Transportation Master Plan Update

Submitted to City of Brantford
by IBI Group

Updated November 2014

ERRATUM

The Transportation Master Plan (TMP) Update dated July 2014 was approved by City Council on August 25, 2014. The report contained the following three errors which have been corrected in this enclosed version dated November 2014:

Section 5.1.1 Official Plan Transportation Schedules

This report section introduces changes that are recommended to the City's Road Classification as presented in Exhibit 5.1. Page 69/70 of the report has been edited to include a basic description of each of the City's road classes, and to include the Charing Cross Street Extension from West Street to Henry Street as one of the 'Future Minor Arterial' roads recommended in the TMP Update.

It also includes reclassification of Oak Park Road north of Highway 403 from a Local Road to a Minor Arterial Road on page 70, and Burwell Street as a Minor Collector Road from St. Paul Avenue to Parkside Drive as recommended in the previous 2007 TMP, also on page 70.

Exhibit 5.1 – Recommended Road Classification

This exhibit on page 71 of the TMP Update has been revised to include the above-noted reclassifications, and to improve the graphic quality of this exhibit.

Exhibit 5.2 – OP Schedule 5-2 Road Widening Recommended Edits

The new Official Plan will include the final road right-of-way widths for Complete Streets, including appropriate active transportation components. Therefore, Exhibit 5.2 has been removed from the TMP Update.

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2 – Population & Employment Forecasts by Traffic Zones 2011-2041
3 – Transportation Model Update Report
4 – Transportation Impact Assessment Guidelines
5 – Active Transportation Plan Report
6 – Traffic Signal Control System Assessment

Executive Summary

1 STUDY FOUNDATION

In January 2013, the City of Brantford began preparation of an update to their 2007 Transportation Master Plan (TMP), to be conducted concurrently with the preparation of a Master Servicing Plan (MSP. At the same time, the City also began its mandatory five year Official Plan Review (OPR). That parallel process has provided the city growth information on which the TMP Update is now based.

Since the City's previous TMP for the City of Brantford was adopted in February 2007, major transportation system improvements have been implemented including the Henry Street and King George Road widening, Grey Street Extension, increased kilometres of shared cycle/vehicle lanes and achieving a 12 % increase in annual transit users. The City also saw completion of three important Schedule 'C' Municipal Class Environmental Assessments (EAs) for the conversion of Colborne/Dalhousie Streets to two way operation from Brant Avenue to Brett Street, Shellard Lane improvements for all road users from Colborne Street to west City limits and preparation of an EA and preliminary design with the Ministry of Transportation (MTO) for improvements to the interchange at Highway 403 and Oak Park.

The City's new population and employment forecasts to the new planning horizon of 2031 also now reflect the Province's Places To Grow policies as amended in November 2012. Furthermore, a number of transportation infrastructure projects previously recommended in the 2006 to 2011 period have not been implemented, nor have Environmental Assessment studies been undertaken due to funding constraints and reduced transportation demand resulting from the lower growth rate. These previously proposed projects include widening Veterans Memorial Parkway to four lanes from Mount Pleasant to Market Street including widening the Grand River crossing, Brant Avenue operational improvements by removing on-street parking and extending Charing Cross Street as four lanes from West Street to Henry Street.

The TMP Update has also addressed newer issues involving changing economic and associated growth conditions, changes in the regional transportation context around Brantford (i.e., Highway 24) and evolving public priorities for the transportation system, for example dealing with the new Complete Streets philosophy, expanding the emphasis on Active Transportation and new traffic management and calming measures (i.e., roundabouts).

2 PUBLIC CONSULTATION

A key factor influencing the development of the TMP Update, and the associated Master Servicing Plan (MSP) and Official Plan Review (OPR) has been the input received from the various involved stakeholders and the general public. The formal public consultation program for these three projects was integrated during the early project stages involving notices and three Public Information Centres held during the TMP Update process.

Outreach meetings were also held with the City's Downtown Action Committee, Environmental Policy Advisory Committee, Multi-Use Trails and Bikeways Advisory Committee and Transit Liaison Advisory Committee. Public and external agency

consultation was also undertaken during the study through media coverage, e-mails, letters and the above-noted series of formal meetings. City Council was also kept informed on the study progress through formal reports and presentations.

The major transportation issues identified by the public involve specific road congestion, access to Highway 403 especially from the southwest, alternatives to car use especially involving walking and cycling, access to GO Transit and future transportation needs of an aging population. For public transit, the main issues identified by the public involve the need to improve internal service for example with more direct and faster routes, along with connections to GO Transit and other communities (Paris, Cambridge, Hamilton) and promotion of public transit.

3 EXISTING TRANSPORTATION SYSTEM

3.1 Existing Road Network

The City's travel demand forecasting model was updated (see TMP Section 2.5) as part of the TMP Update, and the following conditions were confirmed in terms of general traffic conditions on the major Brantford road network:

- The p.m. peak hour traffic is more congested than the a.m. peak hour traffic;
- In both peak hours, the King George Road and Wayne Gretzky Parkway interchanges are the main routes that traffic from Highway 403 uses to get into the City, which results in high and near-capacity traffic flows near these interchanges;
- From and to the King George Road interchange, traffic generally proceeds along King George Road and Brant Avenue to access the downtown core;
- From and to the Wayne Gretzky Parkway interchange, traffic generally proceeds along Wayne Gretzky Parkway and Colborne Street, which provides access to the 1-way couplet of Colborne Street and Dalhousie Street to access the downtown;
- West Street is also a highly utilized north-south road;
- North of Highway 403, King George Road and Wayne Gretzky Parkway serve as the main north-south accesses with vehicles then feeding to Fairview Drive, Powerline Road and Dunsdon Street to go east-west; and
- Colborne Street and Veterans Memorial Parkway provide the main connections into the City from the southwest.

The traffic Volume- to-Capacity (V/C) ratios in the 2011 PM Peak Hour on major City streets indicate roadway level-of-service (LOS). Colborne Street at the Grand River and Veterans Memorial Parkway (VMP) in the southwest portion of the City show fair to poor LOS today, along with sections of King George Road at Highway 403, West Street and Wayne Gretzky Parkway. While VMP provides a more continuous route than Colborne Street, it does not provide access for the communities north of VMP, which contributes to higher traffic volumes along Colborne Street as these subdivisions feed onto Colborne Street. Inter-regional travel was also analysed between Brantford and Hamilton, and Brantford and Waterloo Region.

3.2 Existing Transit Network Use

According to the new validated transit model developed for the City as part of this TMP Update, Transit Routes 1, 2, 4A, 4C, 7 and 9 showed good utilization in both peak

periods with more than 100 riders on each route. Route 8 only showed good utilization in the PM peak period with more than 100 riders. Routes 5 and 6 showed poor utilization with less than 100 people riding on each route in each peak period.

Conversely, Route 9 was modelled slightly pessimistically with lower than observed ridership in the PM peak hour. This was attributed to the trip generation process, like the Shellard Lane and Conklin Road subdivisions, where trip activity along Grey Street, Lyndhurst Street and near the St. Joseph's Lifecare Centre may be under-represented by the trip generation rates. Spot checks undertaken on private auto traffic west of Garden Avenue and east of Wayne Gretzky Parkway confirmed this observation.

3.3 Existing Active Transportation (AT)

The TMP Update's AT strategy proposes to build from the City's strong off-road trail network by enhancing access to the trail system and providing walk and bike infrastructure in new development areas. Over time, it is the intention of the TMP Update that this strategy encourage walking and cycling as the preferred option for short trips. The TMP Update aims to build on the advantageous characteristics of the City, and to address on-going AT challenges.

New sidewalks and multi-use trails adjacent to the roadway are typically constructed in the Capital Program as part of roadway improvement projects on local, collector and arterial roads. The annual budget for the Sidewalk Program is currently $100,000 per year. Multi-use trails along non-roadway corridors are managed by Parks & Recreation, and their annual budget for new multi-use trails is $100,000 per year.

Also since 2007, the City has also constructed 4.8km of multi-use trails in non-roadway corridors and 7.2km of multi-use trails (adjacent to road). For on-road facilities, the City constructed 4.2km of bike lanes, 6.8km of shared use lanes and 23.6 km of signed routes. Trails located along non-roadway corridors are managed (i.e. constructed and maintained) by Parks & Recreation.

The West Conklin area demonstrates examples of well-designed bike lanes on Conklin Road, and multi-use trails are currently planned along Shellard Lane. New development areas present opportune conditions for implementing sidewalks on both sides of the road and/or high-quality bike facilities with separate, designated space for cyclists. In established neighbourhoods, all existing signed routes were installed within the last five years, with 7.6km planned within the next year and an additional 14.9km in the planning process. This pace of development affirms a level of commitment by the City to the bikeways and trails network.

The public has also expressed a desire for quieter and safer streets, such as "slow zones" with posted speeds of 40 km/h. Any directive to maintain roads with excess capacity often conflicts with the directive for more speed management on arterial roads, and traffic calming on local roads. Strong policy is required for City staff in addressing both community needs and higher level objectives for Active Transportation in the City.

4 TRANSPORTATION IMPACTS OF GROWTH

4.1 Population and Employment Growth

The population and employment forecasts for the City of Brantford indicate significant growth in the period from 2011 to 2031, growing by 30% and 32% respectively. These forecasts have been incorporated into the City's new strategic transportation model. The population and employment forecasts from the Growth Plan for the Greater Golden

Horseshoe were provided in 5-year intervals (2011, 2016, 2021, 2026, and 2031) and allocated to traffic zones in the City. The allocations were based on Schedule 1-2 Growth Management Plan in the City's Official Plan, land use designations and sites with known development potential. This information has the City population growing from 93,650 in 2011 to 121,264 in 2031, and its employment growing from 46,892 in 2011 to 59,678 in 2031. This grow information has been used to forecast future travel demands in association with land use patterns provided by the City's Community Services Department to test the effectiveness of alternative transportation strategies.

4.2 Change in Travel Mode Choice

Another important update for the forecasting model is travel behaviour represented by mode of travel. Today, about 87% of trips in the peak period are made by the private automobile, with 2% made by transit, 8% by walking / cycling, and 3% by other modes. This shows that travel in Brantford is currently very auto-reliant, as is typical of most smaller North American cities today. However, the TMP Update is based on private auto use decreasing to 80% of PM Peak trips by 2031, and transit and cycling/walking increase to 6% and 10% respectively.

4.3 Local Travel Growth to 2031: Do-Nothing Scenario

The updated model forecasts travel in Brantford in 2031 first under a "Do-Nothing" scenario where travel mode choices are unchanged from 2011, and no further capacity improvements (i.e. road widening, extensions) are included. Under this scenario, local City travel in the AM Peak Hour is expected to grow by 22%, and by 27% in the PM Peak Hour. Travel delays on the City's road network are also forecast to basically double, growing by 208% in the AM and 237% in the PM Peak Hours under the 2031 Do-Nothing scenario. Other transportation impacts of this scenario include the following LOS conditions shown as Volume/Capacity ratios on Exhibit ES.1:

- Continued capacity stress on key existing corridors – King George Road, Brant Avenue, West Street, Wayne Gretzky Parkway, Colborne Street and Veterans Memorial Parkway; and
- New capacity stress on West Street between Henry Street and Charing Cross Street, Brant Avenue between Toll Gate Road and King George Road, on Clarence Street that continues north of Veterans Memorial Parkway, on Shellard Lane and Blackburn Drive leading into the southwest subdivisions and on the Colborne / Dalhousie one-way couplet west of Wayne Gretzky Parkway.

The distribution of growing private auto use in the City by 2031 in the Do-Nothing scenario is graphically shown on Exhibit ES.2.

5 ALTERNATIVE TRANSPORTATION STRATEGIES

The 2007 TMP's strategy transportation direction remains valid for the 2014 Update. That is to both increase the supply of transportation infrastructure (optimize, expand and new facilities), and manage travel demand (cost, behaviour, land use). However, the impacts of this strategy on the 2031 roadway network have been updated to reflect the new growth forecasts and network capacity improvements made since 2007.

