2045.5

EX15.1

For Action

Bus Lane Implementation Plan

Date: July 14, 2020
To: TTC Board
From: Chief Strategy & Customer Officer

Summary

The COVID-19 pandemic has shown that the TTC is a vital service in Toronto providing transportation to essential destinations including employment, healthcare, groceries and pharmacies. Although TTC ridership may be down to 22% of pre-pandemic levels, the TTC continues to serve hundreds of thousands of customer-trips on a daily basis. We also have learned through this pandemic, that bus customers have relied on our services the most - 36% of the customers that used buses prior to COVID-19 are still using the system as compared to 19% of subway customers, as of the week ending June 26.

As the city and GTHA re-opens and recovery begins, it is expected that people who have the resources and option to, will return to private vehicles, taxis or private transportation companies (PTCs) more quickly than to transit in order to maintain physical distance from others. The TTC's surface transit network plays a critical role in moving people around Toronto and we must enhance its attractiveness to ensure it continues to provide a viable alternative to the automobile. A key initiative to achieve this is the implementation of bus transit lanes, which will provide customers with a safe, reliable and fast service.

The TTC's *5-Year Service Plan & 10-Year Outlook* identified a 20-point action plan including *Action 4.1 Explore Bus Transit Lanes*. The TTC has worked with partner divisions at the City to develop the following prioritization and implementation plan for the five corridors identified in the Plan. At the December 2019 and June 2020 Board meetings, motions were approved to include Lawrence East as a priority corridor. The review of Lawrence East is progressing and will be included in the City's Surface Transit Network Improvement Study that will be presented to Council in Q4 2020.

The purpose of this report is to present the prioritization of these five priority bus corridors, an accelerated integrated work plan and an implementation plan for the first priority: Eglinton East.

Priority	Corridor	Implementation
A	Eglinton East	2020
B	Jane Street	2021
C	Dufferin Street, Finch East, Steeles West	2022 and beyond (included in Surface Transit Network Improvement Study)

This report has been prepared in consultation with the General Manager, Transportation Services and the Chief Planner and Executive Director, City Planning Division.

Recommendations

It is recommended that the TTC Board:

1. Approve the recommended prioritization of the five priority bus corridors
    a. Priority A: Eglinton East
    b. Priority B: Jane Street
    c. Priority C: Dufferin Street, Finch East and Steeles Avenue West
2. Approve the creation of a new capital project entitled Bus Lane Implementation at a cost of $7.628 million with funding to be reallocated from the following capital projects:
    a. $6.98 million from the TTC's 2020 Capital Budget Subway Asbestos Removal Program (IO 6068);
    b. $400,000 from the Construct BRT Lines on the Avenues – EA capital project (IO 6362); and
    c. $250,000 from the Opportunity to Improve Transit Services capital project. (IO6713)
3. Direct staff to report back in December 2020 on results of community consultations, a detailed design, implementation plan and capital costs for Jane Street.
4. Direct staff to forward this report to the City of Toronto and specifically, the City Clerk, the General Manager of Transportation Services Division and the Chief Planner and Executive Director, City Planning Division.

Financial Summary

The installation of transit priority treatments on Eglinton East are estimated at a total cost of approximately $7.8 million, of which $7.628 million are capital costs and $155,000 are one-time operating costs, as outlined in the following table (**Table 1**).

Table 1: Summary of the estimated 2020 capital and operating costs

Capital budget		
Stop consolidation / relocation	$650,000	Funding will be reallocated within the existing capital budgets as noted in Recommendation 2.
Priority treatments (pavement markings, signage, etc.)	$6,977,644	Funding will be transferred from the TTC's 2020 approved Capital budget Subway Asbestos Removal Program as noted in Recommendation 2
Total capital costs	**$7,627,644**	
Operating budget		
Marketing campaign	$20,000	Funds have been budgeted in TTC's 2020 Operating Budget.
Promotional Bus Wraps (similar to Electric Bus)	$135,000	This unbudgeted expenditure will be funded from the amount allocated for improvements to surface transit schedules in the 2020 Operating Budget.
Total operating costs	**$155,000**	

Initially identified in TTC's 5-Year Service Plan as one of five priority bus lanes to be implemented beginning in 2021, these capital projects were not funded in TTC's 2020-2029 Capital Plan. As a result, funds must be reallocated from other capital projects with available funding in 2020 to enable the acceleration of the Bus Lane Implementation for Eglington East capital project.

In order to proceed, a total of total of $7.628 million in approved capital funding will be reallocated from the following capital projects: $6.98 million from the *Asbestos Removal Program*: $400,000 from to the *Construct BRT Lines on the Avenues – EA* and

$250,000 from the *Opportunity to Improve Transit Services* capital projects to the new Bus Lane Implementation capital project. The Priority Bus Lane treatments such as pavement, marking and signage work will be undertaken by Transportation Services on behalf of the TTC.

The remaining $0.16 million in one-time operating costs will be funded through the TTC's 2020 Operating Budget while on-going operating and maintenance costs, including snow removal, will be included in Transportation Services' operating budget as part of its responsibility for road maintenance.

Bus lanes on the Eglinton East corridor are anticipated to increase transit reliability and reduce transit travel time on average between two-to-five minutes per trip. These time and reliability savings present an opportunity to achieve operating budget savings of 500 fewer service hours per week, equivalent to about $2.5 million per year and a capital cost avoidance of seven fewer peak buses equivalent to approximately $6.3 million.

The allocation of the operating cost savings and capital cost avoidance from the implementation of bus lanes will be considered for inclusion in the 2021 Service Plan and Budget process.

Funding required for the remaining priority corridors identified in the TTC's 5-Year Service Plan & 10-Year Outlook, will be considered for inclusion in the 2021-2030 Capital Budget and Plan as part of the 2021 Budget process.

The Interim Chief Financial Officer has read this report and agrees with the financial impact information.

Equity/Accessibility Matters

The TTC is making Toronto's transit system barrier-free by implementing changes that will make all of its services and facilities accessible to all our customers. The TTC strongly believes that all customers should enjoy the freedom, independence and flexibility to travel anywhere on its transit system. The TTC's commitment to providing accessible transit is also at the forefront of its *2018-2022 Corporate Plan* and its *5-Year Service Plan & 10-Year Outlook*.

The improved speed, reliability and increased capacity on the transit priority corridors will increase economic opportunity for equity-seeking groups. Many of the priority corridors identified are home to more racialized peoples, people with low-income and those who are essential frontline workers. The bus lanes will positively impact these groups and improve their access to employment and healthcare services. This, in turn, helps all Torontonians during the coronavirus pandemic.

Having a fast and reliable transit network is critical for equity-seeking groups who need to get to work, school, health services, recreational and cultural services, etc. Studies have shown that individuals who have less access to resources and services typically have worse health outcomes. Ensuring that access is equitable as well as reliable, safe and timely supports population health overall in the city of Toronto.

Decision History

At the December 12, 2019 TTC Board meeting, the Board approved the *5-Year Service Plan & 10-Year Outlook*. The Plan included a 20-point action plan. Action 4.1 is to explore bus transit lanes in the city of Toronto. The Board directed staff to report back on a prioritization plan, implementation timeline and integrated work plan for the Proposed Enhanced Priority Corridors.

https://www.ttc.ca/About_the_TTC/Commission_reports_and_information/Commission_meetings/2019/December_12/Reports/Decisions/16_5_Year_Service_Plan_and_10_Year_Outlook_Decision.pdf

At the June 17, 2020 TTC Board meeting, the Board approved the following motion, requesting staff to identify transit priority measures on all five bus priority corridors in the TTC's 5-Year Service Plan (Section 4.1) with a recommended design and implementation plan for the Board's approval at its July 14, 2020 meeting, with targeted installation for September 1, 2020.

http://www.ttc.ca/About_the_TTC/Commission_reports_and_information/Commission_meetings/2020/June_17/Reports/12_Notice_of_Motion_Fast_Tracking_Bus_Priority_Transit_Lanes.pdf

The TTC Board also adopted the following Member motion: That staff evaluate ridership and investigate the need and potential for priority transit measures on Lawrence Avenue East (east of Victoria Park to Rouge Hills Drive) and report back at the TTC Board's July 14, 2020 meeting.

Issue Background

Through its strategies, plans and policies, the City of Toronto recognizes the necessity of improvements to transit services in achieving the City's vision and goals for the future. Surface transit priority plays a key role in these improvements.

The COVID-19 crisis has shown that the TTC is vital to hundreds of thousands of customers who use our services to travel to essential destinations including grocery stores, pharmacies, healthcare facilities and employment. A recent University of Toronto survey of customer travel patterns during the pandemic indicated that 87% of customers deemed these four trip purposes as the most essential. Post COVID-19, a strong recovery plan will be needed to build ridership back. As the city and GTHA re-opens and recovery begins, it is expected that people will return to private vehicles, taxis or PTCs more quickly than they will to transit in order to maintain physical distance from others.

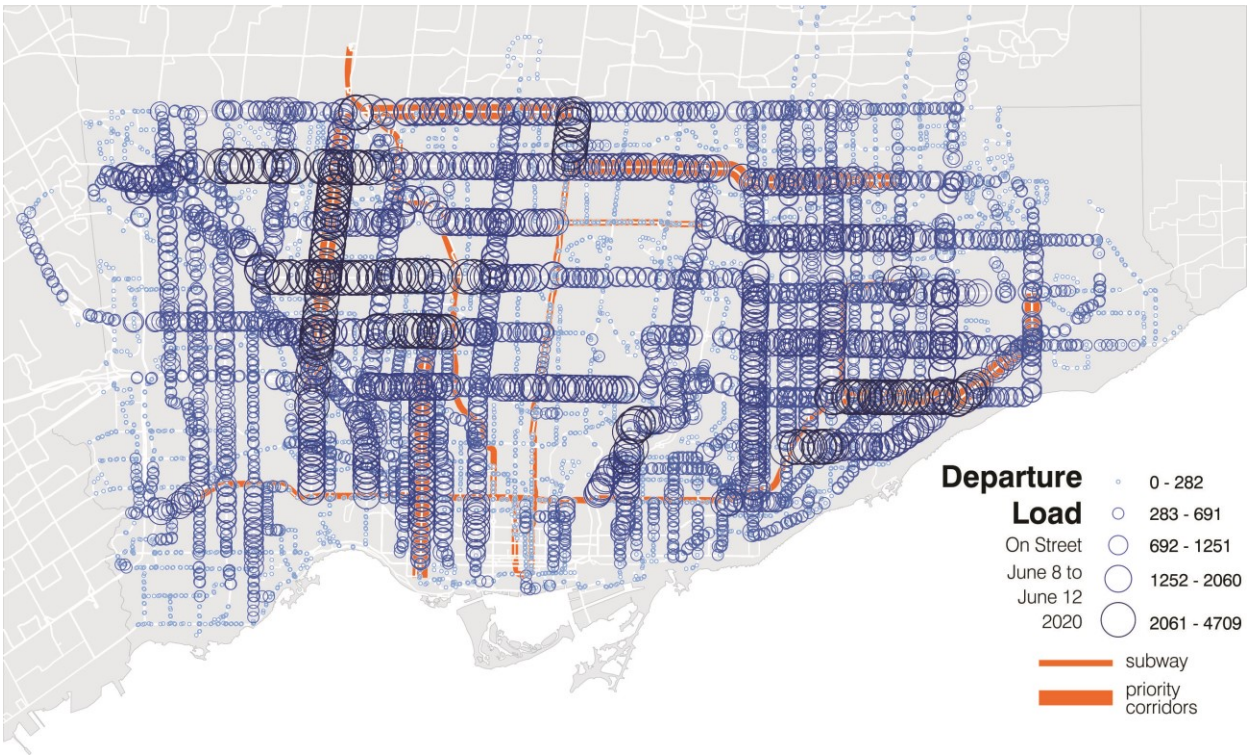
The TTC's surface transit network plays a critical role in moving people around Toronto and we must enhance its attractiveness to ensure it continues to provide a viable alternative to the automobile as the city and region re-opens. This will support economic recovery, environmental sustainability and social vibrancy. Bus lane implementation is a key part of the TTC's recovery planning.

This report focuses on a near-term priority bus lane implementation plan. The TTC's *5-Year Service Plan & 10-Year Outlook* identified a 20-point action plan, including *Action 4.1 Explore Bus Transit Lanes*. Action 4.1 identified exploring bus transit lanes on five priority bus corridors:

- Dufferin Street
- Eglinton Avenue East
- Finch Avenue East
- Jane Street
- Steeles Avenue West

These are some of the TTC's most heavily used bus corridors, where nearly a quarter of a million customers travel every weekday (pre-COVID conditions). Transit on these corridors plays a significant role in moving large volumes of people and, given priority, could move even more. Even during COVID-19, these corridors continue to play a significant role in moving people around the city. **Figure 1**, shown below, illustrates the bus departure loads across the city.

Figure 1: Bus departure loads - June 8, 2020 – June 12, 2020



These corridors have a high through-put of buses all day, seven days a week. These roadways experience heavy vehicle traffic (particularly during peak hours), carry high volumes of transit passengers, service a variety of destinations and land uses, and are well-connected to other major transit corridors.

Throughout the public and stakeholder consultations for the *5-Year Service Plan & 10-Year Outlook,* participants said they would like the TTC to:

- Deliver reliable and frequent service;
- Enhance transit priority on the bus and streetcar network;
- Integrate surface transit with new rapid transit lines, regional transit partners and other transportation modes;
- Identify local service improvement opportunities with community groups; and
- Improve the overall transit rider experience, from beginning to end.

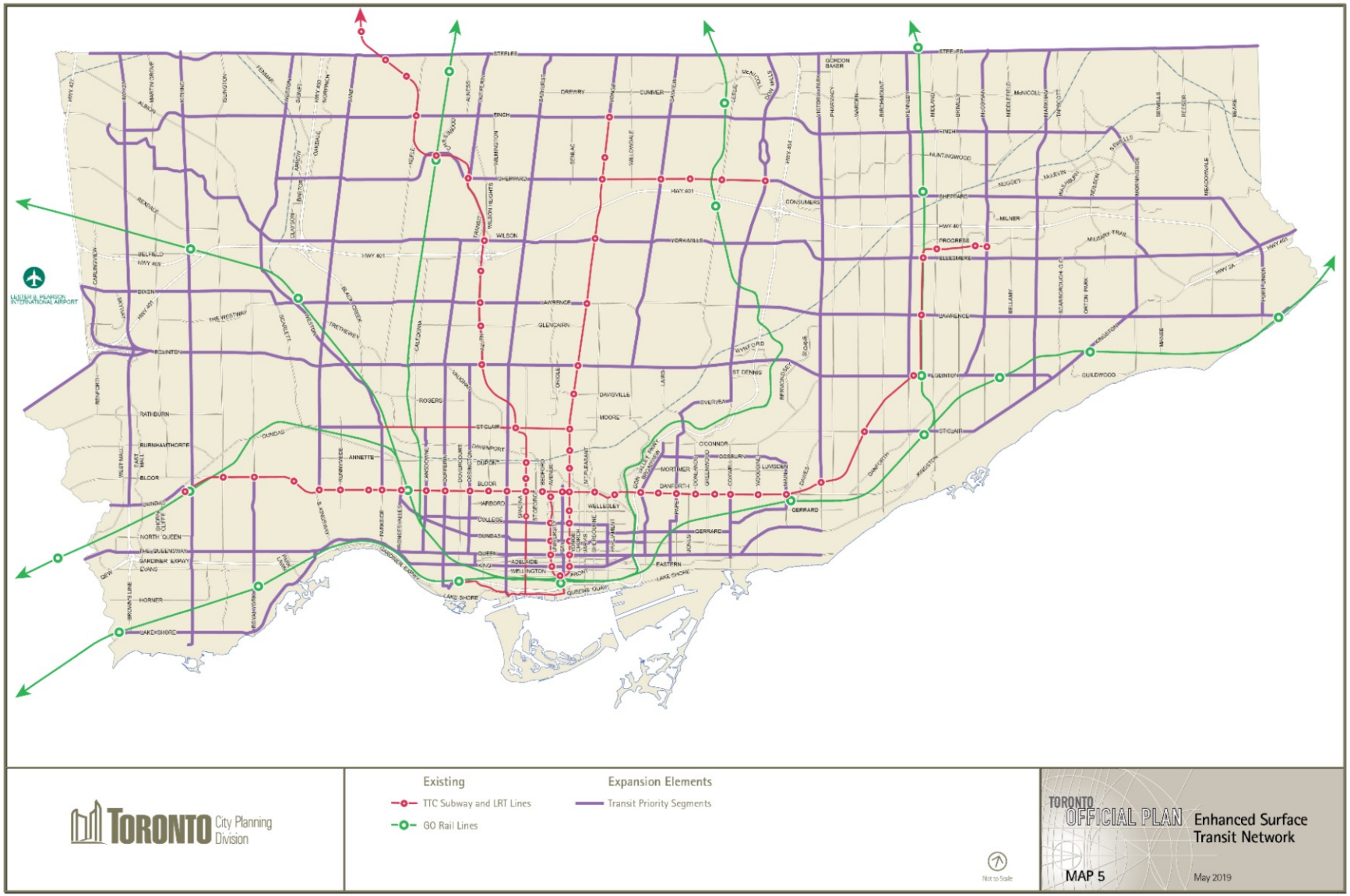
Implementation of bus lanes is about moving people more efficiently on transit by improving reliability, speed and capacity on the busiest surface transit routes in the city. This will ensure that resources are being used more efficiently to provide the same level of service or better.

In parallel to the *5-Year Service Plan & 10-Year Outlook*, the City has been working on the Surface Transit Network Implementation Study (STNIS). STNIS recognizes the importance of prioritizing surface transit as a key step in congestion management moving forward to 2025 and beyond.

STNIS, led by Transportation Services, in collaboration with City Planning and the TTC, provides the foundation and governance framework for planning, developing, prioritizing, funding, delivering and monitoring of transit priority measures within the city of Toronto. STNIS identifies a multi-year transit priority implementation program to be included in Transportation Services' 10-Year Budget and Capital Program. The study recognizes that the *5-Year Service Plan & 10-Year Outlook* is a plan to fast-track the implementation of bus lanes on five priority corridors and serves as a precursor to near- and long-term surface transit projects. The STNIS study will be presented to City Council in Q4 2020. **Figure 2**, shown below, is Map 5 of the Official Plan Amendment that was presented to City Council in February 2020. The map identifies corridors that have been selected for enhanced transit priority measures. The map will serve as the foundation for the STNIS program. Lawrence East is included and will be considered for priority measures as part of STNIS.

The TTC has worked with partner divisions at the City to develop a prioritization and implementation plan for bus lanes on the five corridors identified in the Plan. This report presents the results of that analysis.

Figure 2: City of Toronto Official Plan - Map 5



Comments

Priority bus lane objectives

The transit network plays a critical role in meeting Toronto's transportation needs, moving 1.8 million people a day (pre-COVID conditions). The TTC operates an extensive surface transit network that is exceptional by North American standards. The TTC operates 13 of the 24 busiest bus routes in Canada and the United States[1]. The majority of these routes operate in mixed-traffic conditions. Over the years, increases in traffic congestion have resulted in a decrease in the speed and reliability of these heavily used bus routes on busy streets.

Improvements to surface transit are critical over the next five years to ensure that the TTC is doing its part in achieving the City's vision and goals for the future. Across North America, it has been demonstrated that tactical implementation of transit priority measures can be achieved quickly, at relatively low cost, and can have a major impact on the speed, reliability and overall attractiveness of the transit system when compared to more resource-intensive measures, such as LRT and other fixed guideway systems. These tactical projects more often than not lead to permanent solutions.

The following outcomes (**Table 2**) were used to guide the prioritization of the top five corridors identified in the *5-Year Service Plan & 10-Year Outlook*:

Table 2: Priority bus lane objectives – Target outcomes

Target outcome	Description
Tactical transit improvements	This allows the City and the TTC to try out new ideas, relatively quickly and at minimal cost. The bus lanes should be safe, feasible and simple to implement.
Real improvements for existing customers	The bus lane should provide real benefits, such as improving bus reliability, speed and capacity for a better customer experience.
Improve transit speed	The bus lane should provide net travel time savings over general purpose traffic, making surface transit a more attractive choice for trip making.
Increased access	The bus lane should improve people's ability to reach desired services and activities, taking into account both mobility (travel speed) and travel distances required to reach destinations.

[1] Based on a high-level peer review of Canadian and US transit agencies including: Atlanta (MARTA), Boston (MBTA), Chicago (CTA), New York (NYCT), Washington (WMATA), San Francisco (MTA), Vancouver (Translink), York Region (YRT/Viva)

Target outcome	Description
Advance equity initiatives	The bus lane should help advance equity initiatives identified in the City's Poverty Reduction Action Plan and improve overall transit access for equity-seeking communities.
Advance approved strategic documents and action plans	The bus lane should help advance the goals and objectives identified in Council-approved strategic documents and action plans.

Prioritization plan

Related to the objectives above, TTC staff worked in partnership with City Planning and Transportation Services to complete an evaluation based on the criteria identified in **Table 3**. This assessment helped determine a prioritization plan for the top five corridors.

Table 3: Assessment criteria

Criteria	Description
Transit characteristics	Existing ridership, travel time, service reliability and frequency of service.
Policy framework	Alignment with the Regional Transportation Plan, Official Plan, Congestion Management Plan, STNIS, TTC Corporate Plan and other strategic documents.
Equity	Neighbourhood Equity Index.
Ease of implementation	Right-of-Way availability and parking by-law review.
Existing traffic conditions and network impact of bus lane	Review existing studies that have been completed, traffic and transit data, regional travel demand model.
Safety impacts	Collision history data and Vision Zero initiatives.
Existing capital projects	Opportunity investment – what work is already being planned on these corridors: • State of Good Repair Projects • Cycling Network Plan • Utility Works • Development Plans • Queue Jump Lane Projects

The results of the evaluation can be found in **Attachment 1**.

Table 4 summarizes the recommended prioritization.

Table 4: Assessment results

Priority	Corridor	Description
A	Eglinton East (Kennedy to UofT Scarborough via Kingston Road and Morningside)	This corridor is the easiest to implement with minimal impacts on other lanes of traffic. The section along Eglinton Avenue East already includes an HOV lane. Extensive consultation has already been completed on the corridor for the future Eglinton East LRT. There is support for improving transit services. A bus lane would help build ridership for a future LRT alignment. The majority of the corridor falls within Neighbourhood Improvement Areas (NIAs). In addition, as construction for the Scarborough Subway Extension is expected to begin in 2021, dedicated lanes for transit vehicles will help minimize the negative impacts of long-term construction in the area.
B	Jane Street (Steeles to Eglinton)	This corridor has one of the slowest operating speeds. It provides an important north-south connection between Line 1 Yonge-University and future Line 5 Eglinton. It also traverses through many Neighbourhood Improvement Areas. Implementing a bus lane requires re-purposing of the existing curb lanes for transit. There would be no adverse impacts to on-street parking. Effects on other road traffic at the inter-change with Highway 401 and Highway 400 requires further additional analysis and consultation with MTO.
C	Steeles West (Pioneer Village Station to Yonge)	This corridor would provide a faster connection to either side of Line 1 and would serve York University. York Region would also benefit from the bus lane. The City has approval to initiate a Municipal Class Environmental Assessment study to widen Steeles between Bathurst and Hilda. Widening this section of Steeles Avenue West would facilitate the operations of the proposed bus lane by eliminating this existing bottleneck.
C	Finch East (Finch Station to McCowan)	This corridor shows significant growth in developments that are planned or under review. There are also important connections to post-secondary institutions. Effects on other road traffic at the inter-change with Highway 404 requires further additional analysis and consultation with MTO.
C	Dufferin Street (Wilson to Dufferin Gate)	This corridor has the slowest operating speeds, however, it also has the greatest challenges for implementation. South of Rogers Road, Dufferin Street has a very narrow right-of-way and a lot of on-street parking. Additional analysis is needed to ensure impacts are minimized.

As a result of the evaluation, staff had identified the following timeline:

- Eglinton East and Jane Street – spring and fall of 2021
- Steeles West, Finch East and Dufferin Street – 2022 and beyond

In June 2020, TTC Board requested that staff fast track the priority bus lane program. Of the two scheduled projects, both have been accelerated by six months. Eglinton East corridor will be implemented in fall 2020 followed by Jane Street in spring 2021. Below is a description of the proposed work plan for both of these corridors.

Eglinton East Corridor

The following section presents the proposed service concept, example cross-sections and benefits of bus lanes on the Eglinton East corridor.

The Eglinton East corridor is 10.9-km in length and runs from Kennedy Station to the University of Toronto Scarborough Campus (UTSC). It follows three major streets: Eglinton Avenue East, Kingston Road and Morningside Avenue. The service would be an interim solution to the future Eglinton East LRT service. The existing HOV lanes would be converted to priority bus lanes, while curbside general purpose lanes on Kingston Road and Morningside Avenue would be converted to priority bus lanes.

Through the implementation of the bus lane on the corridor, stops would also be consolidated to speed up service and mimic the proposed LRT stops. **Figure 3** shows the proposed service and stops on the corridor. Local services operating on this corridor will stop at the proposed stop locations only. Express services operating on this corridor will not change. Consultation on the service concept will be completed over the summer as part of the TTC's Annual Service Plan process. The service concept is subject to change as a result of consultation. **Figures 4** through **7** present cross-section samples of key segments on the corridor. These configurations will be confirmed during detailed design.

Table 5 summarizes the projected benefits of bus lanes on the corridor. Bus lanes on the Eglinton East corridor is anticipated to increase transit reliability and reduce transit travel time on average between two-to-five minutes per trip. These time and reliability savings are expected to result in an operating cost avoidance of 500 fewer service hours per week, equivalent to about $2.5 million per year and a capital cost avoidance of seven fewer peak buses equivalent to approximately $6.3 million.

The disposition of the operating cost savings and capital cost avoidance to be realized from the implementation of bus lanes will be considered for inclusion in the 2021 Service Plan and Budget process.

Note, that at this time, bus lanes will only be implemented from Brimley Road to Ellesmere Road. Construction of the Scarborough Subway Extension by Metrolinx is expected to start in spring 2021, which will require lane closures from Kennedy Station to Brimley Road. Once construction is complete, it is anticipated that bus lanes will be extended west to Kennedy Station. During the Scarborough Subway Extension

construction works, traffic impacts will be monitored so that the priority bus lanes could be recommended for implementation earlier, if conditions allow.

Figure 3: Eglinton East service concept

Figure 4: Eglinton Avenue East – 4 General Purpose Lanes + 2 Bus Lanes Cross-Section

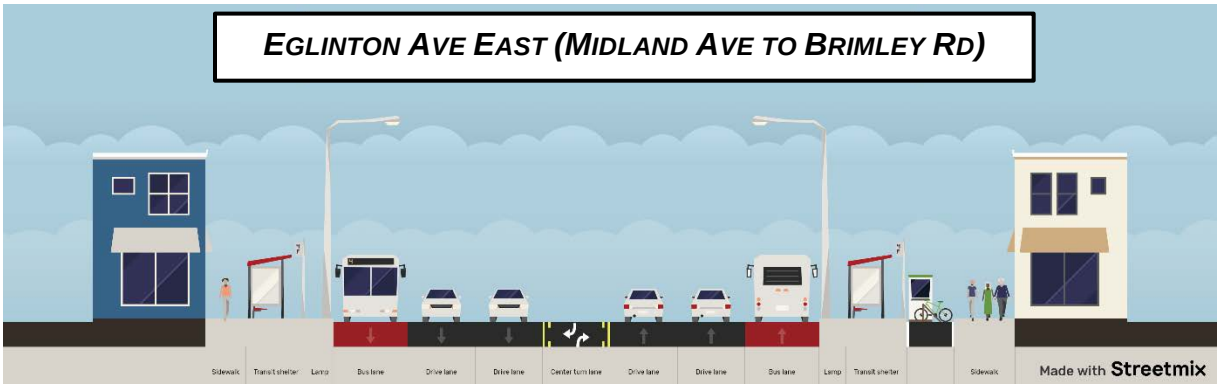


Figure 5: Eglinton Avenue East – 2 General Purpose Lanes + 2 Bus Lanes Cross-Section

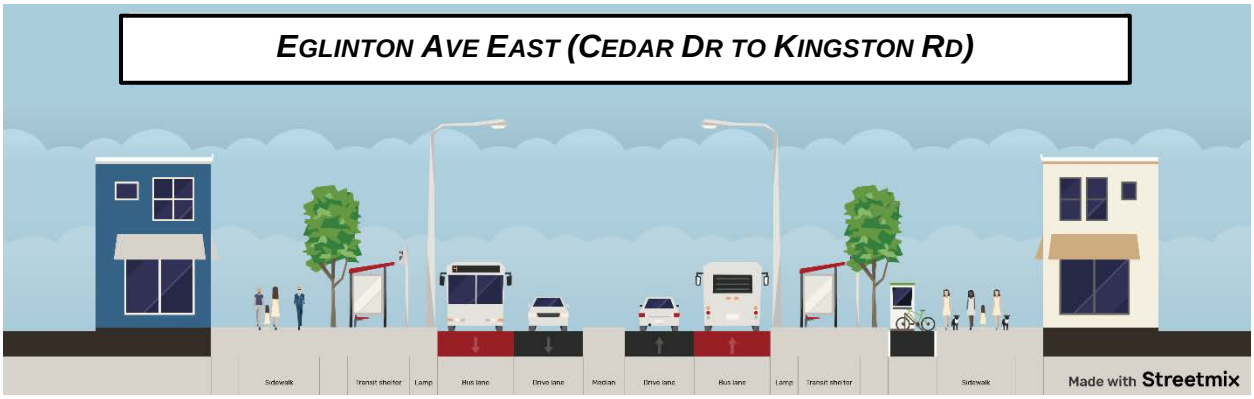


Figure 6: Kingston Road – 4 General Purpose Lanes + 2 Bus Lanes Cross-Section

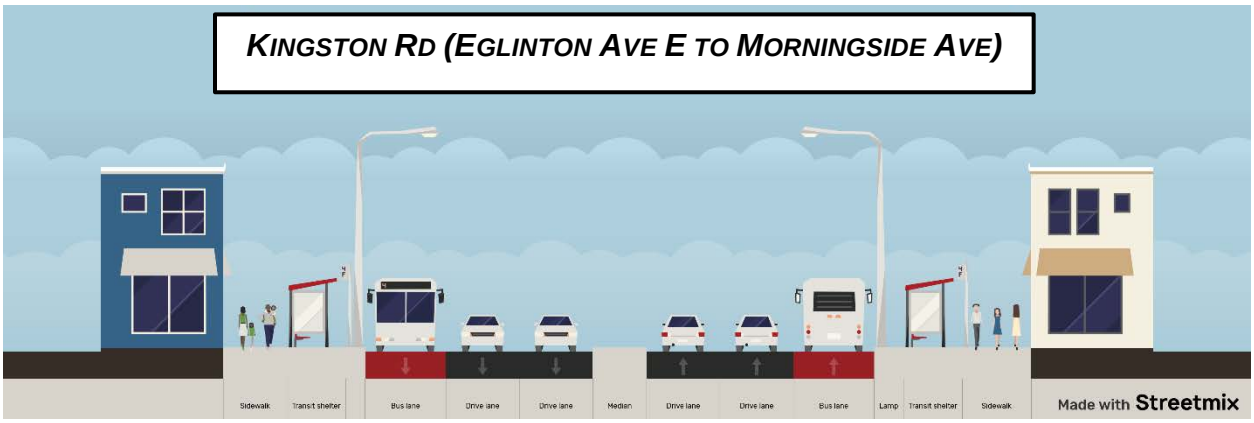


Figure 7: Morningside Avenue – 2 General Purpose Lanes + 2 Bus Lanes Cross-Section

Table 5: Eglinton East benefits

Target outcome	Projected benefit
Tactical transit improvements	Converting existing HOV lanes and general purpose lanes with red paint, pavement markings and signage makes this a simple and cost-effective solution.
Real improvements for existing customers	It is anticipated that the bus lane will improve reliability and speed of existing services, which will allow the TTC to increase capacity on the corridor. This will impact the existing 47,000 customers who use the corridor daily.
Improve transit speed	It is anticipated that the bus lane will result in an average travel time savings of 16.5% for local services (two-to-five minutes per trip).
Increased access	The increase in speed and reliability will allow customers to travel longer distances at a faster speed, reaching new destinations and services.
Advance equity initiatives	The corridor serves seven of Scarborough's eight NIA's and advances Action 7.2.1 of the City Council-approved Poverty Reduction Strategy 2019-2022 Term Action Plan.
Advance approved strategic documents and action plans	Advances strategies and actions identified in: • Transform TO • Resilience Strategy • Corporate Strategic Plan • Poverty Reduction Strategy 2019-2022 Term Action Plan • TTC Corporate Plan

City staff have prepared a report for Executive Committee: Eglinton East Corridor – Priority Bus Lanes. TTC staff support this report, which outlines the proposed bus lanes on the Eglinton East corridor with a connection to the University of Toronto Scarborough Campus. The report seeks Council authority to proceed with implementation and monitoring of the project in late fall 2020. **Figure 8** shows the anticipated project schedule.

Jane Street - Proposed work plan and implementation timeline

In order to implement bus lanes on Jane Street, the following work plan has been developed:

- Phase One: Develop goals and prioritization plan for top five corridors (complete)
- Phase Two: Focus on Jane Street – evaluate corridor designs, select preferred design, consult the public and begin assembling baseline data
- Phase Three: Implement and monitor Jane Street

Figure 9 below depicts the proposed work plan and timeline.

Figure 8: Eglinton East - Accelerated implementation timeline

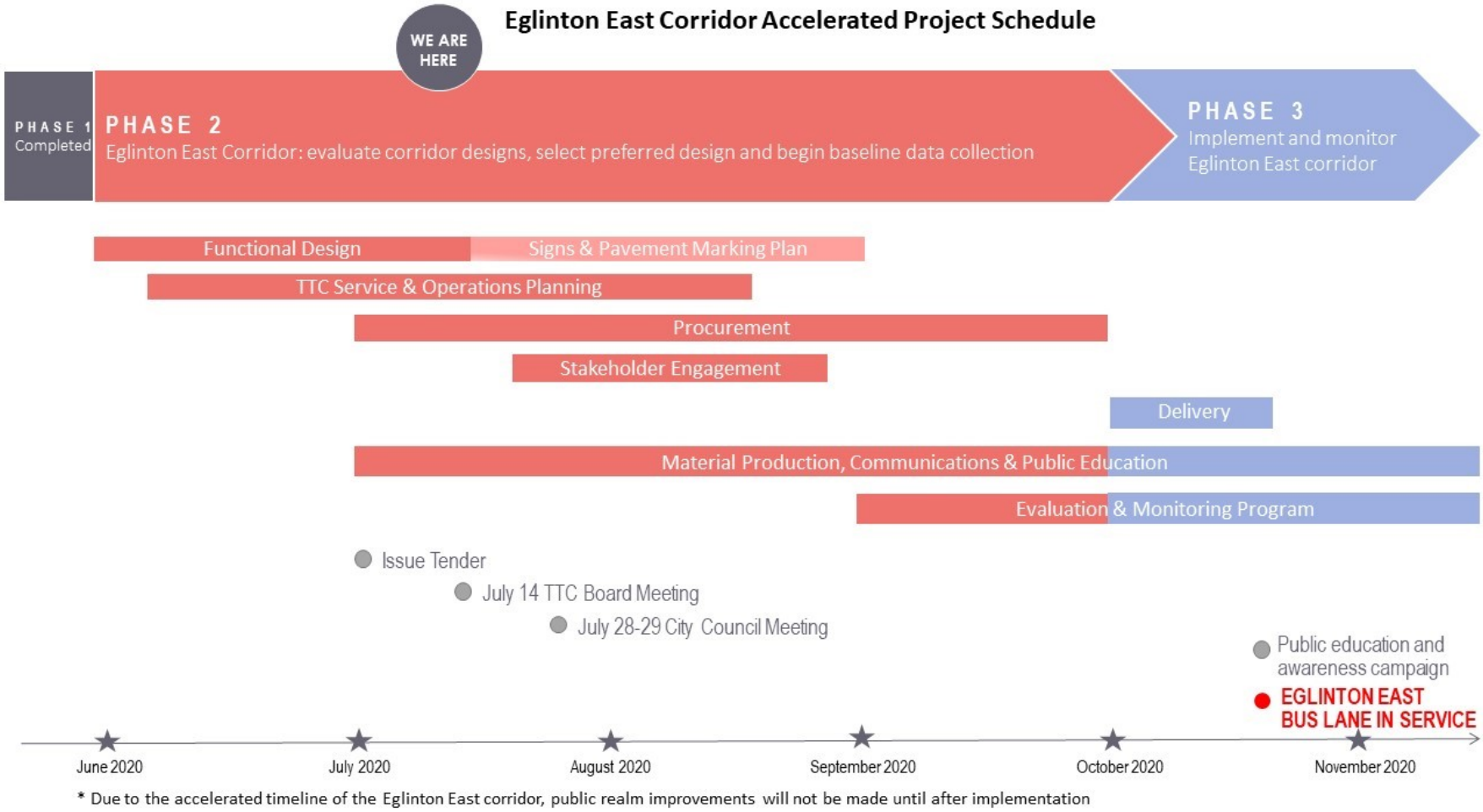
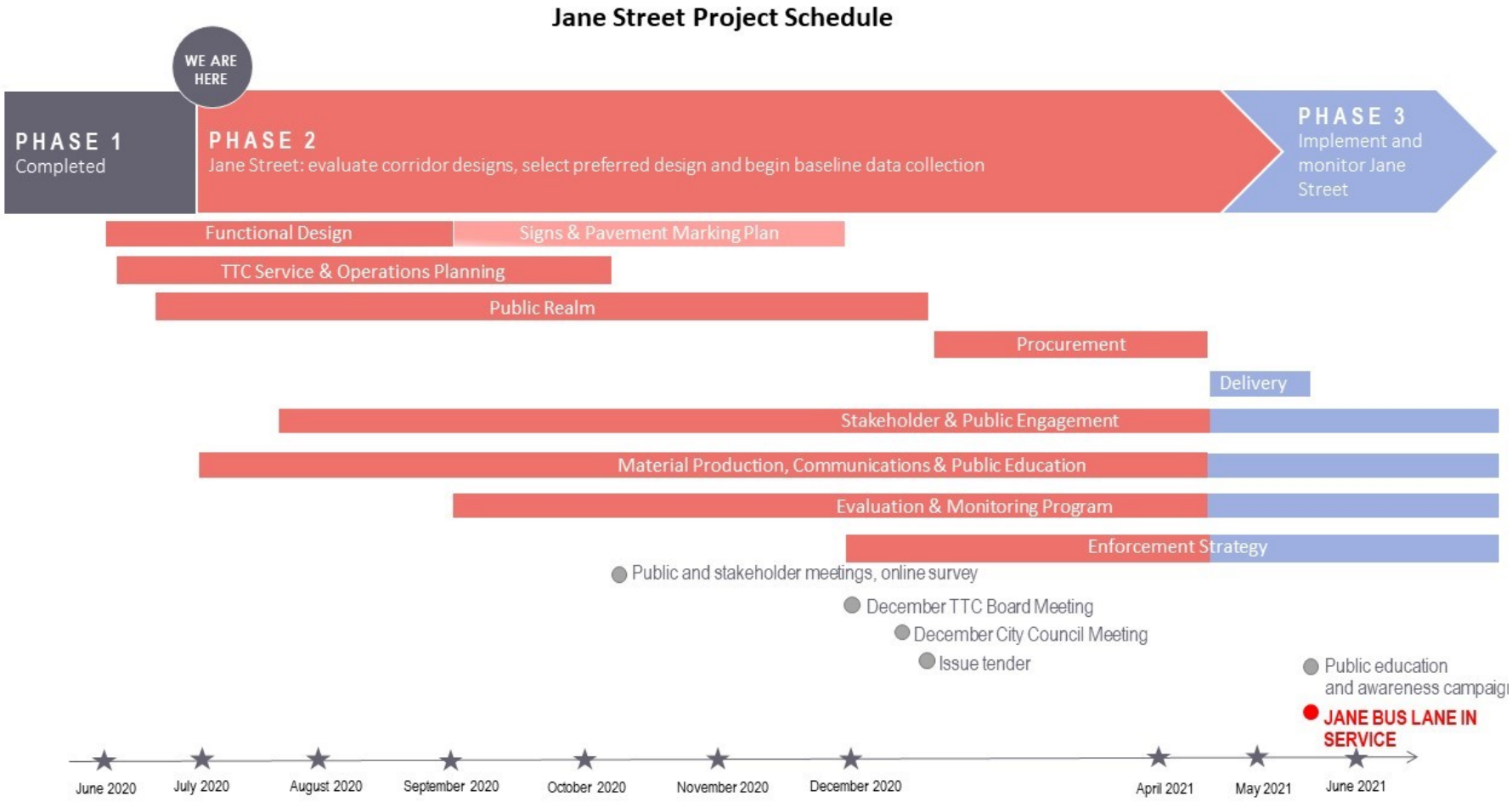


Figure 9: Jane Street - Implementation timeline



Next steps

Staff will report back to the Board and City Council with a recommended design and detailed implementation plan for Jane Street in December 2020. Estimated costs will be reported in Q4 2020 through the detailed implementation plan. City staff will report back to Council on STNIS with a timeline for the remaining three corridors and Lawrence East in Q4 2020. Status updates will also be provided via the CEO's Report in the fall.

