

<b>TO:</b>	<b>CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON MAY 14, 2019</b>
<b>FROM:</b>	<b>KELLY SCHERR, P. ENG., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL AND ENGINEERING SERVICES AND CITY ENGINEER</b>
<b>SUBJECT:</b>	<b>NEW TRAFFIC SIGNALS</b>

<b>RECOMMENDATION</b>
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That on the recommendation of the Managing Director, Environmental and Engineering Services and City Engineer, the following actions **BE TAKEN** with respect to the Traffic Signal Warrant process:

- a) This enhancements to the traffic control assessment process described herein **BE ENDORSED**;
- b) The installation of the following traffic signals **BE APPROVED**:
  - i. Blackwater Road and Adelaide Street North;
  - ii. Oxford Street West and Riverbend Road;
  - iii. Riverside Drive at Beaverbrook Avenue; and,
  - iv. Wilton Grove Road and Commerce Road.
- c) The installation of the following pedestrian signals **BE APPROVED**:
  - i. Fanshawe Park Road East at Fremont Avenue; and,
  - ii. Richmond Street near Westchester Road.
- d) The attached proposed by-law (Appendix A) **BE INTRODUCED** at the Municipal Council meeting to be held on May 21, 2019, for the purpose of amending the Traffic and Parking By-law (PS-113).

<b>PREVIOUS REPORTS PERTINENT TO THIS MATTER</b>
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- Civic Works Committee – October 31, 2011 – Update on Book 15: Pedestrian Crossing Facilities;
- Civic Works Committee – May 29, 2012 – [Update on Book 15: Pedestrian Crossing Facilities](#)
- Civic Works Committee – March 3, 2014 – [London Road Safety Strategy](#)
- Civic Works Committee – October 6, 2014 – [Riverside Drive and Beaverbrook Intersection Improvements](#)
- Civic Works Committee – April 25, 2016 – [Pedestrian Crossover Program](#)
- Civic Works Committee – November 29, 2016 – [Riverside Drive and Beaverbrook Avenue Intersection](#)

## 2019-2023 STRATEGIC PLAN

The following report supports the Strategic Plan through the strategic focus area of “Building a Sustainable City”. Traffic signals enable Londoners to move around the city safely and easily in a manner that meets their needs by improving safety for all modes of transportation.

## BACKGROUND

This report reviews the current traffic signal warrant process and describes enhancements to improve pedestrian safety and connectivity. The following council resolutions are addressed in this report:

“That the communication from J. Burns related to a request for a pedestrian crosswalk at the intersection of Pack Road and Colonel Talbot Road BE REFERRED to the Division Manager, Transportation Planning and Design for review and consultation with Mr. Burns as well as a report back to the appropriate standing committee related to this matter. (21/3/CWC)” (File No. 99 Pedestrian Sidewalk – Pack Road and Colonel Talbot Road, CWC Deferred Matters List) and

“That the Civic Administration BE DIRECTED take the following actions with respect to traffic signalization at priority intersections:

- a) conduct detailed design work on the following intersections of Pack Road and Colonel Talbot Road; Blackwater Road and Adelaide Street; and Sunningdale Road and South Wenige Drive, when they meet the warrant, traffic signals can be installed without further delay;
- b) conduct an updated traffic study at Oxford Street and Riverbend Road, and Stackhouse Avenue and Fanshawe Park Road; and,
- c) review the current warrant system and best practices in other municipalities and report back with possible changes to the way we prioritize intersections for traffic signalization where appropriate; it being noted the Civic Works Committee received communication from Councillors A. Hopkins and M. Cassidy with respect to this matter. (2018-T07) (4.2/13/CWC)”

The report also requests Council approval for several near-term signal installations in accordance with City policy. A request for the pending implementation of traffic signals at Hyde Park Road and South Carriage Road is not identified in this recommendation because this direction was previously received.

