Municipality Of Chatham-Kent

Infrastructure and Engineering Services

Engineering and Transportation Division

To: Mayor and Members of Council

From: Mark Ceppi, Engineering Technologist

Date: December 19, 2017

Subject: Wallaceburg Travel Planning Study

Recommendations

It is recommended that:

1. The Wallaceburg Travel Pattern Study be accepted for information.

2. Payment of $110,450.72 (including HST) be issued to reimburse the Ministry of Transportation Ontario as the Municipality of Chatham-Kent's 50% share of the Wallaceburg Travel Pattern Study expenses.

Background

At the January 11, 2010 meeting, Chatham-Kent Council approved the following Notice of Motion:

'That Administration investigate the feasibility of establishing a hazardous truck route around Wallaceburg to relieve truck traffic congestion on Murray Street and Margaret Avenue in Wallaceburg.'

As a regional roadway, King's Highway 40 has a major impact on traffic flow through Wallaceburg. Therefore the Ministry of Transportation Ontario (MTO) was contacted by the Engineering and Transportation Division to discuss Council's directive and an agreement was made to conduct a Travel Pattern Study under a 50/50 cost share arrangement. The MTO took the lead in acquiring a transportation engineering consultant to conduct the study

Work on the Wallaceburg Travel Planning Study began in October 2013 and the draft report was presented at the November 23, 2015 Council Meeting by representatives from the consultant, the MTO, and Engineering and Transportation Division staff. Comments from Council discussion were received and the report was revised accordingly. The final report was received in May 2017 and in October 2017 an invoice was received to reimburse the MTO 50% of the study expenses per the cost share arrangement.

The Municipality's share of the study expense is $110,450.72 including taxes. Therefore, under Purchasing By-law #3-2016, Council approval is required for payment of consulting fees of $100,000 or more.

Comments

The Executive Summary for the Wallaceburg Travel Pattern Study can be found in Appendix 'A' (attached). The report in its entirety can be obtained from the Engineering and Transportation Division upon request.

The Travel Pattern Study consisted of two phases: a license plate survey and a road network review. The objectives were to:

- Assess the travel patterns and volumes of autos and trucks travelling to, from and through Wallaceburg;
- Assess the road network and identify any operational constraints both existing and future;
- Determine the potential to mitigate operational problems through diversion of traffic away from central Wallaceburg; and,
- Recommend follow-up studies or actions.

The findings of the report indicate the following:

- Highway 40 south of Wallaceburg is the busiest access with 8,500 vehicles per day and is the primary access for trucks, of which 325 out of 740 are classified as heavy trucks.
- The majority of passenger car and truck trips observed are beginning or ending in Wallaceburg, not passing through Wallaceburg.
- Passenger Car trips passing through Wallaceburg tend to use Highway 40 to the south and are split between Highway 40 and Chatham Kent Road 31 (Kimball Road) to the west and north, respectively.
- Truck trips passing through Wallaceburg tend to use Highway 40 through Wallaceburg (Murray Street – McNaughton Avenue – Dufferin Avenue) with very few using Chatham-Kent Road 31 (Kimball Road). This indicates the weight restriction implemented on Kimball Road in 2010 has been effective.
- The road network currently operates well overall with all intersections operating within acceptable limits. However, the intersection of McNaughton Avenue and Dufferin Avenue experiences Highway 40 traffic volumes that are high enough to cause northbound left turn vehicle queues to exceed the available left turn lane storage length.
- Based on Municipal Official Plan population and employment projections, no new traffic operational problems will arise over the next 20 years other than further increases to the northbound left turn queuing issue identified at the McNaughton Avenue and Dufferin Avenue intersection.

The Wallaceburg Travel Pattern Study provides several mitigating measures including by-pass routes to redirect Highway 40 truck traffic away from central Wallaceburg. These routes, ranging from the ultimate, highest cost solution to lowest cost include:

- Direct roadway connection of Highway 40 south to Highway 40 north constructed to the west of Wallaceburg;
- Roadway improvements to Base Line Road and Arnold Road;
- Roadway improvements to Base Line Road with a new north-south roadway connection to Dufferin Avenue constructed near Snye Road.

