



То:	Council in Committee of the Whole
From:	Warren Munro, HBA, RPP, Commissioner, Development Services Department
Report Number:	CNCL-20-115
Date of Report:	June 17, 2020
Date of Meeting:	June 22, 2020
Subject:	One-Way / Two-Way Downtown Street Conversion Study Update
File:	B-1210

1.0 Purpose

On September 30, 2019 Development Services Committee considered DS-19-174, Notice of Motion – Reconversion of Streets into Two-way Thoroughfare, and adopted the following resolution:

"That staff be directed to update the previous report on the feasibility of the reconversion of the following streets into two-way thoroughfares:

- 1. King Street and Bond Street
- 2. Simcoe Street and Centre Street; and,

That Regional Staff be consulted where appropriate and that the report come back to the Development Services Committee by the end of Q2, 2020."

The purpose of this report is to respond to the September 30, 2019 Development Services Committee directive and to provide an update on the One-Way Conversion Study that was undertaken by the City in 2001.

Attachment 1 is a copy of the 2001 One-Way Conversion Study.

Attachment 2 is a copy of DS-01-25, a joint report of the Commissioners of Development Services and Operational Services regarding the One-Way Conversion Study Final Budget.

2.0 Recommendation

It is recommended to City Council:

1. That Report DS-20-115 dated June 17, 2020 concerning the One-Way / Two-Way Downtown Street Conversion Study Update be received for information.

3.0 Executive Summary

Not applicable.

4.0 Input From Other Sources

Region of Durham

5.0 Analysis

5.1 Background

At its meeting of September 30, 2019, Development Services Committee approved DS-19-174 and directed staff to update the One-Way Conversion Study that was undertaken by the City in 2001 and report back to the Development Services Committee by the end of Q2, 2020.

5.2 2001 One-Way Conversion Study - Findings

In 2000, the City retained Stantec Consulting to undertake an investigation of the feasibility, cost and other impacts of converting the King Street /Bond Street and Simcoe Street/Centre Street one-way couplets to two-way operations. The study utilized a combined technical and economic approach (see Attachment 1).

The transportation study area involved the complete King/Bond and Simcoe/Centre oneway corridors, while the economic impact study area focused on the downtown core area bounded by Division Street, John Street, McMillan Street/Queen Street and Colborne Street.

The criteria used to assess the transportation impacts of the conversion options were:

- Pedestrian safety
- Network operations
- Intersection conflicts
- Transit service
- Potential traffic diversion

The criteria used to assess the economic impacts of the conversion options were:

- Exposure to potential clients
- Traffic speed and friction
- Parking

- Elements of intimacy
- Physical and Psychological Barriers
- Construction/Disruption

The transportation analysis of the study concluded:

- There was no feasible way to partially convert the King Street /Bond Street or Simcoe Street/Centre Street one-way street pairs.
- If on-street parking is to remain, from a traffic operations perspective, the existing network of one-way pairs is preferred, followed by the conversion of the Simcoe Street/Centre Street one-way pair.
- The conversion of the King Street/Bond Street one-way pair was determined to be impractical due the poor traffic operations that would result, the significant loss of onstreet parking and the complexity of converting the transition areas at each end.
- The conversion of the Simcoe Street/Centre Street one-way pair was determined to be feasible, subject to further analysis.
- A preliminary estimate revealed that the cost to convert King Street/Bond Street couplet to two-way operation was estimated to be between \$2.5 and \$3.1 million (in year 2000 dollars). The cost to convert the Simcoe Street/Centre Street couplet was estimated to be between \$1.0 and \$1.5 million (in year 2000 dollars). These estimates did not include potential costs for utility relocations, parking replacement, modifications to transit operations or public education and promotion. In 2020 dollars, these costs are estimated to be between \$3.5 million and \$4.4 million for the King Street/Bond Street couplet and between \$1.4 million and \$2.1 million for the Simcoe Street/Centre Street couplet.

The economic analysis of the study concluded:

 The conversion of either one of the one-way couplets or both would result in an increase in annual retail sales in the downtown by improving many of the transportation-related conditions needed for successful retailing including an increase in traffic exposure and a reduction in traffic speeds.

The above findings were presented to a joint meeting of the Development Services and Operational Services Committees on January 23, 2001 as part of staff Report DS-01-25 (see Attachment 2). At that meeting, the Joint Committee referred Report DS-01-25 and the consultant's report to staff for consultation with the public and other stakeholders, and requested staff to report back to the Development Services Committee on a recommended course of action following public consultation.

Following the Joint Committee meeting, a public consultation meeting was held and direction was required on funding for the next phase of the report. Funding for Phase 2 of the One-Way Conversion Study was not approved by Council through the annual budget process.

At the November 24, 2008 City Council meeting, Council reviewed DS-08-473, the Development Services Committee's Outstanding Items Status Report and removed DS-01-25 from the outstanding items list since the next phase of the report was not funded by Council through the annual budget process.

5.3 2001 One-Way Conversion Study Update

As directed by the Development Services Committee staff undertook a technical review of the 2001 One-Way Conversion Study. The technical review focuses on the comparison of existing vehicular traffic to the traffic data in the 2001 report.

The 2001 study utilized traffic data from 1997 to 1999 to compare the afternoon peak hour traffic volumes along King Street, Bond Street, Simcoe Street and Centre Street in the study area. The combined traffic volumes during the afternoon peak hour along King Street and Bond Street ranged between approximately 2,300 to 3,700 vehicles per hour, with King Street carrying slightly higher volume. Along Simcoe Street and Centre Street, the combined traffic volumes during the afternoon peak hour ranged between approximately 1,700 to 2,200 vehicles per hour, with slightly higher volumes along Simcoe Street.

Using available traffic data from the Region for signalized intersections along King Street, Bond Street, Centre Street and Simcoe Street from 2016 to 2018, a similar comparison of the afternoon peak hour traffic volumes was undertaken. Along King Street and Bond Street, the combined traffic volumes appear to be consistent with the 2001 volumes and ranged between approximately 2,400 to 3,200 vehicles per hour. The minor differences in volumes may be accounted for by the timing of data collection (winter versus summer).

Along Simcoe Street and Centre Street, the combined traffic volumes also appear to be consistent with the 2001 study during the afternoon peak hour and ranged between approximately 1,600 to 2,200 vehicles per hour.

5.4 Impacts of Other Projects

In recent years, there have been transit and streetscape projects proposed along the King Street/Bond Street and Simcoe Street/Centre Street one-way couplets that may affect traffic patterns and require space and property resulting in impacts on the feasibility of the conversion to two-way. These projects include:

- King Street East Streetscape Project being undertaken by the City;
- Simcoe Street Bus Rapid Transit Project being proposed by the Durham Regional Transit;
- Durham-Scarborough Bus Rapid Transit Project being undertaken by Metrolinx;
- Lakeshore East GO Service Extension to Bowmanville proposed by Metrolinx; and,
- Road Rationalization.

The first phase of the King Street East streetscape project included removing the on-street parking along the north side of King Street East between Ontario Street and Mary Street North to widen the sidewalk, allowing for additional space for pedestrians, landscaping, outdoor patios/cafes, streetscape amenities and businesses. The second phase of the

project will focus on the widening of the sidewalk on the north side of King Street East between Simcoe Street North and Ontario Street.

The Simcoe Street Bus Rapid Transit Project proposes the implementation of bus rapid transit along Simcoe Street between the future Central Oshawa GO Station and Highway 407 East. The project includes the possible re-purposing of existing traffic lanes in each direction for the exclusive use of transit for that portion of Simcoe Street between Conlin Road and the future Central Oshawa GO Station.

The Durham-Scarborough Bus Rapid Transit project is intended to provide approximately 36 kilometres (22 mi.) of dedicated transit infrastructure along the Highway 2 corridor to connect Durham Region and the City of Toronto. The project is intended to enhance interregional mobility and connect residents and employment. The technically preferred option for the project proposes to convert the curbside general traffic lanes along King Street (northern most lane) and Bond Street (southern most lane) to dedicated transit lanes. Staff reported to Development Services Committee and Council to obtain City comments on the Durham-Scarborough Bus Rapid Transit project through staff Report DS-20-20 dated January 29, 2020. Metrolinx has not, as of the date of this Report, responded to the comments in DS-20-20 including the request for a joint meeting with Whitby and Oshawa Engineering staff.

In addition, Metrolinx is working to bring new GO rail service to a 20-kilometre (12.4 mi.) extension of the Lakeshore East GO line from Oshawa to Bowmanville. As part of the extension, two new GO stations are proposed in Oshawa. One is the Thornton's Corners Station and the other is the Central Oshawa GO Station. With the development of these proposed new stations, it is expected that traffic patterns in the downtown core will be affected. Staff reported to Development Services Committee and Council to obtain City comments on the Oshawa-to-Bowmanville Lakeshore East Extension through staff Report DS-11-40 dated January 12, 2011. Further support for the Oshawa to Bowmanville Lakeshore East Extension were provided through CNCL-19-45 on May 21, 2019.

Finally, the Region and its area municipalities have been discussing Road Rationalization since 2002. Road Rationalization is an exercise to review and assign ownership and responsibility for certain roads to the most appropriate municipal authority (Region or City). As part of Road Rationalization, portions of King Street and Bond Street (except those portions between Centre Street and Ritson Road) were part of a list of roads to be considered for transfer. Staff had provided an update on the status of Road Rationalization with Region of Durham to Council on July 18, 2018 as part of INFO-18-142.

5.5 Impacts of City Initiatives

Since the 2001 study was completed, many new initiatives have been introduced that could also affect the feasibility of converting the King Street/Bond Street and Simcoe Street/Centre Street one-way couplets. Some of these initiatives include:

- Accessibility for Ontarians with Disabilities Act
- Active Transportation Master Plan

Report to Council in Committee of the Whole Meeting Date: June 22, 2020

The purpose of the Accessibility for Ontarians with Disabilities Act, 2005 (A.O.D.A.) is to achieve an accessible Ontario by 2025 through the development, implementation and enforcement of accessibility standards that apply to the public, private and not-for-profit sectors. The City of Oshawa is committed to meeting the accessibility needs of people with disabilities and continues to develop, implement and maintain policies that address integration, independence, dignity and equal opportunity. The A.O.D.A. standards and policies were not in place and were not accounted for in the 2001 study.

In 2015, the City approved the Integrated Transportation Master Plan (I.T.M.P.) along with the Active Transportation Master Plan (A.T.M.P.). The A.T.M.P. is a statement of the City's ongoing commitment to implementing initiatives to encourage active transportation as a viable alternative to the private automobile for short distance trips and to promote active lifestyle opportunities and choices for residents, visitors and employees in the City. In 2001, City staff's understanding of active transportation was in its infancy. Accordingly, active transportation was not considered in the 2001 study. Furthermore, the I.T.M.P. recommended undertaking a study to analyze the impacts of converting one-way streets to two-way in the downtown. At the time when the I.T.M.P. was approved by Council, the recommendation concerning such a study was referred to staff for a report.

5.6 Conclusions and Next Steps

As part of a review of the 2001 study, it was determined that the 2016 to 2018 traffic volumes along the King Street/Bond Street and Simcoe Street/Centre Street one-way couplets are consistent with the traffic volumes that were utilized in the 2001 study.

Based on a review of the transportation analysis, where a comparison of the 2016 to 2018 afternoon peak hour traffic volumes are compared to the 2001 study, it can be concluded that the recommendations of the 2001 study are still valid.

The 2001 study concluded that:

- The conversion of the King Street/Bond Street one-way pair was not practical due to the poor traffic operations that would result, the significant loss of on-street parking, and the complexity of converting the transition areas at each end; and,
- The conversion of the Simcoe Street/Centre Street one-way pair was considered feasible, subject to further analysis.

In the event that Council deems it appropriate to undertake further analysis of the Simcoe and Centre Street one-way pairs, the Region should be requested to fund the study and its cost (estimated at \$100,000). It is appropriate for the Region to fund such a study since both Simcoe Street and Centre Street are under the jurisdiction of the Region of Durham.

6.0 Financial Implications

There are no financial implications associated with the recommendation.

