

# Transportation Impact Study

## PROPOSED RESIDENTIAL DEVELOPMENT

900 Lakeshore Road W  
MISSISSAUGA, ONTARIO

October 2024  
Project No: NT-23-188

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**Re:     Transportation Impact Study  
          Proposed Residential Development  
          900 Lakeshore Road W, City of Mississauga  
          Our Project No. NT-23-188**

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NexTrans Consulting Engineers (a Division of NextEng Consulting Group Inc.) is pleased to present the enclosed Transportation Impact Study Update for the above noted site in support an Official Plan Amendment and Zoning By-law Amendment Applications for a proposed residential development.

The subject property is located at 900 Lakeshore Road W, south of Lakeshore Road West and east of Whittier Crescent, in the City of Mississauga. The existing site is currently occupied by an existing one-storey residential house. The proposed redevelopment of the site consists of a 10-storey residential building with a total of 188 residential dwelling units. The proposed development will provide a minimum of 205 parking spaces and 122 bicycle parking spaces (inclusive of Class A and Class B). A full moves access will be provided onto Lakeshore Road West to service the proposed development.

The Transportation Impact Study is consistent with the City and Region traffic impact study guidelines, concludes that the proposed development can adequately be accommodated by the existing transportation network, excellent existing Mississauga Transit Services, the future Lakeshore Bus Rapid Transit, as well as the Transportation Demand Management measures and incentives recommended in this report.

We trust the enclosed sufficiently addresses your needs. Should you have any questions, please do not hesitate to contact the undersigned.

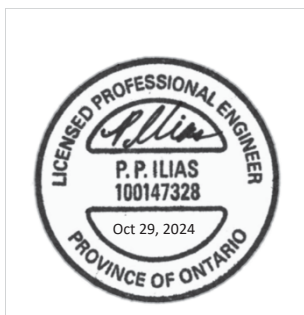
Yours truly,

**Nextrans Consulting Engineers**  
A Division of NextEng Consulting Group Inc.

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#### Report Submission Record

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|----------------|------------------|---------------------------------------|
| Final Report   | November 8, 2024 | For Final Submission                  |
|                |                  |                                       |
|                |                  |                                       |

## EXECUTIVE SUMMARY

NexTrans Consulting Engineers (A Division of NextEng Consulting Group Inc.) was retained by 1000570027 Ontario Inc. (the 'Client') to undertake a Transportation Impact Study Update in support of an Official Plan Amendment and Zoning By-law Amendment Applications application.

The subject property is located at 900 Lakeshore Road W, south of Lakeshore Road West and east of Whittier Crescent, in the City of Mississauga. The existing site is currently occupied by an existing one-storey residential house.

### Proposed Development

The existing site is currently vacant. The proposed redevelopment of the site consists of a 10-storey residential building with 188 units, and the proposed access onto Lakeshore Road W.

### Transportation Assessment Analysis

The proposed development is expected to generate:

- 71 total two-way trips (16 inbound and 55 outbound) and 74 total two-way trips (45 inbound and 29 outbound) during the AM and PM peak hours, respectively.
- 23 two-way auto trips (5 inbound and 18 outbound) and 14 two-way auto trips (9 inbound and 5 outbound) during the AM and PM peak hours, respectively; and
- 48 two-way transit trips (11 inbound and 37 outbound) and 60 two-way transit trips (36 inbound and 24 outbound) during the AM and PM peak hours, respectively

### Auto Mode Assessment

The intersection capacity analysis indicates that under existing, future background and future total conditions, all the intersections considered in the Study are expected to operate at acceptable levels of service with optimized signal timing plan.

The proposed site accesses are expected to operate at acceptable levels of service with minimum delay or queue.

### Active Transportation Mode Assessment

#### Walking Mode Assessment

The area is currently well-served by a sufficient network of sidewalks, with sidewalks are available on both sides of Lakeshore Road, east side of Lorne Park Road and west side of Ibar Way. Sidewalks are reasonably maintained.

The proposed development is committed to construct the sidewalks along Lakeshore Road W and along the frontage of the proposed development. The sidewalk will be constructed to the City standards.

#### Cycling Mode Assessment

Under the existing conditions, there are Multi-use Trails along Lakeshore Road, Signed Bike Routes along Lorne Park Road and Ibar Way. There is Waterfront Rail in the area.

Our analysis and review indicate that the existing cycling network can be improved in the future as part of the City of Mississauga 2018 Cycling Master Plan and Lakeshore Connected Communities Transportation Master Plan recommendations. This will encourage existing and future residents to use these facilities instead of driving single-occupant-vehicles. These infrastructure projects are beyond the scope of this Study and this project.

#### Transit Mode Assessment

The analysis indicates that the proposed development is expected to generate 23 two-way transit trips (5 inbound and 18 outbound) and 14 two-way transit trips (9 inbound and 5 outbound) during the AM and PM peak hours, respectively (highest). For the purposes of this assessment, it is assumed that all of these trips are transit related, which is conservative.

The proposed development is located about 200m to MiWay Bus Route 23.

The analysis indicates that the transit passenger demands generated by the proposed development can be accommodated by the existing and future transit services along this corridor. No additional improvements beyond what have been identified and planned by the City and Metrolinx are required to accommodate the proposed development.

### Vehicle Parking Review

Based on the Zoning Bylaw requirements, the proposed development will require to provide a total of 245 vehicle parking spaces, inclusive of residential, visitor. The proposed development will provide a total of 205 parking spaces which presents a technical shortfall of 40 residential parking spaces, or 16.3% reduction.

### Bicycle Parking Review

Based on the assessment of this Study Update, the proposed development is required and will provide a total of 122 bicycle parking spaces, including 9 short-term (Class B) spaces and 113 long-term spaces (Class A) for visitors and residents, respectively. The proposed development will meet this requirement by providing 122 bicycle parking spaces.

The proposed bicycle parking supply by the proposed development will support the vehicle parking reduction as this will encourage residents to take active mode of transportation to work, school and discretionary trips instead of driving private vehicles.

### Transportation Demand Management Measures and Incentives

The TDM measures and incentives related to the proposed development have been assessed and recommended in Section 10 of this report to support active transportation and transit, to meet the objectives and requirements of the City of Mississauga sustainable transportation objectives.

### Loading Requirement

Under the City's By-Law Zoning By-law 0225-2007, one loading space is required for residential component. The minimum loading space dimensions are: 3.5 m width and 9.0 m Length. The proposed development will meet this requirement.

### Study Conclusions and Recommendations

Based on the Study assessment, the following recommendations are provided:

- The proposed development has minimum or negligible impacts on the existing and future transportation network. The proposed development also represents good transportation planning and will support the future major transit investments by Metrolinx and the City of Mississauga.
- The proposed development implements the TDM measures and incentives identified in this report to support active transportation and transit and to reduce the numbers of single-occupant-vehicle trips to and from the proposed development;
- The proposed development implements the parking rates of 0.89 spaces/unit for resident and 0.2 spaces/unit for visitor, to support TDM and minimize the numbers of single-occupant-vehicle trips;
- The proposed development provides direct shared pedestrian and cycling connections to Lakeshore Road W, where appropriate. For example, the building entrances fronting onto these public roads for convenient and direct pedestrian access.

- Recommended improvements:
  - Require all new developments to provide transportation demand management measures and incentives;
  - Require all new developments to reduce residential vehicle parking rates to reduce car ownership and single-occupant-vehicle trips to and from this area; and
  - Provide provisions for active transportation, such as meet or exceed the Zoning By-law for bicycle parking requirements

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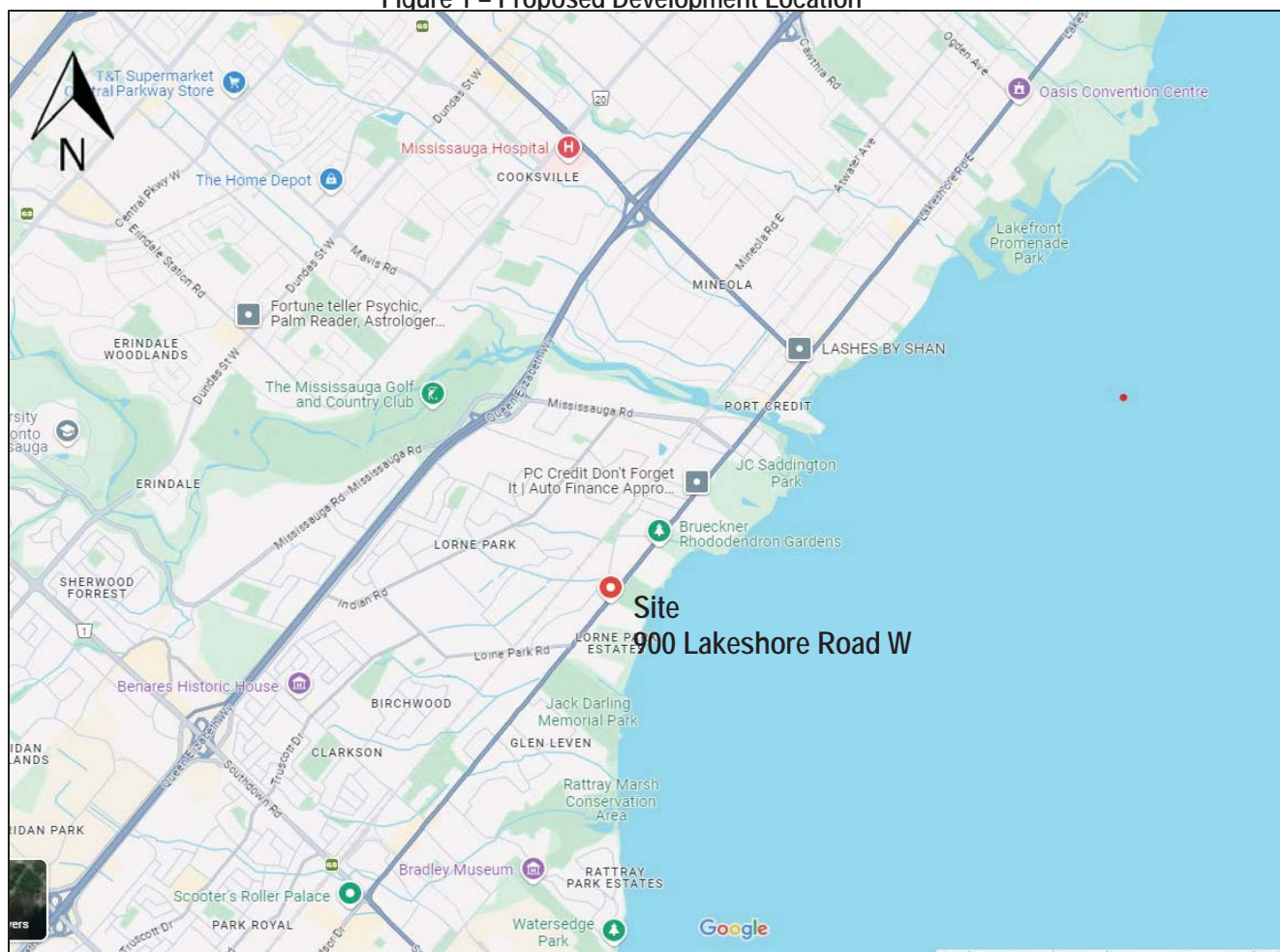
## 1.0 INTRODUCTION

NexTrans Consulting Engineers (A Division of NextEng Consulting Group Inc.) was retained by 1000570027 Ontario Inc. (the 'Client') to undertake a Transportation Impact Study Update in support of an Official Plan Amendment and Zoning By-law Amendment Applications application.

The subject property is located at 900 Lakeshore Road W, south of Lakeshore Road West and east of Whittier Crescent, in the City of Mississauga. The existing site is currently occupied by an existing one-storey residential house. The proposed redevelopment of the site consists of a 10-storey residential building with a total of 188 residential dwelling units. The location of the proposed development is illustrated in **Figure 1**.

The Study Update methodologies are consistent with the City's Traffic Impact Study (TIS) Guidelines, the Region's Guidelines for Using Synchro, as well as previous assessment conducted by NexTrans.

**Figure 1 – Proposed Development Location**

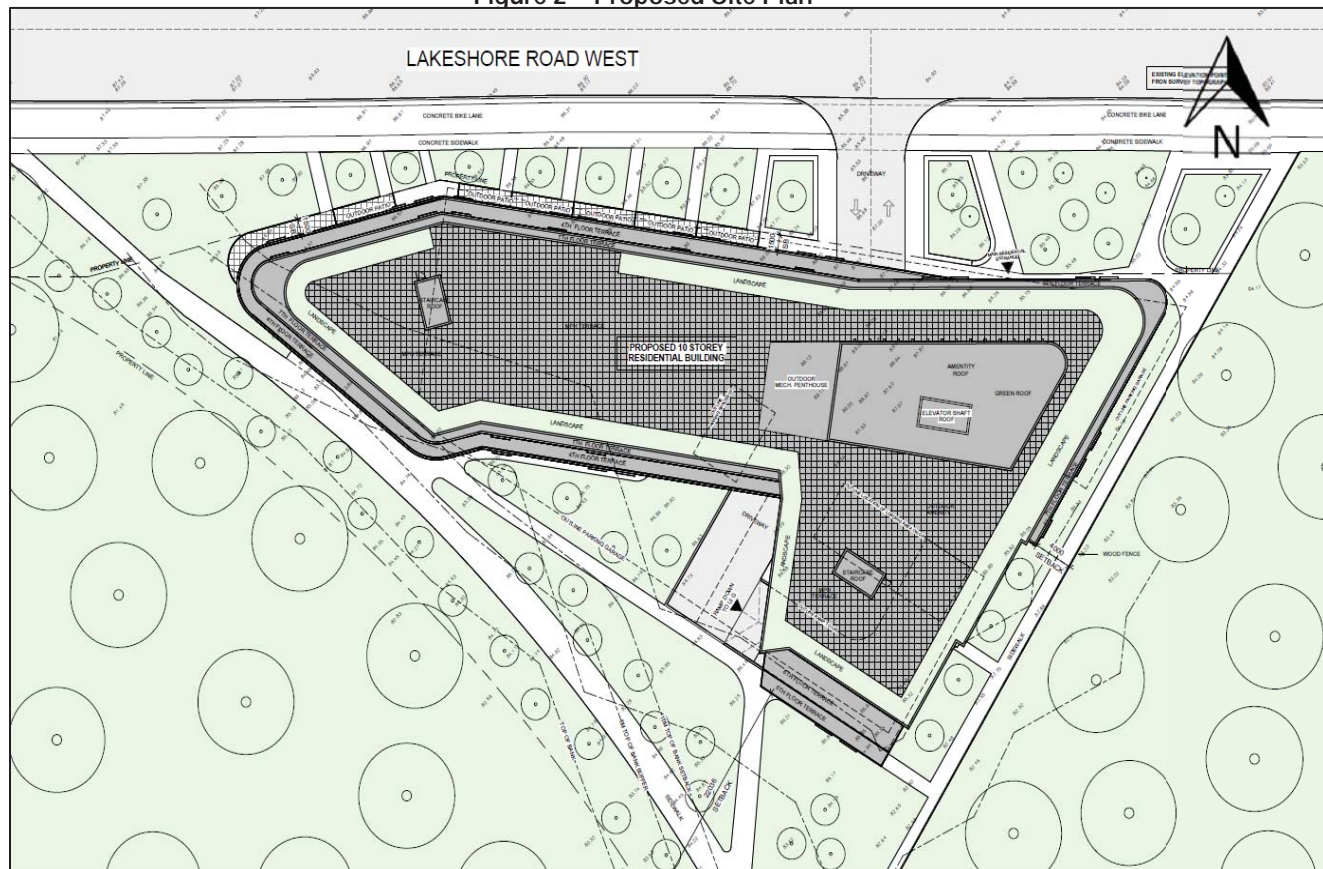


Source: Google Map

The proposed development will provide a minimum of 205 parking spaces and 122 bicycle parking spaces. **Figure 2** illustrates the proposed development site plan.

Currently, the subject site has one full moves access onto Lakeshore Road W. With the proposed redevelopment, the existing full moves access onto Lakeshore Road W will be retained.

Figure 2 – Proposed Site Plan



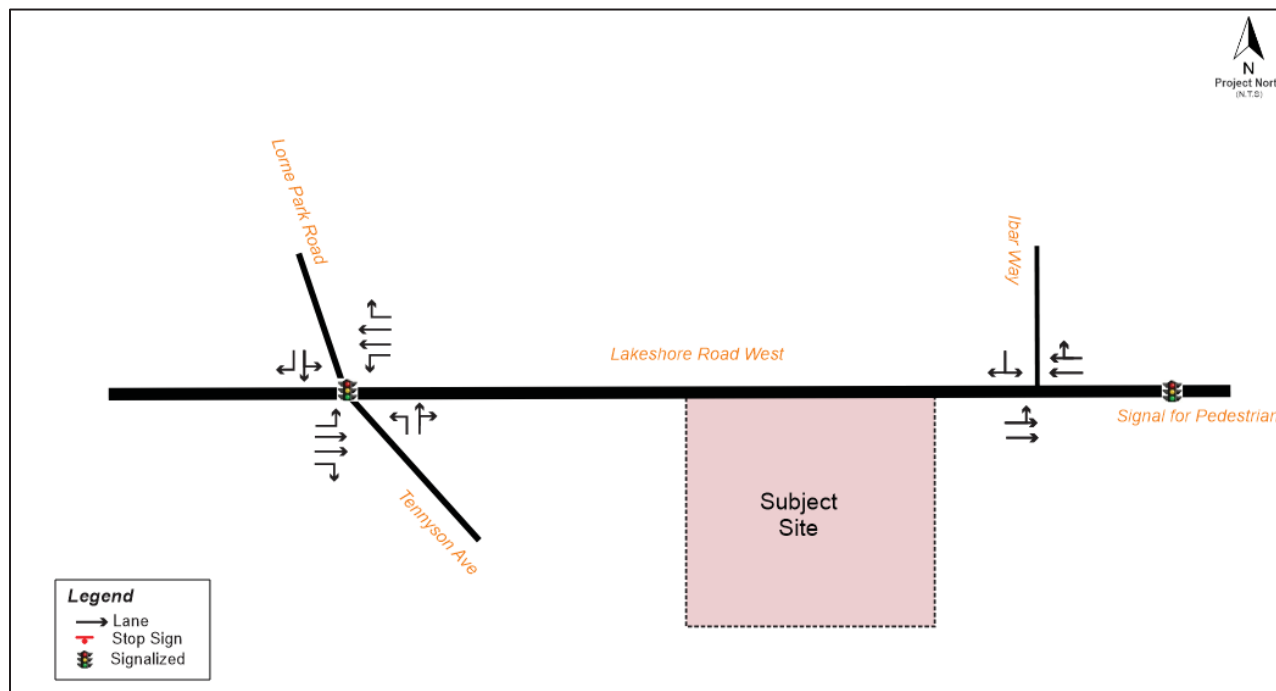
## 2.0 EXISTING TRAFFIC CONDITIONS

### 2.1. Existing Road Network

The existing road network, lane configuration and existing traffic control for the study area are shown in **Figure 3** (Existing Lane Configurations). The details area described below:

- **Lakeshore Road:** is an east-west major arterial under the City of Mississauga jurisdiction. It generally has a four-lane cross-section with turning lanes at the major intersections. It maintains a posted speed limit of 50 km/h near the subject site.
- **Ibar Way:** is a north-south local road under the City of Mississauga jurisdiction. It has two general purpose lanes with bicycle lanes on both sides of the road. It maintains a posted speed limit of 40 km/h near the subject site.
- **Tennyson Ave/Lorne Park Road:** is a north-south collector road under the City of Mississauga jurisdiction. It has two general purpose lanes and maintains a posted speed limit of 40 km/h.

Figure 3 – Existing Lane Configuration and Traffic Control



## 2.2. Existing Active Transportation Network Assessment

### 2.2.1. Walking Mode Assessment

The area is currently well-served by a sufficient network of sidewalks, with sidewalks are available on both sides of Lakeshore Road, east side of Lorne Park Road and west side of Ibar Way. Sidewalks are reasonably maintained.

### 2.2.2. Cycling Mode Assessment

Under the existing conditions, there are Multi-use Trails along Lakeshore Road, Signed Bile Rotes along Lorne Park Road and Ibar Way. There is Waterfront Rail in the area.

The assessment and review indicate that the existing cycling network can be improved in the future as part of the City of Mississauga 2023 Cycling Master Plan and Lakeshore Connected Communities Transportation Master Plan recommendations. This will encourage existing and future residents to use these facilities instead of driving single-occupant-vehicles.

Figure 4 illustrates the existing active transportation network in the study area.



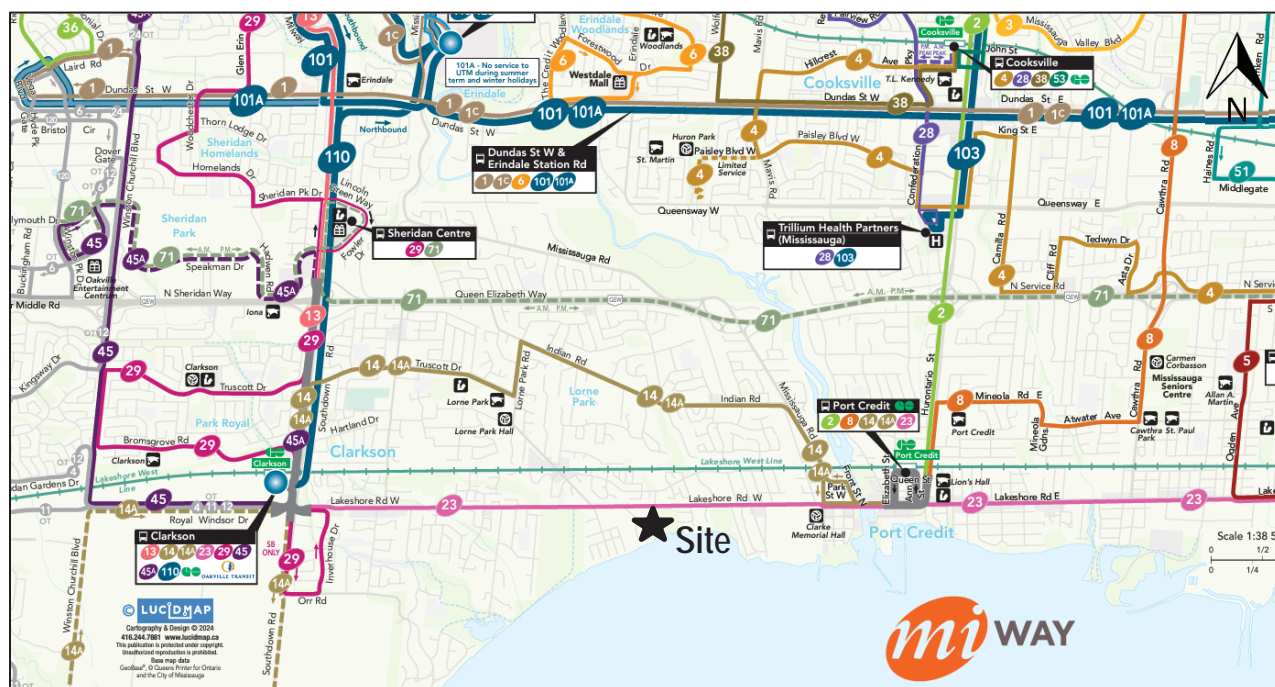
**Legend**

- Bike Lanes
- Multi-use trails
- Signed Route

Map of Mineola, New York, showing the proposed multi-use trail route. The map includes a legend for Bike Lanes (orange), Multi-use trails (blue), and Signed Route (purple). A red star marks the 'Site' near the Mineola Creek. The map also shows major roads like North Sheridan Way, South Sheridan Way, Indian Rd, and Mineola Rd E. A north arrow is in the top left corner.

### 2.3. Existing Transit Mode Assessment

### Figure 5 – Existing Transit Network in the Study Area



Source: Mississauga Transit Website ([www.web.mississauga.ca/miway-transit](http://www.web.mississauga.ca/miway-transit))

Mississauga Transit service descriptions are outlined below:

- **MiWay Route 23** – 23 Lakeshore is running generally in an east-west direction along Lakeshore Road west and Lakeshore Road E. The route operates in the west from Clarkson GO Train Station, to Port Credit GO Train Station and then to the Long Branch GO Station to the east. The service frequency is approximately 11 minutes during both the weekday morning and afternoon peak periods.
- **Route 5 Dixie** – This route is generally operating in the north-south direction from Long Branch GO Train Station area to the south to Cardiff Boulevard to the north. The service frequency is approximately 8-10 minutes during both the weekday morning and afternoon peak periods.
- **Lakeshore West GO Transit** – The Lakeshore West GO Line services between Union Station and Hamilton GO Centre and Hamilton West Harbour. This is all-day two-way service with a service frequency of approximately 30 minutes.

Based on NexTrans review of the existing Mississauga Transit/MiWay operating schedule, GO Transit operating schedule, as well as the context of the study area indicates that the area is currently has excellent transit service. The existing Route 23 MiWay has excellent service frequency (11 minutes or less) that connect residents to three GO Train Stations (Long Branch, Port Credit and Clarkson), as well as Route 5 Dixie.

The assessment and review indicate that the area has excellent transit service and there is no noticeable constrain in service at this time. In addition, with the future GO Service Expansion (formerly Regional Express Rail) all-day two-way and 15-minute service along Lakeshore West GO Line, as well as the future BRT on Lakeshore Road E, there will a significant increase in public ridership in the future.

## 2.4. Existing Traffic Volumes

As part of the previous assessment, the traffic turning movement counts were conducted at the following intersections:

- Lakeshore Road W and Lorne Park (signalized)
- Lakeshore Road W and Ibar Way (unsignalized)

The turning movement counts were conducted during the morning (7:00 a.m. to 9:00 a.m.) and afternoon (4:00 p.m. to 6:00 p.m.) peak periods for all area intersections.

Turning movement counts are summarized in **Appendix A**, using the methodology noted above. The existing volumes are illustrated in **Figure 6**.

## 2.5. Existing Traffic Assessment

The existing volumes in **Figure 6** were analyzed using Synchro Version 11 software. It should be noted that the printouts for unsignalized intersections are based on HCM 2000 outputs and the results for signalized intersections are based on Synchro Lanes, Volumes and Timings so that queues and more detailed information are provided. The detailed results are provided in **Appendix B** and summarized in **Table 1**. The analysis reflects the existing signal timing plans provided by the City of Mississauga.

Based on the intersection capacity analysis, under the existing traffic conditions, all the intersections considered in this Study are currently operating at acceptable levels of service.

The critical movement such as the eastbound left turn at Lakeshore Road W and Lorne Park is expected to operate at higher delay and v/c ratio due to higher demand during the morning and afternoon peak hours.

The potential mitigation measures for this intersection include providing left turn protected signal phase for this movement, the analysis indicates that the level of service of this intersection is significantly improved. Therefore, this optimized signal timing plan will carry onto future background and future total condition.

All other unsignalized intersections are expected to operate at acceptable levels of service and no improvements are required at this time.

Figure 6 – Existing Traffic Volumes (Balanced)

| Lorne Park       |     |     |    | Ibar Way |     |     |     |
|------------------|-----|-----|----|----------|-----|-----|-----|
| 97               | 5   | 59  | 1  | 107      | 114 | 25  | 9   |
| 163              | 1   | 109 | ←  | 583      | 589 | 52  | 31  |
| ↔                | ↓   | ↔   | ↔  | 4        | 4   | ↔   | ↔   |
| Lakeshore Road W |     |     |    |          |     |     |     |
| 123              | 123 | ↔   | ↔  | 1        | ↔   | 28  | 17  |
| 685              | 570 | →   | 16 | 4        | 8   | 675 | 670 |
| 7                | 11  | ↔   | 6  | 0        | 2   |     |     |

Table 1 – Existing Levels of Service

| Intersection   | Key Movement | Weekday AM Peak Hour |           |                            | Weekday PM Peak Hour |           |                            |
|--|--------------|----------------------|-----------|----------------------------|----------------------|-----------|----------------------------|
|  |              | LOS (v/c)            | Delay (s) | Queue 95 <sup>th</sup> (m) | LOS (v/c)            | Delay (s) | Queue 95 <sup>th</sup> (m) |
| Lakeshore Rd W/<br>Lorne Park<br>(signalized)  | Overall      | E                    | 0.96      | 71.2                       | E                    | 0.91      | 74.5                       |
|  | EB – L       | F                    | 1.89      | 486.0                      | F                    | 1.89      | 486.0                      |
|  | EB – T       | D                    | 0.68      | 38.6                       | D                    | 0.81      | 44.0                       |
|  | EB – R       | C                    | 0.01      | 28.6                       | C                    | 0.01      | 28.7                       |
|  | WB – L       | C                    | 0.02      | 32.1                       | C                    | 0.03      | 32.1                       |
|  | WB – T       | D                    | 0.83      | 46.1                       | D                    | 0.83      | 46.5                       |
|  | WB – R       | C                    | 0.07      | 32.5                       | C                    | 0.08      | 32.5                       |
|  | NB – L       | C                    | 0.04      | 25.5                       | C                    | 0.02      | 25.2                       |
|  | NB – TR      | C                    | 0.01      | 25.1                       | C                    | 0.00      | 25.0                       |
|  | SB – LT      | C                    | 0.29      | 29.2                       | C                    | 0.16      | 27.1                       |
|  | SB – R       | C                    | 0.11      | 26.3                       | C                    | 0.07      | 25.8                       |
| Lakeshore Rd W/<br>Lorne Park<br>(signalized) with<br>EB exclusive left<br>turn signal | Overall      | B                    | 0.36      | 18.7                       | B                    | 0.32      | 18.9                       |
|  | EB – L       | B                    | 0.37      | 14.5                       | B                    | 0.37      | 14.6                       |
|  | EB – T       | B                    | 0.38      | 15.9                       | B                    | 0.45      | 16.8                       |
|  | EB – R       | B                    | 0.01      | 12.6                       | B                    | 0.01      | 12.6                       |
|  | WB – L       | B                    | 0.01      | 17.5                       | B                    | 0.02      | 17.6                       |
|  | WB – T       | C                    | 0.48      | 22.4                       | C                    | 0.49      | 22.5                       |
|  | WB – R       | B                    | 0.08      | 18.4                       | B                    | 0.09      | 18.5                       |
|  | NB – L       | B                    | 0.04      | 18.3                       | B                    | 0.01      | 18.0                       |
|  | NB – TR      | B                    | 0.01      | 18.0                       | B                    | 0.00      | 17.9                       |
|  | SB – LT      | B                    | 0.24      | 19.9                       | B                    | 0.13      | 18.9                       |
|  | SB – R       | B                    | 0.11      | 18.5                       | B                    | 0.07      | 18.0                       |
| Lakeshore Rd W/<br>Ibar Way<br>(unsignalized)  | EB – LT      | A                    | 0.02      | 0.8                        | A                    | 0.04      | 1.4                        |
|  | SB – LR      | C                    | 0.25      | 18.5                       | C                    | 0.11      | 16.7                       |



### 3.0 TRANSPORTATION PLANNING CONTEXT IN THE AREA

#### 3.1. Land Use Context

A comprehensive review of the area indicates that there are wide range of land uses and facilities available, which includes: grocery stores, pharmacy, banks and restaurants as well as existing and future high-rise condominium buildings to the east of the proposed development.

As the development proposal includes a 10-storey building with a total of 188 residential dwelling units, therefore, the proposed development will have similar transportation characteristics as the existing area.

#### 3.2. Transportation Planning Context

The analysis and review of the area indicate that the area is currently servicing by excellent existing land use, transportation network and transit network. This will accommodate other modes of transportation such as walking, cycling and public transit. Future residents living in the proposed development will have other ways to travel around, with less dependent on private automobile and therefore will not require many parking spaces.

#### 3.3. Lakeshore Connected Communities Transportation Master Plan

The proposed development is located within the Lakeshore Connecting Communities Transportation Master Plan Study. Based on the information obtained from the project website (<http://www.mississauga.ca/portal/residents/lakeshore-connecting-communities#lcc-main>), the purpose of the Transportation Master Plan Study is to conduct a review how to best connect the communities of Clarkson, Port Credit and Lakeview while preserving and enhancing the unique character and sense of place of each community.

The study builds on recent planning studies to develop a design for the Lakeshore Road corridor from building face to building face that supports all modes of transportation, connects people to places, and moves goods to market. The study will also evaluate rapid transit alternatives east of Hurontario Street as well as extending rapid transit into the Port Credit area.

