity Utilization			18.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 2: Dundalk Street & Glenelg Street/Grey Street N

2032 FB AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	46	127	31	25	44	14
Future Volume (vph)	46	127	31	25	44	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.5	3.5	3.1	4.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.901			0.967		
Flt Protected				0.973	0.964	
Satd. Flow (prot)	1436	0	0	1746	1414	0
Flt Permitted				0.973	0.964	
Satd. Flow (perm)	1436	0	0	1746	1414	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	263.8			323.7	411.0	
Travel Time (s)	23.7			29.1	37.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	17%	11%	0%	0%	50%	0%
Adj. Flow (vph)	61	169	41	33	59	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	230	0	0	74	78	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.9%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 2: Dundalk Street & Glenelg Street/Grey Street N

















2032 FB AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↘	↙
Traffic Volume (veh/h)	46	127	31	25	44	14
Future Volume (Veh/h)	46	127	31	25	44	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	61	169	41	33	59	19
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			230		260	146
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			230		260	146
tC, single (s)			4.1		6.9	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.0	3.3
p0 queue free %			97		90	98
cM capacity (veh/h)			1350		617	907
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	230	74	78			
Volume Left	0	41	59			
Volume Right	169	0	19			
cSH	1700	1350	669			
Volume to Capacity	0.14	0.03	0.12			
Queue Length 95th (m)	0.0	0.7	3.0			
Control Delay (s)	0.0	4.4	11.1			
Lane LOS		A	B			
Approach Delay (s)	0.0	4.4	11.1			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			3.1			
Intersection Capacity Utilization			26.9%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 3: Ida Street & Grey Road 9/Main Street

2032 FB AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	167	20	42	146	12	13	3	28	14	13	21
Future Volume (vph)	12	167	20	42	146	12	13	3	28	14	13	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	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		0.987			0.992			0.915			0.941	
Flt Protected		0.997			0.990			0.985			0.986	
Satd. Flow (prot)	0	1769	0	0	1735	0	0	1639	0	0	1907	0
Flt Permitted		0.997			0.990			0.985			0.986	
Satd. Flow (perm)	0	1769	0	0	1735	0	0	1639	0	0	1907	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		788.4			805.6			914.0			590.7	
Travel Time (s)		71.0			72.5			82.3			53.2	
Confl. Peds. (#/hr)							1		2	2		1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	20%	18%	35%	53%	14%	10%	9%	0%	25%	8%	9%	0%
Adj. Flow (vph)	15	204	24	51	178	15	16	4	34	17	16	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	243	0	0	244	0	0	54	0	0	59	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 3: Ida Street & Grey Road 9/Main Street

2032 FB AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	12	167	20	42	146	12	13	3	28	14	13	21
Future Volume (Veh/h)	12	167	20	42	146	12	13	3	28	14	13	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	15	204	24	51	178	15	16	4	34	17	16	26
Pedestrians		1			2							
Lane Width (m)		4.8			4.8							
Walking Speed (m/s)		1.1			1.1							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	193			228			568	541	218	572	546	186
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	193			228			568	541	218	572	546	186
tC, single (s)	4.3			4.6			7.2	6.5	6.5	7.2	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.7			3.6	4.0	3.5	3.6	4.1	3.3
p0 queue free %	99			95			96	99	96	96	96	97
cM capacity (veh/h)	1279			1090			380	425	766	382	411	860
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	243	244	54	59								
Volume Left	15	51	16	17								
Volume Right	24	15	34	26								
cSH	1279	1090	563	519								
Volume to Capacity	0.01	0.05	0.10	0.11								
Queue Length 95th (m)	0.3	1.1	2.4	2.9								
Control Delay (s)	0.6	2.1	12.1	12.8								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.6	2.1	12.1	12.8								
Approach LOS			B	B								
<b>Intersection Summary</b>												
Average Delay			3.4									
Intersection Capacity Utilization			34.0%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 4: Main Street & Dundalk Street

2032 FB AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	28	298	260	55	115	53
Future Volume (vph)	28	298	260	55	115	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.977		0.957	
Flt Protected		0.996			0.967	
Satd. Flow (prot)	0	1687	1596	0	1759	0
Flt Permitted		0.996			0.967	
Satd. Flow (perm)	0	1687	1596	0	1759	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	10			10	1	1
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	10%	11%	15%	15%	18%	3%
Adj. Flow (vph)	39	414	361	76	160	74
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	453	437	0	234	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	54.2%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 4: Main Street & Dundalk Street

2032 FB AM



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	28	298	260	55	115	53
Future Volume (Veh/h)	28	298	260	55	115	53
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	39	414	361	76	160	74
Pedestrians		1	1		10	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	447				902	410
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	447				902	410
tC, single (s)	4.2				6.6	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.3
p0 queue free %	96				42	88
cM capacity (veh/h)	1059				275	631
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	453	437	234			
Volume Left	39	0	160			
Volume Right	0	76	74			
cSH	1059	1700	334			
Volume to Capacity	0.04	0.26	0.70			
Queue Length 95th (m)	0.9	0.0	38.0			
Control Delay (s)	1.1	0.0	37.4			
Lane LOS	A		E			
Approach Delay (s)	1.1	0.0	37.4			
Approach LOS			E			
<b>Intersection Summary</b>						
Average Delay			8.2			
Intersection Capacity Utilization			54.2%		ICU Level of Service	A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
5: Osprey Street & Main Street /Main Street

2032 FB AM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	368	25	9	278	3	43	2	13	28	5	13
Future Volume (vph)	13	368	25	9	278	3	43	2	13	28	5	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.992			0.999			0.970			0.961	
Flt Protected		0.998			0.998			0.964			0.970	
Satd. Flow (prot)	0	1706	0	0	1707	0	0	1598	0	0	1670	0
Flt Permitted		0.998			0.998			0.964			0.970	
Satd. Flow (perm)	0	1706	0	0	1707	0	0	1598	0	0	1670	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	7		4	4		7	3					3
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	14%	0%	0%	14%	0%	8%	0%	18%	8%	0%	0%
Adj. Flow (vph)	17	478	32	12	361	4	56	3	17	36	6	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	527	0	0	377	0	0	76	0	0	59	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.4%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 5: Osprey Street & Main Street /Main Street

2032 FB AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	368	25	9	278	3	43	2	13	28	5	13
Future Volume (Veh/h)	13	368	25	9	278	3	43	2	13	28	5	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	17	478	32	12	361	4	56	3	17	36	6	17
Pedestrians		3						6			7	
Lane Width (m)		3.8						3.5			3.5	
Walking Speed (m/s)		1.1						1.1			1.1	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	372			516			944	930	500	940	944	373
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	372			516			944	930	500	940	944	373
tC, single (s)	4.1			4.1			7.2	6.5	6.4	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.5	3.6	4.0	3.3
p0 queue free %	99			99			74	99	97	84	98	97
cM capacity (veh/h)	1190			1054			218	259	537	220	255	671
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	527	377	76	59								
Volume Left	17	12	56	36								
Volume Right	32	4	17	17								
cSH	1190	1054	253	278								
Volume to Capacity	0.01	0.01	0.30	0.21								
Queue Length 95th (m)	0.3	0.3	9.3	6.0								
Control Delay (s)	0.4	0.4	25.2	21.4								
Lane LOS	A	A	D	C								
Approach Delay (s)	0.4	0.4	25.2	21.4								
Approach LOS			D	C								
Intersection Summary												
Average Delay			3.4									
Intersection Capacity Utilization			37.4%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
6: Glenelg Street & Glenelg Access

2032 FB AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Volume (vph)	11	20	17	42	135	33
Future Volume (vph)	11	20	17	42	135	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.903		0.973	
Flt Protected		0.983			0.961	
Satd. Flow (prot)	0	1811	1663	0	1722	0
Flt Permitted		0.983			0.961	
Satd. Flow (perm)	0	1811	1663	0	1722	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		456.0	263.8		80.1	
Travel Time (s)		41.0	23.7		7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	22	18	46	147	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	34	64	0	183	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.5%
Analysis Period (min)	15
	ICU Level of Service A

















HCM Unsignalized Intersection Capacity Analysis  
6: Glenelg Street & Glenelg Access

2032 FB AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↷	
Traffic Volume (veh/h)	11	20	17	42	135	33
Future Volume (Veh/h)	11	20	17	42	135	33
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	22	18	46	147	36
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	64				87	41
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	64				87	41
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				84	97
cM capacity (veh/h)	1538				907	1030
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	34	64	183			
Volume Left	12	0	147			
Volume Right	0	46	36			
cSH	1538	1700	929			
Volume to Capacity	0.01	0.04	0.20			
Queue Length 95th (m)	0.2	0.0	5.6			
Control Delay (s)	2.6	0.0	9.8			
Lane LOS	A		A			
Approach Delay (s)	2.6	0.0	9.8			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			6.7			
Intersection Capacity Utilization			24.5%	ICU Level of Service	A	
Analysis Period (min)			15			

7: Osprey Street/Osprey Street & Toronto Street/Bradley Street

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	2	33	5	2	3	19	21	0	30	6
Future Volume (vph)	4	2	2	33	5	2	3	19	21	0	30	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.4	3.5	3.5	4.4	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		0.966			0.993			0.935			0.978	
Flt Protected		0.976			0.960			0.996				
Satd. Flow (prot)	0	1931	0	0	1970	0	0	1734	0	0	1802	0
Flt Permitted		0.976			0.960			0.996				
Satd. Flow (perm)	0	1931	0	0	1970	0	0	1734	0	0	1802	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		109.8			83.2			292.8			220.5	
Travel Time (s)		9.9			7.5			26.4			19.8	
Confl. Peds. (#/hr)	3					3	3		3	3		3
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Heavy Vehicles (%)	2%	0%	0%	0%	0%	2%	0%	2%	0%	2%	2%	2%
Adj. Flow (vph)	6	3	3	51	8	3	5	29	32	0	46	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	62	0	0	66	0	0	55	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.0%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 7: Osprey Street/Osprey Street & Toronto Street/Bradley Street

2032 FB AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	4	2	2	33	5	2	3	19	21	0	30	6
Future Volume (vph)	4	2	2	33	5	2	3	19	21	0	30	6
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Hourly flow rate (vph)	6	3	3	51	8	3	5	29	32	0	46	9
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	12	62	66	55								
Volume Left (vph)	6	51	5	0								
Volume Right (vph)	3	3	32	9								
Hadj (s)	-0.03	0.14	-0.26	-0.06								
Departure Headway (s)	4.2	4.3	3.9	4.1								
Degree Utilization, x	0.01	0.07	0.07	0.06								
Capacity (veh/h)	829	811	902	863								
Control Delay (s)	7.2	7.6	7.2	7.3								
Approach Delay (s)	7.2	7.6	7.2	7.3								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.4									
Level of Service			A									
Intersection Capacity Utilization			17.0%	ICU Level of Service	A							
Analysis Period (min)			15									

Lanes, Volumes, Timings  
8: Main Street & Owen Sound Street

2032 FB AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	406	273	60	54	0
Future Volume (vph)	4	406	273	60	54	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.976					
Flt Protected					0.950	
Satd. Flow (prot)	0	1721	1669	0	2046	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1721	1669	0	2046	0
Link Speed (k/h)	40		40	40		
Link Distance (m)	155.5		320.4	159.9		
Travel Time (s)	14.0		28.8	14.4		
Confl. Peds. (#/hr)	4					
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	13%	15%	7%	0%	0%
Adj. Flow (vph)	5	495	333	73	66	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	500	406	0	66	0
Sign Control	Free		Free	Stop		

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.6%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 8: Main Street & Owen Sound Street

2032 FB AM



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↶	
Traffic Volume (veh/h)	4	406	273	60	54	0
Future Volume (Veh/h)	4	406	273	60	54	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	5	495	333	73	66	0
Pedestrians					4	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	410				878	374
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	410				878	374
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				79	100
cM capacity (veh/h)	1154				318	674
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	500	406	66			
Volume Left	5	0	66			
Volume Right	0	73	0			
cSH	1154	1700	318			
Volume to Capacity	0.00	0.24	0.21			
Queue Length 95th (m)	0.1	0.0	5.8			
Control Delay (s)	0.1	0.0	19.3			
Lane LOS	A		C			
Approach Delay (s)	0.1	0.0	19.3			
Approach LOS			C			
<b>Intersection Summary</b>						
Average Delay			1.4			
Intersection Capacity Utilization			34.6%		ICU Level of Service	A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 9: Osprey Street /Osprey Street & Grey Street N

2032 FB AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	6	6	28	19	0	5	0	12	0	0	0
Future Volume (vph)	0	6	6	28	19	0	5	0	12	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.932						0.906				
Flt Protected					0.971			0.985				
Satd. Flow (prot)	0	1717	0	0	1789	0	0	1644	0	0	1842	0
Flt Permitted					0.971			0.985				
Satd. Flow (perm)	0	1717	0	0	1789	0	0	1644	0	0	1842	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		323.7			65.9			220.5			53.1	
Travel Time (s)		29.1			5.9			19.8			4.8	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Adj. Flow (vph)	0	8	8	37	25	0	7	0	16	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	0	0	62	0	0	23	0	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	19.2%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 9: Osprey Street /Osprey Street & Grey Street N

2032 FB AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	0	6	6	28	19	0	5	0	12	0	0	0
Future Volume (Veh/h)	0	6	6	28	19	0	5	0	12	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	0	8	8	37	25	0	7	0	16	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	25			16			111	111	12	127	115	25
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	25			16			111	111	12	127	115	25
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			99	100	99	100	100	100
cM capacity (veh/h)	1589			1602			852	761	1069	819	757	1051
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	16	62	23	0								
Volume Left	0	37	7	0								
Volume Right	8	0	16	0								
cSH	1589	1602	992	1700								
Volume to Capacity	0.00	0.02	0.02	0.00								
Queue Length 95th (m)	0.0	0.5	0.5	0.0								
Control Delay (s)	0.0	4.4	8.7	0.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	4.4	8.7	0.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay			4.7									
Intersection Capacity Utilization			19.2%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 10: Bradley Street & Grey Street N

2032 FB AM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	2	9	4	11	38
Future Volume (vph)	15	2	9	4	11	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984			0.895		
Flt Protected	0.958			0.966		
Satd. Flow (prot)	1736			0	0	1779
Flt Permitted	0.958			0.966		
Satd. Flow (perm)	1736			0	0	1779
Link Speed (k/h)	40			40	40	
Link Distance (m)	65.9			127.5	111.2	
Travel Time (s)	5.9			11.5	10.0	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64
Adj. Flow (vph)	23	3	14	6	17	59
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	0	20	76	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.4%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 10: Bradley Street & Grey Street N

2032 FB AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	2	9	4	11	38
Future Volume (Veh/h)	15	2	9	4	11	38
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	23	3	14	6	17	59
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	80	46	76			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80	46	76			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	99			
cM capacity (veh/h)	913	1023	1523			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	26	20	76			
Volume Left	23	14	0			
Volume Right	3	0	59			
cSH	925	1523	1700			
Volume to Capacity	0.03	0.01	0.04			
Queue Length 95th (m)	0.7	0.2	0.0			
Control Delay (s)	9.0	5.2	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.0	5.2	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			2.8			
Intersection Capacity Utilization			17.4%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 1: Ida Street & Glenelg Street

2032 FB PM












Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	26	26	28	33	19
Future Volume (vph)	22	26	26	28	33	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.927		0.931			
Flt Protected	0.978					0.969
Satd. Flow (prot)	1952	0	1710	0	0	1741
Flt Permitted	0.978					0.969
Satd. Flow (perm)	1952	0	1710	0	0	1741
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%
Adj. Flow (vph)	28	33	33	35	41	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	68	0	0	65
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	19.5%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 1: Ida Street & Glenelg Street

2032 FB PM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	22	26	26	28	33	19
Future Volume (Veh/h)	22	26	26	28	33	19
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	28	32	32	35	41	24
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	156	50			67	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	156	50			67	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	97			97	
cM capacity (veh/h)	818	1025			1547	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	60	67	65			
Volume Left	28	0	41			
Volume Right	32	35	0			
cSH	917	1700	1547			
Volume to Capacity	0.07	0.04	0.03			
Queue Length 95th (m)	1.6	0.0	0.6			
Control Delay (s)	9.2	0.0	4.7			
Lane LOS	A		A			
Approach Delay (s)	9.2	0.0	4.7			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			4.5			
Intersection Capacity Utilization			19.5%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 2: Dundalk Street & Glenelg Street/Grey Street N

2032 FB PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	43	83	15	53	128	19
Future Volume (vph)	43	83	15	53	128	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.5	3.5	3.1	4.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.911			0.983		
Flt Protected				0.989	0.958	
Satd. Flow (prot)	1541	0	0	1635	1754	0
Flt Permitted				0.989	0.958	
Satd. Flow (perm)	1541	0	0	1635	1754	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	263.8			323.7	411.0	
Travel Time (s)	23.7			29.1	37.0	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	16%	1%	0%	11%	14%	0%
Adj. Flow (vph)	48	93	17	60	144	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	141	0	0	77	165	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.2% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 2: Dundalk Street & Glenelg Street/Grey Street N

2032 FB PM



















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Traffic Volume (veh/h)	43	83	15	53	128	19
Future Volume (Veh/h)	43	83	15	53	128	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	48	93	17	60	144	21
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			141		188	94
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			141		188	94
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			99		81	98
cM capacity (veh/h)			1455		765	968
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	141	77	165			
Volume Left	0	17	144			
Volume Right	93	0	21			
cSH	1700	1455	786			
Volume to Capacity	0.08	0.01	0.21			
Queue Length 95th (m)	0.0	0.3	6.0			
Control Delay (s)	0.0	1.7	10.8			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.7	10.8			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			5.0			
Intersection Capacity Utilization			29.2%	ICU Level of Service	A	
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 3: Ida Street & Grey Road 9/Main Street

2032 FB PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	200	17	38	209	11	26	17	45	11	10	21
Future Volume (vph)	28	200	17	38	209	11	26	17	45	11	10	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	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		0.991			0.994			0.931			0.934	
Flt Protected		0.994			0.993			0.986			0.987	
Satd. Flow (prot)	0	2014	0	0	1949	0	0	1783	0	0	1866	0
Flt Permitted		0.994			0.993			0.986			0.987	
Satd. Flow (perm)	0	2014	0	0	1949	0	0	1783	0	0	1866	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		788.4			805.6			914.0			590.7	
Travel Time (s)		71.0			72.5			82.3			53.2	
Confl. Peds. (#/hr)	3		1	1		1			3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	14%	4%	7%	34%	5%	0%	5%	14%	13%	0%	0%	13%
Adj. Flow (vph)	29	211	18	40	220	12	27	18	47	12	11	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	258	0	0	272	0	0	92	0	0	45	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.4%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 3: Ida Street & Grey Road 9/Main Street

2032 FB PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	28	200	17	38	209	11	26	17	45	11	10	21
Future Volume (Veh/h)	28	200	17	38	209	11	26	17	45	11	10	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	29	211	18	40	220	12	27	18	47	12	11	22
Pedestrians					3			1			3	
Lane Width (m)					4.8			4.8			4.8	
Walking Speed (m/s)					1.1			1.1			1.1	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	235			230			612	594	224	646	597	229
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	235			230			612	594	224	646	597	229
tC, single (s)	4.2			4.4			7.1	6.6	6.3	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.5			3.5	4.1	3.4	3.5	4.0	3.4
p0 queue free %	98			97			93	95	94	96	97	97
cM capacity (veh/h)	1260			1169			363	378	785	332	393	781
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	258	272	92	45								
Volume Left	29	40	27	12								
Volume Right	18	12	47	22								
cSH	1260	1169	506	488								
Volume to Capacity	0.02	0.03	0.18	0.09								
Queue Length 95th (m)	0.5	0.8	5.0	2.3								
Control Delay (s)	1.1	1.5	13.7	13.1								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.1	1.5	13.7	13.1								
Approach LOS			B	B								
<b>Intersection Summary</b>												
Average Delay			3.8									
Intersection Capacity Utilization			34.4%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 4: Main Street & Dundalk Street

2032 FB PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	28	299	280	121	84	39
Future Volume (vph)	28	299	280	121	84	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.959		0.957	
Flt Protected		0.996			0.967	
Satd. Flow (prot)	0	1774	1695	0	1914	0
Flt Permitted		0.996			0.967	
Satd. Flow (perm)	0	1774	1695	0	1914	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	6			6	2	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	6%	9%	0%	6%	0%
Adj. Flow (vph)	29	315	295	127	88	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	344	422	0	129	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	53.1%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 4: Main Street & Dundalk Street

















2032 FB PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	28	299	280	121	84	39
Future Volume (Veh/h)	28	299	280	121	84	39
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	29	315	295	127	88	41
Pedestrians		2	2		6	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	428				740	366
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	428				740	366
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	97				76	94
cM capacity (veh/h)	1134				366	677
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	344	422	129			
Volume Left	29	0	88			
Volume Right	0	127	41			
cSH	1134	1700	428			
Volume to Capacity	0.03	0.25	0.30			
Queue Length 95th (m)	0.6	0.0	9.5			
Control Delay (s)	0.9	0.0	17.0			
Lane LOS	A		C			
Approach Delay (s)	0.9	0.0	17.0			
Approach LOS			C			
<b>Intersection Summary</b>						
Average Delay			2.8			
Intersection Capacity Utilization			53.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
5: Osprey Street & Main Street /Main Street

2032 FB PM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	350	43	10	371	3	23	7	18	18	3	11
Future Volume (vph)	18	350	43	10	371	3	23	7	18	18	3	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.986			0.999			0.950			0.954	
Flt Protected		0.998			0.999			0.976			0.972	
Satd. Flow (prot)	0	1729	0	0	1732	0	0	1375	0	0	1742	0
Flt Permitted		0.998			0.999			0.976			0.972	
Satd. Flow (perm)	0	1729	0	0	1732	0	0	1375	0	0	1742	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	18		10	10		18	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	12%	0%	13%	12%	0%	50%	0%	7%	0%	0%	0%
Adj. Flow (vph)	20	389	48	11	412	3	26	8	20	20	3	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	457	0	0	426	0	0	54	0	0	35	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.8%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
5: Osprey Street & Main Street /Main Street

2032 FB PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	350	43	10	371	3	23	7	18	18	3	11
Future Volume (Veh/h)	18	350	43	10	371	3	23	7	18	18	3	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	20	389	48	11	412	3	26	8	20	20	3	12
Pedestrians		4			7			17			18	
Lane Width (m)		3.8			3.8			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			1			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	433			454			923	925	437	938	948	436
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	433			454			923	925	437	938	948	436
tC, single (s)	4.2			4.2			7.6	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			4.0	4.0	3.4	3.5	4.0	3.3
p0 queue free %	98			99			86	97	97	91	99	98
cM capacity (veh/h)	1083			1035			188	255	596	217	248	613
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	457	426	54	35								
Volume Left	20	11	26	20								
Volume Right	48	3	20	12								
cSH	1083	1035	266	283								
Volume to Capacity	0.02	0.01	0.20	0.12								
Queue Length 95th (m)	0.4	0.2	5.7	3.2								
Control Delay (s)	0.6	0.3	22.0	19.5								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.6	0.3	22.0	19.5								
Approach LOS			C	C								
<b>Intersection Summary</b>												
Average Delay			2.3									
Intersection Capacity Utilization			41.8%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
6: Glenelg Street & Glenelg Access

2032 FB PM



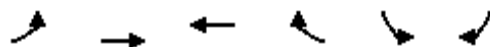
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	37	23	26	212	86	22
Future Volume (vph)	37	23	26	212	86	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.880		0.972	
Flt Protected		0.970			0.962	
Satd. Flow (prot)	0	1787	1621	0	1722	0
Flt Permitted		0.970			0.962	
Satd. Flow (perm)	0	1787	1621	0	1722	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		456.0	263.8		80.1	
Travel Time (s)		41.0	23.7		7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	25	28	230	93	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	65	258	0	117	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.9%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
6: Glenelg Street & Glenelg Access

2032 FB PM



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↶	
Traffic Volume (veh/h)	37	23	26	212	86	22
Future Volume (Veh/h)	37	23	26	212	86	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	25	28	230	93	24
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	258			248	143	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	258			248	143	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	97			87	97	
cM capacity (veh/h)	1307			718	905	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	65	258	117			
Volume Left	40	0	93			
Volume Right	0	230	24			
cSH	1307	1700	750			
Volume to Capacity	0.03	0.15	0.16			
Queue Length 95th (m)	0.7	0.0	4.2			
Control Delay (s)	4.9	0.0	10.7			
Lane LOS	A		B			
Approach Delay (s)	4.9	0.0	10.7			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			3.6			
Intersection Capacity Utilization			33.9%	ICU Level of Service	A	
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 7: Osprey Street/Osprey Street & Toronto Street/Bradley Street

2032 FB PM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	6	2	24	5	2	6	37	53	0	17	2
Future Volume (vph)	4	6	2	24	5	2	6	37	53	0	17	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.4	3.5	3.5	4.4	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		0.977			0.991			0.926			0.985	
Flt Protected		0.984			0.963			0.997				
Satd. Flow (prot)	0	1976	0	0	1972	0	0	1699	0	0	1814	0
Flt Permitted		0.984			0.963			0.997				
Satd. Flow (perm)	0	1976	0	0	1972	0	0	1699	0	0	1814	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		109.8			83.2			292.8			220.5	
Travel Time (s)		9.9			7.5			26.4			19.8	
Confl. Peds. (#/hr)	6						6		11	11		
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	2%	0%	0%	0%	0%	2%	20%	2%	0%	2%	2%	2%
Adj. Flow (vph)	6	9	3	34	7	3	9	53	76	0	24	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	0	0	44	0	0	138	0	0	27	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	23.9%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 7: Osprey Street/Osprey Street & Toronto Street/Bradley Street

2032 FB PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	4	6	2	24	5	2	6	37	53	0	17	2
Future Volume (vph)	4	6	2	24	5	2	6	37	53	0	17	2
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	6	9	3	34	7	3	9	53	76	0	24	3
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	18	44	138	27								
Volume Left (vph)	6	34	9	0								
Volume Right (vph)	3	3	76	3								
Hadj (s)	-0.02	0.12	-0.28	-0.03								
Departure Headway (s)	4.3	4.4	3.8	4.1								
Degree Utilization, x	0.02	0.05	0.15	0.03								
Capacity (veh/h)	806	790	925	848								
Control Delay (s)	7.4	7.6	7.4	7.3								
Approach Delay (s)	7.4	7.6	7.4	7.3								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.4									
Level of Service			A									
Intersection Capacity Utilization			23.9%	ICU Level of Service	A							
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 8: Main Street & Owen Sound Street

2032 FB PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	5	380	376	115	56	5
Future Volume (vph)	5	380	376	115	56	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.968		0.988	
Flt Protected		0.999			0.956	
Satd. Flow (prot)	0	1782	1731	0	2034	0
Flt Permitted		0.999			0.956	
Satd. Flow (perm)	0	1782	1731	0	2034	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		155.5	320.4		159.9	
Travel Time (s)		14.0	28.8		14.4	
Confl. Peds. (#/hr)	22					
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	9%	10%	4%	0%	0%
Adj. Flow (vph)	6	432	427	131	64	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	438	558	0	70	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.9% ICU Level of Service A
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

## 8: Main Street & Owen Sound Street

2032 FB PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↶	
Traffic Volume (veh/h)	5	380	376	115	56	5
Future Volume (Veh/h)	5	380	376	115	56	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	6	432	427	131	64	6
Pedestrians					22	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					3	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	580				958	514
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	580				958	514
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				77	99
cM capacity (veh/h)	977				278	549
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	438	558	70			
Volume Left	6	0	64			
Volume Right	0	131	6			
cSH	977	1700	291			
Volume to Capacity	0.01	0.33	0.24			
Queue Length 95th (m)	0.1	0.0	7.0			
Control Delay (s)	0.2	0.0	21.3			
Lane LOS	A		C			
Approach Delay (s)	0.2	0.0	21.3			
Approach LOS			C			
<b>Intersection Summary</b>						
Average Delay			1.5			
Intersection Capacity Utilization			36.9%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 9: Osprey Street /Osprey Street & Grey Street N

2032 FB PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	0	24	5	14	10	0	10	0	26	0	0	0
Future Volume (vph)	0	24	5	14	10	0	10	0	26	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.977						0.903				
Flt Protected					0.972			0.986				
Satd. Flow (prot)	0	1800	0	0	1790	0	0	1640	0	0	1842	0
Flt Permitted					0.972			0.986				
Satd. Flow (perm)	0	1800	0	0	1790	0	0	1640	0	0	1842	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		323.7			65.9			220.5			53.1	
Travel Time (s)		29.1			5.9			19.8			4.8	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	0	29	6	17	12	0	12	0	31	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	35	0	0	29	0	0	43	0	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	18.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 9: Osprey Street /Osprey Street & Grey Street N

2032 FB PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	0	24	5	14	10	0	10	0	26	0	0	0
Future Volume (Veh/h)	0	24	5	14	10	0	10	0	26	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	0	29	6	17	12	0	12	0	31	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	12			35			78	78	32	109	81	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	12			35			78	78	32	109	81	12
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	100	97	100	100	100
cM capacity (veh/h)	1607			1576			903	804	1042	837	800	1069
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total	35	29	43	0								
Volume Left	0	17	12	0								
Volume Right	6	0	31	0								
cSH	1607	1576	999	1700								
Volume to Capacity	0.00	0.01	0.04	0.00								
Queue Length 95th (m)	0.0	0.2	1.0	0.0								
Control Delay (s)	0.0	4.3	8.8	0.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	4.3	8.8	0.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay			4.7									
Intersection Capacity Utilization			18.0%	ICU Level of Service		A						
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 10: Bradley Street & Grey Street N

2032 FB PM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	3	7	10	9	26
Future Volume (vph)	40	3	7	10	9	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991			0.899		
Flt Protected	0.956			0.980		
Satd. Flow (prot)	1745			1805	1656	0
Flt Permitted	0.956			0.980		
Satd. Flow (perm)	1745			1805	1656	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	65.9			127.5	111.2	
Travel Time (s)	5.9			11.5	10.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Adj. Flow (vph)	53	4	9	13	12	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	0	0	22	47	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.8%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 10: Bradley Street & Grey Street N

2032 FB PM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	3	7	10	9	26
Future Volume (Veh/h)	40	3	7	10	9	26
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	53	4	9	13	12	35
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	60	30	47			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	60	30	47			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	100	99			
cM capacity (veh/h)	941	1045	1560			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	57	22	47			
Volume Left	53	9	0			
Volume Right	4	0	35			
cSH	947	1560	1700			
Volume to Capacity	0.06	0.01	0.03			
Queue Length 95th (m)	1.5	0.1	0.0			
Control Delay (s)	9.0	3.0	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.0	3.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			4.6			
Intersection Capacity Utilization			16.8%	ICU Level of Service	A	
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 1: Ida Street & Glenelg Street

2027 FT AM












Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	83	63	10	72	40	18
Future Volume (vph)	83	63	10	72	40	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.942		0.881			
Flt Protected	0.972					0.967
Satd. Flow (prot)	1725	0	1254	0	0	1562
Flt Permitted	0.972					0.967
Satd. Flow (perm)	1725	0	1254	0	0	1562
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	0%	33%	0%	33%	14%	13%
Adj. Flow (vph)	109	83	13	95	53	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	192	0	108	0	0	77
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 1: Ida Street & Glenelg Street

2027 FT AM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	83	63	10	72	40	18
Future Volume (Veh/h)	83	63	10	72	40	18
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	109	83	13	95	53	24
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	190	60			108	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	190	60			108	
tC, single (s)	6.4	6.5			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.6			2.3	
p0 queue free %	86	91			96	
cM capacity (veh/h)	773	924			1411	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	192	108	77			
Volume Left	109	0	53			
Volume Right	83	95	0			
cSH	832	1700	1411			
Volume to Capacity	0.23	0.06	0.04			
Queue Length 95th (m)	6.8	0.0	0.9			
Control Delay (s)	10.6	0.0	5.4			
Lane LOS	B		A			
Approach Delay (s)	10.6	0.0	5.4			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			6.5			
Intersection Capacity Utilization			25.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 2: Dundalk Street & Glenelg Street/Grey Street N

2027 FT AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	114	126	63	102	43	45
Future Volume (vph)	114	126	63	102	43	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.5	3.5	3.1	4.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.929			0.931		
Flt Protected				0.981	0.976	
Satd. Flow (prot)	1464	0	0	1760	1527	0
Flt Permitted				0.981	0.976	
Satd. Flow (perm)	1464	0	0	1760	1527	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	263.8			321.8	411.0	
Travel Time (s)	23.7			29.0	37.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	17%	11%	0%	0%	50%	0%
Adj. Flow (vph)	152	168	84	136	57	60
Shared Lane Traffic (%)						
Lane Group Flow (vph)	320	0	0	220	117	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.7% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
2: Dundalk Street & Glenelg Street/Grey Street N

















2027 FT AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	114	126	63	102	43	45
Future Volume (Veh/h)	114	126	63	102	43	45
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	152	168	84	136	57	60
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			320		540	236
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			320		540	236
tC, single (s)			4.1		6.9	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.0	3.3
p0 queue free %			93		86	93
cM capacity (veh/h)			1251		400	808
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	320	220	117			
Volume Left	0	84	57			
Volume Right	168	0	60			
cSH	1700	1251	540			
Volume to Capacity	0.19	0.07	0.22			
Queue Length 95th (m)	0.0	1.6	6.2			
Control Delay (s)	0.0	3.5	13.5			
Lane LOS		A	B			
Approach Delay (s)	0.0	3.5	13.5			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			3.6			
Intersection Capacity Utilization			37.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
3: Ida Street & Grey Road 9/Main Street

2027 FT AM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	157	19	39	140	11	12	23	26	13	29	56
Future Volume (vph)	38	157	19	39	140	11	12	23	26	13	29	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	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		0.988			0.992			0.942			0.923	
Flt Protected		0.991			0.990			0.990			0.993	
Satd. Flow (prot)	0	1759	0	0	1736	0	0	1786	0	0	1903	0
Flt Permitted		0.991			0.990			0.990			0.993	
Satd. Flow (perm)	0	1759	0	0	1736	0	0	1786	0	0	1903	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		788.4			805.6			914.0			590.7	
Travel Time (s)		71.0			72.5			82.3			53.2	
Confl. Peds. (#/hr)							1		2	2		1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	20%	18%	35%	53%	14%	10%	9%	0%	25%	8%	9%	0%
Adj. Flow (vph)	46	191	23	48	171	13	15	28	32	16	35	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	260	0	0	232	0	0	75	0	0	119	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.6%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
3: Ida Street & Grey Road 9/Main Street

2027 FT AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	157	19	39	140	11	12	23	26	13	29	56
Future Volume (Veh/h)	38	157	19	39	140	11	12	23	26	13	29	56
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	46	191	23	48	171	13	15	28	32	16	35	68
Pedestrians		1			2							
Lane Width (m)		4.8			4.8							
Walking Speed (m/s)		1.1			1.1							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	184			214			654	574	204	616	580	178
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	184			214			654	574	204	616	580	178
tC, single (s)	4.3			4.6			7.2	6.5	6.5	7.2	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.7			3.6	4.0	3.5	3.6	4.1	3.3
p0 queue free %	96			96			95	93	96	95	91	92
cM capacity (veh/h)	1290			1105			298	398	779	336	384	869
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	260	232	75	119								
Volume Left	46	48	15	16								
Volume Right	23	13	32	68								
cSH	1290	1105	464	548								
Volume to Capacity	0.04	0.04	0.16	0.22								
Queue Length 95th (m)	0.8	1.0	4.3	6.2								
Control Delay (s)	1.7	2.1	14.3	13.4								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.7	2.1	14.3	13.4								
Approach LOS			B	B								
Intersection Summary												
Average Delay			5.2									
Intersection Capacity Utilization			28.6%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
4: Main Street & Dundalk Street

2027 FT AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	49	279	246	53	114	76
Future Volume (vph)	49	279	246	53	114	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.976		0.946	
Flt Protected		0.993			0.971	
Satd. Flow (prot)	0	1683	1595	0	1766	0
Flt Permitted		0.993			0.971	
Satd. Flow (perm)	0	1683	1595	0	1766	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	10			10	1	1
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	10%	11%	15%	15%	18%	3%
Adj. Flow (vph)	68	388	342	74	158	106
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	456	416	0	264	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	54.8% ICU Level of Service A
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

## 4: Main Street & Dundalk Street

2027 FT AM



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	49	279	246	53	114	76
Future Volume (Veh/h)	49	279	246	53	114	76
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	68	388	342	74	158	106
Pedestrians		1	1		10	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	426				914	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	426				914	390
tC, single (s)	4.2				6.6	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.3
p0 queue free %	94				40	84
cM capacity (veh/h)	1079				263	648
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	456	416	264			
Volume Left	68	0	158			
Volume Right	0	74	106			
cSH	1079	1700	345			
Volume to Capacity	0.06	0.24	0.77			
Queue Length 95th (m)	1.5	0.0	46.4			
Control Delay (s)	1.9	0.0	42.5			
Lane LOS	A		E			
Approach Delay (s)	1.9	0.0	42.5			
Approach LOS			E			
<b>Intersection Summary</b>						
Average Delay			10.6			
Intersection Capacity Utilization			54.8%		ICU Level of Service	A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
5: Osprey Street & Main Street /Main Street

2027 FT AM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	351	24	8	263	3	42	12	12	115	13	12
Future Volume (vph)	12	351	24	8	263	3	42	12	12	115	13	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.992			0.998			0.975			0.988	
Flt Protected		0.998			0.999			0.969			0.961	
Satd. Flow (prot)	0	1706	0	0	1707	0	0	1638	0	0	1674	0
Flt Permitted		0.998			0.999			0.969			0.961	
Satd. Flow (perm)	0	1706	0	0	1707	0	0	1638	0	0	1674	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	7		4	4		7	3					3
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	14%	0%	0%	14%	0%	8%	0%	18%	8%	0%	0%
Adj. Flow (vph)	16	456	31	10	342	4	55	16	16	149	17	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	503	0	0	356	0	0	87	0	0	182	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.4%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
5: Osprey Street & Main Street /Main Street

2027 FT AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	351	24	8	263	3	42	12	12	115	13	12
Future Volume (Veh/h)	12	351	24	8	263	3	42	12	12	115	13	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	16	456	31	10	342	4	55	16	16	149	17	16
Pedestrians		3						6			7	
Lane Width (m)		3.8						3.5			3.5	
Walking Speed (m/s)		1.1						1.1			1.1	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	353			493			901	882	478	898	896	354
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	353			493			901	882	478	898	896	354
tC, single (s)	4.1			4.1			7.2	6.5	6.4	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.5	3.6	4.0	3.3
p0 queue free %	99			99			76	94	97	35	94	98
cM capacity (veh/h)	1209			1075			227	277	553	228	272	688
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	503	356	87	182								
Volume Left	16	10	55	149								
Volume Right	31	4	16	16								
cSH	1209	1075	265	246								
Volume to Capacity	0.01	0.01	0.33	0.74								
Queue Length 95th (m)	0.3	0.2	10.5	39.3								
Control Delay (s)	0.4	0.3	25.1	52.0								
Lane LOS	A	A	D	F								
Approach Delay (s)	0.4	0.3	25.1	52.0								
Approach LOS			D	F								
<b>Intersection Summary</b>												
Average Delay			10.6									
Intersection Capacity Utilization			42.4%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
6: Glenelg Street & Glenelg Access

2027 FT AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	88	94	42	135	51
Future Volume (vph)	24	88	94	42	135	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.958		0.963	
Flt Protected		0.989			0.965	
Satd. Flow (prot)	0	1822	1765	0	1712	0
Flt Permitted		0.989			0.965	
Satd. Flow (perm)	0	1822	1765	0	1712	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		456.0	263.8		80.1	
Travel Time (s)		41.0	23.7		7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	96	102	46	147	55
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	122	148	0	202	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.1%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
6: Glenelg Street & Glenelg Access

















2027 FT AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↕	
Traffic Volume (veh/h)	24	88	94	42	135	51
Future Volume (Veh/h)	24	88	94	42	135	51
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	96	102	46	147	55
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	148				273	125
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	148				273	125
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				79	94
cM capacity (veh/h)	1434				704	926
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	122	148	202			
Volume Left	26	0	147			
Volume Right	0	46	55			
cSH	1434	1700	753			
Volume to Capacity	0.02	0.09	0.27			
Queue Length 95th (m)	0.4	0.0	8.2			
Control Delay (s)	1.7	0.0	11.5			
Lane LOS	A		B			
Approach Delay (s)	1.7	0.0	11.5			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			5.4			
Intersection Capacity Utilization		34.1%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 7: Osprey Street & Toronto Street/Bradley Street

















2027 FT AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	2	2	66	5	2	3	120	47	0	179	34
Future Volume (vph)	14	2	2	66	5	2	3	120	47	0	179	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.4	3.5	3.5	4.4	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		0.986			0.996			0.963			0.979	
Flt Protected		0.962			0.957			0.999				
Satd. Flow (prot)	0	1962	0	0	1972	0	0	1688	0	0	1684	0
Flt Permitted		0.962			0.957			0.999				
Satd. Flow (perm)	0	1962	0	0	1972	0	0	1688	0	0	1684	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		109.8			83.2			292.8			217.2	
Travel Time (s)		9.9			7.5			26.4			19.5	
Confl. Peds. (#/hr)	3						3	3		3	3	3
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	11%	0%
Adj. Flow (vph)	22	3	3	102	8	3	5	185	72	0	275	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	28	0	0	113	0	0	262	0	0	327	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.1%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 7: Osprey Street & Toronto Street/Bradley Street

2027 FT AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	14	2	2	66	5	2	3	120	47	0	179	34
Future Volume (vph)	14	2	2	66	5	2	3	120	47	0	179	34
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Hourly flow rate (vph)	22	3	3	102	8	3	5	185	72	0	275	52
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	28	113	262	327								
Volume Left (vph)	22	102	5	0								
Volume Right (vph)	3	3	72	52								
Hadj (s)	0.09	0.16	-0.04	0.06								
Departure Headway (s)	5.6	5.5	4.7	4.7								
Degree Utilization, x	0.04	0.17	0.34	0.43								
Capacity (veh/h)	559	589	741	739								
Control Delay (s)	8.8	9.6	10.0	11.1								
Approach Delay (s)	8.8	9.6	10.0	11.1								
Approach LOS	A	A	B	B								
Intersection Summary												
Delay			10.4									
Level of Service			B									
Intersection Capacity Utilization			24.1%	ICU Level of Service	A							
Analysis Period (min)			15									

Lanes, Volumes, Timings  
8: Main Street & Owen Sound Street

2027 FT AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	475	258	174	140	0
Future Volume (vph)	4	475	258	174	140	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.946					
Flt Protected					0.950	
Satd. Flow (prot)	0	1720	1644	0	2046	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1720	1644	0	2046	0
Link Speed (k/h)	40		40		40	
Link Distance (m)	155.5		320.4		159.9	
Travel Time (s)	14.0		28.8		14.4	
Confl. Peds. (#/hr)	4					
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	13%	15%	7%	0%	0%
Adj. Flow (vph)	5	579	315	212	171	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	584	527	0	171	0
Sign Control	Free		Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.6% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 8: Main Street & Owen Sound Street

2027 FT AM



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	475	258	174	140	0
Future Volume (Veh/h)	4	475	258	174	140	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	5	579	315	212	171	0
Pedestrians					4	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	531				1014	425
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	531				1014	425
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				35	100
cM capacity (veh/h)	1042				264	630
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	584	527	171			
Volume Left	5	0	171			
Volume Right	0	212	0			
cSH	1042	1700	264			
Volume to Capacity	0.00	0.31	0.65			
Queue Length 95th (m)	0.1	0.0	31.0			
Control Delay (s)	0.1	0.0	40.6			
Lane LOS	A		E			
Approach Delay (s)	0.1	0.0	40.6			
Approach LOS			E			
<b>Intersection Summary</b>						
Average Delay			5.5			
Intersection Capacity Utilization			42.6%		ICU Level of Service	A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 9: Osprey Street & Grey Street N

2027 FT AM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	107	6	206	130	0	5	0	124	0	0	0
Future Volume (vph)	0	107	6	206	130	0	5	0	124	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.993						0.870				
Flt Protected					0.970			0.998				
Satd. Flow (prot)	0	1829	0	0	1787	0	0	1599	0	0	1842	0
Flt Permitted					0.970			0.998				
Satd. Flow (perm)	0	1829	0	0	1787	0	0	1599	0	0	1842	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		321.8			63.9			217.2			58.1	
Travel Time (s)		29.0			5.8			19.5			5.2	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Adj. Flow (vph)	0	143	8	275	173	0	7	0	165	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	151	0	0	448	0	0	172	0	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.5%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 9: Osprey Street & Grey Street N

2027 FT AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	107	6	206	130	0	5	0	124	0	0	0
Future Volume (Veh/h)	0	107	6	206	130	0	5	0	124	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	0	143	8	275	173	0	7	0	165	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None					None						
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	173			151			870	870	147	1035	874	173
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	173			151			870	870	147	1035	874	173
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			81			97	100	82	100	100	100
cM capacity (veh/h)	1404			1430			232	234	900	146	233	871
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	151	448	172	0								
Volume Left	0	275	7	0								
Volume Right	8	0	165	0								
cSH	1404	1430	805	1700								
Volume to Capacity	0.00	0.19	0.21	0.00								
Queue Length 95th (m)	0.0	5.4	6.1	0.0								
Control Delay (s)	0.0	5.7	10.7	0.0								
Lane LOS		A	B	A								
Approach Delay (s)	0.0	5.7	10.7	0.0								
Approach LOS			B	A								
Intersection Summary												
Average Delay			5.7									
Intersection Capacity Utilization			39.5%	ICU Level of Service	A							
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 10: Bradley Street & Grey Street N

2027 FT AM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	228	2	8	40	54	328
Future Volume (vph)	228	2	8	40	54	328
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.884	
Flt Protected	0.953			0.992		
Satd. Flow (prot)	1754	0	0	1827	1628	0
Flt Permitted	0.953			0.992		
Satd. Flow (perm)	1754	0	0	1827	1628	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	63.9			188.8	110.1	
Travel Time (s)	5.8			17.0	9.9	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64
Adj. Flow (vph)	356	3	13	63	84	513
Shared Lane Traffic (%)						
Lane Group Flow (vph)	359	0	0	76	597	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.5%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 10: Bradley Street & Grey Street N

2027 FT AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	228	2	8	40	54	328
Future Volume (Veh/h)	228	2	8	40	54	328
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	356	3	12	62	84	512
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	426	340	596			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	426	340	596			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	38	100	99			
cM capacity (veh/h)	578	702	980			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	359	74	596			
Volume Left	356	12	0			
Volume Right	3	0	512			
cSH	579	980	1700			
Volume to Capacity	0.62	0.01	0.35			
Queue Length 95th (m)	32.2	0.3	0.0			
Control Delay (s)	20.8	1.5	0.0			
Lane LOS	C	A				
Approach Delay (s)	20.8	1.5	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			7.4			
Intersection Capacity Utilization			42.5%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
1: Ida Street & Glenelg Street

2027 FT PM












Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	45	42	24	57	58	18
Future Volume (vph)	45	42	24	57	58	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.934		0.905			
Flt Protected	0.975					0.963
Satd. Flow (prot)	1961	0	1662	0	0	1744
Flt Permitted	0.975					0.963
Satd. Flow (perm)	1961	0	1662	0	0	1744
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%
Adj. Flow (vph)	56	53	30	71	73	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	109	0	101	0	0	96
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	22.6%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 1: Ida Street & Glenelg Street

2027 FT PM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	45	42	24	57	58	18
Future Volume (Veh/h)	45	42	24	57	58	18
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	56	52	30	71	72	22
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	232	66			101	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	232	66			101	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	95			95	
cM capacity (veh/h)	725	1004			1504	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	108	101	94			
Volume Left	56	0	72			
Volume Right	52	71	0			
cSH	837	1700	1504			
Volume to Capacity	0.13	0.06	0.05			
Queue Length 95th (m)	3.4	0.0	1.1			
Control Delay (s)	9.9	0.0	5.8			
Lane LOS	A		A			
Approach Delay (s)	9.9	0.0	5.8			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			5.4			
Intersection Capacity Utilization			22.6%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 2: Dundalk Street & Glenelg Street/Grey Street N

2027 FT PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	84	82	26	83	127	34
Future Volume (vph)	84	82	26	83	127	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.5	3.5	3.1	4.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.933				0.972	
Flt Protected				0.988	0.962	
Satd. Flow (prot)	1542	0	0	1636	1760	0
Flt Permitted				0.988	0.962	
Satd. Flow (perm)	1542	0	0	1636	1760	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	263.8			321.8	411.0	
Travel Time (s)	23.7			29.0	37.0	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	16%	1%	0%	11%	14%	0%
Adj. Flow (vph)	94	92	29	93	143	38
Shared Lane Traffic (%)						
Lane Group Flow (vph)	186	0	0	122	181	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.4%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 2: Dundalk Street & Glenelg Street/Grey Street N

2027 FT PM



















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	84	82	26	83	127	34
Future Volume (Veh/h)	84	82	26	83	127	34
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	94	92	29	93	143	38
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			186		291	140
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			186		291	140
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			98		78	96
cM capacity (veh/h)			1401		661	913
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	186	122	181			
Volume Left	0	29	143			
Volume Right	92	0	38			
cSH	1700	1401	702			
Volume to Capacity	0.11	0.02	0.26			
Queue Length 95th (m)	0.0	0.5	7.8			
Control Delay (s)	0.0	1.9	11.9			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.9	11.9			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			4.9			
Intersection Capacity Utilization			34.4%	ICU Level of Service	A	
Analysis Period (min)			15			



Lanes, Volumes, Timings  
3: Ida Street & Grey Road 9/Main Street

2027 FT PM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	191	16	35	198	10	24	20	41	10	13	37
Future Volume (vph)	52	191	16	35	198	10	24	20	41	10	13	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	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		0.992			0.994			0.935			0.918	
Flt Protected		0.990			0.993			0.986			0.991	
Satd. Flow (prot)	0	1991	0	0	1950	0	0	1789	0	0	1815	0
Flt Permitted		0.990			0.993			0.986			0.991	
Satd. Flow (perm)	0	1991	0	0	1950	0	0	1789	0	0	1815	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		788.4			805.6			914.0			590.7	
Travel Time (s)		71.0			72.5			82.3			53.2	
Confl. Peds. (#/hr)	3		1	1		1			3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	14%	4%	7%	34%	5%	0%	5%	14%	13%	0%	0%	13%
Adj. Flow (vph)	55	201	17	37	208	11	25	21	43	11	14	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	273	0	0	256	0	0	89	0	0	64	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.4%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 3: Ida Street & Grey Road 9/Main Street

2027 FT PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	191	16	35	198	10	24	20	41	10	13	37
Future Volume (Veh/h)	52	191	16	35	198	10	24	20	41	10	13	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	55	201	17	37	208	11	25	21	43	11	14	39
Pedestrians					3			1			3	
Lane Width (m)					4.8			4.8			4.8	
Walking Speed (m/s)					1.1			1.1			1.1	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	222			219			654	616	214	666	620	216
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	222			219			654	616	214	666	620	216
tC, single (s)	4.2			4.4			7.1	6.6	6.3	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.5			3.5	4.1	3.4	3.5	4.0	3.4
p0 queue free %	96			97			92	94	95	97	96	95
cM capacity (veh/h)	1274			1181			326	360	796	317	375	794
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	273	256	89	64								
Volume Left	55	37	25	11								
Volume Right	17	11	43	39								
cSH	1274	1181	471	528								
Volume to Capacity	0.04	0.03	0.19	0.12								
Queue Length 95th (m)	1.0	0.7	5.2	3.1								
Control Delay (s)	1.9	1.4	14.4	12.8								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.9	1.4	14.4	12.8								
Approach LOS			B	B								
<b>Intersection Summary</b>												
Average Delay			4.4									
Intersection Capacity Utilization			36.4%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 4: Main Street & Dundalk Street

2027 FT PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	42	283	264	120	83	47
Future Volume (vph)	42	283	264	120	83	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.958		0.951	
Flt Protected		0.994			0.969	
Satd. Flow (prot)	0	1775	1695	0	1911	0
Flt Permitted		0.994			0.969	
Satd. Flow (perm)	0	1775	1695	0	1911	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	6			6	2	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	6%	9%	0%	6%	0%
Adj. Flow (vph)	44	298	278	126	87	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	342	404	0	136	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	56.5%
Analysis Period (min)	15
	ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis  
 4: Main Street & Dundalk Street

















2027 FT PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (veh/h)	42	283	264	120	83	47
Future Volume (Veh/h)	42	283	264	120	83	47
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	44	298	278	126	87	49
Pedestrians		2	2		6	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	410				735	349
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	410				735	349
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	96				76	93
cM capacity (veh/h)	1151				363	693
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	342	404	136			
Volume Left	44	0	87			
Volume Right	0	126	49			
cSH	1151	1700	438			
Volume to Capacity	0.04	0.24	0.31			
Queue Length 95th (m)	0.9	0.0	9.9			
Control Delay (s)	1.4	0.0	16.9			
Lane LOS	A		C			
Approach Delay (s)	1.4	0.0	16.9			
Approach LOS			C			
<b>Intersection Summary</b>						
Average Delay			3.1			
Intersection Capacity Utilization			56.5%	ICU Level of Service		B
Analysis Period (min)			15			

Lanes, Volumes, Timings  
5: Osprey Street & Main Street /Main Street

2027 FT PM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	332	42	9	355	3	23	9	17	64	5	10
Future Volume (vph)	17	332	42	9	355	3	23	9	17	64	5	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.985			0.999			0.953			0.983	
Flt Protected		0.998			0.999			0.977			0.961	
Satd. Flow (prot)	0	1728	0	0	1732	0	0	1388	0	0	1775	0
Flt Permitted		0.998			0.999			0.977			0.961	
Satd. Flow (perm)	0	1728	0	0	1732	0	0	1388	0	0	1775	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	18		10	10		18	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	12%	0%	13%	12%	0%	50%	0%	7%	0%	0%	0%
Adj. Flow (vph)	19	369	47	10	394	3	26	10	19	71	6	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	435	0	0	407	0	0	55	0	0	88	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	43.1%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 5: Osprey Street & Main Street /Main Street

2027 FT PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	332	42	9	355	3	23	9	17	64	5	10
Future Volume (Veh/h)	17	332	42	9	355	3	23	9	17	64	5	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	19	369	47	10	394	3	26	10	19	71	6	11
Pedestrians		4			7			17			18	
Lane Width (m)		3.8			3.8			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			1			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	415			433			881	882	416	895	904	418
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	415			433			881	882	416	895	904	418
tC, single (s)	4.2			4.2			7.6	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			4.0	4.0	3.4	3.5	4.0	3.3
p0 queue free %	98			99			87	96	97	69	98	98
cM capacity (veh/h)	1100			1054			201	271	612	232	263	627
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	435	407	55	88								
Volume Left	19	10	26	71								
Volume Right	47	3	19	11								
cSH	1100	1054	278	254								
Volume to Capacity	0.02	0.01	0.20	0.35								
Queue Length 95th (m)	0.4	0.2	5.5	11.3								
Control Delay (s)	0.5	0.3	21.1	26.5								
Lane LOS	A	A	C	D								
Approach Delay (s)	0.5	0.3	21.1	26.5								
Approach LOS			C	D								
Intersection Summary												
Average Delay			3.9									
Intersection Capacity Utilization			43.1%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
6: Glenelg Street & Glenelg Access

2027 FT PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↶	
Traffic Volume (vph)	50	65	56	212	86	31
Future Volume (vph)	50	65	56	212	86	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.893		0.964	
Flt Protected		0.979			0.965	
Satd. Flow (prot)	0	1803	1645	0	1714	0
Flt Permitted		0.979			0.965	
Satd. Flow (perm)	0	1803	1645	0	1714	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		456.0	263.8		80.1	
Travel Time (s)		41.0	23.7		7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	71	61	230	93	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	125	291	0	127	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 38.8% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis  
6: Glenelg Street & Glenelg Access

2027 FT PM



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↶	
Traffic Volume (veh/h)	50	65	56	212	86	31
Future Volume (Veh/h)	50	65	56	212	86	31
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	71	61	230	93	34
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	291				355	176
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	291				355	176
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				85	96
cM capacity (veh/h)	1271				616	867
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	125	291	127			
Volume Left	54	0	93			
Volume Right	0	230	34			
cSH	1271	1700	668			
Volume to Capacity	0.04	0.17	0.19			
Queue Length 95th (m)	1.0	0.0	5.3			
Control Delay (s)	3.6	0.0	11.7			
Lane LOS	A		B			
Approach Delay (s)	3.6	0.0	11.7			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			3.6			
Intersection Capacity Utilization			38.8%	ICU Level of Service		A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
7: Osprey Street & Toronto Street/Bradley Street

2027 FT PM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	6	2	40	5	2	6	155	75	0	96	21
Future Volume (vph)	36	6	2	40	5	2	6	155	75	0	96	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.4	3.5	3.5	4.4	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		0.994			0.994			0.957			0.976	
Flt Protected		0.961			0.959			0.999				
Satd. Flow (prot)	0	1976	0	0	1972	0	0	1709	0	0	1834	0
Flt Permitted		0.961			0.959			0.999				
Satd. Flow (perm)	0	1976	0	0	1972	0	0	1709	0	0	1834	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		109.8			83.2			292.8			217.2	
Travel Time (s)		9.9			7.5			26.4			19.5	
Confl. Peds. (#/hr)	6					6			11	11		
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	20%	7%	0%	0%	0%	0%
Adj. Flow (vph)	51	9	3	57	7	3	9	221	107	0	137	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	0	0	67	0	0	337	0	0	167	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	30.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 7: Osprey Street & Toronto Street/Bradley Street

2027 FT PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	36	6	2	40	5	2	6	155	75	0	96	21
Future Volume (vph)	36	6	2	40	5	2	6	155	75	0	96	21
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	51	9	3	57	7	3	9	221	107	0	137	30
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	63	67	337	167								
Volume Left (vph)	51	57	9	0								
Volume Right (vph)	3	3	107	30								
Hadj (s)	0.13	0.14	-0.10	-0.11								
Departure Headway (s)	5.3	5.3	4.4	4.5								
Degree Utilization, x	0.09	0.10	0.41	0.21								
Capacity (veh/h)	611	611	801	755								
Control Delay (s)	8.8	8.9	10.3	8.7								
Approach Delay (s)	8.8	8.9	10.3	8.7								
Approach LOS	A	A	B	A								
Intersection Summary												
Delay			9.6									
Level of Service			A									
Intersection Capacity Utilization			30.0%	ICU Level of Service	A							
Analysis Period (min)			15									

Lanes, Volumes, Timings  
8: Main Street & Owen Sound Street

2027 FT PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	408	359	250	101	5
Future Volume (vph)	5	408	359	250	101	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.945		0.993	
Flt Protected		0.999			0.955	
Satd. Flow (prot)	0	1782	1707	0	2042	0
Flt Permitted		0.999			0.955	
Satd. Flow (perm)	0	1782	1707	0	2042	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		155.5	320.4		159.9	
Travel Time (s)		14.0	28.8		14.4	
Confl. Peds. (#/hr)	22					
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	9%	10%	4%	0%	0%
Adj. Flow (vph)	6	464	408	284	115	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	470	692	0	121	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.7%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 8: Main Street & Owen Sound Street

















2027 FT PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Volume (veh/h)	5	408	359	250	101	5
Future Volume (Veh/h)	5	408	359	250	101	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	6	464	408	284	115	6
Pedestrians					22	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					3	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	714				1048	572
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	714				1048	572
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				53	99
cM capacity (veh/h)	872				246	509
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	470	692	121			
Volume Left	6	0	115			
Volume Right	0	284	6			
cSH	872	1700	252			
Volume to Capacity	0.01	0.41	0.48			
Queue Length 95th (m)	0.2	0.0	18.3			
Control Delay (s)	0.2	0.0	31.7			
Lane LOS	A		D			
Approach Delay (s)	0.2	0.0	31.7			
Approach LOS			D			
<b>Intersection Summary</b>						
Average Delay			3.1			
Intersection Capacity Utilization			46.7%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 9: Osprey Street & Grey Street N

2027 FT PM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	82	5	112	55	0	9	0	177	0	0	0
Future Volume (vph)	0	82	5	112	55	0	9	0	177	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Fr <sub>t</sub>		0.992						0.872				
Fl <sub>t</sub> Protected					0.968			0.998				
Satd. Flow (prot)	0	1827	0	0	1783	0	0	1603	0	0	1842	0
Fl <sub>t</sub> Permitted					0.968			0.998				
Satd. Flow (perm)	0	1827	0	0	1783	0	0	1603	0	0	1842	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		321.8			63.9			217.2			58.1	
Travel Time (s)		29.0			5.8			19.5			5.2	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	0	99	6	135	66	0	11	0	213	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	105	0	0	201	0	0	224	0	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.9%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 9: Osprey Street & Grey Street N

2027 FT PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	82	5	112	55	0	9	0	177	0	0	0
Future Volume (Veh/h)	0	82	5	112	55	0	9	0	177	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	0	99	6	135	66	0	11	0	213	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	66			105			438	438	102	651	441	66
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	66			105			438	438	102	651	441	66
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			91			98	100	78	100	100	100
cM capacity (veh/h)	1536			1486			492	466	953	276	464	998
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	105	201	224	0								
Volume Left	0	135	11	0								
Volume Right	6	0	213	0								
cSH	1536	1486	911	1700								
Volume to Capacity	0.00	0.09	0.25	0.00								
Queue Length 95th (m)	0.0	2.3	7.3	0.0								
Control Delay (s)	0.0	5.4	10.2	0.0								
Lane LOS		A	B	A								
Approach Delay (s)	0.0	5.4	10.2	0.0								
Approach LOS			B	A								
Intersection Summary												
Average Delay			6.4									
Intersection Capacity Utilization			33.9%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 10: Bradley Street & Grey Street N