7.0 Relationship to the Oshawa Strategic Plan

This report meets the Oshawa Strategic Plan goal of Economic Prosperity and Financial Stewardship.

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Anthony Ambra, P.Eng., Director, Engineering Services

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Warren Munro, HBA, RPP, Commissioner, Development Services Department

Item: CNCL-20-115 Attachment 1

B-1100-0033 2001 Minute Manual Annual Annual

CITY OF OSHAWA One-Way Conversion Study Phase 1 Final Report

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CITY OF OSHAWA

One-Way Conversion Study Phase 1 Final Report

PREPARED FOR: CITY OF OSHAWA

PREPARED BY:

STANTEC CONSULTING LTD.

Date: Project No. January 11, 2001 602 10265

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Transportation & Parking Services City of Oshawa 50 Centre Street South OSHAWA, ON L1H 3Z7

Attention: Mr. Craig Kelly, P. Eng.

Dear Mr. Kelly:

Reference: Final Report Oshawa One-Way Conversion Study - Phase 1

Stantec Consulting and Urban Marketing Collaborative are pleased to present this final report on the findings and conclusions of this Phase 1 evaluation of one-way street conversions in Oshawa. We conclude that conversion of the north-south one-way pair along Simcoe and Centre Streets is feasible from a traffic operations perspective, and practical as part of other initiatives to support core area business and vitality. The estimated capital cost of this conversion is between 1.0 and 1.5 million dollars. We also conclude that full or partial conversion of the King/Bond corridor is not practical in terms of traffic operations.

We also conclude that Simcoe and Centre Streets conversion has the potential to stimulate downtown retail sales growth, in association with other economic, urban design and marketing initiatives.

This was a Phase 1 introductory investigation into complex transportation and economic issues. Therefore, we recommend that a further Phase 2 assessment be conducted of conversion impacts on existing and future traffic conditions, on-street parking and neighbourhood traffic diversion. This should include public consultation, and the functional design of the conversion before any final implementation decision is made.

Sincerely,

Transportation

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Buildings

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Urban, Land

STANTEC/CONSULTING LTD.

Don Drackley, MCP, MCIP, MITE Principal / Transportation

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Executive Summary

INTRODUCTION

This review of Oshawa's one-way street system was recommended in 1996 as part of the downtown revitalization strategy in Vision 2000: City Centre Plan. As a result of that exercise, one-way sections of Celina, Albert, Ontario and Victoria Streets were converted to two-way operations. Council then decided to proceed with a phased investigation of the practicality, feasibility, cost and impacts of converting the King/Bond and Simcoe/Centre one-way couplets to two-way operations. Council would then decide whether to continue this review into design and implementation planning.

The City retained Stantec Consulting and Urban Marketing Collaborative to conduct this Phase 1 study, using a combined technical and economic approach. The Transportation Study Area involved the complete King/Bond and Simcoe/Centre oneway corridors, while the Economic Impact Study Area focused on the downtown core area bounded by Division, John, McMillan/Queen and Colborne.

COMPARATIVE EXAMPLES

The consulting team collected comparative information from other North American cities that have converted downtown one-way streets to two-way operations. This review concluded that after conversion; traffic levels of service remained acceptable, the public appeared to have readily accepted the conversions, business community response has been positive. However, no formal post-conversion economic analysis has been conducted.

INVENTORY OF CONDITIONS

Existing Traffic Conditions - The study concludes that in general, traffic flows and intersection operations along the one-way couplets are within acceptable ranges based on speed and associated Level-Of-Service (LOS). In terms of actual traffic volume, combined King/Bond carries between 1,300 and 3,700 vehicles in the afternoon peak hour, with King handling the higher volume. Centre/Simcoe carries between 1,700 and 2,200 vehicles, with the volume being slightly higher on Simcoe. Most on-street parking is also located on Simcoe and King Streets, where pedestrian crossings are also high. Survey data shows that of the 80,000 trips destined into the study area on an average day, 75% come from outside the downtown, and of this, 75% come from the Oshawa urban area, 15% from within Durham Region and 10% from west of the Region.

It is recommended that before any final decision on conversion can be made, future traffic conditions should be forecasted, at least in the short and medium term as part of a Phase 2 study.

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<u>System Modification Constraints</u> - Conversion feasibility is influenced by a number of technical constraints identified in this study, including roadway geometry, transit service, traffic controls and crossing structures (i.e. creeks). Roadway geometry constrains conversion where three lanes would allow only one travel lane in each direction, plus a centre left turn lane, or where on-street parking (i.e. along sections of King and Simcoe) restricts the provision of travel lanes and turn lanes, unless such parking is removed. Other potentially difficult conversion locations are at the ends of the existing one-way pairs.

Transit service uses almost all portions of the one-way pairs. Any conversion must be able to maintain similar transit operating times, headways and access so there is minimal impact on schedules. This in turn may require changes or additions to routes, with associated operational, staffing and equipment costs.

Conversion will also require physical modifications to traffic control equipment, pavement markings and signal timing. There are 22 signalized intersections along King and Bond Streets, and 10 on Simcoe and Centre Streets. Finally, there are four crossing structures along the King/Bond pair (two across Oshawa Creek and two across Harmony Creek). These structures may have to be widened in association with any roadway widening required by conversion.

<u>General Business Conditions</u> - The study provides basic data on retailing activity, and concludes that while the downtown is not expected to regain its position as a prominent retailing centre, it may emerge as a niche retailing area serving the office employment market and the overall City. This will require, in part, continued enhancement of downtown infrastructure such as streetscaping, and possible one-way street conversion to slow traffic and improve the pedestrian environment.

Interviews with key downtown business stakeholders were conducted as part of this study, and presented a general opinion that downtown revitalization action must be taken, and conversion was one of the needed first steps, as long as parking would not be lost and there would be no increased traffic congestion.

ALTERNATIVES AND PHASE 1 CONCLUSIONS - TRANSPORTATION

Both full and partial conversion concepts were evaluated for King/Bond because of its length. Three final conversion alternatives were evaluated and compared with Existing Conditions:

- Full Two-Way Conversion along the entire length of the Simcoe/Centre and King/Bond pairs, with 2 lanes per direction and intersection turn lanes;
- North-South Simcoe/Centre Conversion only, and;
- East-West King/Bond Conversion only.

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These alternatives were evaluated based on the following:

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Pedestrian	Network	Intersection	Transit	Potential Traffic
Safety	Operations	Conflicts	Service	Diversion

The evaluation concludes that the Existing Condition is the most preferred alternative <u>from purely a transportation perspective</u>. If on-street parking is retained, the North-South Conversion also ranks well as the second best approach. If some parking is removed, (with two-way operation only) to provide turn lanes at key intersections, then the East-West Conversion improves slightly, but the North-South Conversion traffic conditions improve comparable to Existing Conditions. Full Conversion consistently ranks as the worst approach from the traffic perspective. The estimated capital cost of a North-South Conversion is \$960,000 to \$1.43 million, and \$2.45 to \$3.15 million for East-West Conversion and \$3.41 to \$4.38 million for Full Conversion.

The main transportation-related conclusion from this study is that conversion of the north-south one-way pair along Simcoe and Centre Streets is feasible from a traffic operations perspective, and practical as part of other initiatives to support core area business and vitality. The estimated capital cost of this conversion is between one and one and a half million dollars. It is also recommended that this conclusion and cost estimate (north-south conversion only) be confirmed as part of a more detailed Phase 2 conversion study, including further analysis and forecasting of traffic LOS, on-street parking impacts, potential traffic diversion and functional design items, as well as public consultation.

EVALUATIONS AND PHASE 1 CONCLUSIONS - ECONOMICS

From a purely economic perspective, this study concludes that the downtown's projected image, including the physical design and operation of the streets, has a direct impact on the area's ability to attract investment, including retailing. Therefore, the conversion alternatives were evaluated based on several economic factors, namely; exposure to potential clients, traffic speed and friction, parking, elements of intimacy, physical and psychological barriers and construction/disruption. Specific conclusions from this economic assessment are:

- The estimated 30% increase in traffic volumes along King Street in an east-west conversion, or Simcoe Street in a north-south conversion will benefit adjacent retailers, if acceptable operating conditions are also maintained. However, in either case, traffic volume reduction is also predicted on the associated pair, being either Bond or Centre Street;
- Reduced speeds will increase motorist awareness of their surroundings in the downtown, thereby enhancing visibility;
- The North-South Conversion of Simcoe and Centre offers the least potential impact on on-street parking (other than the Existing Condition), and;
- Retail sales are estimated to increase from between 0.3 to 1.4% as a result of the North-South Conversion, depending on the extent of associated on-street parking loss.

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1.0 Introduction

1.1 STUDY BACKGROUND

In 1962, the City of Oshawa commissioned a traffic planning study to assess current and forecasted traffic conditions to 1981. The study recommended, among other things, that three one-way pairs be created to improve traffic operations in the downtown during peak periods. As a result of that study, the present one-way roadway system in Oshawa was developed.

In 1996, the City's "Vision 2000: City Centre Plan" recommended a review of the downtown transportation system as part of its downtown revitalization strategy, including a review of the one-way street system. As a result of that exercise, the following streets were converted to two-way operations:

- Celina Street Athol to King Street
- Albert Street Athol to King Street
- Ontario Street King to Bond Street
- Victoria Street King to Bond Street

These streets are not primary arterial routes in the downtown, so their conversion was considered to be feasible in terms of area traffic operations. However, Council also decided that no other action be taken on major arterial conversions to two-way at that time. The minor street conversions were monitored, and the conversion condition became satisfactory after a learning period.

In 1997, the Downtown Oshawa Board of Management (DOBM) requested information from the City when the next phase on one-way street conversions would take place. At that time, the DOBM requested that Simcoe Street be the next conversion to two-way operations.

The remaining major one-way street system in downtown Oshawa involves King, Bond, Centre and Simcoe Streets. The City determined that in order to establish the feasibility, cost and phasing of a conversion of these streets to two-way operation, a comprehensive transportation assessment would be required. This full study would include Region, stakeholder and public participation. In May, 1998, the City decided to proceed with a phased downtown traffic study, starting with a Phase 1 assessment focusing on the practicality, feasibility, cost and impacts, both positive and negative, of a one-way street conversion in downtown Oshawa. Council would then consider the results of this Phase 1 study to determine whether to proceed with a more

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detailed review. This report provides the findings, conclusions and recommendations resulting from this Phase 1 study.

1.2 STUDY PROCESS

1.2.1 Study Purpose

According to the Study Terms of Reference, the purpose of this Study is to:

Prepare a report for City Council on the feasibility and practicality of converting the two significant one-way pairs in downtown Oshawa, namely King/Bond and Simcoe/Centre, to two-way operations.

This report can be considered as Phase 1 of a more comprehensive project that may continue into Phase 2, if required, that would study in greater detail the conversion implementation and associated impacts.

1.2.2 Study Approach

The City retained Stantec Consulting Ltd., in association with Urban Marketing Collaborative, to provide the Phase 1 assessments of both transportation and economic impacts associated with possible one-way conversions. The consultants proposed that this combination of technical and economic assessments was advisable in order to assess the interrelationship between traffic patterns and business revitalization.

1.2.3 Study Area

Two study areas were set by the Terms of Reference, as shown on Figure 1.1:

<u>Transportation Study Area</u> – the King/Bond one-way pair extending east-west from east of Stevenson Road to Harmony Road, and under the jurisdiction of the City, and the Simcoe/Centre one-way pair extending north-south from Adelaide to Gibb/Olive as regional roads.

Economic Impact Study Area – focused on the core area bounded by Division, John, McMillan/Queen and Colborne.

1.2.4 Study Direction

This study was directed by a Steering Committee consisting of representatives from:

Stantec

City of Oshawa: Transportation & Parking Planning



040 7553200×12, 30 00-13

Engineering Economic Development

Region of Durham: Works Planning

Downtown Oshawa Board of Management

Because this Phase 1 study was focused on the technical feasibility and practicality of conversion, public consultation was not included, but will be an important component of any Phase 2 continuation.

