BURNSIDE

ReNew Sheppard East Transportation Planning Study

Final Report

City of Toronto

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1.0 Introduction

1.1 Background

The City of Toronto (City) has retained R.J. Burnside & Associates Limited (Burnside) to complete a Transportation Planning Study to guide growth and future development within the Sheppard Avenue East corridor between Bayview Avenue and Leslie Street. The ReNew Sheppard East Transportation Planning Study will provide recommendations to improve infrastructure, refine the existing policy framework, and develop additional policies.

1.2 Description of the study area

The ReNew Sheppard East study area (study area) is shown in Figure 1-1.

Figure 1-1: Study Area

1.3 Engagement

1.3.1 Stakeholder Consultation

This Phase 1 report documents the transportation needs and opportunities assessment within the study area. This analysis was conducted based on a review of existing conditions and the engagement of internal staff and external stakeholders such as the Toronto Transit Commission (TTC) and Bike Share Toronto. The purpose of these stakeholder meetings was to brainstorm ideas, derive needs and opportunities, and ensure potential solutions were aligned with stakeholder interests and objectives. Key engagement dates are provided in Table 1-1.

Table 1-1: Stakeholder Consultations

Stakeholder	Type of Stakeholder	Date of Consultation
Toronto Transit Commission	External	October 26, 2022
Bike Share Toronto	External	November 18, 2022
Transportation Services – Capital Projects Pedestrian and Cycling Projects, City Planning	Internal	January 23, 2023

1.3.2 Community Consultation

The ReNew Sheppard East Study Open House was held on Wednesday, April 12, 2023. Residents and members of the public provided feedback to City staff and the Ward Councillor to understand the community's concerns. Public feedback on the transportation planning study highlighted several key concerns. There was safety concerns related to vehicle access and pedestrian crossings, particularly at the YMCA parking exit, Sheppard Avenue, and Ethennonnhawahstihnen' Lane, where speeding and unsafe conditions were reported. Cyclists and pedestrians face conflicts due to a lack of dedicated infrastructure, with repeated concerns regarding for the need for separated cycling lanes on Sheppard Avenue and Burbank Drive. Speeding was also concerning along the East Don River Trail.

There were also concerns about congestion, particularly along Sheppard Avenue, Ether Shiner Boulevard, and Leslie Street, with many expressing frustrations about new development exacerbating traffic problems. Suggestions for improving pedestrian connectivity include more frequent and safer crossings, particularly for seniors and near new community centers, with additional measures like raised pedestrian crossings, speed bumps, and sidewalk extensions. Finally, several residents raised the need for better access to the TTC, enhanced multi-use trails, and safer crossings at major intersections.

2.0 Planning Context and Initiatives

This section provides a summary of the Provincial and City policy documents. The existing policies and other guiding planning principles provide direction for developing the City's transportation system.

2.1 Provincial Planning Context

2.1.1 Provincial Policy Statement, 2020

The Provincial Policy Statement (PPS) provides a vision for land use planning in Ontario that encourages efficient use of land, resources, and public investment in infrastructure. The policies related to transportation system planning include:

Healthy, Active Communities (1.5.1)

- *Plan public streets, spaces, and facilities to be safe, meet the needs of pedestrians, foster social interaction, and facilitate active transportation and community connectivity.*
- *Recognize provincial parks, conservation reserves, and other protected areas, and minimizing negative impacts on these areas.*

Transportation Systems (1.6.7)

- *Provide for transportation systems which are safe, energy efficient, facilitate the movement of people and goods, and are appropriate to address projected needs.*
- *Make efficient use of existing and planned infrastructure, including the use of transportation demand management strategies, where feasible.*
- *Provide for a multimodal transportation system, which maintains connectivity within and among transportation systems and, where possible, improves connections which cross jurisdictional boundaries.*
- *Promote a land use pattern, density, and mix of uses that minimize the length and number of vehicle trips and support current and future use of transit and active transportation.*

Transportation and Infrastructure Corridors (1.6.8)

- *Plan for and protect corridors and rights-of-way for infrastructure, including transportation, transit and electricity generation facilities and transmission systems to meet current and projected needs.*
- *Protect major goods movement facilities and corridors for the long term.*
- *Prevent development in planned corridors that could preclude or negatively affect the use of the corridor for the purpose for which it was identified.*

- *Encourage the preservation and reuse of abandoned corridors for purposes that maintain integrity and continuous linear characteristics of the corridor, wherever feasible.*
- *Consider the Wise Use and Management of Resources when planning for corridors and rights-of-way for significant transportation and infrastructure facilities.*

2.1.2 Places to Grow – Growth Plan for the Greater Golden Horseshoe (2020)

A Place to Grow (Growth Plan) contains policies and schedules to plan for growth and development in a way that supports economic prosperity, protects the environment, and helps communities achieve a high quality of life. This Growth Plan also sets out a long-term framework for managing growth by providing population and employment forecasts for upper- and single-tier municipalities within the Greater Golden Horseshoe.

The guiding principles of the Growth Plan related to transportation are as follows:

- *"Prioritize intensification and higher densities in strategic growth areas to make efficient use of land and infrastructure and support transit viability.*
- *Improve the integration of land use planning with planning and investment in infrastructure and public service facilities, including integrated service delivery through community hubs, by all levels of government."*

2.1.3 2041 Regional Transportation Plan (2018)

The 2041 Regional Transportation Plan (RTP) identifies a long-term vision for building an integrated transportation system in the Greater Toronto and Hamilton Area (GTHA). It sets forth a plan for Regional Rapid Transit, the regional Highway, Network, and Regional Express Rail (RER), now referred to as the GO Expansion Project.

GO Expansion will transform GO Rail into a frequent all-day, two-way express rail service that will provide an electrified service on existing GO Rail lines with 15-minute frequencies and all-day two-way service. To support the expanded services, improvement to infrastructure is needed:

- Track expansion, including the upgrade of existing structures within corridors such as culverts, bridges
- Grade separations
- Maintenance and storage facilities
- Electrification infrastructure
- Station Expansions (parking, building, pedestrian access, etc.)
- New stations that will optimize ridership and minimize the delay

The development of the Oriole GO Station that is currently within the study area will be aligned with the vision and objectives of the 2041 RTP.

2.1.4 GO Rail Station Access (2023)

GO Rail Station Access "*supports enhanced GO Station access, improves options for customers, and increases the capacity of GO Stations to accommodate ridership growth in a way that is sustainable and financially efficient to 2041*." GO Rail Station Access was released in February 2023. Part of the access plan provides details for each GO Station regarding the target mode shares and expected ridership. The GO Rail Station Access envisions a shift to rail station access that grows ridership, enhances customer experience and safety, and reduces dependence on single-occupancy vehicles.

Relevant policy direction and target 2041 modal splits for the Oriole GO Station for each access mode are shown in Table 2-1.

Table 2-1: Target Modal Splits for Oriole GO Station and Policy Directions

Station Access Mode	Target Modal Split (2041) %	Policy Directions
Walking	19	Establish a network of safe and comfortable pedestrian routes that connect directly to the station and are activated with transit-supportive uses.
Transit	27	Coordinate local and regional service schedules and fare systems.
Cycling	3	Create safe and direct routes to stations that are complemented with clear wayfinding.
Pick-up/ Drop-off	15	Provide efficient access and appropriately located with clear wayfinding.
Carpool Passengers	4	Optimize available parking to enhance safety and usability, while integrating parking within Mixed Modal stations.
Drive & Park	32	Explore innovating strategies for providing and managing parking.

The development of the Oriole GO Station that is currently within the study area will be aligned with the vision and objectives of the GO Rail Station Access.

2.1.5 CycleON

Ontario's Cycling Strategy provides strategic direction to support and encourage growth in cycling over the next 20 years. The key strategic directions focus on:

- Healthy, active, and prosperous communities – direction focuses on providing enhanced cycling infrastructure through buildings (including commercial, residential, and institutional buildings) and planning guidelines and policies.

- Cycling infrastructure – the direction aims to improve the efficiency of the approval process for new cycling infrastructure and focuses on funding partnerships with municipalities to test and build cycling infrastructure.
- Safer highways and streets – this direction recognizes the need for continuing education and the enforcement of traffic laws to create a safe space for all road users.
- Awareness and behavioural shift – the direction focuses on educating people to encourage them to cycle more through province-wide campaigns or schools and communities. It also states the need to research, collect data, and develop cycling best practices.

2.2 City of Toronto Planning Context and Related Studies

2.2.1 City of Toronto Official Plan

The City's Official Plan sets a clear vision for the City defining a set of policies that ensures the City grows responsibly and sustainably, meeting the needs of future generations. The transportation-related policies include:

- *The City will work with neighbouring municipalities, the Province of Ontario and Metrolinx to address mutual challenges and to implement the Provincial framework for dealing with growth across the GTA which reduces auto dependency and improves air quality,*
- *The City's transportation system will be maintained and developed to support the growth management objectives of this Plan by developing the key elements of the transportation system in a mutually supportive manner which prioritizes walking, cycling, and transit over other passenger transportation modes,*
- *Considering the diverse travel needs of people of all ages, abilities, and means in the planning and development of the transportation system,*
- *Improving connections between key elements of the transportation system to enhance the convenience of multi-modal trips, and*
- *Incorporating design features in transportation infrastructure, where feasible, that facilitate their modification or conversion to other uses in response to changes in environmental conditions, technology, development, and travel behaviour.*

The Official Plan also emphasizes the importance of land use and transportation integration: "*The integration of transportation and land use planning is critical to achieving the overall aim of increasing accessibility throughout the City. Accessibility has two components: mobility (transportation) and proximity (land use). Increasing mobility by providing modal choice, and/or increasing the speed of travel allows more trips to be made within a given time, whereas increasing proximity through greater mixing of uses and/or higher densities achieves the same effect by shortening trip lengths. The policies of this Plan reflect the importance of mutually supportive transportation and land use*

policies that combine the mechanisms of mobility and proximity to maximize accessibility."

The following key maps of the Official Plan were reviewed within the context of ReNew Sheppard East:

- Urban Structure: Map 2 of the Official Plan
- High Order Transit Corridors: Map 4 of the Official Plan
- Surface Transit Priority Network: Map 5 of the Official Plan

The Urban Structure review indicated that Sheppard Avenue is designated as an "Avenue." The Official Plan defines "Avenues" as areas of growth within Mixed-Used Areas and areas that can provide for new jobs and homes to accommodate the City's growing population.

The High Order Transit Corridor and Surface Transit Priority Network reviews indicated that the segments along Sheppard Avenue adjacent to TTC Line 4 are designated as areas for future transit expansion and priority transit segments.

2.2.2 Sheppard East Subway Corridor Secondary Plan

The Sheppard East Subway Corridor Secondary Plan is a strategy to support the significant investment in rapid transit by managing, directing, and ensuring quality development in the area. This strategy aims to encourage development in key areas designated as *Mixed-Use Areas* and establish a planning context for long-term growth. The transportation-related policies include:

- *To facilitate traffic flow, the number of access points from public roads to private redevelopment sites will be minimized, particularly on arterial roads.*
- *Major office/employment development proponents will be encouraged to develop and implement appropriate travel demand management strategies to reduce peak period automobile trips, and facilitate non-auto modes of travel such as transit, walking and cycling. In addition, measures to support transit use such as maximum parking standards, parking sharing arrangements, public parking structures, and payment-in-lieu may be required on sites within walking distance of rapid transit stations.*

2.2.3 City of Toronto Complete Streets Guidelines

The City's Complete Streets Guidelines (2017) provide Toronto-specific direction on how to allocate space in the street right-of-way that accounts for all road users. The three guiding principles include:

- Streets for People:
  - Improve safety and accessibility of streets for the most vulnerable road users in mind – children, the elderly, and individuals with disabilities.

  - Give people mobility choices.
  - Make a connected network and infrastructure for all mobility choices.
  - Promote healthy and active living by designing streets that are more comfortable and inviting for walking and cycling.

- Streets for Placemaking:
  - Create beautiful and vibrant public spaces where people naturally want to stop, spend time, and engage with the social fabric of the street.
  - Respect and respond to the local area context as provided by the envisioned land uses and the character of the surrounding neighbourhoods.
  - Improve environmental sustainability goals by incorporating street vegetation and other progressive stormwater management systems.
- Streets for Prosperity:
  - Support economic vitality and the neighbourhood businesses that front it.
  - Enhance social equity by welcoming all races, incomes, genders, and abilities.
  - Balance flexibility and cost-effectiveness by having the ability to adapt to the City's changing needs over time.

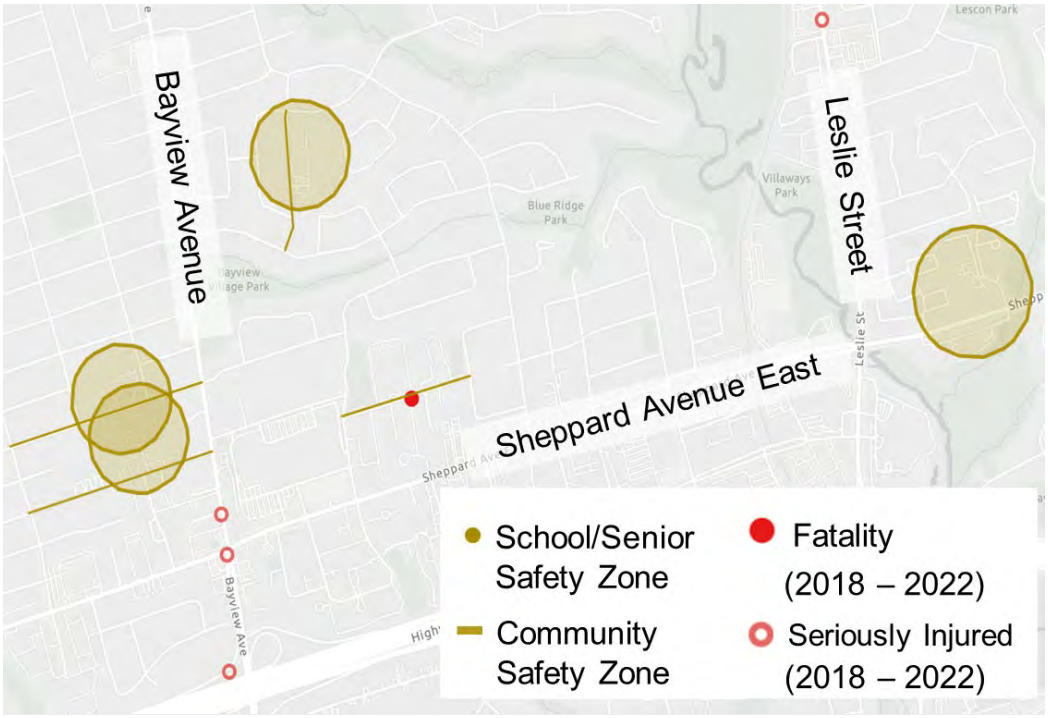
The Complete Street Guidelines describe a range of street types in Toronto and are intended to be considered in all street design projects in the City of Toronto. They outline the steps involved in street design and provide an overview of the design principles and considerations for the key components and functions of streets (i.e., the design for pedestrians, cycling, transit, green infrastructure, roadways, and intersections).

2.2.4 City of Toronto Vision Zero Road Safety Plan

The City of Toronto's Vision Zero Road Safety Plan is a comprehensive action plan focused on reducing traffic-related fatalities and serious injuries on Toronto's streets. The plan prioritizes the safety of our most vulnerable road users across seven emphasis areas through a range of extensive, proactive, targeted, and data-driven initiatives. The emphasis areas include pedestrians, school children, older adults, cyclists, motorcyclists, aggressive driving, and distraction.

Within and around the study area, approximately 10% of the residents are 14 years old or younger, and 18% are 65 years old and over. The study area contains several school / senior safety zones and community safety zones, as shown in Figure 2-1.

Figure 2-1: Safety Zones and Fatal / Seriously Injured Collisions (2018 to 2022)



Source: Adapted from the City of Toronto's Vision Zero Road Safety Map

2.2.5 City of Toronto TransformTO

The City of Toronto's TransformTO is a strategy to achieve net zero greenhouse gas emissions (GHG) across the community by 2040. This strategy calls for rapid action to scale up existing programs, implement additional authorities, and coordinate with other levels of government to establish the trajectory needed to achieve net zero by 2040. In 2020, the transportation sector accounted for 33% of community-wide emissions, primarily attributable to gasoline used in passenger cars and trucks, which accounted for 25% of community-wide emissions.

The transportation sector is the second largest source of GHG emissions in Toronto; therefore, the City will work to increase access to low-carbon transportation options, including walking, biking, public transit, and electric vehicles. By 2030, the City aims for 30% of registered vehicles in Toronto to be electric, as well as 75% of school/work trips under 5 km to be walked, biked, or by transit.

2.3 Relevant Planning and Infrastructure Initiatives

2.3.1 Sheppard Avenue East Complete Street (City of Toronto)

The Sheppard Avenue East Complete Street project proposes changes to Sheppard Avenue East from Bayview Avenue to Leslie Street. These changes will improve safety

for people driving, cycling, walking, and taking transit. The proposed changes to Sheppard Avenue East are as follows:

- *Reallocation of some vehicular lanes and narrowed lane widths to improve safety.*
- *Intersection improvements, including protected intersection elements at signalized intersections.*
- *Widened sidewalks and enhanced crossings to improve the experience of people walking and to ensure compliance with the Accessibility for Ontarians with Disabilities Act (AODA).*
- *New transit stop features, including accessible bus stops, new transit shelters and seating areas.*
- *Raised uni-directional (one-way) cycle tracks on the north and south side of the road.*
- *New plantings and green infrastructure.*

2.3.2 Sheppard Avenue East Resurfacing Project (City of Toronto)

The primary objective of road resurfacing and reconstruction is to repair or replace damaged sections of the road, curb, and sidewalk. This provides opportunities for improving safety and operations at intersections, installing new cycle tracks, widening sidewalks, and including new trees and green infrastructure. The proposed changes to Sheppard Avenue East are as follows:

- *Reallocation of some vehicular lanes and narrowed lane widths to improve safety.*
- *Intersection improvements, including protected intersection elements at signalized intersections.*
- *Raised uni-directional (one-way) cycle tracks on the north and south side of the road.*

2.3.3 5-Year Service Plan & 10-Year Outlook (TTC)

The TTC's 5-Year Service Plan & 10-Year Outlook outlines the service needs between 2020 to 2024. The Plan identifies resource and funding requirements, serving as the basis for annual operating budgets and 10-year capital plans. Five pillars of opportunity were identified to improve customer experience:

- Enhance the transit network:
  - Accommodate population and employment growth by increasing service.
  - Implement new services to address travel patterns by modifying existing and implementing new routes.
  - Open Line 5 – Eglinton, which will offer fast and frequent east-west rapid transit across Toronto's Eglinton Avenue from Etobicoke to Scarborough.
  - Relieve crowding on Line 1 by upgrading the signaling system.
  - Open Line 6 – Finch West between Humber College and Finch West Station, improving service for affected neighbourhoods.
  - Enhance the streetcar network by adding new, low-floor, high-capacity cars.
  - Apply an equity lens to service planning.

- Enhance customer experience at key surface transit stop areas:
  - Expand customer amenities at stop areas, including accessibility, heating, and furnishing.
  - Improve wayfinding at stops, including vehicle arrival signs and maps.
  - Improving placemaking at key stops, including formal pathways, improved lighting, larger sidewalks, and platforms for customers to wait.
- Improve service reliability:
  - Improve surface transit schedules to reflect actual operating conditions.
  - Mitigate delays from planned service disruptions by increasing the availability of buses, streetcars, and trains.
- Prioritize surface transit:
  - Explore bus transit lanes by implementing exclusive bus lanes, stop consolidation, all-door boarding, and other measures.
  - Implement more queue jump lanes, up to three new locations each year.
  - Implement more transit signal priority to help transit vehicles.
- Accelerate integration with regional transit partners and complementary modes of transit:
  - Expand service integration with regional routes.
  - Integrate micro-transit services, including an autonomous shuttle trial.
  - Enhance integration with cycling by enhancing TTC Subway Stations and stops with bike repair stations and bike parking.
  - Enhance pedestrian pathways to TTC services.
  - Implement a Mobility as a Service (MaaS) strategy.

The TTC has begun preparing a new 5-Year Service Plan (2024 to 2028) and 10-Year Outlook. This updated service plan will revisit certain aspects of the previous 5-Year Service Plan, as the COVID-19 pandemic affected the timing of its implementation

2.3.4 Oriole GO Station Relocation (Metrolinx)

Metrolinx has proposed to relocate the Oriole GO Station as part of their Regional Express Rail (RER) program, which aims to significantly increase rail service across the GO Rail network. The new location for the Oriole GO Station is proposed to be directly south of the TTC Leslie Station on Old Leslie Street, with access through the existing TTC Leslie Station parking lot. Parking spaces from the previous location will not be reinstated; therefore, active transportation and transit access to the GO Station will be encouraged.

Transportation operations analyses were conducted at the study intersections for 2018, 2019, 2020, and 2025 weekday morning (AM) and afternoon (PM) peak hours. The analysis found that most turning movements in the study area would not be impacted

and concluded that the relocation would be a significant transportation gain for the communities who use the Oriole GO Station.

3.0 Existing Transportation Conditions

This section documents a review of the existing transportation conditions. The City's transportation network within the ReNew Sheppard East study area includes roads, active transportation infrastructure, and transit routes. Mobility characteristics such as the residents' travel patterns are assessed to understand how and when this transportation system is being used.

3.1 Transportation System Inventory

3.1.1 Street Network

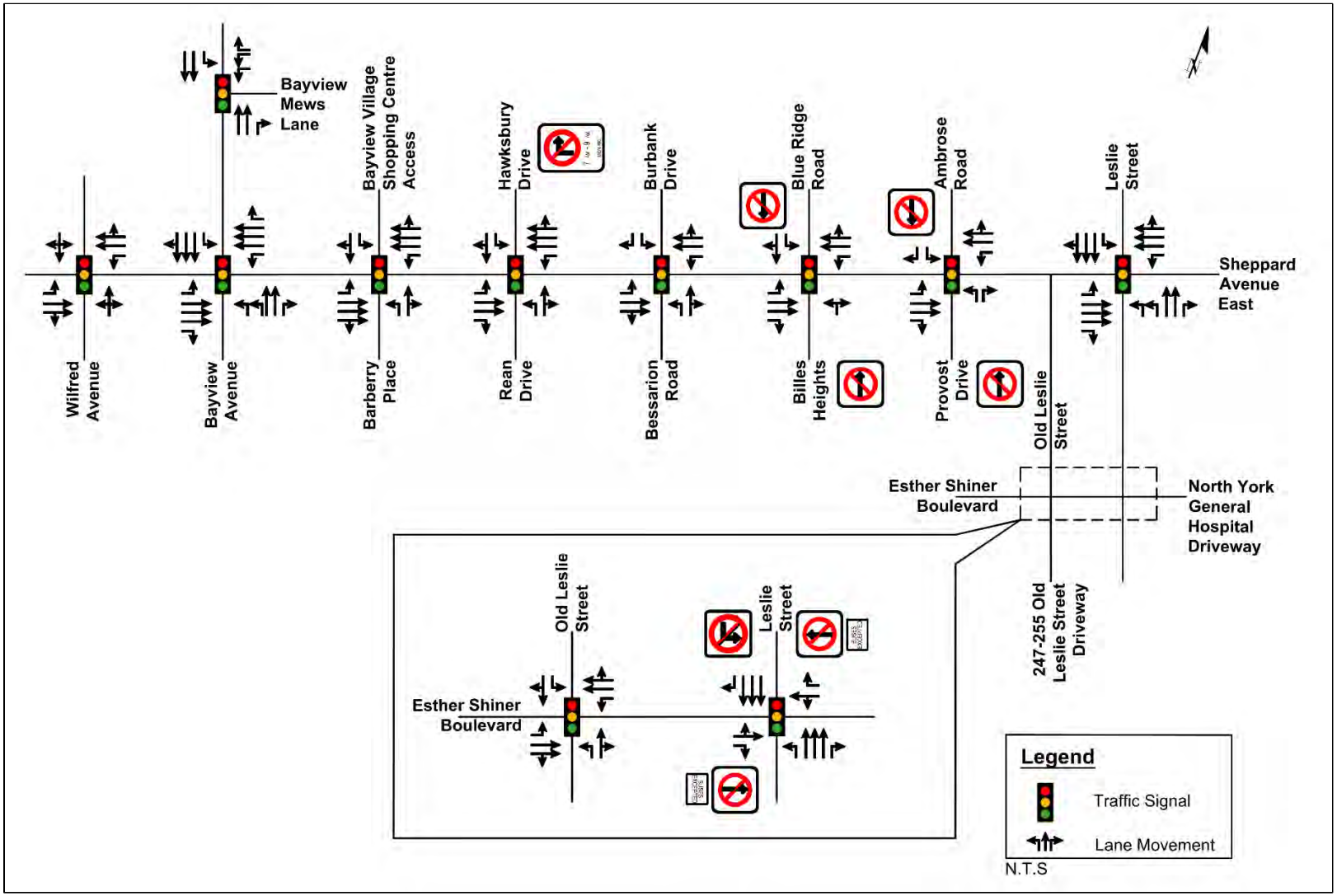
Sheppard Avenue East is an east-west urban major arterial road that runs continuously throughout the City of Toronto. It intersects Bayview Avenue to the west and Leslie Street to the east, which are north-south urban major arterial roads. Sheppard Avenue East intersects a few north-south urban collector and minor arterial roads, namely Wilfred Avenue, Ambrose Road / Provost Drive / Esther Shiner Boulevard and Old Leslie Street. South of Sheppard Avenue East lies Highway 401, an east-west provincial expressway with interchanges at Bayview Avenue and Leslie Street. The road characteristics of the study intersections are shown in Table 3-1. All roads are under the jurisdiction of the City.

Table 3-1: Existing Road Characteristics of the Study Intersections

Name	Classification	Number of Through Lanes per Direction	Posted/ Assumed Speed Limit (km/hr)
Sheppard Avenue East	Major Arterial	2/3	50/60
Wilfred Avenue	Collector/Local	1	40
Bayview Avenue	Major Arterial	3	50
Leslie Street	Major Arterial	3	50
Bayview Mews Lane	Local	1	40
Barberry Place	Local	1	40
Rean Drive	Local	1	40
Hawksbury Drive	Local	1	40
Burbank Drive	Local	1	40
Bessarion Road	Local	1	40
Blue Ridge Road	Local (Assumed)	1	40
Billes Heights	Local (Assumed)	1	50
Ambrose Road	Collector/Local	1	40
Provost Drive	Minor Arterial	1	40
Esther Shiner Boulevard	Minor Arterial	2	40
Old Leslie Street	Collector	1	40

The roadway configuration is shown in Figure 3-1.

Figure 3-1: Roadway Configuration



3.1.2 Active Transportation Network

There are continuous sidewalks along both sides of major arterial roads. Local streets within the study area have sidewalks on both sides, sidewalk on one side, or no sidewalk. There is a designated bicycle lane on Esther Shiner Boulevard between Old Leslie Street and Provost Drive. Within and in close vicinity of the study area are off-road multi-use trails along the Don Valley River: the Betty Sutherland Trail and the East Don Parkland Trail. The existing active transportation network is shown in Figure 3-2.

3.1.3 Transit Network

Transit within the study area is provided by the Toronto Transit Commission (TTC) and Metrolinx.

Along Sheppard Avenue East between Yonge Street and Don Mills Road, TTC operates Line 4(Sheppard). This subway has stations along Sheppard Avenue East at Bayview Avenue, Bessarion Road, and Old Leslie Street.

Along Sheppard Avenue East, TTC operates 85 Sheppard East (Don Mills Station to Yonge Street). This bus has stops along Sheppard Avenue East, including at Bayview Avenue, Bessarion Road, Provost Drive, Old Leslie Street, and Leslie Street. Key stops within the study area include Leslie Station, Bessarion Station, and Bayview Station. As of 2024, this bus has now been rebranded to 185 Sheppard Central. For the purposes of this report, this bus will be referred to as 85 Sheppard East.

Along Bayview Avenue, TTC operates 11 Bayview (Steeles Avenue to Davisville Station). This bus has stops along Bayview Avenue, including at Sheppard Avenue East and Bayview Mews Lane.

Along Leslie Avenue, TTC operates 51 Leslie (Freshmeadow-Don Mills Access to Eglinton Station). This bus has stops along Leslie Street, including at Sheppard Avenue East and Esther Shiner Boulevard. This bus also makes stops at Leslie Station (intersection of Old Leslie Street and Sheppard Avenue) and the main entrance of North York General Hospital.

TTC also operates special routes, including 385 Sheppard East (Yonge Street to Meadowvale Loop at Sheppard Avenue East). This bus operates along Sheppard Avenue East between Yonge Street and Meadowvale Road, following the same stops as 185 Sheppard Central. The 385 Sheppard East runs only at night between 2:25 a.m. and 4:40 a.m. These bus routes are shown in Figure 3-3.

Metrolinx provides GO Transit service via the Oriole GO. The Oriole GO provides quick and efficient inter- and intra-regional transit service to major destinations such as downtown Toronto and Richmond Hill. The station also provides pedestrian connectivity to Esther Shiner Boulevard.

Figure 3-2: Active Transportation Network within Study Area

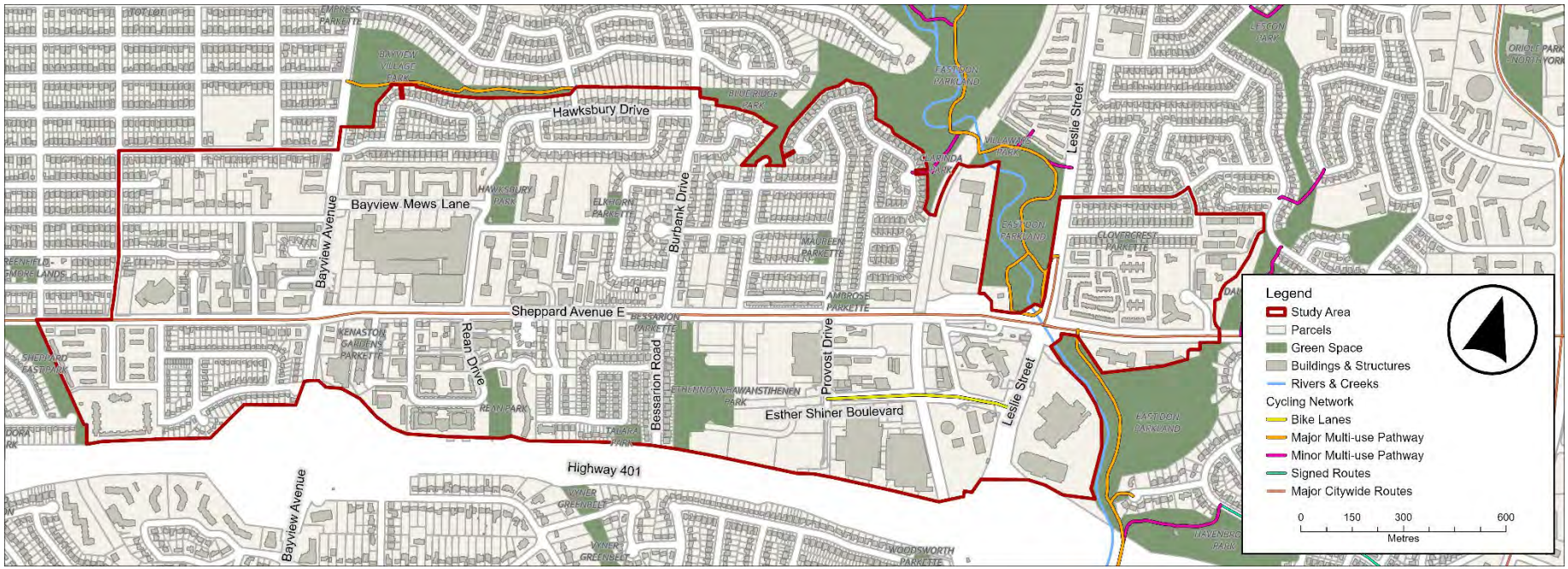
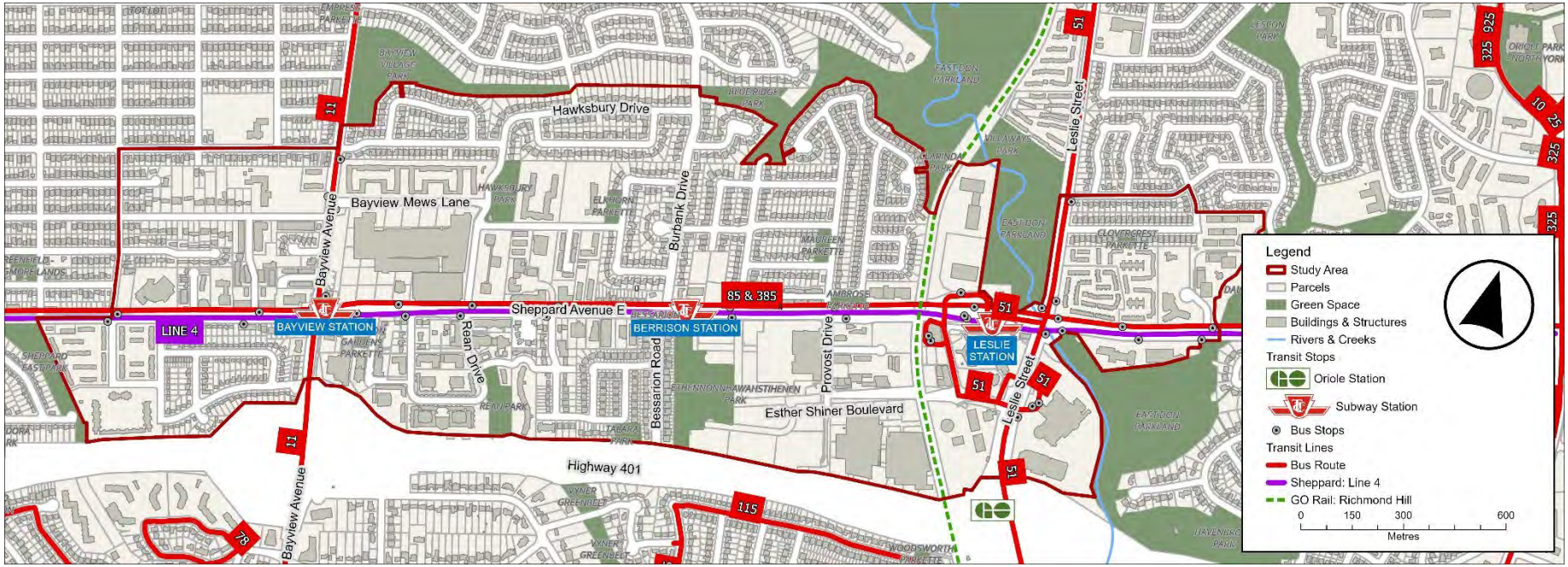


Figure 3-3: Transit Network within Study Area



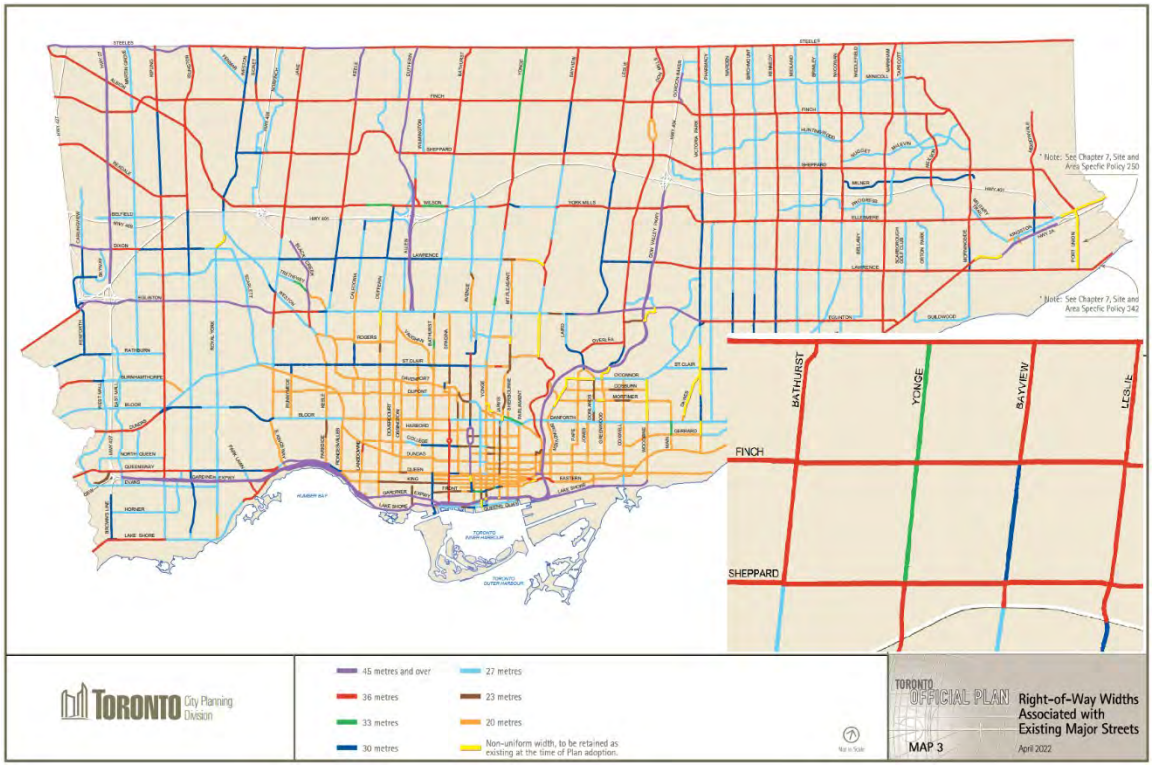
3.1.4 Road Right-of-Way Characteristics

The road right-of-way for the major streets in the study area are as follows:

- Sheppard Avenue East: 36.0 m
- Bayview Avenue: 30.0 m and 36.0 m
- Leslie Street: 36.0 m

These right-of-way widths are shown in Figure 3-4.

Figure 3-4: Right-of-Way Widths Official Plan



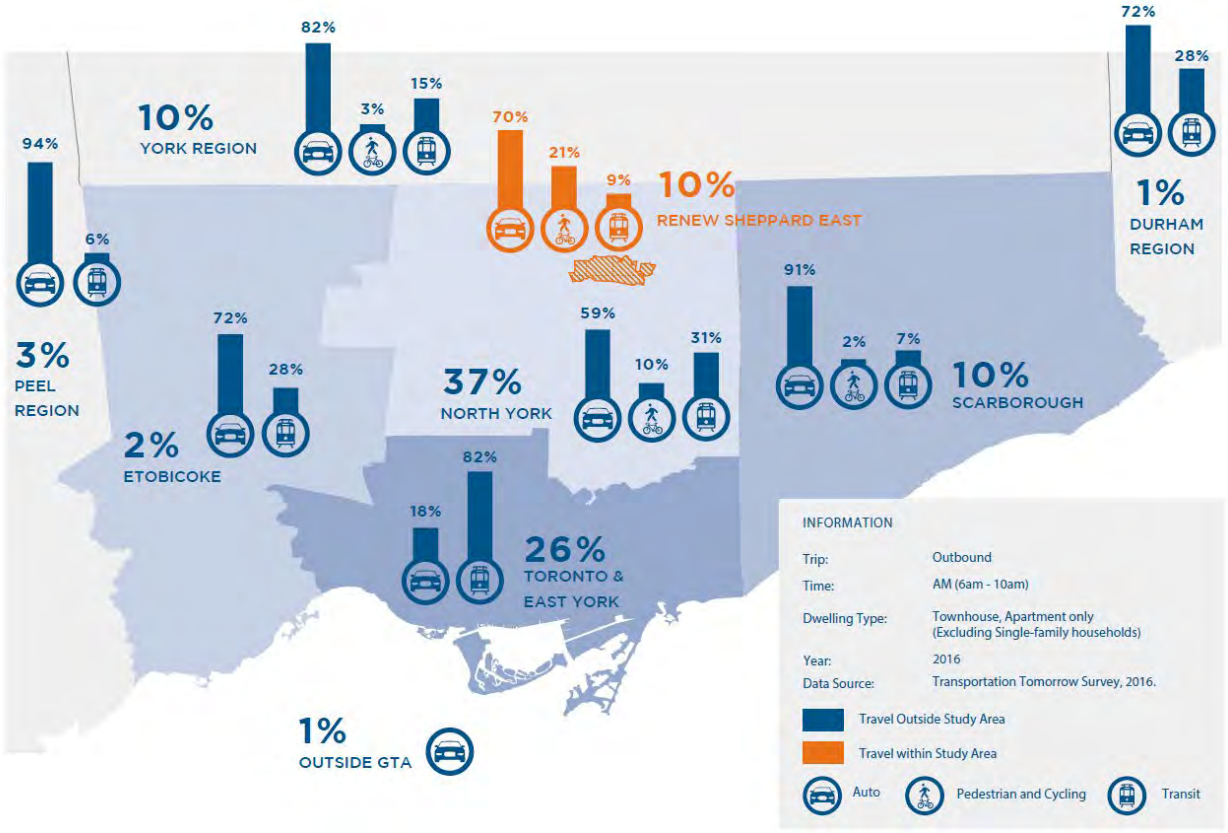
Source: City of Toronto Official Plan Map 3

3.2 Travel Demand

3.2.1 Travel Patterns

Transportation Tomorrow Survey (TTS) provided 2016 travel patterns and mode shares for the AM peak period for the study area which is illustrated in Figure 3-5. This data shows that only 10% travel of trips stay within the study area. Out of that 10%, 70% of those trips are made by driving, 21% by cycling or walking, and 9% by transit. The TTS data also indicates that 37% of the trips are to North York where 59% of those trips are made by driving, 10% by walking or cycling, and 31% by transit.

Figure 3-5: ReNew Sheppard East Trip Distribution (Outbound, 6 AM to 10 AM)

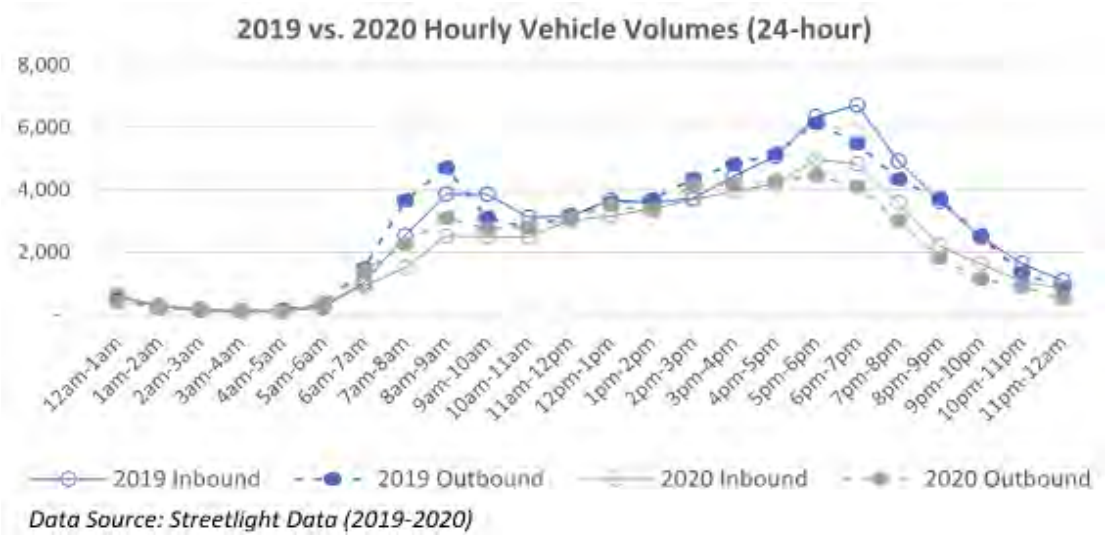


3.2.2 2019 and 2020 Temporal Distribution of Traffic Volumes

Data for travel demand was obtained from Streetlight's 2019/2020 Sheppard East Corridor Monitoring Program.

Streetlight provided 2019 and 2020 hourly vehicle volume data (over a 24-hour period) for the Sheppard East Corridor. There has been an approximately 16% overall reduction in the average daily total number of vehicles in the Sheppard East Corridor between 2019 and 2020 (due to COVID-19 impacts). The vehicle trip patterns for 2019 and 2020 are illustrated in Figure 3-6.

Figure 3-6: Vehicle Trip Patterns (Weekday)



Data Source: Streetlight Data (2019-2020)

3.3 Existing Traffic Conditions

The existing traffic conditions analysis for eleven major ReNew Sheppard East Study intersections and mid-block road segments were assessed. A summary of the traffic assessment is provided in this section. A more detailed analysis is provided in Appendix A.

3.3.1 Existing Intersection Traffic Operations

The existing traffic volumes were derived and balanced using data from the City of Toronto and 4Transit. Data was also collected from the "*Sheppard Avenue Existing Conditions Traffic Assessment Memorandum*" by Urban Systems. The turning movement counts that were provided by the City for the traffic analysis are shown in Table 3-2.

Table 3-2: Date of Turning Movement Counts

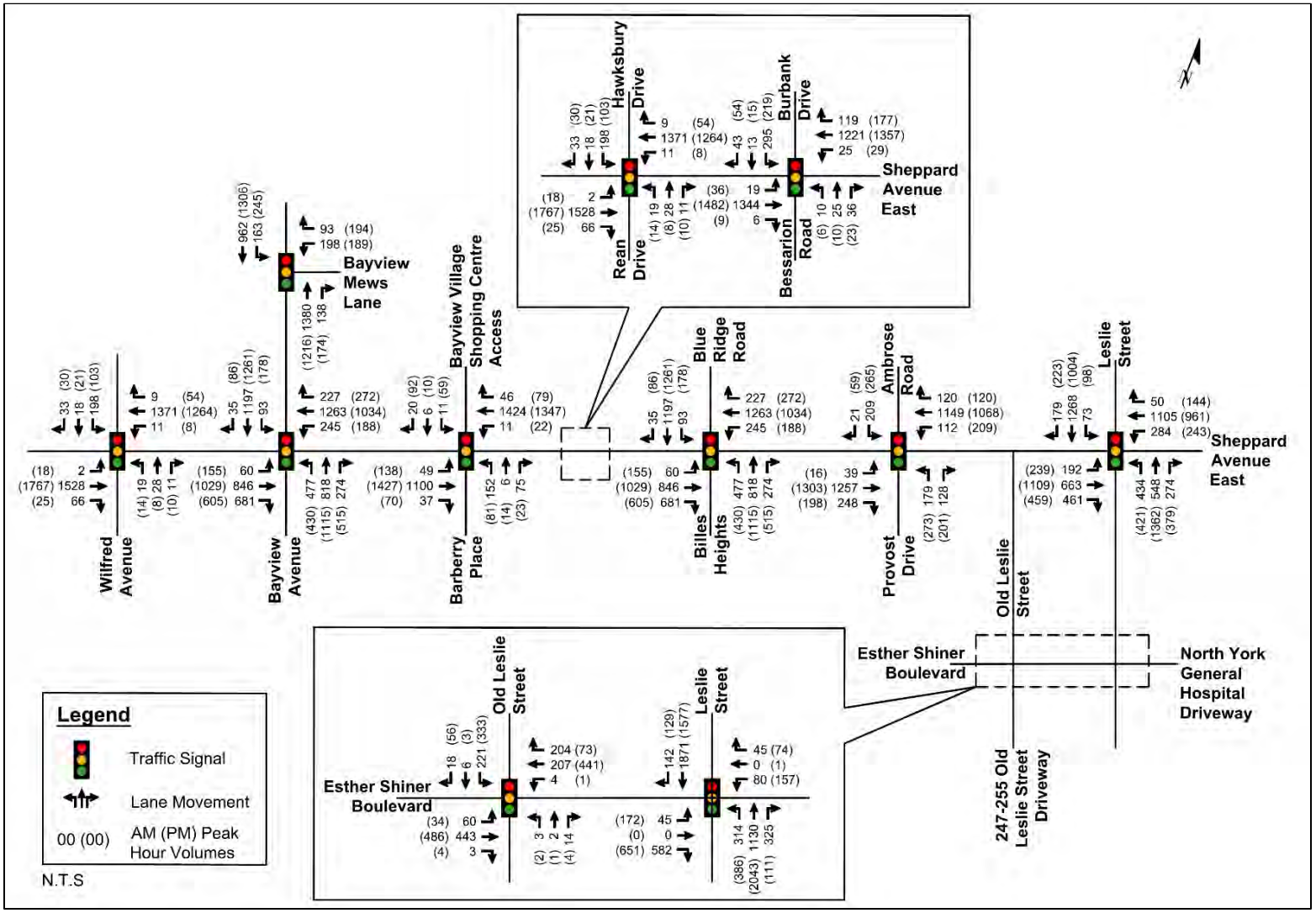
Location	Date of Count
Leslie Street and Sheppard Avenue East	April 18, 2017
Leslie Street and Sheppard Avenue East	June 26, 2018
Leslie Street and Esther Shiner Boulevard	June 26, 2018
Old Leslie Street and Esther Shiner Boulevard	June 26, 2018
Bayview Avenue and Sheppard Avenue East	June 13, 2019
Bayview Avenue and Bayview Mews Lane	November 26, 2019
Bessarion Road / Burbank Drive and Sheppard Avenue East	November 26, 2019
Provost Drive / Ambrose Road and Sheppard Avenue East	November 26, 2019
Wilfred Avenue and Sheppard Avenue East	August 31, 2021

Location	Date of Count
Barberry Place and Sheppard Avenue East	August 31, 2021
Rean Drive / Hawksbury Drive and Sheppard Avenue East	August 31, 2021
Blue Ridge Road / Billes Heights and Sheppard Avenue East	August 31, 2021

The traffic count data was collected between 2017 and 2021. Based on a review of the historic growth rates and the Sheppard Monitoring Data that compares traffic data prior to the COVID-19 pandemic, a 0% growth was observed. Therefore, the 2017 to 2021 traffic counts were assumed reasonable for existing conditions.

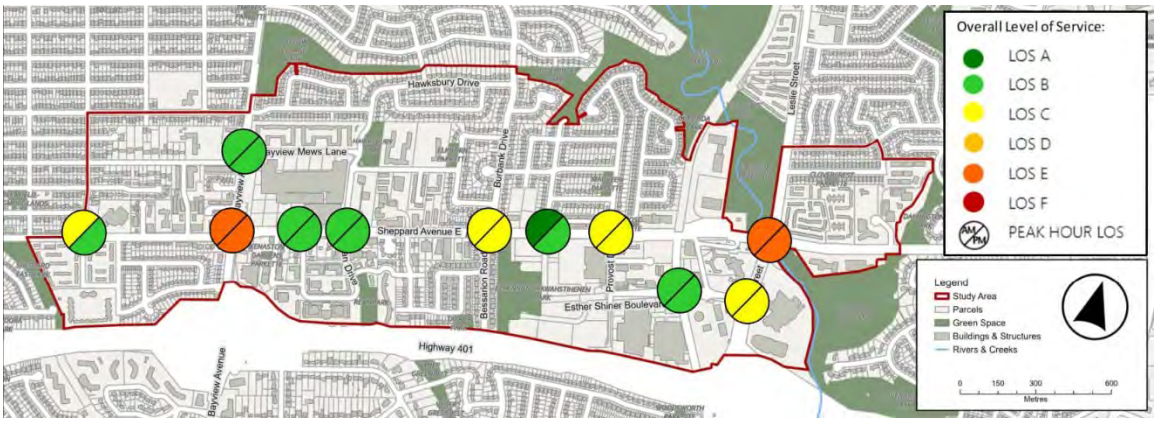
The existing traffic conditions are shown in Figure 3-7.

Figure 3-7: Existing Conditions Traffic Volumes



A summary of the intersection operations is shown in Figure 3-8.

Figure 3-8: Summary of Existing Traffic Operations Analysis



The traffic operations assessment indicated that the Bayview Avenue and Sheppard Avenue intersection and the Leslie Street and Sheppard Avenue intersection are operating close to or above capacity (LOS E) during the AM and PM peak hour.

3.3.2 Existing Road Capacity Analysis

A road capacity analysis for the AM peak hour indicated that the following roadway segments were congested:

- Bayview Avenue (Southbound) – Sheppard Avenue East to Highway 401
- Leslie Street (Southbound) – Maris Shepway to Sheppard Avenue East
- Leslie Street (Southbound) – Esther Shiner Boulevard to Highway 401

A road capacity analysis for the PM peak hour indicated that the following links were congested:

- Bayview Avenue (Southbound) – Sheppard Avenue East to Highway 401
- Leslie Street (Northbound) – Maris Shepway to Sheppard Avenue East
- Leslie Street (Southbound) – Esther Shiner Boulevard to Highway 401

The existing traffic operations and link capacity analysis indicates that there is a need to improve transportation conditions within the study area. This need can be generally accomplished through demand management or infrastructure improvements.

3.4 Existing Transit Conditions

The 2019 maximum passenger volumes were provided by TTC for 85 Sheppard East, 51 Leslie, and 11 Bayview in the study area. Maximum passenger volumes represent the maximum number of passengers that are traversing through the bus stop after

boarding and alighting. Maximum pedestrian volumes in 2019 for each bus within the study area are shown in Table 3-3 for the AM period and Table 3-4 for the PM period.

Table 3-3: 2019 Maximum Pedestrian Volumes within the Study Area – AM

TTC Bus	Eastbound / Northbound	Westbound / Southbound
85 Sheppard East	46	127
11 Bayview	134	109
51 Leslie	58	85

Table 3-4: 2019 Maximum Pedestrian Volumes within the Study Area – PM

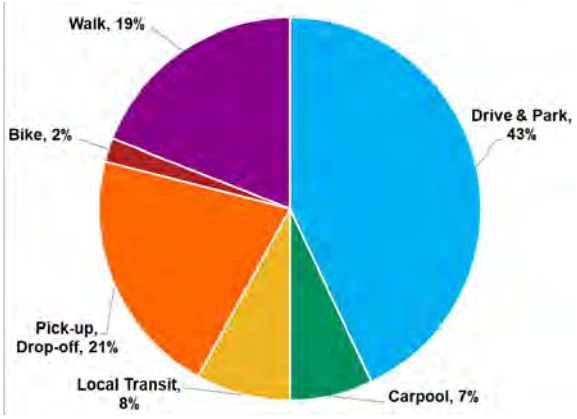
TTC Bus	Eastbound / Northbound	Westbound / Southbound
85 Sheppard East	70	51
11 Bayview	110	146
51 Leslie	101	64

The 2019 GO Rail ridership and access mode share is detailed in GO Rail Station Access (2023) and shown in Table 3-5 and Figure 3-9.