The City Council has endorsed the Lakeshore Connecting Communities Transportation Master Plan Study. Lakeshore Connecting Communities Transportation Master Plan will set out a long-term vision for transit and corridor improvements along Lakeshore Road from 2020 to 2041 that will support waterfront development.

The project will now move to its next steps, which is completing the Class Environmental Assessment process for the Lakeshore Corridor. This will involve further developing, evaluating and consulting on a number of different road designs for Lakeshore Road. NexTrans will review the final study and materials available on the website and address the questions or concerns related to this project from the proposed development perspective, where appropriate.

#### 3.4. Metrolinx GO Expansion Project – Lakeshore West

As indicated, the proposed development is located approximately 3 km to Hurontario Street future LRT and Port Credit Go Station on the Lakeshore West GO Line. It is NexTrans' understanding that, currently, the Lakeshore West GO Line provides two-way, all-day service seven days a week, from Toronto Union Station to Aldershot Station in Burlington. It provides rush-hour service from Hamilton to Toronto in the morning and back from Toronto to Hamilton in the afternoon. Regular weekday GO Train service for commuters in Niagara Falls and St. Catharines started in January 2019.

Since August 31, 2019, weekend service between Toronto and Niagara started running all year round. In the future, with the Lakeshore West GO expansion along with the electrification of the existing GO Line, it will provide 15-minute service or better all-day and two-way service between Toronto and Burlington, alongside new hourly service to and from Hamilton seven days a week.

### 3.5. Hurontario LRT (Expected Completion in Fall 2024)

It is NexTrans' understanding that Metrolinx is partnered with the City of Mississauga and the City of Brampton to build the new 18-km Hurontario LRT (19 stations) that services Mississauga and Brampton with better and more convenient way of travel. Based on the project website information (<http://www.metrolinx.com/en/greaterregion/projects/hurontario-lrt.aspx>) Metrolinx and Infrastructure Ontario (IO) have officially announced the winning bidder for the Hurontario Light Rail Transit project. Mobilinx, the winning team, will design, build, finance, operate and maintain the new transit project for a 30-year term.

Metrolinx has announced the naming the Hurontario light-rail-transit (LRT) project as the Hazel McCallion Line, to commemorate the former Mississauga mayor. The project will continue to be referred to as the Hurontario LRT project while construction is underway but will adopt the name once the line opens. Once in service, the 18-kilometre Hazel McCallion Line will bring a new, environmentally friendly and reliable method of transportation to a rapidly growing region. The new transit system will feature 19 stations, travel through two urban growth centres and connect to major transit systems including GO Transit (Milton and Lakeshore West lines), the Mississauga Transitway, Brampton Transit, ZUM and MiWay. The Hazel McCallion Line will operate in its own dedicated lane ensuring a smooth, reliable and convenient ride along the region's busiest street.

As Mississauga and Brampton expands with new residents, businesses and amenities, sustainable and reliable transit becomes vital. The Hazel McCallion Line will operate with clean, electrically powered light rail vehicles, producing near zero emissions. The future LRT line not just get cars off the road, but it's a more sustainable, environmentally conscious way to travel within the City of Mississauga. The future residents in the proposed development can connect with the future Hurontario LRT by taking a few minutes walk to the Dundas Station or Cooksville Station.

Therefore, this project will further encourage existing and future residents to take more convenient and sustainable mode of transportation in transit, instead of driving single-occupant-vehicles.

## 4.0 FUTURE BACKGROUND CONDITIONS

### 4.1. Analysis Horizon

For the purposes of this assessment, 2029 horizon has been carried out for the study analysis as five-year horizon to be consistent with City of Mississauga Guidelines.

### 4.2. Future Background Corridor Growth

NexTrans has received the growth rates from the City of Mississauga that will be applied to Lakeshore Road W. The city indicates that 1% growth per annum (compounded) will be applied to the eastbound and westbound direction during the AM peak hour and 0.5% growth per annum (compounded) for the eastbound and westbound direction during the PM peak hour for Lakeshore Road W. It is important to note that the growth rate already capture the background traffic volumes in the area, therefore, no background traffic will be added.

Figure 7 illustrates the 2029 future background traffic volumes.

Figure 7 – Future Background Traffic Volumes

| Lorne Park       |     |     |     |     |    |     |     |     |  | Ibar Way |  |
|------------------|-----|-----|-----|-----|----|-----|-----|-----|--|----------|--|
| 97               | 5   | 59  | 112 | 114 | 25 | 9   | 18  | 36  |  |          |  |
| 163              | 1   | 109 | 613 | 604 | 52 | 31  | 662 | 744 |  |          |  |
| ←                | ↓   | →   | ←   | →   | ←  | →   | ←   | →   |  |          |  |
| Lakeshore Road W |     |     |     |     |    |     |     |     |  |          |  |
| 123              | 123 | ↓   | 16  | 4   | 8  | 28  | 17  | ↓   |  |          |  |
| 702              | 599 | →   | 6   | 0   | 2  | 692 | 704 | →   |  |          |  |
| 7                | 11  | ↓   |     |     |    |     |     |     |  |          |  |

### 4.3. Future Background Traffic Assessment

The estimated 2029 future background traffic volumes illustrated in Figure 7 were analyzed using Synchro Version 11 software. The detailed calculations are provided in Appendix D and summarized in Table 2.

Table 2 – 2029 Future Background Levels of Service

| Intersection   | Key Movement | Weekday AM Peak Hour |           |                            | Weekday PM Peak Hour |           |                            |
|--|--------------|----------------------|-----------|----------------------------|----------------------|-----------|----------------------------|
|  |              | LOS (v/c)            | Delay (s) | Queue 95 <sup>th</sup> (m) | LOS (v/c)            | Delay (s) | Queue 95 <sup>th</sup> (m) |
| Lakeshore Rd W/<br>Lorne Park<br>(signalized) with<br>EB exclusive left<br>turn signal | Overall      | B                    | 0.38      | 19.0                       | B                    | 0.33      | 19.0                       |
|  | EB – L       | B                    | 0.38      | 14.7                       | B                    | 0.38      | 14.6                       |
|  | EB – T       | B                    | 0.39      | 16.1                       | B                    | 0.46      | 16.9                       |
|  | EB – R       | B                    | 0.01      | 12.6                       | B                    | 0.01      | 12.6                       |
|  | WB – L       | B                    | 0.01      | 17.5                       | B                    | 0.02      | 17.6                       |
|  | WB – T       | C                    | 0.51      | 22.8                       | C                    | 0.50      | 22.7                       |
|  | WB – R       | B                    | 0.07      | 18.1                       | B                    | 0.09      | 18.5                       |
|  | NB – L       | B                    | 0.04      | 18.1                       | B                    | 0.01      | 18.0                       |
|  | NB – TR      | B                    | 0.01      | 17.9                       | B                    | 0.00      | 17.9                       |
|  | SB – LT      | B                    | 0.24      | 20.8                       | B                    | 0.13      | 18.9                       |
|  | SB – R       | B                    | 0.11      | 19.0                       | B                    | 0.07      | 18.0                       |
| Lakeshore Rd W/<br>Ibar Way<br>(unsignalized)  | EB – LT      | A                    | 0.02      | 0.8                        | A                    | 0.04      | 1.4                        |
|  | SB – LR      | C                    | 0.27      | 19.7                       | C                    | 0.11      | 17.2                       |

Based on the intersection capacity analysis, under the 2029 future background traffic conditions, with the optimized signal timing plan, the intersection of Lakeshore Road West and Lorne Park is expected to generate at acceptable of service. The unsignalized intersection is also expected to generate at acceptable level of service. No physical improvement is required.

## 5.0 SITE TRAFFIC

### 5.1. Proposed Development

As indicated, the existing site is currently vacant. The proposed redevelopment of the site consists of a 10-storey residential building with 188 dwelling units.

To be consistent with the previous assessment, the 2016 Transportation Tomorrow Survey (TTS), the *Trip Generation Manual, 11<sup>th</sup> Edition* published by the Institute of Transportation Engineers (ITE) and information was reviewed to estimate the modal split, trip distribution and trip generation for the proposed development.

## 5.2. Modes of Travel Assessment in the Area

**Table 3** summarizes the travel mode split information based on the review of the 2016 Transportation Tomorrow Survey data for Traffic Zones 3641,3646. The 2016 TTS data extraction is included in **Appendix E**.

**Table 3 – Modal Split based on 2016 TTS Data for Traffic Zones**

| Time                             | Trips Made by Traffic Zones |                |         |       |      |
|----------------------------------|-----------------------------|----------------|---------|-------|------|
|                                  | Auto Driver                 | Auto Passenger | Transit | Cycle | Walk |
| AM Peak Period (6:00AM – 9:00AM) | 67%                         | 15%            | 13%     | 1%    | 4%   |
| PM Peak Period (3:00PM – 6:00PM) | 81%                         | 12%            | 2%      | 2%    | 3%   |

Based on the information above, the non-auto mode of transportation (transit + walking + carpooling) accounts for approximately 33% during the morning peak period and 19% during the afternoon peak period. The transit modal split is approximately 13% during the morning peak period and 2% during the afternoon peak period.

## 5.3. Site Trip Generation

The current development proposal consists of a total of 188 residential dwelling units. The trip generation forecasts were undertaken using the information contained in the *Trip Generation Manual, 11<sup>th</sup> Edition* published by the Institute of Transportation Engineers (ITE). For the purposes of this assessment, the ITE Land Use Codes (LUC) 221 "Multifamily Housing Mid-Rise General Urban/Suburban" fitted curve equations have been utilized for the proposed development. The site trip generation is summarized in **Table 4**.

**Table 4 – Site Trip Generation (11<sup>th</sup> Edition)**

| ITE Land Use   | Magnitude (units/GFA) | Parameters  |     |     | Morning Peak Hour |     |       | Afternoon Peak Hour |     |       |
|--|-----------------------|---|-----|-----|-------------------|-----|-------|---------------------|-----|-------|
|  |                       |   |     |     | In                | Out | Total | In                  | Out | Total |
| Multifamily Housing (Mid-rise)<br>LUC 221 General Urban/Suburban | 188                   | Trip Rates<br>AM - T = 0.44(X) - 11.61<br>PM - T = 0.39(X) + 0.34 |     |     | 16                | 55  | 71    | 45                  | 29  | 74    |
|  |                       | Mode  | AM  | PM  |                   |     |       |                     |     |       |
|  |                       | Non-Auto  | 33% | 19% | 5                 | 18  | 23    | 9                   | 5   | 14    |
|  |                       | Auto  | 67% | 81% | 11                | 37  | 48    | 36                  | 24  | 60    |

Based on the analysis noted above, the proposed development is expected to generate:

- 71 total two-way trips (16 inbound and 55 outbound) and 74 total two-way trips (45 inbound and 29 outbound) during the AM and PM peak hours, respectively.
- 23 two-way auto trips (5 inbound and 18 outbound) and 14 two-way auto trips (9 inbound and 5 outbound) during the AM and PM peak hours, respectively; and
- 48 two-way transit trips (11 inbound and 37 outbound) and 60 two-way transit trips (36 inbound and 24 outbound) during the AM and PM peak hours, respectively

## 5.4. Site Trip Distribution and Assignment

The 2016 Transportation Tomorrow Survey (TTS) data was reviewed for Traffic Zones 3641 and 3646 in order to estimate the general trip distribution for the proposed development. **Table 5** summarizes the planning district/traffic zones distribution based on the 2016 TTS data, with **Table 6** summarizing the site trip assignment based on the 2016 TTS data detailed breakdown for the City of Mississauga Wards and existing transportation network in the area for the residential component of proposed development.

**Table 5 – Site Trip Distribution**

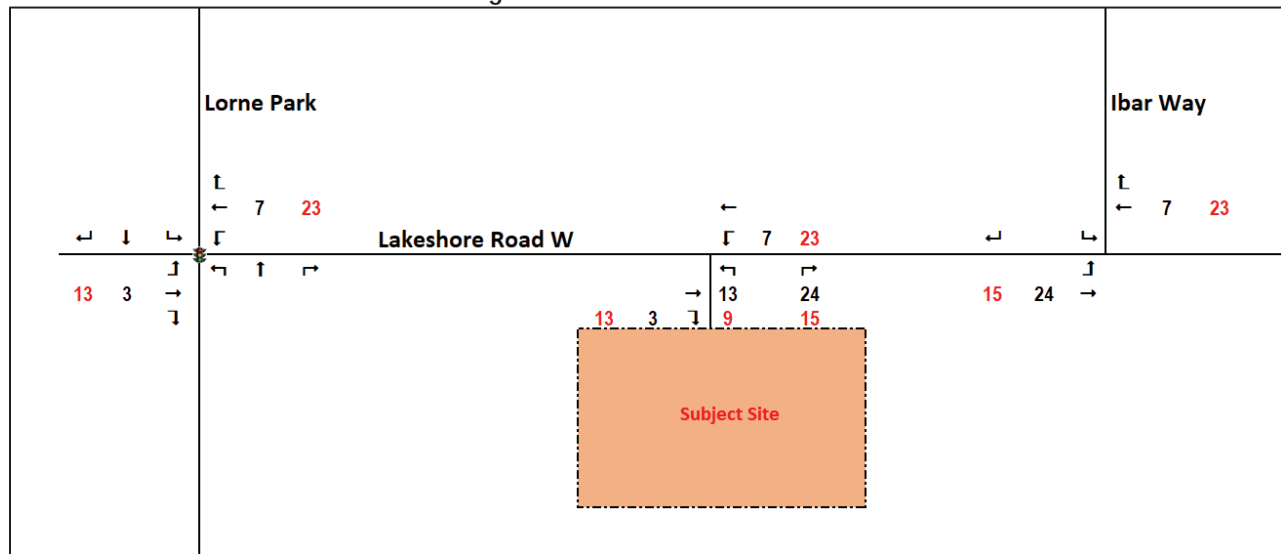
| Mode | Mississauga | Toronto | Brampton | Oakville and West | York Region and North | Total |
|------|-------------|---------|----------|-------------------|-----------------------|-------|
| Auto | 61%         | 21%     | 9%       | 5%                | 4%                    | 100%  |

Table 6 – Site Trip Distribution

| General Direction (To/From) | Inbound     | Outbound    |
|-----------------------------|-------------|-------------|
| East (Lakeshore Road, QEW)  | 65%         | 65%         |
| West (Lakeshore Road, QEW)  | 35%         | 35%         |
| <i>Total</i>                | <i>100%</i> | <i>100%</i> |

Figure 8 illustrates the proposed development generated traffic volumes. It should be noted that the auto site trip distribution and assignment have been taken into consideration the 2016 TTS information, existing intersection operations and capacity constraints.

Figure 8 – Site Traffic Volumes



## 6.0 FUTURE TOTAL TRAFFIC CONDITIONS

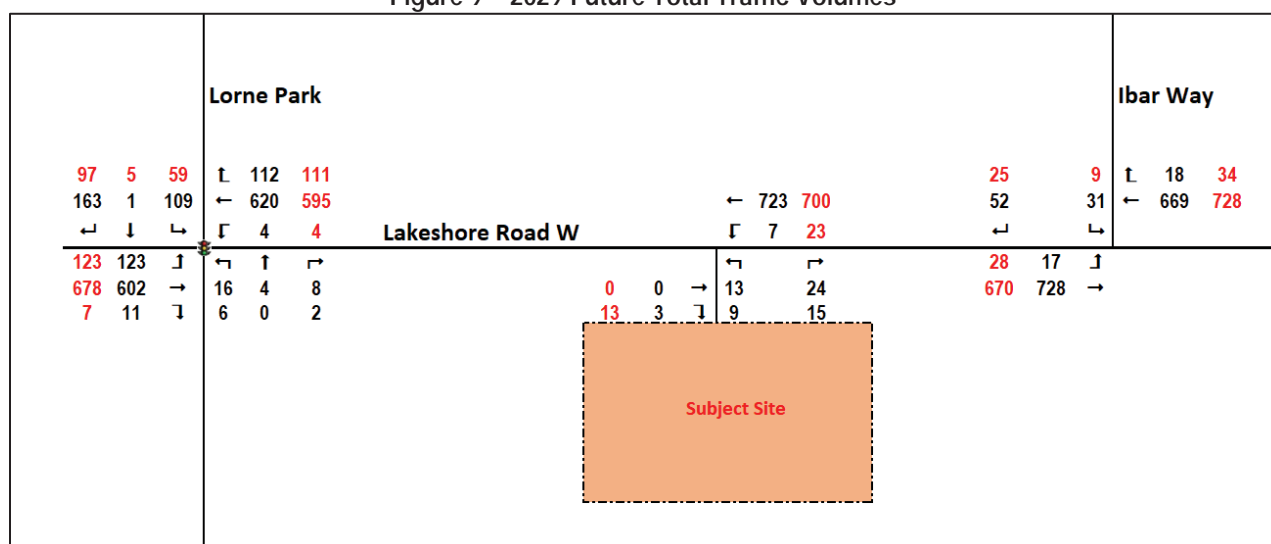
### 6.1. Future Total Traffic Assessment for Auto Mode

The estimated 2029 future total traffic volumes (future background traffic volumes plus site generated traffic volumes) are illustrated in Figure 9 and were analyzed using Synchro Version 11 software. The detailed calculations are provided in Appendix F and summarized in Table 7.

Table 7 – 2029 Future Total Levels of Service

| Intersection   | Key Movement | Weekday AM Peak Hour |      |           |                            | Weekday PM Peak Hour |      |           |                            |
|--|--------------|----------------------|------|-----------|----------------------------|----------------------|------|-----------|----------------------------|
|  |              | LOS (v/c)            |      | Delay (s) | Queue 95 <sup>th</sup> (m) | LOS (v/c)            |      | Delay (s) | Queue 95 <sup>th</sup> (m) |
| Lakeshore Rd W/<br>Lorne Park<br>(signalized) with<br>EB exclusive left<br>turn signal | Overall      | B                    | 0.38 | 19.1      |                            | B                    | 0.33 | 19.0      |                            |
|  | EB – L       | B                    | 0.38 | 14.7      | 20.8                       | B                    | 0.38 | 14.6      | 20.8                       |
|  | EB – T       | B                    | 0.40 | 16.1      | 52.1                       | B                    | 0.46 | 16.9      | 63.4                       |
|  | EB - R       | B                    | 0.01 | 12.6      | 0.0                        | B                    | 0.01 | 12.6      | 0.0                        |
|  | WB – L       | B                    | 0.01 | 17.5      | 2.7                        | B                    | 0.02 | 17.6      | 2.7                        |
|  | WB – T       | C                    | 0.51 | 22.9      | 66.8                       | C                    | 0.50 | 22.7      | 67.7                       |
|  | WB - R       | B                    | 0.07 | 18.1      | 10.8                       | B                    | 0.09 | 18.5      | 12.6                       |
|  | NB – L       | B                    | 0.04 | 18.1      | 6.4                        | B                    | 0.01 | 18.0      | 3.7                        |
|  | NB - TR      | B                    | 0.01 | 17.9      | 4.3                        | B                    | 0.00 | 17.9      | 0.0                        |
|  | SB – LT      | B                    | 0.24 | 20.8      | 28.3                       | B                    | 0.13 | 18.9      | 17.6                       |
|  | SB – R       | B                    | 0.11 | 19.0      | 13.0                       | B                    | 0.07 | 18.0      | 9.3                        |
| Lakeshore Rd W/<br>Ibar Way<br>(unsignalized)  | EB – LT      | A                    | 0.02 | 0.8       | 0.5                        | A                    | 0.04 | 1.4       | 1.0                        |
|  | SB – LR      | C                    | 0.28 | 20.1      | 8.9                        | C                    | 0.12 | 17.7      | 3.1                        |
| Lakeshore Rd W/<br>Site Access<br>(unsignalized)                                       | WB – LT      | A                    | 0.01 | 0.4       | 0.2                        | A                    | 0.31 | 1.1       | 0.8                        |
|  | NB - LR      | C                    | 0.12 | 17.5      | 3.3                        | C                    | 0.09 | 18.4      | 2.3                        |

Figure 9 – 2029 Future Total Traffic Volumes



Based on the intersection capacity analysis, under the 2029 future total traffic conditions with the future BRT, the following observations are provided:

- The proposed development has negligible impacts on all intersections considered in the study area;
- The proposed site accesses are expected to operate at acceptable levels of service with minimum queues or delays;
- All the study intersection considered in this Study are expected to operate at acceptable levels of service;

## 6.2. Active Transportation Assessment

### 6.2.1. Walking Mode Assessment

The area is currently well-served by a sufficient network of sidewalks, with sidewalks are available on both sides of Lakeshore Road, east side of Lorne Park Road and west side of Ibar Way. Sidewalks are reasonably maintained.

The proposed development is committed to construct the sidewalks along Lakeshore Road W and along the frontage of the proposed development. The sidewalk will be constructed per the City standards.

### 6.2.2. Cycling Mode Assessment

Under the existing conditions, there are Multi-use Trails along Lakeshore Road, Signed Bike Routes along Lorne Park Road and Ibar Way. There is Waterfront Rail in the area.

Our analysis and review indicate that the existing cycling network can be improved in the future as part of the City of Mississauga 2018 Cycling Master Plan and Lakeshore Connected Communities Transportation Master Plan recommendations. This will encourage existing and future residents to use these facilities instead of driving single-occupant-vehicles. These infrastructure projects are beyond the scope of this Study and this project.

### 6.2.3. Transit Mode Assessment

As indicated, the proposed development is expected to generate 23 two-way transit trips (5 inbound and 18 outbound) and 14 two-way transit trips (9 inbound and 5 outbound) during the AM and PM peak hours, respectively (highest). For the purposes of this assessment, it is assumed that all of these trips are transit related, which is conservative.

The proposed development is located about 200m to MiWay Bus Route 23.

**Table 8** summarizes the transit trip assignments based on the transit trip generation and distribution estimated from the 2016 Transportation Tomorrow Survey data and MiWay service in the area.

**Table 8 – Site Transit Trip Assignment**

| Transit Route              | AM Peak Hour |           |           | PM Peak Hour |          |           |
|----------------------------|--------------|-----------|-----------|--------------|----------|-----------|
|                            | In           | Out       | Total     | In           | Out      | Total     |
| <b>Total Transit Trips</b> | <b>5</b>     | <b>18</b> | <b>23</b> | <b>9</b>     | <b>5</b> | <b>14</b> |
| MiWay Route 23 eastbound   | 3            | 12        | 15        | 6            | 3        | 9         |
| MiWay Route 23 westbound   | 2            | 6         | 8         | 3            | 2        | 5         |

NexTrans has reviewed the existing transit schedules for the MiWay Route 23 service routes during the weekday morning and afternoon peak hours. **Table 9** summarizes the existing MiWay Route 23 service frequency. It should be noted that the numbers of transit vehicles per hour were calculated using the 60 minutes divided by the vehicle headway based on the latest schedules available on Mississauga Transit website.

**Table 9 – Transit Service Frequency**

| Transit Route  | Weekday AM Peak Hour |                    | Weekday PM Peak Hour |                    |
|----------------|----------------------|--------------------|----------------------|--------------------|
|                | Headway              | No. transit veh/hr | Headway              | No. transit veh/hr |
| MiWay Route 23 | ~ 10 mins            | 6                  | ~ 10 mins            | 6                  |
| MiWay Route 23 | ~ 10 mins            | 6                  | ~ 10 mins            | 6                  |

**Table 10** summarizes the future transit passenger demand from the proposed development per each transit vehicle during the morning and afternoon peak hours. The numbers of passenger demand per transit vehicle was calculated by using the total peak hour passenger demand generated by the proposed development divided by the numbers of transit vehicles per hour.

**Table 10 – Future Transit Passenger Demand from the Proposed Development**

| Transit Route            | Weekday AM Peak Hour |                     | Weekday PM Peak Hour |                     |
|--------------------------|----------------------|---------------------|----------------------|---------------------|
|                          | Inbound (pass/veh)   | Outbound (pass/veh) | Inbound (pass/veh)   | Outbound (pass/veh) |
| MiWay Route 23 Eastbound | 0.5                  | 2                   | 1                    | 0.5                 |
| MiWay Route 23 Westbound | 0.3                  | 1                   | 0.5                  | 0.3                 |

The analysis indicates that the transit passenger demands generated by the proposed development can be accommodated by the existing and future transit services along this corridor.

Worst case scenario, some passengers could be bunched together during the peak 15 minutes, instead of spreading during the entire peak hour. Even if this is the case, our estimates indicate that the transit demand can be accommodated without the need for any additional improvements beyond what have been identified and planned by the City and Metrolinx.

## 7.0 SITE PLAN REVIEW

### 7.1. Loading Requirement

As indicated, the proposed redevelopment of the site consists of a 10-storey mixed-use building with a total of 188 residential dwelling units. The City of Mississauga Zoning By-law 0225-2007 was reviewed to determine the loading requirement for the proposed development. **Table 11** summarizes the loading requirement based on the current Zoning By-law.

**Table 11 – City of Mississauga Zoning By-law Loading Requirements**

| Land Use    | Magnitude | Loading Rates                | Spaces Required |
|-------------|-----------|------------------------------|-----------------|
| Residential | 188 units | Minimum of 30 dwelling units | 1 space         |

Under the City's By-Law Zoning By-law 0225-2007, one loading space is required for residential component a. The minimum loading space dimensions are: 3.5 m width and 9.0 m Length.

### 7.2. Waste Management Plan

NexTrans has reviewed the existing garbage pick up schedule for the area, as well as the Waste Management Plan for Official Plan Amendment/Rezoning Applications guidelines from Region of Peel website ([www.peel.ca](http://www.peel.ca)).

**Figure 10** summarizes the current waste pick-up schedule for the area. Based on the current solid waste pick-up schedule, garbage and recycling pick-up occurs on alternate Monday of the weeks. Organics waste will be picked up every Thursday of the week.



Figure 10 – Waste Collection Schedule

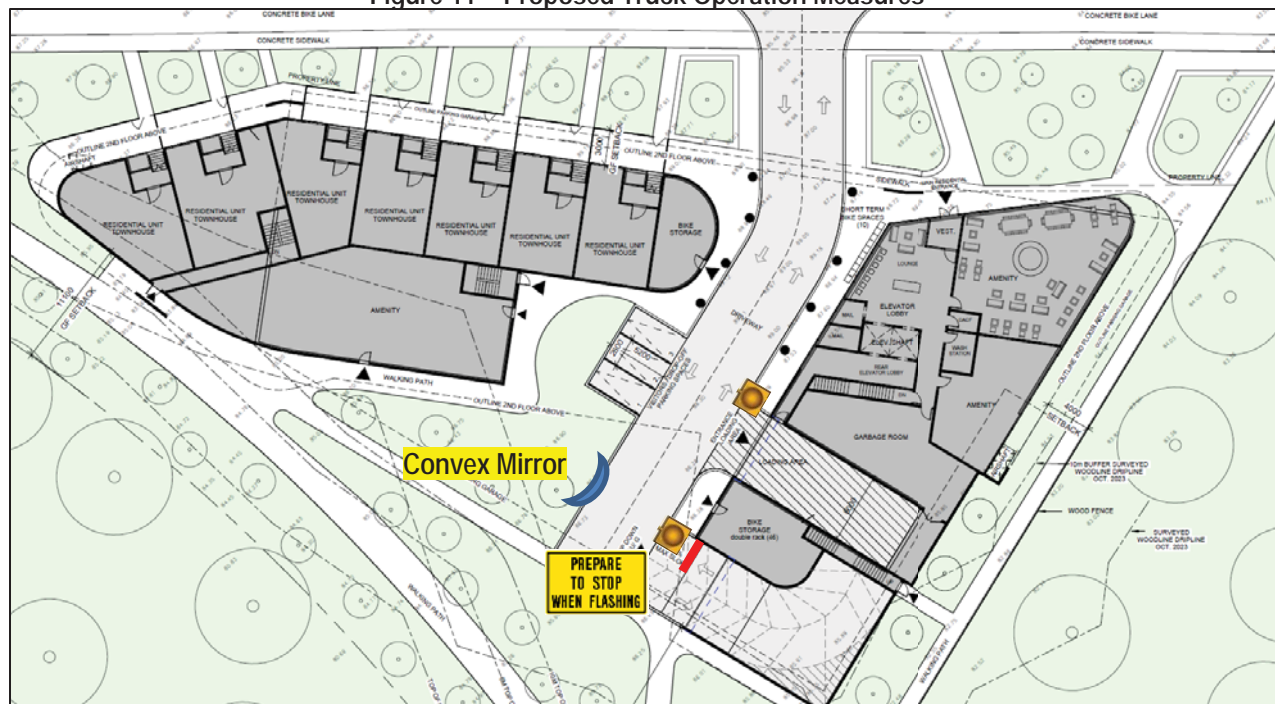
| Sun | Mon   | Tue  | Wed | Thu | Fri               | Sat |
|-----|---|--|-----|-----|-------------------|-----|
| 26  | 27<br>● Garbage<br>● Organics                   | 28   | 29  | 30  | 1<br>● Canada Day | 2   |
| 3   | 4<br>● Recycling<br>● Organics<br>● Yard Waste  | 5  | 6   | 7   | 8                 | 9   |
| 10  | 11<br>● Garbage<br>● Organics                   | 12   | 13  | 14  | 15                | 16  |
| 17  | 18<br>● Recycling<br>● Organics<br>● Yard Waste | 19   | 20  | 21  | 22                | 23  |
| 24  | 25<br>● Garbage<br>● Organics                   | 26   | 27  | 28  | 29                | 30  |
| 31  | 1<br>● Civic Holiday                            | 2<br>● Recycling<br>● Organics<br>● Yard Waste | 3   | 4   | 5                 | 6   |

### 7.3. Loading Operation

NexTrans suggests the following measures to address some of the City's concerns related to the truck operation around the loading area:

1. Flashing beacons and truck in operation signage: the flashing beacons and truck in operation signage will be placed at two strategic locations, one to the west of the loading area and one at the bottom of the ramp before vehicle exit. This beacon will be audible to warn pedestrians that trucks are in operation. All two beacons will be activated when the truck is backing into the ramp, for example, it can be activated with the loop detectors. **Figure 11** illustrates the flashing beacon and truck in operation signage locations.
2. Convex mirrors: convex mirrors will be placed on the opposite side of the loading area so that the truck drivers can see on-coming traffic or pedestrians. The convex mirror is illustrated in **Figure 11**.
3. Sufficient warning signs: warning signs such as "PREPARE TO STOP WHEN LIGHT FLASHING". The locations of the signs are illustrated in **Figure 11**.
4. Assistance of building management on the garbage pick up day: since building management will assist organizing the garbage bins, they can also assist the drivers while the truck is maneuvering into the driveway.

Figure 11 – Proposed Truck Operation Measures



## 8.0 PARKING ASSESSMENT

### 8.1. Vehicle Parking Requirement

NexTrans has reviewed the City of Mississauga Zoning Bylaw for the vehicle parking requirement, the zoning bylaw requires the residential parking rate of 1.10 spaces/dwelling unit for residential parking and 0.20 spaces/dwelling unit for visitor parking.

Table 12 summarizes the required parking for the proposed development based on the rates noted above.

Table 12 – Vehicle Parking Requirements for the Proposed Development

| Unit Type    | No. of Unit | Parking Rates                | Parking Requirement | Parking Provided  |
|--------------|-------------|------------------------------|---------------------|-------------------|
| Residential  | 188 units   | 1.10 space/unit              | 207                 | 167               |
| Visitor      | 188 units   | 0.20 spaces/unit for visitor | 38                  | 38                |
| <b>Total</b> |             |                              | <b>245 spaces</b>   | <b>205 spaces</b> |

Based on the assessment noted above, the proposed development will require to provide a total of 245 vehicle parking spaces, inclusive of residential, visitor. The proposed development will provide a total of 205 parking spaces which presents a technical shortfall of 40 residential parking spaces, or 16.3% reduction.

### 8.2. Why A Reduced Vehicle Parking Provision for New Development Is Important

Reduce vehicle parking and appropriate parking demand management is the best and the most important transportation demand management measure because:

Limited available parking spaces will encourage residents not to own a car.

It encourages residents to take other sustainable modes of transportation available in the area such as walking, cycling and public transit.

It maximizes transit ridership and therefore maximizes the utilization of major transit infrastructure improvements.

It should also be noted that Gen Z will not buying cars due to capital costs and operating costs, they will rather be taking more cost-efficient public transit or uber.