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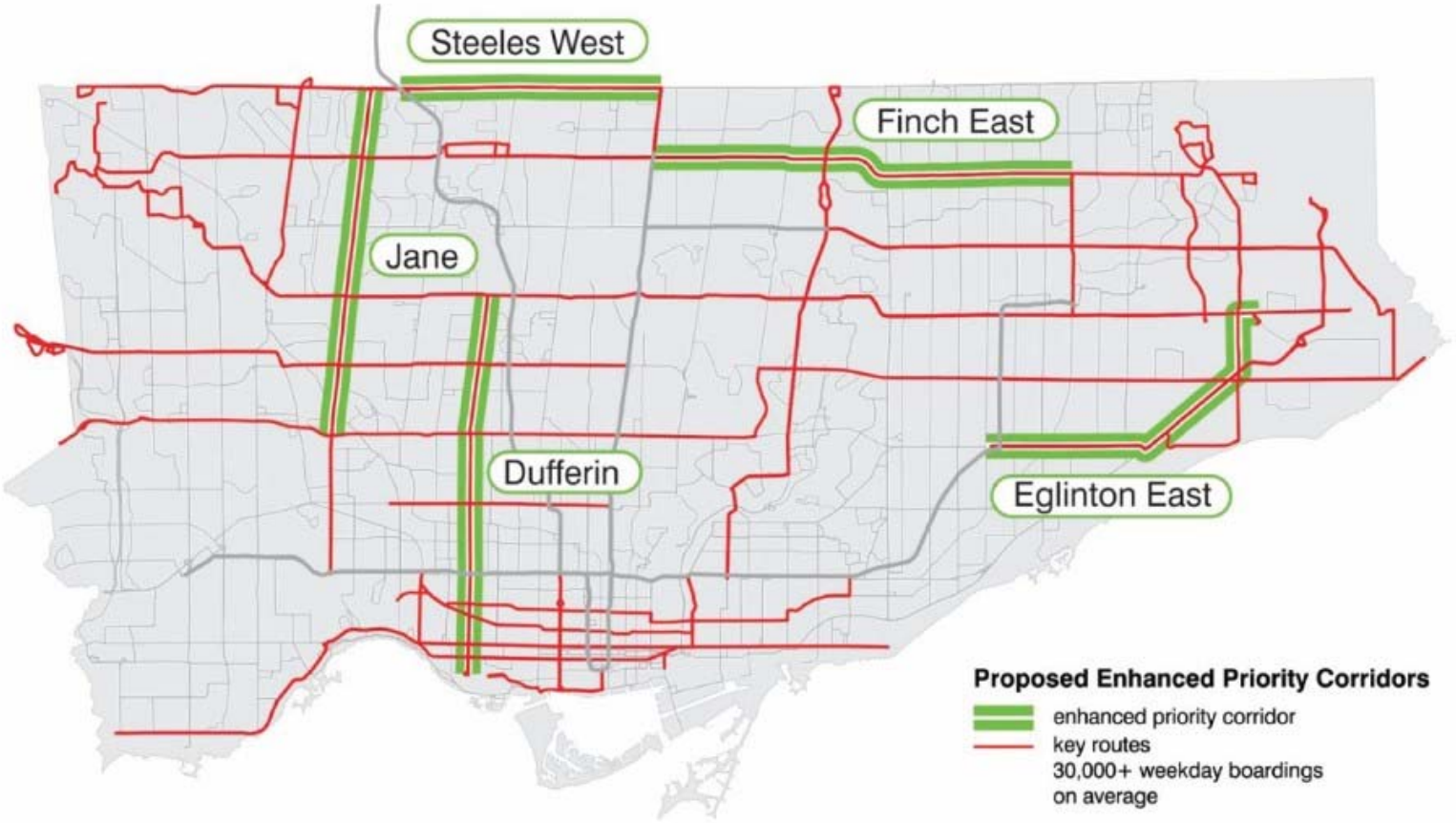
Attachments

Attachment 1 – Corridor Technical Briefs

Attachment 1: Corridor Technical Briefs

BUS LANE IMPLEMENTATION PLAN



Executive Summary and Policy Context

TORONTO

July 2020

Executive Summary

TTC's 5-Year Service Plan & 10-Year Outlook (the Plan) identifies service improvements to public transit service in the City of Toronto in 2020-2024 and beyond. The Plan lays out anticipated growth in the coming five years and sets a vision to accommodate it by focusing on improvements that enhance the TTC's core-competency: mass transit. The Plan's vision is supported by five pillars of opportunity and is accompanied by specific actions outlined in a multi-year 20-point action plan. The TTC Board approved The Plan at its meeting on December 12, 2019 and directed TTC staff to work with Transportation Services and City Planning at the City of Toronto on an implementation plan for prioritizing surface transit on five priority corridors, including:

- Eglinton Avenue East (along the proposed Eglinton East Light Rail Transit alignment);
- Jane Street, between Eglinton Avenue West and Steeles Avenue West;
- Dufferin Street, between Wilson Avenue and the Dufferin Gate Loop;
- Finch Avenue East, between Yonge Street and McCowan Road;
- Steeles Avenue West, between Pioneer Village Station and Yonge Street.

This technical brief examines the feasibility of exclusive bus lanes along each of the priority corridors, identifies potential impacts on all road users, and recommends a path towards prioritization and implementation. Quantitative and qualitative corridor evaluation measures were selected using a data-driven, results-based approach to ensure that the proposed enhancements to surface transit advance strategic and policy objectives of the TTC and the City of Toronto.

Early indications suggest that exclusive bus lanes are feasible for all of the corridors in various forms. Preliminary findings identified Eglinton Avenue East and Jane Street as the most promising corridors for initial implementation of exclusive bus lanes based on a number of factors, including potential improvement to transit reliability, connectivity to existing and under construction rapid transit lines (Line 1 Yonge-University, Line 2 Bloor-Danforth and Line 5 Eglinton Crosstown), surrounding land use context, available right-of-way and capital project coordination opportunity, traffic impacts, alignment with Vision Zero safety initiatives and cycling plans, and transportation equity considerations. The equity considerations seek to ensure that transportation investments will maintain or improve the safety of vulnerable road users and provide benefit to historically underserved communities in the City of Toronto. Steeles Avenue West, Dufferin Street, and Finch Avenue East were found to require further study in order to gain a better understanding of the potential impacts that enhanced surface transit priority may have on the broader transportation network in these areas. These corridors will be prioritized for more detailed study under the Surface Transit Network Implementation Study currently underway through collaboration between Transportation Services, TTC, and City Planning.

Planning and design for all corridors are actively underway. Functional design plans, traffic signal control plans, pavement marking and signage plans, transit service planning, potential by-law modifications and performance measurement plans to support the implementation of exclusive bus lanes along Eglinton Avenue East and Jane Street will be developed over the next few months. Public consultation detailing the application of exclusive bus lanes is currently projected for Fall of 2020, subject to change given potential COVID-19 activity. The TTC/City project team will incorporate public input and submit refined design plans, reports, and analysis to the TTC Board and City Council in December 2020 to obtain permission to advance to the physical construction of the exclusive bus lanes on Eglinton Avenue East and Jane Street in 2021.

Policy Framework

A review of relevant policy and program initiatives confirms that the anticipated outcome of this work (e.g. incorporating exclusive bus lanes) meets the strategic objectives of the City and TTC. There are a number of recent policies and programs in place or underway that support the enhancement of surface transit priority across the City of Toronto.

Toronto's new Corporate Strategic Plan identifies transportation as one of the strategic priorities and commits to a city with safe, affordable, accessible and equitable transportation choices for people and goods. The City's Strategic Priority to "Keep Toronto Moving" supports the TTC's 5-Year Service Plan and other surface transit priority initiatives citywide.

The City's Official Plan identifies a map of corridors targeted for surface transit priority measures. In February 2020, Council adopted an Official Plan Amendment which strengthens the policies related to surface transit priority measures, including a policy that directs the development of key elements of the transportation system to prioritize walking, cycling and transit over other passenger transportation modes. This Official Plan Amendment is built on foundational transportation policy set forth in OPA 274, better known as the "Feeling Congested?" initiative, which was adopted by Council in August 2014. Through these actions, the Official Plan has established a policy framework that supports the enhancement of surface transit priority on major arterials across the City of Toronto.

TTC's 5-Year Service Plan & 10-Year Outlook (the Plan) identifies service improvements to public transit service in the City of Toronto in 2020-2024 and beyond. The Plan lays out anticipated growth in the coming five years and sets a vision to accommodate it by focusing on improvements that enhance the TTC’s core-competency: mass transit. The Plan’s vision is supported by five pillars of opportunity and is accompanied by specific actions outlined in a multi-year 20-point action plan.

TTC's 2018-2022 Corporate Strategic Plan sets the direction for TTC's continued advancement towards delivering a next-level, world-class public transit system and identifies five Critical Paths to help in doing so. Critical Path 3, "Move more customers more reliably", speaks to delivering enhanced surface transit priority projects to improve service reliability, on-time performance, and ultimately grow transit ridership.

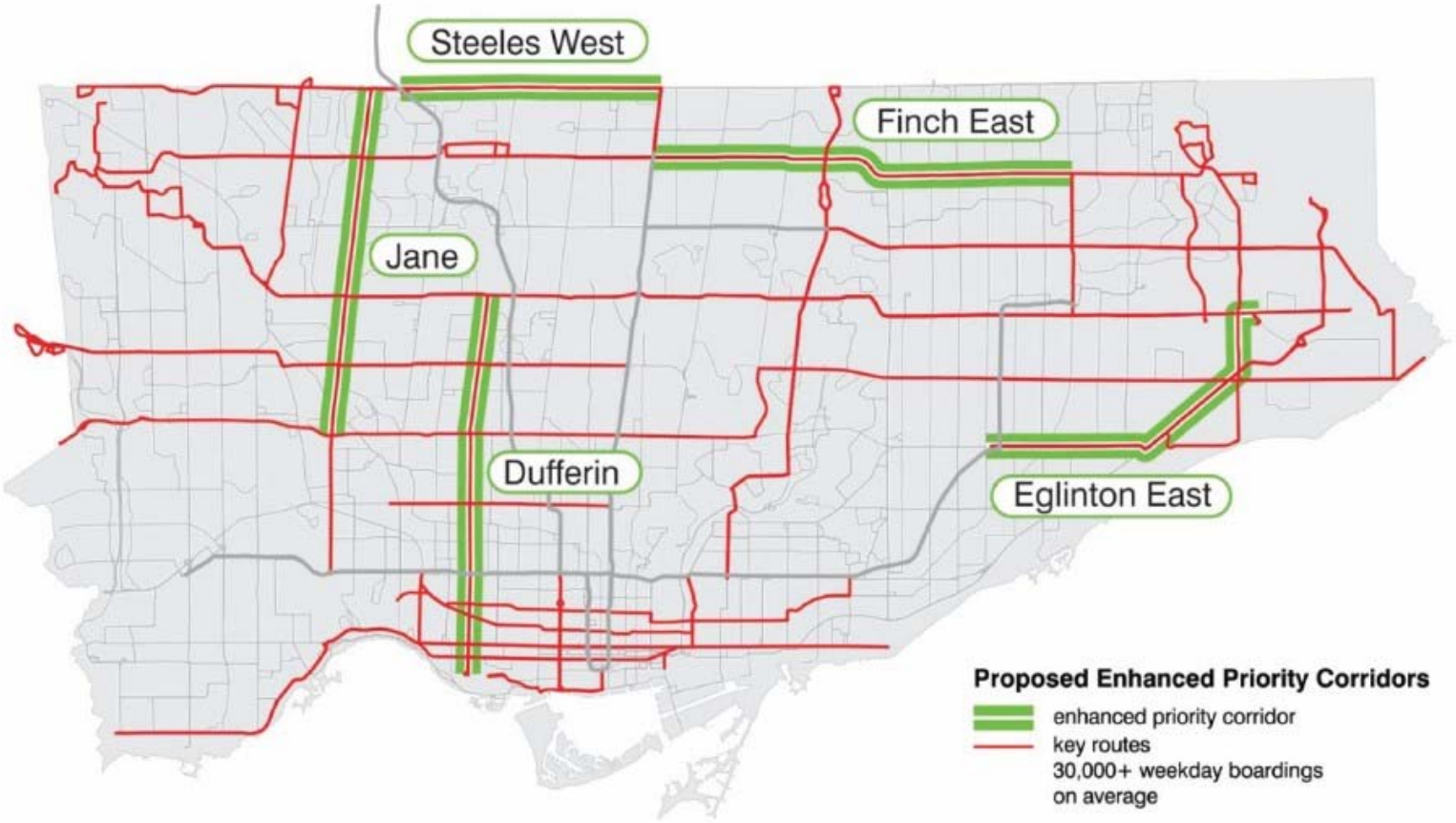
The 2041 Regional Transportation Plan by Metrolinx is currently in-force and seeks to set the transportation vision for the Greater Toronto-Hamilton Area over the next 20 years. The Plan looks to develop a seamless, multimodal transportation system that provides real alternatives to trip making by car. The Plan also establishes a 2041 Frequent Rapid Transit Network which establishes corridors across the region to be considered for enhanced surface transit priority. Eglinton Avenue East, Jane Street, Dufferin Street, Steeles Avenue West, and Finch Avenue East are all identified as corridors planned for enhanced surface transit priority under the Province's Complete 2041 Frequent Rapid Transit Network (Map 6).

The Surface Transit Network Implementation Study (STNIS) is reviewing and consolidating plans by the City and TTC to identify new opportunities for enhanced surface transit priority corridors. The study is looking beyond the quick wins in the 5-Year Service Plan to establish a shared governance framework for evaluating, planning, developing, prioritizing, funding, delivering and monitoring of transit priority measures along priority corridors.

The City's 2020-2024 Congestion Management Plan Update (CMP) identifies the need to prioritize surface transit as a critical step to achieve its vision of maximizing the safety, efficiency, reliability and sustainability of the transportation network for all users while reducing the impact on the environment. The updated CMP will emphasize moving people rather than vehicles.

The City's Surface Transit Operations Improvement Studies (STOIS) program was initiated in 2016 to assess operations along key surface transit routes across the City and identify a range of interventions to improve transit speed and reliability. The corridors considered for exclusive bus lanes were selected in part due to operational deficiencies identified under the STOIS program. This work set a proper baseline to use when considering future surface transit priority improvements as part of TTC's 5-Year Plan, STNIS, or other opportunities to implement surface transit priority on City streets.

BUS LANE IMPLEMENTATION PLAN



Eglinton East Priority Corridor

TORONTO

July 2020

Table of Contents

Introduction

The planned Eglinton Avenue East – Kingston Road – Morningside Avenue bus transit corridor, hereafter referred to as "Eglinton East", is 10.9 kilometres in length and runs from Kennedy Road and Eglinton Avenue East to the University of Toronto Scarborough Campus (UTSC). It follows three major streets: Eglinton Avenue East, Kingston Road and Morningside Avenue, as illustrated in Figure 1.

FIGURE 1: PROPOSED EGLINTON EAST BUS LANE CORRIDOR

The west side of the corridor originates at Eglinton Avenue East and Kennedy Station and continues east along Eglinton Avenue East for 4.5 km until Kingston Road. Eglinton Avenue East is a major arterial road primarily fronted by retail uses and residential towers. It has six to seven lanes of travel, including one HOV lane in each direction and a two-way left-turn lane in the center for much of the corridor. The Eglinton Crosstown LRT is currently under construction between Mount Dennis GO Station in the west and Kennedy Station in the east.

From Eglinton Avenue East and Kingston Road, the corridor turns onto Kingston Road and runs north-east for 3.4 km to Morningside Avenue. Kingston Road is a major six-lane arterial road running parallel to Lake Ontario through southern Scarborough and acting as the southern terminus for many of the area's major

roads due to the geography. Until 1998 Kingston Road made up part of Highway 2 but since its removal from the provincial highway system, it has been planned to develop as an urban street. Its history as the main transportation route connecting Toronto to communities east along Lake Ontario led to the development of a collection of motels along its route, some of which remain as part of the heritage landscape today.

From Kingston Road and Morningside Avenue, the corridor turns onto Morningside Avenue and continues north for 1.7 kilometres before turning east into the UTSC campus. Morningside Avenue is a major four-lane arterial running north-south from the Scarborough Bluffs to nearly the northern edge of Toronto. The southern end of Morningside Avenue along the corridor is primarily fronted by single-family homes, whereas the northern half goes through Morningside Park.

Land Use

Residential

Eglinton Avenue East is identified as an Avenue between Kennedy Station and Kingston Road. Kingston Road is also identified as an Avenue between Eglinton Avenue East and Morningside Avenue.

The corridor comprises primarily low-rise homes. Mid- to high-rise apartments are located along Eglinton Avenue East and in select clusters of density (Kingston-Lawrence-Morningside, Mornelle Court). Despite the significant concentration of employment areas in Scarborough, there are few directly adjacent to the corridor.

Employment/ Institutional

The relationship of the corridor to major employment areas illustrates the importance of the smaller "main street" establishments to the prosperity of the corridor and the need to strengthen connections between major anchors such as UTSC and employment centres located away from the corridor.

There are several important retail clusters directly on the route, including Markington Square (Eglinton/Kingston) and Morningside Crossing (Kingston-Lawrence-Morningside). Unique along the corridor, Eglinton Avenue East from Midland Avenue to Eglinton GO station is a nearly consistent stretch of small-grained "main street" retail hosting primarily smaller locally serving independent businesses.

There are several important destinations along the corridor and within the Study Area, including various retail clusters, the University of Toronto at Scarborough and Centennial College, Scarborough and Rouge Centenary Hospital, Guild Park and Gardens, and Morningside Park.

Development Applications

The following development applications have frontage along the Corridor. They are within proximity to existing bus stops along the corridor.

- 2567 Eglinton Avenue East (under review): One eleven-storey mixed-use building with 101 dwelling units and 342 square metres of retail/commercial space. The development would include 119 vehicular and 82 bicycle parking spaces.
- 2787/2791 Eglinton Avenue East (approved): Five blocks of four-storey stacked townhouses containing 184 dwelling units. The development would include a new public park, approximately 1,170 square metres in size, adjacent to Horton Boulevard and 217 underground parking spaces.
- 3060 Eglinton Avenue East (under review): Five blocks of four-storey stacked townhouses containing 76 dwelling units.

4206-4212 Kingston Road (under review): A twelve-storey mixed-use building with retail uses at-grade and residential uses above, and an eight-storey residential building with both above ground and below ground parking (304 vehicular and 234 bicycle parking spaces). The buildings would contain a total of 307 dwelling units.

Parks and Green Space

Several large natural areas surround the Corridor; however, there is often very little relationship between the Corridor and these systems. The ravine system creates a northern edge for many of the neighbourhoods along the Corridor. The Highland Creek Ravine covers the largest area and includes forested areas, waterways, parks, hiking trails and multi-use paths. To the south of the Corridor, the steep cliffs of the Scarborough Bluffs are a spectacular natural feature along the Lake Ontario shoreline and a destination for people across Toronto.

To the north and east of the Study Area, Rouge National Urban Park and the Toronto Zoo are preserved green spaces and natural areas of regional significance.

Mobility

The area surrounding the corridor is comprehensively covered by a tight grid of local TTC bus routes on most collector streets and arterial roadways. These routes generally provide frequent service (10 minutes or less). Many of these routes turn onto the corridor and terminate at Kennedy Station. Kennedy Station is a major connection between bus routes, Line 2 Bloor-Danforth, Line 3 Scarborough, and the currently under construction Line 5 Eglinton. The corridor also intersects with three express network bus routes at Markham Road, Lawrence Avenue and Ellesmere Road.

The Lakeshore East GO Rail line crosses the corridor twice: at Eglinton and Guildwood stations. Eglinton GO Station is located just east of McCowan Road along Eglinton Avenue East, whereas Guildwood GO Station is on Kingston Road, midway between Eglinton Avenue East and Lawrence Avenue East. The Lakeshore East line is one of the most utilized GO rail corridors.

There are private parking lots along the corridor, generally belonging to commercial establishments. These lots are largely unoccupied during working hours; site visits have observed that approximately 50% to 60% of the capacity of the major commercial parking lots remains available during the mid-day hours.

A review of the Eglinton Avenue East HOV2+ lanes in 2015 found that the non-compliance rate for passenger vehicles varied between 56% and 72% in the a.m. and p.m. peak periods (A higher percentage means poorer compliance). This non-compliance rate negatively impacts transit operations by contributing to increased travel times for passengers and decreased bus route reliability.

The cycling network around the corridor is focused largely along natural systems and the Gatineau Hydro corridor. Gaps in the waterfront and valley cycling networks combined with few on-street cycling facilities limit connectivity for cyclists. Sidewalks and streetscape elements are poorly maintained, making much of the street environment along the corridor inhospitable for walking, cycling and other informal outdoor activity.

There is the need to explore a range of strategies to re-balance the corridor to better support walking, cycling and transit options.

Assessment Criteria

Transit Characteristics

There are ten TTC bus routes that partially or wholly operate on the 10.9km corridor from Kennedy Station to University of Toronto Scarborough Campus via Eglinton Avenue East, Kingston Road and Morningside Avenue. As shown on the map below (Figure 2), some of these routes use only a small portion of the corridor while other routes use the majority. On an average weekday, there are approximately 56,000 TTC customers that would benefit from a bus only lane. This number includes customers boarding on the corridor or customers already on the bus that travel on the corridor.

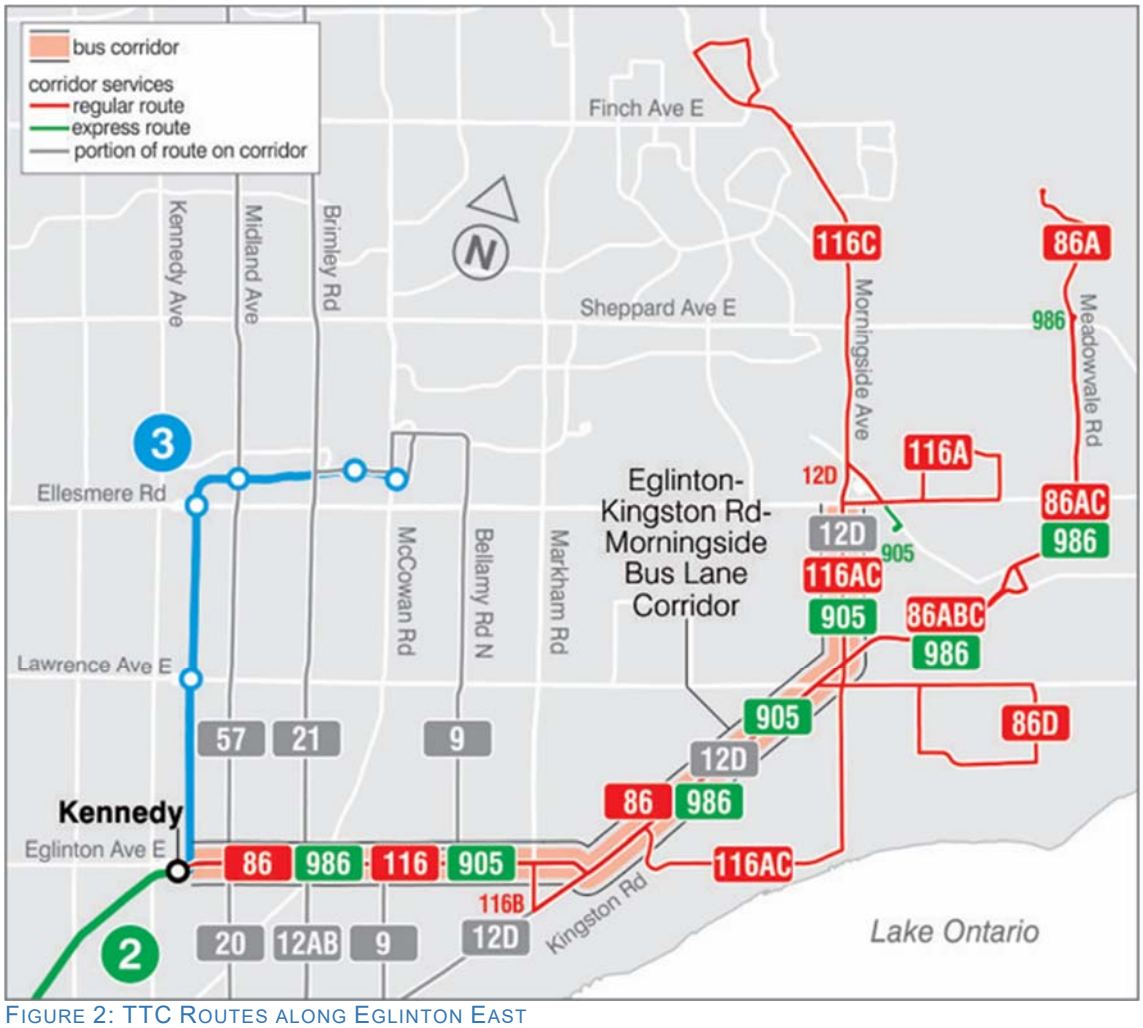


FIGURE 2: TTC ROUTES ALONG EGLINTON EAST

Of the ten routes, four routes utilize 50% or more of the corridor:

- 86 Scarborough
- 116 Morningside
- 905 Eglinton East Express
- 986 Scarborough Express

In October 2019, these four TTC routes accommodated over 47,000 customers on an average weekday. Over 42,000 of those customers (89%) would benefit from a bus only lane (customers boarding and travelling on the corridor).

The overall reliability of these four routes in October 2019 is moderate, with an average all day and an average PM peak on-time performance at 70% or better (scheduled headway performance from end terminals). Table 1 below indicates the October 2019 on-time performance by route.

An initial analysis of headways for October and November 2019 is shown in Figure 3. Each dot on the graph represents the observed time between two vehicles at the peak point of the corridor (Eglinton Avenue East at Markham Road). The maximum headway line is the headway value where it is calculated that if transit vehicles operated at this frequency, they would be operating at its crush capacity as it approaches the route's busiest segment, and customers would be unable to board. The minimum headway line is the headway value where it is calculated that if transit vehicles operated at this frequency, they would be carrying fewer than 10 passengers per bus which is approximately one-third of the seated capacity for a 12m long bus. As seen on the graph, the eastbound headways on Eglinton Avenue East at Markham Road have a significant amount of variability with only 42% of headways between the maximum and minimum headway limits.

The average PM peak speed of buses on this corridor is also moderate at about 18.5km/h. On average, it takes 35 minutes for a TTC customer to travel from Kennedy Station eastbound to the University of Toronto Scarborough campus. When compared to the average auto travel time (HERE data, October 2019), which is 17.5 minutes, transit commute time takes twice as long as driving a personal vehicle.

Although the average reliability and speed of the four routes are relatively good, there is room for improvement. In addition, the construction (and associated lane closures) of TTC's Scarborough Subway Extension to Scarborough Centre is anticipated to begin in late 2021. It is anticipated that this construction will cause significant delays to TTC services. As experienced with the construction of Line 5, construction projects have significant impacts on the speed and reliability of TTC services. Significant drops in ridership can also occur.

TABLE 1: ROUTE OPERATING CHARACTERISTICS

Bus Route	Transit Speed (PM peak travel time in peak direction)	All-day Reliability (on-time performance)	PM peak hour Reliability (on-time performance)	Weekday Ridership Overall (along bus lane corridor)
86 Scarborough	18.5 km/h (35 min)	80%	84%	47,300 (42,000)
116 Morningside		80%	72%	
905 Eglinton East Express		85%	85%	
986 Scarborough Express		72%	71%	

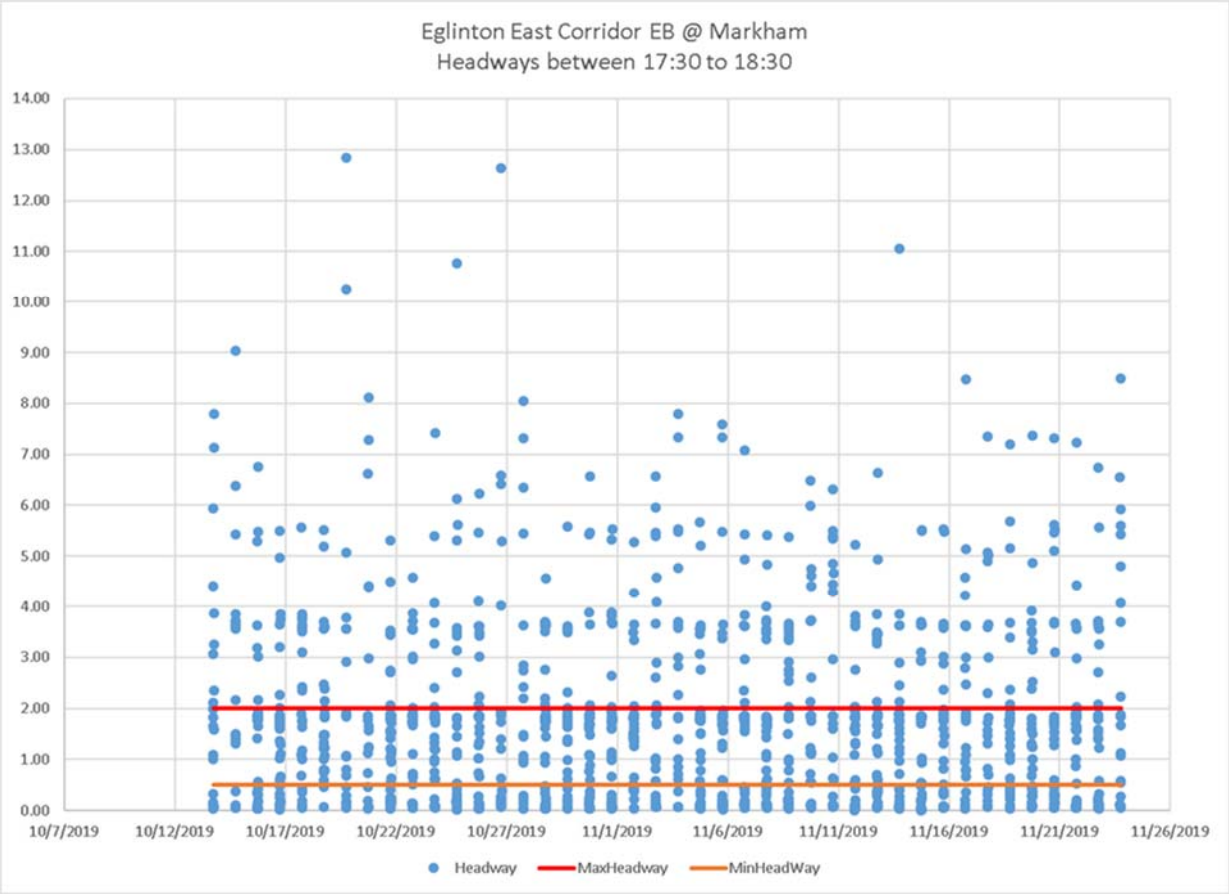


FIGURE 3: EASTBOUND HEADWAYS AT EGLINTON AVENUE EAST AND MARKHAM ROAD DURING THE BUSIEST HOUR (17:30-18:30)

Ease of Implementation

Right-of-Way Review

Eglinton Avenue East has a 36-metre right-of-way (ROW) and six to seven lanes of travel, three per direction and a median or a centre two-way left-turn lane (median or TWLTL) in some sections. The eastbound and westbound curb lanes, from Kennedy Road to Cedar Drive, are designated high occupancy vehicle lanes carrying two or more people (HOV2+). The regulation is in effect Monday to Friday, from 7:00 a.m. to 10:00 a.m. and from 3:00 p.m. to 7:00 p.m., except for public holidays.

Kingston Road has a 33-meter ROW and three general purpose lanes per direction. Both Morningside Avenue and Ellesmere Road have two general purpose lanes per direction and a ROW of 30 and 26 meters, respectively.

Pavement widths vary from 24.4 to 26.3 meters, including the median, on Eglinton Avenue East between Kennedy Road and Cedar Drive. The section between Cedar Drive and Kingston Road is much narrower,

with pavement widths varying from 17.7 to 21.6 meters, including the median. On Kingston Road, the pavement widths vary between 24.9 to 27.3 meters, including the median. Morningside Avenue and Ellesmere Road are much narrower roads with pavement widths around 15 meters. Table 2 shows the right-of-way widths for all sections.

TABLE 2: RIGHT-OF-WAY CHARACTERISTICS

Section	From	To	ROW (m)	Pavement Width	No of Lanes
Eglinton Avenue East	Kennedy Road	Midland Avenue	36	24.4 (incl. median)	6
Eglinton Avenue East	Midland Avenue	Brimley Road	36	24.8 – 25.1	7
Eglinton Avenue East	Brimley Road	McCowan Road	36	25.1 – 26.2 (incl. median)	7
Eglinton Avenue East	McCowan Road	Bellamy Road	36	25.5	7
Eglinton Avenue East	Bellamy Road	Mason Road	36	26.3 (incl. median)	6
Eglinton Avenue East	Mason Road	Markham Road	36	25.2	7
Eglinton Avenue East	Markham Road	Cedar Drive	36	25.5	7
Eglinton Avenue East	Cedar Drive	Kingston Road	36	17.7 (incl. median) – 21.6 (incl. median)	4
Kingston Road	Eglinton Ave East	Scarborough Golf Club Road	33	27.2 (incl. median)	6
Kingston Road	Scarborough Golf Club Road	Cromwell Road / Guildwood Parkway	33	27.3 (incl. median)	6
Kingston Road	Cromwell Road / Guildwood Parkway	Celeste Drive	33	24.9 (incl. median)	6
Kingston Road	Celeste Drive	Morningside Avenue	33	26.9 (incl. median) – 27.3 (incl. median)	6
Morningside Avenue	Kingston Road	Ellesmere Road	30	15.0 – 15.3	4

Proposed Lane Configuration

Notwithstanding reducing lane widths to minimum acceptable guidelines and removing median two-way left-turn lanes, it is not feasible to implement a bus lane and maintain the same number of general purpose lanes along Eglinton East.

Without road widening, the most feasible option is to convert the through curb lanes into an exclusive bus lane and keep left-turn lanes as much as possible. For Eglinton Avenue East and Kingston Road, it means assigning a 4 + 2 lane configuration (two general purpose lanes and one bus lane in each direction). The exception is the section of Eglinton Avenue East between Cedar Drive and Kingston Road, where the cross-section narrows from six lanes to four, allowing for one bus lane and one general purpose lane in each direction. Morningside Avenue is narrower than the rest of the corridor and could have one bus lane and one general purpose lane per direction.

Table 3 summarizes the proposed lane configuration under consideration for each segment on the corridor, assuming at a minimum a 3.3-metre wide bus lane and a 3.0-3.3-metre general purpose lane, as per the City's Lane Widths Guidelines. Left-turn lanes would be maintained where pavement widths allow. Detailed lane configuration and lane widths will be determined for each segment of the corridor during the detailed design stage.

TABLE 3: PROPOSED LANE CONFIGURATION

Section	From	To	Lane Configuration
Eglinton Ave East	Kennedy Road	Cedar Drive	• 2 Bus lanes • 4 General purpose lanes • 1 TWLTL (where feasible)
Eglinton Ave East	Cedar Drive	Kingston Road	• 2 Bus lanes • 2 General purpose lanes
Kingston Road	Eglinton Ave East	Morningside Avenue	• 2 Bus lanes • 4 General purpose lanes
Morningside Avenue	Kingston Road	Ellesmere Road	• 2 Bus lanes • 2 General purpose lanes

Cross-section samples of the segments above are illustrated in the Figures below.

