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TO:	**CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON OCTOBER 6, 2014**
FROM:	**EDWARD SOLDO, P. ENG. DIRECTOR, ROADS AND TRANSPORTATION**
SUBJECT:	**RIVERSIDE DRIVE & BEAVERBROOK AVENUE INTERSECTION IMPROVEMENTS**

RECOMMENDATION

That on the recommendation of the Director, Roads and Transportation, the installation of a traffic signal and the construction of a westbound right turn lane at the intersection of Riverside Drive and Beaverbrook Avenue **BE APPROVED**.

BACKGROUND

Purpose

This report provides Municipal Council with an overview of the traffic situation and seeks the approval of the staff recommendation to install a traffic signal and related intersection improvements at the intersection of Riverside Drive and Beaverbrook Avenue.

Context

The issue of traffic concerns at the intersection of Riverside Drive and Beaverbrook Avenue has been raised by many residents and some members of Council for several years. Staff has been requested in the past to determine the feasibility of traffic signals at the subject intersection to improve traffic operation.

Transportation staff previously undertook traffic reviews for potential signalized intersection. The studies showed that traffic on Riverside Drive would be impacted adversely with significant capacity reduction and increased delay time during peak time periods. The conclusion at the time was to delay signal installation for further consideration when Riverside Drive is widened to provide additional capacity. Road widenings usually resolve intersection access concerns by reducing congestion on the arterial road and creating more left-turn opportunities.

The Smart Moves London 2030 Transportation Master Plan recommended Riverside Drive be widened to four lanes. However, upon further detailed review of constraints such as the Mount Pleasant Cemetery on the northeast corner of the intersection and adjacent shallow frontage properties and slopes, the road widening recommendation was not included in the 2014 Development Charges Background Study. Therefore the widening of Riverside Drive is not included in the 20-Year Transportation Growth Program.

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On May 6, 2014 Council resolved the following:

"That the communication dated April 28, 2014, received from Councillor J.L. Bryant and Councillor P. Hubert, with respect to high density traffic zone safety issues at Beaverbrook Avenue and Riverside Drive, BE REFERRED to the Civic Administration for report back as soon as possible with an alternate plan, notwithstanding previous reports on this matter; it being noted that the Civic Administration will consult with both Councillor J.L. Bryant and Councillor P. Hubert as part of the review. (2014-T08) (8/12/CWC)"

Recently, a petition with approximately 300 signatures requesting the installation of a 3-way stop or traffic signals at Riverside Drive and Beaverbrook Avenue was received by the City. The petition cited resident concerns with traffic volumes on these roads, speed, and limited sight lines at the intersection.