### 8.3. Support Alternative Modes of Transportation

Public Transit is an important mode of transportation for both short and longer distance trips to and from the proposed development. Based on Nextrans' review of the overall transportation network in the area, it is evident that the transportation network will be significantly transformed in the future with the following improvements:

Hurontario Light-Rail-Transit (LRT);

Lakeshore Bus-Rapid-Transit (BRT);

Comprehensive active transportation network by the City and the Region; and

Comprehensive Transportation Demand Management plan

As indicated in previous sections of this Study, the proposed development is located about 200m to the Hurontario LRT and only a few minutes bike ride or transit ride to the Port Credit Station, as such, there are many efficient, quick, convenient and sustainable ways to travel instead of owning and driving private vehicles. With the recent gas price increases and capital cost of owning a vehicle (new vehicle shortage due to supply chain problem), more residents will choose to use more convenient and effective mode of transportation such as public transit, walking and cycling.

### 8.4. Recommended Vehicle Parking Requirement For The Proposed Development

Given the reasons noted above, this area will be transformed into a major transportation mobility hub for all modes of transportation including excellent transit and active transportation. These modes of transportation are sustainable and cheaper than owning a private vehicle. These modes of transportation will also help reducing congestion and pollution in the area.

The following are recommended parking rates (Table 13) for the proposed development, based on the parking justification provided in subsequent sections of this Study.

**Table 13 – Recommended Vehicle Parking Rates for the Proposed Development**

| Unit Type    | No. of Unit | Parking Rates           | Parking Requirement (Spaces) |
|--------------|-------------|-------------------------|------------------------------|
| Residential  | 188 units   | 0.89 spaces/unit        | 167 spaces                   |
| Visitor      | 188 units   | 0.20 spaces/unit        | 38 spaces                    |
| <b>Total</b> |             | <b>1.09 spaces/unit</b> | <b>205 spaces</b>            |

Based on the recommended vehicle parking rates, the proposed development will provide a total of 205 parking spaces for both residential and visitor components. Detailed justifications are provided in the subsequent sections below.

### 8.5. Vehicle Parking Justifications Based Surveys

It is NexTrans' understanding that the City of Mississauga required the proposed development provides empirical data from proxy site parking utilization surveys.

- 223 and 225 Webb Drive, City of Mississauga- total of 728 units (353 and 375 units) and ground commercial/retail.

- 220 Burnhamthorpe Road and 3939 Duke of York Blvd, City of Mississauga – total of 628 residential units (342 and 326 units) and ground commercial/retail.

Detailed survey results are provided in **Appendix G**, with detailed assessment is provided in the subsequent sections below.

## 8.6. Vehicle Parking Utilization Survey Results

For the first two sites, the parking utilization survey study was conducted on:

- Friday January 12, 2024 – from 6:00pm to 1:00am
- Saturday January 13, 2024 – from 2:00pm to 1:00am
- Sunday January 14, 2024 – from 2:00pm to 1:00am
- Monday January 15, 2024 – from 6:00pm to 1:00am
- Tuesday January 16, 2024 – from 6:00pm to 1:00am
- Saturday January 20, 2024 – from 2:00pm to 1:00am
- Sunday January 21, 2024 – from 2:00pm to 1:00am
- Monday January 22, 2024 – from 6:00pm to 1:00am
- Tuesday January 23, 2024 – from 6:00pm to 1:00am

For analysis purposes, Nextrans has utilized two main indicators to analyze the survey results:

Parking utilization percentage – this is the percentage calculated based on the total number of parked vehicles divided by the total numbers of available spaces, separated by visitor and residential components.

Parking utilization rates – is ratio is calculated based on the total number of parked vehicles divided by the total numbers of units, separated by visitor and residential components.

Based on our experience working on various projects in the City of Mississauga and other cities in the Greater Toronto Area, the parking utilization percentage is the best indicator given that it gives a snapshot of how the parking spaces are being utilized by the existing residents for that site.

The parking utilization rates will show a comparison between the approved rates and the actual utilized rates by that development. The survey results and detailed calculations are included in **Appendix G**.

## 8.7. Parking Utilization Percentage

For the purposes of this assessment, three percentage categories have been established, average, lowest and highest utilization percentage. **Table 14** summarizes the survey results.

**Table 14 – Parking Utilization Percentage Based on Proxy Sites**

| Site                          | Category | Visitor |          |        |         | Resident |        |         |         |
|-------------------------------|----------|---------|----------|--------|---------|----------|--------|---------|---------|
|                               |          | Friday  | Saturday | Sunday | Average | Sunday   | Monday | Tuesday | Average |
| 223 & 225 Webb Drive (week 1) | Average  | 57%     | 66%      | 53%    | 59%     | 59%      | 62%    | 67%     | 63%     |

|  |         |     |     |     |     |     |     |     |     |
|--|---------|-----|-----|-----|-----|-----|-----|-----|-----|
| 223 & 225 Webb Drive (week 2)                  |         |     | 48% | 43% | 46% |     | 56% | 59% | 58% |
| 220 Burnhamthorpe & 3939 Duke of York (week 1) |         | 59% | 81% | 74% | 71% | 68% | 65% | 64% | 66% |
| 220 Burnhamthorpe & 3939 Duke of York (week 2) |         |     | 78% | 78% | 78% |     | 67% | 65% | 66% |
|  |         |     |     |     |     |     |     |     |     |
| 223 & 225 Webb Drive (week 1)                  | Lowest  | 41% | 61% | 22% | 41% | 52% | 53% | 53% | 53% |
| 223 & 225 Webb Drive (week 2)                  |         |     | 23% | 14% | 19% |     | 46% | 49% | 48% |
| 220 Burnhamthorpe & 3939 Duke of York (week 1) |         | 47% | 64% | 42% | 51% | 61% | 61% | 61% | 61% |
| 220 Burnhamthorpe & 3939 Duke of York (week 2) |         |     | 69% | 67% | 68% |     | 64% | 60% | 62% |
|  |         |     |     |     |     |     |     |     |     |
| 223 & 225 Webb Drive (week 1)                  | Highest | 84% | 86% | 66% | 79% | 62% | 73% | 76% | 70% |
| 223 & 225 Webb Drive (week 2)                  |         |     | 64% | 66% | 65% |     | 61% | 64% | 63% |
| 220 Burnhamthorpe & 3939 Duke of York (week 1) |         | 69% | 84% | 91% | 81% | 70% | 67% | 65% | 67% |
| 220 Burnhamthorpe & 3939 Duke of York (week 2) |         |     | 93% | 84% | 89% |     | 70% | 67% | 69% |

Based on the assessment noted above, the average parking utilization percentage for the visitor is ranging from 46% to 70%, with the overall average of 70%. The lowest utilization average is 14% and the highest is 100%.

The average parking utilization percentage for the residential is ranging from 51% to 66%, with the overall average of 59%. The lowest utilization average is 39% and the highest is 76%.

### 8.8. Parking Utilization Rates (Space/unit)

For the purposes of this assessment, three percentage categories have been established, average, lowest and highest utilization percentage. Table 15 summarizes the survey results.

The average parking utilization percentage for the visitor is ranging from 0.04 spaces/unit to 0.07 spaces/unit, with the overall average of 0.06 spaces/unit. The lowest utilization average is 0.02 spaces/unit and the highest is 0.08 spaces/unit.

The average parking utilization percentage for the residential is ranging from 0.46 spaces/unit to 0.69 spaces/unit, with the overall average of 0.56 spaces/unit. The lowest utilization average is 0.29 spaces/unit and the highest is 0.77 spaces/unit.

Table 15– Parking Utilization Percentage

| Site   | Category | Visitor |          |        |         | Resident |        |         |         |
|--|----------|---------|----------|--------|---------|----------|--------|---------|---------|
|  |          | Friday  | Saturday | Sunday | Average | Sunday   | Monday | Tuesday | Average |
| 223 & 225 Webb Drive (week 1)                  | Average  | 0.05    | 0.06     | 0.05   | 0.05    | 0.06     | 0.63   | 0.68    | 0.46    |
| 223 & 225 Webb Drive (week 2)                  |          |         | 0.04     | 0.04   | 0.04    |          | 0.57   | 0.60    | 0.59    |
| 220 Burnhamthorpe & 3939 Duke of York (week 1) |          | 0.04    | 0.05     | 0.05   | 0.05    | 0.72     | 0.69   | 0.68    | 0.70    |
| 220 Burnhamthorpe & 3939 Duke of York (week 2) |          |         | 0.05     | 0.05   | 0.05    |          | 0.72   | 0.69    | 0.71    |
|  |          |         |          |        |         |          |        |         |         |
| 223 & 225 Webb Drive (week 1)                  | Lowest   | 0.04    | 0.05     | 0.02   | 0.04    | 0.53     | 0.54   | 0.54    | 0.54    |
| 223 & 225 Webb Drive (week 2)                  |          |         | 0.02     | 0.01   | 0.02    |          | 0.46   | 0.50    | 0.48    |
| 220 Burnhamthorpe & 3939 Duke of York (week 1) |          | 0.03    | 0.04     | 0.03   | 0.03    | 0.65     | 0.65   | 0.66    | 0.65    |
| 220 Burnhamthorpe & 3939 Duke of York (week 2) |          |         | 0.04     | 0.04   | 0.04    |          | 0.68   | 0.64    | 0.66    |
|  |          |         |          |        |         |          |        |         |         |
| 223 & 225 Webb Drive (week 1)                  |          | 0.07    | 0.08     | 0.06   | 0.07    | 0.63     | 0.74   | 0.77    | 0.71    |

|  |         |      |      |      |      |      |      |      |      |
|--|---------|------|------|------|------|------|------|------|------|
| 223 & 225 Webb Drive (week 2)                  | Highest |      | 0.06 | 0.06 | 0.06 |      | 0.62 | 0.65 | 0.64 |
| 220 Burnhamthorpe & 3939 Duke of York (week 1) |         | 0.05 | 0.06 | 0.06 | 0.06 | 0.75 | 0.72 | 0.69 | 0.72 |
| 220 Burnhamthorpe & 3939 Duke of York (week 2) |         |      | 0.06 | 0.06 | 0.06 |      | 0.75 | 0.72 | 0.74 |

Table 16 summarizes the Zoning By-law parking rate adjustment based on the proxy site parking utilization rates.

**Table 16 – Parking Rates Based on Proxy Site Survey**

| Unit Type   | Zoning By-law Rates         | Average Rate Adjustment | Lowest Range Adjustment | Highest Range Adjustment |
|-------------|-----------------------------|-------------------------|-------------------------|--------------------------|
| Residential | 0.9 spaces/unit             | 0.56 spaces/unit        | 0.29 spaces/unit        | 0.77 spaces/unit         |
| Visitor     | 0.2 spaces/unit for visitor | 0.07 spaces/unit        | 0.02 spaces/unit        | 0.08 spaces/unit         |

### 8.9. Recommendation Rates Based on Survey Data

Based on the parking utilization survey results, Nextrans recommends the proposed parking rates for the development as summarized in Table 17 below. This was based on the information provided in Table 16. The recommended parking rate is 0.20 spaces/unit for visitor and 0.89 spaces/unit for residential.

**Table 17 – Recommended Parking Rate**

| Unit Type      | Number of Unit | Zoning By-law Rates         | Recommended Rates | Parking Requirement |
|----------------|----------------|-----------------------------|-------------------|---------------------|
| Residential    | 188 spaces     | 1.1 spaces/unit             | 0.89 spaces/unit  | 167 spaces          |
| Visitor/retail | 188 spaces     | 0.2 spaces/unit for visitor | 0.20 spaces/unit  | 38 spaces           |
| <b>Total</b>   |                |                             |                   | <b>205 spaces</b>   |

## 9.0 BICYCLE PARKING ASSESSMENT

Table 18 summarizes the City of Mississauga Zoning By-law bicycle parking requirement (Table 3.1.6.5.1) for the proposed development to support TDM and active transportation.

**Table 18 – Bicycle Parking Space Requirements**

| Land Use    | No. of Unit / GFA | Class B (Short-Term) |        | Class A (Long-Term) |        | Total |
|-------------|-------------------|----------------------|--------|---------------------|--------|-------|
|             |                   | Rates                | Spaces | Rates               | Spaces |       |
| Residential | 188 units         | 0.05 spaces/unit     | 9      | 0.60 spaces/unit    | 113    | 122   |

Based on the assessment above, the proposed development is required and will provide a total of 122 bicycle parking spaces, including 9 short-term (Class B) spaces and 113 long-term spaces (Class A) for visitors and residents, respectively. The proposed development will meet this requirement by providing 122 bicycle parking spaces.

The proposed bicycle parking supply by the proposed development will support the vehicle parking reduction as this will encourage residents to take active mode of transportation to work, school and discretionary trips instead of driving private vehicles.

## 10.0 TRANSPORTATION DEMAND MANAGEMENT

The following TDM measures and programs will be provided by the proposed development to support the recommended vehicle parking rates:

- Transit incentive;



- Meet or exceed Zoning By-law bicycle parking requirements;
- Provide bicycle repair station;
- Provide carshare spaces (one for each building);
- Provide EV parking spaces;
- Information package, community website or information screens in the lobby areas with transit schedule;
- Provide well-lit and direct pedestrian and cycling connections along the frontage of the site along Lakeshore Road; and
- Internal site design and circulation to accommodate pedestrians and cyclists. These TDM measures are explained in more detail below.

### 10.1. Transit Incentives

The proposed development is committed to provide pre-loaded PRESTO Cards for the residents that will not purpose a vehicle parking space. The pre-loaded amount is equivalent to about one month transit pass, or approximately \$150 per card. The card can be distributed at the time of purchase as the card will not expire.

With the recent implementation of one-fare integration between transit agencies, the residents can use this pre-loaded PRESTO Cards on Mississauga Transit or GO Transit.

### 10.2. Bicycle Parking Provision

The proposed development will provide the bicycle parking to meet the Zoning By-law requirement. These bicycle parking spaces will support the vehicle parking reduction as this will encourage residents to take active mode of transportation to work, school and discretionary trips instead of driving private vehicles.

### 10.3. Bicycle Repair Station

To support the bicycle parking provision noted above, the proposed development will provide two bicycle repair stations, one in each building. The bicycle repair stations will be provided inside the bicycle parking area, at a convenient location where the residents can easily access to. The potential locations will be illustrated in the proposed site plan.

### 10.4. Electric Vehicle Parking Spaces

As the world is shifting from internal combustion engines to electric vehicle to combat climate change, the proposed development will accommodate this paradigm shift by providing the required EV charging parking spaces as per the applicable City of Mississauga Zoning By-law. In addition to car EV charging parking spaces, micromobility transportation technology is also important. On this basis, the proposed development will provide some of the bicycle parking spaces with EV charging capability.

### 10.5. Information Package and Technologies

The proposed development will provide an information package in the form of a letter or electronic letter that will include all of the following information:

- Mississauga Transit Schedule
- GO Transit Schedule

- Community Maps
- Cycling Maps
- Potential dedicated website for the project or smart phone apps (third party)

In addition, the proposed development will consider providing several screens in the lobbies that display traffic conditions, transit schedule and inclement weather conditions so that the residents can prepare and choose their modes of transportation as appropriate.

## 10.6. Active Transportation

The proposed development is committed to provide well-lit and direct pedestrian and cycling connections along the frontage of the site along Lakeshore Road.

## 10.7. Site Design

The interior of the site will be designed in such manner to accommodate pedestrians and cyclists such as:

- Direct pedestrian and cycling connections to Lakeshore Road;
- Provide main entrances that conducive to walking and cycling; and
- Potential style centre court designs to accommodate all modes of transportation in one space

The detailed design will be provided at the subsequent stage of the proposed development that include the above provisions to the satisfaction of the City.

The following TDM incentives are recommended for the proposed residential development, based on NexTrans' review of the City of Mississauga Cycling Master Plan, Moving Mississauga Report and the Region of Peel TDM Strategy:

- Given that parking management is the best TDM measures, the proposed development should implement the approved parking rates, or further reduce the vehicle parking supply to support TDM and minimize the numbers of single-occupant-vehicle trips, where appropriate;
- Consider providing a total of 122 bicycle parking spaces, inclusive of short-term (Class B) and long-term (Class A) spaces on-site at secured and convenient locations, where appropriate;
- Provide direct shared pedestrian/bicycle connections from the proposed development to Lakeshore Road W, where appropriate. For example, the building entrances fronting onto these public roads for convenient and direct pedestrian access; and
- Provide information package for new residents. The information package includes GO Train schedules (Long Branch GO Train Stations), Mississauga MiWay bus route schedules, community and cycling maps, where appropriate. The Information Package can be distributed through a letter or email at the time of purchase.

## 11.0 CONCLUSIONS / FINDINGS

### 11.1. Study Conclusions

The findings and conclusions of the analysis are as follows:

- The proposed development is expected to generate:



- 71 total two-way trips (16 inbound and 55 outbound) and 74 total two-way trips (45 inbound and 29 outbound) during the AM and PM peak hours, respectively.
  - 23 two-way auto trips (5 inbound and 18 outbound) and 14 two-way auto trips (9 inbound and 5 outbound) during the AM and PM peak hours, respectively; and
  - 48 two-way transit trips (11 inbound and 37 outbound) and 60 two-way transit trips (36 inbound and 24 outbound) during the AM and PM peak hours, respectively
- The intersection capacity analysis indicates that under existing, future background and future total conditions, all the intersections considered in the Study are expected to operate at acceptable levels of service with optimized signal timing plan.

The proposed site accesses are expected to operate at acceptable levels of service with minimum delay or queue.

- The analysis indicates that the transit passenger demands generated by the proposed development can be accommodated by the existing and future transit services along this corridor. No additional improvements beyond what have been identified and planned by the City and Metrolinx are required to accommodate the proposed development.
- Based on the Zoning Bylaw requirements, the proposed development will require to provide a total of 245 vehicle parking spaces, inclusive of residential, visitor. The proposed development will provide a total of 205 parking spaces which presents a technical shortfall of 40 residential parking spaces, or 16.3% reduction.
- Based on the assessment of this Study Update, the proposed development is required and will provide a total of 122 bicycle parking spaces, including 9 short-term (Class B) spaces and 113 long-term spaces (Class A) for visitors and residents, respectively. The proposed development will meet this requirement by providing 122 bicycle parking spaces.

The proposed bicycle parking supply by the proposed development will support the vehicle parking reduction as this will encourage residents to take active mode of transportation to work, school and discretionary trips instead of driving private vehicles.

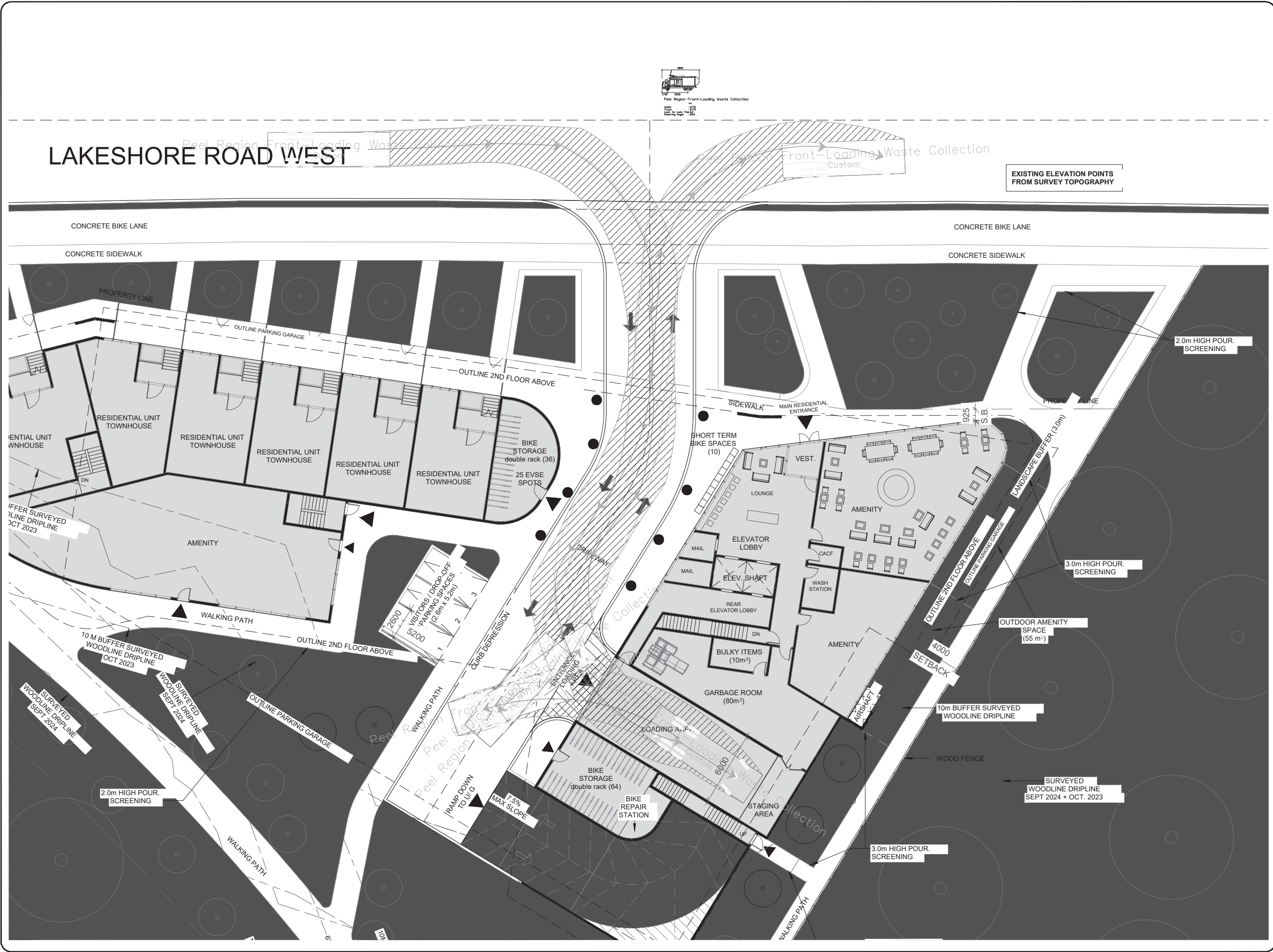
- Under the City's By-Law Zoning By-law 0225-2007, one loading space is required for residential component. The minimum loading space dimensions are: 3.5 m width and 9.0 m Length. The proposed development will meet this requirement.

## 11.2. Study Recommendations

Based on the Study assessment, the following recommendations are provided:

- The City approves the proposed development as the proposed development has minimum or negligible impacts on the existing and future transportation network. The proposed development also represents good transportation planning and will support the future major transit investments by Metrolinx and the City of Mississauga.
- The proposed development implements the TDM measures and incentives identified in this report to support active transportation and transit and to reduce the numbers of single-occupant-vehicle trips to and from the proposed development;
- The proposed development implements the approved parking rates of 0.89 spaces/unit for resident and 0.2 spaces/unit for visitor, to support TDM and minimize the numbers of single-occupant-vehicle trips;

- The proposed development provides direct shared pedestrian and cycling connections to Lakeshore Road W, where appropriate. For example, the building entrances fronting onto these public roads for convenient and direct pedestrian access.
- Recommended improvements:
  - Require all new developments to provide transportation demand management measures and incentives;
  - Require all new developments to reduce residential vehicle parking rates to reduce car ownership and single-occupant-vehicle trips to and from this area; and
  - Provide provisions for active transportation, such as meet or exceed the Zoning By-law for bicycle parking requirements



KEY PLAN

BENCHMARK

| REVISIONS |          |      |    |
|-----------|----------|------|----|
| NO        | REVISION | DATE | BY |
|           |          |      |    |
|           |          |      |    |
|           |          |      |    |
|           |          |      |    |
|           |          |      |    |

STAMP

Suite 201, 520 Industrial Parkway South  
Aurora ON L4G 6W9  
Tel: 905-503-2563  
Web: www.nextrans.ca

PROJECT NAME:

Residential Development

900 Lakeshore Rd W

City of Mississauga

DRAWING TITLE:

AutoTURN Analysis  
Garbage Truck

|                  |                        |
|------------------|------------------------|
| DESIGN BY: K.A.  | DATE: October 29, 2024 |
| CHECKED BY: R.P. | PROJECT NO.            |
| DRAWN BY: K.A.   | NT-23-188              |
| SCALE: NTS       | DRAWING NO.            |

Figure 1

## Appendix A – Existing Traffic Data



Turning Movement Count (2 . LAKESHORE RD W & IBAR WAY)

| Start Time  | Southbound<br>IBAR WAY |             |              |            |                | Westbound<br>LAKESHORE RD W |             |              |            |                | Eastbound<br>LAKESHORE RD W |             |              |            |                | Int. Total<br>(15 min) | Int. Total<br>(1 hr) |
|-------------|------------------------|-------------|--------------|------------|----------------|-----------------------------|-------------|--------------|------------|----------------|-----------------------------|-------------|--------------|------------|----------------|------------------------|----------------------|
|             | Right<br>N:W           | Left<br>N:E | UTurn<br>N:N | Peds<br>N: | Approach Total | Right<br>E:N                | Thru<br>E:W | UTurn<br>E:E | Peds<br>E: | Approach Total | Thru<br>W:E                 | Left<br>W:N | UTurn<br>W:W | Peds<br>W: | Approach Total |                        |                      |
| 07:00:00    | 6                      | 5           | 0            | 4          | 11             | 2                           | 80          | 0            | 1          | 82             | 81                          | 0           | 0            | 0          | 81             | 174                    |                      |
| 07:15:00    | 7                      | 8           | 0            | 0          | 15             | 3                           | 77          | 0            | 2          | 80             | 78                          | 0           | 0            | 0          | 78             | 173                    |                      |
| 07:30:00    | 10                     | 9           | 0            | 0          | 19             | 3                           | 102         | 0            | 0          | 105            | 117                         | 3           | 0            | 0          | 120            | 244                    |                      |
| 07:45:00    | 11                     | 11          | 0            | 0          | 22             | 3                           | 109         | 0            | 0          | 112            | 144                         | 2           | 0            | 0          | 146            | 280                    | 871                  |
| 08:00:00    | 12                     | 9           | 0            | 0          | 21             | 1                           | 140         | 0            | 0          | 141            | 166                         | 4           | 0            | 0          | 170            | 332                    | 1029                 |
| 08:15:00    | 12                     | 11          | 1            | 0          | 24             | 2                           | 125         | 0            | 1          | 127            | 194                         | 3           | 1            | 0          | 198            | 349                    | 1205                 |
| 08:30:00    | 17                     | 7           | 0            | 0          | 24             | 10                          | 175         | 0            | 0          | 185            | 168                         | 5           | 0            | 0          | 173            | 382                    | 1343                 |
| 08:45:00    | 11                     | 3           | 0            | 1          | 14             | 4                           | 190         | 0            | 0          | 194            | 142                         | 4           | 0            | 0          | 146            | 354                    | 1417                 |
| 09:00:00    | 4                      | 9           | 0            | 0          | 13             | 5                           | 139         | 0            | 0          | 144            | 130                         | 6           | 0            | 0          | 136            | 293                    | 1378                 |
| 09:15:00    | 8                      | 7           | 0            | 0          | 15             | 1                           | 138         | 0            | 0          | 139            | 99                          | 2           | 0            | 1          | 101            | 255                    | 1284                 |
| 09:30:00    | 5                      | 6           | 0            | 4          | 11             | 5                           | 118         | 0            | 0          | 123            | 125                         | 1           | 0            | 0          | 126            | 260                    | 1162                 |
| 09:45:00    | 6                      | 7           | 0            | 0          | 13             | 2                           | 106         | 0            | 1          | 108            | 113                         | 4           | 0            | 0          | 117            | 238                    | 1046                 |
| ***BREAK*** |                        |             |              |            |                |                             |             |              |            |                |                             |             |              |            |                |                        |                      |
| 16:00:00    | 6                      | 3           | 0            | 0          | 9              | 13                          | 186         | 0            | 0          | 199            | 160                         | 2           | 0            | 0          | 162            | 370                    |                      |
| 16:15:00    | 6                      | 1           | 0            | 0          | 7              | 12                          | 188         | 0            | 0          | 200            | 158                         | 4           | 0            | 0          | 162            | 369                    |                      |
| 16:30:00    | 7                      | 2           | 0            | 1          | 9              | 2                           | 167         | 0            | 0          | 169            | 185                         | 7           | 0            | 0          | 192            | 370                    |                      |
| 16:45:00    | 6                      | 3           | 0            | 0          | 9              | 8                           | 185         | 0            | 0          | 193            | 172                         | 15          | 0            | 0          | 187            | 389                    | 1498                 |
| 17:00:00    | 6                      | 6           | 0            | 0          | 12             | 10                          | 170         | 0            | 0          | 180            | 159                         | 5           | 0            | 0          | 164            | 356                    | 1484                 |
| 17:15:00    | 9                      | 5           | 0            | 0          | 14             | 7                           | 151         | 0            | 0          | 158            | 186                         | 7           | 0            | 0          | 193            | 365                    | 1480                 |
| 17:30:00    | 6                      | 3           | 0            | 0          | 9              | 10                          | 133         | 1            | 0          | 144            | 170                         | 6           | 0            | 0          | 176            | 329                    | 1439                 |
| 17:45:00    | 2                      | 4           | 0            | 0          | 6              | 5                           | 144         | 0            | 0          | 149            | 126                         | 8           | 0            | 0          | 134            | 289                    | 1339                 |
| 18:00:00    | 8                      | 6           | 0            | 0          | 14             | 3                           | 120         | 0            | 0          | 123            | 117                         | 5           | 0            | 0          | 122            | 259                    | 1242                 |
| 18:15:00    | 3                      | 5           | 0            | 0          | 8              | 6                           | 109         | 0            | 0          | 115            | 129                         | 4           | 0            | 0          | 133            | 256                    | 1133                 |
| 18:30:00    | 4                      | 4           | 0            | 0          | 8              | 6                           | 108         | 0            | 0          | 114            | 109                         | 4           | 0            | 0          | 113            | 235                    | 1039                 |
| 18:45:00    | 6                      | 1           | 0            | 0          | 7              | 8                           | 110         | 0            | 0          | 118            | 93                          | 5           | 0            | 0          | 98             | 223                    | 973                  |
| Grand Total | 178                    | 135         | 1            | 10         | 314            | 131                         | 3270        | 1            | 5          | 3402           | 3321                        | 106         | 1            | 1          | 3428           | 7144                   | -                    |
| Approach%   | 56.7%                  | 43%         | 0.3%         |            | -              | 3.9%                        | 96.1%       | 0%           |            | -              | 96.9%                       | 3.1%        | 0%           |            | -              | -                      | -                    |
| Totals %    | 2.5%                   | 1.9%        | 0%           |            | 4.4%           | 1.8%                        | 45.8%       | 0%           |            | 47.6%          | 46.5%                       | 1.5%        | 0%           |            | 48%            | -                      | -                    |
| Heavy       | 9                      | 2           | 0            |            | -              | 4                           | 86          | 0            |            | -              | 103                         | 8           | 0            |            | -              | -                      | -                    |
| Heavy %     | 5.1%                   | 1.5%        | 0%           |            | -              | 3.1%                        | 2.6%        | 0%           |            | -              | 3.1%                        | 7.5%        | 0%           |            | -              | -                      | -                    |
| Bicycles    | -                      | -           | -            |            | -              | -                           | -           | -            |            | -              | -                           | -           | -            |            | -              | -                      | -                    |
| Bicycle %   | -                      | -           | -            |            | -              | -                           | -           | -            |            | -              | -                           | -           | -            |            | -              | -                      | -                    |



Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (-3.63 °C)