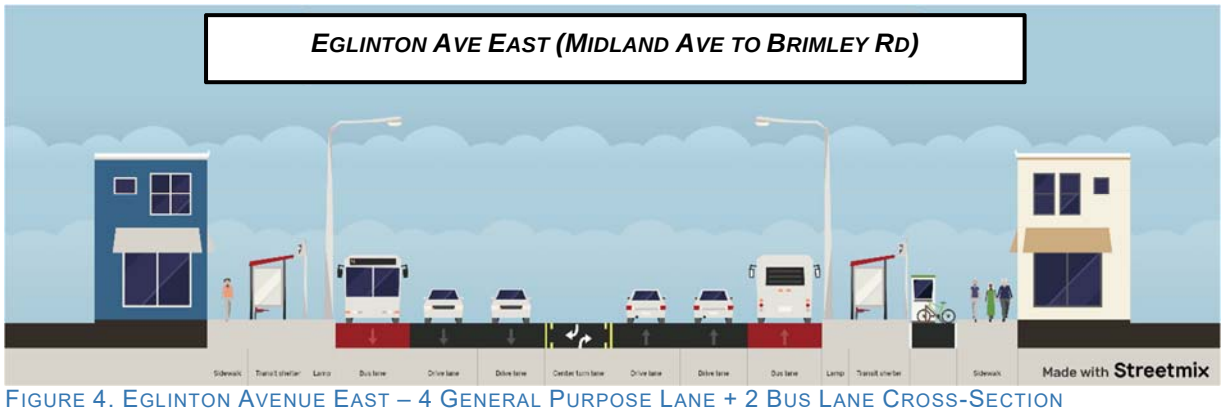


FIGURE 4. EGLINTON AVENUE EAST – 4 GENERAL PURPOSE LANE + 2 BUS LANE CROSS-SECTION

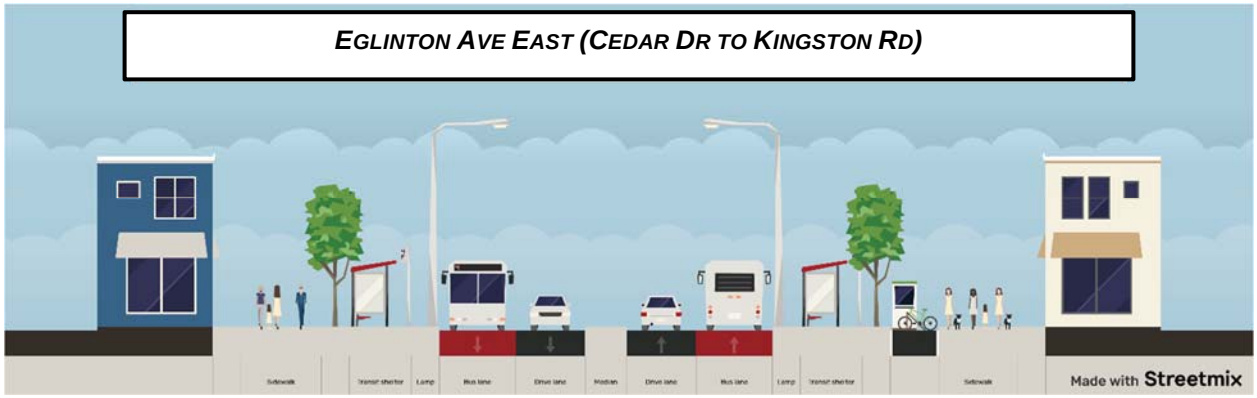


FIGURE 5: EGLINTON AVENUE EAST – 2 GENERAL PURPOSE LANE + 2 BUS LANE CROSS-SECTION

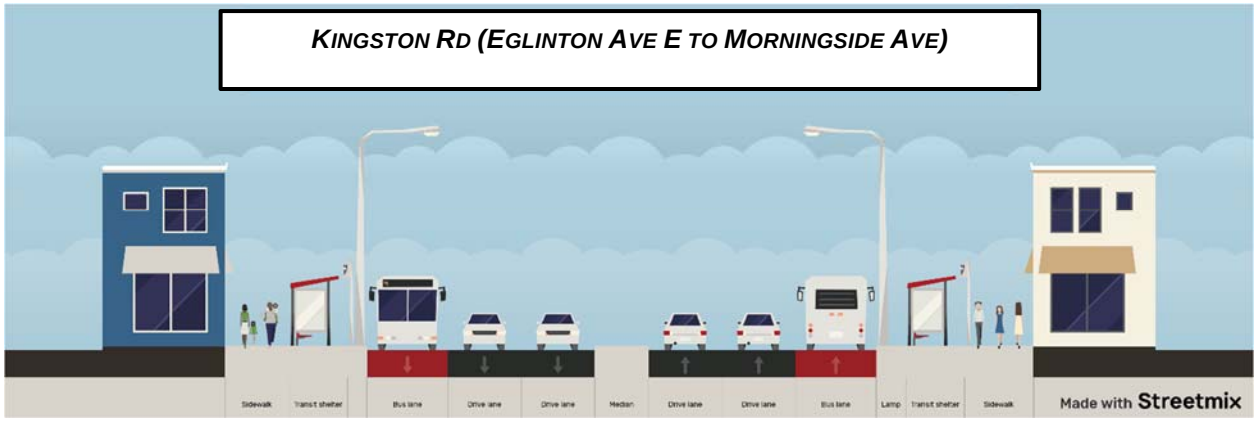


FIGURE 6: KINGSTON ROAD – 4 GENERAL PURPOSE LANE + 2 BUS LANE CROSS-SECTION

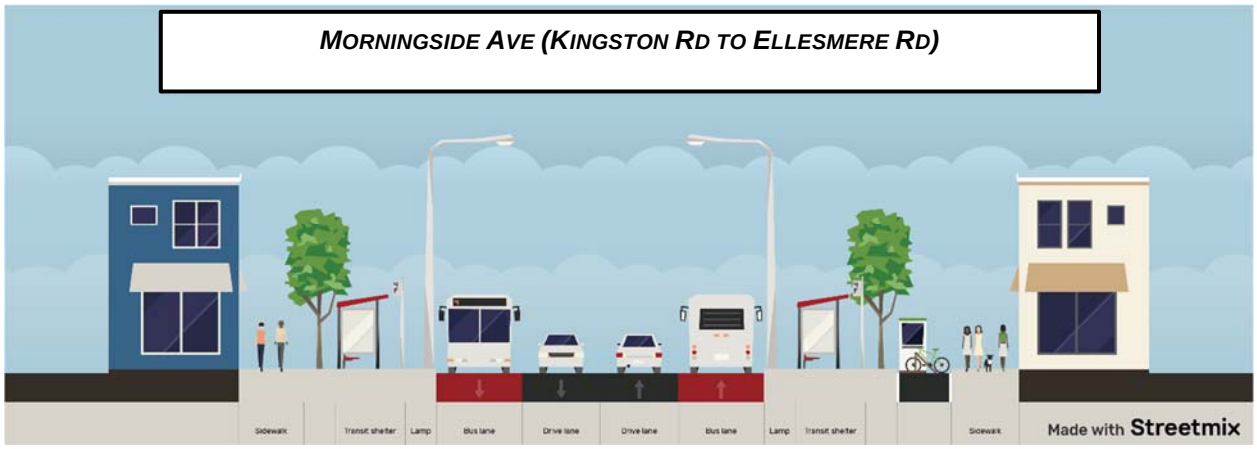


FIGURE 7: MORNINGSIDE AVENUE – 2 GENERAL PURPOSE LANE + 2 BUS LANE CROSS-SECTION

It is worth noting that these configurations will be considered in the context of earlier works performed under the *Transit City Light Rail – Scarborough-Malvern LRT Transit Project Assessment Study* completed in 2009. Allowances will be made for the differences between this current proposal and the LRT work, namely in lane widths and configuration. As an example, the LRT proposal considered a new bridge paralleling Morningside Avenue as it crosses Highland Creek, whereas the bus lane proposal will seek to use existing lanes for enhanced bus priority. The LRT study also carried the LRT alignment through UTSC, whereas the bus lane proposal will keep the alignment on Morningside. Given the flexibility of rubber-tired transit versus fixed guideway (LRT), rerouting of enhanced bus priority service through UTSC can be considered after the main service is implemented.

Parking Impacts

A review of parking along the corridor was undertaken to assess the impact of the proposed bus lane on parking supply. Typically, bus lane corridors prohibit stopping or parking to ensure smooth bus operations. For Eglinton East, the segments of the proposed bus lane corridor have neither on-street parking (i.e., pay-and-display parking machines) nor are they included in a residential permit parking area.

Capital Transportation Projects (2020–2025)

It is critical to review and coordinate the proposed bus lane with other planned capital works projects. Eglinton Avenue East is planned for resurfacing in 2023 and 2024 from Brimley Road to Kingston Road. The proposed bus lane could incorporate partial resurfacing of the curb lanes to improve pavement quality.

Kingston Road is scheduled for replacement or installation of new water mains between Eglinton Avenue East and Celeste Drive in 2023-2024. The bus lanes, if implemented in 2021, would be fully operational by then.

Ellesmere Road is scheduled for resurfacing between Morningside Avenue and Military Trail in 2023. However, this has little to no impact on the bus lane operations, since there would not be any bus lanes at this segment. Table 4 summarizes the planned capital works for the next five years in the corridor, and it also includes the pavement quality for those segments.

TABLE 4: 5-YEAR CAPITAL WORKS PROGRAM

Section	From	To	Proposed Work Type	Year	Pavement Quality Index
Eglinton Avenue East	Kennedy Road	Brimley Road	• On-street bikeway construction or bikeway pavement markings	2024	Poor
Eglinton Avenue East	Brimley Road	Bellamy Road	• Road Resurfacing • On-street bikeway construction or bikeway pavement markings	2024	Poor
Eglinton Avenue East	Bellamy Road	Kingston Road	• Road Resurfacing • On-street bikeway construction or bikeway pavement markings	2023	Poor
Kingston Road	Eglinton Avenue East	Celeste Drive	• Transmission Watermain (replacement or installation of new water mains)	2023-2024	Poor
Morningside Avenue	Highland Creek Bridge	Ellesmere Road	• Bikeway Trail Construction	2023	Fair
Ellesmere Road	Morningside Avenue	Military Trail	• Road Resurfacing • Bikeway Trail Construction	2023	Poor

Cycling Network Plan

The City of Toronto Official Plan promotes a complete streets approach in which the design of a street balances the needs and priorities of the various users and uses within the right-of-way. The safe and efficient movement of pedestrians, cyclists, transit users, goods and services vehicles, emergency vehicles, and motorists across the network should be considered when implementing modifications to a street or corridor. The Cycling Network Plan builds on the Official Plan policies and establishes a priority framework for major city-wide cycling routes. It also provides the next steps for the effective implementation of proposed cycling infrastructure.

The Cycling Network Plan uses the route priority ratings of Top, High, Medium and Low to indicate the level of value the particular route brings to the cycling network. The following nine cycling inputs determine the routes and scores shown on the Cycling Network Plan:

- Current Cycling Demand
- Potential Cycling Demand
- Trip Generators
- Transit Access
- Connectivity
- Coverage
- Barriers
- Safety
- Equity

Current Cycling Demand, Safety and Coverage are weighted higher in the analysis scores. Priority ratings are described in detail below.

- Top priority routes were routes that scored highly across most, if not all, inputs. These are found mostly on arterial roads that connect to many destinations and transit.
- High priority routes scored highly against most inputs.
- Medium priority routes scored highly in some inputs or scored well across many inputs.
- Low priority routes are mostly local neighbourhood routes with parallel route alternatives

Based on the above analysis, Table 5 shows the cycling route priority levels for the roads along the proposed transit corridor.

TABLE 5: CYCLING PRIORITY ROUTES

Street	Cycling Network Plan
Eglinton Avenue East	Top Priority Cycling Route
Kingston Road	Top Priority Cycling Route
Morningside Avenue	High Priority Cycling Route
Ellesmere Road	High Priority Cycling Route

Although there are no immediate plans for cycling facilities in the corridor, the following cross-sections illustrate conceptual options for future integrated cycling routes on the Eglinton East corridor.

For the portions of the bus priority route located on Eglinton Avenue East, Kingston Road and Ellesmere Road, uni-directional cycling facilities would not fit while still maintaining the current lane configuration. The context of these routes is suburban, higher speed (50km/hr speed limit) conditions. In-boulevard, bi-directional facilities meet the objectives of maintaining current lane configuration while not compromising on facility width, as shown in Figure 8 and Figure 9. In-boulevard facilities would also offer a level of comfort to cyclists because of the buffer between the facility and the travel lane. Building the cycling facility behind the bus stop would enable cyclists to ride through without conflicting with transit users waiting at the stop. For Morningside Avenue, uni-directional boulevard cycle tracks are preferred (Figure 10).

For in-boulevard, bi-directional facilities, special considerations are required at the intersection to ensure safe turning movements across the cycling facility such as intersection pavement markings and turning restrictions/phases (dedicated right turn phases).

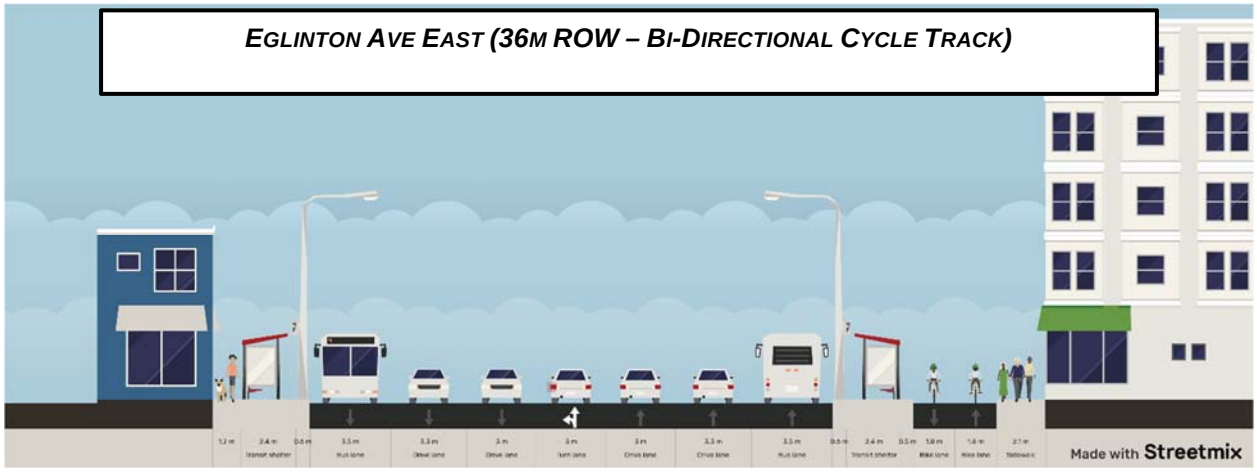


FIGURE 8: EGLINTON AVENUE EAST – CONCEPTUAL CROSS-SECTION FOR 36-METRE ROW

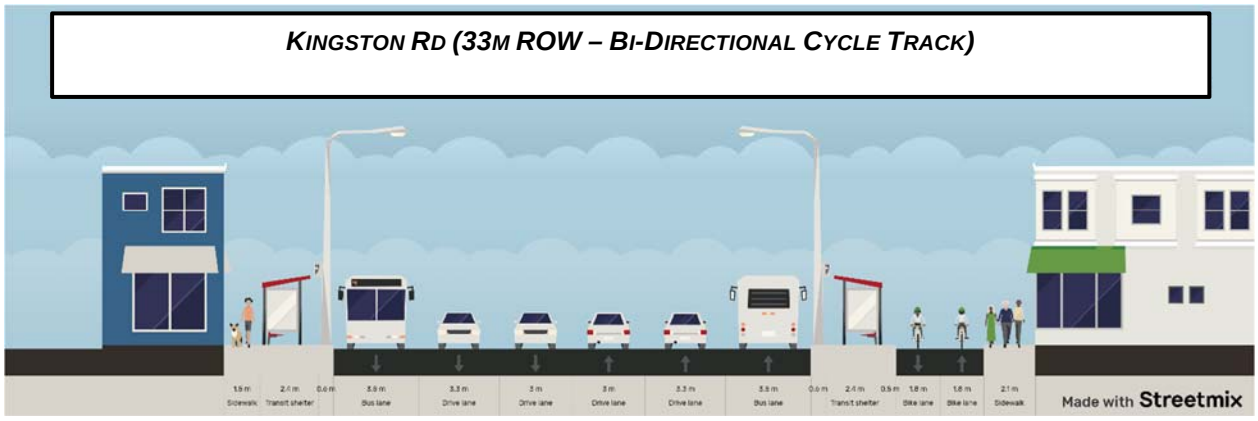


FIGURE 9: KINGSTON ROAD – CONCEPTUAL CROSS-SECTION FOR 33-METRE ROW

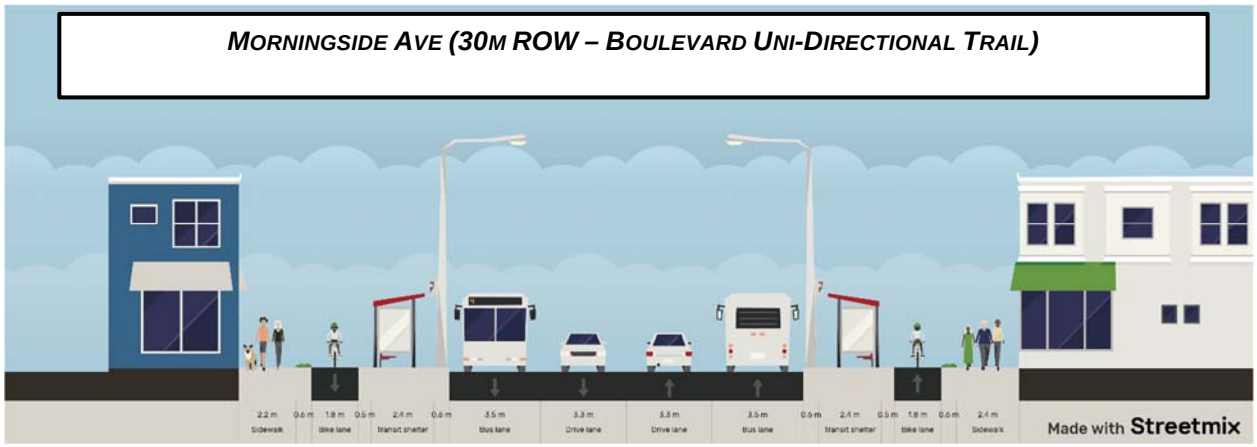


FIGURE 10: MORNINGSIDE AVENUE – CONCEPTUAL CROSS-SECTION FOR 30-METRE ROW

It is worth noting that these configurations will be considered in the context of earlier works performed under the *Transit City Light Rail – Scarborough-Malvern LRT Transit Project Assessment Study* completed in 2009. Allowances will be made for the differences between this current proposal and the LRT work. From the perspective of cycling, the LRT study recommended one cycling lane per direction along Eglinton Avenue and Kingston Road, while the current Cycling Network Plan calls for bi-directional cycle tracks on one side for both streets. This will be reconciled through the detailed design process for an ultimate build-out scenario. Under an accelerated implementation scenario, cycling facilities along Eglinton, Kingston Road, and Morningside would be provided using pavement markings only.

In the interim, alternative cycling routes can be used until an ultimate scenario can be implemented; however, these alternative routes do not cover the majority of the corridor. These routes are listed in Table 6.

TABLE 6: INTERIM ALTERNATIVE CYCLING ROUTES

Section	From	To	Alternative Route
Eglinton Ave E	Kennedy Rd	Midland Ave	Corvette Ave
Eglinton Ave E	Danforth Rd	Bellamy Rd	Trudelle St
Morningside Ave	Kingston Rd	Warnsworth St	Amiens Rd

Safety

Collision History

The City of Toronto's Vision Zero 2.0, which is an update to the original Vision Zero Road Safety Plan from 2016, was adopted in 2019. Vision Zero Road Safety Plan is a pledge to improve safety across the City using a data-driven and targeted approach, focusing on locations where improvements are most needed.

Figure 11 shows the number of killed and seriously injured (KSI) collisions along the Eglinton East corridor. There is a high concentration of KSI collisions between Kennedy Station and Danforth Road and around the Markham Road intersection.

A 2013[1] study in Melbourne, Australia, found that bus priority treatments have significantly reduced the number of fatal and seriously injured people in collisions. Despite concerns regarding the interaction of buses and vehicles at merging or turning sections, the overall conclusion was that converting general-purpose lanes into bus lanes reduced accidents.

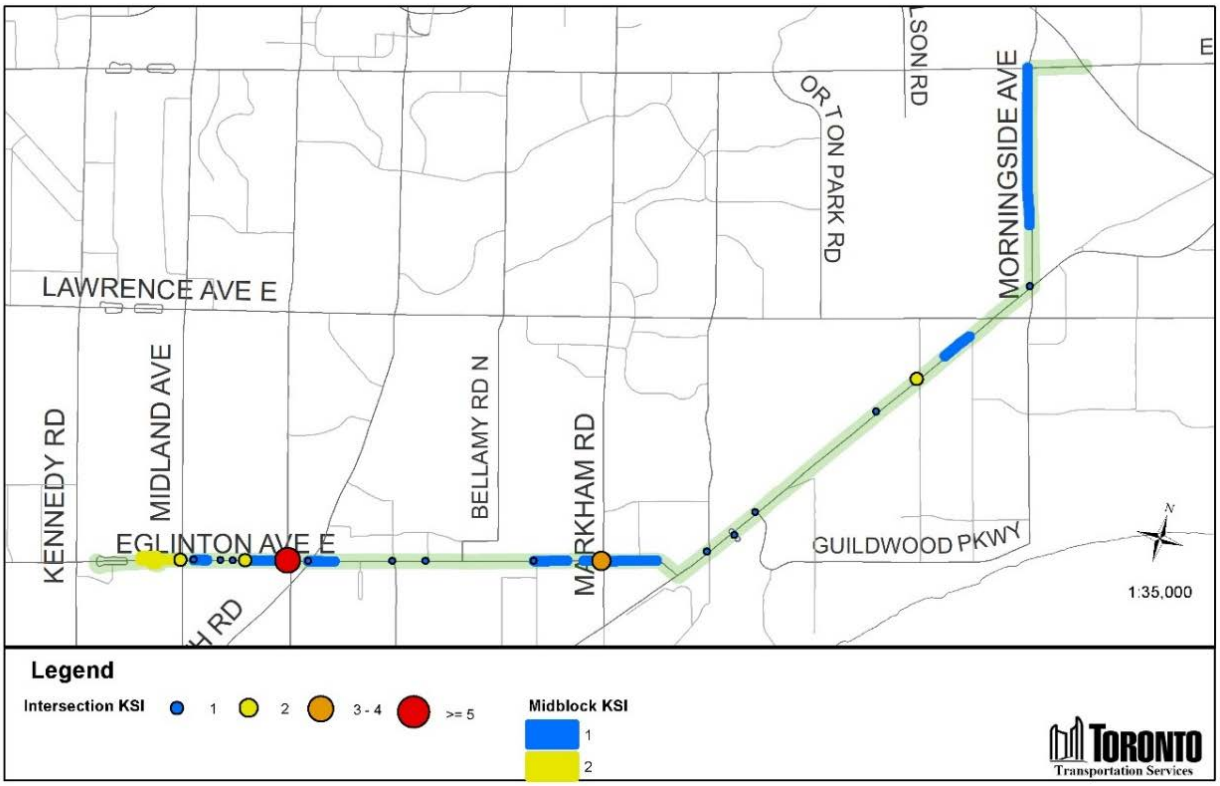


FIGURE 11 EGLINTON EAST CORRIDOR – KSI COLLISIONS – 2014 TO 2018

Vision Zero Initiatives

As part of the initial Vision Zero Road Safety Plan and the Vision Zero 2.0 update, several measures have been implemented along the corridor to address road safety concerns. The following Vision Zero measures, listed in Table 7 and shown in Figure 12, have been implemented since July 2016. The remaining safety

[1] Goh, K. K., Currie, G., Sarvi, M., & Logan, D. (2013, January 1). Road Safety Benefits from Bus Priority: An Empirical Study. *Transportation Research Record*, pp. 41-49.

measures along Eglinton Avenue East will be installed in 2020. These measures align and support the proposed bus lane along the Eglinton East corridor.

TABLE 7: 2016 TO 2020 VISION ZERO INITIATIVES

Vision Zero Measure	Location
Red Light Cameras	• Eglinton Avenue East and Danforth Road • Ellesmere Road and Military Trail
Turn Restrictions	• Morningside Avenue and Tefft Road
Speed Limit Reduction	• Eglinton Avenue East: Kennedy Road to Kingston Road • Kingston Road: Eglinton Avenue East to Morningside Avenue • Morningside Avenue: Kingston Road to Ellesmere Road
Pedestrian Safety Corridors	• Eglinton Avenue East: Kennedy Road to Kingston Road
Community Safety Zones	• Morningside Avenue: Kingston Road to Tefft Road
Senior Safety Zones	• Eglinton Avenue East and Midland Avenue • Kingston Road and Morningside Avenue
Leading Pedestrian Intervals	• Kingston Road and Guildwood Parkway • Kingston Road and Lawrence Avenue East • Morningside Avenue and Tefft Road
Audible Pedestrian Signals	• Eglinton Avenue East and Midland Avenue • Eglinton Avenue East and Barbados Boulevard • Eglinton Avenue East and Markham Road • Morningside Avenue and West Hill Collegiate Institute

FIGURE 12: EGLINTON EAST CORRIDOR – VISION ZERO MEASURES

Equity

The City strives to apply an equity lens to its activities to identify and remove barriers and to support best practices in planning, budgeting, implementation and evaluation of its programs and services, including transportation investments.

Specifically, equity-seeking communities, who have been historically reliant on public transit as a mode of transportation, would benefit from reliable service through the implementation of bus lanes.

In March 2014, City Council adopted the Toronto Strong Neighbourhoods Strategy 2020. The report introduced a Neighbourhood Equity Score for establishing Neighbourhood Improvement Areas (NIAs). The five variables that constitute the Neighbourhood Equity Score are Economic Opportunities, Social Development, Healthy Lives, Participation in Decision-Making and Physical Surroundings. The Neighbourhood Equity Score ranges from 0 to 100; the lower the score, the more equity-seeking a Neighbourhood is. Scores that fall below the recommended Neighbourhood Equity Benchmark are designated as NIAs.

Most of the Eglinton East corridor crosses areas that fall within Neighbourhood Improvement Areas (NIAs), as shown in Figure 13.

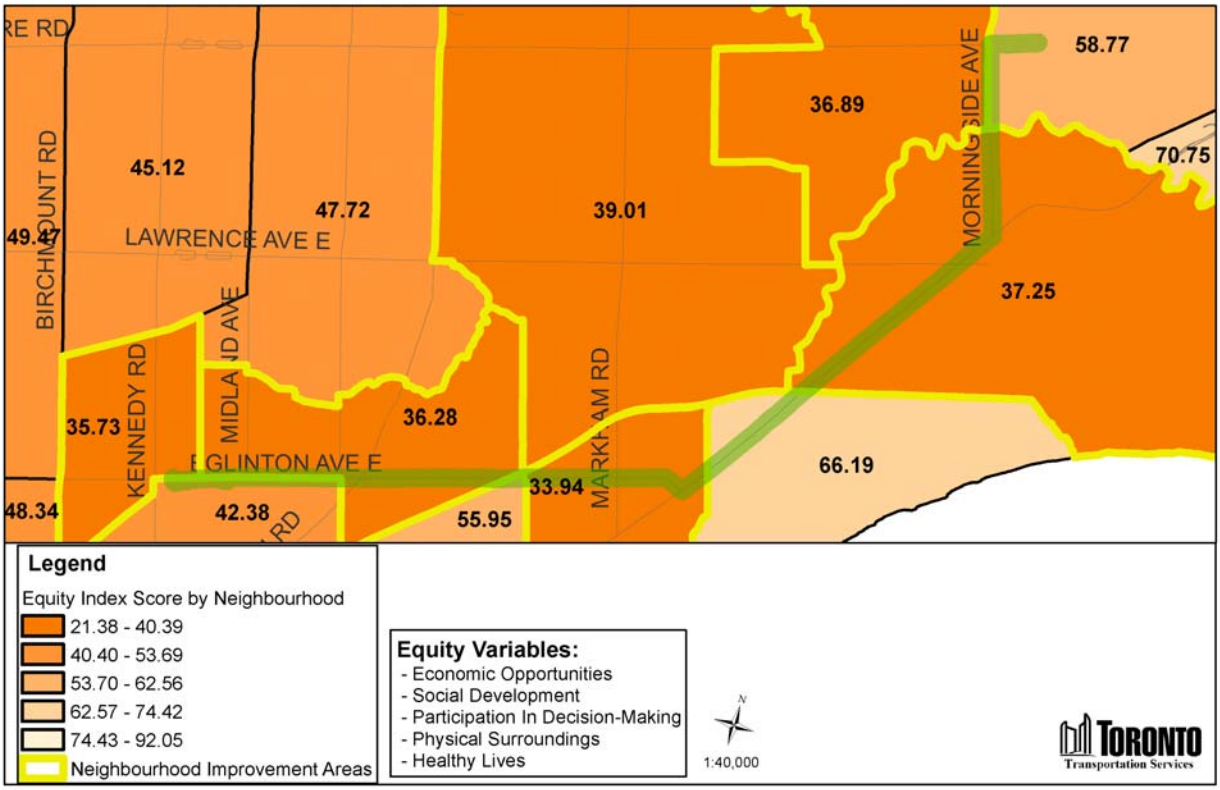


FIGURE 13: NEIGHBOURHOOD EQUITY INDEX

In November 2019, City Council approved the Poverty Reduction Strategy 2019-2022 Term Action Plan. The planned bus lane advances Action 7.2.1. Explore bus transit lanes on heavily used bus corridors in the inner suburbs to improve speed and reliability of existing transit service of the Action Plan.

Existing Traffic Conditions

It is essential to understand the current traffic service levels and how it may perform if a bus lane is introduced on the corridor. A review of the Eglinton East LRT Traffic Study in 2018 reports the existing conditions. The following are observations during the morning and afternoon peak periods.

- Traffic delays/congestion in the peak direction of travel, based on commuting patterns: southbound/westbound in the morning peak hour, northbound/eastbound in the afternoon peak hour, with morning peak hour flow relatively higher than in the afternoon peak hour.
- Congestion bottlenecks can create queueing issues over several adjacent intersections: Kingston Road between Eglinton Avenue East and Scarborough Golf Club Road, Kingston Road between Lawrence Avenue East and Morningside Avenue.
- The key intersections experiencing Level of Service D-F during peak periods are Eglinton/Kennedy, Eglinton/Midland and Kingston/Lawrence/Morningside.

Network Impacts of Bus Lane

Preliminary analysis was undertaken to identify the potential traffic impacts, including traffic infiltration, in the area of the Eglinton East corridor upon implementing the enhanced bus transit priority measures. Current Average Daily Traffic counts (ADTs) along the arterials in the area suggest that the conversion of a vehicle lane into a bus lane would have minimal impact to traffic flow over a 24-hour period. The City's regional travel demand model supports these findings. Using conservative planning level estimates for vehicle capacity, travel demand modelling results indicate that the proposed lane conversion would leave most of Eglinton East and Kingston Road at or under capacity from an auto traffic perspective. Morningside auto traffic demand could potentially exceed planning capacity by up to 200 vehicles per hour. The regional travel demand model identified some bottlenecks and further analysis will be undertaken to address these and inform the detailed design process.

From an infiltration perspective, the City's regional travel demand model was run to simulate the impact of the lane conversion along the subject corridor. The findings indicated that some drivers would choose other routes in response to the lane conversion, and, that the magnitude of the diverted traffic can be generally absorbed without exceeding the capacity of the surrounding roadway network. This is supported by the relatively even spread of diverted trips across the network as reflected in the regional travel demand model, and an understanding of the physical characteristics of the area, as there are no parallel routes that would attract the majority of drivers seeking to save travel time by avoiding the Eglinton East bus transit priority corridor. Highland Creek Park and the GO Transit Lakeshore East corridor both present significant physical barriers to major through routes that would otherwise parallel the Eglinton East corridor in a way that would yield significant travel time savings for diverted trips. As such, the overall potential for traffic infiltration on local streets in the area is anticipated to be low, and the impact of infiltration on surrounding arterials given the above context is anticipated to be minimal. The City has also recently planned the Eglinton East LRT for the same corridor as the bus lanes. As part of this work, traffic modelling to identify the potential for infiltration as a result of the Eglinton East LRT found no indication of systematic/excessive neighbourhood infiltration. Further analysis will be performed to refine these findings so they may inform the detailed design process.

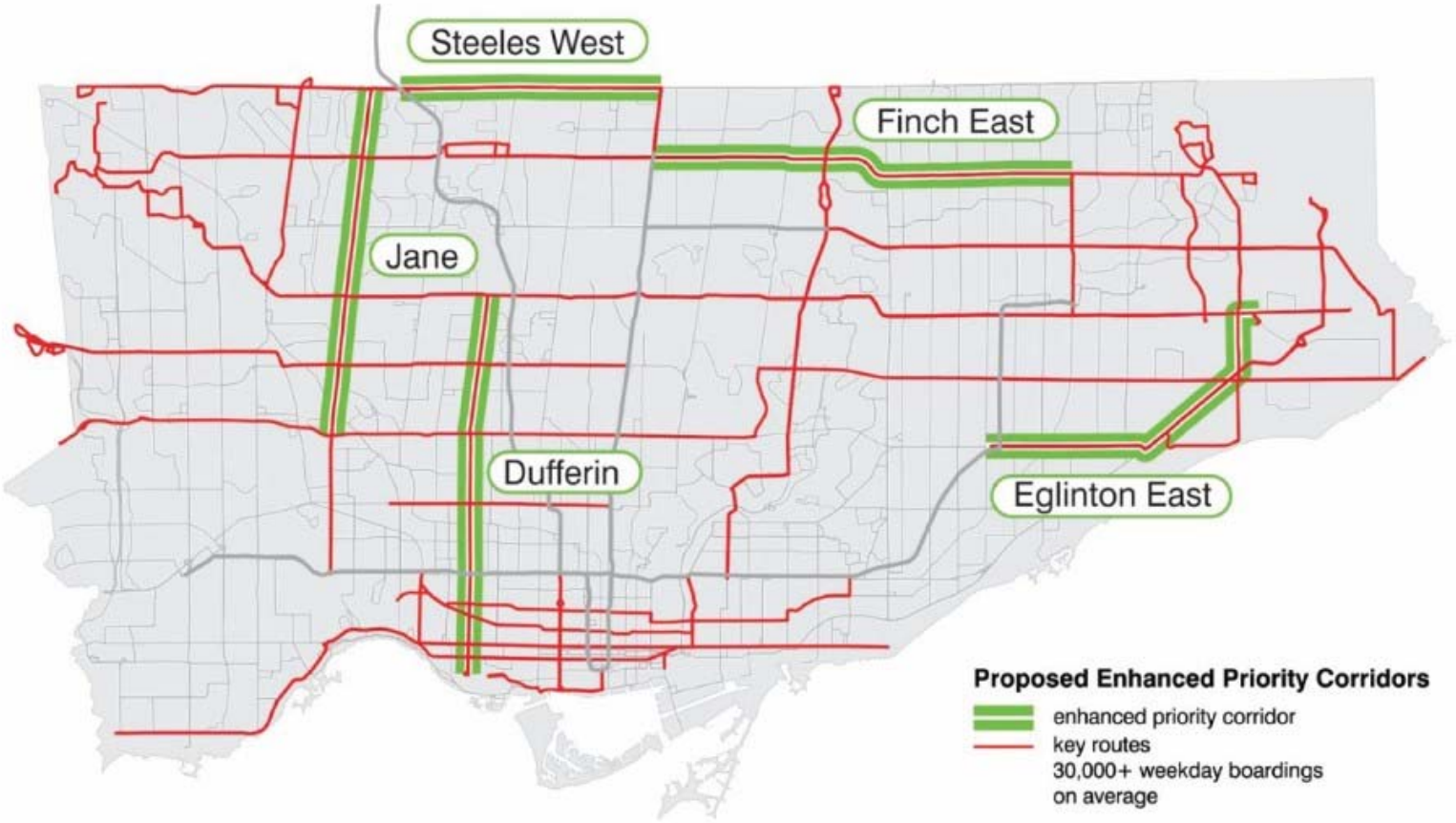
Conclusion

Eglinton East corridor should be **Priority A** for implementing bus lanes based on the following assessment criteria:

- Overall ease of implementation (sufficient right-of-way, no parking impacts);
- High ridership and potential for improved service reliability;

- Equity (potential for improved transit service to equity-seeking communities);
- Existing traffic conditions; and
- Low estimated traffic volumes diverted to parallel roads based on modelling results.

BUS LANE IMPLEMENTATION PLAN



Jane Street Priority Corridor

TORONTO

July 2020

Table of Contents

Introduction

The planned Jane Street bus transit corridor spans 10.3 kilometres beginning at Eglinton Avenue West in the south and ending at Steeles Avenue West in the north (Figure 1). The corridor runs along Jane Street, a four-lane major arterial road aligned north-south through the west end of Toronto. The corridor crosses Highway 401 and Highway 400, as well as a CN, GO and UP Express corridor between Weston Road and Trethewey Drive and a utility corridor north of Finch Avenue West. Although it is primarily surrounded by low-density development, Jane Street fronts a variety of uses, with a mix of residential commercial and industrial areas, including several key destinations.

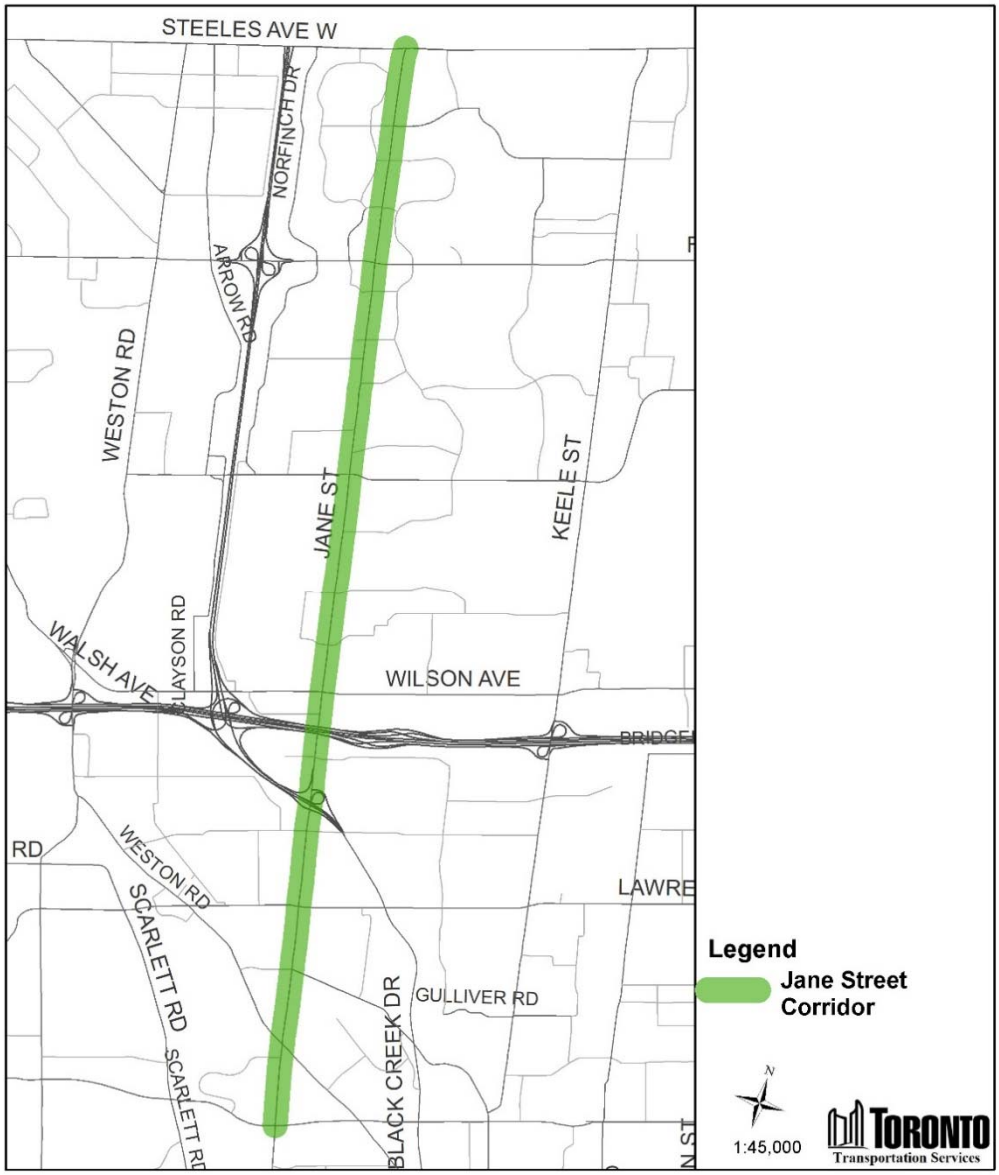


FIGURE 1: PROPOSED JANE STREET BUS LANE CORRIDOR

Land Use

Residential/Commercial

Jane Street is designated as an Avenue at Finch Avenue West, and between Highway 400 and Weston Road.

Most of the residential built form in the Neighbourhoods adjacent to Jane Street comprises of low-rise single-family homes; however, many residential towers front the corridor.

North of Wilson Avenue the Jane corridor abuts a mix of Neighbourhoods and Apartment Neighbourhoods. The detached and semi-detached residential housing typically does not front onto Jane Street. The mid-rise and towers-in-the-park have significant setbacks with access onto Jane Street. South of Wilson Avenue, more of the uses front onto Jane Street. Between Highway 400 crossing Jane Street and Trethewey Drive, it primarily abuts Mixed Use and is surrounded by Neighbourhoods.

South of Trethewey Drive, Jane Street is primarily surrounded by Neighbourhoods. However, there is a pocket of Core Employment Areas south of the Kitchener GO corridor and a pocket of Mixed Use around the intersection with Weston Road.

There is also a significant amount of retail frontage along the corridor. At the south end, retail use is primarily made up of small storefronts, whereas north of Highway 401, the land-use shifts to strip malls with parking. There are a few malls along the corridor: Jane Finch Mall and Yorkgate Mall at Finch Avenue, North York Sheridan Mall at Wilson Avenue and Jane Sheppard Mall at Sheppard Avenue.