1.2.5 Study Process

The consultants followed a six-part work plan in conducting this study:

Task 1: Study Initiation and Data Collection

Task 2: Existing Traffic Analysis

Task 3: Existing Business Conditions Analysis

Task 4: Identification and Analysis of Conversion Options

Task 5: Preliminary Assessment of Impacts/Recommendations

Task 6: Study Report & Presentation

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2.0 Comparative Examples

The consulting team collected comparative information from other North American cities that have converted downtown one-way streets to two-way operations. This was done not only to collect anecdotal information on why and how the conversion was conducted, but also the traffic and business impacts.

It was hoped that based on these comparative examples, a direct correlation could be made to traffic conversion and business revitalization in other cities. However, since business revitalization is a complex process, involving many issues, conditions and efforts in addition to traffic, no such correlation was forthcoming. However, the two information sources provided to this study do show a similar and consistent "pattern" of responses on conversions and impacts.

2.1 CONSULTING TEAM RESEARCH

For this study, the consulting team has made contact with eleven (11) municipalities that have been involved in one-way conversions, namely.

Kitchener, Ontario	Edmonton, Alberta	Ottawa, Ontario
Albuquerque, New Mexico	Lubbock, Texas	Cincinnati, Ohio
Toledo, Ohio	Green Bay, Wisconsin	Lansing, Michigan
Lincoln, Nebraska	Fairfax, Virginia	

Comparison Qualifiers and Conclusions

The above-noted examples represent conversions in a variety of city sizes. However, it should also be recognized that transportation and urban form conditions in each city differ, and that only cities that have considered and then implemented one-way conversions were contacted. Little information was available on cities that chose to not implement such conversions, and the reasons for such decisions. One example is Brantford, Ontario that decided in 1996 to not convert their downtown one-way couplet. No conversion feasibility or traffic study was conducted, but the City's rationale was that although the core area business and social vitality conditions were deteriorating, traffic volumes and speeds were not seen as a problem contributing to this decline. Therefore, Brantford decided to spend available funds on other types of revitalization efforts, such as encouraging more public institutions into the core, and improving the adjacent river valley system.

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In other cases, such as Lincoln, Nebraska, political and business support for the phased conversion program lost momentum after the initial conversion, and so lacked a champion to continue the process. In the case of Lansing, Michigan, the core area one-way conversion program will not continue because the City feels that the initial conversion has resulted in the required business improvements, and further conversion works are not economically justified. Many of the example cores also had the advantage of an alternative route or system for through traffic, which replaced any through function lost or reduced as a result of core area conversions.

With these qualifiers in mind, and understanding that each city is different, the North American cities that have converted one-way streets in their cores report the following common results:

- All conversions were implemented in response to core area revitalization objectives;
- Conversions most commonly involved signal and signage adjustments, as well as capital works within the street right-of-way;
- Some staff concerns about resulting traffic changes were noted, but in each case, the traffic level of service remained at acceptable levels (i.e. no congestion);
- In each case, the public appears to have readily accepted the conversion with minimal problems;
- In each case, response from the business community has been positive;
- No formal economic analysis of business conditions before and after a conversion has been conducted.

A summary of responses from the 11 cities that undertook conversions, and were contacted through this study is included in **Appendix 1**.

2.2 INDEPENDENT USA SURVEY

Recognizing that all cities are different, most of the communities in a recent major survey of 22 US cities that have changed downtown streets from one-way to two-way traffic operations reported:

"positive results, especially for business development".

This survey, conducted by the Hyannis Main Street Business Improvement District, concluded that:

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The survey represented a broad geographic and demographic cross-section;

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- The vast majority of communities surveyed reported that converting traffic to twoway operations was very positive, particularly for business development;
- In almost every case, the conversion was seen as a trade-off between mobility (traffic speed and volume), and access and exposure;
- Communities reported improved business, increased investment, better distribution of traffic (from more choices on how to get around), a more pedestrian friendly environment and a general feeling of improved "livability", and;
- Conversion of complete one-way pairs to two-way was seen by many respondents to be very effective in separating business and through traffic, and was much less confusing to downtown visitors.

A summary of the US survey results, by each community surveyed, is also included in **Appendix 1** to this study

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6.2

3.0 Inventory Of Conditions

3.1 EXISTING TRAFFIC CONDITIONS

The current traffic conditions within the study area were determined based on information (1997 to 1999) provided by the Region of Durham and the City of Oshawa. This included the following:

- Recent traffic surveys at signalized and selected unsignalized intersections
- Review of Signal Timing Plans in Oshawa Central Business District (Durham Region Staff Report, 1996)
- The Regional Municipality of Durham Collision Summary Reports for 1996 and 1997
- The Corporation of the City of Oshawa Collision Summary Reports for 1996 and 1997
- Maps showing parking restrictions, traffic controls and bus routings.

Based on this information, a series of figures were produced which show the existing traffic conditions in the study area. Figure 3.1 provides a summary of the arterial speeds, intersection delays and areas with high collision rates.

3.1.1 Speed

Figure 3.1 indicates that in general, the traffic flows and intersection operations are within acceptable ranges throughout the downtown area based on speed and associated Level-Of-Service (LOS). LOS is a calculation of average traffic conditions at signalized intersections and connecting links in terms of delays experienced by motorists, and is summarized as follows.

LOS A - Very Good	LOS B - Good	LOS C - Fair
LOS D - Poor	LOS E - Very Poor	LOS F - Unacceptable

Speeds are slower on the north-south section of Wilson Road and Ritson Road between King and Bond. Also, some of the traffic movements at the intersection of King and Wilson Road experience high levels of delay.

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Flows

3.1.2 Collisions

The Regional Municipality of Durham and the City of Oshawa annually identify areas where collision rates are high in order to identify the remedial measures that may be necessary. The collision rates for intersections are usually expressed as *number of collisions per million vehicles entering*. The City and the Region identify potential problem areas when the rates exceed 1.5 collisions per million –vehicle kilometres entering.

For road sections, the collision rate of 5.0 per million vehicle kilometres entering is used as the threshold. Figure 3.1 identifies the areas that have met this criteria in 1996 and 1997. This shows that during that time, high collision rates were noted along King Street and Bond Street east of Centre Street. The City identified that these collisions were generally as a result of poor driving habits and a program of selected enforcement was suggested to correct that problem. There were five intersections along the one-way couplets in the City of Oshawa that met the criteria during 1996 and 1997. These included intersections on:

- Centre Street at Richmond Street
- Centre Street and John Street
- King Street at Stevenson Road
- Simcoe Street at Elm/Gibb Street
- Centre Street at Bond Street

3.1.3 Peak Hour Traffic Volume

Figure 3.2 presents a comparison of the afternoon peak hour traffic flows along King Street, Bond Street, Centre Street and Simcoe Street in the study area. This exhibit shows that the combined traffic flows are 1,300 to 3,700 along King Street and Bond Street, with King Street carrying the slightly higher volume. The Centre and Simcoe one-way pair carries a combined total of 1,700 to 2,200 vehicles in the afternoon peak and the volume is only slightly higher on Simcoe than Centre. Figure 3.2b focuses on the directional volumes and percentage direction of this traffic at the "four corners".

3.1.4 Parking and Pedestrian Movement

Figure 3.3 illustrates the parking facilities in the core area and the estimated eight hour pedestrian activities at the intersections in the core area. The majority of the onstreet parking is located on Simcoe and King Streets. There are empty parking spaces in some of the City's off-street parking facilities on an average day. However,

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FIGURE 3.2

2000 VEHICLES PER HICLIN

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FIGURE 3.3

in terms of convenience retailing, these spaces may not be a suitable replacement for any on-street parking loss elsewhere in the downtown

The highest pedestrian activities are at King Street and Simcoe Street where the eight hour pedestrian crossings reach 4,600. The higher pedestrian activity appears to be along King Street, as opposed to Bond Street and on Simcoe Street as opposed to Centre Street.

3.1.5 Origins and Destination for Downtown Trips

Transportation for Tomorrow Survey data for trips into and out of the Greater Oshawa area zones was analyzed to determine the total number of trips as well as the distribution of the trips to surrounding areas. This data was not directly applied to the study analysis, but rather was used to show the context of downtown trip-making in Oshawa. This context was developed for trips originating outside of downtown Oshawa and destined to the study area zones (inbound trips), as well as those trips that originate from within downtown Oshawa that are destined to zones outside of the downtown Oshawa area (outbound trips). Note: The zones used in this study include the Oshawa Centre in the downtown. In addition to these this origin/destination pattern, patterns of trips that originate and are destined to areas within the downtown area of Oshawa (internal trips) were also developed. The details of these patterns are presented in **Appendix 2**.

The pattern of through trips that are neither destined to or originate in the study area or downtown Oshawa was not prepared because of insufficient traffic data to determine these patterns.

Based on available data, there are approximately 80,000 trips destined into the study area of Oshawa in the a.m. peak period, with:

- 75% of the total trips are from points external to the downtown area of Oshawa.
- 75% of these external trips are from the Oshawa urban area outside of downtown (including much of Whitby and Clarington).
- 15% of the external trips are from within Durham Region.
- 10% of the external trips are from west of Durham Region.
- Analysis of inbound and outbound trips resulted in almost identical distribution patterns.

3.1.6 Future Traffic Conditions

This Phase 1 study has concentrated on historic and existing traffic conditions in the study area as the preliminary basis for determining conversion feasibility. It is

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recognized that before any final decision can be made on such conversion, further analysis of forecasted traffic conditions will be required to ensure any traffic changes

can be sustained at least in the short and medium term. This future conditions analysis is recommended as a requirement in a Phase 2 study, if the findings of Phase 1 support further analysis.

3.2 SYSTEM MODIFICATION CONSTRAINTS

The feasibility of converting the City of Oshawa's current one-way system to two way operation requires an examination of a number of constraints in the network. These constraints include the physical limitation of the roadway cross section and property, as well as the potential impact on operations for not only vehicular traffic but other road users (transit, cyclists and pedestrians) as well. During this Phase 1 study, the objective is to investigate the feasibility of a conversion. It was considered necessary to identify constraints which would assist the study team in being able to decide if the conversion was possible or not advisable. Each of these constraints is discussed below.

3.2.1 Roadway Geometry

The current roadway cross section presents a constraint to a two-way conversion. Some sections of the one-way pairs contain three lanes, which allows for only one lane in each direction and a two-way left turn lane. This configuration may restrict the roadway level of service when converted. On certain sections of King Street and Simcoe Street, the four lane cross section is restricted by the on-street parking. Therefore, the conversion would only involve two lanes for traffic and no turn lanes at intersections, unless parking is removed at the critical intersections to provide turning lanes.

The current road right of way restricts the options for developing alternatives. This is particularly a difficulty at the points where Centre joins Simcoe, and where King joins Bond. At these points, it will be necessary to introduce additional lanes to ensure that the approaching traffic has adequate opportunities to choose either roadway when travelling through the City of Oshawa. The road right of way is restrictive at the end points for the Simcoe/Centre pair and the King/Bond pair, creating limitations to any conversion changes. Conversion to two-way operations could also affect the physical accesses to some private properties, and signs that are oriented to face the current traffic flow.

Stantec 3.2.2 Transit Service

Transit services use almost all portions of the one-way pairs. It will be necessary to continue to provide transit service throughout the City core with the conversion to

ONE-WAY CONVERSION STUDY – PHASE 1 City Of Oshawa

two-way operation. Therefore the conversion must be able to provide similar transit operating times, headways and access in order that there will be minimal impact on the current schedule. This in turn may require changes or additions to routes, as well as associated transit bus operations, staffing and operational costs. The Downtown Bus terminal is currently underutilized because the entrance and exits are designed to operate with the one-way street system. If, in conjunction with a one-way conversion, the Downtown Bus Terminal could be modified to accommodate movements in and out from both Bond Street and Centre Street, it might become more useful for Oshawa Transit and GO Transit.

