



REPORT FOR ACTION

Traffic Control Signals - St. Clair Avenue East and North Woodrow Boulevard

Date: February 27, 2019
To: Scarborough Community Council
From: Acting Director, Traffic Management, Transportation Services
Wards: Ward 20 – Scarborough Southwest

SUMMARY

This report is to obtain approval for the removal of the pedestrian refuge island located mid-block on St. Clair Avenue between North Woodrow Avenue and North Bonnington Boulevard.

Traffic studies reveal that the warrant or technical justification for the pedestrian refuge island is no longer met at this location since it fails the current environmental criteria for the number of lanes and road width. The refuge island should be replaced with Traffic Control Signals.

RECOMMENDATIONS

The Acting Director, Traffic Management, Transportation Services, recommends that:

1. City Council approve the installation of traffic control signals at the intersection of St. Clair Avenue East and North Woodrow Boulevard.
2. City Council authorize the removal of the pedestrian refuge island on St. Clair Avenue East, approximately 44 metres east of North Woodrow Boulevard, in conjunction with the installation of traffic control signals at the intersection of St. Clair Avenue East and North Woodrow Boulevard.

FINANCIAL IMPACT

The cost of removing the pedestrian refuge island and installing traffic control signals at St. Clair Avenue East and North Woodrow Boulevard would be approximately \$200,000. This installation will be considered in 2020, subject to the availability of funding and competing priorities.

DECISION HISTORY

This report addresses a new initiative.

COMMENTS

A pedestrian refuge island is currently located at on St. Clair Avenue approximately 44 metres east of North Woodrow Boulevard. It predominantly serves passengers using the TTC's St Clair bus route which has an eastbound stop located west of this crossing at North Woodrow Boulevard and a westbound stop located immediately to the west of this crossing. As a result of a public request about the safety of pedestrians crossing St. Clair Avenue using this pedestrian crossing island, Transportation Services Staff have reviewed the feasibility of installing traffic control signals at this mid-block location and at alternate intersections in this area.

The policy or technical criteria for the usage of a PRI is currently limited to a maximum five-lane cross-section roadway being approximately 16.4 metres wide. St. Clair Avenue in the vicinity of the subject PRI east of North Woodrow Boulevard is a four-lane cross-section with a width of approximately 18.5 metres, including a westbound bus lane and therefore exceeds the maximum width. This PRI no longer meets current City of Toronto guidelines and should be replaced by installing traffic control signals at the intersection of St. Clair Avenue east at North Woodrow Boulevard.

The following characteristics describe the area in the vicinity of 3030 Birchmount Road:

- St Clair Avenue East is a major arterial road with a four-lane (two lanes in each direction) configuration with a posted speed limit of 60 km/h and an 85th percentile operating speed (speed at or below which 85% of drivers travel) of 76 km/h for eastbound traffic and 77 km/h for westbound traffic.
- North Woodrow Boulevard is located between Kennedy Road and Birchmount Road, there is no left-turn storage lane at this location.
- A pedestrian refuge island is located approximately 44 metres east of North Woodrow Boulevard and traffic control signals are located approximately 445 metres to the east at Kennedy Road and approximately 355 metres to the west at Birchmount.

- The adjacent area of this location is comprised of residential detached housing, apartment buildings, with a cemetery on the north side.
- Toronto Transit Commission transit stops are located near side on St. Clair Avenue East at North Woodrow Boulevard.
- This section of St Clair Avenue has a daily two-way traffic volume of approximately 16,732 vehicles per day (vpd).
- Sidewalks are located on the north and south sides of St. Clair Avenue.
- The land uses in this area consist of single-family residential on the west side of Birchmount Road north of the hospital and recreational and park uses on the east side.
- A total of 151 pedestrians were observed crossing at or near the subject pedestrian refuge island during an eight-hour study period on Tuesday, October 13, 2015.

Pedestrian Crossing Protection Warrant Studies

Pedestrian crossing protection warrant/justification studies involve both a Pedestrian Crossover warrant/justification study and a Traffic Control Signal warrant/justification study in order to properly assess the feasibility of alternative traffic control devices.

Pedestrian Crossover Warrant/Justification Study

Pedestrian Crossover Warrant	Compliance Level at PRI
Pedestrian Volume	153 (84%)
Pedestrian Delays	125 (96%)

As outlined in the above table, the installation of a pedestrian crossover is not justified because both categories must be met 100%. However, these numbers are within 4% to 16% of the justification.

Traffic Control Signal Warrant/Justification Study

Given that a pedestrian crossover is not justified at this mid-block location, similarly the installation of mid-block traffic control signals is also not warranted. Therefore, Transportation Services staff conducted a Traffic Control Signal Warrant study at the intersection of St Clair Avenue East and North Woodrow Boulevard, on Tuesday, May 10, 2016, using traffic volumes recorded over the peak eight hours of a typical weekday. The study provides an assessment of the need for Traffic Control Signals based on volumes and delays to cross vehicular traffic and pedestrians, and are expressed in terms of percentages so as to be comparable over time. For traffic control signals to be numerically justified, one of the "Minimum Vehicular Volume" or "Delay to Cross Traffic" or "Collision Hazard" warrants must be 100 % satisfied, or both "Minimum Vehicular Volume" and "Delay to Cross Traffic" must be at least 80% satisfied.

Traffic Control Signal Warrant	Compliance Level
Minimum Vehicular Volumes	7%
Delay to Cross Traffic	34%
Collision Hazard	0%

For traffic control signals to be numerically justified, the following results need to be achieved:

1. one of the "Minimum Vehicular Volume" or "Delay to Cross Traffic" or "Collision Hazard" warrants must be 100 % satisfied; or
2. The "Minimum Vehicular Volume" and "Delay to Cross Traffic" must be at least 80% satisfied.