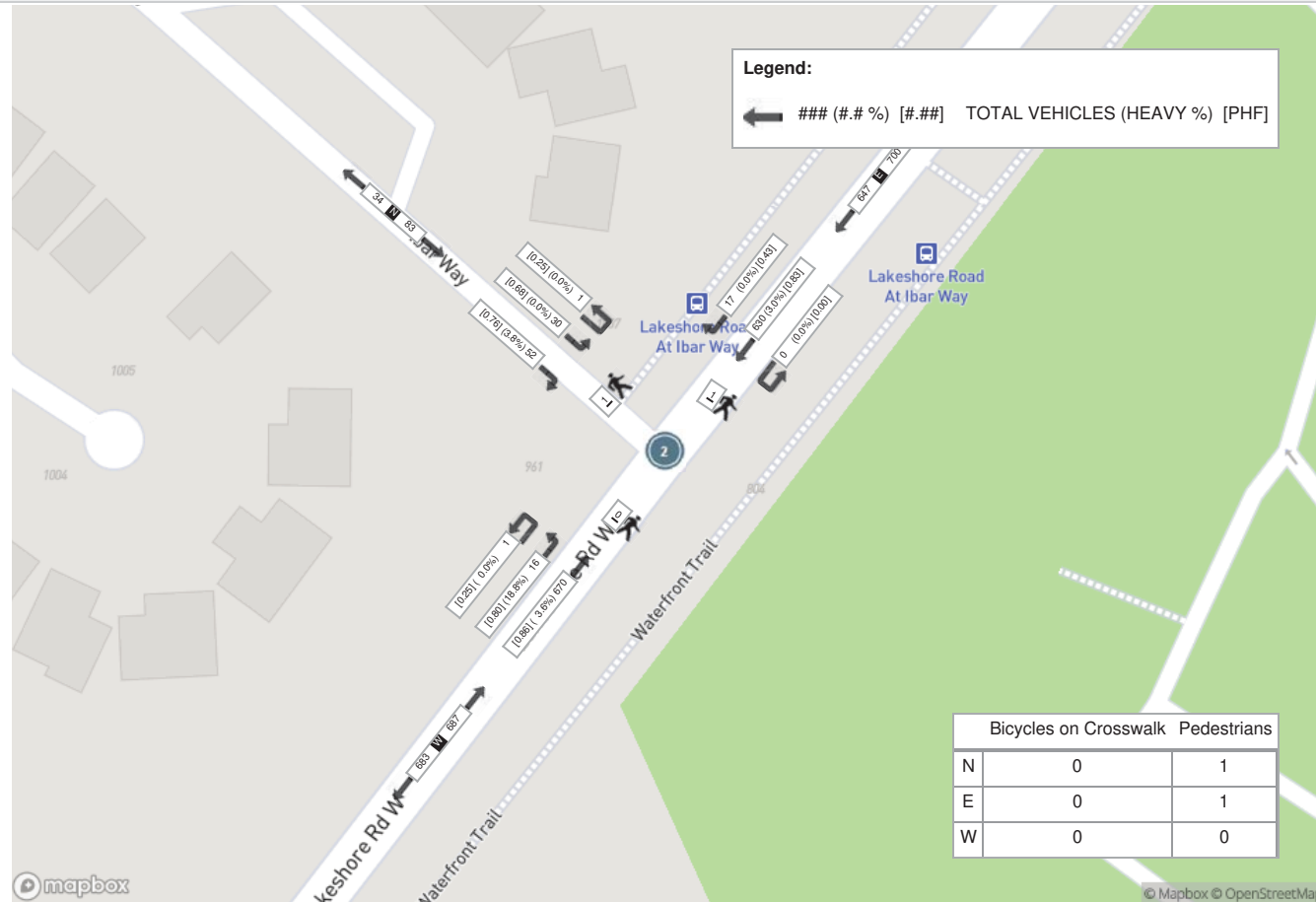
| Start Time             | Southbound<br>IBAR WAY |       |       |      |                | Westbound<br>LAKESHORE RD W |       |       |      |                | Eastbound<br>LAKESHORE RD W |       |       |      |                | Int. Total<br>(15 min) |
|------------------------|------------------------|-------|-------|------|----------------|-----------------------------|-------|-------|------|----------------|-----------------------------|-------|-------|------|----------------|------------------------|
|                        | Right                  | Left  | UTurn | Peds | Approach Total | Right                       | Thru  | UTurn | Peds | Approach Total | Thru                        | Left  | UTurn | Peds | Approach Total |                        |
| 08:00:00               | 12                     | 9     | 0     | 0    | 21             | 1                           | 140   | 0     | 0    | 141            | 166                         | 4     | 0     | 0    | 170            | 332                    |
| 08:15:00               | 12                     | 11    | 1     | 0    | 24             | 2                           | 125   | 0     | 1    | 127            | 194                         | 3     | 1     | 0    | 198            | 349                    |
| 08:30:00               | 17                     | 7     | 0     | 0    | 24             | 10                          | 175   | 0     | 0    | 185            | 168                         | 5     | 0     | 0    | 173            | 382                    |
| 08:45:00               | 11                     | 3     | 0     | 1    | 14             | 4                           | 190   | 0     | 0    | 194            | 142                         | 4     | 0     | 0    | 146            | 354                    |
| Grand Total            | 52                     | 30    | 1     | 1    | 83             | 17                          | 630   | 0     | 1    | 647            | 670                         | 16    | 1     | 0    | 687            | 1417                   |
| Approach%              | 62.7%                  | 36.1% | 1.2%  |      | -              | 2.6%                        | 97.4% | 0%    |      | -              | 97.5%                       | 2.3%  | 0.1%  |      | -              | -                      |
| Totals %               | 3.7%                   | 2.1%  | 0.1%  |      | 5.9%           | 1.2%                        | 44.5% | 0%    |      | 45.7%          | 47.3%                       | 1.1%  | 0.1%  |      | 48.5%          | -                      |
| PHF                    | 0.76                   | 0.68  | 0.25  |      | 0.86           | 0.43                        | 0.83  | 0     |      | 0.83           | 0.86                        | 0.8   | 0.25  |      | 0.87           | -                      |
| Heavy                  | 2                      | 0     | 0     |      | 2              | 0                           | 19    | 0     |      | 19             | 24                          | 3     | 0     |      | 27             | -                      |
| Heavy %                | 3.8%                   | 0%    | 0%    |      | 2.4%           | 0%                          | 3%    | 0%    |      | 2.9%           | 3.6%                        | 18.8% | 0%    |      | 3.9%           | -                      |
| Lights                 | 50                     | 30    | 1     |      | 81             | 17                          | 611   | 0     |      | 628            | 646                         | 13    | 1     |      | 660            | -                      |
| Lights %               | 96.2%                  | 100%  | 100%  |      | 97.6%          | 100%                        | 97%   | 0%    |      | 97.1%          | 96.4%                       | 81.3% | 100%  |      | 96.1%          | -                      |
| Single-Unit Trucks     | 0                      | 0     | 0     |      | 0              | 0                           | 10    | 0     |      | 10             | 11                          | 0     | 0     |      | 11             | -                      |
| Single-Unit Trucks %   | 0%                     | 0%    | 0%    |      | 0%             | 0%                          | 1.6%  | 0%    |      | 1.5%           | 1.6%                        | 0%    | 0%    |      | 1.6%           | -                      |
| Buses                  | 2                      | 0     | 0     |      | 2              | 0                           | 8     | 0     |      | 8              | 11                          | 3     | 0     |      | 14             | -                      |
| Buses %                | 3.8%                   | 0%    | 0%    |      | 2.4%           | 0%                          | 1.3%  | 0%    |      | 1.2%           | 1.6%                        | 18.8% | 0%    |      | 2%             | -                      |
| Articulated Trucks     | 0                      | 0     | 0     |      | 0              | 0                           | 1     | 0     |      | 1              | 2                           | 0     | 0     |      | 2              | -                      |
| Articulated Trucks %   | 0%                     | 0%    | 0%    |      | 0%             | 0%                          | 0.2%  | 0%    |      | 0.2%           | 0.3%                        | 0%    | 0%    |      | 0.3%           | -                      |
| Bicycles on Road       | 0                      | 0     | 0     |      | 0              | 0                           | 0     | 0     |      | 0              | 0                           | 0     | 0     |      | 0              | -                      |
| Bicycles on Road %     | 0%                     | 0%    | 0%    |      | 0%             | 0%                          | 0%    | 0%    |      | 0%             | 0%                          | 0%    | 0%    |      | 0%             | -                      |
| Pedestrians            | -                      | -     | -     | 1    | -              | -                           | -     | -     | 1    | -              | -                           | -     | -     | 0    | -              | -                      |
| Pedestrians%           | -                      | -     | -     | 50%  | -              | -                           | -     | -     | 50%  | -              | -                           | -     | -     | 0%   | -              | -                      |
| Bicycles on Crosswalk  | -                      | -     | -     | 0    | -              | -                           | -     | -     | 0    | -              | -                           | -     | -     | 0    | -              | -                      |
| Bicycles on Crosswalk% | -                      | -     | -     | 0%   | -              | -                           | -     | -     | 0%   | -              | -                           | -     | -     | 0%   | -              | -                      |



Peak Hour: 04:00 PM - 05:00 PM Weather:

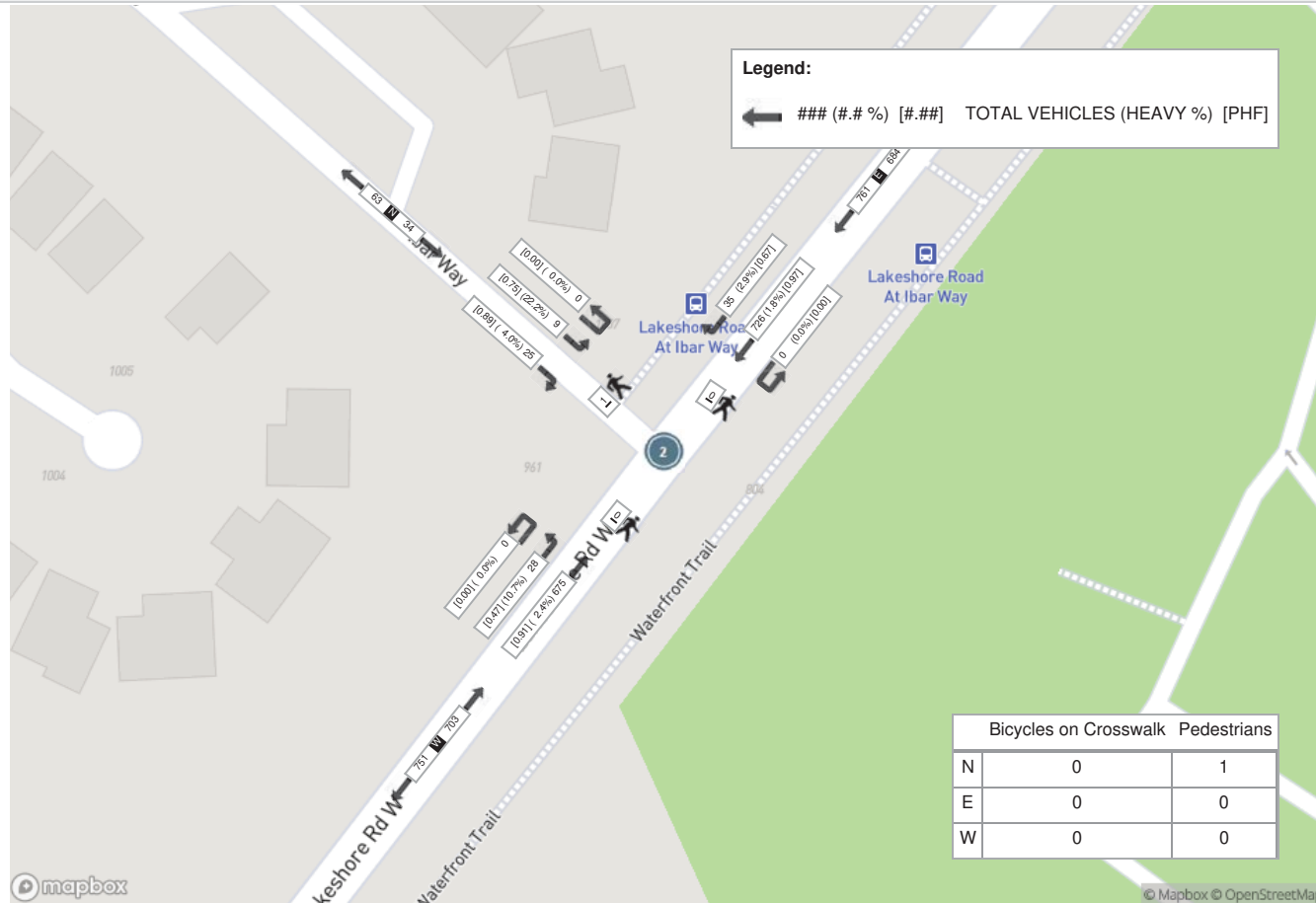
| Start Time             | Southbound<br>IBAR WAY |       |       |      |                | Westbound<br>LAKESHORE RD W |       |       |      |                | Eastbound<br>LAKESHORE RD W |       |       |      |                | Int. Total<br>(15 min) |
|------------------------|------------------------|-------|-------|------|----------------|-----------------------------|-------|-------|------|----------------|-----------------------------|-------|-------|------|----------------|------------------------|
|                        | Right                  | Left  | UTurn | Peds | Approach Total | Right                       | Thru  | UTurn | Peds | Approach Total | Thru                        | Left  | UTurn | Peds | Approach Total |                        |
| 16:00:00               | 6                      | 3     | 0     | 0    | 9              | 13                          | 186   | 0     | 0    | 199            | 160                         | 2     | 0     | 0    | 162            | 370                    |
| 16:15:00               | 6                      | 1     | 0     | 0    | 7              | 12                          | 188   | 0     | 0    | 200            | 158                         | 4     | 0     | 0    | 162            | 369                    |
| 16:30:00               | 7                      | 2     | 0     | 1    | 9              | 2                           | 167   | 0     | 0    | 169            | 185                         | 7     | 0     | 0    | 192            | 370                    |
| 16:45:00               | 6                      | 3     | 0     | 0    | 9              | 8                           | 185   | 0     | 0    | 193            | 172                         | 15    | 0     | 0    | 187            | 389                    |
| Grand Total            | 25                     | 9     | 0     | 1    | 34             | 35                          | 726   | 0     | 0    | 761            | 675                         | 28    | 0     | 0    | 703            | 1498                   |
| Approach%              | 73.5%                  | 26.5% | 0%    |      | -              | 4.6%                        | 95.4% | 0%    |      | -              | 96%                         | 4%    | 0%    |      | -              | -                      |
| Totals %               | 1.7%                   | 0.6%  | 0%    |      | 2.3%           | 2.3%                        | 48.5% | 0%    |      | 50.8%          | 45.1%                       | 1.9%  | 0%    |      | 46.9%          | -                      |
| PHF                    | 0.89                   | 0.75  | 0     |      | 0.94           | 0.67                        | 0.97  | 0     |      | 0.95           | 0.91                        | 0.47  | 0     |      | 0.92           | -                      |
| Heavy                  | 1                      | 2     | 0     |      | 3              | 1                           | 13    | 0     |      | 14             | 16                          | 3     | 0     |      | 19             | -                      |
| Heavy %                | 4%                     | 22.2% | 0%    |      | 8.8%           | 2.9%                        | 1.8%  | 0%    |      | 1.8%           | 2.4%                        | 10.7% | 0%    |      | 2.7%           | -                      |
| Lights                 | 24                     | 7     | 0     |      | 31             | 34                          | 713   | 0     |      | 747            | 659                         | 25    | 0     |      | 684            | -                      |
| Lights %               | 96%                    | 77.8% | 0%    |      | 91.2%          | 97.1%                       | 98.2% | 0%    |      | 98.2%          | 97.6%                       | 89.3% | 0%    |      | 97.3%          | -                      |
| Single-Unit Trucks     | 0                      | 1     | 0     |      | 1              | 1                           | 7     | 0     |      | 8              | 7                           | 0     | 0     |      | 7              | -                      |
| Single-Unit Trucks %   | 0%                     | 11.1% | 0%    |      | 2.9%           | 2.9%                        | 1%    | 0%    |      | 1.1%           | 1%                          | 0%    | 0%    |      | 1%             | -                      |
| Buses                  | 1                      | 1     | 0     |      | 2              | 0                           | 6     | 0     |      | 6              | 8                           | 3     | 0     |      | 11             | -                      |
| Buses %                | 4%                     | 11.1% | 0%    |      | 5.9%           | 0%                          | 0.8%  | 0%    |      | 0.8%           | 1.2%                        | 10.7% | 0%    |      | 1.6%           | -                      |
| Articulated Trucks     | 0                      | 0     | 0     |      | 0              | 0                           | 0     | 0     |      | 0              | 1                           | 0     | 0     |      | 1              | -                      |
| Articulated Trucks %   | 0%                     | 0%    | 0%    |      | 0%             | 0%                          | 0%    | 0%    |      | 0%             | 0.1%                        | 0%    | 0%    |      | 0.1%           | -                      |
| Bicycles on Road       | 0                      | 0     | 0     |      | 0              | 0                           | 0     | 0     |      | 0              | 0                           | 0     | 0     |      | 0              | -                      |
| Bicycles on Road %     | 0%                     | 0%    | 0%    |      | 0%             | 0%                          | 0%    | 0%    |      | 0%             | 0%                          | 0%    | 0%    |      | 0%             | -                      |
| Pedestrians            | -                      | -     | -     | 1    | -              | -                           | -     | -     | 0    | -              | -                           | -     | -     | 0    | -              | -                      |
| Pedestrians%           | -                      | -     | -     | 100% | -              | -                           | -     | -     | 0%   | -              | -                           | -     | -     | 0%   | -              | -                      |
| Bicycles on Crosswalk  | -                      | -     | -     | 0    | -              | -                           | -     | -     | 0    | -              | -                           | -     | -     | 0    | -              | -                      |
| Bicycles on Crosswalk% | -                      | -     | -     | 0%   | -              | -                           | -     | -     | 0%   | -              | -                           | -     | -     | 0%   | -              | -                      |

**Peak Hour: 08:00 AM - 09:00 AM    Weather: Broken Clouds (-3.63 °C)**





**Peak Hour: 04:00 PM - 05:00 PM    Weather:**





Turning Movement Count (1 . LAKESHORE RD W & LORNE PARK RD / TENNYSON AVE)

| Start Time  | Southbound<br>LORNE PARK RD |             |             |              |            |                | Westbound<br>LAKESHORE RD W |             |             |              |            |                | Northbound<br>TENNYSON AVE |             |             |              |            |                | Eastbound<br>LAKESHORE RD W |             |             |              |            |                | Int. Total<br>(15 min) | Int. Total<br>(1 hr) |
|-------------|-----------------------------|-------------|-------------|--------------|------------|----------------|-----------------------------|-------------|-------------|--------------|------------|----------------|----------------------------|-------------|-------------|--------------|------------|----------------|-----------------------------|-------------|-------------|--------------|------------|----------------|------------------------|----------------------|
|             | Right<br>N-W                | Thru<br>N-S | Left<br>N-E | UTurn<br>N-N | Peds<br>N: | Approach Total | Right<br>E-N                | Thru<br>E-W | Left<br>E-S | UTurn<br>E-E | Peds<br>E: | Approach Total | Right<br>S-E               | Thru<br>S-N | Left<br>S-W | UTurn<br>S-S | Peds<br>S: | Approach Total | Right<br>W-S                | Thru<br>W-E | Left<br>W-N | UTurn<br>W-W | Peds<br>W: | Approach Total |                        |                      |
| 07:00:00    | 9                           | 0           | 7           | 0            | 1          | 16             | 5                           | 63          | 0           | 0            | 0          | 68             | 0                          | 0           | 1           | 0            | 0          | 1              | 0                           | 76          | 10          | 0            | 1          | 86             | 171                    |                      |
| 07:15:00    | 17                          | 0           | 3           | 0            | 0          | 20             | 9                           | 96          | 0           | 0            | 0          | 105            | 1                          | 0           | 2           | 0            | 0          | 3              | 1                           | 74          | 4           | 0            | 0          | 79             | 207                    |                      |
| 07:30:00    | 17                          | 0           | 5           | 0            | 2          | 22             | 5                           | 103         | 1           | 0            | 0          | 109            | 2                          | 1           | 1           | 0            | 0          | 4              | 1                           | 111         | 12          | 0            | 2          | 124            | 259                    |                      |
| 07:45:00    | 22                          | 0           | 21          | 0            | 0          | 43             | 10                          | 104         | 0           | 0            | 0          | 114            | 0                          | 1           | 1           | 0            | 2          | 2              | 0                           | 126         | 12          | 0            | 1          | 138            | 297                    | 934                  |
| 08:00:00    | 40                          | 0           | 25          | 0            | 0          | 65             | 29                          | 129         | 1           | 0            | 0          | 159            | 3                          | 2           | 4           | 0            | 0          | 9              | 4                           | 139         | 35          | 0            | 1          | 178            | 411                    | 1174                 |
| 08:15:00    | 57                          | 1           | 50          | 0            | 2          | 108            | 18                          | 104         | 1           | 0            | 0          | 123            | 3                          | 1           | 1           | 0            | 0          | 5              | 3                           | 146         | 41          | 0            | 3          | 190            | 426                    | 1393                 |
| 08:30:00    | 31                          | 0           | 22          | 0            | 1          | 53             | 29                          | 177         | 0           | 0            | 1          | 206            | 1                          | 0           | 5           | 0            | 1          | 6              | 3                           | 148         | 28          | 0            | 4          | 179            | 444                    | 1578                 |
| 08:45:00    | 35                          | 0           | 12          | 0            | 1          | 47             | 31                          | 173         | 2           | 0            | 0          | 206            | 1                          | 1           | 6           | 0            | 0          | 8              | 1                           | 137         | 19          | 0            | 0          | 157            | 418                    | 1699                 |
| 09:00:00    | 24                          | 1           | 12          | 0            | 0          | 37             | 15                          | 135         | 0           | 0            | 1          | 150            | 1                          | 0           | 1           | 0            | 5          | 2              | 1                           | 119         | 16          | 0            | 2          | 136            | 325                    | 1613                 |
| 09:15:00    | 19                          | 1           | 12          | 0            | 0          | 32             | 21                          | 125         | 1           | 0            | 0          | 147            | 0                          | 0           | 0           | 0            | 0          | 0              | 2                           | 86          | 22          | 0            | 1          | 110            | 289                    | 1476                 |
| 09:30:00    | 14                          | 0           | 16          | 0            | 1          | 30             | 17                          | 106         | 0           | 0            | 0          | 123            | 0                          | 0           | 2           | 0            | 0          | 2              | 1                           | 112         | 14          | 0            | 1          | 127            | 282                    | 1314                 |
| 09:45:00    | 31                          | 0           | 14          | 0            | 0          | 45             | 16                          | 87          | 1           | 0            | 2          | 104            | 1                          | 1           | 0           | 0            | 2          | 2              | 1                           | 102         | 28          | 0            | 2          | 131            | 282                    | 1178                 |
| ***BREAK*** |                             |             |             |              |            |                |                             |             |             |              |            |                |                            |             |             |              |            |                |                             |             |             |              |            |                |                        |                      |
| 16:00:00    | 33                          | 0           | 21          | 0            | 1          | 54             | 21                          | 173         | 2           | 0            | 0          | 196            | 1                          | 0           | 2           | 0            | 0          | 3              | 2                           | 137         | 33          | 0            | 2          | 172            | 425                    |                      |
| 16:15:00    | 23                          | 0           | 22          | 0            | 1          | 45             | 25                          | 159         | 0           | 0            | 0          | 184            | 0                          | 0           | 1           | 1            | 0          | 2              | 1                           | 144         | 29          | 0            | 3          | 174            | 405                    |                      |
| 16:30:00    | 15                          | 0           | 15          | 0            | 1          | 30             | 27                          | 157         | 0           | 0            | 0          | 184            | 0                          | 0           | 1           | 0            | 0          | 1              | 3                           | 177         | 30          | 0            | 1          | 210            | 425                    |                      |
| 16:45:00    | 32                          | 1           | 14          | 0            | 1          | 47             | 29                          | 150         | 1           | 0            | 0          | 180            | 1                          | 0           | 2           | 0            | 1          | 3              | 1                           | 177         | 25          | 0            | 1          | 203            | 433                    | 1688                 |
| 17:00:00    | 21                          | 0           | 14          | 0            | 1          | 35             | 35                          | 153         | 1           | 0            | 0          | 189            | 0                          | 0           | 1           | 0            | 0          | 1              | 2                           | 151         | 30          | 0            | 1          | 183            | 408                    | 1671                 |
| 17:15:00    | 29                          | 4           | 16          | 0            | 1          | 49             | 23                          | 129         | 2           | 0            | 0          | 154            | 1                          | 0           | 2           | 0            | 1          | 3              | 1                           | 180         | 38          | 1            | 1          | 220            | 426                    | 1692                 |
| 17:30:00    | 20                          | 0           | 20          | 0            | 0          | 40             | 22                          | 127         | 1           | 0            | 0          | 150            | 0                          | 1           | 0           | 0            | 0          | 1              | 1                           | 154         | 39          | 0            | 0          | 194            | 385                    | 1652                 |
| 17:45:00    | 22                          | 0           | 15          | 0            | 1          | 37             | 23                          | 115         | 0           | 0            | 1          | 138            | 2                          | 0           | 2           | 0            | 0          | 4              | 1                           | 115         | 38          | 0            | 2          | 154            | 333                    | 1552                 |
| 18:00:00    | 21                          | 0           | 12          | 0            | 0          | 33             | 16                          | 115         | 1           | 0            | 0          | 132            | 1                          | 0           | 0           | 0            | 1          | 1              | 1                           | 107         | 35          | 0            | 3          | 143            | 309                    | 1453                 |
| 18:15:00    | 21                          | 1           | 18          | 0            | 2          | 40             | 16                          | 95          | 2           | 0            | 1          | 113            | 3                          | 0           | 3           | 0            | 1          | 6              | 0                           | 112         | 21          | 0            | 0          | 133            | 292                    | 1319                 |
| 18:30:00    | 17                          | 1           | 15          | 0            | 3          | 33             | 6                           | 108         | 2           | 0            | 0          | 116            | 2                          | 1           | 2           | 0            | 0          | 5              | 4                           | 97          | 24          | 0            | 4          | 125            | 279                    | 1213                 |
| 18:45:00    | 26                          | 1           | 8           | 0            | 0          | 35             | 20                          | 95          | 1           | 0            | 0          | 116            | 0                          | 0           | 1           | 0            | 0          | 1              | 1                           | 89          | 23          | 0            | 0          | 113            | 265                    | 1145                 |
| Grand Total | 596                         | 11          | 389         | 0            | 20         | 996            | 468                         | 2978        | 20          | 0            | 6          | 3466           | 24                         | 9           | 41          | 1            | 14         | 75             | 36                          | 3016        | 606         | 1            | 36         | 3659           | 8196                   | -                    |
| Approach%   | 59.8%                       | 1.1%        | 39.1%       | 0%           | -          | -              | 13.5%                       | 85.9%       | 0.6%        | 0%           | -          | -              | 32%                        | 12%         | 54.7%       | 1.3%         | -          | -              | 1%                          | 82.4%       | 16.6%       | 0%           | -          | -              | -                      | -                    |
| Totals %    | 7.3%                        | 0.1%        | 4.7%        | 0%           | -          | 12.2%          | 5.7%                        | 36.3%       | 0.2%        | 0%           | -          | 42.3%          | 0.3%                       | 0.1%        | 0.5%        | 0%           | -          | 0.9%           | 0.4%                        | 36.8%       | 7.4%        | 0%           | -          | 44.6%          | -                      | -                    |
| Heavy       | 22                          | 0           | 14          | 0            | -          | -              | 12                          | 81          | 0           | 0            | -          | -              | 0                          | 0           | 0           | 0            | -          | -              | 2                           | 98          | 14          | 0            | -          | -              | -                      | -                    |
| Heavy %     | 3.7%                        | 0%          | 3.6%        | 0%           | -          | -              | 2.6%                        | 2.7%        | 0%          | 0%           | -          | -              | 0%                         | 0%          | 0%          | 0%           | -          | -              | 5.6%                        | 3.2%        | 2.3%        | 0%           | -          | -              | -                      | -                    |
| Bicycles    | -                           | -           | -           | -            | -          | -              | -                           | -           | -           | -            | -          | -              | -                          | -           | -           | -            | -          | -              | -                           | -           | -           | -            | -          | -              | -                      | -                    |
| Bicycle %   | -                           | -           | -           | -            | -          | -              | -                           | -           | -           | -            | -          | -              | -                          | -           | -           | -            | -          | -              | -                           | -           | -           | -            | -          | -              | -                      | -                    |



Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (-3.63 °C)

