



**STAFF REPORT
ACTION REQUIRED**

**Traffic Control Signal Studies – Ellesmere Road and
Crocus Drive/Dewey Drive, Ellesmere Road and White
Abbey Park**

Date:	March 29, 2011
To:	Scarborough Community Council
From:	Director, Transportation Services, Scarborough District
Wards:	Ward 40 - Scarborough Agincourt Ward 37 - Scarborough Centre
Reference Number:	P:\2011\Cluster B\TRA\Scarborough\sc1140 D11- 4168153 Ellesmere Crocus Dewey TCS

SUMMARY

The purpose of this report is to review the feasibility of installing traffic control signals at Ellesmere Road and Crocus Drive / Dewey Drive and / or Ellesmere Road and White Abbey Park

Traffic studies reveal that Traffic Control Signals are not warranted at either location.

RECOMMENDATIONS

Transportation Services recommends that City Council:

1. Not approve the installation of Traffic Control Signals at the intersection of Ellesmere Road and Crocus Drive / Dewey Drive.
2. Not approve the installation of Traffic Control Signals at the intersection of Ellesmere Road and White Abbey Park.
3. Not pass or amend the appropriate by-law(s) accordingly.

Financial Impact

There is no financial impact associated with this report; however, the financial cost of installing new traffic control signals on Ellesmere Road at Crocus Drive / Dewey Drive and/or on Ellesmere Road at White Abbey Park would be approximately \$160,000.00 and \$130,000.00, respectively, should the installations be approved.

The funding for these signals is not in Budget and not available in Transportation Services Division's Capital Works Budget under Project No.CTP711-01 at this time.

ISSUE BACKGROUND

Further to a request from Councillor Norman Kelly, Transportation Services staff was asked to report to Scarborough Community Council regarding the feasibility of installing traffic control signals on Ellesmere Road and Crocus Drive / Dewey Drive. In addition we included the Technical Justification studies for the neighbouring location of Ellesmere Road and White Abbey Park. Each of these locations has been studied on several occasions within the last four years at the request of the Councillor and the public via 3-1-1. Traffic Control Signal (TCS) and Pedestrian Cross-Over (PXO) studies have been conducted at both locations. The technical justifications or warrants, have not been met at either location in the past.

COMMENTS

The following characteristics describe the intersection of Ellesmere Road and Crocus Drive / Dewey Drive:

- This four leg intersection is presently controlled by stop signs on Crocus Drive and Dewey Drive.
- Ellesmere Road is a five lane road incorporating a two-way centre left-turn lane and is classified as a major arterial road. Ellesmere Road is approximately 16.8 metres wide.
- Ellesmere Road has a posted speed limit of 60 km/h and a daily traffic volume of approximately 25,388 vehicles per day (vpd). The operating speed on Ellesmere Road between Warden Avenue and Pharmacy Avenue is 76 km/h for eastbound and 70 km/h for westbound traffic.
- Crocus Drive is a two-lane north-south collector road with a posted speed limit of 40 km/h. Crocus Drive is 165 metres east of White Abbey Park.
- Dewey Drive is a two-lane north-south collector road with a posted speed limit of 40 km/h. Dewey Drive turns and becomes an east-west collector road approximately 350 metres south of Ellesmere Road.
- Toronto Transit Commission (TTC) bus stops for both the eastbound and westbound directions along Ellesmere Road are located at Crocus Drive/Dewey Drive, and both TTC stops are near side stops.
- Traffic control signals are located approximately 305 metres east at Warden Avenue, and 475 metres west at Pharmacy Avenue along Ellesmere Road.
- Sidewalks are located on both sides of Ellesmere Road.
- Sidewalks are located on both sides of Crocus Drive and on the south side of Dewey Drive beginning at Archwood Court approximately 480 metres southwest of Ellesmere Road and continuing westward to Pharmacy Avenue.

The following characteristics describe the intersection of Ellesmere Road and White Abbey Park:

- White Abbey Park intersects Ellesmere Road on the north side forming a T-type intersection.
- This T-type intersection is presently controlled by a stop sign on White Abbey Park. White Abbey Park is 165 metres west of Crocus Drive / Dewey Drive.
- Ellesmere Road is a five lane road incorporating a two-way centre left-turn lane and is classified as a major arterial road. Ellesmere Road is approximately 16.8 metres wide.
- Ellesmere Road has a posted speed limit of 60 kilometres per hour (km/h) and a daily traffic volume of approximately 25,388 vehicles per day (vpd). The operating speed on Ellesmere Road between Warden Avenue and Pharmacy Avenue is 76 km/h for eastbound and 70 km/h for westbound traffic.
- White Abbey Park is a two-lane north-south collector road with an unposted speed limit of 50 km/h.
- There are no Toronto Transit Commission bus stops for either eastbound or westbound directions along Ellesmere Road in the vicinity of White Abbey Park.
- Traffic control signals are located approximately 310 metres west at Pharmacy Avenue, and 470 metres east at Warden Avenue along Ellesmere Road.
- A sidewalk is located on the east side of White Abbey Park.
- Sidewalks are located on both sides of Ellesmere Road.

