

Traffic Operations Review - Lawrence Avenue West, Caledonia Road to William R. Allen Road

Date: May 11, 2018

To: North York Community Council

From: Acting Director, Transportation Services, North York District

Wards: Ward 15 - Eglinton-Lawrence

SUMMARY

As the Toronto Transit Commission (TTC) operates a transit service on Lawrence Avenue West, City Council approval of this report is required.

At the request of North York Community Council, Transportation Services was directed to review and report back on:

- The exclusion of the property located at 713-723 Lawrence Avenue West from the overnight permit parking program;
- A traffic study on Lawrence Avenue West, between Dufferin Street to Marlee Avenue; and
- The feasibility of installing bicycle lanes on Lawrence Avenue West.

This report will provide the results of the review, which was extended to include the William R. Allen Road ramps. Additionally, a number of opportunities to enhance traffic flow on Lawrence Avenue West were identified. The following is a brief summary of the results of the review:

- Staff recommends that the existing peak period parking prohibitions on Lawrence Avenue West be extended west of Dufferin Street, where there are currently no regulations. Further, the peak period start and end times could be amended following community consultation;
- Staff recommends that the overnight permit parking regulations be amended to exclude permit parking for residents and guests of 713-723 Lawrence Avenue West should permit parking be introduced to this area in the future;
- The traffic control signals between Bolingbroke Road and William R. Allen Road will be converted to a new signal system later this year at which time the signal timings, operations and coordination will be reviewed;

- A new southbound right-turn green arrow will be implemented later this year at Lawrence Avenue West and William R. Allen Road west signal to reduce southbound queuing and delays;
- The signal timings will be reviewed further to determine if additional green time can be provided for the westbound right-turn movement at Lawrence Avenue West and William R. Allen Road east signal;
- The installation of a northbound right-turn green arrow at Lawrence Avenue West and Marlee Avenue is feasible and is planned for the spring of 2019;
- The installation of southbound, westbound and eastbound right-turn green arrows at Dufferin Street and Lawrence Avenue West are feasible and are also planned for the spring of 2019;
- Transportation Services will continue to review enhancements to this corridor when the traffic impact studies for new development applications are received; and
- A major corridor study is required to determine the feasibility of adding a cycling facility on this corridor, and these studies are currently on hold until 2019.

RECOMMENDATIONS

The Acting Director, Transportation Services, North York District recommends that:

1. City Council rescind the existing parking prohibition on both sides of Lawrence Avenue West, between Bathurst Street and Dufferin Street, in effect from 7:00 a.m. to 9:00 a.m., Monday to Friday, except public holidays.
2. City Council rescind the existing parking prohibition on the north side of Lawrence Avenue West, between Dufferin Street and a point opposite Shermount Avenue, in effect from 4:00 p.m. to 6:00 p.m., Monday to Friday, except public holidays.
3. City Council rescind the existing parking prohibition on the south side of Lawrence Avenue West, between Dufferin Street and William R. Allen Expressway, in effect from 4:00 p.m. to 6:00 p.m., Monday to Friday, except public holidays.
4. City Council prohibit parking from 7:00 a.m. to 9:00 a.m., Monday to Friday, except public holidays on the north side of Lawrence Avenue West, between a point 193.5 metres east of Caledonia Road and Bathurst Street.
5. City Council prohibit parking from 7:00 a.m. to 9:00 a.m., Monday to Friday, except public holidays on the south side of Lawrence Avenue West, between a point 201 metres east of Caledonia Road and Bathurst Street.
6. City Council prohibit parking from 4:00 p.m. to 6:00 p.m., Monday to Friday, except public holidays on the north side of Lawrence Avenue West, between a point 193.5 metres east of Caledonia Road and a point opposite Shermount Avenue.

7. City Council prohibit parking from 4:00 p.m. to 6:00 p.m., Monday to Friday, except public holidays on the south side of Lawrence Avenue West, between a point 201 metres east of Caledonia Road and William R. Allen Road.
8. City Council prohibit parking, at all times, on the north side of Lawrence Avenue West, between Caledonia Road and a point 91.5 metres east.
9. City Council amend Municipal Code Chapter 925, Permit Parking, such that the General Manager shall not accept permit parking applications from residents of, visitors to or tradespersons at 713-723 Lawrence Avenue West.