## DISCUSSION

### Traffic Signal Assessment

Traffic signals are designed to ensure a safe and orderly flow of traffic, provide safety for pedestrians and/or vehicles while crossing a busy intersection and help lessen the severity and frequency of collisions between vehicles entering intersections from different directions. Traffic signals can be detrimental to the operational efficiency of a roadway system leading to driver frustration and can increase some types of traffic collisions; it is therefore important to ensure they are only used at appropriate locations.

The Ontario Traffic Manual (OTM) specifies the warrant process that is followed in London and it is consistent with the warrant process used across North America, which assists with creating consistent driver expectation. This process takes into consideration:

- the volume of traffic/pedestrians using the intersection;
- the delay experienced by side street traffic/pedestrians; and,
- the collision history of the intersection.

A warrant-based approach is important as unneeded traffic control signals can be detrimental to the operational efficiency of the roadway system. Adherence to consistent warrants also help foster consistent driver expectations and minimizes liability for municipalities.

The warrant assessment typically considers eight hour traffic volumes. The OTM warrant suggests the use of the four-hour vehicle volume be considered for commuter-dominated roadways, commercial areas and industrial areas where the traffic demand is concentrated over a short timeframe. An example of this accommodation would be a road adjacent to a large manufacturing plant with fixed shift changes.

For most new large developments traffic impact studies (TIS) are completed by developers as part of the approval process. The TIS evaluates the current road network and traffic patterns in the area and addresses what impact the new development will have. The TIS will identify required changes to existing infrastructure (road widening, traffic signals, pedestrian routes, etc.) and the timing of these changes. This information along with the monitoring of the actual progress of the development is taken into account when assessing the traffic signal warrant in growing areas.

New traffic and pedestrian signals should be a minimum of 200 m from the nearest traffic control device to ensure drivers are reacting to the correct device. A spacing of 400 m allows for better coordination with adjacent signals.

## **Pedestrian Crossing Assessment**

Traffic control specifically for pedestrians has traditionally been facilitated with pedestrian signals (PSs). The warrants for PXOs are specified in the OTM. The warrant for a PS considers:

- the volume of traffic;
- the volume of pedestrians;
- the number of pedestrians that are delayed more than 10 seconds before they can cross; and,
- collision history.

In 2016 the Ontario Highway Traffic Act was amended to allow the use of an additional device - Pedestrian Crossovers (PXOs). PXOs can be used on low to medium volume roads to assist pedestrians wishing to cross. There are four types of PXOs with varying degrees of warning systems which are described in the previously referenced April 25, 2016 report to Civic Works Committee. Similar to traffic signals, the warrants for PXOs are specified in the OTM. PXOs along with PSs offer methods for pedestrians to cross a busy road when a traditional traffic signal is not warranted. The PXO warrant includes:

- the volume of traffic;
- the volume of pedestrians;
- the width of road; and,
- pedestrian connectivity.

## **Best Practices of Other Municipalities**

The Ontario Traffic Manual (OTM) warrant process for traffic signal, pedestrian signals and pedestrian crossovers is the standard used by most Ontario municipalities. One municipality was found to use a different warrant for pedestrian signals (PS) that supported PSs in more scenarios than the OTM warrant.

The Transportation Association of Canada (TAC) produced a traffic signal warrant that focuses on potential vehicle/vehicle and vehicle/pedestrian conflicts. The TAC warrant does not take into consideration the collision history of the intersection. TAC does not have a warrant for pedestrian signals or pedestrian crossovers.

The Manual of Uniform Traffic Control Devices (MUTCD) contains a traffic signal that is similar to the OTM warrant. The MUTCD is used in the United States and some Canadian provinces. The MUTCD has some unique warrants (e.g. intersections near railway crossings) that apply in London in those particular circumstances.

## **Process Enhancements**

### Adjusted Pedestrian Threshold

Following the OTM warrant process, a PXO is not recommended if the eight hour vehicle volume is greater than 7,500 and a PS is not warranted if the pedestrian volume is less than 270. This can result in pedestrian desire lines crossing high volume roads with no warranted traffic control device to assist pedestrians to cross.