2027 FT PM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	250	3	7	36	28	168
Future Volume (vph)	250	3	7	36	28	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998			0.884		
Flt Protected	0.953			0.992		
Satd. Flow (prot)	1752			1827		
Flt Permitted	0.953			0.992		
Satd. Flow (perm)	1752			1827		
Link Speed (k/h)	40			40		
Link Distance (m)	63.9			110.1		
Travel Time (s)	5.8			9.9		
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Adj. Flow (vph)	333	4	9	48	37	224
Shared Lane Traffic (%)						
Lane Group Flow (vph)	337	0	0	57	261	0
Sign Control	Stop			Free		

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.5%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 10: Bradley Street & Grey Street N

2027 FT PM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	250	3	7	36	28	168
Future Volume (Veh/h)	250	3	7	36	28	168
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	333	4	9	48	37	224
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	215	149	261			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	215	149	261			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	57	100	99			
cM capacity (veh/h)	768	898	1303			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	337	57	261			
Volume Left	333	9	0			
Volume Right	4	0	224			
cSH	769	1303	1700			
Volume to Capacity	0.44	0.01	0.15			
Queue Length 95th (m)	17.1	0.2	0.0			
Control Delay (s)	13.3	1.3	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.3	1.3	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			6.9			
Intersection Capacity Utilization			32.5%	ICU Level of Service	A	
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 1: Ida Street & Glenelg Street

2032 FT AM



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	83	63	11	73	41	19
Future Volume (vph)	83	63	11	73	41	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.942		0.882			
Flt Protected	0.972					0.967
Satd. Flow (prot)	1725	0	1258	0	0	1562
Flt Permitted	0.972					0.967
Satd. Flow (perm)	1725	0	1258	0	0	1562
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	0%	33%	0%	33%	14%	13%
Adj. Flow (vph)	109	83	14	96	54	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	192	0	110	0	0	79
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.1%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 1: Ida Street & Glenelg Street

2032 FT AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	83	63	11	73	41	19
Future Volume (Veh/h)	83	63	11	73	41	19
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	109	83	14	96	54	25
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	195	62			110	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	195	62			110	
tC, single (s)	6.4	6.5			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.6			2.3	
p0 queue free %	86	91			96	
cM capacity (veh/h)	768	922			1409	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	192	110	79			
Volume Left	109	0	54			
Volume Right	83	96	0			
cSH	828	1700	1409			
Volume to Capacity	0.23	0.06	0.04			
Queue Length 95th (m)	6.8	0.0	0.9			
Control Delay (s)	10.7	0.0	5.3			
Lane LOS	B		A			
Approach Delay (s)	10.7	0.0	5.3			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			6.5			
Intersection Capacity Utilization			25.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 2: Dundalk Street & Glenelg Street/Grey Street N

2032 FT AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	115	127	65	103	44	46
Future Volume (vph)	115	127	65	103	44	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.5	3.5	3.1	4.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.929			0.931		
Flt Protected				0.981	0.976	
Satd. Flow (prot)	1464	0	0	1760	1524	0
Flt Permitted				0.981	0.976	
Satd. Flow (perm)	1464	0	0	1760	1524	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	263.8			321.8	411.0	
Travel Time (s)	23.7			29.0	37.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	17%	11%	0%	0%	50%	0%
Adj. Flow (vph)	153	169	87	137	59	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	322	0	0	224	120	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.1% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 2: Dundalk Street & Glenelg Street/Grey Street N

















2032 FT AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	115	127	65	103	44	46
Future Volume (Veh/h)	115	127	65	103	44	46
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	153	169	87	137	59	61
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			322		548	238
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			322		548	238
tC, single (s)			4.1		6.9	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.0	3.3
p0 queue free %			93		85	92
cM capacity (veh/h)			1249		394	806
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	322	224	120			
Volume Left	0	87	59			
Volume Right	169	0	61			
cSH	1700	1249	533			
Volume to Capacity	0.19	0.07	0.23			
Queue Length 95th (m)	0.0	1.7	6.5			
Control Delay (s)	0.0	3.5	13.7			
Lane LOS		A	B			
Approach Delay (s)	0.0	3.5	13.7			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			3.7			
Intersection Capacity Utilization			38.1%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 3: Ida Street & Grey Road 9/Main Street

2032 FT AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	167	20	42	146	12	13	23	28	14	30	56
Future Volume (vph)	38	167	20	42	146	12	13	23	28	14	30	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	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		0.988			0.992			0.941			0.925	
Flt Protected		0.992			0.990			0.990			0.993	
Satd. Flow (prot)	0	1761	0	0	1735	0	0	1779	0	0	1905	0
Flt Permitted		0.992			0.990			0.990			0.993	
Satd. Flow (perm)	0	1761	0	0	1735	0	0	1779	0	0	1905	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		788.4			805.6			914.0			590.7	
Travel Time (s)		71.0			72.5			82.3			53.2	
Confl. Peds. (#/hr)							1		2	2		1
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	20%	18%	35%	53%	14%	10%	9%	0%	25%	8%	9%	0%
Adj. Flow (vph)	46	204	24	51	178	15	16	28	34	17	37	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	274	0	0	244	0	0	78	0	0	122	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.5%
ICU Level of Service	A
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

## 3: Ida Street & Grey Road 9/Main Street

2032 FT AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	38	167	20	42	146	12	13	23	28	14	30	56
Future Volume (Veh/h)	38	167	20	42	146	12	13	23	28	14	30	56
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	46	204	24	51	178	15	16	28	34	17	37	68
Pedestrians		1			2							
Lane Width (m)		4.8			4.8							
Walking Speed (m/s)		1.1			1.1							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	193			228			683	603	218	646	608	186
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	193			228			683	603	218	646	608	186
tC, single (s)	4.3			4.6			7.2	6.5	6.5	7.2	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.7			3.6	4.0	3.5	3.6	4.1	3.3
p0 queue free %	96			95			94	93	96	95	90	92
cM capacity (veh/h)	1279			1090			282	382	766	318	369	860
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	274	244	78	122								
Volume Left	46	51	16	17								
Volume Right	24	15	34	68								
cSH	1279	1090	447	524								
Volume to Capacity	0.04	0.05	0.17	0.23								
Queue Length 95th (m)	0.8	1.1	4.8	6.8								
Control Delay (s)	1.6	2.1	14.7	13.9								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.6	2.1	14.7	13.9								
Approach LOS			B	B								
<b>Intersection Summary</b>												
Average Delay			5.3									
Intersection Capacity Utilization			29.5%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 4: Main Street & Dundalk Street

2032 FT AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	51	298	260	55	115	79
Future Volume (vph)	51	298	260	55	115	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.977		0.945	
Flt Protected		0.993			0.971	
Satd. Flow (prot)	0	1683	1596	0	1766	0
Flt Permitted		0.993			0.971	
Satd. Flow (perm)	0	1683	1596	0	1766	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	10			10	1	1
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	10%	11%	15%	15%	18%	3%
Adj. Flow (vph)	71	414	361	76	160	110
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	485	437	0	270	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	57.0% ICU Level of Service B
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

## 4: Main Street & Dundalk Street

2032 FT AM



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	51	298	260	55	115	79
Future Volume (Veh/h)	51	298	260	55	115	79
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	71	414	361	76	160	110
Pedestrians		1	1		10	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	447				966	410
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	447				966	410
tC, single (s)	4.2				6.6	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.3
p0 queue free %	93				34	83
cM capacity (veh/h)	1059				243	631
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	485	437	270			
Volume Left	71	0	160			
Volume Right	0	76	110			
cSH	1059	1700	324			
Volume to Capacity	0.07	0.26	0.83			
Queue Length 95th (m)	1.6	0.0	54.9			
Control Delay (s)	1.9	0.0	53.0			
Lane LOS	A		F			
Approach Delay (s)	1.9	0.0	53.0			
Approach LOS			F			
<b>Intersection Summary</b>						
Average Delay			12.8			
Intersection Capacity Utilization			57.0%		ICU Level of Service	B
Analysis Period (min)			15			



Lanes, Volumes, Timings  
5: Osprey Street & Main Street /Main Street

2032 FT AM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	368	25	9	278	3	43	12	13	116	13	13
Future Volume (vph)	13	368	25	9	278	3	43	12	13	116	13	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.992			0.999			0.974			0.988	
Flt Protected		0.998			0.998			0.969			0.961	
Satd. Flow (prot)	0	1706	0	0	1707	0	0	1635	0	0	1675	0
Flt Permitted		0.998			0.998			0.969			0.961	
Satd. Flow (perm)	0	1706	0	0	1707	0	0	1635	0	0	1675	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	7		4	4		7	3					3
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	14%	0%	0%	14%	0%	8%	0%	18%	8%	0%	0%
Adj. Flow (vph)	17	478	32	12	361	4	56	16	17	151	17	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	527	0	0	377	0	0	89	0	0	185	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	43.8%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 5: Osprey Street & Main Street /Main Street

2032 FT AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	368	25	9	278	3	43	12	13	116	13	13
Future Volume (Veh/h)	13	368	25	9	278	3	43	12	13	116	13	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	17	478	32	12	361	4	56	16	17	151	17	17
Pedestrians		3						6			7	
Lane Width (m)		3.8						3.5			3.5	
Walking Speed (m/s)		1.1						1.1			1.1	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	372			516			950	930	500	947	944	373
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	372			516			950	930	500	947	944	373
tC, single (s)	4.1			4.1			7.2	6.5	6.4	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.5	3.6	4.0	3.3
p0 queue free %	99			99			73	94	97	28	93	97
cM capacity (veh/h)	1190			1054			209	259	537	210	255	671
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	527	377	89	185								
Volume Left	17	12	56	151								
Volume Right	32	4	17	17								
cSH	1190	1054	246	228								
Volume to Capacity	0.01	0.01	0.36	0.81								
Queue Length 95th (m)	0.3	0.3	11.9	46.2								
Control Delay (s)	0.4	0.4	27.7	65.6								
Lane LOS	A	A	D	F								
Approach Delay (s)	0.4	0.4	27.7	65.6								
Approach LOS			D	F								
<b>Intersection Summary</b>												
Average Delay			12.7									
Intersection Capacity Utilization			43.8%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
6: Glenelg Street & Glenelg Access

2032 FT AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	89	95	42	135	51
Future Volume (vph)	24	89	95	42	135	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.958		0.963	
Flt Protected		0.990			0.965	
Satd. Flow (prot)	0	1824	1765	0	1712	0
Flt Permitted		0.990			0.965	
Satd. Flow (perm)	0	1824	1765	0	1712	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		456.0	263.8		80.1	
Travel Time (s)		41.0	23.7		7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	97	103	46	147	55
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	123	149	0	202	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.2%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
6: Glenelg Street & Glenelg Access

















2032 FT AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Volume (veh/h)	24	89	95	42	135	51
Future Volume (Veh/h)	24	89	95	42	135	51
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	97	103	46	147	55
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	149			275	126	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	149			275	126	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	98			79	94	
cM capacity (veh/h)	1432			702	924	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	123	149	202			
Volume Left	26	0	147			
Volume Right	0	46	55			
cSH	1432	1700	751			
Volume to Capacity	0.02	0.09	0.27			
Queue Length 95th (m)	0.4	0.0	8.3			
Control Delay (s)	1.7	0.0	11.5			
Lane LOS	A		B			
Approach Delay (s)	1.7	0.0	11.5			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			5.4			
Intersection Capacity Utilization			34.2%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
7: Osprey Street & Toronto Street/Bradley Street

2032 FT AM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	2	2	68	5	2	3	121	48	0	180	34
Future Volume (vph)	14	2	2	68	5	2	3	121	48	0	180	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.4	3.5	3.5	4.4	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		0.986			0.997			0.962			0.979	
Flt Protected		0.962			0.957			0.999				
Satd. Flow (prot)	0	1962	0	0	1974	0	0	1687	0	0	1684	0
Flt Permitted		0.962			0.957			0.999				
Satd. Flow (perm)	0	1962	0	0	1974	0	0	1687	0	0	1684	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		109.8			83.2			292.8			217.2	
Travel Time (s)		9.9			7.5			26.4			19.5	
Confl. Peds. (#/hr)	3						3	3		3	3	3
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	11%	0%
Adj. Flow (vph)	22	3	3	105	8	3	5	186	74	0	277	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	28	0	0	116	0	0	265	0	0	329	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.3%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 7: Osprey Street & Toronto Street/Bradley Street

2032 FT AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	14	2	2	68	5	2	3	121	48	0	180	34
Future Volume (vph)	14	2	2	68	5	2	3	121	48	0	180	34
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Hourly flow rate (vph)	22	3	3	105	8	3	5	186	74	0	277	52
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	28	116	265	329								
Volume Left (vph)	22	105	5	0								
Volume Right (vph)	3	3	74	52								
Hadj (s)	0.09	0.17	-0.04	0.06								
Departure Headway (s)	5.6	5.5	4.7	4.7								
Degree Utilization, x	0.04	0.18	0.34	0.43								
Capacity (veh/h)	556	587	739	737								
Control Delay (s)	8.9	9.7	10.1	11.2								
Approach Delay (s)	8.9	9.7	10.1	11.2								
Approach LOS	A	A	B	B								
Intersection Summary												
Delay			10.5									
Level of Service			B									
Intersection Capacity Utilization			24.3%	ICU Level of Service	A							
Analysis Period (min)			15									

Lanes, Volumes, Timings  
8: Main Street & Owen Sound Street

2032 FT AM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	494	273	178	143	0
Future Volume (vph)	4	494	273	178	143	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.947					
Flt Protected					0.950	
Satd. Flow (prot)	0	1720	1645	0	2046	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1720	1645	0	2046	0
Link Speed (k/h)	40		40	40		
Link Distance (m)	155.5		320.4	159.9		
Travel Time (s)	14.0		28.8	14.4		
Confl. Peds. (#/hr)	4					
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	13%	15%	7%	0%	0%
Adj. Flow (vph)	5	602	333	217	174	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	607	550	0	174	0
Sign Control	Free		Free	Stop		

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	43.8%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 8: Main Street & Owen Sound Street

2032 FT AM



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	4	494	273	178	143	0
Future Volume (Veh/h)	4	494	273	178	143	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	5	602	333	217	174	0
Pedestrians					4	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	554				1058	446
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	554				1058	446
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				30	100
cM capacity (veh/h)	1021				249	614
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	607	550	174			
Volume Left	5	0	174			
Volume Right	0	217	0			
cSH	1021	1700	249			
Volume to Capacity	0.00	0.32	0.70			
Queue Length 95th (m)	0.1	0.0	35.4			
Control Delay (s)	0.1	0.0	47.4			
Lane LOS	A		E			
Approach Delay (s)	0.1	0.0	47.4			
Approach LOS			E			
<b>Intersection Summary</b>						
Average Delay			6.3			
Intersection Capacity Utilization			43.8%		ICU Level of Service	A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 9: Osprey Street & Grey Street N

2032 FT AM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	107	6	206	131	0	5	0	124	0	0	0
Future Volume (vph)	0	107	6	206	131	0	5	0	124	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.993						0.870				
Flt Protected					0.970			0.998				
Satd. Flow (prot)	0	1829	0	0	1787	0	0	1599	0	0	1842	0
Flt Permitted					0.970			0.998				
Satd. Flow (perm)	0	1829	0	0	1787	0	0	1599	0	0	1842	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		321.8			63.9			217.2			58.1	
Travel Time (s)		29.0			5.8			19.5			5.2	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Adj. Flow (vph)	0	143	8	275	175	0	7	0	165	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	151	0	0	450	0	0	172	0	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.6%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 9: Osprey Street & Grey Street N

2032 FT AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	107	6	206	131	0	5	0	124	0	0	0
Future Volume (Veh/h)	0	107	6	206	131	0	5	0	124	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	0	143	8	275	175	0	7	0	165	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	175			151			872	872	147	1037	876	175
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	175			151			872	872	147	1037	876	175
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			81			97	100	82	100	100	100
cM capacity (veh/h)	1401			1430			231	233	900	146	232	868
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total	151	450	172	0								
Volume Left	0	275	7	0								
Volume Right	8	0	165	0								
cSH	1401	1430	805	1700								
Volume to Capacity	0.00	0.19	0.21	0.00								
Queue Length 95th (m)	0.0	5.4	6.1	0.0								
Control Delay (s)	0.0	5.6	10.7	0.0								
Lane LOS		A	B	A								
Approach Delay (s)	0.0	5.6	10.7	0.0								
Approach LOS			B	A								
Intersection Summary												
Average Delay			5.7									
Intersection Capacity Utilization			39.6%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 10: Bradley Street & Grey Street N

2032 FT AM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	228	2	9	40	54	328
Future Volume (vph)	228	2	9	40	54	328
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.884	
Flt Protected	0.953			0.991		
Satd. Flow (prot)	1754	0	0	1825	1628	0
Flt Permitted	0.953			0.991		
Satd. Flow (perm)	1754	0	0	1825	1628	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	63.9			188.8	110.1	
Travel Time (s)	5.8			17.0	9.9	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64
Adj. Flow (vph)	356	3	14	63	84	513
Shared Lane Traffic (%)						
Lane Group Flow (vph)	359	0	0	77	597	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.5%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 10: Bradley Street & Grey Street N

2032 FT AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	228	2	9	40	54	328
Future Volume (Veh/h)	228	2	9	40	54	328
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64
Hourly flow rate (vph)	356	3	14	62	84	512
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	430	340	596			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	430	340	596			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	38	100	99			
cM capacity (veh/h)	574	702	980			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	359	76	596			
Volume Left	356	14	0			
Volume Right	3	0	512			
cSH	575	980	1700			
Volume to Capacity	0.62	0.01	0.35			
Queue Length 95th (m)	32.7	0.3	0.0			
Control Delay (s)	21.1	1.7	0.0			
Lane LOS	C	A				
Approach Delay (s)	21.1	1.7	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			7.5			
Intersection Capacity Utilization			42.5%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
1: Ida Street & Glenelg Street

2032 FT PM












Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	46	43	26	58	59	19
Future Volume (vph)	46	43	26	58	59	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.935		0.907			
Flt Protected	0.975					0.964
Satd. Flow (prot)	1963	0	1666	0	0	1745
Flt Permitted	0.975					0.964
Satd. Flow (perm)	1963	0	1666	0	0	1745
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%
Adj. Flow (vph)	58	54	33	73	74	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	112	0	106	0	0	98
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	22.8%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 1: Ida Street & Glenelg Street

2032 FT PM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	46	43	26	58	59	19
Future Volume (Veh/h)	46	43	26	58	59	19
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	58	54	32	72	74	24
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	240	68			104	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	240	68			104	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	95			95	
cM capacity (veh/h)	716	1001			1500	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	112	104	98			
Volume Left	58	0	74			
Volume Right	54	72	0			
cSH	830	1700	1500			
Volume to Capacity	0.14	0.06	0.05			
Queue Length 95th (m)	3.5	0.0	1.2			
Control Delay (s)	10.0	0.0	5.8			
Lane LOS	B		A			
Approach Delay (s)	10.0	0.0	5.8			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			5.4			
Intersection Capacity Utilization			22.8%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 2: Dundalk Street & Glenelg Street/Grey Street N

2032 FT PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	86	83	27	85	128	35
Future Volume (vph)	86	83	27	85	128	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.5	3.5	3.1	4.5	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.934			0.971		
Flt Protected				0.988	0.962	
Satd. Flow (prot)	1542	0	0	1636	1759	0
Flt Permitted				0.988	0.962	
Satd. Flow (perm)	1542	0	0	1636	1759	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	263.8			321.8	411.0	
Travel Time (s)	23.7			29.0	37.0	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	16%	1%	0%	11%	14%	0%
Adj. Flow (vph)	97	93	30	96	144	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	190	0	0	126	183	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.8%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 2: Dundalk Street & Glenelg Street/Grey Street N

2032 FT PM



















Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Traffic Volume (veh/h)	86	83	27	85	128	35
Future Volume (Veh/h)	86	83	27	85	128	35
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	97	93	30	96	144	39
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			190		300	144
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			190		300	144
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			98		78	96
cM capacity (veh/h)			1396		653	909
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>			
Volume Total	190	126	183			
Volume Left	0	30	144			
Volume Right	93	0	39			
cSH	1700	1396	695			
Volume to Capacity	0.11	0.02	0.26			
Queue Length 95th (m)	0.0	0.5	8.0			
Control Delay (s)	0.0	2.0	12.0			
Lane LOS		A	B			
Approach Delay (s)	0.0	2.0	12.0			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			4.9			
Intersection Capacity Utilization			34.8%	ICU Level of Service	A	
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 3: Ida Street & Grey Road 9/Main Street

2032 FT PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	200	17	38	209	11	26	21	45	11	14	38
Future Volume (vph)	53	200	17	38	209	11	26	21	45	11	14	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	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		0.991			0.994			0.934			0.919	
Flt Protected		0.990			0.993			0.986			0.991	
Satd. Flow (prot)	0	1990	0	0	1949	0	0	1787	0	0	1820	0
Flt Permitted		0.990			0.993			0.986			0.991	
Satd. Flow (perm)	0	1990	0	0	1949	0	0	1787	0	0	1820	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		788.4			805.6			914.0			590.7	
Travel Time (s)		71.0			72.5			82.3			53.2	
Confl. Peds. (#/hr)	3		1	1		1			3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	14%	4%	7%	34%	5%	0%	5%	14%	13%	0%	0%	13%
Adj. Flow (vph)	56	211	18	40	220	12	27	22	47	12	15	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	285	0	0	272	0	0	96	0	0	67	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.4%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 3: Ida Street & Grey Road 9/Main Street

2032 FT PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	53	200	17	38	209	11	26	21	45	11	14	38
Future Volume (Veh/h)	53	200	17	38	209	11	26	21	45	11	14	38
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	56	211	18	40	220	12	27	22	47	12	15	40
Pedestrians					3			1			3	
Lane Width (m)					4.8			4.8			4.8	
Walking Speed (m/s)					1.1			1.1			1.1	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	235			230			686	648	224	702	651	229
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	235			230			686	648	224	702	651	229
tC, single (s)	4.2			4.4			7.1	6.6	6.3	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.3			2.5			3.5	4.1	3.4	3.5	4.0	3.4
p0 queue free %	96			97			91	94	94	96	96	95
cM capacity (veh/h)	1260			1169			307	344	785	296	358	781
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	285	272	96	67								
Volume Left	56	40	27	12								
Volume Right	18	12	47	40								
cSH	1260	1169	453	501								
Volume to Capacity	0.04	0.03	0.21	0.13								
Queue Length 95th (m)	1.1	0.8	6.0	3.5								
Control Delay (s)	1.9	1.5	15.1	13.3								
Lane LOS	A	A	C	B								
Approach Delay (s)	1.9	1.5	15.1	13.3								
Approach LOS			C	B								
<b>Intersection Summary</b>												
Average Delay			4.6									
Intersection Capacity Utilization			37.4%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 4: Main Street & Dundalk Street

2032 FT PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	43	299	280	121	84	49
Future Volume (vph)	43	299	280	121	84	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.959		0.950	
Flt Protected		0.994			0.970	
Satd. Flow (prot)	0	1774	1695	0	1912	0
Flt Permitted		0.994			0.970	
Satd. Flow (perm)	0	1774	1695	0	1912	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	6			6	2	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	6%	9%	0%	6%	0%
Adj. Flow (vph)	45	315	295	127	88	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	360	422	0	140	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	58.5%
Analysis Period (min)	15
	ICU Level of Service B

# HCM Unsignalized Intersection Capacity Analysis

## 4: Main Street & Dundalk Street

















2032 FT PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	43	299	280	121	84	49
Future Volume (Veh/h)	43	299	280	121	84	49
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	45	315	295	127	88	52
Pedestrians		2	2		6	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	428				772	366
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	428				772	366
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	96				74	92
cM capacity (veh/h)	1134				345	677
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	360	422	140			
Volume Left	45	0	88			
Volume Right	0	127	52			
cSH	1134	1700	422			
Volume to Capacity	0.04	0.25	0.33			
Queue Length 95th (m)	0.9	0.0	10.9			
Control Delay (s)	1.4	0.0	17.7			
Lane LOS	A		C			
Approach Delay (s)	1.4	0.0	17.7			
Approach LOS			C			
<b>Intersection Summary</b>						
Average Delay			3.2			
Intersection Capacity Utilization			58.5%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings  
5: Osprey Street & Main Street /Main Street

2032 FT PM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	350	43	10	371	3	23	9	18	65	5	11
Future Volume (vph)	18	350	43	10	371	3	23	9	18	65	5	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.986			0.999			0.952			0.982	
Flt Protected		0.998			0.999			0.977			0.962	
Satd. Flow (prot)	0	1729	0	0	1732	0	0	1390	0	0	1775	0
Flt Permitted		0.998			0.999			0.977			0.962	
Satd. Flow (perm)	0	1729	0	0	1732	0	0	1390	0	0	1775	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	18		10	10		18	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	12%	0%	13%	12%	0%	50%	0%	7%	0%	0%	0%
Adj. Flow (vph)	20	389	48	11	412	3	26	10	20	72	6	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	457	0	0	426	0	0	56	0	0	90	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	44.6%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
5: Osprey Street & Main Street /Main Street

2032 FT PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	350	43	10	371	3	23	9	18	65	5	11
Future Volume (Veh/h)	18	350	43	10	371	3	23	9	18	65	5	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	20	389	48	11	412	3	26	10	20	72	6	12
Pedestrians		4			7			17			18	
Lane Width (m)		3.8			3.8			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			1			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	433			454			924	925	437	938	948	436
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	433			454			924	925	437	938	948	436
tC, single (s)	4.2			4.2			7.6	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			4.0	4.0	3.4	3.5	4.0	3.3
p0 queue free %	98			99			86	96	97	67	98	98
cM capacity (veh/h)	1083			1035			186	255	596	216	248	613
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	457	426	56	90								
Volume Left	20	11	26	72								
Volume Right	48	3	20	12								
cSH	1083	1035	263	238								
Volume to Capacity	0.02	0.01	0.21	0.38								
Queue Length 95th (m)	0.4	0.2	6.0	12.7								
Control Delay (s)	0.6	0.3	22.3	29.0								
Lane LOS	A	A	C	D								
Approach Delay (s)	0.6	0.3	22.3	29.0								
Approach LOS			C	D								
Intersection Summary												
Average Delay			4.1									
Intersection Capacity Utilization			44.6%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
6: Glenelg Street & Glenelg Access

2032 FT PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Volume (vph)	50	66	58	212	86	31
Future Volume (vph)	50	66	58	212	86	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.894		0.964	
Flt Protected		0.979			0.965	
Satd. Flow (prot)	0	1803	1647	0	1714	0
Flt Permitted		0.979			0.965	
Satd. Flow (perm)	0	1803	1647	0	1714	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		456.0	263.8		80.1	
Travel Time (s)		41.0	23.7		7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	72	63	230	93	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	126	293	0	127	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
6: Glenelg Street & Glenelg Access

2032 FT PM



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↶	
Traffic Volume (veh/h)	50	66	58	212	86	31
Future Volume (Veh/h)	50	66	58	212	86	31
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	72	63	230	93	34
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	293				358	178
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	293				358	178
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				85	96
cM capacity (veh/h)	1269				613	865
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	126	293	127			
Volume Left	54	0	93			
Volume Right	0	230	34			
cSH	1269	1700	665			
Volume to Capacity	0.04	0.17	0.19			
Queue Length 95th (m)	1.0	0.0	5.3			
Control Delay (s)	3.6	0.0	11.7			
Lane LOS	A		B			
Approach Delay (s)	3.6	0.0	11.7			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			3.6			
Intersection Capacity Utilization			39.0%	ICU Level of Service	A	
Analysis Period (min)			15			



Lanes, Volumes, Timings  
7: Osprey Street & Toronto Street/Bradley Street

2032 FT PM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	6	2	41	5	2	6	156	78	0	96	21
Future Volume (vph)	36	6	2	41	5	2	6	156	78	0	96	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	4.4	3.5	3.5	4.4	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		0.994			0.994			0.956			0.976	
Flt Protected		0.961			0.959			0.999				
Satd. Flow (prot)	0	1976	0	0	1972	0	0	1708	0	0	1834	0
Flt Permitted		0.961			0.959			0.999				
Satd. Flow (perm)	0	1976	0	0	1972	0	0	1708	0	0	1834	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		109.8			83.2			292.8			217.2	
Travel Time (s)		9.9			7.5			26.4			19.5	
Confl. Peds. (#/hr)	6						6		11	11		
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	20%	7%	0%	0%	0%	0%
Adj. Flow (vph)	51	9	3	59	7	3	9	223	111	0	137	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	0	0	69	0	0	343	0	0	167	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	30.2%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 7: Osprey Street & Toronto Street/Bradley Street

2032 FT PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	36	6	2	41	5	2	6	156	78	0	96	21
Future Volume (vph)	36	6	2	41	5	2	6	156	78	0	96	21
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	51	9	3	59	7	3	9	223	111	0	137	30
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	63	69	343	167								
Volume Left (vph)	51	59	9	0								
Volume Right (vph)	3	3	111	30								
Hadj (s)	0.13	0.14	-0.10	-0.11								
Departure Headway (s)	5.3	5.3	4.4	4.5								
Degree Utilization, x	0.09	0.10	0.41	0.21								
Capacity (veh/h)	608	609	801	752								
Control Delay (s)	8.8	8.9	10.4	8.7								
Approach Delay (s)	8.8	8.9	10.4	8.7								
Approach LOS	A	A	B	A								
Intersection Summary												
Delay			9.7									
Level of Service			A									
Intersection Capacity Utilization			30.2%	ICU Level of Service	A							
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 8: Main Street & Owen Sound Street

2032 FT PM



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	427	376	257	104	5
Future Volume (vph)	5	427	376	257	104	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.945		0.993	
Flt Protected		0.999			0.955	
Satd. Flow (prot)	0	1782	1706	0	2042	0
Flt Permitted		0.999			0.955	
Satd. Flow (perm)	0	1782	1706	0	2042	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		155.5	320.4		159.9	
Travel Time (s)		14.0	28.8		14.4	
Confl. Peds. (#/hr)	22					
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	9%	10%	4%	0%	0%
Adj. Flow (vph)	6	485	427	292	118	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	491	719	0	124	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	48.2%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 8: Main Street & Owen Sound Street

















2032 FT PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	
Traffic Volume (veh/h)	5	427	376	257	104	5
Future Volume (Veh/h)	5	427	376	257	104	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	6	485	427	292	118	6
Pedestrians					22	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	741				1092	595
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	741				1092	595
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				49	99
cM capacity (veh/h)	852				232	494
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	491	719	124			
Volume Left	6	0	118			
Volume Right	0	292	6			
cSH	852	1700	238			
Volume to Capacity	0.01	0.42	0.52			
Queue Length 95th (m)	0.2	0.0	20.8			
Control Delay (s)	0.2	0.0	35.6			
Lane LOS	A		E			
Approach Delay (s)	0.2	0.0	35.6			
Approach LOS			E			
Intersection Summary						
Average Delay			3.4			
Intersection Capacity Utilization		48.2%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 9: Osprey Street & Grey Street N

2032 FT PM

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	83	5	112	55	0	10	0	177	0	0	0
Future Volume (vph)	0	83	5	112	55	0	10	0	177	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Fr <sub>t</sub>		0.992						0.872				
Fl <sub>t</sub> Protected					0.968			0.997				
Satd. Flow (prot)	0	1827	0	0	1783	0	0	1601	0	0	1842	0
Fl <sub>t</sub> Permitted					0.968			0.997				
Satd. Flow (perm)	0	1827	0	0	1783	0	0	1601	0	0	1842	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		321.8			63.9			217.2			58.1	
Travel Time (s)		29.0			5.8			19.5			5.2	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	0	100	6	135	66	0	12	0	213	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	106	0	0	201	0	0	225	0	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.9%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 9: Osprey Street & Grey Street N

2032 FT PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	83	5	112	55	0	10	0	177	0	0	0
Future Volume (Veh/h)	0	83	5	112	55	0	10	0	177	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	0	100	6	135	66	0	12	0	213	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	66			106			439	439	103	652	442	66
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	66			106			439	439	103	652	442	66
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			91			98	100	78	100	100	100
cM capacity (veh/h)	1536			1485			491	465	952	275	463	998
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	106	201	225	0								
Volume Left	0	135	12	0								
Volume Right	6	0	213	0								
cSH	1536	1485	907	1700								
Volume to Capacity	0.00	0.09	0.25	0.00								
Queue Length 95th (m)	0.0	2.3	7.4	0.0								
Control Delay (s)	0.0	5.4	10.3	0.0								
Lane LOS		A	B	A								
Approach Delay (s)	0.0	5.4	10.3	0.0								
Approach LOS			B	A								
Intersection Summary												
Average Delay			6.4									
Intersection Capacity Utilization			33.9%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 10: Bradley Street & Grey Street N

2032 FT PM



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	250	3	7	36	28	169
Future Volume (vph)	250	3	7	36	28	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998			0.884		
Flt Protected	0.953			0.992		
Satd. Flow (prot)	1752	0	0	1827	1628	0
Flt Permitted	0.953			0.992		
Satd. Flow (perm)	1752	0	0	1827	1628	0
Link Speed (k/h)	40			40	40	
Link Distance (m)	63.9			188.8	110.1	
Travel Time (s)	5.8			17.0	9.9	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Adj. Flow (vph)	333	4	9	48	37	225
Shared Lane Traffic (%)						
Lane Group Flow (vph)	337	0	0	57	262	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.6%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 10: Bradley Street & Grey Street N

2032 FT PM



















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	250	3	7	36	28	169
Future Volume (Veh/h)	250	3	7	36	28	169
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	333	4	9	48	37	225
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	216	150	262			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	216	150	262			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	57	100	99			
cM capacity (veh/h)	767	897	1302			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	337	57	262			
Volume Left	333	9	0			
Volume Right	4	0	225			
cSH	769	1302	1700			
Volume to Capacity	0.44	0.01	0.15			
Queue Length 95th (m)	17.1	0.2	0.0			
Control Delay (s)	13.3	1.3	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.3	1.3	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			6.9			
Intersection Capacity Utilization			32.6%	ICU Level of Service	A	
Analysis Period (min)			15			



Lanes, Volumes, Timings  
5: Osprey Street & Main Street /Main Street

2032 FT AM w Signal

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	368	25	9	278	3	43	12	13	116	13	13
Future Volume (vph)	13	368	25	9	278	3	43	12	13	116	13	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		1.00			1.00			1.00			1.00	
Frt		0.992			0.999			0.974			0.988	
Flt Protected		0.998			0.998			0.969			0.961	
Satd. Flow (prot)	0	1703	0	0	1707	0	0	1635	0	0	1671	0
Flt Permitted		0.985			0.983			0.775			0.756	
Satd. Flow (perm)	0	1681	0	0	1681	0	0	1304	0	0	1314	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			1			17			8	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	7		4	4		7	3					3
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	14%	0%	0%	14%	0%	8%	0%	18%	8%	0%	0%
Adj. Flow (vph)	17	478	32	12	361	4	56	16	17	151	17	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	527	0	0	377	0	0	89	0	0	185	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	39.0	39.0		39.0	39.0		21.0	21.0		21.0	21.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		38.5			38.5			12.5			12.5	
Actuated g/C Ratio		0.67			0.67			0.22			0.22	
v/c Ratio		0.47			0.33			0.30			0.63	
Control Delay		8.5			7.2			18.0			29.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		8.5			7.2			18.0			29.3	
LOS		A			A			B			C	
Approach Delay		8.5			7.2			18.0			29.3	
Approach LOS		A			A			B			C	
Queue Length 50th (m)		27.7			17.8			6.1			16.4	

Lanes, Volumes, Timings  
 5: Osprey Street & Main Street /Main Street

2032 FT AM w Signal

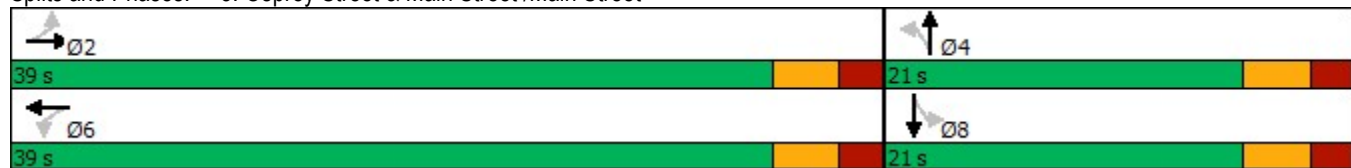


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)		41.9			28.3			13.0			27.1	
Internal Link Dist (m)		330.8			131.5			98.8			268.8	
Turn Bay Length (m)												
Base Capacity (vph)		1130			1127			376			372	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.47			0.33			0.24			0.50	

Intersection Summary

















Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	57.4
Natural Cycle:	45
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.63
Intersection Signal Delay:	12.1
Intersection LOS:	B
Intersection Capacity Utilization	45.4%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 5: Osprey Street & Main Street /Main Street



















HCM Signalized Intersection Capacity Analysis  
5: Osprey Street & Main Street /Main Street

2032 FT AM w Signal

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	368	25	9	278	3	43	12	13	116	13	13
Future Volume (vph)	13	368	25	9	278	3	43	12	13	116	13	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	3.5	3.5
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frbp, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.97			0.99	
Flt Protected		1.00			1.00			0.97			0.96	
Satd. Flow (prot)		1703			1707			1632			1670	
Flt Permitted		0.99			0.98			0.77			0.76	
Satd. Flow (perm)		1681			1681			1304			1314	
Peak-hour factor, PHF	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Adj. Flow (vph)	17	478	32	12	361	4	56	16	17	151	17	17
RTOR Reduction (vph)	0	3	0	0	0	0	0	14	0	0	6	0
Lane Group Flow (vph)	0	524	0	0	377	0	0	75	0	0	179	0
Confl. Peds. (#/hr)	7		4	4		7	3					3
Heavy Vehicles (%)	0%	14%	0%	0%	14%	0%	8%	0%	18%	8%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		37.4			37.4			11.0			11.0	
Effective Green, g (s)		37.4			37.4			11.0			11.0	
Actuated g/C Ratio		0.64			0.64			0.19			0.19	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1076			1076			245			247	
v/s Ratio Prot												
v/s Ratio Perm		c0.31			0.22			0.06			c0.14	
v/c Ratio		0.49			0.35			0.31			0.72	
Uniform Delay, d1		5.5			4.9			20.4			22.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.6			0.9			0.7			10.0	
Delay (s)		7.1			5.8			21.1			32.3	
Level of Service		A			A			C			C	
Approach Delay (s)		7.1			5.8			21.1			32.3	
Approach LOS		A			A			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			11.7				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			58.4				Sum of lost time (s)		10.0			
Intersection Capacity Utilization			45.4%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings  
5: Osprey Street & Main Street /Main Street

2032 FT PM w Signal

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	350	43	10	371	3	23	9	18	65	5	11
Future Volume (vph)	18	350	43	10	371	3	23	9	18	65	5	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		1.00			1.00			0.98			0.99	
Frt		0.986			0.999			0.952			0.982	
Flt Protected		0.998			0.999			0.977			0.962	
Satd. Flow (prot)	0	1722	0	0	1731	0	0	1373	0	0	1768	0
Flt Permitted		0.978			0.989			0.862			0.731	
Satd. Flow (perm)	0	1686	0	0	1713	0	0	1208	0	0	1330	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			1			20			12	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	18		10	10		18	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	12%	0%	13%	12%	0%	50%	0%	7%	0%	0%	0%
Adj. Flow (vph)	20	389	48	11	412	3	26	10	20	72	6	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	457	0	0	426	0	0	56	0	0	90	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	39.0	39.0		39.0	39.0		21.0	21.0		21.0	21.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		43.0			43.0			8.9			8.9	
Actuated g/C Ratio		0.78			0.78			0.16			0.16	
v/c Ratio		0.35			0.32			0.26			0.40	
Control Delay		4.9			4.8			17.2			23.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		4.9			4.8			17.2			23.3	
LOS		A			A			B			C	
Approach Delay		4.9			4.8			17.2			23.3	
Approach LOS		A			A			B			C	
Queue Length 50th (m)		15.9			15.1			3.3			7.4	

Lanes, Volumes, Timings  
 5: Osprey Street & Main Street /Main Street

2032 FT PM w Signal



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)		36.3			34.0			10.7			16.9	
Internal Link Dist (m)		330.8			131.5			98.8			268.8	
Turn Bay Length (m)												
Base Capacity (vph)		1321			1339			366			395	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.35			0.32			0.15			0.23	

Intersection Summary

















Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	55
Natural Cycle:	40
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.40
Intersection Signal Delay:	7.1
Intersection LOS:	A
Intersection Capacity Utilization	46.2%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 5: Osprey Street & Main Street /Main Street



HCM Signalized Intersection Capacity Analysis  
5: Osprey Street & Main Street /Main Street

2032 FT PM w Signal

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	18	350	43	10	371	3	23	9	18	65	5	11	
Future Volume (vph)	18	350	43	10	371	3	23	9	18	65	5	11	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	3.5	3.5	
Total Lost time (s)		5.0			5.0			5.0			5.0		
Lane Util. Factor		1.00			1.00			1.00			1.00		
Frbp, ped/bikes		1.00			1.00			0.99			1.00		
Flpb, ped/bikes		1.00			1.00			1.00			0.99		
Frt		0.99			1.00			0.95			0.98		
Flt Protected		1.00			1.00			0.98			0.96		
Satd. Flow (prot)		1720			1730			1370			1750		
Flt Permitted		0.98			0.99			0.86			0.73		
Satd. Flow (perm)		1686			1713			1208			1330		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	20	389	48	11	412	3	26	10	20	72	6	12	
RTOR Reduction (vph)	0	5	0	0	0	0	0	18	0	0	11	0	
Lane Group Flow (vph)	0	452	0	0	426	0	0	38	0	0	79	0	
Confl. Peds. (#/hr)	18		10	10		18	4		7	7		4	
Heavy Vehicles (%)	7%	12%	0%	13%	12%	0%	50%	0%	7%	0%	0%	0%	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		2			6			4			8		
Permitted Phases	2			6			4			8			
Actuated Green, G (s)		40.9			40.9			6.1			6.1		
Effective Green, g (s)		40.9			40.9			6.1			6.1		
Actuated g/C Ratio		0.72			0.72			0.11			0.11		
Clearance Time (s)		5.0			5.0			5.0			5.0		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		1209			1229			129			142		
v/s Ratio Prot													
v/s Ratio Perm		c0.27			0.25			0.03			c0.06		
v/c Ratio		0.37			0.35			0.30			0.56		
Uniform Delay, d1		3.1			3.0			23.5			24.2		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.9			0.8			1.3			4.7		
Delay (s)		4.0			3.8			24.8			28.9		
Level of Service		A			A			C			C		
Approach Delay (s)		4.0			3.8			24.8			28.9		
Approach LOS		A			A			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			7.2									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.40										
Actuated Cycle Length (s)			57.0									Sum of lost time (s)	10.0
Intersection Capacity Utilization			46.2%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Lanes, Volumes, Timings  
 1: Ida Street & Glenelg Street

Existing AM - Eco Parkway












Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	6	9	9	7	16
Future Volume (vph)	5	6	9	9	7	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.928		0.932			
Flt Protected	0.977					0.985
Satd. Flow (prot)	1660	0	1469	0	0	1597
Flt Permitted	0.977					0.985
Satd. Flow (perm)	1660	0	1469	0	0	1597
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	0%	33%	0%	33%	14%	13%
Adj. Flow (vph)	7	8	12	12	9	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	15	0	24	0	0	30
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 1: Ida Street & Glenelg Street

Existing AM - Eco Parkway

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	6	9	9	7	16
Future Volume (Veh/h)	5	6	9	9	7	16
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	7	8	12	12	9	21
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	57	18			24	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	57	18			24	
tC, single (s)	6.4	6.5			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.6			2.3	
p0 queue free %	99	99			99	
cM capacity (veh/h)	950	977			1516	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	15	24	30			
Volume Left	7	0	9			
Volume Right	8	12	0			
cSH	964	1700	1516			
Volume to Capacity	0.02	0.01	0.01			
Queue Length 95th (m)	0.4	0.0	0.1			
Control Delay (s)	8.8	0.0	2.2			
Lane LOS	A		A			
Approach Delay (s)	8.8	0.0	2.2			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			2.9			
Intersection Capacity Utilization			17.0%		ICU Level of Service	A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 4: Main Street /Main Street & Dundalk Street

Existing AM - Eco Parkway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (vph)	20	228	166	20	11	33
Future Volume (vph)	20	228	166	20	11	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.985		0.898	
Flt Protected		0.996			0.988	
Satd. Flow (prot)	0	1687	1609	0	1791	0
Flt Permitted		0.996			0.988	
Satd. Flow (perm)	0	1687	1609	0	1791	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	10			10	1	1
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	10%	11%	15%	15%	18%	3%
Adj. Flow (vph)	28	317	231	28	15	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	345	259	0	61	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.8%
Analysis Period (min)	15
	ICU Level of Service A

# HCM Unsignalized Intersection Capacity Analysis

## 4: Main Street /Main Street & Dundalk Street

















Existing AM - Eco Parkway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	
Traffic Volume (veh/h)	20	228	166	20	11	33
Future Volume (Veh/h)	20	228	166	20	11	33
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	28	317	231	28	15	46
Pedestrians		1	1		10	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	269				629	256
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	269				629	256
tC, single (s)	4.2				6.6	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.3
p0 queue free %	98				96	94
cM capacity (veh/h)	1235				407	770
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	345	259	61			
Volume Left	28	0	15			
Volume Right	0	28	46			
cSH	1235	1700	631			
Volume to Capacity	0.02	0.15	0.10			
Queue Length 95th (m)	0.5	0.0	2.4			
Control Delay (s)	0.9	0.0	11.3			
Lane LOS	A		B			
Approach Delay (s)	0.9	0.0	11.3			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			1.5			
Intersection Capacity Utilization			37.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
5: Osprey Street & Main Street

Existing AM - Eco Parkway

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	211	12	7	180	2	12	1	11	13	4	10
Future Volume (vph)	10	211	12	7	180	2	12	1	11	13	4	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.993			0.998			0.939			0.950	
Flt Protected		0.998			0.998			0.975			0.976	
Satd. Flow (prot)	0	1708	0	0	1707	0	0	1532	0	0	1677	0
Flt Permitted		0.998			0.998			0.975			0.976	
Satd. Flow (perm)	0	1708	0	0	1707	0	0	1532	0	0	1677	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	7		4	4		7	3					3
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	14%	0%	0%	14%	0%	8%	0%	18%	8%	0%	0%
Adj. Flow (vph)	13	274	16	9	234	3	16	1	14	17	5	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	303	0	0	246	0	0	31	0	0	35	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.8%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
5: Osprey Street & Main Street

Existing AM - Eco Parkway

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	211	12	7	180	2	12	1	11	13	4	10
Future Volume (Veh/h)	10	211	12	7	180	2	12	1	11	13	4	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	13	274	16	9	234	3	16	1	14	17	5	13
Pedestrians		3						6			7	
Lane Width (m)		3.8						3.5			3.5	
Walking Speed (m/s)		1.1						1.1			1.1	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	244			296			586	576	288	583	582	246
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	244			296			586	576	288	583	582	246
tC, single (s)	4.1			4.1			7.2	6.5	6.4	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.5	3.6	4.0	3.3
p0 queue free %	99			99			96	100	98	96	99	98
cM capacity (veh/h)	1326			1270			391	419	711	395	415	791
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	303	246	31	35								
Volume Left	13	9	16	17								
Volume Right	16	3	14	13								
cSH	1326	1270	492	489								
Volume to Capacity	0.01	0.01	0.06	0.07								
Queue Length 95th (m)	0.2	0.2	1.5	1.7								
Control Delay (s)	0.4	0.3	12.8	12.9								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.4	0.3	12.8	12.9								
Approach LOS			B	B								
<b>Intersection Summary</b>												
Average Delay			1.7									
Intersection Capacity Utilization			26.8%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 8: Main Street/Main Street & Owen Sound Street

Existing AM - Eco Parkway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	233	175	44	35	0
Future Volume (vph)	3	233	175	44	35	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.973			
Flt Protected		0.999			0.950	
Satd. Flow (prot)	0	1720	1667	0	2046	0
Flt Permitted		0.999			0.950	
Satd. Flow (perm)	0	1720	1667	0	2046	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		155.5	320.4		154.4	
Travel Time (s)		14.0	28.8		13.9	
Confl. Peds. (#/hr)	4					
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	13%	15%	7%	0%	0%
Adj. Flow (vph)	4	284	213	54	43	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	288	267	0	43	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.7%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 8: Main Street/Main Street & Owen Sound Street

Existing AM - Eco Parkway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↗	↖		↘	
Traffic Volume (veh/h)	3	233	175	44	35	0
Future Volume (Veh/h)	3	233	175	44	35	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	4	284	213	54	43	0
Pedestrians					4	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	271				536	244
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	271				536	244
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				91	100
cM capacity (veh/h)	1298				505	796
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	288	267	43			
Volume Left	4	0	43			
Volume Right	0	54	0			
cSH	1298	1700	505			
Volume to Capacity	0.00	0.16	0.09			
Queue Length 95th (m)	0.1	0.0	2.1			
Control Delay (s)	0.1	0.0	12.8			
Lane LOS	A		B			
Approach Delay (s)	0.1	0.0	12.8			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			1.0			
Intersection Capacity Utilization			24.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 1: Ida Street & Glenelg Street

Existing PM - Eco Parkway












Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	11	22	7	9	16
Future Volume (vph)	9	11	22	7	9	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.924		0.967			
Flt Protected	0.978					0.983
Satd. Flow (prot)	1946	0	1776	0	0	1738
Flt Permitted	0.978					0.983
Satd. Flow (perm)	1946	0	1776	0	0	1738
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%
Adj. Flow (vph)	11	14	28	9	11	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	0	37	0	0	31
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	18.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 1: Ida Street & Glenelg Street

Existing PM - Eco Parkway

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	11	22	7	9	16
Future Volume (Veh/h)	9	11	22	7	9	16
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	11	14	28	9	11	20
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	74	32			37	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	74	32			37	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			99	
cM capacity (veh/h)	928	1047			1587	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	25	37	31			
Volume Left	11	0	11			
Volume Right	14	9	0			
cSH	991	1700	1587			
Volume to Capacity	0.03	0.02	0.01			
Queue Length 95th (m)	0.6	0.0	0.2			
Control Delay (s)	8.7	0.0	2.6			
Lane LOS	A		A			
Approach Delay (s)	8.7	0.0	2.6			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			3.2			
Intersection Capacity Utilization			18.0%		ICU Level of Service	A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 4: Main Street /Main Street & Dundalk Street

Existing PM - Eco Parkway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	192	196	8	16	26
Future Volume (vph)	12	192	196	8	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.995		0.917	
Flt Protected		0.997			0.981	
Satd. Flow (prot)	0	1773	1720	0	1893	0
Flt Permitted		0.997			0.981	
Satd. Flow (perm)	0	1773	1720	0	1893	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	6			6	2	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	6%	9%	0%	6%	0%
Adj. Flow (vph)	13	202	206	8	17	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	215	214	0	44	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	30.6% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 4: Main Street /Main Street & Dundalk Street

















Existing PM - Eco Parkway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↶	
Traffic Volume (veh/h)	12	192	196	8	16	26
Future Volume (Veh/h)	12	192	196	8	16	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	13	202	206	8	17	27
Pedestrians		2	2		6	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	220				446	218
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	220				446	218
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	99				97	97
cM capacity (veh/h)	1351				552	819
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	215	214	44			
Volume Left	13	0	17			
Volume Right	0	8	27			
cSH	1351	1700	690			
Volume to Capacity	0.01	0.13	0.06			
Queue Length 95th (m)	0.2	0.0	1.5			
Control Delay (s)	0.5	0.0	10.6			
Lane LOS	A		B			
Approach Delay (s)	0.5	0.0	10.6			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			1.2			
Intersection Capacity Utilization			30.6%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
5: Osprey Street & Main Street

Existing PM - Eco Parkway

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	207	9	8	197	2	2	6	15	11	2	8
Future Volume (vph)	14	207	9	8	197	2	2	6	15	11	2	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.995			0.999			0.912			0.947	
Flt Protected		0.997			0.998			0.996			0.975	
Satd. Flow (prot)	0	1732	0	0	1730	0	0	1574	0	0	1735	0
Flt Permitted		0.997			0.998			0.996			0.975	
Satd. Flow (perm)	0	1732	0	0	1730	0	0	1574	0	0	1735	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	18		10	10		18	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	12%	0%	13%	12%	0%	50%	0%	7%	0%	0%	0%
Adj. Flow (vph)	16	230	10	9	219	2	2	7	17	12	2	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	256	0	0	230	0	0	26	0	0	23	0
Sign Control		Free			Free			Stop			Stop	

















Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.3%
ICU Level of Service	A
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

## 5: Osprey Street & Main Street

Existing PM - Eco Parkway

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	207	9	8	197	2	2	6	15	11	2	8
Future Volume (Veh/h)	14	207	9	8	197	2	2	6	15	11	2	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	16	230	10	9	219	2	2	7	17	12	2	9
Pedestrians		4			7			17			18	
Lane Width (m)		3.8			3.8			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			1			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	239			257			536	541	259	550	545	242
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	239			257			536	541	259	550	545	242
tC, single (s)	4.2			4.2			7.6	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			4.0	4.0	3.4	3.5	4.0	3.3
p0 queue free %	99			99			99	98	98	97	100	99
cM capacity (veh/h)	1278			1228			361	428	751	407	426	786
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	256	230	26	23								
Volume Left	16	9	2	12								
Volume Right	10	2	17	9								
cSH	1278	1228	584	504								
Volume to Capacity	0.01	0.01	0.04	0.05								
Queue Length 95th (m)	0.3	0.2	1.1	1.1								
Control Delay (s)	0.6	0.4	11.4	12.5								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.6	0.4	11.4	12.5								
Approach LOS			B	B								
<b>Intersection Summary</b>												
Average Delay			1.5									
Intersection Capacity Utilization			29.3%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 8: Main Street/Main Street & Owen Sound Street

Existing PM - Eco Parkway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	229	201	76	42	3
Future Volume (vph)	3	229	201	76	42	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.963		0.992	
Flt Protected		0.999			0.955	
Satd. Flow (prot)	0	1782	1726	0	2040	0
Flt Permitted		0.999			0.955	
Satd. Flow (perm)	0	1782	1726	0	2040	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		155.5	320.4		154.4	
Travel Time (s)		14.0	28.8		13.9	
Confl. Peds. (#/hr)	22					
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	9%	10%	4%	0%	0%
Adj. Flow (vph)	3	260	228	86	48	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	263	314	0	51	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.2%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 8: Main Street/Main Street & Owen Sound Street

Existing PM - Eco Parkway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↕	
Traffic Volume (veh/h)	3	229	201	76	42	3
Future Volume (Veh/h)	3	229	201	76	42	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	3	260	228	86	48	3
Pedestrians					22	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	336				559	293
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	336				559	293
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				90	100
cM capacity (veh/h)	1202				479	731
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	263	314	51			
Volume Left	3	0	48			
Volume Right	0	86	3			
cSH	1202	1700	489			
Volume to Capacity	0.00	0.18	0.10			
Queue Length 95th (m)	0.1	0.0	2.6			
Control Delay (s)	0.1	0.0	13.2			
Lane LOS	A		B			
Approach Delay (s)	0.1	0.0	13.2			
Approach LOS			B			
<b>Intersection Summary</b>						
Average Delay			1.1			
Intersection Capacity Utilization			25.2%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 1: Ida Street & Glenelg Street

2032 FB AM - Eco Parkway












Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	23	27	27	17	15	118
Future Volume (vph)	23	27	27	17	15	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.926		0.949			
Flt Protected	0.978					0.994
Satd. Flow (prot)	1653	0	1549	0	0	1614
Flt Permitted	0.978					0.994
Satd. Flow (perm)	1653	0	1549	0	0	1614
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	0%	33%	0%	33%	14%	13%
Adj. Flow (vph)	30	36	36	22	20	155
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	0	58	0	0	175
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	23.7%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 1: Ida Street & Glenelg Street

2032 FB AM - Eco Parkway

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	23	27	27	17	15	118
Future Volume (Veh/h)	23	27	27	17	15	118
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	30	36	36	22	20	155
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	242	47			58	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	242	47			58	
tC, single (s)	6.4	6.5			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.6			2.3	
p0 queue free %	96	96			99	
cM capacity (veh/h)	741	941			1473	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	66	58	175			
Volume Left	30	0	20			
Volume Right	36	22	0			
cSH	838	1700	1473			
Volume to Capacity	0.08	0.03	0.01			
Queue Length 95th (m)	1.9	0.0	0.3			
Control Delay (s)	9.7	0.0	1.0			
Lane LOS	A		A			
Approach Delay (s)	9.7	0.0	1.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			2.7			
Intersection Capacity Utilization			23.7%	ICU Level of Service	A	
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 4: Main Street & Dundalk Street

2032 FB AM - Eco Parkway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	28	271	314	55	115	53
Future Volume (vph)	28	271	314	55	115	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.980		0.957	
Flt Protected		0.995			0.967	
Satd. Flow (prot)	0	1686	1601	0	1759	0
Flt Permitted		0.995			0.967	
Satd. Flow (perm)	0	1686	1601	0	1759	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	10			10	1	1
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	10%	11%	15%	15%	18%	3%
Adj. Flow (vph)	39	376	436	76	160	74
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	415	512	0	234	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	54.0%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 4: Main Street & Dundalk Street

















2032 FB AM - Eco Parkway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	271	314	55	115	53
Future Volume (Veh/h)	28	271	314	55	115	53
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	39	376	436	76	160	74
Pedestrians		1	1		10	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	522				939	485
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	522				939	485
tC, single (s)	4.2				6.6	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.3
p0 queue free %	96				38	87
cM capacity (veh/h)	993				260	572
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	415	512	234			
Volume Left	39	0	160			
Volume Right	0	76	74			
cSH	993	1700	314			
Volume to Capacity	0.04	0.30	0.74			
Queue Length 95th (m)	0.9	0.0	42.6			
Control Delay (s)	1.2	0.0	43.5			
Lane LOS	A		E			
Approach Delay (s)	1.2	0.0	43.5			
Approach LOS			E			
<b>Intersection Summary</b>						
Average Delay			9.2			
Intersection Capacity Utilization			54.0%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 5: Osprey Street & Main Street /Main Street

















2032 FB AM - Eco Parkway

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	341	25	9	332	3	43	2	13	28	5	13
Future Volume (vph)	13	341	25	9	332	3	43	2	13	28	5	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.991			0.999			0.970			0.961	
Flt Protected		0.998			0.999			0.964			0.970	
Satd. Flow (prot)	0	1706	0	0	1708	0	0	1598	0	0	1670	0
Flt Permitted		0.998			0.999			0.964			0.970	
Satd. Flow (perm)	0	1706	0	0	1708	0	0	1598	0	0	1670	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	7		4	4		7	3					3
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	14%	0%	0%	14%	0%	8%	0%	18%	8%	0%	0%
Adj. Flow (vph)	17	443	32	12	431	4	56	3	17	36	6	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	492	0	0	447	0	0	76	0	0	59	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.5%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
5: Osprey Street & Main Street /Main Street

2032 FB AM - Eco Parkway

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	341	25	9	332	3	43	2	13	28	5	13
Future Volume (Veh/h)	13	341	25	9	332	3	43	2	13	28	5	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	17	443	32	12	431	4	56	3	17	36	6	17
Pedestrians		3						6			7	
Lane Width (m)		3.8						3.5			3.5	
Walking Speed (m/s)		1.1						1.1			1.1	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	442			481			979	965	465	976	979	443
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	442			481			979	965	465	976	979	443
tC, single (s)	4.1			4.1			7.2	6.5	6.4	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.5	3.6	4.0	3.3
p0 queue free %	98			99			73	99	97	83	98	97
cM capacity (veh/h)	1122			1086			206	247	563	209	243	613
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	492	447	76	59								
Volume Left	17	12	56	36								
Volume Right	32	4	17	17								
cSH	1122	1086	241	262								
Volume to Capacity	0.02	0.01	0.31	0.23								
Queue Length 95th (m)	0.4	0.3	9.9	6.4								
Control Delay (s)	0.5	0.3	26.6	22.7								
Lane LOS	A	A	D	C								
Approach Delay (s)	0.5	0.3	26.6	22.7								
Approach LOS			D	C								
Intersection Summary												
Average Delay			3.5									
Intersection Capacity Utilization			36.5%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 8: Main Street & Owen Sound Street

2032 FB AM - Eco Parkway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	379	326	60	54	0
Future Volume (vph)	4	379	326	60	54	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.979			
Flt Protected		0.999			0.950	
Satd. Flow (prot)	0	1719	1671	0	2046	0
Flt Permitted		0.999			0.950	
Satd. Flow (perm)	0	1719	1671	0	2046	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		155.5	320.4		159.9	
Travel Time (s)		14.0	28.8		14.4	
Confl. Peds. (#/hr)	4					
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	13%	15%	7%	0%	0%
Adj. Flow (vph)	5	462	398	73	66	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	467	471	0	66	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.1% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 8: Main Street & Owen Sound Street