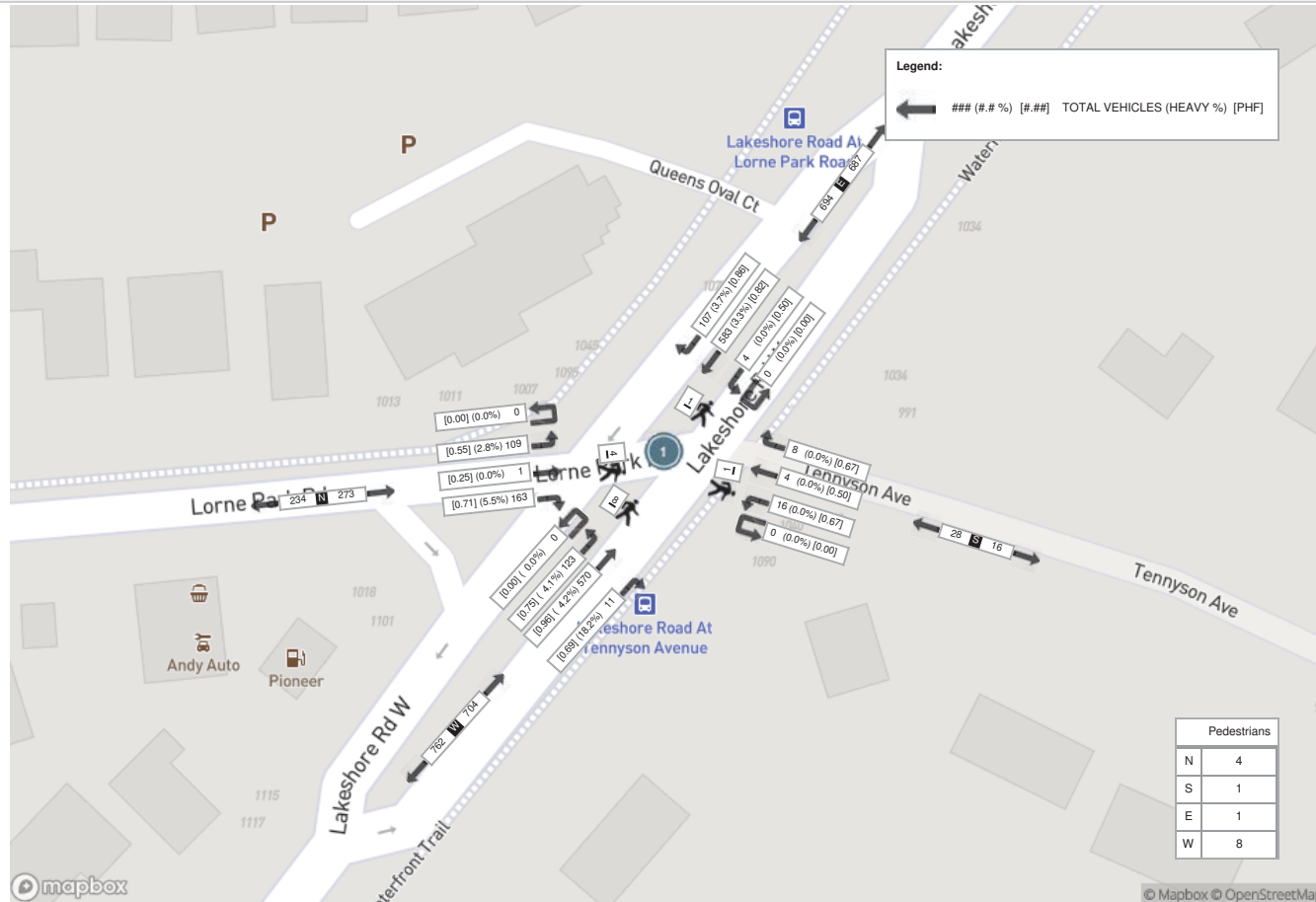
| Start Time           | Southbound<br>LORNE PARK RD |      |       |       |       |                | Westbound<br>LAKESHORE RD W |       |      |       |      |                | Northbound<br>TENNYSON AVE |       |       |       |      |                | Eastbound<br>LAKESHORE RD W |       |       |       |       |                | Int. Total<br>(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             | 40                          | 0    | 25    | 0     | 0     | 65             | 29                          | 129   | 1    | 0     | 0    | 159            | 3                          | 2     | 4     | 0     | 0    | 9              | 4                           | 139   | 35    | 0     | 1     | 178            | 411                    |
| 08:15:00             | 57                          | 1    | 50    | 0     | 2     | 108            | 18                          | 104   | 1    | 0     | 0    | 123            | 3                          | 1     | 1     | 0     | 0    | 5              | 3                           | 146   | 41    | 0     | 3     | 190            | 426                    |
| 08:30:00             | 31                          | 0    | 22    | 0     | 1     | 53             | 29                          | 177   | 0    | 0     | 1    | 206            | 1                          | 0     | 5     | 0     | 1    | 6              | 3                           | 148   | 28    | 0     | 4     | 179            | 444                    |
| 08:45:00             | 35                          | 0    | 12    | 0     | 1     | 47             | 31                          | 173   | 2    | 0     | 0    | 206            | 1                          | 1     | 6     | 0     | 0    | 8              | 1                           | 137   | 19    | 0     | 0     | 157            | 418                    |
| Grand Total          | 163                         | 1    | 109   | 0     | 4     | 273            | 107                         | 583   | 4    | 0     | 1    | 694            | 8                          | 4     | 16    | 0     | 1    | 28             | 11                          | 570   | 123   | 0     | 8     | 704            | 1699                   |
| Approach%            | 59.7%                       | 0.4% | 39.9% | 0%    |       | -              | 15.4%                       | 84%   | 0.6% | 0%    |      | -              | 28.6%                      | 14.3% | 57.1% | 0%    |      | -              | 1.6%                        | 81%   | 17.5% | 0%    |       | -              | -                      |
| Totals %             | 9.6%                        | 0.1% | 6.4%  | 0%    |       | 16.1%          | 6.3%                        | 34.3% | 0.2% | 0%    |      | 40.8%          | 0.5%                       | 0.2%  | 0.9%  | 0%    |      | 1.6%           | 0.6%                        | 33.5% | 7.2%  | 0%    |       | 41.4%          | -                      |
| PHF                  | 0.71                        | 0.25 | 0.55  | 0     |       | 0.63           | 0.86                        | 0.82  | 0.5  | 0     |      | 0.84           | 0.67                       | 0.5   | 0.67  | 0     |      | 0.78           | 0.69                        | 0.96  | 0.75  | 0     |       | 0.93           | -                      |
| Heavy                | 9                           | 0    | 3     | 0     |       | 12             | 4                           | 19    | 0    | 0     |      | 23             | 0                          | 0     | 0     | 0     |      | 0              | 2                           | 24    | 5     | 0     |       | 31             | -                      |
| Heavy %              | 5.5%                        | 0%   | 2.8%  | 0%    |       | 4.4%           | 3.7%                        | 3.3%  | 0%   | 0%    |      | 3.3%           | 0%                         | 0%    | 0%    | 0%    |      | 0%             | 18.2%                       | 4.2%  | 4.1%  | 0%    |       | 4.4%           | -                      |
| Lights               | 154                         | 1    | 106   | 0     |       | 261            | 101                         | 564   | 4    | 0     |      | 669            | 8                          | 4     | 16    | 0     |      | 28             | 9                           | 546   | 118   | 0     |       | 673            | -                      |
| Lights %             | 94.5%                       | 100% | 97.2% | 0%    |       | 95.6%          | 94.4%                       | 96.7% | 100% | 0%    |      | 96.4%          | 100%                       | 100%  | 100%  | 0%    |      | 100%           | 81.8%                       | 95.8% | 95.9% | 0%    |       | 95.6%          | -                      |
| Single-Unit Trucks   | 5                           | 0    | 2     | 0     |       | 7              | 2                           | 8     | 0    | 0     |      | 10             | 0                          | 0     | 0     | 0     |      | 0              | 2                           | 9     | 0     | 0     |       | 11             | -                      |
| Single-Unit Trucks % | 3.1%                        | 0%   | 1.8%  | 0%    |       | 2.6%           | 1.9%                        | 1.4%  | 0%   | 0%    |      | 1.4%           | 0%                         | 0%    | 0%    | 0%    |      | 0%             | 18.2%                       | 1.6%  | 0%    | 0%    |       | 1.6%           | -                      |
| Buses                | 4                           | 0    | 1     | 0     |       | 5              | 2                           | 10    | 0    | 0     |      | 12             | 0                          | 0     | 0     | 0     |      | 0              | 0                           | 13    | 5     | 0     |       | 18             | -                      |
| Buses %              | 2.5%                        | 0%   | 0.9%  | 0%    |       | 1.8%           | 1.9%                        | 1.7%  | 0%   | 0%    |      | 1.7%           | 0%                         | 0%    | 0%    | 0%    |      | 0%             | 0%                          | 2.3%  | 4.1%  | 0%    |       | 2.6%           | -                      |
| Articulated Trucks   | 0                           | 0    | 0     | 0     |       | 0              | 0                           | 1     | 0    | 0     |      | 1              | 0                          | 0     | 0     | 0     |      | 0              | 0                           | 2     | 0     | 0     |       | 2              | -                      |
| Articulated Trucks % | 0%                          | 0%   | 0%    | 0%    |       | 0%             | 0%                          | 0.2%  | 0%   | 0%    |      | 0.1%           | 0%                         | 0%    | 0%    | 0%    |      | 0%             | 0%                          | 0.4%  | 0%    | 0%    |       | 0.3%           | -                      |
| Bicycles on Road     | 0                           | 0    | 0     | 0     |       | 0              | 2                           | 0     | 0    | 0     |      | 2              | 0                          | 0     | 0     | 0     |      | 0              | 0                           | 0     | 0     | 0     |       | 0              | -                      |
| Bicycles on Road %   | 0%                          | 0%   | 0%    | 0%    |       | 0%             | 1.9%                        | 0%    | 0%   | 0%    |      | 0.3%           | 0%                         | 0%    | 0%    | 0%    |      | 0%             | 0%                          | 0%    | 0%    | 0%    |       | 0%             | -                      |
| Pedestrians          | -                           | -    | -     | -     | 4     | -              | -                           | -     | -    | -     | 1    | -              | -                          | -     | -     | -     | 1    | -              | -                           | -     | -     | -     | 8     | -              | -                      |
| Pedestrians%         | -                           | -    | -     | -     | 28.6% | -              | -                           | -     | -    | -     | 7.1% | -              | -                          | -     | -     | -     | 7.1% | -              | -                           | -     | -     | -     | 57.1% | -              | -                      |



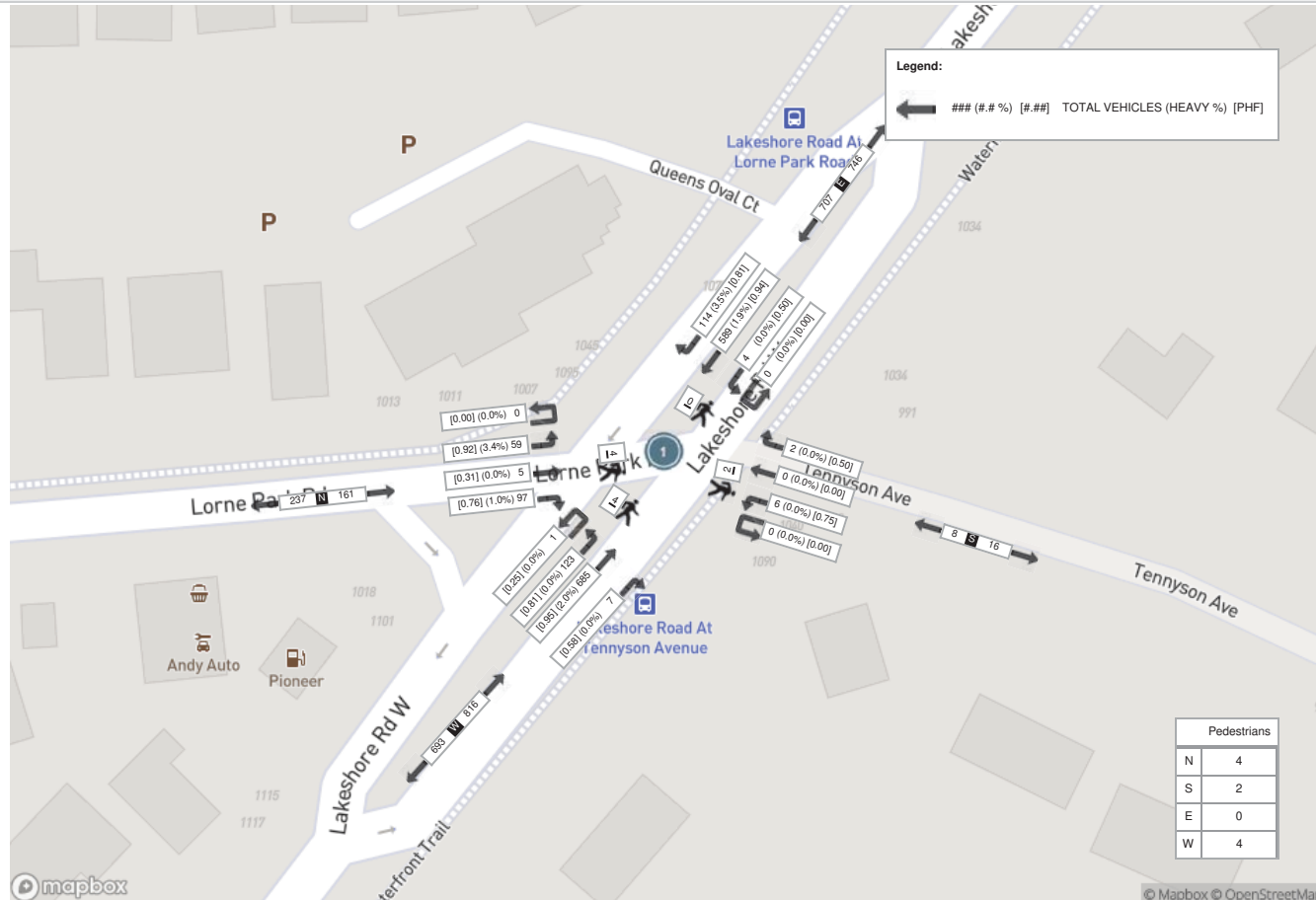
Peak Hour: 04:30 PM - 05:30 PM Weather:

| Start Time           | Southbound<br>LORNE PARK RD |      |       |       |      |                | Westbound<br>LAKESHORE RD W |       |      |       |      |                | Northbound<br>TENNYSON AVE |      |      |       |      |                | Eastbound<br>LAKESHORE RD W |       |       |       |      |                | Int. Total<br>(15 min) |
|----------------------|-----------------------------|------|-------|-------|------|----------------|-----------------------------|-------|------|-------|------|----------------|----------------------------|------|------|-------|------|----------------|-----------------------------|-------|-------|-------|------|----------------|------------------------|
|                      | Right                       | Thru | Left  | UTurn | Peds | Approach Total | Right                       | Thru  | Left | UTurn | Peds | Approach Total | Right                      | Thru | Left | UTurn | Peds | Approach Total | Right                       | Thru  | Left  | UTurn | Peds | Approach Total |                        |
| 16:30:00             | 15                          | 0    | 15    | 0     | 1    | 30             | 27                          | 157   | 0    | 0     | 0    | 184            | 0                          | 0    | 1    | 0     | 0    | 1              | 3                           | 177   | 30    | 0     | 1    | 210            | 425                    |
| 16:45:00             | 32                          | 1    | 14    | 0     | 1    | 47             | 29                          | 150   | 1    | 0     | 0    | 180            | 1                          | 0    | 2    | 0     | 1    | 3              | 1                           | 177   | 25    | 0     | 1    | 203            | 433                    |
| 17:00:00             | 21                          | 0    | 14    | 0     | 1    | 35             | 35                          | 153   | 1    | 0     | 0    | 189            | 0                          | 0    | 1    | 0     | 0    | 1              | 2                           | 151   | 30    | 0     | 1    | 183            | 408                    |
| 17:15:00             | 29                          | 4    | 16    | 0     | 1    | 49             | 23                          | 129   | 2    | 0     | 0    | 154            | 1                          | 0    | 2    | 0     | 1    | 3              | 1                           | 180   | 38    | 1     | 1    | 220            | 426                    |
| Grand Total          | 97                          | 5    | 59    | 0     | 4    | 161            | 114                         | 589   | 4    | 0     | 0    | 707            | 2                          | 0    | 6    | 0     | 2    | 8              | 7                           | 685   | 123   | 1     | 4    | 816            | 1692                   |
| Approach%            | 60.2%                       | 3.1% | 36.6% | 0%    |      | -              | 16.1%                       | 83.3% | 0.6% | 0%    |      | -              | 25%                        | 0%   | 75%  | 0%    |      | -              | 0.9%                        | 83.9% | 15.1% | 0.1%  |      | -              | -                      |
| Totals %             | 5.7%                        | 0.3% | 3.5%  | 0%    |      | 9.5%           | 6.7%                        | 34.8% | 0.2% | 0%    |      | 41.8%          | 0.1%                       | 0%   | 0.4% | 0%    |      | 0.5%           | 0.4%                        | 40.5% | 7.3%  | 0.1%  |      | 48.2%          | -                      |
| PHF                  | 0.76                        | 0.31 | 0.92  | 0     |      | 0.82           | 0.81                        | 0.94  | 0.5  | 0     |      | 0.94           | 0.5                        | 0    | 0.75 | 0     |      | 0.67           | 0.58                        | 0.95  | 0.81  | 0.25  |      | 0.93           | -                      |
| Heavy                | 1                           | 0    | 2     | 0     |      | 3              | 4                           | 11    | 0    | 0     |      | 15             | 0                          | 0    | 0    | 0     |      | 0              | 0                           | 14    | 0     | 0     |      | 14             | -                      |
| Heavy %              | 1%                          | 0%   | 3.4%  | 0%    |      | 1.9%           | 3.5%                        | 1.9%  | 0%   | 0%    |      | 2.1%           | 0%                         | 0%   | 0%   | 0%    |      | 0%             | 0%                          | 2%    | 0%    | 0%    |      | 1.7%           | -                      |
| Lights               | 96                          | 5    | 57    | 0     |      | 158            | 110                         | 578   | 4    | 0     |      | 692            | 2                          | 0    | 6    | 0     |      | 8              | 7                           | 671   | 123   | 1     |      | 802            | -                      |
| Lights %             | 99%                         | 100% | 96.6% | 0%    |      | 98.1%          | 96.5%                       | 98.1% | 100% | 0%    |      | 97.9%          | 100%                       | 0%   | 100% | 0%    |      | 100%           | 100%                        | 98%   | 100%  | 100%  |      | 98.3%          | -                      |
| Single-Unit Trucks   | 1                           | 0    | 0     | 0     |      | 1              | 1                           | 6     | 0    | 0     |      | 7              | 0                          | 0    | 0    | 0     |      | 0              | 0                           | 9     | 0     | 0     |      | 9              | -                      |
| Single-Unit Trucks % | 1%                          | 0%   | 0%    | 0%    |      | 0.6%           | 0.9%                        | 1%    | 0%   | 0%    |      | 1%             | 0%                         | 0%   | 0%   | 0%    |      | 0%             | 0%                          | 1.3%  | 0%    | 0%    |      | 1.1%           | -                      |
| Buses                | 0                           | 0    | 2     | 0     |      | 2              | 3                           | 5     | 0    | 0     |      | 8              | 0                          | 0    | 0    | 0     |      | 0              | 0                           | 3     | 0     | 0     |      | 3              | -                      |
| Buses %              | 0%                          | 0%   | 3.4%  | 0%    |      | 1.2%           | 2.6%                        | 0.8%  | 0%   | 0%    |      | 1.1%           | 0%                         | 0%   | 0%   | 0%    |      | 0%             | 0%                          | 0.4%  | 0%    | 0%    |      | 0.4%           | -                      |
| Articulated Trucks   | 0                           | 0    | 0     | 0     |      | 0              | 0                           | 0     | 0    | 0     |      | 0              | 0                          | 0    | 0    | 0     |      | 0              | 0                           | 2     | 0     | 0     |      | 2              | -                      |
| Articulated Trucks % | 0%                          | 0%   | 0%    | 0%    |      | 0%             | 0%                          | 0%    | 0%   | 0%    |      | 0%             | 0%                         | 0%   | 0%   | 0%    |      | 0%             | 0%                          | 0.3%  | 0%    | 0%    |      | 0.2%           | -                      |
| Bicycles on Road     | 0                           | 0    | 0     | 0     |      | 0              | 0                           | 0     | 0    | 0     |      | 0              | 0                          | 0    | 0    | 0     |      | 0              | 0                           | 0     | 0     | 0     |      | 0              | -                      |
| Bicycles on Road %   | 0%                          | 0%   | 0%    | 0%    |      | 0%             | 0%                          | 0%    | 0%   | 0%    |      | 0%             | 0%                         | 0%   | 0%   | 0%    |      | 0%             | 0%                          | 0%    | 0%    | 0%    |      | 0%             | -                      |
| Pedestrians          | -                           | -    | -     | -     | 4    | -              | -                           | -     | -    | -     | 0    | -              | -                          | -    | -    | -     | 2    | -              | -                           | -     | -     | -     | 4    | -              | -                      |
| Pedestrians%         | -                           | -    | -     | -     | 40%  | -              | -                           | -     | -    | -     | 0%   | -              | -                          | -    | -    | -     | 20%  | -              | -                           | -     | -     | -     | 40%  | -              | -                      |

Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (-3.63 °C)



Peak Hour: 04:30 PM - 05:30 PM    Weather:



|                                |           |                                 |  |                                 |   |                  |                  |                  |                  |
|--------------------------------|-----------|---------------------------------|--|---------------------------------|---|------------------|------------------|------------------|------------------|
| Intellght                      |           | 0201                            |  | LAKESHORE ROAD E @ Lorne Park   |   |                  |                  |                  |                  |
| Phase - Parameter 1-16         | Units     | Phase 1                         | Phase 2  | Phase 3                         | Phase 4                                       | Phase 5          | Phase 6          | Phase 7          | Phase 8          |
| Phase Description*             | String    |                                 |  |                                 |   |                  |                  |                  |                  |
| Walk                           | Sec       | 0                               | 10   | 0                               | 10  | 0                | 0                | 0                | 0                |
| Ped Clear                      | Sec       | 0                               | 17   | 0                               | 22  | 0                | 0                | 0                | 0                |
| Min Green                      | Sec       | 0                               | 8  | 0                               | 8   | 0                | 0                | 0                | 0                |
| Passage                        | Sec       | 0.0                             | 4.0  | 0.0                             | 4.0   | 0.0              | 0.0              | 0.0              | 0.0              |
| Maximum 1                      | Sec       | 0                               | 33   | 0                               | 20  | 0                | 0                | 0                | 0                |
| Maximum 2                      | Sec       | 0                               | 33   | 0                               | 20  | 0                | 0                | 0                | 0                |
| Yellow Change                  | Sec       | 3.0                             | 3.5  | 3.0                             | 3.5   | 3.0              | 4.0              | 3.0              | 4.0              |
| Red Clearance                  | Sec       | 0.0                             | 4.0  | 0.0                             | 4.0   | 0.0              | 0.0              | 0.0              | 0.0              |
| Red Revert                     | Sec       | 0.0                             | 0.0  | 0.0                             | 0.0   | 0.0              | 0.0              | 0.0              | 0.0              |
| Added Initial                  | Sec       | 0.0                             | 0.0  | 0.0                             | 0.0   | 0.0              | 0.0              | 0.0              | 0.0              |
| Max Initial                    | Sec       | 0                               | 0  | 0                               | 0   | 0                | 0                | 0                | 0                |
| Time Before Reduction          | Sec       | 0                               | 0  | 0                               | 0   | 0                | 0                | 0                | 0                |
| Cars Before Reduction          | Veh       | 0                               | 0  | 0                               | 0   | 0                | 0                | 0                | 0                |
| Time To Reduce                 | Sec       | 0                               | 0  | 0                               | 0   | 0                | 0                | 0                | 0                |
| Reduce By                      | Sec       | 0.0                             | 0.0  | 0.0                             | 0.0   | 0.0              | 0.0              | 0.0              | 0.0              |
| Min Gap                        | Sec       | 0.0                             | 0.0  | 0.0                             | 0.0   | 0.0              | 0.0              | 0.0              | 0.0              |
| Dynamic Max Limit              | Sec       | 0                               | 0  | 0                               | 0   | 0                | 0                | 0                | 0                |
| Dynamic Max Step               | Sec       | 0.0                             | 0.0  | 0.0                             | 0.0   | 0.0              | 0.0              | 0.0              | 0.0              |
| [P2] Start Up                  | Enum      | other                           | redClear   | other                           | phaseNotOn                                    | other            | other            | other            | other            |
| [P2] Options                   | Bit       |                                 | 0:Enabled Phase<br>3:Non-Actuated 1<br>7:Max Vehicle Recall<br>8:Ped. Recall<br>13:Actuated Rest In Walk |                                 | 0:Enabled Phase<br>5:Non Lock Detector Memory |                  |                  |                  |                  |
| [P2] Ring                      | Ring      | 0                               | 1  | 0                               | 1   | 0                | 0                | 0                | 0                |
| [P2] Concurrency               | Phase (.) | ()                              | ()   | ()                              | ()  | ()               | ()               | ()               | ()               |
| Coordination - Pattern 1-32    | Units     | 1                               | 2  | 3                               | 4   | 5                | 6                | 7                | 8                |
| Cycle Time                     | Sec       | 70                              | 65   | 70                              | 0   | 0                | 0                | 0                | 0                |
| Offset                         | Sec       | 50                              | 22   | 11                              | 0   | 0                | 0                | 0                | 0                |
| Split                          | Split     | 1                               | 2  | 3                               | 0   | 0                | 0                | 0                | 0                |
| Sequence                       | Sequence  | 1                               | 1  | 1                               | 0   | 0                | 0                | 0                | 0                |
| Phase Parameter Table*         | Number    | 1                               | 1  | 1                               | 1   | 1                | 1                | 1                | 1                |
| Coord Phase Reference Point*   | Enum      | green                           | green  | green                           | green   | green            | green            | green            | green            |
| Coord Mode*                    | Enum      | singlePermissive                | singlePermissive   | singlePermissive                | singlePermissive                              | singlePermissive | singlePermissive | singlePermissive | singlePermissive |
| Coordination - Splits          | Units     | Phase 1                         | Phase 2  | Phase 3                         | Phase 4                                       | Phase 5          | Phase 6          | Phase 7          | Phase 8          |
| Split 1 - Mode                 | Enum      | none                            | none   | none                            | none  | none             | none             | none             | none             |
| Split 1 - Time                 | Sec       | 0                               | 50   | 0                               | 20  | 0                | 0                | 0                | 0                |
| Split 1 - Coord                | Enum      | False                           | True   | False                           | False   | False            | False            | False            | False            |
| Split 1 - Coord Phase Options* | Bit       |                                 | 0: Reference Point   |                                 |   |                  |                  |                  |                  |
| Split 2 - Mode                 | Enum      | none                            | none   | none                            | none  | none             | none             | none             | none             |
| Split 2 - Time                 | Sec       | 0                               | 42   | 0                               | 23  | 0                | 0                | 0                | 0                |
| Split 2 - Coord                | Enum      | False                           | True   | False                           | False   | False            | False            | False            | False            |
| Split 2 - Coord Phase Options* | Bit       |                                 | 0: Reference Point   |                                 |   |                  |                  |                  |                  |
| Split 3 - Mode                 | Enum      | none                            | none   | none                            | none  | none             | none             | none             | none             |
| Split 3 - Time                 | Sec       | 0                               | 50   | 0                               | 20  | 0                | 0                | 0                | 0                |
| Split 3 - Coord                | Enum      | False                           | True   | False                           | False   | False            | False            | False            | False            |
| Split 3 - Coord Phase Options* | Bit       |                                 | 0: Reference Point   |                                 |   |                  |                  |                  |                  |
| Time Base - Schedule 1-16      | Units     | 1                               | 2  | 3                               | 4   | 5                | 6                | 7                | 8                |
| Month                          | Bit       | JFMAMJJASOND                    | JFMAMJJASOND   | JFMAMJJASOND                    | J-----  | -F-----          | --M-----         | ---M-----        | -----J---        |
| Day of Week                    | Bit       | -MTWTF-                         | S-----   | -----S                          | ---W---                                       | -M----           | ----F-           | -M----           | -M----           |
| Day of Month                   | Bit       | 1234567890123456789012345678901 | 1234567890123456789012345678901  | 1234567890123456789012345678901 | 1-----  | -----9-----      | -----9-----      | -----0-----      | 1-----           |
| Day Plan                       | Number    | 1                               | 3  | 2                               | 3   | 3                | 3                | 3                | 3                |
| Time Base - Schedule 1-16      | Units     | 9                               | 10   | 11                              | 12  | 13               | 14               | 15               | 16               |
| Month                          | Bit       | -----A----                      | -----S---  | -----O--                        | -----D  | -----D           | -----D           | -----S---        | -----            |
| Day of Week                    | Bit       | -M----                          | -M----   | -M----                          | ---W---                                       | ---T--           | --T----          | -M----           | SMTWTFS          |
| Day of Month                   | Bit       | ---5-----                       | -2-----  | --4-----                        | --5-----                                      | --6-----         | --4-----         | 0-               | -                |
| Day Plan                       | Number    | 3                               | 3  | 3                               | 3   | 3                | 3                | 3                | 0                |
| Time Base - Day Plans          | Units     | Evt 1                           | Evt 2  | Evt 3                           | Evt 4   | Evt 5            | Evt 6            |                  |                  |
| Plan 1 Hour                    | Hour      | 0                               | 6  |                                 | 9   | 15               | 3                |                  |                  |
| Plan 1 Minute                  | Min       | 0                               | 0  | 30                              | 0   | 30               | 0                |                  |                  |
| Plan 1 Action                  | Number    | 8                               | 1  | 2                               | 3   | 2                | 7                |                  |                  |
| Plan 2 Hour                    | Hour      | 0                               | 7  | 3                               | 0   | 0                | 0                |                  |                  |
| Plan 2 Minute                  | Min       | 0                               | 0  | 0                               | 0   | 0                | 0                |                  |                  |
| Plan 2 Action                  | Number    | 8                               | 2  | 7                               | 0   | 0                | 0                |                  |                  |
| Plan 3 Hour                    | Hour      | 0                               | 8  | 23                              | 3   | 0                | 0                |                  |                  |
| Plan 3 Minute                  | Min       | 0                               | 0  | 0                               | 0   | 0                | 0                |                  |                  |
| Plan 3 Action                  | Number    | 8                               | 2  | 8                               | 7   | 0                | 0                |                  |                  |
| Time Base - Action 1-32        | Units     | 1                               | 2  | 3                               | 4   | 5                | 6                | 7                | 8                |
| Pattern                        | Enum      | Pattern 1                       | Pattern 2  | Pattern 3                       | Pattern 4                                     | Pattern 5        | Pattern 6        | Free             | Free             |
| Aux. Functions                 | Bit       |                                 |  |                                 |   |                  |                  |                  |                  |
| Spec. Functions                | Bit       |                                 |  |                                 |   |                  |                  |                  |                  |
| Time Base - Action 1-32        | Units     | 9                               | 10   |                                 |   |                  |                  |                  |                  |
| Pattern                        | Enum      | Pattern 9                       | Pattern 10   |                                 |   |                  |                  |                  |                  |
| Aux. Functions                 | Bit       |                                 |  |                                 |   |                  |                  |                  |                  |
| Spec. Functions                | Bit       |                                 |  |                                 |   |                  |                  |                  |                  |



|          |  |  |
|----------|--|--|
| Location | Lakeshore Road W @ Lorne Park Road / Tennyson Avenue |  |
| Phase 2  | EW   |  |
| Phase 4  | NS   |  |

## **Appendix B – Existing Traffic Level of Service Calculations**

## Queues

3: tennyson ave/lorne park rd &amp; lakeshore road w

09-20-2024



| Lane Group             | EBL   | EBT  | EBR   | WBL  | WBT  | WBR  | NBL   | NBT  | SBT   | SBR  |
|------------------------|-------|------|-------|------|------|------|-------|------|-------|------|
| Lane Group Flow (vph)  | 134   | 620  | 12    | 4    | 634  | 116  | 17    | 13   | 119   | 177  |
| Act Effct Green (s)    | 27.0  | 27.0 | 27.0  | 22.6 | 22.6 | 22.6 | 32.0  | 32.0 | 32.0  | 32.0 |
| Actuated g/C Ratio     | 0.26  | 0.26 | 0.26  | 0.22 | 0.22 | 0.22 | 0.31  | 0.31 | 0.31  | 0.31 |
| v/c Ratio              | 1.89  | 0.68 | 0.02  | 0.02 | 0.83 | 0.25 | 0.04  | 0.03 | 0.29  | 0.29 |
| Control Delay          | 473.5 | 39.4 | 0.1   | 32.0 | 48.9 | 3.7  | 27.1  | 16.9 | 30.7  | 5.6  |
| Queue Delay            | 0.0   | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| Total Delay            | 473.5 | 39.4 | 0.1   | 32.0 | 48.9 | 3.7  | 27.1  | 16.9 | 30.7  | 5.6  |
| LOS                    | F     | D    | A     | C    | D    | A    | C     | B    | C     | A    |
| Approach Delay         | 114.8 |      | 41.8  |      |      |      | 22.7  |      | 15.7  |      |
| Approach LOS           | F     |      | D     |      |      |      | C     |      | B     |      |
| Queue Length 50th (m)  | ~45.0 | 64.4 | 0.0   | 0.7  | 68.2 | 0.0  | 2.6   | 0.6  | 19.8  | 0.0  |
| Queue Length 95th (m)  | #84.8 | 85.4 | 0.0   | 3.6  | 89.4 | 7.8  | 8.0   | 5.2  | 36.3  | 15.9 |
| Internal Link Dist (m) | 351.9 |      | 597.0 |      |      |      | 420.6 |      | 362.2 |      |
| Turn Bay Length (m)    | 45.0  | 25.0 |       | 25.0 | 25.0 |      |       |      |       |      |
| Base Capacity (vph)    | 71    | 918  | 523   | 190  | 867  | 502  | 390   | 519  | 411   | 609  |
| Starvation Cap Reductn | 0     | 0    | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    |
| Spillback Cap Reductn  | 0     | 0    | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    |
| Storage Cap Reductn    | 0     | 0    | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    |
| Reduced v/c Ratio      | 1.89  | 0.68 | 0.02  | 0.02 | 0.73 | 0.23 | 0.04  | 0.03 | 0.29  | 0.29 |

## Intersection Summary

Cycle Length: 86

Actuated Cycle Length: 104.2

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.89

Intersection Signal Delay: 67.6

Intersection LOS: E

Intersection Capacity Utilization 54.4%

ICU Level of Service A

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.























