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TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON NOVEMBER 11, 2013
FROM:	EDWARD SOLDO, P. ENG. DIRECTOR, ROADS AND TRANSPORTATION
SUBJECT:	BRUCE STREET AND ELMWOOD AVENUE FEASIBILITY OF ONE-WAY TO TWO-WAY CONVERSION

RECOMMENDATION

That on the recommendation of the Director, Roads and Transportation, the following actions **BE TAKEN** with respect to the Feasibility Study for the conversion of Bruce Street and Elmwood Avenue from one-way to two-way operation:

- (a) The Feasibility Study Report **BE RECEIVED** for information; and,
- (b) Civic Administration **BE DIRECTED** to survey the adjacent property owners to determine the level of local resident support for this change.

BACKGROUND

Purpose:

On May 6, 2013, the Civic Works Committee received a request from Councillor Denise Brown for Civic Administration to review the possibility of changing Bruce Street and Elmwood Avenue, between Ridout Street and Wharncliffe Road, from one-way streets to two-way streets due to safety concerns.

The purpose of this report is to provide Committee and Council with the results of the feasibility study with respect to converting Bruce Street and Elmwood Avenue from one-way streets to two-way streets.

DISCUSSION

Bruce Street and Elmwood Avenue are one-way streets located in the Old South neighborhood area. In order to assess the possibility of converting these streets to two-way streets, a detailed feasibility study was undertaken by Delcan Corporation to evaluate the impact of the conversion on the streets and adjacent intersections and the required modifications and cost impacts. The Feasibility Study Executive Summary is attached in Appendix "A". The study area (illustrated below) has been defined as Bruce Street and Elmwood Avenue from Wharncliffe Road to Ridout Street including all intersections within the area.



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On major arterial corridors, one-way operation can provide many benefits including improved traffic signal coordination and overall improvements to the flow of traffic. In a local neighborhood context such as that of Bruce Street and Elmwood Avenue, the one-way operation provides simplified routes for travel into and out of the area as well as reduced delay to side street vehicles (only delayed by one direction of traffic flow). The drawback to this method of operation locally is that it can be confusing to those unfamiliar with the configuration and causes residents along these streets to backtrack when travelling within the neighborhood. One-way streets were more common in the 1950s and unusual in today's neighborhood urban design.

Existing Conditions:

Bruce Street is an eastbound one-way secondary collector with a posted speed limit of 50 km/h and traffic volume of 2000 vehicles a day which is under capacity. On-street parking is currently permitted on the north side of the roadway and all intersections are two or all-way stop controlled.

Elmwood Avenue is a westbound one-way secondary collector with a posted speed limit of 50 km/h and traffic volume of 3500 vehicles a day which is under capacity. On-street parking is currently permitted on the south side of the street between Wharncliffe Road and Wortley Road. East of Wortley Road, parking is achieved via bays installed in the boulevard on the south side of the roadway. A traffic control signal is in place at the intersection of Elmwood Avenue and Wharncliffe Road; all other intersections are two or all-way stop controlled.

The signalized intersection of Wharncliffe Road and Elmwood Avenue is operating at a Level of Service (LOS) "A" indicating very minimum delays and no traffic operational issues. The unsignalized intersections within the study area are operating well under existing conditions, with no significant capacity issues present.

London Transit Commission (LTC) currently operates the 15 Westmount bus route in the study area. Originating in the downtown core, route 15 travels south on Ridout Street before turning west onto Elmwood Avenue followed by a turn south on Edward Street, eventually terminating at the Westmount Mall. On the return trip, the route travels north on Cathcart Street, east on Bruce Street and north on Ridout Street.

The safety concern raised by Councilor Brown with respect to wrong-way traffic on the one-way streets was investigated onsite. The consultant report showed that as part of the traffic volume surveys completed during the morning and afternoon peak hour periods at the study area intersections, a total of approximately 25 vehicles were noted turning the wrong-way on Bruce Street and Elmwood Avenue. A significant portion of the wrong-way traffic was observed on the eastbound right turn movement at the intersection of Elmwood Avenue and Ridout Street. In addition to the vehicular traffic, a number of cyclists were also observed travelling the wrong-way on these roadways.

A review of a five year collision summary revealed no apparent collisions which involved a motorist travelling the wrong way on either Bruce Street or Elmwood Avenue. A number of sideswipe collisions were noted along these streets, likely due to vehicles pulling out of parking spots into through vehicles. At intersections within the study area, a number of rear end, and T-bone collisions were noted however, these are typical of stop-controlled intersections.

Potential Conversion to Two-Way Operations:

To determine the traffic volume reassignment (diversion of traffic) for two-way operations, it was assumed that 50% of through and turning traffic from each roadway would shift to the corresponding intersection on the other street. A traffic operational analysis was undertaken to determine the traffic operations with a two-way configuration in place on Bruce Street and Elmwood Avenue. Overall, the analysis showed that the signalized and unsignalized intersections within the study area would operate well with two-way traffic in place. No critical movements or significant capacity issues were found during either peak hour periods.