2032 FB AM - Eco Parkway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↗	↖		↘	
Traffic Volume (veh/h)	4	379	326	60	54	0
Future Volume (Veh/h)	4	379	326	60	54	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	5	462	398	73	66	0
Pedestrians					4	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	475				910	438
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	475				910	438
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				78	100
cM capacity (veh/h)	1092				304	620
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	467	471	66			
Volume Left	5	0	66			
Volume Right	0	73	0			
cSH	1092	1700	304			
Volume to Capacity	0.00	0.28	0.22			
Queue Length 95th (m)	0.1	0.0	6.1			
Control Delay (s)	0.1	0.0	20.1			
Lane LOS	A		C			
Approach Delay (s)	0.1	0.0	20.1			
Approach LOS			C			
<b>Intersection Summary</b>						
Average Delay			1.4			
Intersection Capacity Utilization			33.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 1: Ida Street & Glenelg Street

2032 FB PM - Eco Parkway












Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	26	113	28	33	34
Future Volume (vph)	22	26	113	28	33	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.927		0.973			
Flt Protected	0.978					0.976
Satd. Flow (prot)	1952	0	1787	0	0	1739
Flt Permitted	0.978					0.976
Satd. Flow (perm)	1952	0	1787	0	0	1739
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%
Adj. Flow (vph)	28	33	141	35	41	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	176	0	0	84
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.6%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 1: Ida Street & Glenelg Street

2032 FB PM - Eco Parkway

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	22	26	113	28	33	34
Future Volume (Veh/h)	22	26	113	28	33	34
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	28	32	141	35	41	42
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	282	158			176	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	282	158			176	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	96			97	
cM capacity (veh/h)	691	892			1412	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	60	176	83			
Volume Left	28	0	41			
Volume Right	32	35	0			
cSH	786	1700	1412			
Volume to Capacity	0.08	0.10	0.03			
Queue Length 95th (m)	1.9	0.0	0.7			
Control Delay (s)	10.0	0.0	3.9			
Lane LOS	A		A			
Approach Delay (s)	10.0	0.0	3.9			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			2.9			
Intersection Capacity Utilization			24.6%		ICU Level of Service	A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 4: Main Street & Dundalk Street

2032 FB PM - Eco Parkway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	28	311	251	121	84	39
Future Volume (vph)	28	311	251	121	84	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.956		0.957	
Flt Protected		0.996			0.967	
Satd. Flow (prot)	0	1774	1693	0	1914	0
Flt Permitted		0.996			0.967	
Satd. Flow (perm)	0	1774	1693	0	1914	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	6			6	2	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	6%	9%	0%	6%	0%
Adj. Flow (vph)	29	327	264	127	88	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	356	391	0	129	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	53.7%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 4: Main Street & Dundalk Street

















2032 FB PM - Eco Parkway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	28	311	251	121	84	39
Future Volume (Veh/h)	28	311	251	121	84	39
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	29	327	264	127	88	41
Pedestrians		2	2		6	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	397				720	336
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	397				720	336
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	98				77	94
cM capacity (veh/h)	1164				375	705
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	356	391	129			
Volume Left	29	0	88			
Volume Right	0	127	41			
cSH	1164	1700	441			
Volume to Capacity	0.02	0.23	0.29			
Queue Length 95th (m)	0.6	0.0	9.1			
Control Delay (s)	0.9	0.0	16.5			
Lane LOS	A		C			
Approach Delay (s)	0.9	0.0	16.5			
Approach LOS			C			
<b>Intersection Summary</b>						
Average Delay			2.8			
Intersection Capacity Utilization			53.7%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
5: Osprey Street & Main Street /Main Street

2032 FB PM - Eco Parkway

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	361	43	10	342	3	23	7	18	18	3	11
Future Volume (vph)	18	361	43	10	342	3	23	7	18	18	3	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.986			0.999			0.950			0.954	
Flt Protected		0.998			0.999			0.976			0.972	
Satd. Flow (prot)	0	1729	0	0	1732	0	0	1375	0	0	1742	0
Flt Permitted		0.998			0.999			0.976			0.972	
Satd. Flow (perm)	0	1729	0	0	1732	0	0	1375	0	0	1742	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	18		10	10		18	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	12%	0%	13%	12%	0%	50%	0%	7%	0%	0%	0%
Adj. Flow (vph)	20	401	48	11	380	3	26	8	20	20	3	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	469	0	0	394	0	0	54	0	0	35	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.1%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
5: Osprey Street & Main Street /Main Street

2032 FB PM - Eco Parkway

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	361	43	10	342	3	23	7	18	18	3	11
Future Volume (Veh/h)	18	361	43	10	342	3	23	7	18	18	3	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	20	401	48	11	380	3	26	8	20	20	3	12
Pedestrians		4			7			17			18	
Lane Width (m)		3.8			3.8			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			1			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	401			466			903	905	449	918	928	404
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	401			466			903	905	449	918	928	404
tC, single (s)	4.2			4.2			7.6	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			4.0	4.0	3.4	3.5	4.0	3.3
p0 queue free %	98			99			87	97	97	91	99	98
cM capacity (veh/h)	1113			1024			195	262	587	224	254	639
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	469	394	54	35								
Volume Left	20	11	26	20								
Volume Right	48	3	20	12								
cSH	1113	1024	272	292								
Volume to Capacity	0.02	0.01	0.20	0.12								
Queue Length 95th (m)	0.4	0.2	5.5	3.1								
Control Delay (s)	0.5	0.4	21.5	19.0								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.5	0.4	21.5	19.0								
Approach LOS			C	C								
<b>Intersection Summary</b>												
Average Delay			2.3									
Intersection Capacity Utilization			42.1%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 8: Main Street & Owen Sound Street

2032 FB PM - Eco Parkway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	392	347	115	56	5
Future Volume (vph)	6	392	347	115	56	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.966		0.988	
Flt Protected		0.999			0.956	
Satd. Flow (prot)	0	1782	1729	0	2034	0
Flt Permitted		0.999			0.956	
Satd. Flow (perm)	0	1782	1729	0	2034	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		155.5	320.4		159.9	
Travel Time (s)		14.0	28.8		14.4	
Confl. Peds. (#/hr)	22					
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	9%	10%	4%	0%	0%
Adj. Flow (vph)	7	445	394	131	64	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	452	525	0	70	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.5% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 8: Main Street & Owen Sound Street

2032 FB PM - Eco Parkway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	392	347	115	56	5
Future Volume (Veh/h)	6	392	347	115	56	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	7	445	394	131	64	6
Pedestrians					22	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	547				940	482
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	547				940	482
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				78	99
cM capacity (veh/h)	1005				285	573
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	452	525	70			
Volume Left	7	0	64			
Volume Right	0	131	6			
cSH	1005	1700	298			
Volume to Capacity	0.01	0.31	0.24			
Queue Length 95th (m)	0.2	0.0	6.8			
Control Delay (s)	0.2	0.0	20.8			
Lane LOS	A		C			
Approach Delay (s)	0.2	0.0	20.8			
Approach LOS			C			
<b>Intersection Summary</b>						
Average Delay			1.5			
Intersection Capacity Utilization			35.5%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 1: Ida Street & Glenelg Street

2032 FT AM - Eco Parkway












Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	83	63	27	73	41	118
Future Volume (vph)	83	63	27	73	41	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.942		0.902			
Flt Protected	0.972					0.987
Satd. Flow (prot)	1725	0	1336	0	0	1601
Flt Permitted	0.972					0.987
Satd. Flow (perm)	1725	0	1336	0	0	1601
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles (%)	0%	33%	0%	33%	14%	13%
Adj. Flow (vph)	109	83	36	96	54	155
Shared Lane Traffic (%)						
Lane Group Flow (vph)	192	0	132	0	0	209
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	30.3%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 1: Ida Street & Glenelg Street

2032 FT AM - Eco Parkway

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	83	63	27	73	41	118
Future Volume (Veh/h)	83	63	27	73	41	118
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	109	83	36	96	54	155
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	347	84			132	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	347	84			132	
tC, single (s)	6.4	6.5			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.6			2.3	
p0 queue free %	83	91			96	
cM capacity (veh/h)	628	896			1382	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	192	132	209			
Volume Left	109	0	54			
Volume Right	83	96	0			
cSH	722	1700	1382			
Volume to Capacity	0.27	0.08	0.04			
Queue Length 95th (m)	8.1	0.0	0.9			
Control Delay (s)	11.8	0.0	2.2			
Lane LOS	B		A			
Approach Delay (s)	11.8	0.0	2.2			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			5.1			
Intersection Capacity Utilization			30.3%		ICU Level of Service	A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 4: Main Street & Dundalk Street

2032 FT AM - Eco Parkway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	51	271	314	55	115	79
Future Volume (vph)	51	271	314	55	115	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.980		0.945	
Flt Protected		0.992			0.971	
Satd. Flow (prot)	0	1682	1601	0	1766	0
Flt Permitted		0.992			0.971	
Satd. Flow (perm)	0	1682	1601	0	1766	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	10			10	1	1
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	10%	11%	15%	15%	18%	3%
Adj. Flow (vph)	71	376	436	76	160	110
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	447	512	0	270	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	58.4%
Analysis Period (min)	15
	ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis  
 4: Main Street & Dundalk Street

















2032 FT AM - Eco Parkway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	51	271	314	55	115	79
Future Volume (Veh/h)	51	271	314	55	115	79
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	71	376	436	76	160	110
Pedestrians		1	1		10	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	522				1003	485
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	522				1003	485
tC, single (s)	4.2				6.6	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.3
p0 queue free %	93				30	81
cM capacity (veh/h)	993				230	572
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	447	512	270			
Volume Left	71	0	160			
Volume Right	0	76	110			
cSH	993	1700	304			
Volume to Capacity	0.07	0.30	0.89			
Queue Length 95th (m)	1.8	0.0	62.0			
Control Delay (s)	2.1	0.0	65.0			
Lane LOS	A		F			
Approach Delay (s)	2.1	0.0	65.0			
Approach LOS			F			
<b>Intersection Summary</b>						
Average Delay			15.0			
Intersection Capacity Utilization			58.4%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings  
5: Osprey Street & Main Street /Main Street

2032 FT AM - Eco Parkway

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	341	25	9	332	3	43	12	13	116	13	13
Future Volume (vph)	13	341	25	9	332	3	43	12	13	116	13	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.991			0.999			0.974			0.988	
Flt Protected		0.998			0.999			0.969			0.961	
Satd. Flow (prot)	0	1706	0	0	1708	0	0	1635	0	0	1675	0
Flt Permitted		0.998			0.999			0.969			0.961	
Satd. Flow (perm)	0	1706	0	0	1708	0	0	1635	0	0	1675	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	7		4	4		7	3					3
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	14%	0%	0%	14%	0%	8%	0%	18%	8%	0%	0%
Adj. Flow (vph)	17	443	32	12	431	4	56	16	17	151	17	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	492	0	0	447	0	0	89	0	0	185	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.8%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 5: Osprey Street & Main Street /Main Street

2032 FT AM - Eco Parkway

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	341	25	9	332	3	43	12	13	116	13	13
Future Volume (Veh/h)	13	341	25	9	332	3	43	12	13	116	13	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	17	443	32	12	431	4	56	16	17	151	17	17
Pedestrians		3						6			7	
Lane Width (m)		3.8						3.5			3.5	
Walking Speed (m/s)		1.1						1.1			1.1	
Percent Blockage		0						1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	442			481			984	965	465	982	979	443
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	442			481			984	965	465	982	979	443
tC, single (s)	4.1			4.1			7.2	6.5	6.4	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.5	3.6	4.0	3.3
p0 queue free %	98			99			72	94	97	24	93	97
cM capacity (veh/h)	1122			1086			197	247	563	198	243	613
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	492	447	89	185								
Volume Left	17	12	56	151								
Volume Right	32	4	17	17								
cSH	1122	1086	234	215								
Volume to Capacity	0.02	0.01	0.38	0.86								
Queue Length 95th (m)	0.4	0.3	12.8	50.6								
Control Delay (s)	0.5	0.3	29.5	76.6								
Lane LOS	A	A	D	F								
Approach Delay (s)	0.5	0.3	29.5	76.6								
Approach LOS			D	F								
<b>Intersection Summary</b>												
Average Delay			14.2									
Intersection Capacity Utilization			42.8%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
 8: Main Street & Owen Sound Street

2032 FT AM - Eco Parkway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	467	326	178	143	0
Future Volume (vph)	4	467	326	178	143	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.952					
Flt Protected					0.950	
Satd. Flow (prot)	0	1721	1648	0	2046	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1721	1648	0	2046	0
Link Speed (k/h)	40		40	40		
Link Distance (m)	155.5		320.4	159.9		
Travel Time (s)	14.0		28.8	14.4		
Confl. Peds. (#/hr)	4					
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	13%	15%	7%	0%	0%
Adj. Flow (vph)	5	570	398	217	174	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	575	615	0	174	0
Sign Control	Free		Free	Stop		

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.6%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 8: Main Street & Owen Sound Street

2032 FT AM - Eco Parkway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↗	↖		↘	
Traffic Volume (veh/h)	4	467	326	178	143	0
Future Volume (Veh/h)	4	467	326	178	143	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	5	570	398	217	174	0
Pedestrians					4	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	619				1090	510
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	619				1090	510
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				27	100
cM capacity (veh/h)	966				238	564
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	575	615	174			
Volume Left	5	0	174			
Volume Right	0	217	0			
cSH	966	1700	238			
Volume to Capacity	0.01	0.36	0.73			
Queue Length 95th (m)	0.1	0.0	38.2			
Control Delay (s)	0.1	0.0	52.7			
Lane LOS	A		F			
Approach Delay (s)	0.1	0.0	52.7			
Approach LOS			F			
<b>Intersection Summary</b>						
Average Delay			6.8			
Intersection Capacity Utilization			42.6%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 1: Ida Street & Glenelg Street

2032 FT PM - Eco Parkway












Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	46	43	113	58	59	34
Future Volume (vph)	46	43	113	58	59	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.8	3.5	3.3	3.5	3.5	3.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.935		0.954			
Flt Protected	0.975					0.969
Satd. Flow (prot)	1963	0	1752	0	0	1741
Flt Permitted	0.975					0.969
Satd. Flow (perm)	1963	0	1752	0	0	1741
Link Speed (k/h)	40		40			40
Link Distance (m)	456.0		590.7			1083.8
Travel Time (s)	41.0		53.2			97.5
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%
Adj. Flow (vph)	58	54	141	73	74	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	112	0	214	0	0	117
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.7%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 1: Ida Street & Glenelg Street

2032 FT PM - Eco Parkway

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	46	43	113	58	59	34
Future Volume (Veh/h)	46	43	113	58	59	34
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	58	54	141	72	74	42
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	367	177			213	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	367	177			213	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	94			95	
cM capacity (veh/h)	602	871			1369	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	112	213	116			
Volume Left	58	0	74			
Volume Right	54	72	0			
cSH	708	1700	1369			
Volume to Capacity	0.16	0.13	0.05			
Queue Length 95th (m)	4.3	0.0	1.3			
Control Delay (s)	11.0	0.0	5.1			
Lane LOS	B		A			
Approach Delay (s)	11.0	0.0	5.1			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			4.2			
Intersection Capacity Utilization			29.7%	ICU Level of Service	A	
Analysis Period (min)			15			



Lanes, Volumes, Timings  
 4: Main Street & Dundalk Street

2032 FT PM - Eco Parkway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	43	311	251	121	84	49
Future Volume (vph)	43	311	251	121	84	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.956		0.950	
Flt Protected		0.994			0.970	
Satd. Flow (prot)	0	1774	1693	0	1912	0
Flt Permitted		0.994			0.970	
Satd. Flow (perm)	0	1774	1693	0	1912	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		805.6	354.8		411.0	
Travel Time (s)		72.5	31.9		37.0	
Confl. Peds. (#/hr)	6			6	2	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	6%	9%	0%	6%	0%
Adj. Flow (vph)	45	327	264	127	88	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	372	391	0	140	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	57.6%
Analysis Period (min)	15
	ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis  
 4: Main Street & Dundalk Street

















2032 FT PM - Eco Parkway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	43	311	251	121	84	49
Future Volume (Veh/h)	43	311	251	121	84	49
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	45	327	264	127	88	52
Pedestrians		2	2		6	
Lane Width (m)		3.5	3.5		4.8	
Walking Speed (m/s)		1.1	1.1		1.1	
Percent Blockage		0	0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	397				752	336
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	397				752	336
tC, single (s)	4.1				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	96				75	93
cM capacity (veh/h)	1164				354	705
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	372	391	140			
Volume Left	45	0	88			
Volume Right	0	127	52			
cSH	1164	1700	435			
Volume to Capacity	0.04	0.23	0.32			
Queue Length 95th (m)	0.9	0.0	10.4			
Control Delay (s)	1.3	0.0	17.2			
Lane LOS	A		C			
Approach Delay (s)	1.3	0.0	17.2			
Approach LOS			C			
<b>Intersection Summary</b>						
Average Delay			3.2			
Intersection Capacity Utilization			57.6%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings  
5: Osprey Street & Main Street /Main Street

2032 FT PM - Eco Parkway

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	361	43	10	342	3	23	9	18	65	5	11
Future Volume (vph)	18	361	43	10	342	3	23	9	18	65	5	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		0.986			0.999			0.952			0.982	
Flt Protected		0.998			0.999			0.977			0.962	
Satd. Flow (prot)	0	1729	0	0	1732	0	0	1390	0	0	1775	0
Flt Permitted		0.998			0.999			0.977			0.962	
Satd. Flow (perm)	0	1729	0	0	1732	0	0	1390	0	0	1775	0
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	18		10	10		18	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	12%	0%	13%	12%	0%	50%	0%	7%	0%	0%	0%
Adj. Flow (vph)	20	401	48	11	380	3	26	10	20	72	6	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	469	0	0	394	0	0	56	0	0	90	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	44.9%
ICU Level of Service	A
Analysis Period (min)	15

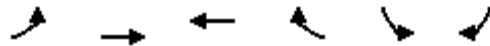
HCM Unsignalized Intersection Capacity Analysis  
5: Osprey Street & Main Street /Main Street

2032 FT PM - Eco Parkway

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	361	43	10	342	3	23	9	18	65	5	11
Future Volume (Veh/h)	18	361	43	10	342	3	23	9	18	65	5	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	20	401	48	11	380	3	26	10	20	72	6	12
Pedestrians		4			7			17			18	
Lane Width (m)		3.8			3.8			3.5			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			1			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	401			466			904	905	449	918	928	404
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	401			466			904	905	449	918	928	404
tC, single (s)	4.2			4.2			7.6	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			4.0	4.0	3.4	3.5	4.0	3.3
p0 queue free %	98			99			86	96	97	68	98	98
cM capacity (veh/h)	1113			1024			192	262	587	223	254	639
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	469	394	56	90								
Volume Left	20	11	26	72								
Volume Right	48	3	20	12								
cSH	1113	1024	270	246								
Volume to Capacity	0.02	0.01	0.21	0.37								
Queue Length 95th (m)	0.4	0.2	5.8	12.2								
Control Delay (s)	0.5	0.4	21.8	27.8								
Lane LOS	A	A	C	D								
Approach Delay (s)	0.5	0.4	21.8	27.8								
Approach LOS			C	D								
Intersection Summary												
Average Delay			4.1									
Intersection Capacity Utilization			44.9%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
8: Main Street & Owen Sound Street

2032 FT PM - Eco Parkway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	439	347	257	104	5
Future Volume (vph)	6	439	347	257	104	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.8	3.5	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.943		0.993	
Flt Protected		0.999			0.955	
Satd. Flow (prot)	0	1782	1705	0	2042	0
Flt Permitted		0.999			0.955	
Satd. Flow (perm)	0	1782	1705	0	2042	0
Link Speed (k/h)		40	40		40	
Link Distance (m)		155.5	320.4		159.9	
Travel Time (s)		14.0	28.8		14.4	
Confl. Peds. (#/hr)	22					
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	9%	10%	4%	0%	0%
Adj. Flow (vph)	7	499	394	292	118	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	506	686	0	124	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.7%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 8: Main Street & Owen Sound Street

















2032 FT PM - Eco Parkway



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↶	
Traffic Volume (veh/h)	6	439	347	257	104	5
Future Volume (Veh/h)	6	439	347	257	104	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	7	499	394	292	118	6
Pedestrians					22	
Lane Width (m)					4.8	
Walking Speed (m/s)					1.1	
Percent Blockage					3	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	708				1075	562
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	708				1075	562
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				50	99
cM capacity (veh/h)	876				237	516
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	506	686	124			
Volume Left	7	0	118			
Volume Right	0	292	6			
cSH	876	1700	243			
Volume to Capacity	0.01	0.40	0.51			
Queue Length 95th (m)	0.2	0.0	20.1			
Control Delay (s)	0.2	0.0	34.3			
Lane LOS	A		D			
Approach Delay (s)	0.2	0.0	34.3			
Approach LOS			D			
<b>Intersection Summary</b>						
Average Delay			3.3			
Intersection Capacity Utilization			46.7%		ICU Level of Service	A
Analysis Period (min)			15			

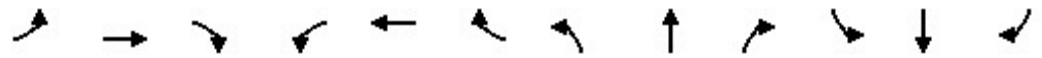
Lanes, Volumes, Timings  
5: Osprey Street & Main Street /Main Street

2032 FT AM - Eco Parkway w Signal

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	341	25	9	332	3	43	12	13	116	13	13
Future Volume (vph)	13	341	25	9	332	3	43	12	13	116	13	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		1.00			1.00			1.00			1.00	
Frt		0.991			0.999			0.974			0.988	
Flt Protected		0.998			0.999			0.969			0.961	
Satd. Flow (prot)	0	1703	0	0	1707	0	0	1635	0	0	1671	0
Flt Permitted		0.982			0.987			0.771			0.726	
Satd. Flow (perm)	0	1675	0	0	1687	0	0	1297	0	0	1262	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			1			17			9	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	7		4	4		7	3					3
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	0%	14%	0%	0%	14%	0%	8%	0%	18%	8%	0%	0%
Adj. Flow (vph)	17	443	32	12	431	4	56	16	17	151	17	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	492	0	0	447	0	0	89	0	0	185	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%		38.3%	38.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		36.5			36.5			12.7			12.7	
Actuated g/C Ratio		0.66			0.66			0.23			0.23	
v/c Ratio		0.45			0.40			0.29			0.63	
Control Delay		8.8			8.4			16.7			27.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		8.8			8.4			16.7			27.8	
LOS		A			A			B			C	
Approach Delay		8.8			8.4			16.7			27.8	
Approach LOS		A			A			B			C	
Queue Length 50th (m)		24.3			21.8			5.8			15.6	

Lanes, Volumes, Timings  
 5: Osprey Street & Main Street /Main Street

2032 FT AM - Eco Parkway w Signal



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)		42.3			37.9			12.3			25.8	
Internal Link Dist (m)		330.8			131.5			98.8			268.8	
Turn Bay Length (m)												
Base Capacity (vph)		1103			1108			432			415	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.45			0.40			0.21			0.45	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	55.6
Natural Cycle:	45
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.63
Intersection Signal Delay:	12.1
Intersection LOS:	B
Intersection Capacity Utilization	44.4%
ICU Level of Service	A
Analysis Period (min)	15

















Splits and Phases: 5: Osprey Street & Main Street /Main Street





















HCM Signalized Intersection Capacity Analysis  
5: Osprey Street & Main Street /Main Street

2032 FT AM - Eco Parkway w Signal

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	341	25	9	332	3	43	12	13	116	13	13
Future Volume (vph)	13	341	25	9	332	3	43	12	13	116	13	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	3.5	3.5
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frbp, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.97			0.99	
Flt Protected		1.00			1.00			0.97			0.96	
Satd. Flow (prot)		1703			1706			1632			1670	
Flt Permitted		0.98			0.99			0.77			0.73	
Satd. Flow (perm)		1676			1686			1298			1262	
Peak-hour factor, PHF	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Adj. Flow (vph)	17	443	32	12	431	4	56	16	17	151	17	17
RTOR Reduction (vph)	0	3	0	0	0	0	0	14	0	0	7	0
Lane Group Flow (vph)	0	489	0	0	447	0	0	75	0	0	178	0
Confl. Peds. (#/hr)	7		4	4		7	3					3
Heavy Vehicles (%)	0%	14%	0%	0%	14%	0%	8%	0%	18%	8%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		35.5			35.5			11.2			11.2	
Effective Green, g (s)		35.5			35.5			11.2			11.2	
Actuated g/C Ratio		0.63			0.63			0.20			0.20	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1049			1055			256			249	
v/s Ratio Prot												
v/s Ratio Perm		c0.29			0.26			0.06			c0.14	
v/c Ratio		0.47			0.42			0.29			0.71	
Uniform Delay, d1		5.6			5.4			19.4			21.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.5			1.2			0.6			9.3	
Delay (s)		7.1			6.6			20.0			30.6	
Level of Service		A			A			C			C	
Approach Delay (s)		7.1			6.6			20.0			30.6	
Approach LOS		A			A			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			11.5				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			56.7				Sum of lost time (s)		10.0			
Intersection Capacity Utilization			44.4%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings  
5: Osprey Street & Main Street /Main Street

2032 FT PM - Eco Parkway w Signal

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	361	43	10	342	3	23	9	18	65	5	11
Future Volume (vph)	18	361	43	10	342	3	23	9	18	65	5	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	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		1.00			1.00			0.98			0.99	
Frt		0.986			0.999			0.952			0.982	
Flt Protected		0.998			0.999			0.977			0.962	
Satd. Flow (prot)	0	1722	0	0	1731	0	0	1373	0	0	1768	0
Flt Permitted		0.980			0.988			0.862			0.731	
Satd. Flow (perm)	0	1689	0	0	1711	0	0	1208	0	0	1330	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			1			20			12	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		354.8			155.5			122.8			292.8	
Travel Time (s)		31.9			14.0			11.1			26.4	
Confl. Peds. (#/hr)	18		10	10		18	4		7	7		4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	12%	0%	13%	12%	0%	50%	0%	7%	0%	0%	0%
Adj. Flow (vph)	20	401	48	11	380	3	26	10	20	72	6	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	469	0	0	394	0	0	56	0	0	90	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	39.0	39.0		39.0	39.0		21.0	21.0		21.0	21.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		43.0			43.0			8.9			8.9	
Actuated g/C Ratio		0.78			0.78			0.16			0.16	
v/c Ratio		0.35			0.29			0.26			0.40	
Control Delay		4.9			4.6			17.2			23.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		4.9			4.6			17.2			23.3	
LOS		A			A			B			C	
Approach Delay		4.9			4.6			17.2			23.3	
Approach LOS		A			A			B			C	
Queue Length 50th (m)		16.5			13.6			3.3			7.4	

Lanes, Volumes, Timings  
 5: Osprey Street & Main Street /Main Street

2032 FT PM - Eco Parkway w Signal

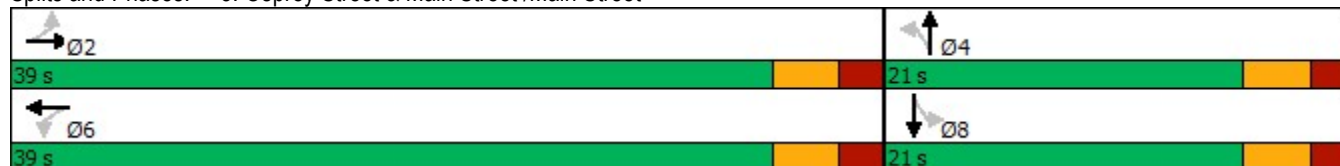


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)		37.6			30.8			10.7			16.9	
Internal Link Dist (m)		330.8			131.5			98.8			268.8	
Turn Bay Length (m)												
Base Capacity (vph)		1323			1337			366			395	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.35			0.29			0.15			0.23	

Intersection Summary

















Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	55
Natural Cycle:	40
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.40
Intersection Signal Delay:	7.1
Intersection LOS:	A
Intersection Capacity Utilization	46.5%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 5: Osprey Street & Main Street /Main Street



HCM Signalized Intersection Capacity Analysis  
5: Osprey Street & Main Street /Main Street

2032 FT PM - Eco Parkway w Signal

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	18	361	43	10	342	3	23	9	18	65	5	11	
Future Volume (vph)	18	361	43	10	342	3	23	9	18	65	5	11	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	3.5	3.8	3.5	3.5	3.8	3.5	3.5	3.5	3.5	4.8	3.5	3.5	
Total Lost time (s)		5.0			5.0			5.0			5.0		
Lane Util. Factor		1.00			1.00			1.00			1.00		
Frbp, ped/bikes		1.00			1.00			0.99			1.00		
Flpb, ped/bikes		1.00			1.00			1.00			0.99		
Frt		0.99			1.00			0.95			0.98		
Flt Protected		1.00			1.00			0.98			0.96		
Satd. Flow (prot)		1721			1730			1370			1750		
Flt Permitted		0.98			0.99			0.86			0.73		
Satd. Flow (perm)		1689			1711			1208			1330		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	20	401	48	11	380	3	26	10	20	72	6	12	
RTOR Reduction (vph)	0	5	0	0	0	0	0	18	0	0	11	0	
Lane Group Flow (vph)	0	464	0	0	394	0	0	38	0	0	79	0	
Confl. Peds. (#/hr)	18		10	10		18	4		7	7		4	
Heavy Vehicles (%)	7%	12%	0%	13%	12%	0%	50%	0%	7%	0%	0%	0%	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		2			6			4			8		
Permitted Phases	2			6			4			8			
Actuated Green, G (s)		40.9			40.9			6.1			6.1		
Effective Green, g (s)		40.9			40.9			6.1			6.1		
Actuated g/C Ratio		0.72			0.72			0.11			0.11		
Clearance Time (s)		5.0			5.0			5.0			5.0		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		1211			1227			129			142		
v/s Ratio Prot													
v/s Ratio Perm		c0.27			0.23			0.03			c0.06		
v/c Ratio		0.38			0.32			0.30			0.56		
Uniform Delay, d1		3.1			3.0			23.5			24.2		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.9			0.7			1.3			4.7		
Delay (s)		4.1			3.6			24.8			28.9		
Level of Service		A			A			C			C		
Approach Delay (s)		4.1			3.6			24.8			28.9		
Approach LOS		A			A			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			7.3									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.41										
Actuated Cycle Length (s)			57.0									Sum of lost time (s)	10.0
Intersection Capacity Utilization			46.5%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

<h1>Junctions 8</h1>
<h2>ARCADY 8 - Roundabout Module</h2>
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Filename: 2027 Traffic Volumes.arc8

Path: J:\1000\1060-Flato Dev\6220- Glenelg Expansion Lands\Design\Traffic\Working\2023.08 - TIS Update\Arcady\2027

Report generation date: 2023-08-15 12:26:08 PM

## Summary of intersection performance

AM							
	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
<b>2027 [Entry Lane Simulation] - Future Background 2027</b>							
<b>Leg 1</b>	0.14	0.85	1.54	N/A	A	1.45	A
<b>Leg 2</b>	0.01	~1	0.78	N/A	A		
<b>Leg 3</b>	0.15	0.88	1.60	N/A	A		
<b>Leg 4</b>	0.02	~1	1.00	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Future Background 2027, AM" model duration: 8:00 AM - 9:00 AM

"D2 - Future Background 2027, PM" model duration: 5:00 PM - 6:00 PM

"D3 - Future Total 2027, AM" model duration: 8:00 AM - 9:00 AM

"D4 - Future Total 2027, PM" model duration: 5:00 PM - 6:00 PM

Run using Junctions 8.0.6.541 at 2023-08-15 12:26:07 PM

## File summary

Title	(untitled)
Location	
Site Number	
Date	2022-08-12
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	khagan
Description	

## Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

## Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

## Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	139992908	7385

# 2027 - Future Background 2027, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 - 2027 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
2027	Entry Lane Simulation		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Future Background 2027, AM	Future Background 2027	AM		PHF	08:00	09:00	60	15				✓		

# Intersection Network

## Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	untitled	Roundabout	1,2,3,4			1.45	A

## Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

# Legs

## Legs

Leg	Leg	Name	Description
1	1	Main Street W	
2	2	Ida Street	
3	3	Grey Road 9	
4	4	Ida Street	

## Capacity Options

Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

## Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.80	4.25	5.00	20.00	35.00	32.50	
2	3.80	4.25	5.00	20.00	35.00	32.50	
3	3.80	4.25	5.00	20.00	35.00	32.50	
4	3.80	4.25	5.00	20.00	35.00	32.50	

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1		(calculated)	(calculated)	0.557	1246.355
2		(calculated)	(calculated)	0.557	1246.355
3		(calculated)	(calculated)	0.557	1246.355
4		(calculated)	(calculated)	0.557	1246.355

The slope and intercept shown above include any corrections and adjustments.

### Entry Lane Analysis: Leg options

Leg	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

### Lanes

Leg	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	1	1		Infinity	0.00	99999.00
2	1	1		Infinity	0.00	99999.00
3	1	1		Infinity	0.00	99999.00
4	1	1		Infinity	0.00	99999.00

### Entry Lane slope and intercept

Leg	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1	(calculated)	(calculated)	0.557	1246.355
2	(calculated)	(calculated)	0.557	1246.355
3	(calculated)	(calculated)	0.557	1246.355
4	(calculated)	(calculated)	0.557	1246.355

### Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				1	2	3	4
1	1	1	1	✓	✓	✓	✓
1	2	1	1	✓	✓	✓	✓
1	3	1	1	✓	✓	✓	✓
1	4	1	1	✓	✓	✓	✓

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	PHF	✓	190.00	100.000
2	PHF	✓	46.00	100.000
3	PHF	✓	188.00	100.000
4	PHF	✓	41.00	100.000

## Peak Hour Factor Data

Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
1	190.00	0.82	SecondQuarter
2	46.00	0.82	SecondQuarter
3	188.00	0.82	SecondQuarter
4	41.00	0.82	SecondQuarter

## Turning Proportions

### Turning Counts / Proportions (Veh/hr) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	11.000	140.000	39.000
	2	13.000	0.000	21.000	12.000
	3	157.000	12.000	0.000	19.000
	4	26.000	3.000	12.000	0.000

### Turning Proportions (Veh) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.06	0.74	0.21
	2	0.28	0.00	0.46	0.26
	3	0.84	0.06	0.00	0.10
	4	0.63	0.07	0.29	0.00

## Vehicle Mix

### Average PCE Per Vehicle - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.100	1.141	1.528
	2	1.083	1.000	1.000	1.091
	3	1.175	1.200	1.000	1.353
	4	1.250	1.000	1.091	1.000

### Truck Percentages - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	10.0	14.1	52.8
	2	8.3	0.0	0.0	9.1
	3	17.5	20.0	0.0	35.3
	4	25.0	0.0	9.1	0.0

## Results

### Results Summary for whole modelled period

Leg	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)
1	1.54	0.14	0.85	A	232.44	232.44	6.03	1.56	0.10
2	0.78	0.01	~1	A	47.64	47.64	0.62	0.78	0.01
3	1.60	0.15	0.88	A	225.76	225.76	6.01	1.60	0.10
4	1.00	0.02	~1	A	48.99	48.99	0.91	1.11	0.02



<h1>Junctions 8</h1>
<h2>ARCADY 8 - Roundabout Module</h2>
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Filename: 2027 Traffic Volumes.arc8

Path: J:\1000\1060-Flato Dev\6220- Glenelg Expansion Lands\Design\Traffic\Working\2023.08 - TIS Update\Arcady\2027

Report generation date: 2023-08-15 12:49:40 PM

## Summary of intersection performance

PM							
	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
<b>2027 [Entry Lane Simulation] - Future Background 2027</b>							
<b>Leg 1</b>	0.11	0.41	1.34	N/A	A	1.18	A
<b>Leg 2</b>	0.01	~1	0.78	N/A	A		
<b>Leg 3</b>	0.09	0.22	1.16	N/A	A		
<b>Leg 4</b>	0.03	~1	0.96	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Future Background 2027, AM" model duration: 8:00 AM - 9:00 AM

"D2 - Future Background 2027, PM" model duration: 5:00 PM - 6:00 PM

"D3 - Future Total 2027, AM" model duration: 8:00 AM - 9:00 AM

"D4 - Future Total 2027, PM" model duration: 5:00 PM - 6:00 PM

Run using Junctions 8.0.6.541 at 2023-08-15 12:49:40 PM

## File summary

Title	(untitled)
Location	
Site Number	
Date	2022-08-12
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	khagan
Description	

## Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

## Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

## Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1615539117	5081

# 2027 - Future Background 2027, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 - 2027 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
2027	Entry Lane Simulation		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Future Background 2027, PM	Future Background 2027	PM		PHF	17:00	18:00	60	15				✓		

# Intersection Network

## Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	untitled	Roundabout	1,2,3,4			1.18	A

## Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

# Legs

## Legs

Leg	Leg	Name	Description
1	1	Main Street W	
2	2	Ida Street	
3	3	Grey Road 9	
4	4	Ida Street	

## Capacity Options

Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

## Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.80	4.25	5.00	20.00	35.00	32.50	
2	3.80	4.25	5.00	20.00	35.00	32.50	
3	3.80	4.25	5.00	20.00	35.00	32.50	
4	3.80	4.25	5.00	20.00	35.00	32.50	

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1		(calculated)	(calculated)	0.557	1246.355
2		(calculated)	(calculated)	0.557	1246.355
3		(calculated)	(calculated)	0.557	1246.355
4		(calculated)	(calculated)	0.557	1246.355

The slope and intercept shown above include any corrections and adjustments.

### Entry Lane Analysis: Leg options

Leg	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

### Lanes

Leg	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	1	1		Infinity	0.00	99999.00
2	1	1		Infinity	0.00	99999.00
3	1	1		Infinity	0.00	99999.00
4	1	1		Infinity	0.00	99999.00

### Entry Lane slope and intercept

Leg	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1	(calculated)	(calculated)	0.557	1246.355
2	(calculated)	(calculated)	0.557	1246.355
3	(calculated)	(calculated)	0.557	1246.355
4	(calculated)	(calculated)	0.557	1246.355

### Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				1	2	3	4
1	1	1	1	✓	✓	✓	✓
1	2	1	1	✓	✓	✓	✓
1	3	1	1	✓	✓	✓	✓
1	4	1	1	✓	✓	✓	✓

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	PHF	✓	243.00	100.000
2	PHF	✓	39.00	100.000
3	PHF	✓	234.00	100.000
4	PHF	✓	81.00	100.000

## Peak Hour Factor Data

Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
1	243.00	0.95	SecondQuarter
2	39.00	0.95	SecondQuarter
3	234.00	0.95	SecondQuarter
4	81.00	0.95	SecondQuarter

## Turning Proportions

### Turning Counts / Proportions (Veh/hr) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	10.000	198.000	35.000
	2	10.000	0.000	20.000	9.000
	3	191.000	27.000	0.000	16.000
	4	41.000	16.000	24.000	0.000

### Turning Proportions (Veh) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.04	0.81	0.14
	2	0.26	0.00	0.51	0.23
	3	0.82	0.12	0.00	0.07
	4	0.51	0.20	0.30	0.00

## Vehicle Mix

### Average PCE Per Vehicle - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.053	1.344
	2	1.000	1.000	1.125	1.000
	3	1.039	1.143	1.000	1.071
	4	1.132	1.143	1.045	1.000

### Truck Percentages - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	5.3	34.4
	2	0.0	0.0	12.5	0.0
	3	3.9	14.3	0.0	7.1
	4	13.2	14.3	4.5	0.0

## Results

### Results Summary for whole modelled period

Leg	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)
1	1.34	0.11	0.41	A	264.44	264.44	6.21	1.41	0.10
2	0.78	0.01	~1	A	41.71	41.71	0.59	0.85	0.01
3	1.16	0.09	0.22	A	246.52	246.52	4.87	1.19	0.08
4	0.96	0.03	~1	A	90.11	90.11	1.60	1.07	0.03

<h1>Junctions 8</h1>
<h2>ARCADY 8 - Roundabout Module</h2>
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Filename: 2032 Traffic Volumes.arc8

Path: J:\1000\1060-Flato Dev\6220- Glenelg Expansion Lands\Design\Traffic\Working\2023.08 - TIS Update\Arcady\2032

Report generation date: 2023-08-15 2:05:23 PM

## Summary of intersection performance

AM							
	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
<b>2032 [Entry Lane Simulation] - Future Background 2032</b>							
<b>Leg 1</b>	0.15	0.92	1.62	N/A	A	1.53	A
<b>Leg 2</b>	0.01	~1	0.81	N/A	A		
<b>Leg 3</b>	0.14	0.85	1.70	N/A	A		
<b>Leg 4</b>	0.02	~1	1.03	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Future Background 2032, AM" model duration: 8:00 AM - 9:00 AM

"D2 - Future Background 2032, PM" model duration: 5:00 PM - 6:00 PM

"D3 - Future Total 2032, AM" model duration: 8:00 AM - 9:00 AM

"D4 - Future Total 2032, PM" model duration: 5:00 PM - 6:00 PM

Run using Junctions 8.0.6.541 at 2023-08-15 2:05:23 PM

## File summary

Title	(untitled)
Location	
Site Number	
Date	2022-08-12
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	khagan
Description	

## Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

## Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

## Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1707845429	8145

# 2032 - Future Background 2032, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 - 2032 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
2032	Entry Lane Simulation		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Future Background 2032, AM	Future Background 2032	AM		PHF	08:00	09:00	60	15				✓		

# Intersection Network

## Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	untitled	Roundabout	1,2,3,4			1.53	A

## Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

# Legs

## Legs

Leg	Leg	Name	Description
1	1	Main Street W	
2	2	Ida Street	
3	3	Grey Road 9	
4	4	Ida Street	

## Capacity Options

Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

## Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.80	4.25	5.00	20.00	35.00	32.50	
2	3.80	4.25	5.00	20.00	35.00	32.50	
3	3.80	4.25	5.00	20.00	35.00	32.50	
4	3.80	4.25	5.00	20.00	35.00	32.50	

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1		(calculated)	(calculated)	0.557	1246.355
2		(calculated)	(calculated)	0.557	1246.355
3		(calculated)	(calculated)	0.557	1246.355
4		(calculated)	(calculated)	0.557	1246.355

The slope and intercept shown above include any corrections and adjustments.

### Entry Lane Analysis: Leg options

Leg	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

### Lanes

Leg	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	1	1		Infinity	0.00	99999.00
2	1	1		Infinity	0.00	99999.00
3	1	1		Infinity	0.00	99999.00
4	1	1		Infinity	0.00	99999.00

### Entry Lane slope and intercept

Leg	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1	(calculated)	(calculated)	0.557	1246.355
2	(calculated)	(calculated)	0.557	1246.355
3	(calculated)	(calculated)	0.557	1246.355
4	(calculated)	(calculated)	0.557	1246.355

### Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				1	2	3	4
1	1	1	1	✓	✓	✓	✓
1	2	1	1	✓	✓	✓	✓
1	3	1	1	✓	✓	✓	✓
1	4	1	1	✓	✓	✓	✓

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	PHF	✓	200.00	100.000
2	PHF	✓	48.00	100.000
3	PHF	✓	199.00	100.000
4	PHF	✓	44.00	100.000

## Peak Hour Factor Data

Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
1	200.00	0.82	SecondQuarter
2	48.00	0.82	SecondQuarter
3	199.00	0.82	SecondQuarter
4	44.00	0.82	SecondQuarter

## Turning Proportions

### Turning Counts / Proportions (Veh/hr) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	12.000	146.000	42.000
	2	14.000	0.000	21.000	13.000
	3	167.000	12.000	0.000	20.000
	4	28.000	3.000	13.000	0.000

### Turning Proportions (Veh) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.06	0.73	0.21
	2	0.29	0.00	0.44	0.27
	3	0.84	0.06	0.00	0.10
	4	0.64	0.07	0.30	0.00

## Vehicle Mix

### Average PCE Per Vehicle - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.100	1.141	1.528
	2	1.083	1.000	1.000	1.091
	3	1.175	1.200	1.000	1.353
	4	1.250	1.000	1.091	1.000

### Truck Percentages - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	10.0	14.1	52.8
	2	8.3	0.0	0.0	9.1
	3	17.5	20.0	0.0	35.3
	4	25.0	0.0	9.1	0.0

## Results

### Results Summary for whole modelled period

Leg	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)
1	1.62	0.15	0.92	A	243.71	243.71	6.62	1.63	0.11
2	0.81	0.01	~1	A	50.10	50.10	0.67	0.80	0.01
3	1.70	0.14	0.85	A	237.48	237.48	6.69	1.69	0.11
4	1.03	0.02	~1	A	52.25	52.25	1.00	1.15	0.02



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<h2>ARCADY 8 - Roundabout Module</h2>
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Filename: 2032 Traffic Volumes.arc8

Path: J:\1000\1060-Flato Dev\6220- Glenelg Expansion Lands\Design\Traffic\Working\2023.08 - TIS Update\Arcady\2032

Report generation date: 2023-08-15 2:07:28 PM

## Summary of intersection performance

PM							
	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
<b>2032 [Entry Lane Simulation] - Future Background 2032</b>							
<b>Leg 1</b>	0.13	0.62	1.44	N/A	A	1.25	A
<b>Leg 2</b>	0.02	~1	0.80	N/A	A		
<b>Leg 3</b>	0.09	0.24	1.22	N/A	A		
<b>Leg 4</b>	0.04	~1	1.03	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Future Background 2032, AM" model duration: 8:00 AM - 9:00 AM

"D2 - Future Background 2032, PM " model duration: 5:00 PM - 6:00 PM

"D3 - Future Total 2032, AM" model duration: 8:00 AM - 9:00 AM

"D4 - Future Total 2032, PM" model duration: 5:00 PM - 6:00 PM

Run using Junctions 8.0.6.541 at 2023-08-15 2:07:28 PM

## File summary

Title	(untitled)
Location	
Site Number	
Date	2022-08-12
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	khagan
Description	

## Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

## Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

## Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1592545723	2958

# 2032 - Future Background 2032, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 - 2032 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
2032	Entry Lane Simulation		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Future Background 2032, PM	Future Background 2032	PM		PHF	17:00	18:00	60	15				✓		

# Intersection Network

## Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	untitled	Roundabout	1,2,3,4			1.25	A

## Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

# Legs

## Legs

Leg	Leg	Name	Description
1	1	Main Street W	
2	2	Ida Street	
3	3	Grey Road 9	
4	4	Ida Street	

## Capacity Options

Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

## Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.80	4.25	5.00	20.00	35.00	32.50	
2	3.80	4.25	5.00	20.00	35.00	32.50	
3	3.80	4.25	5.00	20.00	35.00	32.50	
4	3.80	4.25	5.00	20.00	35.00	32.50	

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1		(calculated)	(calculated)	0.557	1246.355
2		(calculated)	(calculated)	0.557	1246.355
3		(calculated)	(calculated)	0.557	1246.355
4		(calculated)	(calculated)	0.557	1246.355

The slope and intercept shown above include any corrections and adjustments.

### Entry Lane Analysis: Leg options

Leg	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

### Lanes

Leg	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	1	1		Infinity	0.00	99999.00
2	1	1		Infinity	0.00	99999.00
3	1	1		Infinity	0.00	99999.00
4	1	1		Infinity	0.00	99999.00

### Entry Lane slope and intercept

Leg	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1	(calculated)	(calculated)	0.557	1246.355
2	(calculated)	(calculated)	0.557	1246.355
3	(calculated)	(calculated)	0.557	1246.355
4	(calculated)	(calculated)	0.557	1246.355

### Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				1	2	3	4
1	1	1	1	✓	✓	✓	✓
1	2	1	1	✓	✓	✓	✓
1	3	1	1	✓	✓	✓	✓
1	4	1	1	✓	✓	✓	✓

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	PHF	✓	258.00	100.000
2	PHF	✓	42.00	100.000
3	PHF	✓	245.00	100.000
4	PHF	✓	88.00	100.000

## Peak Hour Factor Data

Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
1	258.00	0.95	SecondQuarter
2	42.00	0.95	SecondQuarter
3	245.00	0.95	SecondQuarter
4	88.00	0.95	SecondQuarter

## Turning Proportions

### Turning Counts / Proportions (Veh/hr) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	11.000	209.000	38.000
	2	11.000	0.000	21.000	10.000
	3	200.000	28.000	0.000	17.000
	4	45.000	17.000	26.000	0.000

### Turning Proportions (Veh) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.04	0.81	0.15
	2	0.26	0.00	0.50	0.24
	3	0.82	0.11	0.00	0.07
	4	0.51	0.19	0.30	0.00

## Vehicle Mix

### Average PCE Per Vehicle - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.053	1.344
	2	1.000	1.000	1.125	1.000
	3	1.039	1.143	1.000	1.071
	4	1.132	1.143	1.045	1.000

### Truck Percentages - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	5.3	34.4
	2	0.0	0.0	12.5	0.0
	3	3.9	14.3	0.0	7.1
	4	13.2	14.3	4.5	0.0

## Results

### Results Summary for whole modelled period

Leg	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)
1	1.44	0.13	0.62	A	282.53	282.53	7.01	1.49	0.12
2	0.80	0.02	~1	A	44.82	44.82	0.65	0.87	0.01
3	1.22	0.09	0.24	A	259.41	259.41	5.35	1.24	0.09
4	1.03	0.04	~1	A	97.61	97.61	1.83	1.12	0.03

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Filename: 2027 Traffic Volumes.arc8

Path: J:\1000\1060-Flato Dev\6220- Glenelg Expansion Lands\Design\Traffic\Working\2023.08 - TIS Update\Arcady\2027

Report generation date: 2023-08-15 12:54:06 PM

## Summary of intersection performance

AM							
	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
<b>2027 [Entry Lane Simulation] - Future Total 2027</b>							
<b>Leg 1</b>	0.16	1.04	1.68	N/A	A	1.57	A
<b>Leg 2</b>	0.03	~1	0.98	N/A	A		
<b>Leg 3</b>	0.18	1.24	1.85	N/A	A		
<b>Leg 4</b>	0.03	~1	1.03	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Future Background 2027, AM" model duration: 8:00 AM - 9:00 AM

"D2 - Future Background 2027, PM" model duration: 5:00 PM - 6:00 PM

"D3 - Future Total 2027, AM" model duration: 8:00 AM - 9:00 AM

"D4 - Future Total 2027, PM" model duration: 5:00 PM - 6:00 PM

Run using Junctions 8.0.6.541 at 2023-08-15 12:54:06 PM

## File summary

Title	(untitled)
Location	
Site Number	
Date	2022-08-12
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	khagan
Description	

## Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

## Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

## Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials

1.00	-1	3	1	10	1809661312	9465
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## 2027 - Future Total 2027, AM

### Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 - 2027 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

### Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
2027	Entry Lane Simulation		✓				100.000	100.000	

### Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Future Total 2027, AM	Future Total 2027	AM		PHF	08:00	09:00	60	15				✓		

## Intersection Network

### Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	untitled	Roundabout	1,2,3,4			1.57	A

### Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

## Legs

### Legs

Leg	Leg	Name	Description
1	1	Main Street W	
2	2	Ida Street	
3	3	Grey Road 9	
4	4	Ida Street	

### Capacity Options

Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

### Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
-----	----------------------------------	---------------------	---------------------------------	----------------------	-----------------------------------	------------------------------------	-----------

1	3.80	4.25	5.00	20.00	35.00	32.50	
2	3.80	4.25	5.00	20.00	35.00	32.50	
3	3.80	4.25	5.00	20.00	35.00	32.50	
4	3.80	4.25	5.00	20.00	35.00	32.50	

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1		(calculated)	(calculated)	0.557	1246.355
2		(calculated)	(calculated)	0.557	1246.355
3		(calculated)	(calculated)	0.557	1246.355
4		(calculated)	(calculated)	0.557	1246.355

*The slope and intercept shown above include any corrections and adjustments.*

## Entry Lane Analysis: Leg options

Leg	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

## Lanes

Leg	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	1	1		Infinity	0.00	99999.00
2	1	1		Infinity	0.00	99999.00
3	1	1		Infinity	0.00	99999.00
4	1	1		Infinity	0.00	99999.00

## Entry Lane slope and intercept

Leg	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1	(calculated)	(calculated)	0.557	1246.355
2	(calculated)	(calculated)	0.557	1246.355
3	(calculated)	(calculated)	0.557	1246.355
4	(calculated)	(calculated)	0.557	1246.355

## Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				1	2	3	4
1	1	1	1	✓	✓	✓	✓
1	2	1	1	✓	✓	✓	✓
1	3	1	1	✓	✓	✓	✓
1	4	1	1	✓	✓	✓	✓

# Traffic Flows

## Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

# Entry Flows

## General Flows Data

Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	PHF	✓	190.00	100.000
2	PHF	✓	98.00	100.000
3	PHF	✓	214.00	100.000
4	PHF	✓	61.00	100.000

## Peak Hour Factor Data

Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
1	190.00	0.82	SecondQuarter
2	98.00	0.82	SecondQuarter
3	214.00	0.82	SecondQuarter
4	61.00	0.82	SecondQuarter

# Turning Proportions

## Turning Counts / Proportions (Veh/hr) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	11.000	140.000	39.000
	2	13.000	0.000	56.000	29.000
	3	157.000	38.000	0.000	19.000
	4	26.000	23.000	12.000	0.000

## Turning Proportions (Veh) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.06	0.74	0.21
	2	0.13	0.00	0.57	0.30
	3	0.73	0.18	0.00	0.09
	4	0.43	0.38	0.20	0.00

# Vehicle Mix

## Average PCE Per Vehicle - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.100	1.141	1.528
	2	1.083	1.000	1.000	1.091
	3	1.175	1.200	1.000	1.353
	4	1.250	1.000	1.091	1.000

## Truck Percentages - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	10.0	14.1	52.8
	2	8.3	0.0	0.0	9.1
	3	17.5	20.0	0.0	35.3
	4	25.0	0.0	9.1	0.0

# Results

## Results Summary for whole modelled period



Leg	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)
1	1.68	0.16	1.04	A	232.05	232.05	6.48	1.67	0.11
2	0.98	0.03	~1	A	101.75	101.75	1.53	0.90	0.03
3	1.85	0.18	1.24	A	256.10	256.10	7.69	1.80	0.13
4	1.03	0.03	~1	A	69.08	69.08	1.24	1.08	0.02

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Filename: 2027 Traffic Volumes.arc8

Path: J:\1000\1060-Flato Dev\6220- Glenelg Expansion Lands\Design\Traffic\Working\2023.08 - TIS Update\Arcady\2027

Report generation date: 2023-08-15 12:57:01 PM

## Summary of intersection performance

PM							
	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
<b>2027 [Entry Lane Simulation] - Future Total 2027</b>							
<b>Leg 1</b>	0.12	0.56	1.40	N/A	A	1.26	A
<b>Leg 2</b>	0.02	~1	0.87	N/A	A		
<b>Leg 3</b>	0.12	0.53	1.29	N/A	A		
<b>Leg 4</b>	0.03	~1	1.04	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Future Background 2027, AM" model duration: 8:00 AM - 9:00 AM

"D2 - Future Background 2027, PM" model duration: 5:00 PM - 6:00 PM

"D3 - Future Total 2027, AM" model duration: 8:00 AM - 9:00 AM

"D4 - Future Total 2027, PM" model duration: 5:00 PM - 6:00 PM

Run using Junctions 8.0.6.541 at 2023-08-15 12:57:01 PM

## File summary

Title	(untitled)
Location	
Site Number	
Date	2022-08-12
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	khagan
Description	

## Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

## Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

## Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials

1.00	-1	3	1	10	2069268294	3225
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## 2027 - Future Total 2027, PM

### Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 - 2027 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

### Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
2027	Entry Lane Simulation		✓				100.000	100.000	

### Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Future Total 2027, PM	Future Total 2027	PM		PHF	17:00	18:00	60	15				✓		

## Intersection Network

### Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	untitled	Roundabout	1,2,3,4			1.26	A

### Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

## Legs

### Legs

Leg	Leg	Name	Description
1	1	Main Street W	
2	2	Ida Street	
3	3	Grey Road 9	
4	4	Ida Street	

### Capacity Options

Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

### Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
-----	----------------------------------	---------------------	---------------------------------	----------------------	-----------------------------------	------------------------------------	-----------

1	3.80	4.25	5.00	20.00	35.00	32.50	
2	3.80	4.25	5.00	20.00	35.00	32.50	
3	3.80	4.25	5.00	20.00	35.00	32.50	
4	3.80	4.25	5.00	20.00	35.00	32.50	

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1		(calculated)	(calculated)	0.557	1246.355
2		(calculated)	(calculated)	0.557	1246.355
3		(calculated)	(calculated)	0.557	1246.355
4		(calculated)	(calculated)	0.557	1246.355

*The slope and intercept shown above include any corrections and adjustments.*

## Entry Lane Analysis: Leg options

Leg	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

## Lanes

Leg	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	1	1		Infinity	0.00	99999.00
2	1	1		Infinity	0.00	99999.00
3	1	1		Infinity	0.00	99999.00
4	1	1		Infinity	0.00	99999.00

## Entry Lane slope and intercept

Leg	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1	(calculated)	(calculated)	0.557	1246.355
2	(calculated)	(calculated)	0.557	1246.355
3	(calculated)	(calculated)	0.557	1246.355
4	(calculated)	(calculated)	0.557	1246.355

## Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				1	2	3	4
1	1	1	1	✓	✓	✓	✓
1	2	1	1	✓	✓	✓	✓
1	3	1	1	✓	✓	✓	✓
1	4	1	1	✓	✓	✓	✓

# Traffic Flows

## Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

# Entry Flows

## General Flows Data

Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	PHF	✓	243.00	100.000
2	PHF	✓	60.00	100.000
3	PHF	✓	259.00	100.000
4	PHF	✓	85.00	100.000

## Peak Hour Factor Data

Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
1	243.00	0.95	SecondQuarter
2	60.00	0.95	SecondQuarter
3	259.00	0.95	SecondQuarter
4	85.00	0.95	SecondQuarter

# Turning Proportions

### Turning Counts / Proportions (Veh/hr) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	10.000	198.000	35.000
	2	10.000	0.000	37.000	13.000
	3	191.000	52.000	0.000	16.000
	4	41.000	20.000	24.000	0.000

### Turning Proportions (Veh) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.04	0.81	0.14
	2	0.17	0.00	0.62	0.22
	3	0.74	0.20	0.00	0.06
	4	0.48	0.24	0.28	0.00

# Vehicle Mix

### Average PCE Per Vehicle - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.053	1.344
	2	1.000	1.000	1.125	1.000
	3	1.039	1.143	1.000	1.071
	4	1.132	1.143	1.045	1.000

### Truck Percentages - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	5.3	34.4
	2	0.0	0.0	12.5	0.0
	3	3.9	14.3	0.0	7.1
	4	13.2	14.3	4.5	0.0

# Results

## Results Summary for whole modelled period

Leg	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)
1	1.40	0.12	0.56	A	264.27	264.27	6.48	1.47	0.11
2	0.87	0.02	~1	A	64.04	64.04	1.01	0.95	0.02
3	1.29	0.12	0.53	A	273.77	273.77	6.07	1.33	0.10
4	1.04	0.03	~1	A	94.95	94.95	1.80	1.14	0.03

<h1>Junctions 8</h1>
<h2>ARCADY 8 - Roundabout Module</h2>
Version: 8.0.6.541 [19821,26/11/2015] © Copyright TRL Limited, 2023
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Filename: 2032 Traffic Volumes.arc8

Path: J:\1000\1060-Flato Dev\6220- Glenelg Expansion Lands\Design\Traffic\Working\2023.08 - TIS Update\Arcady\2032

Report generation date: 2023-08-15 2:10:04 PM

## Summary of intersection performance

AM							
	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
<b>2032 [Entry Lane Simulation] - Future Total 2032</b>							
<b>Leg 1</b>	0.44	2.56	3.03	N/A	A	3.17	A
<b>Leg 2</b>	0.06	~1	1.47	N/A	A		
<b>Leg 3</b>	0.62	3.16	4.12	N/A	A		
<b>Leg 4</b>	0.10	0.28	1.83	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Future Background 2032, AM" model duration: 8:00 AM - 9:00 AM

"D2 - Future Background 2032, PM" model duration: 5:00 PM - 6:00 PM

"D3 - Future Total 2032, AM" model duration: 8:00 AM - 9:00 AM

"D4 - Future Total 2032, PM" model duration: 5:00 PM - 6:00 PM

Run using Junctions 8.0.6.541 at 2023-08-15 2:10:04 PM

## File summary

Title	(untitled)
Location	
Site Number	
Date	2022-08-12
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	khagan
Description	

## Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

## Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

## Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials

1.00	-1	3	1	10	1389773736	1304
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## 2032 - Future Total 2032, AM

### Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 - 2032 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

### Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
2032	Entry Lane Simulation		✓				100.000	100.000	

### Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Future Total 2032, AM	Future Total 2032	AM		PHF	08:00	09:00	60	15				✓		

## Intersection Network

### Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	untitled	Roundabout	1,2,3,4			3.17	A

### Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

## Legs

### Legs

Leg	Leg	Name	Description
1	1	Main Street W	
2	2	Ida Street	
3	3	Grey Road 9	
4	4	Ida Street	

### Capacity Options

Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

### Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
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1	3.80	4.25	5.00	20.00	35.00	32.50	
2	3.80	4.25	5.00	20.00	35.00	32.50	
3	3.80	4.25	5.00	20.00	35.00	32.50	
4	3.80	4.25	5.00	20.00	35.00	32.50	

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1		(calculated)	(calculated)	0.557	1246.355
2		(calculated)	(calculated)	0.557	1246.355
3		(calculated)	(calculated)	0.557	1246.355
4		(calculated)	(calculated)	0.557	1246.355

*The slope and intercept shown above include any corrections and adjustments.*

## Entry Lane Analysis: Leg options

Leg	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

## Lanes

Leg	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	1	1		Infinity	0.00	99999.00
2	1	1		Infinity	0.00	99999.00
3	1	1		Infinity	0.00	99999.00
4	1	1		Infinity	0.00	99999.00