FINANCIAL IMPACT

All costs associated with the 2018 signal modifications and parking regulations contained in this report are included within the Transportation Services 2018 Operating Budget.

DECISION HISTORY

City Council, at its meeting on April 26, 2017 adopted Item NY21.35, which directed Transportation Services, North York District to review and report back on the exclusion of the property located at 713-723 Lawrence Avenue West from the overnight permit parking program (Recommendation 11), conduct a traffic study given the increased amount of approved development applications in the area (Recommendation 13) and investigate the possibilities for installing new bicycle lanes on Lawrence Avenue West (Recommendation 14). The Council decision can be found at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2017.NY21.35>

COMMENTS

Existing Conditions

Lawrence Avenue West, between Caledonia Road and William R. Allen Road, is designated as a major arterial roadway with a regulatory speed limit of 50 km/h. The daily two-way traffic volume is approximately 36,000 vehicles. This section of Lawrence Avenue is approximately 1.9 km in length and consists of a four lane cross-section, with two lanes per direction, as well as exclusive left-turn and right-turn lanes at many intersections. This section contains ten traffic control signals and two un-signalized intersections that are stop controlled on the side street. TTC service is provided by the 52 Lawrence West and 59 Maple Leaf bus routes, as well as the 400 Lawrence Manor Community bus.

The land use on the south side of Lawrence Avenue West, between Caledonia Road and William R. Allen Road, is generally residential. On the north side, there is a mix of residential and commercial land uses. Caledonia Park and the Lawrence Square Shopping Centre are also located on the north side. The Lawrence West TTC subway station is located between the two William R. Allen Road signals and pedestrian access is available from both the north and south sides of Lawrence Avenue West. In addition to providing access for the adjacent community, Lawrence Avenue West also serves as a route for motorists to access Highway 401 and 400 via William R. Allen Road, suggesting a higher than normal proportion of non-local traffic utilizes this corridor.

Parking Regulations

The by-lawed parking regulations on Lawrence Avenue West, between Caledonia Road and William R. Allen Road, are described below:

North Side:

- Parking is prohibited at all times, between a point 91.5 metres east of Caledonia Road and a point 102 metres further east;
- Parking is prohibited between Dufferin Street and William R. Allen Road, 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m., Monday to Friday, except public holidays; and
- Three-hour time limit parking is in effect at all other times (unsigned, statutory).

South Side:

- Parking is prohibited at all times, between Caledonia Road and a point 201 metres further east;
- Parking is prohibited between Dufferin Street and William R. Allen Road, 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m., Monday to Friday, except public holidays; and
- Three-hour time limit parking is in effect at all other times (unsigned, statutory).

A review of the parking regulations disclosed a discrepancy between the parking by-laws and the signage currently posted on the street. This discrepancy will be resolved with the approval of Recommendation No. 8 of this report.

During the course of the review it was noted that there are no peak period parking regulations on the section of Lawrence Avenue West, between Dufferin Street and a point east of Corona Street, where the parking prohibition at all times ends. To provide consistency in the parking regulations and to ensure traffic flow is not impeded by parked vehicles on Lawrence Avenue West, it is recommended that the existing peak period parking regulations on both sides be extended west of Dufferin Street. Recommendations 1 through 7 reflect these changes.

In order to ensure the optimal effectiveness of the traffic signal coordination, extensions to the parking regulations can be supported to match the peak periods of the signal timing plans. The traffic control signals in this section of Lawrence Avenue West have established peak period timing plans that operate between the hours of 6:30 a.m. to 9:30 a.m. and 3:00 p.m. to 6:30 p.m., Monday to Friday.