Traffic Control Signal Warrant Study and Historical Records

Transportation Services staff conducted a Traffic Control Signal Warrant Study at the intersection of Ellesmere Road and Crocus Drive / Dewey Drive and Ellesmere Road at White Abbey Park. Using traffic volumes recorded over the peak eight hours of a typical weekday, the following Warrant Calculations were obtained:

Traffic Control Signal Warrant Study and Historical Records

Study Dates: Tuesday, January 23, 2007 & Wednesday, April 14, 2010

Ellesmere Road and Crocus Drive / Dewey Drive

TCS Warrant Ellesmere Rd at Crocus Dr / Dewey Dr	Compliance Level Tuesday, January 23, 2007	Compliance Level Wednesday, April 14, 2010
Minimum Vehicular Volume	54 %	68 %
Delay To Cross Traffic	24 %	35 %
Collision Hazard	7 %	13 %

Traffic Control Signal Warrant Study and Historical Records

Study Dates: Thursday, February 22, 2001, Wednesday January 29, 2003,
 Thursday, December 11, 2008 & Thursday, November 25, 2010
 Ellesmere Road at White Abbey Park

TCS Warrant Ellesmere Rd at White Abbey Park	Compliance Level Thursday, February 22, 2001	Compliance Level Wednesday, January 29, 2003	Compliance Level Thursday, December 11, 2008	Compliance Level Thursday, November 25, 2010
Minimum Vehicular Volume	10 %	10 %	8 %	10 %
Delay To Cross Traffic	21 %	19 %	29 %	36 %
Collision Hazard	7 %	7 %	0 %	0 %

For traffic control signals to be numerically justified, one of the “Minimum Vehicular Volume” or “Delay to Cross Traffic” warrants must be 100% satisfied or the first two of the three warrants must be at least 80% satisfied.

As outlined in the above tables, the traffic volumes do not satisfy the requirements to install traffic control signals.

Pedestrian Crossover Warrant Study and Historical Records

In addition a Pedestrian Crossover Warrant Study was also conducted at Ellesmere Road and Crocus Drive / Dewey Drive and Ellesmere Road and White Abbey Park.

Study Dates: December 19, 1996, Tuesday, January 23, 2007 & Wednesday, April 14, 2010
 Ellesmere Road at Crocus Drive / Dewey Drive

PXO Warrant Ellesmere Rd at Crocus Drive / Dewey Drive	Compliance Level December 18, 1996	Compliance Level Tuesday, January 23, 2007	Compliance Level Wednesday, April 14, 2010
Warrant 1: Pedestrian Volume	26 %	17 %	40 %
Warrant 2: Pedestrian Delay	2 %	21 %	51 %

To support the installation of a pedestrian crossover, both warrants must be satisfied to the extent of 100 percent. In order for the pedestrian delay warrant to be met, a minimum of 200 pedestrians must be observed crossing the roadway, of which 130 must be delayed for periods greater than 10 seconds when crossing Ellesmere Road. Given these observations and study results, a pedestrian crossover cannot be supported at this time at this location.

Study Dates: Wednesday, January 29, 2003, Thursday, December 11, 2008 &
Thursday, November 25, 2010
 Ellesmere Road and White Abbey Park

PXO Warrant Ellesmere Rd at White Abbey Park	Compliance Level Wednesday, January 29, 2003	Compliance Level Thursday, December 11, 2008	Compliance Level Thursday, November 25, 2010
Warrant 1: Pedestrian Volume	2 %	39 %	47 %
Warrant 2: Pedestrian Delay	2 %	34 %	50 %

To support the installation of a pedestrian crossover, both warrants must be satisfied to the extent of 100 percent. In order for the pedestrian delay warrant to be met, a minimum of 200 pedestrians must be observed crossing the roadway, of which 130 must be delayed for periods greater than 10 seconds when crossing Ellesmere Road. Given these observations and study results, a pedestrian crossover cannot be supported at this time at this location.

Pedestrian Traffic Volumes Crossing Ellesmere Road and Pedestrian Refuge Island

Since a pedestrian crossover is not justified, we considered the installation of a Pedestrian Refuge Island (PRI). The minimum required width to install a PRI is 16.4 metres, and Ellesmere Road is 16.8 metres wide in this location. Even though Ellesmere Road has sufficient width to accommodate a PRI, there are insufficient pedestrian crossings. A minimum of 100 pedestrians are required in an eight hour period, and only 91 pedestrians and 78 pedestrians were observed crossing Ellesmere Road at White Abbey Park and Crocus Drive / Dewey Drive, respectively.