## Entry Lane slope and intercept

Leg	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1	(calculated)	(calculated)	0.557	1246.355
2	(calculated)	(calculated)	0.557	1246.355
3	(calculated)	(calculated)	0.557	1246.355
4	(calculated)	(calculated)	0.557	1246.355

## Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				1	2	3	4
1	1	1	1	✓	✓	✓	✓
1	2	1	1	✓	✓	✓	✓
1	3	1	1	✓	✓	✓	✓
1	4	1	1	✓	✓	✓	✓

# Traffic Flows

## Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

# Entry Flows

## General Flows Data

Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	PHF	✓	319.00	100.000
2	PHF	✓	111.00	100.000
3	PHF	✓	366.00	100.000
4	PHF	✓	105.00	100.000

## Peak Hour Factor Data

Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
1	319.00	0.82	SecondQuarter
2	111.00	0.82	SecondQuarter
3	366.00	0.82	SecondQuarter
4	105.00	0.82	SecondQuarter

# Turning Proportions

### Turning Counts / Proportions (Veh/hr) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	23.000	215.000	81.000
	2	27.000	0.000	42.000	42.000
	3	290.000	37.000	0.000	39.000
	4	54.000	26.000	25.000	0.000

### Turning Proportions (Veh) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.07	0.67	0.25
	2	0.24	0.00	0.38	0.38
	3	0.79	0.10	0.00	0.11
	4	0.51	0.25	0.24	0.00

# Vehicle Mix

### Average PCE Per Vehicle - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.100	1.141	1.528
	2	1.083	1.000	1.000	1.091
	3	1.175	1.200	1.000	1.353
	4	1.250	1.000	1.091	1.000

### Truck Percentages - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	10.0	14.1	52.8
	2	8.3	0.0	0.0	9.1
	3	17.5	20.0	0.0	35.3
	4	25.0	0.0	9.1	0.0

# Results

## Results Summary for whole modelled period

Leg	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)
1	3.03	0.44	2.56	A	396.09	396.09	18.02	2.73	0.30
2	1.47	0.06	~1	A	116.41	116.41	2.58	1.33	0.04
3	4.12	0.62	3.16	A	440.46	440.46	25.34	3.45	0.42
4	1.83	0.10	0.28	A	120.14	120.14	3.57	1.78	0.06

<h1>Junctions 8</h1>
<h2>ARCADY 8 - Roundabout Module</h2>
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<b>The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution</b>

Filename: 2032 Traffic Volumes.arc8

Path: J:\1000\1060-Flato Dev\6220- Glenelg Expansion Lands\Design\Traffic\Working\2023.08 - TIS Update\Arcady\2032

Report generation date: 2023-08-15 2:14:47 PM

## Summary of intersection performance

PM							
	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
<b>2032 [Entry Lane Simulation] - Future Total 2032</b>							
<b>Leg 1</b>	0.46	2.41	3.02	N/A	A	2.41	A
<b>Leg 2</b>	0.04	~1	1.34	N/A	A		
<b>Leg 3</b>	0.26	1.46	2.17	N/A	A		
<b>Leg 4</b>	0.12	0.52	1.79	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Future Background 2032, AM" model duration: 8:00 AM - 9:00 AM

"D2 - Future Background 2032, PM" model duration: 5:00 PM - 6:00 PM

"D3 - Future Total 2032, AM" model duration: 8:00 AM - 9:00 AM

"D4 - Future Total 2032, PM" model duration: 5:00 PM - 6:00 PM

Run using Junctions 8.0.6.541 at 2023-08-15 2:14:47 PM

## File summary

Title	(untitled)
Location	
Site Number	
Date	2022-08-12
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	khagan
Description	

## Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

## Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

## Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials

1.00	-1	3	1	10	1073960334	5248
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## 2032 - Future Total 2032, PM

### Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 - 2032 [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

### Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
2032	Entry Lane Simulation		✓				100.000	100.000	

### Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Future Total 2032, PM	Future Total 2032	PM		PHF	17:00	18:00	60	15				✓		

## Intersection Network

### Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	untitled	Roundabout	1,2,3,4			2.41	A

### Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

## Legs

### Legs

Leg	Leg	Name	Description
1	1	Main Street W	
2	2	Ida Street	
3	3	Grey Road 9	
4	4	Ida Street	

### Capacity Options

Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

### Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
-----	----------------------------------	---------------------	---------------------------------	----------------------	-----------------------------------	------------------------------------	-----------

1	3.80	4.25	5.00	20.00	35.00	32.50	
2	3.80	4.25	5.00	20.00	35.00	32.50	
3	3.80	4.25	5.00	20.00	35.00	32.50	
4	3.80	4.25	5.00	20.00	35.00	32.50	

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1		(calculated)	(calculated)	0.557	1246.355
2		(calculated)	(calculated)	0.557	1246.355
3		(calculated)	(calculated)	0.557	1246.355
4		(calculated)	(calculated)	0.557	1246.355

*The slope and intercept shown above include any corrections and adjustments.*

## Entry Lane Analysis: Leg options

Leg	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

## Lanes

Leg	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	1	1		Infinity	0.00	99999.00
2	1	1		Infinity	0.00	99999.00
3	1	1		Infinity	0.00	99999.00
4	1	1		Infinity	0.00	99999.00

## Entry Lane slope and intercept

Leg	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1	(calculated)	(calculated)	0.557	1246.355
2	(calculated)	(calculated)	0.557	1246.355
3	(calculated)	(calculated)	0.557	1246.355
4	(calculated)	(calculated)	0.557	1246.355

## Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				1	2	3	4
1	1	1	1	✓	✓	✓	✓
1	2	1	1	✓	✓	✓	✓
1	3	1	1	✓	✓	✓	✓
1	4	1	1	✓	✓	✓	✓

# Traffic Flows

## Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

# Entry Flows

## General Flows Data

Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	PHF	✓	447.00	100.000
2	PHF	✓	78.00	100.000
3	PHF	✓	384.00	100.000
4	PHF	✓	173.00	100.000

## Peak Hour Factor Data

Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
1	447.00	0.95	SecondQuarter
2	78.00	0.95	SecondQuarter
3	384.00	0.95	SecondQuarter
4	173.00	0.95	SecondQuarter

# Turning Proportions

### Turning Counts / Proportions (Veh/hr) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	21.000	353.000	73.000
	2	21.000	0.000	34.000	23.000
	3	311.000	40.000	0.000	33.000
	4	86.000	37.000	50.000	0.000

### Turning Proportions (Veh) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.05	0.79	0.16
	2	0.27	0.00	0.44	0.29
	3	0.81	0.10	0.00	0.09
	4	0.50	0.21	0.29	0.00

# Vehicle Mix

### Average PCE Per Vehicle - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.053	1.344
	2	1.000	1.000	1.125	1.000
	3	1.039	1.143	1.000	1.071
	4	1.132	1.143	1.045	1.000

### Truck Percentages - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	5.3	34.4
	2	0.0	0.0	12.5	0.0
	3	3.9	14.3	0.0	7.1
	4	13.2	14.3	4.5	0.0

# Results

## Results Summary for whole modelled period

Leg	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)
1	3.02	0.46	2.41	A	489.80	489.80	24.22	2.97	0.40
2	1.34	0.04	~1	A	82.71	82.71	1.88	1.36	0.03
3	2.17	0.26	1.46	A	404.67	404.67	14.23	2.11	0.24
4	1.79	0.12	0.52	A	192.40	192.40	5.95	1.86	0.10



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Filename: Future Background 2032 Eco-Park Traffic Volumes.arc8  
 Path: J:\1000\1060-Flato Dev\6220- Glenelg Expansion Lands\Design\Traffic\Working\2023.08 - TIS Update\Arcady\Eco-Park 2032  
 Report generation date: 2023-08-15 2:22:05 PM

## Summary of intersection performance

AM							
	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
<b>Future Background 2032 (Eco Park) [Entry Lane Simulation] - 2032</b>							
<b>Leg 1</b>	0.38	2.03	2.87	N/A	A	2.66	A
<b>Leg 2</b>	0.10	0.38	1.89	N/A	A		
<b>Leg 3</b>	0.39	1.97	3.50	N/A	A		
<b>Leg 4</b>	0.09	0.06	1.32	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2032, AM " model duration: 8:00 AM - 9:00 AM  
 "D2 - 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2023-08-15 2:22:05 PM

## File summary

Title	(untitled)
Location	
Site Number	
Date	2022-08-12
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	khagan
Description	

## Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

## Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

## Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	249838379	4231

# Future Background 2032 (Eco Park) - 2032, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 - Future Background 2032 (Eco Park) [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Future Background 2032 (Eco Park)	Entry Lane Simulation		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2032, AM	2032	AM		PHF	08:00	09:00	60	15				✓		

# Intersection Network

## Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	untitled	Roundabout	1,2,3,4			2.66	A

## Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

# Legs

## Legs

Leg	Leg	Name	Description
1	1	Main Street W	
2	2	Ida Street	
3	3	Grey Road 9	
4	4	Ida Street	

## Capacity Options

Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

## Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.80	4.25	5.00	20.00	35.00	32.50	

2	3.80	4.25	5.00	20.00	35.00	32.50	
3	3.80	4.25	5.00	20.00	35.00	32.50	
4	3.80	4.25	5.00	20.00	35.00	32.50	

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1		(calculated)	(calculated)	0.557	1246.355
2		(calculated)	(calculated)	0.557	1246.355
3		(calculated)	(calculated)	0.557	1246.355
4		(calculated)	(calculated)	0.557	1246.355

The slope and intercept shown above include any corrections and adjustments.

## Entry Lane Analysis: Leg options

Leg	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

## Lanes

Leg	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	1	1		Infinity	0.00	99999.00
2	1	1		Infinity	0.00	99999.00
3	1	1		Infinity	0.00	99999.00
4	1	1		Infinity	0.00	99999.00

## Entry Lane slope and intercept

Leg	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1	(calculated)	(calculated)	0.557	1246.355
2	(calculated)	(calculated)	0.557	1246.355
3	(calculated)	(calculated)	0.557	1246.355
4	(calculated)	(calculated)	0.557	1246.355

## Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				1	2	3	4
1	1	1	1	✓	✓	✓	✓
1	2	1	1	✓	✓	✓	✓
1	3	1	1	✓	✓	✓	✓
1	4	1	1	✓	✓	✓	✓

# Traffic Flows

## Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

## Entry Flows

## General Flows Data

Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	PHF	✓	254.00	100.000
2	PHF	✓	148.00	100.000
3	PHF	✓	243.00	100.000
4	PHF	✓	139.00	100.000

## Peak Hour Factor Data

Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
1	254.00	0.82	SecondQuarter
2	148.00	0.82	SecondQuarter
3	243.00	0.82	SecondQuarter
4	139.00	0.82	SecondQuarter

# Turning Proportions

## Turning Counts / Proportions (Veh/hr) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	9.000	124.000	121.000
	2	10.000	0.000	21.000	117.000
	3	127.000	12.000	0.000	104.000
	4	45.000	22.000	72.000	0.000

## Turning Proportions (Veh) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.04	0.49	0.48
	2	0.07	0.00	0.14	0.79
	3	0.52	0.05	0.00	0.43
	4	0.32	0.16	0.52	0.00

# Vehicle Mix

## Average PCE Per Vehicle - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.100	1.141	1.528
	2	1.083	1.000	1.000	1.091
	3	1.175	1.200	1.000	1.353
	4	1.250	1.000	1.091	1.000

## Truck Percentages - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	10.0	14.1	52.8
	2	8.3	0.0	0.0	9.1
	3	17.5	20.0	0.0	35.3
	4	25.0	0.0	9.1	0.0

# Results

## Results Summary for whole modelled period

Leg	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)
1	2.87	0.38	2.03	A	336.45	336.45	15.03	2.68	0.25
2	1.89	0.10	0.38	A	158.14	158.14	4.44	1.69	0.07
3	3.50	0.39	1.97	A	304.11	304.11	15.64	3.09	0.26
4	1.32	0.09	0.06	A	156.23	156.23	3.42	1.31	0.06

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Filename: Future Background 2032 Eco-Park Traffic Volumes.arc8  
 Path: J:\1000\1060-Flato Dev\6220- Glenelg Expansion Lands\Design\Traffic\Working\2023.08 - TIS Update\Arcady\Eco-Park 2032  
 Report generation date: 2023-08-15 2:37:58 PM

## Summary of intersection performance

PM							
	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
<b>Future Background 2032 (Eco Park) [Entry Lane Simulation] - 2032</b>							
<b>Leg 1</b>	0.21	1.24	2.48	N/A	A	2.84	A
<b>Leg 2</b>	0.03	~1	1.25	N/A	A		
<b>Leg 3</b>	0.36	1.93	2.53	N/A	A		
<b>Leg 4</b>	0.57	2.88	3.53	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2032, AM" model duration: 8:00 AM - 9:00 AM  
 "D2 - 2032, PM " model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2023-08-15 2:37:58 PM

## File summary

Title	(untitled)
Location	
Site Number	
Date	2022-08-12
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	khagan
Description	

## Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

## Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

## Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	1876878330	8913

# Future Background 2032 (Eco Park) - 2032, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 - Future Background 2032 (Eco Park) [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Future Background 2032 (Eco Park)	Entry Lane Simulation		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2032, PM	2032	PM		ONE HOUR	17:00	18:30	90	15				✓		

# Intersection Network

## Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	untitled	Roundabout	1,2,3,4			2.84	A

## Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

# Legs

## Legs

Leg	Leg	Name	Description
1	1	Main Street W	
2	2	Ida Street	
3	3	Grey Road 9	
4	4	Ida Street	

## Capacity Options

Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

## Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.80	4.25	5.00	20.00	35.00	32.50	

2	3.80	4.25	5.00	20.00	35.00	32.50	
3	3.80	4.25	5.00	20.00	35.00	32.50	
4	3.80	4.25	5.00	20.00	35.00	32.50	

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1		(calculated)	(calculated)	0.557	1246.355
2		(calculated)	(calculated)	0.557	1246.355
3		(calculated)	(calculated)	0.557	1246.355
4		(calculated)	(calculated)	0.557	1246.355

The slope and intercept shown above include any corrections and adjustments.

## Entry Lane Analysis: Leg options

Leg	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

## Lanes

Leg	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	1	1		Infinity	0.00	99999.00
2	1	1		Infinity	0.00	99999.00
3	1	1		Infinity	0.00	99999.00
4	1	1		Infinity	0.00	99999.00

## Entry Lane slope and intercept

Leg	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1	(calculated)	(calculated)	0.557	1246.355
2	(calculated)	(calculated)	0.557	1246.355
3	(calculated)	(calculated)	0.557	1246.355
4	(calculated)	(calculated)	0.557	1246.355

## Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				1	2	3	4
1	1	1	1	✓	✓	✓	✓
1	2	1	1	✓	✓	✓	✓
1	3	1	1	✓	✓	✓	✓
1	4	1	1	✓	✓	✓	✓

# Traffic Flows

## Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

# Entry Flows



## General Flows Data

Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	228.00	100.000
2	ONE HOUR	✓	56.00	100.000
3	ONE HOUR	✓	410.00	100.000
4	ONE HOUR	✓	437.00	100.000

## Turning Proportions

### Turning Counts / Proportions (Veh/hr) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	7.000	162.000	59.000
	2	7.000	0.000	21.000	28.000
	3	164.000	28.000	0.000	218.000
	4	96.000	107.000	234.000	0.000

### Turning Proportions (Veh) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.03	0.71	0.26
	2	0.13	0.00	0.38	0.50
	3	0.40	0.07	0.00	0.53
	4	0.22	0.24	0.54	0.00

## Vehicle Mix

### Average PCE Per Vehicle - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.053	1.344
	2	1.000	1.000	1.125	1.000
	3	1.039	1.143	1.000	1.071
	4	1.132	1.143	1.045	1.000

### Truck Percentages - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	5.3	34.4
	2	0.0	0.0	12.5	0.0
	3	3.9	14.3	0.0	7.1
	4	13.2	14.3	4.5	0.0

## Results

### Results Summary for whole modelled period

Leg	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)
1	2.48	0.21	1.24	A	235.40	353.10	13.09	2.22	0.15
2	1.25	0.03	~1	A	53.91	80.87	1.51	1.12	0.02
3	2.53	0.36	1.93	A	399.73	599.60	21.33	2.13	0.24
4	3.53	0.57	2.88	A	436.98	655.47	31.46	2.88	0.35



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Filename: Future Total 2032 Eco-Park Traffic Volumes.arc8

Path: J:\1000\1060-Flato Dev\6220- Glenelg Expansion Lands\Design\Traffic\Working\2023.08 - TIS Update\Arcady\Eco-Park 2032

Report generation date: 2023-08-15 2:53:16 PM

## Summary of intersection performance

AM							
	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
<b>Future Total 2032 (Eco Park) [Entry Lane Simulation] - 2032</b>							
<b>Leg 1</b>	0.39	2.23	3.13	N/A	A	2.95	A
<b>Leg 2</b>	0.19	1.07	2.29	N/A	A		
<b>Leg 3</b>	0.50	2.62	3.96	N/A	A		
<b>Leg 4</b>	0.09	0.15	1.45	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2032, AM" model duration: 8:00 AM - 9:00 AM

"D2 - 2032, PM" model duration: 5:00 PM - 6:00 PM

Run using Junctions 8.0.6.541 at 2023-08-15 2:53:16 PM

## File summary

Title	(untitled)
Location	
Site Number	
Date	2022-08-12
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	khagan
Description	

## Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

## Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

## Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	595314444	2713

# Future Total 2032 (Eco Park) - 2032, AM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 - Future Total 2032 (Eco Park) [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Future Total 2032 (Eco Park)	Entry Lane Simulation		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2032, AM	2032	AM		PHF	08:00	09:00	60	15				✓		

# Intersection Network

## Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	untitled	Roundabout	1,2,3,4			2.95	A

## Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

# Legs

## Legs

Leg	Leg	Name	Description
1	1	Main Street W	
2	2	Ida Street	
3	3	Grey Road 9	
4	4	Ida Street	

## Capacity Options

Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

## Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.80	4.25	5.00	20.00	35.00	32.50	

2	3.80	4.25	5.00	20.00	35.00	32.50	
3	3.80	4.25	5.00	20.00	35.00	32.50	
4	3.80	4.25	5.00	20.00	35.00	32.50	

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1		(calculated)	(calculated)	0.557	1246.355
2		(calculated)	(calculated)	0.557	1246.355
3		(calculated)	(calculated)	0.557	1246.355
4		(calculated)	(calculated)	0.557	1246.355

The slope and intercept shown above include any corrections and adjustments.

## Entry Lane Analysis: Leg options

Leg	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

## Lanes

Leg	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	1	1		Infinity	0.00	99999.00
2	1	1		Infinity	0.00	99999.00
3	1	1		Infinity	0.00	99999.00
4	1	1		Infinity	0.00	99999.00

## Entry Lane slope and intercept

Leg	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1	(calculated)	(calculated)	0.557	1246.355
2	(calculated)	(calculated)	0.557	1246.355
3	(calculated)	(calculated)	0.557	1246.355
4	(calculated)	(calculated)	0.557	1246.355

## Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				1	2	3	4
1	1	1	1	✓	✓	✓	✓
1	2	1	1	✓	✓	✓	✓
1	3	1	1	✓	✓	✓	✓
1	4	1	1	✓	✓	✓	✓

# Traffic Flows

## Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

## Entry Flows

## General Flows Data

Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	PHF	✓	254.00	100.000
2	PHF	✓	200.00	100.000
3	PHF	✓	269.00	100.000
4	PHF	✓	159.00	100.000

## Peak Hour Factor Data

Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
1	254.00	0.82	SecondQuarter
2	200.00	0.82	SecondQuarter
3	269.00	0.82	SecondQuarter
4	159.00	0.82	SecondQuarter

# Turning Proportions

## Turning Counts / Proportions (Veh/hr) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	9.000	124.000	121.000
	2	10.000	0.000	56.000	134.000
	3	127.000	38.000	0.000	104.000
	4	45.000	42.000	72.000	0.000

## Turning Proportions (Veh) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.04	0.49	0.48
	2	0.05	0.00	0.28	0.67
	3	0.47	0.14	0.00	0.39
	4	0.28	0.26	0.45	0.00

# Vehicle Mix

## Average PCE Per Vehicle - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.100	1.141	1.528
	2	1.083	1.000	1.000	1.091
	3	1.175	1.200	1.000	1.353
	4	1.250	1.000	1.091	1.000

## Truck Percentages - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	10.0	14.1	52.8
	2	8.3	0.0	0.0	9.1
	3	17.5	20.0	0.0	35.3
	4	25.0	0.0	9.1	0.0

# Results

## Results Summary for whole modelled period

Leg	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)
1	3.13	0.39	2.23	A	333.08	333.08	16.07	2.90	0.27
2	2.29	0.19	1.07	A	214.14	214.14	6.88	1.93	0.11
3	3.96	0.50	2.62	A	338.23	338.23	19.18	3.40	0.32
4	1.45	0.09	0.15	A	176.32	176.32	4.17	1.42	0.07

<h1>Junctions 8</h1>
<h2>ARCADY 8 - Roundabout Module</h2>
Version: 8.0.6.541 [19821,26/11/2015] © Copyright TRL Limited, 2023
For sales and distribution information, program advice and maintenance, contact TRL: Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Future Total 2032 Eco-Park Traffic Volumes.arc8

Path: J:\1000\1060-Flato Dev\6220- Glenelg Expansion Lands\Design\Traffic\Working\2023.08 - TIS Update\Arcady\Eco-Park 2032

Report generation date: 2023-08-15 2:57:34 PM

## Summary of intersection performance

PM							
	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
<b>Future Total 2032 (Eco Park) [Entry Lane Simulation] - 2032</b>							
<b>Leg 1</b>	0.39	2.23	3.13	N/A	A	2.95	A
<b>Leg 2</b>	0.19	1.07	2.29	N/A	A		
<b>Leg 3</b>	0.50	2.62	3.96	N/A	A		
<b>Leg 4</b>	0.09	0.15	1.45	N/A	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - 2032, AM" model duration: 8:00 AM - 9:00 AM

"D2 - 2032, PM " model duration: 5:00 PM - 6:00 PM

Run using Junctions 8.0.6.541 at 2023-08-15 2:57:34 PM

## File summary

Title	(untitled)
Location	
Site Number	
Date	2022-08-12
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Analyst	khagan
Description	

## Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
5.75	✓		N/A	0.85	36.00	20.00

## Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

## Entry Lane Analysis Options

Stop Criteria (%)	Random Seed	Results Refresh Speed (s)	Individual Vehicle Animation Number Of Trials	Time Step Size (s)	Last Run Random Seed	Last Run Number Of Trials
1.00	-1	3	1	10	595314444	2713



# Future Total 2032 (Eco Park) - 2032, PM

## Data Errors and Warnings

Severity	Area	Item	Description
Warning	Entry Lane Analysis	A1 - Future Total 2032 (Eco Park) [Entry Lane Simulation]	This analysis set uses entry lane simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Future Total 2032 (Eco Park)	Entry Lane Simulation		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2032, PM	2032	PM		PHF	17:00	18:00	60	15				✓		

# Intersection Network

## Intersections

Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Intersection Delay (s)	Intersection LOS
1	untitled	Roundabout	1,2,3,4			2.95	A

## Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

# Legs

## Legs

Leg	Leg	Name	Description
1	1	Main Street W	
2	2	Ida Street	
3	3	Grey Road 9	
4	4	Ida Street	

## Capacity Options

Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

## Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.80	4.25	5.00	20.00	35.00	32.50	

2	3.80	4.25	5.00	20.00	35.00	32.50	
3	3.80	4.25	5.00	20.00	35.00	32.50	
4	3.80	4.25	5.00	20.00	35.00	32.50	

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1		(calculated)	(calculated)	0.557	1246.355
2		(calculated)	(calculated)	0.557	1246.355
3		(calculated)	(calculated)	0.557	1246.355
4		(calculated)	(calculated)	0.557	1246.355

The slope and intercept shown above include any corrections and adjustments.

## Entry Lane Analysis: Leg options

Leg	Lane Capacity Source	Traffic Considering Secondary Lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00

## Lanes

Leg	Lane Level	Lane	Has Limited Storage	Storage (PCE)	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)
1	1	1		Infinity	0.00	99999.00
2	1	1		Infinity	0.00	99999.00
3	1	1		Infinity	0.00	99999.00
4	1	1		Infinity	0.00	99999.00

## Entry Lane slope and intercept

Leg	Slope	Intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
1	(calculated)	(calculated)	0.557	1246.355
2	(calculated)	(calculated)	0.557	1246.355
3	(calculated)	(calculated)	0.557	1246.355
4	(calculated)	(calculated)	0.557	1246.355

## Lane Movements

Intersection	Leg	Lane Level	Lane	Leg			
				1	2	3	4
1	1	1	1	✓	✓	✓	✓
1	2	1	1	✓	✓	✓	✓
1	3	1	1	✓	✓	✓	✓
1	4	1	1	✓	✓	✓	✓

# Traffic Flows

## Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

## Entry Flows

## General Flows Data

Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	PHF	✓	228.00	100.000
2	PHF	✓	77.00	100.000
3	PHF	✓	435.00	100.000
4	PHF	✓	441.00	100.000

## Peak Hour Factor Data

Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
1	228.00	0.95	SecondQuarter
2	77.00	0.95	SecondQuarter
3	435.00	0.95	SecondQuarter
4	441.00	0.95	SecondQuarter

# Turning Proportions

### Turning Counts / Proportions (Veh/hr) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	7.000	162.000	59.000
	2	7.000	0.000	38.000	32.000
	3	164.000	53.000	0.000	218.000
	4	96.000	111.000	234.000	0.000

### Turning Proportions (Veh) - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.03	0.71	0.26
	2	0.09	0.00	0.49	0.42
	3	0.38	0.12	0.00	0.50
	4	0.22	0.25	0.53	0.00

# Vehicle Mix

### Average PCE Per Vehicle - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.053	1.344
	2	1.000	1.000	1.125	1.000
	3	1.039	1.143	1.000	1.071
	4	1.132	1.143	1.045	1.000

### Truck Percentages - Intersection 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	5.3	34.4
	2	0.0	0.0	12.5	0.0
	3	3.9	14.3	0.0	7.1
	4	13.2	14.3	4.5	0.0

# Results

## Results Summary for whole modelled period

Leg	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)
1	3.13	0.39	2.23	A	333.08	333.08	16.07	2.90	0.27
2	2.29	0.19	1.07	A	214.14	214.14	6.88	1.93	0.11
3	3.96	0.50	2.62	A	338.23	338.23	19.18	3.40	0.32
4	1.45	0.09	0.15	A	176.32	176.32	4.17	1.42	0.07

# APPENDIX F

## Background Development Reports

**FEBRUARY 25, 2021**

**PROJECT NO: 1060-5384**

Ministry of Transportation – West Region  
Corridor Management Section  
659 Exeter Road  
London, Ontario N6E 1L3

**Attention: Martin Leyton**  
**Corridor Management Planner, West Region**

**RE: EDGEWOOD GREENS**  
**TRAFFIC IMPACT STUDY UPDATE COVER LETTER**  
**TOWNSHIP OF SOUTHGATE**

Dear Martin,

Please find enclosed our updated Transportation Impact Study, prepared to support the proposed neighbourhood commercial block located within the Dundalk Meadows development (now referred to as Edgewood Greens) in Dundalk, Township of Southgate.

The original TIS was submitted in December 2015 to the Ontario Ministry of Transportation (MTO) and Township of Southgate. The first update was prepared in response to discussions with MTO and to reflect the additional lands acquired by Flato (Flato North). Subsequent updates were completed in February 2016 and June 2016 in response to comments provided by the MTO. Since these updates, Flato North, East and West have been Draft Plan Approved. Flato West has been constructed and occupied, Flato North is currently under construction, a portion of Flato East has been constructed and the remaining lands are Draft Plan Approved and undergoing detailed design.

A subsequent TIS Update was submitted in January 2020 to support the addition of a neighbourhood commercial block in the south east corner of the property. Since the January 2020 submission, the change has been approved from an Official Plan Amendment, Zoning By-law Amendment and Redline Draft Plan Application perspective, and is now undergoing detailed design as part of the Site Plan Application process.

Additional comments were provided by the MTO in January 2021 and are addressed in the enclosed TIS Update. We have transcribed the comments received on January 6, 2021, followed by our response.

- 1. Comment:** Use the peak hour of the generator fitted equation to estimate the trips for the Shopping Centre (LUC 820)  
**Response:** Acknowledged, the fitted curve of peak hour of generator has now been used. The updated trip generation forecasts are summarized in **Section 5.1**.
- 2. Comment:** Include a Saturday peak hour  
**Response:** The proposed development as a whole is residential in nature, and the proposed commercial block is expected to primarily service the residential development. Accordingly, the Saturday peak hour is not expected to reflect a worst-case scenario for

traffic operations. Additionally, the COVID-19 pandemic and subsequent lockdown prevents accurate traffic data from being collected. Based on further discussions with MTO staff, it was agreed that the Saturday peak hour would not need to be assessed.

- 3. Comment:** MTO agrees with a pass-by trip percentage of 34% as recommended in the report. However, the pass-by trip percentage used on Table 8: Trip Generation was 52%  
**Response:** A 34% pass-by percentage was utilized for both the a.m. and p.m. peak hours. It is highlighted that the 34% pass-by is not a fraction of the primary trips, rather the total trip generation. The total commercial trip generation in the previous version of the TIS was 67 trips in the p.m. peak hour. 23 trips reflect 34% of the 67 total trips. The primary trips represent the remainder which was 44 trips.
- 4. Comment:** Provide a left turn warrant assessment with the updated numbers for the 5- and 10-year horizon.  
**Response:** Acknowledged, left turn warrants are included for all future horizon years.

The total outstanding unit breakdown is as follows:

- 477 Single-detached Units
- 62 Semi-detached Units
- 157 Townhouse Units
- Commercial Building with a GFA of 1,448 m<sup>2</sup> (15,586 ft<sup>2</sup>)

It is noted that since the previous submission, Phases 11-13 of the development have been consolidated and are now referred to only as Phase 11.

Details pertaining to the trip generation are provided in **Section 5.1**. The future total traffic volumes for the 2025, 2030 and 2035 horizon years are illustrated in **Figures 13, 14 and 15**, respectively, with auxiliary turn-lane warrant information included in **Section 5.3** and levels of service summarized in **Section 5.4**. Based on the weekday p.m. future total volumes, a northbound left-turn lane with a minimum storage of 50 metres is warranted at the proposed Highway 10 entrance. This is an increase in 10 metres compared to the January 2020 TIS Update which recommended 40 metres.

Overall, the TIS Update concluded that the proposed development is supportable, with the noted improvements. The boundary road network is expected to operate well under future total traffic volume conditions. Should you have any questions or require any further information, please do not hesitate to contact the undersigned.

The enclosed TIS Update was prepared using the most recent Draft Plan and Site Plan. Any minor changes to the Plan will not materially affect the conclusions contained within this report.

Sincerely,

**C.F. CROZIER & ASSOCIATES INC.**



Alexander J. W. Fleming, MBA, P.Eng.  
Associate  
/kh

**C.F. CROZIER & ASSOCIATES INC.**



Madeleine Ferguson, P.Eng.  
Project Engineer, Transportation

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**TRAFFIC IMPACT STUDY**

**EDGEWOOD GREENS  
TOWNSHIP OF SOUTHGATE**

**PREPARED FOR:  
FLATO DEVELOPMENTS INC.**

**PREPARED BY:**

**C.F. CROZIER & ASSOCIATES INC.  
40 HURON STREET, SUITE 301  
COLLINGWOOD, ONTARIO  
L9T 6P4**

**ORIGINAL – DECEMBER 2015  
UPDATE – FEBRUARY 2016  
UPDATE – JUNE 2016  
UPDATE – JANUARY 2020  
UPDATE – FEBRUARY 2021**

**CFCA FILE NO. 1060-5384**

The material in this report reflects best judgment in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. C.F. Crozier & Associates Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.





## LIST OF FIGURES

- Figure 1:** Edgewood Greens Composite Phasing Plan
- Figure 2:** Flato East Commercial Block Concept Plan
- Figure 3:** Site Location Plan
- Figure 4:** Boundary Road Network
- Figure 5:** 2019 Existing Traffic Volumes
- Figure 6:** Glenelg Trip Assignment
- Figure 7:** 2025 Future Background Traffic Volumes
- Figure 8:** 2030 Future Background Traffic Volumes
- Figure 9:** 2035 Future Background Traffic Volumes
- Figure 10:** Residential Trip Distribution
- Figure 11:** Commercial Primary Trip Distribution
- Figure 12:** Commercial Pass-By Trip Distribution
- Figure 13:** Residential Trip Assignment
- Figure 14:** Commercial Primary Trip Assignment
- Figure 15:** Commercial Pass-By Trip Assignment
- Figure 16:** 2025 Future Total Traffic Volumes
- Figure 17:** 2030 Future Total Traffic Volumes
- Figure 18:** 2035 Future Total Traffic Volumes

Trips generated by Glenelg Phase 1 and Glenelg Phase 2 were assigned to the boundary road network based on the distributions described in the original TIS (Crozier, September 2018 and September 2020, respectively). While the intersection Highway 10 and County Road 9 was not analyzed fully in those reports, 10 percent of trips were assumed to continue east on County Road 9 and 50 percent of trips were assumed to travel south on Highway 10.

The trip assignment for the Glenelg Development is illustrated in **Figure 6** and relevant excerpts from the Glenelg Phase 1 TIS and Phase 2 TIS, as well as the most recent Draft Plan have been included in **Appendix E**.

#### 4.5 Intersection Operations

The future background operations at the study intersections were analyzed using the 2025, 2030 and 2035 future background traffic volumes illustrated in **Figures 7, 8 and 9**, respectively. Detailed capacity analysis worksheets are included in **Appendix C. Table 6, Table 7 and Table 8** outline the 2025, 2030 and 2035 future background traffic operations, respectively.

**Table 6: 2025 Future Background Levels of Service**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay	Maximum v/c ratio <sup>2</sup>	95 <sup>th</sup> Percentile Queues > Storage
Highway 10 and Main Street	Signal	A.M.	B	10.3 s	0.49 (EBT)	None
		P.M.	B	12.5 s	0.51 (EBT)	None
Main Street and Russell Street	Two-way Stop	A.M.	B	10.5 s	0.07 (NB)	None
		P.M.	B	11.3 s	0.06(NB)	None
Main Street and Alice Street/Mill Street	Two-way Stop	A.M.	B	11.3 s	0.05 (NB)	None
		P.M.	B	14.5 s	0.06 (NB)	None
Main Street and Osprey Street	Two-way Stop	A.M.	B	11.9 s	0.04 (SB)	None
		P.M.	B	14.4 s	0.05 (SB)	None
Elm Street and Victoria Street	Two-way Stop	A.M.	A	9.1 s	0.06 (NB)	None
		P.M.	A	9.0 s	0.03 (NB)	None

Note<sup>1</sup>: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU).  
The Level of Service of a two-way stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000).

Note<sup>2</sup>: The maximum v/c ratio for two-way stop-controlled intersections represents the maximum v/c for the minor road approach movements at the intersection. Any movements that experience a v/c ratio in excess of 0.85 are considered critical per the MTO TIS Guidelines.

**Table 7: 2030 Future Background Levels of Service**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay	Maximum v/c ratio <sup>2</sup>	95 <sup>th</sup> Percentile Queues > Storage
Highway 10 and Main Street	Signal	A.M.	B	10.6 s	0.50 (EBT)	None
		P.M.	B	13.1 s	0.54 (EBT)	None
Main Street and Russell Street	Two-way Stop	A.M.	B	10.7 s	0.07 (NB)	None
		P.M.	B	11.5 s	0.06 (NB)	None
Main Street and Alice Street/Mill Street	Two-way Stop	A.M.	B	11.5 s	0.06 (NB)	None
		P.M.	C	15.1 s	0.07 (NB)	None
Main Street and Osprey Street	Two-way Stop	A.M.	B	11.9 s	0.04 (SB)	None
		P.M.	B	14.8 s	0.05 (SB)	None
Elm Street and Victoria Street	Two-way Stop	A.M.	A	9.1 s	0.07 (NB)	None
		P.M.	A	9.1 s	0.04 (NB)	None

Note<sup>1</sup>: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a two-way stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000).

Note<sup>2</sup>: The maximum v/c ratio for two-way stop-controlled intersections represents the maximum v/c for the minor road approach movements at the intersection. Any movements that experience a v/c ratio in excess of 0.85 are considered critical per the MTO TIS Guidelines.

**Table 8: 2035 Future Background Levels of Service**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay	Maximum v/c ratio <sup>2</sup>	95 <sup>th</sup> Percentile Queues > Storage
Highway 10 and Main Street	Signal	A.M.	B	10.9 s	0.52 (EBT)	None
		P.M.	B	13.6 s	0.56 (EBT)	None
Main Street and Russell Street	Two-way Stop	A.M.	B	11.0 s	0.08 (NB)	None
		P.M.	B	11.9 s	0.07 (NB)	None
Main Street and Alice Street/Mill Street	Two-way Stop	A.M.	B	11.9 s	0.07 (NB)	None
		P.M.	C	16.6 s	0.08 (NB)	None
Main Street and Osprey Street	Two-way Stop	A.M.	B	12.3 s	0.05 (SB)	None
		P.M.	C	15.5 s	0.06 (SB)	None
Elm Street and Victoria Street	Two-way Stop	A.M.	A	9.2 s	0.07 (NB)	None
		P.M.	A	9.2 s	0.04 (NB)	None

Note<sup>1</sup>: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro/ICU). The Level of Service of a two-way stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000).

Note<sup>2</sup>: The maximum v/c ratio for two-way stop-controlled intersections represents the maximum v/c for the minor road approach movements at the intersection. Any movements that experience a v/c ratio in excess of 0.85 are considered critical per the MTO TIS Guidelines.

The metrics summarized above indicate that the study intersections are expected to continue operating with a LOS "B" or better, with the exception of Main Street and Alice Street/Mill Street and Main Street and Osprey Street, which are expected to operate with a LOS "C" in the weekday p.m. peak hour. The maximum volume-to-capacity ratio of 0.56 (Highway 10 and Main Street, EBT, p.m.) indicates that the intersections have reserve capacity for increases in traffic volumes. The 95<sup>th</sup> percentile queues through all horizon years and peak hours can be contained within their available storage lengths.

## 5.0 Future Total Conditions

### 5.1 Site Generated Traffic

The proposed mixed-use development will result in additional vehicles on the boundary road network that would otherwise not exist. The proposed development will also result in additional turning movements at the study intersections.

As noted, the remainder of the development is proposed to consist of the following:

- 477 Single-detached Units
- 62 Semi-detached Units
- 157 Townhouse Units
- Commercial Building with a GFA of 1,448 m<sup>2</sup> (15,586 ft<sup>2</sup>)

The trip generation of the proposed residential dwelling and commercial units was forecasted using published data from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10<sup>th</sup> Edition. The ITE Trip Generation Manual is a compendium of industry collected trip generation data across North America for a variety of land uses and is used industry wide as a source for trip generation forecasts.

The applicable average rates and fitted curve equations for Land Use Category (LUC) 210 "Single Family Detached Housing" and LUC 220 "Multifamily Housing (Low-Rise)" were applied to the proposed residential dwelling units. The fitted curve for the peak hour of generator for LUC 820 "Shopping Centre" was applied to the proposed commercial GFA, per the January 2021 MTO comments.

As defined by the ITE Trip Generation Handbook, 3<sup>rd</sup> Edition, primary trips are made for the specific purpose of visiting the generator. Pass-by trips are made as intermediate stops on the way from an origin to a primary destination without a route diversion. Accordingly, these vehicles do not increase the volume of vehicles on the roadway.

The pass-by trip percentage of the commercial retail pass-by trips was forecasted using the rates provided by the ITE Trip Generation Handbook. LUC 820 was used to establish a pass-by percentage of 34 percent for the p.m. peak period. A pass-by percentage was not applied to the a.m. peak period as this trip generation generally captures employees of the commercial uses.

Relevant excerpts from the ITE Trip Generation Manual, 10<sup>th</sup> Edition and ITE Trip Generation Handbook, 3<sup>rd</sup> Edition have been included in **Appendix I**. The forecasted trip generation of the mixed-use development is summarized in **Table 9**.

**Table 9: Trip Generation**

Land Use	Units/GFA	Peak Hour	Trip Type	Trips Generated		
				Inbound	Outbound	Total
LUC 210: Single Family Detached Housing	477 Units	A.M.	Primary	85	258	343
		P.M.		287	168	455
LUC 220: Multifamily Housing (Low-Rise)	219 Units	A.M.	Primary	23	77	100
		P.M.		75	44	119
LUC 820: Shopping Centre	15,586 ft <sup>2</sup>	A.M.	Primary	43	36	79
			Pass-by	22	19	41
		P.M.	Primary	49	49	98
			Pass-by	25	25	50
<b>Total</b>		<b>A.M.</b>	<b>Primary</b>	<b>151</b>	<b>371</b>	<b>522</b>
			<b>Pass-by</b>	<b>22</b>	<b>19</b>	<b>41</b>
		<b>P.M.</b>	<b>Primary</b>	<b>411</b>	<b>261</b>	<b>672</b>
			<b>Pass-by</b>	<b>25</b>	<b>25</b>	<b>50</b>

## 5.2 Trip Distribution and Assignment

### 5.2.1. Residential Trips

The trips generated by the proposed residential portion of the development were distributed to the boundary road network using the distribution described in the June 2016 TIS Update, which was completed using Transportation Tomorrow Survey (TTS) data. Excerpts from the June 2016 TIS as well as the TTS data have been included in **Appendix G**.

The following residential trip distribution was established:

- 50% to and from the south on Highway 10 via the Highway 10 Access
- 5% to and from the north on Highway 10 via the Highway 10 Access
- 5% to and from the east on Main Street via the Highway 10 Access
- 15% travelling to and from the west on Main Street via Elm Street and Osprey Street
- 15% to and from the west on Main Street via Russell Street
- 5% to and from the east on Main Street via Russell Street
- 5% to and from the north on Highway 10 via Russell Street

**Figure 10** outlines the residential trip distribution for the development. The associated primary trip assignment is illustrated in **Figure 13**.

### 5.2.2. Commercial Primary Trips

The primary trips generated by the commercial component of the proposed development were distributed to the boundary road network based on the expected catchment areas in the community. The main catchment area is expected to be comprised of the surrounding residential dwellings in the urban area of the Community of Dundalk.

Given the scale of the Edgewood Greens development, it is assumed that the commercial development will primarily service residents from within the development. As such, half the primary

commercial trips were assumed to remain within Edgewood Greens. The remaining trips were distributed to the west on Main Street and Victoria Street via Russell Street and Elm Street, respectively.

**Figure 11** outlines the residential trip distribution for the development. The associated primary trip assignment is illustrated in **Figure 14**.

### 5.2.3. Commercial Pass-By Trips

The pass-by trips generated by the proposed development are expected to utilize the proposed site access to Highway 10. Existing turning movement counts were used to establish the pass-by trip distribution. In the weekday a.m. peak hour, 50 percent of trips were observed to be travelling to the north and south on Highway 10. In the weekday p.m. peak hour, 35 percent of trips were observed travelling south on Highway 10, with the remaining 65 percent travelling north on Highway 10.

**Figure 12** outlines the pass-by trip distribution for the site, and **Figure 15** outlines the corresponding pass-by trip assignment.

## 5.3 Auxiliary Turn-Lane Assessment

Auxiliary left-turn lane warrants were undertaken for a northbound left-turn lane on Highway 10 at the proposed site access. The warrants were completed using the MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads. Highway 10 has a posted speed limit of 80 km/h fronting the site access. Accordingly, a design speed of 100 km/h was selected, reflecting the engineering convention of a 20 km/h increase on higher speed roadways. **Table 10** summarizes the results of the northbound left-turn lane analyses.

**Table 10: 2035 Future Total Auxiliary Lane Analysis**

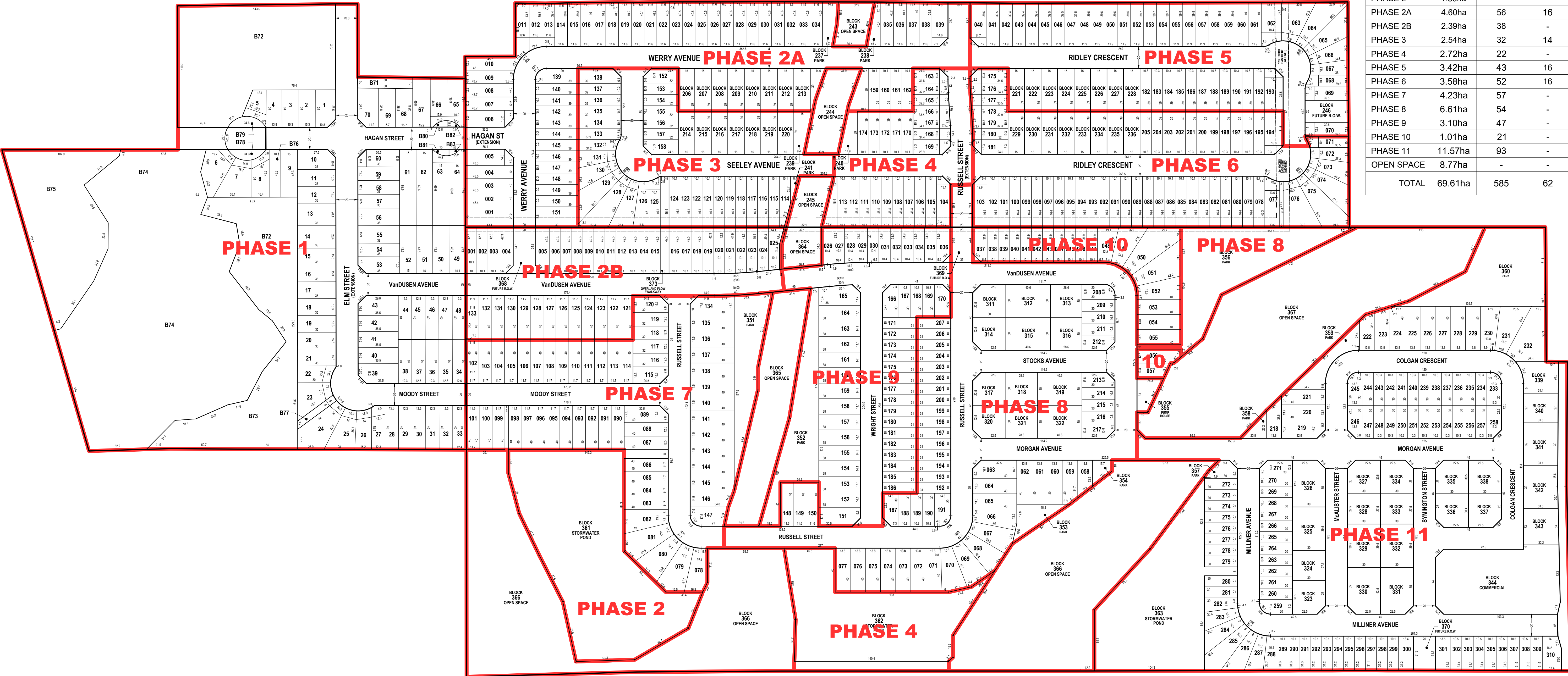
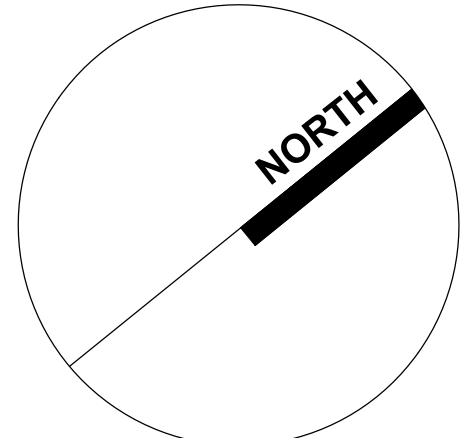
Intersection	Peak Hour	V <sub>A</sub>	% Left Turns in V <sub>A</sub>	V <sub>o</sub>	Warranted	Minimum Storage	MTO GDSOH Figure
Highway 10 and Site Access	A.M.	285	23%	318	Yes	15 m	Ex. 9A-25
	P.M.	731	27%	341	Yes	50 m	Ex. 9A-25

It can be seen that the volumes on Highway 10 exceed the minimum threshold for an auxiliary left-turn lane in the weekday a.m. and p.m. peak hours. The weekday a.m. peak hour volumes warrant a left-turn lane with a minimum storage length of 15 metres, while the weekday p.m. peak hour volumes warrant a left-turn lane with a minimum storage length of 50 metres. A left-turn lane with 50 metres of storage was also warranted under 2030 future total conditions, while a left-turn lane with 40 metres of storage was warranted under 2025 future total conditions.

The auxiliary left-turn lane warrant charts for the 2025, 2030 and 2035 horizon years have been included in **Appendix H** for reference. As discussed in **Section 5.4**, the northbound left-turn movement is forecasted to experience a 95<sup>th</sup> percentile queue of 22.0 metres, which can be accommodated within the warranted 50 metres of storage.

A southbound right-turn lane was considered on Highway 10 at the proposed site access. Per the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR), a right-turn lane is required when the volume of right-turns causes a large delay to the through movements. The projected volume of right-turning vehicles at the site accesses is forecasted to be a maximum of 45 vehicles (p.m.), which represents approximately 13 percent of southbound volumes. This volume of right-turning vehicles is not expected to cause a delay to the southbound through

# EDGEWOOD GREENS COMPOSITE PHASING PLAN



PHASE	AREA	SINGLES	SEMIS	TOWNS	TOTAL
PHASE 1	13.22ha	70	-	-	70
PHASE 2	1.85ha	-	-	-	-
PHASE 2A	4.60ha	56	16	-	72
PHASE 2B	2.39ha	38	-	-	38
PHASE 3	2.54ha	32	14	-	46
PHASE 4	2.72ha	22	-	-	22
PHASE 5	3.42ha	43	16	-	59
PHASE 6	3.58ha	52	16	-	68
PHASE 7	4.23ha	57	-	-	57
PHASE 8	6.61ha	54	-	56	110
PHASE 9	3.10ha	47	-	-	47
PHASE 10	1.01ha	21	-	-	21
PHASE 11	11.57ha	93	-	101	194
OPEN SPACE	8.77ha	-	-	-	-
<b>TOTAL</b>	<b>69.61ha</b>	<b>585</b>	<b>62</b>	<b>157</b>	<b>804</b>

### SITE STATISTICS

1. SITE AREA BREAKDOWN			AREA ft2	AREA m2
LOT AREA			71,730.0	6664.0
NET LOT AREA			71,730.0	6664.0
2. BUILDING AREA (FOOTPRINT)			15,586.0	1448.0
3. PROPOSED BUILDING HEIGHT			1 STOREY (MEASURED FROM FFE 0.0) 8.94m (29'-0")	
4. F.S.I (FLOOR SPACE INDEX)			GROSS FLOOR AREA (m2) / SITE AREA (m2)	(GFA) 1448.0 / (SITE) 6664.0
				0.21
5. PARKING (TYPICAL PARKING SPACE SIZE = 2.75m X 5.75m)				
REQUIRED PARKING				
COMMERCIAL PARKING (1 PARKING SPACE / 20m2 OF NFA (1369/20))			68 SPACES	
TOTAL REQUIRED PARKING			68 SPACES	
PROVIDED PARKING			75 SPACES	
			* OF WHICH 2 SPACES ARE BARRIER-FREE (4.4m X 6m)	

6. LOADING	REQUIRED	1 TYPE B (4m X 9m X 5m ht)				
	PROVIDED	1 TYPE B (4m X 9m X 5m ht)				
7. FLOOR AREA BREAKDOWN	GROSS FLOOR AREA (GFA)		DEDUCTIONS		NET FLOOR AREA (NFA)	
	ft2	m2	LOADING ft2	m2	ft2	m2
GROUND FLOOR (COMMERCIAL, GROUP E CLASSIFICATION)	15586.0	1448.0	MECH 226.0	21.0	14735.7	1369.0
			FLOOR DEDUCTIONS 850.3	79.0	14735.7	1369.0
TOTAL		15586.0	1448.0			

8. SETBACKS		REQUIRED	PROVIDED
NORTH INTERIOR SIDE SETBACK		3.0m	7.5m
SOUTH EXTERIOR SIDE SETBACK		3.0m	6.5m
EAST FRONT SETBACK		14.0m	14.0m
WEST REAR SETBACK		7.5m	39.5

#### PARKING LEGEND

GENERAL NOTE - FIRE ROUTE TO BE POSTED AND DESIGNATED UNDER MUNICIPAL BY-LAW TO BE MINIMUM 6.0m WIDE WITH MINIMUM 12.0m CENTER-LINE TURNING RADIUS MAXIMUM 8% SLOPE OVER A MINIMUM DISTANCE OF 15m

#### LEGEND

▽	UNIT ENTRANCE	□	CATCH BASIN
▲	SERVICE DOOR	H.P.	HYDRO POLE
○	GEODETIC ELEVATION	M.H.	MANHOLE
○	EXISTING ELEVATION	F.H.	FIRE HYDRANT
○	PROPOSED ELEVATION	B.B.	BOLLARD LIGHT REFER TO ELEC. DWGS
♿	HANDICAPPED PARKING		

#### SURVEY DATA

Item	Ontario Building Code Data Matrix Part 3	OBC Reference
1. Project Description:	<input type="checkbox"/> New <input type="checkbox"/> Change of Use <input type="checkbox"/> Part 11 <input type="checkbox"/> Part 11.1 to 11.4	<input type="checkbox"/> Part 3 <input type="checkbox"/> Part 9 1.1.2 [A] 1.1.2 [A] 1.1.2 [A] 1.1.2 [A]
2. Major Occupancy(s)	Group C, RESIDENTIAL OCCUPANCY	3.1.2.1 (1) 9.1.0.2
3. Building Area (m2)	Existing New 1490.4 m2 Total 1490.4 m2	1.4.1.2 [A] 1.4.1.2 [A]
4. Gross Area (m2)	Existing New 1494 m2 Total 9488.8 m2	1.4.1.2 [A] 1.4.1.2 [A]
5. Number of Storeys	Above grade: 1 Below grade: 0	1.4.1.2 [A] & 3.2.1.1 9.1.0.1
6. Number of Streets/Fire Fighter Access: 1		3.2.2.10 & 3.2.9 9.10.20
7. Building Classification: GROUP C (up to 6-Storey, Sprinklered)		3.2.2.43A 9.1.0.4
8. Sprinkler System Proposed	<input checked="" type="checkbox"/> entire building <input type="checkbox"/> basement & ground floor only <input type="checkbox"/> in lieu of roof rating <input type="checkbox"/> not required	3.2.2.20 - 3.2.2.83 3.2.2.15 3.2.2.17 9.1.0.8
9. Standpipe required	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3.2.9 N/A
10. Fire Alarm required	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3.2.4 9.10.18.2
11. Water Service/Supply is Adequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.2.5.7 N/A
12. High Building	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3.2.6 N/A
13. Permitted Construction	<input checked="" type="checkbox"/> Combustible <input type="checkbox"/> Non-combustible <input type="checkbox"/> Both	3.2.2.20 - 3.2.2.83 9.1.0.6
14. Mezzanine(s) Area m2	N/A	3.2.1.1 (3) - 3.2.1.1 (6) 9.1.0.4.1
15. Occupant load based on	<input type="checkbox"/> m2/person <input checked="" type="checkbox"/> design of building	3.1.1.7 9.9.1.3
16. Barrier-free Design	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (explain)	3.8 9.1.0.18.2
17. Hazardous Substances	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3.3.1.2 & 3.3.1.19 9.1.0.1.3 (4)
18. Required Fire Resistance (FRR)	Horizontal Assemblies Floors: N/A, Hours (below grade) Floors: N/A, Hours (above grade) Roof: 0, Hours Mezzanine: N/A, Hours FRR of Supporting Members Floors: 1, Hours Roof: 0, Hours Mezzanine: N/A, Hours	Listed Design No. or Description (SB-2) 3.2.2.20-83 & 3.2.1.4 9.1.0.8 9.1.0.9 Listed Design No. or Description (SB-2) min. 200mm POURED CONCRETE SLAB 9.1.0.14
19. Spatial Separation - Construction of Exterior Walls		3.2.3 9.1.0.14
20. Other - Describe		

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Drawings are not to be scaled for construction. Contractor to verify all existing conditions and dimensions required to perform the work and report any discrepancies with the Contract Documents to the architect before commencing work.

Positions of exposed or finished mechanical or electrical devices, fittings, and fixtures are indicated on architectural drawings. The locations shown on the architectural drawings govern over the Mechanical and Electrical drawings. Those items not clearly located will be located as directed by the architect. These drawings are not to be used for construction unless noted below as "Issued for Construction".

All work to be carried out in conformance with the Code and bylaws of the authority having jurisdiction.