These potential changes will extend the existing parking regulation times by one hour in the morning peak and one and a half hours in the afternoon peak. The changes will have minimal impact on parking but will help improve traffic flow during the entire peak period when traffic volumes on Lawrence Avenue West are high. However, prior to initiating any changes, Transportation Services recommends that community consultation be undertaken.

On-Street Permit Parking Program

A review of the on-street permit parking regulations was completed for 713-723 Lawrence Avenue West. There were no provisions in the site plan agreement for this development pertaining to off-street parking. Currently, overnight permit parking is not permitted on streets falling within the former City of North York. However, this restriction may be changed at some future date to allow permit parking in the vicinity of this development. Should it be ever be expanded to the former City of North York, the residents and guests of this property will be excluded from the overnight permit parking program. Recommendation 9 reflects this change.

Turn Prohibitions

There are currently a number of restrictions in place on this section of Lawrence Avenue West to manage neighbourhood traffic infiltration and the cut-through traffic attempting to by-pass the intersection of Lawrence Avenue West and Dufferin Street.

At the signalized intersection of Lawrence Avenue West and Corona Street, the following turn restrictions are in effect:

- Westbound left turns are prohibited, 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m., Monday to Friday, except public holidays (buses excepted);
- Eastbound right turns are prohibited, 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m., Monday to Friday, except public holidays (buses excepted);
- Northbound straight-throughs are prohibited at all times (buses and bicycles excepted); and
- Southbound straight-throughs are prohibited at all times (buses and bicycles excepted).

These regulations were originally enacted prior to amalgamation. They were amended in 2008 (refer to Item NY14.28) and again in 2013 (refer to Items NY22.9 and NY28.13).

At the signalized intersection of Lawrence Avenue West and Bolingbroke Road, the following turn restrictions are in effect:

- Westbound left turns are prohibited, 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m., Monday to Friday, except public holidays;
- Eastbound right turns are prohibited, 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m., Monday to Friday, except public holidays;
- Northbound straight-throughs are prohibited at all times; and
- Southbound straight-throughs are prohibited at all times.

These regulations were originally enacted prior to amalgamation. They were amended in 2000 (refer to Works Committee Report No. 17, Clause No. 31).

Based on the review, no further turn or entry restrictions are recommended at the present time. However, Transportations Services would be amenable to undertaking additional review pending a favourable community consensus.

Traffic Volumes

The table below provides a comparison at five key intersections in the study area between the traffic volumes from the last five years and the current traffic volumes. The table summarizes the a.m. and p.m. peak hours, as well as the eight-hour total, by direction. The eight-hour total comprises the hours between 7:30 a.m. to 9:30 a.m., 10:00 a.m. to 12:00 p.m., 1:00 p.m. to 3:00 p.m. and 4:00 p.m. to 6:00 p.m. of a typical weekday.

Table 1 - Traffic Volume Comparison at Key Intersections

Inter-section	Time Period	Increase (+) or Decrease (-) in Eastbound Volumes	Increase (+) or Decrease (-) in Westbound Volumes	Pre-vious Count	Current Count	Time Period between Counts (Years)
Caledonia Road	A.M. Peak	+ 207	- 36	Jun. 2013	Mar. 2018	5
	P.M. Peak	+ 115	- 36			
	8-Hour	+ 444	- 207			
Dufferin Street	A.M. Peak	- 256	- 91	Sept. 2015	Mar. 2018	2
	P.M. Peak	- 220	+ 16			
	8-Hour	- 966	- 782			
Marlee Avenue	A.M. Peak	-340	- 400	Jun. 2013	Mar. 2018	5
	P.M. Peak	- 517	- 479			
	8-Hour	- 2,951	- 2,122			
William R. Allen Road west signal	A.M. Peak	+ 77	- 325	Jun. 2013	Mar. 2018	5
	P.M. Peak	- 272	- 420			
	8-Hour	- 579	- 2,227			

Inter-section	Time Period	Increase (+) or Decrease (-) in Eastbound Volumes	Increase (+) or Decrease (-) in Westbound Volumes	Pre-vious Count	Current Count	Time Period between Counts (Years)
William R. Allen Road east signal	A.M. Peak	+ 61	- 50	Jun. 2013	Mar. 2018	5
	P.M. Peak	+ 78	+ 325			
	8-Hour	+ 1,835	+ 1,158			

The data shows that eastbound volumes have generally increased for all periods at Caledonia Road and the William R. Allen Road east signal but they have decreased in all periods at the other three intersections, most significantly at Marlee Avenue.