Table 3-5: 2019 GO Rail Ridership

	Ridership
Daily Riders' Home Station	425
Daily Riders' Destination Station	50
Daily Total Footfall (Boarding + Alightings)	875

Figure 3-9: 2019 Access Mode Share



Source: GO Rail Station Access (2023)

3.5 Existing Active Transportation Conditions

3.5.1 Multi-Modal Level of Service Evaluation

A multi-modal level of service (MMLOS) analysis was undertaken for intersections and corridors within the study area. MMLOS analysis is a methodology for analyzing the level of service experienced by users of different modes along street segments and at intersections.

The Ontario Traffic Council (OTC) MMLOS methodology was used to understand specific areas of improvement within the study area. This methodology was released in 2022 and was developed through the collaboration of many municipalities in Ontario, including the City of Toronto.

For the purposes of the OTC MMLOS evaluation, the future roles of major arterials within the study area (e.g., Sheppard Avenue, Leslie Street, and Bayview Avenue) based on a review of the City's policy framework were designated as a Neighbourhood Main Street based on OTC categories. OTC's definition of a Neighbourhood Main Street is the following:

- Street balances mobility and access.
- Moves moderate to high volumes of cycling, transit, and vehicle movements.
- Balances priority of all modes.
- Traditionally "auto-oriented" land use but often subject to intensification or redevelopment.
- Likely to have mixed but predominantly commercial land use.

For Neighbourhood Main Streets, OTC recommends a target pedestrian and cycling LOS of LOS COTC's general definition of LOS C for pedestrians is the following:

- Pedestrians often have sufficient space to walk or roll in a social manner that is removed from traffic nuisance.
- Crossing distance and delay at intersections is often optimized for pedestrians.
- Crossing locations are often located with sufficient frequency to minimize detour.

OTC's general definition of LOS C for cyclists is the following:

- Cyclists often have sufficient space to ride in a social manner that is removed from traffic nuisance.
- Delay at intersections is often optimized for cyclists.
- Exposure to conflict at intersections is often minimized.

For the purposes of the OTC MMLOS evaluation, minor arterials, and collector roads within the study area (e.g., Provost Drive, Esther Shiner Boulevard, and Old Leslie

Street have a target LOS C. Local streets within the study area (e.g., Bessarion Road, Burbank Drive, and Bayview Mews Lane) have a target LOS E.

3.5.2 Cycling Level of Service Evaluation

Cycling level-of-service evaluation was conducted on seven intersections. At intersections, the criteria used to determine the LOS were:

- Degree of enhanced cycling facilities that add to the safety and comfort for cyclists; and
- Signal cycle length for signalized intersections.

For road segments, the criteria used to determine the LOS were:

- Bike buffer width
- Bike facility width

The results of the cycling level of service evaluation found that all segments and intersections were a LOS of E or F. No intersection or road segment reached their target LOS. The following observations assisted in deriving the MMLOS:

- Although the bike lanes along Esther Shiner Boulevard had sufficient cycle length to minimize delay for pedestrians, there were no additional cycling measures that added to the safety and comfort for cyclists at the intersection.
- The bike lanes along Esther Shiner Boulevard had sufficient width but no buffer between the bike lane and the general-purpose lane.
- Although not part of the MMLOS evaluation, the bike lanes along Esther Shiner Boulevard do not connect to any other dedicated cycling facility, which contributes to its underutilization.

3.5.3 Pedestrian Level of Service Evaluation

Pedestrian level-of-service evaluation was conducted on seven intersections. At intersections, the criteria used to determine the LOS were:

- Degree of enhanced pedestrian facilities that add to the safety and comfort for pedestrians at signalized intersections.
- Degree of marked controlled crossings at unsignalized intersections.
- Signal cycle length for signalized intersections.

For road segments, the criteria used to determine the LOS were:

- Pedestrian facility width
- Pedestrian buffer width

The results of the pedestrian level of service evaluation found that most segments and intersections were a LOS of D, E, or F and did not reach their target LOS. The

exception would be the intersection of Esther Shiner Boulevard and Old Leslie Street which achieved an intersection LOS B. The following observations assisted in deriving the MMLOS:

- Although there were sidewalks present throughout the study area, there was either inadequate pedestrian facility width or buffer between the sidewalk and the general-purpose lane.
- Enhanced pedestrian facilities were observed at several intersections and incorporated in the analysis. More specifically, leading pedestrian intervals at following intersections enhanced the pedestrian environment:
  - Bayview Avenue and Bayview Mews Lane (East-West).
  - Sheppard Avenue and Burbank Drive (North-South, East-West).
  - Sheppard Avenue and Provost Drive (North-South).
  - Leslie Street and Esther Shiner Boulevard (East-West).
  - Esther Shiner Boulevard and Old Leslie Street (North-South, East-West).
- Although not inherently apart of the MMLOS analysis, the lack of east-west crossing at the southern leg of the Bayview Mews Lane and Bayview Avenue intersection creates a less desirable walking environment.

Based on the criteria, Esther Shiner Boulevard and Old Leslie Street met its target LOS because of short pedestrian wait times based on signal timing cycle lengths and the use of leading pedestrian intervals. Although, there are still opportunities to provide enhanced pedestrian facilities to further improve the walking environment.

4.0 Street Network Planning Principles, Needs, and Opportunities

This section describes the planned road improvements, street network principles, and street network needs and opportunities.

4.1 Planned Road Improvements

The Sheppard Avenue East Complete Street project and Sheppard Avenue Resurfacing project proposes changes to Sheppard Avenue East from Bayview Avenue to Leslie Street. These changes will improve safety for people driving, cycling, walking, and taking transit. The design process is still underway and will continue throughout 2024.

4.2 Street Network Principles

As outlined in the City's Complete Streets Guidelines, roads are common spaces where the city comes together. Roads should be "complete streets" where streets should safely accommodate all users – pedestrians, cyclists, transit services, and motor vehicles, while supporting and enhancing local neighbourhood context and character. Supporting goals of equity and the City's Vision zero values, streets should be a safe place for all mobility users regardless of age or ability.

Each street should look, feel, and function in accordance with the City's values. To achieve this objective, road improvements should consider constraints to all road users. Level of service should be assessed for all modes of transportation to understand the types of infrastructure improvements that are required to ensure:

- Pedestrians and cyclists feel safe and comfortable within the public right-of-way.
- Pedestrians and cyclists are encouraged to access the regional and local transit system.
- Congestion from private automobiles is minimized.

4.3 Need to Overcome Property Constraints

There are property constraints within the study area imposed by the Ministry of Transportation Ontario (MTO) and Metrolinx from infrastructure such as Highway 401 ramps and interchanges for MTO and the rail line for Metrolinx, as well as associated setbacks.

Proposed road improvements within the study area should prioritize road elements within the City's right-of-way where they are limited opportunities to expand due to these property constraints. The prioritization of transportation modes will depend on the function of the road and its associated municipal road allowance. For example, Bayview Avenue and Leslie Street should be able to provide for more protected facilities for road

users while narrower streets such as Bessarion Road may require more selective considerations on the facilities and facility types.

4.4 Opportunity to Transform the Role of the Street Network

The Sheppard East Corridor Secondary Plan indicates that the role of Sheppard Avenue should act as a pedestrian-oriented main street. Currently, the other major arterials, Bayview Avenue and Leslie Street, are auto-oriented and facilitate longer-distance travel and movement in the City. Like Sheppard Avenue, Leslie Street, and Bayview Avenue will need to transform more similarly to the function of Sheppard Avenue as a “Main Street” while facilitating longer distance travel especially with vehicles anticipated to access the Highway 401 interchanges.

The need to transform to a more pedestrian-friendly corridor result from the growth of population, employment, and commercial activity within the study area that support self-sufficiency. The City can explore opportunities to secure new connections for pedestrians and cyclists including but not limited to mid-block connections on private property.

5.0 Active Transportation Planning Principles, Needs, and Opportunities

This section describes the planned active transportation improvements, active transportation principles, and needs and opportunities. Supplemental information regarding active transportation needs and opportunities is provided in Appendix B.

5.1 Proposed Active Transportation Improvements

5.1.1 Sheppard Avenue East Complete Street Project

The Sheppard Avenue East Complete Street project proposes road safety improvements to Sheppard Avenue East from Bayview Avenue to Leslie Street. The design process is still underway. A sample of the proposed active transportation improvement is shown in Figure 5-1.

Figure 5-1: Proposed Cross-section of Sheppard Avenue West of Rean Drive

Source: City of Toronto – Sheppard Avenue East Complete Street from Bayview Avenue to Leslie Street

5.1.2 Cycling Network Plan

The Cycling Network Plan (CNP) serves as a comprehensive roadmap and work plan, outlining the City's planned investments in the near-term and intention for the long-term. The Cycling Network Plan consists of the following three components:

- The Long-Term Cycling Network Vision
- The Major City-Wide Cycling Routes
- A three-year rolling Near-Term Implementation Program

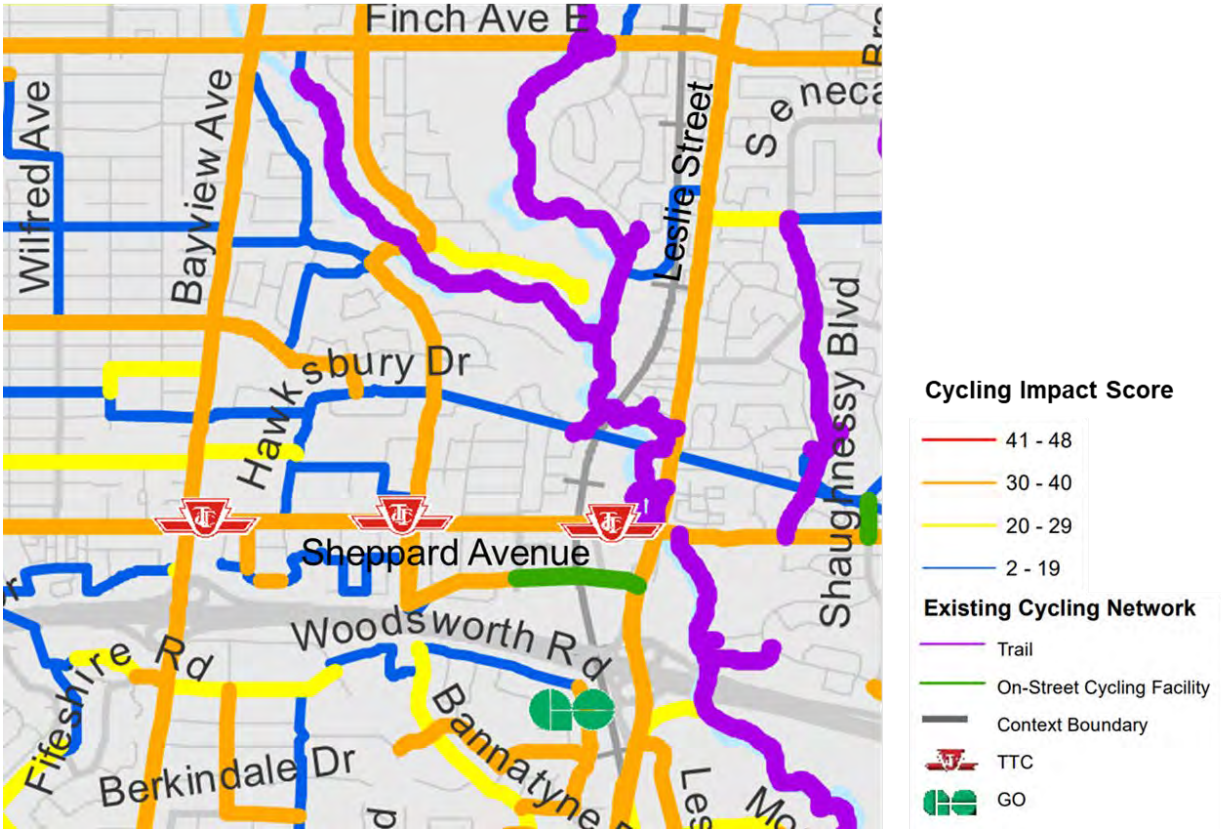
As part of the City's active transportation policy framework, every street in Toronto should be considered for bikeways and other cycling upgrades. Therefore, the Cycling Network Plan does not limit cycling to a specific set of streets. However, the CNP prioritizes the streets based on the value the street brings to the overall cycling network.

This value is represented by the City's Cycling impact analysis which categorizes streets based on the following priority:

- Top: Routes that scored highly across most, if not all, inputs. These are found mostly on arterial streets that connect to many destinations and transit.
- High: Routes that scored highly against most inputs.
- Medium: Routes that scored highly in some input or scored well across many inputs.
- Low: Routes that are primarily local neighborhood connections and typically have parallel routes alternatives.

The analysis scores for the ReNew Sheppard Study Area are shown in Figure 5-2.

Figure 5-2: Cycling Impact Analysis Scores



The following corridors in the study area were assessed as High:

- Bayview Avenue
- Leslie Street
- Esther Shiner Boulevard
- Bessarion Road
- Burbank Drive

5.2 Active Transportation Principles

5.2.1 Connected and Continuous

To be most effective, active transportation networks should be connected and continuous to allow cyclists and pedestrians more opportunities to have safe, separated, and protected facilities to reduce and minimize conflicts with vehicles. Providing safe mobility options for all ages and abilities ensures that active transportation users can feel more confident when using active transportation facilities. A connected network does not leave users isolated and stranded at the end of active transportation facilities. Active transportation networks should also connect to points of interest, including employment and key institutions such as community centres, parks, grocery stores / farmer's markets, libraries, buildings that offer social services, and medical centres.

5.2.2 Human-Scaled and Balanced

A balanced transportation system is one that provides safe, accessible, and efficient options for people to travel around their community without relying solely on cars. A human-scaled transportation system is one that is designed to prioritize the needs of people rather than the need of cars. A balanced and human-scaled transportation system has many benefits to the community, such as:

- Improving the quality of life for people in the community.
- Creating vibrant and livable communities where people can easily connect with neighbours and local businesses.
- Increasing the use of sustainable modes can reduce traffic congestion.
- Increase the commercial and economic activity by creating more walkable and transit-oriented communities.

Active transportation infrastructure plays a key role in balanced and human-scaled transportation systems. This type of infrastructure supports mobility objectives for residents getting to work and promoting physical activity and healthy living. Human-scaled active transportation also caters to the needs of cyclists.

Road design elements related to active transportation can also improve the active transportation environment, include lighting, street furniture, trees for shade, plantings, and bicycle racks.

5.2.3 Accessible Active Transportation

Accessible active transportation ensures that the road right-of-way provides sufficient physical space to pedestrians and cyclists for added safety and to let all road users know that all transportation modes are important. The *Accessibility for Ontarians with Disabilities Act* (AODA) outlines legal requirements to improve accessibility standards

with consideration for both physical and mental disabilities (i.e., relating to mobility, vision, hearing, and cognition).

Young pedestrians or children (particularly under the age of ten) are more likely to misjudge vehicle speeds and available crossing gaps because of their limited scanning ability and attention capacity. Children are considered at-risk road users as they tend to have an underdeveloped sense of safety and understanding of traffic control devices. Seniors are also more likely to underestimate the relative depth separating visual targets, misperceive the distance between themselves and vehicles, and process information more slowly. The elderly are vulnerable road users as the likelihood of fatality also increases with age.

To address the limitations and challenges of young pedestrians and the elderly, it is important to recognize the need to manage pedestrian expectations and misguided decisions due to road geometry, land uses or other operating environment characteristics. In addition, there is an emphasis on providing warning devices and / or signs to heed caution and draw drivers' attention in areas with a greater child and / or senior demographic (e.g., near schools, retirement / nursing homes).

Mobility-impaired pedestrians refer to those affected by a motor movement disability, including pedestrians who use wheelchairs or walkers / canes. Pedestrian crossings should be designed to eliminate physical barriers, where feasible, and provide for adequate walking times at signalized crossings. In allocating pedestrian walk times, a design speed of 1.0 m/s is typically used. However, in the case that 20% or more pedestrians using a crossing is expected to be older (65 years or older), a lower walking speed of 0.9 m/s is assumed. At locations where 20% or more pedestrians are mobility-impaired (i.e., using assistive devices such a wheelchairs and canes), it is best practice to use a walking design speed of 0.8 m/s. These guidelines apply particularly near hospitals and retirement / nursing homes, where there is a need to accommodate a greater number of mobility-impaired pedestrians and the elderly.

Visually impaired pedestrians depend on auditory and tactual information for travel to varying degrees. There is a wide range in the extent to which people are visually impaired, as some may have extremely limited vision, and others may be more sensitive to brightness contrast. Pedestrian facilities should be designed to allow visually impaired pedestrians to easily identify safe pedestrian paths, detect streets and recognize the proper time to cross streets.

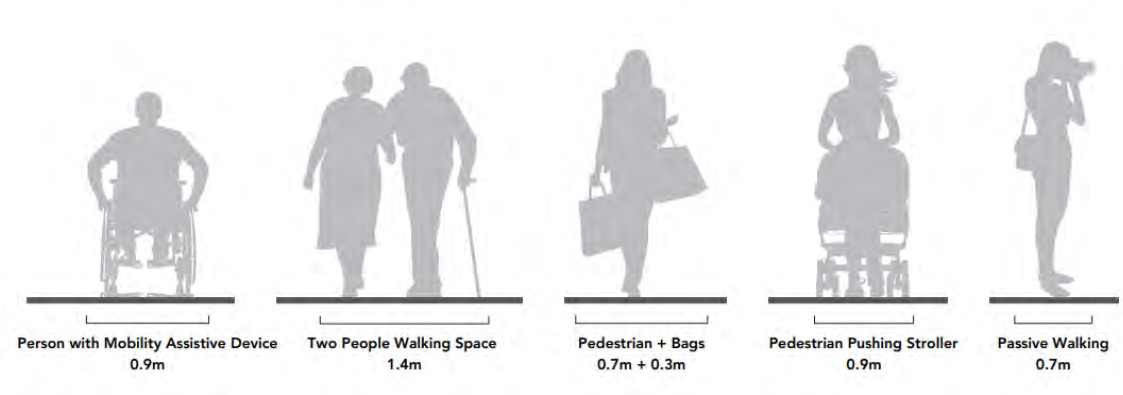
Three considerations for providing accessible pedestrian facilities include:

- Providing adequate pedestrian clearways
- Providing accessible pedestrian signals
- Installation of tactile walking surface indicators

Adequate pedestrian clearways should consider accommodating a wide range of pedestrian users, as illustrated in Figure 5-3. Multi-use trails which can have a mix of cyclists and pedestrians should also have adequate clearway space to improve safety and comfort. This space is important in addressing potentially high-speed differentials between pedestrians and cyclists.

Accessible pedestrian signals advise pedestrians who are blind, visually impaired, or deaf-blind when they have the right-of-way to cross at a signalized intersection using auditory sounds. Tactile walking surfaces are surface-level installations that provide warnings for pedestrians to stop at the sidewalk edge.

Figure 5-3: Examples of Widths of Different Types of Pedestrians



Source: City of Toronto Complete Streets Guidelines

5.3 Needs and Opportunities

5.3.1 Enhance North-South Corridors

Since Sheppard Avenue will be improved through the Sheppard Avenue East Complete Street project with proposed separated cycling facilities, there is an opportunity to enhance north-south roadways to improve connectivity. Sheppard Avenue can act as the main spine of the active transportation network, while the north-south roadways can feed into this spine. North-south roadways that can contribute to this network include Bayview Avenue, Leslie Street, Bessarion Road, and Burbank Drive. A major constraint along Leslie Street is providing continuous and connected active transportation infrastructure through the Metrolinx rail corridor.

More details regarding the existing conditions of these roads and their opportunities are provided in Appendix B.

5.3.2 Provide Quieter Alternatives

With the City's vision of considering every street for cycling upgrades, there are a few parallel routes that can enhance the active transportation network. Sheppard Avenue is a major arterial with high auto volumes. These parallel routes leverage the local neighbourhood streets, which have significantly fewer auto volumes and can be considered quieter alternatives. These routes include:

- Irvington Avenue via a connection from Bayview Avenue
- The entire road segment of Bayview Mews Lane connects west to Spring Garden Avenue
- Citation Drive / Empress Avenue
- Blithfield Avenue / McKee Avenue
- Old Leslie Street and Esther Shiner Boulevard to connect North York General Hospital to/from southside of Sheppard Avenue

More details regarding the existing conditions of these routes and their opportunities are shown in Appendix B.

5.3.3 Enhance Off-Road Trails

The active transportation network consists of both off-road and on-road trails. The benefits of off road-trails include:

- Enhances connectivity to the overall active transportation network.
- Provides more comfort than on-road routes since trails are separated from automobile traffic, potentially increasing use, and promoting healthy communities.
- Allows riders and pedestrians to explore the City's ravines and green space, creating an enjoyable and vibrant community.

Opportunities to enhance off-road trails include:

- Improve the East Don Parkland trail connection where it intersects with Sheppard Avenue and Leslie Street, as south portion of the trail currently has no connection to the north section.
- Ensure trail connectivity is safe and accessible.
- Provide more information about parks and trails using wayfinding and signage.
- Add additional trail crossings where feasible.
- Add multi-use path connection between North York General Hospital and Betty Sutherland Trail to support connectivity.
- Improving access to meet the *Accessibility for Ontarians with Disabilities Act* (AODA).

More details regarding a potential trail connection are shown in Appendix B.

5.3.4 Provide Safe Mid-block Crossings

Long road segments should be reviewed for adequate crossing opportunities to promote walking and cycling. These crossings should be accessible, and the design should consider the use by young children and elderly. Specific locations identified by residents include crossing north and south of Sheppard Avenue to the Bessarion TTC Station and the Leslie TTC Station.

5.3.5 Stakeholder Identified Opportunities

Based on consultation with the City's Transportation Services, Capital Projects, Pedestrian and Cycling Projects team on January 23, 2023, which also included City staff from various departments, a list of opportunities was developed.

A summary of these opportunities is shown in Table 5-1.

Table 5-1: Stakeholder Identified Active Transportation Opportunities

Location	Opportunity
General	Use cycling infrastructure rough-ins to establish north-south cycling connections.
General, TTC Stations, Re-located Oriole GO Station	Create smooth linkages with TTC and GO Transit Stations.
Old Leslie Street	Re-evaluate the function of Old Leslie to accommodate cycling infrastructure to address narrow bridge width, southbound left-turn at Esther Shiner Boulevard, and bus terminal impacts.
Dallington Park	Improve connectivity between proposed Sheppard Avenue cycling facilities and Dallington Park Trail by linking trail access to signalized intersection at Buchan Court.
Clarinda Park	City's Parks, Forestry, and Recreation is planning improvements at Clarinda Park that may include trail access improvements.
East Don Parkland Trail	Informal trail connection at north side of 1200 Sheppard Avenue East and / or connection across GO rail line between 1200 Sheppard East and Clarinda Park to mitigate environmental impacts.
Sheppard Avenue and Leslie Street Intersection	Trail Bridge between the Betty Sutherland Trail and the intersection at Sheppard and Leslie.

Location	Opportunity
Leslie Street and Highway 401	North-south multi-use trail along the existing Oriole GO platform to continue below Highway 401 to avoid ramp interchange and rejoin Leslie Street south of Highway 401 to provide an off-road connection.
Bayview Avenue and Highway 401	Explore off-road multi-use trail around the Bayview and Highway 401 interchange.
Empress Avenue and Citation Drive	East-west local active transportation connection along Empress Avenue and Citation Drive.
Hillcrest Avenue and Bayview Village Park Trail	East-west local active transportation connection along Hillcrest Avenue and Bayview Village Park Trail.
McKee Avenue and Blithfield Avenue	East-west local active transportation connection along McKee Avenue and Blithfield Avenue.
Spring Garden Avenue and Bayview Mews Lane	East-west local active transportation connection along Spring Garden Avenue and Bayview Mews Lane to connect to Willowdale Park Trail, St. Gabriel Catholic School, Bayview Village, and Hawksbury Park.
Hollywood Avenue and Foxwarren Avenue	East-west local active transportation connection along Hollywood Avenue and Foxwarren Avenue to connect to Willowdale Park Trail.
Bayview Avenue and Irvington Crescent	Connect Irvington Crescent, which is on the west side of Bayview Avenue, to the east side of Bayview Avenue.

6.0 Transit Planning Principles, Needs, and Opportunities

This section describes the planned and proposed transit improvements, transit principles, and needs and opportunities. Supplemental information regarding transit needs and opportunities is provided in Appendix C.

6.1 Planned or Proposed Transit Improvements

6.1.1 Proposed Regional Transit Improvements

A proposed relocation of Oriole GO will have the station directly south of Leslie Station on Old Leslie Street with access through the existing Leslie Station parking lot. The opening year was intended to be 2020; however, this project has been delayed. Other proposed design elements are outlined below:

- The platform will include standard GO enclosed passenger waiting areas with canopied sections.
- A Multi-Use Path on the north side of the existing parking lot just south of Leslie Station will provide cyclist and pedestrian connection from Old Leslie Street to the station platform.
- Storage for up to 28 bicycles will be provided at the end of the multi-use paths between the platform and the parking lot.
- A 3 m sidewalk is also proposed north of Sheppard Avenue East, connecting the existing sidewalk on Old Leslie Street to the station platform. Bicycle racks will be installed at this location.

There are a diverse range of land uses surrounding the GO Station including residential, commercial, and community facilities that are supportive of pedestrian activities. The Transportation Impact Study undertaken for this proposed development notes that the bike lanes along either side of Esther Shiner Boulevard between Old Leslie Street and Provost are generally unused and suggests this is due to high-speed limits, wide travel lanes, and a discontinuous cycling network.

6.1.2 Proposed Local Transit Improvements

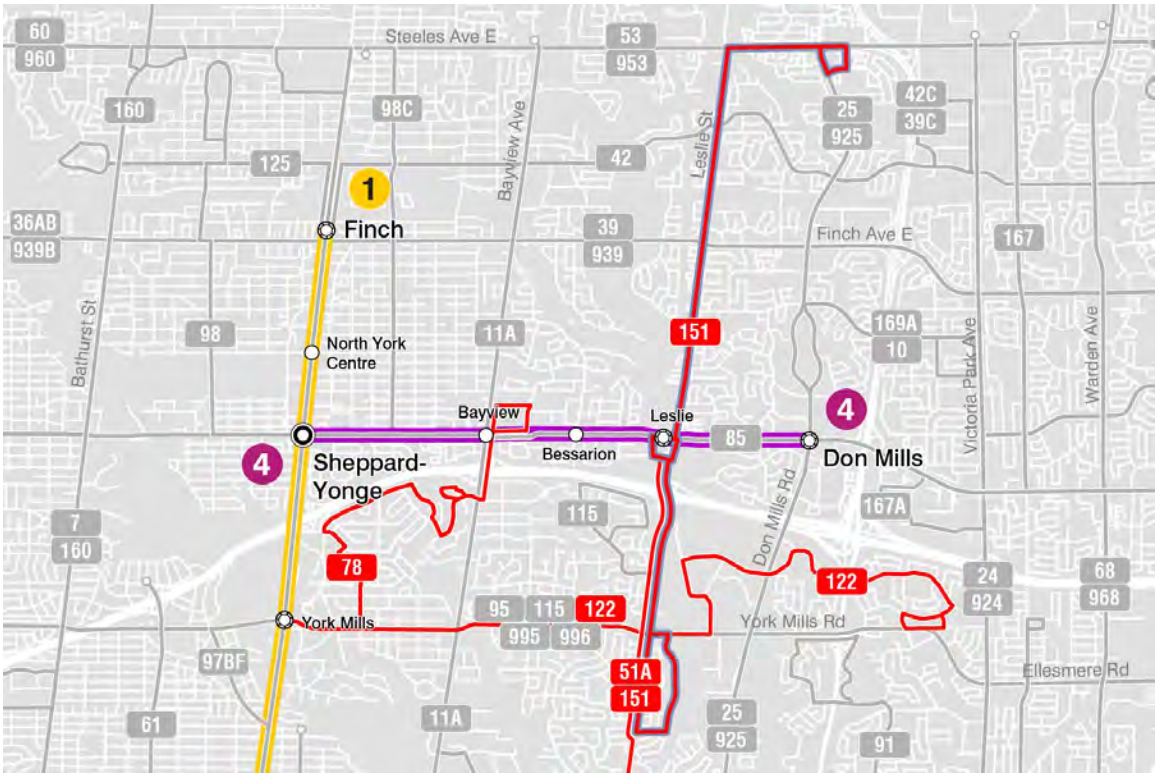
The 2023 Annual Service Plan is currently under review. The draft proposed transit improvements include:

- **78 St. Andrews:** Service extended north to Bayview Village.
- **51 Leslie South:** New north end-of-line will be Leslie Station. Service north of Leslie Station will be provided by the new 151 Leslie North.
- **151 Leslie North:** New route operating from Bond Avenue (South terminus) to Steeles Avenue. Southern end-of-line will loop eastbound on York Mills Road, southbound on Scarsdale Road, westbound on Bond Avenue before returning northbound on Leslie Street.

- **122 Graydon Hall:** Eastern end-of-line will be adjusted to loop southbound on Ness Drive, westbound on York Mills Road, northbound on Fernside Drive, and eastbound on Lynedock Crescent.

A summary of these proposed changes is shown in Figure 6-1.

Figure 6-1: Draft Proposed TTC Improvements



Source: TTC

6.2 Transit Principles

6.2.1 Transit and the Public Realm

The study area boundaries are based on a revised amalgamation of the three boundaries of the Major Transit Station Areas (MTSAs) surrounding the three transit stations. By design, the stations are geographically central to the MTSA boundaries. The transportation system should also be planned in such a way that the stations are the central attractions of each of the MTSAs. This can lead to increased use of the transit provided at these MTSAs, a switch to more sustainable transportation, and provides another community gathering space in which the benefits were mentioned earlier.

This objective can be achieved by ensuring the stations and their immediate surroundings should be designed such that various modes of transportation, public

realm, and attractive community spaces and the public realm are integrated. This concept is commonly referred to as a mobility hub or "higher-order transit zone." Although this term should not be confused with Metrolinx's use of the term "Mobility Hub." Metrolinx has identified 51 mobility hubs in the Greater Toronto and Hamilton Area based on existing and planned transit investments and provision of higher order transit. Bayview, Leslie, and Bessarion stations did not meet the criteria as identified by Metrolinx. At the time of identification, none of these three transit stations were connected to the regional transit network. For the purposes of this study, these three stations will be referred as "local mobility hubs." Unless otherwise stated, this study will use the term "mobility hub" in the general sense of the definition and not specifically referring to the Metrolinx mobility hubs.

Mobility hubs are usually places where people transition from one mode to another. As people are in the process of transitioning from one mode to the next, there are elevated levels of foot traffic. Mobility hubs can take advantage of these high levels by including welcoming and aesthetic design elements to facilitate community interaction and user comfort. Design elements can include:

- Seating furniture: To provide commuters, especially elderly persons, a place to rest and to converse.
- Art and cultural exhibitions.
- Landscaping: Landscaping can help separate pedestrians and cyclists from vehicular traffic and provide benefits to stormwater management.
- Wayfinding: Signage and maps can ensure users understand where they are in a broader context, so they feel more comfortable.
- Lighting: Adequate pedestrian-scale lighting should be provided outside and inside.
- Trip end facilities: Showers and washrooms, bike lockers and storage, and bike repair.

Mobility hubs have also been incorporating emerging technologies in their design, such as the provision of Wi-Fi, e-bike, e-scooter micromobility services, car sharing services, and electric vehicle charging stations. These elements can increase the number of possible modal transitions facilitating more trips to transit while increasing foot traffic and increasing community interactions.

The West Harbour GO Station has been designed with the integration of placemaking and multi-modal transportation in mind. Aesthetic design elements including a children play area, canopied waiting area, and a wayfinding map are shown in Figure 6-2.

Figure 6-2: West Harbour GO Station, City of Hamilton – Design Elements Part 1

Other design elements include landscaped areas, various seating arrangements, and a canopied seating area are shown in Figure 6-3.

Figure 6-3: West Harbour GO Station, City of Hamilton – Design Elements Part 2

The integration of bike share with the GO Station is shown in Figure 6-4.

Figure 6-4: West Harbour GO Station, City of Hamilton – Design Elements Part 3

6.2.2 First and Last Mile Connections

Improving the first and last mile connection to and from transit stations helps enhance the customer transit experience and improve transit usage. Understanding the connections between the regional and local transit stations and points of interests such as parks, open spaces, places of employment, and other institutions helps build more connected communities.

6.3 Needs and Opportunities

6.3.1 Existing Transit Capacity Analysis

A transit capacity analysis was undertaken using passenger volumes and assumed bus capacities for the 51 Leslie Street TTC bus, 11 Bayview Avenue TTC bus, and 85 Sheppard Avenue TTC bus within the study area. This analysis is provided in Appendix C. The results of the analysis indicate that bus ridership is generally below capacity. Further exploration and consultation are required to understand if the low bus ridership is because of:

- Inconvenient routes and connections or inadequate accessibility resulting in travel time costs which are too high to compete with other modes; or
- Service is sufficient and meets the total transit demand of the study area.

If inconvenient routes and connections are causing low bus usage, additional connections may be required to unlock latent transit demand.

6.3.2 Active Transportation Integration

The active transportation system can help facilitate the central importance of the transit stations by being connected, safe, and comfortable for all road users as outlined in the Provincial Growth Plan, Major Transit Station Areas should be connected to local and regional transit services to support transit service integration and should have surrounding infrastructure to support active transportation, including sidewalks, bicycle lanes, and secure bicycle parking.

To identify potential improvements to active transportation corridors to and from the GO and TTC Stations, the following analyses was undertaken:

- Qualitative Public Realm Observations
- Walk-access and walk-egress analysis by TTC Subway entrance
- Walkshed analysis

6.3.2.1 Qualitative Public Realm Observations

A site visit by the project team provided an understanding of the public realm and pedestrian and cyclist comfort at each TTC Station and potential public realm improvements. These observations are documented in Appendix C.

6.3.2.2 Walk-Access and Walk-Egress Analysis

The 2019 and 2022 weekday walk-access and walk-egress to Bayview, Leslie, and Bessarion TTC Stations are shown in Figure 6-5 and Figure 6-6, respectively.

Figure 6-5: 2019 October Average Weekday Entrance Usage

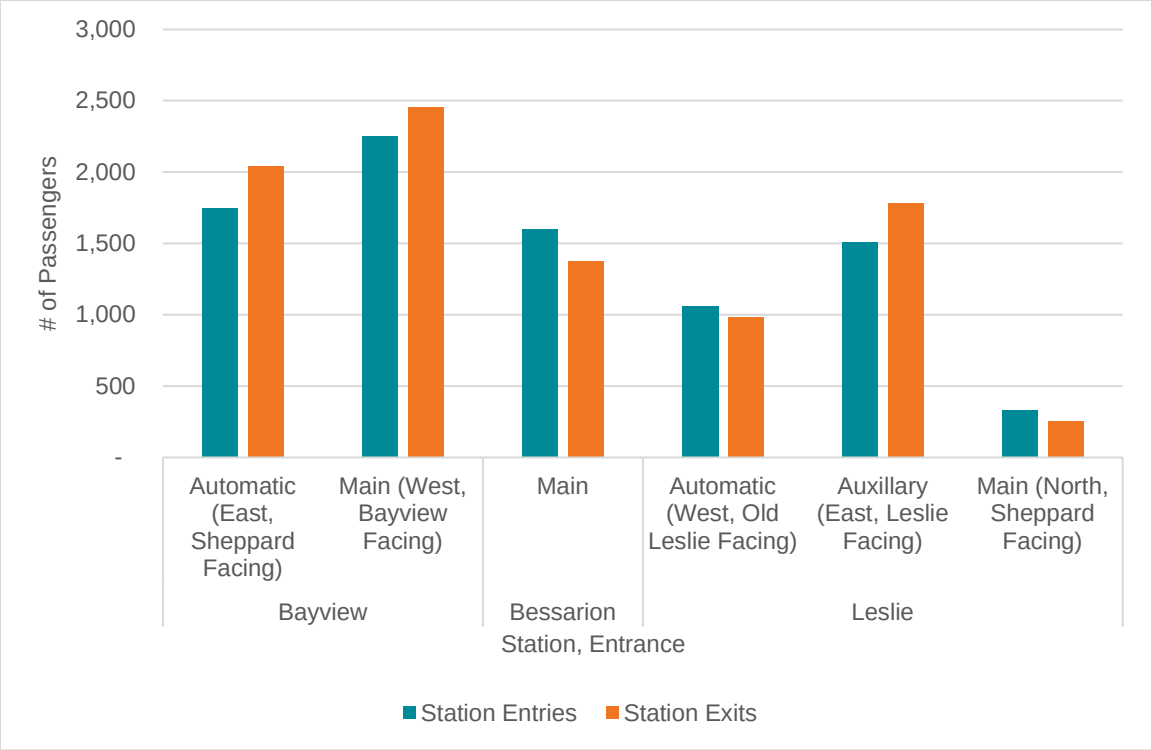
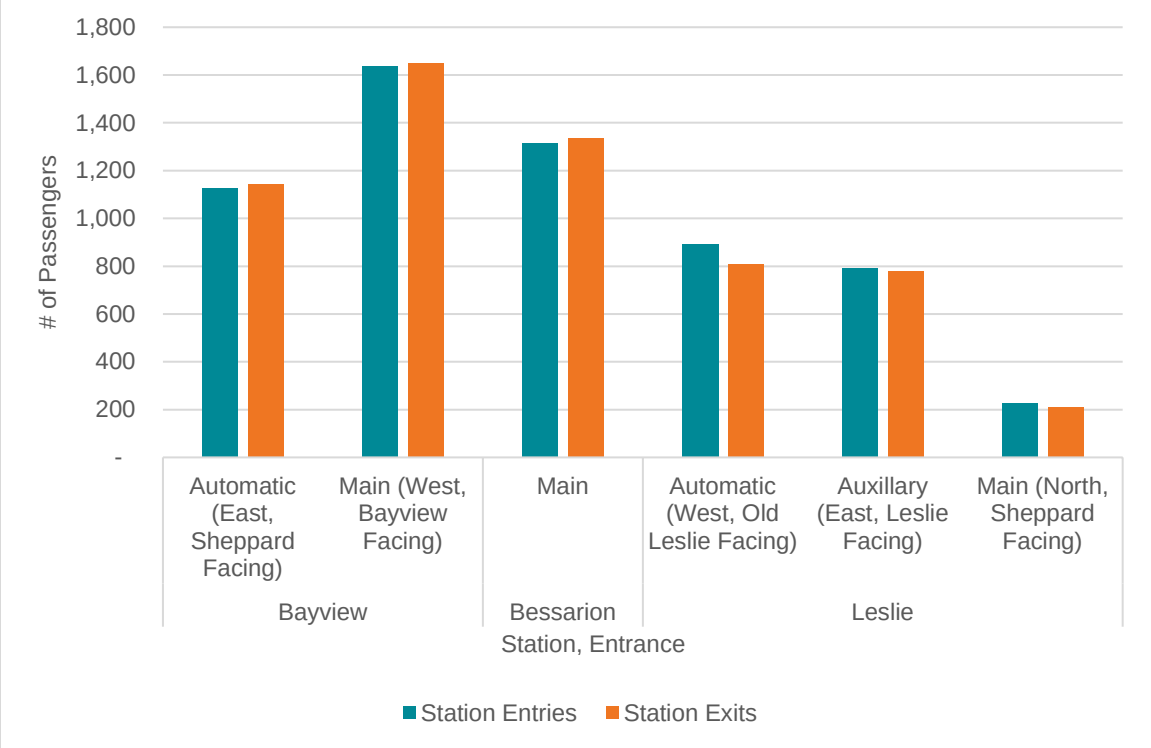


Figure 6-6: 2022 October Average Weekday Entrance Usage



The walk-access and walk-egress analysis indicated that for Bayview Station, the west, Bayview Avenue-facing entrance is more used than the east, Sheppard Avenue-facing entrance. Based on a site visit, the project team observed that the west, Bayview Avenue-facing entrance has fewer pedestrian amenities than the east, Sheppard Avenue-facing entrance. This observation is further documented in Appendix C. A need to improve the pedestrian comfort for the west entrance was observed.

The walk-access and walk-egress analysis indicated that the Main (north, Sheppard Avenue-facing) entrance at Leslie Station is underutilized compared to the other stations. Further exploration is required to understand why this entrance is underutilized. There is a possibility that this entrance is not a direct entrance to many residential units nearby. There is a relatively large, open space in front of this entrance. This open space can be repurposed by adding pedestrian amenities to convert this to a stronger community space. This space is shown in Figure 6-7.

Figure 6-7: Main Entrance at Leslie Station

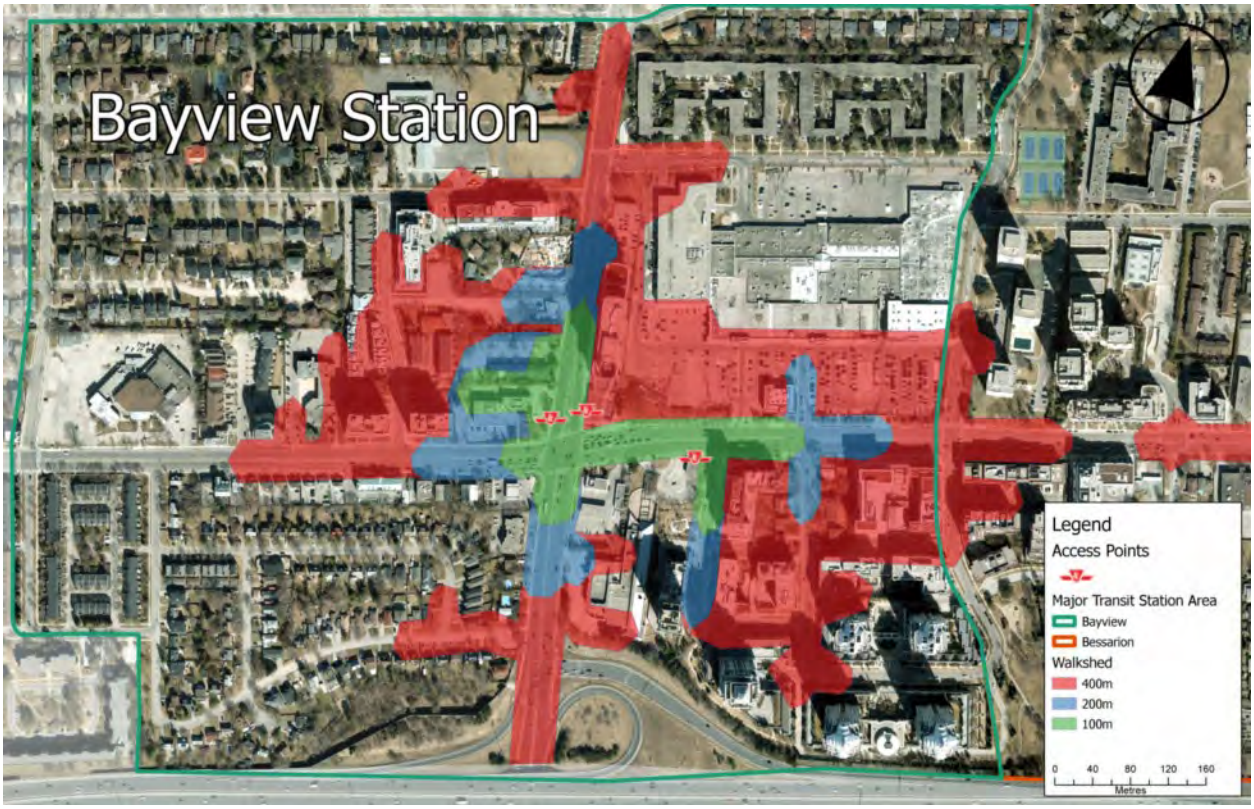
Source: Google Maps

6.3.2.3 Walkshed Analysis

A walkshed analysis shows how far a pedestrian can walk from a certain location. A walkshed analysis was conducted for each entrance of each of the three TTC Stations within the study area. The walkshed analyses can identify preferred routes for walking by understanding the path of least resistance that provides the greatest distance and gaps within the active transportation network.

The walkshed analyses for Bayview TTC Station, Bessarion TTC Station, Leslie TTC Station are shown in Figure 6-8, Figure 6-9, and Figure 6-10, respectively.

Figure 6-8: Walkshed Analysis for Bayview TTC Station



The most noticeable gap in the walkshed analyses was the connection between Bayview Village and the TTC entrance. A more direct connection to the TTC Station would be preferable. This finding was also confirmed through site visits as the project team observed many pedestrians accessing the TTC Station from Bayview Village using restricted routes or routes with no active transportation infrastructure such as the hills on the north side of Sheppard Avenue and west of Bayview Avenue.

Figure 6-9: Walkshed Analysis for Bessarion TTC Station

The distance between Bessarion TTC Station and Ethennonnhawahstihnen' Park is walkable via Ethennonnhawahstihnen' Lane which is shown to be between 200 m and 400 m away. To promote the connection between these two points, active transportation improvements along Ethennonnhawahstihnen' Lane should be explored.

Figure 6-10: Walkshed Analysis for Leslie TTC Station

Based on the walkshed analysis, several key walkable destinations surround Leslie Station including:

- North York General Hospital
- East Don Parkland Trail / Betty Sutherland Trail
- Various commercial and educational institutions

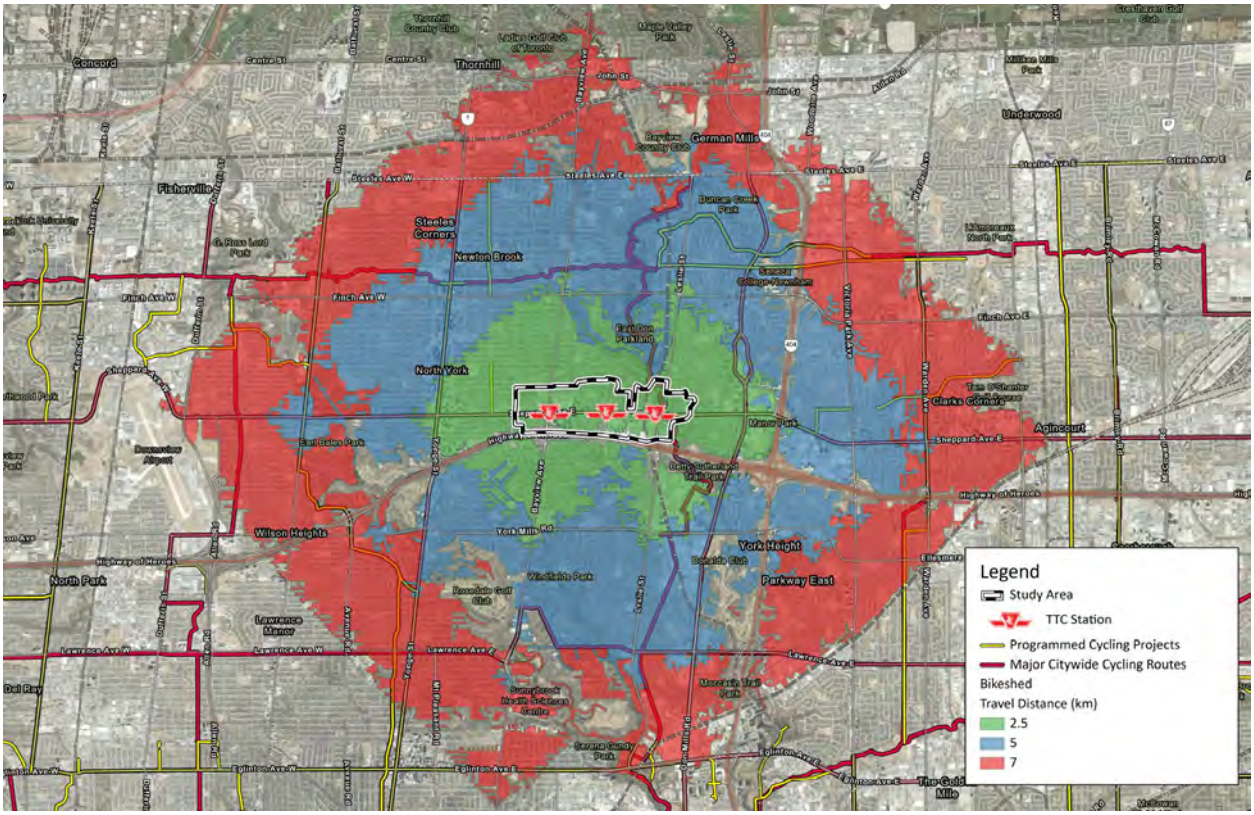
Corridors leading to these destinations include Leslie Street, Sheppard Avenue, Esther Shiner Boulevard, and Old Leslie Street. These routes should be further investigated for active transportation improvements.

6.3.3 Cycleshed Analysis

A cycleshed analysis shows how far a cyclist can travel from a certain location. A cycleshed analysis was conducted for each entrance of each of the three TTC Stations and is illustrated in Figure 6-11. The cycleshed analysis indicates major barriers that should be addressed which include:

- Highway 401
- Don Valley Parkway
- The Don Valley River

Figure 6-11: Cycleshed Analysis for All Three TTC Stations



6.3.4 Parking Constraints at the Future Oriole GO

Parking spaces removed at the existing Oriole GO Station will not be reinstated at the new location. Park-and-ride trips are expected to travel to Old Cummer GO Station where parking is available. Oriole GO Station currently provides 284 parking spaces with high parking utilizations throughout the day. The parking utilization is over 90% by 8:00 a.m. and drops to approximately 88% by 5:00 p.m. Leslie Station currently has 102 parking spaces with high parking utilization throughout the day. The parking utilization is over 90% by 8:00 a.m. and drops to below 90% by 3:00 p.m. As the 284 parking spaces at Oriole GO Station will not be reinstated at the relocated site, encouraging alternative modes to park-and-ride such as active transportation modes for access and egress will be even more important.

6.3.5 Connectivity between Regional and Local Transit

With the relocation of the Oriole GO Station to Leslie Station, there will be increased interconnection between the regional and local transit services. The need to develop Leslie Station as a local mobility hub is even more important as higher-order modal transitions are provided. Comfortable, connected, and accessible pedestrian and cycling connections are important to facilitate the modal transition between local and regional

services. This strategy can help facilitate more use of the regional or local transit services for commuting trips, especially to the downtown central business district.

6.3.6 Support for Future Transit Improvements

The draft proposed TTC improvements require several protections to enhance its feasibility. These are outlined below:

- Extending Route 78 St. Andrews would require protecting for transit operations on Hawksbury Drive and Bayview Mews Lane due to the constraints at the intersection.
- Property for a bus loop on the east side of Bayview Avenue between Sheppard Avenue and Bayview Mews Lane should be identified. A bus loop would promote transit to Bayview Village, provide improved facilities for operators, and expand on potential transit service improvements for other nearby routes. A bus loop would also be able to connect the active transportation network and the transit network.

Road design can also facilitate the use of transit. Based on consultation with the TTC, transit riders prefer direct transit access to North York General Hospital rather than walk from Leslie Station. The draft proposed bus route changes to 51 Leslie would split the existing bus route into two bus routes, both serving North York General Hospital. There is a need to explore streamlined bus access to the hospital. Opportunities include bus-only lanes on Esther Shiner Boulevard to access the overpass over Leslie Street and maintain bus exceptions for through-traffic.

7.0 Sustainability Initiatives

This section describes the City's other sustainability initiatives that can be incorporated within this study including supporting electric vehicles and building infrastructure while considering resilience.

7.1 TransformTO Net Zero Strategy

Toronto City Council has adopted a strategy to reduce community-wide greenhouse gas (GHG) emissions in Toronto to net zero by 2040. The City's GHG reduction targets, from 1990 levels, are:

- 30% by 2020
- 40% by 2025
- 65% by 2030
- Net zero by 2040

Short-term recommendations identified through the strategy include:

- Support safe cycling and walking
- Provide enhanced transit service
- Develop a low-carbon freight strategy
- Enable electric vehicles (EVs)

7.2 Electric Vehicle Initiatives

TransformTO outlines that 100% of transportation shall use zero-carbon energy by 2050. The Federal Government has also announced that they will require 100% of car and passenger truck sales in Canada to be zero-emissions by 2035.

The City has supported the consumer adoption of electric vehicles by creating parking standards for new developments making the provision of EV-ready stalls compulsory. The Toronto Green Standard Version 4, adopted by City Council in July 2021, requires 100% of residential parking spaces (excluding visitor spaces) to be equipped with an energized outlet capable of providing Level 2 charging or higher to the parking spaces. Since December 2021, the City's parking zoning by-law indicated that all parking spaces for residents be EV Ready and that 25% of all other parking spaces in development must also be EV Ready.

The City has also supported the consumer adoption of electric vehicles by installing on-street EV charging stations. This practice started in 2020 as a pilot. In 2022, the City committed to installing 32 additional on-street EV charging stations for 17 residential on-street permit parking locations. In 2023, the Toronto Parking Authority will take full responsibility for the operations and maintenance of all existing and future on-street chargers.

The City plans to begin a City-wide Parking Strategy in 2023. There is an opportunity for the ReNew Sheppard East study to collaborate with the Parking Strategy to understand if there will be a sufficient level of EV-charging stations provided either through private developments or municipal parking spaces by 2051.

7.3 Incorporating Resilience

The City's Resilience Strategy sets the vision, goals, and actions to help Toronto survive, adapt, and thrive in the face of any challenge, particularly climate change and growing inequities. A specific action item from the Resilience Strategy that could be integrated with this study is to communicate, synthesize and scale up ongoing City efforts to advance a system of green and blue infrastructure.

The risk of climate shocks and stresses can be mitigated through the development of a network of green and blue infrastructure. This type of infrastructure purposefully and carefully integrates natural elements into the built environment in ways that can help protect against flooding, mitigate the heat island effect, and improve air, soil, and water quality.

Green and blue infrastructure can include:

- Bioswales
- Urban forestry
- Wetland habitats
- Green streets

The integration of green and blue infrastructure with transit stations, parks / parkettes, and other community spaces would not only enhance the public realm but also have a positive impact on climate change mitigation.

7.4 TTC Green Initiatives

The TTC has set goals to attain a zero-emissions bus fleet that will continue to deliver safe and reliable service. The targets set include 50% of their fleet be zero-emissions by 2028 to 2032 and 100% of their fleet be zero emissions by 2040. The TTC will be trialing a variety of bus models that operate on green technologies.