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4 ISSUED FOR OPA/ZBA 11.06.20  
 3 ISSUED FOR SPA/CO-ORDINATION 07.15.20  
 2 ISSUED FOR CONSULTANT REVIEW 05.08.20  
 1 ISSUED FOR CLIENT REVIEW 05.06.20

revisions: m.d.yr

architectural team:  
 Eduardo Ortiz

construction managers:  
 structural:  
 electrical:  
 mechanical:  
 landscape:  
 site services:

project:  
 Dundalk Commercial  
 Dundalk, Ontario

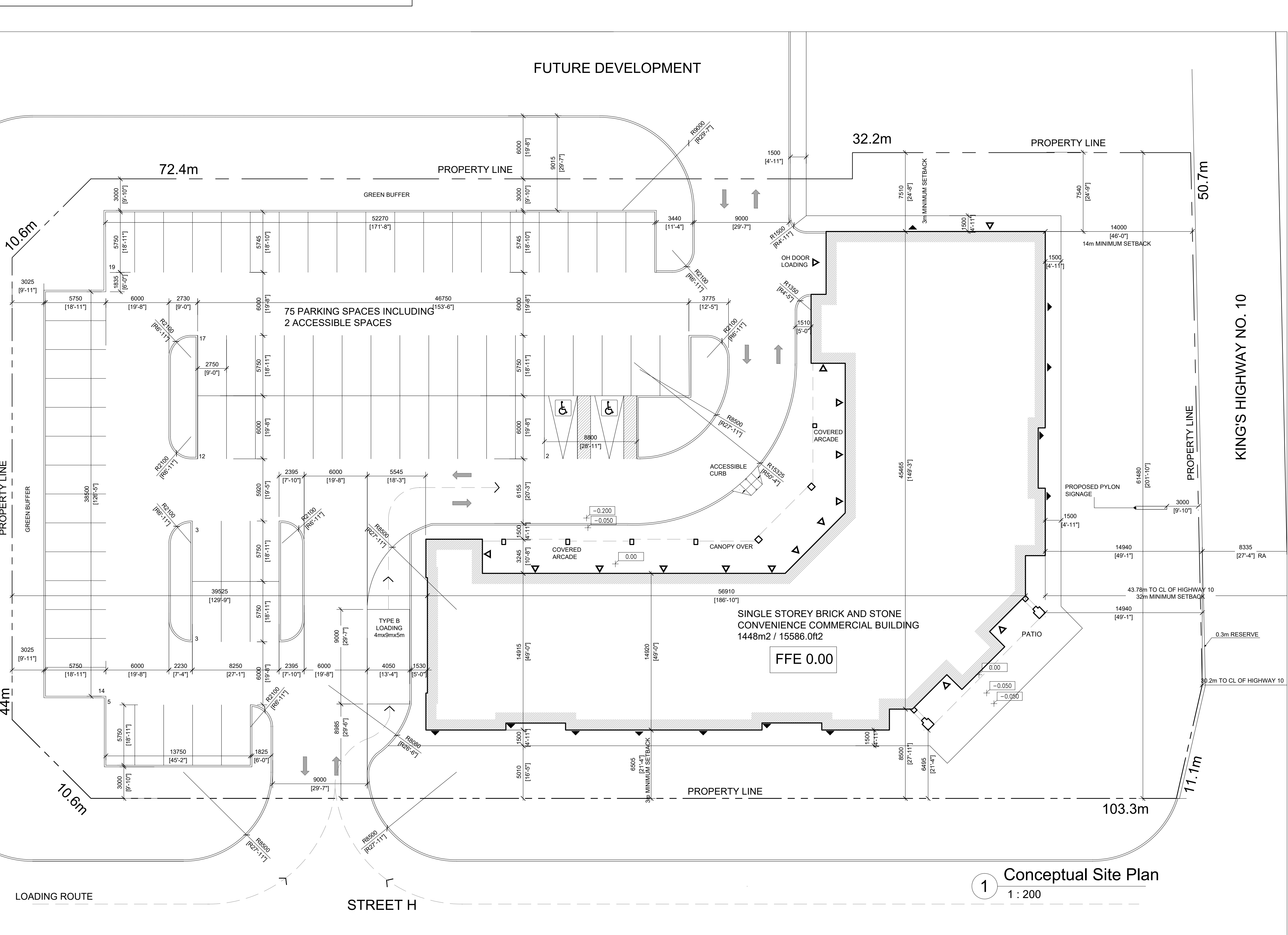
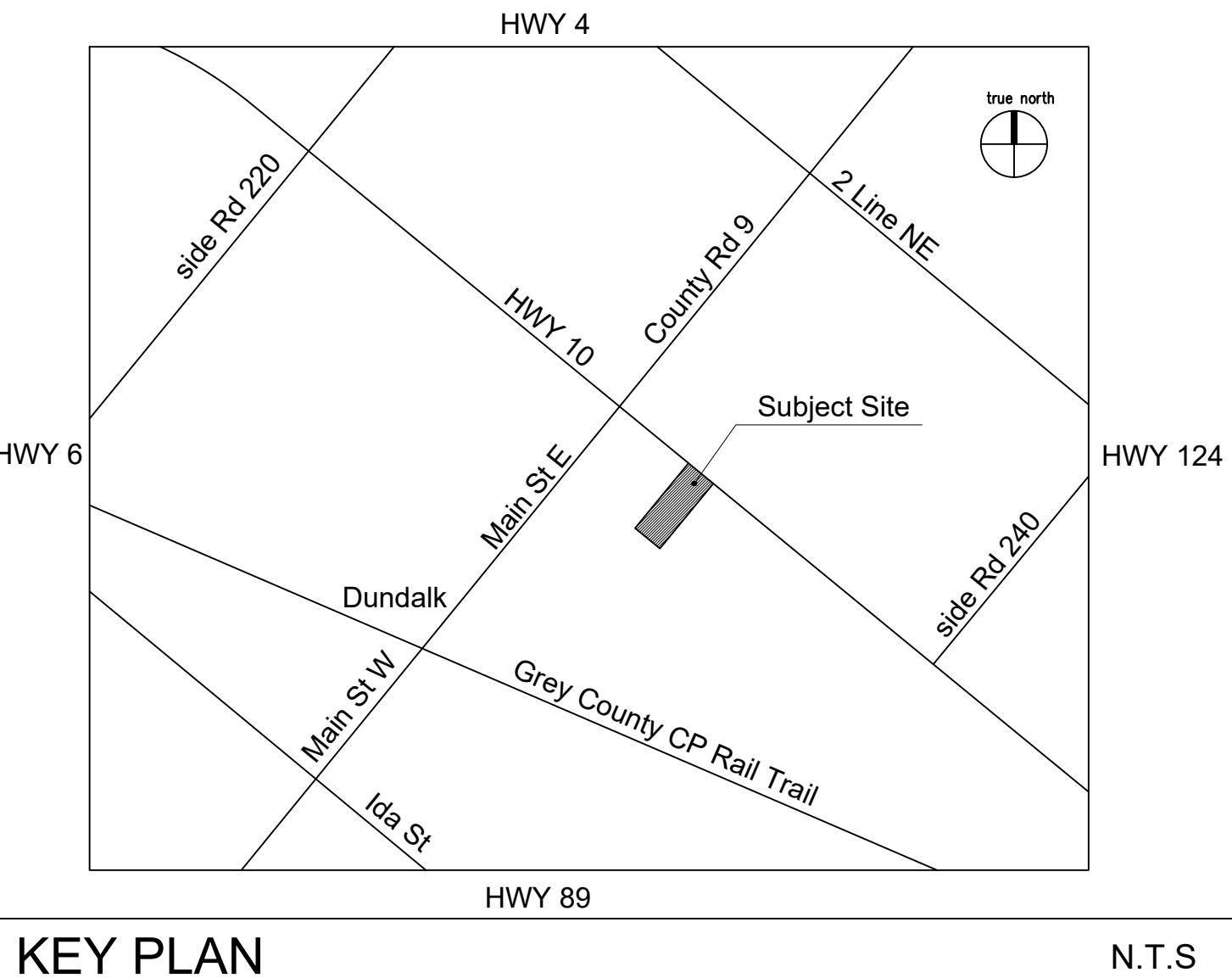
conceptual site plan & statistics

November 6th, 2020  
 1:200  
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 ep

scale:  
 project:  
 drawing number:

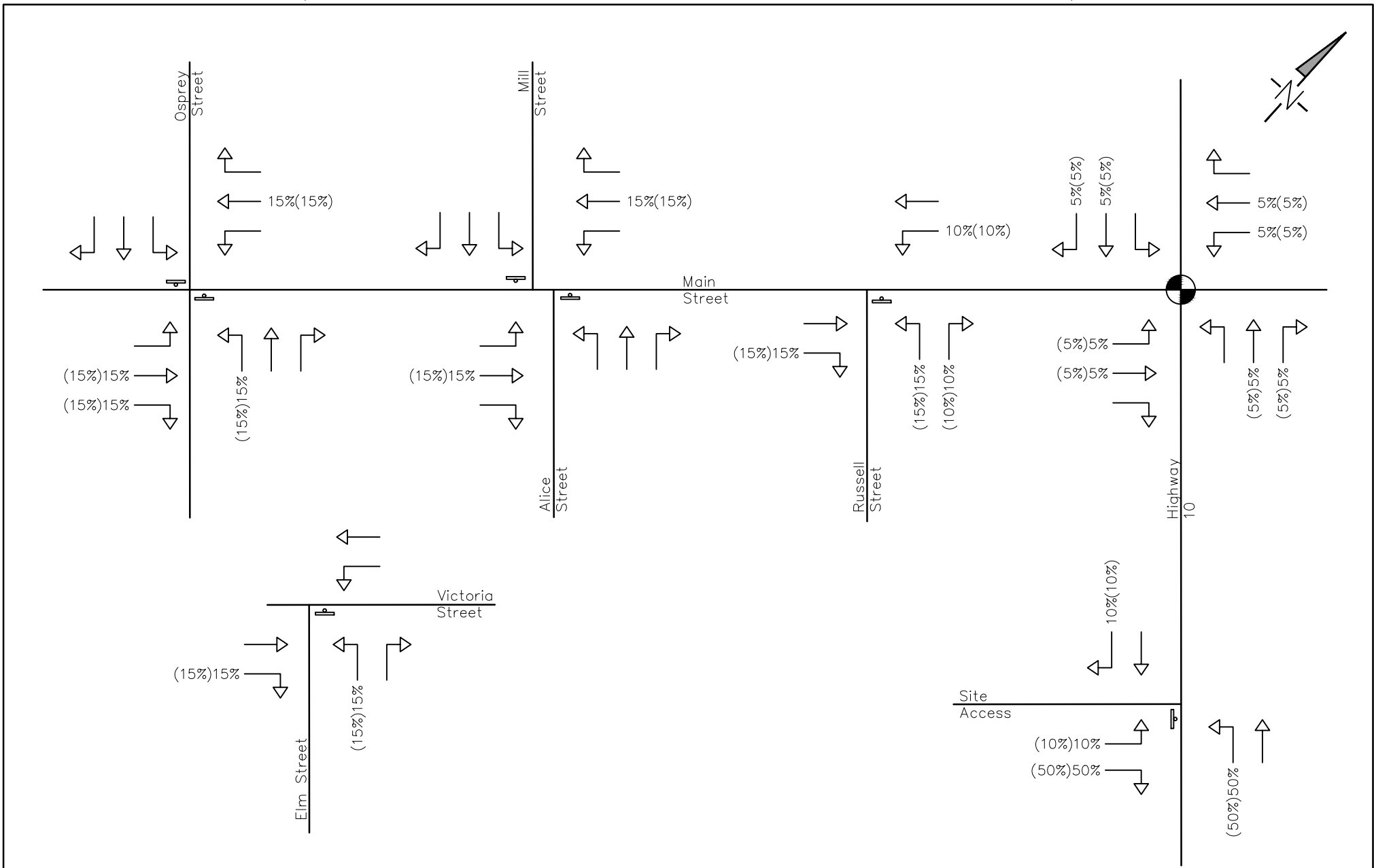
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 South REFER TO PROPOSED METHOD OF BUILDING COMPLIANCE REPORT BY JENSEN HUGHES  
 East REFER TO PROPOSED METHOD OF BUILDING COMPLIANCE REPORT BY JENSEN HUGHES  
 West REFER TO PROPOSED METHOD OF BUILDING COMPLIANCE REPORT BY JENSEN HUGHES  
 Other - Describe

A102a



KING'S HIGHWAY NO. 10





NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

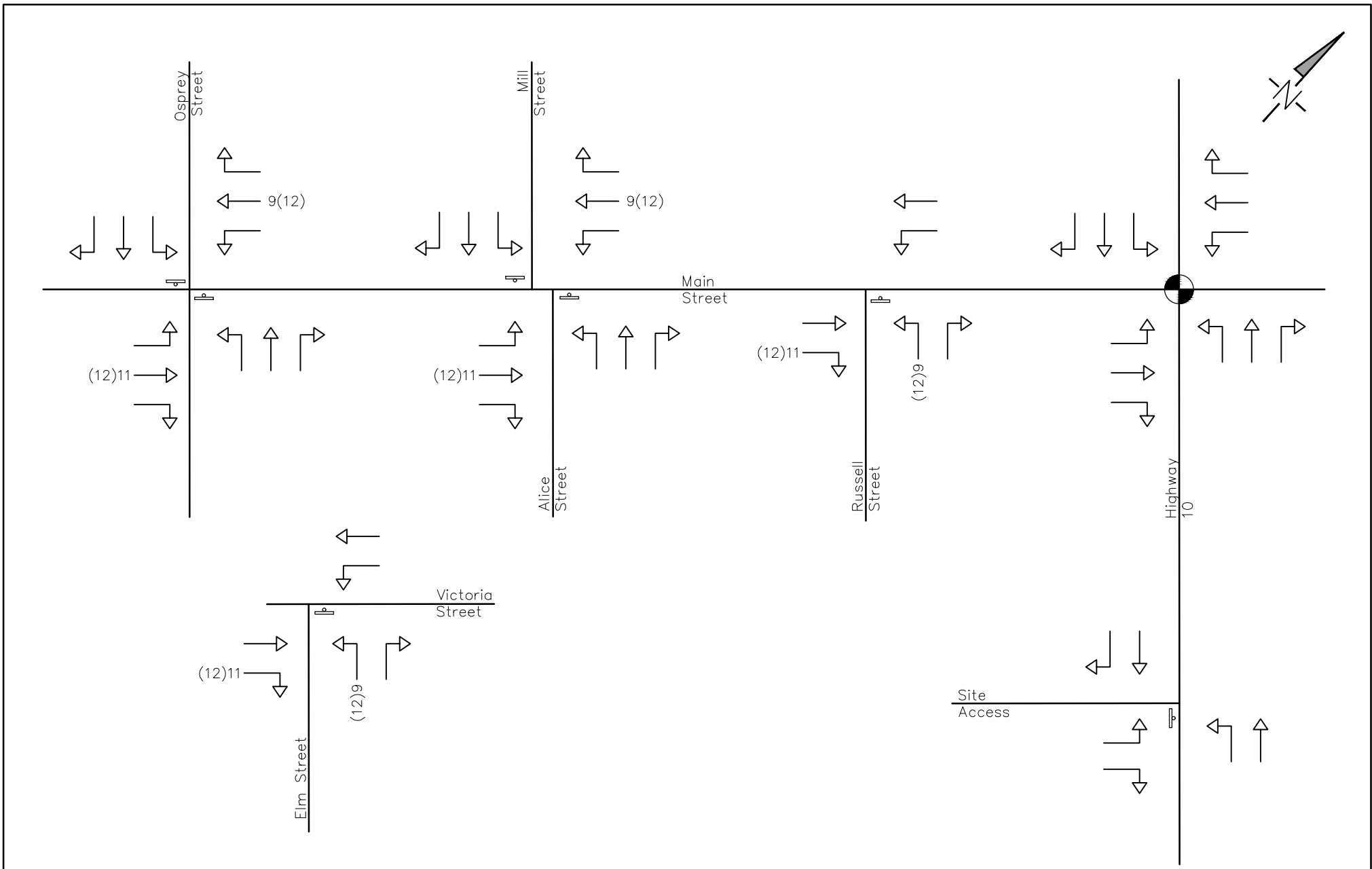
	SIGNAL CONTROL
	STOP CONTROL
xx(yy)	A.M. (P.M.) PEAK HOUR TRAFFIC VOLUMES

Project	Edgewood Greens Dundalk, Township of Southgate	
Drawing	Residential Trip Distribution	



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Scale	N.T.S.	Date	JAN. 20, 2020	Check By	M.F.	
					Drawing	FIG. 10



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	SIGNAL CONTROL
	STOP CONTROL
XX(YY)	A.M. (P.M.) PEAK HOUR TRAFFIC VOLUMES

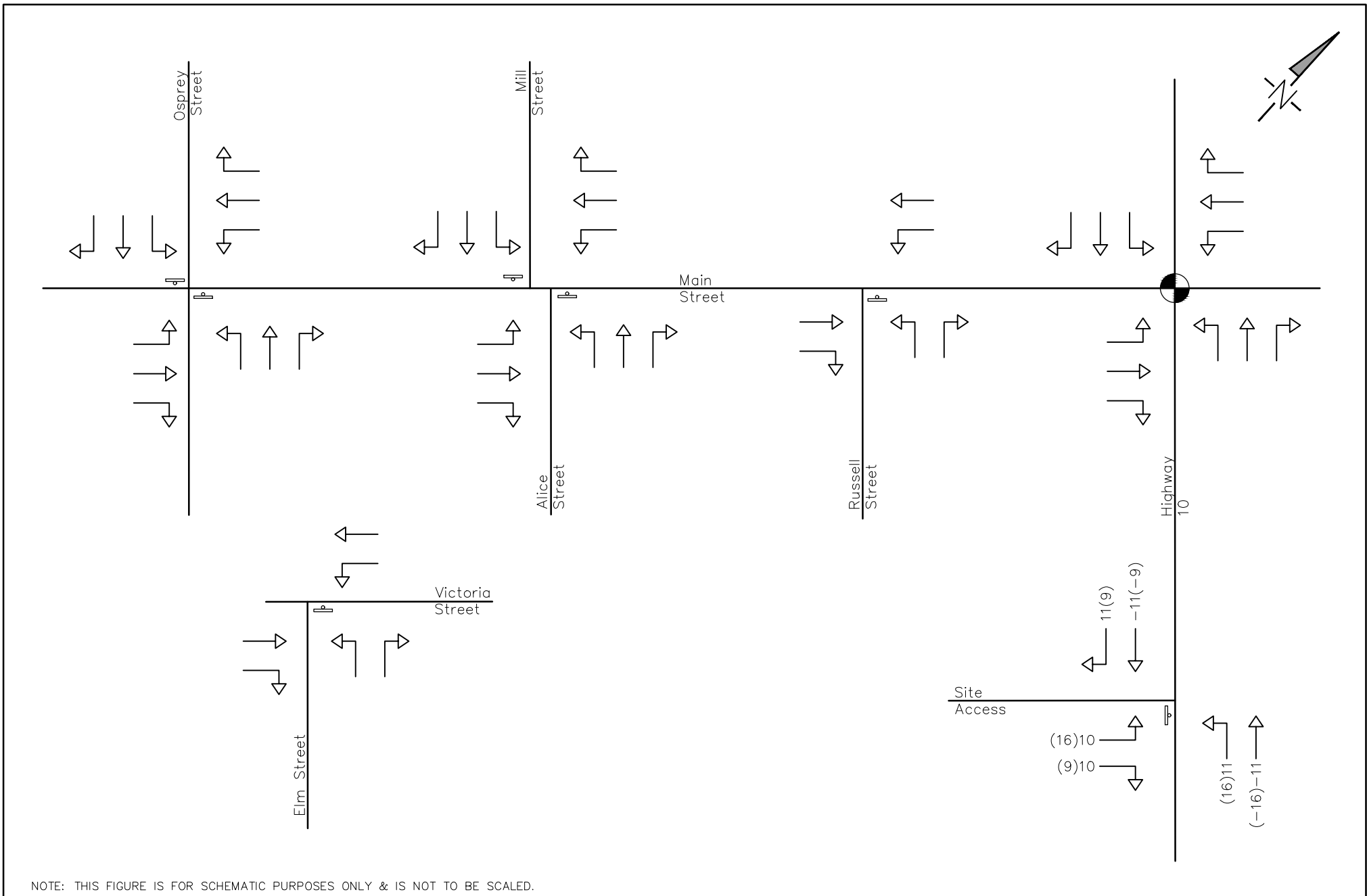
Project	Edgewood Greens Dundalk, Township of Southgate	
Drawing	Commercial Primary Trip Assignment	





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Scale	N.T.S.	Date	FEB. 22, 2021	Check By	M.F.	
					Drawing	FIG. 14



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

	SIGNAL CONTROL
	STOP CONTROL
XX(YY)	A.M. (P.M.) PEAK HOUR TRAFFIC VOLUMES

Project	Edgewood Greens Dundalk, Township of Southgate	
Drawing	Commercial Pass-by Trip Assignment	



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Drawn By	S.K.	Design By	S.K.	Project	1060-5384	
Scale	N.T.S.	Date	FEB. 22, 2021	Check By	M.F.	
					Drawing	FIG. 15



INDUSTRIAL ACCESS ROAD  
GREY ROAD 9 AND IDA STREET  
TRAFFIC IMPACT STUDY

JUNE, 2017



**TRITON  
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## 1.0 INTRODUCTION

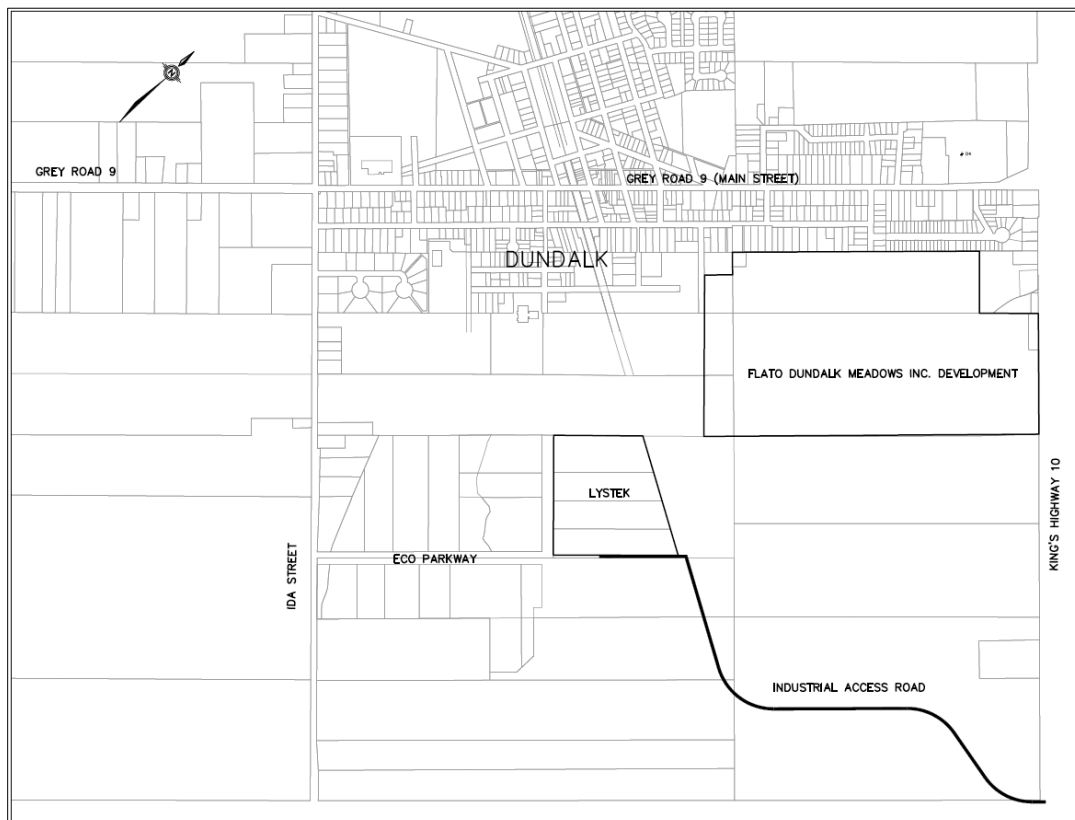
Triton Engineering Services Limited was retained by the Township of Southgate to undertake a Traffic Impact Study to assess the impact on the intersection of Grey Road 9 (Main Street) and Ida Street resulting from the construction of the proposed Industrial Access Road south of Dundalk.

This report summarizes the following:

- Future traffic volumes from the proposed industrial land developments at 50% build-out and full build-out;
- Existing and future levels of service at the Grey Road 9 and Ida Street intersection;
- Future intersection configuration and traffic control to meet future traffic demands.

## 2.0 PROPOSED DEVELOPMENTS AND ROAD NETWORK

The proposed Industrial Access Road will be an east-west arterial road that connects Ida Street (via Eco Parkway) and King's Highway 10 south of Dundalk. The location of the proposed road is shown below.



The lands on both sides of the Industrial Access Road have been designated for industrial use. Eco Parkway currently ends at the entrance to Lystek International (an organic materials recovery centre), which is only one of two existing developments on Eco Parkway.

The land surrounding the industrial use zones is a mix of agriculture and natural areas, with the community of Dundalk to the north. There is a residential development (Flato Dundalk Meadows Inc.) to be constructed south of Dundalk by 2020.

The Township of Southgate has undertaken a Class EA for the Access Road. As part of the review process, Grey County requested a traffic impact study to assess the impact of constructing the Industrial Access Road on the intersection of Grey Road 9 and Ida Street. This report will investigate the effects of a 50% build-out and a full build-out of the industrial lands surrounding the Access Road.

Grey Road 9 is an east-west arterial road with a posted speed of 50 km/h. Ida Street is a north-south rural local road with a posted speed of 50 km/h. Both roads have one lane in each direction with stop control provided on Ida Street.

### 3.0 EXISTING TRAFFIC

Weekday morning and afternoon peak period traffic counts were obtained on April 19, 2018 at the Grey Road 9 and Ida Street intersection. The existing Weekday AM and PM peak hours were determined and the traffic volumes are illustrated in Figure 1.

Existing levels of service were analyzed based on the *Highway Capacity Manual, 2000*, using Synchro 10, Version 10.1. Level of Service definitions are included in Appendix A. The detailed capacity analyses are included in Appendix B. Table 1 outlines the existing traffic levels of service and volume to capacity ratios for the Grey Road 9 and Ida Street intersection.

**Table 1: Existing Traffic Levels of Service**

Intersection	Movement	Level of Service		v/c Ratio	
		AM	PM	AM	PM
<b>Grey Road 9 and Ida Street (Unsignalized)</b>	EB Overall	A	A	0.00	0.00
	WB Overall	A	A	0.02	0.02
	NB Overall	A	B	0.03	0.09
	SB Overall	B	B	0.06	0.05

The unsignalized Grey Road 9 and Ida Street intersection is currently operating at a very good and good level of service during both the Weekday AM and PM Peak hours.

#### 4.0 BACKGROUND TRAFFIC

Background traffic is traffic growth generated from sources other than the developments being studied. This will allow an analysis of the effect that the developments will have on the existing road network.

For the purpose of this study, it was assumed that the road construction of the industrial Access Road would be completed in 2019. This study will analyze the traffic volumes at the Grey Road 9 and Ida Street intersection in 2019 (after the road is completed), in 2024 (full and 50% build-out of industrial lands), and a 5 year horizon (2029). A conservative growth rate of 2% was applied to existing traffic volumes to establish background volumes for 2019, 2024, and 2029.

Flato Dundalk Meadows Inc. (residential development site) is located immediately south of Dundalk and is expected to be constructed and fully occupied by 2030. C.F. Crozier & Associates Inc. completed a traffic impact study (Addendum – June 2016) for the development with the trips generated distributed on the existing local roads. C.F. Crozier had assumed that 30% of the trips generated would travel to and from the west (including downtown Dundalk). To incorporate the additional traffic from this residential development, it is assumed that only 10% of the trips generated would travel to and from Grey Road 9 past Ida Street (with the remaining 20% dispersing in downtown Dundalk). This additional traffic is shown on Figure 2 and was added to the background traffic.

Once the Industrial Access Road is constructed, some traffic will re-route based on more direct connections. It was assumed for the purpose of this study that 30% of the traffic on Grey Road 9 through Dundalk would use the Access Road as a bypass route around the community. This is considered to be a conservative estimate. It was also assumed that all truck traffic currently going through Dundalk would use the Access Road to bypass the village or access the industrial lands.

The following list summarizes the movements that are affected by these assumptions:

- 30% of SB-left cars will be added to SB-thru;
- 30% of EB-thru cars will be added to EB-right;
- 30% of WB-thru cars will be added to NB-left;
- 30% of WB-right cars will be added to NB-thru;
- SB-left trucks will be added to SB-thru;
- EB-thru trucks will be added to EB-right;
- WB-left trucks will be removed;
- WB-thru trucks will be added to NB-left;
- WB-right trucks will be added to NB-thru; and,
- NB-right trucks will be removed.

## 5.0 SITE GENERATED TRAFFIC

### 5.1 Trip Generation

Trip generation is a forecast of the additional traffic created by future developments from studies of similar developments to assess the impact of the additional traffic on the surrounding road network. The *Institute of Transportation Engineers (ITE) Trip Generation Manual, 8<sup>th</sup> Edition* (ITE Code 130 – Industrial Park) was used in this analysis.

The types of developments surrounding the Access Road are not known at this time. The ITE Code 130 – Industrial Park will provide a conservative trip generation. To account for a level of uncertainty, and that a full build-out of the industrial lands is expected to take longer than 5 years, a scenario of 50% build-out was also analyzed to assess when improvements to the Grey Road 9 and Ida Street intersection will be required.

Based on the legal plan provided, an approximate area of 259.75 acres was used to forecast the trips generated by a full build-out of the industrial lands surrounding the proposed Access Road. The 50% build-out area used was 129.875 acres. For this study, it is assumed that all trips generated by the developments are primary trips, thus providing a conservative approach.

The total number of trips generated by the developments for the Weekday AM and PM peak hours are summarized in Table 5 for both 50% build-out and full build-out. The equations used to calculate the number of trips, can be found in Appendix C. It is noted that the 50% development scenario still generates a conservative estimate of 802 and 769 additional trips in the AM and PM peak hours respectively.

**Table 5: Trip Generation Summary**

Land Use	Weekday AM			Weekday PM		
	Trips Entering	Trips Exiting	Total Trips	Trips Entering	Trips Exiting	Total Trips
Industrial Lands – 50% build-out	666	136	802	161	608	769
Industrial Lands – full build-out	1142	234	1376	266	1000	1266

### 5.2 Trip Distribution

The trips generated by the developments were distributed and assigned to the road network based on local traffic patterns, as well as expected origin and destination. It was assumed that 70% of the trips generated would head towards/come from Highway 10 on the Access Road. For a conservative approach, it was assumed that all of the site



levels of service are summarized in Table 8 and Table 9, for the 2024 and 2029 years respectively.

**Table 8: 2024 Total Traffic Levels of Service - Full Build-Out**

Intersection	Movement	Level of Service		v/c Ratio	
		AM	PM	AM	PM
<b>Grey Road 9 and Ida Street (Unsignalized)</b>	EB Overall	A	A	0.01	0.01
	WB Overall	A	A	0.09	0.04
	NB Overall	C	E	0.38	0.85
	SB Overall	C	B	0.42	0.12

**Table 9: 2029 Total Levels of Service - Full Build-Out**

Intersection	Movement	Level of Service		v/c Ratio	
		AM	PM	AM	PM
<b>Grey Road 9 and Ida Street (Unsignalized)</b>	EB Overall	A	A	0.01	0.01
	WB Overall	A	A	0.09	0.04
	NB Overall	C	E	0.40	0.91
	SB Overall	C	B	0.45	0.14

The Grey Road 9 and Ida Street intersection will continue to operate at a very good to average level of service in the AM and PM peak hours with a full industrial build-out. The northbound movement will drop to a poor level of service during the PM peak hours; however, this drop is still acceptable as the movement hasn't reached capacity.

## 7.0 INTERSECTION ANALYSIS AND RECOMMENDATIONS

The Grey Road 9 and Ida Street intersection will maintain a very good to good level of service once the Access Road is constructed. The intersection will be able to fully accommodate the re-directed traffic and the additional traffic from the Flato Dundalk Meadows Inc. residential development.

The intersection will maintain a very good to average level of service through 2029 at full build-out of industrial lands surrounding the Access Road except for the northbound PM movement. The northbound movement will experience very long traffic delays during the PM peak hour once the industrial lands surrounding the Access Road are fully developed. These very long traffic delays are considered acceptable as the northbound movement will not have reached its capacity. At 50% developed, the northbound movement will only experience average traffic delays. Therefore, the existing intersection configuration will be able to accommodate the fully developed traffic volumes expected in 2029. Should the industrial lands develop at a rate close to

full build-out, operations at the intersection should be monitored to determine if delays become excessive. In this case, traffic signals may be required.

Due to the heavy right turn volumes expected after development begins, a 60m right turn taper may be required on Grey Road 9 to prevent gravel spoilage on the shoulder of the road. A 30m recovery taper should be constructed with the right turn taper on the same side of Grey Road 9.

The intersection was analyzed for traffic signals. Due to the uncertainty in the development, Justification 7 – Project Volumes was elected as the most appropriate warrant from *Ontario Traffic Manual, Book 12, March 2012*. Justification 7 adjusts the peak hour volumes (PHV) to an average hourly volume (AHV) to compare against the volume and delay justifications (1 and 2). The thresholds of Justifications 1 and 2 must be met 120% to account for the uncertainty of estimating volumes from the PHV. Table 10 shows the results of the warrant analysis for a 2029 full build-out scenario.

**Table 10: Traffic Signal Warrants**

Grey Road 9 and Ida Street	Justification 1		Justification 2	
	1A	1B	2A	2B
Required Volume (per hour)	480	120	480	50
2029 Future PHV AM(PM)	769 (880)	281 (486)	488 (394)	213 (370)
Adjusted 2029 Future AHV	412	192	221	146
Percent Fulfilled	86%	160%	46%	292%

For traffic signals to be warranted, Justification 1 or 2 must be met 120%. The results of the analysis show that Justification 1A and 2A do not meet the required 120% volumes; therefore, traffic signals are not warranted.

## 8.0 CONCLUSIONS

- The intersection of Grey Road 9 and Ida Street can accommodate the additional traffic from the Flato Dundalk Meadows Inc. residential development, the redistribution of traffic after the Access Road is constructed, and the additional traffic from fully developed industrial lands surrounding the Access Road.
- When full development is realized, lengthy delays for the northbound approach may occur. Due to uncertainties regarding the extent and timing of full development, it is recommended that operations be monitored.
- A 60m right turn taper may be required to prevent gravel spoilage on the shoulder of Grey Road 9 after development begins.
- Traffic signals are not warranted. The intersection should be monitored as development progresses around Dundalk.

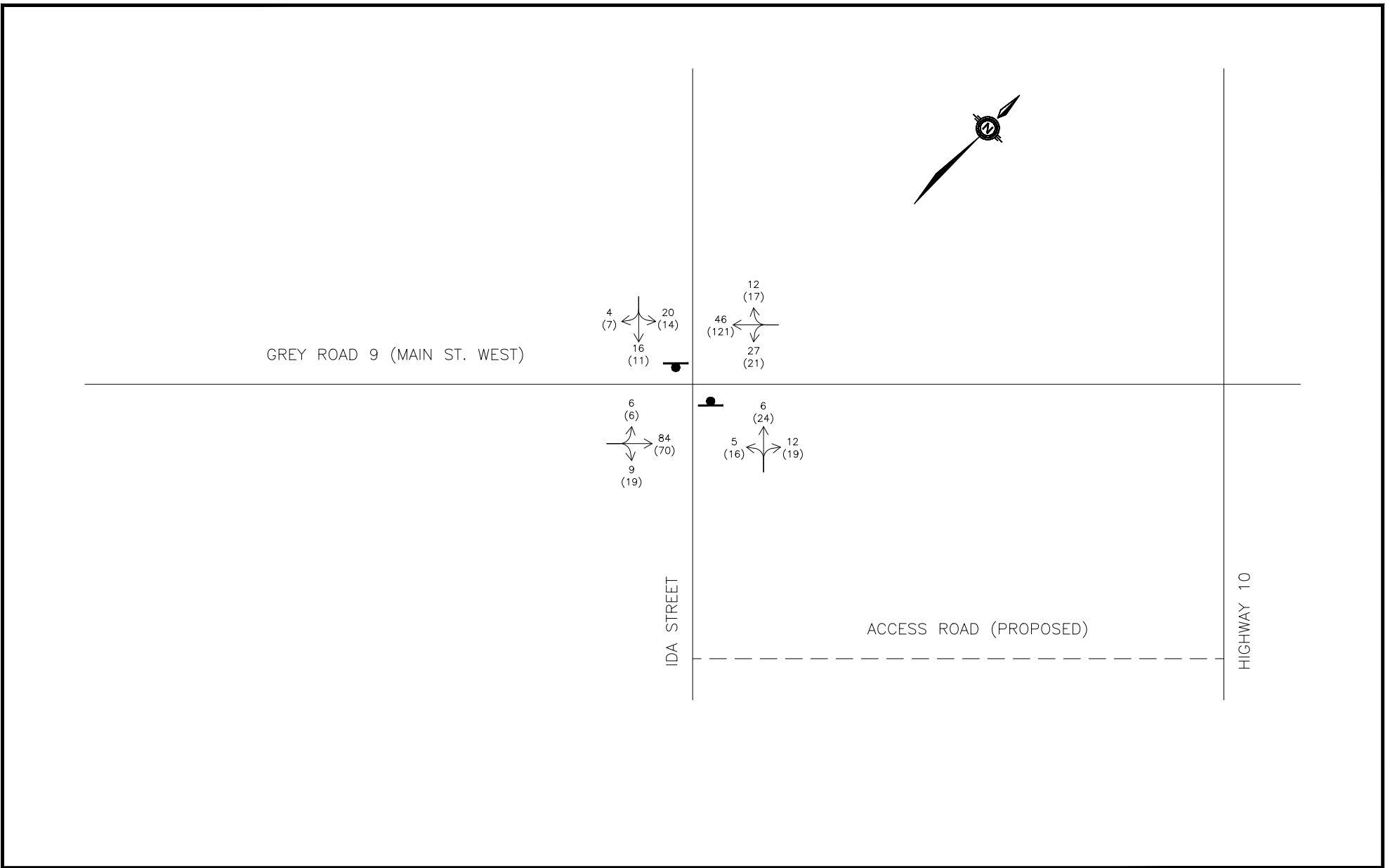
TRITON ENGINEERING SERVICES LIMITED



Taylor Kramp, E.I.T.



Howard Wray, P. Eng.



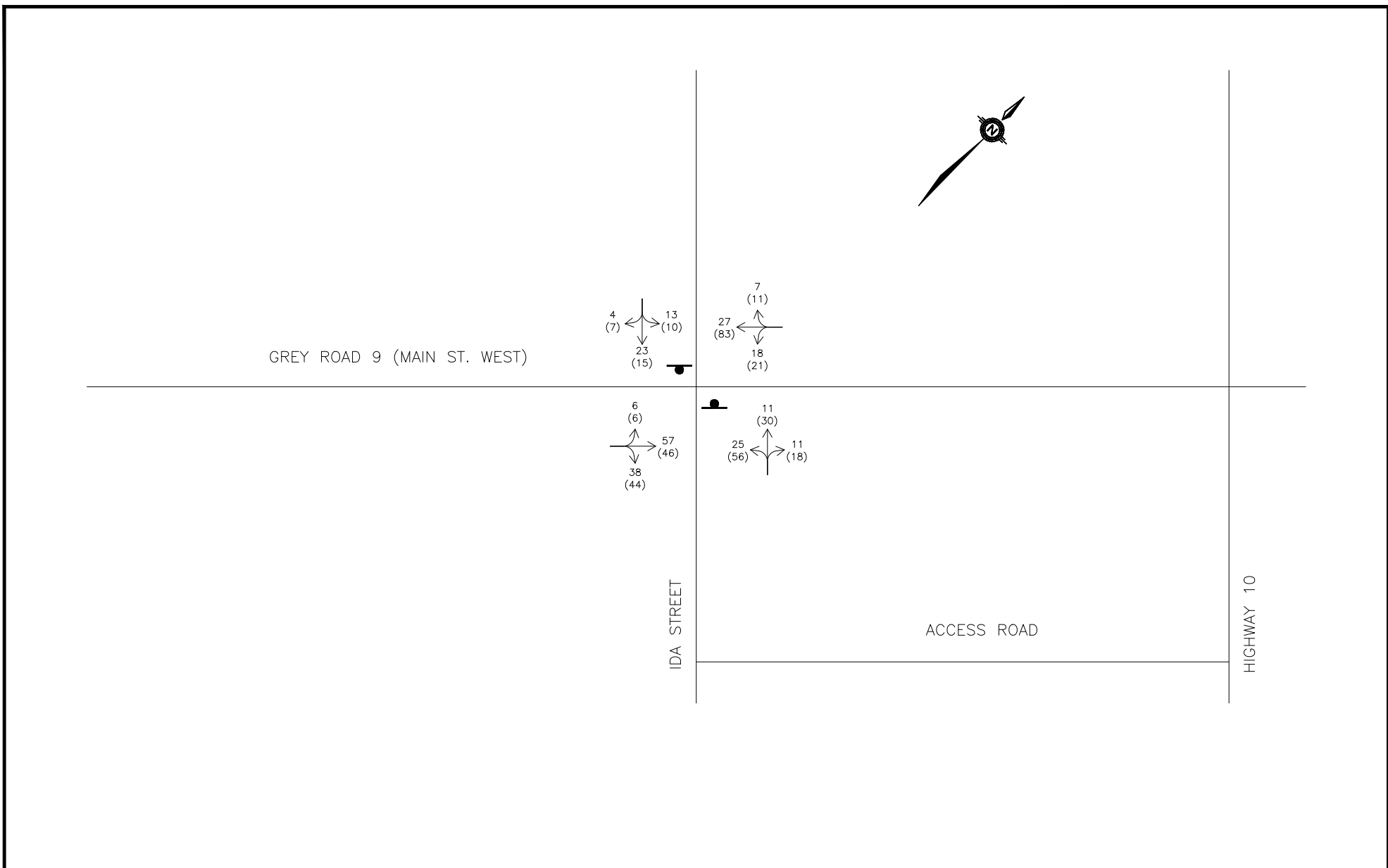
**LEGEND:**

- STOP CONTROL
- TRAFFIC FLOW
- TRAFFIC SIGNALS
- TRAFFIC VOLUMES
- TRAFFIC SIGNALS
- EXISTING ROAD
- PROPOSED ENTRANCE



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 Consulting Engineers

**FIGURE 1:**  
**2018 EXISTING PEAK HOUR TRAFFIC**  
 (NOT TO SCALE)



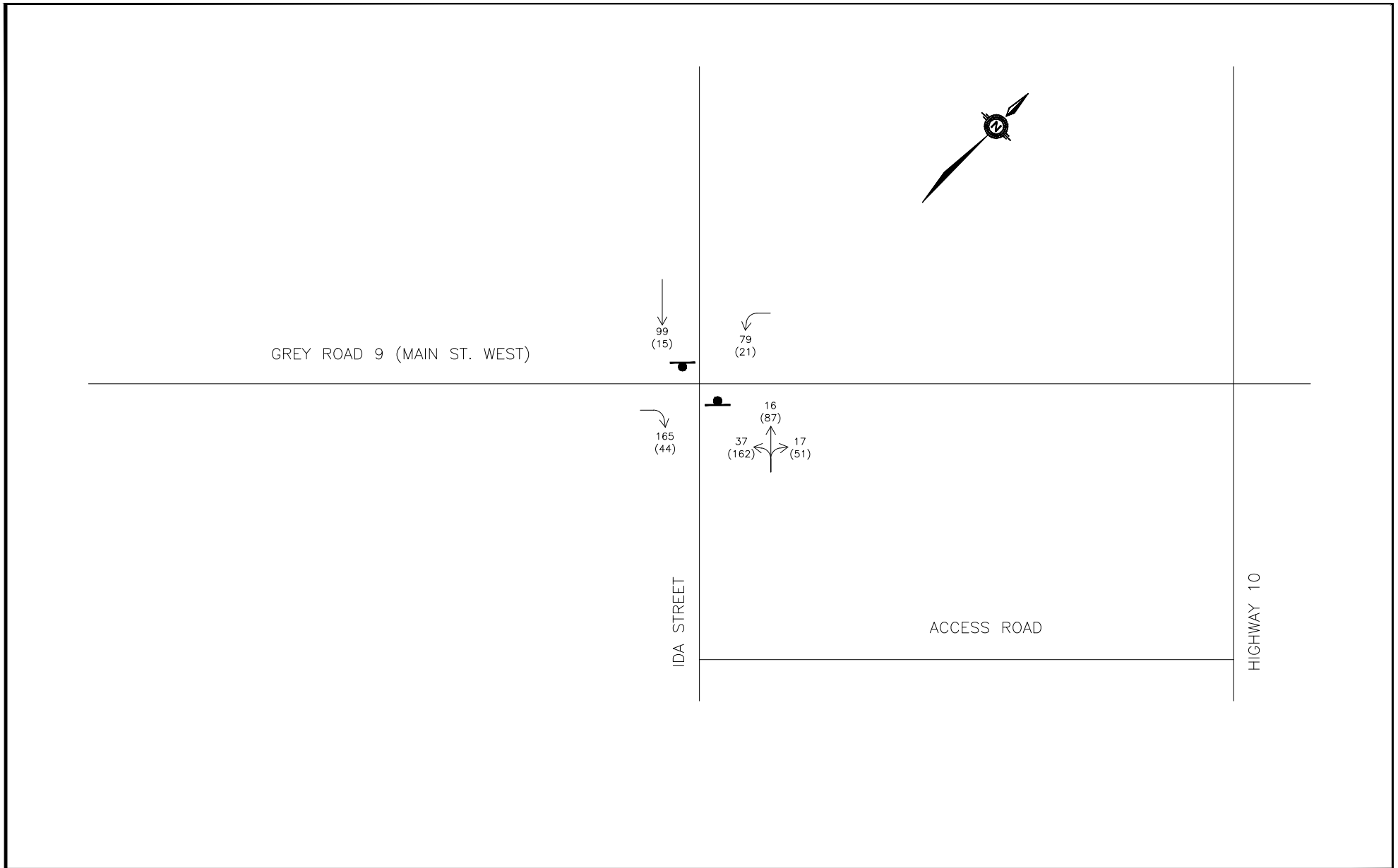
**LEGEND:**

- STOP CONTROL
 25 8:00am - 9:00am
TRAFFIC VOLUMES
— EXISTING ROAD
- (25) 4:30pm - 5:30pm
● TRAFFIC SIGNALS
- - PROPOSED ENTRANCE
- TRAFFIC FLOW



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Consulting Engineers

FIGURE 3:  
**2019 BACKGROUND PEAK HOUR TRAFFIC**  
(NOT TO SCALE)



**LEGEND:**

- STOP CONTROL
 25 8:00am - 9:00am
(25) 4:30pm - 5:30pm
TRAFFIC VOLUMES
- TRAFFIC FLOW
 ● TRAFFIC SIGNALS
- EXISTING ROAD
 - - PROPOSED ENTRANCE



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FIGURE 7:  
**DEVELOPMENT PEAK HOUR TRIP  
DISTRIBUTION - FULL BUILD-OUT**  
(NOT TO SCALE)

**TRAFFIC IMPACT STUDY**

**SOUTHGATE MEADOWS INC.  
TOWNSHIP OF SOUTHGATE**

**GLENELG RESIDENTIAL DEVELOPMENT  
PHASE 2**

**PREPARED BY:**

**C.F. CROZIER & ASSOCIATES INC.  
40 HURON STREET  
COLLINGWOOD, ONTARIO  
L9Y 4R3**

**SEPTEMBER 2020**

**CFCA FILE NO. 1060-5545**

The material in this report reflects best judgment in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. C.F. Crozier & Associates Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.



## 2 INTRODUCTION

### 2.1 Background

C.F. Crozier & Associates Inc. (Crozier) was retained by Southgate Meadows Inc. ("the Developer") to complete a Traffic Impact Study (TIS) in support of a County Official Plan Amendment, Township Official Plan Amendment, Zoning By-law Amendment and Draft Plan of Subdivision Application for a Settlement Boundary Expansion for Phase 2 of the proposed Glenelg residential development located in the west end of the Community of Dundalk, Township of Southgate, County of Grey (the site).

In September 2018, Crozier completed a TIS to support Phase 1 of the Glenelg Residential Development. Phase 1 is located directly south of the Phase 2 lands fronting Glenelg Street. The Phase 1 Official Plan Amendment, Zoning By-law Amendment and Draft Plan Applications have been approved and a Redline Draft Plan Application has also recently been submitted and approved. Phase 1 of the development is currently undergoing detailed design and working towards registration. The scope of this TIS is consistent with that of the Phase 1 TIS.

### 2.2 Purpose

The purpose of the study was to assess the impacts of the proposed development on the boundary road network and to recommend any mitigation measures, if warranted.

The study reviews the following main aspects of the proposed residential development from a transportation engineering perspective:

- Existing, future background, and future total traffic operations at the study intersections
- Forecasted trip generation of the proposed development
- Auxiliary lane requirements at the proposed site accesses

### 2.3 Development Proposal

The site statistics proposed on the Draft Plan have been summarized in **Table 1** below. The Draft Plan prepared by MHBC Planning (September 24, 2020) has been included as **Figure 1**. It has been assumed that for the purposes of this analysis, the entire Phase 2 development will be built out concurrently.

**Table 1: Development Site Statistics**

Development Type	Unit Type	Draft Plan (September 24, 2020)
Residential	Single Detached	83
	Townhomes	66
	Partial Lots	6

For the purpose of this analysis, the six partial lots were assessed as single detached units. Access to the site will be provided by two accesses to Glenelg Street through the previous Glenelg Phase 1 lands and are spaced approximately 220 metres apart. The internal roads within Phase 2 are described as Corbett Street, Aitchison Avenue, Street "A" and Street "B". Street "A" and Aitchison Avenue provide connectivity to the Phase 1 lands.



## 4.4 Background Development Trip Generation

### 4.4.1 Industrial Access Road

It is noted that the Township of Southgate completed a Municipal Class Environmental Assessment for the Dundalk Industrial Access Road in September 2018. The Industrial Access Road would facilitate the development of industrial and commercial employment lands, south of the Community of Dundalk.

Triton Engineering completed a Traffic Impact Study to determine the impacts of the Access Road on the intersection of Main Street West (Grey County Road 9) and Ida Street. Since there are no current applications to develop these lands, the Traffic Impact Study (Triton, 2017) analyzed the intersection under the 2024 and 2029 horizon years assuming both 50 percent build-out and 100 percent build-out. The findings noted that if the development is 100 percent built-out by 2029, the northbound movements would operate at a LOS E in the p.m. peak hour.

Since there are no planning proposals at this time for development in this area, the following analysis did not account for traffic generated by the future industrial/commercial employment lands.

Relevant excerpts from the Industrial Access Traffic Impact Study have been included in **Appendix F** for reference.

### 4.4.2 Glenelg Phase 1

Glenelg Phase 1 is located south of the proposed Phase 2 lands and includes the two primary accesses to Glenelg Street. A Redline Draft Plan has recently been approved for Glenelg Phase 1. The Redline Draft Plan proposes 118 single detached units and 65 townhouse units. It has been assumed that the Phase 1 lands will be fully built-out and occupied prior to the 2025 horizon year. The Glenelg Phase 1 Redline Draft Plan as well as excerpts from the original Glenelg Phase 1 TIS have been included as **Appendix G**.

The trip generation of the Redline Phase 1 development was established using the Institute of Transportation Engineers (ITE) Trip Generation Manual 10<sup>th</sup> Edition using Land Use Categories (LUC) 210 "Single Family Detached Dwelling" and LUC 220 "Multifamily Housing (Low-Rise)". The Glenelg Phase 1 trip generation is summarized in **Table 5**.

**Table 5: Glenelg Phase 1 Trip Generation**

Development	Unit Type	Number of Units	Roadway Peak Hour	Number of Trips		
				Inbound	Outbound	Total
Glenelg Phase 1	LUC 210: Single Family Detached Housing	118	Weekday A.M.	22	67	89
			Weekday P.M.	75	44	119
	LUC 220: Multifamily Housing (Low-Rise)	65	Weekday A.M.	7	25	32
			Weekday P.M.	25	15	40
<b>Total</b>			<b>Weekday A.M.</b>	<b>29</b>	<b>92</b>	<b>121</b>
			<b>Weekday P.M.</b>	<b>100</b>	<b>59</b>	<b>159</b>

The trips generated by the Redline Glenelg Phase 1 Draft Plan were distributed to the boundary road network based on the trip distribution described in the original Glenelg Phase 1 TIS (Crozier, September 2018). The trips generated by the Glenelg Phase 1 residential development are illustrated in **Figure 5**.

**Table 8: 2030 Future Background Level of Service**

Intersection	Control	Peak Hour	Level of Service <sup>1</sup>	Control Delay	Maximum v/c ratio <sup>2</sup>
Glenelg Street and Ida Street	Stop (Two-way)	A.M.	A	8.8s (WB)	0.04 (WB)
		P.M.	A	8.9s (WB)	0.05 (WB)
Glenelg Street/Grey Street and Dundalk Street	Stop (Two-way)	A.M.	A	9.5s (NB)	0.04 (NB)
		P.M.	A	9.6s (NB)	0.11 (NB)
Main Street West (Grey County Road 9) and Dundalk Street	Stop (Two-way)	A.M.	B	13.3s (SB)	0.21 (SB)
		P.M.	B	14.2s (SB)	0.15 (SB)
Main Street West (Grey County Road 9) and Ida Street	Stop (Two-way)	A.M.	B	11.6s (SB)	0.10 (SB)
		P.M.	B	13.6s (SB)	0.18 (NB)
Glenelg Site Access	Stop (Two-way)	A.M.	A	9.2s (SB)	0.10 (SB)
		P.M.	A	9.5s (SB)	0.07 (SB)

Note<sup>1</sup>: The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach (HCM 2000).

Note<sup>2</sup>: The maximum v/c ratio for two-way stop-controlled intersections represents the maximum v/c for the minor road approach movements at the intersection.

The metrics listed above indicate that the boundary road network is expected to continue operating at a LOS “B” or better under 2025 and 2030 future background conditions, with minimal delays and reserve capacity for increases in traffic volumes.

## 5 SITE GENERATED TRAFFIC

The proposed development will result in additional vehicles on the boundary road network that previously did not exist. The proposed development will also result in additional turning movements at the boundary road intersections.

### 5.1 Trip Generation

The trip generation of the single detached residential lots was forecasted using the fitted curve equations provided in the ITE Trip Generation Manual, 10<sup>th</sup> Edition, under the Land Use Category 210 “Single Family Detached Dwelling”.

The trip generation of the townhouse residential lots was forecasted using the fitted curve equations provided in the ITE Trip Generation Manual, 10<sup>th</sup> Edition, under the Land Use Category 220 “Multifamily Housing (Low-Rise)”.

The trip generation of Glenelg Phase 2 is summarized in **Table 9**. Relevant excerpts from the ITE Trip Generation Manual, 10<sup>th</sup> Edition are included in **Appendix I**.

**Table 9: Glenelg Phase 2 Trip Generation**

Use	Trip Type	Peak Hour	Number of Trips		
			Inbound	Outbound	Total
L.U. 210: Single Family Detached Housing (89 Units)	Primary	Weekday A.M.	17	51	68
	Primary	Weekday P.M.	57	34	91
L.U. 220: Multifamily Housing (Low-Rise) (66 Units)	Primary	Weekday A.M.	7	25	32
	Primary	Weekday P.M.	26	15	41
<b>Total</b>	<b>Primary</b>	<b>Weekday A.M.</b>	<b>24</b>	<b>76</b>	<b>100</b>
	<b>Primary</b>	<b>Weekday P.M.</b>	<b>83</b>	<b>49</b>	<b>132</b>

## 5.2 Trip Distribution and Assignment

Trips generated by Phase 2 of the Glenelg residential development were distributed to the boundary road network maintaining the distribution described in the Glenelg Phase 1 TIS. The trip distribution was based on Transportation Tomorrow Survey (TTS) data. The TTS is a comprehensive survey of transportation characteristics in the Golden Horseshoe, Simcoe County and Grey County areas. TTS data is not available for the Community of Dundalk, accordingly, the Township of Melancthon (abutting the Dundalk to the south and east) was selected as it is considered most representative of the subject area.

TTS Data has been included in **Appendix J**. The trip distribution is as follows:

- 10% to/from the north on Ida Street
- 10% to/from the west on Ida Street
- 60% to/from the south on Highway 10
- 20% to/from Dundalk (downtown)
  - 15% to/from the east on Grey Road 9
  - 5% to/from the west on Main Street

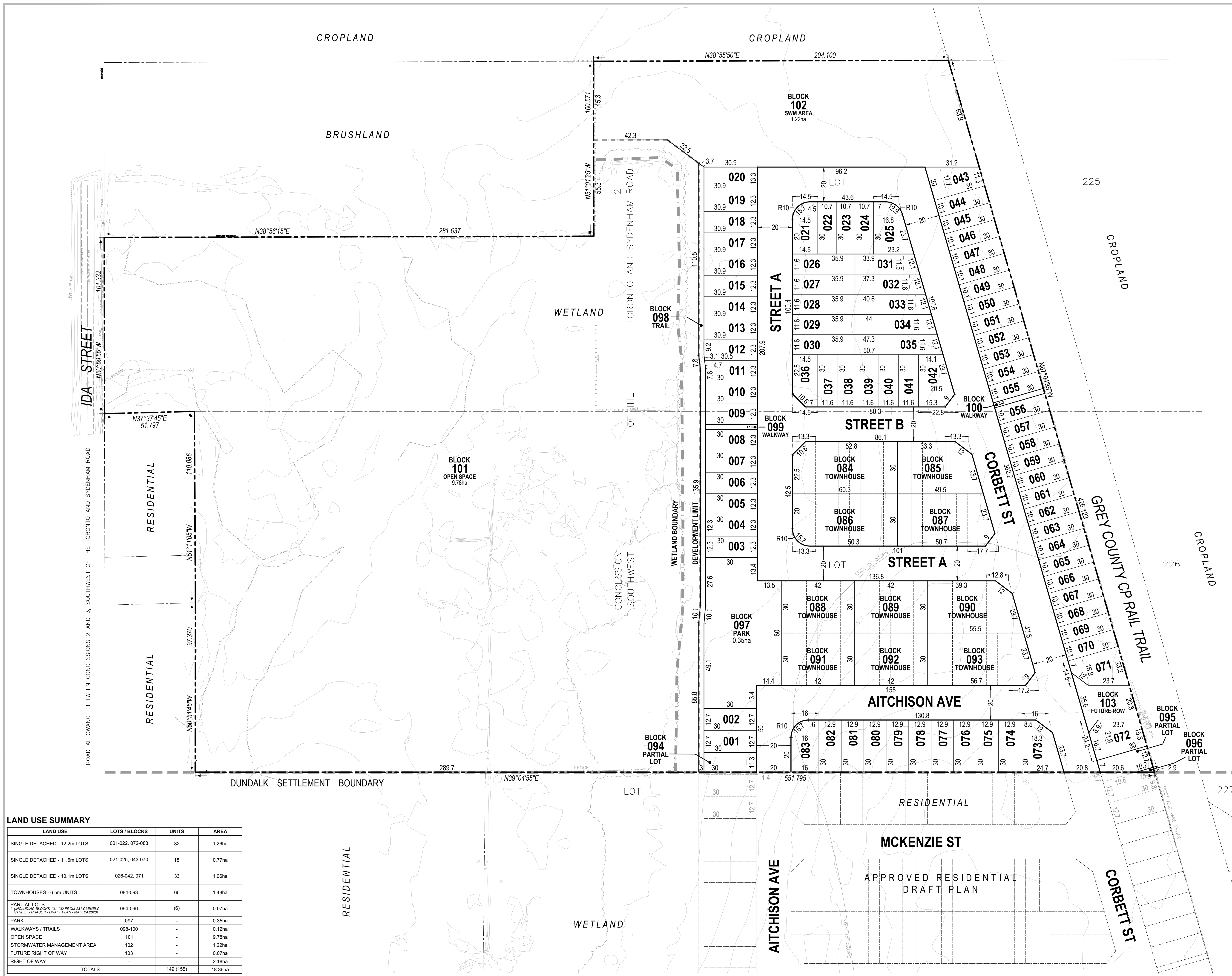
Of the 20 percent remaining in Dundalk, five percent were assumed to travel south on Dundalk Street and then turn right to travel west on Main Street West. The remaining 15 percent were assumed to travel east on Grey Street South and use Proton Street North to access the main downtown commercial corridor.

The development was analyzed under a consolidated access configuration to provide a conservative analysis. The future operations of the site accesses to Glenelg Street are expected to be better than listed herein as traffic volumes will be dispersed across both accesses.

The trips generated by the proposed development were assigned to the boundary road network per the distributions illustrated in **Figure 9**. The corresponding trip assignment is illustrated in **Figure 10**.

# FIGURES

<b>Figure 1:</b>	Glenelg Phase 2 Draft Plan
<b>Figure 2:</b>	Site Location Plan
<b>Figure 3:</b>	Boundary Road Network
<b>Figure 4:</b>	2018 Existing Traffic Volumes
<b>Figure 5:</b>	Glenelg Phase 1 Background Traffic Volumes
<b>Figure 6:</b>	Edgewood Greens Background Traffic Volumes
<b>Figure 7:</b>	2025 Future Background Traffic Volumes
<b>Figure 8:</b>	2030 Future Background Traffic Volumes
<b>Figure 9:</b>	Trip Distribution
<b>Figure 10:</b>	Trip Assignment
<b>Figure 11:</b>	2025 Future Total Traffic Volumes
<b>Figure 12:</b>	2030 Future Total Traffic Volumes



**LAND USE SUMMARY**

LAND USE	LOTS / BLOCKS	UNITS	AREA
SINGLE DETACHED - 12.2m LOTS	001-022, 072-083	32	1.26ha
SINGLE DETACHED - 11.6m LOTS	021-025, 043-070	18	0.77ha
SINGLE DETACHED - 10.1m LOTS	026-042, 071	33	1.06ha
TOWNHOUSES - 6.5m UNITS	084-093	66	1.48ha
PARTIAL LOTS (INCLUDING BLOCKS 131-132 FROM 231 GLENELG STREET - PHASE 1 - DRAFT PLAN - MAR. 24, 2020)	094-096	(6)	0.07ha
PARK	097	-	0.35ha
WALKWAYS / TRAILS	098-100	-	0.12ha
OPEN SPACE	101	-	9.78ha
STORMWATER MANAGEMENT AREA	102	-	1.22ha
FUTURE RIGHT OF WAY	103	-	0.07ha
RIGHT OF WAY	-	-	2.18ha
<b>TOTALS</b>		<b>149 (155)</b>	<b>18.36ha</b>

**LEGAL DESCRIPTION**

PART OF LOTS 225 AND 226  
 CONCESSION 2, SOUTHWEST OF THE TORONTO AND SYDENHAM ROAD  
 TOWNSHIP OF SOUTHWEST  
 COUNTY OF GREY

**OWNER'S CERTIFICATE**

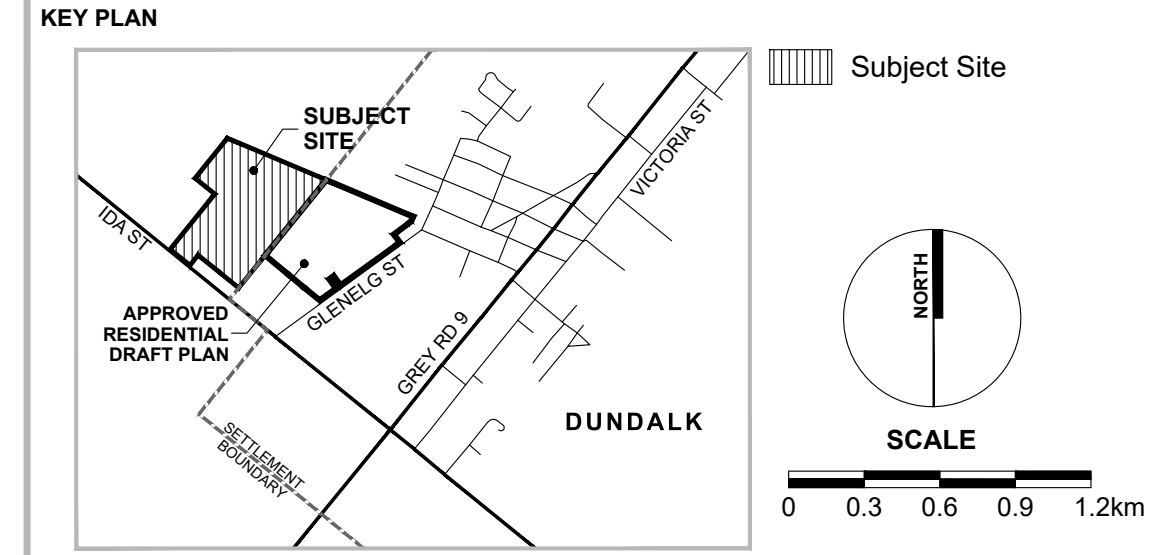
I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.

DATE: \_\_\_\_\_ SHAKIR REHMATULLAH - PRESIDENT  
 2358737 ONTARIO INC.

**SURVEYOR'S CERTIFICATE**

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: \_\_\_\_\_ DAN DZALDOV - OLS  
 SCHAEFFER DZALDOV BENNETT LTD.  
 P: 416-987-0101



**LEGEND**

— RIGHT OF WAY LINE — PROJECT BOUNDARY LINE  
 — BLOCK LINE — PARCEL FABRIC  
 — LOT LINE

**REVISION No. DATE ISSUED / REVISION BY**

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT R.S.O. 1990 C.P.13 AS AMENDED

A. AS SHOWN	E. AS SHOWN	J. AS SHOWN
B. AS SHOWN	F. AS SHOWN	K. ALL MUNICIPAL SERVICES AS REQUIRED
C. AS SHOWN	G. AS SHOWN	L. AS SHOWN
D. 83 SINGLE DETACHED LOTS & 64 TOWNHOUSE UNITS	H. MUNICIPAL WATER SUPPLY	
	I. LOAD/SILT LOAD	

**PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE MHBC PLANNING**

113 COLLIER STREET  
 8 ARIEL - ON - L4M 1H2  
 P: 705 728 0045 F: 705 728 2010  
 WWW.MHBCPLAN.COM

**STAMP**

DATE: SEPT. 24, 2020

FILE No. 15184H

SCALE: 1:1,000 (ARCH D)

DRAWN BY: M.M.