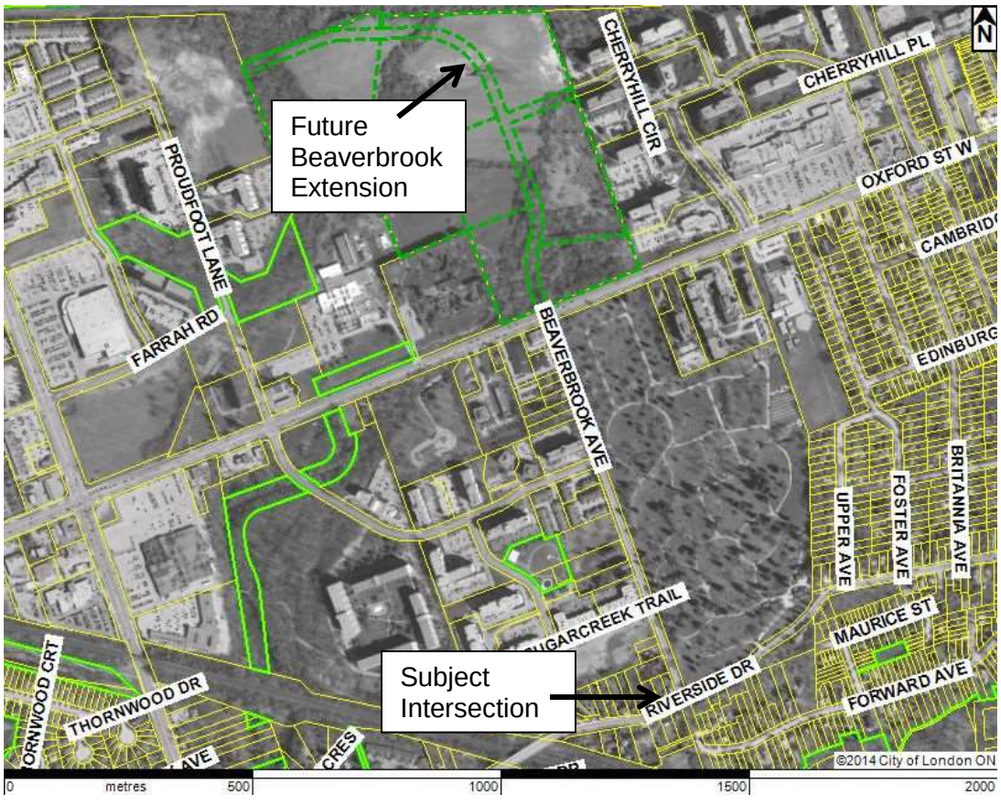
DISCUSSION

Existing Conditions

Riverside Drive is a 2-lane arterial with annual average daily traffic of approximately 20,000 vehicles per day near the intersection. Beaverbrook Avenue is a secondary collector with annual average daily traffic of approximately 6,000 vehicles per day that terminates at a T-intersection with Riverside Drive as shown on Figure 1. It is planned that Beaverbrook Avenue will extend north of Oxford Street West and connect with Proudfoot Lane to the west in the future when development occurs.

Mount Pleasant Cemetery exists in the northeast quadrant and the Living Waters Ministry Healing Centre Church exists to the northwest. The south side of Riverside Drive is bordered closely by residential properties on a ground surface that slopes lower to the south. A pedestrian staircase exists directly south of Beaverbrook Avenue that connects to a path and Forward Avenue further south.

Figure 1 Site Area



The intersection of Riverside Drive and Beaverbrook Avenue is currently traffic controlled by a one-way “Stop” sign located on the southbound approach of Beaverbrook Avenue. Both roads are considered at or above their theoretical traffic volume capacity.

Turning left from Beaverbrook Avenue safely onto Riverside Drive is challenging, in particular during the peak hour periods. This leads to high traffic delays and long traffic queues on Beaverbrook Avenue. Currently, the southbound left turn movement is operating over capacity during the morning and afternoon peak hour periods with Level of Service (LOS) “F”. Level of service is a technical measure of intersection traffic operation that predicts delay by comparing traffic volume to capacity. LOS “A” is ideal and indicates free-flow conditions. LOS “F” is the worst and indicates that intersection operations are failing and congestion and delays are significant.

ALTERNATIVE SOLUTIONS

The continuation of the status quo for the subject intersection is not acceptable from transportation or travelling public expectation perspective. The following options were evaluated in order to improve traffic operation and safety.

Signalized Intersection with No Road Improvements

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 collision between vehicles entering intersections from different directions. However, traffic signals can be detrimental to the operational efficiency of the roadway system and can increase some types of traffic collisions.

The installation of traffic control signals are recommended at intersections where the traffic volume or collision data indicates that their installation is needed to address operational and/or safety issues. The Ontario Traffic Manual (OTM) specifies the warrant process that is followed by the City of London. 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 while still acknowledging that traffic control signals can be detrimental to the operational efficiency of our roadway system.

A recent traffic count at the Riverside Drive/Beaverbrook Avenue intersection showed that the signal does not meet the OTM warrant but is very close at 94% of the warrant. With anticipated growth, the warrant is expected to be satisfied in the near future. However, an analysis of the traffic flow showed that the signalization of this intersection will significantly impact the capacity of Riverside Drive and result in long westbound queues during peak times. The analysis under existing traffic volumes predicts poor traffic operations. The westbound through traffic would back up 400 meters during the afternoon peak hour period and the overall intersection LOS would be “D”. This poor level of service would deteriorate even further with future traffic growth.

The estimated cost for design and construction of a traffic signal at the subject intersection is $300,000.