8.0 Vision, Guiding Principles, and Objectives

8.1 Vision

Since the opening of the Sheppard Subway, development has extended eastward along the Sheppard East corridor from the North York Centre in support of significant investments in public transit. Investments in multi-modal transportation will support the transformation of the area from auto-oriented to one that reduces auto dependency and supports a pedestrian oriented street network. The study area will enhance the identity and sense of place to reinforce existing assets and local features to build a mixed-use, transit supportive community.

The vision for the ReNew Sheppard Study Area is to create a complete, liveable, connected, prosperous, sustainable, and resilient mixed-use community. The study area identifies Distinctive Nodes and Character Areas that will accommodate a balanced mix of housing and built form (building types, tenures, and affordability), diverse commercial uses that support employment opportunities, and build upon community services and facilities.

The street network within the ReNew Sheppard Study Area will support investments in multi-modal transportation and leverage local and regional transportation infrastructure. New streets and connections will support sustainable mobility choices to connect residents and workers to employment, community assets, and residential communities, while supporting goals to reduce car dependency.

8.2 Guiding Principles

The ReNew Sheppard East Secondary Plan is informed by the following Guiding Principles:

Complete Community

- Will encourage a mix of land uses to support daily needs, employment opportunities, and access to community services and facilities.
- A mix of housing options to provide a range of housing choice for people of all ages and abilities across the housing spectrum.

Liveable Community

- A multi-functional, welcoming, and resilient public realm network comprised of parks and open spaces that offer ample opportunities for passive and active recreation, social gathering, and connection to nature.
- Compact development that defines a pedestrian oriented streetscape with comfortable conditions for all users, ages, and abilities.

- Provide varied building heights with transition in intensity and scale to build on existing character and to reflect transit-oriented communities.

Connected Community

- Improve and provide a safe comfortable and connected pedestrian and cycling environment at transit stations.
- Enhance and provide sustainable and active transportation choices.
- Optimize the use of TTC Subway Stations and the Oriole GO Station.
- Establish a complete and balanced transportation network that connects residents and workers to important community destinations.

Prosperous Community

- Will build upon existing healthcare resources such as the North York General Hospital, and other institutional uses.
- Support the expansion of employment and service uses with connections to local and regional transit. A diverse range of new types of business opportunities will be encouraged.

Sustainability and Resilient Community

- Promote sustainable and resilient communities by incorporating low impact design measures, absorbing stormwater on-site, and growing the urban tree canopy.
- Recognize Don River Valley as an important natural heritage asset and destination for the study area. Protect and enhance the ravine adjacent to Don East River to balance its recreational and ecological functions.
- Will support the reuse of materials through the development and construction process.

8.3 Transportation Planning Objectives

This section describes the various planning objectives that are intended to further guide the transportation network within the ReNew Sheppard East study area to 2051.

8.3.1 Growth Management Objectives

There are a mix of land uses within the ReNew Sheppard Study Area with varying densities of employment and residential communities. Commercial activity is generally located along the Sheppard Avenue corridor close to Bayview TTC Station, Bessarion TTC Station, and Leslie TTC Station.

The Integration of land use and transportation planning allows for the development of more complete communities where a community offers a wide range of amenities, services, and opportunities within a compact and accessible area. Managing the study

area's population and employment growth to develop a complete community promotes shorter distance trips within the community, less reliance on personal vehicles, and can increase the adoption of active transportation modes which supports a healthier and more sustainable lifestyle.

8.3.2 Placemaking and Sociability Objectives

One of the primary objectives of transportation planning is to develop a transportation system that provides safe, accessible, and affordable transportation options to connect people to jobs, education, healthcare, social services, and other essential institutions. This transportation planning objective revolves around the concept of mobility. While mobility plays a critical role in our society, transportation planning has also evolved to support the building of great places and sociability.

The sociability of a community refers to communities that offer more opportunities for social interaction between residents and visitors. Sociable cities enhance the community's vibrancy improving the quality of life. Transportation planning can support this objective by ensuring that the transportation network acts as a catalyst for people to interact. This objective can be accomplished if streets are perceived as safe and comfortable and support the congregation of people in community spaces. As public realm enhances and sociability increases, the desire to want to take sustainable modes of transportation such as walking and transit can also increase.

Transportation systems and programs can combat social isolation and loneliness and build stronger and healthier communities. Strategies can include investments in creative programs that make use of transportation infrastructure. Examples include:

- Safe Routes to School and walking school bus programs: These programs create greater social connections between schools, parents, and students utilizing the walkability of neighborhoods surrounding schools.
- Play Streets: A temporary closure of public streets to create a safe space for active play, which offers students and parents a place to meet and build a sense of community.
- Little Free Library around Public Transit Stops: Little Free Library is a nonprofit organization that promotes neighbourhood book exchanges, usually in the form of a public bookcase.
- Transforming trails into walkable art galleries.

8.3.3 Transportation Equity Objectives

An equitable transportation system ensures that the distribution of infrastructure and programs ensure that oppressed and underserved communities have reasonably equal transportation benefits and impacts as communities better served by the transportation system. Recent transportation planning principles have considered equity. For

example, Vision Zero seeks to ensure that vulnerable road users, such as pedestrians and cyclists, are provided infrastructure to ensure robust safety and protection. Complete Streets seeks to ensure that a transportation system is built for all road users, regardless of age or ability.

However, transportation equity analysis is important, as transportation planning decisions can have significant impacts on the community. The impacts of these decisions include:

- Household expenditures: Transportation and living costs usually make up a significant portion of household spending.
- Access to jobs: Employment opportunities are limited to people having reasonable and consistent access to mobility choices.
- Transportation infrastructure imposes indirect and external costs such as pollution, vehicular accidents, and congestion delay. These costs usually affect certain populations, such as low-income neighbourhoods, disproportionally.

8.3.4 Transportation Sustainability Objectives

Sustainable transportation planning refers to the development of a transportation network that reduces resource use, including energy, while still meeting the transportation needs of the community. The Centre for Sustainable Transportation defined a sustainable transportation system as one that:

- Allows individuals and societies to meet their access needs safely and in a manner consistent with human and ecosystem health and with equity within and between generations.
- Is affordable, operates efficiently, offers a choice of transport mode, and supports a vibrant economy.
- Limits emissions and waste to within the planet's ability to absorb them, minimizes consumption of non-renewable resources, limits consumption of renewable resources to the sustainable yield level, reuses and recycles its components, and minimizes the use of land and the production of noise.

One approach to obtaining transportation sustainability is to focus on planning for all modes of transportation. Transportation planning should identify strategies to increase walking, cycling, transit, rideshare, and teleworking. Planning should recognize that these transportation modes should not be treated in isolation, but some synergies exist between them. Planning for these synergies, such as walk-access to transit, should also be considered in the planning process.

Another consideration for obtaining transportation sustainability is minimizing the transportation system's reliance on impervious surfaces that increase the amount of runoff from precipitation. Increased runoff increases the risk of floods. Strategies to reduce its reliance include ensuring the road network at the mid-blocks and intersections

is not wider than they need to be, maximizing the existing parking supply before considering new parking structures and paved spaces, and the use of green infrastructure or low-impact development. Green infrastructure within a transportation system can include the use of swales, permeable pavement, and the use of bioretention areas and rain gardens.

9.0 Future Conditions Assessment

9.1 Land Use Scenario

Long-term population and employment forecasts were provided by the City of Toronto's Planning Division and reflect a growth scenario reflecting the greatest intensification of the ReNew Sheppard Study Area (i.e., "Option 1"). This future condition assessment uses this growth scenario for the purposes of understanding and preparing for the "worst case." The City is currently finalizing the preferred growth scenario which, at this time, may or may not be the "Option 1" scenario.

Growth forecasts were provided for eight traffic zones within the ReNew Sheppard Study Area, as shown in Figure 9-1. The corresponding population and employment forecasts for each zone is summarized in Figure 9-1.

Figure 9-1: Traffic Zones

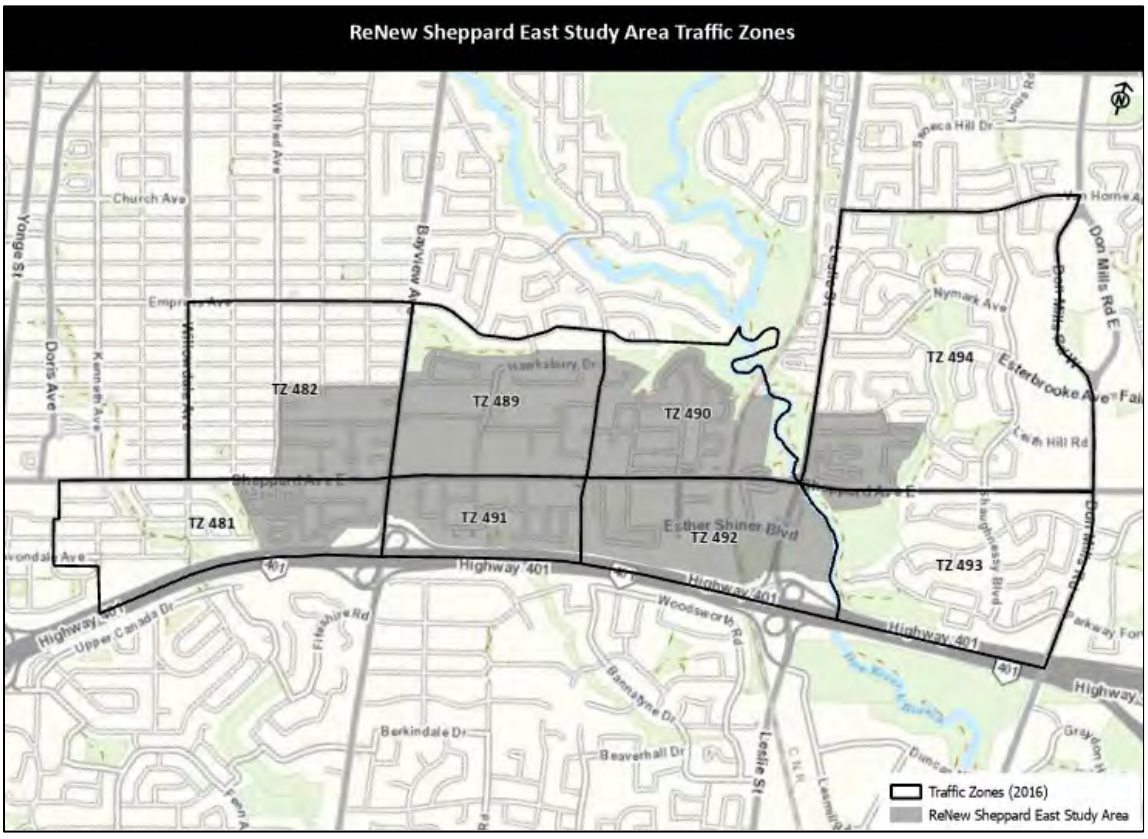


Table 9-1: Population and Employment Forecasts

Population (Resident) Forecasts

Traffic Zone	2021	2041 (Assumed)	Net Growth	% Growth Rate Per Annum
481	2,760	10,490	7,730	7%
482	3,920	15,050	11,130	7%
489	4,766	14,670	9,904	6%
490	1,204	7,690	6,486	10%
491	6,580	17,030	10,450	5%
492	4,366	25,385	21,019	9%
493	2,863	2,865	2	0%
494	12,481	19,420	6,939	2%
Total	**38,940**	**112,600**	**73,660**	**5%**

Employment (Jobs) Forecasts

Traffic Zone	2021	2041 (Assumed)	Net Growth	% Growth Rate Per Annum
481	1,029	2,385	1,356	4%
482	845	2,030	1,185	4%
489	1,712	3,685	1,973	4%
490	1,586	1,565	-21	0%
491	814	1,065	251	1%
492	5,619	11,990	6,371	4%
493	346	345	-1	0%
494	700	1,665	965	4%
Total	**12,651**	**24,730**	**12,079**	**3%**

As shown, the study area is anticipated to experience significant intensification, with population planned to triple and employment planned to double over the long-term. Dense, built-up urban areas like the City of Toronto typically see 0% to 1% growth per annum. For example, between 2016 to 2021, the City of Toronto's population grew by 0.5% per annum from 2,731,571 to 2,794,356. The 5% per annum planned population growth to 2041 in the study area outpaces typical growth within the city. However, with a 3% per annum growth in jobs, the mixed-use densification may provide opportunities to shift trips to more sustainable modes of transportation. This is explored in the subsequent sections.

9.2 Multi-modal Transportation Assessment

A transportation assessment was conducted to consider the impacts and potential mitigation solutions to manage the growth as part of a land use scenario with the greatest intensification.

9.2.1 Travel Demands

Future travel demands were forecasted based on estimated population and employment allocations for each traffic zone in the study area as summarized in Table 9-1. To inform congested road segments in the area, vehicular trip rates were derived based on 2016 Transportation Tomorrow Survey (TTS) data and applied to the net growth in residents and jobs to project future travel demands. The following vehicular trip rates, reflecting the trips produced and attracted to the study area, were applied:

- Resident Trip Rate: 0.11 vehicle trips per resident.
- Employee Trip Rate: 0.56 vehicle trips per job.

However, it should be recognized that these trip rates reflect the pre-pandemic (prior to 2020) demands. Since the onset of the pandemic, telecommuting (work-from-home) has become more prevalent as companies have opted for a more flexible or hybrid work model. Therefore, the vehicle trip rates are likely an overestimation. In addition, the application of the above rates assumes a "business-as-usual" scenario whereby the existing auto mode split of 68% is maintained.

The projected additional trips associated with the "Option 1" growth scenario in the study area is provided in Table 9-2. These additional vehicular trips were assigned and distributed throughout the study network based on the availability of existing accesses for each of the traffic zones.

Table 9-2: Net Vehicular Trip Growth During the Peak Hour

Traffic Zone (2016)	Net Population Growth	Net Employment Growth	Net Resident Trips	Net Employee Trips	Additional Total Trips
481	7,730	1,356	836	760	1,596
482	11,130	1,185	1,204	664	1,868
489	9,904	1,973	1,071	1,105	2,177
490	6,486	0	702	0	702
491	10,450	251	1,130	141	1,271
492	21,019	6,371	2,274	3,569	5,843
493	2	-1	0	0	0
494	6,939	965	751	541	1,291
Total	**73,660**	**12,100**	**7,968**	**6,779**	**14,746**

9.2.2 Link Capacity Analysis

It is estimated that an additional 14,700 vehicles will use the study road network during both morning and afternoon peak hours as a result of the forecasted population and employment growth. The major travel corridors within the ReNew Sheppard Study Area are currently limited to just Sheppard Avenue East, Bayview Avenue, and Leslie Street, each of which will generally provide two travel lanes or service 1,800 vehicles per hour per direction in the future. The results of the future capacity analysis for the morning peak hour are shown in Table 9-4. The results of the future capacity analysis for the afternoon peak hour are shown in Table 9-5.

The volume to capacity (v/c) ratio represents the sufficiency for the road segment to accommodate vehicular demand. A description of typical v/c thresholds is shown in Table 9-3.

Table 9-3: V/C Ratio Threshold Description

V/C Ratio	Description
<0.85	Road segment is operating under capacity and congestion is normally not experienced.
0.85 to0.95	Road segment is operating near its capacity. Higher delays may occur, but typically not for long periods of time.
0.95 to 1.0	Road segment is on the verge of congested conditions and may experience higher delays during the peak hours of the day.
>1.0	The demand exceeds the available capacity of the road segment. High delays may be experienced for extended periods of time.

A volume-to-capacity ratio of 0.90 or less is typically considered acceptable as it indicates a Level of Service (LOS) of D or above. A LOS of E or F is usually considered not acceptable and would warrant the need for mitigation measures or improvement. However, the typical threshold of 0.90 is not specific to rural, sub-urban, or urban environments. For the City of Toronto, specifically in the ReNew Sheppard Study Area, a v/c threshold must consider the realities of an urban environment and the need to prioritize its most critical corridors, along with the mobility of road users beyond the automobile (i.e., pedestrians and cyclists). For these reasons, the v/c threshold for determining corridors that require improvement was set to 1.0. This indicates that corridors that are experiencing used capacity greater than 100% should be identified for improvement.

Table 9-4: 2051 Future Capacity Analysis (AM Peak Hour)

Northbound / Eastbound

Road	From	To	Future Demand	Capacity (Vehicles per Hour per Direction)	Used Capacity
Sheppard Avenue East	Wilfred Avenue	Bayview Avenue	1,960	1,800	109%
Sheppard Avenue East	Bayview Avenue	Bessarian Road / Burbank Drive	3,378	1,800	188%
Sheppard Avenue East	Bessarian Road / Burbank Drive	Provost Drive / Ambrose Road	4,548	1,800	253%
Sheppard Avenue East	Provost Drive / Ambrose Road	Leslie Street	1,827	1,800	102%
Sheppard Avenue East	Leslie Street	Shaughnessy Boulevard	2,454	2,700	91%
Esther Shiner Road	Provost Drive / Ambrose Road	Old Leslie Street	1,087	1,800	60%
Esther Shiner Road	Old Leslie Street	Leslie Street	1,281	1,800	71%
Bayview Avenue	Hollywood Avenue	Bayview Mews Lane	2,816	1,800	156%
Bayview Avenue	Bayview Mews Lane	Sheppard Avenue East	2,611	1,800	145%
Old Leslie Street	Sheppard Avenue East	Highway 401	1,018	1,800	57%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	920	900	102%
Leslie Street	Marowyne Drive	Sheppard Avenue East	2,152	1,800	120%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	754	2,700	28%

Southbound / Westbound

Road	From	To	Vehicles	Capacity (Vehicles per Hour per Direction)	Used Capacity
Sheppard Avenue East	Wilfred Avenue	Bayview Avenue	3,971	1,800	221%
Sheppard Avenue East	Bayview Avenue	Bessarian Road / Burbank Drive	2,897	1,800	161%
Sheppard Avenue East	Bessarian Road / Burbank Drive	Provost Drive / Ambrose Road	4,238	1,800	235%
Sheppard Avenue East	Provost Drive / Ambrose Road	Leslie Street	3,546	1,800	197%
Sheppard Avenue East	Leslie Street	Shaughnessy Boulevard	1,886	1,800	105%
Esther Shiner Road	Provost Drive / Ambrose Road	Old Leslie Street	672	1,800	37%
Esther Shiner Road	Old Leslie Street	Leslie Street	429	1,800	24%
Bayview Avenue	Hollywood Avenue	Bayview Mews Lane	1,657	1,800	92%
Bayview Avenue	Bayview Mews Lane	Sheppard Avenue East	1,454	1,800	81%
Old Leslie Street	Sheppard Avenue East	Highway 401	3,940	2,700	146%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	467	900	52%
Leslie Street	Marowyne Drive	Sheppard Avenue East	1,509	1,800	84%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	3,743	2,700	139%

Table 9-5: 2051 Future Capacity Analysis (PM Peak Hour)

Northbound / Eastbound

Road	From	To	Future Demand	Capacity (Vehicles per Hour per Direction)	Used Capacity
Sheppard Avenue East	Wilfred Avenue	Bayview Avenue	2,541	1,800	141%
Sheppard Avenue East	Bayview Avenue	Bessarian Road/Burbank Drive	4,363	1,800	242%
Sheppard Avenue East	Bessarian Road / Burbank Drive	Provost Drive / Ambrose Road	4,047	1,800	225%
Sheppard Avenue East	Provost Drive / Ambrose Road	Leslie Street	1,914	1,800	106%
Sheppard Avenue East	Leslie Street	Shaughnessy Boulevard	2,630	2,700	97%
Esther Shiner Road	Provost Drive / Ambrose Road	Old Leslie Street	819	1,800	46%
Esther Shiner Road	Old Leslie Street	Leslie Street	1,156	1,800	64%
Bayview Avenue	Hollywood Avenue	Bayview Mews Lane	2,351	1,800	131%
Bayview Avenue	Bayview Mews Lane	Sheppard Avenue East	2,049	1,800	114%
Old Leslie Street	Sheppard Avenue East	Highway 401	1,203	1,800	67%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	441	900	49%
Leslie Street	Marowyne Drive	Sheppard Avenue East	2,738	1,800	152%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	1,495	2,700	55%

Southbound / Westbound

Road	From	To	Vehicles	Capacity (Vehicles per Hour per Direction)	Used Capacity
Sheppard Avenue East	Wilfred Avenue	Bayview Avenue	3,417	1,800	190%
Sheppard Avenue East	Bayview Avenue	Bessarian Road/Burbank Drive	2,372	1,800	132%
Sheppard Avenue East	Bessarian Road / Burbank Drive	Provost Drive / Ambrose Road	3,753	1,800	208%
Sheppard Avenue East	Provost Drive / Ambrose Road	Leslie Street	4,237	1,800	235%
Sheppard Avenue East	Leslie Street	Shaughnessy Boulevard	2,077	1,800	115%
Esther Shiner Road	Provost Drive / Ambrose Road	Old Leslie Street	1,586	1,800	88%
Esther Shiner Road	Old Leslie Street	Leslie Street	984	1,800	55%
Bayview Avenue	Hollywood Avenue	Bayview Mews Lane	2,399	1,800	133%
Bayview Avenue	Bayview Mews Lane	Sheppard Avenue East	1,552	1,800	86%
Old Leslie Street	Sheppard Avenue East	Highway 401	3,255	2,700	121%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	935	900	104%
Leslie Street	Marowyne Drive	Sheppard Avenue East	1,180	1,800	66%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	2,865	2,700	106%

A link capacity analysis with these additional trips assigned indicate that the following issues during the AM and / or PM peak hour:

- Sheppard Avenue East (Eastbound and Westbound) between Wilfred Avenue and Leslie Street will significantly exceed capacity (up to 253% used capacity).
- Bayview Avenue (Northbound and Southbound) north of Bayview Mews Lane will exceed capacity (up to 156% used capacity).
- Bayview Avenue (Northbound) between Bayview Mews Lane and Sheppard Avenue East will exceed capacity (up to 145% used capacity).
- Bayview Avenue (Southbound) south of Sheppard Avenue East will exceed capacity by up to 146%.
- Old Leslie Street (Northbound and Southbound) between Sheppard Avenue East and Esther Shiner Boulevard will be at capacity.
- Leslie Street (Northbound) north of Sheppard Avenue East will exceed capacity (up to 152%).
- Leslie Street (Southbound) between Sheppard Avenue East and Esther Shiner Boulevard will exceed capacity (up to 139%).
- Leslie Street (Northbound and Southbound) south of Esther Shiner Boulevard will exceed capacity (up to 175%).

9.2.3 Target Mode Share

A review of 2016 TTS data indicate that the mode splits during the morning peak period for residents currently residing within the ReNew Sheppard Study Area are as follows:

- Auto driver or passenger: 68%
- Non-auto mode share: 31%:
  - Transit (GO rail and/or local transit): 25%
  - Cycle: 0.4%
  - Walk: 5%
- Other (motorcycle, school bus, taxi passenger and paid rideshare): 1%

With the intensification of the area to support mixed-use lands and the planned improvements to encourage a shift to sustainable (non-auto) modes, including the cycle track proposed along Sheppard Avenue and the relocation of the Oriole GO Station to the existing Leslie TTC Subway Station, the non-auto mode share is anticipated to increase over the next 20 years. To ensure that the transportation network within the study area can accommodate and manage the anticipated growth, a non-auto mode share target was established.

This mode share target was established based on the potential for certain types of existing driving trips to be converted to sustainable modes. The steps included the following:

1. Existing trip patterns and person characteristic data from TTS were first assessed.

2. Based on this assessment, a lower mode share target and a higher, more aggressive mode share was established. This was to provide realistic and contextualized upper and lower bounds for determining the target mode share.

3. Benchmarked areas within the City were compared for mode share, population, employment, and employment-to-population ratio.

Step 1:

The assessment indicated that of all the existing auto driver or passenger trips destined to / originating from the ReNew Sheppard Study Area during the morning peak period (6:00 to 9:00 a.m.), 35% are less than 7.5 km in length. With the addition of and protection for cycling facilities, there is anticipated to be some level of increased uptake in cycling for those who are within a reasonable biking distance to their destination. For reference, the average biking trip for residents in the study area was 7.5 km in 2019 per the Sheppard East Corridor – Transportation Review (2019/2020).

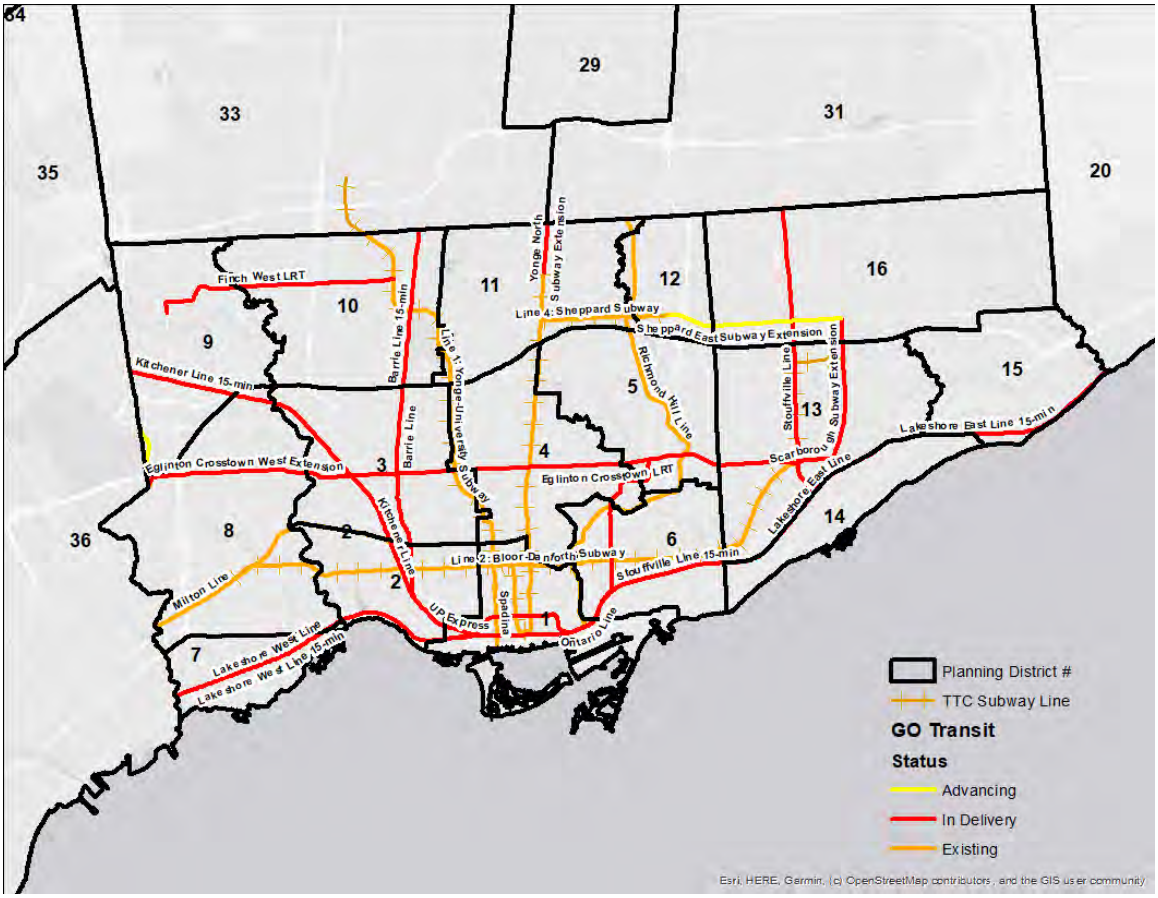
- The shorter (< 1 km) trips make up 3% of existing auto trips, which have the potential to be shifted to walking trips in the future.

Therefore, Future Scenario #1 is defined as a scenario where all driving trips less than 7.5 km in length (35% of existing driving trips) are converted to cycling trips. For reference, this is slightly more aggressive than TransformTO which indicates that 75% of school / work trips under 5 km are walked, biked, or by transit.

Converting auto trips to more sustainable modes will be further supported by planned higher-order transit improvements, as illustrated in Figure 9-3. The Sheppard Subway Extension and Yonge-North Subway Extension will help facilitate this shift as proposed stations and stops are anticipated to be located within 7.5 km of residents within the ReNew Sheppard Study Area.

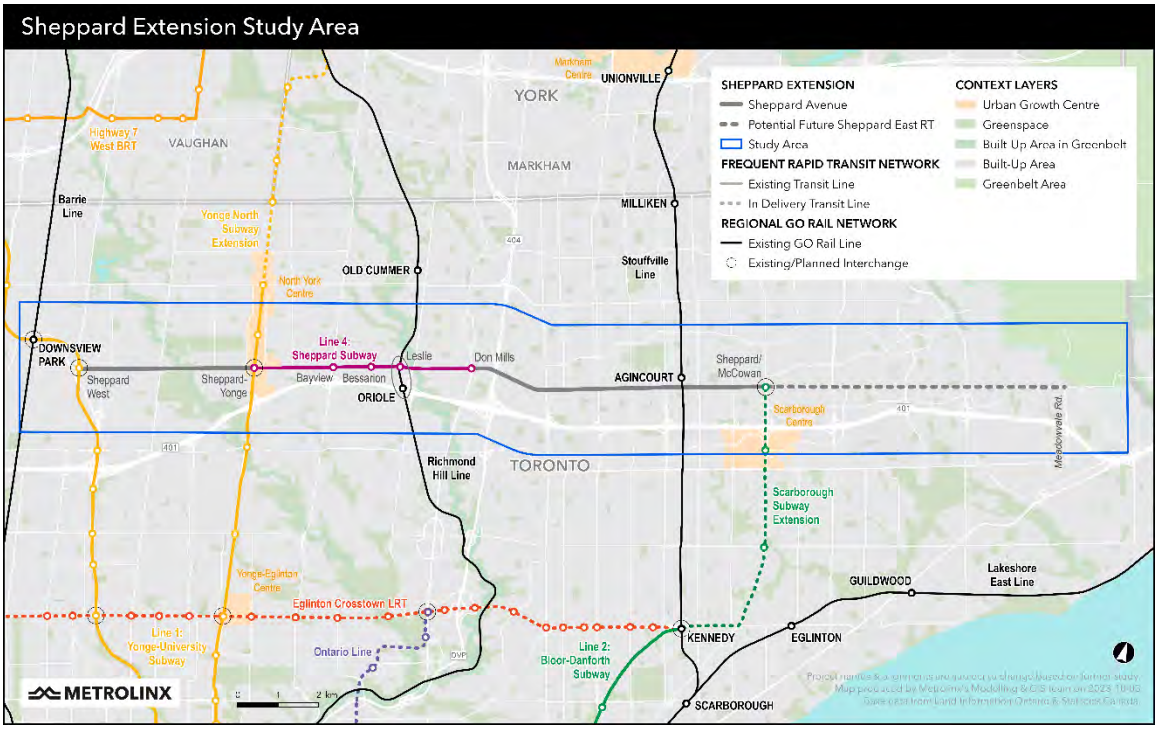
The assessment also indicated that of all the existing auto driver or auto passenger trips destined to / originating from the ReNew Sheppard Study Area during the morning peak period (6:00 to 9:00 a.m.), 22% are greater than 7.5 km in length and accessible via transit; more specifically, these existing auto trips are travelling to/from TTS Planning Districts (Zones 1, 4, 5, 11, and 12) which are located within close proximity to TTC's Line 1 (Yonge-University) subways highlighted in Figure 9-2. Given the proximity of the Leslie and Bayview Subway Station and Oriole GO, which will provide direct access to/from Union Subway Station, this may become an increasingly attractive option for travelers. Additionally, with the implementation of Metrolinx's One Fare Program on February 26, 2024, undertaking joint trips with GO Transit and TTC will be more affordable as transit riders would only need to pay once.

Figure 9-2: TTS Zones (Planning Districts) Close to Line 1



Further, as mentioned, planned transit improvements illustrated in Figure 9-3 can help further encourage and shift existing longer distance auto trips to transit. The Eglinton Crosstown LRT and Scarborough Subway Extension, in particular, provide connecting transfers from the Line 4 / Line 1 Subway and Sheppard Avenue buses, respectively. For reference, approximately 19% of existing origin-destination auto trips would benefit from these transit connections (i.e., proportion of trips travelling to / from TTS Planning District 13). The planned Finch Light Rail Transit (LRT) and Ontario Line are also noted to help expand the transit network; however, given the location of these proposed connections, it is anticipated that the shift for those who are currently using their car to travel would be minor. Therefore, this assessment assumes that the Eglinton LRT, Scarborough Subway Extension, the Finch LRT and Ontario Line would shift an additional 3% of auto trips to transit.

Figure 9-3: Planned Transit Improvements



Therefore, Future Scenario #2 is defined as a scenario where all driving trips greater than 7.5 km in length but are close to Line 1 (22% of existing trips) are converted to transit and planned transit improvements provide an additional 3% in modal shift. Therefore, Future Scenario #2 assumes a modal share shift of 25% of auto trips to transit.

Step 2:

Based on the above, it is estimated that, as a lower threshold, 35% of the current auto trips have the potential to be realistically shifted to sustainable modes. This translates to a future non-auto mode split of 46%. This is achieved if all auto driving / passenger trips that are less than 7.5 km in length are converted to cycling and/or walking trips (Future Scenario #1).

Based on the above, it is estimated that, as an upper threshold, 60% of the current auto trips have the potential to be shifted to sustainable modes. This translates to a future non-auto mode split of 72%. This is achieved if Future Scenario #1 is achieved, if all driving trips greater than 7.5 km in length but are close to Line 1 are converted to transit (Future Scenario #2), and planned transit improvements are implemented.

Therefore, the target non-auto modal split can be assumed to be between 46% and 72%.

Step 3:

Three areas of the city were benchmarked as comparable areas to the ReNew Sheppard Study Area. The benchmarks are shown in Table 9-6.

Table 9-6: Mode Split Benchmarks

	Auto Mode Split (AM Peak)	Non-auto (AM Peak)	Population	Employment	Employment-to-Population Ratio
ReNew Sheppard (2041)	-	-	112,600	24,730	0.22
Downtown	27%	73%	229,500	502,500	2.19
North York City Centre	59%	41%	42,500	119,500	2.81
Midtown Yonge	48%	52%	107,500	42,000	0.39

Based on the benchmarks, Midtown Yonge has similar magnitudes of population, employment, and a higher employment-to-population ratio than the land use mix in ReNew Sheppard by 2041. With Midtown Yonge having a higher employment-to-population ratio and located along Line 1, the ReNew Sheppard Study Area should realistically have an achievable non-auto mode share target that is slightly lower than Midtown Yonge. Therefore, for ReNew Sheppard, a target modal split is assumed to be 50% auto and 50% non-auto.

As shown in Table 9-7, based on a 50% auto / 50% non-auto modal split, the following road corridors remain well over capacity in the AM peak period:

- Sheppard Avenue East, between Bayview Avenue and Bessarion Road / Burbank Drive (Eastbound).
- Sheppard Avenue East, between Bessarion Road and Provost Drive / Ambrose Road (Eastbound).
- Sheppard Avenue West, between Provost Drive and Leslie Street (Westbound).
- Bayview Avenue, between Sheppard Avenue East and Hollywood Avenue (Northbound).
- Leslie Street, between Sheppard Avenue West and Highway 401 (Southbound).

As shown in Table 9-8, based on a 50% auto / 50% non-auto modal split, the following road corridors remain well over capacity in the PM peak period:

- Sheppard Avenue East, between Wilfred Avenue and Bayview Avenue (Eastbound).
- Sheppard Avenue East, between Bayview Avenue and Bessarion Road / Burbank Drive (Eastbound).

- Sheppard Avenue East, between Bessarion Road and Provost Drive / Ambrose Road (Eastbound).
- Sheppard Avenue West, between Leslie Street and Shaughnessy Boulevard (Westbound).
- Leslie Street, between Marowyne Drive and Sheppard Avenue East (Northbound).

With the planned transportation network in place with a 50% auto and a 50% non-auto mode share, the multi-modal transportation assessment indicates that there are several street segments within the ReNew Sheppard Study Area that will experience some constraints to auto capacity until the ultimate of 70% non-auto mode share is achieved. With a mode share of 70%, the future capacity analysis for the AM peak hour is shown in Table 9-9 and the future capacity analysis for the PM peak hour is shown in Table 9-10.

To support a mode shift toward 70% non-auto, all planned and proposed infrastructure improvements examined through this study should be implemented. Providing infrastructure for a more balanced and multi-modal transportation network will allow for a more resilient and effective transportation network. Additionally, one of the two mode share scenarios or some combination of the two should be achieved.

1. At least a 70% non-auto modal share is required which can be achieved if most existing driving trips within 7.5 km is converted to non-driving trips like cycling and walking, and if most existing driving trips greater than 7.5 km is converted to transit trips.

2. Travel demand management (TDM) strategies are undertaken to decrease overall travel demand.

Multi-modal transportation strategies, solutions, and policies to achieve these two scenarios are outlined in Chapter 10.

Table 9-7: 2051 Future Capacity Analysis (AM Peak Hour) with 50% Modal Split

Northbound / Eastbound

Road	From	To	Future Demand	Capacity (Vehicles per Hour per Direction)	Used Capacity
Sheppard Avenue East	Wilfred Avenue	Bayview Avenue	1,568	1,800	87%
Sheppard Avenue East	Bayview Avenue	Bessarian Road / Burbank Drive	2,703	1,800	150%
Sheppard Avenue East	Bessarian Road / Burbank Drive	Provost Drive / Ambrose Road	3,638	1,800	202%
Sheppard Avenue East	Provost Drive / Ambrose Road	Leslie Street	1,462	1,800	81%
Sheppard Avenue East	Leslie Street	Shaughnessy Boulevard	1,964	2,700	73%
Esther Shiner Road	Provost Drive / Ambrose Road	Old Leslie Street	870	1,800	48%
Esther Shiner Road	Old Leslie Street	Leslie Street	1,025	1,800	57%
Bayview Avenue	Hollywood Avenue	Bayview Mews Lane	2,253	1,800	125%
Bayview Avenue	Bayview Mews Lane	Sheppard Avenue East	2,089	1,800	116%
Old Leslie Street	Sheppard Avenue East	Highway 401	814	1,800	45%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	736	900	82%
Leslie Street	Marowyne Drive	Sheppard Avenue East	1,721	1,800	96%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	603	2,700	22%

Southbound / Westbound

Road	From	To	Vehicles	Capacity (Vehicles per Hour per Direction)	Used Capacity
Sheppard Avenue East	Wilfred Avenue	Bayview Avenue	3,177	1,800	177%
Sheppard Avenue East	Bayview Avenue	Bessarian Road / Burbank Drive	2,317	1,800	129%
Sheppard Avenue East	Bessarian Road / Burbank Drive	Provost Drive / Ambrose Road	3,391	1,800	188%
Sheppard Avenue East	Provost Drive / Ambrose Road	Leslie Street	2,837	1,800	158%
Sheppard Avenue East	Leslie Street	Shaughnessy Boulevard	1,509	1,800	84%
Esther Shiner Road	Provost Drive / Ambrose Road	Old Leslie Street	538	1,800	30%
Esther Shiner Road	Old Leslie Street	Leslie Street	343	1,800	19%
Bayview Avenue	Hollywood Avenue	Bayview Mews Lane	1,326	1,800	74%
Bayview Avenue	Bayview Mews Lane	Sheppard Avenue East	1,164	1,800	65%
Old Leslie Street	Sheppard Avenue East	Highway 401	3,152	2,700	117%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	374	900	42%
Leslie Street	Marowyne Drive	Sheppard Avenue East	1,207	1,800	67%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	2,995	2,700	111%

Table 9-8: 2051 Future Capacity Analysis (PM Peak Hour) with 50% Modal Split

Northbound / Eastbound

Road	From	To	Future Demand	Capacity (Vehicles per Hour per Direction)	Used Capacity
Sheppard Avenue East	Wilfred Avenue	Bayview Avenue	2,033	1,800	113%
Sheppard Avenue East	Bayview Avenue	Bessarian Road / Burbank Drive	3,490	1,800	194%
Sheppard Avenue East	Bessarian Road / Burbank Drive	Provost Drive / Ambrose Road	3,238	1,800	180%
Sheppard Avenue East	Provost Drive / Ambrose Road	Leslie Street	1,531	1,800	85%
Sheppard Avenue East	Leslie Street	Shaughnessy Boulevard	2,104	2,700	78%
Esther Shiner Road	Provost Drive / Ambrose Road	Old Leslie Street	655	1,800	36%
Esther Shiner Road	Old Leslie Street	Leslie Street	925	1,800	51%
Bayview Avenue	Hollywood Avenue	Bayview Mews Lane	1,881	1,800	104%
Bayview Avenue	Bayview Mews Lane	Sheppard Avenue East	1,639	1,800	91%
Old Leslie Street	Sheppard Avenue East	Highway 401	962	1,800	53%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	353	900	39%
Leslie Street	Marowyne Drive	Sheppard Avenue East	2,191	1,800	122%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	1,196	2,700	44%

Southbound / Westbound

Road	From	To	Vehicles	Capacity (Vehicles per Hour per Direction)	Used Capacity
Sheppard Avenue East	Wilfred Avenue	Bayview Avenue	2,734	1,800	152%
Sheppard Avenue East	Bayview Avenue	Bessarian Road / Burbank Drive	1,898	1,800	105%
Sheppard Avenue East	Bessarian Road / Burbank Drive	Provost Drive / Ambrose Road	3,002	1,800	167%
Sheppard Avenue East	Provost Drive / Ambrose Road	Leslie Street	3,390	1,800	188%
Sheppard Avenue East	Leslie Street	Shaughnessy Boulevard	1,661	1,800	92%
Esther Shiner Road	Provost Drive / Ambrose Road	Old Leslie Street	1,269	1,800	70%
Esther Shiner Road	Old Leslie Street	Leslie Street	787	1,800	44%
Bayview Avenue	Hollywood Avenue	Bayview Mews Lane	1,919	1,800	107%
Bayview Avenue	Bayview Mews Lane	Sheppard Avenue East	1,241	1,800	69%
Old Leslie Street	Sheppard Avenue East	Highway 401	2,604	2,700	96%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	748	900	83%
Leslie Street	Marowyne Drive	Sheppard Avenue East	944	1,800	52%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	2,292	2,700	85%

Table 9-9: 2051 Future Capacity Analysis (AM Peak Hour) with 70% Modal Split

Northbound / Eastbound

Road	From	To	Future Demand	Capacity (Vehicles per Hour per Direction)	Used Capacity
Sheppard Avenue East	Wilfred Avenue	Bayview Avenue	1,176	1,800	65%
Sheppard Avenue East	Bayview Avenue	Bessarian Road / Burbank Drive	2,027	1,800	113%
Sheppard Avenue East	Bessarian Road / Burbank Drive	Provost Drive / Ambrose Road	2,729	1,800	152%
Sheppard Avenue East	Provost Drive / Ambrose Road	Leslie Street	1,096	1,800	61%
Sheppard Avenue East	Leslie Street	Shaughnessy Boulevard	1,473	2,700	55%
Esther Shiner Road	Provost Drive / Ambrose Road	Old Leslie Street	652	1,800	36%
Esther Shiner Road	Old Leslie Street	Leslie Street	769	1,800	43%
Bayview Avenue	Hollywood Avenue	Bayview Mews Lane	1,690	1,800	94%
Bayview Avenue	Bayview Mews Lane	Sheppard Avenue East	1,567	1,800	87%
Old Leslie Street	Sheppard Avenue East	Highway 401	611	1,800	34%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	552	900	61%
Leslie Street	Marowyne Drive	Sheppard Avenue East	1,291	1,800	72%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	452	2,700	17%

Southbound / Westbound

Road	From	To	Vehicles	Capacity (Vehicles per Hour per Direction)	Used Capacity
Sheppard Avenue East	Wilfred Avenue	Bayview Avenue	2,383	1,800	132%
Sheppard Avenue East	Bayview Avenue	Bessarian Road/Burbank Drive	1,738	1,800	97%
Sheppard Avenue East	Bessarian Road/Burbank Drive	Provost Drive/Ambrose Road	2,543	1,800	141%
Sheppard Avenue East	Provost Drive/Ambrose Road	Leslie Street	2,127	1,800	118%
Sheppard Avenue East	Leslie Street	Shaughnessy Boulevard	1,132	1,800	63%
Esther Shiner Road	Provost Drive/Ambrose Road	Old Leslie Street	403	1,800	22%
Esther Shiner Road	Old Leslie Street	Leslie Street	257	1,800	14%
Bayview Avenue	Hollywood Avenue	Bayview Mews Lane	994	1,800	55%
Bayview Avenue	Bayview Mews Lane	Sheppard Avenue East	873	1,800	48%
Old Leslie Street	Sheppard Avenue East	Highway 401	2,364	2,700	88%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	280	900	31%
Leslie Street	Marowyne Drive	Sheppard Avenue East	905	1,800	50%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	2,246	2,700	83%

Table 9-10: 2051 Future Capacity Analysis (PM Peak Hour) with 70% Modal Split

Northbound / Eastbound

Road	From	To	Future Demand	Capacity (Vehicles per Hour per Direction)	Used Capacity
Sheppard Avenue East	Wilfred Avenue	Bayview Avenue	1,524	1,800	85%
Sheppard Avenue East	Bayview Avenue	Bessarian Road / Burbank Drive	2,618	1,800	145%
Sheppard Avenue East	Bessarian Road / Burbank Drive	Provost Drive / Ambrose Road	2,428	1,800	135%
Sheppard Avenue East	Provost Drive / Ambrose Road	Leslie Street	1,148	1,800	64%
Sheppard Avenue East	Leslie Street	Shaughnessy Boulevard	1,578	2,700	58%
Esther Shiner Road	Provost Drive / Ambrose Road	Old Leslie Street	491	1,800	27%
Esther Shiner Road	Old Leslie Street	Leslie Street	694	1,800	39%
Bayview Avenue	Hollywood Avenue	Bayview Mews Lane	1,411	1,800	78%
Bayview Avenue	Bayview Mews Lane	Sheppard Avenue East	1,230	1,800	68%
Old Leslie Street	Sheppard Avenue East	Highway 401	722	1,800	40%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	265	900	29%
Leslie Street	Marowyne Drive	Sheppard Avenue East	1,643	1,800	91%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	897	2,700	33%

Southbound / Westbound

Road	From	To	Vehicles	Capacity (Vehicles per Hour per Direction)	Used Capacity
Sheppard Avenue East	Wilfred Avenue	Bayview Avenue	2,050	1,800	114%
Sheppard Avenue East	Bayview Avenue	Bessarian Road / Burbank Drive	1,423	1,800	79%
Sheppard Avenue East	Bessarian Road / Burbank Drive	Provost Drive / Ambrose Road	2,252	1,800	125%
Sheppard Avenue East	Provost Drive / Ambrose Road	Leslie Street	2,542	1,800	141%
Sheppard Avenue East	Leslie Street	Shaughnessy Boulevard	1,246	1,800	69%
Esther Shiner Road	Provost Drive / Ambrose Road	Old Leslie Street	951	1,800	53%
Esther Shiner Road	Old Leslie Street	Leslie Street	591	1,800	33%
Bayview Avenue	Hollywood Avenue	Bayview Mews Lane	1,439	1,800	80%
Bayview Avenue	Bayview Mews Lane	Sheppard Avenue East	931	1,800	52%
Old Leslie Street	Sheppard Avenue East	Highway 401	1,953	2,700	72%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	561	900	62%
Leslie Street	Marowyne Drive	Sheppard Avenue East	708	1,800	39%
Leslie Street	Sheppard Avenue East	Esther Shiner Boulevard	1,719	2,700	64%

10.0 Multi-modal Transportation Strategies and Solutions

This section outlines various strategies and recommendations to achieve a 50% to 70% non-auto mode split. New local streets, active transportation strategies, and transit strategies are required to increase the number of trips using sustainable modes. In addition, travel demand management (TDM) and land use strategies are recommended to further reduce auto demand for the study area.

10.1 Street Network Strategies

10.1.1 New Local Street Design

As indicated in Chapter 9, a 70% non-auto mode share is required to ensure that the network can function. To facilitate this 70% non-auto mode share, local road connectors should be considered to enhance the connectivity of the street network within the study area to enhance first / last mile connections and provide more direct active transportation access to Shepard Avenue.

10.1.2 Public Street Right-of-way

Local street connectors should be considered to enhance the connectivity of the street network within the study area. Based on City's design standard and complete street approach to ensure safety for all mobility users Local Street are recommended to achieve a road right-of-way width between 18.5 m to 23 m.

10.2 Active Transportation Strategies

The following active transportation strategies are required to achieve the 50% non-auto mode split.

10.2.1 Separated or Designated Active Transportation Infrastructure

Based on existing and projected traffic volumes, separated or designated active transportation infrastructure is recommended to be implemented along the following public street within the study area:

- Bayview Avenue
- Leslie Street
- Esther Shiner Boulevard
- Burbank Drive
- Old Leslie Road, between Esther Shiner Boulevard and Sheppard Avenue East
- Bessarion Road

Existing cycling infrastructure rough-ins should be used to establish north-south cycling connections.

10.2.2 Overcoming the Highway 401 Active Transportation Barrier

The Highway 401 interchanges at Bayview Avenue and Leslie Street are critical barriers for the continuation of an active transportation network if no strategies are implemented. Separated active transportation infrastructure both within and outside the public street right-of-way should be considered at these interchanges to provide seamless north-south connections across the highway.

Along Leslie Street, the separated active transportation infrastructure can use the existing Oriole GO platform to continue below Highway 401. This would avoid the ramp interchange and can rejoin Leslie Street south of Highway 401 to provide an off-road connection.

Along Bayview Avenue, an off-road multi-use trail going around the interchange should be further explored.

If the active transportation network must cross any freeway ramps, public streets should be designed to slow approaching ramp traffic to promote safer stronger pedestrian and cyclist environment. These considerations can include:

- Normalization of highway on and off ramps.
- Implementing traffic calming measures on the ramp approach such a concrete truck apron to increase radius of ramp entry while accommodating for large trucks.
- Implementing yield controlled painted crossings with appropriate signage.

10.2.3 Local Active Transportation Corridors

Several local street segments are recommended to be considered for active transportation connections and dedicated cycling facilities should be consider in the long-term. For the interim, the use of quiet streets, advisory bike lanes, or sharrows / shared-lane markings with signage can be considered. These street segments are shown in Table 10-1.

Table 10-1: Shared Active Transportation Corridor Recommendations

Road Segment	Additional Active Transportation Considerations
Irvington Avenue	Connection should be considered to Sheppard East Park.
Bayview Mews Lane / Spring Garden Avenue	Connections should be considered to Yonge Street.
Citation Drive / Empress Avenue	Connections should be considered to Yonge Street.
Blithfield Avenue / McKee Avenue	Connections should be considered to Yonge Street via Church Avenue.
Hollywood Avenue / Foxwarren Avenue	Connection should be considered to Yonge Street via Doris Avenue and Empress Avenue.
Old Leslie Street	Accommodate cycling infrastructure along the narrow bridge width, southbound left-turn at Esther Shiner Boulevard, and bus terminal.
Hillcrest Avenue / Bayview Village Park Trail	Connections should be considered to Yonge Street via Kenneth Avenue and Empress Avenue.

10.2.4 Pedestrian Crossing

Several pedestrian crossings are recommended to enhance the continuity of the active transportation network. These pedestrian crossings are outlined below:

- A north-south pedestrian crossing along Sheppard Avenue East is recommended approximately 200 m west of the intersection of Leslie Street and Sheppard Avenue. This pedestrian crossing would facilitate pedestrians crossing to / from the TTC bus stop and Leslie Station.
- An east-west pedestrian crossing at the Bayview Avenue and Foxwarren Drive / Hollywood Avenue intersection is recommended to facilitate continuity between Bayview Avenue and Yonge Street.
- For future studies, an east-west pedestrian crossing at the Bayview Avenue and Bayview Village Park Trail intersection should be explored to facilitate continuity between Bayview Avenue and Yonge Street.

The misaligned intersection of Bayview Mews Lane and Bayview Avenue should be reviewed for safety and/or active transportation-related intersection treatments. During this review, an east-west pedestrian crossing is recommended to be considered on the southbound side of the Bayview Mews Lane and Bayview Avenue intersection.

10.2.5 Off-Road Trails

The following off-road trails are recommended for further study:

- 1200 Sheppard Avenue East to / from East Don Parkland Trail and / or connection across GO Rail line between 1200 Sheppard Avenue East and Clarinda Park to mitigate environmental impacts.
- Improve connectivity between the Betty Sutherland Trail and East Don River Trail. This can be achieved by re-orienting the Betty Sutherland Trail to the Leslie Street and Sheppard Avenue intersection.
- Trail access improvements at Clarinda Park.

To facilitate use of these off-road trails, wayfinding strategies around the study area should be implemented and enhancements to the trailhead located at the north-west corner of the Sheppard Avenue and Leslie Street intersection should be considered.

10.3 Transit Strategies

The following transit strategies are required to achieve a non-auto mode split of 50%.

10.3.1 GO Station and TTC Integration

Metrolinx's previously proposed relocation of the Oriole GO Station to the Leslie TTC Station is recommended to improve transit accessibility and integration. Strategies to consider with the relocation of the Oriole GO Station are outlined below:

- Comfortable, connected, and accessible pedestrian and cycling connections are important to facilitate the modal transition between local and regional transit services.
- Consider the integration of bike parking and micromobility to enhance opportunities for multi-modal transitions.
- Early implementation of multi-modal transportation strategies is important to shift travel behaviours away from driving in anticipation of the parking that will be removed at the existing Oriole GO Station.

10.3.2 Support of Regional Transit

To support the shift to sustainable transportation modes, several Regional transit projects should be implemented to directly affect travel of residents travelling to / from the study area including:

- Introduction of regional GO Bus Service to the study area.
- Sheppard Subway Extension connecting to Line 1 Sheppard West Subway Station and future Scarborough Subway Extension.

10.3.3 Local Bus Services Improvements

It is recommended that residents should continue to be surveyed and consulted regarding the accessibility and routing to potentially enhance utilization of the 51 Leslie Street, 11 Bayview Avenue, and 85 Sheppard Avenue TTC buses.

To support the proposed TTC service enhancements, the following strategies are recommended to be considered:

- Extending Route 78 St. Andrews to loop around the existing Bayview Village Mall via Bayview Mews Lane and Hawksbury Drive. This would require protecting for transit operations on Hawksbury Drive and Bayview Mews Lane due to the physical constraints at the intersection that would limit bus movements.
- Property for a bus loop or facility on the east side of Bayview Avenue between Sheppard Avenue and Bayview Mews Lane should be identified. This bus loop would promote transit to Bayview Village, provide improved facilities for operators, and expand on potential transit service improvements for other nearby routes. A bus loop would also be able to connect the active transportation network and the transit network.
- Streamlining bus access to the North York General Hospital such as bus-only lanes along Esther Shiner Boulevard to facilitate access to the overpass over Leslie Street.
- Further traffic studies to be undertaken to incorporate transit signal priority within the study area to enhance service reliability.