CHECKED BY: K.M.

OTHER:

**PROJECT**

**231 GLENELG STREET PHASE 2**

2358737 ONTARIO INC.  
 3621 HIGHWAY 7 EAST, SUITE 503  
 MARKHAM, ON L3R 0G6  
 P:(905) 479-9292 F:(905) 429-9165  
 WWW.FLATOGROUP.COM

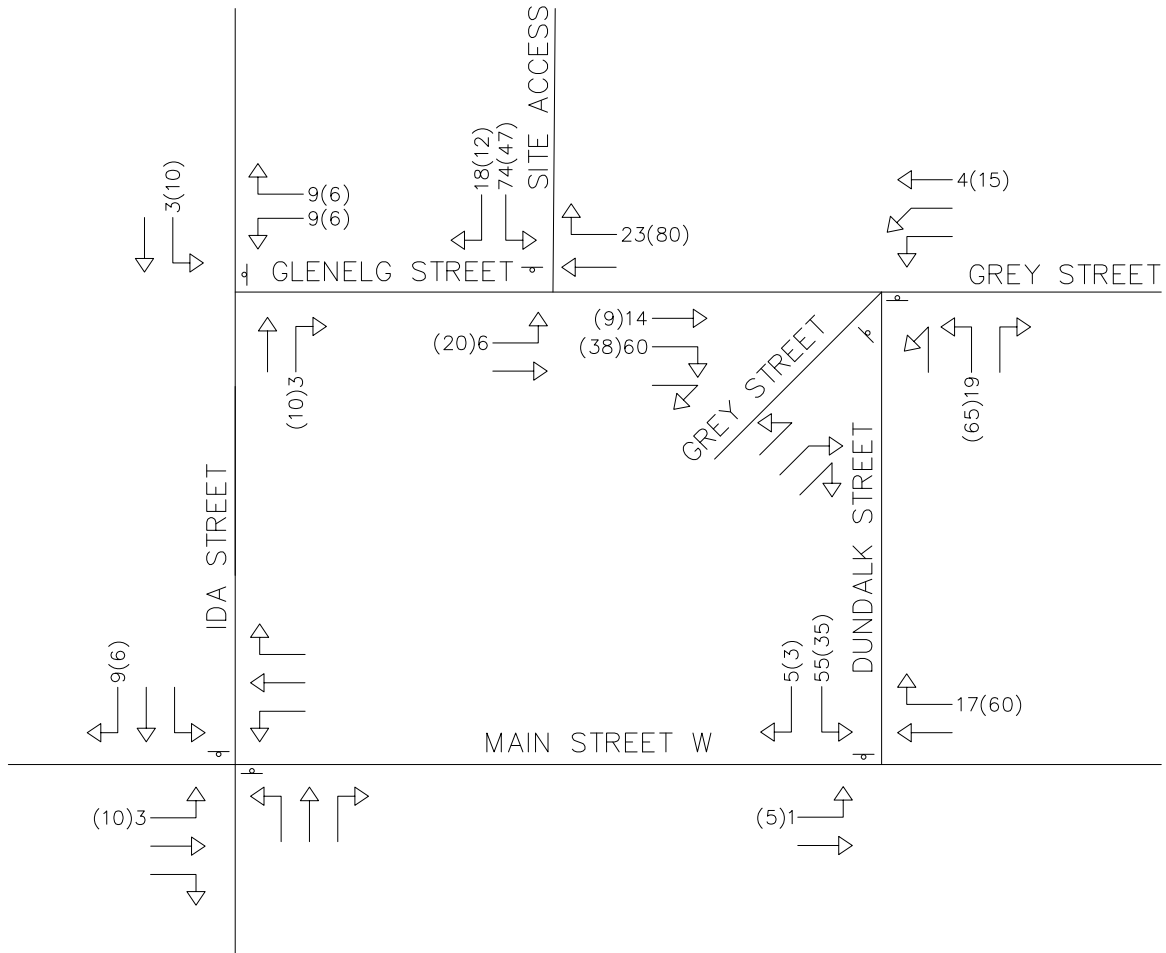
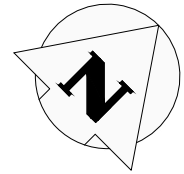
**FILE NAME** DRAFT PLAN OF SUBDIVISION **DWG No.** 1 of 1

**SCALE BAR** 0 5 10 15 20 25 37.5 50 75 100m

MEASUREMENTS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

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NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



LEGEND:  
 ↓ STOP CONTROL  
 AM(PM) WEEKDAY AM(PM) TRIP DISTRIBUTION

Project  
 GLENELG PHASE 2  
 TOWNSHIP OF SOUTHGATE

Title  
 GLENELG PHASE 1  
 BACKGROUND TRAFFIC VOLUMES

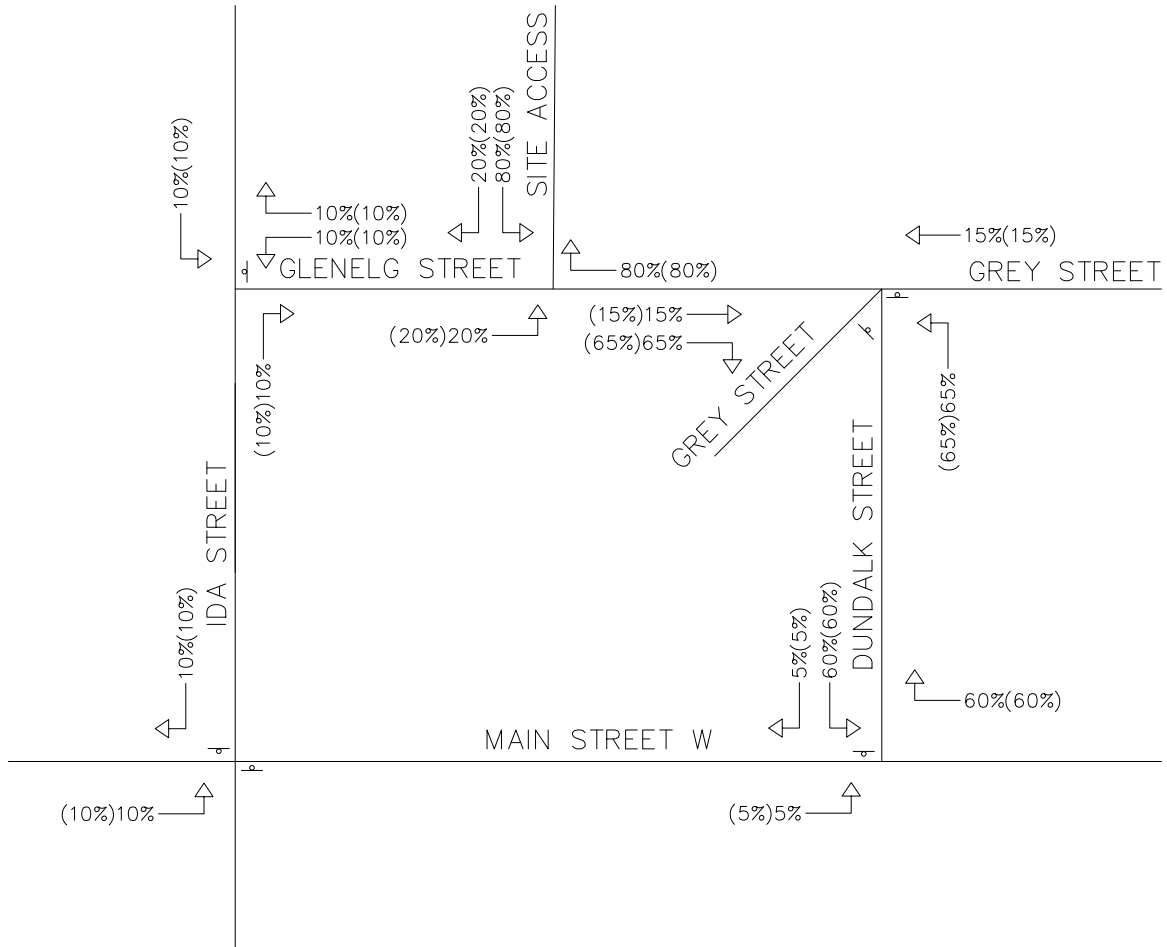
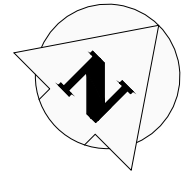



**CROZIER**  
 CONSULTING ENGINEERS

THE HARBOUREDGE BUILDING,  
 40 HURON STREET, SUITE 301,  
 COLLINGWOOD, ON L9Y 4R3  
 705 446-3510 T  
 705 446-3520 F  
 WWW.CFCROZIER.CA  
 INFO@CFCROZIER.CA

Drawn	S.K.	Design	Project No.	1060-5545	
Check	M.F.	Check	Scale	N.T.S	Dwg. FIG. 5

NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



LEGEND:  
 STOP CONTROL  
 AM(PM) WEEKDAY AM(PM)  
 TRIP DISTRIBUTION

Project  
 GLENELG PHASE 2  
 TOWNSHIP OF SOUTHGATE

Title  
 TRIP DISTRIBUTION



**CROZIER**  
 CONSULTING ENGINEERS

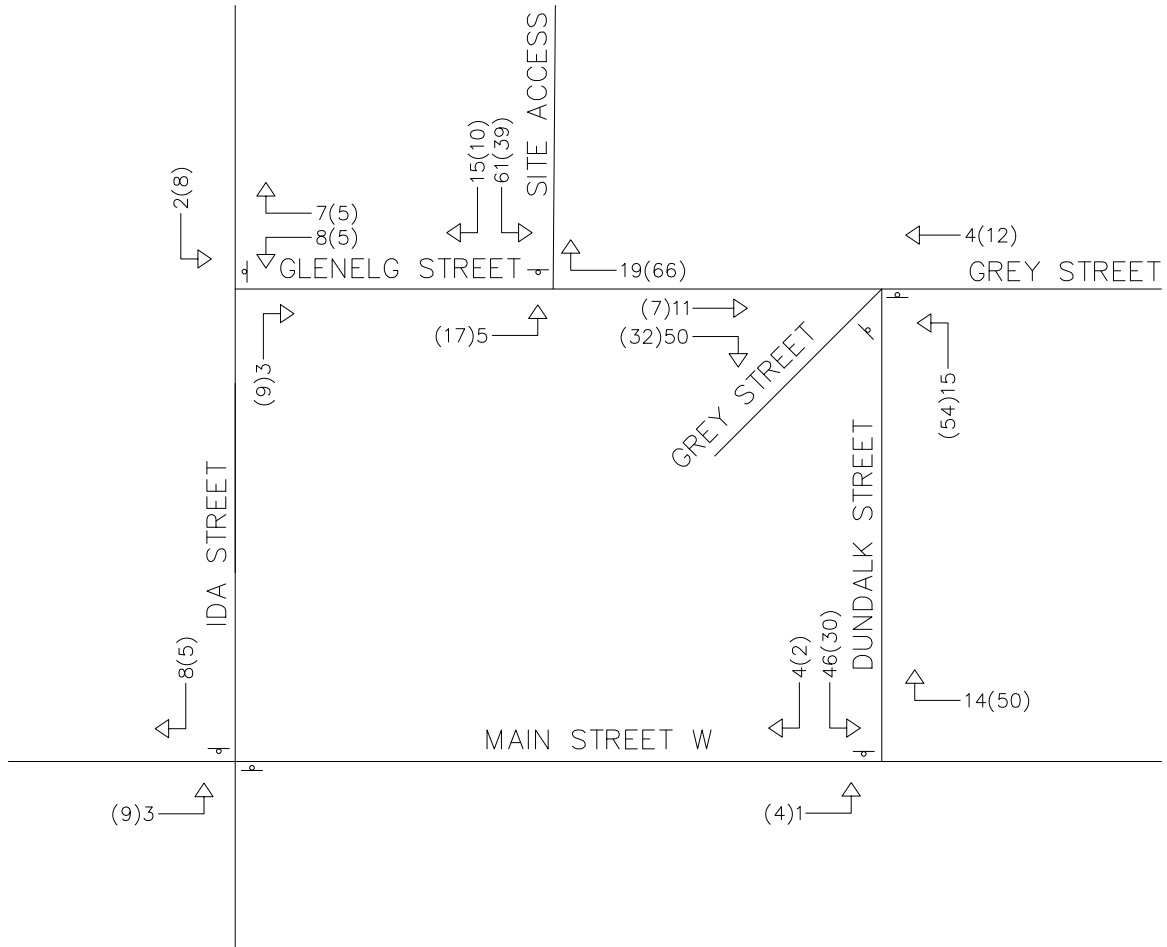
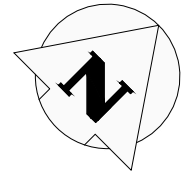
THE HARBOUREDGE BUILDING,  
 40 HURON STREET, SUITE 301,  
 COLLINGWOOD, ON L9Y 4R3  
 705 446-3510 T  
 705 446-3520 F  
 WWW.CFCROZIER.CA  
 INFO@CFCROZIER.CA

Drawn	S.K.	Design	Project No.	1060-5545
Check	M.F.	Check	Scale	N.T.S

Dwg.	FIG. 9
------	--------

**NOTE:**

THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



**LEGEND:**

⊥ STOP CONTROL  
AM(PM) WEEKDAY AM(PM)  
TRIP DISTRIBUTION

Project

GLENELG PHASE 2  
TOWNSHIP OF SOUTHGATE

Title

TRIP ASSIGNMENT



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COLLINGWOOD, ON L9Y 4R3  
705 446-3510 T  
705 446-3520 F  
WWW.CFCROZIER.CA  
INFO@CFCROZIER.CA

Drawn	S.K.	Design	Project No.	1060-5545	
Check	M.F.	Check	Scale	N.T.S	Dwg. FIG. 10



WHITE ROSE (PHASE 3)  
PLAN OF SUBDIVISION

TOWNSHIP OF SOUTHGATE (DUNDALK)  
GREY COUNTY  
TRAFFIC IMPACT STUDY

SEPTEMBER, 2020



**TRITON  
ENGINEERING  
SERVICES  
LIMITED**  
Consulting Engineers

18 Robb Boulevard, Unit 8  
Orangeville, Ontario  
L9W 3L2  
Tel: (519) 941-0330  
Fax: (519) 941-1830  
ORANGEVILLE X FERGUS X GRAVENHURST X HARRISTON

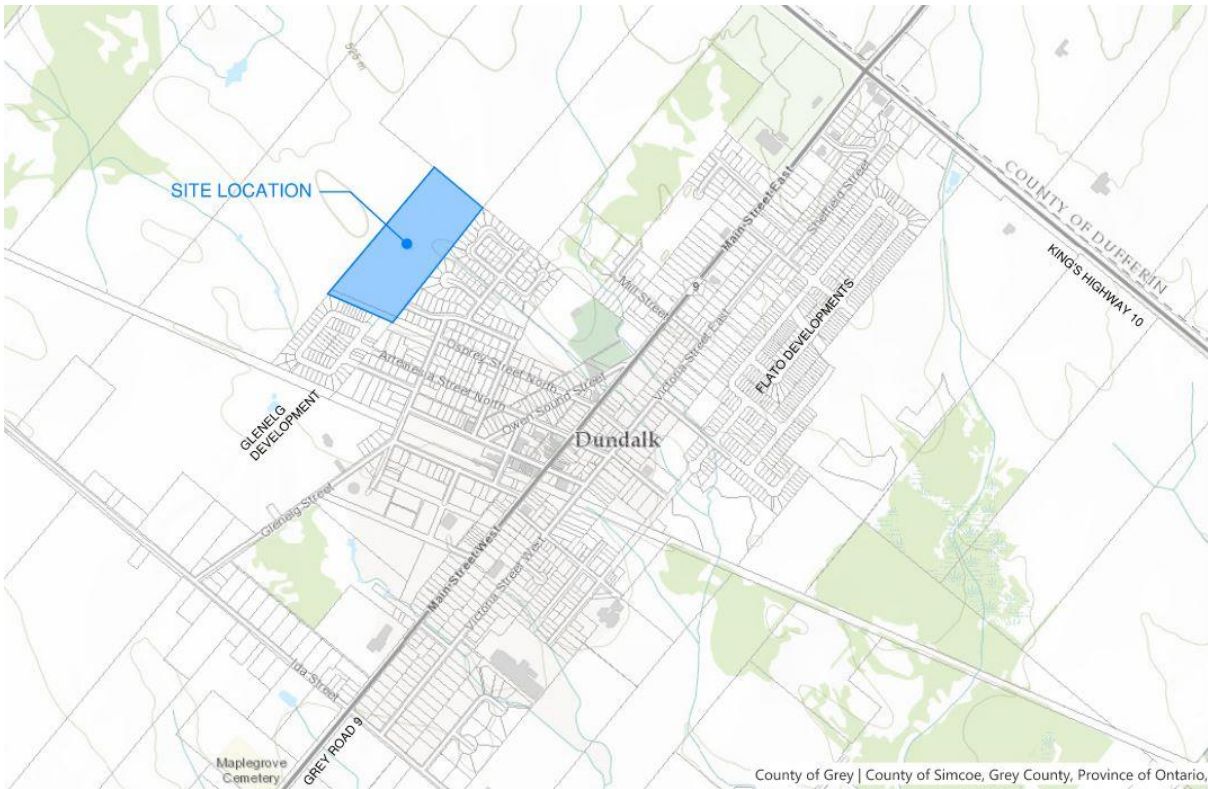
### 1.0 INTRODUCTION

Triton Engineering Services Limited (TESL) has been retained by White Rose Park to prepare a Traffic Impact Study (TIS) in support of a Draft Plan Application for a proposed residential development located in the Community of Dundalk, Township of Southgate. The purpose of this study is to address the impact of this development on Grey Road 9 (Main Street East) and to determine what road and intersection improvements may be required.

### 2.0 EXISTING CONDITIONS

#### 2.1 Road Network

The proposed site is located on the northwest side of Dundalk at the end of Bradley Street. The location of the proposed site is shown on the Key Plan below.



Key Plan

The road network in Dundalk has a skewed orientation. To provide clarity throughout this study, King’s Highway 10, Osprey Street, Artemesia Street, Proton Street, Dundalk Street, and Ida Street have been designated as north-south roads and Glenelg Street and Grey Road 9 (Main Street) have been designated as east-west roads.

### 3.0 PROPOSED DEVELOPMENT

MHBC have provided a draft plan of subdivision, enclosed in Appendix A.

The proposed development consists of 33 single-family dwellings, 24 townhouses, and 34 senior dwellings. The development has two proposed accesses, with 'Street A' connecting to Todd Crescent (Phase 1/2 of White Rose Park) and 'Street B' connecting to the north end of Bradley Street.

### 4.0 EXISTING TRAFFIC

Weekday morning and afternoon peak period traffic counts were undertaken as part of the Glenelg Residential Subdivision TIS in 2018 by C.F. Crozier & Associates Inc. (Crozier) at the intersection of Glenelg Street and Ida Street, the intersection of Grey Road 9 and Ida Street, and the intersection of Grey Road 9 and Dundalk Street. Since these counts were undertaken, there have been no major developments in the surrounding area and are considered acceptable. The traffic volumes were converted into 2020 existing traffic volumes by applying a 1.5% growth rate. This growth rate is consistent with the Glenelg development TIS and the Flato development TIS conducted in 2016 by Crozier.

A traffic count was undertaken at the intersection of Owen Sound Street and Grey Road 9 during the morning and afternoon peak periods on September 8, 2020. Traffic counts were not undertaken at the Proton Street and Artemesia Street intersections with Grey Road 9 as the increase to traffic volumes generated by White Rose Park at these intersections is expected to be very minor, as shown in Figure 5. It is assumed that if increased traffic volumes can be accommodated by the Dundalk Street and Grey Road 9 intersection, then the Proton Street and Artemesia Street intersections will also be able to accommodate the increased traffic volumes.

The existing peak hours for the four intersections and their respective traffic volumes are illustrated on Figure 1 and Table 1 lists the peak hours for each traffic count.

**Table 1: Peak Hours**

Intersection	Peak Hour
Ida Street and Glenelg Street	8:00-9:00 am
	4:15-5:15 pm
Grey Road 9 and Ida Street	7:45-8:45 am
	5:00-6:00 pm
Grey Road 9 and Dundalk Street	8:00-9:00 am
	5:00-6:00 pm
Grey Road 9 and Owen Sound Street	8:00-9:00 am
	4:15-5:15 pm

Intersection	Movement	Level of Service (Delay, s)	
		Weekday AM	Weekday PM
<b>Grey Road 9 and Owen Sound Street (Unsignalized)</b>	EB left-thru	A (0.1)	A (0.1)
	WB thru-right	A (0.0)	A (0.0)
	SB left-right	B (14.0)	C (17.4)

The levels of service remain consistent for most movements due to the increase in traffic volumes during the 2025 and 2030 years with slightly increased delays. The northbound movement at the Ida Street and Grey Road 9 intersection operates at a LOS 'B' during the 2025 AM peak hour, the southbound movement at the Grey Road 9 and Dundalk Street operates at a LOS 'B' during the 2025 AM and PM peak hours, and the southbound movement at the Grey Road 9 and Owen Sound Street intersection operates at a LOS 'C' during the 2025 PM peak hour. All movements are still operating with acceptable delays.

## 6.0 SITE GENERATED TRAFFIC

### 6.1 General

Trip generation is forecast for future developments from studies of similar developments. The *Institute of Transportation Engineers (ITE) Trip Generation Manual, 8<sup>th</sup> Edition* was used in this analysis. Trips generated from residential condominium/townhouse land uses are considered primary trips.

### 6.2 Trip Generation

The ITE Code and the calculated number of trips generated by the development are shown in Table 5.

**Table 5: Trip Generation Codes and Distribution**

Land Use	ITE Code	Description	Trips Generated per Unit					
			Weekday AM			Weekday PM		
			Total	Entering	Exiting	Total	Entering	Exiting
Residential	210	Single-Family Detached Housing	31	8	23	36	23	13
Residential	230	Residential Condominium/Townhouse	17	3	14	19	13	6
Residential	252	Senior Adult Housing – Attached	5	2	3	6	5	1
<b>Development Total</b>			<b>53</b>	<b>13</b>	<b>40</b>	<b>61</b>	<b>41</b>	<b>20</b>

The trip distribution used by the Glenelg and Flato Developments was applied to the White Rose Phase 3 development and is described below:

- 60% to/from Highway 10 via the Owen Sound Street/Grey Road 9 intersection;
- 10% to/from the north via the Ida Street/Glenelg Street intersection;
- 10% to/from the west via Dundalk Street and Grey Road 9; and,
- 20% to/from downtown Dundalk via Dundalk Street, Proton Street, Artemesia Street, and Osprey Street.

This distribution is illustrated on Figure 4 and the trips assigned to the road network is illustrated on Figure 5.

## 7.0 FUTURE TRAFFIC

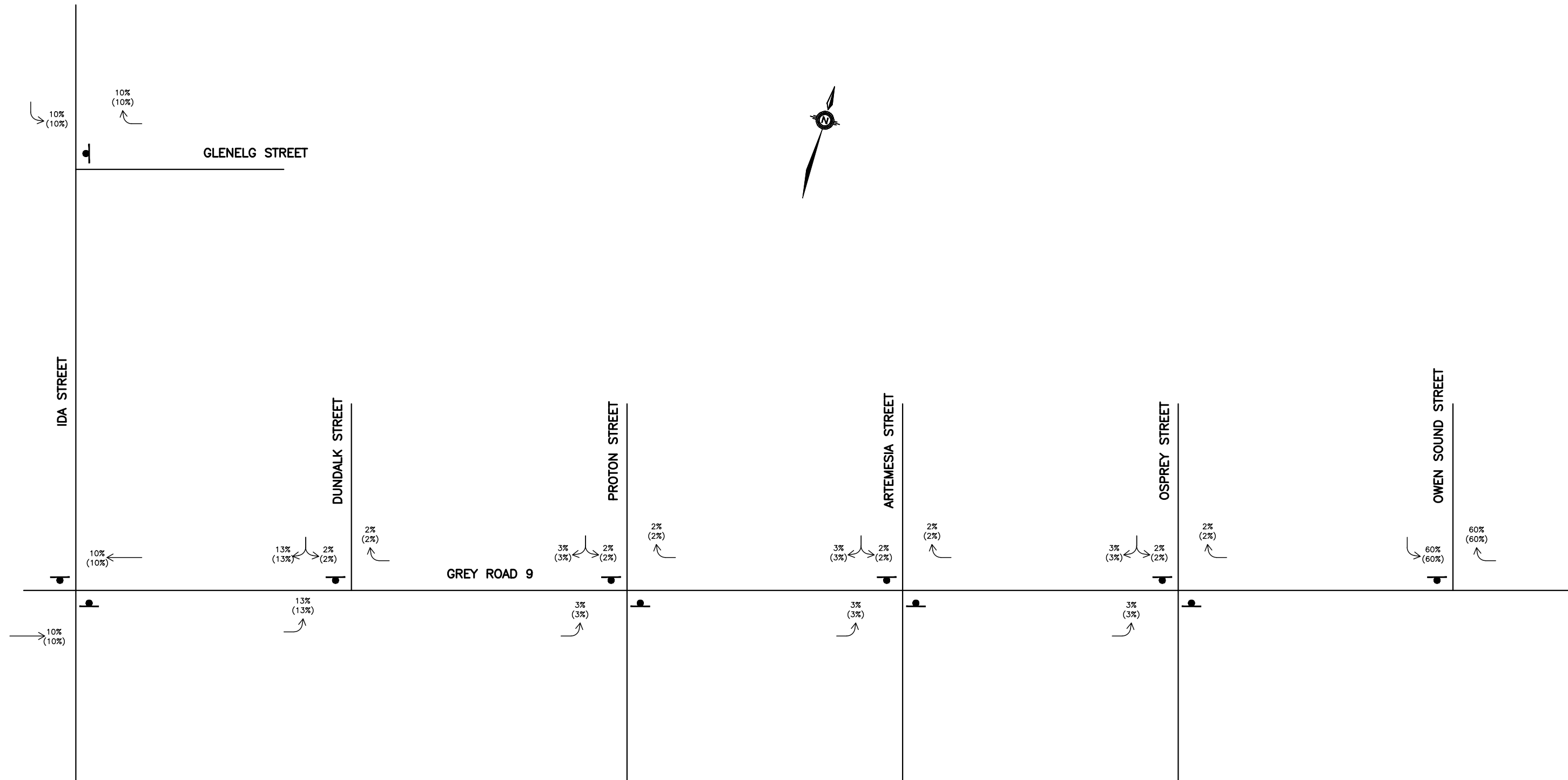
The total development generated traffic was added to the 2025 and 2030 background traffic volumes to determine the total 2025 and 2030 future peak hour traffic, as illustrated in Figures 6 and 7, respectively.

### 7.1 Level of Service Analysis

A level of service analysis was carried out to determine the impact of the trips generated by the development on the existing intersections during the Weekday AM and PM peak hours. The detailed capacity analyses are included in Appendix C. Table 6 and Table 7 summarize the future levels of service for 2025 and 2030 respectively.

**Table 6: 2025 Future Traffic Level of Service**

Intersection	Movement	Level of Service (Delay, s)	
		Weekday AM	Weekday PM
<b>Ida Street and Glenelg Street (Unsignalized)</b>	EB left-right	A (8.8)	A (8.9)
	NB thru-right	A (0.0)	A (0.0)
	SB thru-left	A (2.7)	A (3.2)
<b>Ida Street and Grey Road 9 (Unsignalized)</b>	EB left-thru-right	A (0.5)	A (0.9)
	WB left-thru-right	A (1.7)	A (0.7)
	NB left-thru-right	B (10.2)	B (12.9)
	SB left-thru-right	B (11.4)	B (13.3)
<b>Grey Road 9 and Dundalk Street (Unsignalized)</b>	EB left-thru	A (0.7)	A (0.5)
	WB thru-right	A (0.0)	A (0.0)
	SB left-right	B (12.6)	B (13.7)
<b>Grey Road 9 and Owen Sound Street (Unsignalized)</b>	EB left-thru	A (0.1)	A (0.1)
	WB thru-right	A (0.0)	A (0.0)
	SB left-right	B (14.2)	C (17.5)



**LEGEND:**

— T STOP CONTROL

→ TRAFFIC FLOW

25 am Peak  
(25) pm Peak

●

TRAFFIC VOLUMES

TRAFFIC SIGNALS

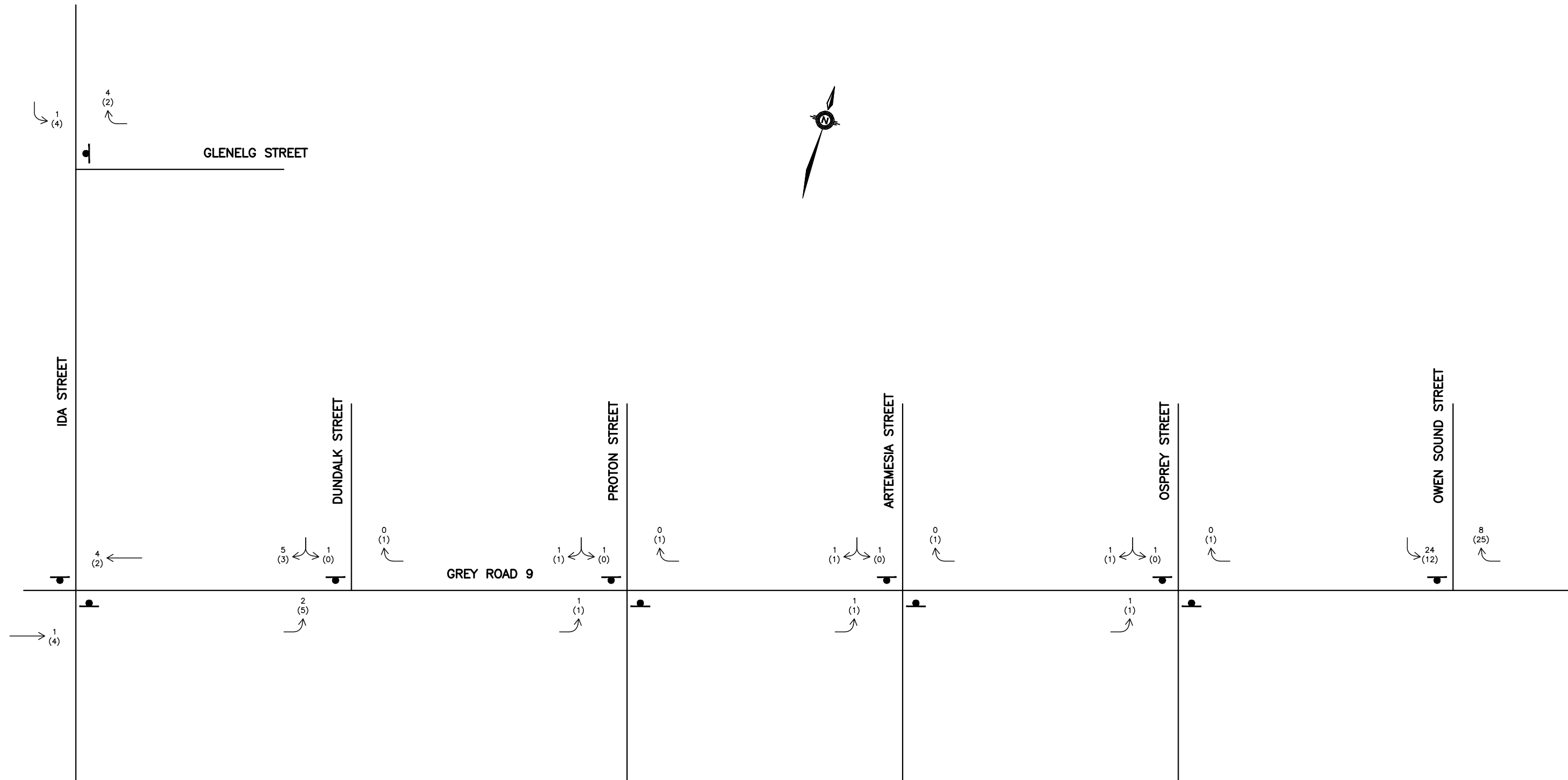
— EXISTING ROAD

- - PROPOSED ENTRANCE



**TRITON ENGINEERING SERVICES LIMITED**  
Consulting Engineers

FIGURE 4:  
**DEVELOPMENT PEAK HOUR TRIP ASSIGNMENT**  
(NOT TO SCALE)



**LEGEND:**

— STOP CONTROL

→ TRAFFIC FLOW

25 am Peak  
(25) pm Peak

●

TRAFFIC VOLUMES

TRAFFIC SIGNALS

— EXISTING ROAD

- - PROPOSED ENTRANCE



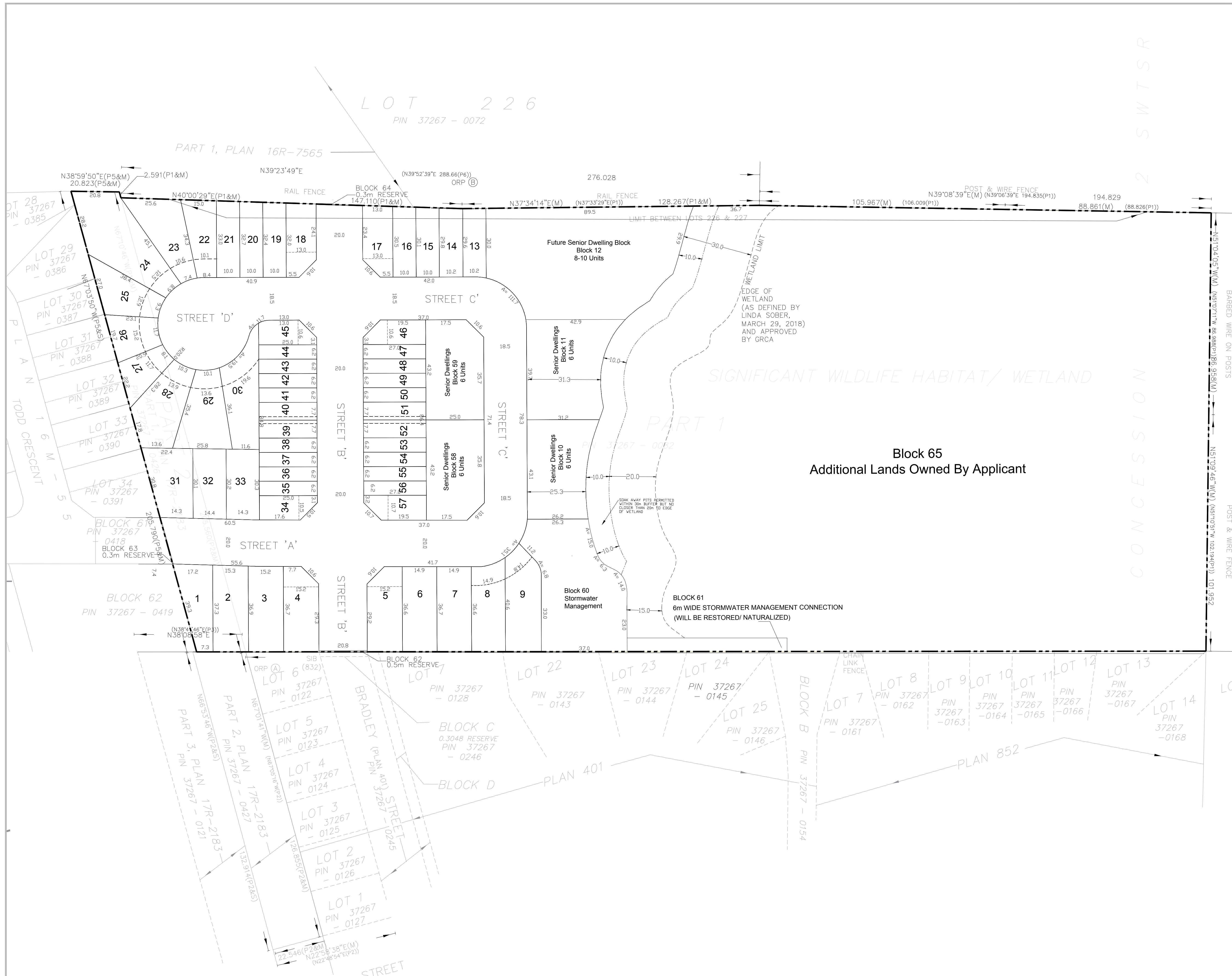
**TRITON ENGINEERING SERVICES LIMITED**  
Consulting Engineers

FIGURE 5:  
**DEVELOPMENT PEAK HOUR TRIP DISTRIBUTION**  
(NOT TO SCALE)

**APPENDIX A**

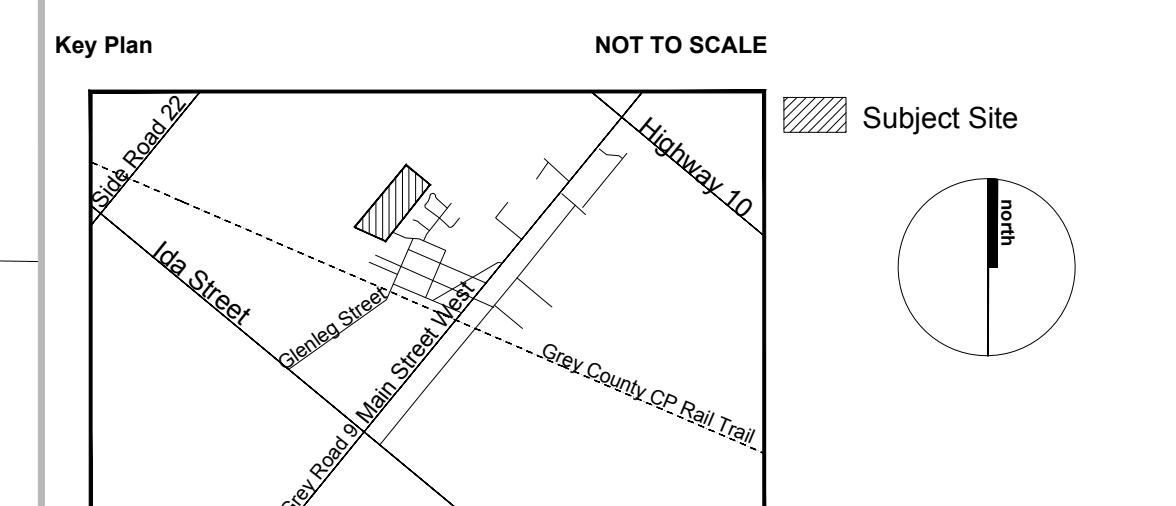
**Draft Plan of Subdivision**





**Legal Description**  
PART OF LOT 227, CONCESSION 2 SWTSR  
PART 1 17R2183 AND AS IN R480846  
(VILLAGE OF DUNDALK)  
NOW IN THE TOWNSHIP OF SOUTHGATE  
(GEOGRAPHIC TOWNSHIP OF PROTON)  
COUNTY OF GREY

**Owner's Certificate**  
I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.  
DATE: \_\_\_\_\_  
DOMINIC DE PALMA  
2570970 ONTARIO INC.



**Legend**

Revision No.	Date	Issued / Revision	By
A. As Shown		B. As Shown	C. As Shown
D. Residential, Stormwater Management		F. As Shown	G. As Shown
I. Listowel Silt Loam		J. As Shown	K. All Services As Required

**Area Schedule**

Description	Lots/Blocks	Units	Area
40' (12.2m) Single Detached	14-31-33	12	0.64ha (1.57ac)
30' (10.0m) Single Detached	13-30	18	0.80ha (1.98ac)
19.5' (6.0m) Townhouses	34-57	24	0.44ha (1.09ac)
Senior Dwelling Blocks (20' (6.2m))	Block 10-11, 58-59	24	0.47ha (1.17ac)
Future Senior Dwelling Block	Block 12	8-10	0.36ha (0.89ac)
Roads	Street 'A', Street 'D'		1.14ha (2.82ac)
Stormwater Management	Block 60		0.19ha (0.48ac)
6m Stormwater Management Connection	Block 61		0.04ha (0.10ac)
Additional Lands Owned by Applicant	Block 65		4.79ha (11.84ac)
0.3m & 0.5m Reserve	Block 62-64		0.01ha (0.02ac)
		86-88	8.88ha (21.94ac)

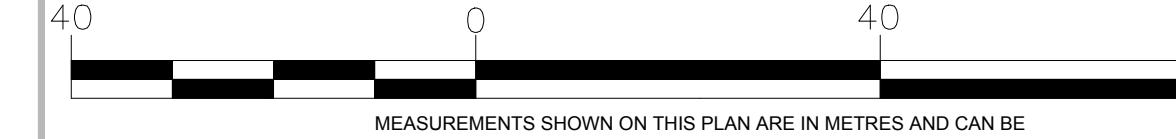


**MHBC** PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE  
230-7050 WESTON ROAD WOODBRIDGE, ON, L4L 8G7 | P: 905 761 5588 F: 905 761 5589 | WWW.MHBCPLAN.COM

Date	May 11, 2020
File No.	13126B
Plan Scale	1:750
Drawn By	T.H.
Checked By	D.K & A.P.
Other	

**Project**  
Part of Lot 227 Concession 2,  
Township of Southgate,  
County of Grey

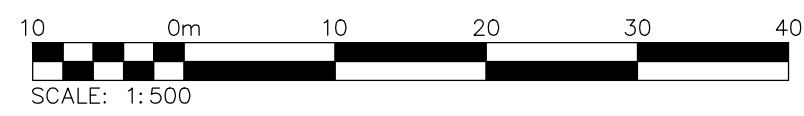
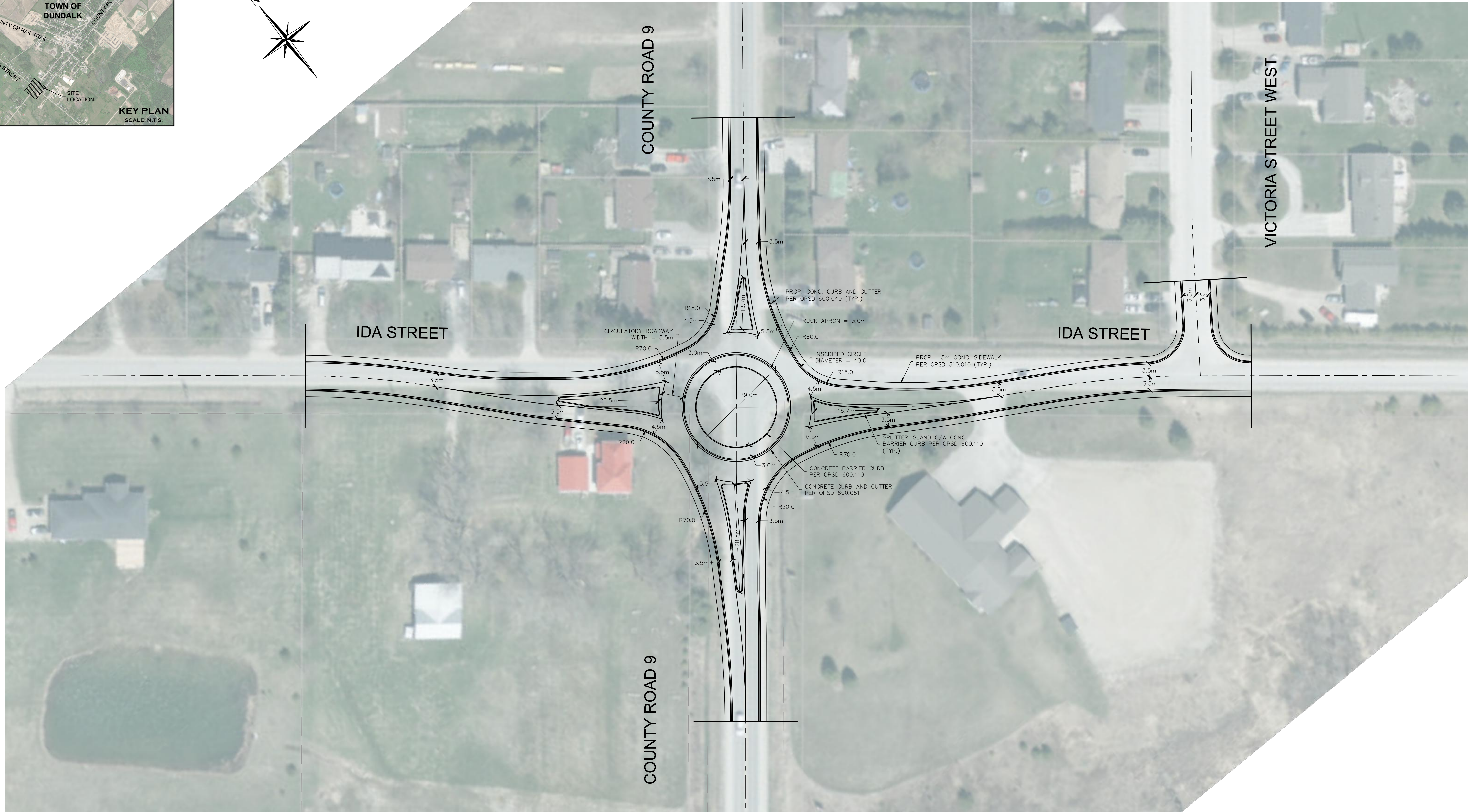
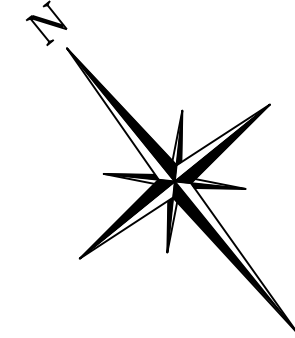
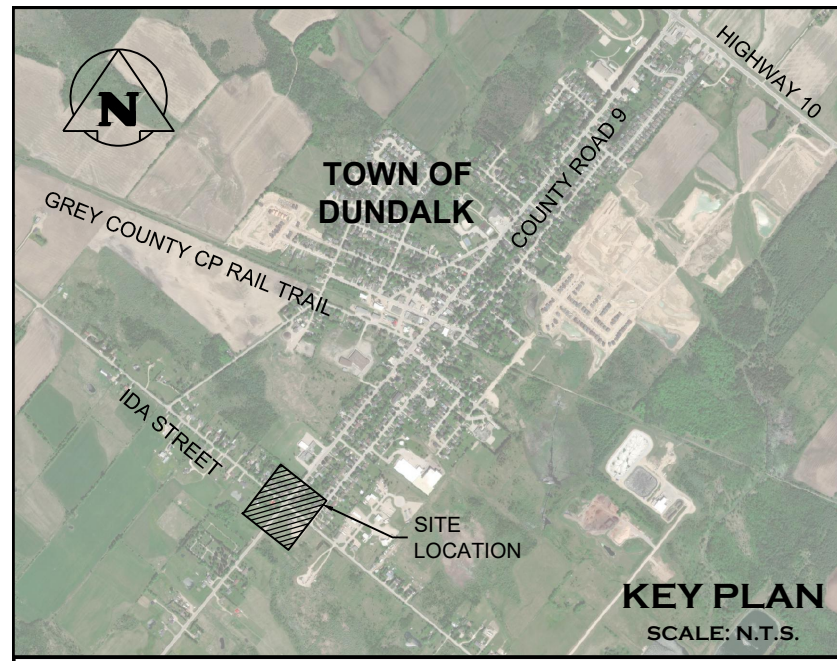
**File Name** DRAFT PLAN OF SUBDIVISION **Dwg No.** 1 of 1



MEASUREMENTS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

# APPENDIX G

## Roundabout Concept

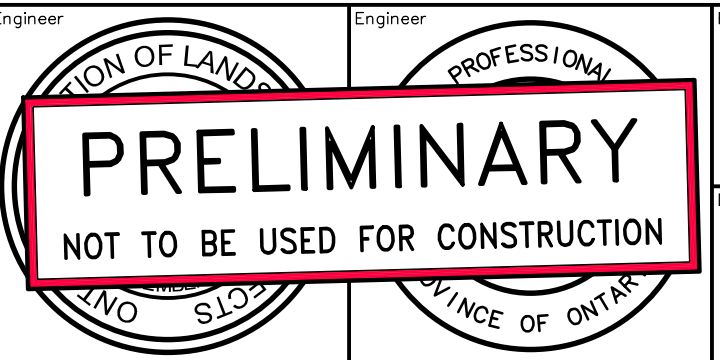


1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.
3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.
4. DO NOT SCALE THE DRAWINGS.
5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

TEMPORARY BENCHMARKS	
TBM#1-	
TBM#2-	
TBM#3-	
***ADD REFERENCE TO SURVEY/SOURCE	

No.	ISSUE	DATE: MMM/DD/YYYY
1.	ISSUED FOR TOWN REVIEW	08/22/2022

Engineer	Project



GLENELG EXPANSION LANDS  
TOWN OF DUNDALK

CONCEPTUAL ROUNDABOUT PLAN

ADMIRAL BUILDING  
1 FIRST STREET, SUITE 200  
COLLINGWOOD, ON, L9Y 1A1  
705-446-3810 T  
705-446-3520 F  
WWW.CFCROZIER.CA  
INFO@CFCROZIER.CA

Drawn By	Design By	Project
DE	DE	1060-5590
Check By	Check By	Scale
SH	MF	1:500

FIG.1

# APPENDIX H

## ITE 11<sup>th</sup> Edition Trip Generation Excerpts

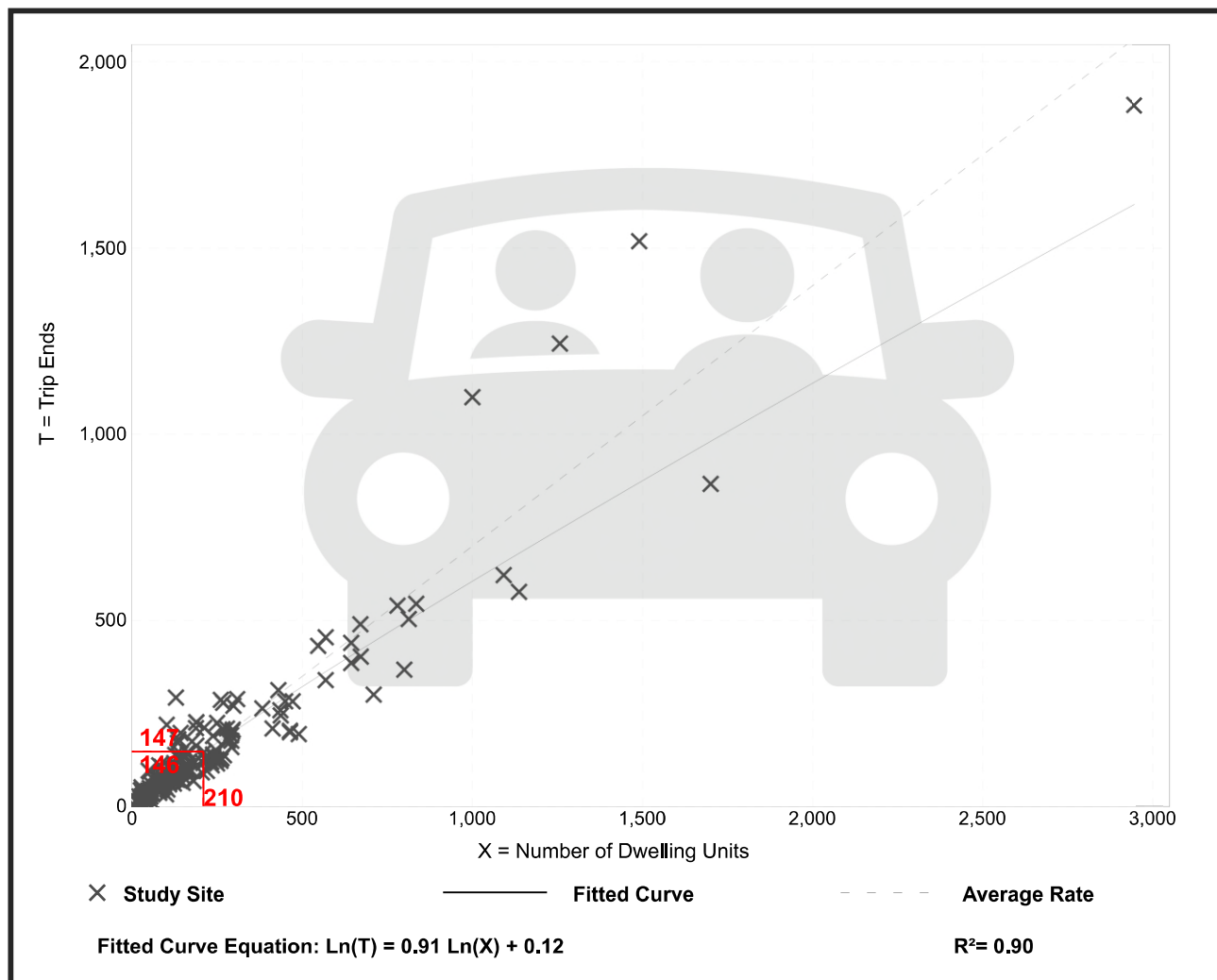
# Single-Family Detached Housing (210)

**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 192  
 Avg. Num. of Dwelling Units: 226  
 Directional Distribution: 25% entering, 75% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

## Data Plot and Equation



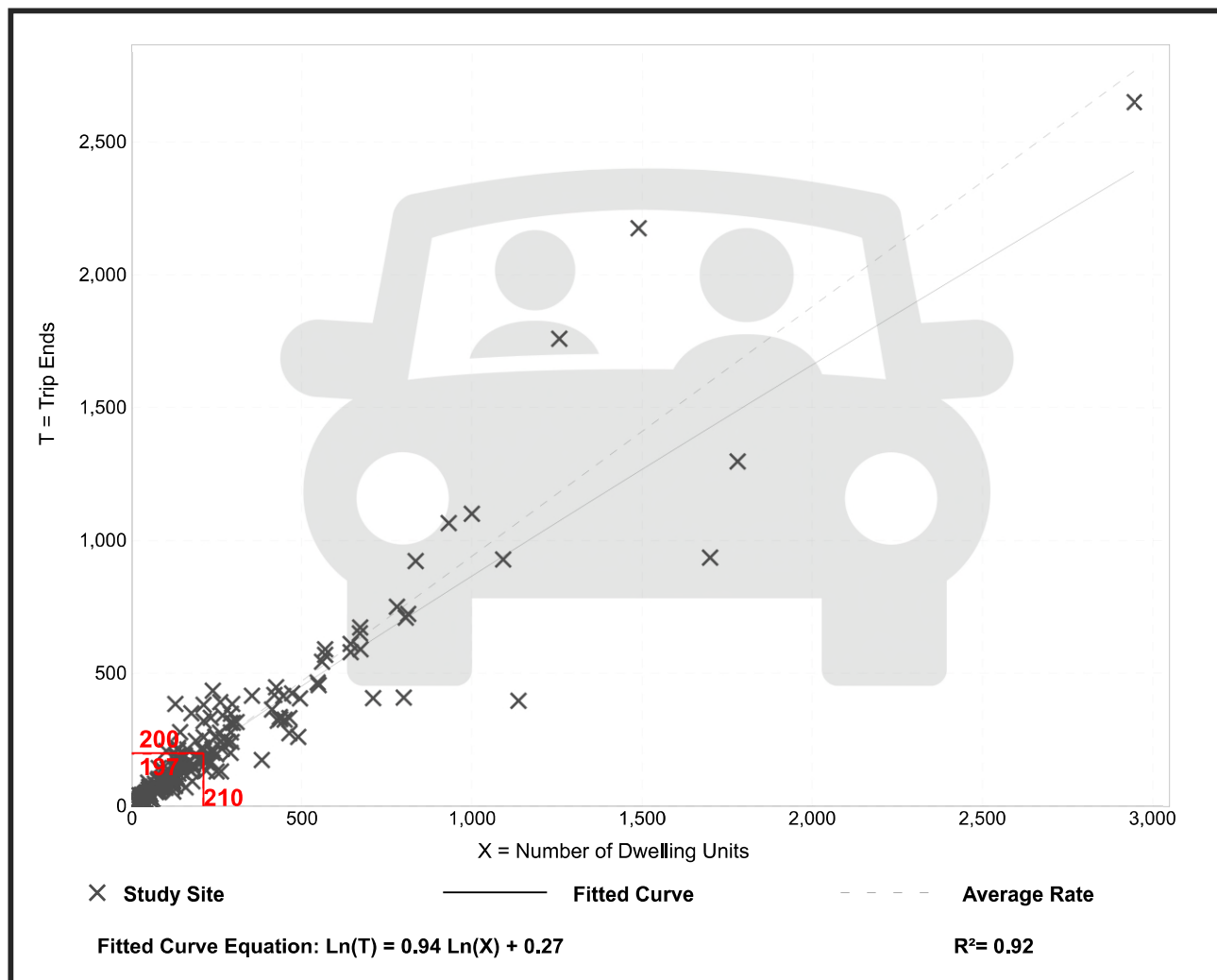
# Single-Family Detached Housing (210)

**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 208  
 Avg. Num. of Dwelling Units: 248  
 Directional Distribution: 63% entering, 37% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

## Data Plot and Equation



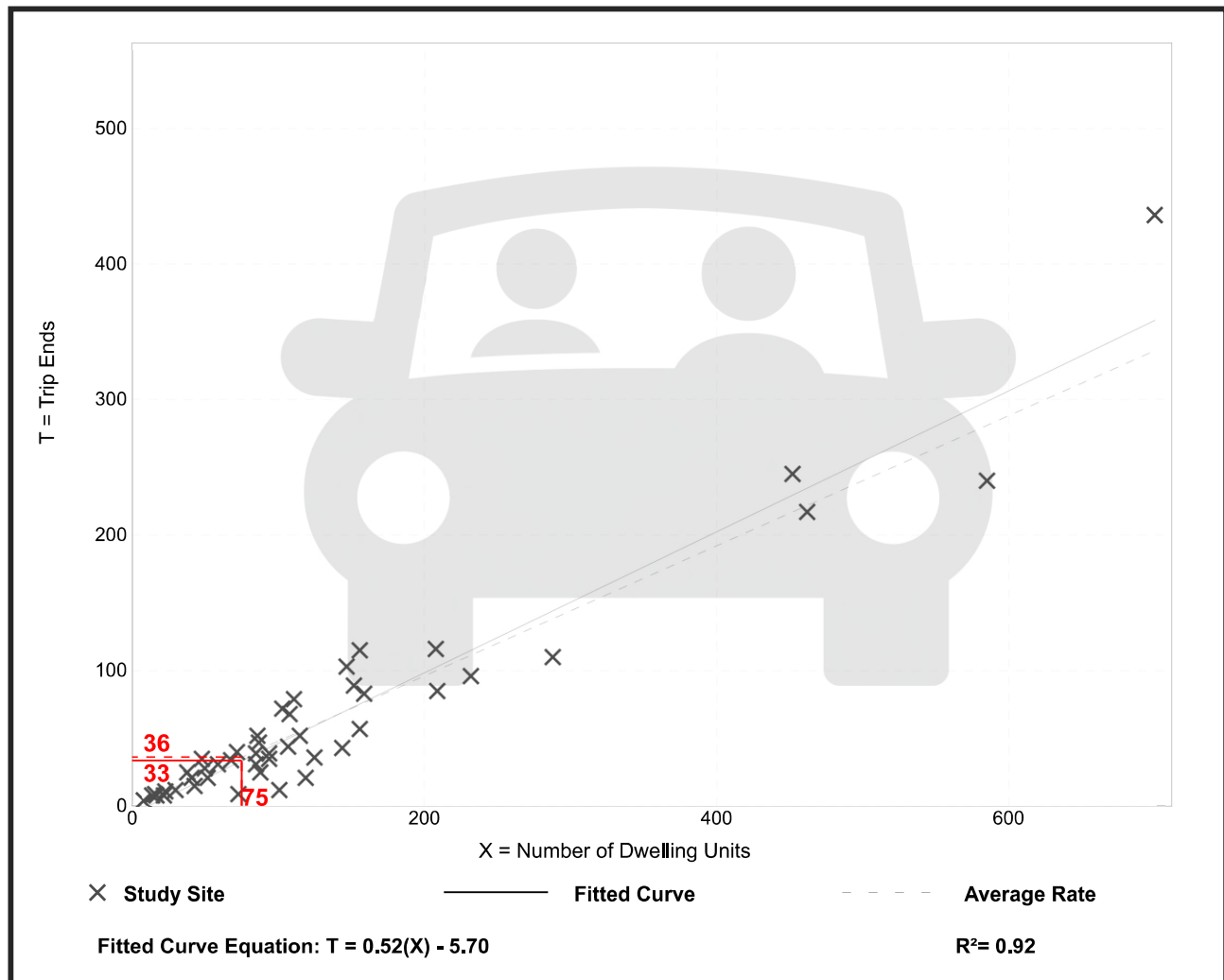
# Single-Family Attached Housing (215)

**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 46  
 Avg. Num. of Dwelling Units: 135  
 Directional Distribution: 25% entering, 75% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.48	0.12 - 0.74	0.14

## Data Plot and Equation



# Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,  
Peak Hour of Adjacent Street Traffic,  
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 51

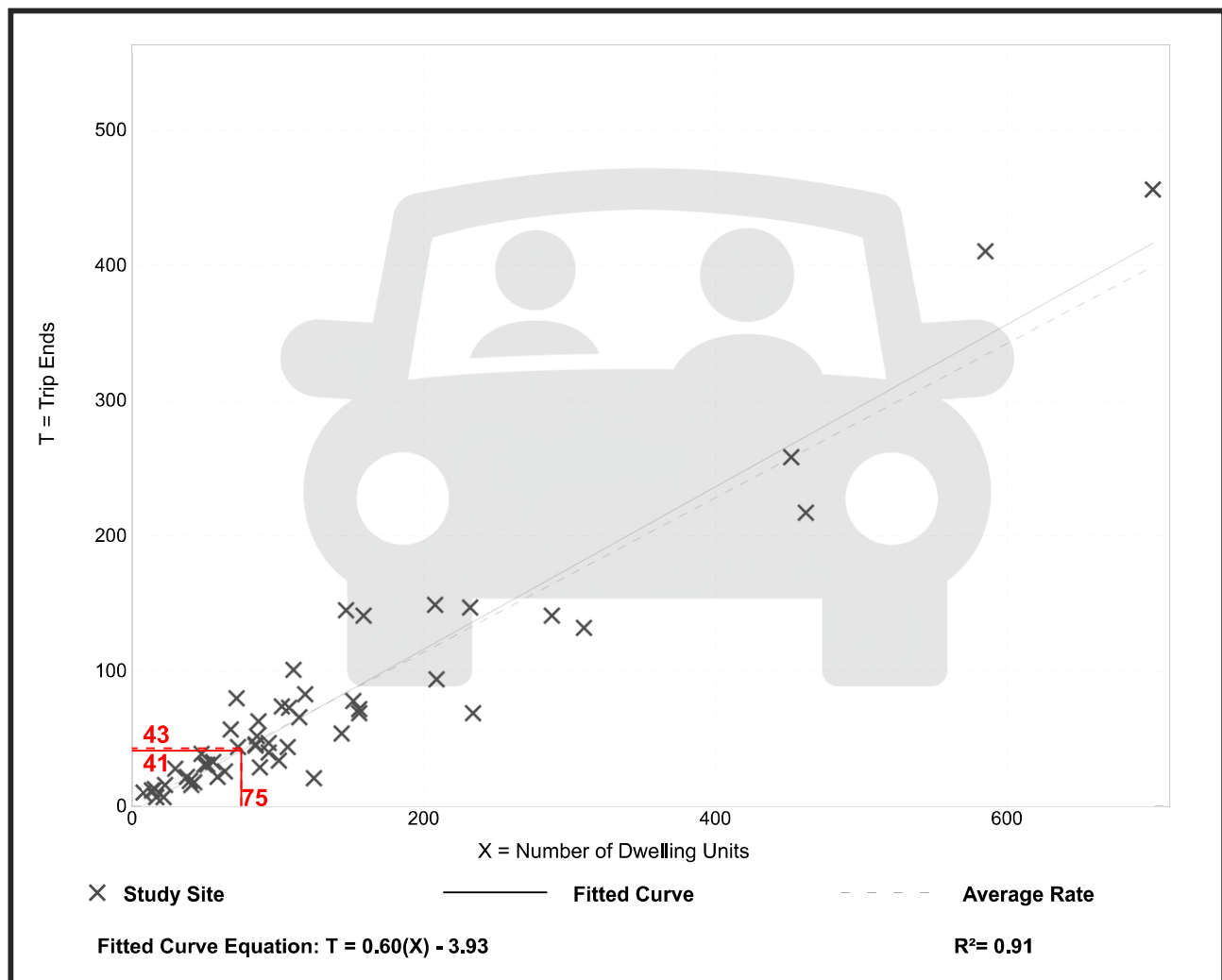
Avg. Num. of Dwelling Units: 136

Directional Distribution: 59% entering, 41% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.17 - 1.25	0.18

## Data Plot and Equation









# APPENDIX I

## TTS Data

Sun Sep 23 2018 09:40:11 GMT-0400 (Eastern Daylight Time) - Run Time: 2015ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of destination - pd\_dest

Column: Planning district of origin - pd\_orig

Filters:

Planning district of orig

and

Primary travel mode of

and

Start time of trip - start\_time In 600-1000

Trip 2016

Table:

	Melancthc Direction
PD 1 of Toronto	25 Southeast
PD 9 of Toronto	7 Southeast
Brampton	48 Southeast
Mississauga	13 Southeast
Woolwich	6 West
City of Guelph	22 West
Erin	49 Southeast
Orangeville	65 Southeast
Barrie	213 East
New Tecumseth	22 Southeast
Adjala-Tosorontio	12 Southeast
Essa	6 Southeast
Grey	6 Northwest
Wasaga Beach	39 East
Mulmur	143 Southeast
Shelburne	189 Southeast
Amaranth	18 Southwest
Melancthon	81 Southeast

Row Labels	Sum of Melancthon	Percentage
East	252	26.14%
Northwest	6	0.62%
Southeast	660	68.46%
Southwest	18	1.87%
West	28	2.90%
<b>Grand Total</b>	<b>964</b>	<b>100.00%</b>

Sun Sep 23 2018 09:50:44 GMT-0400 (Eastern Daylight Time) - Run Time: 1974ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of destination - pd\_dest

Column: Planning district of origin - pd\_orig

Filters:

Planning district

and

Primary travel r

and

Start time of trip - start\_time In 1600-1900

Trip 2016

Table:

	Melancthc Direction
New Tecumseth	48 Southeast
Mulmur	7 Southeast
Shelburne	44 Southeast
Amaranth	34 Southeast
Melancthon	169 Southeast
Mono	24 Southeast
Grand Valley	10 Southwest

Row Labels	Sum of Melancthon	Percentage
Southeast	326	97.02%
Southwest	10	2.98%
<b>Grand Total</b>	<b>336</b>	<b>100.00%</b>

Sun Sep 23 2018 10:02:14 GMT-0400 (Eastern Daylight Time) - Run Time: 1947ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd\_orig

Column: Planning district of destination - pd\_dest

Filters:

Planning district

and

Primary travel r

and

Start time of trip - start\_time In 600-1000

Trip 2016

Table:

	Melancthc Direction
Orangeville	15 Southeast
Barrie	76 East
Shelburne	104 Southeast
Amaranth	34 Southwest
Melancthon	81 Southeast
Mono	12 Southeast
Grand Valley	10 Southwest

Row Labels	Sum of Melancthon	Percentage
East	76	22.89%
Southeast	212	63.86%
Southwest	44	13.25%
<b>Grand Total</b>	<b>332</b>	<b>100.00%</b>

Sun Sep 23 2018 10:01:50 GMT-0400 (Eastern Daylight Time) - Run Time: 1910ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd\_orig

Column: Planning district of destination - pd\_dest

Filters:

Planning district

and

Primary travel r

and

Start time of trip - start\_time In 1600-1900

Trip 2016

Table:

	Melancthc Direction
PD 9 of Torontc	7 Southeast
Brampton	48 Southeast
Mississauga	35 Southeast
City of Guelph	22 West
Orangeville	205 Southeast
Essa	6 Southeast
Wasaga Beach	67 East
Mulmur	48 Southeast
Shelburne	44 Southeast
Melancthon	169 Southeast
Mono	48 Southeast

Row Labels	Sum of Melancthon	Percentage
East	67	9.59%
Southeast	610	87.27%
West	22	3.15%
<b>Grand Total</b>	<b>699</b>	<b>100.00%</b>

# APPENDIX J

## Signal Warrants

# Input Data Sheet

Analysis Sheet

Results Sheet

Proposed Collision

What are the intersecting roadways?