3.2.3 Traffic Controls

Conversion from one way to two way operation will require physical modifications to the traffic signal equipment, signs, pavement markings and signal timing plans. This stage of the analysis has identified the number of signalized intersections throughout the area for conversion as a constraint. There are 22 signalized intersections along King and Bond Street, and ten on the Simcoe/Centre corridor (including the four intersections where the east-west pair crosses the north-south pair). In addition, there is one Intersection Pedestrian Signal (IPS) on King Street and one on Simcoe Street.

3.2.4 Structures

King Street and Bond Streets have four structures throughout the one way section. There are two four lane crossings of the Oshawa Creek west of Centre Street, and two three lane crossings of Harmony Creek west of Harmony Road. These crossings are a constraint to the two-way operation, and if needed, a widening is required in these areas. The two three lane crossings of Harmony Creek are the most critical of the four.

Figure 3.4 provides a summary of the transportation opportunities and constraints facing possible conversions to two-way operations within the study area.

3.3 GENERAL BUSINESS CONDITIONS

According to the City of Oshawa Commercial Opportunities Study by Robin Dee and Associates (1999), the following observations were highlighted:

 According to the City, in 1996 Oshawa had a population of 138,261, which increased to 141,620 by early 1999. Region of Durham information has the total Oshawa, Whitby and Clarington population at 277,100 in 1996 (adjusted for the census undercount.

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• The area is expected to continue to grow by 2.33% per year.

FIGURE 3.4

- There is over 7.78 million square feet of retail/service space in the City of Oshawa.
- The vacancy rate is 15% for the City of Oshawa.
- The Oshawa Centre accounts for one million square feet of retail space of which 71% is devoted to DSTM¹.
- Obvious gaps in the City of Oshawa include warehouse clubs, large format home improvement stores, no major power centre, and none of the new multi-screen theatre developments².

Although this study recognizes that the Central Business District (CBD) is a focal point for the City of Oshawa, it is not expected to regain its position as a predominant retailing centre. There is a possibility for it to emerge as a niche retailing area serving the office employment market, as well as a broader City niche with restaurant and entertainment services.

Recommendations for the CBD include continuing to promote enhancement of municipal infrastructure, such as streetscaping. The CBD should also explore means to improve the pedestrian environment and attractiveness of the primary retailing strips, including wide sidewalks, slowing of traffic, and encouraging and facilitating outdoor patios and other pedestrian amenities among other possible initiatives. Increased efforts to provide more housing in the area would also benefit the CBD.

3.3.1 Downtown Employment

Table 3.1 shows change in the number of firms and employment by economic sector.

	1995		1997		% Change	
	Firms	Employment	Firms	Employment	Firms	Employment
Wholesale	8	48	8	54	0%	13%
Retail Trade	87	354	91	332	5%	~6%
Finance, Insurance, Real Estate	45	598	40	432	-11%	-28%
Business and Personal Service	227	1,882	225	1,903	-1%	1%
Public Administration and Defense	14	3,055	11	3,346	-21%	10%
Total	381	5,937	375	6,067	-2%	2%

Table 3.1 - CBD Employment

Source: Department of Development and Planning Services

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¹ DSTM – department store type merchandise.

² One is planned for the City,

Between 1995 and 1997, the number of businesses in the CBD has declined from 381 to 375, but the total employment has increased by 130 to 6,067 workers. In particular, retail trade has increased the number of businesses over this two-year period, but the total employment has fallen by 6% to 332 workers.

In addition, public administration and defense has decreased the actual number of agencies, but the total employment has increased by almost 300 workers to 3,346. Business and personal services have witnessed a slight increase in the number of workers and only a slight decrease in the actual number of firms.

3.3.2 Retail and Office Occupancy and Vacancy

Table 3.2 highlights the change in occupied and vacant retail and office space.

	1995	1997	% Change
Occupied Retail Space	590,076	554,667	-6%
Vacant Retail Space	184,760	221,223	20%
Retail Vacancy Rate	31%	40%	······································
Total Retail Space	774,836	- 775,890	<1%
Occupied Office Space	1,091,086	1,052,646	-4%
Vacant Office Space	343,245	430,969	26%
Office Vacancy Rate	31%	41%	5. (1
Total Office Space	1,434,331	1,483,615	3%

Table 3.2 – Retail and Office Occupancy and Vacancy

Source: Department of Development and Planning Services

Both retail and office vacancy rates have increased by approximately 10 percentage points between 1995 and 1997. The effect is a 20% increase in vacant retail space and a 26% increase in vacant office space.

3.3.3 Retail/Service Audit

An audit of the existing ground level retail/service businesses in Downtown Oshawa was conducted by UMC during the month of March in order to understand the current retail/service situation. The area comprises the retail/service uses within the defined boundaries of the CBD (approximately from McMillan Drive to Division Street and from Colborne Street to John Street). While there is office and business space within the CBD, only ground level retail/service space is included in our inventory as it is these businesses which will be affected most by a conversion from one-way to two-way streets. Existing and new office uses are not expected to be impacted by a one-way street conversion to two-way because they are employee-oriented. As such, offices are not as dependent on visibility and accessibility as retailing, which is more oriented to attracting destination and impulse customers.

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The following are the most salient findings based on the ground level audit:

- There are 267 retail/service operations totaling over 630,000 square feet.
- Forty-five operations are vacant representing 20% or 127,119 square feet. This
 includes the ground level of the Bond Tower.
- Just under 30% of the total square footage is devoted to retail merchandise.
- Only 14% of the total square footage is devoted to eating and drinking.
- A significant amount of space is service—oriented. In particular, professional offices occupy 10% of the total square footage.
- Among the retail/service operations inventoried, the following commodity groups are dominant:
 - professional offices
 - financial, insurance, real estate
 - general merchandise (includes second-hand stores)
 - beauty salons

Physical Audit

Most of the retail/service operations are centred around the "four corners," or King Street and Simcoe Street.

The retail/service operations also tend to be better closer to the "four corners" and along Celina and Albert Streets. East of Albert Street along King Street the quality of operations falls off until Mary Street where the retail/service operations tend to become more highway/commercial in nature. Each business has their own parking lot and they are set further back from the street.

Currently, Bond Street has limited retail/service operations except for Wilson's Furniture. There are two medical communities located in close proximity to Lakeridge Health Oshawa, to the northern end of the CBD and to the eastern end of the CBD at the Oshawa Clinic.

A complete audit summary of ground level retailing in downtown Oshawa is presented on **Appendix 3**.

Stantec There are entire vacant buildings within the CBD. Most notably, these include the Oshawa Times (office), the Bond Tower, and the Regent Theatre. Some retail/service operations such as the café at the Genosha Hotel and the Queen's Hotel are difficult to determine if they are open or closed.

Celina and Albert Streets have an "urban village" look and feel partly due to the street conversion and streetscaping and the better quality businesses located on the streets that complement the "urban village" theme. The Civic District anchors the southwestern edge of the CBD along Centre Street and Memorial Park.

Competitiveness

Competitiveness refers to the quality of operations of the individual retailer. This includes such factors as merchandising, displays, professional sales staff, signage, value for service, etc. A high competitive retailer knows their target segment and how to market to that group by making the retail experience more unique and compelling. Conversely, a low competitive retailer would convey the impression that they are disinterested in creating a retail experience. As a result, highly competitive retailers and service operators are expected to be less sensitive to traffic system changes, assuming that the changes still provide an acceptable traffic level of service. Low competitive retailers/service operations may be more sensitive to such changes because of their low marketing efforts.

In terms of competitiveness, the majority of the retail/service operations are average regardless of whether they are convenience or destination type businesses. All of the retail/service operations ranked as high in terms of competitiveness are eating and drinking or retail food establishments. These businesses represent just over 16,000 square feet of space, as shown on Table 3.3. This table also shows that over 87,000 square feet of space is considered low in competitiveness. A significant proportion of this space is eating and drinking operations.

		Square Feet	% of Total
Convenience		153,821	47%
******	Low	51,285	16%
	Medium	89,861	27%
	High	12,675	4%
Destin	ation	175,863	53%
-M	Low	36,412	11%
	Medium	135,610	41%
	High	3,841	1%
Total		329,684	100%

Table 3.3 - Competitiveness Rating

Retail Sales

Estimated sales per square foot for different levels of competitiveness for each retail commodity were used to determine total sales. Multiplying the square footage in downtown Oshawa by the different sales per square foot figures yields total sales of just over \$60 million, or approximately \$180 per square foot. This includes retail sales from retail merchandise, apparel, furniture, food items, personal services, and eating and drinking establishments. It does not include financial institutions, professional offices, medical offices, or other offices/agencies in the downtown (detailed findings are included in **Appendix 4**).

Excluding eating and drinking sales, Downtown Oshawa captures \$37 million in sales. The City of Oshawa's comparative retail sales were \$1,530 million. Downtown Oshawa accounts for approximately 2% of retail sales in the City, and this is low compared to an average of 5% in other similar sized cities.

In terms of retail square footage, Downtown Oshawa accounts for 7% of retail square footage. This suggests that Downtown Oshawa has limited retail compared to most downtowns where the percentage relationship between retail square footage and retail sales is closer.

New Developments

Under Construction:

- Bank west of the intersection of King Street and Centre Street.
- Carriage House Retirement Complex.

Planned / Potential:

- Court House and Class A office space planned for site on Bond Street and Mary Street.
- New arena (within or outside of the downtown).

Metred On-Street Parking

The number of metred on-street parking spaces within the Downtown is listed on Table 3.4, including:

Intersection	CBD	Outside CBD	Total Metred On-Street Parking Stalls
King Street West	32	0	32
King Street East	44	9	53
Simcoe Street North	44	0	44
Simcoe Street South	54	28	82
Bond Street West	8	0	8
Bond Street East	36	0	36
Centre Street North	2	0	2
Centre Street South	0	0	0
Rest of CBD	272	22	294
Total	492	59	551

Table 3.4 - Metred On-Street Parking Supply

Source: City of Oshawa

In addition, there are 2,136 parking spaces available at off-street parking lots located throughout the CBD.

Rental Rates and Taxes

The CBD's ground floor rents are in the range of \$9 to \$12 per square foot net, with taxes, maintenance, and insurance (TMI) in the range of \$4 to \$6 per square foot.

Depending on the quality of the rental property, the price may be reduced if major renovations are required.

Office rental rates are in the range of \$9 to \$14 per square foot net, with taxes, maintenance, and insurance (TMI) in the range of \$4 to \$6 per square foot.

3.3.4. Stakeholder Interviews

Part of the Downtown business environment is shaped by local opinion. Part of this Phase 1analysis included interviewing key persons in Downtown Oshawa.

Stantec The purpose of the interviews was to provide these stakeholders with an opportunity to identify issues, problems, ideas, opinions, and eventually form an idea of how the

conversion of one-way streets to two-way streets would impact them. Meetings in small groups as well as one-to-one interviews were set up over two days during the beginning of April. In total, a relatively small sample of 13 business owners/landlords were interviewed.

The discussion findings (included **Appendix 5**) reflect the opinions of those in attendance and not necessarily those of UMC or Stantec Consulting Ltd. UMC recognizes that it is usually the most vocal members of the Downtown who contribute to these sessions and that they are not entirely reflective of the number of retailers and landlords who do not have an opinion one way or the other.

There was a general feeling that things have come to a point where something positive has to be done to revive Downtown Oshawa. Two participants objected to the conversion on the grounds that parking would be lost or there would be increased congestion. However, these same participants did see possible merits in the conversion if guarantees could be made that these two points would not be severely affected.

There were some business owners who believed that their business was doing well and that conversion would not benefit them directly but that it would be beneficial for the community as a whole. All believed that there could be increased synergy between the current mix of retailers.

There was a common feeling that the one-way to two-way conversion was one of the first steps the downtown had to take to revitalizing the area. Everyone recognized that a better retail mix, improved parking (i.e. supply, access convenience, cost, etc.), decreased office vacancy, improved cleanliness, and decreased crime were also required in the downtown.