Furthermore, the concluding recommendation of the 2007 TMP for a balanced approach to transportation remains valid today based on community consultation conducted for the Update. The result is a transportation strategy that is based on:

Exhibit ES.1 - Private Auto V/C Forecast 2013 PM Peak Hour (Do Nothing)

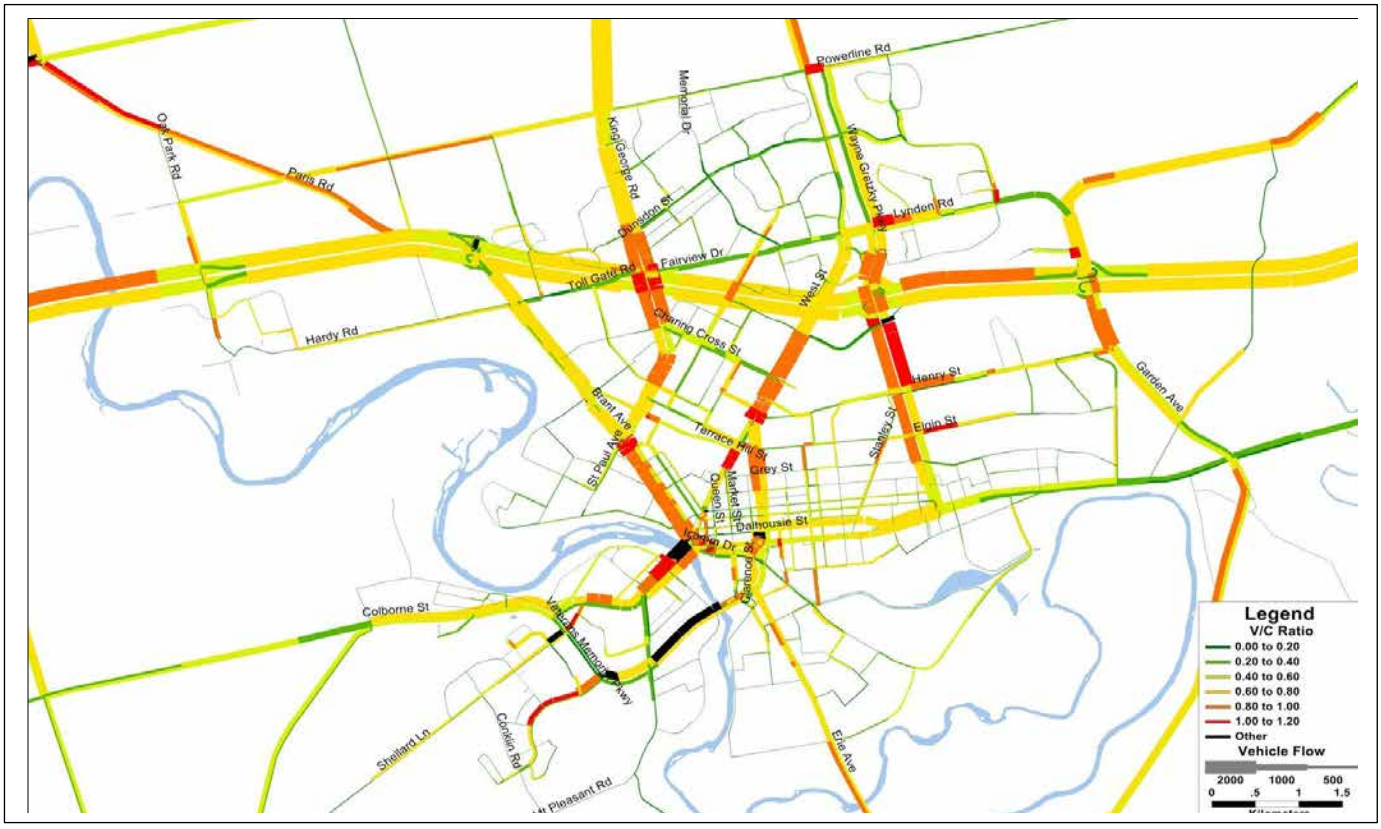
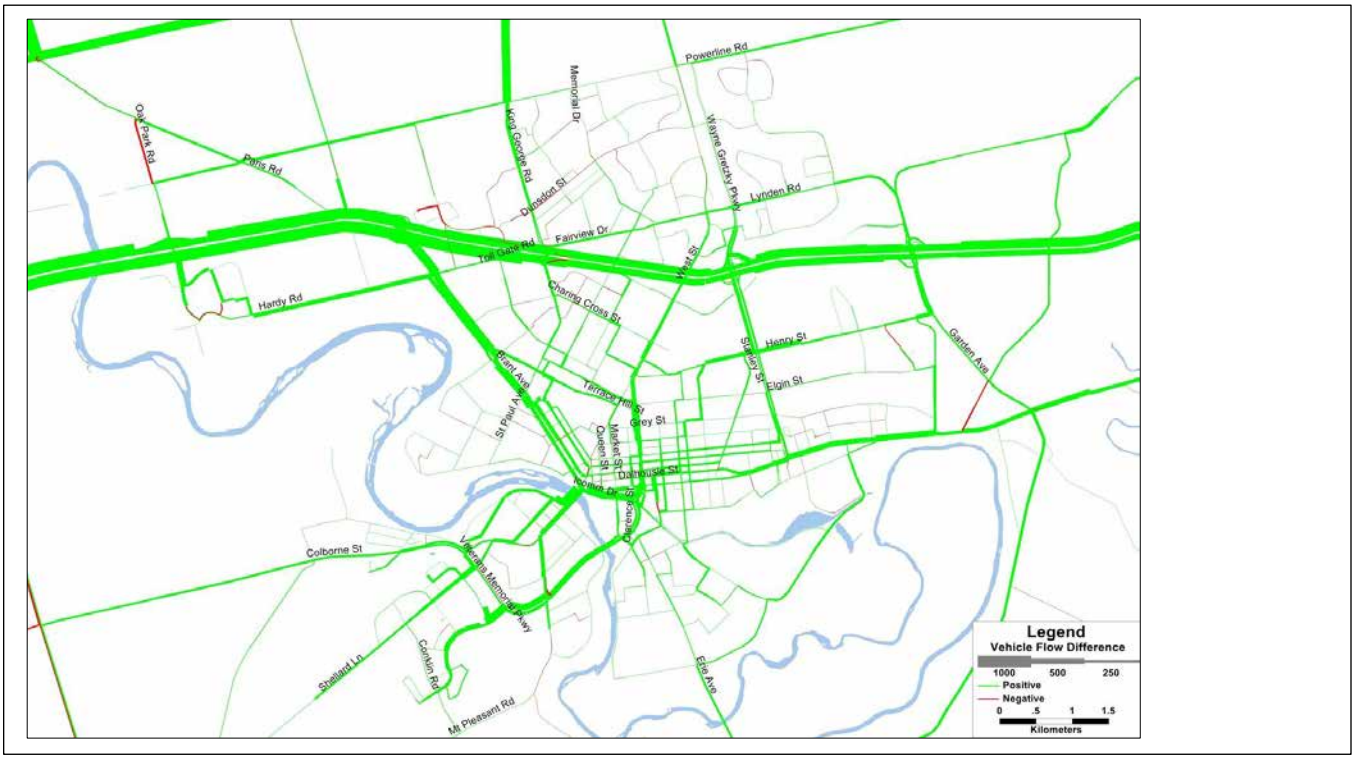


Exhibit ES.2 - Private Auto Volume Growth 2011-2031 PM Peak Hour (Do Nothing)



- Investment in providing and promoting Active Transportation (walking and cycling) as an alternative mode of transportation across the city;
- Management of downtown parking to provide an adequate supply to meet downtown growth needs, while still pricing this parking (off street and on street) in ways that encourage more transit use (i.e. monthly parking cost must be more than monthly transit pass);
- Invest in added transit fleet and resources to meet future transit mode share targets, including terminal facilities and transit route rationalization; and
- Optimize existing roadway capacity using a city-wide corridor management and optimization program focused on intersection capacity optimization, signal priorities and arterial access management

Even with these and other related policy directions, the TMP Update still concludes, as it did in 2007, that with plans to increase transportation supply and manage travel demand associated with population and employment growth to 2031, the City of Brantford will still face congestion in key areas of the roadway network

It is expected that forecasted transportation deficiencies in the City will have to be addressed through a combination of travel demand changes and reduced Level-of-Service in parts of the roadway network, most notably:

* the two Grand River crossings (Colborne Street West and Veterans Memorial Parkway);
* Highway 403 access points (King George Road, Wayne Gretzky Parkway); and
* Along the City's continuous arterial corridors (i.e. West St./Colborne St, Wayne Gretzky Parkway).

5.1 Alternative Transportation Strategies to 2031

In response to the travel demand, traffic growth and associated LOS deficiencies forecast in Brantford by 2031, two alternative transportation strategies were evaluated in addition to the 'Do Nothing' strategy for the City:

Manage Travel Demand – A Transportation Demand Management (TDM) strategy would address the growth of traffic in the City by achieving new mode share targets in 2031. This includes a reduction in the auto driver/passenger share from 87% today to 80% in 2031, a significant tripling of the transit share from 2% today to 6% in 2031 and an increase in Active Transportation from 8% today to 10% in 2031. Furthermore, in this strategy there are no changes to the roadway network capacity that would be provided by planned roadway widening, extensions and/or additions.

When the roadway network level-of-service (LOS) of this is strategy is compared with the 'Do Nothing' strategy, the conclusion is that the Demand Management strategy alone would not be effective in addressing a number of major capacity deficiencies forecast in the City's road network by 2031, most notably along Colborne Street and VMP at the bridges and to the west, along sections of King George Road at Highway 403, West Street, Clarence Street in the downtown, Wayne Gretzky Parkway and along the entire length of Brant Avenue.

Increase Road Network Capacity – The alternative strategy to address travel demands on the City's road network is to enhance the carrying capacity of the network through strategic road widenings and extensions, plus roadway operational improvements for example at key intersections. The main impact of this strategy is the ability to maintain an acceptable and efficient Level-of-Service on Brantford roads over the next 20 years. This includes LOS improvements at the Colborne Street and VMP river crossings, along Wayne Gretzky Parkway and most of West Street and along Clarence Street in the downtown.

5.2 Alternative Public Transit Strategies to 2031

Three alternative transit strategies were evaluated for Brantford in 2031. Option 1: Status Quo would maintain current service levels. Option 2: Peer Level Investment would implement service improvements on key performing routes, add routes to new areas and increase service levels to improve mode share to 4% of peak period demands. Option 3: Transit Focus – Enhanced Level of Investment would implement significant service improvements during all service hours.

Option 2 was selected as the preferred approach for Brantford Transit over the next 10 years, with an Option 3 Enhanced Transit Focus by 2031. Improvements include upgrading and expanding the downtown transit terminal, and constructing enhanced transfer facilities in the vicinity of the Lynden Park Mall and Brantford Commons or other locations as identified through more specific location studies. The targeted transit ridership level would be 20 rides per capita by 2021 and 30 rides per capita by 2031. An improved overall mode share target of 6% would increase to 10% of peak period travel demands. This would result in significantly increased service and investment levels over the period of the Plan, resulting in projected service levels in the order of 120,000 revenue-hours (1.1 revenue-hours/capita) by 2021 and 160,000 (1.3 rev-hrs/capita) by 2031, and ridership of 2.2 million by 2021 and 3.6 million by 2031.

For the specialized transit service by Brantford Lift providing parallel service for people with disabilities who are unable to use the conventional transit service, continued growth in the demand for the specialized service is expected to continue in the future due to both increased accessibility for people with disabilities, as well as changing demographics. However, as the conventional transit service now utilizes fully accessible transit buses, and considering the requirements under the Provincial Accessibility for Ontarians with Disabilities Act (AODA) that the conventional transit service infrastructure (stops, shelters and terminals) be made accessible by 2024, greater use of the conventional service by people with disabilities especially those using mobility devices will occur. This should be encouraged by the City to ensure that the specialized transit service resources are focused on meeting the needs of people who are unable to use the conventional transit service.

On this basis, the City should pro-actively review its eligibility criteria for use of Brantford Lift regularly to ensure that the service is used only by those people unable to use the conventional transit service. The City should also actively encourage maximum use of the conventional service. This approach would optimize the capacity and use of the specialized service by those who most need the service. Even with a strategy to optimize the use of Brantford Lift service, it is anticipated that the service resources (vehicles, revenue-hours and budget) will need to expand in proportion to the future increase in the population.

6 TRANSPORTATION MASTER PLAN

6.1 Policy Review

The following transportation policies have been reviewed and updated where required for the City:

- Guidelines for the Preparation of Transportation Impact Studies;
- Traffic Calming;
- Downtown Parking;
- Use of Roundabouts;
- Provision of Sidewalks including Sidewalk Infill;
- Roadway Capacity Optimization through Access Management and Arterial Road Optimization;
- Complete Streets for safe access of all users; and
- The Role of Transportation in Healthy Communities.

6.2 Active Transportation Plan

The TMP Update includes a new City Bikeway and Trails Network, building on the strong presence of multi-use trails (also called shared use trails) in non-roadway corridors. Thus, the majority of updates focus on on-road facilities. The updates are divided in three groups;

1. upgrade existing and proposed signed routes with improved bike facilities such as marked shared use lanes, bike priority streets or bike lanes, as appropriate,
2. upgrade existing and proposed wide curb lanes on multi-lane and/or arterial roads to bike facilities with designated or separated space for cyclists, and
3. modify existing and proposed routes, or add new routes where possible, to provide more comfortable, direct and continuous connections.