Dundalk and Main Street

GO TO Justification:

What is the direction of the Main Road street?

East-West

When was the data collected?

2032 FT

## Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road?

1

b.- Number of lanes on the Minor Road?

1

c.- How many approaches?

3

d.- What is the operating environment?

Urban

Population >= 10,000

AND

Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
7:00	0	128	0	0	0	0	0	136	28	42	0	5	0
8:00	18	175	0	0	0	0	0	163	25	84	0	22	4
9:00	54	278	0	0	0	0	0	243	58	105	0	74	25
12:00	23	207	0	0	0	0	0	174	36	105	0	29	7
13:00	79	302	0	0	0	0	0	233	121	110	0	32	60
16:00	32	308	0	0	0	0	0	267	182	74	0	47	19
17:00	22	279	0	0	0	0	0	233	136	68	0	36	14
18:00	36	192	0	0	0	0	0	124	257	58	0	11	14
<b>Total</b>	<b>264</b>	<b>1,869</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,573</b>	<b>843</b>	<b>646</b>	<b>0</b>	<b>256</b>	<b>143</b>

## Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	0
13-24	0
25-36	0

\* Include only collisions that are susceptible to correction through the installation of traffic signal control

## Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	81	0	0	0	0	0	0	
Factored 8 hour pedestrian volume	81		0		0		0		
% Assigned to crossing rate	23%		34%		30%		100%		
Net 8 Hour Pedestrian Volume at Crossing									19
Net 8 Hour Vehicular Volume on Street Being Crossed									2,000

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
Total 8 hour pedestrian volume	0	81	0	0	0	0	0	0	
Total 8 hour pedestrians delayed greater than 10 seconds	10	10	1	6	2	4	0	0	
Factored volume of total pedestrians	81		0		0		0		
Factored volume of delayed pedestrians	30		8		8		0		
% Assigned to Crossing Rate	23%		34%		30%		100%		
Net 8 Hour Volume of Total Pedestrians									19
Net 8 Hour Volume of Delayed Pedestrians									12

**Justification 1: Minimum Vehicle Volumes**

**Restricted Flow Urban Conditions**

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 Lanes		2 or More Lanes		Hour Ending									
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	7:00	8:00	9:00	12:00	13:00	16:00	17:00	18:00		
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
1A	480	720	600	900	339	487	812	574	877	910	774	678		
	COMPLIANCE %				47	68	100	80	100	100	100	94	689	86
1B	180	255	180	255	47	106	179	134	142	121	104	69		
	COMPLIANCE %				18	42	70	53	56	47	41	27	354	44
<b>Restricted Flow Signal Justification 1:</b>					Both 1A and 1B 100% Fulfilled each of 8 hours Lesser of 1A or 1B at least 80% fulfilled each of 8 hours								Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
													Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

**Justification 2: Delay to Cross Traffic**

**Restricted Flow Urban Conditions**

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 lanes		2 or More lanes		Hour Ending									
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	7:00	8:00	9:00	12:00	13:00	16:00	17:00	18:00		
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
2A	480	720	600	900	292	381	633	440	735	789	670	609		
	COMPLIANCE %				41	53	88	61	100	100	93	85	620	78
2B	50	75	50	75	42	88	130	112	170	93	82	72		
	COMPLIANCE %				56	100	100	100	100	100	100	96	752	94
<b>Restricted Flow Signal Justification 2:</b>					Both 2A and 2B 100% Fulfilled each of 8 hours Lesser of 2A or 2B at least 80% fulfilled each of 8 hours								Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
													Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

**Justification 3: Combination**

**Combination Justification 1 and 2**

Justification Satisfied 80% or More				Two Justifications Satisfied 80% or More	
Justification 1	Minimum Vehicular Volume	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Justification 2	Delay Cross Traffic	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	NOT JUSTIFIED	

**Justification 4: Four Hour Volume**

Justification	Time Period	Total Volume of Both Approaches (Main)	Heaviest Minor Approach	Required Value	Average % Compliance	Overall % Compliance
		X	Y (actual)	Y (warrant threshold)		
Justification 4	9:00	633	179	208	86 %	75 %
	13:00	735	142	172	83 %	
	16:00	789	121	155	78 %	
	17:00	670	104	194	54 %	



**Justification 5: Collision Experience**

Justification	Preceding Months	% Fulfillment	Overall % Compliance
Justification 5	1-12	0 %	0 %
	13-24	0 %	
	25-36	0 %	

**Justification 6: Pedestrian Volume**

**Pedestrian Volume Analysis**

	8 Hour Vehicular Volume $V_8$	Net 8 Hour Pedestrian Volume				
		< 200	200 - 275	276 - 475	476 - 1000	>1000
Justification 6A	< 1440					
	1440 - 2600	Not Justified				
	2601 - 7000					
	> 7000					

**Pedestrian Delay Analysis**

	Net Total 8 Hour Volume of Total Pedestrians	Net Total 8 Hour Volume of Delayed Pedestrians		
		< 75	75 - 130	> 130
Justification 6B	< 200	Not Justified		
	200 - 300			
	> 300			

# Results Sheet

[Input Sheet](#)

[Analysis Sheet](#)

[Proposed Collision](#)

Intersection: Dundalk and Main Street

Count Date: 2032 FT

## Summary Results

	Justification	Compliance	Signal Justified?	
			YES	NO
1. Minimum Vehicular Volume	A Total Volume	86 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Crossing Volume	44 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Delay to Cross Traffic	A Main Road	78 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Crossing Road	94 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Combination	A Justificaton 1	44 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Justification 2	78 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. 4-Hr Volume		75 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5. Collision Experience	0 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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6. Pedestrians	A Volume	Justification not met	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Delay	Justification not met	<input type="checkbox"/>	<input checked="" type="checkbox"/>

# Proposed Collision Justification (Justification 5A)

[Return to Justifications 1-6](#)

## INPUT

a.- Intersection type (no input required):

3

b.- What year is the intersection being considered for traffic signals?

2004

c.- What is the collision history and annual average daily traffic over the past few years? (Please fill in table below)

Year	Traffic Volume		Impact Type/Year						
	Major AADT	Minor AADT	Approach- ing	Angle	Rear end	Sideswipe	Turning movement	SMV	Other
2000	21626	3893	0	4	5	1	4	0	0
2001	22059	3971	0	6	4	1	3	1	1
2002	22500	4050	0	7	5	2	2	1	0
2003	23300	4200	0	8	3	3	2	1	0
2004	23648	6528	0	9	0	4	1	0	0

d.- If known, please enter the expected traffic volume after signals are introduced. Otherwise, leave the cell blank.

Year	Main AADT	Minor AADT
2004		

## ANALYSIS

### Reducible Collisions

	2000	2001	2002	2003	2004	2004 (Signal)
Total Number of Crashes Per Year	8	9	9	10	10	---
Parameter k	0.81	0.81	0.81	0.81	0.81	0.60
Model Prediction	1.46	1.50	1.53	1.59	2.15	2.15
C <sub>1y</sub>	0.680	0.696	0.712	0.741	1.000	1.000
Comp. Ratio for Period	3.829					1.000

### Non-reducible Collisions

	2000	2001	2002	2003	2004	2004 (Signal)
Total Number of Crashes Per Year	6	7	8	7	4	---
Parameter k	1.47	1.47	1.47	1.47	1.47	1.19
Model Prediction	1.17	1.18	1.20	1.23	1.38	1.38
C <sub>1y</sub>	0.849	0.860	0.870	0.890	1.000	1.000
Comp. Ratio for Period	4.469					1.000

	Reducible Collisions	Non-reducible Collisions
Total Number of Historical Crashes	46	32
Expected Annual Crashes without Signalization based on SPF	2.150	1.377
Expected Annual Crashes without Signalization	11.131	6.046
Variance of Expected Annual Crashes without Signalization	2.647	1.092
Expected Annual Crashes after Signalization based on SPF	2.089	3.286
Expected Annual Crashes after Signalization	10.813	14.425
Variance of Expected Annual Crashes after Signalization	194.857	174.867

	Reducible Collisions	Non-reducible Collisions
Weights for Unsignalized Intersections	0.27	0.18
Weights for Signalized Intersections	0.29	0.25

## RESULTS

Justification	Compliance	Signal Justified?	
		YES	NO
5. Collision Experience	Net Safety Change 2.648 Total Collisions will <i>Increase</i> after this intersection is signalized	<input type="checkbox"/>	<input checked="" type="checkbox"/>

# Input Data Sheet

Analysis Sheet

Results Sheet

Proposed Collision

What are the intersecting roadways?

Osprey St and Main Street

GO TO Justification:

What is the direction of the Main Road street?

East-West

When was the data collected?

2032 FT

## Justification 1 - 4: Volume Warrants

a.- Number of lanes on the Main Road?

1

b.- Number of lanes on the Minor Road?

1

c.- How many approaches?

4

d.- What is the operating environment?

Urban

Population >= 10,000

AND

Speed < 70 km/hr

e.- What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
7:00	0	215	2	14	0	7	6	131	0	152	0	0	23
8:00	4	267	2	23	28	11	8	185	0	187	3	3	34
9:00	13	345	19	47	14	23	6	263	5	143	10	12	65
12:00	8	283	10	14	14	16	9	219	5	134	10	4	27
13:00	18	350	43	26	16	35	10	371	3	65	5	11	56
16:00	15	304	33	104	8	26	10	401	0	59	8	4	60
17:00	12	308	24	26	3	35	14	367	3	35	5	4	42
18:00	5	223	24	13	13	21	14	239	2	89	8	4	31
<b>Total</b>	<b>75</b>	<b>2,295</b>	<b>157</b>	<b>267</b>	<b>96</b>	<b>174</b>	<b>77</b>	<b>2,176</b>	<b>18</b>	<b>864</b>	<b>49</b>	<b>42</b>	<b>338</b>

## Justification 5: Collision Experience

Preceding Months	Number of Collisions*
1-12	0
13-24	0
25-36	0

\* Include only collisions that are susceptible to correction through the installation of traffic signal control

## Justification 6: Pedestrian Volume

a.- Please fill in table below summarizing total pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
<b>Total 8 hour pedestrian volume</b>	0	147	0	0	0	0	0	0	
<b>Factored 8 hour pedestrian volume</b>		147		0		0		0	
<b>% Assigned to crossing rate</b>		23%		34%		30%		100%	
<b>Net 8 Hour Pedestrian Volume at Crossing</b>									34
<b>Net 8 Hour Vehicular Volume on Street Being Crossed</b>									2,000

b.- Please fill in table below summarizing delay to pedestrians crossing major roadway at the intersection or in proximity to the intersection (zones). Please reference Section 4.8 of the Manual for further explanation and graphical representation.

	Zone 1		Zone 2		Zone 3 (if needed)		Zone 4 (if needed)		Total
	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	Assisted	Unassisted	
<b>Total 8 hour pedestrian volume</b>	0	147	0	0	0	0	0	0	
<b>Total 8 hour pedestrians delayed greater than 10 seconds</b>	0	0	0	0	0	0	0	0	
<b>Factored volume of total pedestrians</b>		147		0		0		0	
<b>Factored volume of delayed pedestrians</b>		0		0		0		0	
<b>% Assigned to Crossing Rate</b>		23%		34%		30%		100%	
<b>Net 8 Hour Volume of Total Pedestrians</b>									34
<b>Net 8 Hour Volume of Delayed Pedestrians</b>									0

# Analysis Sheet

Input Sheet

Results Sheet

Proposed Collision

GO TO Justification:

Intersection: Osprey St and Main Street

Count Date: 2032 FT

## Justification 1: Minimum Vehicle Volumes

### Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 Lanes		2 or More Lanes		Hour Ending									
	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	7:00	8:00	9:00	12:00	13:00	16:00	17:00	18:00		
Flow Condition	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
1A	480	720	600	900	527	721	900	726	953	972	836	655		
	COMPLIANCE %				73	100	100	100	100	100	100	91	764	96
1B	120	170	120	170	173	255	249	192	158	209	108	148		
	COMPLIANCE %				100	100	100	100	93	100	64	87	744	93
<b>Restricted Flow Signal Justification 1:</b>					Both 1A and 1B 100% Fullfilled each of 8 hours Lesser of 1A or 1B at least 80% fulfilled each of 8 hours								Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

## Justification 2: Delay to Cross Traffic

### Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 lanes		2 or More lanes		Hour Ending									
	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	7:00	8:00	9:00	12:00	13:00	16:00	17:00	18:00		
Flow Condition	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
2A	480	720	600	900	354	466	651	534	795	763	728	507		
	COMPLIANCE %				49	65	90	74	100	100	100	70	649	81
2B	50	75	50	75	189	272	269	189	163	231	108	146		
	COMPLIANCE %				100	100	100	100	100	100	100	100	800	100
<b>Restricted Flow Signal Justification 2:</b>					Both 2A and 2B 100% Fullfilled each of 8 hours Lesser of 2A or 2B at least 80% fulfilled each of 8 hours								Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

## Justification 3: Combination

### Combination Justification 1 and 2

Justification Satisfied 80% or More				Two Justifications Satisfied 80% or More	
Justification 1	Minimum Vehicular Volume	YES <input type="checkbox"/>	NO <input type="checkbox"/>	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
Justification 2	Delay Cross Traffic	YES <input type="checkbox"/>	NO <input type="checkbox"/>	JUSTIFIED	

## Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main)	Heaviest Minor Approach	Required Value	Average % Compliance	Overall % Compliance
		X	Y (actual)	Y (warrant threshold)		
Justification 4	9:00	651	165	201	82 %	64 %
	13:00	795	81	153	53 %	
	16:00	763	138	163	85 %	
	17:00	728	64	174	37 %	

# Analysis Sheet

[Input Sheet](#)

[Results Sheet](#)

[Proposed Collision](#)

GO TO Justification:

Intersection: Osprey St and Main Street

Count Date: 2032 FT

## Justification 5: Collision Experience

Justification	Preceding Months	% Fulfillment	Overall % Compliance
Justification 5	1-12	0 %	0 %
	13-24	0 %	
	25-36	0 %	

## Justification 6: Pedestrian Volume

### Pedestrian Volume Analysis

	8 Hour Vehicular Volume $V_8$	Net 8 Hour Pedestrian Volume				
		< 200	200 - 275	276 - 475	476 - 1000	>1000
Justification 6A	< 1440					
	1440 - 2600	Not Justified				
	2601 - 7000					
	> 7000					

### Pedestrian Delay Analysis

	Net Total 8 Hour Volume of Total Pedestrians	Net Total 8 Hour Volume of Delayed Pedestrians		
		< 75	75 - 130	> 130
Justification 6B	< 200	Not Justified		
	200 - 300			
	> 300			

# Results Sheet

Input Sheet

Analysis Sheet

Proposed Collision

Intersection: Osprey St and Main Street

Count Date: 2032 FT

## Summary Results

	Justification	Compliance	Signal Justified?	
			YES	NO
1. Minimum Vehicular Volume	A Total Volume	96 %		
	B Crossing Volume	93 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Delay to Cross Traffic	A Main Road	81 %		
	B Crossing Road	100 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Combination	A Justificaton 1	93 %		
	B Justification 2	81 %	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. 4-Hr Volume		64 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5. Collision Experience	0 %	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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6. Pedestrians	A Volume	Justification not met		
	B Delay	Justification not met	<input type="checkbox"/>	<input checked="" type="checkbox"/>

# Proposed Collision Justification (Justification 5A)

[Return to Justifications 1-6](#)

## INPUT

a.- Intersection type (no input required):

3

b.- What year is the intersection being considered for traffic signals?

2004

c.- What is the collision history and annual average daily traffic over the past few years? (Please fill in table below)

Year	Traffic Volume		Impact Type/Year						
	Major AADT	Minor AADT	Approach- ing	Angle	Rear end	Sideswipe	Turning movement	SMV	Other
2000	21626	3893	0	4	5	1	4	0	0
2001	22059	3971	0	6	4	1	3	1	1
2002	22500	4050	0	7	5	2	2	1	0
2003	23300	4200	0	8	3	3	2	1	0
2004	23648	6528	0	9	0	4	1	0	0

d.- If known, please enter the expected traffic volume after signals are introduced. Otherwise, leave the cell blank.

Year	Main AADT	Minor AADT
2004		

## ANALYSIS

### Reducible Collisions

	2000	2001	2002	2003	2004	2004 (Signal)
Total Number of Crashes Per Year	8	9	9	10	10	---
Parameter k	0.81	0.81	0.81	0.81	0.81	0.60
Model Prediction	1.46	1.50	1.53	1.59	2.15	2.15
C <sub>y</sub>	0.680	0.696	0.712	0.741	1.000	1.000
Comp. Ratio for Period	3.829					1.000

### Non-reducible Collisions

	2000	2001	2002	2003	2004	2004 (Signal)
Total Number of Crashes Per Year	6	7	8	7	4	---
Parameter k	1.47	1.47	1.47	1.47	1.47	1.19
Model Prediction	1.17	1.18	1.20	1.23	1.38	1.38
C <sub>y</sub>	0.849	0.860	0.870	0.890	1.000	1.000
Comp. Ratio for Period	4.469					1.000

	Reducible Collisions	Non-reducible Collisions
Total Number of Historical Crashes	46	32
Expected Annual Crashes without Signalization based on SPF	2.150	1.377
Expected Annual Crashes without Signalization	11.131	6.046
Variance of Expected Annual Crashes without Signalization	2.647	1.092
Expected Annual Crashes after Signalization based on SPF	2.089	3.286
Expected Annual Crashes after Signalization	10.813	14.425
Variance of Expected Annual Crashes after Signalization	194.857	174.867

	Reducible Collisions	Non-reducible Collisions
Weights for Unsignalized Intersections	0.27	0.18
Weights for Signalized Intersections	0.29	0.25

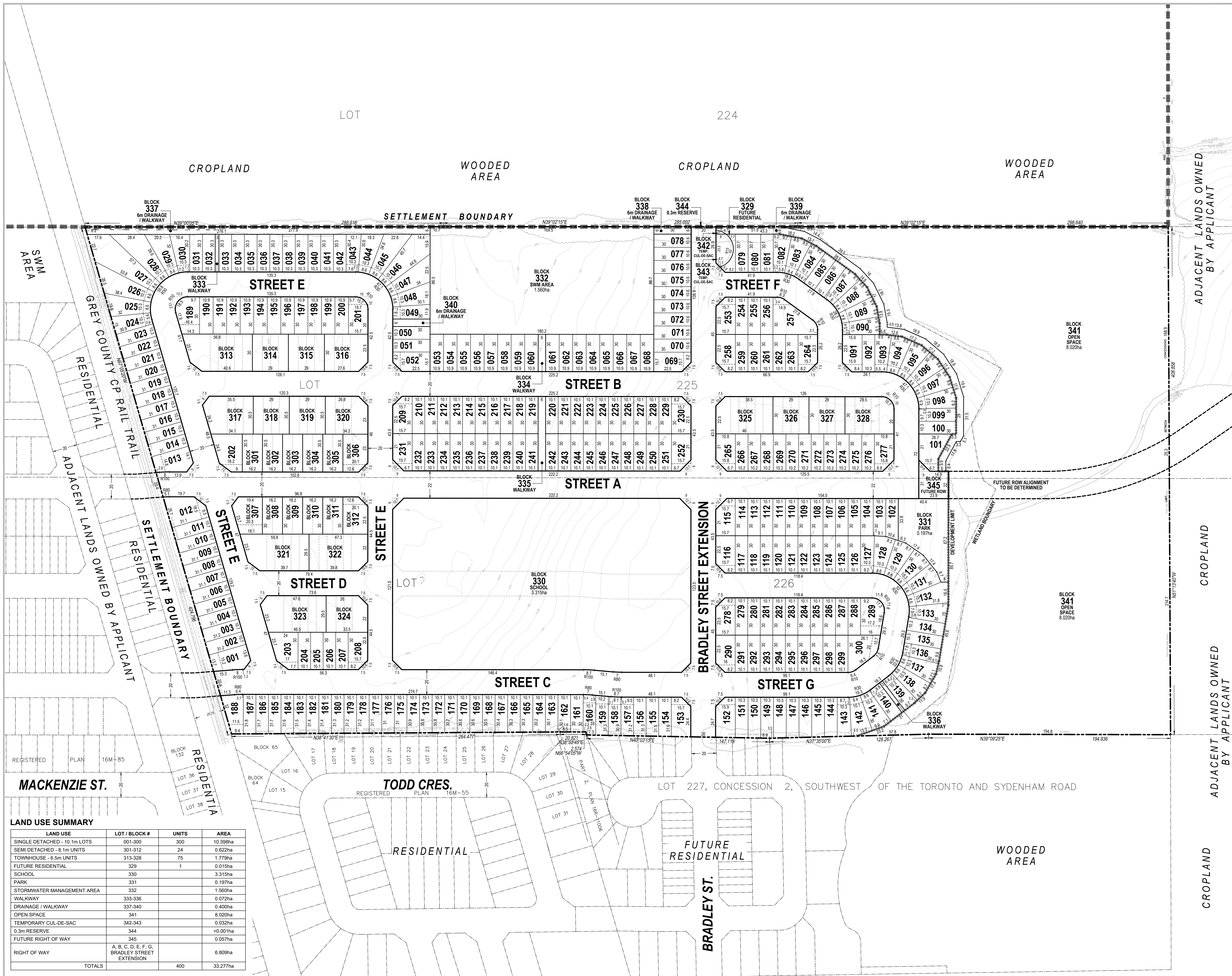
## RESULTS

Justification	Compliance	Signal Justified?	
		YES	NO
5. Collision Experience	Net Safety Change 2.648 Total Collisions will <i>Increase</i> after this intersection is signalized	<input type="checkbox"/>	<input checked="" type="checkbox"/>



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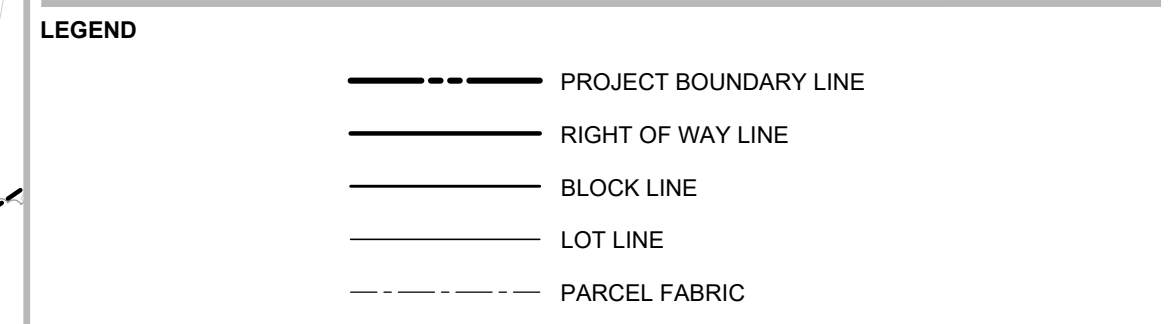
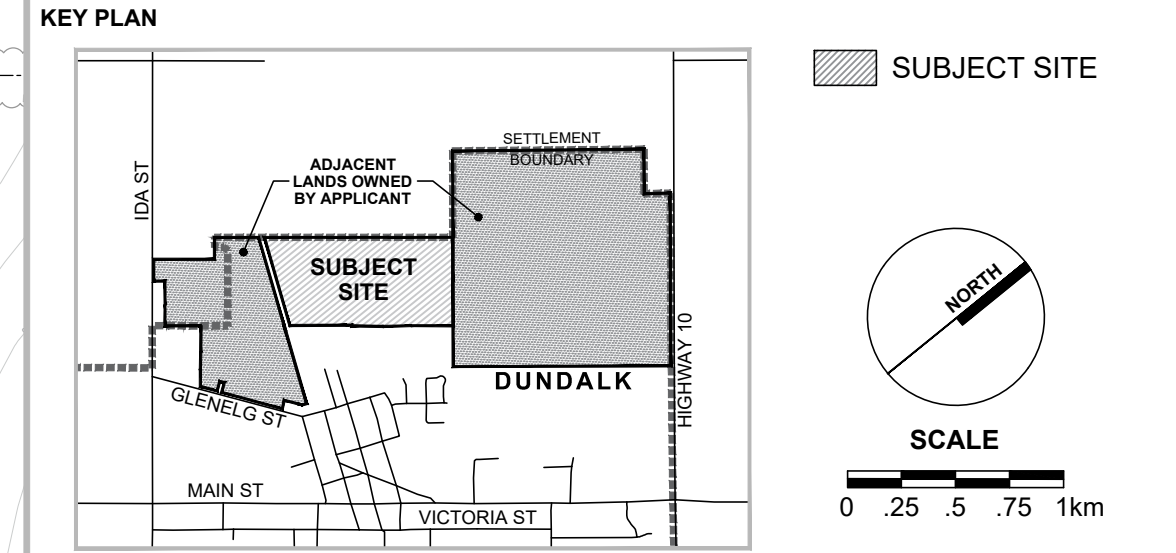
**LEGAL DESCRIPTION**  
 PART OF LOTS 225 AND 226  
 CONCESSION 2, SOUTHWEST OF THE TORONTO AND SYDENHAM ROAD  
 GEOGRAPHIC TOWNSHIP OF PROTON  
 TOWNSHIP OF SOUTHWEST  
 COUNTY OF GREY

**OWNER'S CERTIFICATE**  
 I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED  
 TO SUBMIT THIS PLAN FOR APPROVAL.

DATE: \_\_\_\_\_ SHAKIR REHMATULLAH - PRESIDENT  
 DUNDALK VILLAGE TWO INC.

**SURVEYOR'S CERTIFICATE**  
 I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN  
 AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY  
 SHOWN.

DATE: \_\_\_\_\_ DAN DZALDOV - O.L.S.  
 SCHAEFFER DZALDOV BENNETT LTD.



REV. No.	DATE	ISSUED / REVISION	BY
03	AUG. 14, 2023	ADD WETLAND BOUNDARY AND TEMPORARY CUL-DE-SAC; REVISE PARK, AND LOT LAYOUTS; WIDEN STREET 'A' TO 22m ROW	R.K. / M.M.
02	JUN. 28, 2023	ADD SCHOOL, WALKWAYS, DRAINAGE BLOCKS; REMOVE STREET; CREATE CRESCENT STREET G AND STREET F; REVISE PARK, SWM AREA, AND LOT LAYOUTS	M.M.
01	AUG. 18, 2022	1st SUBMISSION	M.M.

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT R.S.O. 1990 C.P. 13 AS AMENDED

A. AS SHOWN	E. AS SHOWN	J. AS SHOWN
B. AS SHOWN	F. AS SHOWN	K. ALL SERVICES AS REQUIRED
C. AS SHOWN	G. AS SHOWN	(WATER, SANITARY, STORMWATER, HYDRO)
D. 301 SINGLES, 24 SEMIS, & 70 TOWNHOUSES	H. MUNICIPAL WATER SUPPLY & TOWNHOUSES	L. AS SHOWN

**PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE**  
**MHBC PLANNING**  
 113 COLLIER STREET  
 8 A/R 1/E - ON - L4M 1H12  
 P: 705 728 0045 F: 705 728 2010  
 WWW.MHBCPLAN.COM

**LAND USE SUMMARY**

LAND USE	LOT / BLOCK #	UNITS	AREA
SINGLE DETACHED - 10.1m LOTS	001-300	300	10.398ha
SEMI DETACHED - 8.1m UNITS	301-312	24	0.622ha
TOWNHOUSE - 6.5m UNITS	313-328	75	1.779ha
FUTURE RESIDENTIAL	329	1	0.015ha
SCHOOL	330	1	3.315ha
PARK	331	1	0.197ha
STORMWATER MANAGEMENT AREA	332		1.560ha
WALKWAY	333-336		0.072ha
DRAINAGE / WALKWAY	337-340		0.400ha
OPEN SPACE	341		8.020ha
TEMPORARY CUL-DE-SAC	342-343		0.032ha
0.3m RESERVE	344		<0.001ha
FUTURE RIGHT OF WAY	345		0.057ha
RIGHT OF WAY	A, B, C, D, E, F, G, BRADLEY STREET EXTENSION		6.809ha
<b>TOTALS</b>		<b>400</b>	<b>33.277ha</b>

**STAMP**

DATE: **AUG. 18, 2022**

FILE No. **15184AT**

SCALE: **1:1,400 (ARCH D)**

DRAWN BY: **M.M.**

CHECKED BY: **K.C.**

OTHER: \_\_\_\_\_

**PROJECT**  
**GLENELG PHASE 3**  
 DUNDALK VILLAGE TWO INC.  
 3621 HIGHWAY 7 EAST, SUITE 503  
 MARKHAM, ON L3R 0G6  
 P:(905) 479-9292 F:(905) 429-9165  
 WWW.FLATOGROUP.COM

**FILE NAME**  
**DRAFT PLAN OF SUBDIVISION**

**DWG No.**  
**1 of 1**

**SCALE BAR**  
 0 7 14 21 28 35 52.5 70 105 140m  
 MEASUREMENTS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

N:\Southgate\15184AT\Drawings\Draft Plan\CAD\



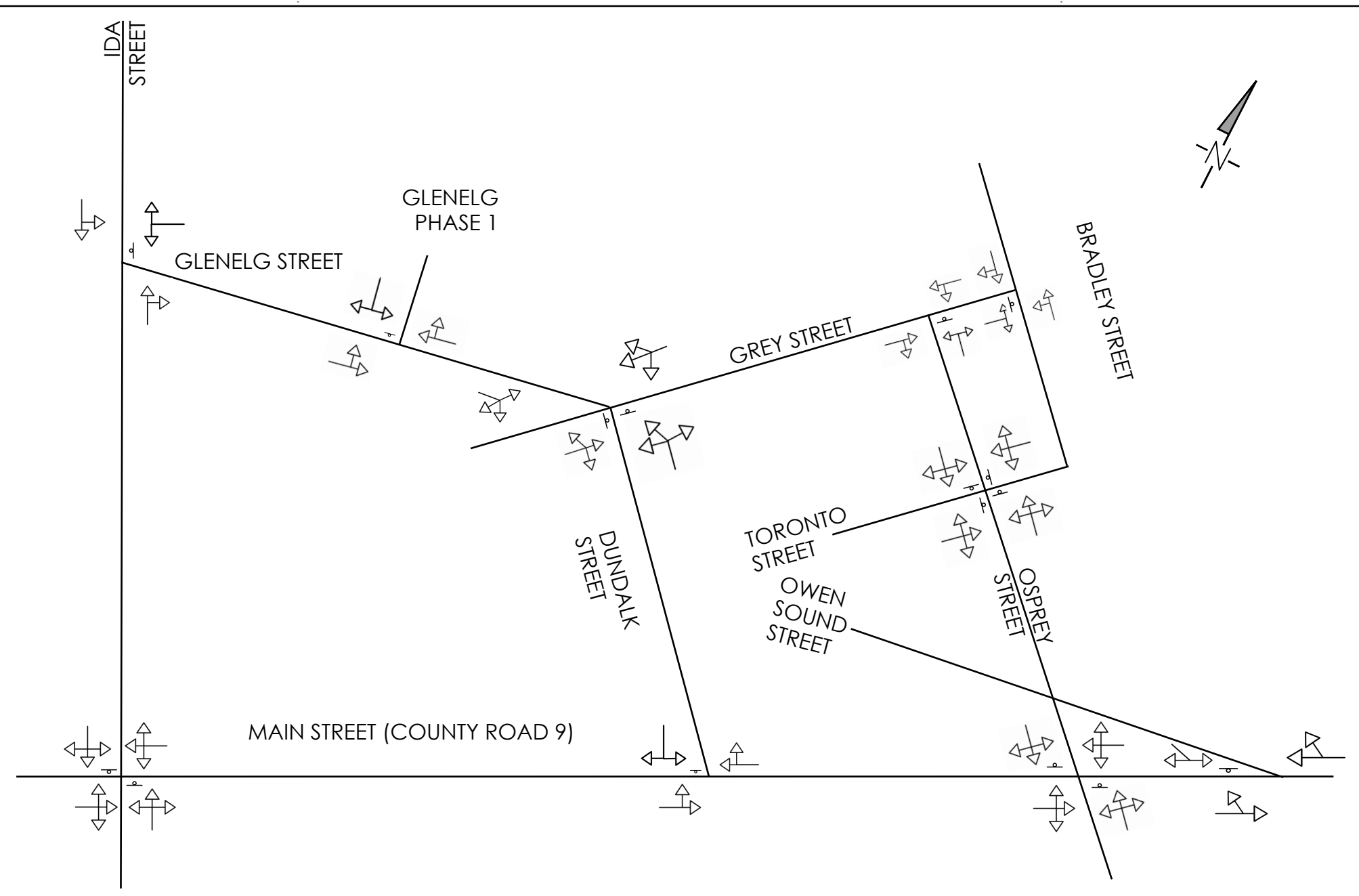
Project  
**GLENELG PHASE 3**  
**TOWNSHIP OF SOUTHGATE, COUNTY OF GREY**


Drawing  
**SITE LOCATION**




THE HARBOUREDGE BUILDING,  
 40 HURON STREET, SUITE 301,  
 COLLINGWOOD, ON L9Y 4R3  
 705 446-3510 T  
 705 446-3520 F  
 WWW.CFCROZIER.CA  
 INFO@CFCROZIER.CA

Drawn By	E.H.	Design By	E.H.	Project	1060-6220	
Scale	N.T.S.	Date	2022.08/15	Check By	E.H.	
					Drawing	FIG. 2



Legend	Project
 STOP CONTROL	GLENELG PHASE 3 TOWNSHIP OF SOUTHGATE, COUNTY OF GREY
	Drawing
	EXISTING TRAFFIC CONTROLS AND LANE CONFIGURATION

Project	GLENELG PHASE 3 TOWNSHIP OF SOUTHGATE, COUNTY OF GREY		
Drawing	EXISTING TRAFFIC CONTROLS AND LANE CONFIGURATION		



**CROZIER**  
CONSULTING ENGINEERS

THE HARBOUREDGE BUILDING,  
40 HURON STREET, SUITE 301,  
COLLINGWOOD, ON L9Y 4R3  
705 446-3510 T  
705 446-3520 F  
WWW.CFCROZIER.CA  
INFO@CFCROZIER.CA

Drawn By	E.H.	Design By	E.H.	Project	1060-6220	
Scale	N.T.S.	Date	2022.08/15	Check By	E.H.	
					Drawing	FIG. 3



**Legend**

xx A.M. Peak Hour Traffic Volumes  
 (XX) P.M. Peak Hour Traffic Volumes  
 ■ Stop Sign

**Glenelg Phase 3**

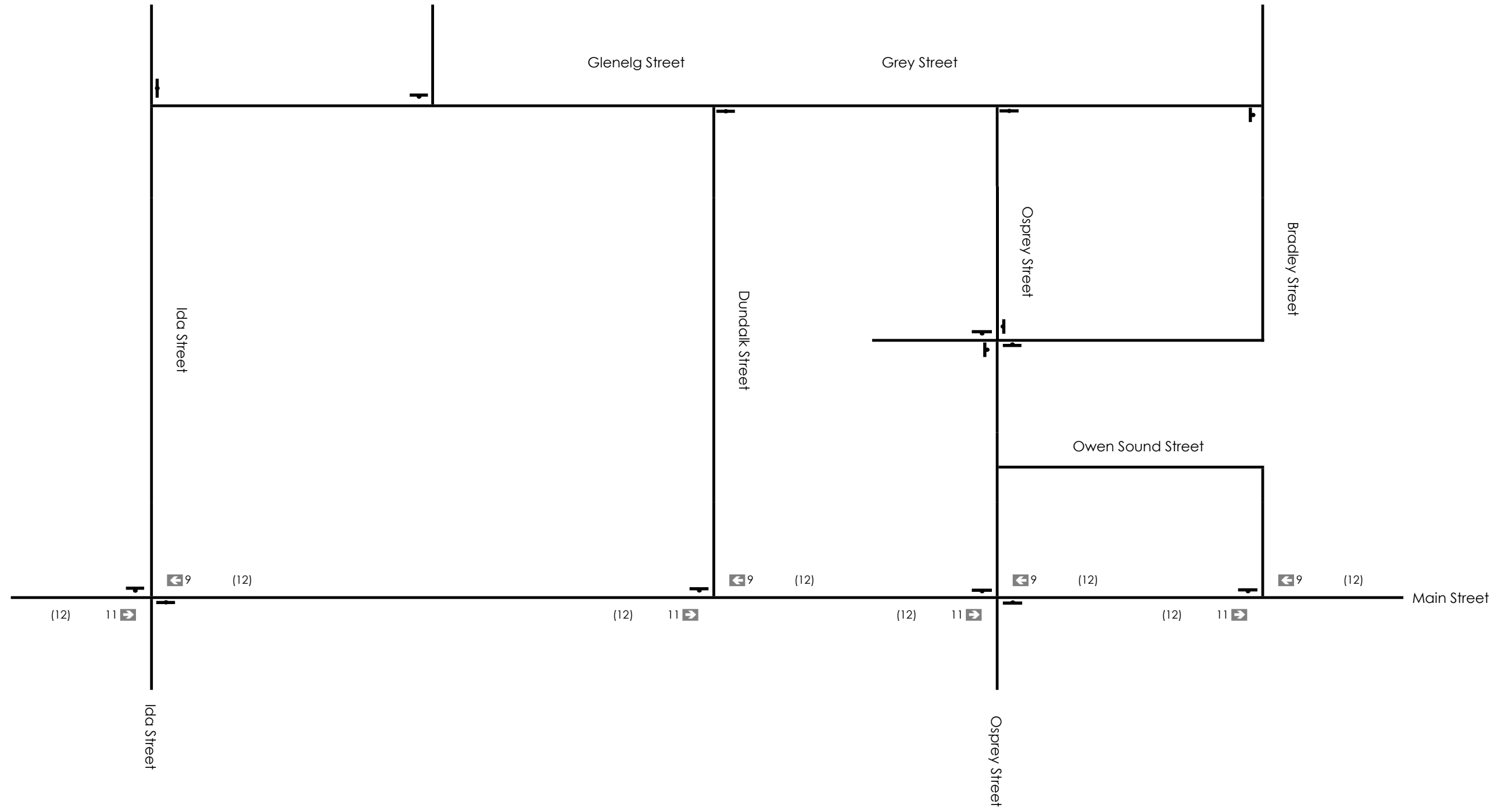
**Existing Traffic Volumes**



**Figure 4**

Project No. 1060-6220

Date. August 2023



Legend	
xx	A.M. Peak Hour Traffic Volumes
(XX)	P.M. Peak Hour Traffic Volumes
■	Stop Sign

**Glenelg Phase 3**

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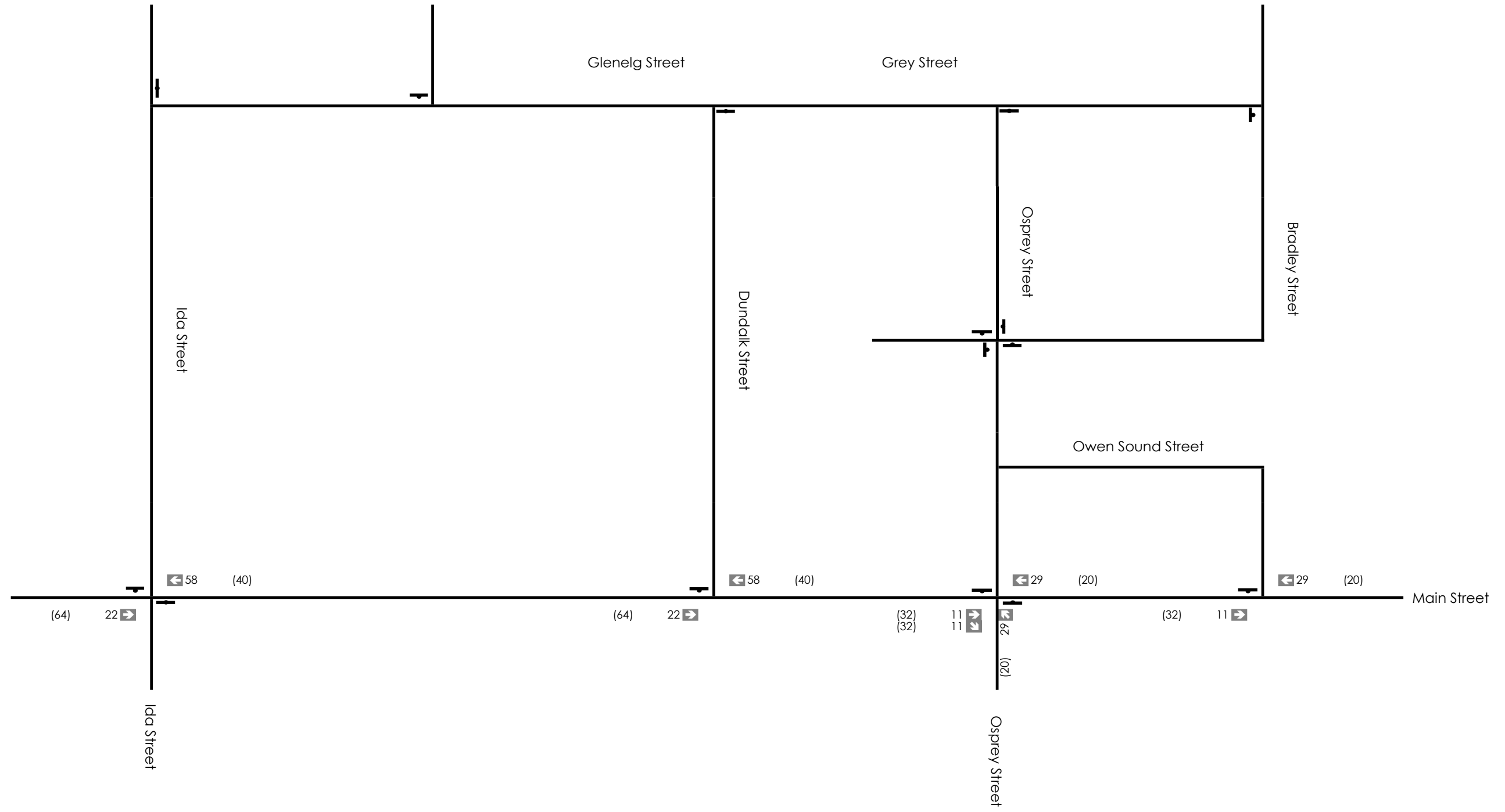
**Background Development: Edgewood Greens Commercial Trip Assignment**



**Figure 5**

Project No. 1060-6220

Date. August 2023



**Legend**

xx A.M. Peak Hour Traffic Volumes  
 (XX) P.M. Peak Hour Traffic Volumes  
 — Stop Sign

**Glenelg Phase 3**

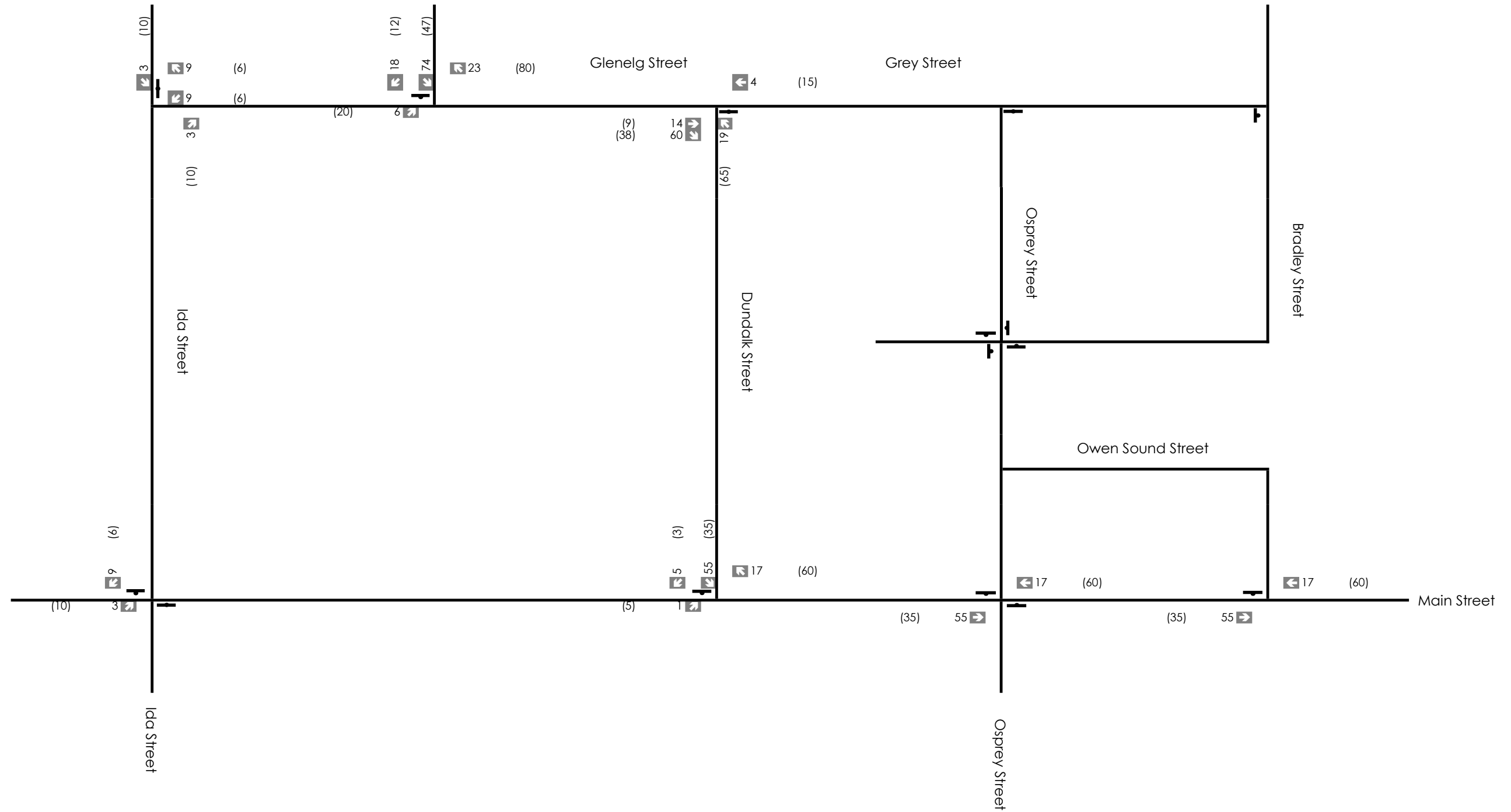
---

**Background Development: Edgewood Greens Residential Trip Assignment**



**Figure 6**

Project No. 1060-6220  
 Date. August 2023



**Legend**

xx A.M. Peak Hour Traffic Volumes  
 (XX) P.M. Peak Hour Traffic Volumes  
 ■ Stop Sign

**Glenelg Phase 3**

**Background Development: Glenelg Phase 1 Trip Assignment**

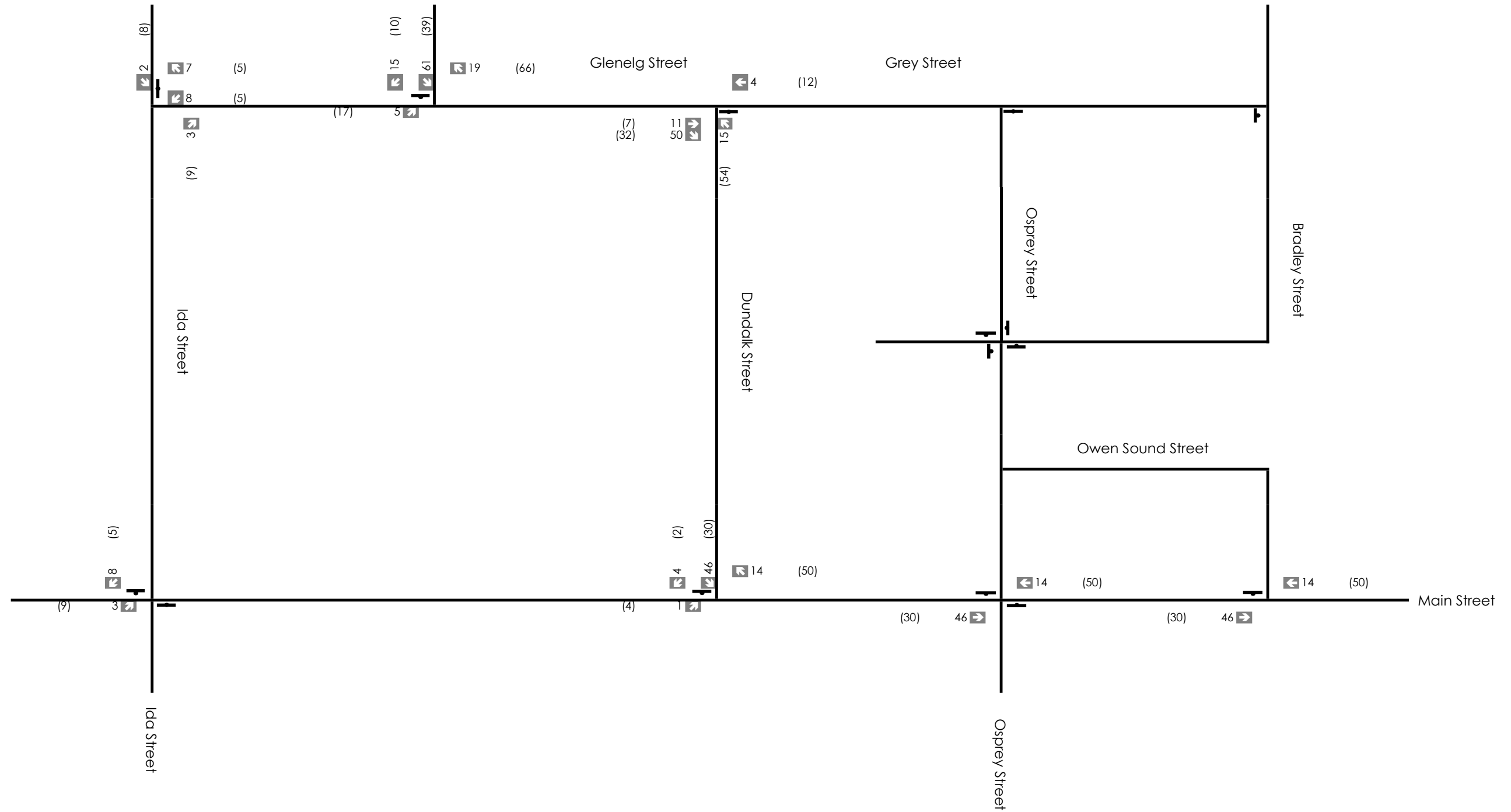


**Figure 7**

Project No. 1060-6220

Date. August 2023





**Legend**

xx A.M. Peak Hour Traffic Volumes  
 (XX) P.M. Peak Hour Traffic Volumes  
 ■ Stop Sign

**Glenelg Phase 3**

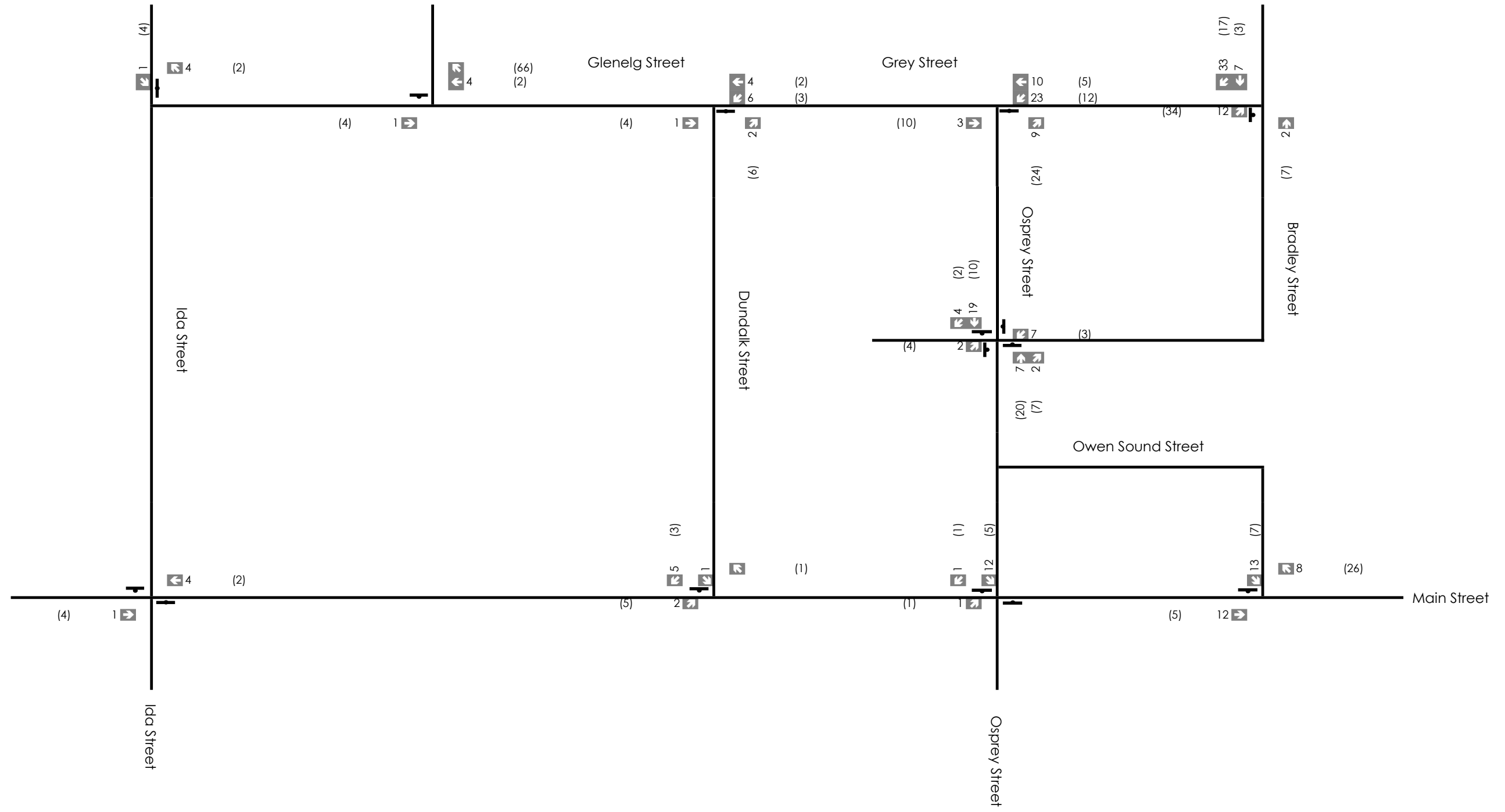
**Background Development: Glenelg Phase 2 Trip Assignment**