Employment/Institutional

There are three significant employment areas along the corridor: just north of Weston Road, between Black Creek Drive and Highway 401, and along Eddystone Avenue to the west of Jane Street. These employment areas are mostly made up of light industrial uses such as warehouses, manufacturing and food distribution. Jane Street is also just east of the Emery-Village Business Improvement Association (BIA), the largest BIA in the city.

York University is an important destination located just east of the north end of the corridor. In the north end of the corridor, most businesses have their own parking spaces, leading to an abundance of off-street parking.

Development Applications

The following development applications have frontage along Jane Street. They are within proximity to existing bus stops along the corridor.

- 1683 Jane Street (under review): a gas station with a retail kiosk at the northeast corner of the Jane Street and Lawrence Avenue West intersection
- 160 Chalkfarm Drive (under review): a six-storey apartment building containing 539 dwelling units and retail/commercial uses on the ground floor at the southeast corner of the Jane Street and Chalkfarm Drive/Heathrow Drive intersection
- 3 Marsh Greenway (under review): a TCHC-led redevelopment of the Firgrove-Grassways community, a total of 941 new dwelling units consisting of townhouses and apartment units of which 341 are TCHC units and 600 are market units located at the northwest corner of the Jane Street and Firgrove Crescent/Yorkwoods Gate intersection
- 2839 Jane Street (under review): a twelve-storey mixed-use building with 190 dwelling units and retail uses on the ground floor located at the northeast corner of the Jane Street and Firgrove Crescent/Yorkwoods Gate intersection

Parks and Green Space

The south end of the corridor is surrounded by Eglinton Flats, Fergy Brown, and Gladhurst parks. The corridor intersects with Toronto's ravines system between Wilson Avenue and Sheppard Avenue West. There is also a hydro corridor that crosses Jane Street just north of Finch Avenue West.

Mobility

The corridor provides connections to several higher-order transit routes. The north end of the corridor is close to both Pioneer Village and Highway 407 subway stations. Both of these subway stations are not directly on the corridor, but the routes that run along the corridor serve Pioneer Village station. The south end of the corridor begins one kilometre west of the future Mount Dennis Station, the western terminus of the Eglinton Crosstown LRT. Buses are tentatively planned to be re-routed to the new station to provide a direct connection to the new line. Jane Street is also a stop along the future Finch West LRT.

The corridor also intersects with three east-west express network bus routes at Lawrence Avenue, Wilson Avenue and Sheppard Avenue West. Numerous routes that run along Wilson Avenue and Sheppard Avenue West service roads lie within the Emery Village BIA.

There are no on-street cycling facilities along the corridor nor on any connecting streets. The only cycling routes nearby are the multi-use trails within the Utility Corridor and Parks system. Sidewalks along Jane Street are narrow and lacking in street trees and furniture. North of Sheppard Avenue West, the sidewalks are significantly set back from the road with a grassy barrier; this underutilized space has potential for improvements to the public realm. South of Sheppard Avenue West, the sidewalks are generally right next to the road, providing no barrier. The two freeways that run over Jane Street present barriers to comfortable pedestrian travel.

Assessment Criteria

Transit Characteristics

FIGURE 2: TTC ROUTES ALONG JANE STREET

Two bus routes operate on the 10.3km corridor on Jane Street from Steeles Avenue West to Eglington Avenue West. As shown on the map (Figure 2), Route 35 Jane and 935 Jane Express utilize the entire 10.3km corridor. The proposed bus lane is represented by the pink line.

In October 2019, these two TTC routes accommodated over 43,000 customers on an average weekday. Over 36,000 of those customers (84%) would benefit from a bus-only lane (customers boarding and travelling on the corridor).

The overall reliability of these two routes in October 2019 is poor with an average all day on-time performance between 43% and 56% and an average PM peak on-time performance between 15% and 26% (scheduled headway performance from end terminals). Table 1 below indicates the October 2019 on-time performance by bus route.

An initial analysis of headways for October and November 2019 is shown in Figure 3. Each dot on the graph represents the observed time between two vehicles at the peak point of the corridor (Jane Street and Eglinton Avenue West). The maximum headway line is the headway value where it is calculated that if transit vehicles operated at this frequency, they would be operating at its crush capacity as it approaches the route's busiest segment, and customers would be unable to board. The minimum headway line is the headway value where it is calculated that if transit vehicles operated at this frequency, they would be carrying fewer than 10 passengers per bus which is approximately one-third of the seated capacity

for a 12m long bus. As seen on the graph the northbound headways on Jane Street at Eglinton Avenue West have a significant amount of variability with only 48% headways between the maximum and minimum headway limits.

The average PM peak speed of buses on this corridor is also poor at about 16.3km/h, with some sections of the corridor that are significantly slower. On average, it takes 38 minutes for a TTC customer to travel from Eglinton Avenue West northbound to Steeles Avenue West. When compared to the average auto travel time (HERE data, October 2019), which is 22.9 minutes, transit is 66% longer than driving a personal vehicle.

TABLE 1: ROUTE OPERATING CHARACTERISTICS

Bus Route	Transit Speed (PM peak travel time in peak direction)	All-day Reliability (on-time performance)	PM peak hour Reliability (on-time performance)	Weekday Ridership along the corridor Overall (along bus lane corridor)
35 Jane	16.3 km/h	56%	26%	43,400
935 Jane Express	(38 min)	43%	15%	(36,500)

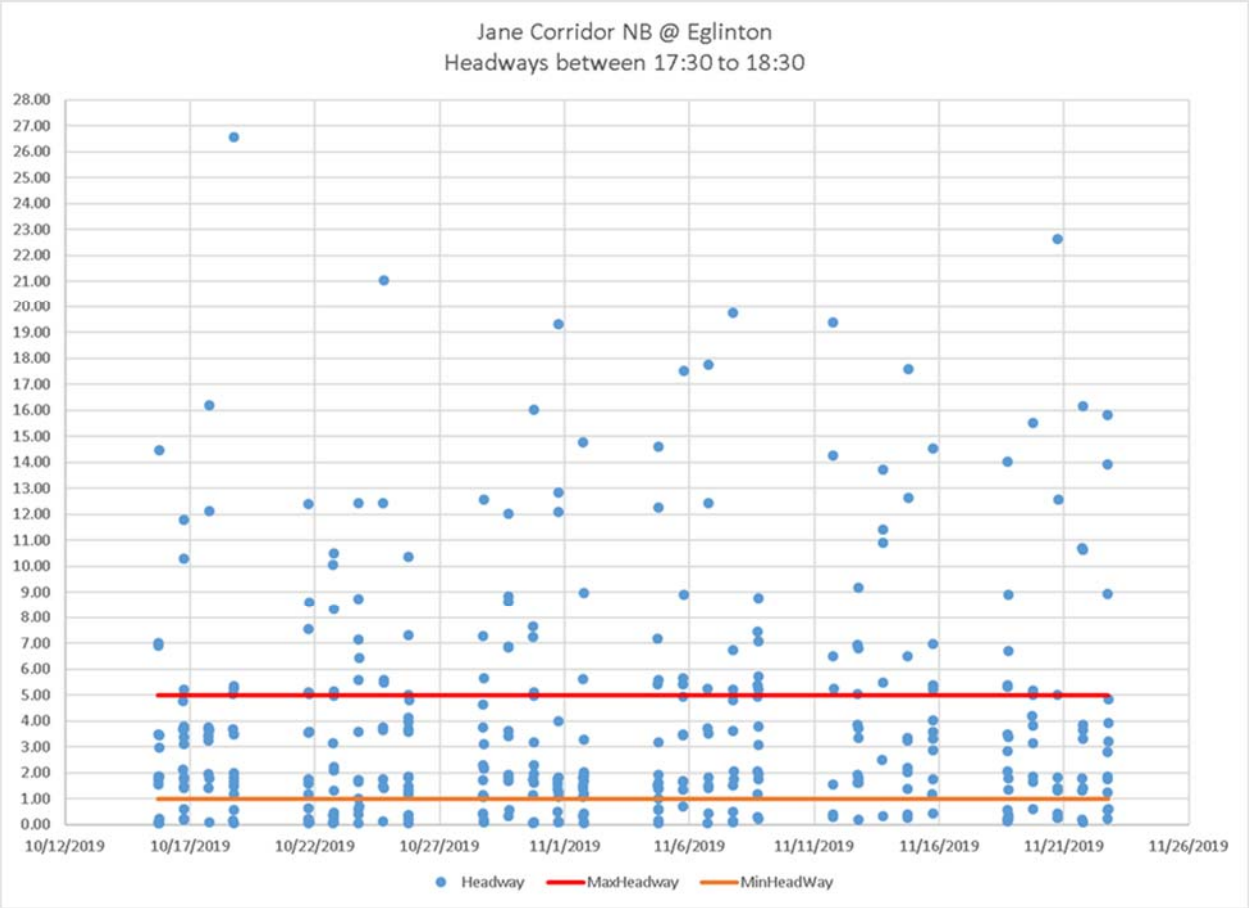


FIGURE 3: NORTHBOUND HEADWAYS AT JANE STREET AND EGLINTON AVENUE WEST DURING THE BUSIEST HOUR (17:30-18:30)

Ease of Implementation

Right-of-Way Review

Jane Street has a 36-meter right-of-way (ROW) between Steeles Avenue West and Sheppard Avenue West. This section of the corridor typically has four to five travel lanes - two per direction and a median two-way left-turn lane (TWLTL) in some sections. Between Sheppard Avenue West and Falstaff Avenue, the ROW ranges from 28-31m with five to six travel lanes except for a four-lane section south of Giltspur Drive. South of the Hwy 400 off-ramps to Emmett Avenue, the ROW narrows down to 26m with five travel lanes. The only exceptions are at Weston Road and Eglinton Avenue West in which the ROW is wider (36m).

Pavement widths vary between 14-16m on four to five lane sections until it flares at the intersection with additional turning lanes. Table 2 shows the right-of-way widths for all sections.

TABLE 2: RIGHT-OF-WAY CHARACTERISTICS

From	To	ROW (m)	Pavement Width (m)	No of Lanes
Steeles Avenue West	Hullmar Drive	39	15.1	4
Hullmar Drive	Shoreham Drive	36	15.2	4-5
Shoreham Drive	Driftwood Avenue	36	14.4	4-5
Driftwood Avenue	Yorkgate Avenue	36	15.2	4-5
Yorkgate Avenue	Finch Avenue West	36	15.3	4-5
Finch Avenue West	Yewtree Boulevard	36	16.5	5
Yewtree Boulevard	Yorkwoods Gate	36	15.1	5
Yorkwoods Gate	Eddystone Avenue	36	15.3	5
Eddystone Avenue	Grandravine Drive	36	15.3	5
Grandravine Drive	Stanley Road/Rita Drive	36	15.5	5
Stanley Road/Rita Drive	Claire Road/Spenvalley Drive	36	15.3	5
Claire Road/Spenvalley Drive	Sheppard Avenue West	36	20	6
Sheppard Avenue West	Giltspur Drive	28	17.4	5
Giltspur Drive	Troutbrooke Drive	28	15.5	4
Troutbrooke Drive	Exbury Road/ Chalkfarm Drive	28	16.4	5
Exbury Road/ Chalkfarm Drive	Heathrow Drive	31	16	5
Heathrow Drive	Wilson Avenue	31	22.6	5-6
Wilson Avenue	Beverly Hills Drive	29	22.8	6
Beverly Hills Drive	Falstaff Avenue	31	22.8	6
Falstaff Avenue	Hwy 400 north off-ramp	26	21.8	5-6
Hwy 400 north off-ramp	Hwy 400 south off-ramp	26	21.8	5-6
Hwy 400 south off-ramp	Maple Leaf Drive	26	21.8	5
Maple Leaf Drive	John Street	26	15.1	5
John Street	Lawrence Avenue West	26	15.9	5
Lawrence Avenue West	Wright Avenue	26	15.4	5
Wright Avenue	Harding Avenue	26	15.3	5
Harding Avenue	Trethewey Drive	26	15.5	5
Trethewey Drive	Weston Road	36	16.9	4
Weston Road	Emmett Avenue	26	18.4	5
Emmett Avenue	Eglinton Avenue West	36	14.9	4-5

Note: TWLTL – Two-way left-turn lane

Proposed Lane Configuration

Notwithstanding reducing lane widths to minimum acceptable guidelines and removing median two-way left-turn lanes, it is not feasible to implement a bus lane and maintain the same number of general purpose lanes along Jane Street.

Without road widening, the most feasible option is to convert the through curb lanes into an exclusive bus lane and keep left-turn lanes as much as possible. Between Steeles Avenue West and Sheppard Avenue West, it means assigning a 2 + 2 bus lane configuration (one general purpose lane and one bus lane in each direction) and removing two-way left-turn lanes in some sections north of Finch Avenue West. It is feasible to do a 3 + 2 bus lane configuration between Sheppard Avenue West and Lawrence Avenue West and maintain existing two-way left-turn lanes in most sections. Finally, a 2 + 2 bus lane configuration is feasible south of Lawrence Avenue West, 3 + 2 at select sections at Trethewey Drive/Denison Road, Weston Road and Eglinton Avenue West. The bus lane configuration and cross-sections for all segments of Jane Street corridor will be carried out in the design phase of the project.

Table 3 summarizes the lane configuration for each segment on the corridor, assuming a 3.3m bus lane and a 3.0m-3.3m general purpose lane. Left-turn lanes would be maintained where pavement widths allow.

TABLE 3: PROPOSED LANE CONFIGURATION

From	To	Bus Lane Configuration
Steeles Avenue West	Sheppard Avenue West	• 2 Bus lanes • 2 General purpose lanes
Sheppard Avenue West	Lawrence Avenue West	• 2 Bus lanes • 2 General purpose lanes • 1 TWLTL
Lawrence Avenue West	Weston Road	• 2 Bus lanes • 2 General purpose lanes
Weston Road	Eglinton Avenue West	• 2 Bus lanes • 2 General purpose lanes • 1 TWLTL

Note: TWLTL – Two-way left-turn lane

Figure 4 depicts a typical narrow section on Jane Street in which a 2 + 2 bus lane cross-section is proposed between Steeles Avenue West and Finch Avenue West. A TWLTL is not feasible in this section.

FIGURE 4: JANE STREET - 2 GENERAL PURPOSE LANE + 2 BUS LANE CROSS-SECTION

Figure 5 illustrates the flared section of Jane Street at Sheppard Avenue West, where an additional turn lane turns this section into a six-lane road (4 + 2 bus lane configuration). The segment of the corridor north of the intersection is mostly five lanes at 3 + 2 bus lane configuration.

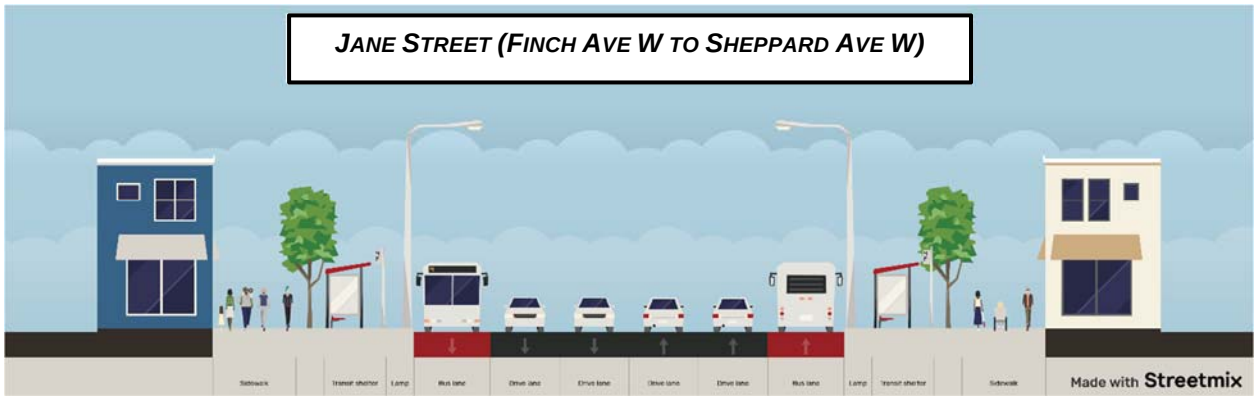


FIGURE 5: JANE STREET – 4 GENERAL PURPOSE LANE + 2 BUS LANE CROSS SECTION

Parking Impacts

A review of parking along the corridor was undertaken to assess the impact of the proposed bus lane on parking supply. Typically, bus lane corridors prohibit stopping or parking to ensure smooth bus operations. For Jane Street, the segment of the proposed bus lane corridor has neither on-street pay and display parking nor residential permit parking areas.

Capital Transportation Projects (2020–2025)

From Table 4, there are some opportunities to review the design and coordinate the installation of bus lanes with planned capital projects along Jane Street:

- Road reconstruction and installation of on-street bikeway facility between Steeles Avenue West and Finch Avenue West (2024); work requires local road widening in the boulevard zone
- Road reconstruction between Sheppard Avenue West and Chalkfarm Drive in 2023

- Pedestrian infrastructure improvements at Wilson and Falstaff Avenue - installation of accessible pedestrian signals, tactile walking surface indicators, curb radii reductions and streetscape corners

Because road reconstruction along Jane Street will only begin in 2023 (assuming there are no delays in designing and permitting approvals), there is merit in advancing the tactical implementation of bus lanes in 2021. Transit riders using the 35 Jane/935 Jane Express route would benefit from an exclusive bus lane that would be in operation before the opening of Line 5 Eglinton in 2022.

TABLE 4: 5-YEAR CAPITAL WORKS PROGRAM

From	To	Proposed Work Type	Year	Pavement Quality
Steeles Avenue West	Finch Avenue West	• Road reconstruction and installation of on-street bikeway facility	2024	Poor
Finch Avenue West	Grandravine Drive	• Basement flooding protection program • Watermain and storm sewer replacement	2018-2021	Poor
Sheppard Avenue West	Chalkfarm Drive	• Road reconstruction	2023	Poor
William Cragg Drive	Black Creek	• Basement flooding protection program and Storm sewer replacement (Planning: 2019-2021; Delivery: 2021-2023)	2019-2023	Fair
Black Creek	Black Creek	• Bridge rehabilitation	2022-2024	Fair
Wilson Avenue	Wilson Avenue	• Pedestrian infrastructure improvement	2022	Fair
Falstaff Avenue	Falstaff Avenue	• Pedestrian infrastructure improvement	2021	Poor

Cycling Network Plan

The City of Toronto Official Plan promotes a complete streets approach in which the design of a street balances the needs and priorities of the various users and uses within the right-of-way. The safe and efficient movement of all road users should be considered when implementing modifications to a street or corridor. The Cycling Network Plan builds on the Official Plan policies and establishes a priority framework for major city-wide cycling routes. It also provides the next steps for the effective implementation of proposed cycling infrastructure.

The Cycling Network Plan uses the route priority ratings of Top, High, Medium and Low to indicate the level of value the particular route brings to the cycling network. The following nine cycling inputs determine the routes and scores shown on the Cycling Network Plan:

- Current Cycling Demand
- Potential Cycling Demand
- Trip Generators
- Transit Access
- Connectivity
- Coverage
- Barriers
- Safety
- Equity

Current Cycling Demand, Safety and Coverage are weighted higher in the analysis scores. Priority ratings are described in detail below.

- Top priority routes were routes that scored highly across most, if not all, inputs. These are found mostly on arterial roads that connect to many destinations and transit.
- High priority routes scored highly against most inputs.
- Medium priority routes scored highly in some inputs or scored well across many inputs.
- Low priority routes are mostly local neighbourhood routes with parallel route alternatives

Based on the above analysis, Jane Street is considered as a **Top Priority** cycling route.

The following cross-sections in Figure 6, Figure 7 and Figure 8 illustrate conceptual options for a future integrated bus lane and cycling route on Jane Street. The cross-sections assume that the current pavement width would be maintained. If a lane reduction or road diet is feasible, the preferred cross-section would be different from what is shown below.

The 36m ROW cross-section for Jane Street allows for in-boulevard facilities; however, the 26m and 28m ROW allows for cycle tracks.

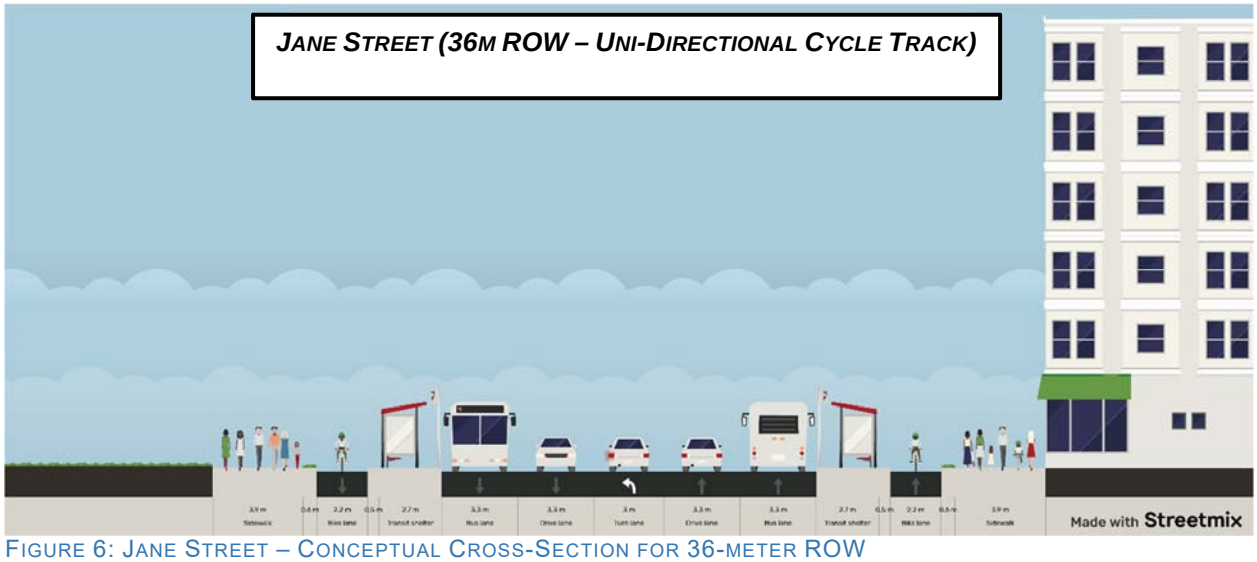


FIGURE 6: JANE STREET – CONCEPTUAL CROSS-SECTION FOR 36-METER ROW

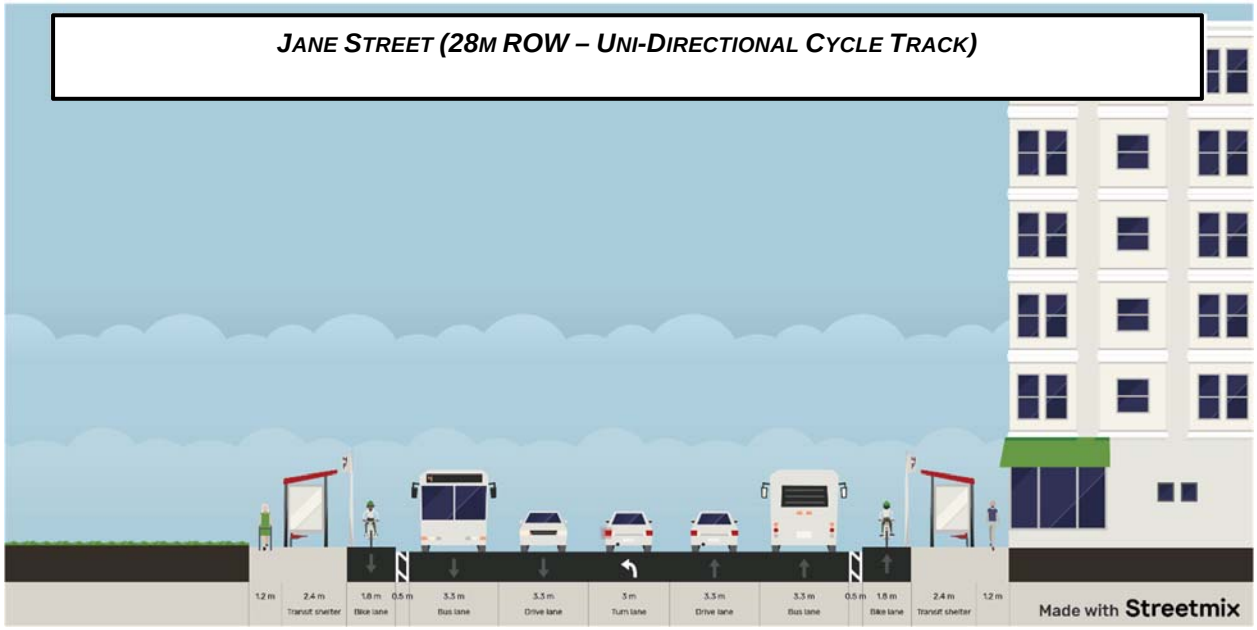


FIGURE 7: JANE STREET – CONCEPTUAL CROSS-SECTION FOR 28-METER ROW

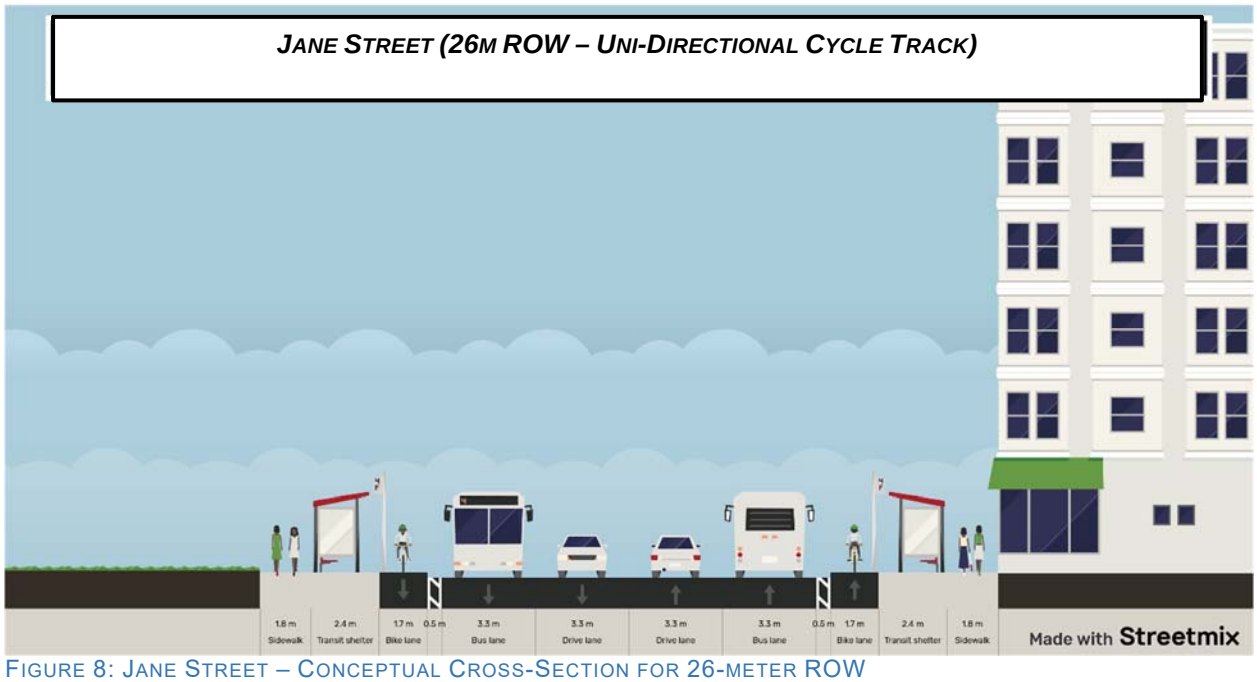


FIGURE 8: JANE STREET – CONCEPTUAL CROSS-SECTION FOR 26-METER ROW

Besides having an integrated bus lane and cycling facility along Jane Street, another option is to separate the two travel modes by utilizing local roads as alternate cycling routes. However, this option is inferior to the former because these roads are not continuous, two-way corridors like Jane Street.

- Gosford Boulevard
- Driftwood Avenue
- Pine Street
- Plainfield Road – John Best Avenue

Safety

Collision History

Figure 9 shows the number of killed and seriously injured (KSI) collisions along Jane Street from 2014-2018. The total collisions are not high compared to the other priority corridors in the TTC 5-Year Service Plan. However, there is a high concentration of collisions at Jane and Keele and Jane and Lawrence intersections.

A 2013[1] study in Melbourne, Australia, found that bus priority treatments have significantly reduced the number of fatal and seriously injured people in collisions. Despite concerns regarding the interaction of buses and vehicles at merging or turning sections, the overall conclusion was that converting general-purpose lanes into bus lanes reduced accidents.

[1] Goh, K. K., Currie, G., Sarvi, M., & Logan, D. (2013, January 1). Road Safety Benefits from Bus Priority: An Empirical Study. *Transportation Research Record*, pp. 41-49.

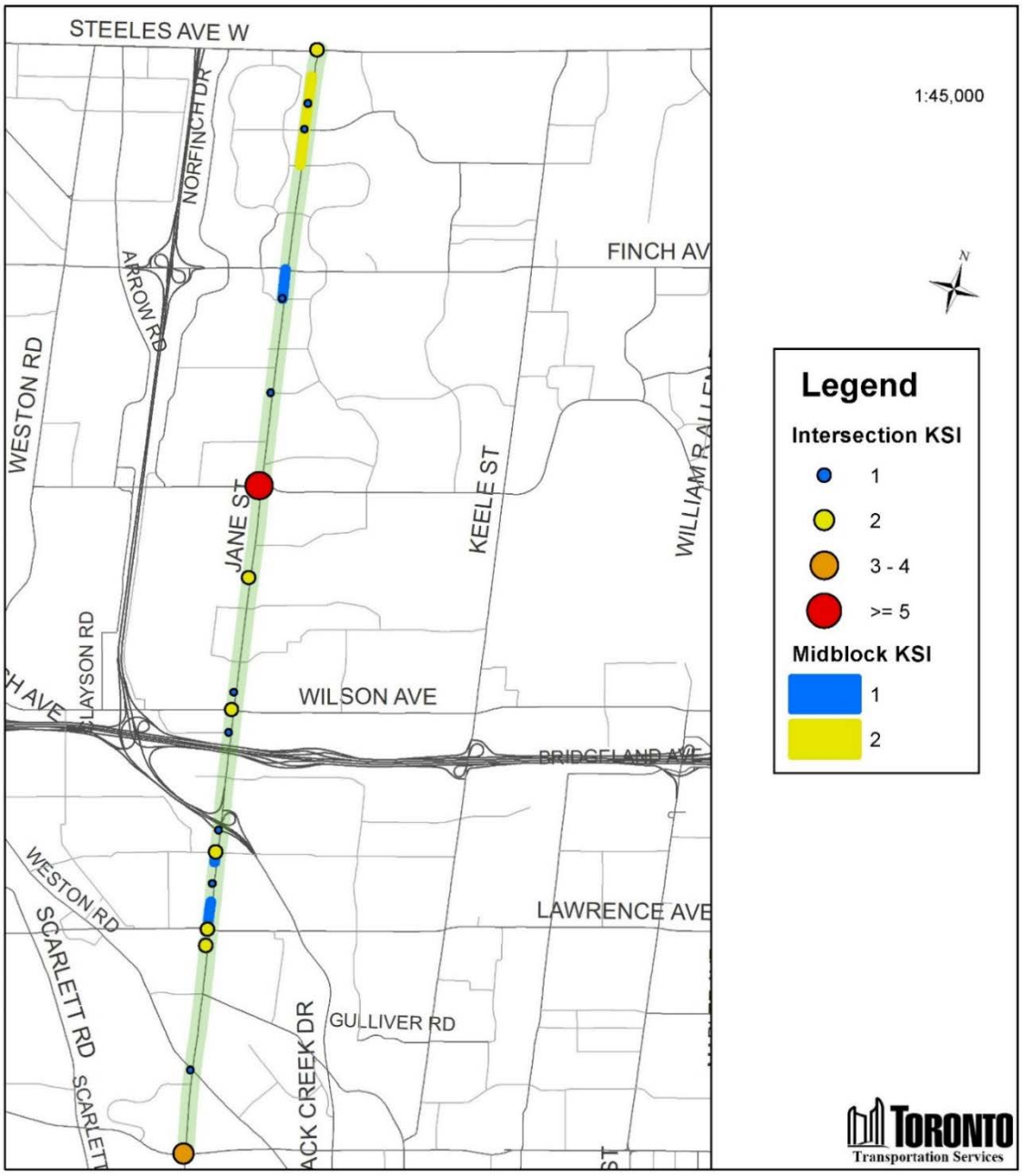


FIGURE 9: JANE STREET CORRIDOR – KSI COLLISIONS – 2014 TO 2018

Vision Zero Initiatives

The City of Toronto's Vision Zero 2.0, which is an update to the original Vision Zero Road Safety Plan from 2016, was adopted in 2019. Vision Zero Road Safety Plan is a pledge to improve safety across the City using a data-driven and targeted approach, focusing on locations where improvements are most needed. As part of the initial Vision Zero Road Safety Plan and the Vision Zero 2.0 update, several measures have been implemented along the corridor to address road safety concerns. The following Vision Zero measures,

listed in Table 5 and shown in Figure 10 have been implemented since July 2016. These measures align and support the proposed bus lane along Jane Street.

TABLE 5: JANE STREET VISION ZERO INITIATIVES (2016-2020)

Vision Zero Measure	Location
Speed Limit Reduction	• Between Lambton Avenue and Pinehill Crescent • Between Wilson Avenue and Steeles Avenue West
Audible Pedestrian Signals	• Jane Street and 240m north of Shoreham Drive
Community Safety Zones	• Between 200m north of Stong Court and 150m south of Stong Court • Between Frith Road and Clair Road
Leading Pedestrian Signals	• Jane Street and Hullmar Drive
Pedestrian Safety Corridors	• Between Lambton Avenue and Pinehill Crescent • Between Wilson Avenue and Steeles Avenue West
Red Light Cameras	• Jane Street and Bala Avenue / Emmett Avenue • Jane Street and Clair Road / Spenvalley Drive • Wilson Avenue and Jane Street • Jane Street and Falstaff Avenue / Gordon Mackay Road • Jane Street and Stong Court / York Gate Boulevard
School Safety Zones	• Saint Charles Garnier Catholic Elementary School
Senior Safety Zones	• Edgeley Apartments (35 Shoreham Drive)
Turn Restrictions	• Jane Street and Downsview Avenue

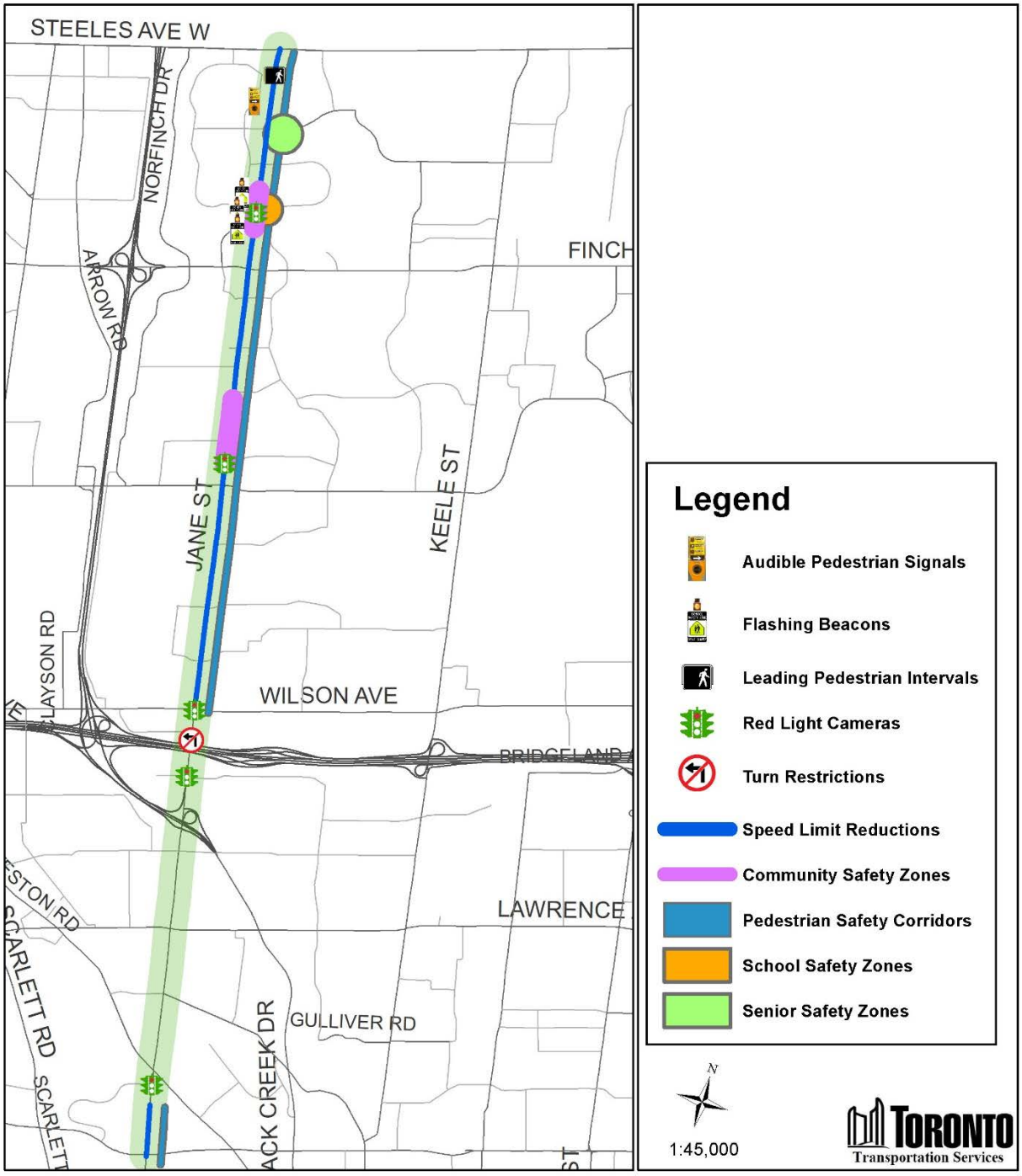


FIGURE 10: JANE STREET CORRIDOR - VISION ZERO MEASURES (2016-2020)

Equity

The City strives to apply an equity lens to identify and remove barriers and to support best practices in planning, budgeting, implementation and evaluation of its programs and services, including transportation investments.

Specifically, equity-seeking communities, who have been historically reliant on public transit as a mode of transportation, would benefit from reliable service through the implementation of bus lanes.

In March 2014, City Council adopted the Toronto Strong Neighbourhoods Strategy 2020. The report introduced a Neighbourhood Equity Score for establishing Neighbourhood Improvement Areas (NIAs). The five variables that constitute the Neighbourhood Equity Score are Economic Opportunities, Social Development, Healthy Lives, Participation in Decision-Making and Physical Surroundings. The Neighbourhood Equity Score ranges from 0 to 100; the lower the score, the more equity-seeking a Neighbourhood is. Scores that fall below the recommended Neighbourhood Equity Benchmark are designated as NIAs.

The entire Jane Street bus lane corridor crosses areas that fall within Neighbourhood Improvement Areas (NIAs), as shown in Figure 11.

In November 2019, City Council approved the Poverty Reduction Strategy 2019-2022 Term Action Plan. The planned bus lane advances Action 7.2.1. Explore bus transit lanes on heavily used bus corridors in the inner suburbs to improve speed and reliability of existing transit service of the Action Plan.