4.0 Identification of Conversion Alternatives

4.1 CONVERSION CONCEPTS

The first technical consideration in developing full and partial conversion alternatives for Oshawa involved the points where the one-way would be converted to the two way, and the expected reassignment of traffic between the converted roadways. These and other conversion concepts are discussed as follows, with the full and partial conversion alternatives shown on the Figure 4.1 key plan:

<u>Traffic Reassignment</u> - There could be a 50% split a conversion, with 50% to Centre Street and 50% to Simcoe Street in the north-south direction, and 50% to Bond and 50% to King in the east-west. This initial assumption was based on the fact that although the alignment of Centre and Bond results in a longer route, they would attract the through trips where as the King and Simcoe may attract the local trips. However, it was also assumed that since King and Simcoe are the more direct routes (less distance and possibly less time), they may attract more trips.

Therefore, for the purposes of this Phase 1 study, and to compare the resulting traffic reassignment potential, the envelope of possible traffic scenarios tested was a 50/50 and 67/33 reassignment, with the smaller proportion assigned to the Bond or Centre route. This assumption can be refined during the next study phase if necessary. Also, this 50/50 or 67/33 reassignment does not account for traffic which may infiltrate onto side streets or divert to other arterials.

Figure 4.2 shows PM Peak Hour traffic volumes forecasted in a full conversion, based on the 50/50 and 67/33 reassignment assumptions. This can be compared with Figure 4.3 and 4.4, which show forecasted volumes with a north-south conversion only, and east-west conversion only, respectively. In summary, the three alternatives evaluated in this study are:

ALTERNATIVE	DESCRIPTION	FIGURE
Full Two Way Operation	The full length of Simcoe/Centre (N-S) and King/Bond (E-W) within the study area converted to two-way operations with 2 lanes per direction, and sufficient turn lanes at intersections.	4.2
North-South Conversion Only	Full conversion of Simcoe/Centre only with 2 lanes per direction and sufficient turn lanes at intersections.	4.3
East-West Conversion Only	Full conversion of King/Bond only with 2 lanes per direction and sufficient turn lanes at intersections.	4.4



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FIGURE 4.1





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<u>New Signals</u> - The north-south configurations were examined and it was agreed that there appears to be only one alternative due to property constraints. It was noted that the conversion would require a new traffic signal at Brock Street and Simcoe Street(currently an IPS) to permit eastbound lefts. It was also noted that the Brock Street/Centre Street intersection would need to be modified to allow two westbound left turn lanes. A new signal would also be required at Fairbanks to permit northbound lefts. The Fairbank signal would need to be controlled in conjunction with the existing Olive Street signal, which is less than 100 metres south of the Fairbanks intersection.

End Treatments - General - In light of the reassignment assumptions, it was assumed that the end treatments must be designed to maintain the focus of traffic movement on King and Simcoe Streets. This means not introducing a left turn onto King for vehicles approaching from the east, or a left turn onto Simcoe for vehicles approaching from the north. However, left turns onto Bond for vehicles approaching from the north. However, left turns onto Bond for vehicles approaching from the west, or onto Centre for vehicles from the south, are unavoidable without major realignments that would require extensive property acquisition. Conversion concepts for the north and south ends of a full Simcoe/Centre conversion are shown on Figure 4.5 and 4.6. Note that in Figure 4.6, an alternative conversion concept for the south end, using Gibb Street rather than Fairbanks Street, should be further evaluated if a Phase 2 study is conducted. Fairbanks Street is in a residential area, and measures may be required to discourage through traffic from using this route, with Gibb as the alternative route.

East End Conversion - The east end conversion alternatives were examined. At this location, the Harmony Creek structure poses a constraint and will likely require widening to accommodate four lanes of traffic from Harmony to Wilson. The creek also poses a constraint for the realignment of the north leg and it was agreed that the realigned roadway should stay close to the existing alignment to avoid impacts on the creek and embankments.

The Riverside Drive intersections would need to be maintained with the conversion, however both are currently right-in and right-out, and there is no need to create full movement accesses. The solution here would have Bond Street 'T' into King Street with double-lefts onto King from Bond. A westbound right cut-off would be provided to facilitate movements from King to Bond, along the same alignment as existing, and two through lanes to King. Eastbound would be two through lanes without a left turn onto Centre. The preferred east end conversion concept is shown on Figure 4.7.



OSHAWA ONE-WAY CONVERSION STUDY

NORTH-SOUTH CONVERSION: NORTH END



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NORTH-SOUTH CONVERSION: SOUTH END

CONVERSION STUDY



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<u>West End Conversion</u> - The west end configuration was examined and it was noted that the constraints in this area are more severe due to access (from both King and Bond) to the retail development between King and Bond, and the residential development on the north side. There are two possible configurations here. One would be to have King Street 'T' into Bond such that the eastbound traffic could stay on the current alignment and there would be double westbound lefts from King Street. The other alternative would have Bond 'T' into King Street leaving the westbound right turn cut-off from Bond onto King in the same location, and adding eastbound double lefts from King onto Bond. In either case it would be necessary for the connection to avoid the Plaza property as much as possible. The preferred concept for the west end conversion is shown on Figure 4.8.

<u>Partial Conversion Switch-Overs</u> – Because of its long length, this study considered an alternative to the full conversion of King-Bond, with a partial conversion of this corridor using switch-over streets. This type of partial conversion for the N-S Simcoe-Centre corridor was not evaluated owing to the relatively short length of this section, and resulting simplicity in converting the entire length compared to introducing switch-over streets.

Along King-Bond, switch-over streets would allow the east and west ends of the corridor to remain one-way, and convert only the central "downtown: section. Possible locations are between Park and the Oshawa Creek (west) and between Division and Ray (east). This would reduce the overall cost of the conversion by avoiding the east and west end treatments and intersection modifications along King and Bond Streets. Concepts for this partial conversion of the King/Bond corridor using switch-over streets are shown on Figure 4.9 and 4.10.

A key constraint in using switch-over streets would be to find an effective way to provide for eastbound traffic weaving across the westbound traffic at the point where the one-way changes to two ways. It is clear that there are no opportunities for a new connection between King and Bond, therefore the existing roadways would have to be used. This switch-over would involve using a one-way road at each end of the transition. It could be done at the west-end with a one-way northbound connection to allow a portion (33 to 50%) of the eastbound traffic on King Street to shift to Bond.

All of the westbound traffic on King would be required to shift to the one-way section of Bond before meeting the eastbound one way section on King. The entry to the one-way roadway could be controlled by a signal to minimize the weaving of eastbound traffic from King to Bond crossing the westbound traffic from King to Bond. The east-end would require a one way southbound connection to do the opposite. Both an east end and west end connection would be necessary to complete the partial conversion.



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EAST-WEST CONVERSION: WEST END

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PARTIAL CONVERSION: EAST END SWITCHOVER



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If a partial conversion of the King/Bond corridor was to be considered, possible switch-over streets would include Ray Street or Division Street in the east, and Gladstone or Warren in the west. However using these existing side streets for the 'switch-over' traffic will introduce new traffic operational problems on the selected side streets. Therefore, using only minor streets for switch overs would be preferable.

4.2 FINAL CONVERSION ALTERNATIVES

A total of seven alternative conversion alternatives were considered in this study, as listed on Table 4. 1:

Alternative	North-South	East-West	Response
	建铁运动 Full And 我们	Full	🐼 Evaluated 🚟
2	Full	Partial	Screened-Out
3	Full	None	Evaluated
4	None	Full	🕵 Evaluated 🦢
5	None	Partial	Screened-Out
6	Partial	Full	Screened-Out
7	Partial	Partial	Screened-Out

Table 4.1 - Preliminary Conversion Alternatives

As this table shows, all alternatives that would involve a partial conversion of either of the two one-way pairs were screened out from further consideration. The screening rationale related to the serious traffic operational problems, limited lane change space, increased pedestrian conflicts, overall complexity and associated property impacts resulting from the use of switchover streets as previously described in Section 4.1 and shown on Figures 4.9 and 4.10.

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5.0 Transportation Analysis

5.1 TRANSPORTATION EVALUATION PROCESS

This section discusses the comparison of the alternatives for one-way conversion based on the transportation considerations. This involves the following factors:

Pedestrian Safety: subjective rating of the implications of the modifications required to convert from one-way to two-way and possible impacts on the pedestrian safety, change in traffic flows at high pedestrian activity areas such as King/Simcoe and Center/King. A pedestrian safety index was developed which is the combination of the eight-hour pedestrian volumes and the p.m. peak hour flows. The lower the index, the more preferred the alternative.

Network Operations: This is a score provided by the Synchro traffic model for each alternative based on the sum of vehicle delays (in seconds) plus number of stops (times 10) plus queuing penalty (vehicles affected times 100) divided by seconds in an hour (3600). The higher the performance index, the better the alternative. The results are summarized as Level-Of-Service (LOS) forecasts after conversion. LOS is a calculation of peak hour traffic conditions at signalized intersections and connecting links in terms of delays experienced by motorists, and is summarized as follows.

LOS A - Very Good	LOS B – Good	LOS C – Fair
LOS D - Poor	LOS E – Very Poor	LOS F – Breakdown/Gridlock

Intersection Conflicts: One of the advantages of a one way street system is that there are fewer points of conflict between vehicles and vehicles-pedestrians and therefore providing safer crossing movements at signalized intersections³. Typically the signalized intersection of two streets, each with two lanes, permitting two-way travel and all turns will have eight points of conflict among vehicular movements and twelve points of conflict between vehicles and pedestrians (including right turns on red) for a total of twenty points of conflict. If one of these two lane roadways is one way the number of conflict points is reduced to one vehicular-vehicular conflict and six pedestrian-vehicular conflicts for a total of seven (about one third of the two-way operation conflict points). When both streets are one-way all vehicular conflicts are removed and four vehicular-pedestrian conflicts remain, including left turn on red movement (only 20% of the number of two-way conflict points). The alternative that produces the fewest intersection conflicts would be preferred.

³ Karmeier, Dilbert F. *Transportation and traffic Engineering Handbook, 2nd ed.* Washington, D.C. USA: Institute of Transportation Engineers, 1982.

Transit Service Impact: This is the change in speed on transit main Transit Routes. Reduced speeds are less desirable.

Potential for Traffic Diversion: This is a qualitative estimate of the potential for vehicles to divert from the main routes through adjacent neighbourhoods, on local streets such as Albert or Celina rather than Simcoe Street, due to congestion at critical points in the network.

5.2 TRANSPORTATION IMPACTS

5.2.1 Pedestrian Safety

The most critical pedestrian activities are in the central area. It is expected that the traffic entering the intersection of King and Simcoe will increase for each alternative, with the greatest increase for the full two-way conversion. Higher pedestrian volumes are along King Street, and less towards Bond and Centre Street, summarized as follows.

		1	Alternatives					
	Existing	Full Tw	o Way	North-	South	East-	West	existing
Arterial	Enter	Enter	%chg	Entering	%chg	Entering	%chg	8hr peds
King/Simcoe	2400	3055	+27%	2755	+15%	2680	+10.5%	4600
Bond/Simcoe	2135	2190	+2.6%	2560	+20%	1780	-17%	2650
King/ Centre	2440	2480	+1.6%	2020	-17%	2875	+18%	3200
Bond/Centre	2430	1575	-35%	2040	-16%	1985	-18%	2300
Veh/ped Ratio	30.09	31.4		30.60		30.82		

Table 5.1 - Pedestrian Volumes and Changes

Based on this, the resulting relative ranking for pedestrian safety are:

0 - Least Preferred / 3 - Most Preferred

	Existing	Rating with Parking		
Criteria		Full Two Way	North South	East West
Pedestrian Safety	3	0	2	1

Therefore, for pedestrians, the preferred alternative is the north-south two way or the existing situation, and the least preferred is the full two-way.

5.2.2 Network Operations

For the downtown study area, PM Peak LOS is presented in Table 5.2 for existing conditions compared to the three basic conversion alternatives, with and without onstreet parking, based on the overall operations of the listed key intersections:

Location	Existing	Full	North-South	East-West
Centre at King	A	C (A)	A (A)	E (A)
Centre at Bond	В	B (A)	B (B)	A (A)
Simcoe at King	С	F (B)	B (B)	E (A)
Simcoe at Bond	A	B (B)	B (B)	A (A)

Table 5.2 - Level-Of-Service Comparisons Central Area With Parking (and Some Parking Removed)

The LOS analysis that resulted in the Table 5.1 results assumed a 67% split of traffic on the primary (King, Simcoe) and 33% secondary (Bond, Centre) routes respectively. An alternative 50/50 traffic split was considered, but felt to be an unreasonable traffic flow after conversion, although it could be further evaluated in a Phase 2 investigation.