**Figure 8**

Project No. 1060-6220

Date. August 2023



Legend	
xx	A.M. Peak Hour Traffic Volumes
(XX)	P.M. Peak Hour Traffic Volumes
■	Stop Sign

**Glenelg Phase 3**

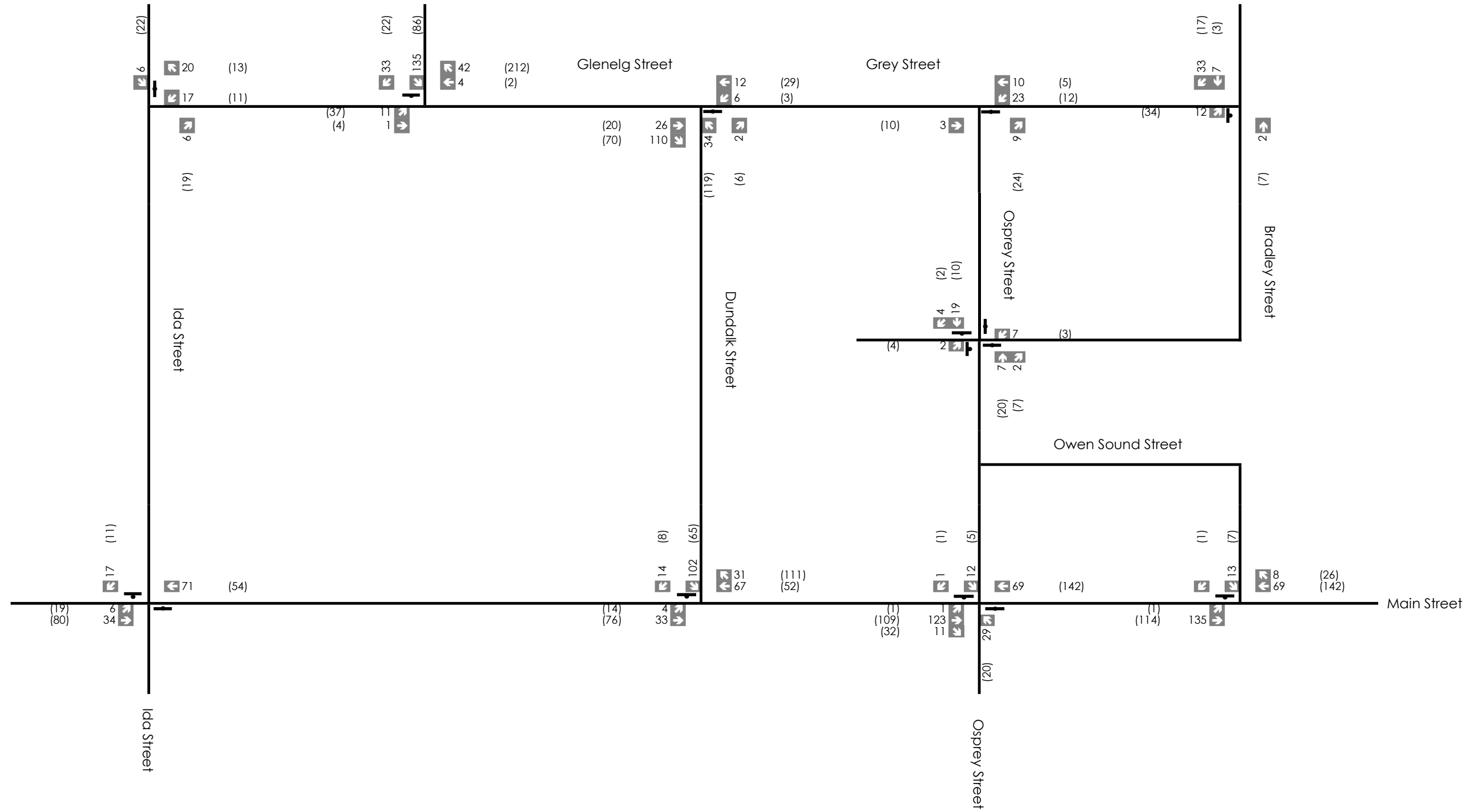
**Background Development: White Rose Phase 3 Trip Assignment**

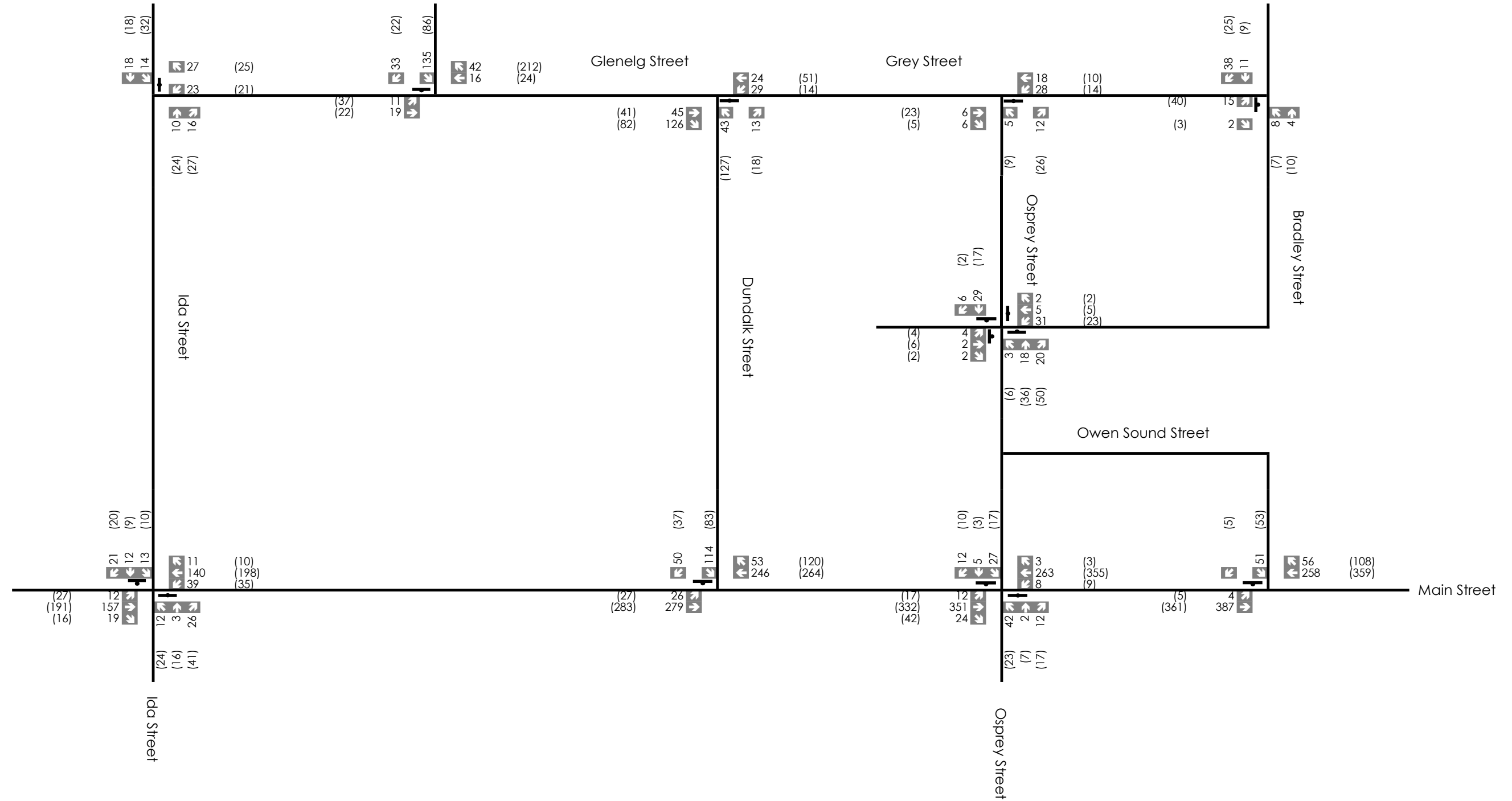


**Figure 9**

Project No. 1060-6220

Date. August 2023





**Legend**

- xx A.M. Peak Hour Traffic Volumes
- (XX) P.M. Peak Hour Traffic Volumes
- Stop Sign

**Glenelg Phase 3**

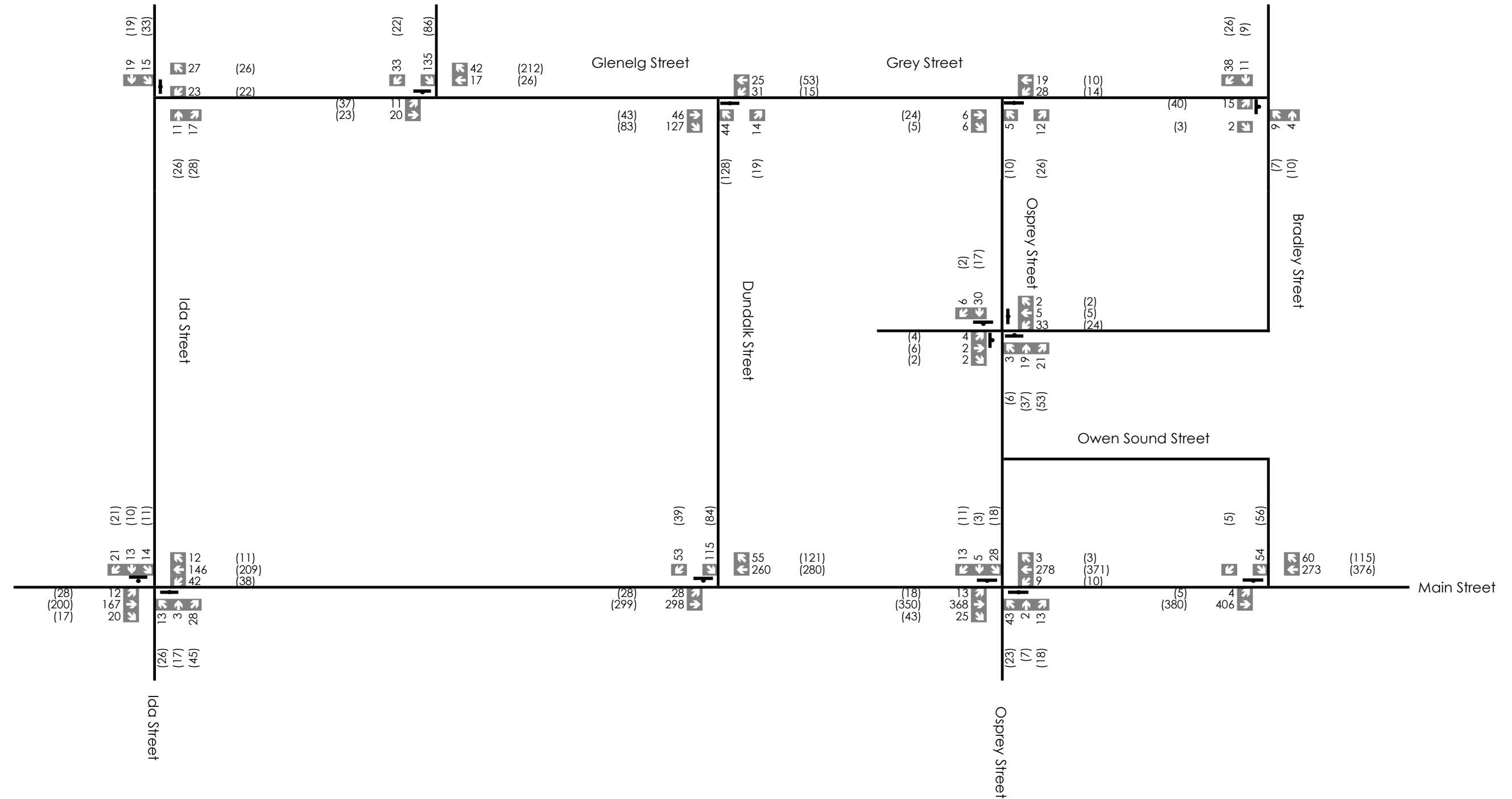
**Future Background 2027 Traffic Volumes**



**Figure 11**

Project No. 1060-6220

Date. August 2023



**Legend**

- xx A.M. Peak Hour Traffic Volumes
- (XX) P.M. Peak Hour Traffic Volumes
- Stop Sign

**Glenelg Phase 3**

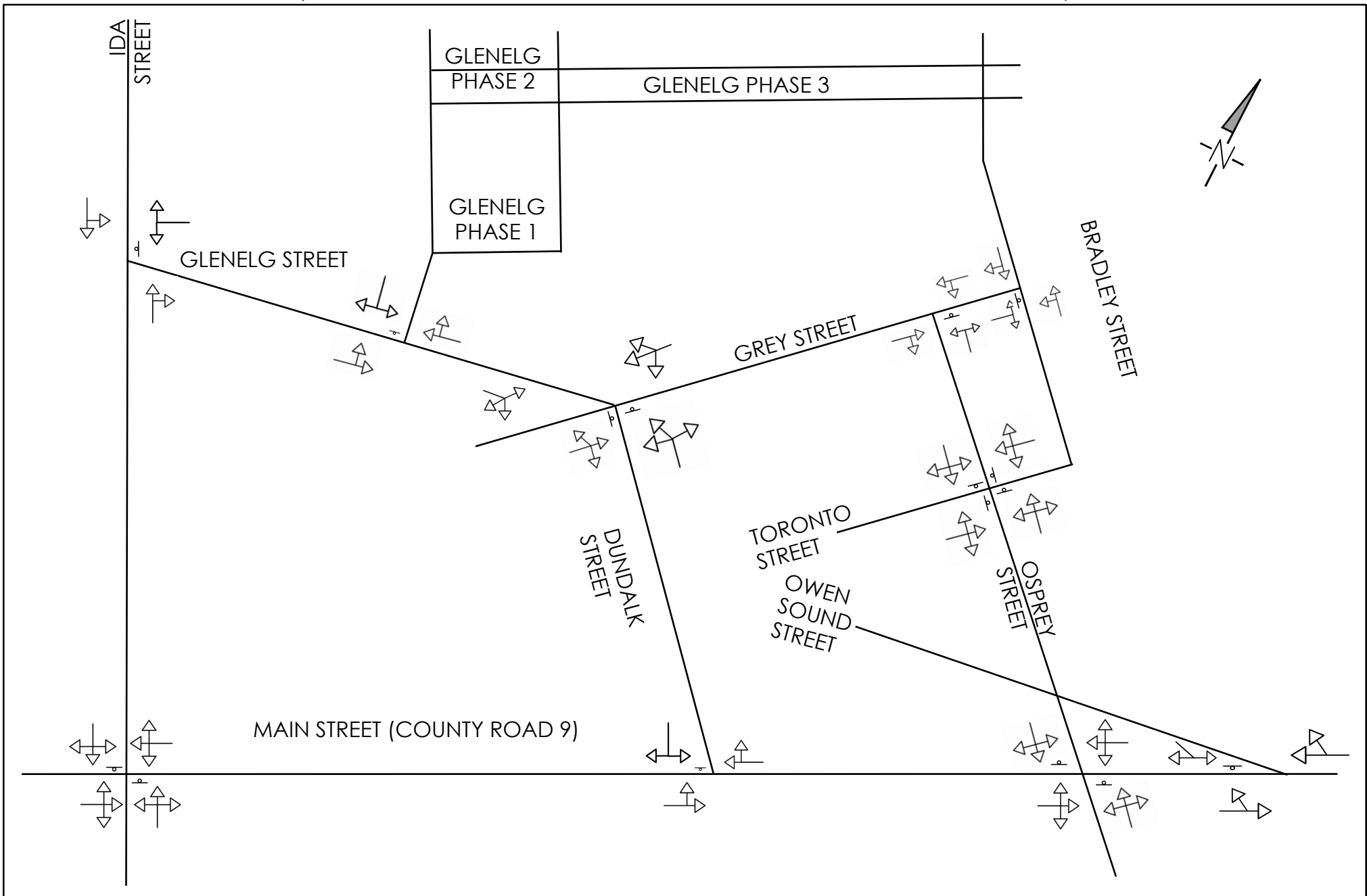
**Future Background 2032 Traffic Volumes**




**Figure 12**


Project No. 1060-6220

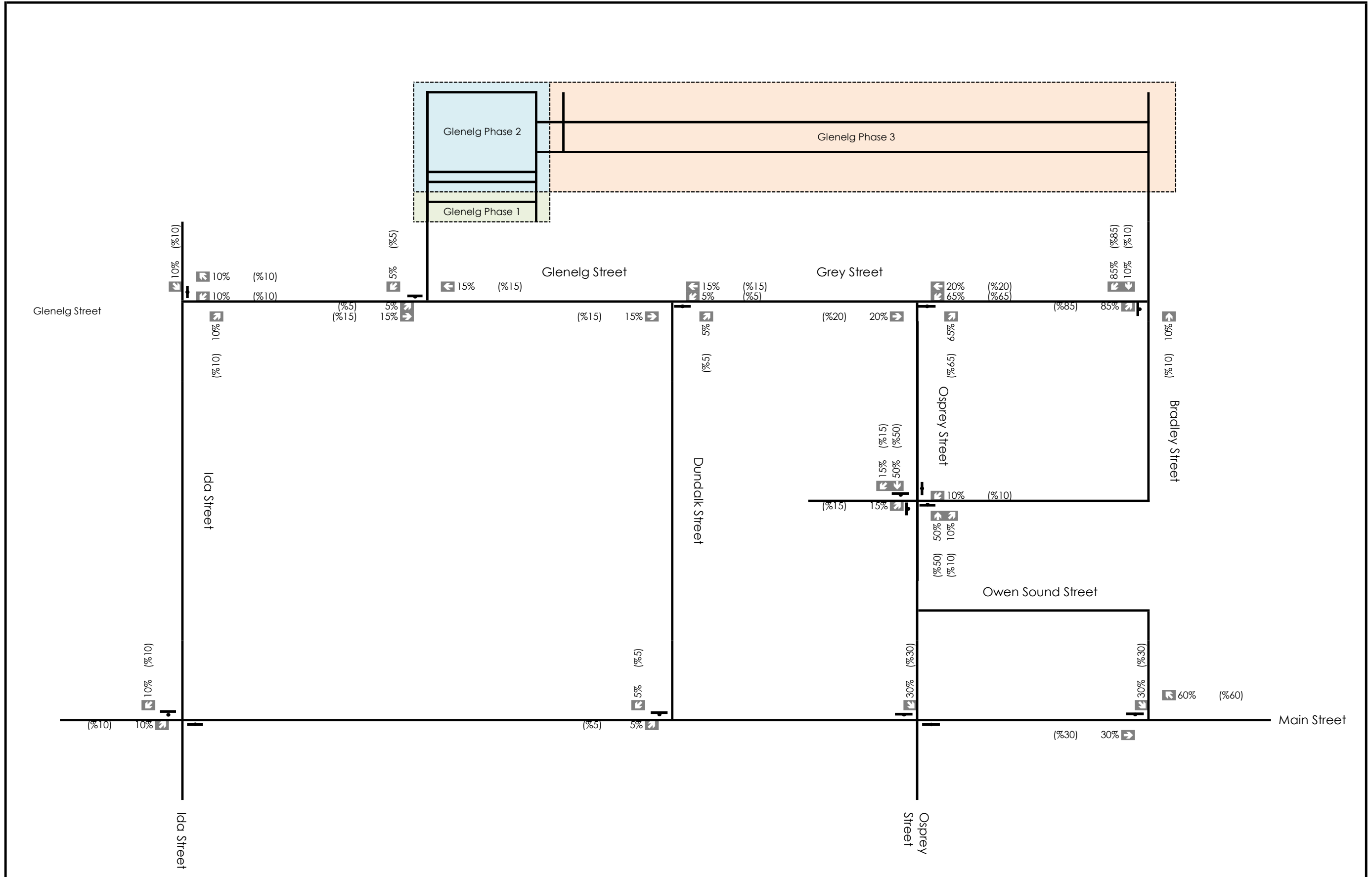
Date. August 2023



Legend
 STOP CONTROL

Project	GLENELG PHASE 3 TOWNSHIP OF SOUTHGATE, COUNTY OF GREY	
Drawing	FUTURE TRAFFIC CONTROLS AND LANE CONFIGURATION	

 <b>CROZIER</b> CONSULTING ENGINEERS		THE HARBOUREDGE BUILDING, 40 HURON STREET, SUITE 301, COLLINGWOOD, ON L9Y 4R3 705 446-3510 T 705 446-3520 F WWW.CFCROZIER.CA INFO@CFCROZIER.CA	
Drawn By	E.H.	Design By	E.H.
Scale	N.T.S.	Date	2022.08/15
Check By	E.H.	Project	1060-6220
Drawing	FIG. 13		



**Legend**

- xx A.M. Peak Hour Traffic Volumes
- (XX) P.M. Peak Hour Traffic Volumes
- Stop Sign

**Glenelg Phase 3**

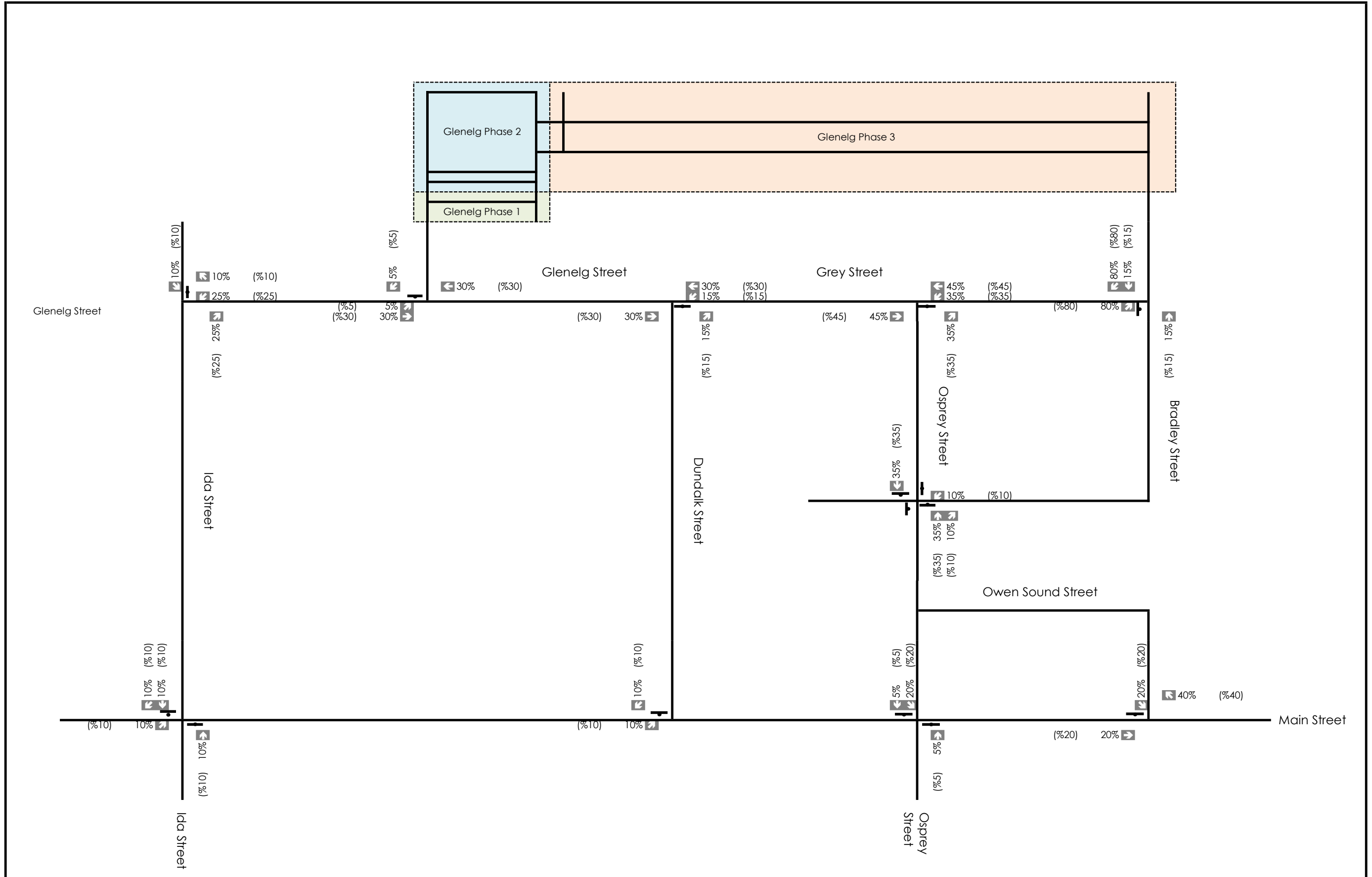
**Site Trip Distribution - Residential**



**Figure 14**

Project No. 1060-6220

Date: August 2023



Legend	
xx	A.M. Peak Hour Traffic Volumes
(XX)	P.M. Peak Hour Traffic Volumes
■	Stop Sign

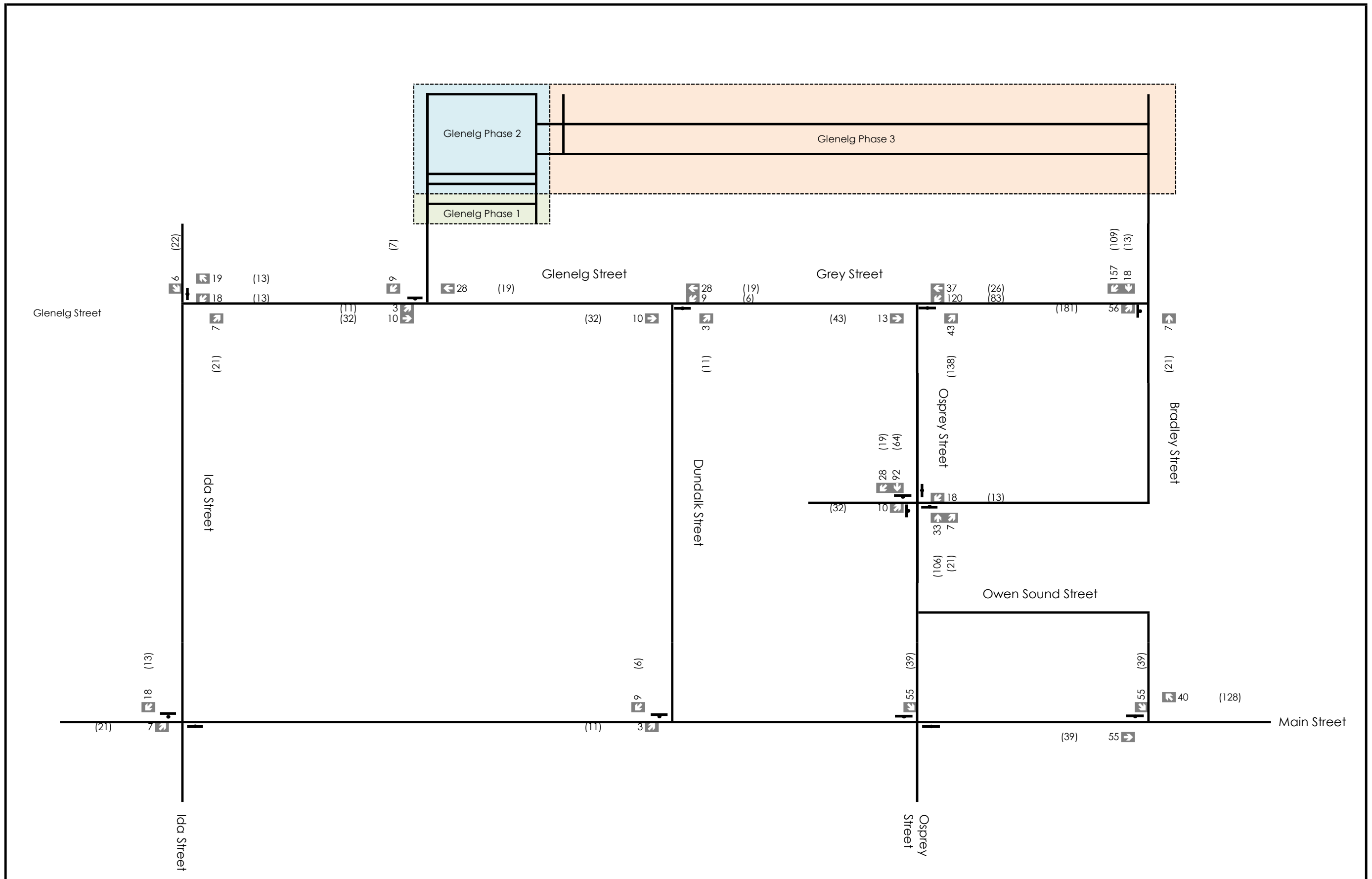
**Glenelg Phase 3**

**Site Trip Distribution - School**



**Figure 15**  
 Project No. 1060-6220  
 Date: August 2023





**Legend**

- xx A.M. Peak Hour Traffic Volumes
- (XX) P.M. Peak Hour Traffic Volumes
- Stop Sign

**Glenelg Phase 3**

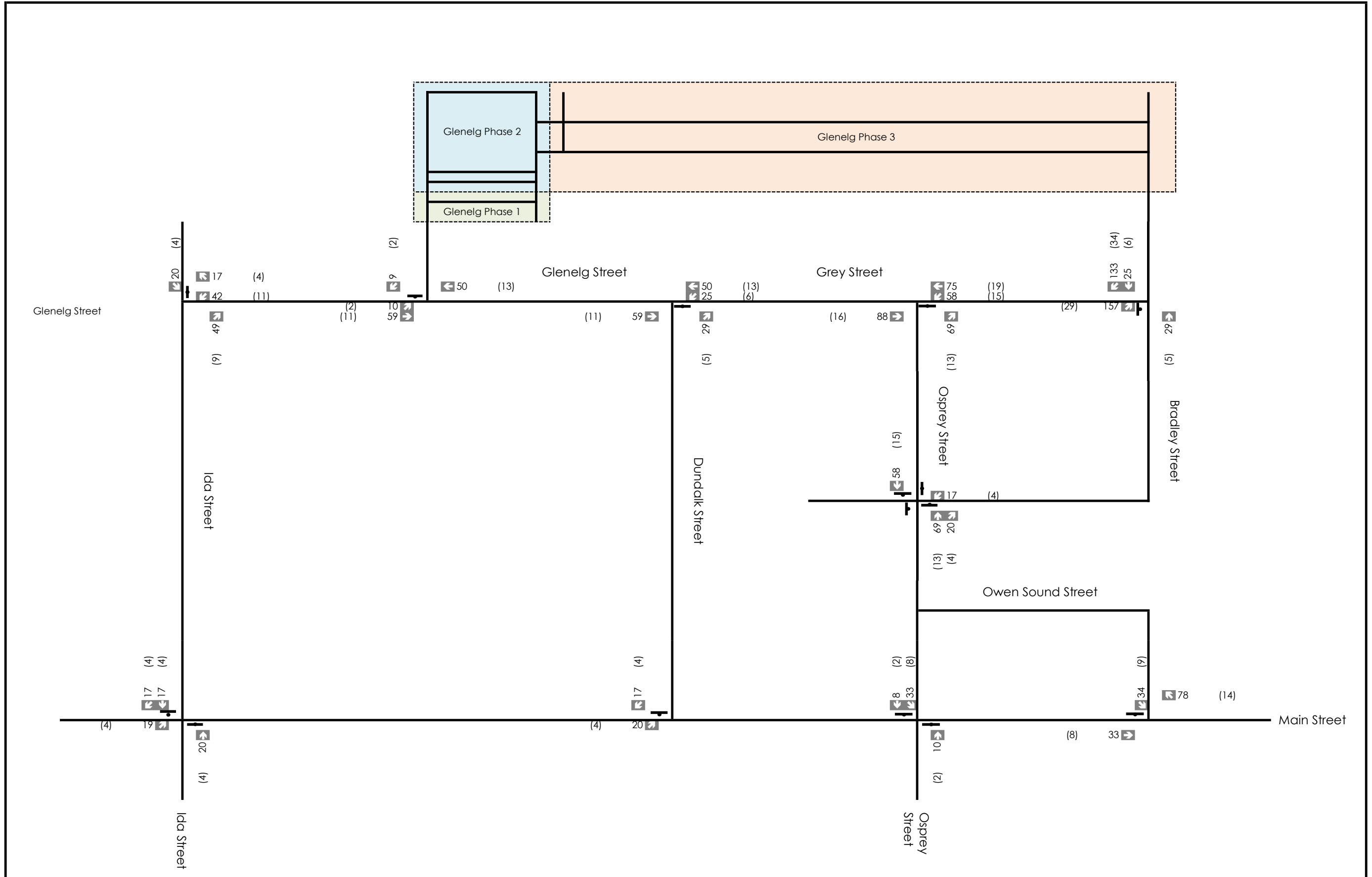
**Site Trip Assignment - Residential**



**Figure 16**

Project No. 1060-6220

Date: August 2023



**Legend**

- xx A.M. Peak Hour Traffic Volumes
- (XX) P.M. Peak Hour Traffic Volumes
- Stop Sign

**Glenelg Phase 3**

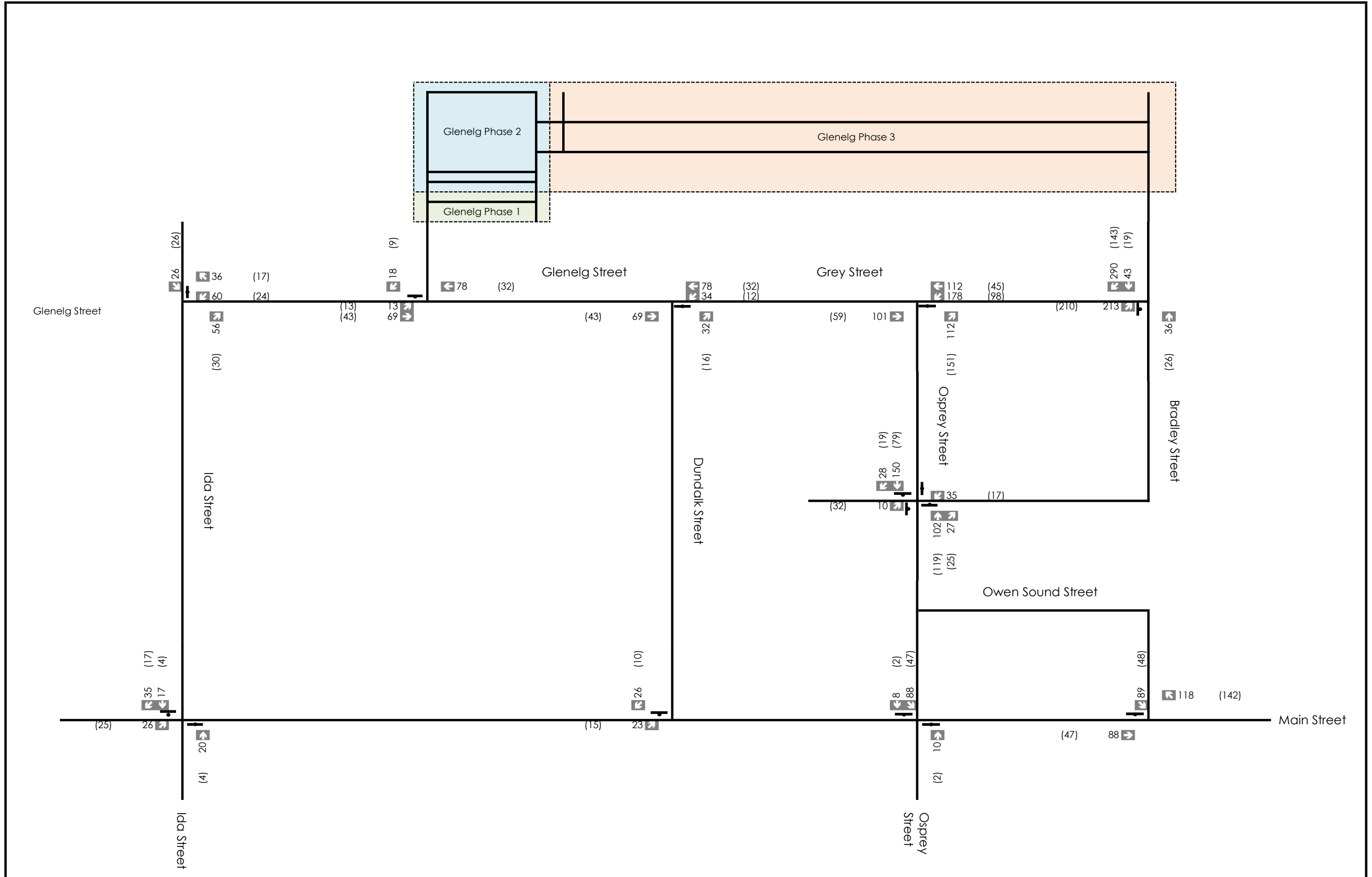
**Site Trip Assignment - School**



**Figure 17**

Project No. 1060-6220

Date: August 2023



Legend	
xx	A.M. Peak Hour Traffic Volumes
(XX)	P.M. Peak Hour Traffic Volumes
■	Stop Sign

**Glenelg Phase 3**

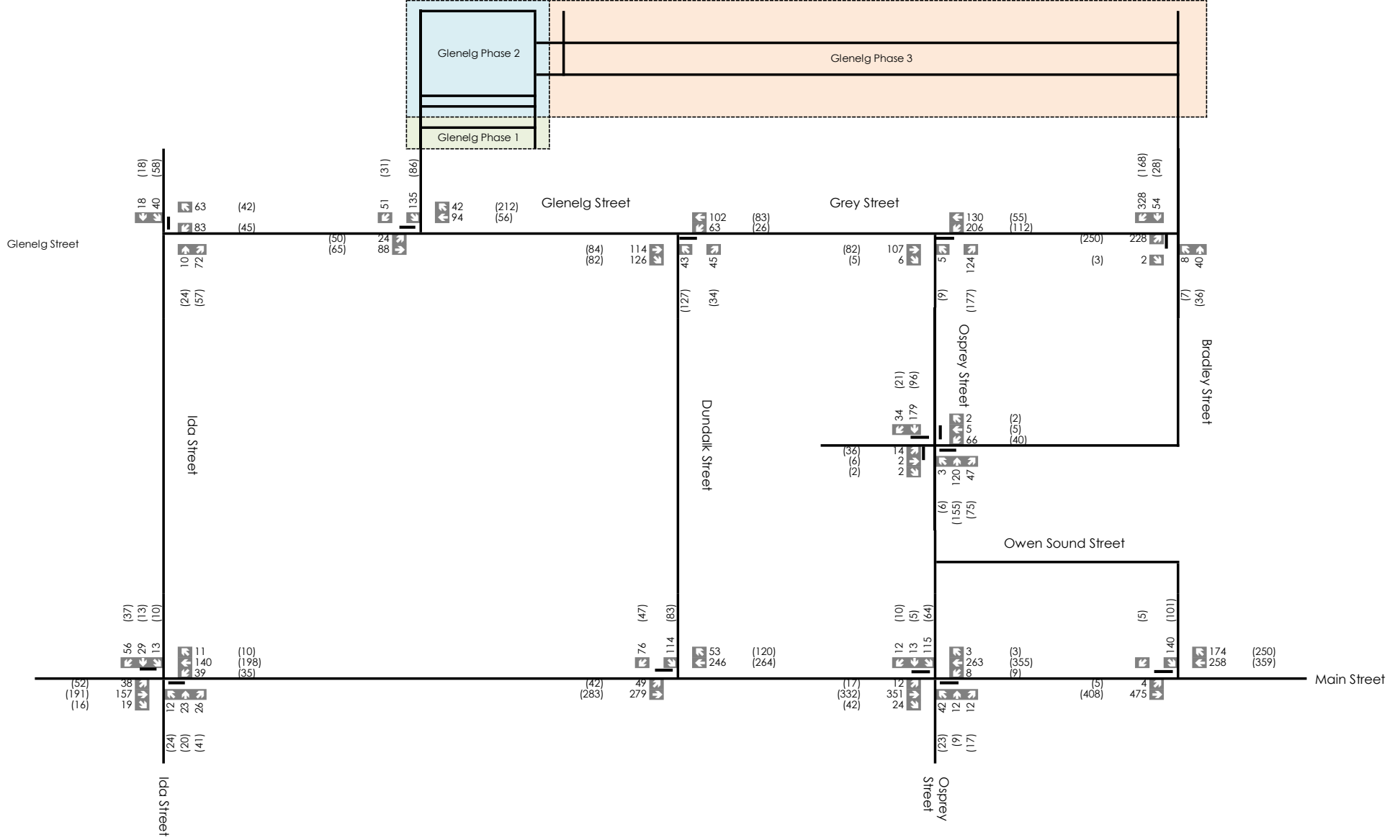
**Subject Property Trip Assignment**



**Figure 18**

Project No. 1060-6220

Date: August 2023



**Legend**

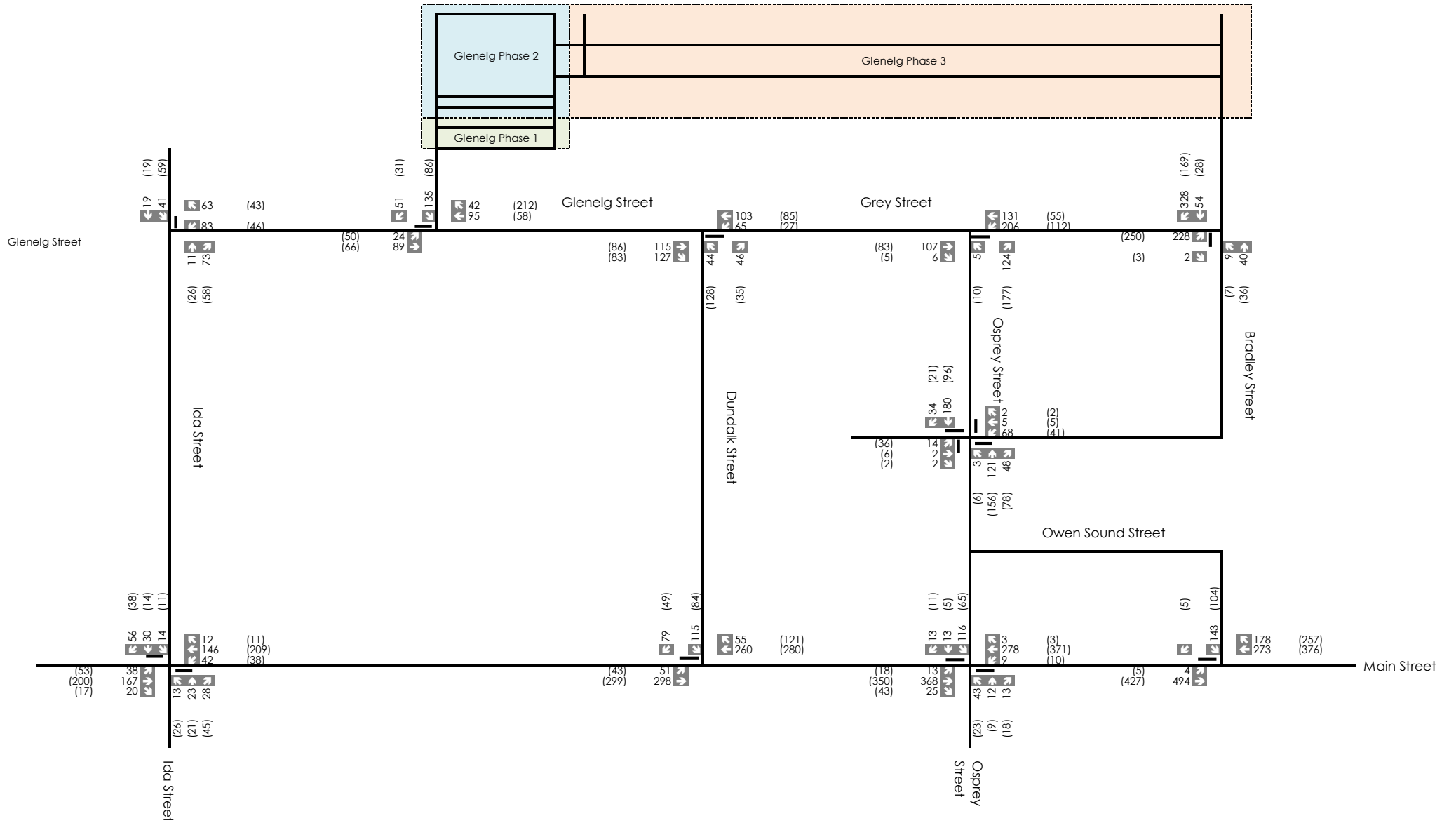
- xx A.M. Peak Hour Traffic Volumes
- XX P.M. Peak Hour Traffic Volumes
- Stop Sign

**Glenelg Phase 3**

**Future Total 2027 Traffic Volumes**



**Figure 19**  
 Project No. 1060-6220  
 Date: August 2023



**Legend**

- xx A.M. Peak Hour Traffic Volumes
- XX P.M. Peak Hour Traffic Volumes
- Stop Sign

**Glenelg Phase 3**

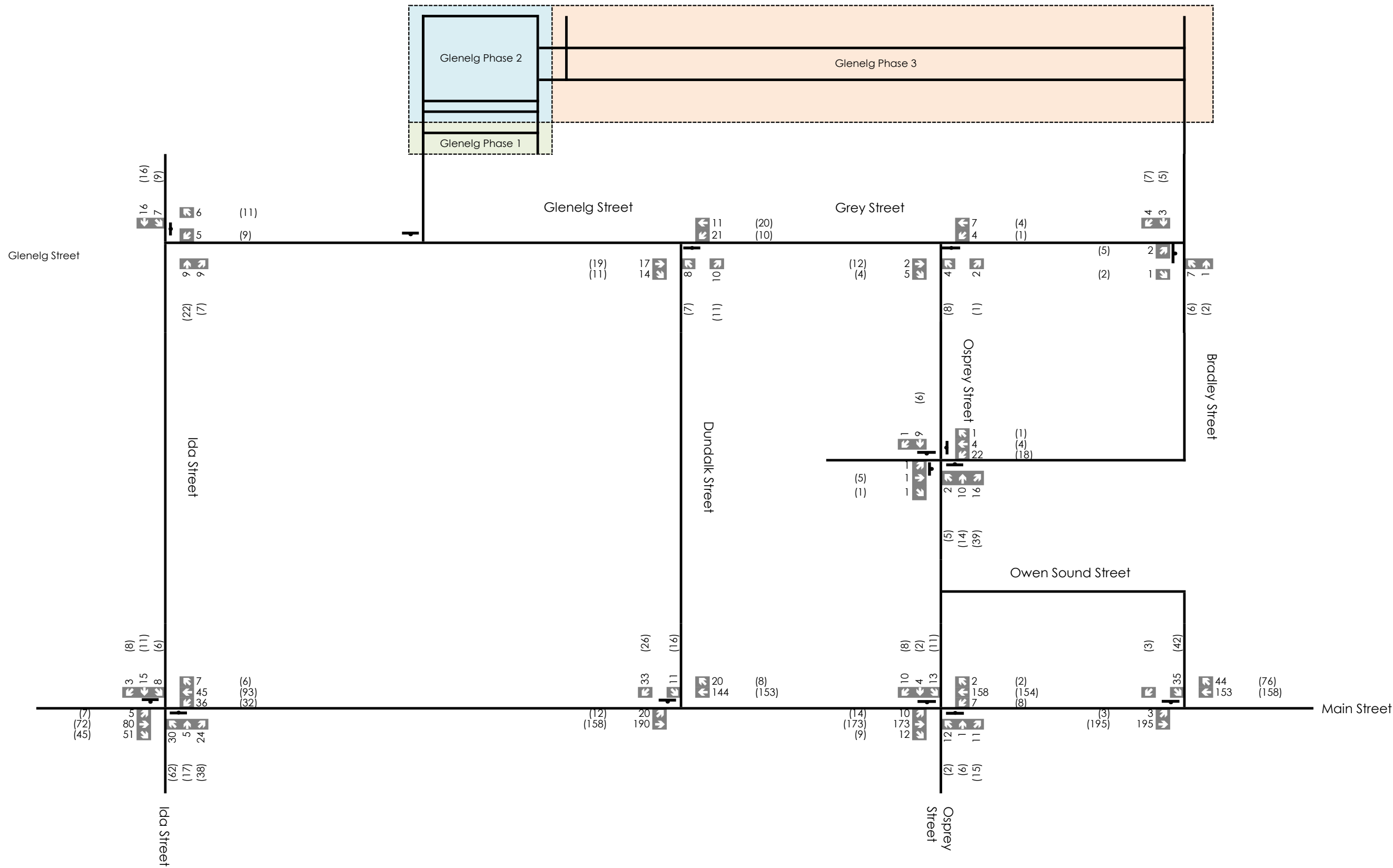
**Future Total 2032 Traffic Volumes**



**Figure 20**

Project No. 1060-6220

Date. August 2023



**Legend**

- xx A.M. Peak Hour Traffic Volumes
- (XX) P.M. Peak Hour Traffic Volumes
- Stop Sign

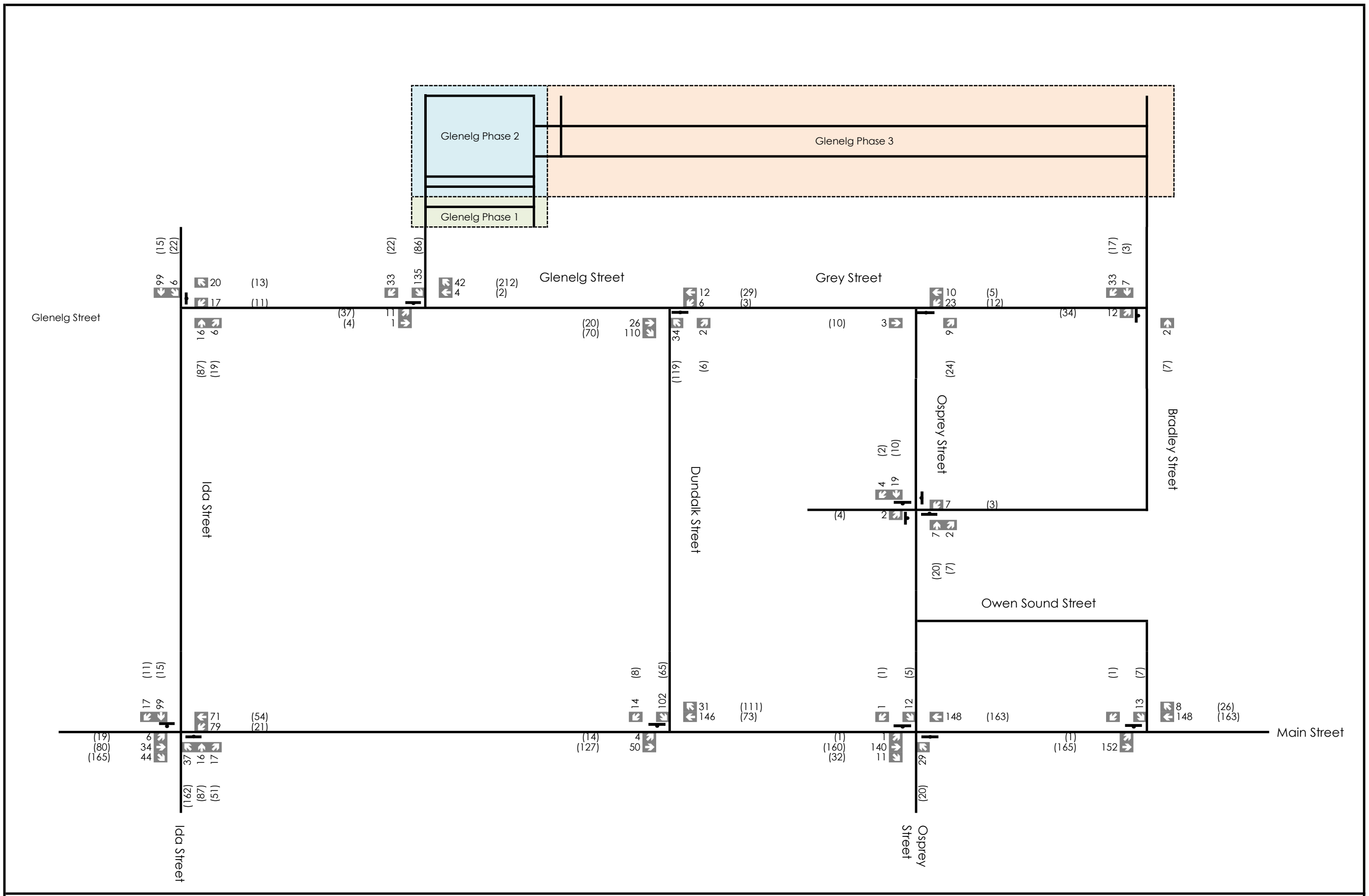
**Glenelg Phase 3**

**Eco Parkway Scenario Adjusted Existing Traffic Volumes**



**Figure 21**

Project No. 1060-6220  
Date. August 2023



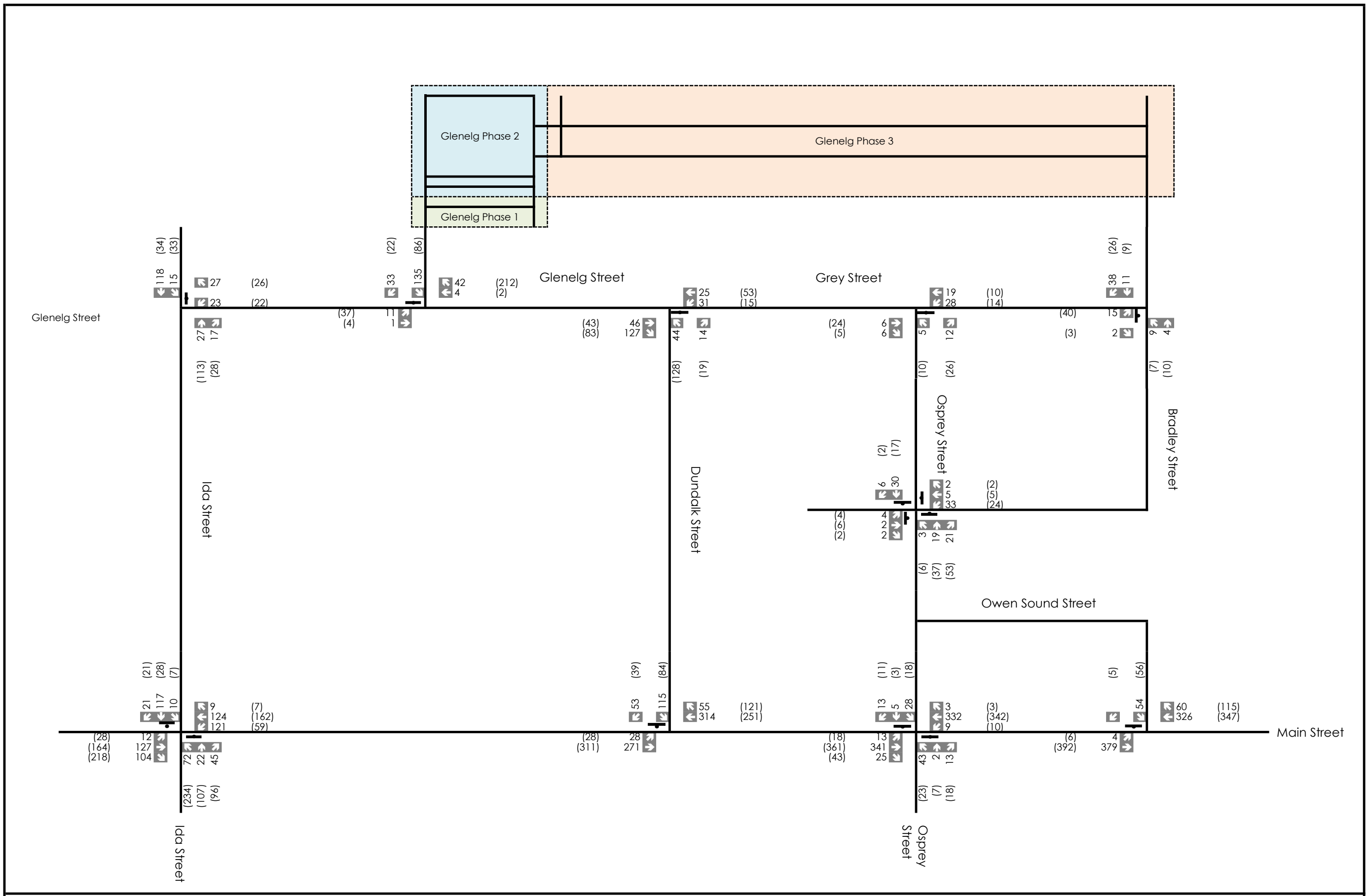
Legend	
xx	A.M. Peak Hour Traffic Volumes
(XX)	P.M. Peak Hour Traffic Volumes
■	Stop Sign

**Glenelg Phase 3**

**Background Development Trip Assignment Including Eco Parkway Industrial Lands**



**Figure 22**  
 Project No. 1060-6220  
 Date: August 2023



**Legend**

- xx A.M. Peak Hour Traffic Volumes
- (XX) P.M. Peak Hour Traffic Volumes
- Stop Sign

**Glenelg Phase 3**

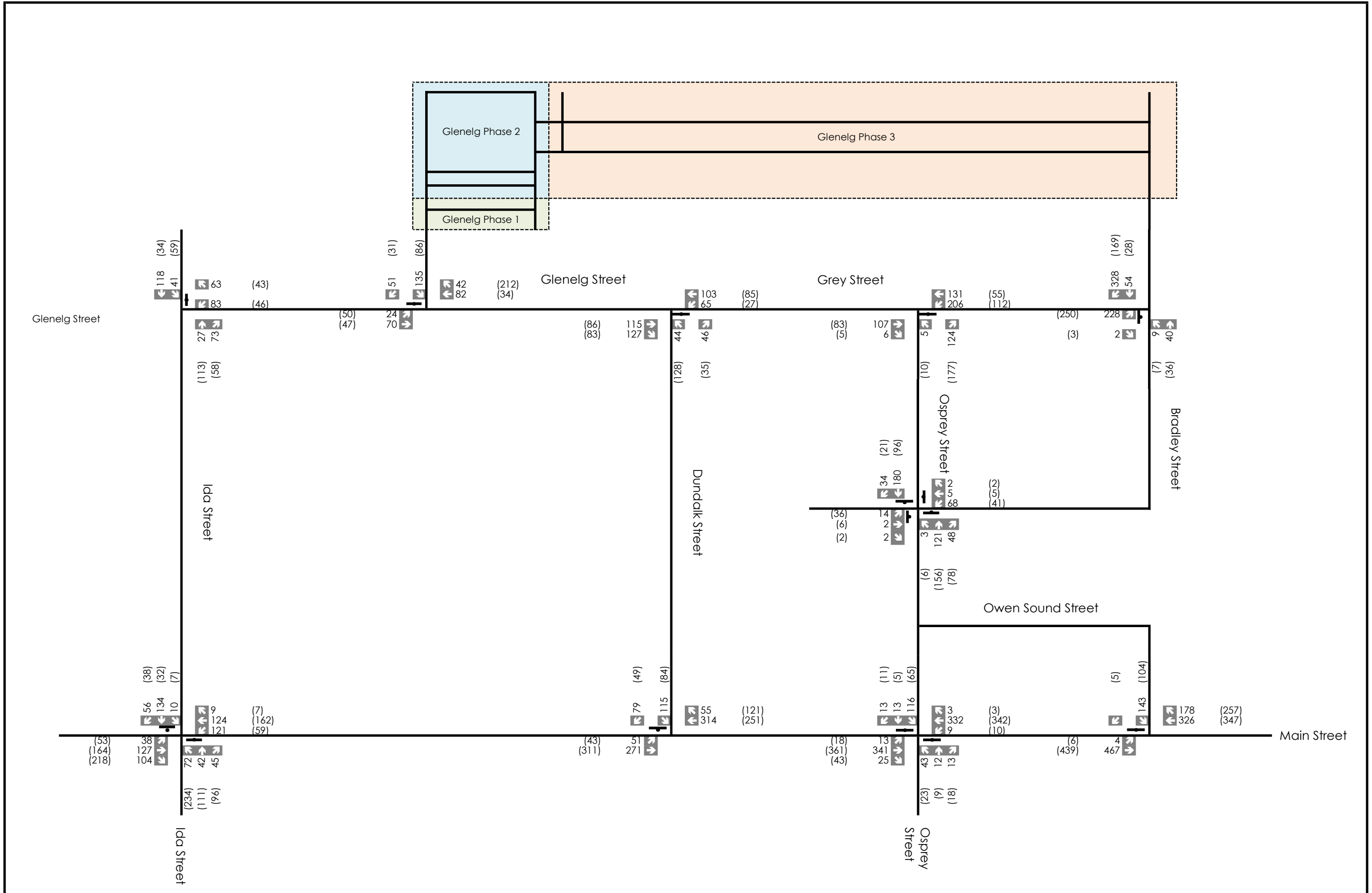
**Eco Parkway Scenario Future Background 2032 Traffic Volumes**



**Figure 23**

Project No. 1060-6220  
Date: August 2023





Legend	
xx	A.M. Peak Hour Traffic Volumes
(XX)	P.M. Peak Hour Traffic Volumes
■	Stop Sign

**Glenelg Phase 3**

**Eco Parkway Scenario Future Total 2032 Traffic Volumes**



**Figure 24**

Project No. 1060-6220

Date: August 2023