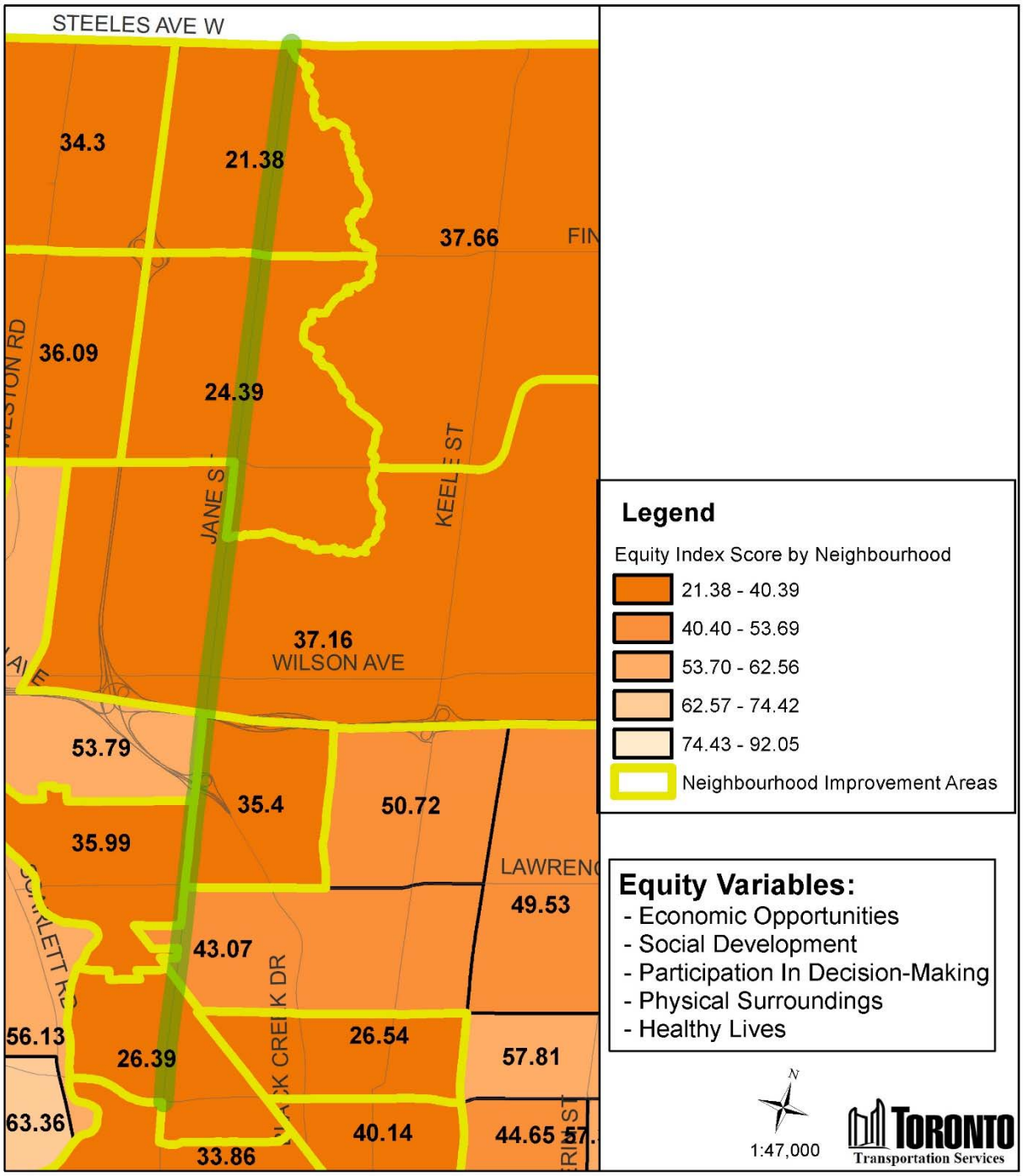


FIGURE 11: JANE STREET CORRIDOR NEIGHBOURHOOD EQUITY INDEX

Existing Traffic Conditions

Jane Street is an essential arterial in the City of Toronto, as it stretches to the northern and southern limits of the city and serves as an alternate route to Highway 400. The corridor also provides access to several significant points of interest, such as York University, TTC's Jane and Pioneer Village Stations, and several shopping centres.

In 2018, the City undertook a traffic signal optimization and coordination study at Jane Street from Steeles Avenue West to Bloor Street West. Synchro base models were developed for the corridor and were calibrated through field surveys and observations. A set of optimized signal timing plans were developed and implemented in the field. After implementation, these timings were reviewed on TransSuite, and through an iterative process, adjustments were made to further improve optimization and coordination. Finally, field surveys and observations were undertaken with the newly implemented timings, and the new operating conditions were compared to the conditions at the start of the study.

Traffic conditions along Jane Street, from Steeles Avenue to Bloor Street West, have shown improvements during peak periods. Travel times along the corridor have decreased by as much as 05:29 (14%), total delays have decreased by as much as 04:36 (29%), and average speeds have increased by as much as 3 km/h (9%). Several activities constrained further improvements along this corridor, including significantly increased traffic volumes, particularly towards the southern edge of the corridor, and ongoing construction. While traffic volumes increased along the corridor, travel times decreased in many cases. This occurrence means that increased throughput is being moved along Jane Street as a result of improved progression.

At the intersection level, some continue to perform at capacity or worse during AM or PM peak. The performance of an intersection can be described in terms of Level of Service (LOS) and volume-to-capacity ratio (v/c).

- Level of service (LOS) is a mechanism used to determine how well an intersection is operating from a road user's perspective. Typically, six levels of service are defined and each is assigned a letter designation from A to F, with LOS A representing the best operating conditions and LOS F the worst. For the signal coordination study, intersection delay is used to describe LOS.
- Volume-to-capacity ratio (v/c) describes the adequacy of an intersection to accommodate traffic demand. A ratio of less than 0.9 indicates sufficient capacity, while a ratio of more than 0.9 indicates at capacity or worse condition for the intersection.

Critical movements that are flagged below are operating at LOS E or F, and with v/c > 0.9.

- Jane Street and Steeles Avenue West: southbound left, eastbound left and westbound left
- Jane Street and Finch Avenue West: northbound through and eastbound through
- Jane Street and Wilson Avenue: northbound through, southbound left and westbound left

- Jane Street and Maple Leaf Drive: southbound left
- Jane Street and Eglinton Avenue West: northbound left and eastbound left

Network Impacts of Bus Lane

Preliminary analysis was undertaken to identify the potential traffic impacts, including traffic infiltration, in the area of the Jane Street corridor upon implementing the enhanced bus transit priority measures. Using conservative planning level estimates for vehicle capacity, regional travel demand modelling results indicate that the proposed lane conversion would leave most of the intersections at or under capacity.

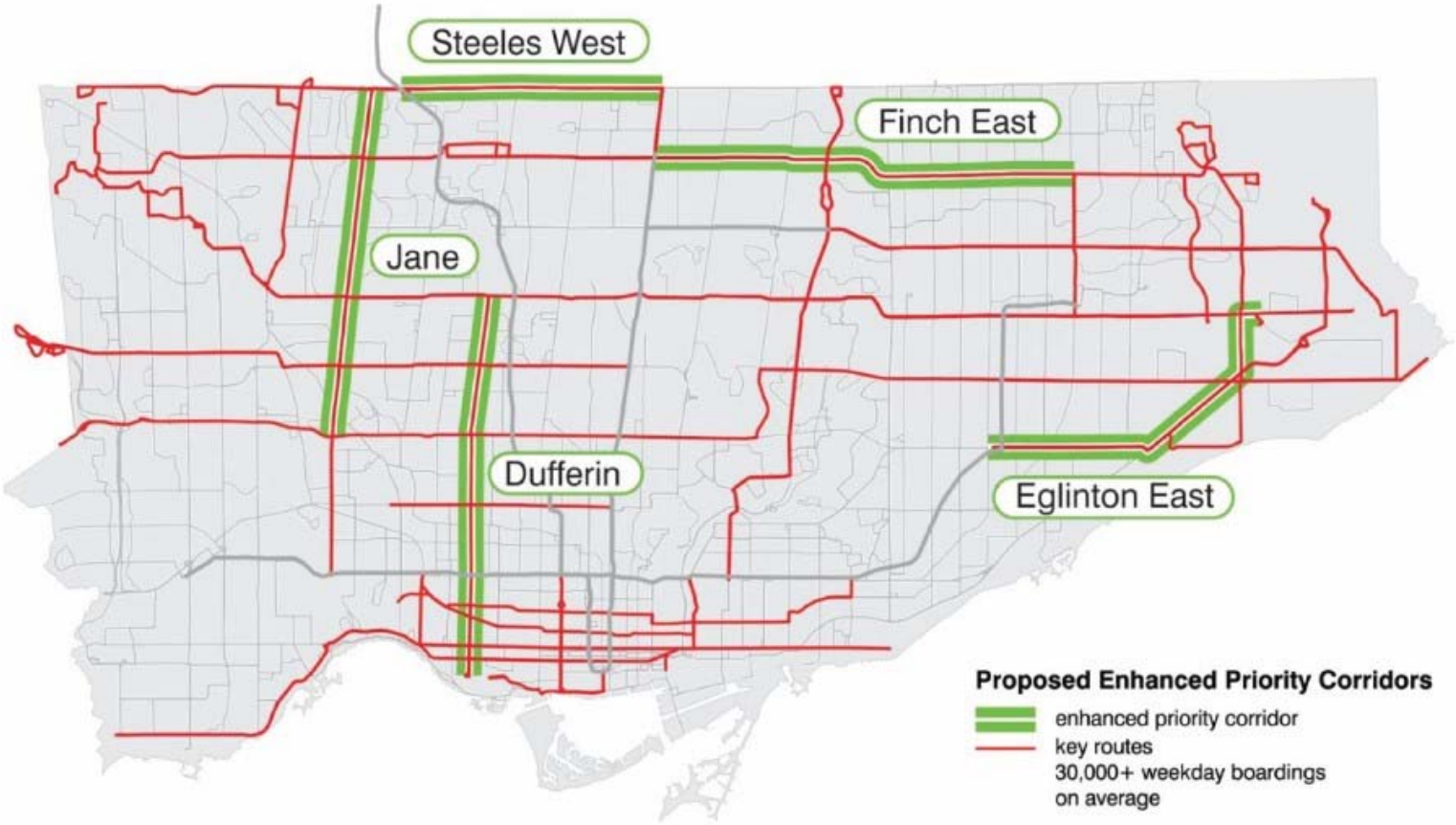
From an infiltration perspective, the City's regional travel demand model was run to simulate the impact of the lane conversion along the subject corridor. The findings indicated that some drivers would choose other routes in response to the lane conversion, and, that the magnitude of the diverted traffic can be generally absorbed without exceeding the capacity of the surrounding roadway network. This is supported by the relatively even spread of diverted trips across the network as reflected in the regional travel demand model. Most other parallel routes received 100 vehicles per hour as a result of the lane conversion. As such, the overall potential for traffic infiltration on local streets in the area is anticipated to be low, and the impact of infiltration on surrounding arterials given the above context is anticipated to be minimal. Further analysis will be performed to refine these findings so they may inform the detailed design process.

Recommendation

The Jane Street corridor should be considered as **Priority B** for implementing bus lanes based on the following assessment criteria:

- Poor transit speed and service reliability;
- Ease of implementation (no parking impacts, few conflicts with capital works program);
- Equity (bus lane will improve service to equity-seeking communities); and
- Few intersections operating at capacity.

BUS LANE IMPLEMENTATION PLAN



Dufferin Street Priority Corridor

TORONTO

July 2020

Table of Contents

Introduction

The planned Dufferin Street bus transit corridor runs 11.2 kilometres along Dufferin Street, between Wilson Avenue and the Dufferin Gate Loop (Figure 1). Dufferin Street is a four-lane major arterial road aligned north-south just to the west of Toronto's Central Business District. It crosses Highway 401 and several rail lines. The land uses and built form of the corridor vary greatly between its north and south ends.

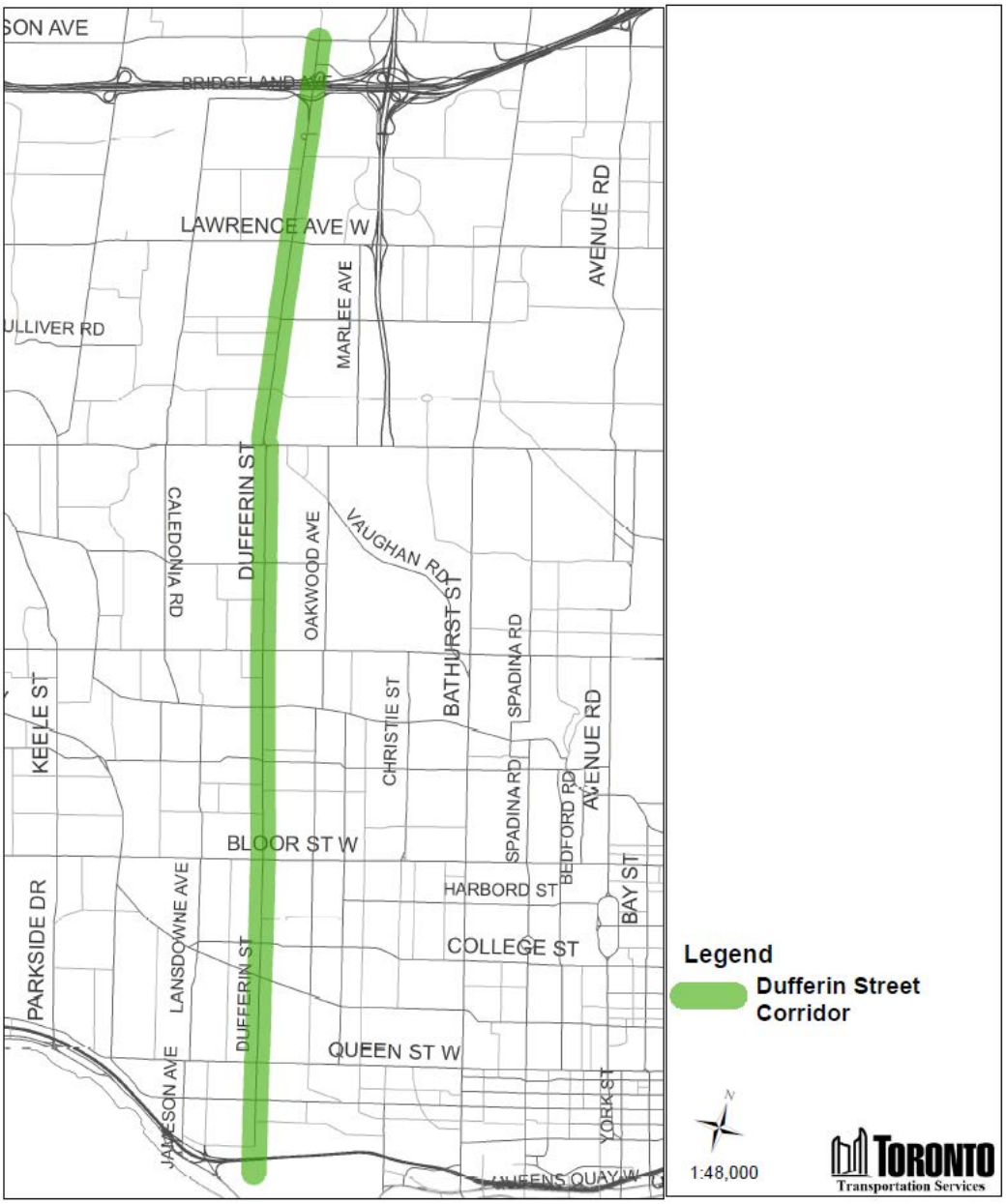


FIGURE 1: PROPOSED DUFFERIN STREET BUS LANE CORRIDOR

Land Use

Residential/Commercial

Dufferin Street is designated as an Avenue between Wilson Avenue and Eglinton Avenue West.

In the southern end of the corridor, between Eglinton Avenue West and the Dufferin Gate Loop, the majority of the corridor is fronted by Neighbourhoods, with Mixed Use Areas at Avenue crossings. This primarily low- and mid-rise housing addresses Dufferin Street with front-facing lots. The Mixed Use Areas consist of low-rise commercial/residential properties, often with retail storefronts. The largest retail area in this section of the corridor is Dufferin Mall, situated just south of Bloor Street West.

North of Eglinton Avenue West, the corridor is primarily fronted by Mixed Use Areas and Employment Areas. The Mixed Use Areas are surrounded by low-rise residential Neighbourhoods made up of mostly single detached houses. From Eglinton Avenue West in the south to Wilson Avenue in the north, the Mixed Use Areas transition from a mix of strip malls and commercial storefronts to large retail plazas. The most significant retail hub is Yorkdale Shopping Centre, situated just south of Highway 401.

Employment/Institutional

Two rail lines cross this section of the corridor: the CP North Toronto Subdivision and the Metrolinx Weston Subdivision. The areas around these rail crossings have traditionally been designated as Core Employment Areas; however, the area is in transition and currently being developed into high-rise residential or mixed-use neighbourhoods. Another Core Employment Area on this section of the corridor is Liberty Village, located on the east side of Dufferin Street, south of King Street West.

Two Employment Areas are abutting the corridor north of Eglinton Avenue West. The first is a commercial plaza on the southeast corner of Wilson Avenue and Dufferin Street. The other is a commercial and industrial area to the west of Dufferin Street, between Glencairn and Castlefield Avenues. There is a third, similar Employment Area just to the west of the corridor, between Lawrence Avenue West and Highway 401.

Development Applications

The significant development applications along the corridor include:

- Galleria Shopping Centre Redevelopment (under construction): mixed-use residential/commercial with a community centre and expanded park, at the southwest corner of Dufferin Street and Dupont Street.

- Dufferin Mall Redevelopment (under review): mixed-use residential/commercial development at the north end of the site with a newly expanded park at the southwest corner of Dufferin Street and Bloor Street West.
- Yorkdale Shopping Centre Transportation Master Plan (under review): anticipated significant mixed-use growth east of Dufferin Street and south of Highway 401.

Parks and Green Space

Various small parks are located throughout the Neighbourhoods along the corridor. The two largest ones are Fairbank Memorial Park (south of Eglinton Avenue West) and Dufferin Grove Park (south of Bloor Street West).

Mobility

The Dufferin corridor connects to several rapid transit routes. It crosses the Line 2 Bloor-Danforth Subway line at Dufferin Station and will cross the future Line 5 Eglinton at Fairbank Station. There are no GO Rail stations directly on Dufferin Street; however, Exhibition Station is within 1km of the corridor.

The corridor also intersects with two east-west express network bus routes at Lawrence Avenue West and Wilson Avenue. Routes along this corridor provide service to 13 BIAs: MarkeTo District, Fairbank Village, York-Eglinton, Corso Italia, Regal Heights Village, Bloordale Village, Bloorcourt Village, College West, College Promenade, Dundas West, Parkdale Village, West Queen West and Liberty Village.

Most of the corridor does not have on-street cycling facilities; however, there is a short bike lane under the rail bridge north of Queen Street West. Dufferin Street also intersects with numerous important cycling routes. These include:

- Rogers Road
- Davenport Road
- King Street West
- Castlefield Avenue
- College Street
- Bloor Street West

Most of these routes have dedicated bike lanes, either at or close to the corridor. King Street West does not have dedicated cycling infrastructure.

The multi-use York Beltline Trail also crosses the corridor. Generally, Dufferin Street is surrounded by quiet residential streets that may not have dedicated cycling infrastructure but can serve as comfortable cycling routes.

The pedestrian realm along Dufferin Street in the south end of the corridor, has wider sidewalks, better street furniture, and smaller blocks with more frequent signalized intersections. In the north end of the corridor, sidewalks tend to be narrow and often abutting large parking lots or grassy medians, with little to protect pedestrians from the elements.

Assessment Criteria

Transit Characteristics

FIGURE 2: TTC ROUTES ALONG DUFFERIN STREET

Two bus routes operate on the 11.2km corridor on Dufferin Street from Wilson Avenue to Dufferin Gate Loop. As shown on the map (Figure 2), Route 29 Dufferin and 929 Dufferin Express utilize the entire 11.2km corridor. The proposed bus lane is represented by the pink line.

In October 2019, these two TTC routes accommodated over 43,000 customers on an average weekday. Over 42,000 of those customers (99%) would benefit from a bus-only lane (customers boarding and travelling on the corridor).

The overall reliability of these two routes in October 2019 is moderate-poor with an average all day on-time performance between 53% and 68% and an average PM peak on-time performance between 33% and 44% (scheduled headway performance from end terminals). Table 1 below indicates the October 2019 on-time performance by bus route.

An initial analysis of headways for October and November 2019 is shown in Figure 3. Each dot on the graph represents the observed time between two vehicles at the peak point of the corridor (Dufferin Street and Bloor Street West). The maximum headway line is the headway value where it is calculated that if transit vehicles operated at this frequency, they would be operating at its crush capacity as it approaches the route's busiest segment, and customers would be unable to board. The minimum headway line is the headway value where it is calculated that if transit vehicles operated at this frequency, they would be carrying fewer than 10 passengers per bus which is approximately one-third of the seated capacity for a 12m long bus. As seen on the graph the northbound headways on Dufferin Street at Bloor Street West have a significant

amount of variability with only 55% headways between the maximum and minimum headway limits.

The average PM peak speed of buses on this corridor is also poor at about 10.6km/h. On average, it takes 63 minutes for a TTC customer to travel from Dufferin Gate Loop northbound to Wilson Avenue. When compared to the average auto travel time (HERE data, October 2019), which is 32.8 minutes, transit is 92% longer than driving a personal vehicle.

TABLE 1: ROUTE OPERATING CHARACTERISTICS

Bus Route	Transit Speed (PM peak travel time in peak direction)	All-day Reliability (on-time performance)	PM peak hour Reliability (on-time performance)	Weekday Ridership along the corridor Overall (along bus lane corridor)
29 Dufferin	10.6 km/h	68%	44%	43,200
929 Dufferin Express	(63 min)	53%	33%	(42,700)

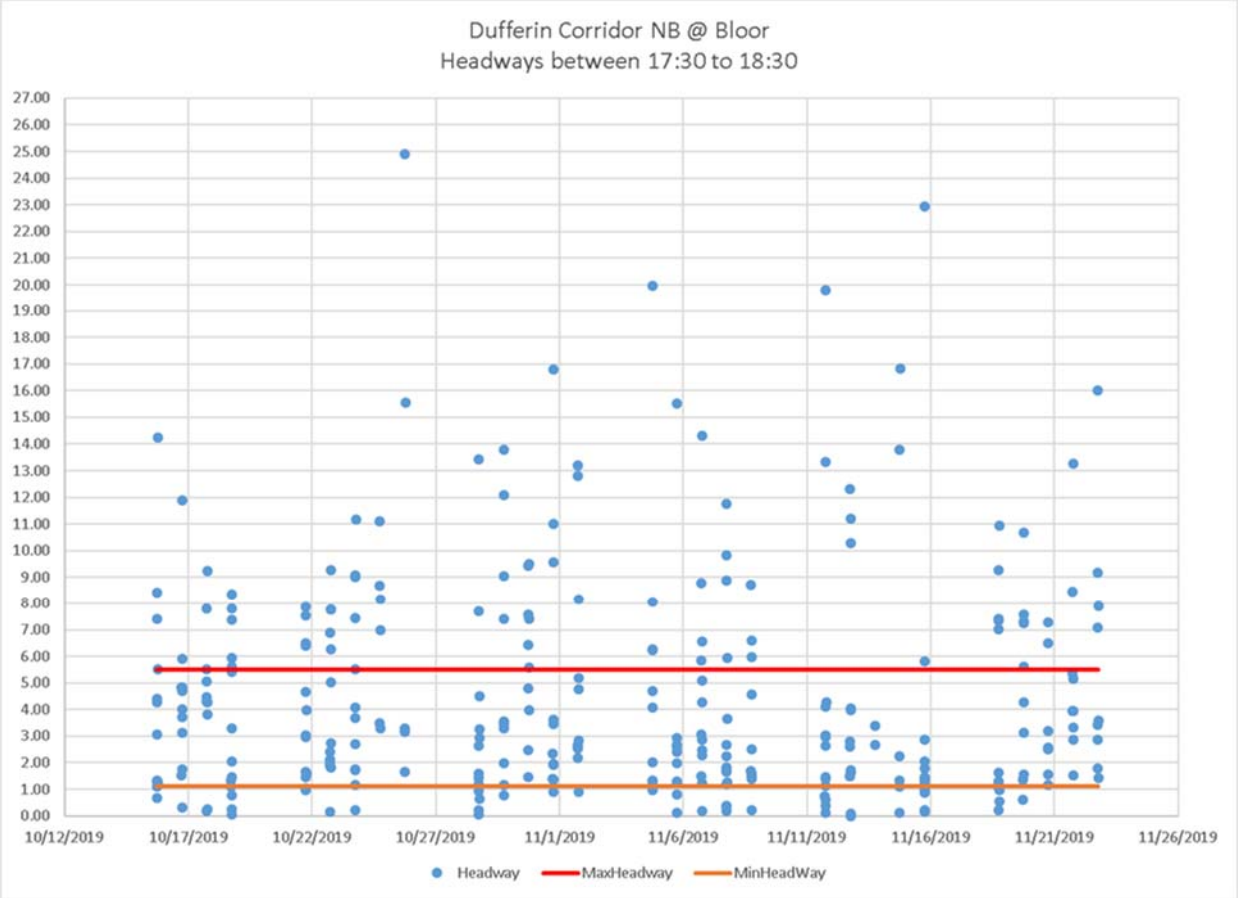


FIGURE 3: NORTHBOUND HEADWAYS AT DUFFERIN STREET AND BLOOR STREET DURING THE BUSIEST HOUR (17:30-18:30)

Ease of Implementation

Right-of-Way Review

Dufferin Street has a 27-meter right-of-way (ROW) between Wilson Avenue and Eglinton Avenue West. Only the segment of the corridor outside Yorkdale Mall has a wider ROW (30). This section of the corridor typically has four to five general purpose lanes - two per direction and a median two-way left-turn lane (TWLTL) in some sections. The corridor south of Eglinton Avenue West to Dufferin Gate Loop has a narrow ROW (20m) and four general purpose lanes.

The pavement widths north of Eglinton Avenue West vary between 14-15m on four to five lane sections until it flares at the intersection with additional turn lanes. In contrast, the pavement width south of Eglinton Avenue West is only about 12-12.8m, just enough for a four-lane two-way corridor. The lane widths are already at the minimum as prescribed in the City's lane width guidelines. Left-turn storage lanes are not available at signalized intersections nor two-way left-turn lanes at midblock segments of the corridor. Table 2 shows the right-of-way widths for all sections.

TABLE 2: RIGHT-OF-WAY CHARACTERISTICS

From	To	ROW (m)	Pavement Width (m)	No of Lanes
Wilson Avenue	Bridgeland Avenue	27	20	5
Bridgeland Avenue	Yorkdale ramp	30	27	7
Yorkdale ramp	Orfus Road	27	15.2	5
Orfus Road	Apex Road	27	15.2	5
Apex Road	Lawrence Avenue West	27	15.2	5
Lawrence Avenue West	Playfair Avenue	27	14.6	4
Playfair Avenue	Glencairn Avenue	27	14.6	4
Glencairn Avenue	Wingold Avenue	27	15.2	5
Wingold Avenue	Briar Hill Avenue	27	15.2	5
Briar Hill Avenue	Castlefield Avenue	27	15.2	5
Castlefield Avenue	Eglinton Avenue West	27	14	4
Eglinton Avenue West	Rogers Road	20	12.8	4
Rogers Road	Saint Claire Avenue West	20	12.8	4
Saint Claire Avenue West	Davenport Road	20	12.8	4
Davenport Road	Dupont Street	20	12.8	4
Dupont Street	Bloor Street West	20	12.8	4
Bloor Street West	College Street	20	12.8	4
College Street	Dundas Street West	20	12.8	4
Dundas Street West	Rail Corridor	20	12.8	4
Rail Corridor	Queen Street West	20	12.8	4
Queen Street West	90m South of Queen Street	20	12	4
90m South of Queen Street	King Street West	20	12	4
King Street West	Liberty Street	20	12	4
Liberty Street	Dufferin Gate Loop	20	12	4

Proposed Lane Configuration

Notwithstanding reducing lane widths to a minimum and removing median two-way left-turn lanes, it is not feasible to implement a bus lane and maintain the same number of through lanes along Dufferin Street.

Assuming a 3.3m wide bus lane and a 3.0m general purpose lane, a total pavement width of 12.6 is required to safely operate a 2 + 2 bus lane configuration (one general purpose lane and one bus lane in each direction). From Table 2, the section of Dufferin Street south of Queen Street West does not have sufficient width. Between Queen Street West and Rogers Road, the bus lane configuration barely fits in this section of the corridor. It also requires detailed measurements because the margin for error is small. An alternative

proposal is to implement bus lanes in one direction only along the narrow corridors. However, that option would require further study to determine its efficacy and impact on overall transit service.

The corridor segment north of Eglinton has wider pavement widths that could accommodate at least a 2 + 2 bus lane configuration, but most of the existing two-way left-turn lanes would need to be removed. The widest section of Dufferin is between Yorkdale and Wilson Avenue. It is feasible to implement a 4 + 2 bus lane configuration.

Table 3 summarizes the lane configuration for each segment on the corridor, assuming a 3.3m bus lane and a 3.0-3.3m general purpose lane. Left-turn lanes would be maintained where pavement widths allow.

TABLE 3: PROPOSED LANE CONFIGURATION

From	To	Bus Lane Configuration
Wilson Avenue	Yorkdale ramp	• 2 Bus lanes • 4 General purpose lanes
Yorkdale Ramp	Lawrence Avenue West	• 2 Bus lanes • 2 General purpose lanes • 1 TWLTL
Lawrence Avenue West	Eglinton Avenue West	• 2 Bus lanes • 2 General purpose lanes
Eglinton Avenue West	Queen Street West	• Requires detailed measurements (margin too close)
Queen Street West	Dufferin Gate Loop	• Bus lane is not feasible

Note: TWLTL – Two-way left-turn lane

Figure 4 shows a narrow section on Dufferin Street in which a 2 + 2 bus lane cross-section is proposed between Lawrence Avenue West and Glencairn Avenue. However, the existing TWLTL will have to be removed in this section to accommodate the bus lane.

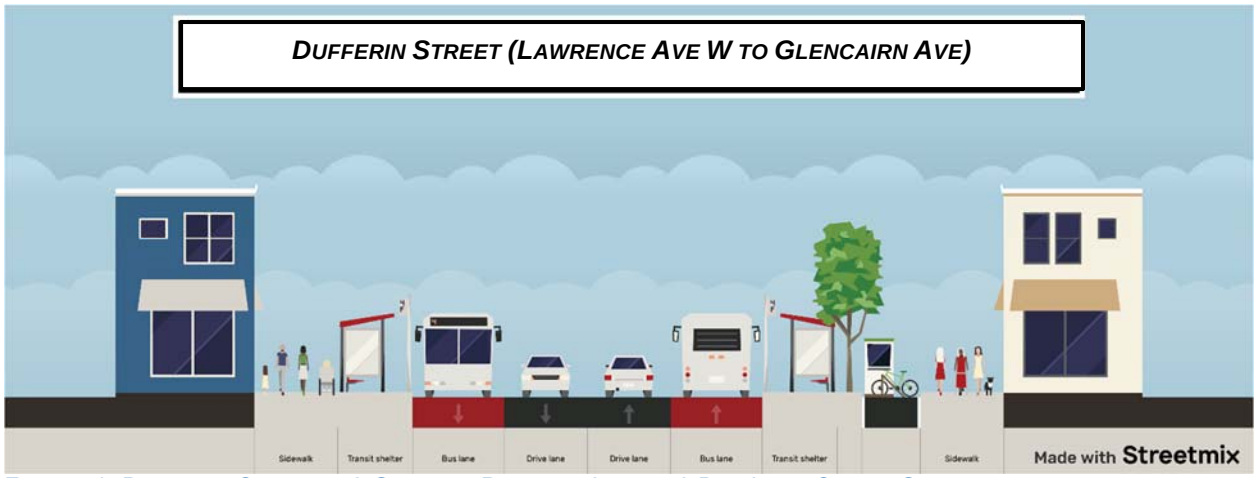


FIGURE 4: DUFFERIN STREET – 2 GENERAL PURPOSE LANE + 2 BUS LANE CROSS-SECTION

Parking Impacts

A review of parking along the corridor was undertaken to assess the impact of the proposed bus lane on parking supply. Typically, bus lane corridors prohibit stopping or parking to ensure smooth bus operations.

On-street parking on the corridor is permitted in some areas south of Rogers Road. Time restrictions during peak periods or overnight apply to areas where parking is permitted. North of Rogers Road parking is prohibited, and greater availability of off-street and private parking spots. Parking is allowed outside of peak periods to accommodate demand from residential houses along the corridor. All curbside parking will need to be removed to accommodate a proposed bus lane in this corridor.

Capital Transportation Projects (2020–2025)

It is critical to review and coordinate the proposed bus lane with the proposed on-street bikeway construction between Glengrove Avenue and Glen Park Avenue (Table 4). Implementing a bus lane and cycle track would not be possible without localized road widening.

It is also essential to understand the geometric modifications at Briar Hill, Hopewell and Ascott Avenue intersections and its impact on bus lane alignment. These infrastructure improvements include the installation of accessible pedestrian signals, tactile walking surface indicators, curb radii reductions and streetscape corners.

Another opportunity for tactical implementation of bus lanes is the planned road resurfacing between Geary Avenue and Bloor Avenue West in 2024. However, the pavement width in this section barely meets the minimum requirements for a 2 + 2 bus lane configuration, and therefore it requires a detailed examination of roadway pavement width.

TABLE 4: 5-YEAR CAPITAL WORKS PROGRAM

From	To	Proposed Work Type	Year	Pavement Quality
Apex Road	Lawrence Avenue West	• Basement flooding protection program • Sanitary sewer replacement (Planning)	2021	Fair
Lawrence Avenue West	Playfair Avenue	• Watermain replacement (Planning)	2021	Fair
Glengrove Avenue	Glen Park Avenue	• On-street bikeway construction and new traffic signal (Planning)	2021	Fair
Briar Hill Avenue	Briar Hill Avenue	• Pedestrian infrastructure improvement (Planning)	2021	Fair
Hopewell Avenue	Hopewell Avenue	• Pedestrian infrastructure improvement (Planning)	2022	Fair
Hunter Avenue	Keywest Avenue	• Basement flooding protection program • New storm sewer	2020-2025	Poor
Ascott Avenue	Ascott Avenue	• Pedestrian infrastructure improvement (Planning)	2023	Fair
Geary Avenue	Bloor Street West	• Road Resurfacing	2024	Poor
Liberty Street	Springhurst Avenue	• Trunk sewer construction (Planning)	2022	Good
Springhurst Avenue	Dufferin Gate Loop	• Streetcar track replacement • Watermain replacement	2021 2022	Good

Cycling Network Plan

The City of Toronto Official Plan promotes a complete streets approach in which the design of a street balances the needs and priorities of the various users and uses within the right-of-way. The safe and efficient movement of all road users should be considered when implementing modifications to a street or corridor. The Cycling Network Plan builds on the Official Plan policies and establishes a priority framework for major city-wide cycling routes. It also provides the next steps for the effective implementation of proposed cycling infrastructure.

The Cycling Network Plan uses the route priority ratings of Top, High, Medium and Low to indicate the level of value the particular route brings to the cycling network. The following nine cycling inputs determine the routes and scores shown on the Cycling Network Plan:

- Current Cycling Demand
- Potential Cycling Demand
- Trip Generators
- Transit Access
- Connectivity
- Coverage
- Barriers
- Safety
- Equity

Current Cycling Demand, Safety and Coverage are weighted higher in the analysis scores. Priority ratings are described in detail below.

- Top priority routes were routes that scored highly across most, if not all, inputs. These are found mostly on arterial roads that connect to many destinations and transit.
- High priority routes scored highly against most inputs.
- Medium priority routes scored highly in some inputs or scored well across many inputs.
- Low priority routes are mostly local neighbourhood routes with parallel route alternatives.

Based on the above analysis, Dufferin Street is considered as a **Top Priority** cycling route.

The following cross-sections in Figure 5 and Figure 6 illustrate the preferred options for a future integrated bus lane and cycling routes on Dufferin Street. The cross-sections assume that the current pavement width would be maintained. If a lane reduction or road diet is feasible, the preferred cross-section would be different from what is shown below.

The 20-m ROW section of Dufferin does not allow for separate bus lanes and cycling track. Without taking away a lane for vehicles and the remaining boulevard zone, a shared bike and bus lane is the only feasible design option (Figure 5). The 27m ROW allows for cycle tracks but may only accommodate a 2 + 2 bus lane configuration (Figure 6).

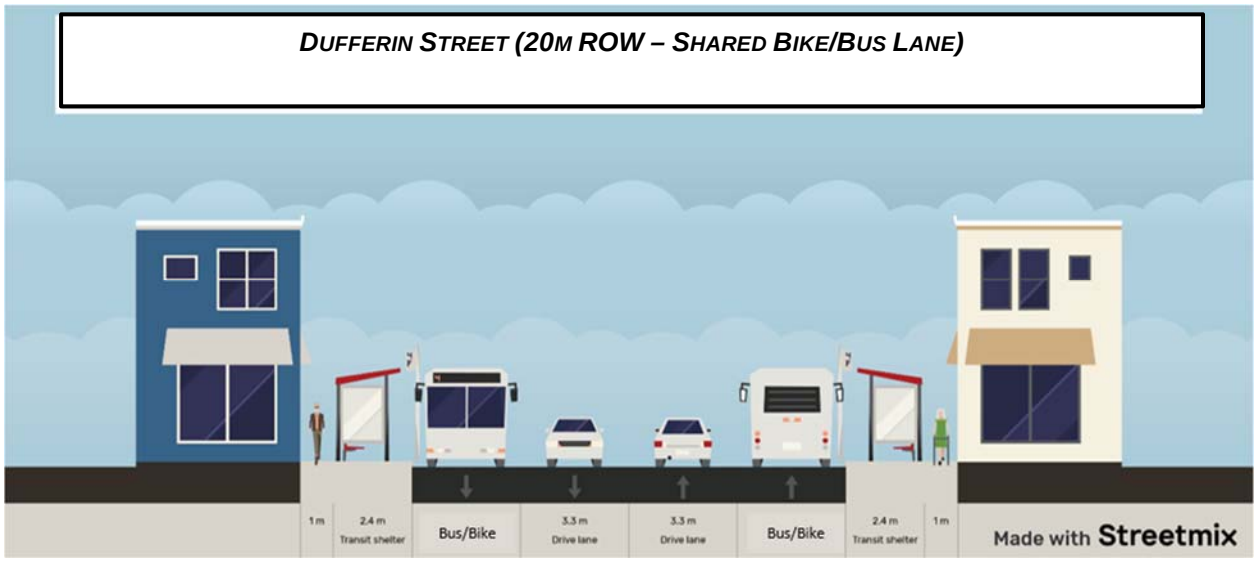


FIGURE 5: DUFFERIN STREET – CONCEPTUAL CROSS-SECTION FOR 20-METER ROW

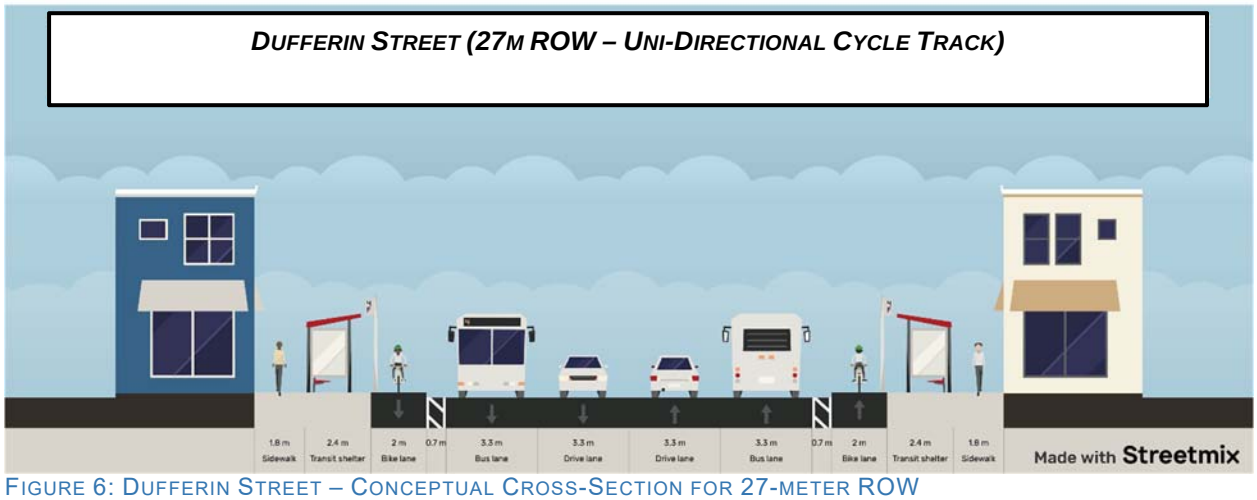


FIGURE 6: DUFFERIN STREET – CONCEPTUAL CROSS-SECTION FOR 27-METER ROW

Besides having an integrated bus lane and cycling facility along Dufferin Street, another option is to separate the two travel modes by utilizing local roads as alternate cycling routes. However, this option is inferior to the former because these roads are not continuous, two-way corridors like Dufferin Street.