The potential for the two-way street conversion was discussed with the London Police and they have advised that they receive very few complaints and/or traffic related concerns from residents in the area. The police have indicated that they have no objection to the potential conversion to two-way streets as long as the lane widths safely permit the travel on two way

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directions.

The infrastructure and operating requirements for converting Bruce Street and Elmwood Avenue from one-way to two-way operations are briefly summarized below:

Bruce Street

- Maintain the existing on-street parking within the 8 metre width of the road. Narrow streets with parking provide a level of traffic calming.
- Creation of one westbound and one eastbound lane.
- Installation of westbound stop control and stop bar at Wharncliffe Road.
- Elimination of the existing eastbound left turn lanes at Wortley Road and Ridout Street to accommodate westbound traffic.
- Creation of a westbound lane at Wortley Road with stop control on the east leg.
- Removal of all existing one-way and do not enter signage for the length of Bruce Street.
- In coordination with LTC staff, determine the possibility to change the routing of the 15 Westmount bus so only Elmwood Avenue is utilized due to the wider pavement width.
- The cost of converting Bruce Street to two-way street is estimated \$5,762.

Elmwood Avenue

- Maintain the existing on-street parking within the 9.2 metre width of the road.
- Creation of one westbound and one eastbound lane.
- Removal of the westbound left turn lane at Wharncliffe Road to accommodate eastbound traffic.
- Conversion of eastbound right turn lane on the west leg at Wharncliffe Road to a through/right turn lane.
- Removal of pork chop island on west leg at Wortley Road.
- Adjust pedestrian crosswalks as necessary.
- Installation of eastbound lane with stop control and stop bar at Ridout Street.
- Removal of all existing one-way and do not enter signage for the length of Elmwood Avenue.
- The cost of converting Elmwood Avenue to two-way street is estimated \$56,885.

Public Consultation:

Conversion of one-way streets to two-way is a Schedule A+ Activity under the Municipal Class Environmental Assessment Process. Schedule A+ activities are pre-approved, however, the public is to be advised prior to implementation.

Given this is a non-essential undertaking in an established neighbourhood, Civic Administration has initiated this public participation meeting. The intent of this public participation meeting is to present the Feasibility Study findings to the Committee and public and receive comment. The public participation meeting was advertised in the Londoner and via notices distributed to all adjacent property owners.

Some initial public comments were received from two local residents with opposition to this proposal. The comments indicated that maintenance of on-street parking, as proposed, is important. Suggestions were made that wrong-way travel by motorists and cyclists are low risk and should be dealt with through additional signage.

CONCLUSION

A Feasibility Study to examine the conversion of Bruce Street and Elmwood Avenue from one-way operation to two-way was conducted at the request of the Ward Councillor. The feasibility study determined:

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- Bruce Street and Elmwood Avenue currently operate well during the morning and afternoon peak hour periods with one-way operations in place.
- Safety concerns currently exist with vehicles and cyclists travelling the wrong-way on these roadways.
- Bruce Street and Elmwood Avenue are expected to continue operating well if converted to two-way operation.
- The estimated total cost of the potential conversion of Bruce Street and Elmwood Avenue to two-way street is not expected to exceed \$63,000.

Given the proposed conversion would effect a non-essential change in an established neighbourhood, a public participation meeting was arranged to provide the public with information and receive delegations and their comments.

Subject to the outcomes of the public participation meeting, staff can survey the adjacent property owners to determine if majority support exists for such a change. If majority support was measured, Administration would arrange for the appropriate amendment to the Traffic and Parking By-law.

Acknowledgements:

This report was prepared within the Transportation Planning and Design Division by Maged Elmadhoon; Manager, Transportation Planning with assistance from Shane Maguire; Division Manager of Roadway Lighting & Traffic Control.

PREPARED BY:	RECOMMENDED BY:
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REVIEWED & CONCURRED BY:	
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Attach: Appendix "A" - Delcan Corporation Report – Feasibility study – Executive Summary

- c. Councillor D. Brown
- R. Scrivens, London Police
- P. Dubniak, London Transit Commission

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Appendix "A"

Feasibility Study – Executive Summary

Delcan Corporation

Introduction

In June 2013, Delcan Corporation (Delcan) was retained by the City of London to examine the feasibility of converting Bruce Street and Elmwood Avenue, located in the Old South neighborhood, from one-way to two-way operations between Wharncliffe Road and Ridout Street. The request for this study originated at a meeting of City Council where local safety concerns were raised regarding the existing one-way configuration.

The study area included significant intersections along each roadway including:

Bruce Street at:

- Wharncliffe Road;
- Cathcart Street;
- Wortley Road; and
- Ridout Street.

Elmwood Avenue at:

- Wharncliffe Road;
- Edward Street;
- Cathcart Street;
- Wortley Road; and
- Ridout Street

Existing Conditions

Operationally, no significant capacity or delay issues were found at any of the study area intersections.