However, these by-pass route solutions are not justifiable at this time due to the high capital cost of each compared to low benefit provided to the Wallaceburg road network, which the study found to be operating well overall.

The study reviewed the northbound left turn queuing issue at the intersection of McNaughton Avenue and Dufferin Avenue and found the mitigating options are limited due to the proximity of the Lord Selkirk Bridge (Sydenham River). Physical improvements to the northbound left turn lane are not feasible therefore the study suggests that traffic signal timing and co-ordination modifications may offer minor improvement to the traffic operation conditions.

A roundabout option was also considered for the intersection of McNaughton Avenue and Dufferin Avenue. However, this option would also be costly and require land from adjacent park space and business properties.

Signage to promote an alternative route along Base Line Road, Old Glass Road, Mason Road, and Arnold Street could also be improved. The study notes that signs were previously installed by the Municipality to direct traffic to this route but additional or enhanced signs could be installed to encourage greater use. This could reduce the northbound left turn queues at the intersection of McNaughton Avenue and Dufferin Avenue. However, administration notes that connecting link roadways are eligible to receive provincial funding for roadway lifecycle improvements whereas the alternative route is not.

Conclusion

The Wallaceburg Travel Pattern Study did not identify truck traffic congestion problems on Murray Street and Margaret Avenue, as was stated in the notice of motion. This could be due to a vehicle weight restriction that was implemented on Kimball Road by the County of Lambton in May 2010, which was after the notice of motion. Also, potential by-pass route options for Highway 40 traffic were identified but deemed not justified due to a high cost of implementation with no major traffic operational issues identified in the Wallaceburg road network.

The notice of motion also specifies the establishment of a route for hazardous trucks. The definition of a ‘hazardous truck’ is not identified in the *Highway Traffic Act,* R.S.O. 1990 (HTA) however the transportation of goods deemed to be dangerous is identified

and regulated. Dangerous Goods are defined under the federal *Transportation of Dangerous Goods Act, 1992* and the provincial *Dangerous Goods Transportation Act R.R.O. 1990* provides regulations for transport of such goods. The regulations are for designating or prohibiting goods, issuing permits, insurance requirements, safety, inspections, and other requirements in the transportation of dangerous goods in general and do not provide specific regulations for designating highway routes within a municipality. Therefore, under current regulations a by-pass route established around Wallaceburg would be light vehicle and truck traffic in general and not specifically designated for hazardous trucks.

Areas of Strategic Focus and Critical Success Factors

The recommendation in this report supports the following areas of strategic focus:

☐ Economic Prosperity:

Chatham-Kent is an innovative and thriving community with a diversified economy

☒ A Healthy and Safe Community:

Chatham-Kent is a healthy and safe community with sustainable population growth

☐ People and Culture:

Chatham-Kent is recognized as a culturally vibrant, dynamic, and creative community

☐ Environmental Sustainability:

Chatham-Kent is a community that is environmentally sustainable and promotes stewardship of our natural resources

The recommendations in this report supports the following critical success factors:

☐ Financial Sustainability:

The Corporation of the Municipality of Chatham-Kent is financially sustainable

☐ Open, Transparent and Effective Governance:

The Corporation of the Municipality of Chatham-Kent is open, transparent and effectively governed with efficient and bold, visionary leadership

☐ Has the potential to support all areas of strategic focus & critical success factors

☒ Neutral issues (does not support negatively or positively)

Consultation

The MTO took the lead in acquiring a transportation engineering consulting firm to undertake the Wallaceburg Travel Pattern Study. Through the MTO's request for proposals (RFP) process IBI Group was selected as the study consultant. The Municipality provided available information (Transportation Master Plan, Official Plan, traffic counts, population reports, etc.) to the MTO and the consultant as required.