The capital cost to provide these facilities is estimated at $11.125 Million to year 2031, or an average annual investment of about $550,000. The following Exhibit ES.3 summarizes the recommendations for the short, medium and long term to 2031.

Exhibit ES.3 - Active Transportation Network Recommendations

SHORT-TERM 2014 – 2019		
Length	**Facility**	**Cost**
10.6 km	Bike Lanes	$ 668,000
2.0 km	Buffered Bike lanes	$ 114,000
5.4 km	Bike Priority Street	$ 206,000
1.5 km	Super Sharrows	$ 39,000
12.6 km	Marked Shared Use Lanes	$ 126,000
6.4 km	Boulevard Trails (adjacent to roadway)	$1,400,000
0.7 km	Shared- Use Rails (non-roadway corridor	$ 178,000
39.2 km	**Sub-Total Short-Term**	**$2,731,000**

MEDIUM –TERM 2020 – 2024		
17.3 km	Bike Lanes	$2,015,000
4.5 km	Bike Priority Street	$ 170,000
17.3 km	Marked Shared Use Lanes	$ 172,000
2.0 km	Boulevard Trails (adjacent to roadway)	$ 437,000
0.8 km	Shared- Use Trail (non-roadway corridor)	$ 194,000
0.5km	Bikeway or trail connection	$ 15,000
42.4 km	**Sub-Total Medium-Term**	**$3,003,000**
LONG-TERM 2025 – 2031		
5.8 km	Bike Lanes - $1,094,000	$1,094,000
2.1 km	Buffered Bike lanes -	$1,325,000
2.7 km	Bike Priority Streets	$ 104,000
16.0 km	Marked Shared Use lanes –	$ 160,000
10.1 km	Boulevard Trails (adjacent to roadway) -	$2,231,000
1.5 km	Shared- Use Trail (non-roadway corridor) -	$ 364,000
1.6 km	Bikeway or trail connection -	$ 113,000
39.8 km	**Sub-Total Long-Term**	**$5,391,000**
121.4 km	**GRAND TOTAL**	**$11,125,000**

6.3 Transit Improvement Plan

With the preferred “Peer Level Investment” option preferred for the 10 years, and an ultimate target for an Enhanced focus on transit by 2031, the TMP transit policies have been structured to provide an incremental approach to achieving these levels. In the short to medium term, improvements to key performing transit routes will be provided through marketing, route changes and the addition of new routes as recommended in the 2012 ECO transit study. The objective is to increase transit ridership and improve the overall transit mode share to 3% overall and 4% of peak hour trips (compared to about 2% today). This would be more in line with Brantford’s peer communities, and occur over the next 5 years, 2014 to 2019.

Between 2020 and 2031, the City will pursue the more aggressive “Transit Focus” approach in conjunction with continued population growth and growth in new areas of the city. The ‘Transit Focus’ will target improvements to key routes, increased service levels and frequencies and introduction of express routes between key residential and employment areas.

It is envisioned that by 2031, this strategy will lead to an annual ridership level of 3 million and improve the transit mode share to 6% as a result of growth and increased use of transit. However, achieving an increase in ridership of this magnitude will require increased financial investment by the City, estimated to be $18.6 Million by 2031 (excluding GO Transit service). The following Exhibit ES.4 summarizes the transit recommendations for each phase to the year 2031.

Exhibit ES.4 - Transit Network Recommendations

SHORT-TERM 2014 – 2019		
Fleet	3 Conventional and 2 specialized transit buses	$1,980,000
Building	Replacement of Transit terminal	$7,000,000
Transfer points	Two Enhanced Transfer facilities	$3,000,000
Route infrastructure	Additional shelters	$ 127,500
Studies	Transit Master Plan	$ 100,000
Inter-regional	Extension of GO Transit Service area to include Brantford/Brant County	GO Transit Cost
	Sub-Total Short-Term	**$12,207,500**
MEDIUM –TERM 2020 – 2024		
Fleet	2 Conventional and 1 Specialized transit buses	$1,560,000
Building	Transit Service Centre Expansion M	$1,625,000
Route infrastructure	Additional shelters	$ 47,500
	Sub-Total Medium-Term	**$3,232,500**
LONG-TERM 2025 – 2031		
Fleet	4 Conventional and 1 specialized transit buses	$3, 010,000
Route infrastructure	Additional shelters	$ 200,000
	Sub-Total Long-Term	**$3,210,000**
	GRAND TOTAL	**$18,650,000**

As part of the 2013 TMP Update, a separate Business Case study was conducted to assess the feasibility of having GO Transit introduce bus service to the City of Brantford and Brant County. The study concluded there was significant potential and the priority destination was the City of Hamilton via Highway 403, McMaster University and Main Street to the GO Centre in downtown Hamilton (Option 1A) or via Highway 403, the Lincoln Alexander Parkway and Mohawk College to the GO Centre in downtown Hamilton (Option 1B). Secondary and future inter-municipal routes to Aldershot/Burlington (Option 2) and Cambridge (Option 3) GO stations were also identified. The first step for introduction of GO Transit service to Brantford/County of Brant requires the extension of GO Transit's service area to include the city and county.

6.4 Road Network Improvement Plan

Forecasting of future trip-making in Brantford, and associated Transportation Demand Management factors indicate that managing travel demand in Brantford to year 2031 using Active Transportation, public transit and other TDM improvements is still expected to leave capacity deficiencies in the road network. While some of the roadway projects identified in the 2007 TMP have been completed or have been approved through the

Environmental Assessment process since that time, others have not been implemented. The TMP Update recommends that the following 12 key projects, shown on Exhibit ES.5, remain in the TMP Update and implemented over the next 20 years. The total estimated capital cost of these projects is $179.98 Million, not including property costs for new or widened corridors. Exhibit ES.6 illustrates the location of these roadway improvements in the City of Brantford.

Exhibit ES.5 - Roadway Network Recommendations

SHORT-TERM 2014 – 2019		
1A	Clarence Street Improvement, Colborne St. to West Street – widening to include two-way left turn lane and signals*	$13,275,000
2	Colborne Street/Dalhousie St. 1-Way**	$ 90,000
3A	Shellard Lane Widening Stage 1 from Veterans Memorial Parkway to 1 km west of Conklin Road** (Funding committed in current capital budget (underway in 2014)	$ 8,500,000
4	Oak Park Road Widening and Interchange Reconstruction, Highway 403 to Hardy Road (MTO EA Completed)	$10,000,000
6	Veterans Memorial Parkway widening to 4 lanes, Mount Pleasant Street to Erie Avenue*	$24,664,000
9	Downtown Intersection Improvements**	$ 1,754,000
	Sub-Total Short-Term	**$58,283,000**
MEDIUM –TERM 2020 – 2024		
1B	Clarence Street/West Street Intersection Improvement* - $1.7 M	$ 1,700,000
3B	Shellard Lane Widening Stage 2 from 1 Km West of Conklin Road to West City Limit** (EA Completed)	$ 6,000,000
5	Oak Park Road Extension, 4 Lanes from Hardy Road to Colborne Street*	$37,000,000
8	Charing Cross Extension, 4 Lanes from West Street to Henry Street*	$26,000,000
	Sub-Total Medium-Term	**$70,700,000**
LONG-TERM 2025 – 2031		
7	Veterans Memorial Parkway 4-lane Extension, Market Street to Colborne Street*	$21,000,000
10	6 Lane Wayne Gretzky Parkway from Lynden Road south to Colborne Street*	$30,000,000
	Sub-Total Long-Term	**$51,000,000**
	GRAND TOTAL	**$179,983,000**

* EA required
** EA completed

In addition to these Active Transportation, Transit and Road Network improvement costs, the TMP Update includes an estimated cost of $6.43M to implement TMP recommendations regarding transportation system management over the next 17 years to 2031. These costs involve Transportation Demand Management initiatives,

neighbourhood traffic calming programs, regular TMP updates every five years and associated updates to the travel demand forecasting model.

6.5 TMP Review and Monitoring

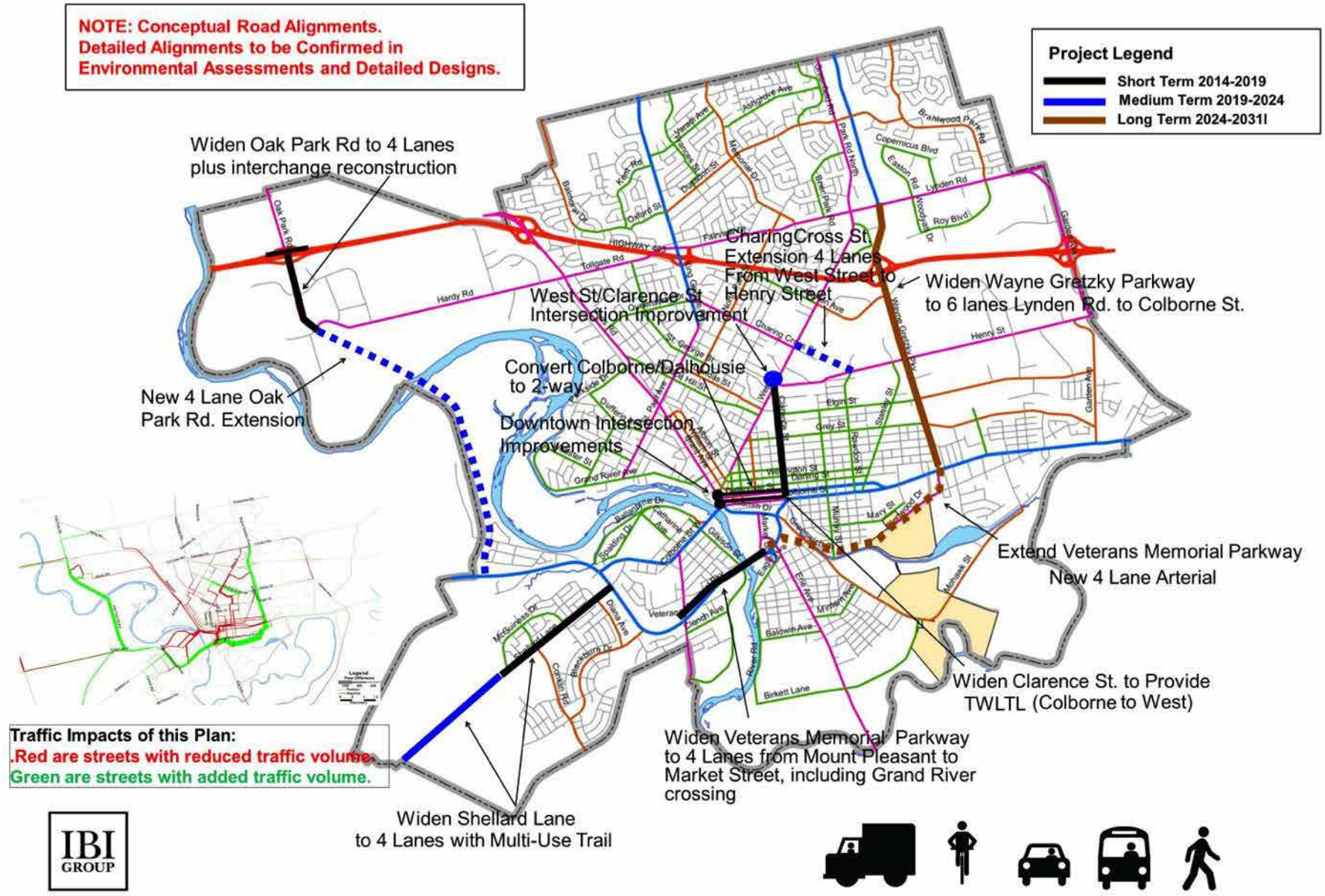
The TMP is intended to be reviewed and updated as required every five years in association with the mandatory Official Plan review process. It also addresses only the Phases 1 and 2 requirements of the Municipal Class EA planning process for specific road extension, widening and intersection improvements, providing an assessment of the problem or opportunity and assessment of alternative planning solutions. It is not intended to address planning and design details that will be further addressed in Phases 3 and 4 of the complete process.

Many of the TMP policy recommendations are being incorporated into the Official Plan (OP) update, and will be implemented through processing of land use applications under the Planning Act. The City may also choose to implement the recommended projects in a different order or phasing that has been suggested in the TMP Update to accommodate Council priorities, the need to coordinate with other infrastructure works (i.e. sewer work), planned developments in the area, or other considerations beyond the scope of this project to consider.

The TMP should also be monitored by maintaining the traffic demand forecasting model, including continued participation in the Transportation Tomorrow Survey. TMP monitoring may contain recommendations on updated traffic calming, parking management and truck route management. It is recommended that the TMP be monitored on an annual basis, taking into consideration new traffic counts, trends, private sector initiatives, performance targets, provincial initiatives and city growth.