To address this issue a recommended London based solution was developed that supports a lower threshold for the installation of a PS or PXO for roads with a minimum of 100 pedestrians crossing during an eight hour period and a minimum of 750 vehicles during that same time period.

## Pedestrian Connectivity

Pedestrian connectivity and desire lines are currently used when analysing PXOs. It is recommended that this consideration also be applied to PS assessment when 8-hour pedestrian volumes are less than 100 and the distance to the nearest controlled crossing is greater than 400 m.

## **Financing**

The following table outlines the capital construction and annual operating costs for each of the traffic control devices:

Traffic Control Device		Capital Costs	Annual Operating Costs
Traffic Signals		\$325,000	\$7,592
Pedestrian Signal		\$125,000	\$3,796
Pedestrian Crossover	Type B	\$30,000	\$2,000
	Type C	\$27,500	\$1,830
	Type D	\$7,500	\$1,000

New traffic signals and pedestrian signals are funded using development charges. The 2019 Development Charges Transportation Background Study includes the signalization of 29 intersections (\$9,425,000) and 40 urban intersection improvements which include traffic signals and street lights (\$20,000,000) over the 20 year plan. Funds for signals are also included in larger major roadwork projects.

New pedestrian crossovers are funded from within existing capital budgets and are included in funding requests to Federal and Provincial programs.

## **Near Term Traffic Signal, Pedestrian Signal and Pedestrian Crossover Locations**

The chart found in Appendix B lists the various locations where a traffic control device is being considered and their status with respect to the OTM traffic signal, enhanced pedestrian signal warrant and the OTM pedestrian crosswalk warrants. Near term installations are described more fully in the following sections.

### Near Term Traffic Signals

Traffic signal implementation is planned for South Carriage Road and Hyde Park Road in 2019 as per Municipal Council direction.

Traffic signals at Wilton Grove Road and Commerce Road (the Maple Leaf plant entrance) will be constructed as part of the comprehensive road improvement project planned to begin in 2019 in coordination with the development construction. The traffic impact study (TIS) for the development identified the need for a traffic signal to support the development.

The intersections of Blackwater Road/Adelaide Street North and Oxford Street West/Riverbend Road do not currently meet the traffic signal warrant; however, construction of traffic signals is planned for 2020 based on the progress of development, anticipation that the warrant will be met and the availability of sufficient capital budget funds for construction.

Traffic signals at Riverside Drive and Beaverbrook Avenue have been the subject of previous Civic Works Committee reports in October 6, 2014 and November 29, 2016. These reports responded to resident requests for traffic signals and considered the corresponding impact on traffic flow on Riverside Drive. As development in the area increases, the intersection is now very near the signal warrant based on side street delay. Signals are planned in 2020 or 2021 depending on property acquisition needs. A short right-turn lane was installed to partially mitigate the impacts to traffic flow.

There is a need for a traffic signal at Pack Road and Colonel Talbot Road to address an approaching traffic warrant and also to assist pedestrians wishing to access transit. In recognition of the pedestrian connectivity need, the 2019 Development Charges Background Study project scheduling separates and accelerates the Pack Road intersection component from a larger urbanization project on Colonel Talbot Road. This work will be done in conjunction with the installation of sidewalk connections and improved transit amenities in the quickest timeframe possible acknowledging the project scope and financing. Construction is planned for 2021 based on availability of capital funds and the design schedule.

#### Near Term Pedestrian Signals

Using the new London developed pedestrian signal warrant, a PS is warranted on Richmond Street near Westchester Road and proposed for implementation in 2020. An 8-hour count observed 167 pedestrians.

Pedestrian connectivity and desire lines is also now being considered when assessing PSs far from another controlled crossing. An 8-hour count observed 85 pedestrians crossing Fanshawe Parking Road East at Fremont Avenue with the main destination being A. B. Lucas Secondary School. The nearest controlled crossing is at Adelaide Street North which is 440 m east. PS installation is proposed in 2020.