The result of the 67/33 split assumption is that Centre and Bond would carry less traffic than today. This results in a LOS maintenance or improvement at some intersections, as shown on Table 5.1 at Centre at Bond (East-West Conversion) and Simcoe at King (North-South Conversion). Simcoe at King remains the worst LOS intersection after conversion, unless parking is removed to provide left turn lanes, because each route is assumed to be carrying 67% of the corridor traffic.

These LOS forecasts suggest that except for the impact of full conversion at the Simcoe/King intersection, and East-West conversion at the Simcoe/King and Centre/King intersections, overall LOS is expected to be acceptable. Furthermore, the table shows that removal of parking near these three low LOS intersections to provide left turn lanes would significantly improve these specific intersection operations.

NOTE: No firm conclusion should be made on the basis of Table 5.1 without further, more specific Phase 2 analysis.

Stantec The overall network operations deteriorate with the two-way operation with parking in place, with the exception of the North-South conversion where it changes only slightly (5%). Five intersections will operate at LOS E or worse with the East-West only

alternative, four with the full conversion, and one with the North–South (same as existing). The removal of parking as part of conversion alternatives improves the full conversion the most, particularly along King Street and reduces the number of intersections operating at E or worse to only two for the east-west and full conversion, and none for the north-south.

With parking in place, the preferred alternative is the existing situation or North-South conversion, while the least preferred is the Full conversion. Without parking the preferences do not change among the alternatives for two–way operation as summarized below:

0- Least Preferred / 3- Most Preferred

	Existing	Rating With Parking (and Some Parking Removed)			
Criteria		Full Two Way	North South	East West	
Network	3	0	3	1	
Operations	(3)	(1)	(3)	(2)	

Traffic signals along the one-way pairs are part of a coordinated system of 75 signals. Signal timing modifications to accommodate conversion to two-way operations will also affect the coordination of crossing streets.

5.2.3 Intersection Conflicts

Figure 5.1 shows that under the current one way operation, the intersection conflicts at the four core area intersections total four each. These are pedestrian-vehicle conflicts and they occur on each pedestrian crossing during right turns and left turns on red. At the other intersections along the one-way pairs, where there are two lane approaches, the number of intersection conflicts is eight including two vehicle-vehicle conflict and six pedestrian-vehicle conflicts.

With the full two-way alternative, the number of conflict points at the signalized intersections increases significantly in the four intersections in the core area. The current four points of conflict will increase to 20 conflict points (8 vehicular and 12 pedestrian-vehicular) with the two-way operation, and would reach 24 points of conflict (12 vehicular and 12 pedestrian-vehicular) if parking was removed to permit two lane approaches (see Figure 5.1). Some of the conflicts can be reduced by restricting turning movements or banning right turns on red; however this will lead to further capacity constraints.

When only one of the pairs of roadways (either north-south or east-west) is converted, the number of vehicular conflicts increases by only one at each intersection, and the number of vehicle-pedestrian conflicts increases from four to six for a total of seven points of conflict (see Figure 5.1). With parking removed, and allowing for two lane approaches, the number of conflict points would be 8 per



Oshawa One Way Conversiom Study Conflicts on One Way & Two Way Streets Figure 5.1

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intersection. This is currently the number of conflict points at all the other intersections along the one-way pairs outside of the central area.

In summary, the alternative ratings of intersection conflicts are compared as follows:

0- Least Preferred / 3-Most Preferred

	Existing	Rating with Parking (and Some Parking Removed)			
Criteria		Full Two Way	North South	East West	
Intersection	3	0	2	1	
Conflicts	(3)	(0)	(2)	(1)	

Therefore, in terms of the conflict points at the intersections, the existing condition is preferred and the full two-way operation is least preferred, while north-south is preferred over east-west two-way operation because there are fewer intersections affected for the north-south. The preference does not change with parking removed, however it is noted that including parking is slightly preferred over the parking removed sub-alternatives, because there are more points of conflict with the two approaches at intersections.

5.2.4 Transit Service

The speeds along King and Simcoe decrease by 7 kph with conversion to two-way operation, which can impact the transit operations. Similarly the speeds on Centre Street decrease when converted to two way. The speeds on Bond Street tend to increase with the conversion and this may be due to the less traffic diverted to the Bond corridor. Speeds on King and Simcoe increase when parking is removed. The comparative rating of each alternative based on transit impacts is presented as follows:

	Existing	Rating with Parking	g (and Some Par	king Removed)
Criteria		Full Two Way	North South	East West
Transit Service	3	0	2	1
	(2)	(0)	(1)	(3)

0-Least Preferred / 3-Most Preferred

The preferred alternative in this category is the existing conditions and the least preferred is the full conversion. The North-South is preferred slightly ahead of the East-West, because it has less impact on the longer routes.

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It should also be remembered, and assessed further in a Phase 2 study, that any negative impact on transit service and routing caused by conversion can cause increased capital and operational costs. These in turn can result in ridership loss if passed on to the passenger. Also, Oshawa Transit has some spare travel time to accommodate increased running time on its Simcoe Route, but there is no spare

travel time available on the King Route. Increased running time could mean requiring an additional bus. A Phase 2 study would need to look at possible transit route changes, and the impacts on transfer points.

5.2.5 Potential Traffic Diversion

The potential for traffic to divert into adjacent areas was explored on a preliminary basis. Essentially, diversion will become an issue in areas where the traffic congestion in the main corridors may lead to vehicles diverting to parallel routes. This is particularly an issue at the end points of the study area where it will be necessary to encourage the traffic to divert to Bond or Centre. The south and west ends are the most problematic as a left turn would be required for traffic to shift to the parallel routes. The south connection is the worst of the two because there is insufficient right-of-way to provide a separate left turn lane, which may result in traffic using streets such as Albert Street plus other side streets to avoid the Simcoe corridor. The resulting comparison of alternative ratings based on potential traffic diversion are:

0-Least Preferred / 3-Most Preferred

	Existing	Rating			
Criteria		Full Two Way	North South	East West	
Potential	3	0	1	2	
Diversion					

Therefore, the preferred alternative is the existing situation and the least preferred in the full two-way conversion, the North-south conversion is less preferred than the east-west.

5.2.6 Overall Transportation Evaluation

Table 5.3 summarizes the results of the comparison on the basis of the transportation criteria. This summary compares the existing situation (do-nothing) to three alternatives using the same scoring scale as used above in the individual comparisons in Sections 5.2.1 through to 5.2.5:

Least preferred	0
Less preferred	1
More preferred	2
Most preferred	3

Stantec

The results show that with parking in place (no loss), the existing situation is preferred, followed by the North-South conversion. The least preferred is the full two-way. Without parking (parking loss), the East-West alternative improves and the North-South alternative becomes similar to the existing situation with parking.

Table	5.3	•	Transportation Evaluation	Summary
			Relative Rankings	

	Existing	Rating with On-Street Parking		
Criteria		Full Two Way	North South	East West
Pedestrian Safety	3	0	2	1
Network Operations	3	0	3	1
Intersection Conflicts	3	0	2	1
Transit Service	3	0	2	1
Potential Diversion	3	0	1	2
Total	15	0	10	6
	Existing	Rating with	Some On-Stree Removed	et Parking
Criteria		Full Two Way	North South	East West
Pedestrian Safety	3	0	2	1
Network Operations	0	1	3	2
Intersection Conflicts	3	Ő	2	1
Transit Service	2	0	1	3
Potential Diversion	3	0	1	2
Total	11	1	9	9

0 - Least Preferred / 3 - Most Preferred

In the above table, the Existing condition was evaluated based on no change to onstreet parking, irrespective of the parking changes tested for the three conversion alternatives. When parking is removed from these three conversion alternatives, the result is slightly improved operations, and associated ratings compared to the existing condition.

5.2.7 Capital Cost Estimates

There were four major items included in the conceptual, Phase 1 cost estimation of the three conversion alternatives:

Roadway modifications and widening at the point where the current one-way roadways meet the two-way operation. This includes removal and reinstatement of the traffic islands and road widening where necessary. The cost for road widening includes a general provision for utility relocation, however the cost for relocation of the fiber optics cable along King Street has not been included. Therefore, the costs for the East-West and Full two-way alternatives should be considered to be low.

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Road overlays throughout the project area which involves milling the entire road surface and repaving with 40 mm of asphalt and repainting the roadway. The costs for this could vary as it may only be necessary to mill and repave up to half a lane width from the edge of each road (i.e. enough to remove the lane stripping). The unit cost for repainting could vary, especially with any turning arrows and stop bars which may be thermo plastic. In this estimate we have used lane kilometre costs for the alternatives. The unit cost is estimated at 32,000 per lane kilometre, but could be as high as \$50,000 depending on the line painting technique.

Modify existing signals included the cost to modify the intersection signal controls so that they could operate two ways. This may involve changing pole locations and additional signal heads and wiring. The cost will vary on an intersection by intersection basis. The unit costs range from \$5,000 to \$20,000 per intersection based on the experiences in Edmonton and Kitchener.

New Signals are required at end points where the traffic currently changes from oneway to two-way. The new signalized intersections could cost between \$80,000 to \$100,000 depending on hardware, interconnections and other regional requirements.

The following Table 5.4 presents a summary of the cost estimate range for each alternative based on minimal and conservative estimates:

Cost Items	Alternatives						
	Ea	ast-West	No	rth-South	Full		
	Quantity	\$ Range \$00	Quantity	\$ Range \$000	Quantity	\$ Range \$000	
Lane Kilometres	31.65	1,013 - 1,60	0 12.35	400 - 620	44	1,410 - 2,200	
Modify signals	23	115 - 50	0 11	60 - 220	30	150 - 600	
New signals	2	160 - 20	0 2	160 - 200	4	320 - 400	
End treatments	1	0 - 50	0 1	0 - 80	1	0 - 600	
Total		1,788 - 2,30	0	700 - 1,040		2,489 - 3,200	
Gst		125 - 16	0	50 - 73		175 - 225	
Engineering		360 - 46	0	140 - 210		500 - 640	
Contingency		180 - 23	0	70 - 105		250 - 320	
Total		2,453 - 3,1	50	960 - 1,430		3,415 - 4,385	

Table 5.4 - Capital Cost Estimates (Year 2000 \$)

NOTE: End treatments include assumed bridge widening.

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These estimates indicate that the capital cost for each of the three conversion alternatives totals:

East-West Conversion:

\$2.5 to 3.1 million

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North-South Conversion\$0.95 to \$1.5 millionFull one-way\$3.4 to \$4.4 million

Since the range in costs do not overlap, it is clear that the North-South alternative will be the least cost of all. These estimates do not include:

- Underground utility replacement
- On-street parking replacement, if required
- Parking and loading area modifications
- Transit routing and/or stop modifications
- Public education and promotion of the conversion.

5.3 TRANSPORTATION CONCLUSIONS

This Phase 1 study evaluated three alternatives to convert study area streets to twoway operations:

- 1. Full Two Way Conversion
- 2. North-South Conversion Only
- 3. East-West Conversion Only

In addition, with each of the alternatives, a sub alternative dealing with the possible removal of some on-street parking to provide turn lanes needed to improve operations at critical intersections was also evaluated.

The main transportation conclusion from this Phase 1 study is that conversion of the north-south one-way pair along Simcoe and Centre Streets is feasible from a traffic operations perspective. The estimated cost of this conversion is between 1.0 to 1.5 million dollars. This does not include costs for associated modifications, for example utility relocation, on-street parking replacement, transit modifications and signal modifications. The full conversion of both one-way pairs is the least preferred alternative.

The results of this study show that if all on-street parking is to remain in place along the Simcoe/Centre and King/Bond corridors (i.e. no loss of on-street parking), then the existing situation is preferred, followed by the North-South (Simcoe/Centre) conversion as the most preferred of the conversion alternatives. The least preferred is the full two-way conversion.