- Locksley Avenue
- Northcliffe Boulevard
- Westmount Avenue
- Bartlett Avenue
- Havelock Street – Lindsey Avenue
- Gladstone Avenue

Safety

Collision History

Figure 7 shows the number of killed and seriously injured (KSI) collisions along Dufferin Street from 2014-2018. The total collisions are not high compared to the other four priority corridors in the TTC 5-Year Service Plan. However, there is a moderate concentration of collisions at Dufferin Street and Dundas Street West intersection. It is also notable that there are some midblock collisions recorded along the section of Dufferin Street south of Eglinton Ave West.

A 2013[1] study in Melbourne, Australia, found that bus priority treatments have significantly reduced the number of fatal and seriously injured people in collisions. Despite concerns regarding the interaction of buses and vehicles at merging or turning sections, the overall conclusion was that converting general-purpose lanes into bus lanes reduced accidents.

[1] Goh, K. K., Currie, G., Sarvi, M., & Logan, D. (2013, January 1). Road Safety Benefits from Bus Priority: An Empirical Study. *Transportation Research Record*, pp. 41-49.

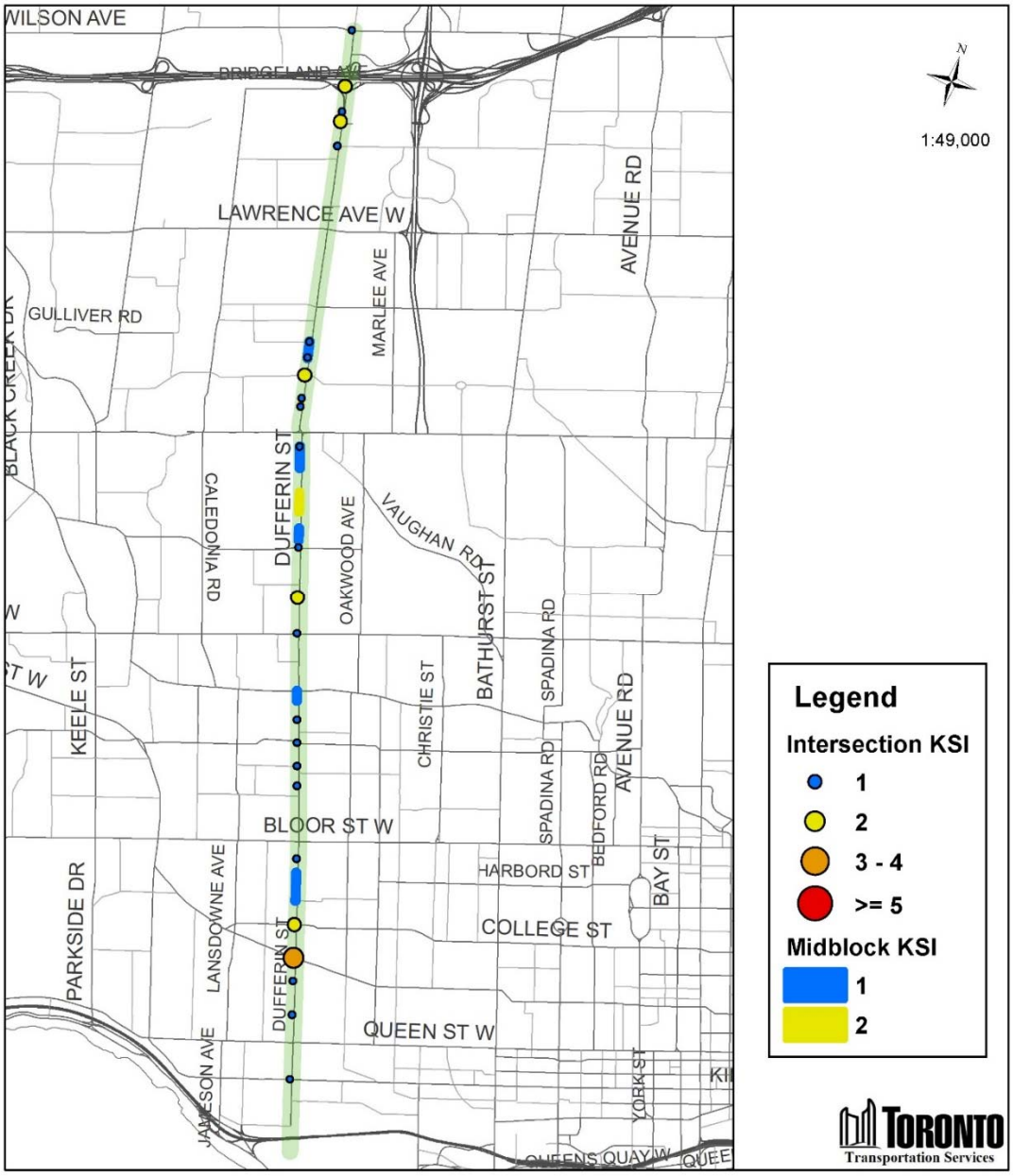


FIGURE 7: DUFFERIN STREET CORRIDOR – KSI COLLISIONS – 2014 TO 2018

Vision Zero Initiatives

The City of Toronto's Vision Zero 2.0, which is an update to the original Vision Zero Road Safety Plan from 2016, was adopted in 2019. Vision Zero Road Safety Plan is a pledge to improve safety across the City using a data-driven and targeted approach, focusing on locations where improvements are most needed. As part of the initial Vision Zero Road Safety Plan and the Vision Zero 2.0 update, several measures have been implemented along the corridor to address road safety concerns. The following Vision Zero measures, listed in Table 5 and shown in Figure 8 have been implemented since July 2016. These measures align and support the proposed bus lane along Dufferin Street.

TABLE 5: DUFFERIN STREET VISION ZERO INITIATIVES (2016-2020)

Vision Zero Measure	Location
Speed Limit Reduction	• Between Sylvan Avenue and Eglinton Avenue West
Audible Pedestrian Signals	• Queen Street West and Dufferin Street • Dufferin Street and Lawrence Avenue West • Dufferin Street and Wingold Avenue / Private Access • Dufferin Street and 72m North of Sylvan Ave / Private Access • College Street and Dufferin Street
Community Safety Zones	• Between Dundas Street West and Queen Street West • Between Regal Road and Brandon Avenue • Between Eglinton Avenue West and Keywest Avenue
Leading Pedestrian Signals	• Dufferin Street and Playfair Avenue / Wenderly Drive
Pedestrian Safety Corridors	• Between Eglinton Avenue West and Geary Avenue
Red Light Cameras	• Dufferin Street and Glencairn Avenue • Dufferin Street and Dupont Street
School Safety Zones	• Alexander Muir • Gladstone Avenue Junior and Senior Public School • The Grove Community School • Fairbank Middle School
Senior Safety Zones	• Fairview Nursing Home
Turn Restrictions	• Dufferin Street and Peel Avenue
Watch Your Speed Signs	• Alexander Muir • Gladstone Avenue Junior and Senior Public School • The Grove Community School • Fairbank Middle School

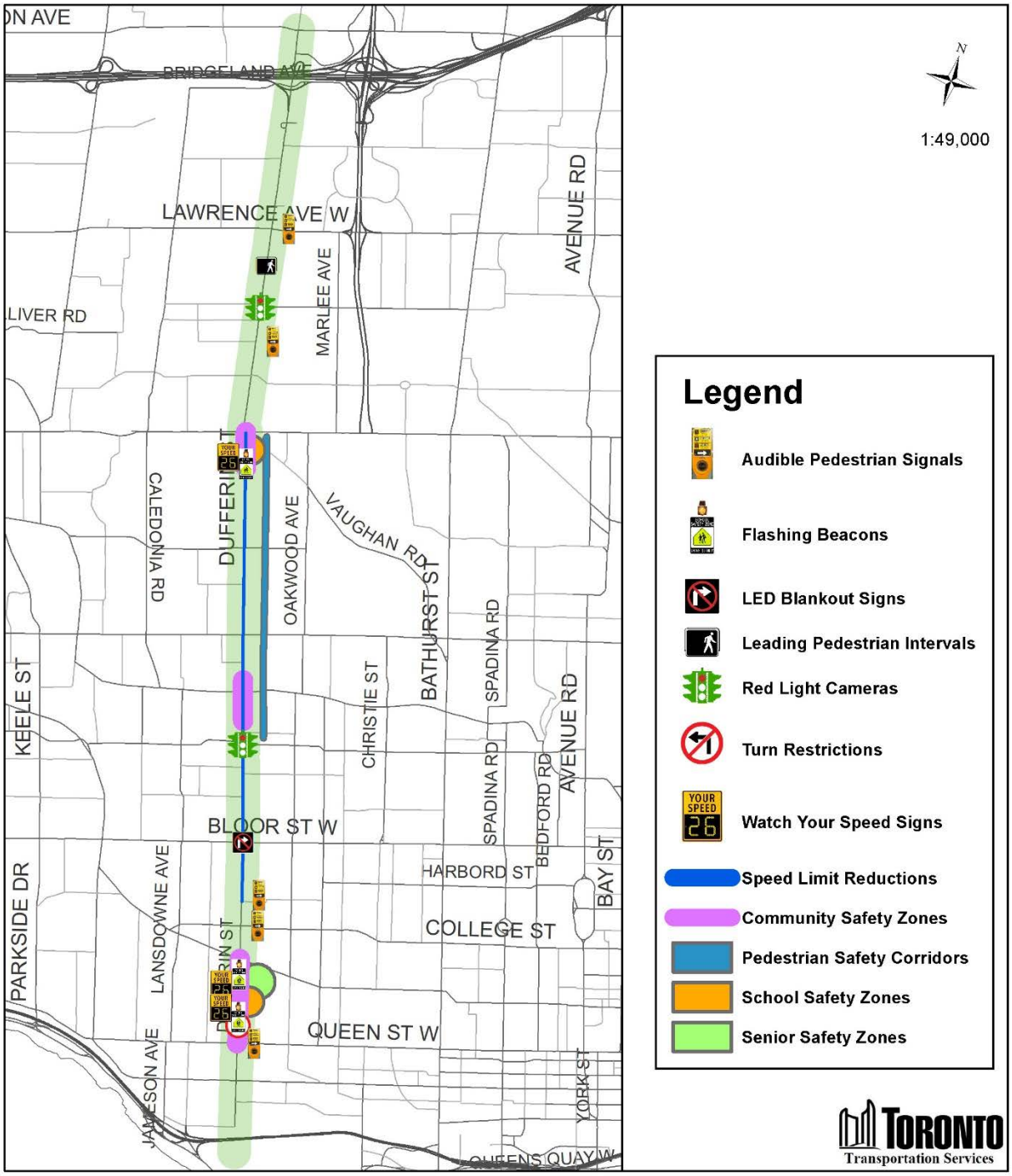


FIGURE 8: DUFFERIN STREET CORRIDOR - VISION ZERO MEASURES (2016-2020)

Equity

The City strives to apply an equity lens to identify and remove barriers and to support best practices in planning, budgeting, implementation and evaluation of its programs and services, including transportation investments.

Specifically, equity-seeking communities, who have been historically reliant on public transit as a mode of transportation, would benefit from reliable service through the implementation of bus lanes.

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Besides a short section of Dufferin Street south of Queen Street West (Figure 9), the majority of the proposed bus lane corridor does not serve Neighbourhood Improvement Areas (NIAs).

In November 2019, City Council approved the Poverty Reduction Strategy 2019-2022 Term Action Plan. The planned bus lane advances Action 7.2.1., Explore bus transit lanes on heavily used bus corridors in the inner suburbs to improve speed and reliability of existing transit service, of the Action Plan.

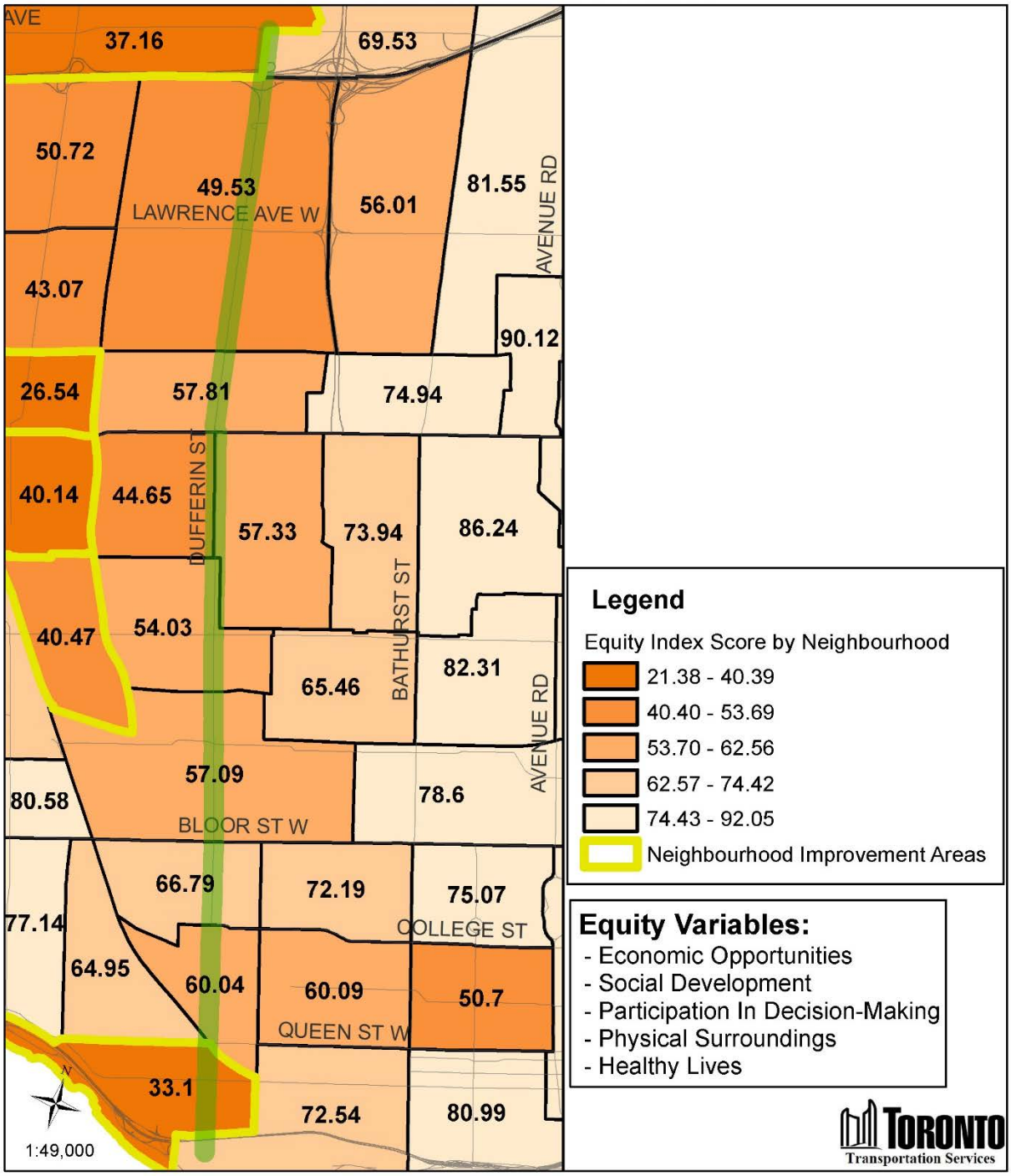


FIGURE 9: DUFFERIN STREET CORRIDOR NEIGHBOURHOOD EQUITY INDEX

Existing Traffic Conditions

Dufferin Street is a vital arterial road in the City of Toronto, as it stretches to both the northern and southern limits of the City, connecting the suburbs to the downtown core. As such, this arterial must operate smoothly and efficiently. The Dufferin Street corridor passes through several different land uses including residential, industrial, commercial, and institutional. There are several major trip generators along the corridor that were taken into consideration, including TTC's Dufferin Station, Yorkdale Mall, Dufferin Mall, the Canadian National Exhibition, and BMO Field that generate significant traffic and impact the traffic flow along the corridor. On-street parking is permitted intermittently along the corridor throughout the day, and several transit routes are operating along the corridor at very high frequencies; the impacts of each on the flow of traffic have been taken into consideration.

In 2017, the City undertook a traffic signal optimization and coordination study at Dufferin Street from Wilson Avenue to Dufferin Gate Loop. Synchro base models were developed for the corridor and were calibrated through field surveys and observations. A set of optimized signal timing plans were developed and implemented in the field. These timings were reviewed on TransSuite, and through an iterative process, adjustments were made to improve optimization and coordination further. Finally, field surveys and observations were undertaken with the newly implemented timings, and the new operating conditions were compared to the conditions at the start of the study.

Traffic conditions along Dufferin Street, from Wilson Avenue to Saskatchewan Road, have shown some improvements as a result of this study. During peak periods, travel times along the corridor have decreased by as much as 3 minutes and 29 seconds (13%), total delays have decreased by as much as 1 minute and 47 seconds (21%), and travel speeds have increased by as much as 3.8 km/h (15%). Several barriers inhibited further improvements along this corridor, including significantly increased traffic volumes and ongoing construction. This study has also demonstrated that while traffic volumes have increased along the corridor during peak periods, travel times have only marginally increased in most cases, which means that increased throughput is being moved along Dufferin Street as a result of improved progression.

At the intersection level, some continue to perform at capacity or worse during AM or PM peak. The performance of an intersection can be described in terms of Level of Service (LOS) and volume-to-capacity ratio (v/c).

- Level of service (LOS) is a mechanism used to determine how well an intersection is operating from a road user's perspective. Typically, six levels of service are defined and each is assigned a letter designation from A to F, with LOS A representing the best operating conditions and LOS F the worst. For the signal coordination study, intersection delay is used to describe LOS.

- Volume-to-capacity ratio (v/c) describes the adequacy of an intersection to accommodate traffic demand. A ratio of less than 0.9 indicates sufficient capacity, while a ratio of more than 0.9 indicates at capacity or worse condition for the intersection.

Critical movements that are flagged below are operating at LOS E or F, and with v/c > 0.9.

- Dufferin Street and Wilson Avenue: eastbound through, westbound left
- Dufferin Street and Bridgeland Avenue: eastbound left
- Dufferin Street and Bentworth Avenue/Ranee Avenue: northbound through, southbound through and left, eastbound left
- Dufferin Street and Lawrence Avenue West: northbound through and left, southbound left, westbound left
- Dufferin Street and Castlefield Avenue/Roselawn Avenue: southbound left
- Dufferin Street and Rogers Road: northbound and southbound through
- Dufferin Street and Dupont Street: all movements
- Dufferin Street and Dundas Street West: northbound and southbound through
- Dufferin Street and Queen Street West: northbound, southbound and eastbound through

Network Impacts of Bus Lane

Preliminary analysis was undertaken to identify the potential traffic impacts, including traffic infiltration, in the area of the Dufferin Street corridor upon implementing the enhanced bus transit priority measures. Using conservative planning level estimates for vehicle capacity, regional travel demand modelling results indicate that the proposed lane conversion would leave some of the intersections at or over capacity, e.g. Eglinton Avenue West, St. Clair Avenue West, Bloor Street West, etc. At Eglinton Avenue West, auto traffic demand could potentially exceed planning capacity by up to 400 vehicles per hour. The regional travel demand model identified some bottlenecks and further analysis will be undertaken to address these and inform the detailed design process.

From an infiltration perspective, the City's regional travel demand model was run to simulate the impact of the lane conversion along the subject corridor. The findings indicated that some drivers would choose other routes in response to the lane conversion, and, that the magnitude of the diverted traffic can be generally absorbed without exceeding the capacity of the surrounding roadway network. This is supported by the relatively even spread of diverted trips across the network as reflected in the regional travel demand model. Allen Road, as an example, received an additional 200 vehicles per hour as a result of the conversion. Most other parallel routes received 100 vehicles per hour or less. As such, the overall potential for traffic infiltration on local streets in the area is anticipated to be low, and the impact of

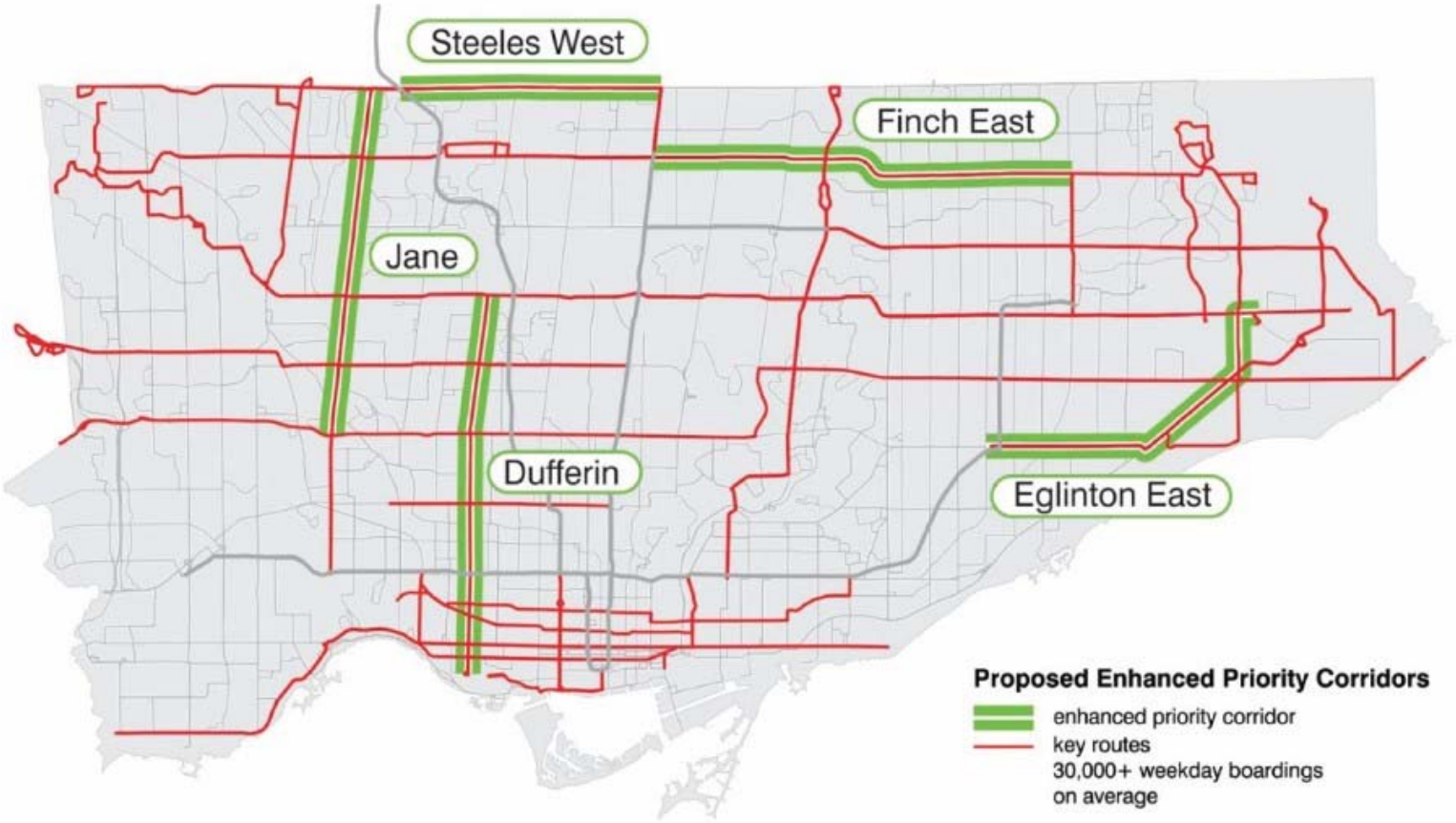
infiltration on surrounding arterials given the above context is anticipated to be minimal. Further analysis will be performed to refine these findings so they may inform the detailed design process.

Recommendation

The Dufferin Street corridor should be considered as **Priority C** for implementing bus lanes in the next five years, as further study is recommended in order to gain a better understanding of the potential impacts that enhanced surface transit priority may have on the broader transportation network in these areas. The following should be assessed in further detail to ensure safe transit operations and mitigate impacts to other road users:

- Insufficient pavement width along Dufferin Street south of Eglinton Avenue West;
- Impact of loss of on-street parking;
- Several intersections operating at over capacity; and
- Accommodate cycling design into the planned bus lane.

BUS LANE IMPLEMENTATION PLAN



Finch East Priority Corridor

TORONTO

July 2020

Table of Contents

Introduction

The planned Finch Avenue East bus transit corridor, hereafter referred to as "Finch East," is 12.6 kilometres along Finch Avenue East, between Yonge Street and McCowan Road, as illustrated in Figure 1. Finch Avenue East is a major arterial road aligned east-west through the north end of Toronto. Along the corridor, it crosses Highway 404 and several rail lines. Finch Avenue is a four-lane road through the majority of the corridor; however, between between Liszt Gate/Trudy Road and the ramp to southbound Highway 404, it widens to three lanes in the eastbound direction. There is a variety of land uses throughout the corridor.

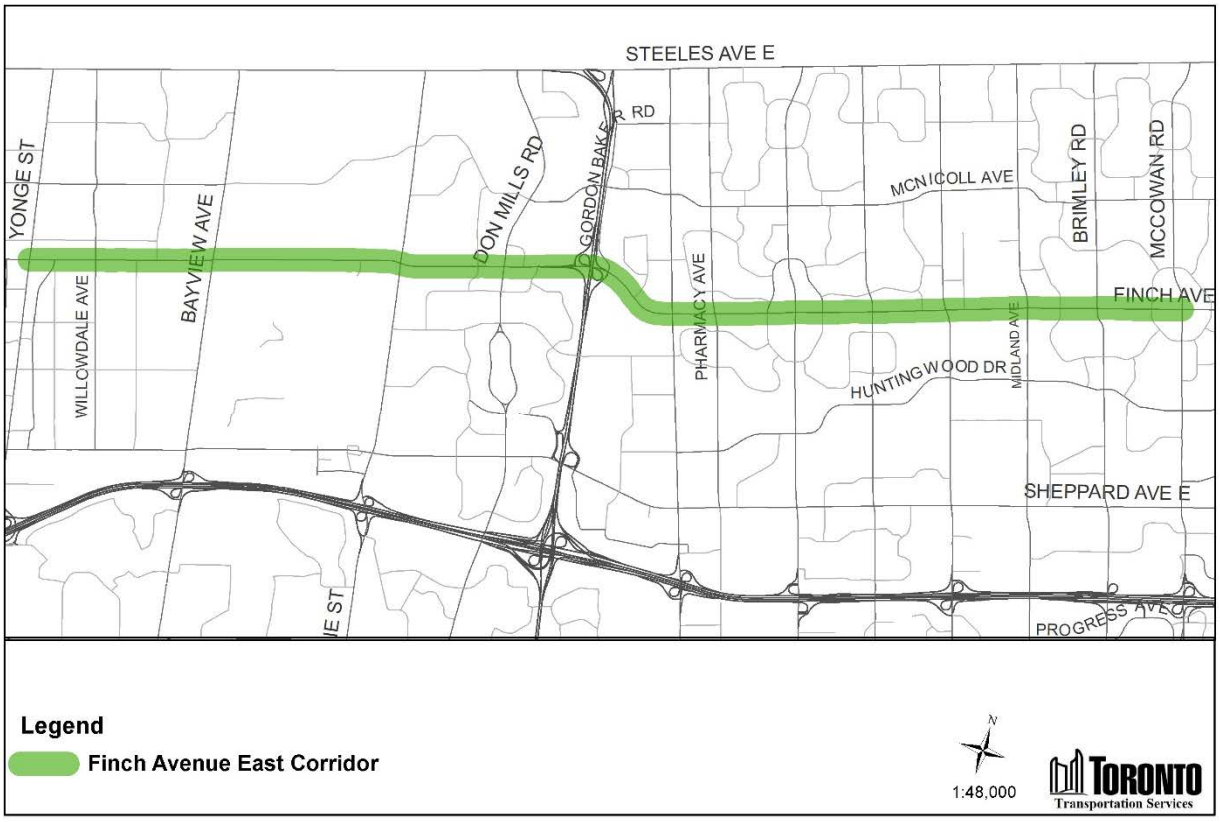


FIGURE 1: PROPOSED FINCH AVENUE EAST BUS LANE CORRIDOR

Land Use

Residential/ Commercial

Finch Avenue is designated as an Avenue between Yonge Street and Bayview Avenue. The majority of the corridor is fronted by Neighbourhoods. Between Yonge Street and Bayview Avenue, these low-rise residential areas have direct access to Finch Avenue East. East of Bayview Avenue, the majority of detached housing is rear-facing onto the corridor, with no direct access. There are many small clusters of Apartment Neighbourhoods along the corridor, typically at major intersections. These include those at intersections with Bayview Avenue, Don Mills Road, Pharmacy Avenue, Warden Avenue, Birchmount Road and McCowan Road. These high-rise residential buildings are typically towers-in-the-park set back from the corridor.

The Mixed Use Area at Yonge Street contains both residential and office towers. Unlike the Apartment Neighbourhoods, however, these towers are not set back from Finch Avenue. There are also low-rise storefronts in this area. Smaller Mixed Use Areas along the corridor can be found at Leslie Street, Don Mills Road, Victoria Park Avenue and Warden Avenue. These areas have retail development in the form of strip malls or malls, the largest being Bridlewood Mall at Warden Avenue.

Employment/ Institutional

There is one Employment Area along the corridor: on the north side of Finch Avenue, between Kennedy Road and Midland Avenue. This area holds a variety of businesses, including retail, services, manufacturing and healthcare.

Several Institutional Areas are situated along or near the corridor. Seneca College's Newnham Campus is located at Finch Avenue East and Highway 404. Birchmount Hospital is just north of Finch Avenue East at Birchmount Avenue.

Development Applications

The significant development applications along the corridor include:

- Bridlewood Mall (Council approved): 975 residential units in eight towers at the northwest corner of Finch Avenue East and Warden Avenue
- Woodside Square Mall (under review): residential and additional commercial uses at the northwest corner of Finch Avenue E and McCowan Road

Parks and Green Space

There are a few small Parks near the intersection of Finch Avenue East and Don Mills Road; both Seneca Hill Park and Skymark Park have sports facilities that make them essential community hubs. L'Amoreaux Sports Complex and Kidstown Water Park are two recreational facilities located just to the north of the Corridor at Birchmount Road.

Toronto's ravine system crosses the Finch Corridor at several points. The largest of these is between Bayview Avenue and Leslie Street, along the Don River. Several trails running through Natural Areas connect to the corridor. There is a Utility Corridor with green space that is just north of and parallel to Finch Avenue East.

Mobility

The west end of the corridor is at Finch Station, the terminus of Line 1 Yonge-University Subway line and several other bus routes. The corridor also intersects with two north-south express network bus routes at Don Mills Road and Victoria Park Avenue.

The Finch East corridor crosses both the Richmond Hill and Stouffville GO Rail lines. The Stouffville line crossing is currently at-grade, with planned grade separation. The Richmond Hill crossing is grade-separated. The closest station on the Richmond Hill line is Old Cummer, located just north of the corridor. This station is directly accessible by foot from both sides of Finch Avenue East via a pedestrian bridge constructed over the road. There are no Stouffville GO stations on the corridor (Finch Avenue crosses the Stouffville GO Rail line between Agincourt and Milliken Stations); however, the planned Finch East SmartTrack station would connect to the corridor.

There is no on-street parking along the Finch East corridor, though most establishments abutting the corridor have private parking lots. Many of the residences west of Bayview Avenue have driveways connecting to Finch Avenue.

Finch Avenue East does not currently have any on-street cycling facilities; however, cycling infrastructure is planned along Finch Avenue East in the vicinity of the future Finch SmartTrack station. The Cycling Network Plan identifies Warden Avenue and Midland Avenue as corridors for further study. There are multi-use trails in Natural Areas that connect to the corridor, as well as in the Utility Corridor nearby. The Natural Areas or trails that connect directly to the corridor include:

- Newtonbrook Park
- East Don Parkland
- Timberland Park
- East Highland Creek Trail

- Iroquois Park

Proximity to ravine trails, existing and planned cycling facilities, and the Utility Corridor trail creates many cycling connection opportunities along Finch Avenue East.

The narrow sidewalks along the corridor are typically set back from the road, buffered by a strip of green space. Many trees are lining the corridor. The relatively small block sizes and more frequent signalized intersections west of Bayview Avenue create a more appealing pedestrian realm than that of the eastern portion of the corridor. Additionally, the on and off-ramps to Highway 404 present a barrier to walking and cycling.

Assessment Criteria

Transit Characteristics

FIGURE 2: TTC ROUTES ALONG FINCH AVENUE EAST

Two bus routes operate on the 12.6 kilometres corridor on Finch Avenue East from Finch Station to McCowan Road. As shown on the map (Figure 2), Route 39 Finch East and 939 Finch Express utilize the entire 12.6km corridor.

In October 2019, these two TTC routes accommodated over 56,000 customers on an average weekday. Over 32,000 of those customers (57%) would benefit from a bus only lane (customers boarding and travelling on the corridor).

The overall reliability of these two routes in October 2019 is moderate-poor with an average all day on-time performance between 70% and 75% and an average PM peak on-time performance between 47% and 57%(scheduled headway performance from end terminals). Table 1 below indicates the October 2019 on-time performance by route.

An initial analysis of headways for October and November 2019 is shown in Figure 3. Each dot on the graph represents the observed time between two vehicles at the peak point of the corridor (Finch Avenue East

and Bayview Avenue). The maximum headway line is the headway value where it is calculated that if transit vehicles operated at this frequency, they would be operating at its crush capacity as it approaches the route's busiest segment, and customers would be unable to board. The minimum headway line is the headway value where it is calculated that if transit vehicles operated at this frequency, they would be carrying fewer than 10 passengers per bus which is approximately one-third of the seated capacity for a 12m long bus. As seen on the graph the eastbound headways on Finch Avenue East at Bayview have a significant amount of variability with only 45% headways between the maximum and minimum headway limits.

The average PM peak speed of buses on this corridor is also poor at about 18.4km/h, with some sections of the corridor that are significantly slower. On average, it takes 41 minutes for a TTC customer to travel from McCowan Station westbound to Finch Station. When compared to the average auto travel time (HERE data, October 2019), which is 32 minutes, transit is 28% longer than driving a personal vehicle.

TABLE 1: ROUTE OPERATING CHARACTERISTICS

Bus Route	Transit Speed (PM peak travel time in peak direction)	All-day Reliability (on-time performance)	PM peak hour Reliability (on-time performance)	Weekday Ridership along the corridor Overall (along bus lane corridor)
39 Finch East	18.4 km/h	70%	47%	56,100
939 Finch Express	(41 min)	75%	57%	(32,200)

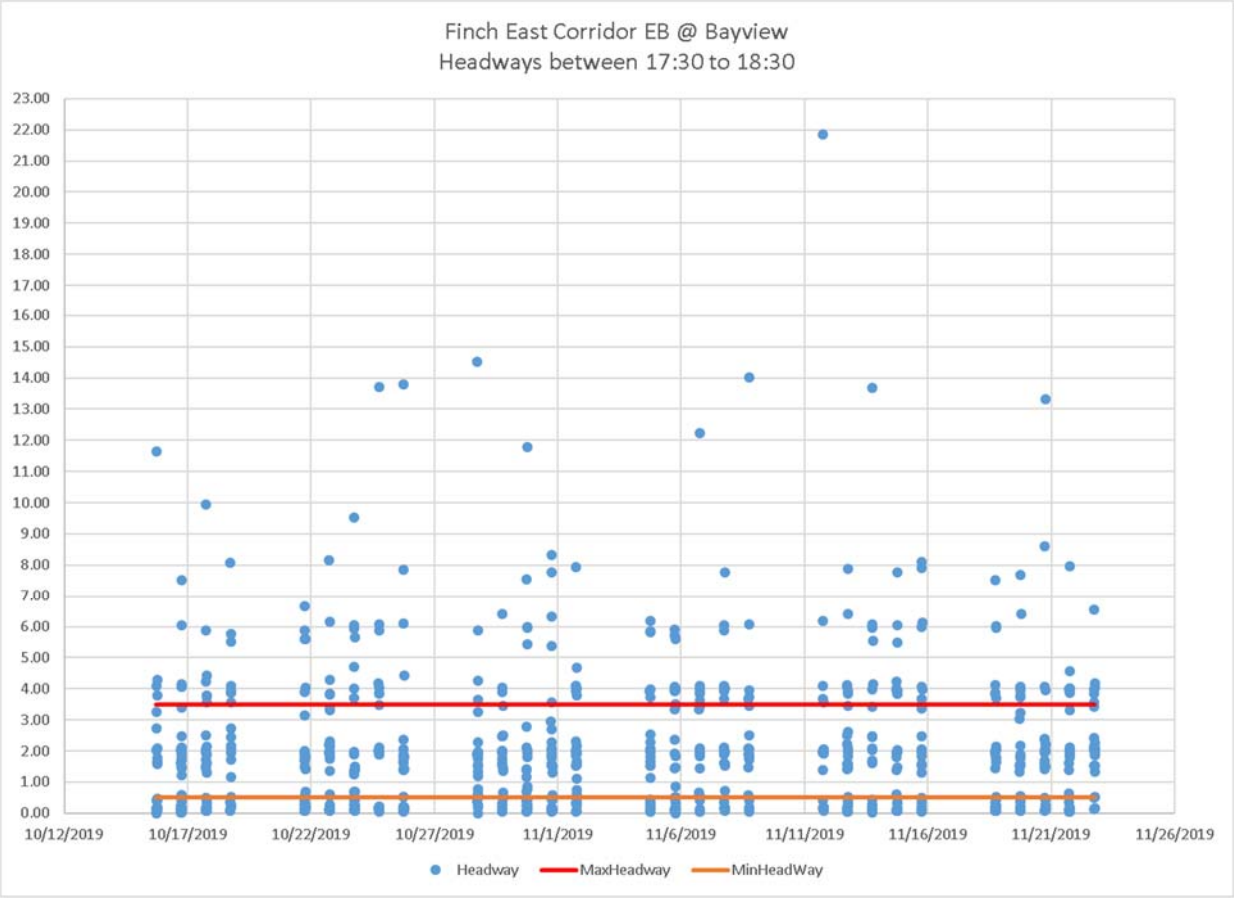


FIGURE 3: ACTUAL EASTBOUND HEADWAYS AT FINCH AVENUE EAST AND BAYVIEW AVENUE DURING THE BUSIEST HOUR (17:30-18:30)

Ease of Implementation

Right-of-Way Review

Finch Avenue East right-of-way (ROW) varies between 26 metres and 38 metres along the corridor. The majority of the corridor consists of four lanes of travel, two per direction and a two-way left-turn lane (TWLTL) in some sections. The section between Liszt Gate/Trudy Road and the ramp to southbound Highway 404 widens to three lanes in the eastbound direction. The segment around the Highway 404 interchange is under the jurisdiction of the Ministry of Transportation (MTO) and requires MTO approval before any change in lane configuration.