A number of potential safety concerns were noted during visits to the study area including:

- Vehicles (approximately 25) and cyclists travelling the wrong-way on both roadways;and
- Motorists failing to yield the right-of-way to vehicles and pedestrians at the intersection of Elmwood Avenue and Wortley Road.

A review of the five year collision history in the study area was undertaken; no collisions were attributable to vehicles travelling the wrong way. The majority of collisions were related to intersection movements (i.e. right angle, rear end) or parking (sideswipe while pulling out of on street parking).

Characteristics of One-Way and Two-Way Operations

On major arterial corridors, one-way operation can provide many benefits including improved traffic signal coordination and overall improvements to the flow of traffic. In a local neighborhood context such as that of Bruce Street and Elmwood Avenue, the one-way operation provides simplified routes for travel into and out of the area as well as reduced delay to side street vehicles (only delayed by one direction of traffic flow). The drawback to this method of operation locally is that it can be confusing to those unfamiliar with the configuration and causes residents along these streets to backtrack when travelling within the neighborhood. Additionally, intersections where these roads meet the arterial network can become congested as this layout funnels inbound and outbound traffic to defined routes. At Bruce Street and Elmwood Avenue however, numerous other streets to the north and south of the study area are available to provide access to the neighborhood.

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With two-way operation on Bruce Street and Elmwood Avenue, motorists would be given greater choice in routes used to access the area, and eliminate the need to loop around the block to access properties. Instances of motorists travelling the wrong way on these roadways would be eliminated however; a number of dedicated turn lanes would be eliminated to accommodate the new travel lanes.

Potential Conversion to Two-Way Operations

Traffic volumes were redistributed to assess two-way operating conditions. No significant capacity issues are expected with two-way traffic; however, the area should be monitored for further improvements to operations.

Infrastructure Requirements – Bruce Street

Bruce Street has a current width of approximately 8 metres. With two-way operations including on-street parking, this would allow for two through lanes of approximately 3 metres each with 2 metres for on-street parking. City of London staff have indicated that this would be acceptable as traffic would be calmed by the narrower travel lanes; however, if safety issues develop, the on-street parking would be removed entirely.

The 15 Westmount London Transit bus route currently operates on Bruce Street from Cathcart Street to Ridout Street. The narrower lanes may not be ideal for wider vehicles as other vehicles could be blocked by them.

The following infrastructure modifications will be required to convert Bruce Street from one-way to two-way operations:

- Removal of all existing one-way and do not enter signage;
- Introduction of westbound stop control at the intersections with Wharnccliffe Road and Wortley Road;
- Removal of the eastbound left turn lane at Wortley Road to accommodate westbound vehicles; and
- Installation of yellow pavement delineation markings at intersections to signify two- way traffic.

Infrastructure Requirements – Elmwood Avenue

Elmwood Avenue has a current width of approximately 9.2 metres which would allow for a 2.5 metre parking lane with 3.35 metre wide through lanes.

As with Bruce Street, London Transit operates route 15 Westmount along Elmwood Avenue between Edward Street and Ridout Street. As the through lanes on Elmwood Avenue will be wider than those on Bruce Street with two-way operations in place, consideration should be given to moving the bus route fully to Elmwood Avenue.

The following infrastructure modifications will be required to convert Elmwood Avenue from one-way to two-way operations:

- Removal of all existing one-way and do not enter signage;
- Removal of westbound left turn lane at Wharnccliffe Road;
- Introduction of eastbound stop control at the intersections with Edward Street, Cathcart Street, Wortley Road, and Ridout Street;
- Removal of the existing pork chop island on the west leg of the Wortley Road intersection (adjust pedestrian crosswalks as necessary); and
- installation of yellow pavement delineation marking at intersections to signify two-way operations.

Cost Estimate

Estimates have been prepared to detail the approximate cost of converting Bruce Street and Elmwood Avenue from one-way to two-way operations including sign, pavement marking, and curb modifications. It should be noted that no apparent utility conflicts were

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identified and as such, the cost of any necessary relocations is not reflected in these estimates.

It was estimated that the conversion of Bruce Street described above would cost approximately \$5,800 while the conversion of Elmwood Avenue would cost approximately \$56,900. The conversion of Elmwood Avenue is significantly higher due to the removal of the pork chop island and more involved sign and marking work.

Conclusions and Recommendations

Based on our observations and analysis, it can be concluded that:

- Traffic on Bruce Street and Elmwood Avenue operates well during the AM and PM peak hours with one-way operations in place;
- Safety concerns currently exist with vehicles and cyclists travelling the wrong-way on these roadways as well as the layout of the Elmwood Avenue / Wortley Road intersection;
- Bruce Street and Elmwood Avenue are expected to continue operating well if converted to two-way operation; and
- The cost of basic conversions on Bruce Street and Elmwood Avenue are \$5,762 and \$56,885 respectively.