The Manager of Transportation and Parking Services should provide a Transportation Perspective Report to Council every 5 years, (scheduled for 6 months following the release of published TTS data), to advise council on recent trends with respect to transportation patterns within the City, and the need to update the TMP.

Exhibit ES.6 - Roadway Network Improvement Plan



1 STUDY FOUNDATION

1.1 Background

In January 2013, the City of Brantford began preparation of an update to their 2007 Transportation Master Plan (TMP), to be conducted concurrently with the preparation of a Master Servicing Plan (MSP). The intent was that both studies would be carried out in an integrated manner due to the many interrelationships between the two study topics. At the same time, the City also began their mandatory five year Official Plan Review (OPR). That parallel process has provided the city growth information on which the TMP Update is now based.

The previous TMP for the City of Brantford was adopted in February 2007. Since then a number of changes in the transportation infrastructure have taken place in and around the community which were recommended in the 2007 TMP to be implemented in the period 2006 to 2017 including:

Major Transportation System Improvements Implemented Since 2007

- Widen Henry Street with cycle lanes, multi-use trail and intersection improvements from Stanley Street to Garden Avenue;
- Widen King George Road to provide a two-way left turn lane from Fairview Drive/Tollgate Drive to Dunsdon Street/Oxford Street;
- Construct the Grey Street Extension, with cycle lanes and traffic calming from James Avenue to Rowanwood Avenue;
- Increase the kilometres of shared cycle/vehicle lanes, dedicated cycling lanes, multi-use trails and wayfinding signage; and
- Achieve a 12% increase in annual number of transit users with expansion of service coverage, improved accessibility, customer service and increased bus-hours of service.

The City has also completed two important Schedule ‘C’ Municipal Class Environmental Assessments (EAs) for the projects noted below that were recommended in the 2007 TMP.

Major Transportation Environmental Assessments (EA) Completed Since 2007

- Conversion of Colborne/Dalhousie Streets to two way operation from Brant Avenue to Brett Street;
- Shellard Lane improvements for all road users from Colborne Street to west City limits to accommodate forecasted growth in southwest Brantford; and
- The City cooperated with MTO in the preparation of an EA and preliminary design for improvements to the interchange at Highway 403 and Oak Park Road to accommodate forecasted growth in the Northwest Industrial Area, south of Highway 403.

The City’s population has also not grown to the level forecast in 2006. At that time the population was 90,192, and it grew by 3.8% to 93,650 in 2011 according to Census data. However, the 2007 TMP had forecast a population of 100,600 in 2011 for an increase of 11.5% which did not occur. The City’s new population and employment forecasts to the

new planning horizon of 2031 reflect the Province's Places To Grow policies as amended in November 2012.

Furthermore, a number of transportation infrastructure projects recommended in the 2006 to 2011 period have not been implemented, nor have Environmental Assessment studies been undertaken due to funding constraints and reduced transportation demand resulting from the lower growth rate. These include:

2006-2011 Recommended Projects Not Implemented

- Widen Veterans Memorial Parkway to four lanes from Mount Pleasant to Market Street including widening the Grand River crossing;
- Brant Avenue operational improvements by removing on-street parking; and
- Extend Charing Cross Street as four lanes from West Street to Henry Street.

Updating the 2007 Transportation Master Plan (TMP) has provided an opportunity to review, reconfirm or change the City's main transportation infrastructure and service plans. The update has also addressed newer issues involving changing economic and associated growth conditions, changes in the regional transportation context around Brantford (i.e., Highway 24) and evolving public priorities for the transportation system, for example dealing with the new Complete Streets philosophy, expanding the emphasis on Active Transportation and new traffic management and calming measures (i.e., roundabouts).

The basic transportation issues and needs facing Brantford for the next 20 years are similar to those in most smaller Canadian cities. They include responding to growth, funding constraints, auto-dominated travel, core area revitalization, cost-effective transit operation and how to maximize the capacity of the existing road network. But in the context of south-central Ontario, Brantford has growth potential that requires plans that will effectively serve growing transportation demands.

1.2 Study Objectives

The following study objectives were set by the City for this TMP Update:

1. Plan to accommodate 20 years of city growth to 2031 within the existing boundaries of the City of Brantford;
2. Provide transportation infrastructure project and cost input into the Development Charges update;
3. Follow the Master Planning process and key principles of the Municipal Class EA to satisfy EA requirements for Schedule 'B' undertakings, and Phase 1 and 2 for Schedule 'C' projects; and
4. Consult with First Nations, agencies, stakeholders and the public early and continuously throughout the master planning process, using various techniques and materials.

Other objectives, constraints and limitations that influenced the development of this TMP Update include:

- **Make this a "made for Brantford" master plan** reflecting the unique characteristics of Brantford and its context while still learning from successes in other similar-sized cities;

- **Show the impacts of not making system improvements** in terms of deficiencies, level-of-service and ability to meet planning targets;
- **Coordinate TMP preparation with the city's concurrent Master Servicing Plan study** in terms of growth forecasting, consultation activities and planning of cost efficiencies in the development of new transportation, sewer and water infrastructure;
- **Integrate transportation and land use planning**. Transportation and land use planning has been coordinated to identify bold transportation strategies that will be required to support an overall sustainability plan for transportation over the next 20 years, and translate these strategies into Official Plan policy;
- **Define the future role of public transit**. Reduce the City's environmental footprint by increasing transit use through improved service levels, by effectively serving newly developing areas, meeting the accessibility needs of residents, and by considering inter-municipal and inter-regional links. Incremental fixes have become increasingly limited in meeting Brantford's future transit needs; and
- **The Complete Streets philosophy** has been applied to this TMP Update so that streets are planned, built and maintained for all users.

1.3 Study Approach

The approach used in updating the TMP Update was based on a scope of work formed by four study phases:

Phase 1: Develop a Study Foundation

Phase 2: Examine Transportation Impacts Associated with Projected Growth

Phase 3: Develop and Test Alternative Transportation Strategies

Phase 4: Development an Implementation Strategy

These four study phases comply with the requirements of the Municipal Class EA process. Phase 1 established the strengths and deficiencies in the existing transportation network. Phase 2 examined the transportation impacts associated with alternative land use and growth scenarios that were developed as part of the Official Plan Review. Phase 3 developed a series of alternative transportation strategies and assessed their ability to accommodate future mobility needs in the City while supporting continued growth, and Phase 4 incorporated all of this previous work into a series of infrastructure plans and policies and identified an implementation program to guide the City forward to the year 2031.

1.4 Public Consultation

The City recognizes that the choices the community makes today with respect to growth and development and long-term needs for transportation infrastructure will shape the community for years to come. Therefore, a key factor influencing the development of the TMP Update, as well as the associated Master Servicing Plan (MSP) and Official Plan Review (OPR) has been the input received from the various involved stakeholders and the general public on the future provision of transportation services to serve the City to the year 2031.

The formal public consultation program for these three projects was integrated during the early project stages involving the Notice of Study Commencement in May 2013 and Public

Information Centre (PIC) #1 as listed below. These notices are included in **Appendix 1** of this report:

- External Agency Notification – April, 2013
- Notice of Study Commencement – May 2013
- Public Information Centre #1 – June 26, 2013
- Public Workshop – October 24, 2013
- Public Information Centre #3 – April 2, 2014

Outreach meetings were also held with the City's Downtown Action Committee, Environmental Policy Advisory Committee, Multi-Use Trails and Bikeways Advisory Committee and Transit Liaison Advisory Committee. A substantial amount of public and external agency consultation was undertaken during the course of this study through media coverage, e-mails, letters and the above-noted series of formal meetings to gather valuable public input and present components of the TMP Update.

The City of Brantford's council was also kept informed on the study progress through formal reports and presentations. These included the following:

- Scheduling and Alignment of TMP and MSP (Report PW: 2013-040)- May 13 2013 at project start up
- TMP and MSP Project Update Report (Report PW2013-063) August 12, 2013, following the initial public information Centre
- TMP Update and presentation of recommended plan (Report PW2014-019) – March 17, 2014; prior to the final Public meeting and Development Charges By-Law.

The first PIC had 28 participants, and focused on transportation issues facing the city. As summarized further in the PIC Summary in **Appendix 1** of this report provided under separate cover, with the top issues being:

- Congestion at Highway 403/King George Road ramps.
- Access to Highway 403 from the southwest.
- Gridlock at Hardy Road and the CNR level railway crossing.
- Maintaining good road conditions.
- Need alternatives to owning cars (e.g., improve transit hours of operation, provide safe cycling routes).
- Access to GO Transit.
- Pollution from cars.
- Traffic and gridlock.
- Making sure walking cycling and transit are being met now and especially in the future with regard to aging demographic.

The second formal consultation event was held as a workshop with 30 participants to address a series of questions about Active Transportation, Public Transit and the Road Network. For example, on the question of their vision for walking and cycling in Brantford, the workshop participates responded with:

- Walking and cycling should be accessible for all Brantford residents as an opportunity to be active and healthy; and
- Access to the trails should be equitable and connected to all neighbourhoods, thus neighbourhood trails are just as important to the network as the trails along the Grand River.

For public transit, that workshop group discussed the role of transit in Brantford, and listed the following main issues:

- Transit is important;
- Need to improve internal service, for example more direct and faster routes;
- Need connections to GO Transit and other communities (Paris, Cambridge, Hamilton);
- Promote transit; and
- City should adopt transit-supportive policies.

The overall comments of the road network group included:

- City should build roundabouts, also consider safety, lower speeds, driver education;
- Busy roads are acceptable, can't expect Brantford to be without congestion, travel times are acceptable today;
- Agreement on the process of planning and protection to address the worst 'hot-spots';
- Downtown attracts a lot of traffic, but so does Highway 403 and the employment lands (Henry Street, Lynden Road);
- University growth and students in the downtown means it should develop as pedestrian friendly as possible;
- Agreement that river crossings from southwest Brantford and access to downtown is a problem, that will worsen with growth in the southwest; and
- No direct routing to Highway 403, so people use a variety of routes mostly through the downtown

Other more specific comments from the workshop are reported in the Workshop Summary Report included as an appendix to the updated TMP.

At the third and final PIC, the Draft TMP Update recommendations were displayed and most of the 39 attendees supported a shift towards alternative travel modes, more investment in transit to increase use, continued Active Transportation investment and widening Clarence Street, Shellard Lane and Oak Park Road. Opinions about other road network recommendations were less favourable, including the recommended widening and extending the Veterans Memorial Parkway and widening Wayne Gretzky Parkway.

1.5 Existing Road Network

To update the City's travel demand forecasting model, the road network was first replaced with a new higher-resolution road mapping layer using new GIS data. The new road network covers the same area and zone system as the 2010 model, but includes local roads and other municipal roads not in the prior model.

The new road layer offers several enhancements to the model. First, the additional local roads can be enabled or disabled and used in assignments. This ability is needed to model existing and proposed transit routes which use some of the local roads. It also provides flexibility to model sub-areas in the future if additional model zones are developed or new roads become major route choices for travellers. The new road layer is also at a higher overall level of resolution, and includes better representation of ramps, curvature of roads, and multi-lane roads. Exhibit 1.1 illustrates the model's updated road network within the City of Brantford. Exhibit 1.2 shows the updated modeling road network for the surrounding County of Brant.