10.3.4 Accessible and Equitable Transit Station Design and Experience

The City should consider incorporating enhanced transit station elements focusing on transit user comfort leveraging public realm improvements. Elements to consider include seating / furniture, passenger wayfinding, green infrastructure, and bike parking.

Focus areas for these enhancements include the west, Bayview Avenue-facing entrance at Bayview Station and the north, Sheppard Avenue-facing entrance at Leslie Station. These entrances showed qualitatively fewer pedestrian amenities than other entrances and quantitatively less usage.

Another focus area would be the Oriole GO Station relocation to the Leslie TTC Station. Enhancing pedestrian comfort would make this location a place to visit and gather supporting the desire to shift to non-automobile transportation modes.

Ensuring more accessible and equitable transit station design can improve the attraction of using public transit. The three TTC stations within the Study Aea should be reviewed to ensure universal design standards are applied. This includes:

- Step-free access for including elevators, ramps, or lifts to accommodate passengers with mobility devices, strollers, and luggage.

- Tactile pathways to guide passengers from the station entrance to the platform or bus stop.
- Clear signage and wayfinding to provide clear, easily readable signage throughout transit stations and stops. Signage should include large print, high-contrast colours placed at accessible heights for all users.
- Seating and resting areas throughout the station allow resting for those with mobility constraints and the elderly.
- Ticket machines should be accessible for those who use wheelchairs or those with dexterity constraints.
- Ensure that transit information, signage, and / or customer service are available in multiple languages to cater to diverse populations within the study area. Data from Statistics Canada indicates that the most popular languages spoken at home within the study area include English, Persian, Mandarin, Korean, and Cantonese.

Enhancing first and last mile connections improves the overall accessibility and convenience of using public transit, supporting the shifts to sustainable modes. The following strategies support the enhancement of first and last mile connections:

- The active transportation network strategies and recommendations indicated in Section 10.2 will improve pedestrian and cycling connections to the three TTC stations within the study area.
- Improving the overall built-environment within the study area by enhancing the comfort, safety, and aesthetics will promote active transportation modes to transit stations. These include enhancing gathering spaces (Section 10.5.4) and incorporating more placemaking and public art elements within the study area (Section 10.5.5).
- Increasing the number of bike share stations within the study area. Although four stations have been identified in the 4-Year Growth Plan (2022 to 2025), there are additional opportunities within the next Growth Plan to increase the number of planned bike share stations. The City can consider using developer contributions (such as through cash-in-lieu of parking funds) to fund additional stations. The City of Hamilton recently used cash-in-lieu of parking funds to introduce their e-scooter pilot program.
- The City can partner with developers to discuss transit incentives for new developments. During the pre-application consultation stage, the City can ask developers to provide free pre-loaded transit passes (i.e., PRESTO cards) to future residents.
- The City can also work with developers, TTC, and non-profit agencies to introduce micro transit shuttles that connect to TTC services in the area to further enhance the accessibility of reach of transit users. There are currently over 35 private shuttles connecting to TTC stations across the network. More information and details can be found in TTC's 5-Year Service and Customer Experience Action Plan.

10.4 Travel Demand Management Strategies

Travel Demand Management (TDM) is used to describe a set of strategies that allow for the more efficient use of transportation resources. From the City's Official Plan: TDM measures aim to encourage people to take fewer and shorter vehicle trips to reduce congestion, energy consumption, and pollution. In the past, transportation planning has focused on supply-side solutions by identifying where transportation capacity is needed to satisfy forecast travel demand. TDM, in contrast, emphasizes changing travel behaviour to modify and reduce our demand for vehicular travel in cities. TDM is most effective when supported by complementary actions in the key areas of land use planning and public transit improvements.

Active transportation and transit network strategies facilitate the shift to a 50% non-auto mode share by increasing the number of sustainable mode trips. Travel demand strategies can incrementally reduce the overall auto demand and potentially help increase the non-auto mode share to 70%.

10.4.1 Educational Campaigns

Educational campaigns can bring the community together. They provide an opportunity for residents within the ReNew Sheppard East study area to meet others with a common interest in improving their cycling knowledge and meeting more experienced cyclists. This can be achieved through the City developing partnerships with local businesses in the active lifestyle industry within the study area.

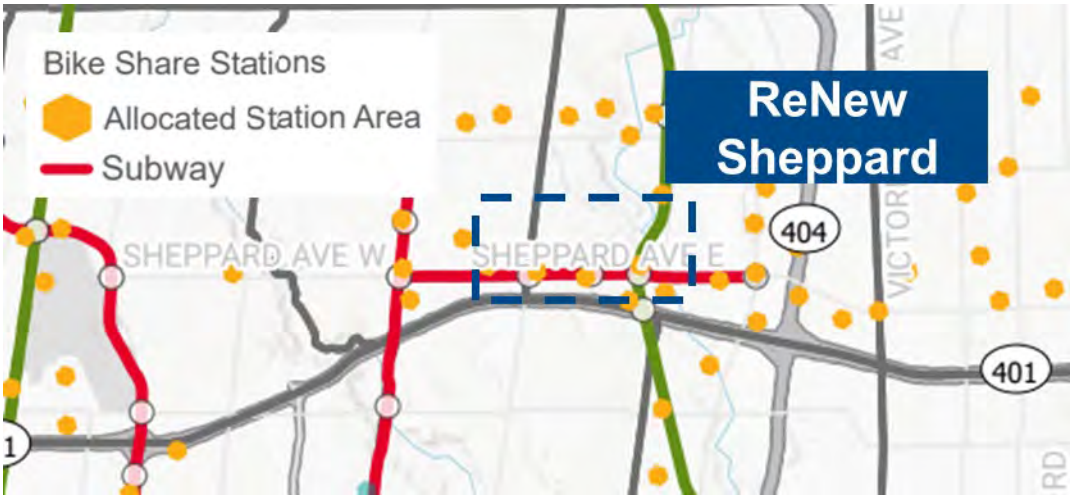
There is a potential to tap into businesses that facilitate educational campaigns with the following topics:

- Learn how to fix a flat bike tire
- Learn essential bike maintenance skills
- Unlock the secrets of winter bike commuting
- Commuter safety

10.4.2 Bike Share Toronto

Bike Share Toronto offers 24/7 convenient access to over 9,000 bikes and 700 stations across the city. Bike Share Toronto's 4-Year Growth Plan (2022 to 2025) guides station planning for the Bike Share Toronto network as part of the Toronto Parking Authority's (TPA) annual capital expansion from 2022 to 2025. The future bike share network considers ridership, equity, revenue, first / last mile, and accessibility. The 4-Year Growth Plan identifies four potential bike share locations within the ReNew Sheppard Study Area, as shown in Figure 10-1.

Figure 10-1: Bike Share



There is an opportunity to provide input on the locations of the four planned Bike Share Toronto stations.

Increasing the number of bike share stations within the study area. Although four stations have been identified in the 4-Year Growth Plan (2022 to 2025), there are additional opportunities within the next Growth Plan to increase the number of planned bike share stations. The City can consider using developer contributions (such as through cash-in-lieu of parking funds) to fund additional stations. The City of Hamilton recently used cash-in-lieu of parking funds to introduce their e-scooter pilot program.

10.4.3 School Partnerships

Recognizing that students and young children are vulnerable road users, there are opportunities to partner with schools within the study area to promote active transportation such as walking and cycling. Providing more opportunities for children to walk allows them to be more confident in their abilities and can increase the likelihood of this healthy habit carrying on with them as they get older. The two programs that the City should explore with the schools include:

- Safe routes to school, walking school bus programs, and bike to school programs: These programs create greater social connections between schools, parents, and students utilizing the walkability of neighborhoods surrounding schools.
- Play Streets: A temporary closure of public streets to create a safe space for active play, which offers students and parents a place to meet and build a sense of community.

Schools within the study area include:

- Hollywood Public School
- Elkhorn Public School
- St. Gabriel Catholic School

Other schools in proximity to the study area include Lescon Public School, Dallington Public School, Shaughnessy Public School, and Avondale Public School. Although these schools are not within the study area, there may still be residents close to the borders of the study area that may have children that attend these schools. All future Toronto District School Board and Toronto Catholic District School Board schools should be considered for these programs.

10.4.4 Mobility and Gathering Spaces

The more community gathering spaces within the study area, the more opportunities there are for a connected and vibrant community. With this objective, there are opportunities to enhance pedestrian amenities at the parks and parkettes within the study area.

Ethennonnhawahstihnen' Park, as shown in Figure 10-2, has many amenities such as a splash pad, turf area for sports and physical activity, and various aesthetic canopied areas for shade.

Figure 10-2: Ethennonnhawahstihnen' Park

This park is one of the largest within and in close proximity to the study area. Other parks or parkettes within the study area are smaller, so the amenities should be scaled appropriately. For example, additional shade trees, a small chess table, or an extra seating area may be sufficient for a parkette to draw more visitors by foot and bike. Further investigations should be done to understand what sorts of improvements can be made to any of these parks to enhance the public realm.

10.4.5 Placemaking and Public Art

The retaining walls along Sheppard Avenue near Leslie Street are an opportunity to create a more pleasant and comfortable walking and cycling environment through the use of public art. This location already has public art installed and leads to the East Don Parkland Trail, which is further east, as shown in Figure 10-3.

Figure 10-3: Public Art Along Sheppard Avenue

The City could partner with local Toronto artists to assist in beautifying the Sheppard Avenue corridor. The City of Hamilton regularly seeks submissions from artists or artist-led teams for permanent public artwork at various locations within the City. StreetARToronto (StART) is a suite of innovative programs designed specifically for street and public spaces. The goal of StART programs is to make City streets more beautiful and safer, encourage active transportation (walking and cycling), and showcase local artists. Partnering with StART would provide an opportunity in developing public art along the corridor.

10.4.6 Carpooling and Parking Management Strategies

Enhancing the feasibility of carpooling should be considered as a strategy especially with high volumes of people traveling to major destinations simultaneously such as to the North York General Hospital. Parking at major destinations and employment areas is anticipated to be constraint in the future. Therefore, carpooling can be part of the strategy to reduce single-occupant vehicle trips to reduce future parking demand.

Carpooling would also reduce parking demand. Through community consultation, residents have expressed concerns regarding on-street parking. In some areas, on-street parking has created issues with perceived safety and comfort of cyclists and traffic circulation.

10.4.7 Car-share Spaces

The City can partner with developers during the pre-application consultation phase to provide car-share spaces reducing the need for private vehicle ownership. Typically, car-share spaces replace vehicular parking spaces based on parking requirements in the zoning by-law.

The limitation of providing car-share spaces in new developments is that the property manager must be able to partner with a car-share operator to utilize the space. If no operator is willing to allocate a car to that car-share space, that parking space becomes an inefficient use of land. When possible, the City should work with the developers to find implementable solutions of car-share in addition to providing the car-share spaces during the pre-application consultation phase.

10.4.8 Curbside Management and On-street Parking Strategies

In the future, the City should consider either limiting the number of on-street parking spaces to encourage the use of alternative transportation modes to the study area or applying on-street pricing techniques to limit the demand. These techniques can include higher hourly parking rates or dynamic pricing to respond to demand throughout the day.

Curbside management is an important consideration for the future of ReNew Sheppard. In these types of physically constraint areas, there is a lot of competition for the curb which can include in the future:

- Vehicle-for-hire / taxi pick-up and drop-off zones
- Access for loading, curbside pick-up, and commercial deliveries
- Active transportation facilities
- Pedestrians and pedestrian crossings
- Vehicular parking
- Bike parking
- E-scooter and e-bike parking zones
- Temporary patios for restaurants, bars, cafes, and retail spaces
- Food trucks
- Landscaping
- Street activations and special events

The City should explore future strategies to utilize the curb to respond to the growing mix of residential, commercial, and other uses in the area.

10.4.9 Trip-end Facilities

To encourage the use of alternative modes of travel, the City can work with developers and employers to increase the provision of trip-end facilities, such as showers, bike lockers, and changing rooms, in new and existing developments. These amenities will support commuters who choose to walk, bike, or run to work by providing convenient and secure options for storing personal belongings and freshening up upon arrival.

The City can also install more bike posts or secure bike storage along Sheppard Avenue, focused at the transit stations, to improve first- and last-mile connections using the bike.

The City should work with the TTC to ensure that bike repair stations in good condition should be continued to be provided at Bayview Station and Leslie Station. A bike repair station should also be implemented at Bessarion Station and other City facilities such as community centres (e.g., Ethennonnhawahstihnen' Community Recreation Centre).

10.5 Land Use Strategies

Land use planning should consider matching the planned types of employment with the anticipated socio-economic demographics of the future population. This could enhance the possibility that residents of the study area can live and work within the study area. This could decrease future trip distances and increase the potential for shifts to non-automobile modes of transportation. Enhancing self-containment is an important strategy that could help reduce the automobile demand within the study area. Appropriate land use mix would create a complete community where more internal trips within the study area can be facilitated by sustainable mode of transportation.

Increase in employment uses can in the area would utilize available capacity travel to the study area in the morning peak hours and away in the afternoon peak hours. Examples of employment uses to encourage in the area should be professional / management / technical services and retail / sales / service and general office / clerical type jobs.

Additionally, to ensure that the transportation network can function adequately by 2041, the planned net population and employment should decrease to ensure by appropriate transportation infrastructure is available to support the growth and to achieve a 50% non-auto modal split.

Appropriate policies to manage growth are essential to ensure that infrastructure is properly aligned with the desired shifts in travel behavior. It is recommended that site- and area-specific policies be developed to ensure that the necessary infrastructure is implemented, and that mode share trends shift toward sustainable transportation options before further development in the area proceeds.

10.6 Sustainability Strategies

Additional sustainability initiatives include:

- Consider exploring the availability of electric vehicle charging stations (publicly or privately provided) to support the adoption of zero-emission vehicles.
- Increase the active transportation mode share to reduce the use of automobile trips which reduces GHG emissions.
- Support the integration of green and blue infrastructure at transit stations, parks / parkettes, and other community spaces to enhance desirability to walk, cycle, and transit. This infrastructure can include green roofs and walls, urban trees, permeable pavements, rain garden and bioswales, water features like ponds and fountains, and green streetscapes.

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Appendix A

Supplemental Information: Existing Traffic Operations

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Appendix A – Supplemental Information: Existing Traffic Operations

Date: March 2, 2023 **Project No.:** 300055817.000

Project Name: Toronto ReNew Sheppard East

Client Name: City of Toronto

From: R.J. Burnside & Associates Limited

1.0 Introduction

The existing traffic operations for the ReNew Sheppard East study intersections and mid-block road segments were assessed. The City of Toronto provided 2019 TMCs for most study intersections, and 2018 TMCs were obtained from 4Transit's Oriole GO Station Relocation (Metrolinx) report for those remaining. Along with the TMCs, existing Signal Timing Plans for the study intersections were provided by the City and coded into the Synchro model, incorporating the newly implemented Leading Pedestrian Interval (LPI) where applicable.

2.0 Data Collection

Data for conducting traffic analysis were obtained from the City of Toronto.

2.1 Turning Movement Counts

The turning movement counts that were provided by the City for the traffic analysis are shown in Table 1. Turning movement counts are provided in Attachment 1.

Table 1: Turning Movement Counts Provided by the City of Toronto

Location	Date of Count
Bayview Avenue and Bayview Mews Lane	November 26, 2019
Bayview Avenue and Sheppard Avenue East	June 13, 2019
Bessarion Road/Burbank Drive and Sheppard Avenue East	November 26, 2019
Provost Drive/Ambrose Road and Sheppard Avenue East	November 26, 2019
Leslie Street and Sheppard Avenue East	April 18, 2017

2.2 Supplemental Traffic Studies

Due to the dated regional turning movement count provided, traffic count data for the following study was reviewed:

- Oriole Go Station – Transportation and Traffic Impact Assessment, dated March 29, 2021, was prepared by 4Transit.

Details regarding weekday turning movement counts for the 4Transit study are shown in Table 2.

Table 2: Supplemental Traffic Data Details

Location	Date of Count
Leslie Street and Sheppard Avenue East	June 26, 2018
Leslie Street and Esther Shiner Boulevard	June 26, 2018
Old Leslie Street and Esther Shiner Boulevard	June 26, 2018

The traffic count data is provided in Attachment 1.

2.3 Existing Signal Timing Plans

Signal timing plans were provided by the City for the 7 signalized study intersections. Detailed signal timing plans are provided in Attachment 2.

3.0 Methodology

Intersection operations were assessed for intersections in the Study Areas using the software program Synchro 11, which employs methodology from the *Highway Capacity Manual (HCM 2000, HCM 2010, and HCM 6)*, published by the Transportation Research Board National Research Council.

Synchro 11 can analyze both signalized and unsignalized intersections in a road corridor or network, considering the spacing, interaction, queues, and operations between intersections. The analysis contained within this report utilizes the HCM 2000 techniques / methodology within the Synchro software package.

Signalized Intersections

Signalized intersection analysis considers two separate measures of performance:

- The capacity of all intersection movements, based on a volume to capacity ratio that measures the degree of capacity utilized.
- The level of service (LOS) for all intersection movements, based on the average control delay per vehicle for the various movements through the intersection and overall. Delay indicates how long a vehicle must wait to complete a movement and is represented by a

letter between A and F, with F being the longest delay. The link between LOS and delay (in seconds) for signalized intersections is summarized below.

Level of Service	Control Delay per Vehicle (seconds)
A	≤10
B	> 10 – 20
C	> 20 – 35
D	> 35 – 55
E	> 55 – 80
F	> 80

In the case that a v/c ratio for a movement is greater than 1.0 under existing conditions, the software is likely underestimating the capacity. This could be due to several reasons, including but not limited to higher saturation flows, more aggressive drivers, and vehicles utilizing more of the yellow or all-red phases.

4.0 Existing Traffic Conditions

4.1 Traffic Volumes

The existing traffic volumes were derived and balanced using data from the City of Toronto and 4Transit. The turning movement counts provided by the City for the traffic analysis are shown in Table 3.

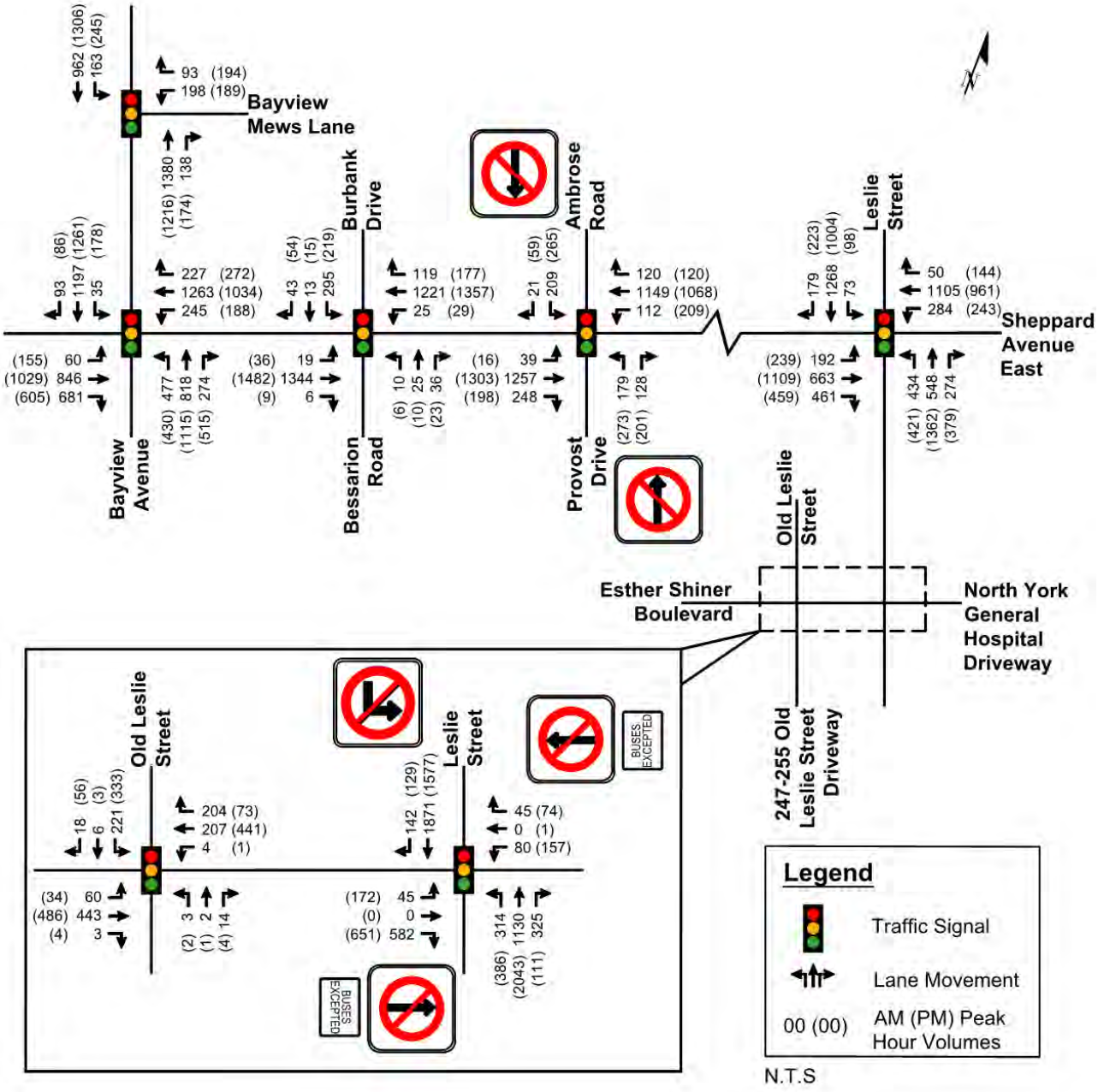
Table 3: Date of Turning Movement Counts

Location	Date of Count
Leslie Street and Sheppard Avenue East	April 18, 2017
Leslie Street and Sheppard Avenue East	June 26, 2018
Leslie Street and Esther Shiner Boulevard	June 26, 2018
Old Leslie Street and Esther Shiner Boulevard	June 26, 2018
Bayview Avenue and Sheppard Avenue East	June 13, 2019
Bayview Avenue and Bayview Mews Lane	November 26, 2019
Bessarion Road/Burbank Drive and Sheppard Avenue East	November 26, 2019
Provost Drive/Ambrose Road and Sheppard Avenue East	November 26, 2019

The traffic count data was collected between 2017 and 2019. Based on a review of the historic growth rates and the Sheppard Monitoring Data that compares traffic data pre-covid, a 0% growth rate was employed.

The existing traffic conditions are shown in Figure 1.

Figure 1: Existing Conditions Traffic Volumes (2023)



4.2 Link Capacity Analysis

The existing v/c ratios for the study corridors were calculated for the weekday AM and PM peak hours using the existing traffic automobile volumes. Based on transportation modelling data provided by the City, 800 vehicles per hour [veh/hr] per through lane was used to calculate link capacity. The through movements exiting the links were used as the link volumes, and for cases with a through + right lane, the through and right turn movements were used together. Cases where these volumes were not available were analyzed as follows:

- Bayview Avenue – Sheppard Avenue to Highway 401 Southbound: Turning movement counts for the Bayview Avenue interchange were provided by the City, and the percentage of southbound through traffic was applied to the existing southbound screenline volume. Turning movement counts are provided in Attachment 1.
- Leslie Street – Sheppard Avenue to Maris Shepway Northbound: The link contains no dedicated left or right turn lanes; therefore, the northbound screenline volume was used.
- Leslie Street – Esther Shiner Boulevard to Highway 401 Southbound: Turning movement counts for the Leslie Street interchange were not provided; therefore, the on-ramp was included as a through lane, and the southbound screenline volume was used.

The reasoning behind using the through-volumes only and omitting the turn volumes where possible is that the turn lanes sometimes extend from intersection to intersection, and turn lanes do not have a capacity of 800 veh/hr.

Congested links are assumed to have a link v/c ratio greater than 0.90 and are highlighted in the tables below in red.

The results for Bayview Avenue are presented in Table 4 for the AM peak and Table 5 for the PM peak.

Table 4: Link Capacity Analysis for Bayview Avenue - AM Existing Conditions

Bayview Avenue	# of Lanes	Total Capacity [veh/hr]	Volume [veh]	v/c ratio	# of Lanes	Total Capacity	Volume	v/c ratio
	Southbound				Northbound			
Sheppard Avenue to Bayview Mews Lane	3	2,400	1,232	0.52	2	1,600	1,380	0.87
Sheppard Avenue to Highway 401	2	1,600	1,523	**0.96**	2	1,600	818	0.52

Table 5: Link Capacity Analysis for Bayview Avenue - PM Existing Conditions

Bayview Avenue	# of Lanes	Total Capacity [veh/hr]	Volume [veh]	v/c ratio	# of Lanes	Total Capacity	Volume	v/c ratio
	Southbound				Northbound			
Sheppard Avenue to Bayview Mews Lane	3	2,400	1,347	0.57	2	1,600	1,216	0.76
Sheppard Avenue to Highway 401	2	1,600	1,674	**1.05**	2	1,600	1,115	0.70

The results for Leslie Street are presented in Table 6 for the AM peak and Table 7 for the PM peak.

Table 6: Link Capacity Analysis for Leslie Street - AM Existing Conditions

Bayview Avenue	# of Lanes	Total Capacity [veh/hr]	Volume [veh]	v/c ratio	# of Lanes	Total Capacity	Volume	v/c ratio
	Southbound				Northbound			
Sheppard Avenue to Maris Shepway	2	1,600	1,447	**0.91**	2	1,600	790	0.50
Sheppard Avenue to Esther Shiner Boulevard	3	2,400	1,871	0.78	2	1,600	548	0.35
Esther Shiner Boulevard to Highway 401	3	2,400	2,533	**1.06**	3	2,400	1,130	0.48

Table 7: Link Capacity Analysis for Leslie Street - PM Existing Conditions

Bayview Avenue	# of Lanes	Total Capacity [veh/hr]	Volume [veh]	v/c ratio	# of Lanes	Total Capacity	Volume	v/c ratio
	Southbound				Northbound			
Sheppard Avenue to Maris Shepway	2	1,600	1,227	0.77	2	1,600	1,745	**1.10**
Sheppard Avenue to Esther Shiner Boulevard	3	2,400	1,577	0.66	2	1,600	1,362	0.86
Esther Shiner Boulevard to Highway 401	3	2,400	2,385	**1.00**	3	2,400	2,043	0.86

4.3 Traffic Operations

The existing traffic operation results for the study intersections are summarized in Table 8. Detailed results are provided in Attachment 3. Critical movements have LOS of E or F and are highlighted in red.

Table 8: Existing Conditions Traffic Operations Analysis

Movement	Weekday AM Peak Hour		Weekday PM Peak Hour	
	v/c	LOS	v/c	LOS
Bayview Avenue and Bayview Mews Lane				
Overall	0.73	B	0.76	B
WBL	0.55	D	0.51	D
WBR	0.08	D	0.32	D
NBT	0.69	B	0.54	A
NBR	0.12	A	0.14	A
SBL	0.72	C	0.75	B
SBT	0.42	A	0.53	A
Bayview Avenue and Sheppard Avenue East				
Overall	**1.09**	**E**	**1.07**	**E**
EBL	**0.82**	**F**	0.76	D
EBT	0.59	D	0.68	D
EBR	**1.09**	**F**	**0.93**	**E**
WBL	**1.25**	**F**	**0.92**	**E**
WBT	0.65	C	0.69	D
WBR	0.32	C	0.33	D
NBL	**1.28**	**F**	**1.25**	**F**
NBT	0.50	C	0.80	D
NBR	0.34	B	0.67	C
SBL	0.51	D	**1.18**	**F**
SBTR	0.76	D	0.79	D
Bessarion Road/Burbank Drive and Sheppard Avenue East				
Overall	0.80	C	0.78	B
EBL	0.30	B	0.57	C
EBTR	0.80	C	0.76	B
WBL	0.36	B	0.36	B
WBTR	0.83	C	0.81	B
NBL	0.02	B	0.02	C
NBTR	0.06	C	0.04	C
SBL	0.65	C	0.61	D
SBTR	0.06	C	0.07	C
Provost Drive/Ambrose Road and Sheppard Avenue East				
Overall	0.82	C	0.84	C
EBL	0.29	C	0.11	C
EBT	0.89	D	0.90	D
EBR	0.28	B	0.21	C
WBL	0.60	C	0.77	D
WBTR	0.68	B	0.57	B

Movement	Weekday AM Peak Hour		Weekday PM Peak Hour	
	v/c	LOS	v/c	LOS
NBL	0.46	C	0.70	D
NBR	0.09	D	0.50	D
SBL	0.52	D	0.70	D
SBR	0.02	C	0.04	C
Leslie Street and Sheppard Avenue East				
Overall	**1.06**	**E**	**1.25**	**E**
EBL	**1.10**	**F**	**1.35**	**F**
EBT	0.42	D	0.72	D
EBR	0.68	D	0.63	C
WBL	**0.96**	**E**	**1.36**	**F**
WBTR	0.74	D	0.73	D
NBL	**1.35**	**F**	**0.80**	**E**
NBT	0.35	C	0.76	C
NBR	0.35	B	0.47	B
SBL	0.30	D	**1.29**	**F**
SBTR	**0.93**	**E**	0.79	D
Leslie Street and Esther Shiner Boulevard				
Overall	0.98	C	0.94	C
EBTL	0.37	D	**0.79**	**E**
EBR	**1.17**	**F**	**0.95**	**E**
WBTL	0.56	D	**0.82**	**E**
WBR	0.03	D	0.05	D
NBL	0.79	D	0.85	D
NBT	0.31	A	0.58	B
NBR	0.22	A	0.07	A
SBT	0.76	C	0.77	C
SBR	0.10	B	0.10	C
Old Leslie Street and Esther Shiner Boulevard				
Overall	0.41	B	0.55	B
EBL	0.18	B	0.12	B
EBTR	0.34	B	0.38	B
WBL	0.01	B	0.00	B
WBTR	0.25	B	0.40	B
NBL	0.01	B	0.00	B
NBTR	0.01	B	0.00	B
SBL	0.42	B	0.61	B
SBTR	0.02	B	0.04	B

4.4 Intersection Queues

Queueing was reviewed using Synchro's 95th percentile queue. A comparison of the existing storage / link distances and queues is summarized in Table 9. Movements with 95th percentile queues exceeding the storage / link distance are highlighted in red.

Table 9: Future Conditions Queue Summary

Movement	Existing Storage/ Link Distance (m)	Weekday AM Peak Hour	Weekday PM Peak Hour
		95th % Queue (m)	95th % Queue (m)
Bayview Avenue and Bayview Mews Lane			
WBL	66	32	31
WBR	300+	15	29
NBT	200+	123	92
NBR	71	7	8
SBL	40	21	29
SBT	500+	47	74
Bayview Avenue and Sheppard Avenue East			
EBL	78	46	59
EBT	500+	94	111
EBR	**85**	**239**	**179**
WBL	160	129	82
WBT	200+	126	112
WBR	**45**	**51**	44
NBL	**97**	**131**	**115**
NBT	200	104	179
NBR	200	53	128
SBL	**80**	43	**93**
SBTR	200+	140	148
Bessarion Road/Burbank Drive and Sheppard Avenue East			
EBL	30	10	5
EBTR	200+	135	111
WBL	31	12	3
WBTR	180	139	119
NBL	15	5	1
NBTR	300+	13	2
SBL	**41**	**82**	40
SBTR	300+	11	3
Provost Drive/Ambrose Road and Sheppard Avenue East			
EBL	37	15	8
EBT	210	180	201.8
EBR	42	32	24
WBL	160	28	58
WBTR	500+	115	96
NBL	200	56	89
NBR	70	18	41
SBL	500+	64	87
SBR	50	0	0
Leslie Street and Sheppard Avenue East			
EBL	166	96	130
EBT	500+	66	125
EBR	130	112	106
WBL	187	109	134
WBTR	300+	124	124

Movement	Existing Storage/ Link Distance (m)	Weekday AM Peak Hour	Weekday PM Peak Hour
		95th % Queue (m)	95th % Queue (m)
NBL	152	118	83
NBT	200+	66	199
NBR	200+	52	73
SBL	134	31	7
SBTR	200+	176	142
Leslie Street and Esther Shiner Boulevard			
EBTL	110	21	66
EBR	**110**	**210**	**177**
WBTL	**23**	**33**	**62**
WBR	23	0	8
NBL	155	101	146
NBT	200+	36	133
NBR	182	7	7
SBT	200+	151	162
SBR	180	11	14
Old Leslie Street and Esther Shiner Boulevard			
EBL	42	13	8
EBTR	300+	30	34
WBL	62	2	1
WBTR	100+	18	34
NBL	50	2	2
NBTR	200+	4	2
SBL	**36**	35	**56**
SBTR	100+	5	6

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Attachment 1

Historical Counts

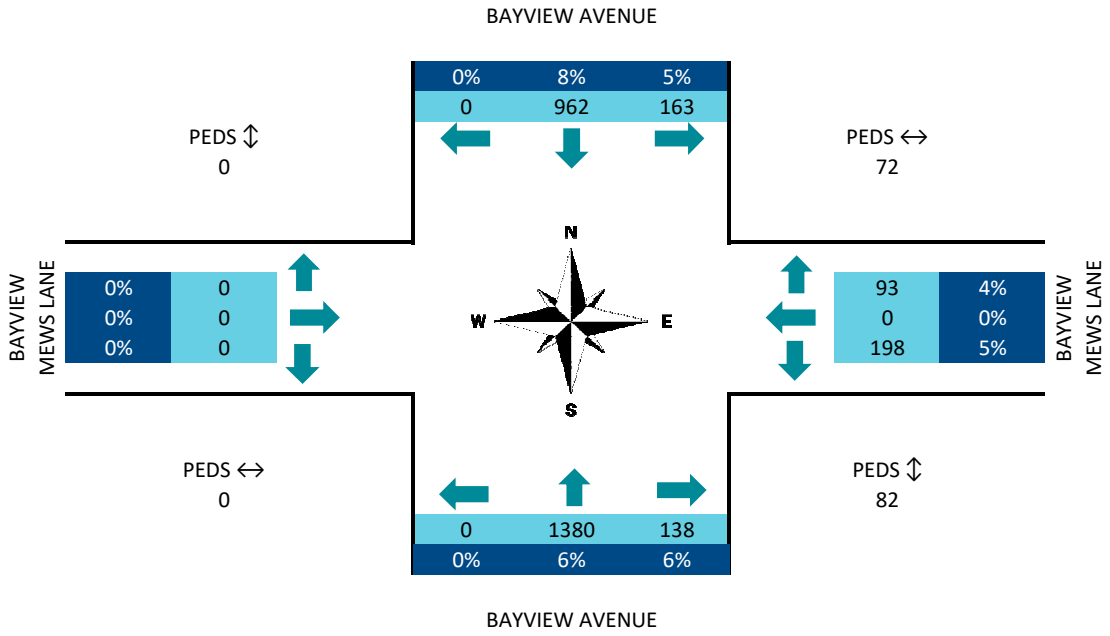
AM AND PM PEAK HOUR DIAGRAMS

SOURCE	CITY OF TORONTO	**AM PEAK HOUR**		**PM PEAK HOUR**	
INTERSECTION	BAYVIEW AVE AT BAYVIEW MEWS LANE (PX 1147)	FROM	08:00	FROM	17:00
COUNT DATE	Tuesday, November 26, 2019	TO	09:00	TO	18:00

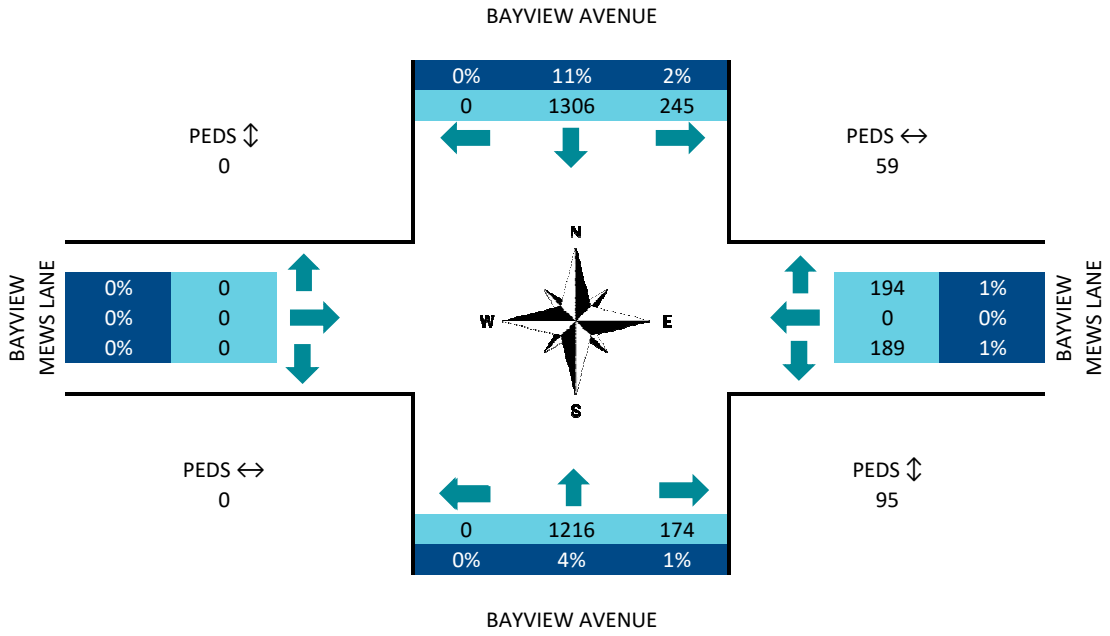
N-S Street BAYVIEW AVENUE **E-W Street** BAYVIEW MEWS LANE

TOTAL VEHICLES | HEAVY VEHICLE %

AM PEAK HOUR



PM PEAK HOUR



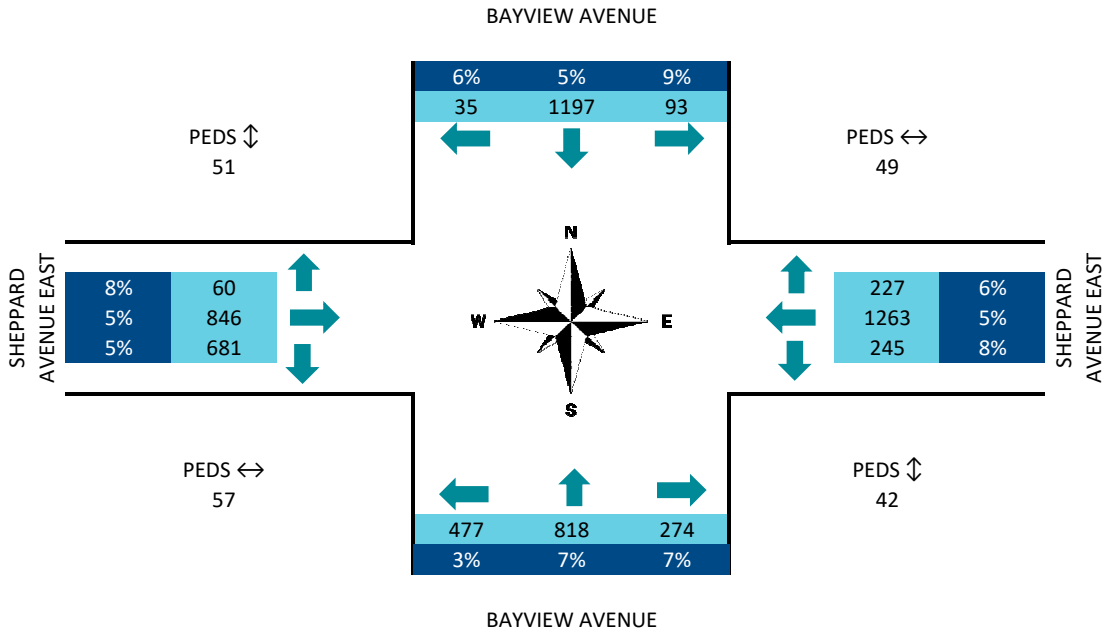
AM AND PM PEAK HOUR DIAGRAMS

SOURCE	CITY OF TORONTO	**AM PEAK HOUR**		**PM PEAK HOUR**	
INTERSECTION	BAYVIEW AVE AT SHEPPARD AVE (PX 648)	FROM	08:00	FROM	17:00
COUNT DATE	Thursday, June 13, 2019	TO	09:00	TO	18:00

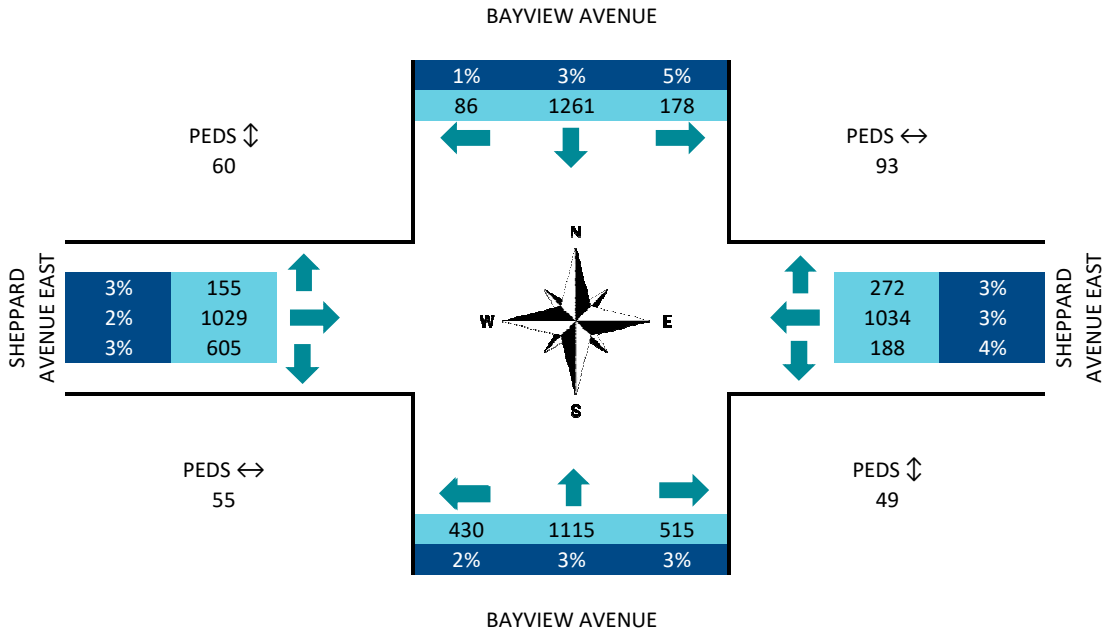
N-S Street BAYVIEW AVENUE **E-W Street** SHEPPARD AVENUE EA

TOTAL VEHICLES | HEAVY VEHICLE %

AM PEAK HOUR



PM PEAK HOUR



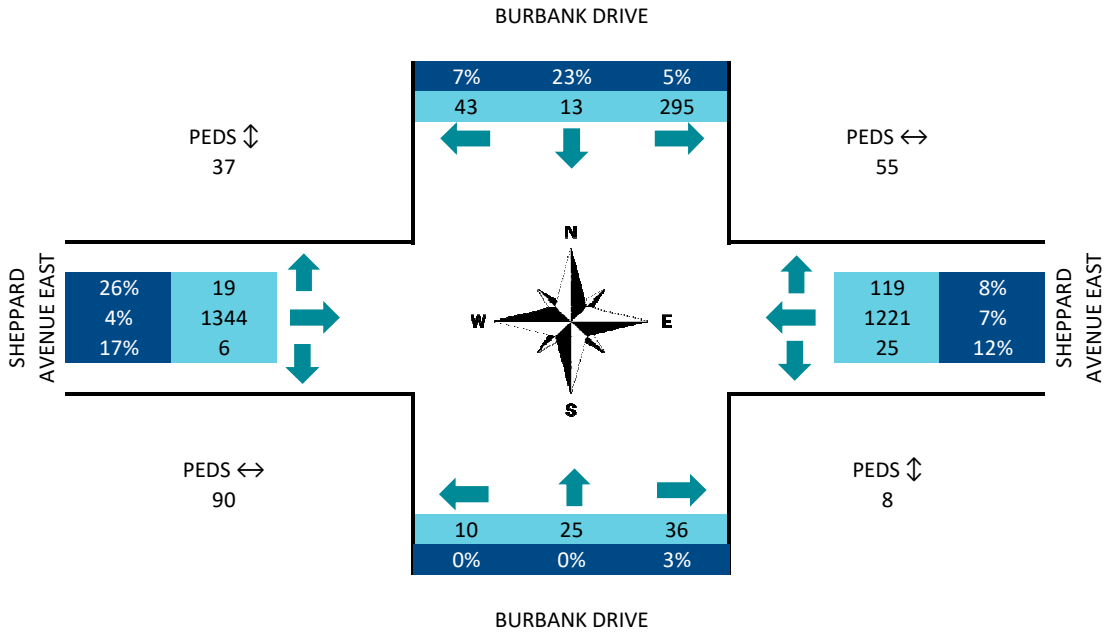
AM AND PM PEAK HOUR DIAGRAMS

SOURCE	CITY OF TORONTO	**AM PEAK HOUR**		**PM PEAK HOUR**	
INTERSECTION	BESSARION RD AT BURBANK DR & SHEPPARD AVE (PX 743)	FROM	08:00	FROM	17:00
COUNT DATE	Tuesday, November 26, 2019	TO	09:00	TO	18:00

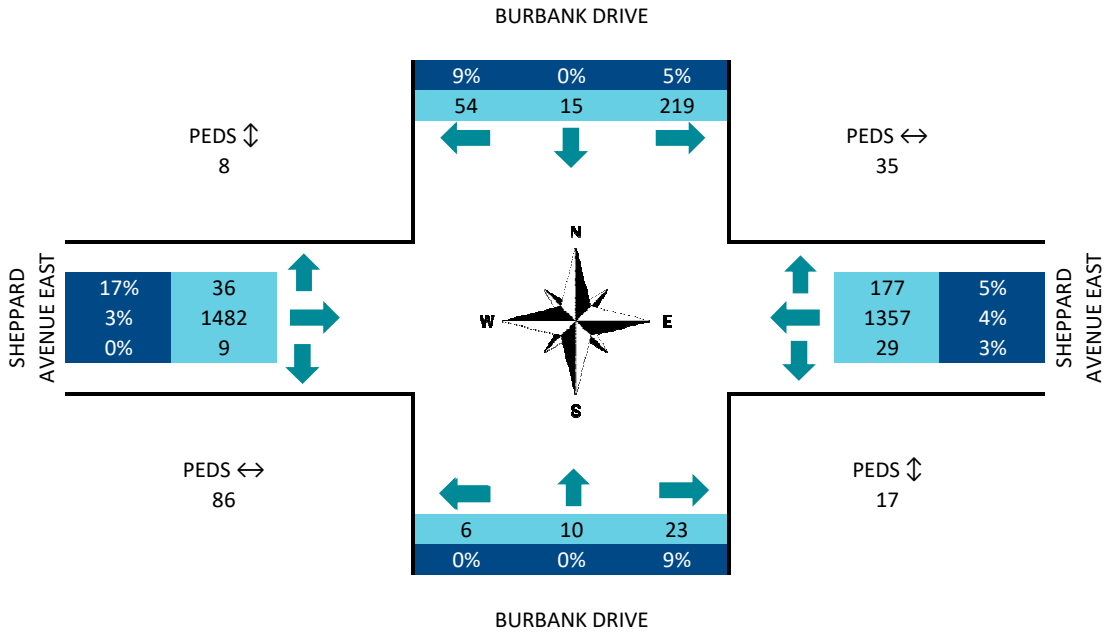
N-S Street BURBANK DRIVE **E-W Street** SHEPPARD AVENUE EA

TOTAL VEHICLES | HEAVY VEHICLE %

AM PEAK HOUR



PM PEAK HOUR



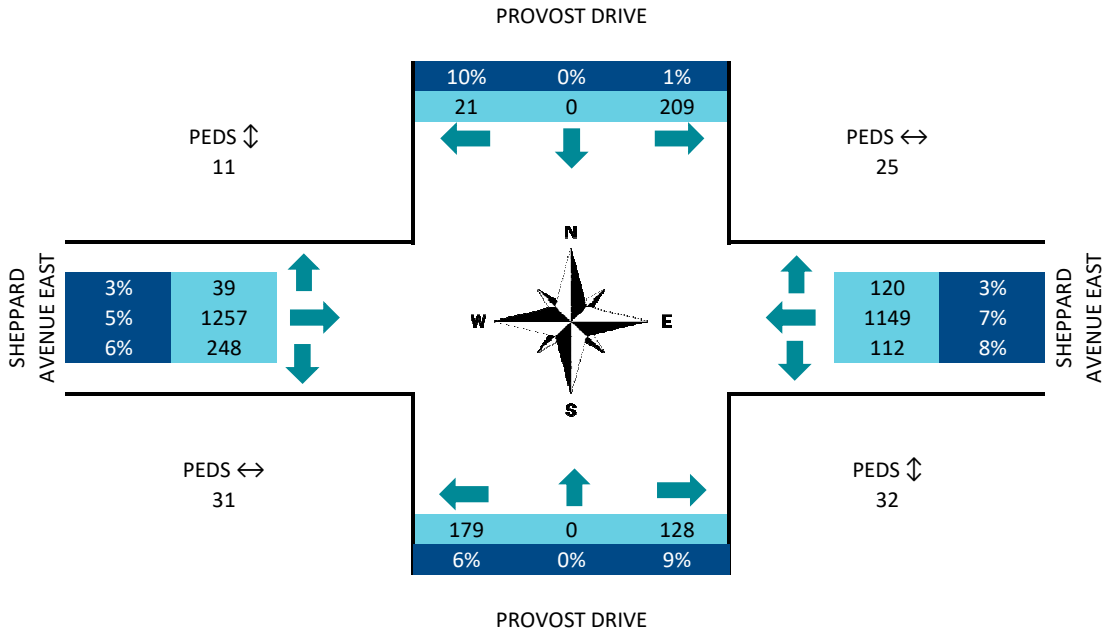
AM AND PM PEAK HOUR DIAGRAMS

SOURCE	CITY OF TORONTO		**AM PEAK HOUR**		**PM PEAK HOUR**
INTERSECTION	SHEPPARD AVE E AT AMBROSE RD & PROVOST DR (PX 1014	FROM	08:00	FROM	16:15
COUNT DATE	Tuesday, November 26, 2019	TO	09:00	TO	17:15

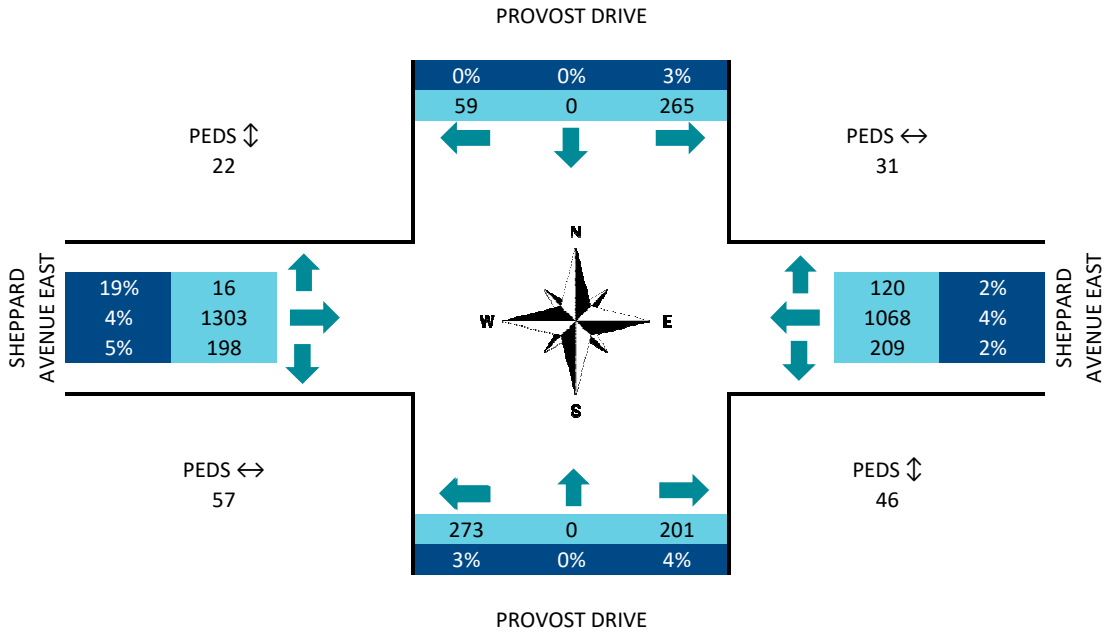
N-S Street PROVOST DRIVE **E-W Street** SHEPPARD AVENUE EA

TOTAL VEHICLES | HEAVY VEHICLE %

AM PEAK HOUR



PM PEAK HOUR



Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

Municipality: Toronto
Site #: 1808700007
Intersection: Leslie St & Sheppard Ave
TFR File #: 1
Count date: 26-Jun-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Leslie St runs N/S

North Leg Total:	2261			
North Entering:	1471			
North Peds:	11			
Peds Cross:	⋈			

Heavys	3	21	1	25
Trucks	2	8	0	10
Cars	174	1190	72	1436
Totals	179	1219	73	

Heavys	36
Trucks	14
Cars	740
Totals	790

East Leg Total:	2449
East Entering:	1439
East Peds:	57
Peds Cross:	⧖

Leslie St

Heavys	Trucks	Cars	Totals
32	25	1661	1718

Sheppard Ave

Cars	Trucks	Heavys	Totals
46	2	2	50
1062	19	24	1105
276	5	3	284
1384	26	29	

N
W E
S

Heavys	Trucks	Cars	Totals
8	2	182	192
15	2	646	663
4	4	453	461
27	8	1281	

Sheppard Ave

Cars	Trucks	Heavys	Totals
981	8	21	1010

Leslie St

Peds Cross:	⧖			
West Peds:	90			
West Entering:	1316			
West Leg Total:	3034			

Cars	1919
Trucks	17
Heavys	28
Totals	1964

Cars	425	512	263	1200
Trucks	4	10	6	20
Heavys	5	26	5	36
Totals	434	548	274	

Peds Cross:	⋈			
South Peds:	97			
South Entering:	1256			
South Leg Total:	3220			

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 17:00:00
To: 18:00:00

Municipality: Toronto
Site #: 1808700007
Intersection: Leslie St & Sheppard Ave
TFR File #: 1
Count date: 26-Jun-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Leslie St runs N/S