#### Near Term Pedestrian Crossovers

London has been proactive with PXO implementation since enabled by Highway Traffic Act amendments. This will continue with new PXOs at ten locations across the city in 2019.

## CONCLUSION

Traffic control assessment balances the needs of all road users and optimizes safety. The warrants used are standardized across Ontario which fosters consistent road user expectation and manages municipal liability. Predictions are used when coordinating with development planning and implementation.

Two enhancements to current processes are recommended in response to concerns and to support active transportation and healthy and vibrant neighbourhoods. The recommendations will support more controlled pedestrian crossings where pedestrian volumes, connectivity and desire lines are detected. The two enhancements will improve the quality of pedestrian environments as per Council's Strategic Plan.

In 2019 a traffic signal is planned for South Carriage Road and Hyde Park Road as per Municipal Council's direction. The Wilton Grove Road and Commerce Road traffic signal will be constructed as part of the road improvements planned for 2019. The traffic signal designs for the Blackwater Road/Adelaide Street North, Hamilton Road/Clarke Road, Sunningdale Road East/South Wenige Drive East and Pack Road/Colonel Talbot Road intersections were started in 2018. Construction of the Blackwater Road/Adelaide Street North and Oxford Street West/Riverbend Road traffic signals is currently planned for 2020. The other signals in design will be implemented as warrants are met. Pack Road/Colonel Talbot Road will be implemented in 2021 in coordination with comprehensive intersection improvements. Signals at Riverside Drive/Beaverbrook Avenue are also planned for 2021. Traffic signal implementation at Gainsborough Road/Coronation Drive (west leg) and Sunningdale Road East/South Wenige Drive East are forecasted for 2021 and 2022 respectively based on warrant monitoring and availability of funds.

Using the new London developed warrant, pedestrian signals are recommended at Fanshawe Park Road East/Fremont Avenue and Richmond Street near Westchester Road. These pedestrian signals are scheduled for 2020.

Type D PXOs are planned in 2019 for Whisker Street/Chambers Avenue, Buroak Drive/Denview Avenue roundabout, Helena Montague Avenue/Grand View Avenue and Belmont Drive/Hillsborough Road intersections. PXOs are also planned for the Firefly Drive/Repton Avenue, Lola Street/Belvedere Avenue intersections and Dundas Street between Adelaide Street North and Elizabeth Street based on pedestrian connectivity. Other PXO locations may be added as traffic studies are completed. A by-law amending the Traffic and Parking By-law can be found in Appendix A to add the above PXOs.

**Acknowledgements:**

This report was prepared with the assistance of Mark Ridley, Transportation Planning and Design Division and Alexei Chkouro, Roadway Lighting and Traffic Control Division.

<b>SUBMITTED BY:</b>	<b>REVIEWED AND CONCURRED BY:</b>
<b>SHANE MAGUIRE, P. ENG. DIVISION MANAGER, ROADWAY LIGHTING AND TRAFFIC CONTROL</b>	<b>DOUG MACRAE, P.ENG., MPA DIRECTOR, ROADS AND TRANSPORTATION</b>
<b>RECOMMENDED BY:</b>	
<b>KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL AND ENGINEERING SERVICES AND CITY ENGINEER</b>	

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Attach: Appendix A: Proposed Traffic and Parking By-Law Amendments  
Appendix B: Future Traffic Signals, Pedestrian Signals and Pedestrian  
Crossovers



## APPENDIX A

### BY-LAW TO AMEND THE TRAFFIC AND PARKING BY-LAW (PS-113)

Bill No.

By-law No. PS-113

A by-law to amend By-law PS-113 entitled, "A by-law to regulate traffic and the parking of motor vehicles in the City of London."