Exhibit 1.1 - Existing Brantford Road Network

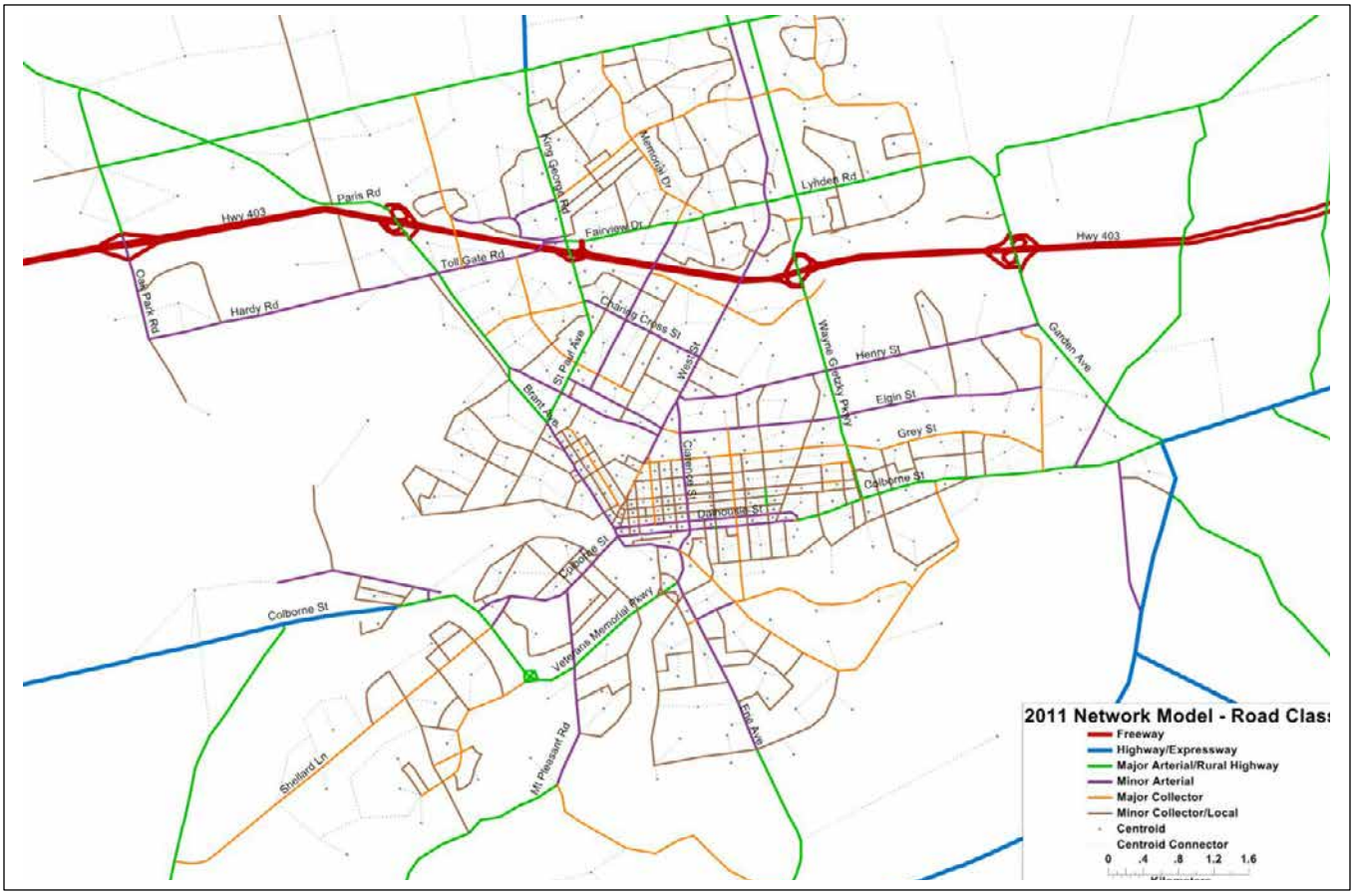
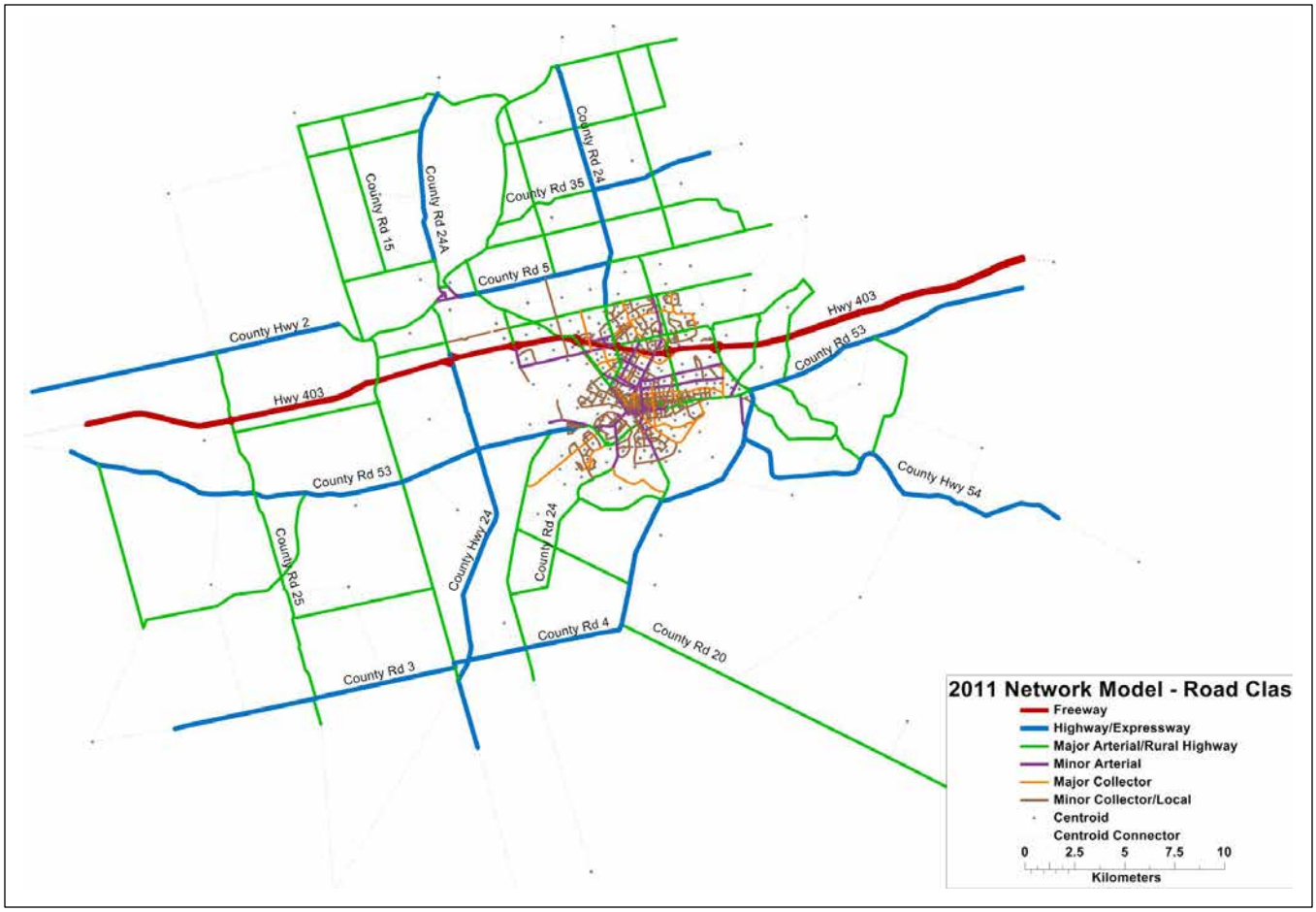


Exhibit 1.2 – Existing County of Brant Road Network



1.6 Existing Local Roadway Travel Demands

The updated travel demand forecasting model measures the following generalized traffic conditions on the City's road network in the PM Peak Hour, which is the worst case condition. This condition is measured as the Volume/Capacity Ratio (V/C) on major roads, with the associated Level of Service (LOS) Conditions shown in Exhibit 1.3:

Exhibit 1.3 - Volume to Capacity (V/C) and Level of Service (LOS) Thresholds

VOLUME / CAPACITY RATIO (V/C)	LEVEL-OF-SERVICE (LOS)	GENERAL TRAFFIC CONDITION
0.00 – 0.20 0.20 - 0.40 0.40 – 0.60	A B C	Excellent to Good
0.60 – 0.80	D	Fair
0.80 – 1.00	E	Poor
1.00 – 1.20	F	Unacceptable

1.6.1 Existing Auto Traffic Level of Service (LOS)

The goal of most small-sized municipalities today in Canada is to maintain LOS A to D conditions on their road networks, address LOS E conditions on their roads and avoid any LOS F conditions through capacity enhancement and Transportation Demand Management actions.

These following observations are noted with the updated modelling in terms of general traffic conditions on the major Brantford road network. The existing (2011) city-wide V/C Ratios are shown on Exhibit 1.4:

- The p.m. peak hour traffic is more congested than the a.m. peak hour traffic;
- In both peak hours, the King George Road and Wayne Gretzky Parkway interchanges are the main routes that traffic from Highway 403 uses to get into the City, which results in high and near-capacity traffic flows near these interchanges;
- From and to the King George Road interchange, traffic generally proceeds along King George Road and Brant Avenue to access the downtown core;
- From and to the Wayne Gretzky Parkway interchange, traffic generally proceeds along the Parkway and Colborne Street, which provides access to the 1-way couplet of Colborne Street and Dalhousie Street to access the downtown core;
- West Street is also a highly utilized north-south road;
- North of Highway 403, King George Road and Wayne Gretzky Parkway serve as the main north-south accesses with vehicles then feeding to Fairview Road, Power Line Road and Dunsdon Street to go east-west; and
- Colborne Street and Veterans Memorial Parkway provide the main connections into the City from the southwest.

An important observation about the model concerns Colborne Street and Veterans Memorial Parkway (VMP) in the southwest portion of the City. While VMP provides a more continuous route than Colborne Street, it does not provide access for the communities north of VMP, which contributes to higher traffic volumes along Colborne Street as these subdivisions feed onto Colborne Street in the model. However, since the 2006 TTS, the Shellard Lane and Conklin Road subdivisions (southwest of VMP and west of the Grand River) have grown significantly.

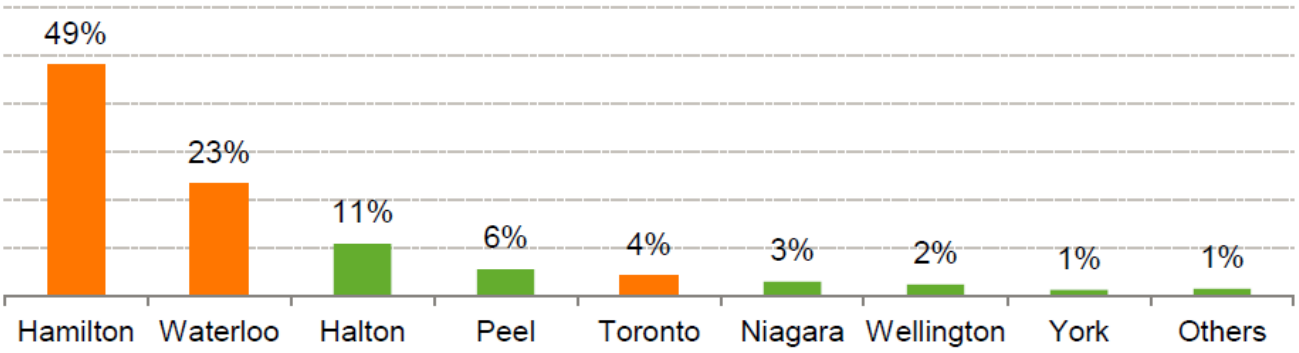
Spot checks were also performed along several links south of VMP and showed a modelled-to-observed traffic ratio of approximately 0.70. The under-representation may be a result of recent growth in these areas not fully accounted for in the trip rates or demographic data. To forecast traffic, the pivot approach is recommended for these areas rather than using model forecasts directly. The pivot approach involves forecasting growth using the model then adding it to existing traffic counts.

1.6.2 Primary External Trip Markets

Exhibit 1.5 shows the destinations for all Greater Golden Horseshoe (GGH) – bound daily trips travelling to and from the City of Brantford based on the 2006 Transportation Tomorrow Survey (TTS). Clearly, Hamilton and Waterloo Region represent the two largest trip markets outside of Brantford, attracting 49% and 23% of external trips respectively, with Halton, Peel and Toronto regions attracting the majority but a smaller individual share of the remainder. However, Toronto attracts more transit trips from Brantford than any other GGH municipality due to its size and existing transit connections

Exhibit 1.4 - Auto Traffic / Volume to Capacity Ratio (V/C) in 2011 PM Peak Hour

Exhibit 1.5 - Destinations for GGH Trips Originating in Brantford (2006 TTS)



In terms of actual trips, Hamilton attracts about 8,700 daily round trips, and Waterloo Region 4,400 daily round trips compared to 680 Toronto daily round trips.