Westbound volumes have increased at the William R. Allen Road east signal and they have decreased in all periods at the other four intersections, most significantly at Marlee Avenue and William R. Allen Road west signal.

Some of the decreases in volumes shown in the table could be a result of changes in travel patterns due to construction projects such as the resurfacing of Lawrence Avenue West from William R. Allen Road to Dufferin Street in 2016 and the Eglinton Crosstown Light Rail Transit construction that is currently underway.

Traffic Speeds

The City of Toronto purchases speed data from a third-party which uses a variety of sources, including vehicle sensor data, smartphones, fleet vehicles, and navigation devices. The table below provides a summary of the average speed information available from the real-time and historical traffic flow datasets over the subject section of Lawrence Avenue West.

Table 2 - Traffic Speed Comparison by Year

Year	Average Eastbound Speed (km/hr)			Average Westbound Speed (km/hr)		
	A.M. Peak (7:00 a.m. to 10:00 a.m., Mon. to Fri.)	P.M. Peak (4:00 p.m. to 7:00 p.m., Mon. to Fri.)	Night (9:00 p.m. to 12:00 a.m.)	A.M. Peak (7:00 a.m. to 10:00 a.m., Mon. to Fri.)	P.M. Peak (4:00 p.m. to 7:00 p.m., Mon. to Fri.)	Night (9:00 p.m. to 12:00 a.m.)
2012	23.7	19.4	28.2	26.8	24.0	31.1
2013	21.9	18.0	28.2	26.5	22.6	31.1
2014	20.4	17.6	28.0	25.9	23.1	30.7
2015	21.0	17.5	28.0	25.9	23.1	30.5
2016	20.8	17.6	28.1	24.6	21.6	30.2
2017	20.2	13.1	28.5	23.3	20.8	27.4
2018*	19.3	14.2	28.4	23.0	21.7	27.1

*2018 data is based on average speeds from January 2, 2018 to February 7, 2018.

The summary shows that the average eastbound and westbound speeds throughout the years have decreased slightly, but at a relatively steady rate. The average speeds are consistently higher in the a.m. peak relative to the p.m. peak and are indicative of higher congestion in the latter period. The travel speeds during the overnight period when traffic volumes are relatively low is approximately 4 to 9 km/h more than the a.m. peak period.

Signal Operation

Transportation Services reviewed the signal co-ordination along the entire section of Lawrence Avenue West, as well as specific traffic movements at the individual intersections.

Signal Co-ordination

The City of Toronto undertook a review of the signal coordination on Lawrence Avenue West, between, from Royal York Road to Bayview Avenue, in 2013. As part of this review, optimized timings were implemented in November 2013 for the signals between Caledonia Road and Corona Street. The signals between Bolingbroke Road and William R. Allen Road were not included in the coordination review, as they operate on a different signal system called Split Cycle Offset Optimization Technique (SCOOT), where the timings continuously adapt based on real-time information received from vehicle detectors located on the approaches to these signalized intersections.

The SCOOT system at these signals will be converted to a new signal system (TransSuite) later this year. As part of this conversion, the signal timings, operation and co-ordination will be reviewed between Bolingbroke Road and William R. Allen Road.

Field observations were undertaken on Lawrence Avenue West during the a.m. and p.m. peak periods on April 18th and 19th, 2018. The observations confirmed the heavy eastbound congestion during the p.m. peak period. Traffic queues extended back from the William R. Allen Road east signal to Bolingbroke Road due to the heavy traffic volumes waiting to turn left onto the northbound on ramp. As indicated, further review of the eastbound timings is planned to improve traffic flow in this section along with the signal system conversion, in late 2018.