Pavement widths vary from 15 metres in some of the 4-lane cross-sections to 28 metres around the Highway 404 on and off ramps. Table 2 shows the right-of-way widths for all sections.

TABLE 2: RIGHT-OF-WAY CHARACTERISTICS

From	To	ROW (m)	Pavement Width (m)	No of Lanes
Yonge Street	Kenneth Avenue/ Doris Avenue	29	17.8 (incl. QJL)	5
Kenneth Avenue/ Doris Avenue	Dudley Avenue	29	17.8 (incl. TWLTL)	5
Dudley Avenue	Bayview Avenue	26	13.5	4
Bayview Avenue	Gaspe Road	36	17.3 (incl. TWLTL)	5
Gaspe Road	Leslie Street	28-36	14.8-15.8	4
Leslie Street	Liszt Gate/ Trudy Road	36	15 (incl. TWLTL)	5
Liszt Gate/ Trudy Road	Brahms Avenue	36	15	5
Brahms Avenue	Don Mills Road	36	22	7
Don Mills Road	Au Large Blvd/ Seneca Hill Dr	36	22-23	5
Au Large Blvd/ Seneca Hill Dr	Hwy 404 SB Off-Ramp	36	19.2-24.5	4
Hwy 404 SB Off-Ramp	404 NB Off-Ramp/ Gordon Baker Rd	36	28 (incl. ramps)	4
404 NB Off-Ramp/ Gordon Baker Rd	Kennedy Avenue	30-36	15.1-18.1	4
Kennedy Avenue	Milken Avenue	36	16.3 (incl. TWLTL)	5
Milken Avenue	Baylawn Drive	38	15.2	4
Baylawn Drive	Midland Avenue	38	15.8 (incl. TWLTL)	5
Midland Avenue	McCowan Road	36-37	15.2-15.5	4

Note: TWLTL – Two-way left-turn lane
QJL – Queue Jump Lane

Proposed Lane Configuration

Notwithstanding reducing lane widths to minimum acceptable guidelines and removing the centre two-way left-turn lanes, it is not feasible to implement a bus lane and maintain the same number of through lanes along the Finch East corridor.

Without road widening, the most feasible option is to convert the through curb lanes into an exclusive bus lane and keep the two-way left-turn lanes in as many sections as possible. This means assigning a 4 + 2 lane configuration (two general purpose lanes and one bus lane in each direction), or a 2 + 2 lane

configuration (one general purpose lanes and one bus lane in each direction), depending on the available existing pavement widths.

Table 3 summarizes the proposed lane configuration for each segment on the corridor, assuming at a minimum a 3.3-metre wide bus lane and a 3.0-3.3-metre general purpose lane, as per the City's Lane Widths Guidelines. Left-turn lanes would be maintained where pavement widths allow. Detailed lane configuration and lane widths will be determined for each segment of the corridor during the detailed design stage.

TABLE 3: PROPOSED LANE CONFIGURATION

From	To	Lane Configuration
Yonge Street	Dudley Avenue	• 2 Bus lanes • 2 General purpose lanes • 1 TWLTL
Dudley Avenue	Bayview Avenue	• 2 Bus lanes • 2 General purpose lanes
Bayview Avenue	Gaspe Road	• 2 Bus lanes • 2 General purpose lanes • 1 TWLTL
Gaspe Road	Brahms Avenue	• 2 Bus lanes • 2 General purpose lanes
Brahms Avenue	Don Mills Road	• 2 Bus lanes • 4 General purpose lanes • 1 TWLTL
Don Mills Road	Au Large Blvd/ Seneca Hill Dr	• 2 Bus lanes • 3-4 General purpose lanes
Au Large Blvd/ Seneca Hill Dr	Hwy 404 SB Off-Ramp	• 2 Bus lanes (MTO approval) • 2-3 General purpose lanes
Hwy 404 SB Off-Ramp	404 NB Off-Ramp/ Gordon Baker Rd	• 2 Bus lanes (MTO approval) • 2-3 General purpose lanes
404 NB Off-Ramp/ Gordon Baker Rd	Kennedy Avenue	• 2 Bus lanes • 2 General purpose lanes
Kennedy Avenue	Milken Avenue	• 2 Bus lanes • 2 General purpose lanes • 1 TWLTL
Milken Avenue	Baylawn Drive	• 2 Bus lanes • 2 General purpose lanes

From	To	Lane Configuration
Baylawn Drive	Midland Avenue	• 2 Bus lanes • 4 General purpose lanes • 1 TWLTL
Midland Avenue	McCowan Road	• 2 Bus lanes • 2 General purpose lanes

Note: TWLTL – Two-way left-turn lane

Cross-section samples of the segments above are illustrated in the Figures below.

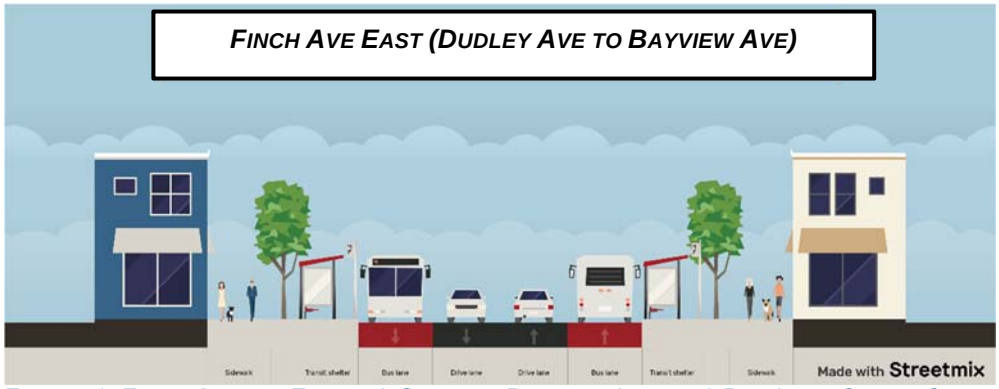


FIGURE 4. FINCH AVENUE EAST – 2 GENERAL PURPOSE LANE + 2 BUS LANE CROSS-SECTION

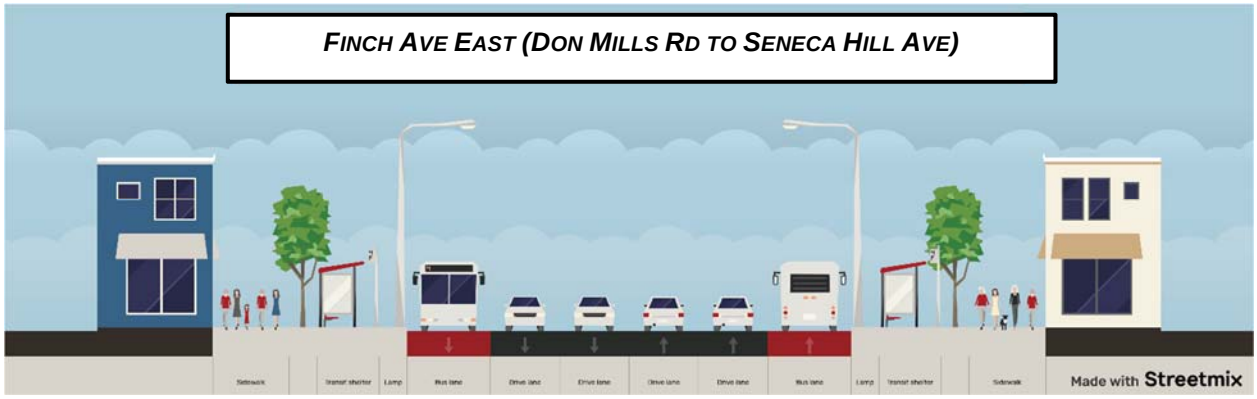


FIGURE 5: FINCH AVENUE EAST – 4 GENERAL PUPORSE LANE + 2 BUS LANE CROSS-SECTION

Parking Impacts

A review of parking along the corridor was undertaken to assess the impact of the proposed bus lane on parking supply. Typically, bus lane corridors prohibit stopping or parking to ensure smooth bus operations. For Finch East, the segments of the proposed bus lane corridor have neither on-street parking (i.e., pay-and-display parking machines) nor are they included in a residential permit parking area.

Capital Transportation Projects (2020–2025)

It is critical to review and coordinate the proposed bus lane with other planned capital works projects. There is a planned watermain replacement in 2021 from Leslie Street to Liszt Gate. The section between Gordon Baker Road and Midland Avenue is scheduled for resurfacing in 2023-2024. To take advantage of the resurfacing, the implementation of a bus lane could be done at the same time. Table 4 summarizes the planned capital works for the next five years in the corridor. It also includes the pavement quality for those segments.

TABLE 4: 5-YEAR CAPITAL WORKS PROGRAM

From	To	Proposed Work Type	Year	Pavement Quality
At Leslie Street		• Removal of Right-Turn Channel	2022	Poor
Leslie St	Liszt Gate	• Watermain Replacement	2021	Poor
At Skymark Dr		• Pedestrian Infrastructure Improvement	2022	Poor
Hwy 404 Ramp/ Gordon Baker Rd	Midland Ave	• Road Resurfacing	2023-2024	Poor

Cycling Network Plan

The City of Toronto Official Plan promotes a complete streets approach in which the design of a street balances the needs and priorities of the various users and uses within the right-of-way. The safe and efficient movement of pedestrians, cyclists, transit users, goods and services vehicles, emergency vehicles, and motorists across the network should be considered when implementing modifications to a street or corridor. The Cycling Network Plan builds on the Official Plan policies and establishes a priority framework for major city-wide cycling routes. It also provides the next steps for the effective implementation of proposed cycling infrastructure.

The Cycling Network Plan uses the route priority ratings of Top, High, Medium and Low to indicate the level of value the particular route brings to the cycling network. The following nine cycling inputs determine the routes and scores shown on the Cycling Network Plan:

- Current Cycling Demand
- Potential Cycling Demand
- Trip Generators
- Transit Access
- Connectivity
- Coverage
- Barriers
- Safety
- Equity

Current Cycling Demand, Safety and Coverage are weighted higher in the analysis scores. Priority ratings are described in detail below.

- Top priority routes were routes that scored highly across most, if not all, inputs. These are found mostly on arterial roads that connect to many destinations and transit.
- High priority routes scored highly against most inputs.
- Medium priority routes scored highly in some inputs or scored well across many inputs.
- Low priority routes are mostly local neighbourhood routes with parallel route alternatives

Based on the above analysis, Finch Avenue East is classified as a **High Priority** cycling route along the proposed transit corridor.

Although there are no immediate plans for cycling facilities in the corridor, the following cross-sections illustrate conceptual options for future integrated cycling routes on the Finch East corridor. The cross-sections assume that the current lane configuration would be maintained. If a lane reduction or road diet is feasible, the preferred cross-section would be different from what is shown below.

East of Bayview Avenue, the land use patterns are more suburban; therefore, in-boulevard facilities are preferred for this section with cycle tracks preferred from Yonge Street to Bayview Avenue. The four-lane 36m ROW cross-section includes a bike-share dock to facilitate first and last-mile travel to the bus stop.

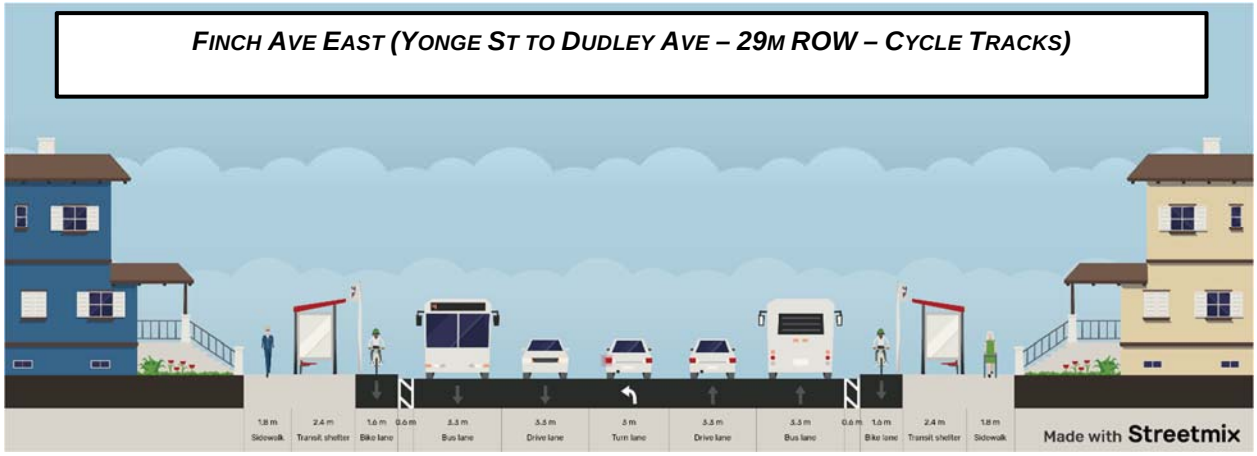


FIGURE 6: FINCH AVENUE EAST – CONCEPTUAL CROSS-SECTION FOR 29-METRE ROW

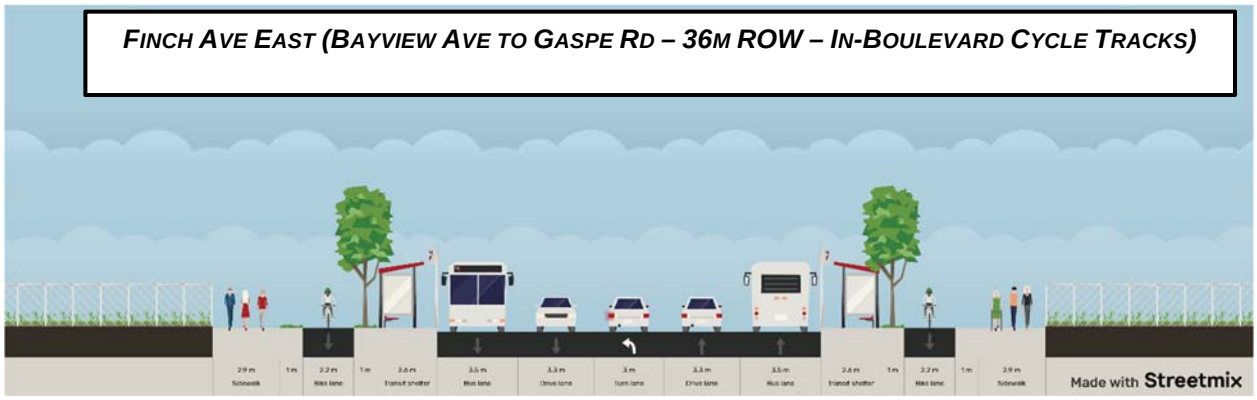


FIGURE 7: FINCH AVENUE EAST – CONCEPTUAL CROSS-SECTION FOR 36-METRE ROW

In the interim, a few alternative cycling routes can be used until an ultimate scenario can be implemented; however, these alternative routes do not cover the entire corridor. These routes are listed in Table 5.

TABLE 5: INTERIM ALTERNATIVE CYCLING ROUTES

From	To	Alternative Route
Willowdale Ave	Maxome Ave	Olive Ave
Leslie St	Brahms Ave	Rameau Dr
Pharmacy Ave	Bridletown Cir	Pinemeadow Blvd/Bridleton Cirl
Bridletown Cir	Birchmount Rd	L'Amareaux Dr
Birchmount Rd	Wayside Ave	Silver Springs Blvd
Alexmuir Blvd	Brimley Ave	Deepdale Dr
Brimley Ave	Sandhurst Cir	Chartland Blvd S
Sandhurst Cir	McCowan Rd	Sandhurst Circle

Safety

Collision History

The City of Toronto's Vision Zero 2.0, which is an update to the original Vision Zero Road Safety Plan from 2016, was adopted in 2019. Vision Zero Road Safety Plan is a pledge to improve safety across the City using a data-driven and targeted approach, focusing on locations where improvements are most needed.

Figure 8 shows the number of killed and seriously injured (KSI) collisions along the Finch Avenue East corridor. There is a high concentration of KSI collisions at the Bridletowne Circle intersection and Warden Avenue intersection.

A 2013[1] study in Melbourne, Australia, found that bus priority treatments have significantly reduced the number of fatal and seriously injured people in collisions. Despite concerns regarding the interaction of buses and vehicles at merging or turning sections, the overall conclusion was that converting general-purpose lanes into bus lanes reduced accidents.

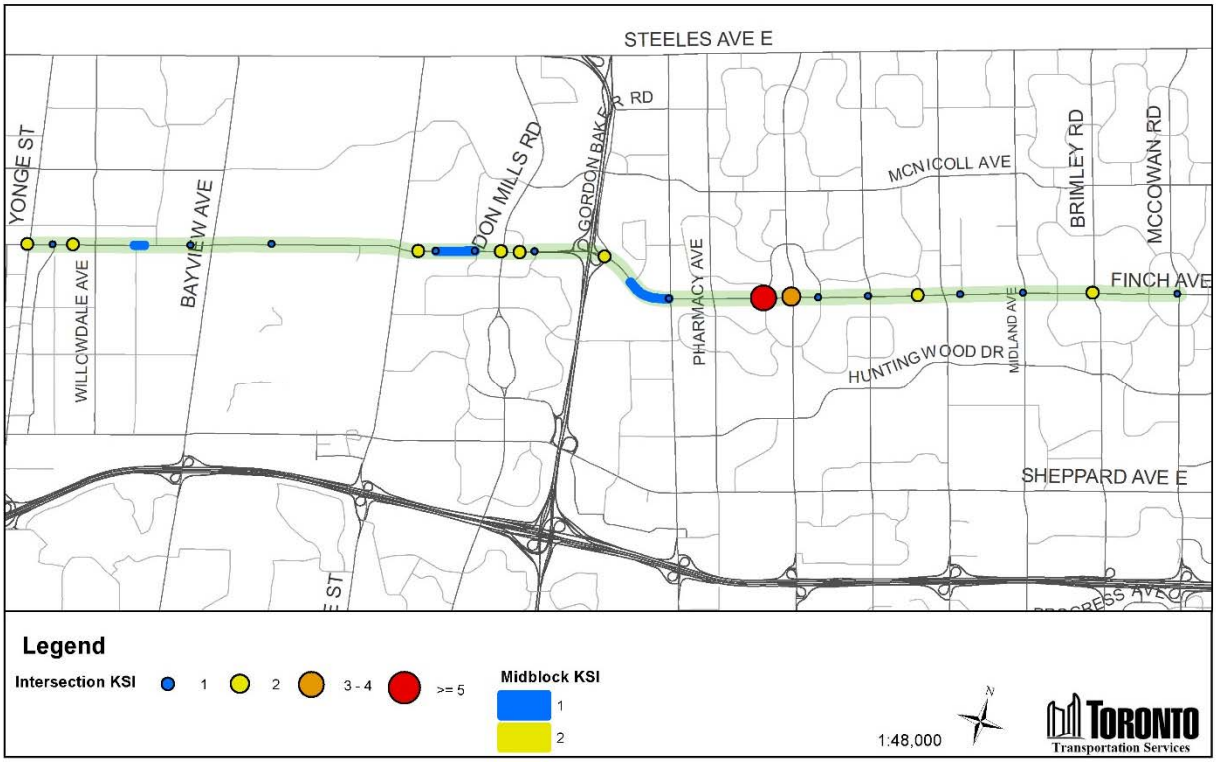


FIGURE 8: FINCH EAST CORRIDOR – KSI COLLISIONS – 2014 TO 2018

Vision Zero Initiatives

As part of the initial Vision Zero Road Safety Plan and the Vision Zero 2.0 update, several measures have been implemented along the corridor to address road safety concerns. The following Vision Zero measures, listed in Table 6 and shown in Figure 9 have been implemented since July 2016. These measures align and support the proposed bus lane along the Finch East corridor.

[1] Goh, K. K., Currie, G., Sarvi, M., & Logan, D. (2013, January 1). Road Safety Benefits from Bus Priority: An Empirical Study. *Transportation Research Record*, pp. 41-49.

TABLE 6: 2016 TO 2020 VISION ZERO INITIATIVES

Vision Zero Measure	Location
Red Light Cameras	• Finch Ave E and Willowdale Ave • Finch Ave E and Leslie St • Finch Ave E and Birchmount Rd • Finch Ave E and Brimley Rd • Finch Ave E and Gordon Baker Rd / Finch E 404 N Ramp
Speed Limit Reduction	• Finch Ave E: Yonge St to McCowan Rd
Senior Safety Zones	• Finch Ave E: Bayview Ave
School Safety Zones	• Finch Public School (west of Bayview Ave)
Community Safety Zones	• Finch Ave E - Bayview Ave to 100 West Of Estelle Ave • Finch Ave E - Bridletowne Cir to Birchmount Rd
Leading Pedestrian Intervals	• Finch Ave E and Skymark Dr / Private Access • Finch Ave E and Alexmuir Blvd / Chartland Blvd S
Audible Pedestrian Signals	• Finch Ave E and Bayview Ave • Finch Ave E and Victoria Park Ave • Finch Ave E and Au Large Blvd / Seneca Hill Dr • Finch Ave E and Willowdale Ave • Finch Ave E and Midland Ave
Flashing Beacons	• Finch Public School (west of Bayview Ave)
Watch Your Speed Signs	• Finch Public School (west of Bayview Ave)

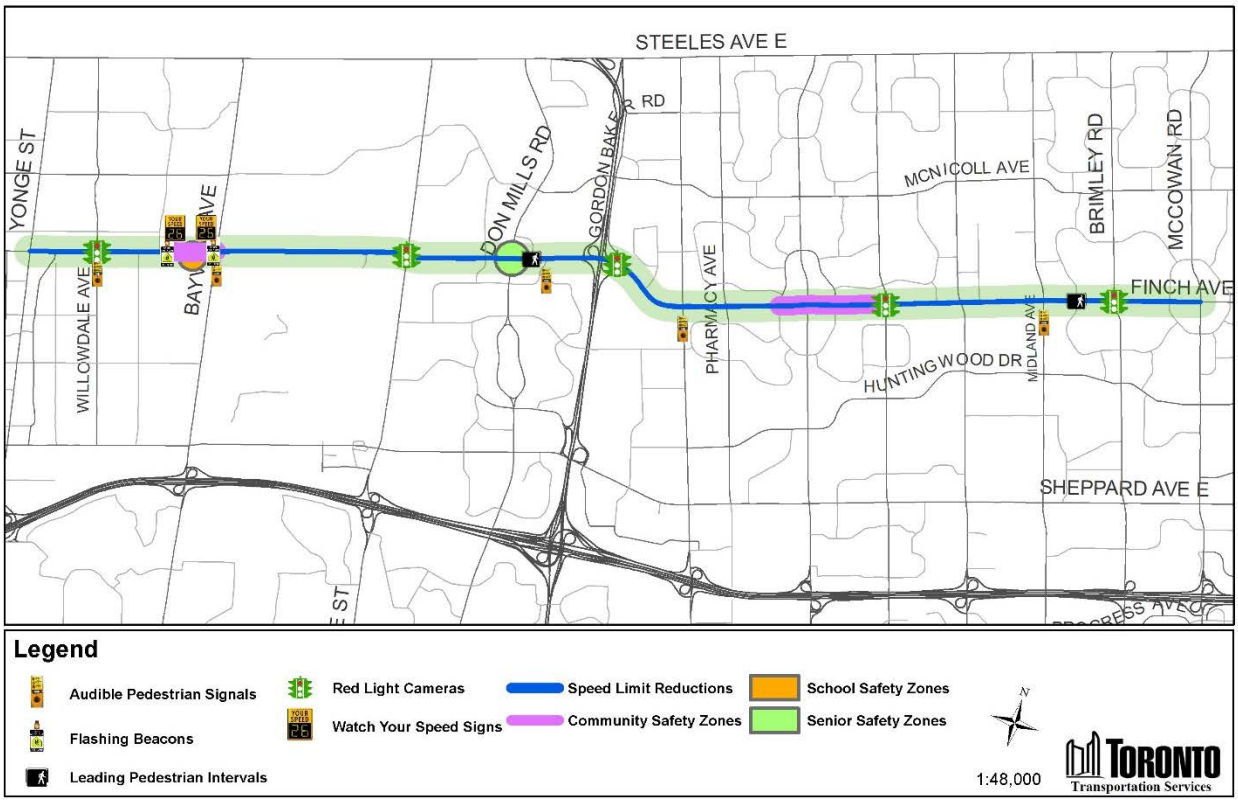


FIGURE 9: FINCH EAST CORRIDOR – VISION ZERO MEASURES

Equity

The City strives to apply an equity lens to its activities to identify and remove barriers and to support best practices in planning, budgeting, implementation and evaluation of its programs and services, including transportation investments.

Specifically, equity-seeking communities, who have been historically reliant on public transit as a mode of transportation, would benefit from reliable service through the implementation of bus lanes.

In March 2014, City Council adopted the Toronto Strong Neighbourhoods Strategy 2020. The report introduced a Neighbourhood Equity Score for establishing Neighbourhood Improvement Areas (NIAs). The five variables that constitute the Neighbourhood Equity Score are Economic Opportunities, Social Development, Healthy Lives, Participation in Decision-Making and Physical Surroundings. The Neighbourhood Equity Score ranges from 0 to 100; the lower the score, the more equity-seeking a Neighbourhood is. Scores that fall below the recommended Neighbourhood Equity Benchmark are designated as NIAs.

Although the Finch East corridor does not cross any areas that fall within Neighbourhood Improvement Areas (NIAs), as shown in Figure 10, the corridor crosses some areas with low Equity Index Score, mainly east of Victoria Park Avenue.

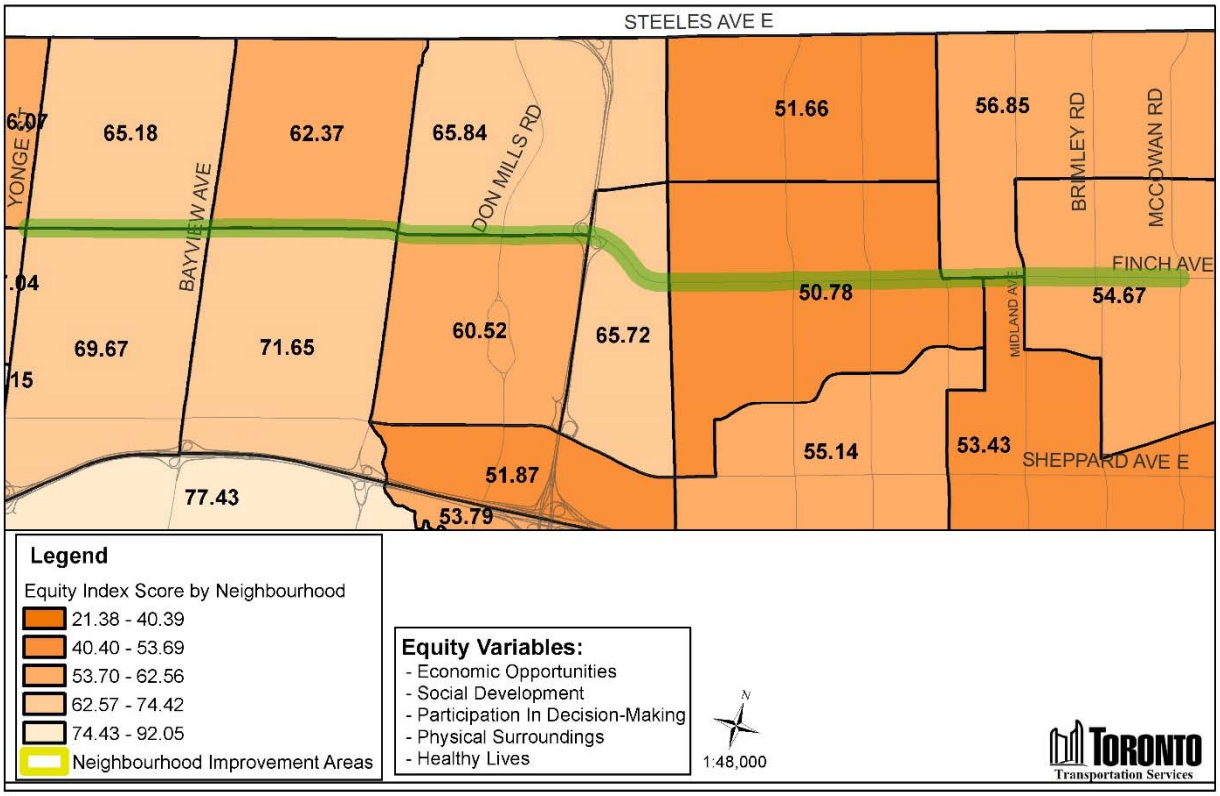


FIGURE 10: NEIGHBOURHOOD EQUITY INDEX

In November 2019, City Council approved the Poverty Reduction Strategy 2019-2022 Term Action Plan. The planned bus lane advances Action 7.2.1. Explore bus transit lanes on heavily used bus corridors in the inner suburbs to improve speed and reliability of existing transit service of the Action Plan.

Existing Traffic Conditions

It is essential to understand the current traffic service levels and how it may perform if a bus lane is introduced on the corridor. The Finch East corridor extends from the Finch Subway Station at Yonge Street to McCowan Road in the east. Transportation Services and TTC are currently undertaking Phase 3 of the Surface Transit Operational Improvement Study (STOIS 3). One of the objectives of the study was to provide a detailed review of current transit operations along four (4) corridors, with Finch East being one of them. Table 7 summarizes areas of interest extracted from site observations and the analysis of the data collected for STOIS 3.

TABLE 7: FINCH AVENUE EAST - AREAS OF INTEREST

Area of Interest	Identified Sources of Issues
Don Mills Road to Victoria Park Avenue, encompassing Seneca College and Highway 404	• High traffic volume from Highway 404 and limitation of roadway capacity to accommodate • Long signal delays at Don Mills Road and Victoria Park Avenue • Large traffic and pedestrian volumes to and from Seneca College
McCowan Road and surrounding segments	• Low speeds, frequent and long signal delays and frequent occurrences of congestion • Lack of left turn signal phase from EB Finch onto NB McCowan • Heightened traffic accessing and egressing Woodside Square
Kennedy Road	• Lowest speeds along the Finch corridor • Frequent and long signal delays and frequent occurrences of congestion
Warden Avenue	• Low speeds • High traffic volumes
Bayview Avenue	• Long signal delay and large traffic volumes in the WB direction • Heightened traffic from Finch Public School
Leslie Street	• Long signal delays and large traffic volumes • Far-side bus stops require buses to cross the right-turning traffic from Leslie Street onto Finch Avenue to access the bus stops

Network Impacts of Bus Lane

Preliminary analysis was undertaken to identify the potential traffic impacts, including traffic infiltration, in the area of the Steeles West corridor upon implementing the enhanced bus transit priority measures. Current Average Daily Traffic counts (ADTs) along the arterials in the area suggest that the conversion of a vehicle lane into a bus lane would have minimal impact to traffic flow over a 24-hour period. The City's regional travel demand model supports these findings. Using conservative planning level estimates for vehicle capacity, regional travel demand modelling results indicate that the proposed lane conversion would leave most of Finch Avenue East at or under capacity from an auto traffic perspective. The regional

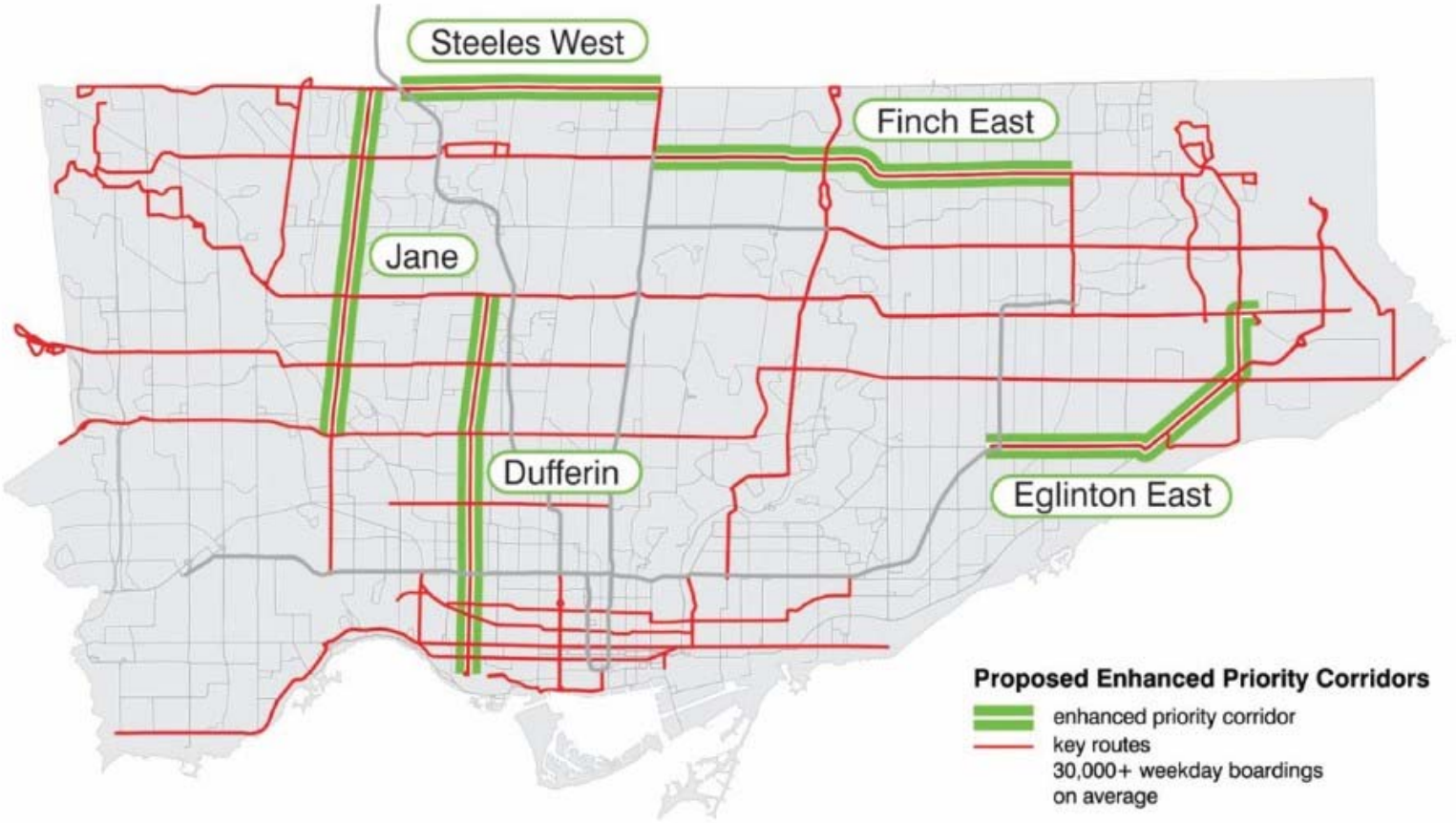
travel demand model identified some bottlenecks, such as east of Highway 404 and east of Brimley Road, and further analysis will be undertaken to address these and inform the detailed design process.

From an infiltration perspective, the City's regional travel demand model was run to simulate the impact of the lane conversion along the subject corridor. The findings indicated that some drivers would choose other routes in response to the lane conversion, and, that the magnitude of the diverted traffic can be generally absorbed without exceeding the capacity of the surrounding roadway network. As such, the overall potential for traffic infiltration on local streets in the area is anticipated to be low, and the impact of infiltration on surrounding arterials given the above context is anticipated to be minimal. Further analysis will be performed to refine these findings so they may inform the detailed design process.

Recommendation

The Finch East corridor should be considered as **Priority C** for implementing bus lanes in the next five years, as further study is recommended in order to gain a better understanding of the potential impacts that enhanced surface transit priority may have on the broader transportation network in these areas. Specifically, further analysis and collaboration with the MTO is required for the segment around the Highway 404 interchange.

BUS LANE IMPLEMENTATION PLAN



Steeles West Priority Corridor

TORONTO

July 2020

Table of Contents

Introduction

The planned Steeles Avenue West bus transit corridor, hereafter referred to as "Steeles West", runs 7.9 kilometres along Steeles Avenue West, beginning at the entrance to Pioneer Village Station in the west and ending at Yonge Street in the east, as illustrated in Figure 1. Steeles Avenue is a major arterial road that sits on the boundary between the City of Toronto along the southern side and York Region along the northern side of the corridor. Although it is a boundary road, operations of Steeles Avenue fall to the City of Toronto. Steeles Avenue is a six-lane road from the west end of the corridor to Bathurst Street, after which it narrows to four lanes with a centre turning lane. One block west of Yonge Street, the corridor widens again to six lanes. There is a variety of land uses throughout the corridor.

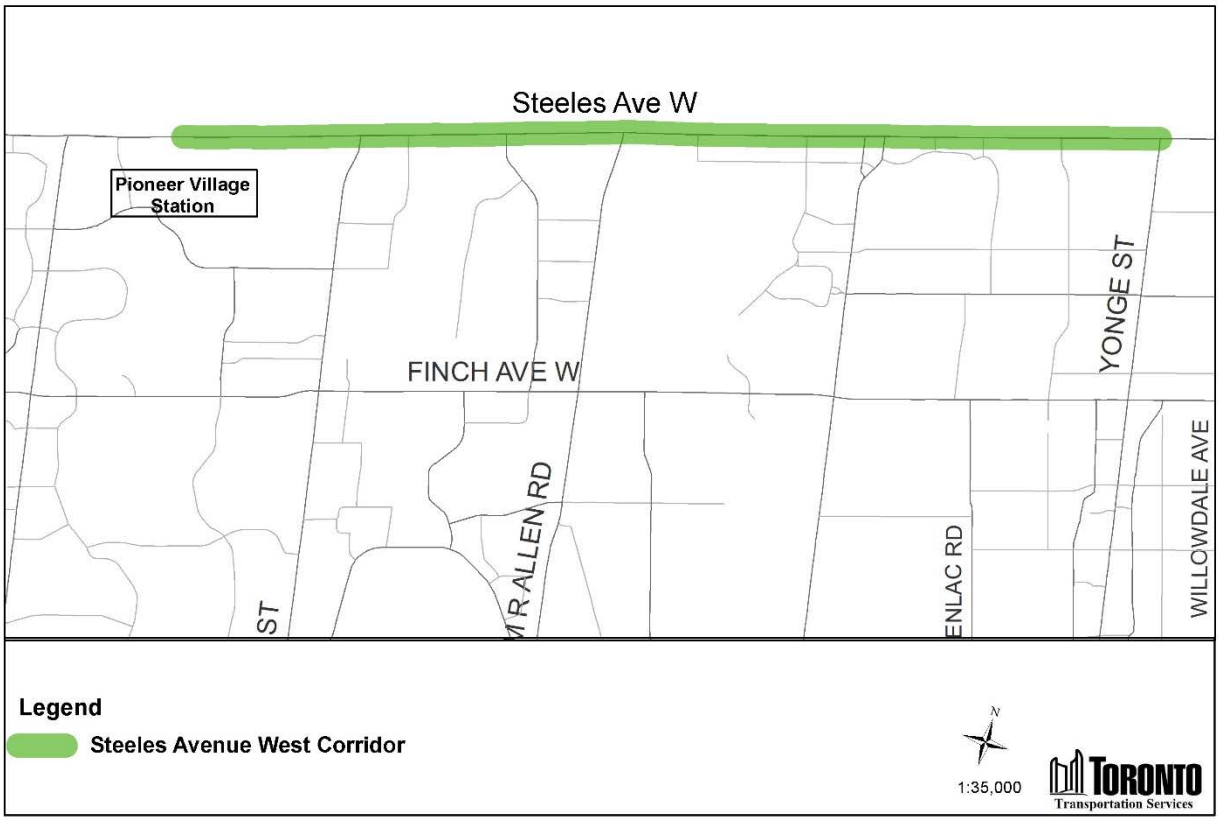


FIGURE 1: PROPOSED STEELES AVENUE WEST BUS LANE CORRIDOR

Land Use

Residential/ Commercial

East of the Core Employment Areas, the land uses and built form along the corridor are similar in both the City of Toronto and York Region. Along the south side, the corridor abuts mostly Neighbourhoods, with Apartment Neighbourhoods and Mixed Use Areas at the intersections with Bathurst Street and Yonge Street. The low-rise residential housing in the Neighbourhoods does not front on to Steeles Avenue, with the majority of the lots being rear-facing. Many of the high-rise residential towers have large setbacks, and the majority do not have direct access to the corridor.