1.7 Existing Transit Network Use

According to the new validated transit model developed for the City as part of this TMP Update, the following general conditions were noted about modelled transit ridership for 2011. Refer to Exhibit 1.6 for context:

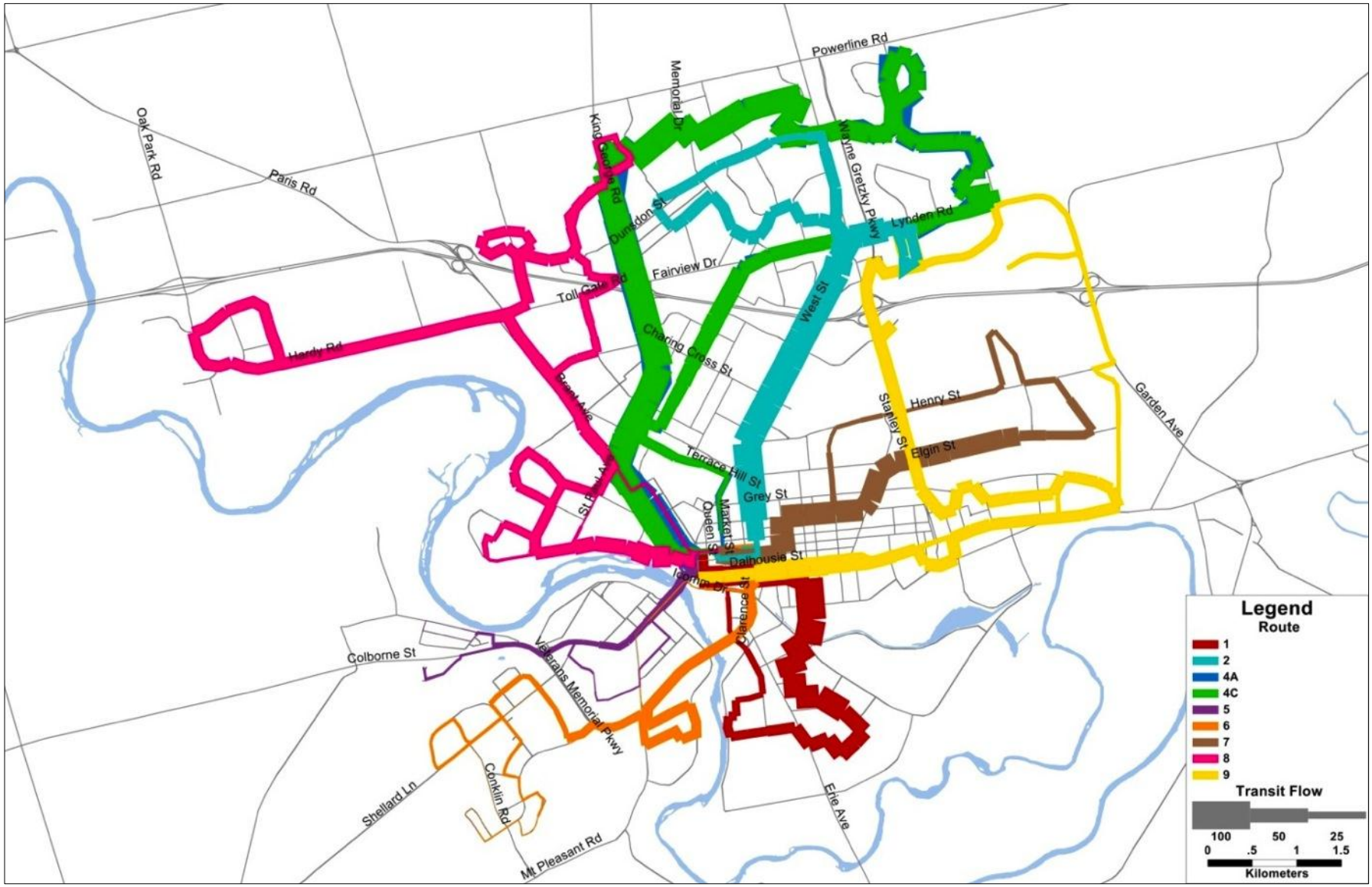
- In both peak periods, Transit Routes 1, 2, 4A, 4C, 7 and 9 showed good utilization with more than 100 riders on each route;
- Route 8 only showed good utilization in the PM peak period with more than 100 riders; and,
- Routes 5 and 6 showed poor utilization with less than 100 people riding on each route in each peak period.

These observations were compared to the analysis undertaken in the 2011 Transit Service Review, and they are consistent with the 2011 findings about route performance.

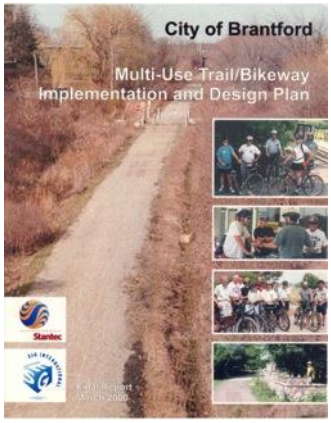
However, it is important to note that ridership on Routes 2 and 4A was modelled optimistically in terms of travel and wait times, as well as directness between major trip generating nodes. The directness of the route makes these transit routes very attractive for travel in the model.

Conversely, Route 9 was modelled slightly pessimistically with lower than observed ridership in the PM peak hour. This was attributed to the trip generation process, like the Shellard Lane and Conklin Road subdivisions, where trip activity along Grey Street, Lyndhurst Street and near the St. Joseph's Lifecare Centre may be under-represented by the trip generation rates. Spot checks undertaken on private auto traffic west of Garden Avenue and east of Wayne Gretzky Parkway confirmed this observation.

Exhibit 1.6 - Transit Traffic Assessment, 2011 PM Peak Period



1.8 Existing Active Transportation (AT)



In 2000, the City of Brantford approved the Multi-Use Trail / Bikeway Implementation and Design Plan (2000 MUTB Plan). The plan focused on the development of a network based on the Multi-use Trail/Bikeway Concept. It proposed to build an additional 42 km of multi-use trails and 83km of on-road bikeways at a cost of $6.7M (1999 Dollars). The proposed on-road bikeways included signed routes, bike lanes, paved shoulders, and wide curb lanes.

The 2007 TMP Update addressed walking and cycling. Since the 2000 MUTB Plan, much progress had occurred in the implementation of proposed off-road / trail facilities. However, some challenges were recognized when implementing the proposed on-road facilities. Among these challenges was the perception that cycling and walking are primarily recreational pursuits, and that the on-road bikeways should not interfere with existing roadway capacity.

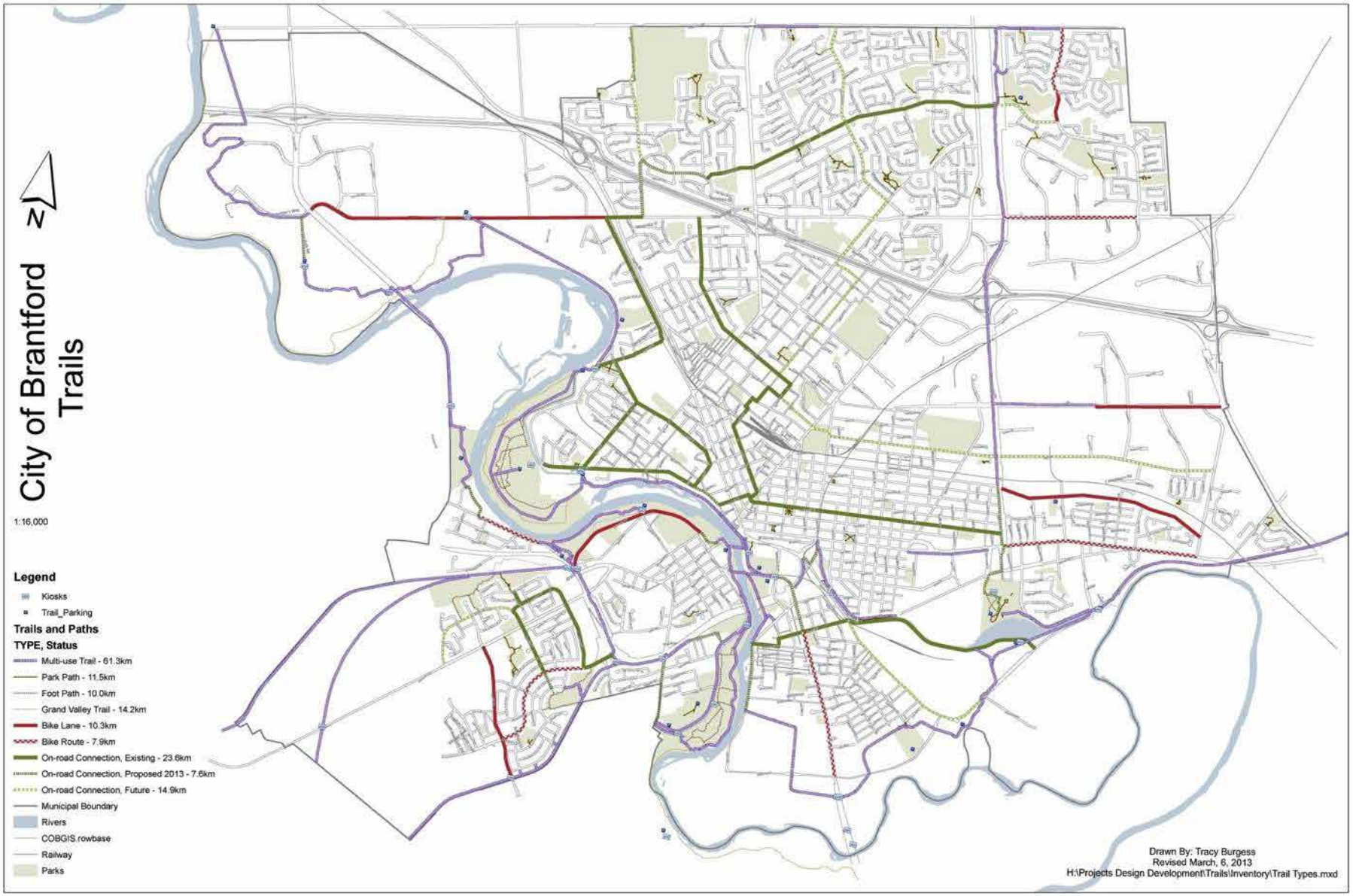
The 2007 TMP Update proposed to build from the strong off-road network by enhancing access to the trail system and providing walk and bike infrastructure in new development areas. Over time, it was the intention of the 2007 TMP Update that this strategy would encourage walking and cycling to be the preferred option for short trips. At the time, the combined mode share for cycling and walking was 6% for trips to work. The 2007 TMP Update set out a vision to achieve a mode share for walking and biking of 10% of PM peak trips by 2031.

Today, Brantford still has many characteristics that are amenable to walking and cycling. The prominence of parks and open space, including the Grand River and the existing off-road trail system, mean that recreational destinations are close by for many residents. The urban core also provides attractive historic features and a compact street network with many route options for walking and cycling trips. Intensification corridors are typically located along arterial roads (such as King George Road, Wayne Gretzky Parkway and Colborne Street) with commercial, mixed use and more dense residential areas. This land use pattern enables more short trips that are within the reach of walking and cycling. The abandonment of old rail corridors provides other opportunities to create trails (such as the TH & B rail trail) that traverse the city and connect to activity areas. More recently, constructed bike lanes (such as those on Conklin Road and Grey Street) are good examples of high-quality bike facilities.

However, some specific characteristics challenge the appeal of Active Transportation (AT) in Brantford. Perhaps most notable is the need for better infrastructure within the roadway system. In general, newer communities (such as those north of Highway 403 and west of Wayne Gretzky Parkway) have fewer sidewalks compared to more established neighbourhoods located closer to the urban core. While signed bike routes exist throughout the city, there are currently no on-street bikeways with separate space (i.e. designated exclusively) for cyclists in core, high-activity areas.

As shown next on Exhibit 1.7, existing bike lanes are typically located along the outskirts of the City (such as Hardy Road, Henry Street). One exception is Ballantyne Drive where the bike lane serves contra-flow cyclists on a one-way street, where a shared use lane is provided in the general travel lane. Gaps remain in the existing network, which provides limited opportunities to cross Highway 403 and the Grand River. Some of the planned bike routes, proposed to address these gaps, are indirect. Other challenges for AT planning are the pattern of larger parcels for commercial and industrial uses; and planning sensitivities associated with First Nations lands.

Exhibit 1.7 - Existing Trails and Bikeways



This current TMP Update aims to build on the advantageous characteristics of the City, and to address on-going AT challenges**.** Thus, it is necessary to understand the implications of the 2007 TMP Update to current conditions. The following sub-sections discuss progress towards the AT strategies set out in the 2007 TMP Update.

1.8.1 The Pedestrian Sidewalk Network

Along the road network, there are currently 541km of sidewalks and 13.8km of multi-use trails (called shared use trails) in the City of Brantford. South of Highway 403 and west of Wayne Gretzky Parkway, most streets have sidewalks on both sides of the street. However, north and west areas of the City show several distinct regions where there are many streets with no sidewalks or sidewalks only on one side. In industrial zones, roads typically do not have sidewalks.

Outside of the road network, there are 52.8km of multi-use trails, the Grand Valley Trail (14.5km), 12.2km of park paths and 10.0 km of (pedestrian only) foot paths.

The 2007 TMP Update recommended the creation of an annual sidewalk construction program to retrofit sidewalks along arterial roads. Additionally along arterial roads, the 2007 TMP Update recognized the need for pedestrian facilities on both sides of the road. In development areas, sidewalks are proposed on both sides of collector roads and one side of local roads. Other policy recommendations addressed the need to improve access to transit and accessibility along new and existing facilities in the pedestrian network.