Stantec

If some removal of on-street parking for turn lanes at key intersections was to be allowed as part of conversion, then the East-West alternative improves slightly as reviewed in Section 5.2.2. However, the operations and impacts of the North-South alternative also improve to the point where this alternative rates similar to the existing

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situation with retained parking. Acceptable LOS at specific intersections can be maintained with a converted Simcoe/Centre corridor, although analysis of the full roadway operations in Phase 2 study is needed to confirm this.

Conversion of the King/Bond corridor is not preferred owing to the traffic operational needs of this route, the possible removal of a large amount of on-street parking needed to maintain traffic operations, and the complexity of converting the east and west ends of this corridor to two-way operations.

6.0 Economic Analysis

The post conversion economic impact assessment addresses the downtown core retail/service businesses only. It attempts to quantify the direct impact the street direction conversion will have on retail/service businesses in the downtown. Further improvements by the City, landlord, and/or tenant will have additional impacts on retail sales beyond those outlined in this section.

The three final conversion alternatives were examined and compared against the current situation, namely:

- Full Conversion
- East/West Conversion Only
- North/South Conversion Only

In addition, within each option different scenarios were considered. A Phase 2 analysis could expand upon these options to fully analyze their impact on downtown retail.

Based on the initial research, there appears to be a reasonable amount of data available on the sociology of urban design and traffic, but virtually none on the economic impacts on commercial development. Logic would suggest that this was not surprising given the complexity of both the street environment and the market itself. The success of an individual retailer is dependent on a number of factors that could include any of the following. However, note that this study has only focused on two of these economic factors - Traffic Flow and Parking Availability:

Street Environment	Traffic Flow	Merchandising
Inventory	Store Display	Marketing/Advertising
Services Offered	Accounting Systems	Store Façade
Location	Location of Competitors	Location of Complementary Businesses
Parking Availability	Cost Competitiveness of Rental Property	

In fact, the list of factors is quite extensive. It has been accepted that it is extremely difficult to isolate one component (i.e. traffic system) without impacting other components (i.e. land use).

In addition, reliable sales data is difficult to obtain given the proprietary nature of the data. However, there are a few studies that address the implications to the retail sector. Evidence would suggest that there is a negative relationship between heavy streets (defined as one-way streets with synchronized lights and comparatively high traffic volumes) and both the awareness of one's surroundings and the willingness to interact with those surroundings.

Research shows that both drivers and pedestrians are less able to describe the details of streets they travel everyday when those streets are fast, loud, and perceived as dangerous. The implications for a downtown street—front retailer are obvious but no one has been able to quantify the impact. The degree to which different categories of businesses along the affected routes will be affected depends on the current retail situation and the potential for change in the future.

6.1 ECONOMIC EVALUATION CRITERIA

The aim of the downtown retailers is to increase the size and penetration of their trade area. This is accomplished in two ways. Essentially, the retailers want to:

- encourage those that currently visit the area to spend more while they are there,
- increase their frequency of visitation; and
- encourage those who do not visit to start to visit.

Each option considered will affect the retail base differently. The degree of impact on the businesses along the street front were related to:

- number of businesses/vacancies,
- convenience/destination mix⁴, and
- competitiveness (quality of operations).

A basis for the analysis required an examination of several factors that will affect the retail base of the downtown. These include:

⁴ Convenience stores tend to include those that people shop on a regular basis and are highly dependent upon high traffic levels. Destination stores anchor a retail area and draw customers. Customers tend to shop at these stores on an infrequent basis.

- exposure to potential customers degree of improved visibility and accessibility to retail/service operations
- traffic speed the lower the speed the better
- parking (on-street) how the loss of parking will affect retail/service businesses
- intimacy degree to which the conversion works with other downtown initiatives to create a more animated environment
- physical and psychological barriers perceived and actual ease and complicated usage
- construction/disruption how the construction phase will disrupt businesses

6.1.1 Exposure to Potential Customers

Table 6.1 summaries the amount of square footage in the economic study area (CBD), with further data provided in **Appendix 3**. This data reflects the number of businesses and the competitiveness of the convenience and destination stores, and the amount of vacant space along King/Bond, Simcoe/Centre, and the other streets in the Downtown.

	King/Bond	Simcoe/ Centre	Other Streets	Total CBD
Convenience				
Low	23,867	17,442	9,976	51,285
Medium	50,215	22,704	16,942	89,861
High	1,000	6,424	5,251	12,675
Total Convenience	75,082	46,570	32,169	153,821
Destination				
Low	15,346	9,924	11,142	36,412
Medium	45,831	45,165	44,614	135,610
High	0	3,841	0	3,841
Total Destination	61,177	58,930	55,756	175,863
Total	136,259	105,500	87,925	329,684
Professional/Commercial	69,133	82,598	28,563	180,294
Vacant	81,080	17,759	28,280	127,119
Total	286,472	205,857	144,768	637,097

Table 6.1 - CBD Square Footage

Using the 67/33 traffic assignment applied to this study, traffic would be expected to increasing traffic along King Street and Simcoe Street, with associated benefit potential for those retailers who are located there. However, in terms of an East/West or a North/South conversion, there are more retailers, including more convenience retailers, that can benefit along King Street, than along Simcoe Street. In addition, this increase in traffic and exposure along King Street and Simcoe Street (67% split) would result in decreased traffic (33%) and exposure along Bond and Centre, as shown on Table 6.2, with a potential reverse impact on retail sales.

In terms of the conversion options, the Table 6.2 highlights the potential change in traffic flow along the major streets following a conversion and assuming that traffic volumes are split between the couplet in a 67/33 ratio with the smaller proportion assigned to the Bond and/or Centre routes. For the purposes of this analysis, the 67/33 split is carried through the rest of the report.

1	East/West	North/South	Fuli
King	30%	-2%	13%
Bond	-32%	-7%	-41%
Simcoe	-13%	30%	. 26%
Centre	-1%	-31%	-33%

Table 6.2 - Increase in Traffic with a 67	7/33	Split
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Source: City of Oshawa, Stantec

Increasing exposure to the majority of retailers will increase the accessibility and improve sales. However, if traffic is too slow and there is too much friction, motorists and pedestrians will be frustrated, which can create a negative environment for retailing and could result in people avoiding the area completely.

6.1.2 Speed and Friction

Moving cars through a downtown is no longer the main objective in some cities. The new objective is to reduce speeds and volumes of traffic to a level that is compatible with pedestrian traffic. The result will be a situation whereby vehicular traffic can still pass through at an acceptable level/speed, and pedestrians do not feel intimidated by the area and will actually visit more often and stay longer.

Speed is widely perceived as the single most important transportation factor impacting retail performance. Speed can be confused with congestion, suggesting that a lowering of downtown traffic speed represents an inconvenience or negative impact. There are no guidelines or standards to define what is an appropriate speed for a major downtown street. What is more important is the "pace" of this traffic, described in terms of consistent movement along the route and through the intersections. It is possible to have a relatively high mid-block speed condition between intersections, but delays at intersections. Conversely, it is possible to have

lower mid-block speeds and good progress through intersections, resulting in a consistent "pace" along the route. The important issue regarding speed is traffic flow delay, and not the actual measured speed.

Lower speeds in a downtown environment can benefit convenience goods to a greater extent than destination goods and big-ticket items. While different types of retail find differing ranges of speed acceptable (e.g. a highway/commercial fast food outlet can thrive in a higher speed environment versus an intimate bistro which would not survive), the perception that high speeds are detrimental to retail is near universal. High speeds:

- reduce awareness of one's surroundings,
- intimidate pedestrians, and
- serve to divide the sides of a street into separate entities.

Streets designed for moving traffic, by definition, reduce the "friction" between cars and cars, cars and people, cars and bikes, bikes and people, etc. and the vitality this "friction" brings to downtown streets.

Compared to the current situation, estimated speeds in the downtown core are summarized on Table 6.3 for these downtown links only :

Street	Alternatives			
	Existing	East-West	North-South	Full
King	10	4-32	22	3-10
Bond	26	23-33	22	21-34
Símcoe	24	21	13-18	7-28
Centre	27	25	15-24	19-35

Table 6.3 - Existing/Estimated Speeds in the Downtown (kph)

The range depends on the amount of parking removed to accommodate the level of traffic through the core of the downtown. Speeds along Simcoe Street following a North/South conversion will be 25% to 45% slower, whereas speeds along King Street following a Full conversion will be between 70% slower to approximately the same.

6.1.3 Parking

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The importance of providing accessible parking in any retail environment is undeniable. Often, the number one complaint in any downtown is the lack and/or

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high cost of parking. However, one's perception of "accessible" adjusts to the setting. Drivers generally expect that finding parking in a downtown takes longer than in other areas.

The challenge for any downtown is to create a retail environment worthy of the extra effort. The ideal setup is short-term on-street parallel parking and a long-term off-street garage within a single block. The on-street parking serves to draw the two sides of the street closer visually, provides a literal and mental buffer between the sidewalk and the traffic and adds friction by the act of parking itself. The garage makes up for the parking shortage.

Some on-street parking spaces are usually lost when converting from one-way to two-way. This can occur either at the approaches to intersections where turn lanes may be required (at least 2/3 spaces per approach depending on the length of turn queuing required), or along an entire block if the parking lane is needed to add an additional travel lane. Such loss of parking for a downtown is not a good scenario. Each on-street parking space is worth approximately \$40,000 in retail sales per year. Retailers require approximately 4 parking stalls per 1,000 square feet of retail, or one stall per 250 square feet. This is based on industry standards for retailing development. Average sales per square foot are approximately \$150 to \$180. Therefore, the loss of one stall results in the approximately \$40,000 lost retail sales per year estimate.

However, to a certain extent, the loss of parking may be compensated by measures to improve customers' awareness of parking opportunities. This can be in the form of standardized signage, increased parking on side streets, and stricter enforcement for employees to park off-site. In addition, parking may be increased on Bond or Centre Streets. While increased marketing of off-street parking may help, it cannot replace the convenience of on-street parking for businesses in the immediate vicinity. Also, additional on-street parking may be possible, but it will likely be in places where it has not previously been needed, and may not effectively replace any lost on-street spaces.

Losing on-street parking also represents an "undefined" capital cost of conversion, similar to the cost of undefined transit service changes that may be required. In the case of parking, the undefined cost involves the provision of replacement parking for lost on-street stalls.

Two different scenarios regarding parking loss were examined: maximum loss required to accommodate traffic by removing all on-street parking along key links with deficient LOS, compared to an assumed low-impact 10% loss mainly to provide improved intersection turning space where required. The results of these two scenarios are listed on Table 6.4:
Table 6.4 - Potential On-Street Parking Retention (Loss)

MAXIMUM

	Existing	East/West	North/South	Full	
King	King 76 4		76	44	
Bond	44	44	44	44	
Simcoe	98	76 81		76	
Centre	2	2	2	2	
Total	220	166 (-54)	203 (-17)	166 (-54)	

Sources: City of Oshawa, Stantec

10% LOSS

	Existing	East/West	North/South	Full
King	76	68	76	68
Bond	44	44	44	44
Simcoe	98	88	88	88
Centre	2	2	2	2
Total	220	202 (-18)	210 (-10)	202 (-18)

Sources: City of Oshawa, UMC

6.1.4 Elements of Intimacy

One-way streets in and of themselves are not seen as harmful to retail, however, people usually associate them with speed. There are examples of successful downtowns with one-way retail streets such as Kingston, Ontario; Madison, Wisconsin; Colorado Springs, Colorado; but these cities have other natural and manmade designs that slow traffic and allow retail to grow. None have more than two moving lanes, high speeds are not a concern, and they have on-street parking. However, two-way streets are preferable from a retail and pedestrian point of view because of the increased friction. Under this scenario, on-coming traffic slows things down and adds to the action on the street, making the area more animated.

These design elements are considered primary to the success of creating an experiential retail environment in the downtown, but true success is often borne out of the interaction between these elements (and many others mentioned previously).