The Municipality's Purchasing Officer was consulted for direction on the procedure for reimburse the MTO considering Chatham-Kent did not directly hire the consultant. The services provided through the partnership with the MTO were consultant related.

Financial Implications

The Municipality's share of the Wallaceburg Travel Patten Study expense is $110,450.72 (including HST). Therefore, under Purchasing By-law #3-2016, Council approval is required to issue payment of consulting fees of $100,000 or more.

The funding for the study will be provided through Engineering and Transportation Division's Traffic Consulting Fees account.

Prepared by:

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Mark Ceppi
Engineering Technologist
Engineering and Transportation Division

Reviewed by:

_____
Chris Thibert, P. Eng.
Manager, Infrastructure Services
Engineering and Transportation

Reviewed by:

_____
Adam Sullo, P. Eng.
Director
Engineering and Transportation Division

Reviewed by:

_____
Thomas Kelly, P. Eng., MBA
General Manager
Infrastructure and Engineering Services

Consulted and confirmed the content of the consultation section of the report by:

_____
Jennifer Scherle
Purchasing Officer
Financial Services

c. Director, Public Works Division

Attachment: Appendix A: Executive Summary

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Appendix A

Highway 40 - Wallaceburg Travel Pattern Study

Travel Pattern Study Report

Prepared for Ministry of Transportation, Ontario
by IBI Group

April 2017

Executive Summary

The Ministry of Transportation, Ontario (MTO), with the Municipality of Chatham-Kent commissioned the Highway 40 - Wallaceburg Travel Pattern Study due to concerns of traffic and trucks travelling through central Wallaceburg. Concerns were raised by members of the public and the Municipality that through trucks, especially heavy trucks, were causing delay and congestion in Wallaceburg, and that high volumes of trucks presented a noise and safety issue. The purpose of the study includes the following:

- Assess the travel patterns and volumes of autos and trucks travelling to, from and through Wallaceburg;
- Assess the road network and identify any operational constraints both existing and future;
- Determine the potential to mitigate operational problems through diversion of traffic away from central Wallaceburg; and,
- Recommend follow-up studies or actions.

Survey Findings

Travel patterns were determined through a license-plate trace survey, which involved photographing licence plates and matching the plates between stations to determine through trips. Seven locations were selected to form a cordon around Wallaceburg to observe all key entry and exit points for passenger and commercial traffic. Surveys were undertaken on October 8 and October 20 of 2013 to capture the busy fall season when agricultural shipping is high and industry is fully operational. The survey database, after cleaning and expansion, indicated that 20,800 trips to, from, and through Wallaceburg occur on a weekday and 16,000 trips occur on a Sunday.

Travel patterns for passenger cars are illustrated in Exhibit 1, and travel patterns for trucks are indicated in Exhibit 2. Key findings include:

- Highway 40 south of Wallaceburg is the busiest access with 8,500 vehicles per day. It is the primary access for trucks with 740 trucks per day (of which 325 are heavy trucks).
- The majority of both passenger car and truck trips are to/from Wallaceburg, with 70% of cars on Highway 40 south and 55% of trucks travelling to or from Wallaceburg, but not through.
- Through car trips (Exhibit 1) tend to use Highway 40 south of Wallaceburg (2,300 passenger cars per day), and split to the north and west among Chatham-Kent 31, Highway 40 North, and Chatham-Kent 32. Walpole Island is a main origin along Chatham-Kent 31, and Chatham-Kent 32 provides a slightly shorter route to Highway 402 than does Highway 40.
- Through trucks tend to use Highway 40 through Wallaceburg from north to south exclusively. Few through trucks use Chatham-Kent Road 31, indicating that the restriction placed in 2010 has been effective. Of the 340 through trucks per day, 200 are heavy tractor-trailers travelling directly from Highway 40 south to Highway 40 north. Heavy trucks peak in the mid-day, with 20 through trucks per hour. This volume is sufficient to contribute to the public perception of frequent heavy trucks causing traffic slow-downs through Wallaceburg.