North Leg Total: 3070
North Entering: 1325
North Peds: 70
Peds Cross: ⋈

Heavys	3	2	0	5
Trucks	1	9	0	10
Cars	219	993	98	1310
Totals	223	1004	98	

Heavys	8
Trucks	4
Cars	1733
Totals	1745

East Leg Total: 2934
East Entering: 1348
East Peds: 93
Peds Cross: ⧖

Leslie St

Heavys	Trucks	Cars	Totals
8	2	1595	1605

Sheppard Ave

Cars	Trucks	Heavys	Totals
143	0	1	144
957	0	4	961
238	3	2	243
1338	3	7	

N
W E
S

Heavys	Trucks	Cars	Totals
0	1	238	239
7	6	1096	1109
1	1	457	459
8	8	1791	

Sheppard Ave

Cars	Trucks	Heavys	Totals
1572	7	7	1586

Leslie St

Peds Cross: ⧖
West Peds: 148
West Entering: 1807
West Leg Total: 3412

Cars	1688
Trucks	13
Heavys	5
Totals	1706

Cars	419	1352	378	2149
Trucks	1	3	1	5
Heavys	1	7	0	8
Totals	421	1362	379	

Peds Cross: ⋈
South Peds: 152
South Entering: 2162
South Leg Total: 3868

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

Municipality: Toronto
Site #: 1808700008
Intersection: Leslie St & Esther Shiner Blvd
TFR File #: 1
Count date: 26-Jun-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Leslie St runs N/S

North Leg Total:	3233			
North Entering:	2013			
North Peds:	56			
Peds Cross:	⋈			
Heavys	1	28	0	29
Trucks	1	10	0	11
Cars	140	1833	0	1973
Totals	142	1871	0	
Heavys	35			
Trucks	13			
Cars	1172			
Totals	1220			
East Leg Total:	450			
East Entering:	125			
East Peds:	3			
Peds Cross:	⧖			

Leslie St

Heavys	Trucks	Cars	Totals
5	4	447	456

Cars	Trucks	Heavys	Totals
45	0	0	45
0	0	0	0
77	0	3	80
122	0	3	

Esther Shiner Blvd

N
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Heavys	Trucks	Cars	Totals
6	1	38	45
0	0	0	0
4	6	572	582
10	7	610	

driveway

Cars	Trucks	Heavys	Totals
322	1	2	325

Leslie St

Peds Cross:	⧖			
West Peds:	10			
West Entering:	627			
West Leg Total:	1083			
Cars	2482			
Trucks	16			
Heavys	35			
Totals	2533			
Cars	307	1089	322	1718
Trucks	3	12	1	16
Heavys	4	29	2	35
Totals	314	1130	325	
Peds Cross:	⋈			
South Peds:	3			
South Entering:	1769			
South Leg Total:	4302			

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:45:00
To: 17:45:00

Municipality: Toronto
Site #: 1808700008
Intersection: Leslie St & Esther Shiner Blvd
TFR File #: 1
Count date: 26-Jun-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Leslie St runs N/S

North Leg Total:	3969			
North Entering:	1680			
North Peds:	89			
Peds Cross:	⋈			
Heavys	3	3	0	6
Trucks	0	9	0	9
Cars	126	1539	0	1665
Totals	129	1551	0	
Heavys	11			
Trucks	10			
Cars	2268			
Totals	2289			
East Leg Total:	343			
East Entering:	232			
East Peds:	9			
Peds Cross:	⧖			

Leslie St

Heavys	Trucks	Cars	Totals
4	0	512	516

Esther Shiner Blvd

Heavys	Trucks	Cars	Totals
4	1	167	172
0	0	0	0
4	2	645	651
8	3	812	

Cars	Trucks	Heavys	Totals
74	0	0	74
1	0	0	1
155	1	1	157
230	1	1	

N
W E
S

driveway

Cars	Trucks	Heavys	Totals
108	0	3	111

Leslie St

Peds Cross:	⧖			
West Peds:	29			
West Entering:	823			
West Leg Total:	1339			
Cars	2339			
Trucks	12			
Heavys	8			
Totals	2359			
Cars	385	2027	108	2520
Trucks	0	9	0	9
Heavys	1	7	3	11
Totals	386	2043	111	
Peds Cross:	⋈			
South Peds:	0			
South Entering:	2540			
South Leg Total:	4899			

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 7:45:00
To: 8:45:00

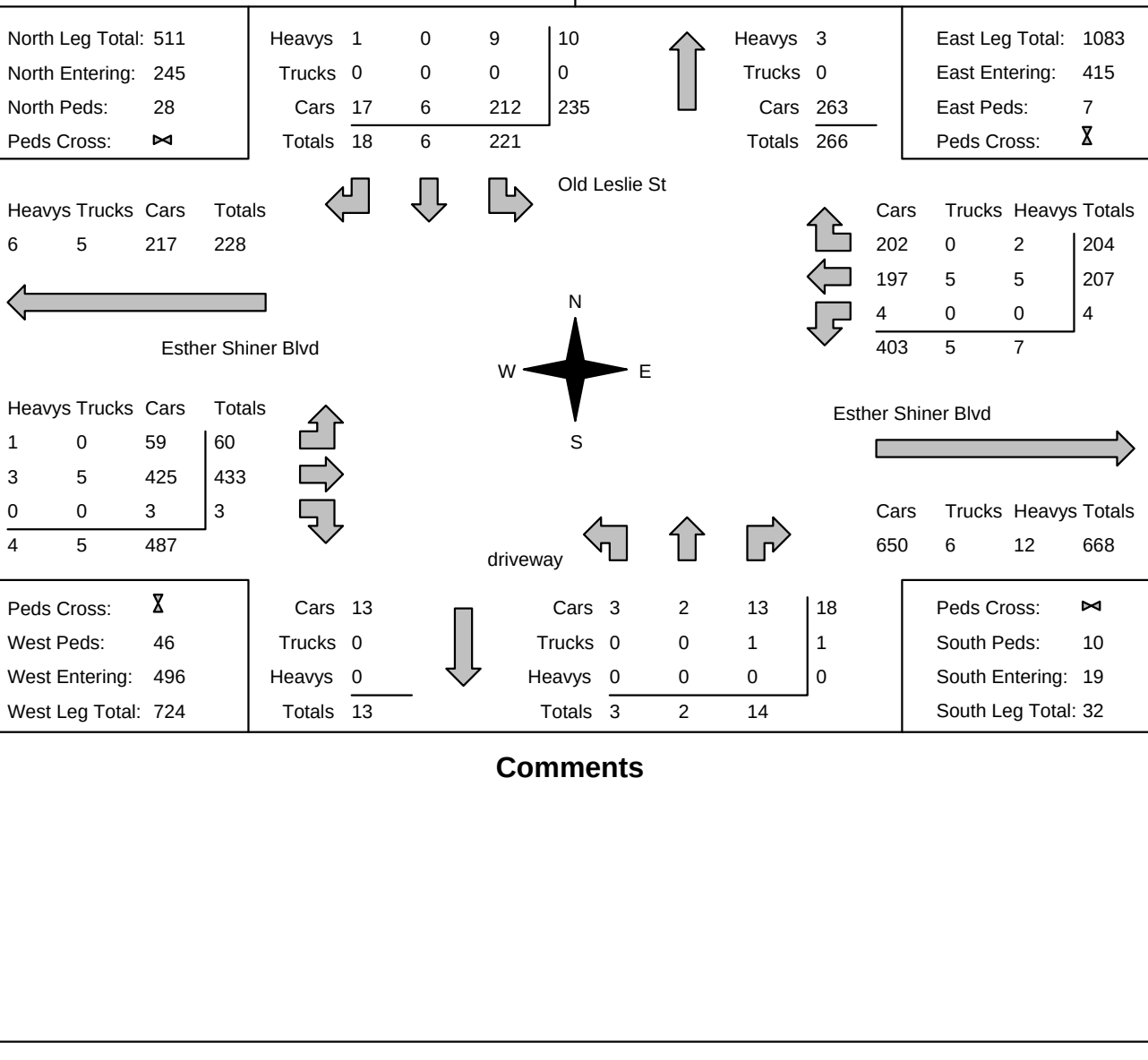
Municipality: Toronto
Site #: 1808700006
Intersection: Esther Shiner Blvd & Old Leslie St
TFR File #: 1
Count date: 26-Jun-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Esther Shiner Blvd runs W/E



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:45:00
To: 17:45:00

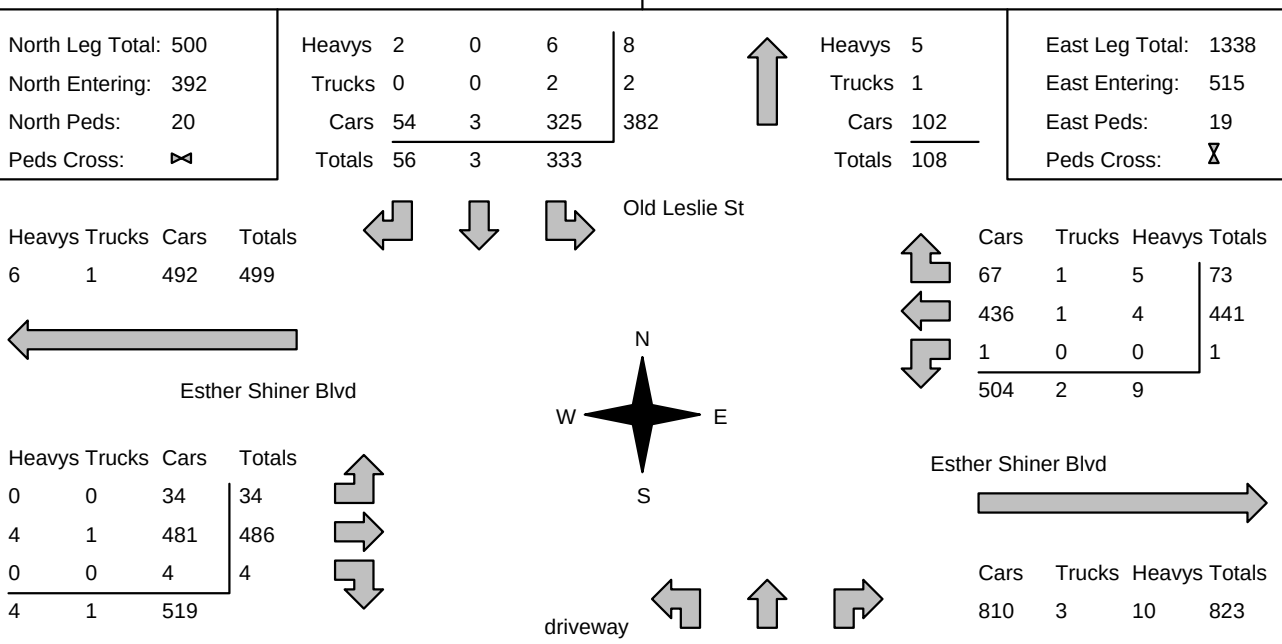
Municipality: Toronto
Site #: 1808700006
Intersection: Esther Shiner Blvd & Old Leslie St
TFR File #: 1
Count date: 26-Jun-18

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Esther Shiner Blvd runs W/E



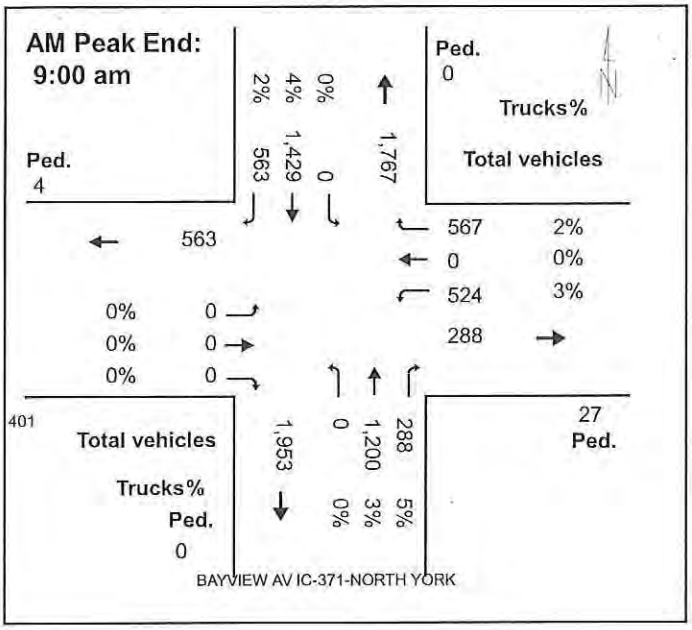
Comments

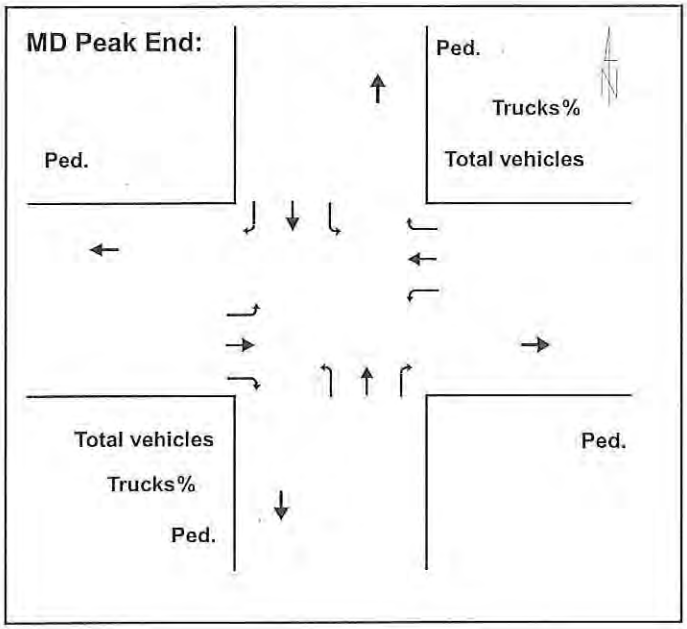
Ontario

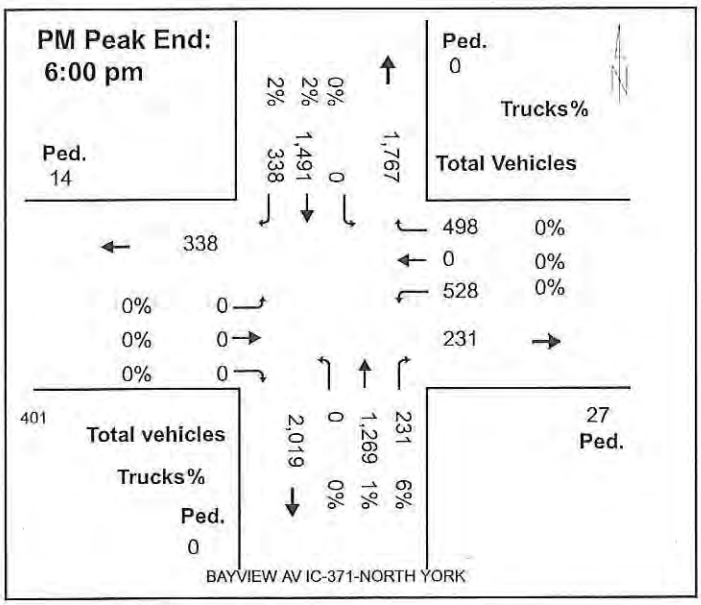
HWY 401 @ BAYVIEW AV IC-371-NORTH YORK

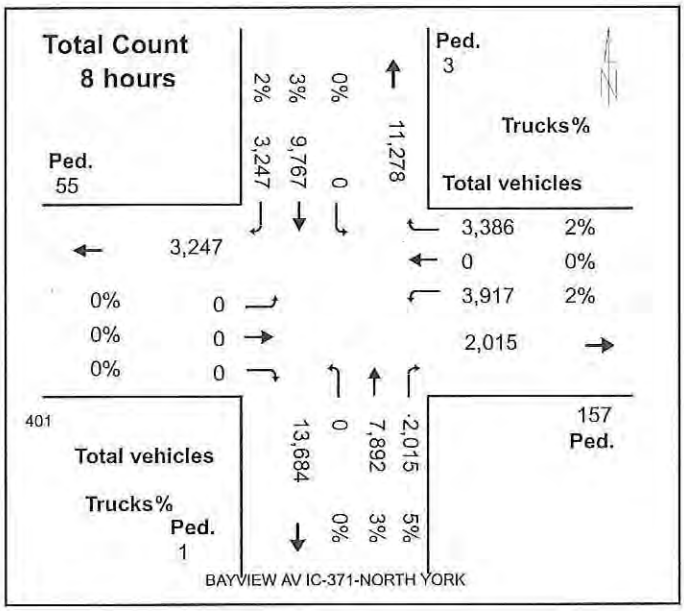
Central

Intersection ID:476420000(--N--) **Count Day: Wednesday** **Count Date: 12-Oct-2016**









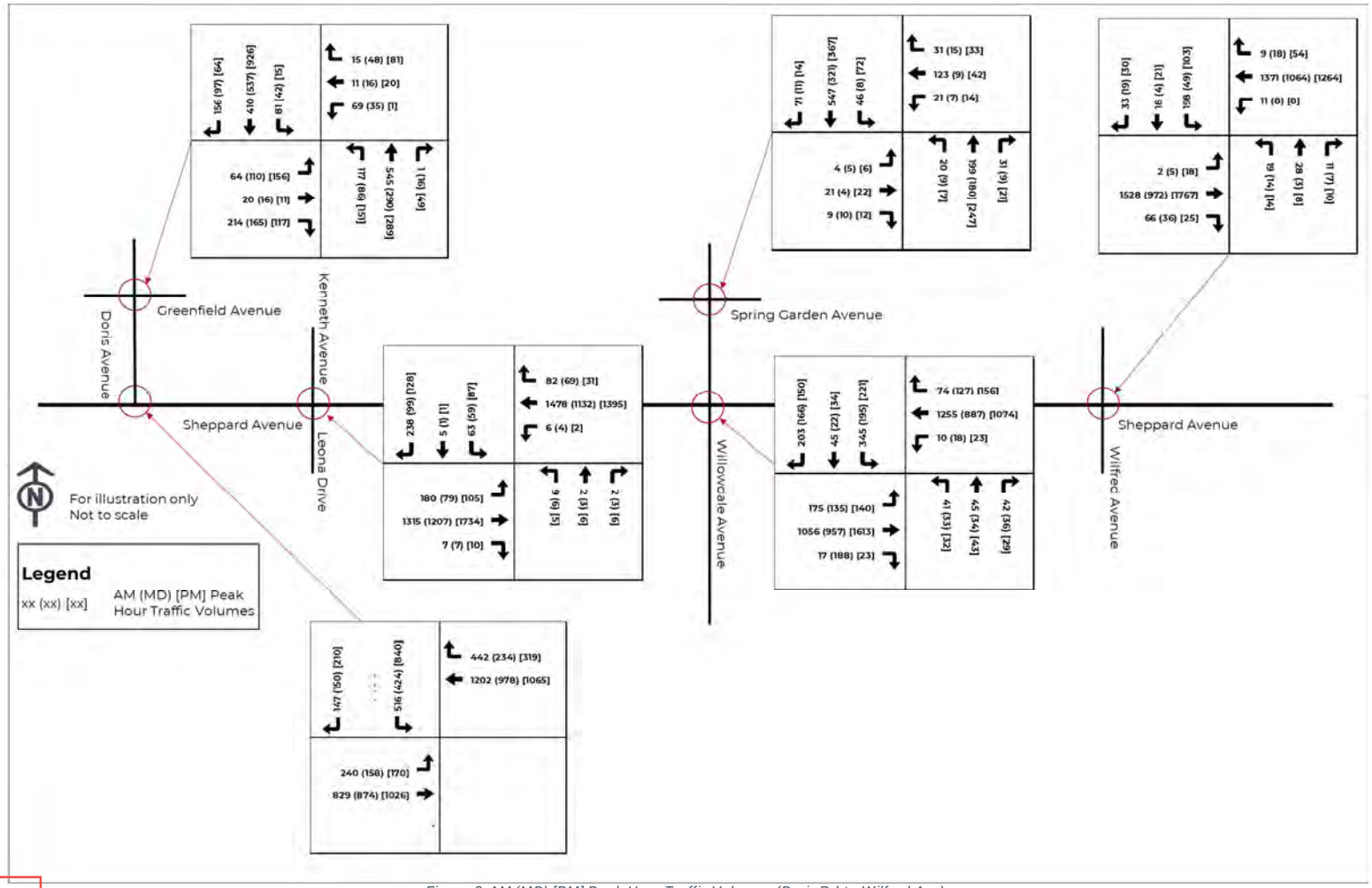


Figure 2: AM (MD) [PM] Peak Hour Traffic Volumes (Doris Rd to Wilfred Ave)

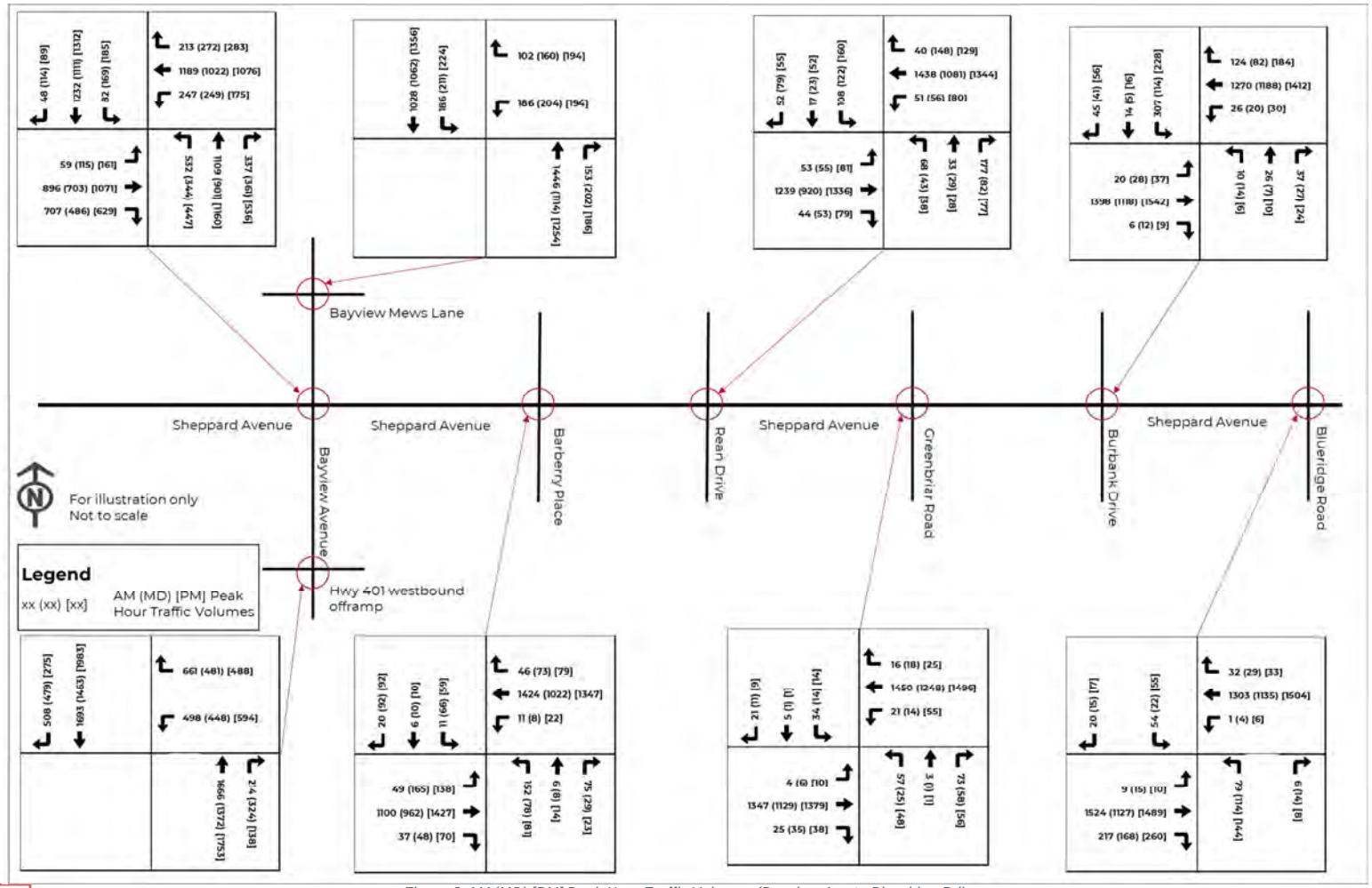


Figure 3: AM (MD) [PM] Peak Hour Traffic Volumes (Bayview Ave to Blueridge Rd)

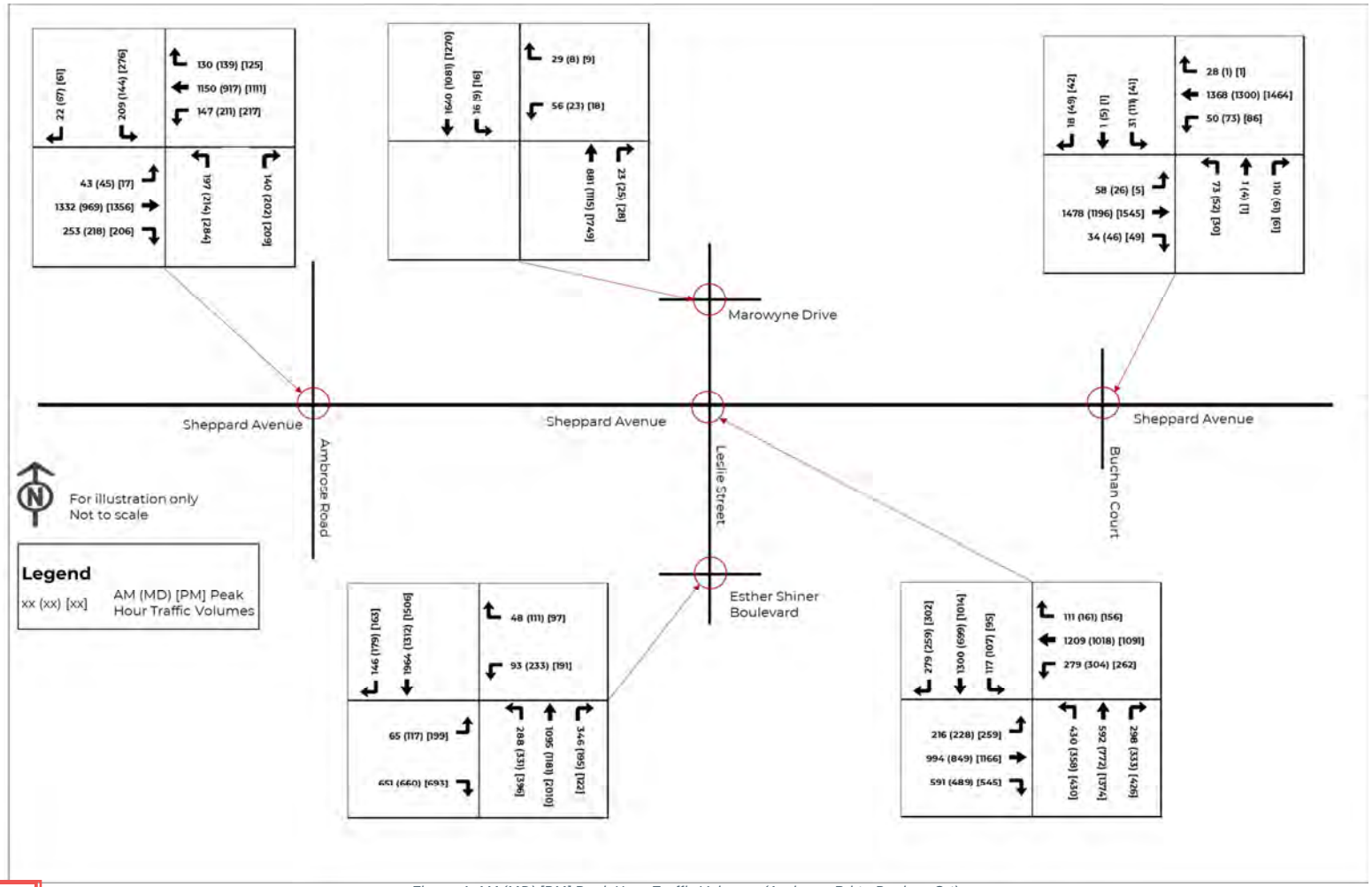


Figure 4: AM (MD) [PM] Peak Hour Traffic Volumes (Ambrose Rd to Buchan Crt)

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Attachment 2

Signal Timing Plans

Attachment 2: Signal Timing Plans

LOCATION:	Bayview Ave & Bayview Mews Lane
MODE/COMMENT:	SA2-VMG with PR, 2-Wire Polara APS & LPI
TCS/SCN:	1147 / 11311
PREPARED BY / DATE:	Toni Hourani / April 17, 2020
CHECKED BY / DATE:	Amaneh Dialameh / April 20, 2020
DISTRICT:	North York
COMPUTER SYSTEM:	UTC/SCOOT
CONTROLLER/CABINET TYPE:	Econolite ASC/3-2100 / M
CONFLICT FLASH:	Red & Red
DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing @ 1.2 m/s)
CONTROLLER FIRMWARE:	2.47.10
IMPLEMENTATION DATE:	May 22, 2020

UTC Stages	Green Returns
B	2 & 6
F	4 & 8
H	1 & 6

NEMA Phase (Green Return)		OFF All Other Times	AM 06:30-10:00 M-F	PM 15:00-19:00 M-F	Phase Mode (Fixed/Demanded or Callable)	Remarks
	Local	Pattern 1	Pattern 2	Pattern 3		
	System Plan	Plan 1	Plan 2	Plan 3		
1 	WLK FDW MIN 6 MAX1 6 MAX2 15 AMB 3 ALLR 1 SPLIT	18	11	11	Callable & Extendable by Setback Loop	Pedestrian Minimums: NSWK = 7 sec, NSFD = 17 sec EWWK = 7 sec, EWFD = 16 sec WB phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum WBG is 7 seconds. If ongoing vehicle demand exists on the stopbar loop, the WBG is capable of providing vehicle extensions up to the maximum. If a pedestrian call is received, the pedestrian minimums will be served. The EWWK & EWFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the NSG.
Bayview Ave 2 	WLK 7 FDW 17 MIN 24 MAX1 24 MAX2 24 AMB 3.3 ALLR 2.4 SPLIT	48	69	77	Fixed	
3 NOT USED	WLK FDW MIN MAX1 AMB ALLR SPLIT					Side Street Passage Time = 3 sec APS on during 7 sec of NSWK & 7 sec of EWWK when activated by push button. Extended Push Activation = 3 sec Left-Turn Passage Time = 2 sec. SF#1 disables SBLA (times to be determined). SF#4 enables Max 2 (times to be determined). EW Leading Pedestrian Interval - EWWK comes up 5 seconds before EW vehicle green.
4 ACTIVATED	WLK 7 FDW 16 MIN 7 MAX1 23 MAX2 23 AMB 3.0 ALLR 3.2 SPLIT	30	30	30		
5 NOT USED	WLK FDW MIN MAX1 AMB ALLR SPLIT					
Bayview Ave 6 	WLK 7 FDW 17 MIN 24 MAX1 24 MAX2 24 AMB 3.3 ALLR 2.4 SPLIT	68	80	69	Fixed	
7 NOT USED	WLK FDW MIN MAX1 AMB ALLR SPLIT					
Bayview Mews Lane 8 	DLY G 5 WLK 7 FDW 16 MIN 7 MAX1 23 MAX2 23 AMB 3.0 ALLR 3.2 SPLIT	30	30	30	Callable by Stopbar loop and/or Pushbutton. Extendable by Stopbar loop. Split shown includes 5 sec of EW LPI	
	CL VP	96 17	110 17	118 17		

Note: T-Intersection (no West Leg)
No pedestrian crossing on South side

LOCATION:	**Bayview Ave & Sheppard Ave East**
MODE/COMMENT:	**SA1 with 2 - Wire Polara APS & UPS - RLC (WB)**
TCS#/SCN#	**0648 / 11321**
PREPARED BY/DATE:	**RanaJamil Iftikhar / October 3, 2022**
CHECKED BY /DATE:	**Tony Zhao/ October 3, 2022**
ATO / DISTRICT / WARD:	**Area 2 / North York / 18**
COMPUTER SYSTEM:	**UTC/SCOOT**
CONTROLLER/CABINET:	**PEEK ATC-1000 / TS2 T1**
CONFLICT:	**Red & Red**
DESIGN WALK SPEED:	**0.9 m/s (FDW based on full crossing at 1.1m/s)**
IMPLEMENTATION DATE:	**October 3, 2022**

UTC Stages	Green Returns
A	2 & 5
B	2 & 6
C	3 & 7
D	3 & 8
E	4 & 7
F	4 & 8
G	1 & 5
H	1 & 6

Dual Ring NEMA Phase (Green Return)			OFF All Other Times	AM 06:30-10:00 M - F	PM 15:00-19:00 M - F	NGHT 22:00-6:00 Daily	WKND 10:00-18:00 Sat-Sun	Phase Mode (Fixed, Demanded or Callable)	Remarks
	Local Plan		Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5		
	System Plan		Plan 1	Plan 2	Plan 3	Plan 4	Plan 5		
1 	WLK							SBLA Callable / Extendable by 9 m Set-Back Loop	Pedestrian Minimum: NSWK = 8 sec, NSFD = 31 sec. EWWK = 8 sec, EWFD = 32 sec.
	FDW								EB, WB and SB Left-Turns Passage Time = 2 sec.
	MIN	6							NB (Fully Protected) Left-Turn Passage Time = 2.5 sec.
	MAX1	6							SF# 1 disables SBLA during 06:30-10:00, M-F
	MAX2	6							SF# 2 disables WBLA (Times to be determined)
	AMB	3.2							SF# 3 disables EBLA during 6:30 -10:00 M- F and 22:00-6:00 daily
	ALLR	3.7							SF# 4 enables MAX2 (Times to be determined).
	SPLIT		13		13	13	13		APS on during full NS and EW walks when activated by push buttons.
Bayview Ave 2 	WLK	8						Fixed	APS not on during Left Turn arrows phases.
	FDW	31							Extended Push Activation = 3 secs.
	MIN	39							The following grades were used to calculate the amber intervals:
	MAX1	47							Sheppard Ave (EB): 2.5%
	MAX2	47							Sheppard Ave (WB): 3.9%
	AMB	3.2							Bayview Ave (NB): 1.6%
	ALLR	3.7							Bayview Ave (SB): 3.8%
	SPLIT		67	78	63	63	63		
3 	WLK							WBLA Callable and Extendable by 9m set-back loop NBRT concurrent with WBLT	
	FDW								
	MIN	6							
	MAX1	6							
	MAX2	10							
	AMB	3.2							
	ALLR	4.6							
	SPLIT		14	16	18	14	16		
Sheppard Ave East 4 	WLK	8						Fixed	
	FDW	32							
	MIN	40							
	MAX1	40							
	MAX2	40							
	AMB	3.2							
	ALLR	2.9							
	SPLIT		50	50	50	48	50		
5 	WLK							NBLT Fully Protected Callable/Extendable by Stop-bar Loop EBRT concurrent with NBLT	
	FDW								
	MIN	6							
	MAX1	15							
	MAX2	15							
	AMB	3.1							
	ALLR	4.5							
	SPLIT		23	23	21	14	21		
Bayview Ave 6 	WLK	8						Fixed	
	FDW	31							
	MIN	39							
	MAX1	42							
	MAX2	42		(Error in ETP)					
	AMB	3.2							
	ALLR	3.7		~~50~~	~~56~~				
	SPLIT		57	~~57~~	~~57~~	52	57		
7 	WLK							EBLA Callable / Extendable by 9 m Set-Back Loop	
	FDW								
	MIN	6							
	MAX1	6							
	MAX2	10							
	AMB	3.1							
	ALLR	4.9							
	SPLIT		14		18		16		
Sheppard Ave East 8 	WLK	8						Fixed	
	FDW	32							
	MIN	40							
	MAX1	40							
	MAX2	40							
	AMB	3.2							
	ALLR	2.9							
	SPLIT		50	86	50	62	50		
	CL		144	144	144	128	144		
	OFF		1	1	1	1	1		

NOTES:

LOCATION:	Sheppard Ave E & Burbank Dr / Bessarion Rd	ATD (District) / WARD:	2 (North York) / 17
MODE/COMMENT:	SA2-VMG with PR & LPI	COMPUTER SYSTEM:	TransSuite
TCS:	743	CONTROLLER/CABINET TYPE:	Econolite ASC/3-2100/TS2T1
PREPARED BY/DATE:	IBI / December 18 2020	CONFLICT FLASH:	Red & Red
CHECKED BY/DATE:	Behnam Amini / Ihtesham Ahmad /December 30, 2020	DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing at 1.2 m/s)
IMPLEMENTATION DATE:	January 15, 2021	CHANNEL/DROP:	4084/52
		CONTROLLER FIRMWARE:	2.47.10

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NEMA Phase			OFF	AM	PM	NGHT	WKND	Highway 401 Closure	Phase Mode	Remarks
			All Other Times	06:30-09:30 M-F	15:00-19:00 M-F	22:00-06:30 Daily	9:00-18:00 Sat & Sun		(Fixed/Demanded/Callable)	
	Local Plan		Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 16		
	System Plan		Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 16		
1 NOT USED	WLK									Pedestrian Minimums: EWWK = 12 seconds, EWFD = 16 seconds NSWK = 12 seconds, NSFD = 21 seconds NS phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum NSG is 7 seconds. If ongoing vehicle demand exists on the stopbar loop, the NSG is capable of providing vehicle extensions up to the maximum. If a pedestrian call is received, the pedestrian minimums will be served. The NSWK & NSFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle/pedestrian demand. Unused extension time is given to the EWG.
	FDW									
	MIN									
	MAX1									
	AMB									
	ALR									
	SPLIT									
2 Sheppard Ave E	DLY GRN	5							Fixed.	
	WLK	12								
	FDW	16								
	MIN	23								
	MAX1	48								
	AMB	3.3							Split shown includes 5 seconds of EW LPI.	
	ALR	2.9								
	SPLIT		60	64	80	38	70	90		
3 NOT USED	WLK									Side street passage time = 3 seconds Leading Pedestrian Intervals - EWWK comes up 5 seconds before EW vehicle green and NSWK comes up 5 seconds before NS vehicle green
	FDW									
	MIN									
	MAX1									
	AMB									
	ALR									
	SPLIT									
4 Bessarion Rd	DLY GRN	5							Callable by Stopbar loop and/or pushbutton; Extendable by Stopbar loop.	
	WLK	12								
	FDW	21								
	MIN	7								
	MAX1	28								
	AMB	3.3							Split shown includes 5 seconds of NS LPI.	
	ALR	3.4								
	SPLIT		40	46	40	40	40	40		
5 NOT USED	WLK									
	FDW									
	MIN									
	MAX1									
	AMB									
	ALR									
	SPLIT									
6 Sheppard Ave E	DLY GRN	5							Fixed.	
	WLK	12								
	FDW	16								
	MIN	23								
	MAX1	48								
	AMB	3.3							Split shown includes 5 seconds of EW LPI.	
	ALR	2.9								
	SPLIT		60	64	80	38	70	90		
7 NOT USED	WLK									
	FDW									
	MIN									
	MAX1									
	AMB									
	ALR									
	SPLIT									
8 Burbank Dr	DLY GRN	5							Callable by Stopbar loop and/or pushbutton; Extendable by Stopbar loop.	
	WLK	12								
	FDW	21								
	MIN	7								
	MAX1	28								
	AMB	3.3							Split shown includes 5 seconds of NS LPI.	
	ALR	3.4								
	SPLIT		40	46	40	40	40	40		
	CL		100	110	120	78	110	130		
	OF		2	104	117	70	87	115		

NOTES:

LOCATION:	Sheppard Ave E & Provost Dr / Ambrose Rd	ATO (District) / WARD:	2 (North York) / 17
MODE/COMMENT:	SAP with PR and 2-Wire Polara APS & LPI	COMPUTER SYSTEM:	TransSuite
TCS:	1014	CONTROLLER/CABINET TYPE:	Econolite ASC/3-2100/TS2T1
PREPARED BY/DATE:	IBI / December 18 2020	CONFLICT FLASH:	Red & Red
CHECKED BY/DATE:	Behnam Amini / Intesham Ahmad (December 30, 2020	DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing at 1.2 m/s)
IMPLEMENTATION DATE:	January 18, 2021	CHANNEL/DROP:	4029/15
		CONTROLLER FIRMWARE:	2.47.10

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NEMA Phase		OFF	AM	PM	NGHT	WKND	Highway 401 Closure	Phase Mode	Remarks
		All Other Times	06:30-09:30 M-F	15:00-19:00 M-F	22:00-06:30 Daily	9:00-18:00 Sat & Sun		(Fixed/Demanded/Callable)	
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 16		
	System Plan	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 16		
1	WLK							Callable/Extendable by Setback loop NBRA concurrent with WBLA	Pedestrian Minimums: EWWK = 7 seconds, EWFD = 23 seconds NSWK = 7 seconds, NSFD = 24 seconds NS phase is callable by vehicle and/or pedestrian actuation. If a vehicle call and/or a pedestrian call is received, the maximum NSG will be served. Unused time allocated to EWG/EWWK. The NSWK & NSFD are displayed on the pedestrian signal heads if a vehicle and/or pedestrian call is received. Side street passage time = 3 seconds Left-turn passage time = 2 seconds Extended Push Activation = 3 seconds APS on for 7 seconds of EWWK and 7 seconds for NSWK when activated by pushbutton and no left-turn arrows are displayed. NS Leading Pedestrian Interval - NSWK comes up 5 seconds before NS vehicle green
	FDW								
	MIN 6								
	MAX1 12								
	AMB 3.3								
	ALR 5.4								
	SPLIT	21	18	26		30	38		
2 Sheppard Ave E	WLK 7							Fixed	
	FDW 23								
	MIN 30								
	MAX1 32								
	AMB 3.3								
	ALR 3.3								
	SPLIT	39	52	53	38	40	52		
3 NOT USED	WLK								
	FDW								
	MIN								
	MAX1								
	AMB								
	ALR								
	SPLIT								
4 Provost Dr	DLY GRN 5							Callable by Stopbar loop and/or pushbutton; Extendable by Stopbar loop. Split shown includes 5 seconds of NS LPI.	
	WLK 7								
	FDW 24								
	MIN 26								
	MAX1 26								
	AMB 3.3								
	ALR 5.4								
	SPLIT	40	40	41	40	40	40		
5 NOT USED	WLK								
	FDW								
	MIN								
	MAX1								
	AMB								
	ALR								
	SPLIT								
6 Sheppard Ave E	WLK 7							Fixed	
	FDW 23								
	MIN 30								
	MAX1 53								
	AMB 3.3								
	ALR 3.3								
	SPLIT	80	70	78	38	70	90		
7 NOT USED	WLK								
	FDW								
	MIN								
	MAX1								
	AMB								
	ALR								
	SPLIT								
8 Ambrose Rd	DLY GRN 5							Callable by Stopbar loop and/or pushbutton; Extendable by Stopbar loop. Split shown includes 5 seconds of NS LPI.	
	WLK 7								
	FDW 24								
	MIN 26								
	MAX1 26								
	AMB 3.3								
	ALR 5.4								
	SPLIT	40	40	41	40	40	40		
	CL	100	110	120	78	110	130		
	OF	15	25	23	74	100	21		

NOTES:

LOCATION:	Sheppard Ave E / Leslie St	ATD(DISTRICT) / WARD:	2 (North York) / 17
MODE/COMMENT:	SA1 with 2-Wire Polara APS, UPS & RLC (SB)	COMPUTER SYSTEM:	TransSuite
TCS:	744	CONTROLLER/CABINET TYPE:	Peek ATC 1000/TS2T1
PREPARED BY/DATE:	Tony Zhao / January 10, 2023	CONFLICT FLASH:	Red & Red
CHECKED BY/DATE:		DESIGN WALK SPEED:	0.9 m/s (FDW based on full crossing at 1.1 m/s)
IMPLEMENTATION DATE:	January 10, 2023	CHANNEL/DROP:	4039/45
		CONTROLLER FIRMWARE:	3.010.1.2976

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NEMA Phase		OFF All Other Times	AM 06:30-09:30 M-F	PM 15:00-19:00 M-F	NGHT 22:00-06:30 Daily	WKND 9:00-18:00 Sat & Sun	DVP	Highway 401 Closure	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Pattern 16		
	Split Table	Split 1	Split 2	Split 3	Split 4	Split 5	Split 6	Split 16		
1	WLK								WBLA callable/extendable by setback loop WBLA and NBRA are displayed simultaneously.	Pedestrian Mminums: EWWK = 8 s, EWFD = 35 s NSWK = 8 s, NSFD = 35 s
	FDW									
	MIN 6									Left-turn passage time = 2 s
	MAX1 6									Fully protected NBLA passage time = 2.5 s
	AMB 3.3									APS on during full walk of NSWK & EWWK when activated by pushbutton and no left-turn arrows are displayed.
	ALR 4.9									
	SPLIT	15	17	17		19	24	19		
2 Sheppard Ave E	WLK 8								Fixed	Extended Push Activation = 3 seconds
	FDW 35									Equipped with 11 system loops (see loop drawing)
	MIN 43									NBLA and EBRA are displayed simultaneously NBLA is fully protected due to the double left turn
	MAX1 45									
	AMB 3.3									WBLA and NBRA are displayed simultaneously.
	ALR 3.7									
	SPLIT	52	52	52	52	52	52	52		
3 NOT USED	WLK									
	FDW									
	MIN									
	MAX1									
	AMB									
	ALR									
	SPLIT									
4 Leslie St	WLK 8								Fixed	
	FDW 35									
	MIN 43									
	MAX1 65									
	AMB 3.3									
	ALR 3.8									
	SPLIT	73	71	61	68	69	74	69		
5	WLK								EBLA callable/extendable by setback loop	
	FDW									
	MIN 6									
	MAX1 6									
	AMB 3.3									
	ALR 5.2									
	SPLIT	15	17	17		19	24	19		
6 Sheppard Ave E	WLK 8								Fixed	
	FDW 35									
	MIN 43									
	MAX1 45									
	AMB 3.3									
	ALR 3.7									
	SPLIT	52	52	52	52	52	52	52		
7	WLK								NB is Fully Protected NBLA callable/extendable by stopbar loop NBLA and EBRA are displayed simultaneously.	
	FDW									
	MIN 6									
	MAX1 14									
	AMB 3.3									
	ALR 4.4									
	SPLIT	22	20	30	17	18	23	18		
8 Leslie St	WLK 8								Fixed	
	FDW 35									
	MIN 43									
	MAX1 43									
	AMB 3.3									
	ALR 3.8									
	SPLIT	51	51	51	51	51	51	51		
	CL	140	140	150	120	140	150	140		
	OF	2	139	2	111	139	125	122		

NOTES:

LOCATION:	Leslie St & Esther Shiner Blvd/North York Gen Hosp Ent							ATC/DISTRICT / WARD:	2 (North York) / 17	N
MODE/COMMENT:	SA2 with PR & *EBLA Firehall Preemption & LPI							COMPUTER SYSTEM:	TransSuite	
TCS:	1752							CONTROLLER/CABINET TYPE:	PEEK ATC-1060 / TSZT1	
PREPARED BY / DATE:	Samia Lamsal Khanal / September 15, 2021							CONFLICT FLASH:	Red & Red	
CHECKED BY / DATE:	Amanah Diamanah / September 22, 2021							DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing @1.2m/s)	
IMPLEMENTATION DATE:	November 29, 2021							CHANNEL SWOP:	4029/13	
								CONTROLLER FIRMWARE:	3.018.1.2976	
NEMA Phase		OFF	AM	PM	NGHT	WKND	DVP	Phase Mode	Remarks	
		All Other Times	06:30-09:30 M-F	15:00-19:00 M-F	22:00-06:30 Daily	9:00-19:00 Sat - Sun	TBD	(Fixed/Demanded/Callable)		
	Local Plan:	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 16			
	Split Table:	Split 1	Split 2	Split 3	Split 4	Split 5	Split 16			
1 NOT USED	WLK								Pedestrian Minimums: NSWK = 7 sec, NSFD = 18 sec EWWK = 12 sec, EWFD = 31 sec	
	FDW									
	MIN									
	MAX1								EW phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum EWG is 7 seconds. If ongoing vehicle demand exists on the stopbar loop, the EWG is capable of providing vehicle extensions up to the maximum. If a pedestrian call is received, the maximum would be served. The EWWK & EWFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle/pedestrian demand. Unused extension time is given to the NSG	
	AMB									
	ALR									
	SPLIT									
2 Leslie St	WLK	7						Fixed	Side Street Passage Time = 3 sec	
	FDW	18							Left-Turn Passage Time = 2 sec	
	MIN	25							**Firehall Preemption:**	
	MAX1	53							If preemption is received in phase 2/6,	
	AMB	3.4							time to Preemption Sequence A = 0 - 31 sec	
	ALR	2.5							If preemption is received in phase 4/8,	
	SPLIT		89	89	89	89	89		time to Preemption Sequence A = 0 - 51 sec	
3 NOT USED	WLK								**Preemption Sequence A**	
	FDW								Serve 50.0 seconds EBLA/EBG/EWDW	
	MIN								Serve 3.3 seconds EBY/EWDW	
	MAX1								Serve 3.9 second ALLR	
	AMB								Return to normal operation in NS phase	
	ALR								Signal goes to ALLR display before serving preemption sequence	
Esther Shiner Blvd 4	WLK DLY	5							EW Leading Pedestrian Interval - EWWK comes up 5 seconds before EW vehicle green	
	WLK	12								
	FDW	31						Callable by Wavetronix sensor and/or Push Button. Extendable by Wavetronix sensor.	The following phases were used to calculate the yellow intervals:	
	MIN	7								
	MAX1	39							Esther Shiner Blvd (EB) - 1.2 %	
	AMB	3.0							North York Gen Hosp Ent (WB) - 0.02 %	
	ALR	4.8							Leslie St (NB) - 1.22 %	
	SPLIT		51	51	51	51	51		Leslie St (SB) - 1.57 %	
5	WLK									
	FDW									
	MIN	6						NBLA Callable/Extendable by exit/ack loop. EBRA on concurrently with NBLA		
	MAX1	27								
	AMB	3.4								
	ALR	4.5								
	SPLIT		35	29	35	41	42			
Leslie St 6	WLK	7						Fixed		
	FDW	18								
	MIN	25								
	MAX1	48								
	AMB	3.4								
	ALR	2.5								
	SPLIT		54	60	34	49	55			
7	WLK							Swivel during Firehall / preemption only		
	FDW									
	MIN									
	MAX1									
	AMB									
	ALR									
	SPLIT									
North York Gen Hosp Ent 8	WLK DLY	5								
	WLK	12						Callable by Wavetronix sensor and/or Push Button. Extendable by Wavetronix sensor. Split shown includes 5 sec of EW LPI		
	FDW	31								
	MIN	7								
	MAX1	39								
	AMB	3.0								
	ALR	4.8								
	SPLIT		51	51	51	51	51			
	CL		140	140	140	120	140	160		
	OF		58	64	58	105	47	6		

Notes:

LOCATION:	Esther Shiner Blvd & Old Leslie St / Private Access	ATO (District) / WARD:	2 (North York) / 15
TCS:	2041	COMPUTER SYSTEM:	TransSuite
MODE/COMMENT:	SA2 with WRM, LPI & 2-wire Polara APS	CONTROLLER/CABINET TYPE:	Peek ATC-1000 / TS2T1
PREPARED BY / DATE:	Michelle Chen / 2022-10-14	CONFLICT FLASH:	Red & Red
CHECKED BY / DATE:	Dan Lu / 2022-10-24	DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing at 1.2 m/s)
CITY STAFF:	Ameneh Dialameh	CHANNEL/DROP:	5013/6
IMPLEMENTATION DATE:	November 18, 2022	CONTROLLER FIRMWARE:	3.018.1.2976

NEMA Phase		OFF All Other Times	AM 06:30-09:15 M-F	PM 15:45-18:30 M-F	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 1	Pattern 2	Pattern 3		
	Split Table	Split 1	Split 2	Split 3		
1 NOT USED	WLK FDW MIN MAX 1 AMB ALR SPLIT					Pedestrian Minimums: EWWK = 7 sec., EWFD = 22 sec. NSWK = 7 sec., NSFD = 24 sec. NS phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum NSG is 7 seconds. If ongoing vehicle demand exists on the stopbar loop, the NSG is capable of providing vehicle extensions up to the maximum. If a pedestrian call is received, the pedestrian minimums will be served. The NSWK & NSFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given Side Street Passage Time = 3 sec During free plans, signal rests in EWWK and does not cycle through EWFD unless there is side street vehicle and/or side street pedestrian demand. All plans operate free using split values as green times (WLK & FDW) for phases 2 & 6. The signal will serve the programmed WLK & FDW values following WRM. Phase 4 & 8 uses split values as green time. APS on during 7 sec of EWWK & NSWK when activated by push buttons. Extended Push Activation = 3 secs. NS and EW Leading Pedestrian Interval - NSWK and EWWK comes up 5 seconds before NS and EW vehicle greens. The following grades were used to calculate the AMB intervals: North Leg: -1.4% South Leg: 1.0% East Leg: 0% West Leg: -0.5% Script to call main street APS during free operation is installed
2 Esther Shiner Blvd	WLK D 5 WLK 7 FDW 22 MIN 24 MAX 1 30 AMB 3.0 ALR 3.7 SPLIT	30	30	30	Fixed Split shown includes 5 sec of EW LPI	
3 NOT USED	WLK FDW MIN MAX 1 AMB ALR SPLIT					
4 Private Acc	WLK D 5 WLK 7 FDW 24 MIN 7 MAX 1 26 AMB 3.0 ALR 3.8 SPLIT	26	26	26	Callable by Stopbar Loop and/or Push Button; Extendable by Stopbar Loop Split shown includes 5 sec of NS LPI	
5 NOT USED	WLK FDW MIN MAX 1 AMB ALR SPLIT					
6 Esther Shiner Blvd	WLK D 5 WLK 7 FDW 22 MIN 24 MAX 1 30 AMB 3.0 ALR 3.7 SPLIT	30	30	30	Fixed Split shown includes 5 sec of EW LPI	
7 NOT USED	WLK FDW MIN MAX 1 AMB ALR SPLIT					
8 Old Leslie St	WLK D 5 WLK 7 FDW 24 MIN 7 MAX 1 26 AMB 3.0 ALR 3.8 SPLIT	26	26	26	Callable by Stopbar Loop and/or Push Button; Extendable by Stopbar Loop Split shown includes 5 sec of NS LPI	
	CL OF	0 Free	0 Free	0 Free		

NOTES:

LOCATION:	Sheppard Ave E & Wilfred Ave	ATO (District) / WARD:	2 (North York) / 18
MODE/COMMENT:	SA2-VMG with PR & LPI	COMPUTER SYSTEM:	TransSuite
TCS:	1245	CONTROLLER/CABINET TYPE:	Econolite ASC/3-2100 /TS2T1
PREPARED BY/DATE:	IBI / December 18 2020	CONFLICT FLASH:	Red & Red
CHECKED BY/DATE:	Behnam Amini / Ihtesham Ahmad /December 30, 2020	DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing at 1.2 m/s)
IMPLEMENTATION DATE:	January 15, 2021	CHANNEL/DROP:	4039/52
		CONTROLLER FIRMWARE:	2.47.10

NEMA Phase			OFF	AM	PM	NGHT	WKND	Highway 401 Closure	Phase Mode	Remarks
			All Other Times	06:30-09:30 M-F	15:00-19:00 M-F	22:00-06:30 Daily	10:00-19:00 Sat & Sun		(Fixed/Demanded/Callable)	
	Local Plan		Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 16		
	System Plan		Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 16		
1 NOT USED	WLK									Pedestrian Minimums: EWWK = 12 seconds, EWFD = 16 seconds NSWK = 12 seconds, NSFD = 18 seconds
	FDW									
	MIN									
	MAX1									
	AMB									
	ALR									
	SPLIT									
2 Sheppard Ave E	DLY GRN	5							Fixed.	NS phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum NSG is 7 seconds. If ongoing vehicle demand exists on the stopbar loop, the NSG is capable of providing vehicle extensions up to the maximum. If a pedestrian call is received, the pedestrian minimums will be served. The NSWK & NSFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle demand. Unused extension time is given to the EWG.
	WLK	12								
	FDW	16								
	MIN	23								
	MAX1	53								
	AMB	3.3							Split shown includes 5 seconds of EW LPI.	
	ALR	2.3								
	SPLIT		64	81	74	56	64	84		
3 NOT USED	WLK									Side street passage time = 3 seconds
	FDW									
	MIN									Leading Pedestrian Intervals - EWWK comes up 5 seconds before EW vehicle green and NSWK comes up 5 seconds before NS vehicle green.
	MAX1									
	AMB									
	ALR									
	SPLIT									
4 Wilfred Ave	DLY GRN	5							Callable by Stopbar loop and/or pushbutton; Extendable by Stopbar loop.	
	WLK	12								
	FDW	18								
	MIN	7								
	MAX1	25								
	AMB	3.3							Split shown includes 5 seconds of NS LPI.	
	ALR	2.5								
	SPLIT		36	39	36	36	36	36		
5 NOT USED	WLK									
	FDW									
	MIN									
	MAX1									
	AMB									
	ALR									
	SPLIT									
6 Sheppard Ave E	DLY GRN	5							Fixed.	
	WLK	12								
	FDW	16								
	MIN	23								
	MAX1	53								
	AMB	3.3							Split shown includes 5 seconds of EW LPI.	
	ALR	2.3								
	SPLIT		64	81	74	56	64	84		
7 NOT USED	WLK									
	FDW									
	MIN									
	MAX1									
	AMB									
	ALR									
	SPLIT									
8 Wilfred Ave	DLY GRN	5							Callable by Stopbar loop and/or pushbutton; Extendable by Stopbar loop.	
	WLK	12								
	FDW	18								
	MIN	7								
	MAX1	25								
	AMB	3.3							Split shown includes 5 seconds of NS LPI.	
	ALR	2.5								
	SPLIT		36	39	36	36	36	36		
	CL		100	120	110	92	100	120		
	OF		23	111	23	91	26	95		

NOTES:

LOCATION	Sheppard Av. E. & Barberry Pl./Bayview Village Mall	DISTRICT	North York
MODE/COMMENT	SA2-VMG with PR, LPI & Polara 2-Wire APS	COMPUTER SYSTEM	UTC / SCOOT
TCS/SCN	1913 / 11371	CONTROLLER/CABINET	Novax L7N2 / M
PREPARED BY / DATE:	Ameneh Dialameh / October 29, 2018	CONFLICT FLASH	Red & Red
CHECKED BY / DATE:	Behnam Amini /	DESIGN WALK SPEED	0.9 m/s (FDW based on full crossing at 1.1 m/s)

STREET		Sheppard Av. E.								Barberry Pl./Bayview Village Mall								REMARKS
COMPUTER INTERVAL		11	12	13	1	2	3	4	5	6	7	8	9	10				
ASPECT	PLAN 1: No Left Turn Called				EWG	>	>	>	>	>	>		>	>	No Calls / EW PR			Pedestrian Minima
					EWWK	>	>	>	>	>	>		>	>				EWWK = 8 sec.; EWFD = 16 sec.
		APS																NSWK = 8 sec., NSFD = 25 sec.
																		SF#1 disables EBLA 00:00-10:00 daily (backed up by external clock)
	PLAN 2: EBLA Only Called	EBLA	EBYA		EWG	>	>	EWY	ALLR	NSG	>	>	NSY	ALLR	Vehicle Call Only			SF#2 disables WBLA all times
		EBG	>	>	EWWK	>	EWFD	EWDW	>	NSDW	>	>	>	>				EBLA & WBLA callable by setback loops
		EWWK	>	>														Extended push activation = 3 secs.
		South Side Only																Under system control APS only provided during local interval
																		# 11, 12, & 13 when no arrows are displayed.
	PLAN 3: WBLA Only Called	WBLA	WBYA								NSG	>	NSY	ALLR	Pedestrian Call			NS Leading Pedestrian Interval - NSWK comes up 5 secs before NS vehicle green
		WBG	>	>						NSWK	>	NSFD	NSDW	>				
		EWWK	>	>						APS								
		North Side Only																
	PLAN 4: Both EBLA and WBLA Called	EWLA	EWYA	ALLR														
		EWDW	>	>														

CONTROLLER INTERVAL			11	12	13	1	2	3	4	5	6	7	8	9	10				SCHEDULES
IMP. DATE	CL	C/S																	
Nov 23, 2018	100	C1S1	6	2	2	21	7	16	4	2	5	3	25	3	4				All Other Times.
													1+3						
	110	C2S1	6	2	2	21	17	16	4	2	5	3	25	3	4				06:30 - 10:00, M-F
													1+3						
	110	C3S1	9	2	2	21	14	16	4	2	5	3	25	3	4				15:00 - 19:00, M-F
													1+3						
HOLD INTERVAL			*				*					*							
UTC STAGE	Plan 1					B	B	DE	DE	DE	E	E		B	B				
	Plan 2		A	B	B						D	D	I	ACBF	ACBF				
	Plan 3		C	B	B						D	D	I	ACBF	ACBF				
	Plan 4		F	B	B														

NOTES: Stage E is a dummy stage when EWFD reverts to EWWK in the absence of side street demand at the end of Interval #3.
Vehicle Extensions are inhibited during Stage E to improve response time to side street pedestrians and/or vehicle demand.
During local control, intervals 11-13 are only timed if EWLA called.