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

Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

## 3: tennyson ave/lorne park rd & lakeshore road w

09-20-2024

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement                          | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
| Lane Configurations               |  |  |  |  |  |  |  |  |   |   |  |  |
| Traffic Volume (vph)              | 123   | 570   | 11  | 4   | 583   | 107   | 16  | 4   | 8   | 109   | 1   | 163   |
| Future Volume (vph)               | 123   | 570   | 11  | 4   | 583   | 107   | 16  | 4   | 8   | 109   | 1   | 163   |
| Ideal Flow (vphpl)                | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Total Lost time (s)               | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   |   |   | 7.5   | 7.5   |
| Lane Util. Factor                 | 1.00  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  | 1.00  |   |   | 1.00  | 1.00  |
| Frt                               | 1.00  | 1.00  | 0.85  | 1.00  | 1.00  | 0.85  | 1.00  | 0.90  |   |   | 1.00  | 0.85  |
| Flt Protected                     | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  |   |   | 0.95  | 1.00  |
| Satd. Flow (prot)                 | 1770  | 3539  | 1583  | 1770  | 3539  | 1583  | 1770  | 1669  |   |   | 1775  | 1583  |
| Flt Permitted                     | 0.15  | 1.00  | 1.00  | 0.42  | 1.00  | 1.00  | 0.68  | 1.00  |   |   | 0.72  | 1.00  |
| Satd. Flow (perm)                 | 276   | 3539  | 1583  | 777   | 3539  | 1583  | 1268  | 1669  |   |   | 1339  | 1583  |
| Peak-hour factor, PHF             | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  |
| Adj. Flow (vph)                   | 134   | 620   | 12  | 4   | 634   | 116   | 17  | 4   | 9   | 118   | 1   | 177   |
| RTOR Reduction (vph)              | 0   | 0   | 9   | 0   | 0   | 91  | 0   | 6   | 0   | 0   | 0   | 123   |
| Lane Group Flow (vph)             | 134   | 620   | 3   | 4   | 634   | 25  | 17  | 7   | 0   | 0   | 119   | 54  |
| Turn Type                         | Perm  | NA  | Perm  | Perm  | NA  | Perm  | Perm  | NA  |   | Perm  | NA  | Perm  |
| Protected Phases                  |   | 2   |   |   | 4   |   |   | 6   |   |   | 6   |   |
| Permitted Phases                  | 2   |   | 2   | 4   |   | 4   | 6   |   |   | 6   |   | 6   |
| Actuated Green, G (s)             | 27.0  | 27.0  | 27.0  | 22.6  | 22.6  | 22.6  | 32.0  | 32.0  |   |   | 32.0  | 32.0  |
| Effective Green, g (s)            | 27.0  | 27.0  | 27.0  | 22.6  | 22.6  | 22.6  | 32.0  | 32.0  |   |   | 32.0  | 32.0  |
| Actuated g/C Ratio                | 0.26  | 0.26  | 0.26  | 0.22  | 0.22  | 0.22  | 0.31  | 0.31  |   |   | 0.31  | 0.31  |
| Clearance Time (s)                | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   |   |   | 7.5   | 7.5   |
| Vehicle Extension (s)             | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |   |   | 3.0   | 3.0   |
| Lane Grp Cap (vph)                | 71  | 917   | 410   | 168   | 768   | 343   | 389   | 513   |   |   | 411   | 486   |
| v/s Ratio Prot                    |   | 0.18  |   |   | c0.18   |   |   | 0.00  |   |   |   |   |
| v/s Ratio Perm                    | c0.49   |   | 0.00  | 0.01  |   | 0.02  | 0.01  |   |   |   | c0.09   | 0.03  |
| v/c Ratio                         | 1.89  | 0.68  | 0.01  | 0.02  | 0.83  | 0.07  | 0.04  | 0.01  |   |   | 0.29  | 0.11  |
| Uniform Delay, d1                 | 38.5  | 34.6  | 28.6  | 32.1  | 38.9  | 32.4  | 25.3  | 25.1  |   |   | 27.4  | 25.9  |
| Progression Factor                | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |   |   | 1.00  | 1.00  |
| Incremental Delay, d2             | 447.4   | 4.0   | 0.0   | 0.1   | 7.2   | 0.1   | 0.2   | 0.0   |   |   | 1.8   | 0.5   |
| Delay (s)                         | 486.0   | 38.6  | 28.6  | 32.1  | 46.1  | 32.5  | 25.5  | 25.1  |   |   | 29.2  | 26.3  |
| Level of Service                  | F   | D   | C   | C   | D   | C   | C   | C   |   |   | C   | C   |
| Approach Delay (s)                |   | 116.7   |   |   | 43.9  |   |   | 25.3  |   |   | 27.5  |   |
| Approach LOS                      |   | F   |   |   | D   |   |   | C   |   |   | C   |   |
| <b>Intersection Summary</b>       |   |   |   |   |   |   |   |   |   |   |   |   |
| HCM 2000 Control Delay            |   |   | 71.2  |   |   | HCM 2000 Level of Service   |   | E   |   |   |   |   |
| HCM 2000 Volume to Capacity ratio |   |   | 0.96  |   |   |   |   |   |   |   |   |   |
| Actuated Cycle Length (s)         |   |   | 104.1   |   |   | Sum of lost time (s)  |   | 22.5  |   |   |   |   |
| Intersection Capacity Utilization |   |   | 54.4%   |   |   | ICU Level of Service  |   | A   |   |   |   |   |
| Analysis Period (min)             |   |   | 15  |   |   |   |   |   |   |   |   |   |
| c Critical Lane Group             |   |   |   |   |   |   |   |   |   |   |   |   |

# HCM Unsignalized Intersection Capacity Analysis

6: lakeshore road w/lakeshore rd w & lbar Way

09-20-2024



| Movement                          | EBL  | EBT  | WBT   | WBR  | SBL                  | SBR  |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations               |      | ↑↑   | ↑↑    |      | ↑↑                   |      |
| Traffic Volume (veh/h)            | 17   | 670  | 630   | 17   | 31                   | 52   |
| Future Volume (Veh/h)             | 17   | 670  | 630   | 17   | 31                   | 52   |
| 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)            | 18   | 728  | 685   | 18   | 34                   | 57   |
| 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            | 703  |      |       |      | 1094                 | 352  |
| vC1, stage 1 conf vol             |      |      |       |      |                      |      |
| vC2, stage 2 conf vol             |      |      |       |      |                      |      |
| vCu, unblocked vol                | 703  |      |       |      | 1094                 | 352  |
| tC, single (s)                    | 4.1  |      |       |      | 6.8                  | 6.9  |
| tC, 2 stage (s)                   |      |      |       |      |                      |      |
| tF (s)                            | 2.2  |      |       |      | 3.5                  | 3.3  |
| p0 queue free %                   | 98   |      |       |      | 83                   | 91   |
| cM capacity (veh/h)               | 890  |      |       |      | 204                  | 645  |
| Direction, Lane #                 | EB 1 | EB 2 | WB 1  | WB 2 | SB 1                 |      |
| Volume Total                      | 261  | 485  | 457   | 246  | 91                   |      |
| Volume Left                       | 18   | 0    | 0     | 0    | 34                   |      |
| Volume Right                      | 0    | 0    | 0     | 18   | 57                   |      |
| cSH                               | 890  | 1700 | 1700  | 1700 | 357                  |      |
| Volume to Capacity                | 0.02 | 0.29 | 0.27  | 0.14 | 0.25                 |      |
| Queue Length 95th (m)             | 0.5  | 0.0  | 0.0   | 0.0  | 8.0                  |      |
| Control Delay (s)                 | 0.8  | 0.0  | 0.0   | 0.0  | 18.5                 |      |
| Lane LOS                          | A    |      |       |      | C                    |      |
| Approach Delay (s)                | 0.3  |      | 0.0   |      | 18.5                 |      |
| Approach LOS                      |      |      |       |      | C                    |      |
| Intersection Summary              |      |      |       |      |                      |      |
| Average Delay                     |      |      | 1.2   |      |                      |      |
| Intersection Capacity Utilization |      |      | 42.3% |      | ICU Level of Service | A    |
| Analysis Period (min)             |      |      | 15    |      |                      |      |

## Queues

3: tennyson ave/lorne park rd &amp; lakeshore road w

09-20-2024



| Lane Group             | EBL   | EBT    | EBR  | WBL   | WBT  | WBR  | NBL   | NBT  | SBT   | SBR  |
|------------------------|-------|--------|------|-------|------|------|-------|------|-------|------|
| Lane Group Flow (vph)  | 134   | 745    | 8    | 4     | 640  | 124  | 7     | 2    | 69    | 105  |
| Act Effct Green (s)    | 27.0  | 27.0   | 27.0 | 22.7  | 22.7 | 22.7 | 32.0  | 32.0 | 32.0  | 32.0 |
| Actuated g/C Ratio     | 0.26  | 0.26   | 0.26 | 0.22  | 0.22 | 0.22 | 0.31  | 0.31 | 0.31  | 0.31 |
| v/c Ratio              | 1.89  | 0.81   | 0.02 | 0.03  | 0.83 | 0.27 | 0.02  | 0.00 | 0.16  | 0.18 |
| Control Delay          | 475.9 | 45.0   | 0.0  | 32.0  | 49.1 | 4.6  | 26.7  | 0.0  | 28.6  | 2.2  |
| Queue Delay            | 0.0   | 0.0    | 0.0  | 0.0   | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| Total Delay            | 475.9 | 45.0   | 0.0  | 32.0  | 49.1 | 4.6  | 26.7  | 0.0  | 28.6  | 2.2  |
| LOS                    | F     | D      | A    | C     | D    | A    | C     | A    | C     | A    |
| Approach Delay         | 109.7 |        |      | 41.8  |      |      | 20.7  |      | 12.7  |      |
| Approach LOS           | F     |        |      | D     |      |      | C     |      | B     |      |
| Queue Length 50th (m)  | ~45.1 | 81.1   | 0.0  | 0.7   | 69.0 | 0.0  | 1.1   | 0.0  | 11.0  | 0.0  |
| Queue Length 95th (m)  | #84.8 | #107.2 | 0.0  | 3.7   | 90.3 | 9.6  | 4.6   | 0.0  | 22.5  | 4.9  |
| Internal Link Dist (m) | 351.9 |        |      | 597.0 |      |      | 420.6 |      | 362.2 |      |
| Turn Bay Length (m)    | 45.0  |        | 25.0 | 25.0  |      | 25.0 |       |      |       |      |
| Base Capacity (vph)    | 71    | 917    | 522  | 167   | 866  | 502  | 407   | 876  | 430   | 591  |
| Starvation Cap Reductn | 0     | 0      | 0    | 0     | 0    | 0    | 0     | 0    | 0     | 0    |
| Spillback Cap Reductn  | 0     | 0      | 0    | 0     | 0    | 0    | 0     | 0    | 0     | 0    |
| Storage Cap Reductn    | 0     | 0      | 0    | 0     | 0    | 0    | 0     | 0    | 0     | 0    |
| Reduced v/c Ratio      | 1.89  | 0.81   | 0.02 | 0.02  | 0.74 | 0.25 | 0.02  | 0.00 | 0.16  | 0.18 |

## Intersection Summary

Cycle Length: 86

Actuated Cycle Length: 104.3

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.89

Intersection Signal Delay: 71.7

Intersection LOS: E

Intersection Capacity Utilization 54.5%

ICU Level of Service A

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.



























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

Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

## 3: tennyson ave/lorne park rd & lakeshore road w

09-20-2024

|                                   |  |    |  |  |    |  |   |  |  |  |    |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement                          | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
| Lane Configurations               |  |   |  |  |   |  |  |  |  |   |   |  |
| Traffic Volume (vph)              | 123   | 685   | 7   | 4   | 589   | 114   | 6   | 0   | 2   | 59  | 5   | 97  |
| Future Volume (vph)               | 123   | 685   | 7   | 4   | 589   | 114   | 6   | 0   | 2   | 59  | 5   | 97  |
| Ideal Flow (vphpl)                | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Total Lost time (s)               | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   |   |   | 7.5   | 7.5   |
| Lane Util. Factor                 | 1.00  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  | 1.00  |   |   | 1.00  | 1.00  |
| Frt                               | 1.00  | 1.00  | 0.85  | 1.00  | 1.00  | 0.85  | 1.00  | 0.85  |   |   | 1.00  | 0.85  |
| Flt Protected                     | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  |   |   | 0.96  | 1.00  |
| Satd. Flow (prot)                 | 1770  | 3539  | 1583  | 1770  | 3539  | 1583  | 1770  | 1583  |   |   | 1780  | 1583  |
| Flt Permitted                     | 0.15  | 1.00  | 1.00  | 0.37  | 1.00  | 1.00  | 0.71  | 1.00  |   |   | 0.75  | 1.00  |
| Satd. Flow (perm)                 | 276   | 3539  | 1583  | 687   | 3539  | 1583  | 1326  | 1583  |   |   | 1402  | 1583  |
| Peak-hour factor, PHF             | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  |
| Adj. Flow (vph)                   | 134   | 745   | 8   | 4   | 640   | 124   | 7   | 0   | 2   | 64  | 5   | 105   |
| RTOR Reduction (vph)              | 0   | 0   | 6   | 0   | 0   | 97  | 0   | 1   | 0   | 0   | 0   | 73  |
| Lane Group Flow (vph)             | 134   | 745   | 2   | 4   | 640   | 27  | 7   | 1   | 0   | 0   | 69  | 32  |
| Turn Type                         | Perm  | NA  | Perm  | Perm  | NA  | Perm  | Perm  | NA  |   | Perm  | NA  | Perm  |
| Protected Phases                  |   | 2   |   |   | 4   |   |   | 6   |   |   | 6   |   |
| Permitted Phases                  | 2   |   | 2   | 4   |   | 4   | 6   |   |   | 6   |   | 6   |
| Actuated Green, G (s)             | 27.0  | 27.0  | 27.0  | 22.7  | 22.7  | 22.7  | 32.0  | 32.0  |   |   | 32.0  | 32.0  |
| Effective Green, g (s)            | 27.0  | 27.0  | 27.0  | 22.7  | 22.7  | 22.7  | 32.0  | 32.0  |   |   | 32.0  | 32.0  |
| Actuated g/C Ratio                | 0.26  | 0.26  | 0.26  | 0.22  | 0.22  | 0.22  | 0.31  | 0.31  |   |   | 0.31  | 0.31  |
| Clearance Time (s)                | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   |   |   | 7.5   | 7.5   |
| Vehicle Extension (s)             | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |   |   | 3.0   | 3.0   |
| Lane Grp Cap (vph)                | 71  | 917   | 410   | 149   | 770   | 344   | 407   | 486   |   |   | 430   | 486   |
| v/s Ratio Prot                    |   | 0.21  |   |   | c0.18   |   |   | 0.00  |   |   |   |   |
| v/s Ratio Perm                    | c0.49   |   | 0.00  | 0.01  |   | 0.02  | 0.01  |   |   |   | c0.05   | 0.02  |
| v/c Ratio                         | 1.89  | 0.81  | 0.01  | 0.03  | 0.83  | 0.08  | 0.02  | 0.00  |   |   | 0.16  | 0.07  |
| Uniform Delay, d1                 | 38.6  | 36.2  | 28.6  | 32.1  | 38.9  | 32.4  | 25.1  | 25.0  |   |   | 26.3  | 25.5  |
| Progression Factor                | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |   |   | 1.00  | 1.00  |
| Incremental Delay, d2             | 447.4   | 7.8   | 0.0   | 0.1   | 7.6   | 0.1   | 0.1   | 0.0   |   |   | 0.8   | 0.3   |
| Delay (s)                         | 486.0   | 44.0  | 28.7  | 32.1  | 46.5  | 32.5  | 25.2  | 25.0  |   |   | 27.1  | 25.8  |
| Level of Service                  | F   | D   | C   | C   | D   | C   | C   | C   |   |   | C   | C   |
| Approach Delay (s)                |   | 110.6   |   |   | 44.2  |   |   | 25.2  |   |   | 26.3  |   |
| Approach LOS                      |   | F   |   |   | D   |   |   | C   |   |   | C   |   |
| <b>Intersection Summary</b>       |   |   |   |   |   |   |   |   |   |   |   |   |
| HCM 2000 Control Delay            |   |   | 74.5  |   |   | HCM 2000 Level of Service   |   | E   |   |   |   |   |
| HCM 2000 Volume to Capacity ratio |   |   | 0.91  |   |   |   |   |   |   |   |   |   |
| Actuated Cycle Length (s)         |   |   | 104.2   |   |   | Sum of lost time (s)  |   | 22.5  |   |   |   |   |
| Intersection Capacity Utilization |   |   | 54.5%   |   |   | ICU Level of Service  |   | A   |   |   |   |   |
| Analysis Period (min)             |   |   | 15  |   |   |   |   |   |   |   |   |   |
| c Critical Lane Group             |   |   |   |   |   |   |   |   |   |   |   |   |



# HCM Unsignalized Intersection Capacity Analysis

6: lakeshore road w/lakeshore rd w & lbar Way

09-20-2024



| Movement                          | EBL  | EBT  | WBT   | WBR  | SBL                  | SBR  |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations               |      | ↑↑   | ↑↑    |      | ↑↑                   |      |
| Traffic Volume (veh/h)            | 28   | 675  | 726   | 35   | 9                    | 25   |
| Future Volume (Veh/h)             | 28   | 675  | 726   | 35   | 9                    | 25   |
| 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)            | 30   | 734  | 789   | 38   | 10                   | 27   |
| 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            | 827  |      |       |      | 1235                 | 414  |
| vC1, stage 1 conf vol             |      |      |       |      |                      |      |
| vC2, stage 2 conf vol             |      |      |       |      |                      |      |
| vCu, unblocked vol                | 827  |      |       |      | 1235                 | 414  |
| tC, single (s)                    | 4.1  |      |       |      | 6.8                  | 6.9  |
| tC, 2 stage (s)                   |      |      |       |      |                      |      |
| tF (s)                            | 2.2  |      |       |      | 3.5                  | 3.3  |
| p0 queue free %                   | 96   |      |       |      | 94                   | 95   |
| cM capacity (veh/h)               | 800  |      |       |      | 162                  | 588  |
| Direction, Lane #                 | EB 1 | EB 2 | WB 1  | WB 2 | SB 1                 |      |
| Volume Total                      | 275  | 489  | 526   | 301  | 37                   |      |
| Volume Left                       | 30   | 0    | 0     | 0    | 10                   |      |
| Volume Right                      | 0    | 0    | 0     | 38   | 27                   |      |
| cSH                               | 800  | 1700 | 1700  | 1700 | 344                  |      |
| Volume to Capacity                | 0.04 | 0.29 | 0.31  | 0.18 | 0.11                 |      |
| Queue Length 95th (m)             | 0.9  | 0.0  | 0.0   | 0.0  | 2.9                  |      |
| Control Delay (s)                 | 1.4  | 0.0  | 0.0   | 0.0  | 16.7                 |      |
| Lane LOS                          | A    |      |       |      | C                    |      |
| Approach Delay (s)                | 0.5  |      | 0.0   |      | 16.7                 |      |
| Approach LOS                      |      |      |       |      | C                    |      |
| Intersection Summary              |      |      |       |      |                      |      |
| Average Delay                     |      |      | 0.6   |      |                      |      |
| Intersection Capacity Utilization |      |      | 49.2% |      | ICU Level of Service | A    |
| Analysis Period (min)             |      |      | 15    |      |                      |      |

OPT CONDITION

## Queues

3: tennyson ave/lorne park rd &amp; lakeshore road w

09-20-2024



| Lane Group             | EBL   | EBT  | EBR  | WBL  | WBT   | WBR  | NBL   | NBT  | SBT   | SBR  |
|------------------------|-------|------|------|------|-------|------|-------|------|-------|------|
| Lane Group Flow (vph)  | 134   | 620  | 12   | 4    | 634   | 116  | 17    | 13   | 119   | 177  |
| Act Effct Green (s)    | 46.2  | 40.6 | 40.6 | 32.8 | 32.8  | 32.0 | 32.0  | 32.0 | 32.0  | 32.8 |
| Actuated g/C Ratio     | 0.53  | 0.46 | 0.46 | 0.37 | 0.37  | 0.36 | 0.36  | 0.36 | 0.36  | 0.37 |
| v/c Ratio              | 0.32  | 0.38 | 0.02 | 0.01 | 0.48  | 0.18 | 0.04  | 0.02 | 0.24  | 0.25 |
| Control Delay          | 12.7  | 16.0 | 0.0  | 18.8 | 23.0  | 5.0  | 18.9  | 12.2 | 21.6  | 4.2  |
| Queue Delay            | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| Total Delay            | 12.7  | 16.0 | 0.0  | 18.8 | 23.0  | 5.0  | 18.9  | 12.2 | 21.6  | 4.2  |
| LOS                    | B     | B    | A    | B    | C     | A    | B     | B    | C     | A    |
| Approach Delay         | 15.2  |      |      |      | 20.2  |      | 16.0  |      | 11.2  |      |
| Approach LOS           | B     |      |      |      | C     |      | B     |      | B     |      |
| Queue Length 50th (m)  | 11.4  | 36.1 | 0.0  | 0.5  | 46.1  | 0.4  | 2.0   | 0.5  | 14.8  | 0.0  |
| Queue Length 95th (m)  | 20.8  | 49.0 | 0.0  | 2.7  | 62.4  | 11.2 | 6.4   | 4.3  | 28.3  | 13.0 |
| Internal Link Dist (m) | 351.9 |      |      |      | 597.0 |      | 420.6 |      | 362.2 |      |
| Turn Bay Length (m)    | 45.0  | 25.0 |      | 25.0 | 25.0  |      |       |      |       |      |
| Base Capacity (vph)    | 427   | 1640 | 775  | 290  | 1322  | 650  | 463   | 615  | 489   | 702  |
| Starvation Cap Reductn | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0     | 0    |
| Spillback Cap Reductn  | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0     | 0    |
| Storage Cap Reductn    | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0     | 0    |
| Reduced v/c Ratio      | 0.31  | 0.38 | 0.02 | 0.01 | 0.48  | 0.18 | 0.04  | 0.02 | 0.24  | 0.25 |

## Intersection Summary

Cycle Length: 63

Actuated Cycle Length: 87.7

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 16.6

Intersection LOS: B

Intersection Capacity Utilization 53.9%



























ICU Level of Service A

Analysis Period (min) 15

# HCM Signalized Intersection Capacity Analysis

## 3: tennyson ave/lorne park rd & lakeshore road w

09-20-2024

|                                   |  |    |  |  |    |  |   |    |  |  |    |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement                          | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
| Lane Configurations               |  |   |  |  |   |  |  |   |   |   |   |  |
| Traffic Volume (vph)              | 123   | 570   | 11  | 4   | 583   | 107   | 16  | 4   | 8   | 109   | 1   | 163   |
| Future Volume (vph)               | 123   | 570   | 11  | 4   | 583   | 107   | 16  | 4   | 8   | 109   | 1   | 163   |
| Ideal Flow (vphpl)                | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Total Lost time (s)               | 2.0   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   |   |   | 7.5   | 7.5   |
| Lane Util. Factor                 | 1.00  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  | 1.00  |   |   | 1.00  | 1.00  |
| Frt                               | 1.00  | 1.00  | 0.85  | 1.00  | 1.00  | 0.85  | 1.00  | 0.90  |   |   | 1.00  | 0.85  |
| Flt Protected                     | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  |   |   | 0.95  | 1.00  |
| Satd. Flow (prot)                 | 1770  | 3539  | 1583  | 1770  | 3539  | 1583  | 1770  | 1669  |   |   | 1775  | 1583  |
| Flt Permitted                     | 0.33  | 1.00  | 1.00  | 0.42  | 1.00  | 1.00  | 0.68  | 1.00  |   |   | 0.72  | 1.00  |
| Satd. Flow (perm)                 | 610   | 3539  | 1583  | 777   | 3539  | 1583  | 1268  | 1669  |   |   | 1339  | 1583  |
| Peak-hour factor, PHF             | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  |
| Adj. Flow (vph)                   | 134   | 620   | 12  | 4   | 634   | 116   | 17  | 4   | 9   | 118   | 1   | 177   |
| RTOR Reduction (vph)              | 0   | 0   | 6   | 0   | 0   | 72  | 0   | 6   | 0   | 0   | 0   | 111   |
| Lane Group Flow (vph)             | 134   | 620   | 6   | 4   | 634   | 44  | 17  | 7   | 0   | 0   | 119   | 66  |
| Turn Type                         | pm+pt   | NA  | Perm  | Perm  | NAcustom  | Perm  | NA  |   |   | Perm  | NAcustom  |   |
| Protected Phases                  | 5   | 2   |   |   | 6   |   | 8   |   |   |   | 4   |   |
| Permitted Phases                  | 2   |   | 2   | 6   |   | 4   | 8   |   |   | 4   |   | 6   |
| Actuated Green, G (s)             | 41.1  | 41.1  | 41.1  | 32.8  | 32.8  | 32.0  | 32.0  | 32.0  |   |   | 32.0  | 32.8  |
| Effective Green, g (s)            | 41.1  | 41.1  | 41.1  | 32.8  | 32.8  | 32.0  | 32.0  | 32.0  |   |   | 32.0  | 32.8  |
| Actuated g/C Ratio                | 0.47  | 0.47  | 0.47  | 0.37  | 0.37  | 0.36  | 0.36  | 0.36  |   |   | 0.36  | 0.37  |
| Clearance Time (s)                | 2.0   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   |   |   | 7.5   | 7.5   |
| Vehicle Extension (s)             | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |   |   | 3.0   | 3.0   |
| Lane Grp Cap (vph)                | 367   | 1650  | 738   | 289   | 1317  | 574   | 460   | 606   |   |   | 486   | 589   |
| v/s Ratio Prot                    | 0.03  | c0.18   |   |   | c0.18   |   |   | 0.00  |   |   |   |   |
| v/s Ratio Perm                    | 0.14  |   | 0.00  | 0.01  |   | 0.03  | 0.01  |   |   |   | c0.09   | 0.04  |
| v/c Ratio                         | 0.37  | 0.38  | 0.01  | 0.01  | 0.48  | 0.08  | 0.04  | 0.01  |   |   | 0.24  | 0.11  |
| Uniform Delay, d1                 | 13.9  | 15.2  | 12.6  | 17.4  | 21.1  | 18.4  | 18.1  | 17.9  |   |   | 19.6  | 18.1  |
| Progression Factor                | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |   |   | 1.00  | 1.00  |
| Incremental Delay, d2             | 0.6   | 0.7   | 0.0   | 0.1   | 1.3   | 0.1   | 0.2   | 0.0   |   |   | 0.3   | 0.4   |
| Delay (s)                         | 14.5  | 15.9  | 12.6  | 17.5  | 22.4  | 18.4  | 18.3  | 18.0  |   |   | 19.9  | 18.5  |
| Level of Service                  | B   | B   | B   | B   | C   | B   | B   | B   |   |   | B   | B   |
| Approach Delay (s)                |   | 15.6  |   |   | 21.8  |   |   | 18.1  |   |   | 19.0  |   |
| Approach LOS                      |   | B   |   |   | C   |   |   | B   |   |   | B   |   |
| <b>Intersection Summary</b>       |   |   |   |   |   |   |   |   |   |   |   |   |
| HCM 2000 Control Delay            |   |   | 18.7  |   |   | HCM 2000 Level of Service   |   | B   |   |   |   |   |
| HCM 2000 Volume to Capacity ratio |   |   | 0.36  |   |   |   |   |   |   |   |   |   |
| Actuated Cycle Length (s)         |   |   | 88.1  |   |   | Sum of lost time (s)  |   | 17.0  |   |   |   |   |
| Intersection Capacity Utilization |   |   | 53.9%   |   |   | ICU Level of Service  |   | A   |   |   |   |   |
| Analysis Period (min)             |   |   | 15  |   |   |   |   |   |   |   |   |   |
| c Critical Lane Group             |   |   |   |   |   |   |   |   |   |   |   |   |

## Queues

3: tennyson ave/lorne park rd &amp; lakeshore road w

09-20-2024



| Lane Group             | EBL   | EBT  | EBR  | WBL  | WBT   | WBR  | NBL   | NBT  | SBT   | SBR  |
|------------------------|-------|------|------|------|-------|------|-------|------|-------|------|
| Lane Group Flow (vph)  | 134   | 745  | 8    | 4    | 640   | 124  | 7     | 2    | 69    | 105  |
| Act Effct Green (s)    | 46.2  | 40.6 | 40.6 | 32.8 | 32.8  | 32.0 | 32.0  | 32.0 | 32.0  | 32.8 |
| Actuated g/C Ratio     | 0.53  | 0.46 | 0.46 | 0.37 | 0.37  | 0.36 | 0.36  | 0.36 | 0.36  | 0.37 |
| v/c Ratio              | 0.32  | 0.45 | 0.01 | 0.02 | 0.48  | 0.19 | 0.01  | 0.00 | 0.13  | 0.16 |
| Control Delay          | 12.7  | 17.0 | 0.0  | 18.8 | 23.1  | 5.7  | 18.5  | 0.0  | 20.2  | 4.2  |
| Queue Delay            | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| Total Delay            | 12.7  | 17.0 | 0.0  | 18.8 | 23.1  | 5.7  | 18.5  | 0.0  | 20.2  | 4.2  |
| LOS                    | B     | B    | A    | B    | C     | A    | B     | A    | C     | A    |
| Approach Delay         | 16.2  |      |      |      | 20.2  |      | 14.4  |      | 10.6  |      |
| Approach LOS           | B     |      |      |      | C     |      | B     |      | B     |      |
| Queue Length 50th (m)  | 11.4  | 45.2 | 0.0  | 0.5  | 46.5  | 1.3  | 0.8   | 0.0  | 8.2   | 0.0  |
| Queue Length 95th (m)  | 20.8  | 60.4 | 0.0  | 2.7  | 63.1  | 12.6 | 3.7   | 0.0  | 17.6  | 9.3  |
| Internal Link Dist (m) | 351.9 |      |      |      | 597.0 |      | 420.6 |      | 362.2 |      |
| Turn Bay Length (m)    | 45.0  | 25.0 |      | 25.0 | 25.0  |      |       |      |       |      |
| Base Capacity (vph)    | 424   | 1640 | 775  | 257  | 1322  | 650  | 484   | 700  | 518   | 662  |
| Starvation Cap Reductn | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0     | 0    |
| Spillback Cap Reductn  | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0     | 0    |
| Storage Cap Reductn    | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0     | 0    |
| Reduced v/c Ratio      | 0.32  | 0.45 | 0.01 | 0.02 | 0.48  | 0.19 | 0.01  | 0.00 | 0.13  | 0.16 |

## Intersection Summary

Cycle Length: 63

Actuated Cycle Length: 87.7

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 17.3

Intersection LOS: B

Intersection Capacity Utilization 54.5%
























ICU Level of Service A

Analysis Period (min) 15

# HCM Signalized Intersection Capacity Analysis

## 3: tennyson ave/lorne park rd & lakeshore road w

09-20-2024

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement                          | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
| Lane Configurations               |  |  |  |  |  |  |  |  |  |   |  |  |
| Traffic Volume (vph)              | 123   | 685   | 7   | 4   | 589   | 114   | 6   | 0   | 2   | 59  | 5   | 97  |
| Future Volume (vph)               | 123   | 685   | 7   | 4   | 589   | 114   | 6   | 0   | 2   | 59  | 5   | 97  |
| Ideal Flow (vphpl)                | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Total Lost time (s)               | 2.0   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   |   |   | 7.5   | 7.5   |
| Lane Util. Factor                 | 1.00  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  | 1.00  |   |   | 1.00  | 1.00  |
| Frt                               | 1.00  | 1.00  | 0.85  | 1.00  | 1.00  | 0.85  | 1.00  | 0.85  |   |   | 1.00  | 0.85  |
| Flt Protected                     | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  |   |   | 0.96  | 1.00  |
| Satd. Flow (prot)                 | 1770  | 3539  | 1583  | 1770  | 3539  | 1583  | 1770  | 1583  |   |   | 1780  | 1583  |
| Flt Permitted                     | 0.32  | 1.00  | 1.00  | 0.37  | 1.00  | 1.00  | 0.71  | 1.00  |   |   | 0.76  | 1.00  |
| Satd. Flow (perm)                 | 603   | 3539  | 1583  | 687   | 3539  | 1583  | 1326  | 1583  |   |   | 1420  | 1583  |
| Peak-hour factor, PHF             | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  |
| Adj. Flow (vph)                   | 134   | 745   | 8   | 4   | 640   | 124   | 7   | 0   | 2   | 64  | 5   | 105   |
| RTOR Reduction (vph)              | 0   | 0   | 4   | 0   | 0   | 72  | 0   | 1   | 0   | 0   | 0   | 66  |
| Lane Group Flow (vph)             | 134   | 745   | 4   | 4   | 640   | 52  | 7   | 1   | 0   | 0   | 69  | 39  |
| Turn Type                         | pm+pt   | NA  | Perm  | Perm  | NAcustom  | Perm  | NA  |   |   | Perm  | NAcustom  |   |
| Protected Phases                  | 5   | 2   |   |   | 6   |   | 8   |   |   |   | 4   |   |
| Permitted Phases                  | 2   |   | 2   | 6   |   | 4   | 8   |   |   | 4   |   | 6   |
| Actuated Green, G (s)             | 41.1  | 41.1  | 41.1  | 32.8  | 32.8  | 32.0  | 32.0  | 32.0  |   |   | 32.0  | 32.8  |
| Effective Green, g (s)            | 41.1  | 41.1  | 41.1  | 32.8  | 32.8  | 32.0  | 32.0  | 32.0  |   |   | 32.0  | 32.8  |
| Actuated g/C Ratio                | 0.47  | 0.47  | 0.47  | 0.37  | 0.37  | 0.36  | 0.36  | 0.36  |   |   | 0.36  | 0.37  |
| Clearance Time (s)                | 2.0   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   |   |   | 7.5   | 7.5   |
| Vehicle Extension (s)             | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |   |   | 3.0   | 3.0   |
| Lane Grp Cap (vph)                | 364   | 1650  | 738   | 255   | 1317  | 574   | 481   | 574   |   |   | 515   | 589   |
| v/s Ratio Prot                    | 0.03  | c0.21   |   |   | c0.18   |   |   | 0.00  |   |   |   |   |
| v/s Ratio Perm                    | 0.15  |   | 0.00  | 0.01  |   | 0.03  | 0.01  |   |   |   | c0.05   | 0.02  |
| v/c Ratio                         | 0.37  | 0.45  | 0.01  | 0.02  | 0.49  | 0.09  | 0.01  | 0.00  |   |   | 0.13  | 0.07  |
| Uniform Delay, d1                 | 13.9  | 15.9  | 12.6  | 17.5  | 21.2  | 18.5  | 18.0  | 17.9  |   |   | 18.8  | 17.8  |
| Progression Factor                | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |   |   | 1.00  | 1.00  |
| Incremental Delay, d2             | 0.6   | 0.9   | 0.0   | 0.1   | 1.3   | 0.1   | 0.1   | 0.0   |   |   | 0.1   | 0.2   |
| Delay (s)                         | 14.6  | 16.8  | 12.6  | 17.6  | 22.5  | 18.5  | 18.0  | 17.9  |   |   | 18.9  | 18.0  |
| Level of Service                  | B   | B   | B   | B   | C   | B   | B   | B   |   |   | B   | B   |
| Approach Delay (s)                |   | 16.4  |   |   | 21.8  |   |   | 18.0  |   |   | 18.4  |   |
| Approach LOS                      |   | B   |   |   | C   |   |   | B   |   |   | B   |   |
| <b>Intersection Summary</b>       |   |   |   |   |   |   |   |   |   |   |   |   |
| HCM 2000 Control Delay            |   |   | 18.9  |   |   | HCM 2000 Level of Service   |   |   |   | B   |   |   |
| HCM 2000 Volume to Capacity ratio |   |   | 0.32  |   |   |   |   |   |   |   |   |   |
| Actuated Cycle Length (s)         |   |   | 88.1  |   |   | Sum of lost time (s)  |   |   |   | 17.0  |   |   |
| Intersection Capacity Utilization |   |   | 54.5%   |   |   | ICU Level of Service  |   |   |   | A   |   |   |
| Analysis Period (min)             |   |   | 15  |   |   |   |   |   |   |   |   |   |
| c Critical Lane Group             |   |   |   |   |   |   |   |   |   |   |   |   |