Technical Requirement for Pedestrian Refuge Island (PRI)

Roadway	Criterion	Requirement	Warrant Satisfied
Ellesmere Rd and Crocus Dr / Dewey Drive	Minimum Road width	On street where PRI are proposed, the minimum road width must exceed 16.4 metres	Yes 16.8 m
	Pedestrian Volume	The pedestrian volume crossing Ellesmere Road, to justify this type of installation required eight-hour volume is 100 pedestrians	No, at both
Ellesmere Rd and White Abbey Park	Turning Movement	Heavy volume of turning movements, Non – residential driveways or entrance in immediate vicinity	No* Volume is low
	Accident History	Pedestrian Collisions Hazard is greater than 3 per year for each location	No, at both

*A Non-Residential Auto Service Garage is located on the northeast corner of Ellesmere Road and White Abbey Park

Given these observations and study results, a pedestrian refuge island cannot be technically supported at this time at either location.

Automatic 24-Hour Speed Study (Automatic Traffic Recorder, A.T.R.)

Study Dates: Thursday, November 4, 2010
 Ellesmere Road between Crocus Drive & White Abbey Park
 Speed Limit: 60 Km/h

Roadway Location	Speed Ranges – Km/h				Total Vehicles 24 Hours	85 th Percentile Speed*
	1 - 50	51 - 60	61 -65	> 65		
Eastbound	700	2,386	2,490	6,832	12,408 vpd	76 km/h
Westbound	1,804	4,335	2,942	3,899	12,980 vpd	70 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. The westbound recorded 85th percentile speeds are within the tolerable speed range (within 10 km/h of the posted speed limit). The eastbound recorded 85th percentile exceeds the tolerance range.

Roadway Classification and Vehicle Volumes

Roadway	Classification	Typical Daily Vehicle Volume For Subject Road Classification	Recorded Daily Vehicle Volume For Subject Road
Ellesmere Rd between Crocus Dr and White Abbey Park	Major Arterial	Greater than 20,000 vehicles per day (vpd)	Thursday, November 4, 2010 25,388 vpd

As evidenced in the above table, the subject roadway is functioning well within the vehicle volume range of a major arterial road.

It should be noted that there is a north-south hydro corridor and a watercourse extending north from Ellesmere Road in this vicinity. This physical barrier separates the vehicular movements of motorists in the Crocus Drive community from the motorists in the White Abbey Park community. This watercourse crosses Dewey Drive via a box culvert and proceeds southward.

Collision History

A review of the Toronto Police Service collision records for the five-year period ending December 31, 2009 is summarised below.

Toronto Police Service Collision Records for Ellesmere Road and Crocus Drive / Dewey Drive.

Five-year review period for which we have complete data: January 1, 2005 to December 31, 2009

Three-Year Collision Information	Number of Reported Collisions					
	2005	2006	2007	2008	2009	Total
Collisions Potentially Preventable by the Installation of Traffic Control Signals	0	1	1	0	1	3
Collisions Involving Pedestrians Crossing Ellesmere Road	0	0	0	0	0	0

This collision record is not indicative of a significant collision hazard at this location

Toronto Police Service Collision Records for Ellesmere Road and White Abbey Park
 Five-year review period for which we have complete data: January 1, 2005 to December 31, 2009

Three-Year Collision Information	Number of Reported Collisions					
	2005	2006	2007	2008	2009	Total
Collisions Potentially Preventable by the Installation of Traffic Control Signals	0	0	0	0	0	0
Collisions Involving Pedestrians Crossing Ellesmere Road	0	0	0	0	0	0

This collision record is not indicative of a significant collision hazard at this location

The TTC has been consulted and concurs with this finding that traffic control signals are not warranted at either location.

It should be noted that notwithstanding the current non-compliance with numerical warrants, if traffic control signals were to be approved on Ellesmere Road at Crocus Drive / Dewey Drive, this would be the most suitable location in terms of traffic control signal spacing and providing pedestrian access to the TTC stops if warranted in the future.

The potential installation of traffic control signals on Ellesmere Road and White Abbey Park would require two residential driveways on the south side of Ellesmere Road to be incorporated into the traffic control signals. Experience has shown that signaling residential driveways opposite a T-type intersection raises objections from homeowners. These objections range from restricted access /egress to excessive illumination caused by the signals lights facing the homes. In addition, there are no TTC stops at this location.

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ATTACHMENTS

1. Location Plan (Traffic Control Signal Studies – Ellesmere Road and Crocus Drive / Dewey Drive, Ellesmere Road and White Abbey Park)