Centrepoint Mall at Yonge and Steeles is the main retail destination along the corridor. There is also some retail use at Bathurst Street and Dufferin Street. Big-box stores with large parking lots make up the majority of the retail built form along the corridor.

Employment/ Institutional

In the City of Toronto, the west end of the corridor begins at York University, an important postsecondary Institutional Area. To the east of the campus is a large Employment Area with a mix of commercial and light industrial uses, with retail alongside logistics and manufacturing. There is similar employment land use in York Region along this section of the corridor.

Development Applications

The significant development applications along the corridor include:

- 1881 Steeles Avenue West (under review): One eleven-storey, two twelve-storey and two 27 storey buildings. The proposal would have 1,171 residential units, 3,502 square metres of retail/commercial space, and 1,206 parking spaces.
- 755 Steeles Avenue West (under review): A ten-storey residential building with a single storey, 950 square metre retail building at the corner of Steeles Avenue West and Village Gate.
- 765 Steeles Avenue West (under review): A ten-storey residential apartment building consisting of 129 residential units and an eight-storey residential apartment building with 80 residential units. A total of 178 parking spaces will be provided.

Parks and Green Space

Just east of Dufferin Street, the corridor crosses the West Don Valley Open Space - a Natural Area that is part of the City of Toronto's extensive ravine system

Mobility

The Steeles West corridor connects to several higher-order transit routes. It runs between the newly-constructed Line 1 Extension and the planned Line 1 Yonge-University extension (north on Yonge Street). At the west end, the corridor connects to Pioneer Village Station, and at the east end, it terminates at the location of the planned Steeles Station, at the intersection of Yonge Street and Steeles Avenue. The closest existing station on the east side of the corridor is Finch Station, located two kilometres south of the intersection of Yonge and Steeles.

The corridor crosses the Barrie GO Rail line; although York University GO Station is just a kilometre south of Steeles Avenue, it has no direct access from the corridor. Due to its location along the northern boundary of the City of Toronto, Steeles Avenue West is utilized by both TTC and York Region Transit bus routes.

Bus routes along this corridor provide service to the DUKE Heights BIA.

There is no on-street parking along the Steeles West corridor, though most establishments along the corridor have private parking lots.

There is no cycling infrastructure along the corridor nor on any roads that it crosses, though there are multi-use trails in Natural Areas that connect to the corridor. The pedestrian realm is consistent throughout the corridor: narrow sidewalks in the boulevard. The sidewalks may be situated next to the curb or set back from the paved roadway with sod/grass. Although there are many trees along the corridor, there is limited street furniture. The built form fronting the corridor presents a challenge to walkability; destinations are spaced far apart, and long stretches of the corridor are not pedestrian-friendly.

Assessment Criteria

Transit Characteristics

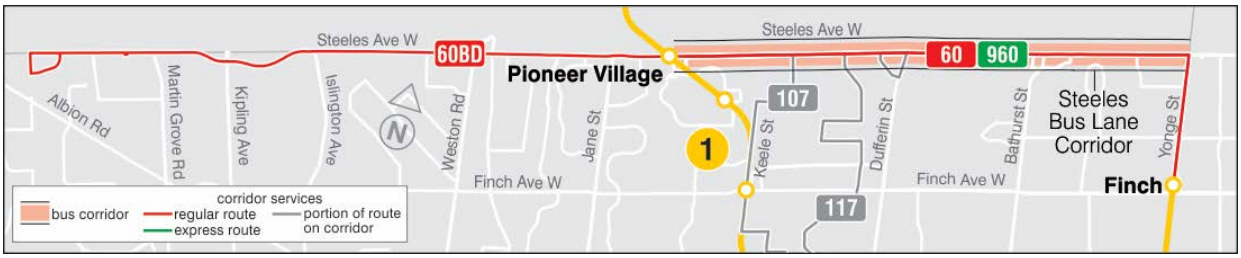


FIGURE 2: TTC ROUTES ALONG STEELES WEST

Two bus routes operate on the 7.9km corridor on Steeles Avenue West from Pioneer Village Station to Yonge Street. As shown on the map above (Figure 2), route 60 Steeles West and 960 Steeles West Express utilize the entire 7.9km corridor.

In October 2019, these two TTC routes accommodated over 34,000 customers on an average weekday. Over 23,000 of those customers (70%) would benefit from a bus only lane (customers boarding and travelling on the corridor).

The overall reliability of these two routes in October 2019 is moderate-poor with an average all day on-time performance between 56% and 64% and an average PM peak on-time performance between 41% and 45%(scheduled headway performance from end terminals). Table 1 below indicates the October 2019 on-time performance by route.

An initial analysis of headways for October and November 2019 is shown in Figure 3. Each dot on the graph represents the observed time between two vehicles at the peak point of the corridor (Steeles Avenue West and Yonge Street). The maximum headway line is the headway value where it is calculated that if transit vehicles operated at this frequency, they would be operating at its crush capacity as it approaches the route's busiest segment, and customers would be unable to board. The minimum headway line is the headway value where it is calculated that if transit vehicles operated at this frequency, they would be carrying fewer than 10 passengers per bus which is approximately one-third of the seated capacity for a 12m long bus. As seen on the graph the westbound headways on Steeles Avenue West at Yonge Street have a significant amount of variability with only 50% headways between the maximum and minimum headway limits.

The average PM peak speed of buses on this corridor is also poor at about 17.5km/h. On average, it takes 27 minutes for a TTC customer to travel from Yonge Street westbound to Pioneer Village Station. When compared to the average auto travel time (HERE data, October 2019), which is 24.2 minutes, transit is 12% longer than driving a personal vehicle.

TABLE 1: ROUTE OPERATING CHARACTERISTICS

Bus Route	Transit Speed (PM peak travel time in peak direction)	All-day Reliability (on-time performance)	PM peak hour Reliability (on-time performance)	Weekday Ridership along the corridor Overall (along bus lane corridor)
60 Steeles West	17.5 km/h	64%	41%	34,000
960 Steeles West Express	(27 min)	56%	45%	(23,900)

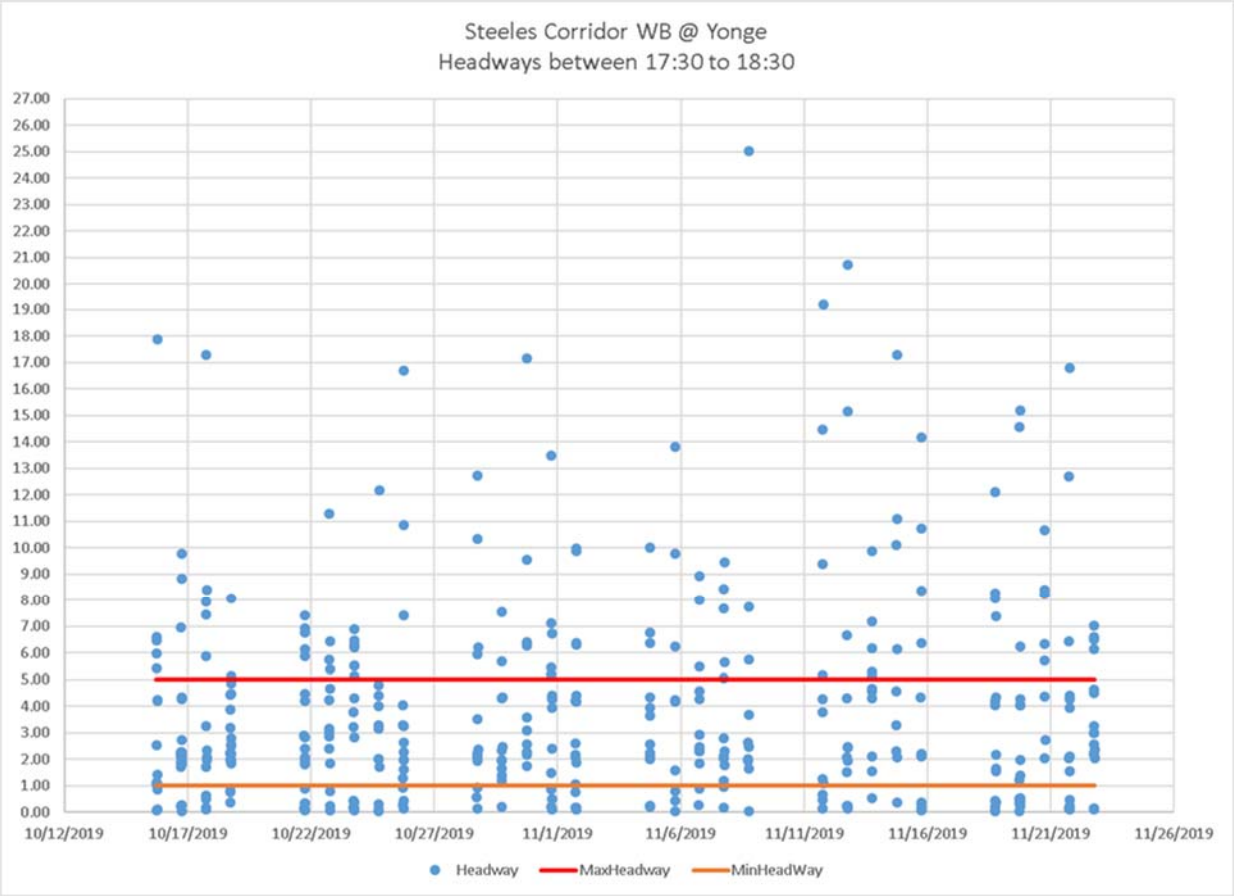


FIGURE 3: ACTUAL WESTBOUND HEADWAYS AT STEELES AVENUE WEST AND YONGE STREET DURING THE BUSIEST HOUR (17:30-18:30)

Ease of Implementation

Right-of-Way Review

Steeles Avenue West has a 44-metre right-of-way (ROW) between Pioneer Village Stration and Keele Street and a 36-metre ROW between Keele Street and Yonge Street. The majority of the segment consists of six general purpose lanes, three per direction and a two-way centre left-turn lane (TWLTL) in some sections. The section between Bathurst Street and Hilda Avenue narrows down to four lanes of travel, two lanes per direction and a two-way left-turn lane in the middle.

Pavement widths vary from 15 metres in the 5-lane cross-section to 26.4 metres in the 7-lane cross-section. Table 2 shows the average right-of-way widths for all sections.

TABLE 2: RIGHT-OF-WAY CHARACTERISTICS

From	To	ROW (m)	Pavement Width (m)	No of Lanes
Pioneer Village Station	Keele Street	44	25.5 (incl. median)	6
Keele Street	Hidden Trail	36	25.3 – 26.3 (incl. TWLTL)	7
Hidden Trail	Carpenter Road	36	21.2	6
Carpenter Road	Bathurst Street	36	26.1(incl. TWLTL)	7
Bathurst Street	Hilda Avenue	36	15 (incl. TWLTL)	5
Hilda Avenue	Yonge Street	36	26.4	7

Note: TWLTL – Two-way left-turn lane

Proposed Lane Configuration

Notwithstanding reducing lane widths to minimum acceptable guidelines and removing the centre two-way left-turn lanes, it is not feasible to implement a bus lane and maintain the same number of general purpose lanes along the Steeles West corridor.

Without road widening, the most feasible option is to convert the through curb lanes into an exclusive bus lane and keep the two-way left-turn lanes in as many sections as possible. This means assigning a 4 + 2 lane configuration (two general purpose lanes and one bus lane in each direction). The exception is the section of Steeles Avenue West between Bathurst Street and Hilda Avenue, where the cross-section narrows from six lanes to four, allowing for either one bus lane and one general purpose lane in each direction or maintaining the two general purpose lanes per direction.

Table 3 summarizes the lane configuration for each segment on the corridor, assuming at a minimum a 3.3-metre wide bus lane and a 3.0-3.3-metre general purpose lane, as per the City's Lane Widths Guidelines. Left-turn lanes would be maintained where pavement widths allow. Detailed lane configuration and lane widths will be determined for each segment of the corridor during the detailed design stage.

TABLE 3: PROPOSED LANE CONFIGURATION

From	To	Lane Configuration
Pioneer Village Station	Keele Street	• 2 Bus lanes • 4 General purpose lanes
Keele Street	Hidden Trail	• 2 Bus lanes • 4 General purpose lanes • 1 TWLTL
Hidden Trail	Carpenter Road	• 2 Bus lanes • 4 General purpose lanes
Carpenter Road	Bathurst Street	• 2 Bus lanes • 4 General purpose lanes • 1 TWLTL
Bathurst Street	Hilda Avenue	• 2 Bus lanes • 2 General purpose lanes OR • 4 General purpose lanes
Hilda Avenue	Yonge Street	• 2 Bus lanes • 4 General purpose lanes • 1 TWLTL

Note: TWLTL – Two-way left-turn lane

Cross-section samples of the segments above are illustrated in the Figures below.

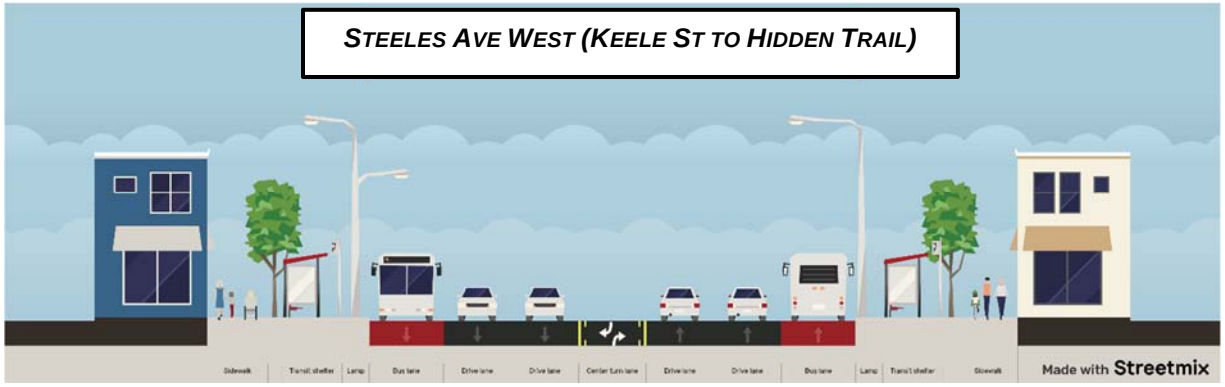


FIGURE 4. STEELES AVENUE WEST – 4 GENERAL PURPOSE LANE + 2 BUS LANE CROSS-SECTION

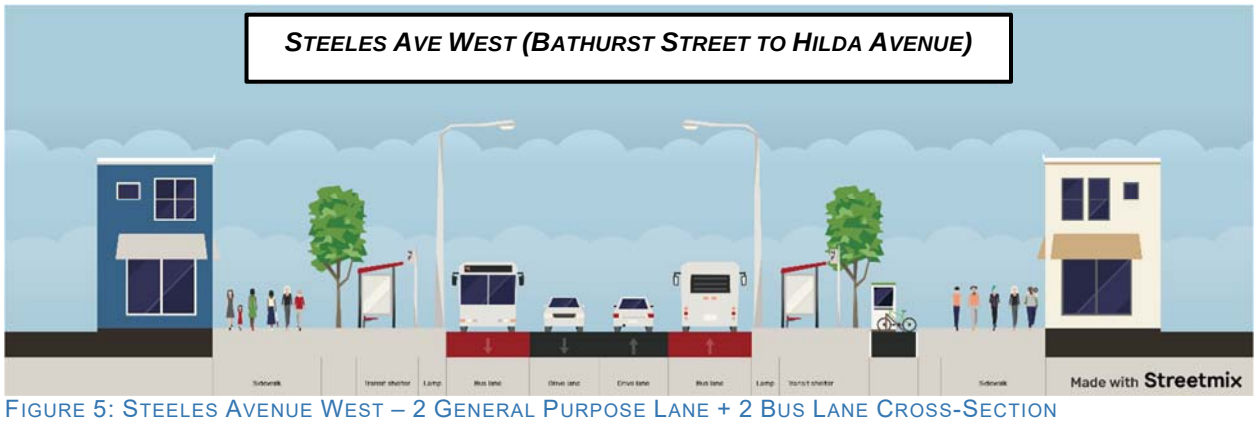


FIGURE 5: STEELES AVENUE WEST – 2 GENERAL PURPOSE LANE + 2 BUS LANE CROSS-SECTION

Parking Impacts

A review of parking along the corridor was undertaken to assess the impact of the proposed bus lane on parking supply. Typically, bus lane corridors prohibit stopping or parking to ensure smooth bus operations. For Steeles West, the segments of the proposed bus lane corridor have neither on-street parking (i.e., pay-and-display parking machines) nor are they included in a residential permit parking area.

Capital Transportation Projects (2020–2025)

It is critical to review and coordinate the proposed bus lane with other planned capital works projects. The City has approval to initiate an Environmental Assessment to widen Steeles between Bathurst and Hilda. Widening this section of Steeles would facilitate the operations of the proposed bus lane by eliminating the existing bottleneck. Table 4 summarizes the planned capital works for the next five years in the corridor. It also includes the pavement quality for those segments.

TABLE 4: 5-YEAR CAPITAL WORKS PROGRAM

From	To	Proposed Work Type	Year	Pavement Quality
At Don River West Branch		• Bridge Rehabilitation	2022-2024	Poor
Carnival Crt	Carpenter Rd	• Watermain Replacement	2021	Poor
Bathurst St	Hilda Ave	• Road Widening • Road Reconstruction	By 2025	Poor

Cycling Network Plan

The City of Toronto Official Plan promotes a complete streets approach in which the design of a street balances the needs and priorities of the various users and uses within the right-of-way. The safe and efficient movement of pedestrians, cyclists, transit users, goods and services vehicles, emergency vehicles, and motorists across the network should be considered when implementing modifications to a street or corridor. The Cycling Network Plan builds on the Official Plan policies and establishes a priority framework for major city-wide cycling routes. It also provides the next steps for the effective implementation of proposed cycling infrastructure.

The Cycling Network Plan uses the route priority ratings of Top, High, Medium and Low to indicate the level of value the particular route brings to the cycling network. The following nine cycling inputs determine the routes and scores shown on the Cycling Network Plan:

- Current Cycling Demand
- Potential Cycling Demand
- Trip Generators
- Transit Access
- Connectivity
- Coverage
- Barriers
- Safety
- Equity

Current Cycling Demand, Safety and Coverage are weighted higher in the analysis scores. Priority ratings are described in detail below.

- Top priority routes were routes that scored highly across most, if not all, inputs. These are found mostly on arterial roads that connect to many destinations and transit.
- High priority routes scored highly against most inputs.
- Medium priority routes scored highly in some inputs or scored well across many inputs.
- Low priority routes are mostly local neighbourhood routes with parallel route alternatives

Based on the above analysis, Steeles Avenue West is classified as a **High Priority** cycling route along the proposed transit corridor.

Although there are no immediate plans for cycling facilities in the corridor, the following cross-sections illustrate conceptual options for future integrated cycling routes on the Steeles West corridor. The cross-sections assume that the current lane configuration would be maintained.

Steeles Avenue West is located in a suburban context with higher speeds (60km/hr and 50 km/hr), and therefore, in-boulevard facilities are preferred. For the 44-metre right-of-way (ROW) section, it is proposed to add a bike-share dock at the transit shelters because there is ample ROW to include this amenity and will support first and last-mile travel to the bus stop.

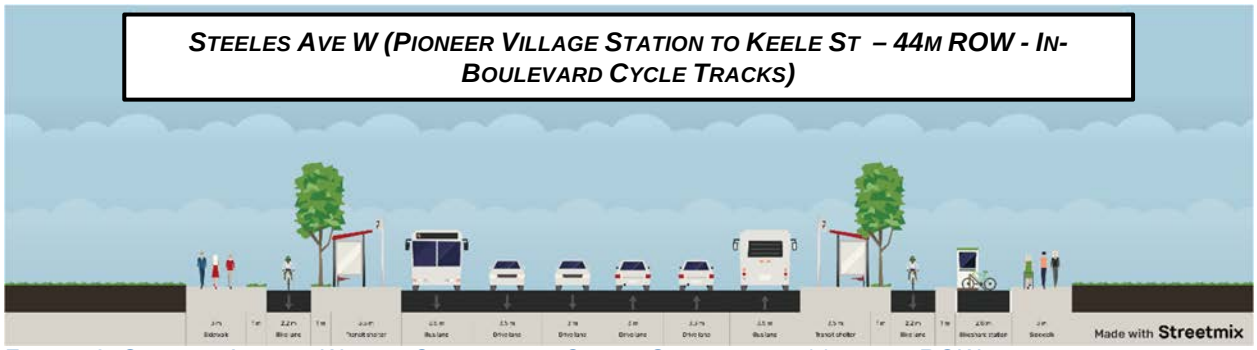


FIGURE 6: STEELES AVENUE WEST – CONCEPTUAL CROSS-SECTION FOR 44-METRE ROW

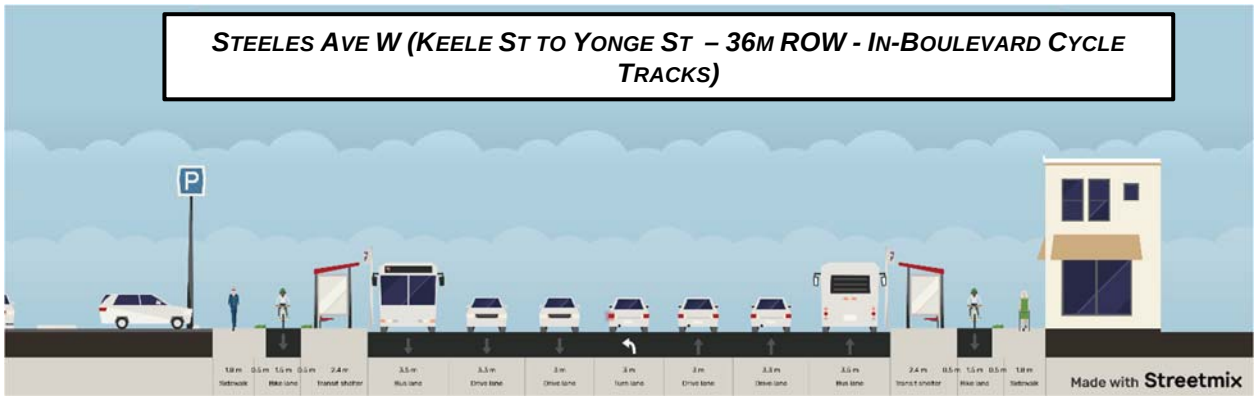


FIGURE 7: STEELES AVENUE WEST – CONCEPTUAL CROSS-SECTION FOR 36-METRE ROW

In the interim, a few alternative cycling routes can be used until an ultimate scenario can be implemented; however, these alternative routes do not cover the entire corridor. These routes are listed in Table 5.

TABLE 5: INTERIM ALTERNATIVE CYCLING ROUTES

From	To	Alternative Route
Pioneer Village Station	Keele St	Ex York U Trail/Chimneystack Trail
Don River W Branch (E of Dufferin)	Carpenter Rd	Fisherville Rd
Bathurst St	Hilda Ave	Greenwin Village Rd/Green Bush Rd

Safety

Collision History

The City of Toronto's Vision Zero 2.0, which is an update to the original Vision Zero Road Safety Plan from 2016, was adopted in 2019. Vision Zero Road Safety Plan is a pledge to improve safety across the City using a data-driven and targeted approach, focusing on locations where improvements are most needed.

Figure 8 shows the number of killed and seriously injured (KSI) collisions along the Steeles Avenue West corridor. There is a high concentration of KSI collisions at the Keele Street intersection.

A 2013[1] study in Melbourne, Australia, found that bus priority treatments have significantly reduced the number of fatal and seriously injured people in collisions. Despite concerns regarding the interaction of buses and vehicles at merging or turning sections, the overall conclusion was that converting general-purpose lanes into bus lanes reduced accidents.

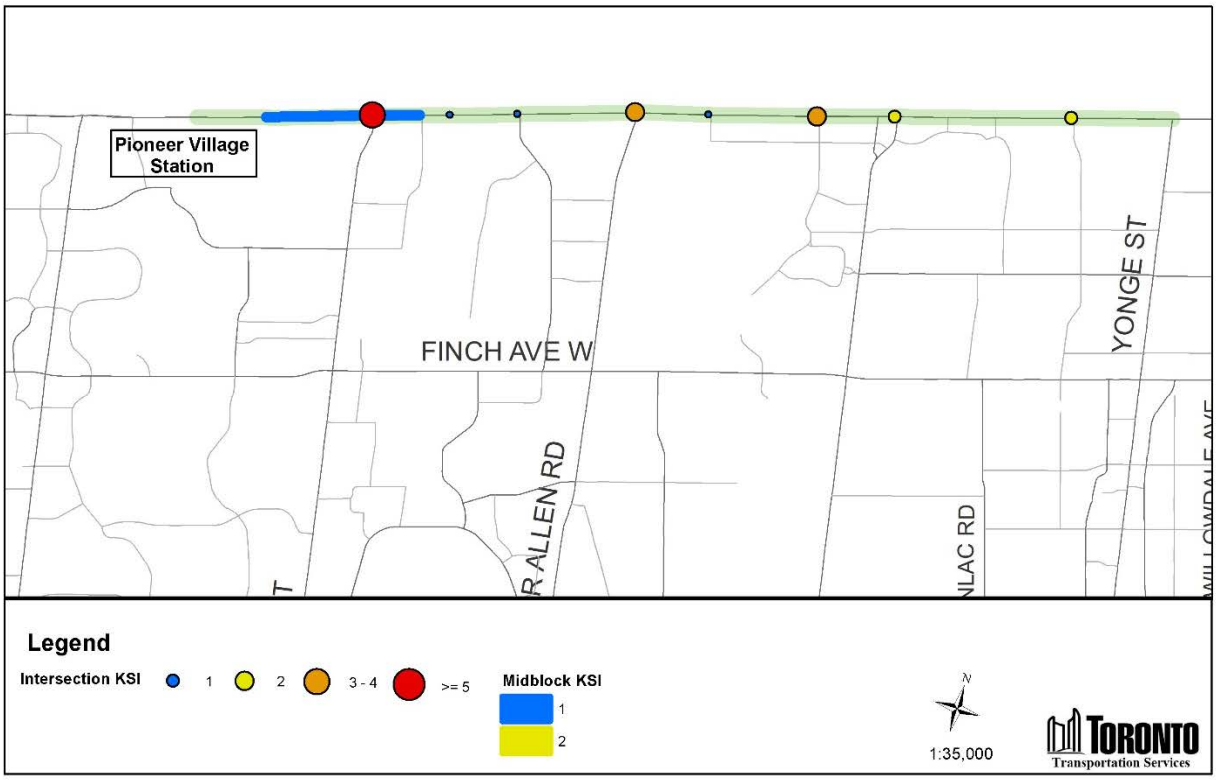


FIGURE 8: STEELES WEST CORRIDOR – KSI COLLISIONS – 2014 TO 2018

Vision Zero Initiatives

As part of the initial Vision Zero Road Safety Plan and the Vision Zero 2.0 update, several measures have been implemented along the corridor to address road safety concerns. The following Vision Zero measures, listed in Table 6 and shown in Figure 9 have been implemented since July 2016. These measures align and support the proposed bus lane along the Eglinton East corridor.

[1] Goh, K. K., Currie, G., Sarvi, M., & Logan, D. (2013, January 1). Road Safety Benefits from Bus Priority: An Empirical Study. *Transportation Research Record*, pp. 41-49.

TABLE 6: 2016 TO 2020 VISION ZERO INITIATIVES

Vision Zero Measure	Location
Red Light Cameras	• Steeles Ave W and Keele St • Steeles Ave W and Dufferin St • Steeles Ave W and Carpenter Rd / Private Access @ Shopping Centre • Steeles Ave W and Hilda Ave • Steeles Ave W and Yonge St
Turn Restrictions	• Steeles Ave W and Howard Moscoe Way
Speed Limit Reduction	• Steeles Ave W: Keele St to Yonge St
Senior Safety Zones	• Steeles Ave W and Bathurst Street
Audible Pedestrian Signals	• Steeles Ave W and Howard Moscoe Way • Steeles Ave W and Gerry Fitzgerald Dr / Futurity Gate • Steeles Ave W and 185m West Of Hidden Trl / Private Access • Steeles Ave W and Hidden Trl / Conley St • Steeles Ave W and Hilda Ave

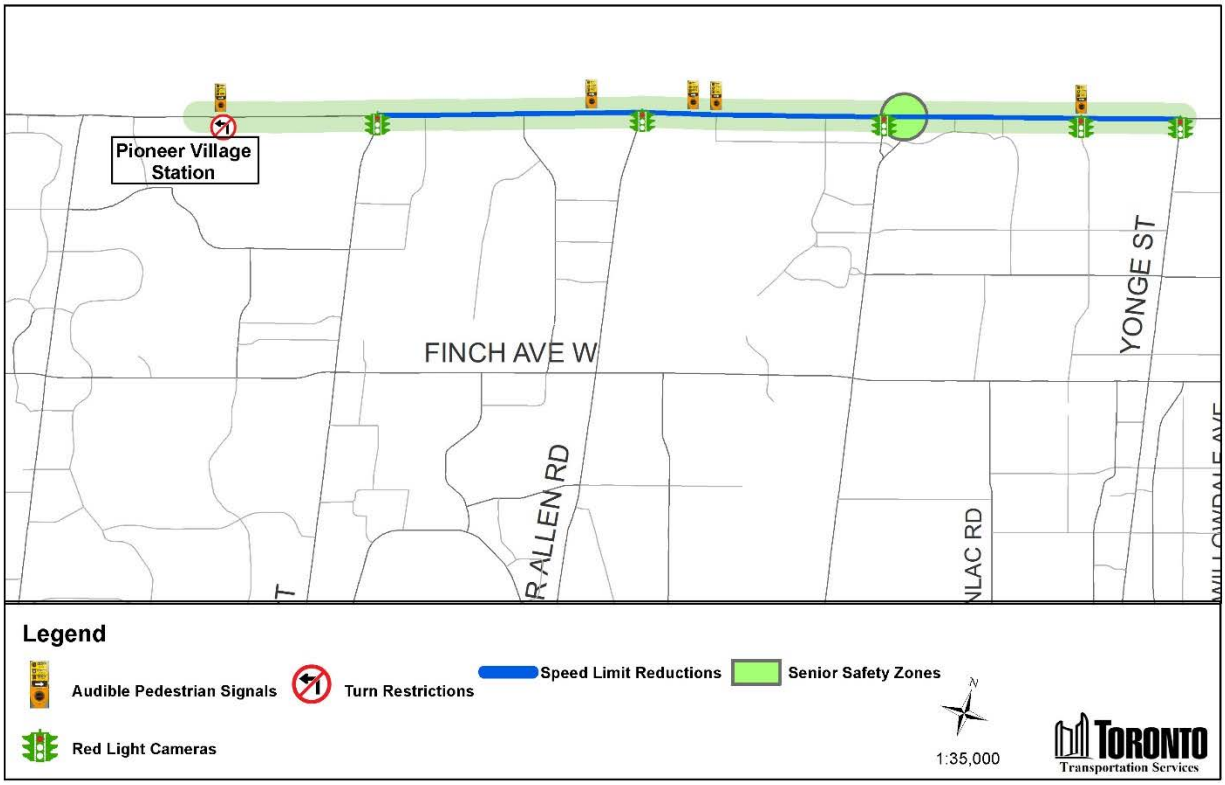


FIGURE 9: STEELES WEST CORRIDOR – VISION ZERO MEASURES

Equity

The City strives to apply an equity lens to its activities to identify and remove barriers and to support best practices in planning, budgeting, implementation and evaluation of its programs and services, including transportation investments.

Specifically, equity-seeking communities, who have been historically reliant on public transit as a mode of transportation, would benefit from reliable service through the implementation of bus lanes.

In March 2014, City Council adopted the Toronto Strong Neighbourhoods Strategy 2020. The report introduced a Neighbourhood Equity Score for establishing Neighbourhood Improvement Areas (NIAs). The five variables that constitute the Neighbourhood Equity Score are Economic Opportunities, Social Development, Healthy Lives, Participation in Decision-Making and Physical Surroundings. The Neighbourhood Equity Score ranges from 0 to 100; the lower the score, the more equity-seeking a Neighbourhood is. Scores that fall below the recommended Neighbourhood Equity Benchmark are designated as NIAs.

Approximately half of the Steeles West corridor crosses areas that fall within Neighbourhood Improvement Areas (NIAs), as shown in Figure 10.

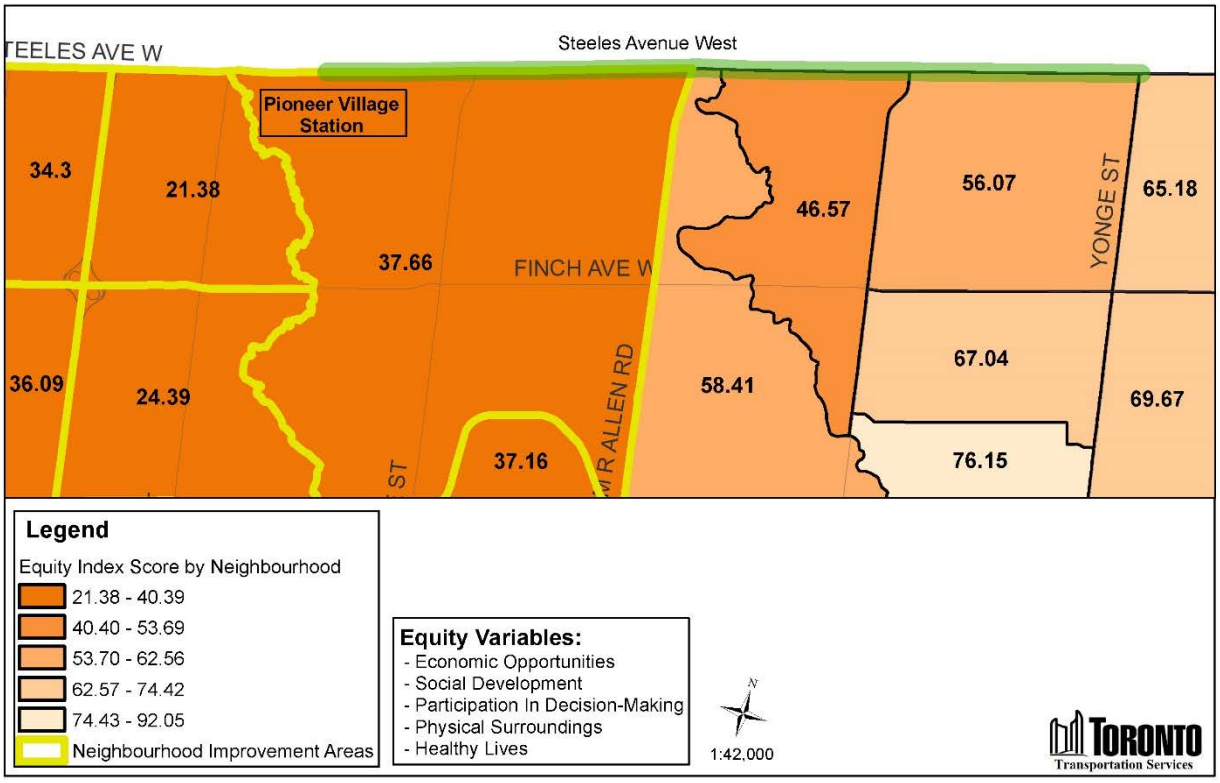


FIGURE 10: NEIGHBOURHOOD EQUITY INDEX

In November 2019, City Council approved the Poverty Reduction Strategy 2019-2022 Term Action Plan. The planned bus lane advances Action 7.2.1. Explore bus transit lanes on heavily used bus corridors in the inner suburbs to improve speed and reliability of existing transit service, of the Action Plan.

Existing Traffic Conditions

It is essential to understand the current traffic service levels and how it may perform if a bus lane is introduced on the corridor. The Steeles West corridor connects two subway stations, the Pioneer Village Station in the West and Finch Station on Yonge Street 2km south of Steeles Avenue West. Transportation Services and TTC are currently undertaking Phase 3 of the Surface Transit Operational Improvement Study (STOIS 3). One of the objectives of the study was to provide a detailed review of current transit operations along four (4) corridors, with Steeles West being one of them. Table 7 summarizes areas of interest extracted from site observations and the analysis of the data collected for STOIS 3.

TABLE 7: STEELES AVENUE WEST - AREAS OF INTEREST

Area of Interest	Identified Sources of Issues
Segments from Keele Street to Dufferin Street	• Large traffic volumes travelling to/from York Region (north of Steeles), resulting in large turning volumes. • Highly industrialized area on the north side of Steeles with many trucks and oversized vehicles travelling and occupying much of the road capacity. • Highly commercialized area on the south side of Steeles with many vehicles accessing and egressing
Bathurst Street and Carpenter Road segments	• Highly commercialized area at Bathurst and Steeles • Large traffic volumes travelling to/from York Region (north of Steeles) resulting in large turning volumes
Hilda Avenue signal	• Long signal delays

Network Impacts of Bus Lane

Preliminary analysis was undertaken to identify the potential traffic impacts, including traffic infiltration, in the area of the Steeles West corridor upon implementing the enhanced bus transit priority measures. Current Average Daily Traffic counts (ADTs) along the arterials in the area suggest that the conversion of a vehicle lane into a bus lane would have minimal impact to traffic flow over a 24-hour period. The City's regional travel demand model supports these findings. Using conservative planning level estimates for vehicle capacity, regional travel demand modelling results indicate that the proposed lane conversion would leave most of Steeles Avenue West at or under capacity from an auto traffic perspective. The

regional travel demand model identified some bottlenecks, such as east of Jane Street and east of Dufferin Street, and further analysis will be undertaken to address these and inform the detailed design process.

From an infiltration perspective, the City's regional travel demand model was run to simulate the impact of the lane conversion along the subject corridor. The findings indicated that some drivers would choose other routes in response to the lane conversion, and, that the magnitude of the diverted traffic can be generally absorbed without exceeding the capacity of the surrounding roadway network. As such, the overall potential for traffic infiltration on local streets in the area is anticipated to be low, and the impact of infiltration on surrounding arterials given the above context is anticipated to be minimal. Further analysis will be performed to refine these findings so they may inform the detailed design process.

Recommendation

The Steeles West corridor should be considered as **Priority C** for implementing bus lanes in the next five years based on the following assessment criteria:

- Poor transit speed and service reliability
- Overall ease of implementation (sufficient right-of-way with some impacts on two-way left-turn lanes, no parking impacts, widening opportunity planned within the next five years);
- High ridership and potential for improved service reliability;
- Equity (potential for improved transit service to equity-seeking communities);
- Low estimated traffic volumes diverted to parallel roads based on modelling results.