Exhibit 1: Travel Patterns of Passenger Vehicles

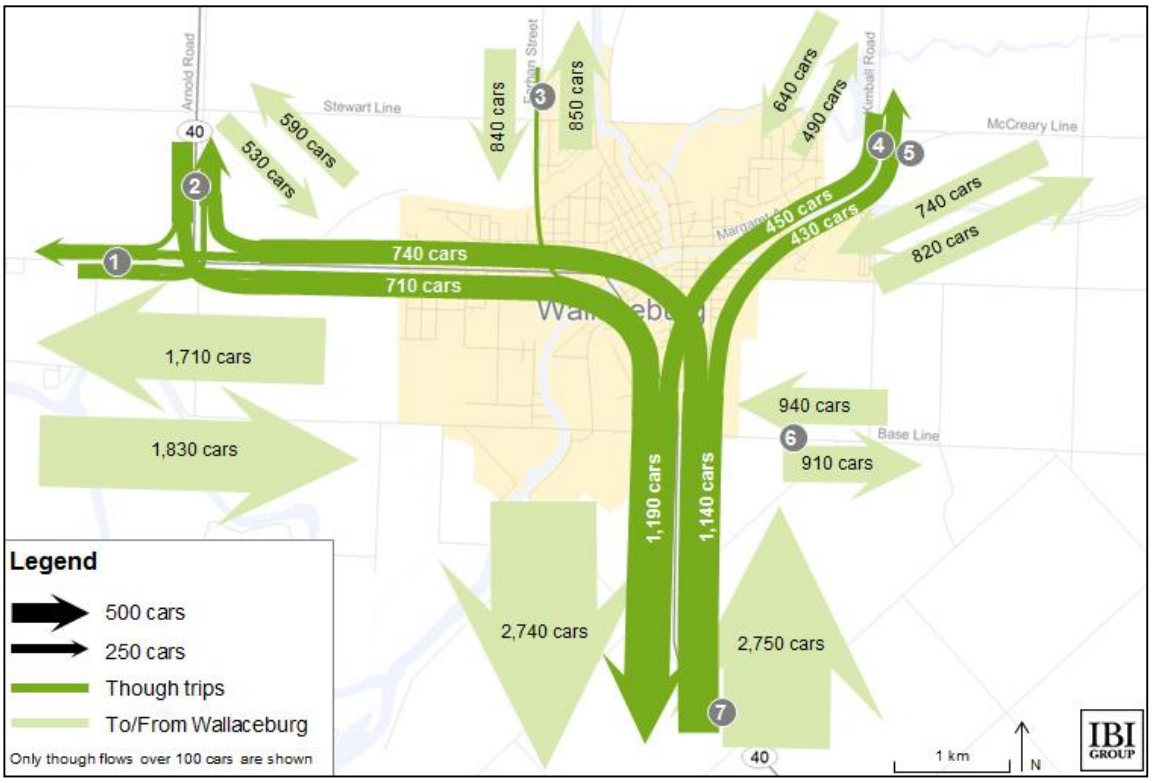
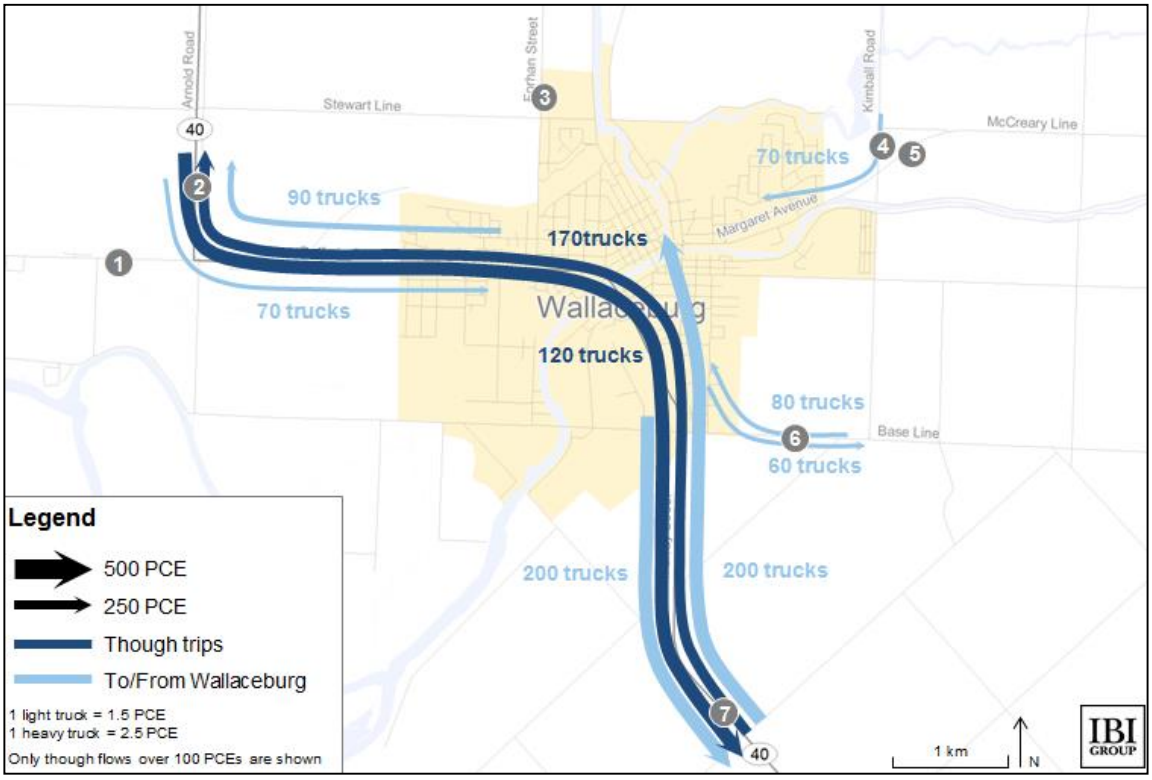