Neither of the above-noted technical requirements to install traffic control signals at this intersection is met.

Our review of the Collision Hazard is based on the previous three-year (2015 – 2017) collision history. There were no reported collisions preventable by the installation of traffic control signals.

Pedestrian Crossing Volume at the Pedestrian Refuge Island (PRI)

Pedestrian Characteristics	Eight-Hour Pedestrian Crossing Volume
Assisted Children*	12
Unassisted Children	0
Youths / Adults	137
Senior Citizens	1
Disabled Pedestrian	1
Total Pedestrian Volume	151

* Assisted children are children crossing the road accompanied by a youth, an adult or a senior citizen.

Our study revealed the following reasons for pedestrians crossing at or near the Pedestrian Refuge Island:

Pedestrian Crossing Reasons – To/From	Eight-Hour Pedestrian Crossing Volume
TTC Bus Stops	146
North to South Side	5

Pedestrian Refuge Island Compliance

Pedestrian Refuge Island (PRI) Compliance	Eight-Hour Pedestrian Crossing Volume
Pedestrians Used PRI Properly	71 (47%)
Pedestrians Crossed Beside PRI	80 (53%)
Total Pedestrians	151 (100%)

Roadway Classification

Roadway	Classification	Typical Daily Vehicle Volume For Subject Road Classification	Recorded Daily Vehicle Volume For Subject Road
St Clair Avenue East	Major Arterial Road	> 20,000 vehicles per day (vpd)	Wednesday, October 8, 2014 Near North Woodrow Blvd. 16,732 vpd

As evidenced in the above-noted table, St Clair Avenue East is operating well within the vehicle volume range of a major arterial roadway.

24-Hour Speed Studies

Study Location: St Clair Avenue East, Near North Woodrow Blvd.
 Study Date: Wednesday, October 8, 2014
 Speed Limit: 60 Km/h (Signed)

Study Location	Speed Ranges – Km/h					Total Vehicles 24 Hours	85th Percentile Speed*
	1 - 50	51 - 60	61 - 70	71 - 75	> 75		
St Clair Avenue E. (westbound)	100	840	4279	1793	1516	8,528	76 Km/h
St Clair Avenue E. (eastbound)	63	679	4014	1811	1637	8,204	77 Km/h
Totals	163	1519	8293	3604	3153	16,732	Average 77 Km/h

* The 85th percentile speed is the speed at or below which the majority of motorists are travelling. This generally reflects the speed at which most motorists feel comfortable travelling on a given section of roadway, taking into consideration traffic volumes and surrounding conditions.

Collision History

Five-year review period ending November 30, 2018 for which we have complete data:

Five-Year Collision Information	Number of Reported Collisions					
	2014	2015	2016	2017	2018	Total
Collisions Potentially Preventable By the Installation of Traffic Control Signals	0	0	1	1	2	4
Collisions Involving Pedestrians Crossing St Clair Avenue East	0	0	1	0	0	1

A review was undertaken of the Toronto Police Service Collision Records for the five year period ending November 30, 2018 on St Clair Avenue in the vicinity of the existing pedestrian refuge island. The review indicates that there was one pedestrian related collision involving a pedestrian crossing from the pedestrian refuge and three other collisions involving vehicles colliding with the pedestrian refuge island.

This collision record is indicative of a safety issue at this location. The pedestrian refuge island (PRI) has been struck on three separate occasions during the 5 year period.

The results of the studies and analyses noted above indicate the technical justification for the installation of traffic control signals at the intersection of St. Clair Avenue East at North Woodrow Boulevard is not satisfied.

Notwithstanding the above noted results of the technical assessment, it is recommended that the pedestrian refuge island located 44 metres east of North Woodrow Boulevard is removed and traffic control signals be installed at St. Clair Avenue East at North Woodrow Boulevard for the following reasons:

- The prevailing vehicle operating speeds on St. Clair Avenue makes it difficult for pedestrians to continue to use the existing pedestrian refuge island, especially pedestrians from the vulnerable sector including seniors, children and persons using mobility devices.
- This collision record is indicative of a safety issue at the pedestrian refuge island as there was a pedestrian related collision and the island has been struck on three separate occasions during the 5 year period.
- In keeping with City's policy or technical criteria for the usage of a PRI is currently limited to a maximum five-lane cross-section roadway being approximately 16.4 metres wide. St Clair Avenue in the vicinity of the subject PRI east of North Woodrow Boulevard is a four-lane cross-section with a width of approximately 18.5 metres including the westbound bus-bay.

Analysis

Based on residential complaints and the excessive road width at the existing PRI which may be concern for safety for pedestrians crossing at this location, staff recommend the removal of the PRI east located east of North Woodrow Boulevard and replacing it with the installation of a traffic control signals at the intersection of St. Clair Avenue and North Woodrow Boulevard. It should be noted that the closest protected crossing at the TCS at Birchmount Road is 355 metres to the west, a relatively long walking distance.

The recommended installation of traffic control signals will allow for a fully controlled intersection where pedestrians will have greater degree safety in crossing St. Clair Avenue without vehicular conflicts. The TTC has been consulted on this report and concurs with these findings.

CONTACT

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ATTACHMENTS

1. Location Plan (Traffic Control Signals - St. Clair Avenue East and North Woodrow Boulevard).

Attachment 1 - Location Plan (Traffic Control Signals - St. Clair Avenue East and North Woodrow Boulevard).