## **Appendix C – Background Developments**



# Appendix B

## Pre-Study Consultation Checklist

| Description   | Information   | Section Reference |
|---|---|-------------------|
| <b>Development Information</b>  |   |                   |
| Development Description (land use, size, and number of phases of development)   | <ul style="list-style-type: none"> <li>A 11-storey residential building includes 189 residential units.</li> </ul>  | 2.3.6             |
| <b>Transportation Impact Assessment</b>   |   |                   |
| <b>Step 1 – Screening</b>   |   |                   |
| Type of Application (attach a drawing)  | <input type="checkbox"/> Official Plan Amendment<br><input type="checkbox"/> Zoning Amendment<br><input type="checkbox"/> Site Plan Control Application<br><input type="checkbox"/> Plan of Subdivision<br><input type="checkbox"/> Other _____                           | 2.3.5             |
| Screening Criteria  | <input type="checkbox"/> Trip Generation Trigger Satisfied<br><input type="checkbox"/> Location Trigger Satisfied<br><input type="checkbox"/> Operational/Safety Trigger Satisfied  | 2.2.1             |
| Type of Study   | <input type="checkbox"/> Transportation Impact Study<br><input type="checkbox"/> Access Review<br><input type="checkbox"/> No Additional Study Required   | 2.2.1             |
| <b>Step 2 – Scoping</b>   |   |                   |
| Study Area (intersections to be analyzed)<br><br>Note: The Transportation Consultant is responsible to identify any further intersections impacted as the study progresses. | <ul style="list-style-type: none"> <li>Lakeshore Rd W and Ibar Way</li> <li>Lakeshore Rd W and Tennyson Ave/Lorne Park Rd</li> <li></li> <li></li> <li></li> <li></li> </ul>  | 2.3.8             |
| Horizon Years   | <input type="checkbox"/> 5 years from date of TIS<br><input type="checkbox"/> Interim years _____<br><input type="checkbox"/> Other _____   | 2.3.9             |
| Analysis Periods  | <input type="checkbox"/> AM weekday peak hour of adjacent roadway<br><input type="checkbox"/> PM weekday peak hour of adjacent roadway<br><input type="checkbox"/> Saturday peak hour of adjacent roadway<br><input type="checkbox"/> AM weekday peak hour of development | 2.3.10            |

| Description  | Information  | Section Reference |
|--|--|-------------------|
|  | <input type="checkbox"/> PM weekday peak hour of development<br><input type="checkbox"/> Saturday peak hour of development<br><input type="checkbox"/> Other _____   |                   |
| Input Parameters and Assumptions (potential deviations)          | <ul style="list-style-type: none"> <li>• <del>Use existing PHF</del></li> <li>• PHF should be 0.92 as per TIS Guideline</li> <li>• STP obtained from city</li> <li>• </li> <li>• </li> </ul>   | 2.3.13            |
| Existing Transportation Conditions                               | <input type="checkbox"/> City data sources<br><input type="checkbox"/> New data collection<br><input type="checkbox"/> Other _____   | 2.3.14            |
| Planned Network Improvements (with timing)                       | <ul style="list-style-type: none"> <li>• Lakeshore Connecting Communities Transportation Master Plan</li> <li>• </li> <li>• </li> </ul>  | 2.3.16            |
| Other Planned Developments (per <a href="#">City's Website</a> ) | <ul style="list-style-type: none"> <li>• 1139 Lorne Park Road</li> <li>• 55 Coveside Dr</li> <li>• 115-145 High Street West</li> <li>• 1035 Southdown Road</li> <li>• <del>2077-2105 Royal Windsor Dr</del></li> <li>• <del>980 Southdown Road</del></li> </ul>  | 2.3.17            |
| Identification of Mitigation Improvement Measures                | <input type="checkbox"/> Neighbourhood Traffic Management Plan<br><input type="checkbox"/> Other _____   | 2.3.23            |
| Safety Analysis (any special issues)                             | <ul style="list-style-type: none"> <li>• </li> <li>• </li> <li>• </li> <li>• </li> </ul>   | 2.3.25            |
| Site Access and Circulation (design vehicles)                    | <input type="checkbox"/> Passenger Car (P)<br><input type="checkbox"/> Light Single Unit Truck (LSU)<br><input type="checkbox"/> Medium Single Unit Truck (MSU)<br><input type="checkbox"/> Heavy Single Unit Truck (HSU)<br><input type="checkbox"/> Pumper Fire Truck<br><input type="checkbox"/> WB-20 Tractor Semi-Trailer Truck<br><input type="checkbox"/> Other <a href="#">Peel Waste Collection Vehicle</a> | 2.3.26            |
| Impacts During Construction (any special issues)                 | <ul style="list-style-type: none"> <li>• </li> <li>• </li> <li>• </li> <li>• </li> </ul>   | 2.3.27            |
| <b>Step 3 – Forecasting</b>                                      |  |                   |
| Growth Rate  | <input type="checkbox"/> Obtained from City<br><input type="checkbox"/> Historical traffic counts<br><input type="checkbox"/> Travel demand forecasts<br><input type="checkbox"/> Proposed Growth Rate: _____  | 2.3.15            |

| Description   | Information  | Section Reference |
|---|--|-------------------|
| Site Trip Generation  | <input type="checkbox"/> ITE Trip Generation Manual<br><input type="checkbox"/> "First Principles"<br><input type="checkbox"/> Observed rates for similar developments in area<br><input type="checkbox"/> Other _____   | 2.3.19            |
| Trip Reductions   | <input type="checkbox"/> Internal capture reductions for mixed-use developments<br><input type="checkbox"/> Pass-by reductions<br><input type="checkbox"/> Other _____   | 2.3.19            |
| Trip Distribution   | <input type="checkbox"/> Local traffic patterns<br><input type="checkbox"/> TTS<br><input type="checkbox"/> Travel demand model<br><input type="checkbox"/> Population and employment distribution<br><input type="checkbox"/> Market analysis of catchment area<br><input type="checkbox"/> Other _____ | 2.3.20            |
| Trip Assignment   | <input type="checkbox"/> Local traffic patterns<br><input type="checkbox"/> Shortest distance<br><input type="checkbox"/> Site layout, access design and logical routing<br><input type="checkbox"/> Existing turning movements<br><input type="checkbox"/> Other _____                                  | 2.3.21            |
| <b>Transportation Demand Management Plan</b>  |  |                   |
| Format  | <input type="checkbox"/> Within a TIA Report<br><input type="checkbox"/> Standalone  | 3.2.1             |
| Type of Transportation Demand Management Plan   | <input type="checkbox"/> TDM Statement<br><input type="checkbox"/> TDM Scheme  | 3.2.2             |
| <b>Pedestrian Circulation Plan</b>  |  |                   |
| Format  | <input type="checkbox"/> Within a TIA Report<br><input type="checkbox"/> Standalone  | 4.2.1             |
| <b>Additional Comments</b>  |  |                   |
| <ul style="list-style-type: none"> <li><b>Community Impacts:</b> Any transportation related impacts on the existing community and comments from the public through the planning approval process shall be addressed in the report.</li> <li><b>Access Review:</b> Ensure that the site access(es) conforms to all TAC standards (e.g. corner clearances, clear throat lengths, veh &amp; ped sight line distance for ingress/egress, proximity/alignment to other driveways/roads, etc.); Provide confirmation and technical justification of whether the site access location(s) and design(s) are safe for all roadway users and why.</li> <li><b>Traffic Control Warrants:</b> (e.g. all-way stop, traffic control signals) are to be provided, where applicable, for all three scenarios (existing, future background, future total)</li> <li><b>Detailed Recommendations:</b> regarding on-site/off-site roadway improvements, site access, site circulation, and TDM measures shall be made.</li> </ul> |  |                   |

## Sam Nguyen

---

**From:** Tyler Xuereb <Tyler.Xuereb@mississauga.ca>  
**Sent:** March 6, 2024 9:11 AM  
**To:** Sam Nguyen  
**Subject:** RE: Term of Reference for 900 Lakeshore Road West

Good Morning Sam,

Using the City's travel demand model and supporting traffic count data, the transportation planning section has determined the projected growth along Lakeshore Road. Below are the recommended growth rates, which are compounded annually from existing to 2029.

|         | Compounded<br>Annual Growth<br>from Existing to<br>2029 |      |
|---------|---|------|
|         | EB  | WB   |
| AM Peak | 1.0%  | 1.0% |
|         |   |      |
| PM Peak | 0.5%  | 0.5% |

Regards,



**Tyler Xuereb**  
Transportation Planning Analyst  
T 905-615-3200 ext.4783  
[Tyler.xuereb@mississauga.ca](mailto:Tyler.xuereb@mississauga.ca)

[City of Mississauga](#) | Transportation and Works Department,  
Infrastructure Planning and Engineering Services Division

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**From:** Sam Nguyen <sam@nextrans.ca>  
**Sent:** Monday, February 26, 2024 9:50 AM  
**To:** Tyler Xuereb <Tyler.Xuereb@mississauga.ca>  
**Subject:** [EXTERNAL] RE: Term of Reference for 900 Lakeshore Road West

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Thank you. I appreciate it.

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**From:** Tyler Xuereb <[Tyler.Xuereb@mississauga.ca](mailto:Tyler.Xuereb@mississauga.ca)>  
**Sent:** Monday, February 26, 2024 9:49 AM  
**To:** Sam Nguyen <[sam@nextrans.ca](mailto:sam@nextrans.ca)>  
**Subject:** RE: Term of Reference for 900 Lakeshore Road West

Thanks Sam!

I will get the rates to you as soon as I can.

Regards,



**Tyler Xuereb**  
Transportation Planning Analyst  
T 905-615-3200 ext.4783  
[Tyler.xuereb@mississauga.ca](mailto:Tyler.xuereb@mississauga.ca)

[City of Mississauga](#) | Transportation and Works Department,  
Infrastructure Planning and Engineering Services Division

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---

**From:** Sam Nguyen <[sam@nextrans.ca](mailto:sam@nextrans.ca)>  
**Sent:** Monday, February 26, 2024 9:37 AM  
**To:** Tyler Xuereb <[Tyler.Xuereb@mississauga.ca](mailto:Tyler.Xuereb@mississauga.ca)>  
**Subject:** [EXTERNAL] RE: Term of Reference for 900 Lakeshore Road West

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Hi Tyler,

The horizon year is 2029. And the list of the background developments are following:

- 1139 Lorne Park Road
- 55 Coveside Dr
- 115-145 High Street West
- 1035 Southdown Road

Thanks

Sam

---

**From:** Tyler Xuereb <[Tyler.Xuereb@mississauga.ca](mailto:Tyler.Xuereb@mississauga.ca)>  
**Sent:** Monday, February 26, 2024 7:09 AM  
**To:** Sam Nguyen <[sam@nextrans.ca](mailto:sam@nextrans.ca)>  
**Subject:** RE: Term of Reference for 900 Lakeshore Road West

Good Morning Sam,

Can you please provide me with the horizon year for your study as well as any background developments you are including in your analysis.

Thanks,



**Tyler Xuereb**

Transportation Planning Analyst  
T 905-615-3200 ext.4783  
[Tyler.xuereb@mississauga.ca](mailto:Tyler.xuereb@mississauga.ca)

[City of Mississauga](#) | Transportation and Works Department,  
Infrastructure Planning and Engineering Services Division

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**From:** Sam Nguyen <[sam@nextrans.ca](mailto:sam@nextrans.ca)>  
**Sent:** Friday, February 23, 2024 9:16 AM  
**To:** Tyler Xuereb <[Tyler.Xuereb@mississauga.ca](mailto:Tyler.Xuereb@mississauga.ca)>  
**Subject:** [EXTERNAL] FW: Term of Reference for 900 Lakeshore Road West

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Hi Tyler,

I need your help with the grow rate for Lakeshore Road West.

Thanks

Sam

---

**From:** Bo Yu <[BoYang.Yu@mississauga.ca](mailto:BoYang.Yu@mississauga.ca)>  
**Sent:** Thursday, February 22, 2024 5:21 PM  
**To:** Sam Nguyen <[sam@nextrans.ca](mailto:sam@nextrans.ca)>  
**Cc:** Trans Projects <[Trans.Projects@mississauga.ca](mailto:Trans.Projects@mississauga.ca)>  
**Subject:** RE: Term of Reference for 900 Lakeshore Road West

Good afternoon Sam,

Please find attached stamped and approved ToR for the proposed development, which encompasses City comments.  
Other items to note:

- Certification Form - The Transportation Consultant must complete, sign, and seal (if appropriate) the attached Certification Form from the City's TIS Guidelines (2022) and submit the document with the application/report to ensure compliance with qualification requirements. The TIS Guidelines can be found at <https://www.mississauga.ca/wp-content/uploads/2023/03/CMississauga-TIS-Guidelines-Version-5.1-Dec-2022.pdf>. It must be ensured that the report conforms to the City's TIS Guidelines.
- Growth Rates/Traffic Data - Please contact Tyler Xuereb from the City's Transportation Planning Section ([tyler.xuereb@mississauga.ca](mailto:tyler.xuereb@mississauga.ca), Ext. 4783) to confirm growth rates and/or obtain traffic data for the study area roadways.
- Signal Timing Plans - Signal timing plans for signalized intersections under the City's jurisdiction can be obtained from Jim Kartsomanis ([Jim.Kartsomanis@mississauga.ca](mailto:Jim.Kartsomanis@mississauga.ca), Ext. 3964).

Please do not hesitate to contact me if you have any questions.

Regards,



**Bo Yang Yu, C.Tech**

Traffic Planning Technologist

T 905-615-3200 ext. 4784

[boyang.yu@mississauga.ca](mailto:boyang.yu@mississauga.ca)

[City of Mississauga](#) | Transportation & Works Department  
Infrastructure Planning & Engineering Services Division

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**From:** Sam Nguyen <[sam@nextrans.ca](mailto:sam@nextrans.ca)>

**Sent:** Thursday, February 22, 2024 3:07 PM

**To:** Bo Yu <[BoYang.Yu@mississauga.ca](mailto:BoYang.Yu@mississauga.ca)>

**Cc:** Trans Projects <[Trans.Projects@mississauga.ca](mailto:Trans.Projects@mississauga.ca)>

**Subject:** [EXTERNAL] RE: Term of Reference for 900 Lakeshore Road West

**Importance:** High

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Hi Bo,

I am following up with the TOR, can you please review and provide comment? I need to start on this project asap.

Thanks

Sam

---

**From:** Michael Turco <[Michael.Turco@mississauga.ca](mailto:Michael.Turco@mississauga.ca)> **On Behalf Of** Trans Projects

**Sent:** Monday, February 12, 2024 3:34 PM

**To:** Sam Nguyen <[sam@nextrans.ca](mailto:sam@nextrans.ca)>

**Cc:** Bo Yu <[BoYang.Yu@mississauga.ca](mailto:BoYang.Yu@mississauga.ca)>

**Subject:** RE: Term of Reference for 900 Lakeshore Road West

Hi Sam,

Thank you providing a TIS Terms of Reference. Bo Yu (cc'd) from our team will review and provide comments.

Regards,



**Michael Turco, C.E.T., CPT, MITE**



Traffic Planning Coordinator  
T 905-615-3200 ext. 3597  
[michael.turco@mississauga.ca](mailto:michael.turco@mississauga.ca)

[City of Mississauga](#) | Transportation & Works Department  
300 City Centre Drive | Mississauga ON | L5B 3C1

Please consider the environment before printing.

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**From:** Sam Nguyen <[sam@nextrans.ca](mailto:sam@nextrans.ca)>  
**Sent:** Monday, February 12, 2024 12:54 PM  
**To:** Michael Turco <[Michael.Turco@mississauga.ca](mailto:Michael.Turco@mississauga.ca)>  
**Subject:** Term of Reference for 900 Lakeshore Road West

Good afternoon Michael,

Please find attached the term of reference for the proposed development located at 900 Lakeshore Road West.  
Can you please provide comment at the earliest convenience?

Thanks

**Sam (Trang) Nguyen**  
Transportation Analyst

o: 905-503-2563 ext. 207  
e: [sam@nextrans.ca](mailto:sam@nextrans.ca)  
w: [www.nextrans.ca](http://www.nextrans.ca)

**NexTrans Consulting Engineers**  
**A Division of NextEng Consulting Group Inc.**  
520 Industrial Parkway South, Suite 201  
Aurora ON L4G 6W8

## **Appendix D – Future Background Traffic Level of Service Calculations**

## Queues

3: tennyson ave/lorne park rd &amp; lakeshore road w

09-20-2024



| Lane Group             | EBL   | EBT  | EBR  | WBL  | WBT   | WBR  | NBL   | NBT  | SBT   | SBR  |
|------------------------|-------|------|------|------|-------|------|-------|------|-------|------|
| Lane Group Flow (vph)  | 134   | 651  | 12   | 4    | 666   | 116  | 17    | 13   | 119   | 177  |
| Act Effct Green (s)    | 46.2  | 40.6 | 40.6 | 32.8 | 32.8  | 32.8 | 32.0  | 32.0 | 32.0  | 32.0 |
| Actuated g/C Ratio     | 0.53  | 0.46 | 0.46 | 0.37 | 0.37  | 0.37 | 0.36  | 0.36 | 0.36  | 0.36 |
| v/c Ratio              | 0.33  | 0.40 | 0.02 | 0.01 | 0.50  | 0.17 | 0.04  | 0.02 | 0.24  | 0.26 |
| Control Delay          | 12.9  | 16.3 | 0.0  | 18.8 | 23.4  | 4.7  | 18.9  | 12.2 | 21.6  | 4.3  |
| Queue Delay            | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| Total Delay            | 12.9  | 16.3 | 0.0  | 18.8 | 23.4  | 4.7  | 18.9  | 12.2 | 21.6  | 4.3  |
| LOS                    | B     | B    | A    | B    | C     | A    | B     | B    | C     | A    |
| Approach Delay         | 15.5  |      |      |      | 20.6  |      | 16.0  |      | 11.2  |      |
| Approach LOS           | B     |      |      |      | C     |      | B     |      | B     |      |
| Queue Length 50th (m)  | 11.4  | 38.2 | 0.0  | 0.5  | 48.9  | 0.0  | 2.0   | 0.5  | 14.8  | 0.0  |
| Queue Length 95th (m)  | 20.8  | 51.7 | 0.0  | 2.7  | 65.8  | 10.8 | 6.4   | 4.3  | 28.3  | 13.0 |
| Internal Link Dist (m) | 351.9 |      |      |      | 597.0 |      | 420.6 |      | 362.2 |      |
| Turn Bay Length (m)    | 45.0  | 25.0 |      | 25.0 | 25.0  |      |       |      |       |      |
| Base Capacity (vph)    | 411   | 1640 | 775  | 281  | 1322  | 664  | 463   | 615  | 489   | 690  |
| Starvation Cap Reductn | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0     | 0    |
| Spillback Cap Reductn  | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0     | 0    |
| Storage Cap Reductn    | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0     | 0    |
| Reduced v/c Ratio      | 0.33  | 0.40 | 0.02 | 0.01 | 0.50  | 0.17 | 0.04  | 0.02 | 0.24  | 0.26 |

## Intersection Summary

Cycle Length: 63

Actuated Cycle Length: 87.7

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 16.9

Intersection LOS: B

Intersection Capacity Utilization 54.7%























ICU Level of Service A

Analysis Period (min) 15

# HCM Signalized Intersection Capacity Analysis

## 3: tennyson ave/lorne park rd & lakeshore road w

09-20-2024

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement                          | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL  | NBT   | NBR   | SBL   | SBT   | SBR   |
| Lane Configurations               |  |  |  |  |  |  |  |  |   |   |  |  |
| Traffic Volume (vph)              | 123   | 599   | 11  | 4   | 613   | 107   | 16   | 4   | 8   | 109   | 1   | 163   |
| Future Volume (vph)               | 123   | 599   | 11  | 4   | 613   | 107   | 16   | 4   | 8   | 109   | 1   | 163   |
| Ideal Flow (vphpl)                | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900   | 1900  | 1900  | 1900  | 1900  | 1900  |
| Total Lost time (s)               | 2.0   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5  | 7.5   |   |   | 7.5   | 7.5   |
| Lane Util. Factor                 | 1.00  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00   | 1.00  |   |   | 1.00  | 1.00  |
| Frt                               | 1.00  | 1.00  | 0.85  | 1.00  | 1.00  | 0.85  | 1.00   | 0.90  |   |   | 1.00  | 0.85  |
| Flt Protected                     | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  | 0.95   | 1.00  |   |   | 0.95  | 1.00  |
| Satd. Flow (prot)                 | 1770  | 3539  | 1583  | 1770  | 3539  | 1583  | 1770   | 1669  |   |   | 1775  | 1583  |
| Flt Permitted                     | 0.31  | 1.00  | 1.00  | 0.40  | 1.00  | 1.00  | 0.68   | 1.00  |   |   | 0.72  | 1.00  |
| Satd. Flow (perm)                 | 574   | 3539  | 1583  | 753   | 3539  | 1583  | 1268   | 1669  |   |   | 1339  | 1583  |
| Peak-hour factor, PHF             | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92   | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  |
| Adj. Flow (vph)                   | 134   | 651   | 12  | 4   | 666   | 116   | 17   | 4   | 9   | 118   | 1   | 177   |
| RTOR Reduction (vph)              | 0   | 0   | 6   | 0   | 0   | 73  | 0  | 6   | 0   | 0   | 0   | 113   |
| Lane Group Flow (vph)             | 134   | 651   | 6   | 4   | 666   | 43  | 17   | 7   | 0   | 0   | 119   | 64  |
| Turn Type                         | pm+pt   | NA  | Perm  | Perm  | NA  | Perm  | Perm   | NA  |   | Perm  | NA  | Perm  |
| Protected Phases                  | 5   | 2   |   |   | 6   |   |  | 4   |   |   | 8   |   |
| Permitted Phases                  | 2   |   | 2   | 6   |   | 6   | 4  |   |   | 8   |   | 8   |
| Actuated Green, G (s)             | 41.1  | 41.1  | 41.1  | 32.8  | 32.8  | 32.8  | 32.0   | 32.0  |   |   | 32.0  | 32.0  |
| Effective Green, g (s)            | 41.1  | 41.1  | 41.1  | 32.8  | 32.8  | 32.8  | 32.0   | 32.0  |   |   | 32.0  | 32.0  |
| Actuated g/C Ratio                | 0.47  | 0.47  | 0.47  | 0.37  | 0.37  | 0.37  | 0.36   | 0.36  |   |   | 0.36  | 0.36  |
| Clearance Time (s)                | 2.0   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5  | 7.5   |   |   | 7.5   | 7.5   |
| Vehicle Extension (s)             | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0  | 3.0   |   |   | 3.0   | 3.0   |
| Lane Grp Cap (vph)                | 353   | 1650  | 738   | 280   | 1317  | 589   | 460  | 606   |   |   | 486   | 574   |
| v/s Ratio Prot                    | 0.03  | c0.18   |   |   | c0.19   |   |  | 0.00  |   |   |   |   |
| v/s Ratio Perm                    | 0.15  |   | 0.00  | 0.01  |   | 0.03  | 0.01   |   |   |   | c0.09   | 0.04  |
| v/c Ratio                         | 0.38  | 0.39  | 0.01  | 0.01  | 0.51  | 0.07  | 0.04   | 0.01  |   |   | 0.24  | 0.11  |
| Uniform Delay, d1                 | 14.0  | 15.4  | 12.6  | 17.4  | 21.4  | 17.8  | 18.1   | 17.9  |   |   | 19.6  | 18.6  |
| Progression Factor                | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00   | 1.00  |   |   | 1.00  | 1.00  |
| Incremental Delay, d2             | 0.7   | 0.7   | 0.0   | 0.1   | 1.4   | 0.2   | 0.0  | 0.0   |   |   | 1.2   | 0.4   |
| Delay (s)                         | 14.7  | 16.1  | 12.6  | 17.5  | 22.8  | 18.1  | 18.1   | 17.9  |   |   | 20.8  | 19.0  |
| Level of Service                  | B   | B   | B   | B   | C   | B   | B  | B   |   |   | C   | B   |
| Approach Delay (s)                |   | 15.8  |   |   | 22.1  |   |  | 18.1  |   |   | 19.7  |   |
| Approach LOS                      |   | B   |   |   | C   |   |  | B   |   |   | B   |   |
| <b>Intersection Summary</b>       |   |   |   |   |   |   |  |   |   |   |   |   |
| HCM 2000 Control Delay            |   |   | 19.0  |   |   | HCM 2000 Level of Service   |  | B   |   |   |   |   |
| HCM 2000 Volume to Capacity ratio |   |   | 0.38  |   |   |   |  |   |   |   |   |   |
| Actuated Cycle Length (s)         |   |   | 88.1  |   |   | Sum of lost time (s)  |  | 17.0  |   |   |   |   |
| Intersection Capacity Utilization |   |   | 54.7%   |   |   | ICU Level of Service  |  | A   |   |   |   |   |
| Analysis Period (min)             |   |   | 15  |   |   |   |  |   |   |   |   |   |
| c Critical Lane Group             |   |   |   |   |   |   |  |   |   |   |   |   |

# HCM Unsignalized Intersection Capacity Analysis

6: lakeshore road w/lakeshore rd w & lbar Way

09-20-2024



| Movement                          | EBL  | EBT  | WBT   | WBR  | SBL                  | SBR  |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations               |      | ↑↑   | ↑↑    |      | ↑↑                   |      |
| Traffic Volume (veh/h)            | 17   | 704  | 662   | 17   | 31                   | 52   |
| Future Volume (Veh/h)             | 17   | 704  | 662   | 17   | 31                   | 52   |
| 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)            | 18   | 765  | 720   | 18   | 34                   | 57   |
| 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            | 738  |      |       |      | 1148                 | 369  |
| vC1, stage 1 conf vol             |      |      |       |      |                      |      |
| vC2, stage 2 conf vol             |      |      |       |      |                      |      |
| vCu, unblocked vol                | 738  |      |       |      | 1148                 | 369  |
| tC, single (s)                    | 4.1  |      |       |      | 6.8                  | 6.9  |
| tC, 2 stage (s)                   |      |      |       |      |                      |      |
| tF (s)                            | 2.2  |      |       |      | 3.5                  | 3.3  |
| p0 queue free %                   | 98   |      |       |      | 82                   | 91   |
| cM capacity (veh/h)               | 864  |      |       |      | 188                  | 628  |
| Direction, Lane #                 | EB 1 | EB 2 | WB 1  | WB 2 | SB 1                 |      |
| Volume Total                      | 273  | 510  | 480   | 258  | 91                   |      |
| Volume Left                       | 18   | 0    | 0     | 0    | 34                   |      |
| Volume Right                      | 0    | 0    | 0     | 18   | 57                   |      |
| cSH                               | 864  | 1700 | 1700  | 1700 | 335                  |      |
| Volume to Capacity                | 0.02 | 0.30 | 0.28  | 0.15 | 0.27                 |      |
| Queue Length 95th (m)             | 0.5  | 0.0  | 0.0   | 0.0  | 8.6                  |      |
| Control Delay (s)                 | 0.8  | 0.0  | 0.0   | 0.0  | 19.7                 |      |
| Lane LOS                          | A    |      |       |      | C                    |      |
| Approach Delay (s)                | 0.3  |      | 0.0   |      | 19.7                 |      |
| Approach LOS                      |      |      |       |      | C                    |      |
| Intersection Summary              |      |      |       |      |                      |      |
| Average Delay                     |      |      | 1.3   |      |                      |      |
| Intersection Capacity Utilization |      |      | 43.2% |      | ICU Level of Service | A    |
| Analysis Period (min)             |      |      | 15    |      |                      |      |

## Appendix E – 2016 TTS Data Analysis

Thu Sep 19 2024 13:08:25 GMT-0400 (Eastern Daylight Time) - Run Time: 2450ms

Cross Tabulation Query Form - Trip - 2016

Row: 2006 GTA zone of origin - gta06\_orig  
Column: Primary travel mode of trip - mode\_prime

Filters:  
2006 GTA z 3646  
and  
Primary trav c d g j m p t u w  
and  
Start time of trip - start\_time In 600-900

Trip 2016

Table:

|      | Transit exc | Cycle | Auto drive | GO rail onl | Joint GO r | Auto passe | Walk |      |
|------|-------------|-------|------------|-------------|------------|------------|------|------|
| 3641 | 124         | 57    | 1809       | 256         | 121        | 280        | 130  |      |
| 3646 | 127         | 0     | 2546       | 200         | 21         | 685        | 131  |      |
|      | 251         | 57    | 4355       | 456         | 142        | 965        | 261  | 6487 |
|      | 4%          | 1%    | 67%        | 7%          | 2%         | 15%        | 4%   |      |

Fri Sep 20 2024 09:54:03 GMT-0400 (Eastern Daylight Time) - Run Time: 2413ms

Cross Tabulation Query Form - Trip - 2016

Row: 2006 GTA zone of origin - gta06\_orig  
Column: Primary travel mode of trip - mode\_prime

Filters:  
2006 GTA z 3646  
and  
Primary trav c d g j m p t u w  
and  
Start time of trip - start\_time In 1500-1800

Trip 2016

Table:

|      | Transit exc | Cycle | Auto drive | GO rail onl | Auto passe | Walk |      |
|------|-------------|-------|------------|-------------|------------|------|------|
| 3641 | 52          | 29    | 1903       | 7           | 201        | 0    |      |
| 3646 | 0           | 57    | 916        | 0           | 206        | 115  |      |
|      | 52          | 86    | 2819       | 7           | 407        | 115  | 3486 |
|      | 1%          | 2%    | 81%        | 0%          | 12%        | 3%   |      |

Fri Sep 20 2024 10:32:04 GMT-0400 (Eastern Daylight Time) - Run Time: 2472ms

Cross Tabulation Query Form - Trip - 2016

Row: 2006 GTA zone of origin - gta06\_orig  
Column: Planning district of destination - pd\_dest

Filters:  
2006 GTA z 3646  
and  
Primary trav M  
and  
Start time of trip - start\_time In 600-900