LOCATION	Sheppard Av. E. & Hawksbury Dr./Rean Dr.	DISTRICT	North York
MODE/COMMENT	SA2-VMG with PR	COMPUTER SYSTEM	UTC / SCOOT
TCS/SCN	742 / 11381	CONTROLLER/CABINET	Novax - 18cct
PREPARED BY/DATE:	Alvin Luk / March 2, 2020	CONFLICT	Red & Red
CHECKED BY/DATE:	Masoud Ramezani / March 5, 2020	DESIGN WALK SPEED	0.9 m/s (FDW based on full crossing @ 1.1m/s)

STREET		Sheppard Av. E.						Hawksbury Dr./Rean Dr.							REMARKS
COMPUTER INT.		1	2	3	4	5	6	7	8	9	10	11	12		
ASPECT		EWG	>	>	>	>	>	>	>	>		>	>	No Calls /	Pedestrian Minimums:
		EWWK	>	>	>	>	>	>	>	>		>	>	EW PR	NSWK = 8 s, NSFD = 25 s
															EWWK = 8 s, EWFD = 13 s
															Controller background cycle is
		EWG	>	>	>	EWY	ALLR	NSG	>	>	>	NSY	ALLR	Vehicle Call	disabled. Signal holds in Int. #3
		EWWK	>	>	EWFD	EWDW	>	NSDW	>	>	>	>	>	Only	
								NSG	>	>	>	NSY	ALLR	Pedestrian	
								NSWK	>	>	NSFD	NSDW	>	Call	

CONTROLLER INT.			1	2	3	4	5	6	7	8	9	10	11	12	SCHEDULES
IMP. DATE	CL	C/S													
Mar 27, 2020	144	C1S1	2	20	63	13	4	2	3	4	1	25	4	3	NORMAL
												1+3			
	144	C2S1	2	20	62	13	4	2	3	4	2	25	4	3	06:30 - 10:00, M-F
												1+3			
	144	C3S1	2	20	61	13	4	2	3	4	3	25	4	3	15:00 - 19:00, M-F
												1+3			
HOLD INTERVAL					*						*				
UTC	Plan 1		B	B	B	ABC	ABC	ABC	C	C	C		B	B	
STAGE	Plan 2								A	A	A	I	B	B	
	Plan 3								A	A	A	I	B	B	
	Plan 4														

NOTES: Stage C is a dummy stage when EWFD reverts to EWWK in the absence of side street demand at the end of Interval #4.
Vehicle Extensions are inhibited during Stage C to improve response time to side street pedestrians and/or vehicle demand.

LOCATION:	Sheppard Ave E & Blue Ridge Rd / Private Access	ATO (District) / WARD:	2 (North York) / 17
MODE/COMMENT:	SA2-VMG with PR & LPI	COMPUTER SYSTEM:	TransSuite
TCS:	1956	CONTROLLER/CABINET TYPE:	Econolite ASC/3-2100/TS2T1
PREPARED BY/DATE:	IBI / December 18 2020	CONFLICT FLASH:	Red & Red
CHECKED BY/DATE:	Behnam Amini / Ihtesham Ahmad /December 30, 2020	DESIGN WALK SPEED:	1.0 m/s (FDW based on full crossing at 1.2 m/s)
IMPLEMENTATION DATE:	January 15, 2021	CHANNEL/DROP:	5023/10
		CONTROLLER FIRMWARE:	2.47.10

N N

NEMA Phase		OFF All Other Times	AM 06:30-09:30 M-F	PM 15:00-19:00 M-F	NGHT 22:00-06:30 Daily	WKND 9:00-18:00 Sat & Sun	Highway 401 Closure	Phase Mode (Fixed/Demanded/Callable)	Remarks
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 16		
	System Plan	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 16		
1 NOT USED	WLK								Pedestrian Minimums: EWWK = 12 seconds, EWFD = 15 seconds NSWK = 12 seconds, NSFD = 23 seconds NS phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum NSG is 7 seconds. If ongoing vehicle demand exists on the stopbar loop, the NSG is capable of providing vehicle extensions up to the maximum. If a pedestrian call is received, the pedestrian minimums will be served. The NSWK & NSFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle/pedestrian demand. Unused extension time is given to the EWG. Side street passage time = 3 seconds Leading Pedestrian Intervals - EWWK comes up 5 seconds before EW vehicle green and NSWK comes up 5 seconds before NS vehicle green.
	FDW								
	MIN								
	MAX1								
	AMB								
	ALR								
	SPLIT								
2 Sheppard Ave E	DLY GRN 5								
	WLK 12							Fixed.	
	FDW 15								
	MIN 22								
	MAX1 45								
	AMB 3.3							Split shown includes 5 seconds of EW LPI.	
	ALR 2.5								
	SPLIT	56	66	76	34	66	86		
3 NOT USED	WLK								
	FDW								
	MIN								
	MAX1								
	AMB								
	ALR								
	SPLIT								
4 Private Access	DLY GRN 5								
	WLK 12							Callable by Traficam and/or pushbutton; Extendable by Traficam.	
	FDW 23								
	MIN 7								
	MAX1 30								
	AMB 3.3							Split shown includes 5 seconds of NS LPI.	
	ALR 4.9								
	SPLIT	44	44	44	44	44	44		
5 NOT USED	WLK								
	FDW								
	MIN								
	MAX1								
	AMB								
	ALR								
	SPLIT								
6 Sheppard Ave E	DLY GRN 5								
	WLK 12							Fixed.	
	FDW 15								
	MIN 22								
	MAX1 45								
	AMB 3.3							Split shown includes 5 seconds of EW LPI.	
	ALR 2.5								
	SPLIT	56	66	76	34	66	86		
7 NOT USED	WLK								
	FDW								
	MIN								
	MAX1								
	AMB								
	ALR								
	SPLIT								
8 Blue Ridge Rd	DLY GRN 5								
	WLK 12							Callable by Stopbar loop and/or pushbutton; Extendable by Stopbar loop.	
	FDW 23								
	MIN 7								
	MAX1 30								
	AMB 3.3							Split shown includes 5 seconds of NS LPI.	
	ALR 4.9								
	SPLIT	44	44	44	44	44	44		
	CL	100	110	120	78	110	130		
	OF	91	104	117	72	104	3		

NOTES: NBRT / NBT loop replaced with Traficam as of December 21, 2018.

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Attachment 3

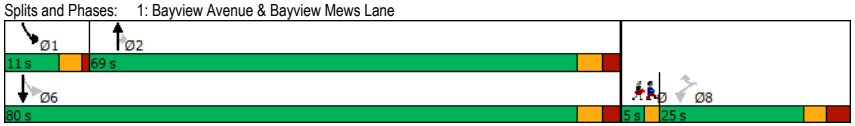
Existing AM/PM Synchro Reports

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø7
Lane Configurations							
Traffic Volume (vph)	198	93	1380	138	163	962	
Future Volume (vph)	198	93	1380	138	163	962	
Lane Group Flow (vph)	220	103	1533	153	181	1069	
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases			2		1	6	7
Permitted Phases	8	8		2	6		
Detector Phase	8	8	2	2	1	6	
Switch Phase							
Minimum Initial (s)	7.0	7.0	24.0	24.0	6.0	24.0	1.0
Minimum Split (s)	24.2	24.2	46.0	46.0	10.5	29.7	5.0
Total Split (s)	25.0	25.0	69.0	69.0	11.0	80.0	5.0
Total Split (%)	22.7%	22.7%	62.7%	62.7%	10.0%	72.7%	5%
Yellow Time (s)	3.0	3.0	3.3	3.3	3.0	3.3	2.0
All-Red Time (s)	3.2	3.2	2.4	2.4	1.0	2.4	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2	5.7	4.7	4.0	5.7	
Lead/Lag	Lag	Lag	Lag	Lag	Lead		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	None	Max	Max	None	Max	None
v/c Ratio	0.55	0.41	0.69	0.18	0.71	0.42	
Control Delay	46.0	13.3	13.4	1.7	25.3	4.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.0	13.3	13.4	1.7	25.3	4.9	
Queue Length 50th (m)	20.5	0.0	87.4	0.0	6.7	30.4	
Queue Length 95th (m)	31.8	14.4	122.5	6.7	#20.4	46.2	
Internal Link Dist (m)	321.3		291.9			215.1	
Turn Bay Length (m)	66.0			71.0	40.0		
Base Capacity (vph)	648	342	2228	858	256	2566	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.34	0.30	0.69	0.18	0.71	0.42	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 97.9
Natural Cycle: 90
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Bayview Avenue & Bayview Mews Lane



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	198	93	1380	138	163	962
Future Volume (vph)	198	93	1380	138	163	962
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	5.7	4.7	4.0	5.7
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	0.87	1.00	0.82	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3372	1371	3444	1257	1738	3380
Flt Permitted	0.95	1.00	1.00	1.00	0.10	1.00
Satd. Flow (perm)	3372	1371	3444	1257	187	3380
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	220	103	1533	153	181	1069
RTOR Reduction (vph)	0	91	0	52	0	0
Lane Group Flow (vph)	220	12	1533	101	181	1069
Confl. Peds. (#/hr)		72		82	82	
Heavy Vehicles (%)	5%	4%	6%	6%	5%	8%
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	11.6	11.6	63.3	63.3	74.3	74.3
Effective Green, g (s)	11.6	11.6	63.3	64.3	74.3	74.3
Actuated g/C Ratio	0.12	0.12	0.65	0.66	0.76	0.76
Clearance Time (s)	6.2	6.2	5.7	5.7	4.0	5.7
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	399	162	2229	826	253	2567
v/s Ratio Prot			0.45		c0.05	0.32
v/s Ratio Perm	c0.07	0.01		0.08	c0.49	
v/c Ratio	0.55	0.08	0.69	0.12	0.72	0.42
Uniform Delay, d1	40.6	38.3	11.0	6.2	11.8	4.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.2	1.8	0.3	9.2	0.5
Delay (s)	42.3	38.5	12.7	6.5	21.0	4.6
Level of Service	D	D	B	A	C	A
Approach Delay (s)	41.1		12.2			7.0
Approach LOS	D		B			A

Intersection Summary

HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	97.8	Sum of lost time (s)	17.9
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

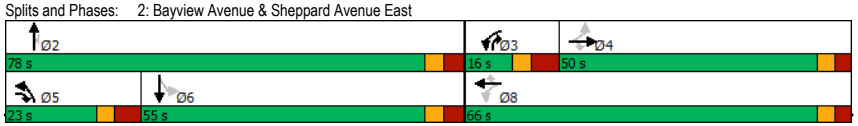
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	60	846	681	245	1263	227	477	818	274	93	1197
Future Volume (vph)	60	846	681	245	1263	227	477	818	274	93	1197
Lane Group Flow (vph)	64	900	724	261	1344	241	507	870	291	99	1310
Turn Type	Perm	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	pm+ov	Perm	NA
Protected Phases		4	5	3	8		5	2	3		6
Permitted Phases	4		4	8		8			2	6	
Detector Phase	4	4	5	3	8	8	5	2	3	6	6
Switch Phase											
Minimum Initial (s)	40.0	40.0	6.0	6.0	40.0	40.0	6.0	39.0	6.0	39.0	39.0
Minimum Split (s)	46.1	46.1	13.6	13.8	46.1	46.1	13.6	45.9	13.8	45.9	45.9
Total Split (s)	50.0	50.0	23.0	16.0	66.0	66.0	23.0	78.0	16.0	55.0	55.0
Total Split (%)	34.7%	34.7%	16.0%	11.1%	45.8%	45.8%	16.0%	54.2%	11.1%	38.2%	38.2%
Yellow Time (s)	3.2	3.2	3.1	3.2	3.2	3.2	3.1	3.2	3.2	3.2	3.2
All-Red Time (s)	2.9	2.9	4.5	4.6	2.9	2.9	4.5	3.7	4.6	3.7	3.7
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.1	5.1	6.6	6.8	5.1	5.1	6.6	5.9	6.8	5.9	5.9
Lead/Lag	Lag	Lag	Lead	Lead			Lead		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	Max	Max
v/c Ratio	0.82	0.59	1.11	1.29	0.65	0.37	1.28	0.50	0.35	0.51	0.76
Control Delay	108.8	43.9	99.4	189.8	34.9	19.5	193.6	24.8	14.0	48.5	45.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	108.8	43.9	99.4	189.8	34.9	19.5	193.6	24.8	14.0	48.5	45.2
Queue Length 50th (m)	16.7	79.0	~211.7	~70.1	109.5	28.8	~94.8	85.5	35.2	22.5	122.1
Queue Length 95th (m)	#45.4	93.7	#238.8	#128.5	125.5	50.4	#130.2	103.9	52.2	42.9	140.0
Internal Link Dist (m)		145.8			235.0			137.9			291.9
Turn Bay Length (m)	78.0		85.0	160.0		45.0	97.0			80.0	
Base Capacity (vph)	81	1574	655	203	2136	666	395	1726	827	195	1713
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.57	1.11	1.29	0.63	0.36	1.28	0.50	0.35	0.51	0.76

Intersection Summary

Cycle Length: 144
Actuated Cycle Length: 142.4
Natural Cycle: 140
Control Type: Semi Act-Uncoord

~ 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.

Splits and Phases: 2: Bayview Avenue & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	846	681	245	1263	227	477	818	274	93	1197	35
Future Volume (vph)	60	846	681	245	1263	227	477	818	274	93	1197	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1	6.6	6.8	5.1	5.1	6.6	5.9	6.8	5.9	5.9	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.94	1.00	1.00	0.95	1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1678	4995	1474	1687	4995	1443	3437	3411	1449	1651	4963	
Flt Permitted	0.15	1.00	1.00	0.16	1.00	1.00	0.95	1.00	1.00	0.33	1.00	
Satd. Flow (perm)	258	4995	1474	282	4995	1443	3437	3411	1449	567	4963	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	64	900	724	261	1344	241	507	870	291	99	1273	37
RTOR Reduction (vph)	0	0	52	0	0	51	0	0	10	0	2	0
Lane Group Flow (vph)	64	900	672	261	1344	190	507	870	281	99	1308	0
Confl. Peds. (#/hr)	49		57	57		49	51		42	42		51
Heavy Vehicles (%)	8%	5%	5%	8%	5%	6%	3%	7%	7%	9%	5%	6%
Turn Type	Perm	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	pm+ov	Perm	NA	
Protected Phases		4	5	3	8		5	2	3		6	
Permitted Phases	4		4	8		8			2	6		
Actuated Green, G (s)	42.3	42.3	57.7	58.3	58.3	58.3	15.4	71.1	79.3	48.1	48.1	
Effective Green, g (s)	43.3	43.3	59.7	59.3	59.3	59.3	16.4	72.1	81.3	49.1	49.1	
Actuated g/C Ratio	0.30	0.30	0.42	0.42	0.42	0.42	0.12	0.51	0.57	0.34	0.34	
Clearance Time (s)	6.1	6.1	7.6	7.8	6.1	6.1	7.6	6.9	7.8	6.9	6.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	78	1518	617	208	2080	600	395	1727	827	195	1711	
v/s Ratio Prot		0.18	0.13	c0.08	0.27		c0.15	0.26	0.02		c0.26	
v/s Ratio Perm	0.25		0.33	c0.44		0.13			0.17	0.17		
v/c Ratio	0.82	0.59	1.09	1.25	0.65	0.32	1.28	0.50	0.34	0.51	0.76	
Uniform Delay, d1	45.9	42.1	41.4	36.3	33.2	27.9	63.0	23.3	16.3	37.1	41.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	47.4	0.6	63.0	147.7	0.7	0.3	145.7	1.1	0.2	9.1	3.3	
Delay (s)	93.3	42.7	104.4	184.0	33.9	28.2	208.7	24.3	16.5	46.2	44.8	
Level of Service	F	D	F	F	C	C	F	C	B	D	D	
Approach Delay (s)		71.1			54.4			79.0			44.9	
Approach LOS		E			D			E			D	

Intersection Summary

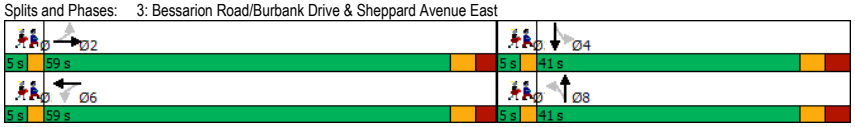
HCM 2000 Control Delay	62.8	HCM 2000 Level of Service		E	
HCM 2000 Volume to Capacity ratio	1.09				
Actuated Cycle Length (s)	142.4	Sum of lost time (s)		24.4	
Intersection Capacity Utilization	150.0%	ICU Level of Service		H	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø5	Ø7
Lane Configurations												
Traffic Volume (vph)	19	1344	25	1221	10	25	295	13				
Future Volume (vph)	19	1344	25	1221	10	25	295	13				
Lane Group Flow (vph)	20	1406	26	1396	10	64	307	59				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		2		6		8		4	1	3	5	7
Permitted Phases	2		6		8		4					
Detector Phase	2	2	6	6	8	8	4	4				
Switch Phase												
Minimum Initial (s)	23.0	23.0	23.0	23.0	7.0	7.0	7.0	7.0	1.0	1.0	1.0	1.0
Minimum Split (s)	34.2	34.2	34.2	34.2	39.7	39.7	39.7	39.7	5.0	5.0	5.0	5.0
Total Split (s)	59.0	59.0	59.0	59.0	41.0	41.0	41.0	41.0	5.0	5.0	5.0	5.0
Total Split (%)	53.6%	53.6%	53.6%	53.6%	37.3%	37.3%	37.3%	37.3%	5%	5%	5%	5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	3.4	3.4	3.4	3.4	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.31	0.80	0.36	0.83	0.02	0.10	0.66	0.11				
Control Delay	28.2	23.6	30.8	25.2	22.0	12.0	34.8	9.9				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay	28.2	23.6	30.8	25.2	22.0	12.0	34.8	9.9				
Queue Length 50th (m)	2.1	107.5	2.8	109.2	1.3	3.3	50.2	1.8				
Queue Length 95th (m)	9.1	134.6	11.2	138.3	4.8	12.1	81.7	10.3				
Internal Link Dist (m)		520.0		187.5		166.1		235.9				
Turn Bay Length (m)	30.0		31.0		15.0		41.0					
Base Capacity (vph)	72	1948	80	1852	479	637	468	560				
Starvation Cap Reductn	0	0	0	7	0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0	0	0				
Reduced v/c Ratio	0.28	0.72	0.33	0.76	0.02	0.10	0.66	0.11				

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 95.3
Natural Cycle: 95
Control Type: Semi Act-Uncoord

Splits and Phases: 3: Bessarion Road/Burbank Drive & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1344	6	25	1221	119	10	25	36	295	13	43
Future Volume (vph)	19	1344	6	25	1221	119	10	25	36	295	13	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.7	6.7		6.7	6.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.91		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1448	3503		1630	3324		1762	1699		1725	1478	
Flt Permitted	0.09	1.00		0.08	1.00		0.72	1.00		0.72	1.00	
Satd. Flow (perm)	132	3503		144	3324		1332	1699		1299	1478	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	20	1400	6	26	1272	124	10	26	38	307	14	45
RTOR Reduction (vph)	0	0	0	0	6	0	0	24	0	0	29	0
Lane Group Flow (vph)	20	1406	0	26	1390	0	10	40	0	307	30	0
Confl. Peds. (#/hr)	55		90	90		55	37		8	8		37
Heavy Vehicles (%)	26%	4%	17%	12%	7%	8%	0%	0%	3%	5%	23%	7%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	47.9	47.9		47.9	47.9		34.4	34.4		34.4	34.4	
Effective Green, g (s)	47.9	47.9		47.9	47.9		34.4	34.4		34.4	34.4	
Actuated g/C Ratio	0.50	0.50		0.50	0.50		0.36	0.36		0.36	0.36	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.7	6.7		6.7	6.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	66	1762		72	1672		481	613		469	534	
v/s Ratio Prot		0.40			c0.42			0.02			0.02	
v/s Ratio Perm	0.15			0.18			0.01			c0.24		
v/c Ratio	0.30	0.80		0.36	0.83		0.02	0.06		0.65	0.06	
Uniform Delay, d1	13.9	19.6		14.4	20.2		19.6	19.9		25.4	19.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	2.6		3.1	3.7		0.1	0.2		7.0	0.2	
Delay (s)	16.5	22.2		17.4	23.9		19.6	20.1		32.4	20.0	
Level of Service	B	C		B	C		B	C		C	C	
Approach Delay (s)		22.2			23.8			20.0			30.4	
Approach LOS		C			C			C			C	

Intersection Summary					
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.80				
Actuated Cycle Length (s)	95.2	Sum of lost time (s)	16.9		
Intersection Capacity Utilization	72.0%	ICU Level of Service	C		
Analysis Period (min)	15				

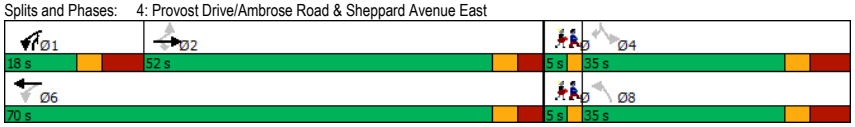
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR	Ø3	Ø7
Lane Configurations											
Traffic Volume (vph)	39	1257	248	112	1149	179	128	209	21		
Future Volume (vph)	39	1257	248	112	1149	179	128	209	21		
Lane Group Flow (vph)	42	1366	270	122	1379	195	139	227	23		
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Over	Perm	Perm		
Protected Phases		2		1	6		1			3	7
Permitted Phases	2		2	6		8		4	4		
Detector Phase	2	2	2	1	6	8	1	4	4		
Switch Phase											
Minimum Initial (s)	30.0	30.0	30.0	6.0	30.0	26.0	6.0	26.0	26.0	1.0	1.0
Minimum Split (s)	36.6	36.6	36.6	14.7	36.6	34.7	14.7	34.7	34.7	5.0	5.0
Total Split (s)	52.0	52.0	52.0	18.0	70.0	35.0	18.0	35.0	35.0	5.0	5.0
Total Split (%)	47.3%	47.3%	47.3%	16.4%	63.6%	31.8%	16.4%	31.8%	31.8%	5%	5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	3.3	3.3	3.3	5.4	3.3	5.4	5.4	5.4	5.4	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.6	6.6	6.6	8.7	6.6	8.7	8.7	8.7	8.7		
Lead/Lag	Lag	Lag	Lag	Lead		Lag	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	None	Max	None	None	Max	Max	None	None
v/c Ratio	0.29	0.89	0.38	0.61	0.68	0.46	0.56	0.52	0.05		
Control Delay	26.3	36.1	9.4	29.3	15.9	37.5	16.5	39.1	0.2		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	26.3	36.1	9.4	29.3	15.9	37.5	16.5	39.1	0.2		
Queue Length 50th (m)	5.4	133.0	13.0	10.5	91.3	33.8	0.0	40.1	0.0		
Queue Length 95th (m)	14.9	#179.3	31.6	28.0	114.2	55.2	17.3	63.8	0.0		
Internal Link Dist (m)		216.6			562.9						
Turn Bay Length (m)	37.0		42.0	160.0					50.0		
Base Capacity (vph)	144	1533	719	214	2032	425	262	434	468		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.29	0.89	0.38	0.57	0.68	0.46	0.53	0.52	0.05		

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 105
Natural Cycle: 95
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Provost Drive/Ambrose Road & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	1257	248	112	1149	120	179	0	128	209	0	21
Future Volume (vph)	39	1257	248	112	1149	120	179	0	128	209	0	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6	6.6	8.7	6.6		8.7		8.7	8.7		8.7
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.93	1.00	0.99		1.00		1.00	1.00		0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		0.99		1.00	0.96		1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1761	3476	1428	1690	3355		1699		1498	1737		1447
Flt Permitted	0.18	1.00	1.00	0.07	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	329	3476	1428	129	3355		1699		1498	1737		1447
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)	42	1366	270	122	1249	130	195	0	139	227	0	23
RTOR Reduction (vph)	0	0	91	0	7	0	0	0	128	0	0	17
Lane Group Flow (vph)	42	1366	179	122	1372	0	195	0	11	227	0	6
Confl. Peds. (#/hr)	25		31	31		25	11		32	32		11
Heavy Vehicles (%)	3%	5%	6%	8%	7%	3%	6%	0%	9%	1%	0%	10%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm		Over	Perm		Perm
Protected Phases		2		1	6				1			
Permitted Phases	2		2	6			8			4		4
Actuated Green, G (s)	46.3	46.3	46.3	63.4	63.4		26.3		8.4	26.3		26.3
Effective Green, g (s)	46.3	46.3	46.3	63.4	63.4		26.3		8.4	26.3		26.3
Actuated g/C Ratio	0.44	0.44	0.44	0.60	0.60		0.25		0.08	0.25		0.25
Clearance Time (s)	6.6	6.6	6.6	8.7	6.6		8.7		8.7	8.7		8.7
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	145	1532	629	202	2025		425		119	435		362
v/s Ratio Prot		c0.39		0.05	c0.41				0.01			
v/s Ratio Perm	0.13		0.13	0.31			0.11			c0.13		0.00
v/c Ratio	0.29	0.89	0.28	0.60	0.68		0.46		0.09	0.52		0.02
Uniform Delay, d1	18.8	27.0	18.8	19.5	13.9		33.3		44.8	33.9		29.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00		1.00
Incremental Delay, d2	5.0	8.3	1.1	5.0	1.8		0.8		0.3	4.4		0.1
Delay (s)	23.8	35.3	19.9	24.5	15.8		34.1		45.1	38.4		29.7
Level of Service	C	D	B	C	B		C		D	D		C
Approach Delay (s)		32.5			16.5			38.7			37.6	
Approach LOS		C			B			D			D	

Intersection Summary

HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		

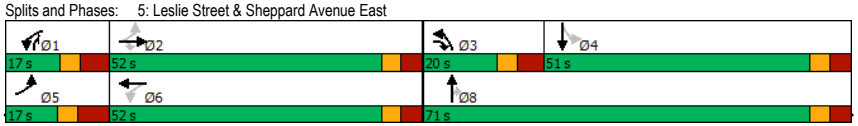
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	192	663	461	284	1105	434	548	274	73	1219
Future Volume (vph)	192	663	461	284	1105	434	548	274	73	1219
Lane Group Flow (vph)	198	684	475	293	1191	447	565	282	75	1442
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Prot	NA	pm+ov	Perm	NA
Protected Phases	5	2	3	1	6	3	8	1		4
Permitted Phases	2		2	6				8	4	
Detector Phase	5	2	3	1	6	3	8	1	4	4
Switch Phase										
Minimum Initial (s)	6.0	43.0	6.0	6.0	43.0	6.0	43.0	6.0	43.0	43.0
Minimum Split (s)	14.5	50.0	13.7	14.1	50.0	13.7	50.1	14.1	50.1	50.1
Total Split (s)	17.0	52.0	20.0	17.0	52.0	20.0	71.0	17.0	51.0	51.0
Total Split (%)	12.1%	37.1%	14.3%	12.1%	37.1%	14.3%	50.7%	12.1%	36.4%	36.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	5.2	3.7	4.4	4.8	3.7	4.4	3.8	4.8	3.8	3.8
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	0.0	0.0
Total Lost Time (s)	7.5	6.0	6.7	7.1	6.0	6.7	6.1	7.1	7.1	7.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max	Max
v/c Ratio	1.12	0.42	0.71	0.98	0.74	1.35	0.35	0.36	0.30	0.90
Control Delay	132.9	37.7	29.4	82.2	44.9	220.7	24.5	15.1	40.1	53.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	132.9	37.7	29.4	82.2	44.9	220.7	24.5	15.1	40.1	53.5
Queue Length 50th (m)	~44.9	53.7	76.1	53.4	105.9	~81.5	50.5	32.6	15.4	135.7
Queue Length 95th (m)	#95.1	65.7	111.4	#108.7	123.1	#117.3	66.0	51.1	30.1	158.9
Internal Link Dist (m)		562.9			569.3		219.7			317.1
Turn Bay Length (m)	166.0		130.0	187.0		152.0			134.0	
Base Capacity (vph)	177	1687	669	298	1655	332	1595	774	253	1602
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	1.12	0.41	0.71	0.98	0.72	1.35	0.35	0.36	0.30	0.90

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 138.8
Natural Cycle: 140
Control Type: Semi Act-Uncoord
~ 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.

Splits and Phases: 5: Leslie Street & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	663	461	284	1105	50	434	548	274	73	1219	179
Future Volume (vph)	192	663	461	284	1105	50	434	548	274	73	1219	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.5	6.0	6.7	7.1	6.0		6.7	6.1	7.1	7.1	7.1	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	1.00	1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.92	1.00	1.00		1.00	1.00	0.91	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00	0.96	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1737	5092	1481	1758	4987		3471	3411	1428	1730	5022	
Flt Permitted	0.10	1.00	1.00	0.30	1.00		0.95	1.00	1.00	0.44	1.00	
Satd. Flow (perm)	190	5092	1481	559	4987		3471	3411	1428	801	5022	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	198	684	475	293	1139	52	447	565	282	75	1257	185
RTOR Reduction (vph)	0	0	57	0	3	0	0	0	14	0	14	0
Lane Group Flow (vph)	198	684	418	293	1188	0	447	565	268	75	1428	0
Confl. Peds. (#/hr)	57		90	90		57	11		97	97		11
Heavy Vehicles (%)	5%	3%	2%	3%	4%	8%	2%	7%	4%	1%	2%	3%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	pm+ov	Perm	NA	
Protected Phases	5	2	3	1	6		3	8	1		4	
Permitted Phases	2		2	6					8	4		
Actuated Green, G (s)	52.3	43.8	56.1	52.7	43.8		12.3	63.9	72.8	43.9	43.9	
Effective Green, g (s)	54.3	44.8	58.1	54.7	44.8		13.3	64.9	74.8	43.9	43.9	
Actuated g/C Ratio	0.39	0.32	0.42	0.39	0.32		0.10	0.47	0.54	0.32	0.32	
Clearance Time (s)	8.5	7.0	7.7	8.1	7.0		7.7	7.1	8.1	7.1	7.1	
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)	180	1643	619	305	1609		332	1594	769	253	1588	
v/s Ratio Prot	c0.08	0.13	0.06	0.07	0.24		c0.13	0.17	0.02		c0.28	
v/s Ratio Perm	c0.35		0.22	0.31					0.16	0.09		
v/c Ratio	1.10	0.42	0.68	0.96	0.74		1.35	0.35	0.35	0.30	0.90	
Uniform Delay, d1	33.1	36.8	32.7	37.2	41.8		62.8	23.6	18.2	35.8	45.3	
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	96.4	0.2	2.9	40.8	1.8		174.7	0.6	0.3	3.0	8.5	
Delay (s)	129.5	36.9	35.6	78.1	43.6		237.4	24.2	18.4	38.8	53.9	
Level of Service	F	D	D	E	D		F	C	B	D	D	
Approach Delay (s)		50.0			50.4			96.6			53.1	
Approach LOS		D			D			F			D	

Intersection Summary

HCM 2000 Control Delay	61.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	138.8	Sum of lost time (s)	27.3
Intersection Capacity Utilization	145.2%	ICU Level of Service	H
Analysis Period (min)	15		

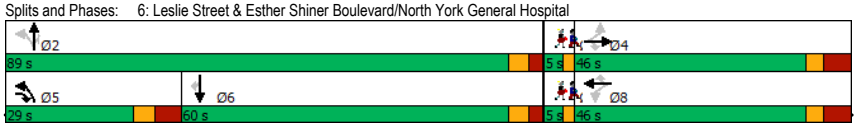
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	Ø3
Lane Configurations												
Traffic Volume (vph)	45	0	582	80	0	45	314	1130	325	1871	142	
Future Volume (vph)	45	0	582	80	0	45	314	1130	325	1871	142	
Lane Group Flow (vph)	0	47	606	0	83	47	327	1177	339	1949	148	
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	
Protected Phases		4	5		8		5	2		6		3
Permitted Phases	4		4	8		8	2		2		6	
Detector Phase	4	4	5	8	8	8	5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	7.0	6.0	25.0	25.0	25.0	25.0	1.0
Minimum Split (s)	45.8	45.8	13.9	45.8	45.8	45.8	13.9	30.9	30.9	30.9	30.9	5.0
Total Split (s)	46.0	46.0	29.0	46.0	46.0	46.0	29.0	89.0	89.0	60.0	60.0	5.0
Total Split (%)	32.9%	32.9%	20.7%	32.9%	32.9%	32.9%	20.7%	63.6%	63.6%	42.9%	42.9%	4%
Yellow Time (s)	3.0	3.0	3.4	3.0	3.0	3.0	3.4	3.4	3.4	3.4	3.4	2.0
All-Red Time (s)	4.8	4.8	4.5	4.8	4.8	4.8	4.5	2.5	2.5	2.5	2.5	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.8	7.9		7.8	7.8	7.9	5.9	5.9	5.9	5.9	
Lead/Lag	Lag	Lag	Lead	Lag	Lag	Lag	Lead			Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	Max	Max	Max	None
v/c Ratio		0.36	1.16		0.56	0.18	0.79	0.31	0.27	0.76	0.19	
Control Delay		52.6	122.3		60.8	1.4	43.9	4.5	1.0	25.1	3.3	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		52.6	122.3		60.8	1.4	43.9	4.5	1.0	25.1	3.3	
Queue Length 50th (m)		9.4	~145.1		17.0	0.0	50.4	23.5	0.0	118.3	0.0	
Queue Length 95th (m)		20.8	#209.4		32.4	0.0	#100.3	35.5	6.8	150.8	10.4	
Internal Link Dist (m)		126.3			53.3			213.2		219.7		
Turn Bay Length (m)							155.0		182.0		180.0	
Base Capacity (vph)		407	522		465	628	413	3848	1279	2554	793	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.12	1.16		0.18	0.07	0.79	0.31	0.27	0.76	0.19	

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 109
Natural Cycle: 140
Control Type: Semi Act-Uncoord
~ 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.

Splits and Phases: 6: Leslie Street & Esther Shiner Boulevard/North York General Hospital



Lane Group	Ø7
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	4%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	0	582	80	0	45	314	1130	325	0	1871	142
Future Volume (vph)	45	0	582	80	0	45	314	1130	325	0	1871	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.8	7.9		7.8	7.8	7.9	5.9	5.9		5.9	5.9
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91	1.00		0.91	1.00
Frpb, ped/bikes		1.00	0.99		1.00	0.99	1.00	1.00	0.97		1.00	0.92
Flpb, ped/bikes		1.00	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected		0.95	1.00		0.95	1.00	0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)		1570	1589		1741	1609	1789	5043	1574		5142	1481
Flt Permitted		0.70	1.00		0.73	1.00	0.06	1.00	1.00		1.00	1.00
Satd. Flow (perm)		1162	1589		1331	1609	121	5043	1574		5142	1481
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	47	0	606	83	0	47	327	1177	339	0	1949	148
RTOR Reduction (vph)	0	0	40	0	0	42	0	0	80	0	0	74
Lane Group Flow (vph)	0	47	566	0	83	5	327	1177	259	0	1949	74
Confl. Peds. (#/hr)	3		10	10		3	56		3	3		56
Heavy Vehicles (%)	16%	0%	2%	4%	0%	0%	2%	4%	1%	0%	2%	1%
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm		NA	Perm
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8		8	2		2			6
Actuated Green, G (s)		12.1	33.2		12.1	12.1	83.2	83.2	83.2		54.2	54.2
Effective Green, g (s)		12.1	33.2		12.1	12.1	83.2	83.2	83.2		54.2	54.2
Actuated g/C Ratio		0.11	0.30		0.11	0.11	0.76	0.76	0.76		0.50	0.50
Clearance Time (s)		7.8	7.9		7.8	7.8	7.9	5.9	5.9		5.9	5.9
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		128	483		147	178	415	3849	1201		2556	736
v/s Ratio Prot			c0.23				0.15	0.23			0.38	
v/s Ratio Perm		0.04	0.13		0.06	0.00	c0.45		0.16			0.05
v/c Ratio		0.37	1.17		0.56	0.03	0.79	0.31	0.22		0.76	0.10
Uniform Delay, d1		44.9	37.9		46.0	43.2	31.8	4.0	3.7		22.2	14.5
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		1.8	97.2		4.9	0.1	9.6	0.2	0.4		2.2	0.3
Delay (s)		46.7	135.1		50.8	43.3	41.3	4.2	4.1		24.4	14.8
Level of Service		D	F		D	D	D	A	A		C	B
Approach Delay (s)		128.8			48.1			10.8			23.7	
Approach LOS		F			D			B			C	

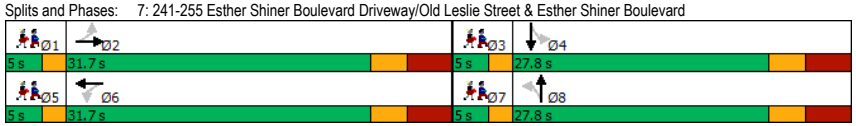
Intersection Summary				
HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.98			
Actuated Cycle Length (s)	109.0	Sum of lost time (s)	23.6	
Intersection Capacity Utilization	99.5%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø5	Ø7
Lane Configurations												
Traffic Volume (vph)	60	433	4	207	3	2	221	6				
Future Volume (vph)	60	433	4	207	3	2	221	6				
Lane Group Flow (vph)	63	459	4	433	3	17	233	25				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		2		6		8		4	1	3	5	7
Permitted Phases	2		6		8		4					
Detector Phase	2	2	6	6	8	8	4	4				
Switch Phase												
Minimum Initial (s)	24.0	24.0	24.0	24.0	7.0	7.0	7.0	7.0	1.0	1.0	1.0	1.0
Minimum Split (s)	30.7	30.7	30.7	30.7	32.8	32.8	32.8	32.8	5.0	5.0	5.0	5.0
Total Split (s)	31.7	31.7	31.7	31.7	27.8	27.8	27.8	27.8	5.0	5.0	5.0	5.0
Total Split (%)	45.6%	45.6%	45.6%	45.6%	40.0%	40.0%	40.0%	40.0%	7%	7%	7%	7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0
All-Red Time (s)	3.7	3.7	3.7	3.7	3.8	3.8	3.8	3.8	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.8	6.8	6.8	6.8				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.18	0.34	0.01	0.32	0.01	0.03	0.42	0.04				
Control Delay	14.9	15.0	12.5	7.5	11.3	6.6	16.2	6.7				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay	14.9	15.0	12.5	7.5	11.3	6.6	16.2	6.7				
Queue Length 50th (m)	4.8	19.5	0.3	8.7	0.2	0.2	18.7	0.4				
Queue Length 95th (m)	12.1	29.6	1.9	17.3	1.5	3.2	35.0	4.1				
Internal Link Dist (m)		258.8		126.3		94.1		280.8				
Turn Bay Length (m)	42.0		62.0		50.0		36.0					
Base Capacity (vph)	368	1407	356	1402	570	640	559	660				
Starvation Cap Reductn	0	0	0	0	0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0	0	0				
Reduced v/c Ratio	0.17	0.33	0.01	0.31	0.01	0.03	0.42	0.04				

Intersection Summary
Cycle Length: 69.5
Actuated Cycle Length: 63.5
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Splits and Phases: 7: 241-255 Esther Shiner Boulevard Driveway/Old Leslie Street & Esther Shiner Boulevard



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	433	3	4	207	204	3	2	14	221	6	18
Future Volume (vph)	60	433	3	4	207	204	3	2	14	221	6	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7		6.7	6.7		6.8	6.8		6.8	6.8	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.97	1.00		0.98	1.00		0.99	1.00	
Frt	1.00	1.00		1.00	0.93		1.00	0.87		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1780	3574		1766	3232		1789	1543		1742	1588	
Flt Permitted	0.50	1.00		0.49	1.00		0.74	1.00		0.75	1.00	
Satd. Flow (perm)	937	3574		907	3232		1395	1543		1369	1588	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	456	3	4	218	215	3	2	15	233	6	19
RTOR Reduction (vph)	0	1	0	0	134	0	0	9	0	0	11	0
Lane Group Flow (vph)	63	458	0	4	299	0	3	8	0	233	14	0
Confl. Peds. (#/hr)	7		46	46		7	28		10	10		28
Heavy Vehicles (%)	2%	2%	0%	0%	5%	1%	0%	0%	7%	4%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	24.0	24.0		24.0	24.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	24.0	24.0		24.0	24.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.41	0.41		0.41	0.41	
Clearance Time (s)	6.7	6.7		6.7	6.7		6.8	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	354	1350		342	1221		571	631		560	650	
v/s Ratio Prot		c0.13			0.09			0.01			0.01	
v/s Ratio Perm	0.07			0.00			0.00			c0.17		
v/c Ratio	0.18	0.34		0.01	0.25		0.01	0.01		0.42	0.02	
Uniform Delay, d1	13.2	14.1		12.3	13.5		11.1	11.1		13.3	11.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.0	0.1		0.0	0.0		2.3	0.1	
Delay (s)	13.4	14.2		12.4	13.6		11.1	11.2		15.6	11.2	
Level of Service	B	B		B	B		B	B		B	B	
Approach Delay (s)		14.1			13.6			11.2			15.2	
Approach LOS		B			B			B			B	

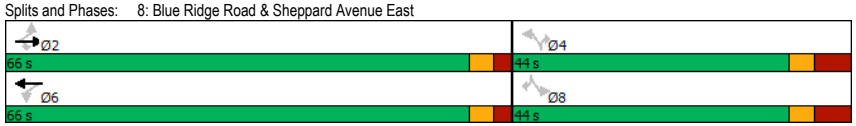
Intersection Summary				
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	63.5	Sum of lost time (s)	17.5	
Intersection Capacity Utilization	78.5%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations									
Traffic Volume (vph)	9	1524	217	1	1303	79	6	54	20
Future Volume (vph)	9	1524	217	1	1303	79	6	54	20
Lane Group Flow (vph)	10	1657	236	1	1451	86	7	59	22
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm
Protected Phases		2			6				
Permitted Phases	2		2	6		4	4	8	8
Detector Phase	2	2	2	6	6	4	4	8	8
Switch Phase									
Minimum Initial (s)	22.0	22.0	22.0	22.0	22.0	7.0	7.0	7.0	7.0
Minimum Split (s)	40.8	40.8	40.8	32.8	32.8	43.2	43.2	43.2	43.2
Total Split (s)	66.0	66.0	66.0	66.0	66.0	44.0	44.0	44.0	44.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	4.9	4.9	4.9	4.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	5.8	8.2	8.2	8.2	8.2
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.05	0.60	0.19	0.01	0.53	0.43	0.03	0.29	0.11
Control Delay	4.7	6.9	2.4	4.0	6.0	41.4	1.0	37.9	12.0
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	7.0	2.4	4.0	6.0	41.4	1.0	37.9	12.0
Queue Length 50th (m)	0.4	59.3	4.5	0.0	47.1	13.0	0.0	8.8	0.0
Queue Length 95th (m)	2.0	91.3	12.1	0.5	72.1	26.4	0.6	19.5	5.5
Internal Link Dist (m)		187.5			216.6				
Turn Bay Length (m)	30.0		40.0	30.0					
Base Capacity (vph)	221	2767	1265	164	2755	758	694	758	694
Starvation Cap Reductn	0	255	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.66	0.19	0.01	0.53	0.11	0.01	0.08	0.03

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 84.5
Natural Cycle: 85
Control Type: Semi Act-Uncoord

Splits and Phases: 8: Blue Ridge Road & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1524	217	1	1303	32	79	0	6	54	0	20
Future Volume (vph)	9	1524	217	1	1303	32	79	0	6	54	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8	5.8	5.8		8.2		8.2	8.2		8.2
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1789	3579	1601	1789	3566		1789		1601	1789		1601
Flt Permitted	0.15	1.00	1.00	0.11	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	287	3579	1601	213	3566		1789		1601	1789		1601
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)	10	1657	236	1	1416	35	86	0	7	59	0	22
RTOR Reduction (vph)	0	0	32	0	1	0	0	0	6	0	0	20
Lane Group Flow (vph)	10	1657	204	1	1450	0	86	0	1	59	0	2
Turn Type	Perm	NA	Perm	Perm	NA		Perm		Perm	Perm		Perm
Protected Phases		2			6							
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	64.1	64.1	64.1	64.1	64.1		8.1		8.1	8.1		8.1
Effective Green, g (s)	64.1	64.1	64.1	64.1	64.1		8.1		8.1	8.1		8.1
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.74		0.09		0.09	0.09		0.09
Clearance Time (s)	5.8	5.8	5.8	5.8	5.8		8.2		8.2	8.2		8.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	213	2661	1190	158	2651		168		150	168		150
v/s Ratio Prot		c0.46			0.41							
v/s Ratio Perm	0.03		0.13	0.00			c0.05		0.00	0.03		0.00
v/c Ratio	0.05	0.62	0.17	0.01	0.55		0.51		0.00	0.35		0.01
Uniform Delay, d1	2.9	5.3	3.2	2.8	4.8		37.2		35.4	36.6		35.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00		1.00
Incremental Delay, d2	0.4	1.1	0.3	0.1	0.8		2.6		0.0	1.3		0.0
Delay (s)	3.4	6.4	3.6	2.9	5.6		39.8		35.4	37.9		35.5
Level of Service	A	A	A	A	A		D		D	D		D
Approach Delay (s)		6.0			5.6			39.5			37.2	
Approach LOS		A			A			D			D	

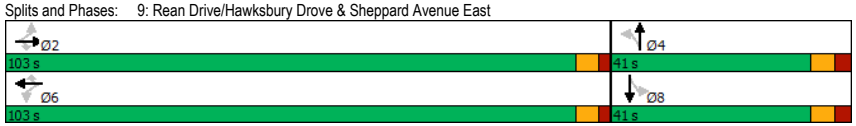
Intersection Summary				
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	86.2	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	66.3%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	53	1239	44	51	1438	40	68	33	108	17
Future Volume (vph)	53	1239	44	51	1438	40	68	33	108	17
Lane Group Flow (vph)	58	1347	48	55	1563	43	74	228	117	75
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	2	2	2	6	6	6	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	27.0	40.0	40.0	40.0	40.0
Total Split (s)	103.0	103.0	103.0	103.0	103.0	103.0	41.0	41.0	41.0	41.0
Total Split (%)	71.5%	71.5%	71.5%	71.5%	71.5%	71.5%	28.5%	28.5%	28.5%	28.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0	7.0	7.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	Max	Max	Max	None	None	None	None	None	None	None
v/c Ratio	0.35	0.52	0.04	0.24	0.60	0.04	0.32	0.66	0.97	0.23
Control Delay	15.5	9.5	2.0	10.9	10.8	3.3	51.2	42.8	129.0	21.4
Queue Delay	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	10.9	2.0	10.9	10.8	3.3	51.2	42.8	129.0	21.4
Queue Length 50th (m)	5.0	72.8	0.0	4.3	93.5	0.9	17.2	37.6	30.8	6.0
Queue Length 95th (m)	18.0	115.5	4.2	13.5	147.3	5.1	31.9	64.4	#60.3	19.2
Internal Link Dist (m)		131.5			520.0			90.0		77.4
Turn Bay Length (m)	30.0			40.0		40.0	35.0			
Base Capacity (vph)	167	2613	1182	228	2613	1177	341	477	180	462
Starvation Cap Reductn	0	991	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	0.35	0.83	0.04	0.24	0.60	0.04	0.22	0.48	0.65	0.16