Exhibit 2: Travel Patterns of Trucks (Weekday 24h)



Traffic Analysis

Collected traffic data were brought forward for an operational analysis of the mid-day peak period when trucking activity is highest. The existing conditions analysis indicates that the road network operates well overall with all intersections operating within acceptable limits based on MTO criteria. However, volumes on Highway 40 are high enough to cause long queues for the northbound left turn at McNaughton Avenue and Dufferin Avenue. The queue for the left turn exceeds the turn bay length and blocks the through movement and right-turning movement. Further to the problem location, truck volumes are sufficient to cause occasional slow-moving traffic platoons and public perceptions of delay in the community.

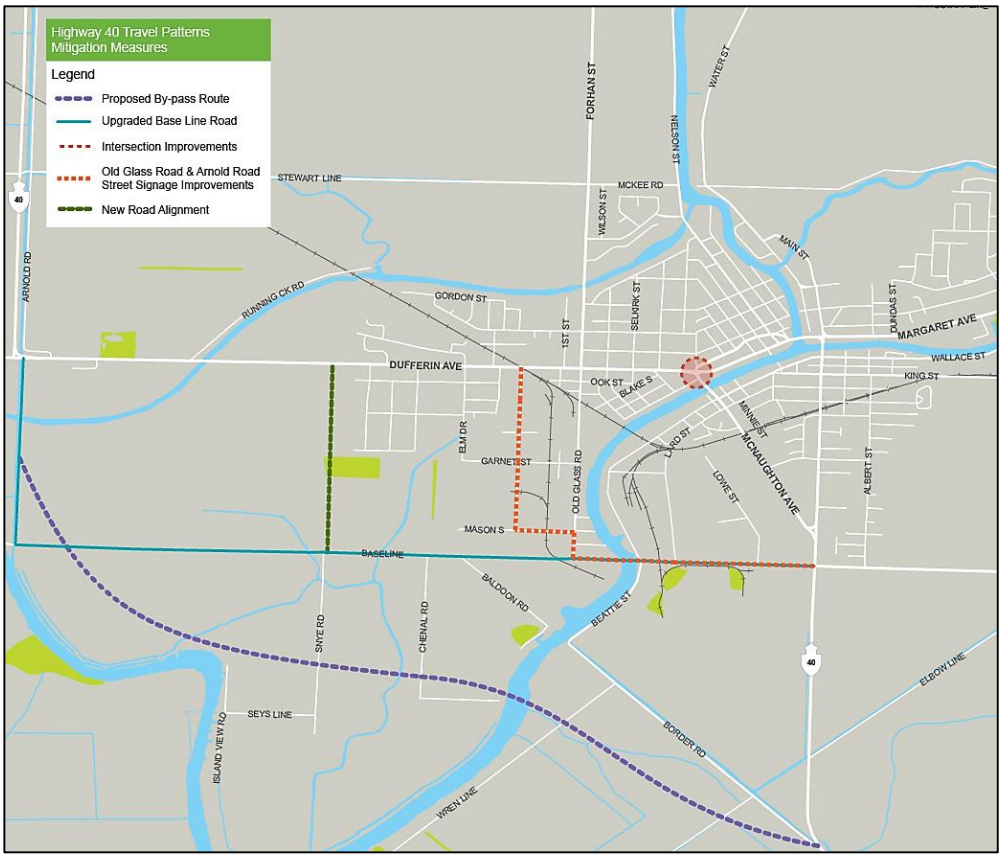
Future conditions traffic forecasts were developed using population and employment projections and the Municipal Official Plan. Forecasts indicate low to moderate growth over the next 20 years. Analysis determined that no new traffic operational problems will arise, although there will be further increases in queuing at the problem location of McNaughton Avenue at Dufferin Avenue, compounding the existing problem.

Overall the traffic analysis indicates that traffic volumes and truck volumes are high enough to cause perceived delay and operational constraints at one location, but the road network generally provides sufficient capacity for through traffic and the problem location is localized.

Mitigation Measures

The study scope included a review of potential improvements to the road network to divert through traffic away from central Wallaceburg or to improve traffic operations. Exhibit 3 indicates the improvements reviewed with a summary provided on the following pages.

Exhibit 3: Map of Potential Mitigation Measures



Highway 40 Bypass

The Highway 40-Wallaceburg bypass is a long-term plan at MTO that was also identified in the 2008 Chatham-Kent Transportation Master Plan for completion by 2028. The bypass would divert through traffic and trucks away from central Wallaceburg as it would provide a direct route between Highway 40 south of Wallaceburg and Highway 40 north of Dufferin Avenue. With an estimated length of 6.2km, the new bypass should offer a travel time of at least 6 minutes compared to current trips through Wallaceburg that require 11-15 minutes or more. Traffic forecasts for the bypass were derived from the survey results and indicate that at least 1,500 vehicles per day would use the bypass.

The proposed bypass would have a high capital cost. The bypass would require property acquisition and new mainline highway construction, including construction of several bridges. A parametric cost estimate indicates that the project would require at least $28 million in 2012 dollars, excluding property acquisition.

Given the high cost and localised nature of current problems, advancing the bypass from its current status as a long-term plan to an EA or short-term plan is not warranted at this time.

Base Line Road and Arnold Road Bypass

A second possibility to divert through traffic away from central Wallaceburg is to upgrade Base Line Road so that it is suitable for trucks. This route follows an existing alignment and it would also provide a time savings compared to the existing routes through Wallaceburg due to fewer signalized and unsignalized intersections.