Since 2007, the City constructed 45.2km of new sidewalks, 4.8km of new multi-use trails in non-roadway corridors, and 7.2km of multi-use trails adjacent to roads. New sidewalks (and multi-use trails adjacent to the roadway) are typically constructed in the Capital Program as part of roadway improvement projects on local, collector and arterial roads. The annual budget for the Sidewalk Program is currently $100,000 per year. Multi-use trails along non-roadway corridors are managed by Parks & Recreation, and their annual budget for new multi-use trails is $100,000 per year.

In 2010, the City enacted a policy for the petition for new sidewalks (infill sidewalks). This policy has challenges involving public acceptance of infill sidewalk implementation that may present barriers towards developing a pedestrian network. Revision of the current sidewalk policy may be required to address these barriers as is further discussed in Section 4 of this report.

1.8.2 The Bikeway and Trail Network

Within the road network shown on Exhibit 1.7, there are currently 10.3km of bike lanes, 10.0 km of wide shared use lanes (called shared bike routes), 23.6km of sign routes (called on-road connections) and 13.8km of multi-use trails (called shared use trail or boulevard trails) adjacent to the roadway. Both bike lanes and wide shared use lanes are typically located along the outskirts of the City, except for Ballantyne Drive which has a contra-flow bike lane on a one-way street. Many signed routes traverse the City and provide good east-west connections. Several routes also connect to the northwest areas of the City. Key multi-use trails adjacent to the roadway are the Veterans Memorial Parkway (VMP) Trail and the Wayne Gretzky Parkway (WGP) Trail. There also sections of multi-use trail adjacent to: Clarence Street, Colborne Street, Forest Road/Beach Road, and Henry Street.

Outside the road network, there are currently 46.9km of multi-use trails (called shared use trails), the Grand Valley Trail (14.5km) and 12.2km of park paths. Most multi-use trails are

located near the Grand River or along an abandoned rail corridor. As its name implies, park paths are generally located within parks and open space.

The 2007 TMP Update recommended the Bikeways and Trails Network Plan be established as part of the Official Plan. It proposed 70km of multi-use trails, 52km of bike lanes, 4km of paved shoulders, 89km of signed routes and 17km of wide shared use lanes. Additional recommendations were made regarding design and maintenance.

Since 2007, the City constructed 4.8km of multi-use trails in non-roadway corridors and 7.2km of multi-use trails (adjacent to road). For on-road facilities, the City constructed 4.2km of bike lanes, 6.8km of shared use lanes and 23.6 km of signed routes. Trails located along non-roadways corridors are managed (i.e. constructed and maintained) by Parks & Recreation.

Trails located adjacent to the roadway are constructed as part of roadway improvement projects identified by the City's Public Works Commission, but are maintained by both Parks & Recreation and Operations department. All on-road bikeways are maintained by Operational Services. This division of responsibility for the development of the network has led to challenges in coordination between the two bodies.

In new development areas, the City has successfully implemented bikeways and trails as per the strategic direction in the 2007 TMP Update. Conklin Road demonstrates examples of well-designed bike lanes on Conklin Road, and multi-use trails are currently planned along Shellard Lane. New development areas present opportune conditions for implementing sidewalks on both sides of the road and/or high-quality bike facilities with separate, designated space for cyclists. In established neighbourhoods, all existing signed routes were installed within the last five years, with 7.6km planned within the next year and an additional 14.9km in the planning process. This pace of development affirms a level of commitment by the City to the bikeways and trails network.

Projects that require a change in the existing roadway configuration are often more challenging to implement. City staff can face opposition from residents when proposing the removal of travel lanes such as with road diets (even where there is excess capacity), or where there is a modification of on-street parking. However, members of Brantford City Council have also expressed a desire from the community for quieter and safer streets, such as "slow zones" with posted speeds of 40 km/h. Any directive to maintain roads with excess capacity often conflicts with the directive for more speed management on arterial roads, and traffic calming on local roads. Strong policy is required for City staff in addressing both community needs and higher level objectives associated with different road types, their function and the accommodation of travel options. The recent conversion of the existing wide shared use lanes on Erie Avenue to bike lanes is an encouraging sign.

2 TRANSPORTATION IMPACTS OF GROWTH

2.1 Population and Employment Growth

The original Places To Grow Growth Plan includes growth forecasts for the City of Brantford with a residential population of 126,000 and an employment force of 53,000 in 2031, as well as intensification policies and targets. Since the commencement of the 2014 TMP Update, the province has released amendment 2 (2013) which provides revised 2031 forecasts and new 2041 forecasts. Due to the timing of the release of Amendment 2 and the preparation of the 2014 TMP Update, the 2014 Update remains focused on the original forecasts as outlined below in Exhibit 2.1, but with consideration given to the new post-2031 forecasts and 2041 horizon (see TMP Section 4.5.4).

Updated Brantford and area population and employment forecasts were provided by the City of Brantford Policy Planning Department in their March 2013 forecasting report included as **Appendix 2** to this TMP Update. This data was used to develop a strategic transportation model, along with traffic count data on City roadways and new information on the travel patterns and mode choices in the City. The population and employment forecasts from the Growth Plan for the Greater Golden Horseshoe were provided in 5-year intervals (2011, 2016, 2021, 2026, and 2031). These forecasts were then allocated to traffic zones in the City. The allocations were based on Schedule 1-2 Growth Management Plan in the City's Official Plan, land use designations and sites with known development potential. At a summary level, the growth forecasts used in the TMP Update growth analysis are as follows:

Exhibit 2.1 - City of Brantford Population & Employment to 2031

BASE YEAR	POPULATION (PERSONS)	EMPLOYMENT (PERSONS)
2011	93,650	46,892
2016	98,225	48,582
2021	106,723	52,049
2026	113,839	56,682
2031	121,264	59,678

Source: City of Brantford Policy Planning, June 2013 and March 2013 Population & Employment by Traffic Zones 2011-2041

With the updated growth forecasts allocated to the City's traffic analysis zones, the model is used to forecast future travel demands associated with future growth and land use patterns provided by the City's Community Services Department, and to test the effectiveness of various alternative transportation strategies. Other transportation model updates included:

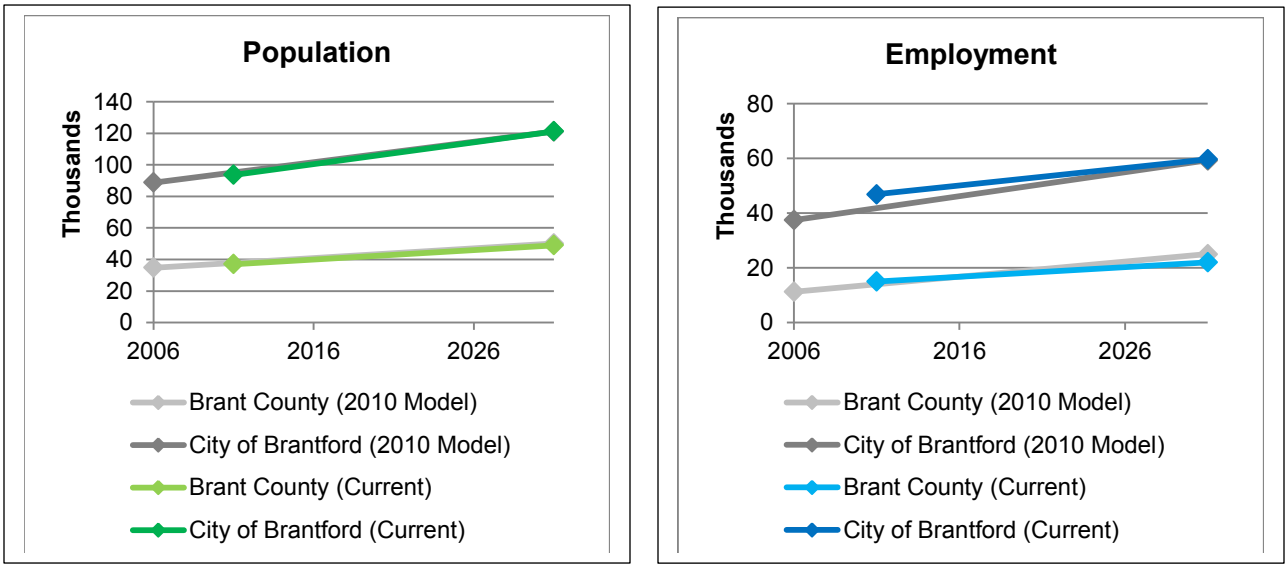
- a 2011 base year incorporating the most recent population and employment forecasts, traffic counts and transit ridership data;
- a new road layer with higher-resolution GIS data to allow better mapping and road and transit representation;
- a new auto assignment algorithm with a faster and more accurate origin-based user-equilibrium method;
- a new transit model component with 2011 transit operations data; and,

- a range of model network or parameter adjustments to improve base-year validation and refine future-year forecasts.

Exhibit 2.2 further illustrates population and employment data for 2006 and 2011, as well as forecasts for 2031 gathered from the City of Brantford and Places to Grow Amendment 2. The following trends were observed:

- Between 2006 and 2011, population has grown by 5.5% (~4,900 persons) for the City of Brantford and 6.3% (~2,200 persons) for the rest of County of Brant, and employment has grown by 25.3% (~9,500 jobs) for the City of Brantford and 33.1% (~3,700 jobs) and for the rest of County of Brant;
- Comparing the updated population data with the data used in the 2010 model shows a similar growth trend; and
- Comparing the updated employment data with the data used in the 2010 model shows a slower growth trend.

Exhibit 2.2 - Comparison of Population and Employment Data to 2031



The population and employment forecasts for the City of Brantford and County of Brant indicate significant growth in the period from 2011 to 2031. The population and employment is expected to grow by 30% and 32% respectively during this 20 year period as shown on Exhibit 2.3.

Exhibit 2.4 illustrates the pattern of population and employment growth by traffic zones in 2031 plus the 5, 10 and 15 year interim periods. Although the exhibits show traffic zones beyond the current boundaries of the City, the TMP Update does not assign population and employment growth to these zones within the 2031 time horizons, nor does it consider needs for infrastructure improvements beyond the current boundary. With this in mind, the following growth trends to 2031 have been noted:

- High employment growth in the Oak Park Road & Hardy Road (Northwest Industrial Park) and Henry Street/Wayne Gretzky (Braneida Industrial Park) areas;
- High population growth in the southern zones surrounding Shellard Lane, Erie Avenue and Mohawk Street; and,

- High population and employment growth in the downtown core.

Exhibit 2.3 - Population and Employment Growth Forecasts, 2011 to 2031

Demographic / Area	2011	2031	Growth
Population			
Brant County (excl. City of Brantford)	37,000	49,000	32%
City of Brantford	93,650	121,265	29%
Total	**130,650**	**170,265**	**30%**
Employment			
Brant County (excl. City of Brantford)	15,000	22,000	47%
City of Brantford	46,892	59,676	27%
Total	**61,892**	**81,676**	**32%**

2.2 Change in Travel Mode Choice

Another important update for the forecasting model is travel behaviour represented by mode of travel. Exhibit 2.5 summarizes the share of peak hour trips made by Brantford residents by different modes of travel based on 2006 and 2011 TTS data, plus updated TMP targets for 2016 and 2031. It shows that today, about 87% of trips in the peak period are made by the private automobile, with 2% made by transit, 8% by walking / cycling, and 3% by other modes. The main conclusion is that travel in Brantford is currently very auto-reliant, as is typical of most smaller North American cities today. However, the TMP Update is based on private auto use decreasing to 80% of PM Peak trips by 2031, and transit and cycling/walking increase to 6% and 10% respectively.

Exhibit 2.4 - Existing Brantford Travel Mode Shares

MODE OF TRAVEL	%AGE OF PM PEAK PERSON TRIPS FROM BRANTFORD HOUSEHOLDS			
	2006 TTS *	**2011 TTS ***	**TMP 2016 Target**	**TMP 2031 Target**
Auto Driver	69	71	67	63
Auto Passenger	17	16	17	17
Transit	2	2	3	6
Cycle/Walk	8	8	9	10
Other	4	3	4	4

* The Transportation Tomorrow Survey (TTS) is a comprehensive travel survey conducted in the Greater Toronto and Hamilton Area (GTHA) and surrounding areas once every five years.