Signalized Intersection with Road Improvements

For this alternative, a westbound right-turn lane was considered to mitigate the impact on the westbound through traffic on Riverside Drive if a traffic signal is installed. The traffic analysis under current traffic volumes with a westbound right-turn lane predicts the westbound through traffic would back up to 235 meters during the afternoon peak hour period and the overall intersection LOS would be “B”. These results predict significantly better traffic operations when compared with the previous alternative.

A preliminary site investigation showed that the cemetery fence is located at distances ranging from 3.5 m to 6 m from the edge of the Riverside Drive pavement east of Beaverbrook Avenue. A minimum 5.5 m width will be required for the right-turn lane and sidewalk and minor cemetery impacts are possible. It should be noted that the existing fence is not necessarily located along the property line and more site survey will be required to determine any impacts in detail.

The preliminary estimated cost for this alternative is in the order of $500,000.

It is worth noting that installing a traffic signal at the intersection of Riverside Drive and Beaverbrook Avenue will potentially increase the cut-through traffic on Beaverbrook Avenue and ultimately increase traffic volume using Beaverbrook Avenue and Proudfoot Lane.

Analysis of Future Conditions

A confirmatory sensitivity analysis was conducted to evaluate the intersection under future conditions. A conservative value of 2% traffic growth was used to analyze the intersection for the 10-year horizon. The traffic analysis under future conditions with a westbound right-turn lane showed that westbound through traffic would back up to 334 meters during the afternoon peak hour period and the overall intersection LOS would be “C”. The results are considered acceptable in the urban environment.

Roundabout Concept

A feasibility study to introduce a roundabout concept for the intersection of Riverside Drive and Beaverbrook Avenue was conducted. The geometric design and traffic operation for a single lane roundabout design based on City standards were evaluated.

The traffic analysis showed that the intersection traffic operations would operate very poorly with the roundabout concept. The property impacts associated with a roundabout are significant including potential impacts to both private property and the cemetery. Physical restrictions such as adjacent structures and existing grades add to the roundabout challenge. The pedestrian stairs connecting Riverside Drive with Forward Avenue south of Riverside Drive would likely also be impacted.

Due to the site constraints, the cost of implementing a roundabout at this location is high. The preliminary estimated cost of the roundabout option is in the order of $1.3 to 1.5 Million.

Traffic Signals on Beaverbrook Avenue at Oxford Street West

Beaverbrook Avenue currently intersects with Oxford Street West as a T-intersection and a one way stop on Beaverbrook Road. It is planned that Beaverbrook Avenue will extend north of Oxford Street West and connect with Proudfoot Lane to the west in the future when development occurs. The intersection of Oxford Street West and Beaverbrook Avenue will be signalized when warranted which is expected once Beaverbrook Avenue is extended and the area to the north of Oxford Street West is developed. The future configuration will provide more flexibility for general and commuter traffic to select preferred routes. However, signalization of the Oxford Street West intersection at the current time will not resolve the access issue at the Riverside Drive intersection.

CONCLUSION

In light of the technical analyses, intersection improvements comprising a traffic signal and a westbound right turn lane are recommended for the intersection of Riverside Drive and Beaverbrook Avenue. It is anticipated that the intersection will operate at an acceptable level of service and traffic delays on Beaverbrook Avenue will improve significantly.

Subject to Council approval, the detailed design for construction of the signal and required road improvements will be prepared for construction in 2015. Funding is available through Transportation Growth accounts. The design will include an assessment of driver sight-lines as well as other design parameters.

The installation of this traffic signal will result in estimated additional annual operating costs to the Environmental and Engineering Services Department budget of $6,590 after installation in 2015.

It is noted that the improved access to Riverside Drive is predicted to encourage the migration of additional traffic onto Beaverbrook Avenue. Beaverbrook Avenue is a secondary collector that already experiences traffic usage above its theoretical traffic capacity.

Acknowledgements

This report was prepared within the Transportation Planning and Design Division by Maged Elmadhoon; Manager, Transportation Planning, with input from staff within the Transportation Planning and Design Division.

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c: Transportation Advisory Committee c/o Heather Lysynski