Intersection Summary
Cycle Length: 144
Actuated Cycle Length: 133.3
Natural Cycle: 80
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 9: Rean Drive/Hawksbury Drove & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	1239	44	51	1438	40	68	33	177	108	17	52
Future Volume (vph)	53	1239	44	51	1438	40	68	33	177	108	17	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
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	0.87		1.00	0.89	
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)	1789	3579	1601	1789	3579	1601	1789	1646		1789	1669	
Flt Permitted	0.12	1.00	1.00	0.17	1.00	1.00	0.71	1.00		0.37	1.00	
Satd. Flow (perm)	230	3579	1601	313	3579	1601	1334	1646		705	1669	
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)	58	1347	48	55	1563	43	74	36	192	117	18	57
RTOR Reduction (vph)	0	0	13	0	0	8	0	63	0	0	40	0
Lane Group Flow (vph)	58	1347	35	55	1563	35	74	165	0	117	35	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	97.3	97.3	97.3	97.3	97.3	97.3	22.9	22.9		22.9	22.9	
Effective Green, g (s)	97.3	97.3	97.3	97.3	97.3	97.3	22.9	22.9		22.9	22.9	
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73	0.73	0.17	0.17		0.17	0.17	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
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)	168	2614	1169	228	2614	1169	229	282		121	286	
v/s Ratio Prot		0.38			c0.44			0.10			0.02	
v/s Ratio Perm	0.25		0.02	0.18		0.02	0.06			c0.17		
v/c Ratio	0.35	0.52	0.03	0.24	0.60	0.03	0.32	0.59		0.97	0.12	
Uniform Delay, d1	6.5	7.8	4.9	5.9	8.6	4.9	48.4	50.8		54.8	46.7	
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	5.5	0.7	0.0	0.6	0.4	0.0	0.8	3.1		70.8	0.2	
Delay (s)	12.0	8.5	5.0	6.4	9.0	5.0	49.2	53.9		125.5	46.9	
Level of Service	B	A	A	A	A	A	D	D		F	D	
Approach Delay (s)		8.5			8.8			52.7			94.8	
Approach LOS		A			A			D			F	

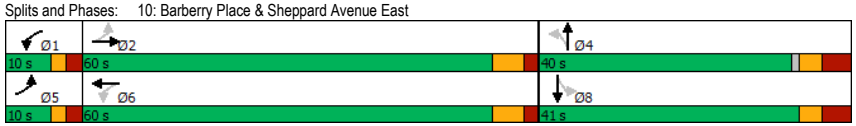
Intersection Summary				
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	133.2	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	79.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	49	1100	11	1424	152	6	11	6
Future Volume (vph)	49	1100	11	1424	152	6	11	6
Lane Group Flow (vph)	53	1236	12	1598	165	89	12	29
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	6.0	21.0	6.0	21.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	60.0	10.0	60.0	40.0	40.0	41.0	41.0
Total Split (s)	10.0	60.0	10.0	60.0	40.0	40.0	41.0	41.0
Total Split (%)	9.0%	54.1%	9.0%	54.1%	36.0%	36.0%	36.9%	36.9%
Yellow Time (s)	2.0	4.0	2.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	6.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Max	None	None	Max	Max	None	None
v/c Ratio	0.29	0.46	0.04	0.66	0.37	0.15	0.03	0.05
Control Delay	13.9	15.8	9.7	22.7	30.1	7.7	25.4	13.0
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	13.9	15.8	9.7	22.9	30.1	7.7	25.4	13.0
Queue Length 50th (m)	4.4	50.1	1.0	89.5	24.1	0.9	1.6	0.9
Queue Length 95th (m)	9.4	74.9	3.4	104.9	47.3	12.3	6.3	7.8
Internal Link Dist (m)		235.0		131.5		99.4		60.3
Turn Bay Length (m)	40.0		25.0		50.0		25.0	
Base Capacity (vph)	181	2715	270	2715	463	596	439	571
Starvation Cap Reductn	0	0	0	366	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.46	0.04	0.68	0.36	0.15	0.03	0.05

Intersection Summary
Cycle Length: 111
Actuated Cycle Length: 102
Natural Cycle: 115
Control Type: Semi Act-Uncoord

Splits and Phases: 10: Barberry Place & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	1100	37	11	1424	46	152	6	75	11	6	20
Future Volume (vph)	49	1100	37	11	1424	46	152	6	75	11	6	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.86		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	5117		1789	5118		1789	1623		1789	1669	
Flt Permitted	0.08	1.00		0.18	1.00		0.74	1.00		0.70	1.00	
Satd. Flow (perm)	153	5117		344	5118		1391	1623		1317	1669	
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)	53	1196	40	12	1548	50	165	7	82	12	7	22
RTOR Reduction (vph)	0	3	0	0	3	0	0	56	0	0	15	0
Lane Group Flow (vph)	53	1233	0	12	1595	0	165	33	0	12	14	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	58.9	54.1		51.5	50.4		33.0	33.0		33.0	33.0	
Effective Green, g (s)	58.9	54.1		51.5	50.4		33.0	33.0		33.0	33.0	
Actuated g/C Ratio	0.56	0.51		0.49	0.48		0.31	0.31		0.31	0.31	
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	160	2631		183	2451		436	509		413	523	
v/s Ratio Prot	c0.02	0.24		0.00	c0.31			0.02			0.01	
v/s Ratio Perm	0.17			0.03			c0.12			0.01		
v/c Ratio	0.33	0.47		0.07	0.65		0.38	0.06		0.03	0.03	
Uniform Delay, d1	13.9	16.4		14.1	20.7		28.1	25.3		25.0	25.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.6		0.2	0.6		2.5	0.2		0.0	0.0	
Delay (s)	15.1	17.0		14.2	21.4		30.6	25.5		25.0	25.0	
Level of Service	B	B		B	C		C	C		C	C	
Approach Delay (s)		16.9			21.3			28.8			25.0	
Approach LOS		B			C			C			C	

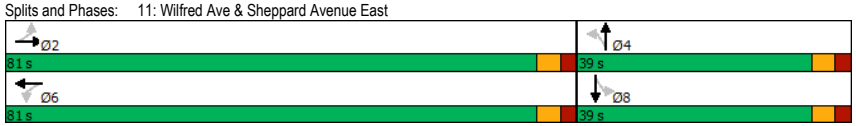
Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	105.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	2	1528	11	1371	19	28	198	18
Future Volume (vph)	2	1528	11	1371	19	28	198	18
Lane Group Flow (vph)	2	1733	12	1500	0	63	0	271
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	23.0	23.0	23.0	23.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.6	33.6	33.6	33.6	35.8	35.8	35.8	35.8
Total Split (s)	81.0	81.0	81.0	81.0	39.0	39.0	39.0	39.0
Total Split (%)	67.5%	67.5%	67.5%	67.5%	32.5%	32.5%	32.5%	32.5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.6	5.6	5.6	5.6		5.8		5.8
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
v/c Ratio	0.02	0.77	0.16	0.67		0.14		0.70
Control Delay	9.0	19.2	15.2	16.1		28.8		49.1
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	9.0	19.2	15.2	16.1		28.8		49.1
Queue Length 50th (m)	0.2	144.5	1.1	110.8		9.4		56.1
Queue Length 95th (m)	1.2	173.8	4.7	133.7		20.6		86.9
Internal Link Dist (m)		149.2		363.8		136.1		104.8
Turn Bay Length (m)	28.0		24.0					
Base Capacity (vph)	125	2237	76	2246		447		387
Starvation Cap Reductn	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0		0		0
Reduced v/c Ratio	0.02	0.77	0.16	0.67		0.14		0.70

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 11: Wilfred Ave & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1528	66	11	1371	9	19	28	11	198	18	33
Future Volume (vph)	2	1528	66	11	1371	9	19	28	11	198	18	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6		5.6	5.6			5.8			5.8	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	1.00			0.97			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.96	
Satd. Flow (prot)	1789	3556		1789	3575			1805			1779	
Flt Permitted	0.11	1.00		0.06	1.00			0.87			0.75	
Satd. Flow (perm)	200	3556		120	3575			1593			1386	
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)	2	1661	72	12	1490	10	21	30	12	215	20	36
RTOR Reduction (vph)	0	3	0	0	0	0	0	7	0	0	4	0
Lane Group Flow (vph)	2	1730	0	12	1500	0	0	56	0	0	267	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	75.4	75.4		75.4	75.4			33.2			33.2	
Effective Green, g (s)	75.4	75.4		75.4	75.4			33.2			33.2	
Actuated g/C Ratio	0.63	0.63		0.63	0.63			0.28			0.28	
Clearance Time (s)	5.6	5.6		5.6	5.6			5.8			5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	125	2234		75	2246			440			383	
v/s Ratio Prot		c0.49			0.42							
v/s Ratio Perm	0.01			0.10				0.04			c0.19	
v/c Ratio	0.02	0.77		0.16	0.67			0.13			0.70	
Uniform Delay, d1	8.4	16.1		9.2	14.3			32.5			38.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	2.7		4.5	1.6			0.6			10.0	
Delay (s)	8.6	18.8		13.7	15.9			33.1			48.9	
Level of Service	A	B		B	B			C			D	
Approach Delay (s)		18.8			15.9			33.1			48.9	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.4
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

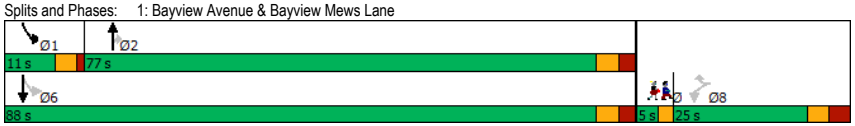
c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø7
Lane Configurations							
Traffic Volume (vph)	189	194	1216	174	245	1306	
Future Volume (vph)	189	194	1216	174	245	1306	
Lane Group Flow (vph)	197	202	1267	181	255	1360	
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA	
Protected Phases			2		1	6	7
Permitted Phases	8	8		2	6		
Detector Phase	8	8	2	2	1	6	
Switch Phase							
Minimum Initial (s)	7.0	7.0	24.0	24.0	6.0	24.0	1.0
Minimum Split (s)	24.2	24.2	46.0	46.0	10.5	29.7	5.0
Total Split (s)	25.0	25.0	77.0	77.0	11.0	88.0	5.0
Total Split (%)	21.2%	21.2%	65.3%	65.3%	9.3%	74.6%	4%
Yellow Time (s)	3.0	3.0	3.3	3.3	3.0	3.3	2.0
All-Red Time (s)	3.2	3.2	2.4	2.4	1.0	2.4	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	-1.0	0.0	0.0	
Total Lost Time (s)	6.2	6.2	5.7	4.7	4.0	5.7	
Lead/Lag	Lag	Lag	Lag	Lag	Lead		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	None	Max	Max	None	Max	None
v/c Ratio	0.51	0.66	0.54	0.20	0.74	0.53	
Control Delay	49.0	21.1	10.2	1.6	18.9	5.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	49.0	21.1	10.2	1.6	18.9	5.7	
Queue Length 50th (m)	20.0	5.9	61.8	0.0	9.7	44.0	
Queue Length 95th (m)	30.9	28.3	91.6	7.2	#29.0	73.1	
Internal Link Dist (m)	321.3		291.9			215.1	
Turn Bay Length (m)	66.0			71.0	40.0		
Base Capacity (vph)	622	391	2363	886	344	2555	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.32	0.52	0.54	0.20	0.74	0.53	

Intersection Summary

Cycle Length: 118
Actuated Cycle Length: 106
Natural Cycle: 90
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Bayview Avenue & Bayview Mews Lane



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	189	194	1216	174	245	1306
Future Volume (vph)	189	194	1216	174	245	1306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2	5.7	4.7	4.0	5.7
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	0.89	1.00	0.77	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3506	1432	3510	1252	1784	3288
Flt Permitted	0.95	1.00	1.00	1.00	0.17	1.00
Satd. Flow (perm)	3506	1432	3510	1252	310	3288
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	197	202	1267	181	255	1360
RTOR Reduction (vph)	0	152	0	57	0	0
Lane Group Flow (vph)	197	50	1267	124	255	1360
Confl. Peds. (#/hr)		59		95	95	
Heavy Vehicles (%)	1%	1%	4%	1%	2%	11%
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	11.7	11.7	71.4	71.4	82.4	82.4
Effective Green, g (s)	11.7	11.7	71.4	72.4	82.4	82.4
Actuated g/C Ratio	0.11	0.11	0.67	0.68	0.78	0.78
Clearance Time (s)	6.2	6.2	5.7	5.7	4.0	5.7
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	386	158	2364	855	338	2555
v/s Ratio Prot			0.36		c0.05	0.41
v/s Ratio Perm	c0.06	0.03		0.10	c0.54	
v/c Ratio	0.51	0.32	0.54	0.14	0.75	0.53
Uniform Delay, d1	44.4	43.5	8.8	5.9	7.4	4.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	1.2	0.9	0.4	9.2	0.8
Delay (s)	45.6	44.6	9.7	6.3	16.6	5.3
Level of Service	D	D	A	A	B	A
Approach Delay (s)	45.1		9.3			7.1
Approach LOS	D		A			A

Intersection Summary

HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	106.0	Sum of lost time (s)	17.9
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

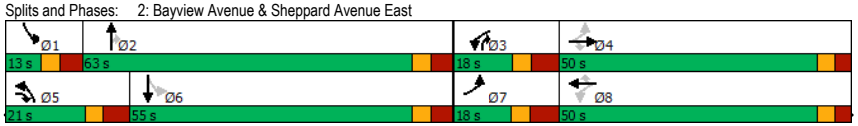
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	155	1029	605	188	1034	272	430	1115	515	178	1261
Future Volume (vph)	155	1029	605	188	1034	272	430	1115	515	178	1261
Lane Group Flow (vph)	158	1050	617	192	1055	278	439	1138	526	182	1375
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	pm+ov	pm+pt	NA
Protected Phases	7	4	5	3	8		5	2	3	1	6
Permitted Phases	4		4	8		8			2	6	
Detector Phase	7	4	5	3	8	8	5	2	3	1	6
Switch Phase											
Minimum Initial (s)	6.0	40.0	6.0	6.0	40.0	40.0	6.0	39.0	6.0	6.0	39.0
Minimum Split (s)	14.0	46.1	13.6	13.8	46.1	46.1	13.6	45.9	13.8	12.9	45.9
Total Split (s)	18.0	50.0	21.0	18.0	50.0	50.0	21.0	63.0	18.0	13.0	55.0
Total Split (%)	12.5%	34.7%	14.6%	12.5%	34.7%	34.7%	14.6%	43.8%	12.5%	9.0%	38.2%
Yellow Time (s)	3.1	3.2	3.1	3.2	3.2	3.2	3.1	3.2	3.2	3.2	3.2
All-Red Time (s)	4.9	2.9	4.5	4.6	2.9	2.9	4.5	3.7	4.6	3.7	3.7
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	7.0	5.1	6.6	6.8	5.1	5.1	6.6	5.9	6.8	5.9	5.9
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	None	None	Max
v/c Ratio	0.78	0.68	0.96	0.94	0.69	0.49	1.25	0.80	0.70	1.19	0.79
Control Delay	54.4	46.1	59.2	79.3	46.4	14.7	182.6	42.5	26.7	158.1	45.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.4	46.1	59.2	79.3	46.4	14.7	182.6	42.5	26.7	158.1	45.5
Queue Length 50th (m)	28.2	95.0	132.3	35.0	95.8	16.2	~77.5	143.9	84.2	~39.7	124.2
Queue Length 95th (m)	#58.2	110.8	#179.0	#81.1	111.8	43.2	#114.7	178.8	127.3	#92.3	147.9
Internal Link Dist (m)		145.8			235.0			137.9			291.9
Turn Bay Length (m)	78.0		85.0	160.0		45.0	97.0			80.0	
Base Capacity (vph)	203	1629	643	205	1613	583	352	1428	753	153	1745
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.64	0.96	0.94	0.65	0.48	1.25	0.80	0.70	1.19	0.79

Intersection Summary

Cycle Length: 144
Actuated Cycle Length: 141.7
Natural Cycle: 130
Control Type: Semi Act-Uncoord

~ 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.

Splits and Phases: 2: Bayview Avenue & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	1029	605	188	1034	272	430	1115	515	178	1261	86
Future Volume (vph)	155	1029	605	188	1034	272	430	1115	515	178	1261	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	5.1	6.6	6.8	5.1	5.1	6.6	5.9	6.8	5.9	5.9	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.89	1.00	1.00	0.95	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5142	1503	1753	5092	1413	3471	3544	1500	1737	5025	
Flt Permitted	0.13	1.00	1.00	0.13	1.00	1.00	0.95	1.00	1.00	0.11	1.00	
Satd. Flow (perm)	233	5142	1503	234	5092	1413	3471	3544	1500	194	5025	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	158	1050	617	192	1055	278	439	1138	526	182	1287	88
RTOR Reduction (vph)	0	0	54	0	0	140	0	0	39	0	5	0
Lane Group Flow (vph)	158	1050	563	192	1055	138	439	1138	487	182	1370	0
Confl. Peds. (#/hr)	93		55	55		93	60		49	49		60
Heavy Vehicles (%)	3%	2%	3%	4%	3%	3%	2%	3%	3%	5%	3%	1%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	pm+ov	pm+pt	NA	
Protected Phases	7	4	5	3	8		5	2	3	1	6	
Permitted Phases	4		4	8		8			2	6		
Actuated Green, G (s)	51.6	41.6	55.0	51.8	41.6	41.6	13.4	56.1	66.3	54.2	48.1	
Effective Green, g (s)	53.6	42.6	57.0	53.8	42.6	42.6	14.4	57.1	68.3	56.2	49.1	
Actuated g/C Ratio	0.38	0.30	0.40	0.38	0.30	0.30	0.10	0.40	0.48	0.40	0.35	
Clearance Time (s)	8.0	6.1	7.6	7.8	6.1	6.1	7.6	6.9	7.8	6.9	6.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	207	1545	604	208	1530	424	352	1428	723	154	1741	
v/s Ratio Prot	0.06	0.20	c0.09	c0.07	0.21		c0.13	0.32	0.05	0.06	0.27	
v/s Ratio Perm	0.23		0.28	0.28		0.10			0.27	c0.41		
v/c Ratio	0.76	0.68	0.93	0.92	0.69	0.33	1.25	0.80	0.67	1.18	0.79	
Uniform Delay, d1	32.6	43.6	40.5	33.4	43.7	38.4	63.6	37.2	28.1	36.6	41.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.3	1.2	21.4	41.3	1.3	0.5	132.8	4.7	2.5	129.7	3.7	
Delay (s)	47.9	44.8	61.9	74.7	45.0	38.9	196.5	41.9	30.6	166.3	45.3	
Level of Service	D	D	E	E	D	D	F	D	C	F	D	
Approach Delay (s)		50.8			47.6			71.3			59.4	
Approach LOS		D			D			E			E	

Intersection Summary

HCM 2000 Control Delay	58.2	HCM 2000 Level of Service		E	
HCM 2000 Volume to Capacity ratio	1.07				
Actuated Cycle Length (s)	141.7	Sum of lost time (s)		24.6	
Intersection Capacity Utilization	108.8%	ICU Level of Service		G	
Analysis Period (min)	15				

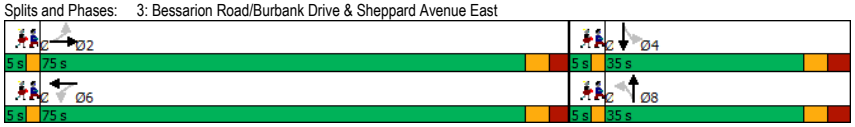
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø5	Ø7
Lane Configurations												
Traffic Volume (vph)	36	1482	29	1357	6	10	219	15				
Future Volume (vph)	36	1482	29	1357	6	10	219	15				
Lane Group Flow (vph)	38	1569	31	1614	6	35	231	73				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		2		6		8		4	1	3	5	7
Permitted Phases	2		6		8		4					
Detector Phase	2	2	6	6	8	8	4	4				
Switch Phase												
Minimum Initial (s)	23.0	23.0	23.0	23.0	7.0	7.0	7.0	7.0	1.0	1.0	1.0	1.0
Minimum Split (s)	34.2	34.2	34.2	34.2	34.7	34.7	34.7	34.7	5.0	5.0	5.0	5.0
Total Split (s)	75.0	75.0	75.0	75.0	35.0	35.0	35.0	35.0	5.0	5.0	5.0	5.0
Total Split (%)	62.5%	62.5%	62.5%	62.5%	29.2%	29.2%	29.2%	29.2%	4%	4%	4%	4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	3.4	3.4	3.4	3.4	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.7	6.7	6.7	6.7				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.57	0.77	0.36	0.82	0.02	0.07	0.61	0.15				
Control Delay	48.4	18.3	24.1	20.0	30.2	16.1	41.2	12.7				
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0				
Total Delay	48.4	18.3	24.1	20.2	30.2	16.1	41.2	12.7				
Queue Length 50th (m)	4.2	110.4	2.9	118.6	0.9	1.6	39.2	2.3				
Queue Length 95th (m)	#22.1	135.2	11.2	146.4	4.3	9.6	72.4	13.7				
Internal Link Dist (m)		520.0		187.5		166.1		235.9				
Turn Bay Length (m)	30.0		31.0		15.0		41.0					
Base Capacity (vph)	82	2485	104	2397	390	475	380	491				
Starvation Cap Reductn	0	0	0	183	0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0	0	0				
Reduced v/c Ratio	0.46	0.63	0.30	0.73	0.02	0.07	0.61	0.15				

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 99.1
Natural Cycle: 90
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Bessarion Road/Burbank Drive & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	1482	9	29	1357	177	6	10	23	219	15	54
Future Volume (vph)	36	1482	9	29	1357	177	6	10	23	219	15	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.2	6.2		6.2	6.2		6.7	6.7		6.7	6.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	1.00		1.00	0.98		1.00	0.90		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1560	3537		1772	3408		1811	1590		1708	1560	
Flt Permitted	0.07	1.00		0.08	1.00		0.71	1.00		0.73	1.00	
Satd. Flow (perm)	117	3537		149	3408		1353	1590		1320	1560	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	38	1560	9	31	1428	186	6	11	24	231	16	57
RTOR Reduction (vph)	0	0	0	0	8	0	0	17	0	0	41	0
Lane Group Flow (vph)	38	1569	0	31	1606	0	6	18	0	231	32	0
Confl. Peds. (#/hr)	35		86	86		35	8		17	17		8
Heavy Vehicles (%)	17%	3%	0%	3%	4%	5%	0%	0%	9%	5%	0%	9%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	57.4	57.4		57.4	57.4		28.6	28.6		28.6	28.6	
Effective Green, g (s)	57.4	57.4		57.4	57.4		28.6	28.6		28.6	28.6	
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.29	0.29		0.29	0.29	
Clearance Time (s)	6.2	6.2		6.2	6.2		6.7	6.7		6.7	6.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	67	2052		86	1977		391	459		381	451	
v/s Ratio Prot		0.44			c0.47			0.01			0.02	
v/s Ratio Perm	0.32			0.21			0.00			c0.17		
v/c Ratio	0.57	0.76		0.36	0.81		0.02	0.04		0.61	0.07	
Uniform Delay, d1	13.0	15.7		11.0	16.5		25.1	25.3		30.3	25.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.6	1.7		2.6	2.7		0.1	0.2		7.0	0.3	
Delay (s)	23.5	17.4		13.6	19.1		25.2	25.4		37.3	25.8	
Level of Service	C	B		B	B		C	C		D	C	
Approach Delay (s)		17.5			19.0			25.4			34.5	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	98.9	Sum of lost time (s)	16.9	
Intersection Capacity Utilization	77.6%	ICU Level of Service	D	
Analysis Period (min)	15			

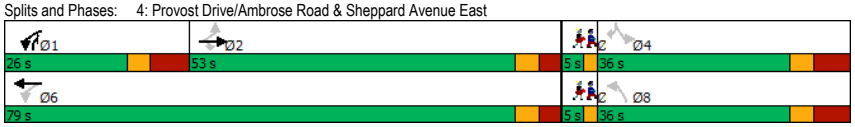
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR	Ø3	Ø7
Lane Configurations											
Traffic Volume (vph)	16	1303	198	209	1068	273	201	265	59		
Future Volume (vph)	16	1303	198	209	1068	273	201	265	59		
Lane Group Flow (vph)	17	1357	206	218	1238	284	209	276	61		
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Over	Perm	Perm		
Protected Phases		2		1	6		1			3	7
Permitted Phases	2		2	6		8		4	4		
Detector Phase	2	2	2	1	6	8	1	4	4		
Switch Phase											
Minimum Initial (s)	30.0	30.0	30.0	6.0	30.0	26.0	6.0	26.0	26.0	1.0	1.0
Minimum Split (s)	36.6	36.6	36.6	14.7	36.6	34.7	14.7	34.7	34.7	5.0	5.0
Total Split (s)	53.0	53.0	53.0	26.0	79.0	36.0	26.0	36.0	36.0	5.0	5.0
Total Split (%)	44.2%	44.2%	44.2%	21.7%	65.8%	30.0%	21.7%	30.0%	30.0%	4%	4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	3.3	3.3	3.3	5.4	3.3	5.4	5.4	5.4	5.4	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.6	6.6	6.6	8.7	6.6	8.7	8.7	8.7	8.7		
Lead/Lag	Lag	Lag	Lag	Lead		Lag	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	None	Max	Max	None	Max	Max	None	None
v/c Ratio	0.11	0.89	0.31	0.78	0.57	0.70	0.69	0.70	0.13		
Control Delay	23.6	39.8	8.4	45.7	13.4	50.4	30.7	51.0	0.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	23.6	39.8	8.4	45.7	13.4	50.4	30.7	51.0	0.6		
Queue Length 50th (m)	2.3	147.3	7.6	32.3	77.4	58.7	16.6	57.1	0.0		
Queue Length 95th (m)	7.7	#201.8	24.0	57.7	95.4	88.4	40.8	86.7	0.0		
Internal Link Dist (m)		216.6			562.9						
Turn Bay Length (m)	37.0		42.0	160.0					50.0		
Base Capacity (vph)	155	1518	668	328	2169	407	346	393	470		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.11	0.89	0.31	0.66	0.57	0.70	0.60	0.70	0.13		

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 115
Natural Cycle: 105
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Provost Drive/Ambrose Road & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1303	198	209	1068	120	273	0	201	265	0	59
Future Volume (vph)	16	1303	198	209	1068	120	273	0	201	265	0	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6	6.6	8.7	6.6		8.7		8.7	8.7		8.7
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.87	1.00	0.99		1.00		1.00	1.00		0.96
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		0.97		1.00	0.94		1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1517	3510	1358	1789	3436		1720		1570	1664		1567
Flt Permitted	0.23	1.00	1.00	0.07	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	361	3510	1358	129	3436		1720		1570	1664		1567
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	17	1357	206	218	1112	125	284	0	209	276	0	61
RTOR Reduction (vph)	0	0	85	0	7	0	0	0	114	0	0	47
Lane Group Flow (vph)	17	1357	121	218	1231	0	284	0	95	276	0	14
Confl. Peds. (#/hr)	31		57	57		31	22		46	46		22
Heavy Vehicles (%)	19%	4%	5%	2%	4%	2%	3%	0%	4%	3%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm		Over	Perm		Perm
Protected Phases		2		1	6				1			
Permitted Phases	2		2	6			8			4		4
Actuated Green, G (s)	49.7	49.7	49.7	72.4	72.4		27.3		14.0	27.3		27.3
Effective Green, g (s)	49.7	49.7	49.7	72.4	72.4		27.3		14.0	27.3		27.3
Actuated g/C Ratio	0.43	0.43	0.43	0.63	0.63		0.24		0.12	0.24		0.24
Clearance Time (s)	6.6	6.6	6.6	8.7	6.6		8.7		8.7	8.7		8.7
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	156	1516	586	283	2163		408		191	395		371
v/s Ratio Prot		c0.39		0.09	c0.36				0.06			
v/s Ratio Perm	0.05		0.09	0.39			0.17			c0.17		0.01
v/c Ratio	0.11	0.90	0.21	0.77	0.57		0.70		0.50	0.70		0.04
Uniform Delay, d1	19.5	30.2	20.4	32.2	12.3		40.1		47.2	40.1		33.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00		1.00
Incremental Delay, d2	1.4	8.6	0.8	12.2	1.1		9.5		2.0	9.9		0.2
Delay (s)	20.9	38.8	21.2	44.4	13.4		49.5		49.2	49.9		34.0
Level of Service	C	D	C	D	B		D		D	D		C
Approach Delay (s)		36.3			18.0			49.4			47.0	
Approach LOS		D			B			D			D	

Intersection Summary

HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.84			
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	26.0	
Intersection Capacity Utilization	94.7%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	239	1109	459	243	961	421	1362	379	98	1004
Future Volume (vph)	239	1109	459	243	961	421	1362	379	98	1004
Lane Group Flow (vph)	241	1120	464	245	1116	425	1376	383	99	1239
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Prot	NA	pm+ov	Perm	NA
Protected Phases	5	2	3	1	6	3	8	1		4
Permitted Phases	2		2	6				8	4	
Detector Phase	5	2	3	1	6	3	8	1	4	4
Switch Phase										
Minimum Initial (s)	6.0	43.0	6.0	6.0	43.0	6.0	43.0	6.0	43.0	43.0
Minimum Split (s)	14.5	50.0	13.7	14.1	50.0	13.7	50.1	14.1	50.1	50.1
Total Split (s)	17.0	52.0	30.0	17.0	52.0	30.0	81.0	17.0	51.0	51.0
Total Split (%)	11.3%	34.7%	20.0%	11.3%	34.7%	20.0%	54.0%	11.3%	34.0%	34.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	5.2	3.7	4.4	4.8	3.7	4.4	3.8	4.8	3.8	3.8
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	7.5	6.0	6.7	7.1	6.0	6.7	6.1	7.1	6.1	6.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max	Max
v/c Ratio	1.37	0.72	0.66	1.38	0.73	0.80	0.76	0.48	1.29	0.80
Control Delay	225.2	49.4	27.5	231.3	49.2	73.6	33.1	17.0	236.1	50.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0
Total Delay	225.2	49.4	27.5	231.3	49.2	73.6	35.0	17.0	236.1	50.6
Queue Length 50th (m)	~74.7	108.2	73.7	~77.3	107.0	62.4	165.6	49.4	~37.0	120.3
Queue Length 95th (m)	#130.0	124.9	106.0	#133.3	123.9	82.3	198.6	72.7	#76.0	141.2
Internal Link Dist (m)		562.9			569.3		219.7			317.1
Turn Bay Length (m)	166.0		130.0	187.0		152.0			134.0	
Base Capacity (vph)	176	1605	710	177	1576	554	1818	796	77	1558
Starvation Cap Reductn	0	0	0	0	0	0	278	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	1.37	0.70	0.65	1.38	0.71	0.77	0.89	0.48	1.29	0.80

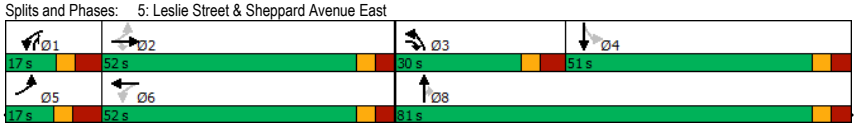
Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 148.8
Natural Cycle: 150
Control Type: Semi Act-Uncoord

~ 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.

Splits and Phases: 5: Leslie Street & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	239	1109	459	243	961	144	421	1362	379	98	1004	223
Future Volume (vph)	239	1109	459	243	961	144	421	1362	379	98	1004	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.5	6.0	6.7	7.1	6.0		6.7	6.1	7.1	6.1	6.1	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	1.00	1.00	0.91	
Frpb, ped/bikes	1.00	1.00	0.89	1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1823	5193	1455	1787	5065		3541	3614	1393	1790	4966	
Flt Permitted	0.11	1.00	1.00	0.11	1.00		0.95	1.00	1.00	0.13	1.00	
Satd. Flow (perm)	211	5193	1455	204	5065		3541	3614	1393	252	4966	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	241	1120	464	245	971	145	425	1376	383	99	1014	225
RTOR Reduction (vph)	0	0	51	0	10	0	0	0	12	0	23	0
Lane Group Flow (vph)	241	1120	413	245	1106	0	425	1376	371	99	1216	0
Confl. Peds. (#/hr)	93		148	148		93	70		152	152		70
Heavy Vehicles (%)	0%	1%	0%	2%	0%	1%	0%	1%	0%	0%	1%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		Prot	NA	pm+ov	Perm	NA	
Protected Phases	5	2	3	1	6		3	8	1		4	
Permitted Phases	2		2	6					8	4		
Actuated Green, G (s)	52.3	43.8	65.0	52.7	43.8		21.2	73.9	82.8	45.0	45.0	
Effective Green, g (s)	54.3	44.8	67.0	54.7	44.8		22.2	74.9	84.8	46.0	46.0	
Actuated g/C Ratio	0.36	0.30	0.45	0.37	0.30		0.15	0.50	0.57	0.31	0.31	
Clearance Time (s)	8.5	7.0	7.7	8.1	7.0		7.7	7.1	8.1	7.1	7.1	
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)	179	1563	655	180	1524		528	1819	793	77	1535	
v/s Ratio Prot	0.09	0.22	0.09	c0.09	0.22		0.12	c0.38	0.03		0.24	
v/s Ratio Perm	0.40		0.19	c0.41					0.24	c0.39		
v/c Ratio	1.35	0.72	0.63	1.36	0.73		0.80	0.76	0.47	1.29	0.79	
Uniform Delay, d1	38.6	46.3	31.4	38.1	46.5		61.2	29.6	18.8	51.4	47.0	
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	188.2	1.6	2.0	194.1	1.8		8.7	3.0	0.4	197.2	4.3	
Delay (s)	226.8	47.9	33.4	232.2	48.3		69.9	32.6	19.2	248.6	51.3	
Level of Service	F	D	C	F	D		E	C	B	F	D	
Approach Delay (s)		67.9			81.4			37.5			65.9	
Approach LOS		E			F			D			E	

Intersection Summary

HCM 2000 Control Delay	60.3	HCM 2000 Level of Service		E	
HCM 2000 Volume to Capacity ratio	1.25				
Actuated Cycle Length (s)	148.8	Sum of lost time (s)		26.3	
Intersection Capacity Utilization	144.0%	ICU Level of Service		H	
Analysis Period (min)	15				

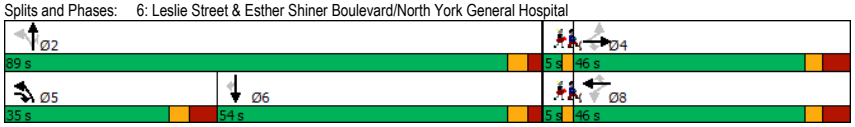
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	Ø3
Lane Configurations												
Traffic Volume (vph)	172	0	651	157	1	74	386	2043	111	1551	129	
Future Volume (vph)	172	0	651	157	1	74	386	2043	111	1551	129	
Lane Group Flow (vph)	0	176	664	0	161	76	394	2085	113	1583	132	
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	
Protected Phases		4	5		8		5	2		6		3
Permitted Phases	4		4	8		8	2		2		6	
Detector Phase	4	4	5	8	8	8	5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	6.0	7.0	7.0	7.0	6.0	25.0	25.0	25.0	25.0	1.0
Minimum Split (s)	45.8	45.8	13.9	45.8	45.8	45.8	13.9	30.9	30.9	30.9	30.9	5.0
Total Split (s)	46.0	46.0	35.0	46.0	46.0	46.0	35.0	89.0	89.0	54.0	54.0	5.0
Total Split (%)	32.9%	32.9%	25.0%	32.9%	32.9%	32.9%	25.0%	63.6%	63.6%	38.6%	38.6%	4%
Yellow Time (s)	3.0	3.0	3.4	3.0	3.0	3.0	3.4	3.4	3.4	3.4	3.4	2.0
All-Red Time (s)	4.8	4.8	4.5	4.8	4.8	4.8	4.5	2.5	2.5	2.5	2.5	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		7.8	7.9		7.8	7.8	7.9	5.9	5.9	5.9	5.9	
Lead/Lag	Lag	Lag	Lead	Lag	Lag	Lag	Lead			Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	Max	Max	Max	None
v/c Ratio		0.79	0.95		0.82	0.19	0.86	0.58	0.10	0.75	0.21	
Control Delay		70.4	52.1		76.3	4.5	53.0	11.6	1.8	35.0	5.4	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		70.4	52.1		76.3	4.5	53.0	11.6	1.8	35.0	5.4	
Queue Length 50th (m)		40.0	118.7		36.8	0.0	73.5	85.2	0.0	117.3	0.0	
Queue Length 95th (m)		65.2	#176.8		61.6	7.1	#145.9	132.2	6.9	158.3	13.2	
Internal Link Dist (m)		126.3			53.3			213.2		219.7		
Turn Bay Length (m)							155.0		182.0		180.0	
Base Capacity (vph)		356	705		315	573	469	3574	1126	2099	623	
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0	
Storage Cap Reductn		0	0		0	0	0	0	0	0	0	
Reduced v/c Ratio		0.49	0.94		0.51	0.13	0.84	0.58	0.10	0.75	0.21	

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 121.2
Natural Cycle: 130
Control Type: Semi Act-Uncoord
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Leslie Street & Esther Shiner Boulevard/North York General Hospital



Lane Group	Ø7
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	4%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	0	651	157	1	74	386	2043	111	0	1551	129
Future Volume (vph)	172	0	651	157	1	74	386	2043	111	0	1551	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.8	7.9		7.8	7.8	7.9	5.9	5.9		5.9	5.9
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91	1.00		0.91	1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00		1.00	0.86
Flpb, ped/bikes		0.99	1.00		0.98	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected		0.95	1.00		0.95	1.00	0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)		1760	1587		1774	1600	1825	5193	1585		5193	1379
Flt Permitted		0.61	1.00		0.54	1.00	0.07	1.00	1.00		1.00	1.00
Satd. Flow (perm)		1126	1587		999	1600	135	5193	1585		5193	1379
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	176	0	664	160	1	76	394	2085	113	0	1583	132
RTOR Reduction (vph)	0	0	38	0	0	61	0	0	35	0	0	79
Lane Group Flow (vph)	0	176	626	0	161	15	394	2085	78	0	1583	53
Confl. Peds. (#/hr)	9		29	29		9	89					89
Heavy Vehicles (%)	3%	0%	1%	1%	0%	0%	0%	1%	3%	0%	1%	2%
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm		NA	Perm
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8		8	2		2			6
Actuated Green, G (s)		24.0	50.5		24.0	24.0	83.4	83.4	83.4		49.0	49.0
Effective Green, g (s)		24.0	50.5		24.0	24.0	83.4	83.4	83.4		49.0	49.0
Actuated g/C Ratio		0.20	0.42		0.20	0.20	0.69	0.69	0.69		0.40	0.40
Clearance Time (s)		7.8	7.9		7.8	7.8	7.9	5.9	5.9		5.9	5.9
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		223	661		197	317	462	3576	1091		2101	557
v/s Ratio Prot			c0.21				0.19	0.40			0.30	
v/s Ratio Perm		0.16	0.19		0.16	0.01	c0.40		0.05			0.04
v/c Ratio		0.79	0.95		0.82	0.05	0.85	0.58	0.07		0.75	0.10
Uniform Delay, d1		46.1	34.0		46.5	39.3	35.6	9.8	6.2		30.9	22.3
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		16.7	22.6		22.4	0.1	14.1	0.7	0.1		2.6	0.3
Delay (s)		62.9	56.6		68.8	39.4	49.8	10.5	6.3		33.4	22.7
Level of Service		E	E		E	D	D	B	A		C	C
Approach Delay (s)		58.0			59.4			16.3			32.6	
Approach LOS		E			E			B			C	

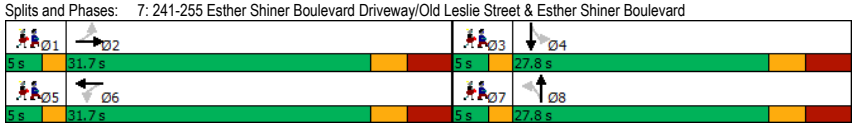
Intersection Summary				
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.94			
Actuated Cycle Length (s)	121.1	Sum of lost time (s)	23.6	
Intersection Capacity Utilization	105.6%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø5	Ø7
Lane Configurations												
Traffic Volume (vph)	34	486	1	441	2	1	333	3				
Future Volume (vph)	34	486	1	441	2	1	333	3				
Lane Group Flow (vph)	36	516	1	541	2	5	351	62				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		2		6		8		4	1	3	5	7
Permitted Phases	2		6		8		4					
Detector Phase	2	2	6	6	8	8	4	4				
Switch Phase												
Minimum Initial (s)	24.0	24.0	24.0	24.0	7.0	7.0	7.0	7.0	1.0	1.0	1.0	1.0
Minimum Split (s)	30.7	30.7	30.7	30.7	32.8	32.8	32.8	32.8	5.0	5.0	5.0	5.0
Total Split (s)	31.7	31.7	31.7	31.7	27.8	27.8	27.8	27.8	5.0	5.0	5.0	5.0
Total Split (%)	45.6%	45.6%	45.6%	45.6%	40.0%	40.0%	40.0%	40.0%	7%	7%	7%	7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0
All-Red Time (s)	3.7	3.7	3.7	3.7	3.8	3.8	3.8	3.8	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.8	6.8	6.8	6.8				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.12	0.38	0.00	0.41	0.00	0.01	0.61	0.09				
Control Delay	14.1	15.3	12.0	14.8	11.0	8.2	20.5	4.4				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay	14.1	15.3	12.0	14.8	11.0	8.2	20.5	4.4				
Queue Length 50th (m)	2.7	22.3	0.1	22.3	0.2	0.1	31.2	0.2				
Queue Length 95th (m)	8.0	33.2	0.9	33.6	1.2	1.8	56.0	6.0				
Internal Link Dist (m)		258.8		126.3		94.1		280.8				
Turn Bay Length (m)	42.0		62.0		50.0		36.0					
Base Capacity (vph)	326	1420	322	1388	555	678	571	667				
Starvation Cap Reductn	0	0	0	0	0	0	0	0				
Spillback Cap Reductn	0	0	0	0	0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0	0	0				
Reduced v/c Ratio	0.11	0.36	0.00	0.39	0.00	0.01	0.61	0.09				

Intersection Summary
Cycle Length: 69.5
Actuated Cycle Length: 63.5
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Splits and Phases: 7: 241-255 Esther Shiner Boulevard Driveway/Old Leslie Street & Esther Shiner Boulevard



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	486	4	1	441	73	2	1	4	333	3	56
Future Volume (vph)	34	486	4	1	441	73	2	1	4	333	3	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.7	6.7		6.7	6.7		6.8	6.8		6.8	6.8	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.97	
Flpb, ped/bikes	0.99	1.00		0.94	1.00		0.99	1.00		0.98	1.00	
Frt	1.00	1.00		1.00	0.98		1.00	0.88		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1804	3606		1721	3480		1801	1654		1762	1547	
Flt Permitted	0.44	1.00		0.46	1.00		0.72	1.00		0.75	1.00	
Satd. Flow (perm)	829	3606		825	3480		1358	1654		1399	1547	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	36	512	4	1	464	77	2	1	4	351	3	59
RTOR Reduction (vph)	0	1	0	0	19	0	0	2	0	0	35	0
Lane Group Flow (vph)	36	515	0	1	522	0	2	3	0	351	27	0
Confl. Peds. (#/hr)	19		89	89		19	20		21	21		20
Heavy Vehicles (%)	0%	1%	0%	0%	1%	8%	0%	0%	0%	2%	0%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	24.0	24.0		24.0	24.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	24.0	24.0		24.0	24.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.41	0.41		0.41	0.41	
Clearance Time (s)	6.7	6.7		6.7	6.7		6.8	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	313	1362		311	1315		556	677		572	633	
v/s Ratio Prot		0.14			c0.15			0.00			0.02	
v/s Ratio Perm	0.04			0.00			0.00			c0.25		
v/c Ratio	0.12	0.38		0.00	0.40		0.00	0.00		0.61	0.04	
Uniform Delay, d1	12.8	14.3		12.3	14.5		11.1	11.1		14.8	11.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.2		0.0	0.2		0.0	0.0		4.9	0.1	
Delay (s)	13.0	14.5		12.3	14.7		11.1	11.1		19.7	11.4	
Level of Service	B	B		B	B		B	B		B	B	
Approach Delay (s)		14.4			14.6			11.1			18.4	
Approach LOS		B			B			B			B	

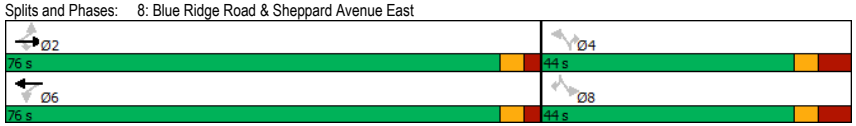
Intersection Summary				
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	63.5	Sum of lost time (s)	17.5	
Intersection Capacity Utilization	64.6%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBR	SBL	SBR
Lane Configurations									
Traffic Volume (vph)	10	1489	260	6	1504	144	8	55	17
Future Volume (vph)	10	1489	260	6	1504	144	8	55	17
Lane Group Flow (vph)	11	1618	283	7	1671	157	9	60	18
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	Perm	Perm
Protected Phases		2			6				
Permitted Phases	2		2	6		4	4	8	8
Detector Phase	2	2	2	6	6	4	4	8	8
Switch Phase									
Minimum Initial (s)	22.0	22.0	22.0	22.0	22.0	7.0	7.0	7.0	7.0
Minimum Split (s)	32.8	32.8	32.8	32.8	32.8	43.2	43.2	43.2	43.2
Total Split (s)	76.0	76.0	76.0	76.0	76.0	44.0	44.0	44.0	44.0
Total Split (%)	63.3%	63.3%	63.3%	63.3%	63.3%	36.7%	36.7%	36.7%	36.7%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	4.9	4.9	4.9	4.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	5.8	5.8	5.8	8.2	8.2	8.2	8.2
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	Max	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.08	0.63	0.24	0.05	0.65	0.63	0.04	0.24	0.07
Control Delay	6.8	9.0	3.0	6.0	9.3	51.8	4.4	39.4	11.1
Queue Delay	0.0	0.4	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	6.8	9.3	3.0	6.0	9.5	51.8	4.4	39.4	11.1
Queue Length 50th (m)	0.6	71.6	6.7	0.3	76.1	28.4	0.0	10.3	0.0
Queue Length 95th (m)	2.8	110.5	17.1	2.0	117.6	48.2	1.5	21.6	4.7
Internal Link Dist (m)		187.5			216.6				
Turn Bay Length (m)	30.0		40.0	30.0					
Base Capacity (vph)	141	2582	1197	153	2575	636	585	636	585
Starvation Cap Reductn	0	409	0	0	246	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.74	0.24	0.05	0.72	0.25	0.02	0.09	0.03

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 100.7
Natural Cycle: 90
Control Type: Semi Act-Uncoord

Splits and Phases: 8: Blue Ridge Road & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1489	260	6	1504	33	144	0	8	55	0	17
Future Volume (vph)	10	1489	260	6	1504	33	144	0	8	55	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8	5.8	5.8		8.2		8.2	8.2		8.2
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00		1.00	1.00		1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00		0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95		1.00	0.95		1.00
Satd. Flow (prot)	1789	3579	1601	1789	3567		1789		1601	1789		1601
Flt Permitted	0.10	1.00	1.00	0.11	1.00		0.95		1.00	0.95		1.00
Satd. Flow (perm)	195	3579	1601	213	3567		1789		1601	1789		1601
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)	11	1618	283	7	1635	36	157	0	9	60	0	18
RTOR Reduction (vph)	0	0	42	0	1	0	0	0	8	0	0	15
Lane Group Flow (vph)	11	1618	241	7	1670	0	157	0	1	60	0	3
Turn Type	Perm	NA	Perm	Perm	NA		Perm		Perm	Perm		Perm
Protected Phases		2			6							
Permitted Phases	2		2	6			4		4	8		8
Actuated Green, G (s)	72.7	72.7	72.7	72.7	72.7		14.0		14.0	14.0		14.0
Effective Green, g (s)	72.7	72.7	72.7	72.7	72.7		14.0		14.0	14.0		14.0
Actuated g/C Ratio	0.72	0.72	0.72	0.72	0.72		0.14		0.14	0.14		0.14
Clearance Time (s)	5.8	5.8	5.8	5.8	5.8		8.2		8.2	8.2		8.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0		3.0
Lane Grp Cap (vph)	140	2583	1155	153	2575		248		222	248		222
v/s Ratio Prot		0.45			c0.47							
v/s Ratio Perm	0.06		0.15	0.03			c0.09		0.00	0.03		0.00
v/c Ratio	0.08	0.63	0.21	0.05	0.65		0.63		0.01	0.24		0.01
Uniform Delay, d1	4.1	7.1	4.6	4.0	7.3		40.9		37.4	38.6		37.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00		1.00
Incremental Delay, d2	1.1	1.2	0.4	0.6	1.3		5.2		0.0	0.5		0.0
Delay (s)	5.2	8.3	5.0	4.6	8.6		46.1		37.4	39.1		37.4
Level of Service	A	A	A	A	A		D		D	D		D
Approach Delay (s)		7.8			8.6			45.6			38.7	
Approach LOS		A			A			D			D	

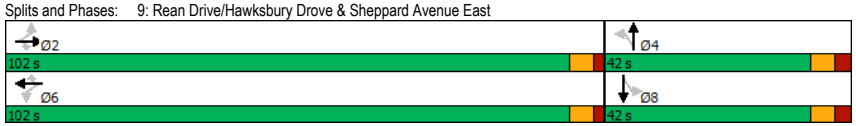
Intersection Summary				
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	100.7	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	71.4%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	81	1336	79	80	1344	129	38	28	160	52
Future Volume (vph)	81	1336	79	80	1344	129	38	28	160	52
Lane Group Flow (vph)	88	1452	86	87	1461	140	41	114	174	117
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			4		8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	2	2	2	6	6	6	4	4	8	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	27.0	26.0	26.0	26.0	26.0
Total Split (s)	102.0	102.0	102.0	102.0	102.0	102.0	42.0	42.0	42.0	42.0
Total Split (%)	70.8%	70.8%	70.8%	70.8%	70.8%	70.8%	29.2%	29.2%	29.2%	29.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0	7.0	7.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	Max	Max	Max	Max	Max	Max	None	None	None	None
v/c Ratio	0.46	0.56	0.07	0.45	0.56	0.12	0.19	0.33	0.79	0.35
Control Delay	18.6	10.2	1.6	18.1	10.2	3.1	47.4	26.0	76.2	35.4
Queue Delay	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.6	12.0	1.6	18.1	10.2	3.1	47.4	26.0	76.2	35.4
Queue Length 50th (m)	8.4	81.8	0.0	8.2	82.7	3.6	9.2	12.4	43.9	18.7
Queue Length 95th (m)	29.3	130.1	5.5	28.5	131.3	12.0	19.9	29.2	69.4	36.0
Internal Link Dist (m)		131.5			520.0			90.0		77.4
Turn Bay Length (m)	30.0			40.0		40.0	35.0			
Base Capacity (vph)	193	2600	1186	195	2600	1186	331	486	335	486
Starvation Cap Reductn	0	934	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	0.46	0.87	0.07	0.45	0.56	0.12	0.12	0.23	0.52	0.24

Intersection Summary
Cycle Length: 144
Actuated Cycle Length: 132.5
Natural Cycle: 75
Control Type: Semi Act-Uncoord

Splits and Phases: 9: Rean Drive/Hawksbury Drove & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	1336	79	80	1344	129	38	28	77	160	52	55
Future Volume (vph)	81	1336	79	80	1344	129	38	28	77	160	52	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
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	0.89		1.00	0.92	
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)	1789	3579	1601	1789	3579	1601	1789	1675		1789	1739	
Flt Permitted	0.14	1.00	1.00	0.14	1.00	1.00	0.66	1.00		0.67	1.00	
Satd. Flow (perm)	266	3579	1601	269	3579	1601	1251	1675		1266	1739	
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)	88	1452	86	87	1461	140	41	30	84	174	57	60
RTOR Reduction (vph)	0	0	23	0	0	23	0	49	0	0	29	0
Lane Group Flow (vph)	88	1452	63	87	1461	117	41	65	0	174	88	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	96.3	96.3	96.3	96.3	96.3	96.3	23.2	23.2		23.2	23.2	
Effective Green, g (s)	96.3	96.3	96.3	96.3	96.3	96.3	23.2	23.2		23.2	23.2	
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73	0.73	0.18	0.18		0.18	0.18	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0		7.0	7.0	
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)	193	2601	1163	195	2601	1163	219	293		221	304	
v/s Ratio Prot		0.41			c0.41			0.04			0.05	
v/s Ratio Perm	0.33		0.04	0.32		0.07	0.03			c0.14		
v/c Ratio	0.46	0.56	0.05	0.45	0.56	0.10	0.19	0.22		0.79	0.29	
Uniform Delay, d1	7.4	8.3	5.1	7.3	8.4	5.3	46.6	46.9		52.3	47.5	
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	7.6	0.9	0.1	7.2	0.9	0.2	0.4	0.4		16.7	0.5	
Delay (s)	15.0	9.2	5.2	14.5	9.2	5.5	47.0	47.3		69.0	48.0	
Level of Service	B	A	A	B	A	A	D	D		E	D	
Approach Delay (s)		9.3			9.2			47.2			60.6	
Approach LOS		A			A			D			E	

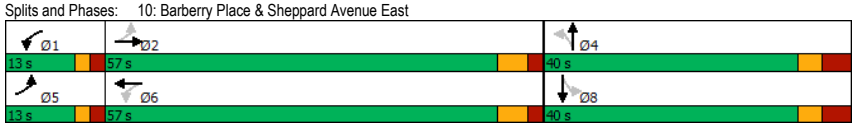
Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	132.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	138	1427	22	1347	81	14	59	10
Future Volume (vph)	138	1427	22	1347	81	14	59	10
Lane Group Flow (vph)	150	1627	24	1550	88	40	64	111
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	5	2	1	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	30.0	9.5	30.0	40.0	40.0	40.0	40.0
Total Split (s)	13.0	57.0	13.0	57.0	40.0	40.0	40.0	40.0
Total Split (%)	11.8%	51.8%	11.8%	51.8%	36.4%	36.4%	36.4%	36.4%
Yellow Time (s)	2.0	4.0	2.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	6.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Max	None	Max	None	None	None	None
v/c Ratio	0.49	0.47	0.09	0.52	0.53	0.17	0.36	0.38
Control Delay	11.1	8.3	4.5	12.1	47.9	19.9	40.7	13.0
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	11.1	8.3	4.5	12.3	47.9	19.9	40.7	13.0
Queue Length 50th (m)	5.7	33.6	0.8	53.3	14.2	2.3	10.1	1.7
Queue Length 95th (m)	18.5	74.7	3.2	75.1	28.6	11.0	21.7	15.5
Internal Link Dist (m)		235.0		131.5		99.4		60.3
Turn Bay Length (m)	40.0		25.0		50.0		25.0	
Base Capacity (vph)	320	3473	334	2986	484	655	517	673
Starvation Cap Reductn	0	0	0	576	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.47	0.07	0.64	0.18	0.06	0.12	0.16

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 88.1
Natural Cycle: 80
Control Type: Semi Act-Uncoord

Splits and Phases: 10: Barberry Place & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	1427	70	22	1347	79	81	14	23	59	10	92
Future Volume (vph)	138	1427	70	22	1347	79	81	14	23	59	10	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.91		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1789	5106		1789	5099		1789	1707		1789	1629	
Flt Permitted	0.11	1.00		0.13	1.00		0.69	1.00		0.73	1.00	
Satd. Flow (perm)	215	5106		250	5099		1291	1707		1377	1629	
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)	150	1551	76	24	1464	86	88	15	25	64	11	100
RTOR Reduction (vph)	0	3	0	0	4	0	0	22	0	0	88	0
Lane Group Flow (vph)	150	1624	0	24	1546	0	88	18	0	64	23	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	66.3	59.9		56.4	54.0		11.3	11.3		11.3	11.3	
Effective Green, g (s)	66.3	59.9		56.4	54.0		11.3	11.3		11.3	11.3	
Actuated g/C Ratio	0.73	0.66		0.62	0.60		0.12	0.12		0.12	0.12	
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	301	3375		196	3039		161	212		171	203	
v/s Ratio Prot	c0.05	0.32		0.00	0.30			0.01			0.01	
v/s Ratio Perm	c0.32			0.07			c0.07			0.05		
v/c Ratio	0.50	0.48		0.12	0.51		0.55	0.09		0.37	0.12	
Uniform Delay, d1	6.1	7.6		6.6	10.6		37.2	35.1		36.4	35.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.5		0.3	0.6		3.8	0.2		1.4	0.3	
Delay (s)	7.4	8.1		6.9	11.2		41.0	35.3		37.8	35.5	
Level of Service	A	A		A	B		D	D		D	D	
Approach Delay (s)		8.1			11.2			39.2			36.3	
Approach LOS		A			B			D			D	

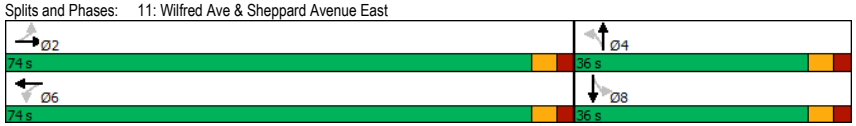
Intersection Summary				
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	90.6	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	60.7%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	18	1767	8	1264	14	8	103	21
Future Volume (vph)	18	1767	8	1264	14	8	103	21
Lane Group Flow (vph)	20	1948	9	1433	0	35	0	168
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		4		8
Permitted Phases	2		6		4		8	
Detector Phase	2	2	6	6	4	4	8	8
Switch Phase								
Minimum Initial (s)	23.0	23.0	23.0	23.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.6	33.6	33.6	33.6	35.8	35.8	35.8	35.8
Total Split (s)	74.0	74.0	74.0	74.0	36.0	36.0	36.0	36.0
Total Split (%)	67.3%	67.3%	67.3%	67.3%	32.7%	32.7%	32.7%	32.7%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.6	5.6	5.6	5.6		5.8		5.8
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	None	None	None	None	None	None
v/c Ratio	0.10	0.76	0.11	0.56		0.13		0.69
Control Delay	6.9	11.9	9.4	8.1		26.1		50.3
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	6.9	11.9	9.4	8.1		26.1		50.3
Queue Length 50th (m)	1.0	100.2	0.4	55.9		3.8		27.6
Queue Length 95th (m)	4.4	170.2	2.9	94.7		12.0		48.5
Internal Link Dist (m)		149.2		363.8		136.1		104.8
Turn Bay Length (m)	28.0		24.0					
Base Capacity (vph)	200	2564	82	2555		494		453
Starvation Cap Reductn	0	0	0	0		0		0
Spillback Cap Reductn	0	0	0	0		0		0
Storage Cap Reductn	0	0	0	0		0		0
Reduced v/c Ratio	0.10	0.76	0.11	0.56		0.07		0.37

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 96.7
Natural Cycle: 90
Control Type: Semi Act-Uncoord

Splits and Phases: 11: Wilfred Ave & Sheppard Avenue East



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	1767	25	8	1264	54	14	8	10	103	21	30
Future Volume (vph)	18	1767	25	8	1264	54	14	8	10	103	21	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6		5.6	5.6			5.8			5.8	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.96			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1789	3571		1789	3556			1766			1774	
Flt Permitted	0.15	1.00		0.06	1.00			0.86			0.78	
Satd. Flow (perm)	279	3571		116	3556			1556			1427	
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)	20	1921	27	9	1374	59	15	9	11	112	23	33
RTOR Reduction (vph)	0	1	0	0	2	0	0	9	0	0	9	0
Lane Group Flow (vph)	20	1947	0	9	1431	0	0	26	0	0	159	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	69.4	69.4		69.4	69.4			15.9			15.9	
Effective Green, g (s)	69.4	69.4		69.4	69.4			15.9			15.9	
Actuated g/C Ratio	0.72	0.72		0.72	0.72			0.16			0.16	
Clearance Time (s)	5.6	5.6		5.6	5.6			5.8			5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	200	2562		83	2552			255			234	
v/s Ratio Prot		c0.55			0.40							
v/s Ratio Perm	0.07			0.08				0.02			c0.11	
v/c Ratio	0.10	0.76		0.11	0.56			0.10			0.68	
Uniform Delay, d1	4.2	8.5		4.2	6.4			34.3			38.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.0	2.2		0.6	0.3			0.2			7.6	
Delay (s)	5.1	10.7		4.8	6.7			34.5			45.6	
Level of Service	A	B		A	A			C			D	
Approach Delay (s)		10.6			6.7			34.5			45.6	
Approach LOS		B			A			C			D	

Intersection Summary					
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.74				
Actuated Cycle Length (s)	96.7	Sum of lost time (s)		11.4	
Intersection Capacity Utilization	72.6%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

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Appendix B

Supplemental Information: Active Transportation Needs and Opportunities

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Appendix B – Supplemental Information: Active Transportation Opportunities

Date: March 2, 2023 **Project No.:** 300055817.000

Project Name: Toronto ReNew Sheppard East

Client Name: City of Toronto (City)

From: R.J. Burnside & Associates Limited

1.0 Introduction

A preliminary needs and opportunities assessment was conducted on the active transportation network within and in close vicinity to the ReNew Sheppard Study Area. Major opportunities are shown below and grouped into three categories, including enhancing north-south corridors, providing quieter alternatives, and improving off-road trails.