WHEREAS subsection 10(2) paragraph 7. Of the *Municipal Act, 2001*, S.O. 2001, c.25, as amended, provides that a municipality may pass by-laws to provide any service or thing that the municipality considers necessary or desirable to the public;

AND WHEREAS subsection 5(3) of the *Municipal Act, 2001*, as amended, provides that a municipal power shall be exercised by by-law;

NOW THEREFORE the Municipal Council of The Corporation of the City of London enacts as follows:

#### 1. Pedestrian Crossovers

Schedule 13.1 of By-law PS-113 is hereby amended by **adding** the following rows:

Belmont Drive	At the east side of the intersection with Hillsborough Road
Belvedere Avenue	At the north side of the intersection with Lola Street
Buroak Drive	At the west side of the intersection with Denview Avenue
Buroak Drive	At the east side of the intersection with Denview Avenue
Chambers Avenue	At the north side of the intersection with Whisker Street
Denview Avenue	At the south side of the intersection with Buroak Drive
Denview Avenue	At the north side of the intersection with Buroak Drive
Dundas Street	122 m east of Adelaide Street North
Grand View Avenue	At the north side of the intersection with Helena Montague Avenue
Repton Avenue	At the south side of the intersection with Firefly Drive

This by-law comes into force and effect on the day it is passed.

PASSED in Open Council on May 21, 2019

Ed Holder, Mayor

Catharine Saunders, City Clerk

First Reading – May 21, 2019

Second Reading – May 21, 2019

Third Reading – May 21, 2019

**APPENDIX B**

**Future Traffic Signals, Pedestrian Signals and Pedestrian Crossovers**

Traffic Signals				
East-West Street	North-South Street	Minimum Volume Warrant <sup>(1)</sup>	Delay Warrant <sup>(1)</sup>	Comment
Wilton Grove Road	Commerce Road / Maple Leaf Entrance	-	-	The TIS identified a traffic signal is required to service the future near-term development. Construction is scheduled for 2019 with major project.
Fanshawe Lake Conservation Area Entrance	Clarke Road	69%	95%	This will be part of the 2020 Veteran's Memorial Parkway extension. Warrant will be met with the intersection reconfiguration.
Byron Baseline Road	Lansing Avenue	88%	76%	Currently an all-way stop. Continue to monitor.
Riverside Drive	Beaverbrook Avenue	65%	98%	A traffic signal may increase short-cutting traffic; 14 pedestrians in 8 hours. A traffic signal is planned for 2020 <sup>(2)</sup> .
Blackwater Road	Adelaide Street North	77%	85%	Design is underway. Construction is planned for 2020 <sup>(2)</sup> .
Hamilton Road	Clarke Road	79%	79%	Design is complete. Construction is planned for 2021 <sup>(2)</sup> .

Base Line Road East	High Street	90%	62%	Currently an all-way stop.
Gainsborough Road	Coronation Drive (west leg)	66%	86%	Construction is planned for 2021 <sup>(2)</sup> .
Sunningdale Road East	South Wenige Drive East	74%	77%	Design is underway Construction is planned for 2022 <sup>(2)</sup> .
Pack Road	Colonel Talbot Road	82%	69%	Required for pedestrian connectivity. Anticipate that the full traffic signal warrant will be satisfied when the Silverleaf development is complete. Planning is underway for a comprehensive intersection improvement including a traffic signal and sidewalks for construction in 2021 <sup>(2)</sup> .
Sunningdale Road East	Clarke Road	81%	56%	Continue to monitor as development in the area increases. Construction is tentatively planned for 2022 <sup>(2)</sup> .
South Carriage Road	Hyde Park Road	70%	67%	Construction is scheduled for 2019 as per Municipal Council resolution.
Fanshawe Park Road East	Stackhouse Avenue	45%	68%	Continue to monitor as development north of Fanshawe Park Road East increases.
Oxford Street West	Riverbend Road	64%	41%	The traffic impact study for the