Trip 2016

Table:

|      | PD 1 of | Toi PD 2 of | Toi PD 3 of | Toi PD 5 of | Toi PD 7 of | Toi PD 8 of | Toi PD 9 of | Toi PD 10 of | Ti PD 11 of | Ti PD 12 of | Ti PD 13 of | Ti PD 16 of | Ti Markham | Vaughan | Brampton | Mississauga | Halton Hill | Milton | Oakville | Clearview | Wasaga Be | External |      |
|------|---------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|------------|---------|----------|-------------|-------------|--------|----------|-----------|-----------|----------|------|
| 3641 | 45      | 8           | 16          | 66          | 61          | 78          | 0           | 44           | 31          | 46          | 0           | 0           | 0          | 42      | 126      | 1147        | 0           | 21     | 63       | 0         | 0         | 14       |      |
| 3646 | 72      | 5           | 0           | 0           | 0           | 111         | 54          | 116          | 0           | 0           | 47          | 121         | 13         | 73      | 260      | 1504        | 20          | 21     | 93       | 13        | 22        | 0        |      |
|      | 117     | 13          | 16          | 66          | 61          | 189         | 54          | 160          | 31          | 46          | 47          | 121         | 13         | 115     | 386      | 2651        | 20          | 42     | 156      | 13        | 22        | 14       | 4353 |
|      | 3%      | 0%          | 0%          | 2%          | 1%          | 4%          | 1%          | 4%           | 1%          | 1%          | 1%          | 3%          | 0%         | 3%      | 9%       | 61%         | 0%          | 1%     | 4%       | 0%        | 1%        | 0%       |      |
|      |         |             |             | mississauga | 61%         |             | east        | 65%          |             |             |             |             |            |         |          |             |             |        |          |           |           |          |      |
|      |         |             |             | toronto     | 21%         |             | west        | 35%          |             |             |             |             |            |         |          |             |             |        |          |           |           |          |      |
|      |         |             |             | brampton    | 9%          |             |             | 100%         |             |             |             |             |            |         |          |             |             |        |          |           |           |          |      |
|      |         |             |             | oakville an | 5%          |             |             |              |             |             |             |             |            |         |          |             |             |        |          |           |           |          |      |
|      |         |             |             | york region | 4%          |             |             |              |             |             |             |             |            |         |          |             |             |        |          |           |           |          |      |
|      |         |             |             |             | 100%        |             |             |              |             |             |             |             |            |         |          |             |             |        |          |           |           |          |      |

| ITE Land Use  | Magnitude<br>(units/GFA) | Parameters  |     |     | Morning Peak Hour |     |       | Afternoon Peak Hour |     |       |
|---|--------------------------|---|-----|-----|-------------------|-----|-------|---------------------|-----|-------|
|   |                          |   |     |     | In                | Out | Total | In                  | Out | Total |
| Multi-family<br>Housing<br><br>(Mid-rise)<br>LUC 221<br>General<br>Urban/Suburban | 188                      | Trip Rates<br>AM - T = 0.44(X) - 11.61<br>PM - T = 0.39(X) + 0.34 |     |     | 16                | 55  | 71    | 45                  | 29  | 74    |
|   |                          | Mode  | AM  | PM  |                   |     |       |                     |     |       |
|   |                          | Non-Auto  | 33% | 19% | 5                 | 18  | 23    | 9                   | 5   | 14    |
|   |                          | Auto  | 67% | 81% | 11                | 37  | 48    | 36                  | 23  | 60    |

## **Appendix F – Future Total Traffic Level of Service Calculations**



## Queues

3: tennyson ave/lorne park rd &amp; lakeshore road w

09-20-2024



| Lane Group             | EBL   | EBT  | EBR  | WBL  | WBT   | WBR  | NBL   | NBT  | SBT   | SBR  |
|------------------------|-------|------|------|------|-------|------|-------|------|-------|------|
| Lane Group Flow (vph)  | 134   | 654  | 12   | 4    | 674   | 116  | 17    | 13   | 119   | 177  |
| Act Effct Green (s)    | 46.2  | 40.6 | 40.6 | 32.8 | 32.8  | 32.8 | 32.0  | 32.0 | 32.0  | 32.0 |
| Actuated g/C Ratio     | 0.53  | 0.46 | 0.46 | 0.37 | 0.37  | 0.37 | 0.36  | 0.36 | 0.36  | 0.36 |
| v/c Ratio              | 0.33  | 0.40 | 0.02 | 0.01 | 0.51  | 0.17 | 0.04  | 0.02 | 0.24  | 0.26 |
| Control Delay          | 12.9  | 16.3 | 0.0  | 18.8 | 23.5  | 4.7  | 18.9  | 12.2 | 21.6  | 4.3  |
| Queue Delay            | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| Total Delay            | 12.9  | 16.3 | 0.0  | 18.8 | 23.5  | 4.7  | 18.9  | 12.2 | 21.6  | 4.3  |
| LOS                    | B     | B    | A    | B    | C     | A    | B     | B    | C     | A    |
| Approach Delay         | 15.5  |      |      |      | 20.7  |      | 16.0  |      | 11.2  |      |
| Approach LOS           | B     |      |      |      | C     |      | B     |      | B     |      |
| Queue Length 50th (m)  | 11.4  | 38.4 | 0.0  | 0.5  | 49.6  | 0.0  | 2.0   | 0.5  | 14.8  | 0.0  |
| Queue Length 95th (m)  | 20.8  | 52.1 | 0.0  | 2.7  | 66.8  | 10.8 | 6.4   | 4.3  | 28.3  | 13.0 |
| Internal Link Dist (m) | 351.9 |      |      |      | 415.5 |      | 420.6 |      | 362.2 |      |
| Turn Bay Length (m)    | 45.0  | 25.0 |      | 25.0 | 25.0  |      |       |      |       |      |
| Base Capacity (vph)    | 408   | 1640 | 775  | 281  | 1322  | 664  | 463   | 615  | 489   | 690  |
| Starvation Cap Reductn | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0     | 0    |
| Spillback Cap Reductn  | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0     | 0    |
| Storage Cap Reductn    | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0     | 0    |
| Reduced v/c Ratio      | 0.33  | 0.40 | 0.02 | 0.01 | 0.51  | 0.17 | 0.04  | 0.02 | 0.24  | 0.26 |

## Intersection Summary

Cycle Length: 63

Actuated Cycle Length: 87.7

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 17.0

Intersection LOS: B

Intersection Capacity Utilization 54.8%
























ICU Level of Service A

Analysis Period (min) 15

# HCM Signalized Intersection Capacity Analysis

## 3: tennyson ave/lorne park rd & lakeshore road w

09-20-2024

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement                          | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL  | NBT   | NBR   | SBL   | SBT   | SBR   |
| Lane Configurations               |  |  |  |  |  |  |  |  |  |   |  |  |
| Traffic Volume (vph)              | 123   | 602   | 11  | 4   | 620   | 107   | 16   | 4   | 8   | 109   | 1   | 163   |
| Future Volume (vph)               | 123   | 602   | 11  | 4   | 620   | 107   | 16   | 4   | 8   | 109   | 1   | 163   |
| Ideal Flow (vphpl)                | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900   | 1900  | 1900  | 1900  | 1900  | 1900  |
| Total Lost time (s)               | 2.0   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5  | 7.5   |   |   | 7.5   | 7.5   |
| Lane Util. Factor                 | 1.00  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00   | 1.00  |   |   | 1.00  | 1.00  |
| Frt                               | 1.00  | 1.00  | 0.85  | 1.00  | 1.00  | 0.85  | 1.00   | 0.90  |   |   | 1.00  | 0.85  |
| Flt Protected                     | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  | 0.95   | 1.00  |   |   | 0.95  | 1.00  |
| Satd. Flow (prot)                 | 1770  | 3539  | 1583  | 1770  | 3539  | 1583  | 1770   | 1669  |   |   | 1775  | 1583  |
| Flt Permitted                     | 0.30  | 1.00  | 1.00  | 0.40  | 1.00  | 1.00  | 0.68   | 1.00  |   |   | 0.72  | 1.00  |
| Satd. Flow (perm)                 | 566   | 3539  | 1583  | 751   | 3539  | 1583  | 1268   | 1669  |   |   | 1339  | 1583  |
| Peak-hour factor, PHF             | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92   | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  |
| Adj. Flow (vph)                   | 134   | 654   | 12  | 4   | 674   | 116   | 17   | 4   | 9   | 118   | 1   | 177   |
| RTOR Reduction (vph)              | 0   | 0   | 6   | 0   | 0   | 73  | 0  | 6   | 0   | 0   | 0   | 113   |
| Lane Group Flow (vph)             | 134   | 654   | 6   | 4   | 674   | 43  | 17   | 7   | 0   | 0   | 119   | 64  |
| Turn Type                         | pm+pt   | NA  | Perm  | Perm  | NA  | Perm  | Perm   | NA  |   | Perm  | NA  | Perm  |
| Protected Phases                  | 5   | 2   |   |   | 6   |   |  | 4   |   |   | 8   |   |
| Permitted Phases                  | 2   |   | 2   | 6   |   | 6   | 4  |   |   | 8   |   | 8   |
| Actuated Green, G (s)             | 41.1  | 41.1  | 41.1  | 32.8  | 32.8  | 32.8  | 32.0   | 32.0  |   |   | 32.0  | 32.0  |
| Effective Green, g (s)            | 41.1  | 41.1  | 41.1  | 32.8  | 32.8  | 32.8  | 32.0   | 32.0  |   |   | 32.0  | 32.0  |
| Actuated g/C Ratio                | 0.47  | 0.47  | 0.47  | 0.37  | 0.37  | 0.37  | 0.36   | 0.36  |   |   | 0.36  | 0.36  |
| Clearance Time (s)                | 2.0   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5  | 7.5   |   |   | 7.5   | 7.5   |
| Vehicle Extension (s)             | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0  | 3.0   |   |   | 3.0   | 3.0   |
| Lane Grp Cap (vph)                | 350   | 1650  | 738   | 279   | 1317  | 589   | 460  | 606   |   |   | 486   | 574   |
| v/s Ratio Prot                    | 0.03  | c0.18   |   |   | c0.19   |   |  | 0.00  |   |   |   |   |
| v/s Ratio Perm                    | 0.15  |   | 0.00  | 0.01  |   | 0.03  | 0.01   |   |   |   | c0.09   | 0.04  |
| v/c Ratio                         | 0.38  | 0.40  | 0.01  | 0.01  | 0.51  | 0.07  | 0.04   | 0.01  |   |   | 0.24  | 0.11  |
| Uniform Delay, d1                 | 14.0  | 15.4  | 12.6  | 17.4  | 21.4  | 17.8  | 18.1   | 17.9  |   |   | 19.6  | 18.6  |
| Progression Factor                | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00   | 1.00  |   |   | 1.00  | 1.00  |
| Incremental Delay, d2             | 0.7   | 0.7   | 0.0   | 0.1   | 1.4   | 0.2   | 0.0  | 0.0   |   |   | 1.2   | 0.4   |
| Delay (s)                         | 14.7  | 16.1  | 12.6  | 17.5  | 22.9  | 18.1  | 18.1   | 17.9  |   |   | 20.8  | 19.0  |
| Level of Service                  | B   | B   | B   | B   | C   | B   | B  | B   |   |   | C   | B   |
| Approach Delay (s)                |   | 15.8  |   |   | 22.1  |   |  | 18.1  |   |   | 19.7  |   |
| Approach LOS                      |   | B   |   |   | C   |   |  | B   |   |   | B   |   |
| Intersection Summary              |   |   |   |   |   |   |  |   |   |   |   |   |
| HCM 2000 Control Delay            |   |   | 19.1  |   |   | HCM 2000 Level of Service   |  | B   |   |   |   |   |
| HCM 2000 Volume to Capacity ratio |   |   | 0.38  |   |   |   |  |   |   |   |   |   |
| Actuated Cycle Length (s)         |   |   | 88.1  |   |   | Sum of lost time (s)  |  | 17.0  |   |   |   |   |
| Intersection Capacity Utilization |   |   | 54.8%   |   |   | ICU Level of Service  |  | A   |   |   |   |   |
| Analysis Period (min)             |   |   | 15  |   |   |   |  |   |   |   |   |   |
| c Critical Lane Group             |   |   |   |   |   |   |  |   |   |   |   |   |

# HCM Unsignalized Intersection Capacity Analysis

6: lakeshore road w/lakeshore rd w & lbar Way

09-20-2024



| Movement                          | EBL  | EBT  | WBT   | WBR  | SBL                  | SBR  |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations               |      | ↑↑   | ↑↑    |      | ↑↑                   |      |
| Traffic Volume (veh/h)            | 17   | 728  | 669   | 17   | 31                   | 52   |
| Future Volume (Veh/h)             | 17   | 728  | 669   | 17   | 31                   | 52   |
| 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)            | 18   | 791  | 727   | 18   | 34                   | 57   |
| Pedestrians                       |      |      |       |      |                      |      |
| Lane Width (m)                    |      |      |       |      |                      |      |
| Walking Speed (m/s)               |      |      |       |      |                      |      |
| Percent Blockage                  |      |      |       |      |                      |      |
| Right turn flare (veh)            |      |      |       |      |                      |      |
| Median type                       |      | None | None  |      |                      |      |
| Median storage (veh)              |      |      |       |      |                      |      |
| Upstream signal (m)               |      | 181  |       |      |                      |      |
| pX, platoon unblocked             |      |      |       |      |                      |      |
| vC, conflicting volume            | 745  |      |       |      | 1168                 | 372  |
| vC1, stage 1 conf vol             |      |      |       |      |                      |      |
| vC2, stage 2 conf vol             |      |      |       |      |                      |      |
| vCu, unblocked vol                | 745  |      |       |      | 1168                 | 372  |
| tC, single (s)                    | 4.1  |      |       |      | 6.8                  | 6.9  |
| tC, 2 stage (s)                   |      |      |       |      |                      |      |
| tF (s)                            | 2.2  |      |       |      | 3.5                  | 3.3  |
| p0 queue free %                   | 98   |      |       |      | 81                   | 91   |
| cM capacity (veh/h)               | 859  |      |       |      | 183                  | 625  |
| Direction, Lane #                 | EB 1 | EB 2 | WB 1  | WB 2 | SB 1                 |      |
| Volume Total                      | 282  | 527  | 485   | 260  | 91                   |      |
| Volume Left                       | 18   | 0    | 0     | 0    | 34                   |      |
| Volume Right                      | 0    | 0    | 0     | 18   | 57                   |      |
| cSH                               | 859  | 1700 | 1700  | 1700 | 328                  |      |
| Volume to Capacity                | 0.02 | 0.31 | 0.29  | 0.15 | 0.28                 |      |
| Queue Length 95th (m)             | 0.5  | 0.0  | 0.0   | 0.0  | 8.9                  |      |
| Control Delay (s)                 | 0.8  | 0.0  | 0.0   | 0.0  | 20.1                 |      |
| Lane LOS                          | A    |      |       |      | C                    |      |
| Approach Delay (s)                | 0.3  |      | 0.0   |      | 20.1                 |      |
| Approach LOS                      |      |      |       |      | C                    |      |
| Intersection Summary              |      |      |       |      |                      |      |
| Average Delay                     |      |      | 1.3   |      |                      |      |
| Intersection Capacity Utilization |      |      | 43.9% |      | ICU Level of Service | A    |
| Analysis Period (min)             |      |      | 15    |      |                      |      |

# HCM Unsignalized Intersection Capacity Analysis

8: site access & lakeshore road w

09-20-2024

|                                   |      |      |       |                      |      |      |
|-----------------------------------|------|------|-------|----------------------|------|------|
|                                   | →    | ↘    | ↙     | ←                    | ↖    | ↗    |
| Movement                          | EBT  | EBR  | WBL   | WBT                  | NBL  | NBR  |
| Lane Configurations               | ↑↑   |      |       | ↑↑                   | ↘    | ↗    |
| Traffic Volume (veh/h)            | 721  | 3    | 7     | 723                  | 13   | 24   |
| Future Volume (Veh/h)             | 721  | 3    | 7     | 723                  | 13   | 24   |
| 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)            | 784  | 3    | 8     | 786                  | 14   | 26   |
| 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            |      |      | 787   |                      | 1194 | 394  |
| vC1, stage 1 conf vol             |      |      |       |                      |      |      |
| vC2, stage 2 conf vol             |      |      |       |                      |      |      |
| vCu, unblocked vol                |      |      | 787   |                      | 1194 | 394  |
| tC, single (s)                    |      |      | 4.1   |                      | 6.8  | 6.9  |
| tC, 2 stage (s)                   |      |      |       |                      |      |      |
| tF (s)                            |      |      | 2.2   |                      | 3.5  | 3.3  |
| p0 queue free %                   |      |      | 99    |                      | 92   | 96   |
| cM capacity (veh/h)               |      |      | 828   |                      | 177  | 606  |
| Direction, Lane #                 | EB 1 | EB 2 | WB 1  | WB 2                 | NB 1 |      |
| Volume Total                      | 523  | 264  | 270   | 524                  | 40   |      |
| Volume Left                       | 0    | 0    | 8     | 0                    | 14   |      |
| Volume Right                      | 0    | 3    | 0     | 0                    | 26   |      |
| cSH                               | 1700 | 1700 | 828   | 1700                 | 328  |      |
| Volume to Capacity                | 0.31 | 0.16 | 0.01  | 0.31                 | 0.12 |      |
| Queue Length 95th (m)             | 0.0  | 0.0  | 0.2   | 0.0                  | 3.3  |      |
| Control Delay (s)                 | 0.0  | 0.0  | 0.4   | 0.0                  | 17.5 |      |
| Lane LOS                          |      |      | A     | C                    |      |      |
| Approach Delay (s)                | 0.0  |      | 0.1   |                      | 17.5 |      |
| Approach LOS                      |      |      |       |                      | C    |      |
| Intersection Summary              |      |      |       |                      |      |      |
| Average Delay                     |      |      | 0.5   |                      |      |      |
| Intersection Capacity Utilization |      |      | 34.9% | ICU Level of Service | A    |      |
| Analysis Period (min)             |      |      | 15    |                      |      |      |

## Queues

3: tennyson ave/lorne park rd &amp; lakeshore road w

09-20-2024



| Lane Group             | EBL   | EBT  | EBR  | WBL  | WBT   | WBR  | NBL   | NBT  | SBT   | SBR  |
|------------------------|-------|------|------|------|-------|------|-------|------|-------|------|
| Lane Group Flow (vph)  | 134   | 777  | 8    | 4    | 682   | 124  | 7     | 2    | 69    | 105  |
| Act Effct Green (s)    | 46.2  | 40.6 | 40.6 | 32.8 | 32.8  | 32.0 | 32.0  | 32.0 | 32.0  | 32.8 |
| Actuated g/C Ratio     | 0.53  | 0.46 | 0.46 | 0.37 | 0.37  | 0.36 | 0.36  | 0.36 | 0.36  | 0.37 |
| v/c Ratio              | 0.34  | 0.47 | 0.01 | 0.02 | 0.52  | 0.19 | 0.01  | 0.00 | 0.13  | 0.16 |
| Control Delay          | 13.0  | 17.3 | 0.0  | 18.8 | 23.6  | 5.7  | 18.5  | 0.0  | 20.2  | 4.2  |
| Queue Delay            | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| Total Delay            | 13.0  | 17.3 | 0.0  | 18.8 | 23.6  | 5.7  | 18.5  | 0.0  | 20.2  | 4.2  |
| LOS                    | B     | B    | A    | B    | C     | A    | B     | A    | C     | A    |
| Approach Delay         | 16.5  |      |      |      | 20.8  |      | 14.4  |      | 10.6  |      |
| Approach LOS           | B     |      |      |      | C     |      | B     |      | B     |      |
| Queue Length 50th (m)  | 11.4  | 47.7 | 0.0  | 0.5  | 50.4  | 1.3  | 0.8   | 0.0  | 8.2   | 0.0  |
| Queue Length 95th (m)  | 20.8  | 63.4 | 0.0  | 2.7  | 67.7  | 12.6 | 3.7   | 0.0  | 17.6  | 9.3  |
| Internal Link Dist (m) | 351.9 |      |      |      | 409.7 |      | 420.6 |      | 362.2 |      |
| Turn Bay Length (m)    | 45.0  | 25.0 |      | 25.0 | 25.0  |      |       |      |       |      |
| Base Capacity (vph)    | 404   | 1640 | 775  | 248  | 1322  | 650  | 484   | 691  | 518   | 662  |
| Starvation Cap Reductn | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0     | 0    |
| Spillback Cap Reductn  | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0     | 0    |
| Storage Cap Reductn    | 0     | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0     | 0    |
| Reduced v/c Ratio      | 0.33  | 0.47 | 0.01 | 0.02 | 0.52  | 0.19 | 0.01  | 0.00 | 0.13  | 0.16 |

## Intersection Summary

Cycle Length: 63

Actuated Cycle Length: 87.7

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 17.8

Intersection LOS: B

Intersection Capacity Utilization 55.4%


























ICU Level of Service B

Analysis Period (min) 15

# HCM Signalized Intersection Capacity Analysis

## 3: tennyson ave/lorne park rd & lakeshore road w

09-20-2024

|                                   |  |    |  |  |    |  |   |  |  |  |    |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement                          | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
| Lane Configurations               |  |   |  |  |   |  |  |  |   |   |   |  |
| Traffic Volume (vph)              | 123   | 715   | 7   | 4   | 627   | 114   | 6   | 0   | 2   | 59  | 5   | 97  |
| Future Volume (vph)               | 123   | 715   | 7   | 4   | 627   | 114   | 6   | 0   | 2   | 59  | 5   | 97  |
| Ideal Flow (vphpl)                | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Total Lost time (s)               | 2.0   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   |   |   | 7.5   | 7.5   |
| Lane Util. Factor                 | 1.00  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  | 1.00  |   |   | 1.00  | 1.00  |
| Frt                               | 1.00  | 1.00  | 0.85  | 1.00  | 1.00  | 0.85  | 1.00  | 0.85  |   |   | 1.00  | 0.85  |
| Flt Protected                     | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  | 0.95  | 1.00  |   |   | 0.96  | 1.00  |
| Satd. Flow (prot)                 | 1770  | 3539  | 1583  | 1770  | 3539  | 1583  | 1770  | 1583  |   |   | 1780  | 1583  |
| Flt Permitted                     | 0.30  | 1.00  | 1.00  | 0.36  | 1.00  | 1.00  | 0.71  | 1.00  |   |   | 0.76  | 1.00  |
| Satd. Flow (perm)                 | 557   | 3539  | 1583  | 666   | 3539  | 1583  | 1326  | 1583  |   |   | 1420  | 1583  |
| Peak-hour factor, PHF             | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  | 0.92  |
| Adj. Flow (vph)                   | 134   | 777   | 8   | 4   | 682   | 124   | 7   | 0   | 2   | 64  | 5   | 105   |
| RTOR Reduction (vph)              | 0   | 0   | 4   | 0   | 0   | 72  | 0   | 1   | 0   | 0   | 0   | 66  |
| Lane Group Flow (vph)             | 134   | 777   | 4   | 4   | 682   | 52  | 7   | 1   | 0   | 0   | 69  | 39  |
| Turn Type                         | pm+pt   | NA  | Perm  | Perm  | NAcustom  | Perm  | NA  |   |   | Perm  | NAcustom  |   |
| Protected Phases                  | 5   | 2   |   |   | 6   |   | 8   |   |   |   | 4   |   |
| Permitted Phases                  | 2   |   | 2   | 6   |   | 4   | 8   |   |   | 4   |   | 6   |
| Actuated Green, G (s)             | 41.1  | 41.1  | 41.1  | 32.8  | 32.8  | 32.0  | 32.0  | 32.0  |   |   | 32.0  | 32.8  |
| Effective Green, g (s)            | 41.1  | 41.1  | 41.1  | 32.8  | 32.8  | 32.0  | 32.0  | 32.0  |   |   | 32.0  | 32.8  |
| Actuated g/C Ratio                | 0.47  | 0.47  | 0.47  | 0.37  | 0.37  | 0.36  | 0.36  | 0.36  |   |   | 0.36  | 0.37  |
| Clearance Time (s)                | 2.0   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   | 7.5   |   |   | 7.5   | 7.5   |
| Vehicle Extension (s)             | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |   |   | 3.0   | 3.0   |
| Lane Grp Cap (vph)                | 346   | 1650  | 738   | 247   | 1317  | 574   | 481   | 574   |   |   | 515   | 589   |
| v/s Ratio Prot                    | 0.03  | c0.22   |   |   | c0.19   |   |   | 0.00  |   |   |   |   |
| v/s Ratio Perm                    | 0.15  |   | 0.00  | 0.01  |   | 0.03  | 0.01  |   |   |   | c0.05   | 0.02  |
| v/c Ratio                         | 0.39  | 0.47  | 0.01  | 0.02  | 0.52  | 0.09  | 0.01  | 0.00  |   |   | 0.13  | 0.07  |
| Uniform Delay, d1                 | 14.0  | 16.1  | 12.6  | 17.5  | 21.5  | 18.5  | 18.0  | 17.9  |   |   | 18.8  | 17.8  |
| Progression Factor                | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |   |   | 1.00  | 1.00  |
| Incremental Delay, d2             | 0.7   | 1.0   | 0.0   | 0.1   | 1.5   | 0.1   | 0.1   | 0.0   |   |   | 0.1   | 0.2   |
| Delay (s)                         | 14.8  | 17.0  | 12.6  | 17.6  | 23.0  | 18.5  | 18.0  | 17.9  |   |   | 18.9  | 18.0  |
| Level of Service                  | B   | B   | B   | B   | C   | B   | B   | B   |   |   | B   | B   |
| Approach Delay (s)                |   | 16.7  |   |   | 22.3  |   |   | 18.0  |   |   | 18.4  |   |
| Approach LOS                      |   | B   |   |   | C   |   |   | B   |   |   | B   |   |
| <b>Intersection Summary</b>       |   |   |   |   |   |   |   |   |   |   |   |   |
| HCM 2000 Control Delay            |   |   | 19.2  |   |   | HCM 2000 Level of Service   |   | B   |   |   |   |   |
| HCM 2000 Volume to Capacity ratio |   |   | 0.34  |   |   |   |   |   |   |   |   |   |
| Actuated Cycle Length (s)         |   |   | 88.1  |   |   | Sum of lost time (s)  |   | 17.0  |   |   |   |   |
| Intersection Capacity Utilization |   |   | 55.4%   |   |   | ICU Level of Service  |   | B   |   |   |   |   |
| Analysis Period (min)             |   |   | 15  |   |   |   |   |   |   |   |   |   |
| c Critical Lane Group             |   |   |   |   |   |   |   |   |   |   |   |   |

# HCM Unsignalized Intersection Capacity Analysis

6: lakeshore road w/lakeshore rd w & lbar Way

09-20-2024



| Movement                          | EBL  | EBT  | WBT   | WBR  | SBL                  | SBR  |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations               |      | ↑↑   | ↑↑    |      | ↑↑                   |      |
| Traffic Volume (veh/h)            | 28   | 707  | 767   | 35   | 9                    | 25   |
| Future Volume (Veh/h)             | 28   | 707  | 767   | 35   | 9                    | 25   |
| 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)            | 30   | 768  | 834   | 38   | 10                   | 27   |
| Pedestrians                       |      |      |       |      |                      |      |
| Lane Width (m)                    |      |      |       |      |                      |      |
| Walking Speed (m/s)               |      |      |       |      |                      |      |
| Percent Blockage                  |      |      |       |      |                      |      |
| Right turn flare (veh)            |      |      |       |      |                      |      |
| Median type                       |      | None | None  |      |                      |      |
| Median storage veh                |      |      |       |      |                      |      |
| Upstream signal (m)               |      | 187  |       |      |                      |      |
| pX, platoon unblocked             |      |      |       |      |                      |      |
| vC, conflicting volume            | 872  |      |       |      | 1297                 | 436  |
| vC1, stage 1 conf vol             |      |      |       |      |                      |      |
| vC2, stage 2 conf vol             |      |      |       |      |                      |      |
| vCu, unblocked vol                | 872  |      |       |      | 1297                 | 436  |
| tC, single (s)                    | 4.1  |      |       |      | 6.8                  | 6.9  |
| tC, 2 stage (s)                   |      |      |       |      |                      |      |
| tF (s)                            | 2.2  |      |       |      | 3.5                  | 3.3  |
| p0 queue free %                   | 96   |      |       |      | 93                   | 95   |
| cM capacity (veh/h)               | 769  |      |       |      | 148                  | 568  |
| Direction, Lane #                 | EB 1 | EB 2 | WB 1  | WB 2 | SB 1                 |      |
| Volume Total                      | 286  | 512  | 556   | 316  | 37                   |      |
| Volume Left                       | 30   | 0    | 0     | 0    | 10                   |      |
| Volume Right                      | 0    | 0    | 0     | 38   | 27                   |      |
| cSH                               | 769  | 1700 | 1700  | 1700 | 321                  |      |
| Volume to Capacity                | 0.04 | 0.30 | 0.33  | 0.19 | 0.12                 |      |
| Queue Length 95th (m)             | 1.0  | 0.0  | 0.0   | 0.0  | 3.1                  |      |
| Control Delay (s)                 | 1.4  | 0.0  | 0.0   | 0.0  | 17.7                 |      |
| Lane LOS                          | A    |      |       |      | C                    |      |
| Approach Delay (s)                | 0.5  |      | 0.0   |      | 17.7                 |      |
| Approach LOS                      |      |      |       |      | C                    |      |
| Intersection Summary              |      |      |       |      |                      |      |
| Average Delay                     |      |      | 0.6   |      |                      |      |
| Intersection Capacity Utilization |      |      | 50.0% |      | ICU Level of Service | A    |
| Analysis Period (min)             |      |      | 15    |      |                      |      |

# 

8: lakeshore road w

09-20-2024

|                                   |      |      |       |                      |      |      |
|-----------------------------------|------|------|-------|----------------------|------|------|
|                                   | →    | ↘    | ↙     | ←                    | ↖    | ↗    |
| Movement                          | EBT  | EBR  | WBL   | WBT                  | NBL  | NBR  |
| Lane Configurations               | ↑↑   |      |       | ↑↑                   | ↘    |      |
| Traffic Volume (veh/h)            | 720  | 13   | 23    | 736                  | 9    | 15   |
| Future Volume (Veh/h)             | 720  | 13   | 23    | 736                  | 9    | 15   |
| 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)            | 783  | 14   | 25    | 800                  | 10   | 16   |
| 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            |      |      | 797   |                      | 1240 | 398  |
| vC1, stage 1 conf vol             |      |      |       |                      |      |      |
| vC2, stage 2 conf vol             |      |      |       |                      |      |      |
| vCu, unblocked vol                |      |      | 797   |                      | 1240 | 398  |
| tC, single (s)                    |      |      | 4.1   |                      | 6.8  | 6.9  |
| tC, 2 stage (s)                   |      |      |       |                      |      |      |
| tF (s)                            |      |      | 2.2   |                      | 3.5  | 3.3  |
| p0 queue free %                   |      |      | 97    |                      | 94   | 97   |
| cM capacity (veh/h)               |      |      | 821   |                      | 162  | 601  |
| Direction, Lane #                 | EB 1 | EB 2 | WB 1  | WB 2                 | NB 1 |      |
| Volume Total                      | 522  | 275  | 292   | 533                  | 26   |      |
| Volume Left                       | 0    | 0    | 25    | 0                    | 10   |      |
| Volume Right                      | 0    | 14   | 0     | 0                    | 16   |      |
| cSH                               | 1700 | 1700 | 821   | 1700                 | 295  |      |
| Volume to Capacity                | 0.31 | 0.16 | 0.03  | 0.31                 | 0.09 |      |
| Queue Length 95th (m)             | 0.0  | 0.0  | 0.8   | 0.0                  | 2.3  |      |
| Control Delay (s)                 | 0.0  | 0.0  | 1.1   | 0.0                  | 18.4 |      |
| Lane LOS                          |      |      | A     | C                    |      |      |
| Approach Delay (s)                | 0.0  |      | 0.4   |                      | 18.4 |      |
| Approach LOS                      |      |      |       |                      | C    |      |
| Intersection Summary              |      |      |       |                      |      |      |
| Average Delay                     |      |      | 0.5   |                      |      |      |
| Intersection Capacity Utilization |      |      | 47.0% | ICU Level of Service | A    |      |
| Analysis Period (min)             |      |      | 15    |                      |      |      |