A signal co-ordination review and optimization on Dufferin Street, from north of Wilson Avenue to south of F.G. Gardiner Expressway, was completed in 2016. Additionally, a signal co-ordination review and optimization on Caledonia Road, between St. Clair Avenue West and north of Orfus Road, will be undertaken in late 2018.

Signal Phasing Enhancements

To address the ongoing concerns about southbound right-turn delays at Lawrence Avenue West and the William R. Allen Road west signal, a review of the traffic operations was previously undertaken. This review confirmed the excessive delays and queues and the need for a southbound right-turn green arrow phase has been

identified. This southbound phase will operate in advance of the pedestrian crossing phase on the west intersection leg and this installation is planned for late 2018.

As a result of the above-noted implementation, the signal operations at the two adjacent signals at Marlee Avenue and William R. Allen Road east intersection will also need to be revised to ensure traffic signal coordination is maintained to service the heavy traffic flow between these three signals.

As part of the coordination review, it was noted that there is a significant amount of congestion at the east signal due to the large number of westbound right-turning vehicles. Therefore, the signal operations at the east signal will be reviewed as part of the upcoming signal system conversion to determine if additional green time can be provided.

From the review of the turning movement counts and traffic control signal operation, the intersection of Lawrence Avenue West and Marlee Avenue has a high volume of northbound right-turning vehicles. This intersection also has a right-turn-on-red prohibition during the peak periods. Staff conducted observations on May 8 and 9, 2018 to determine if this location would benefit from the provision of a right-turn green arrow that would be displayed concurrently with the existing westbound left-turn green arrow.

Based on staff observations, these changes would exacerbate congestion, as most northbound right-turning vehicles were seen to enter the middle lane to proceed to make eastbound left turns onto William R. Allen Road almost immediately after turning onto Lawrence Avenue West. These conflicts have caused delays for motorists making westbound left turns onto Marlee Avenue during the protected phase, as queued vehicles were blocking the intersection at the end of the north/southbound signal timing phase. Therefore, it would not be beneficial to install a right-turn green arrow that would be displayed concurrently with the existing westbound left-turn green arrow.

To improve traffic operations at Dufferin Street and Lawrence Avenue West, the installation of right-turn green arrows for the southbound, westbound and eastbound directions has been planned for the spring of 2019. These phases will enhance the flow of right-turning traffic and will operate concurrently with the existing left-turn phases in the eastbound, southbound and northbound directions, respectively.

Road Alterations

Over the past six years, Lawrence Avenue West and William R. Allen Road east and west signals have undergone the physical changes identified in the table below.

Table 3 - Physical Changes at William R. Allen Road ramps

Location	Date	Change
William R. Allen Road west signal	August 2012 - May 2013	The channelized southbound right-turn movement was removed and the second southbound left-turn lane was converted to a right-turn lane.
	November 2016	A pedestrian barrier was installed along Lawrence Avenue West on the northwest corner (from William R. Allen Rd to the mall walkway) to prevent pedestrians from cutting diagonally across the westbound traffic lanes.
	September 2017	A short, second southbound left-turn lane was installed to re-instate the previous dual southbound left-turn movement.
William R. Allen Road east signal	August 2012 - May 2013	The channelized westbound right-turn movement was removed and replaced with an exclusive westbound right-turn lane at the intersection. A north-south pedestrian crossing was installed on the west intersection leg.
	February 2017	A westbound right-turn green arrow was installed and is displayed concurrently with the eastbound left-turn green arrow to increase the flow of northbound traffic onto William R. Allen Road.
	September 2017	A raised traffic island was constructed on the north side of the intersection to provide physical separation and improve the turning movements for the concurrent eastbound left and westbound right turning traffic.

As part of the resurfacing work on Lawrence Avenue West, between Dufferin Street and William R. Allen Road, the pavement markings were reviewed for this section. One

improvement that was identified was a two-way left-turn lane that was installed fronting 760 Lawrence Avenue West.