The current geometry of Base Line Road is not suitable for heavy trucks and significant improvements would be required to bring it to an acceptable standard for through traffic. Improvements would likely include road widening, intersection improvements, road realignment, and new structures across creeks. Upgrades also have the potential to affect several adjacent properties. A parametric cost estimate is that upgrades would cost $9M excluding property acquisitions. Due to the high capital cost and localised nature of the existing problem, the upgrade does not appear justifiable at this time.

New North-South Connection to Base Line Road

A new north-south road alignment has been proposed along the west boundary of Wallaceburg in the vicinity of Snye Road. The road could act as an alternative, lower-cost bypass to divert through traffic and trucks away from central Wallaceburg as it would provide routing via Base Line Road without the significant infrastructure work needed along Arnold Road.

There are a number of potential sub-alternatives for the road with different alignments to avoid natural features in the area or to connect with existing roads. Parametric cost estimates were developed with a range of $6.5M to $9M. The road would require upgrading of 1.3 km of Base Line Road (Snye Road to Old Glass Road) and the cost does not include property acquisition.

This alternative would have a lower cost than the Highway 40 Bypass and the Base Line Road Upgrades and would be equally as effective at diverting trucks away from central Wallaceburg. However, due to the relatively high cost, this upgrade does not appear justifiable at this time.

Intersection Improvements at McNaughton Avenue and Dufferin Avenue

There are limited mitigation options available for travel through Wallaceburg on Highway 40 due to the layout of the existing road network and the few Sydenham River crossings in Wallaceburg. Three potential intersections improvements to address the queuing at McNaughton Avenue and Dufferin Avenue were reviewed. The improvements are extending the northbound left turn bay,

providing a double-left turn for the northbound left, reconstructing the intersection as a roundabout, and improving signal timing and coordination.

The analysis found that a roundabout would operate well but would require significant work involving road widening with potential property impacts on existing park space and some businesses. Alternatively, upgrading the intersection to provide a lengthened northbound left turn lane, or a double-left northbound turn, was not considered practical due to the limited space available and proximity of the Sydenham River Bridge. In both cases these improvements would not reduce through traffic using the intersection.

With physical improvements being constrained, improving signal timing plans and coordination will likely offer some improvements to traffic conditions; however the municipality is already managing the intersection and the degree of improvement would likely be limited.

Alternative Route Signage

In 2010 the Municipality of Chatham-Kent implemented signage to inform truck drivers of another route around central Wallaceburg using Old Glass Road and Arnold Street. The current signage on this route informs the northbound drivers of the alternative route, but existing signs are small and are somewhat difficult to see. Additional or enhanced signage to encourage greater use of the alternative route may reduce use of the northbound left turn in central Wallaceburg.

Improvements could include installing larger, prominent signs located in a visible location for drivers in both directions, and an information campaign including temporary variable message signs, sending information sheets to truck operators, and using the media to release information.

As with the signal timing improvements, the effectiveness of these measures would likely be less than other improvements. However, given the low cost and ease of implementation, signage improvements and refined signal timing plans should be considered for the short to medium term.

Proponent Analysis

Based on the study findings, a proponent statement was developed to recommend follow-up studies or actions for the Municipality of Chatham-Kent and MTO. Following the findings of the mitigation review, recommendations are to pursue smaller-scale short to medium term measures to manage the existing road network and encourage more use of the alternative truck route already in place in Wallaceburg. Traffic conditions, truck volumes, and public concerns should continue to be monitored over the coming years and an updated traffic operation study could be commissioned at a future date, should conditions appear to worsen. The proposed bypass should remain a long-term planning initiative. The following provides the proponent statement:

> *The proponents should consider operational improvements, such as signal timing adjustments and improved signage to improve traffic operations, and to encourage more trucks to use the currently signed alternate truck route (Baseline Road and Old Glass Road). Traffic operations, in particular queues at the intersection of McNaughton Avenue and Dufferin Avenue, should be monitored over the next several years for any improvement or worsening.*