While not every retailer requires the same thing from its immediate environment, the most successful retailers benefit from a certain intimacy achieved by clustering a diverse mix of retail capitalizing on a niche and close attention to urban design, which are goals of Oshawa's Vision 2000 City Centre Plan. This has been achieved to a certain extent along Celina Street. The street has an urban village feel that is different than King or Bond Streets.

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The goal of the design effort is to create a single place, drawing the various pieces of design and diverse retail mix together. Designers talk of drawing the street closer by widening sidewalks, landscaping, lighting and banner poles, etc. These are inline with the recommendations for the CBD in Robin Dee and Associates' report on

Oshawa (1999) and with the streetscaping plans for Downtown Oshawa currently in place. It will be important to incorporate all streetscaping elements with a common theme including directional and placemarking signage.

The action of downtown streets is considered one of its greatest assets. Opportunities for "people watching" adds to the mix. One person's failed attempt at parallel parking becomes another's entertainment. Sidewalk café tables positioned near the building edge keep pedestrians from being pushed out beyond the reach of a store-front display and provide a steady stream of entertainment and friction for those seated. The strategies are varied, but the goal is always to create an intimate, active space unique to the City.

6.1.5 Physical and Psychological Barriers

Converting one couplet or both couplets in the downtown will assist to increase accessibility for the downtown businesses. Downtown Oshawa relies heavily on King/Bond and Simcoe/Centre Streets for access, egress, and pass through. A full conversion could essentially double the accessibility, and with more street animation comes other longer term benefits, such as reduced crime rates in the core. However, one-way streets are also often blamed for increased congestion due to increased circulating traffic, and for longer trip journeys. The perception is that converting one couplet or both couplets may potentially alleviate some of this congestion.

In addition, other barriers may be improved upon and so expected positive responses can include:

- the perception that downtown is easier to use and navigate;
- the image of the downtown as being more pedestrian friendly and serious about revitalization;
- favourable comments from retail/service customers;
- the use as a selling point to attract future retailers; and
- driving force to prompt retailers/landlords to want to improve their business (façade, inventory, displays).

There may be negative comments from other stakeholders that could possibly have an ill-effect on retail/service businesses. These comments include:

- unfavourable comments from pass-through motorists;
- concern from retailers affected by conversion but outside of the downtown;

residential complaints about possible traffic diversion and/or increased parking.

6.1.6 Construction / Disruption

Construction along major retail streets dampens sales as less traffic is able to pass through and motorists avoid the area. In addition, pedestrians tend to shop less due to the dust and noise. This is a one-time cost to businesses that will not occur in subsequent years, and could include:

Table 6.5 - Construction / Disruption Delay Periods

	East/West	North/South	Full
Construction/Disruption	six months	Three months	six months
Source: Stantec			

While the period during which the downtown will be directly affected is shorter than for the entire project, there will be disruption to services that must be taken into account.

6.2 ECONOMIC IMPACTS

6.2.1 Retail Sales

For each of the three conversion options, a range of retail sales increases (which includes quantification for increases due to exposure, traffic speed, and decreases due to loss of parking and construction) has been estimated for the type of retail/service operation (i.e. convenience/destination) and for the competitiveness of the operations. These estimates were based on comparative experiences in evaluating retail sales impacted by changes to exposure, traffic speed and reduced parking. These comparative experiences suggest that highly competitive retail operations can still benefit more than less competitive operations experiencing these changes.

For each option, two scenarios have been developed to address the potential loss of parking. Each option includes a scenario whereby the maximum number of on-street parking spaces are lost in order to achieve acceptable vehicular flow, and a scenario whereby only 10% of on-street parking is lost. A detailed breakdown of the retail sales increase for each criteria is included in **Appendix 6**, and summarized in Table 6.6:

Alternatives	Convenience Retail			Destination Retail			Total	
							Sales Volume Increase	
	Low	Med.	High	Low	Med	High	(\$1,000's)	
EAST / WEST Conversion					.1		······································	
Retail Sales Increase	3-4%	10– 13%	19– 23%	1.5 2.5%	7- 9%	10– 13%	\$62,230 - \$62,809	
Annual Sales Loss Due to Parking								
With Maximum Loss							- \$2,160	
With 10% Loss							- \$720	
NORTH / SOUTH Conversion								
Retail Sales Increase	34%	10 11%	15– 16%	2-3%	6 8%	10– 12%	\$61,688 - \$61,968	
Sales Loss Due to Parking	-							
With Maximum Loss							- \$1,560	
With 10% Loss		1000-00-00-00-00-00-00-00-00-00-00-00-00	*				- \$400	
FULL Conversion								
Retail Sales Increase	3-4%	13– 17%	22– 26%	3-4%	10– 13%	13– 17%	\$66,454 - \$68,263	
Sales Loss Due to Parking								
With Maximum Loss							- \$2,160	
With 10% Loss							- \$700	

Table 6.6 - Potential Annual Retail Sales Increase (\$000) With Parking Loss Scenario

The following table also demonstrates the retail sales that could be attributable from a one-way to two-way conversion for the first year.

Table 6.7 - Potential Year 1 Retail Sales Increase (\$000) With Parking Los	S
Scenario	

	Retail Sales (\$000)		Gain (Current to Year 2) - \$000	Annual Gain	
	Year 1	Year 2			
CURRENT SITUATION	\$60,286				
EAST / WEST Conversion					
With Maximum Parking Loss	\$60,068 \$60,649	\$61,342- \$61,944	\$1,056-\$1,658	0.9–1.4%	
With 10% Parking Loss	\$61,508 \$62,089	\$62,782 \$63,384	\$2,496-\$3,098	2.1-2.5%	
NORTH / SOUTH Conversion					
With Maximum Parking Loss	\$61,128	\$60,589-	\$303-\$583	0.3-0.5%	

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L	\$60 408	\$60,869		
With 10% Parking Loss	\$61,288 \$61,568	\$61,749- \$62,029	\$1,463-\$1,743	1.2-1.4%
FULL Conversion	allel and an 			
With Maximum Parking Loss	\$64,294- \$66,103	\$67,038- \$68,847	\$6,752-\$8,561	5.6-7.1%
With 10% Parking Loss	\$65,734- \$67,543	\$68,478- \$70,287	\$8,192-\$10,001	6.6-8.0%

Over a two-year period, retail sales can be expected to increase by six to eight million dollars for a full conversion. The retail sales increases are less for the one couplet alternatives. With the maximum parking loss taken into effect, the resulting sales increases due to conversion are in the range of 0.9 to 1.4% for an East/West conversion, and in the range of 0.3 to 0.5% for a North/South conversion.

The resulting sales increase will first manifest itself in increased sales for the current retail/service operators. As these businesses become more successful and draw additional customers, they will encourage more businesses to occupy the vacant space in the downtown thereby reducing the vacancy rate. The resulting sales increases will eventually translate into increased property values and, in turn, increased assessments and property tax revenue to the City.

Businesses that become more profitable may require more staff, which in turn increases the employment in the downtown, which impacts the economy of the downtown in a positive way.

6.3 ECONOMIC CONCLUSION

A successful downtown retail environment is heavily dependent on quantifiable urban design features such as traffic speed and direction, parking, as well as more qualitative features such as intimacy and friction. Intimacy and friction can be defined as the beneficial social interaction that occurs in an urban area between a diverse mix of user groups (pedestrians – young, old, ethnic; bicycle riders; car drivers, etc.). All of these factors can impact a downtown's potential for success, especially when combined with increased driver awareness. In addition, it is generally accepted that the downtown's projected image, including the physical design of the streets, has a direct impact on the area's ability to attract investment (including retail). At issue, and frequently in conflict with these efforts, are a City's goals for improved traffic flow, improved safety, regional connectedness, and a greater number of congestion mitigation efforts.

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This Phase 1 study concludes that from an economic impact perspective, one-way conversions offer the potential for improved retailing conditions within the Oshawa downtown by improving many of the transportation-related conditions needed for successful retailing, including:

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- Any increase in traffic volumes that maintain acceptable operating characteristics (i.e. delays, queuing, speed) will benefit adjacent retailers. In the Simcoe/Centre conversion, a 30% increase in traffic volumes is expected on Simcoe Street. A corresponding 30% decrease in traffic on Centre Street is also expected
- Conversion of Simcoe/Centre affords the best resulting Level-of-Service potential compared to the King/Bond or full conversion alternatives.
- Reduced speeds will increase motorist awareness of their surroundings in the downtown, thereby enhancing visibility.
- The Simcoe/Centre conversion offers the least impact on on-street parking.
- Retail sales are estimated to increase from 0.3 to 8.0%, depending on what conversion alternative is chosen.

7.0 Recommendations

The main transportation conclusion from this Phase 1 study is that conversion of the north-south one-way pair along Simcoe and Centre Streets is feasible from a traffic operations perspective, and practical as part of other initiatives to support core area business and vitality. The estimated capital cost of this conversion is approximately 1.0 to 1.5 million dollars. This does not include costs for associated modifications, for example utility relocation, on-street parking replacement, transit modifications and signal modifications. The full conversion of both one-way pairs is the least preferred alternative.

The results of this study show that if all on-street parking is to remain along the Simcoe/Centre corridor (i.e. no loss of any on-street parking), then the conversion may not be feasible, and in that case the existing situation would be preferred (no change). Once again, the least preferred is the full two-way conversion.

If some removal of on-street parking for turn lanes at key intersections was to be allowed as part of conversion, then the East-West alternative improves slightly. However, the operations and impacts of the North-South alternative also improve to the point where it rates similar to the existing situation with retained parking. This assumes an acceptable LOS can be maintained within a converted Simcoe/Centre corridor with only minimal parking removal.

Based on the potential impacts and opportunities involved, and the cost to convert, the final conversion decision should next involve a more detailed consideration of impacts and associated trade-offs within the Oshawa downtown. This scale of analysis was beyond the Phase 1 study scope to answer, but this study has identified six (6) main issues requiring further analysis. Each should be addressed in a more indepth Phase 2 study so that all possible impacts, both positive and negative, are known in the final deliberation:

 This Phase 1 study has reached its conclusions on the assumption that traffic LOS would not be allowed to decrease to unacceptable levels as a result of conversion. However, other changes in LOS can result from conversion, such as slowed traffic progression that in turn can potentially benefit the streetscape visibility and accessibility.

Therefore, assurance is needed that the traffic LOS on a converted Simcoe/Centre couplet can be maintained at acceptable levels not only in the short term after conversion, but further into a 5-10 year intermediate timeframe. This will require travel demand forecasting of the converted Simcoe/Centre scenario, and may involve a trade-off between acceptable, yet still different LOS conditions with and without conversion.

- A conceptual plan is required of the number and location of on-street parking stalls that may have to be removed to ensure the acceptable LOS after conversion. An inventory of removed versus new parking opportunities is needed to assess the net potential loss in parking, and those businesses most affected by any such losses.
- Transit operations within the downtown will be impacted by a conversion. A review of route and service standard changes in and through the downtown should be conducted to ensure transit can continue to operate effectively on converted routes.
- 4. Traffic patterns can potentially respond to conversion by diverting to alternative routes. If this occurs, and these alternative routes are not designed to carry increased traffic, and/or involve sensitive abutting land use, then other community traffic problems can result. A downtown area traffic analysis and forecast can be conducted to identify the potential for diversions after conversion.
- 5. Other conversion studies conducted by Stantec Consulting (Kitchener, Cambridge, Ottawa) have involved a functional design exercise to prepare lane marking plans, identify signage, signals and on-street parking changes, and to prepare more accurate cost estimates. This ability to show staff, elected officials and the public exactly how a Simcoe/Centre conversion could be implemented in downtown Oshawa is recommended as part of a Phase 2 study.
- 6. The final Phase 2 study recommendation is to include opportunities to inform and involve stakeholders (i.e. merchants) and the general public. Stantec has found that public interest is usually high in such studies, especially where trade-offs must be made between the provision of through traffic versus destination traffic needs in a downtown.
- A more specific analysis of the Simcoe/Centre conversion could expand upon the analysis of expected business impacts, based on more Phase 2 traffic and layout information (i.e. parking).