The removal of the channelized right-turn lanes may have resulted in a minimal increase in delays to motorists undertaking these movements because of being required to slow down and turn through the signalized intersection. However, right-turn channels are generally no longer being considered in the City of Toronto, as they are problematic for the following reasons:

- Right-turning vehicles may travel too quickly in the right-turn channel, resulting in a failure to yield to oncoming traffic in the cross street;
- Conflicts between right-turning vehicles and pedestrians trying to cross the right-turn channel;
- Confusion among drivers and pedestrians as to which party has the right-of-way; and
- People with low or no vision experience difficulty when trying to navigate across right-turn channels.

Therefore, in view of the significant enhancements to safety for the high volumes of pedestrians in this area, and the mitigating strategies to reduce these impacts, the minor inconvenience to motorists is justified.

To improve transit service reliability, a road alteration report has been brought before North York Community Council to extend the westbound right-turn lane on Lawrence Avenue West at Dufferin Street to provide a queue jump lane for buses that extends to Corona Street/Via Bagnato (refer to Item NY30.12). A new westbound right-turn lane is also proposed at Corona Street/Via Bagnato. North York Community Council adopted this item as amended on May 2, 2018 and it will be considered at the May 22, 2018 meeting of City Council. Changes for north/south queue jump lanes for buses are also being evaluated at Dufferin Street and Lawrence Avenue West.

Proposed Developments

Attached is a summary of the development applications in the immediate area used to assess the upcoming density that would contribute to traffic on Lawrence Avenue West (Appendix 2).

As part of the development application review, increased density from new developments is reviewed along with the impacts of the traffic changes to surrounding streets. Access to the land uses are also reviewed to reduce the potential conflict points on the major arterials. Improvements that are proposed with the development applications in this study area include signal timing changes along Lawrence Avenue West and Dufferin Street, and new public roads to enhance the connectivity of the area road network. Three new public roads have been proposed by the respective developments:

1. 901 Lawrence Avenue West - A new north-south public road that connects to Lawrence Avenue and temporarily ends in a cul-de-sac.
2. 3000 Dufferin Street - A new north-south public road that connects to Playfair Avenue. This road will ultimately connect to the new road proposed by 901 Lawrence Avenue West.
3. 3140 Dufferin Street - A new east-west public lane connecting to Dufferin Street and a new north-south public road connecting to Apex Road.

Cycling

A major corridor study will be required to determine the possibility of adding a cycling facility on this corridor. As per the 2016 approval of the Cycling Network Plan, all new major corridor studies are on hold pending the report to City Council in 2019 with an update to the cycling network plan.

Conclusion

As a result of our review, the following is recommended for City Council approval:

- Extend the existing peak period parking regulations west of Dufferin Street to where the parking prohibition for all times periods ends at a point east of Corona Street; and
- Should overnight permit parking be expanded to this area in the future, residents, guests and visitors to No. 713-723 Lawrence Avenue West would not be eligible to apply for a permit.

Staff will also undertake the following improvements:

- Initiate discussions with the Ward Councillor and community to amend the times of the existing peak period parking prohibitions to match the times of the peak periods in the signal timing plans;
- Implement a new southbound right-turn green arrow at Lawrence Avenue West and the William R. Allen Road west signal;
- Review the signal timings, coordination and traffic flow with the SCOOT to TransSuite signal system conversion planned this year for the signals between Bolingbroke Road and William R. Allen Road;
- Review timings for the westbound right-turn at Lawrence Avenue West and William R. Allen Road east signal in conjunction with the signal system conversion work planned for this year;
- Install southbound, westbound and eastbound right-turn green arrows at Dufferin and Lawrence Avenue West;
- Continue to review and evaluate traffic impact studies and include any necessary improvements to Lawrence Avenue West for new developments in the study area; and
- Report on the City-wide cycling network in 2019.

Councillor Josh Colle has been advised of the recommendations of this staff report.

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SIGNATURE

Peter K. Hillier
Acting Director

ATTACHMENTS

Attachment 1: Development Summary Report
Attachment 2: Map - Lawrence Avenue West, Caledonia Road - W.R. Allen Road,
Traffic Operations Review