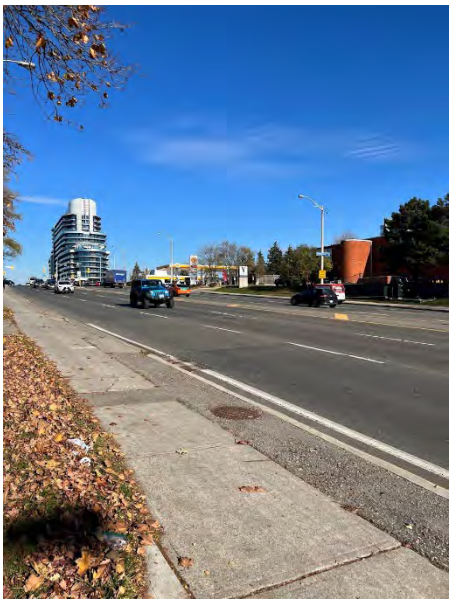
2.0 Enhancing North-South Corridors

Because Sheppard Avenue will be improved through the Sheppard Avenue reconstruction project with proposed separated cycling facilities, there is an opportunity to enhance north-south roadways to improve connectivity. Sheppard Avenue can act as the main spine of the active transportation network, while the north-south roadways can feed into this spine. North-south roadways that can contribute to this network include Bayview Avenue, Leslie Street, and Bessarion Road.

Bessarion Road is a 26 m road with sidewalks on either side and a boulevard. The road end contains a walking path to Talara Park. Due to its available municipal right-of-way, connectivity between the park and Sheppard Avenue and an existing pedestrian trail, the characteristics of Bessarion Road facilitate an opportunity to enhance the active transportation environment. Bessarion Road is shown in Figure 1.

Figure 1: Bessarion Road within ReNew Sheppard (Image adapted from Google Earth)

Figure 2: Bayview Avenue



Bayview Avenue is a major 4-lane arterial that widens up to seven lanes at the Bayview Avenue and Sheppard intersection. During the AM and PM peak hours, Bayview Avenue is a congested corridor with high auto traffic volumes partly driven by the Highway 401-Bayview Avenue interchange. Bayview Avenue includes a sidewalk on both sides with an edge zone separating the sidewalk from the travel lanes, as illustrated in Figure 2.

Leslie Street is a 4-lane major arterial that widens up to seven lanes at the Leslie Street and Sheppard Avenue intersection. During the AM and PM peak hours, Leslie Street has high auto traffic volumes partly driven by the Highway 401-Leslie Street interchange. Leslie Street contains sidewalks on both sides. On the west side, there is a narrow edge zone to buffer pedestrians from vehicles. On the east side, there is a planting buffer separating the sidewalk from the travel lane.

3.0 Providing Quieter Alternatives

With the City's vision of considering every street for cycling upgrades, there are a few parallel routes that can enhance the active transportation network. Sheppard Avenue is a major arterial with high auto volumes. These parallel routes leverage the local neighbourhood streets, which have significantly fewer auto volumes and can be considered quieter alternatives.

These routes include:

- Irvington Avenue via a connection from Bayview Avenue.
- The entire road segment of Bayview Mews Lane connecting west to Spring Garden Avenue.
- Old Leslie Street and Esther Shiner Boulevard to connect North York General Hospital to / from the south side of Sheppard Avenue.

On Bayview Avenue, south of Sheppard Avenue, is a pedestrian connection, connecting to Irvington Avenue, as illustrated in Figure 3. Irvington Avenue connects to Sheppard East Park via two more local streets (Calvin Avenue and Irvin Avenue), also illustrated in Figure 3 Irvington Avenue is currently a 2-lane local residential street with no sidewalks on either side until Wilfred Avenue.

Figure 3: Bayview Avenue Pedestrian Connection (Adapted from Google Earth)

Within the study area, North York General Hospital is a key destination, employment area, and institution providing medical services to the city. Leslie Station entrances and exits are spaced widely apart. Connections from all the entrances and exits of Leslie Station should be reviewed to ensure that employees and visitors can safely access the hospital with a high degree of comfort. The Sheppard Avenue and Leslie Street intersection is a large intersection that carries lots of automobile traffic. Alternative active transportation routes to the hospital can be taken by pedestrians or cyclists using various bridges and Esther Shiner Boulevard, as shown in Figure 4. The bridge connecting Esther Shiner Boulevard and North York General Hospital can also be accessed by a staircase along Leslie Street.

These routes consist of much less automobile traffic and could be a more comfortable alternative to walking along Sheppard Avenue and Leslie Street. Improving the pedestrian environment along these alternative routes should be further explored.

Figure 4: North York General Hospital and Leslie Station

4.0 Enhance Off-road Trails

The active transportation network consists of both off-road and on-road trails. The benefits of off-road trails include:

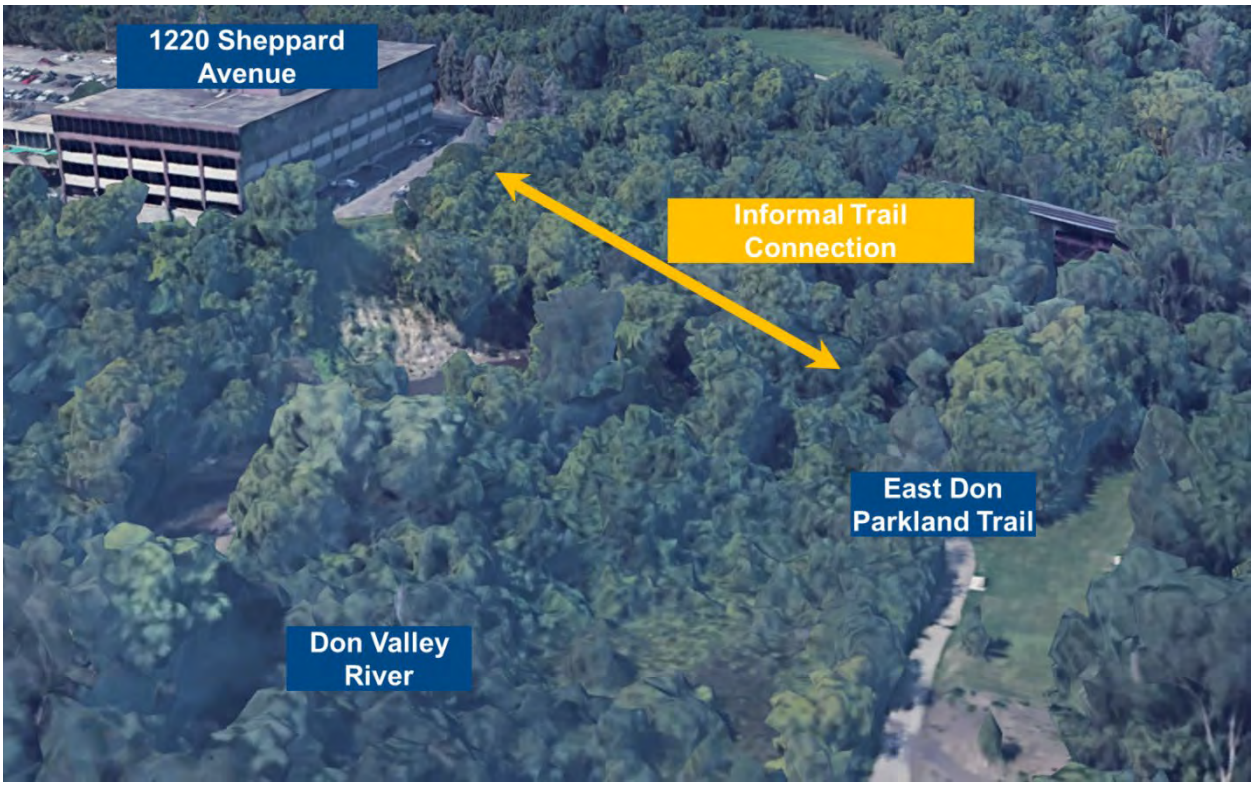
- Enhances connectivity to the overall active transportation network.
- Provides more comfort than on-road routes since trails are separated from automobile traffic, potentially increasing use, and promoting healthy communities.
- Allows riders and pedestrians to explore the city's ravines and green space, creating an enjoyable and vibrant community.

Opportunities to enhance off-road trails include:

- Improve the East Don Parkland trail connection under Sheppard Avenue and Leslie Street, as the south portion of the trail currently has no connection to the north section.
- Ensure trail connectivity is safe and accessible.
- Provide more information about parks and trails using wayfinding and signage.
- Adding additional trail crossings where feasible.

Behind 1220 Sheppard Avenue East is an informal pedestrian trail that traverses steeply to the East Don Parkland Trail, as illustrated in Figure 5. This office building is also shown relative to Leslie Street and Sheppard Avenue in Figure 6.

Figure 5: Informal Trail Connection Behind 1220 Sheppard Avenue



Leslie Street has many trail accesses to the East Don Parkland Trail, which runs adjacent to the Don Valley River, as illustrated in Figure 6. These characteristics of Leslie Street facilitate an opportunity to enhance the active transportation environment.

Figure 6: Leslie Street Trail Accesses (Adapted from Google Earth)

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Appendix C

Supplemental Information: Transit Needs and Opportunities

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Appendix C – Supplemental Information: Transit Needs and Opportunities

Date: March 2, 2023 **Project No.:** 300055817.000

Project Name: Toronto ReNew Sheppard East

Client Name: City of Toronto (City)

From: R.J. Burnside & Associates Limited

1.0 Introduction

A preliminary needs and opportunities assessment was conducted on the transit network within and in close vicinity to the ReNew Sheppard Study Area. Supplemental information is provided on bus boarding and alighting, the existing transit capacity analysis, and observations from a site visit on pedestrian amenities at TTC stations.

2.0 Bus Boarding and Alighting

TTC data for the bus routes within the Study Area were provided by the City. Gaps occur in the max volume, which can be seen in the figures below, as data was not provided for locations where no boardings were recorded.

The 85 Sheppard East bus route operates along Sheppard Avenue East, and the operations per bus stop are shown in Figure 1, Figure 2, Figure 3, and Figure 4.

Figure 1: 85 Sheppard East Eastbound – Fall 2019 AM

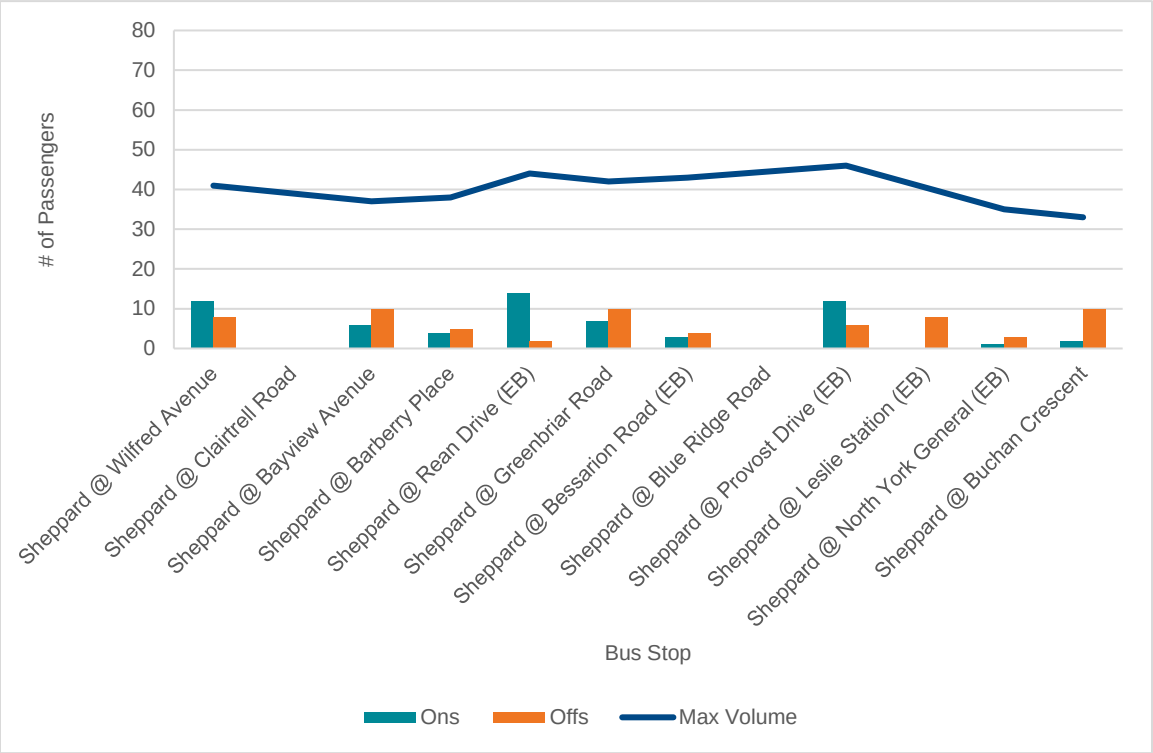


Figure 2: 85 Sheppard East Eastbound – Fall 2019 PM

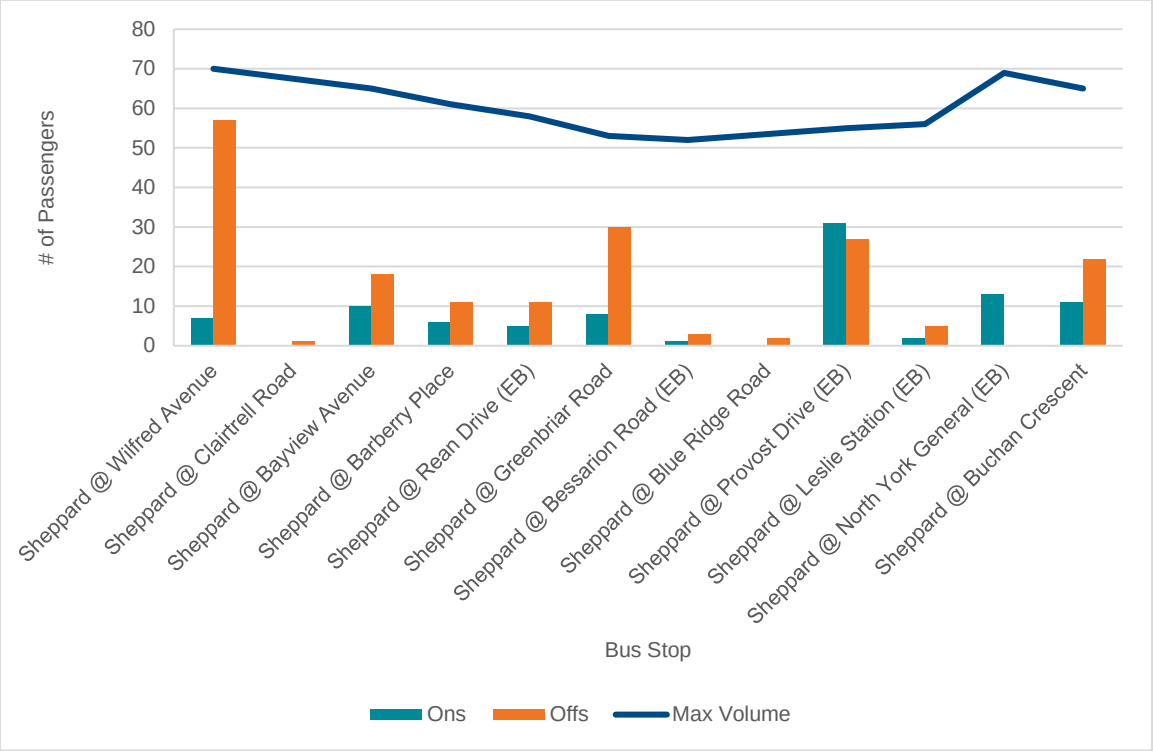


Figure 3: 85 Sheppard East Westbound – Fall 2019 AM

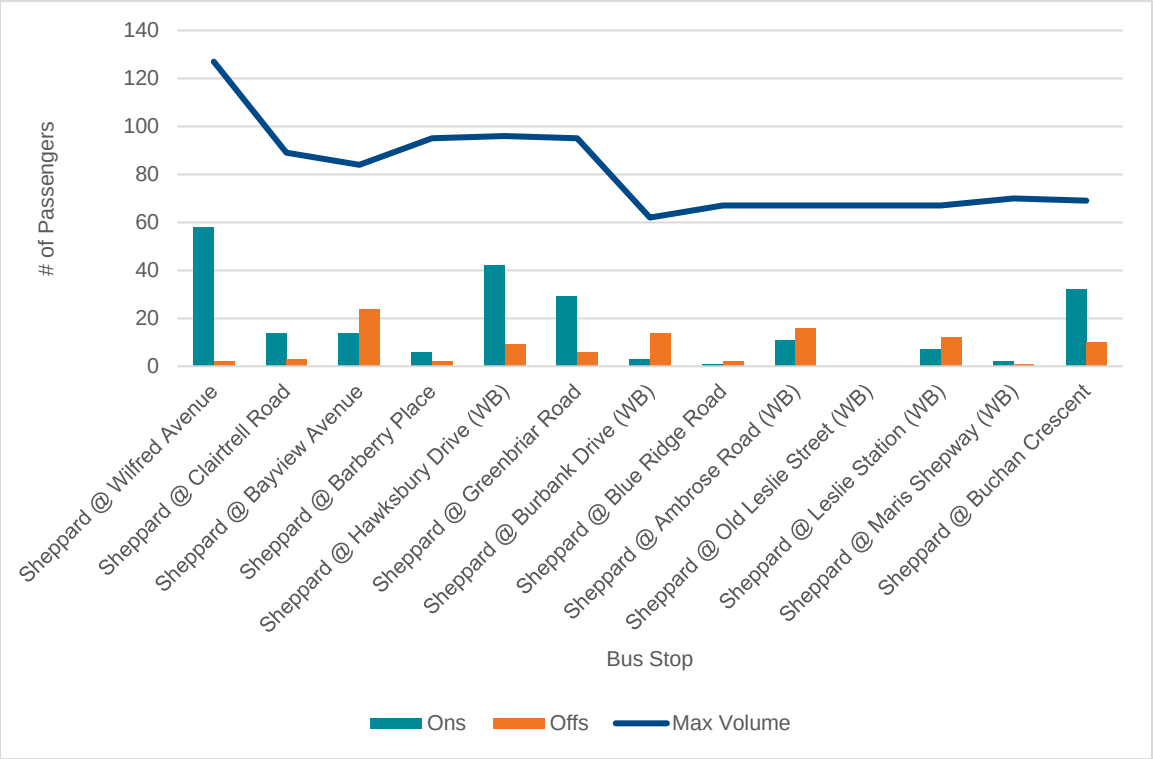
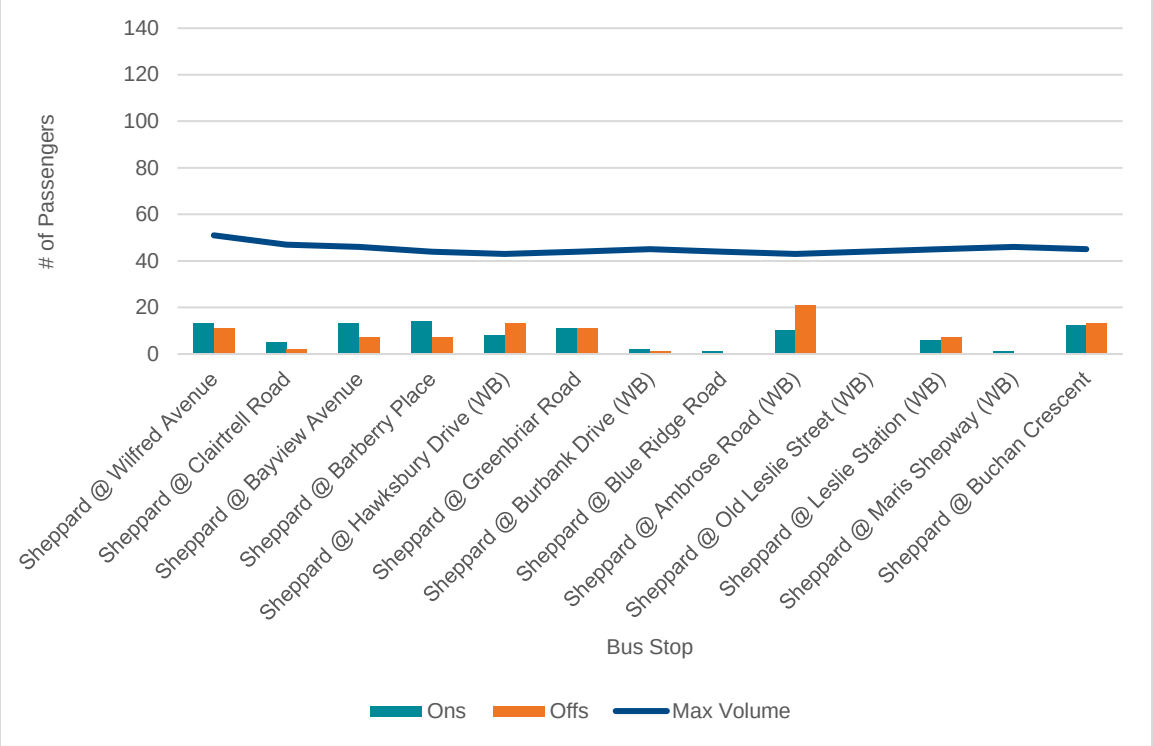


Figure 4: 85 Sheppard East Westbound – Fall 2019 PM



The 51 Leslie bus route operates along Leslie Street, and the operations per bus stop are shown in Figure 5, Figure 6, Figure 7, and Figure 8.

Figure 5: 51 Leslie Northbound – Fall 2019 AM

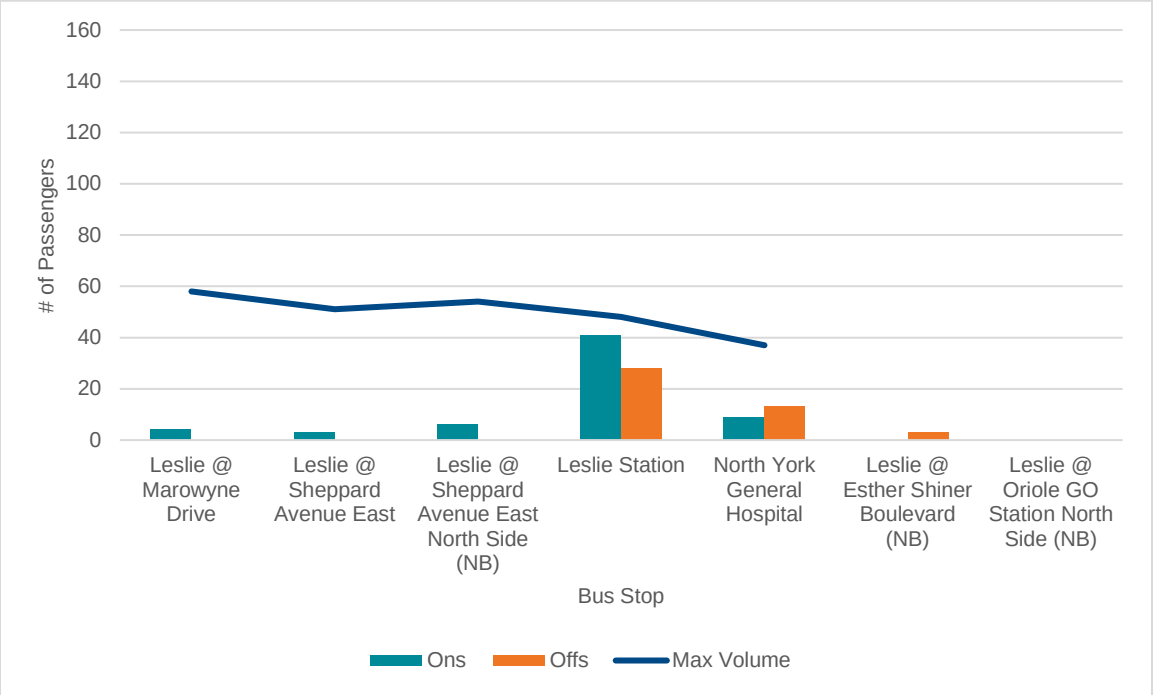


Figure 6: 51 Leslie Northbound – Fall 2019 PM

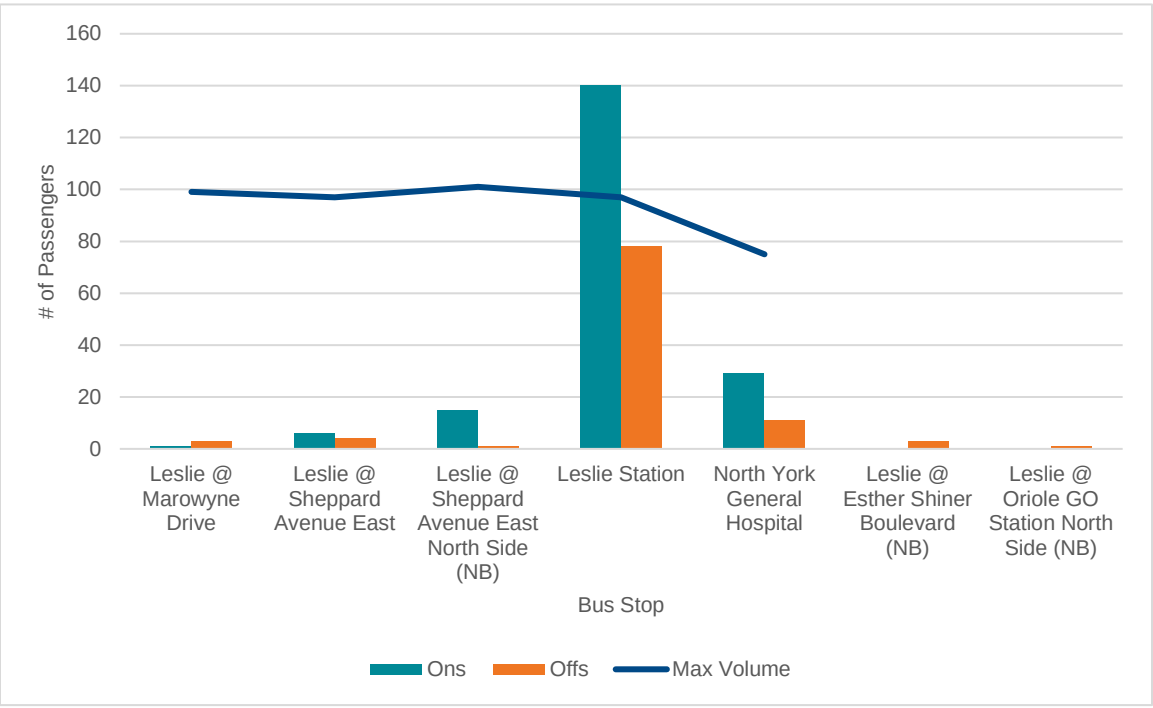


Figure 7: 51 Leslie Southbound – Fall 2019 AM

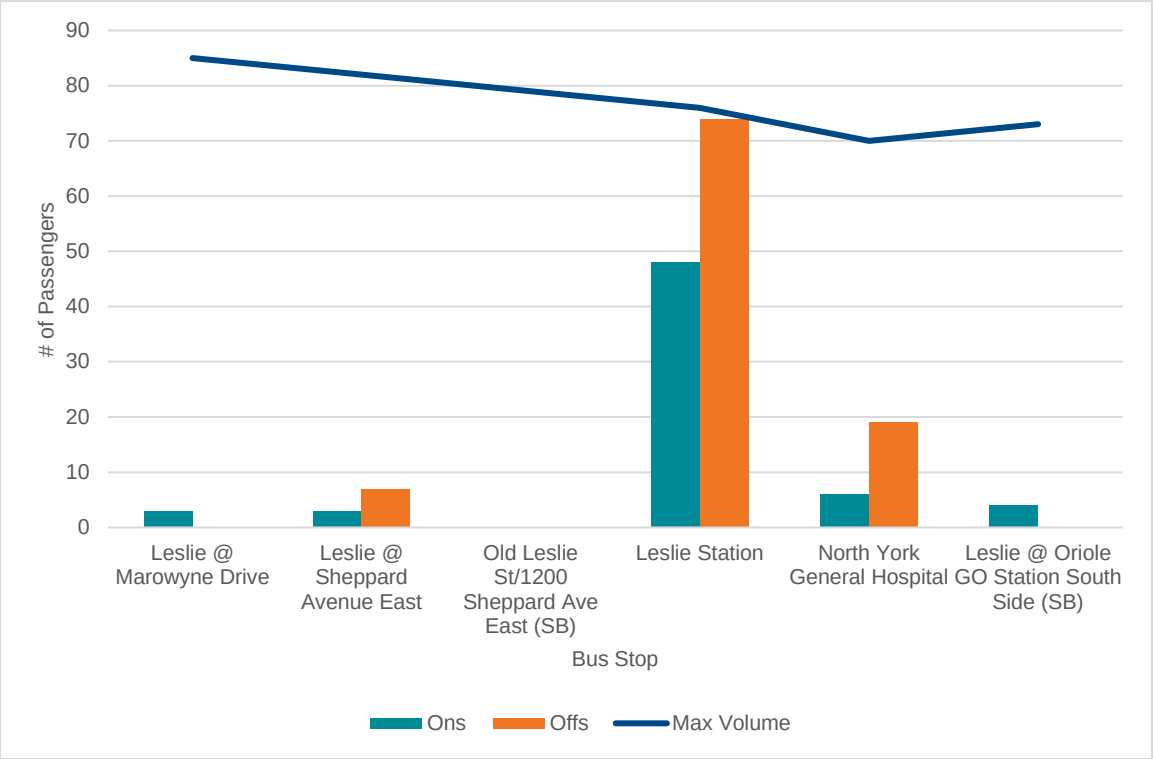
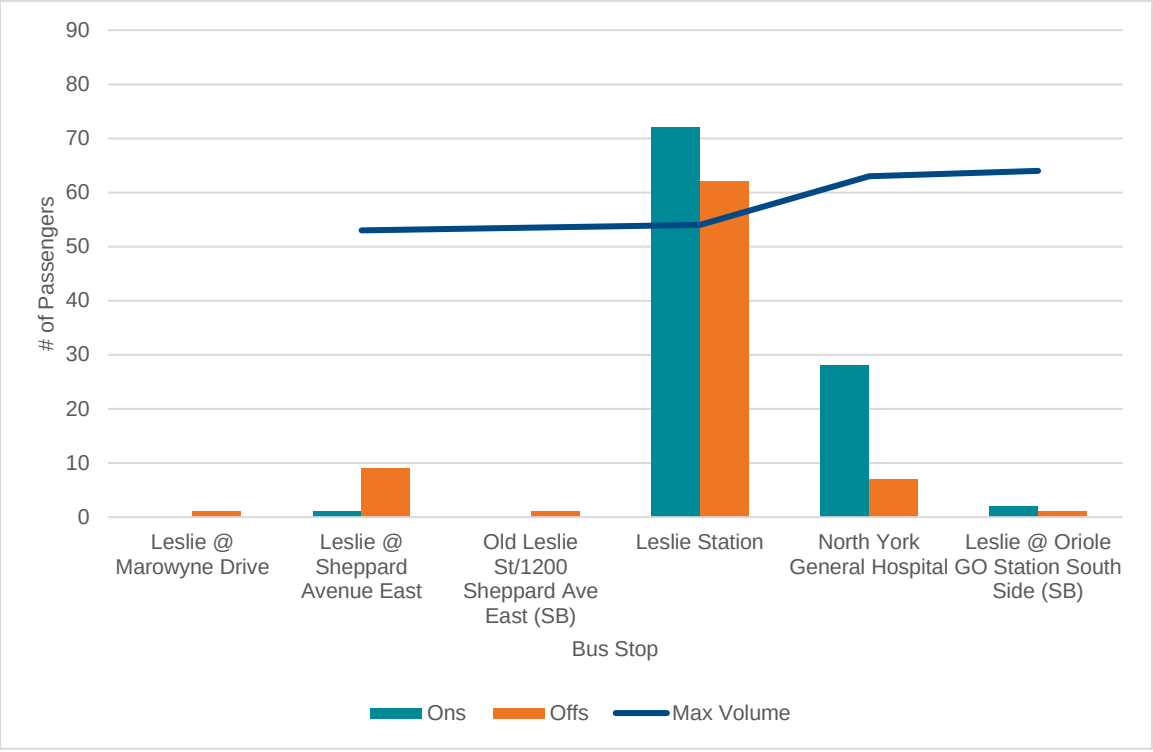


Figure 8: 51 Leslie Southbound – Fall 2019 PM



The 51 Bayview bus route operates along Bayview Avenue, and the operations per bus stop are shown in Figure 9, Figure 10, Figure 11, and Figure 12.

Figure 9: 11 Bayview Northbound – Fall 2019 AM

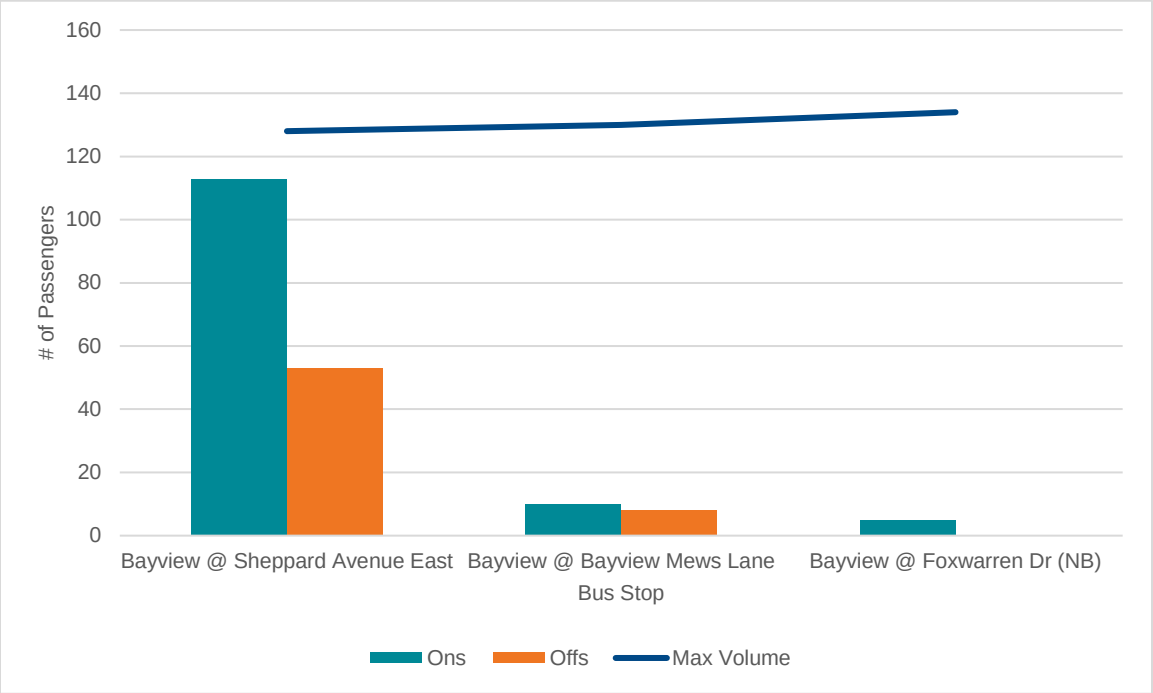


Figure 10: 11 Bayview Northbound – Fall 2019 PM

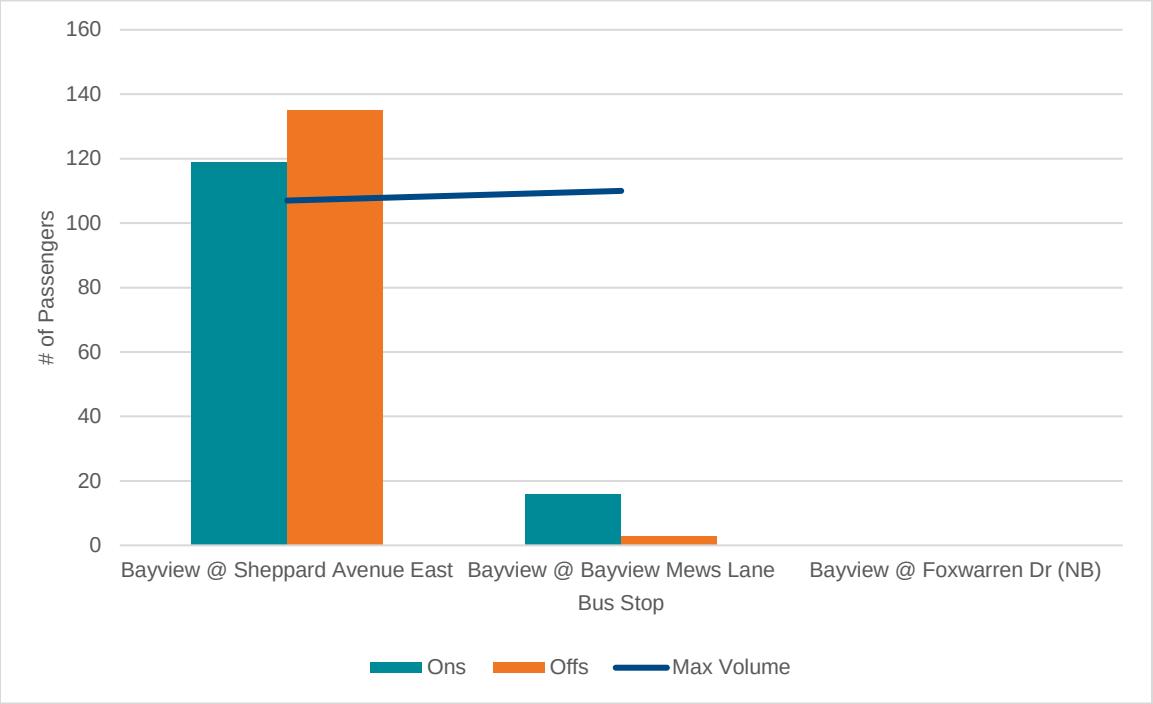


Figure 11: 11 Bayview Southbound – Fall 2019 AM

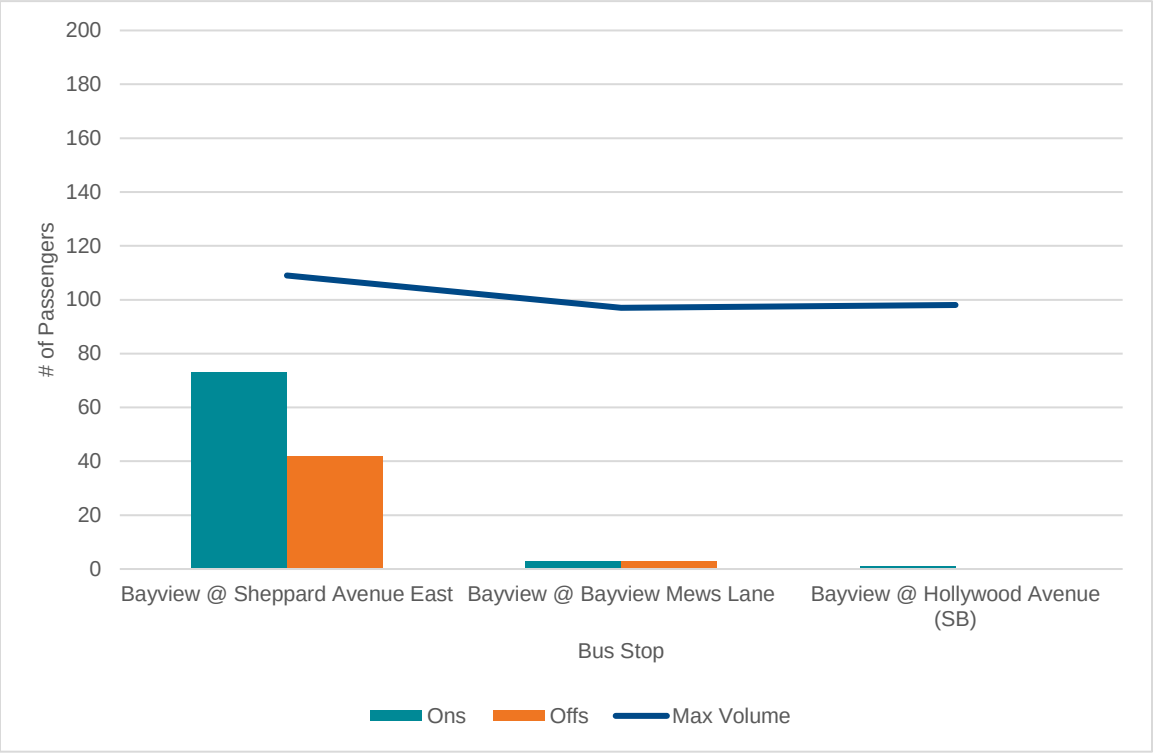
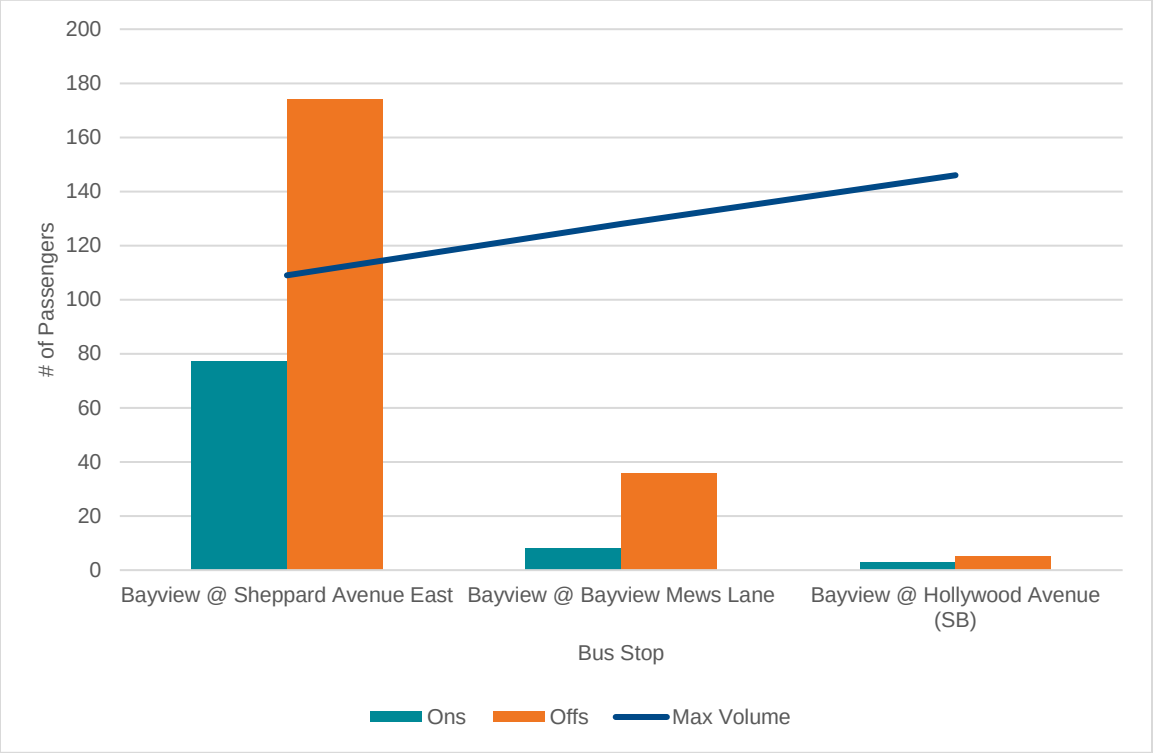


Figure 12: 11 Bayview Southbound – Fall 2019 PM



3.0 Existing Transit Capacity Analysis

The v/c ratios for each bus were calculated using the 2019 greatest max volume and capacity within the study area, as shown in Table 1 and Table 2. Bus capacity was determined by multiplying the peak number of buses serving stops per hour by the peak crowding standard of 50.

Table 1: Bus Capacity Analysis – 2019 AM Existing Conditions

Bus	Max volume [veh/hr]	Total Capacity [veh/hr]	v/c ratio	Max volume [veh/hr]	Total Capacity [veh/hr]	v/c ratio
	E/B	**E/B**	**E/B**	**W/B**	**W/B**	**W/B**
85 Sheppard East	46	250	0.18	127	250	0.51
	N/B	**N/B**	**N/B**	**S/B**	**S/B**	**S/B**
51 Leslie	58	150	0.39	85	150	0.57
11 Bayview	134	250	0.54	109	250	0.44

Table 2: Bus Capacity Analysis – 2019 PM Existing Conditions

Bus	Max volume [veh/hr]	Total Capacity [veh/hr]	v/c ratio	Max volume [veh/hr]	Total Capacity [veh/hr]	v/c ratio
	E/B	**E/B**	**E/B**	**W/B**	**W/B**	**W/B**
85 Sheppard East	70	200	0.35	51	200	0.26
	N/B	**N/B**	**N/B**	**S/B**	**S/B**	**S/B**
51 Leslie	101	150	0.67	64	150	0.43
11 Bayview	110	250	0.44	146	250	0.58

The existing transit capacity analysis indicated that the buses operated below pedestrian capacity.

4.0 Pedestrian Amenities at TTC Stations

A site visit was conducted by the project team to gain an understanding of the pedestrian comfort and amenities at each TTC Bus Station. Observations are documented below.

4.1 Bayview Station

Bayview Station does not have park-and-ride / kiss-and-ride facilities for cars, so the main modes of access and egress to and from this station are walking, cycling, and bus. The north-east corner of Bayview Station contains many design elements supporting active transportation. Bike lockers are provided, as shown in Figure 13.

Figure 13: Bike Lockers at Bayview Station

Bike racks with a small overhead canopy to protect from the weather are provided, as shown in Figure 14.

Figure 14: Bike Racks at Bayview Station

A large canopy for riders to wait and to be protected from the sun, rain, and other adverse weather conditions and benches are located near a self-service bike repair stand, as shown in Figure 15. A community message board is located to the left of the pillar supporting the canopy, which may be a good opportunity to incorporate wayfinding and mapping.

Figure 15: Large Canopy and Bike Repair Kit at Bayview Station

As outlined above, design elements currently exist at Bayview Station to make this station an attractive place to visit. These design elements are a good starting point to build on the concept of a local mobility hub.

There are places for improvement. The northwest corner of Bayview Avenue and Sheppard Avenue does not have the same level of amenities for riders waiting for buses, as shown in Figure 16. To keep the sidewalks clear, bus riders wait under the much smaller canopy; however, due to the frequency of the bus service and demand, pedestrians are often observed to be tightly squeezed under this area, especially during winter conditions. The edge zone provides limited separation between the sidewalk and the travel lane.

Figure 16: Northwest Corner of Bayview Avenue and Sheppard Avenue

4.2 Bessarion Station

Bessarion Station does not have park-and-ride / kiss-and-ride facilities for cars, so the main modes of access and egress to and from this station are walking, cycling, and bus. A small canopy exists for transit users for resting or waiting for the 85 Sheppard bus, as shown in Figure 17. There are no bicycle racks.

Figure 17: Bessarion Station Entrance

4.3 Leslie Station

With the proposed relocation of the Oriole GO Station to Leslie Station, there will be increased interconnection between the Regional and local transit services. The need to develop Leslie Station as a local mobility hub is vital as higher-order modal transitions are provided. Comfortable, connected, and accessible pedestrian connections are important to facilitate the modal transition between local and Regional services. This strategy can help facilitate more use of the Regional or local transit services for commuting trips, especially to the downtown central business district.

R.J. Burnside & Associates Limited