				development suggested a traffic signal would be triggered with area growth and upon completion of development. Design to start in 2019 for construction in 2020 <sup>(2)</sup> based on development progress.
Pedestrian Signals				
Westchester Drive	Richmond Street	100% (80% <sup>(3)</sup> )	0%	167 pedestrians in 8 hours. 83 pedestrians were delayed for 10 seconds or more. Recommended for installation based on the new PS warrant for construction for 2020 <sup>(2)</sup> .
Fanshawe Park Road East	Fremont Avenue	100% (35% <sup>(3)</sup> )	0%	85 pedestrians in 8 hours. 40 pedestrians were delayed for 10 seconds or more. Recommended for installation based on the new PS warrant for construction for 2020 <sup>(2)</sup> .
Tecumseh Avenue East	Wharncliffe Road South	56% (28% <sup>(3)</sup> )	0%	61 pedestrians in 8 hours. 23 pedestrians were delayed for 10 seconds or more.
Grosvenor Street	Adelaide Street North	56% (26% <sup>(3)</sup> )	0%	56 pedestrians in 8 hours. 21 pedestrians were delayed for 10 seconds or more.
Dundas Street	Beatrice Street	54% (27% <sup>(3)</sup> )	0%	54 pedestrians in 8 hours. 23 pedestrians

				were delayed for 10 seconds or more.
Culver Drive	Clarke Road	53% (23% <sup>(3)</sup> )	0%	53 pedestrians in 8 hours. 28 pedestrians were delayed for 10 seconds or more.
St. James Street	Colonel Talbot Road	50% (17% <sup>(3)</sup> )	0%	50 pedestrians in 8 hours. 21 pedestrians were delayed for 10 seconds or more.
Leathorne Avenue	Adelaide Street North	48% (20% <sup>(3)</sup> )	0%	48 pedestrians in 8 hours. 25 pedestrians were delayed for 10 seconds or more.
Trafalgar Street	East of Ash Street	46% (18% <sup>(3)</sup> )	0%	46 pedestrians in 8 hours. 21 pedestrians were delayed for 10 seconds or more.
Commissioners Road West	Gordon Avenue	45% (24% <sup>(3)</sup> )	0%	45 pedestrians in 8 hours. 32 pedestrians were delayed for 10 seconds or more.
Ambleside Drive	Western Road	23% (14% <sup>(3)</sup> )	0%	23 pedestrian in 8 hours. 15 pedestrians were delayed for 10 seconds or more.
Commissioners Road West	West of Andover Drive	18% (8% <sup>(3)</sup> )	0%	18 pedestrians in 8 hours. 6 pedestrians were delayed for 10 seconds or more.
Oxford Street West	Headley Gate	3% (2% <sup>(3)</sup> )	0%	3 pedestrians in 8 hours. 1 pedestrians were delayed for 10 seconds or more.

Pedestrian Crossovers				
Whisker Street	Chambers Avenue	100%	n/a	320 pedestrians in 4 hours; route to school; Type D PXO planned for 2019.
Buroak Drive	Denview Avenue	100%	n/a	139 pedestrians in 2 hours; route to school; roundabout; Type D PXO planned for 2019.
Helena Montague Avenue	Grand View Avenue	100%	n/a	206 pedestrians in 4 hours; route to school; Type D PXO planned for 2019.
Belmont Drive	Hillsborough Road	100%	n/a	126 pedestrians in 4 hours; route to school; Type D PXO planned for 2019.
Firefly Drive	Repton Avenue	100%	n/a	Route to school; Type D PXO planned for 2019.
Ensign Drive	Andover Drive	73%	n/a	Route to school; Type D PXO planned for 2020 <sup>(2)</sup> .
Virginia Road	Hastings Drive	71%	n/a	Route to school; existing PXO 135 m north on Hastings Drive
Ashley Crescent (south intersection)	Jalna Avenue	69%	n/a	Route to school; Type D PXO planned for 2020 <sup>(2)</sup> .
Grosvenor Avenue	Barker Street	65%	n/a	Route to school; Type D PXO planned for 2020 <sup>(2)</sup> .

Notes:

- (1) For traffic signals the Combination Warrant is when the Minimum Volume Warrant and the Delay Warrant are greater than 80%.
- (2) Construction dates are tentative and are dependent on sufficient Capital budget funds.
- (3) For pedestrian signals the Minimum Volume and Delay Warrants follow a formula outlined out in Ontario Traffic Manual