Exhibit 2.5 - Population and Employment Growth (2011 to 2031) by Traffic Zone

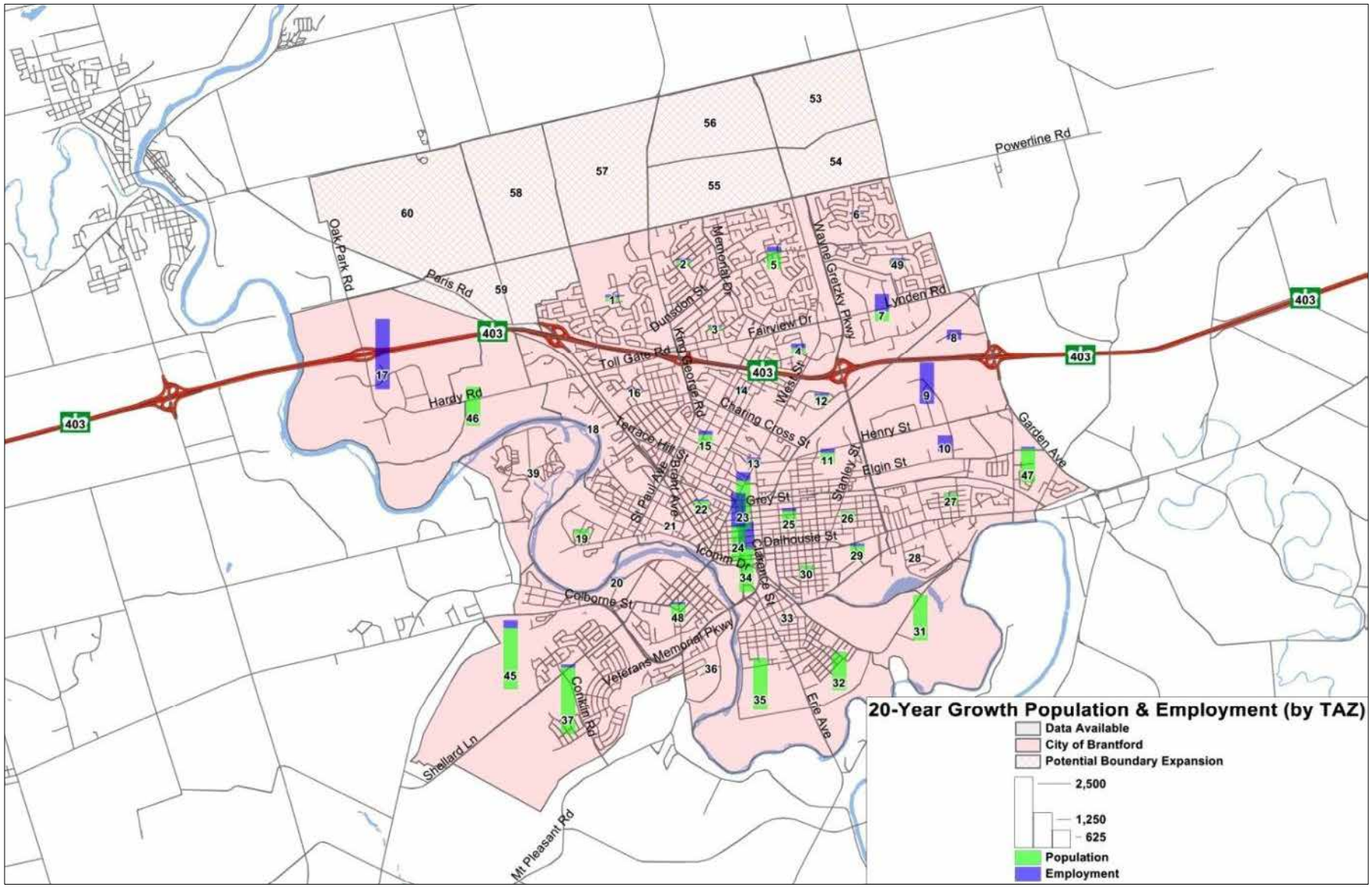
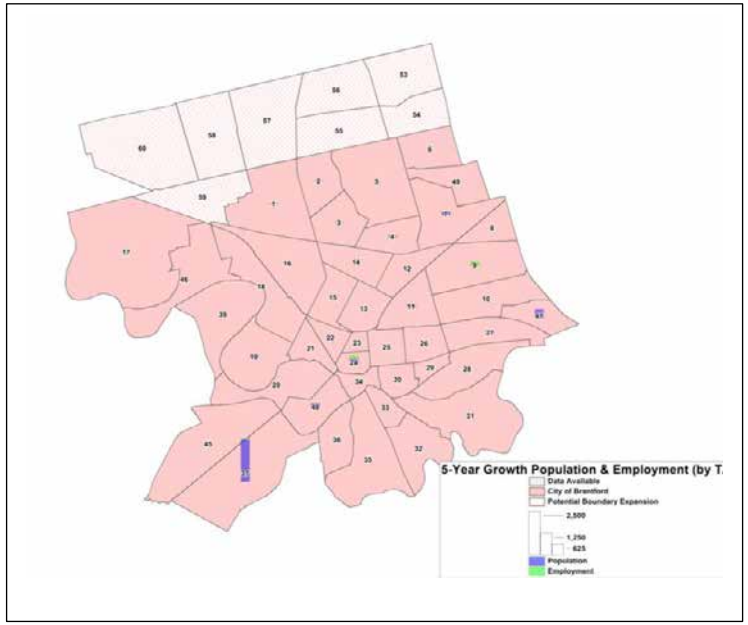
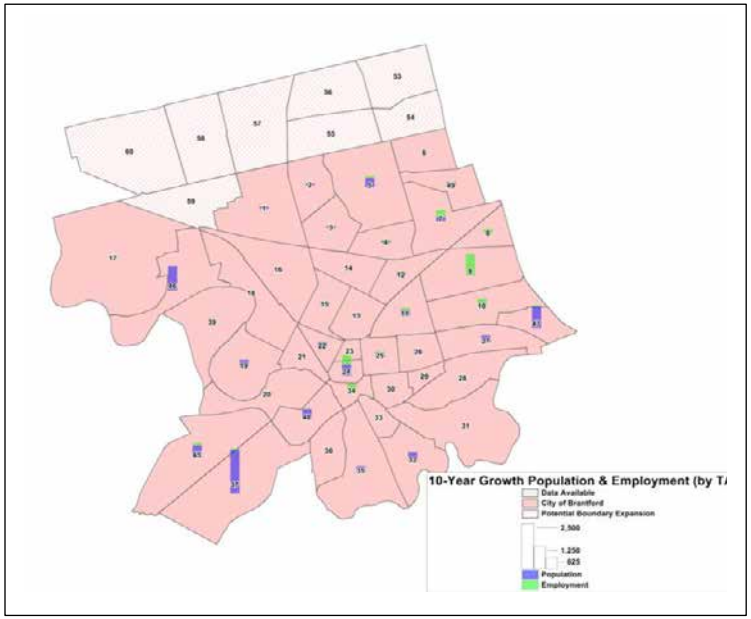
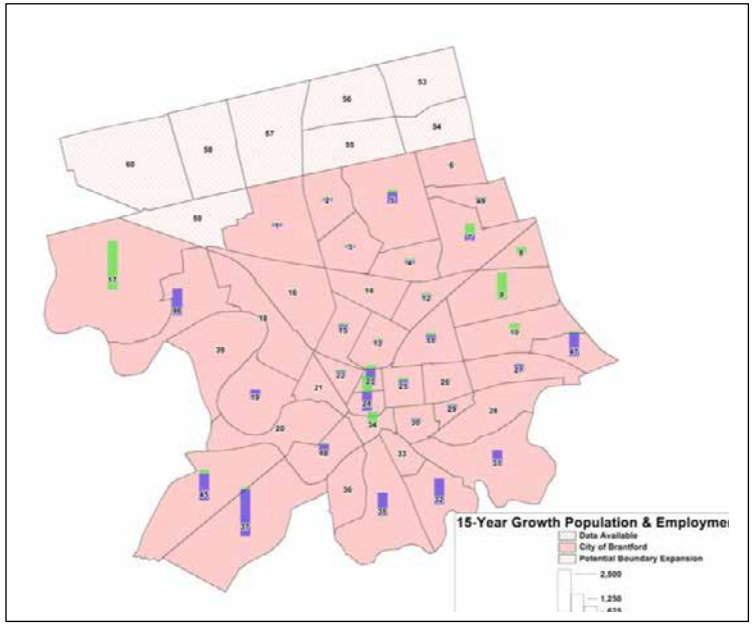


Exhibit 2.5 (cont.) - Population and Employment Growth (2011 to 2031) by Traffic Zone







2.3 Local Travel Growth to 2031

The updated travel forecasting model forecasts travel in the City of Brantford and County of Brant in 2031 first under a "Do-Nothing" scenario . In this case, the travel mode choices are unchanged from 2011, and no further capacity improvements (i.e. road widenings, extensions) are included in the model. The forecasted modal growths are consistent with population and employment growth, as shown in Exhibit 2.6. It should be noted that the transit growth is less than population growth for the base scenario as a result of this growth occurring in areas not currently served by transit.

Exhibit 2.6 - Private Auto and Transit Trip Total Forecasts

MODE / PERIOD	2011	2031	GROWTH
Private Auto			
A.M. Peak Hour			
Brant County (excl. City of Brantford)	15,205	19,650	29%
City of Brantford	16,709	20,439	22%
Total	**31,914**	**40,089**	**26%**
P.M. Peak Hour			
Brant County (excl. City of Brantford)	18,241	23,694	30%
City of Brantford	25,467	32,592	27%
Total	**43,708**	**56,286**	**29%**
Transit			
A.M. Peak Period	1,259	1,640	30%
P.M. Peak Period	1,460	1,739	19%

2.4 2031 Local Travel Assignment and Network

2.4.1 Private Auto Traffic

Exhibit 2.9a/b illustrates the assignment of private auto vehicles to the network in 2031 in the PM Peak Hour measured as the Volume/Capacity (V/C) ratio on highways, arterials and collectors. This exhibit reflects the 'Do Nothing' scenario where no changes to roadway network capacity or mode shares are made over the next 20 years. The growth in private auto traffic results in the percentage growth in a.m. and p.m. peak hour delay and vehicle-kilometres travelled shown in Exhibit 2.7 below. In absolute terms, a.m. delay was forecasted to increase moderately to 96 minutes. However, p.m. delay was forecasted to increase significantly to 245 minutes. Exhibit 2.7 also illustrates the extent of growth expected in vehicle kilometres travelled.

Exhibit 2.7 - Network Growth Statistics, 2011 to 2031

PEAK PERIOD / AGGREGATE NETWORK STATISTIC	2011	2031	GROWTH
A.M. Peak Hour			
Delay (min)	31.3	96.4	208%
Vehicle-Kilometre Travelled (veh-km)	482,188	611,002	27%
P.M. Peak Hour			
Delay (min)	72.6	244.4	237%
Vehicle-Kilometre Travelled (veh-km)	593,268	775,107	31%

Other impacts forecast from growth in private auto traffic include:

- There is continued capacity stress on key existing corridors – King George Road, Brant Avenue, West Street, Wayne Gretzky Parkway, Colborne Street and Veterans Memorial Parkway;
- New capacity stress on West Street between Henry Street and Charing Cross;
- New capacity stress on Brant Avenue between Toll Gate Road and King George Road was observed;
- New capacity stress on Clarence Street that continues north of Veterans Memorial Parkway was observed;
- New capacity stress on Shellard Lane and Blackburn drive leading into the southwest subdivisions was observed; and,
- New capacity stress on the 1-way couplets of Colborne Street and Dalhousie Street west of Wayne Gretzky Parkway was observed.

2.4.2 Transit Ridership

Transit ridership showed significant growth for routes 1, 6, 7 and 9, as summarized in Exhibit 2.8. Strong growth along routes 1, 6 and 9 can be attributed to the strong population growth observed in the traffic zones surrounding these routes. Growth on route 7 is strong but slightly less than the other routes owing to employment growth in the Braneida Park area. As noted by the 2011 Transit Service Review, route 7 receives a relatively high amount of cross-town traffic, which when combined with the employment growth at Braneida Park, results in strong growth for the route.

Exhibit 2.8 - Projected Local Transit Ridership Growth, 2011 to 2031

Route	A.M. Peak Period (6 A.M. – 9 A.M.)			P.M. Peak Period (3 P.M. – 6 P.M.)		
	Ridership		Growth	Ridership		Growth
	2011	2031		2011	2031	
1	148	216	46%	155	199	28%
2	196	223	14%	300	329	10%
4A	168	172	3%	243	257	6%
4C	131	140	7%	260	260	0%
5	34	38	9%	54	62	15%
6	61	95	55%	58	111	92%
7	179	252	41%	142	170	20%
8	99	90	-10%	182	168	-8%
9	192	309	61%	144	172	20%
TOTAL	**1,209**	**1,534**	**27%**	**1,538**	**1,729**	**12%**

Exhibit 2.9a - Private Auto V/C Forecast 2031 PM Peak Hour (Do Nothing)

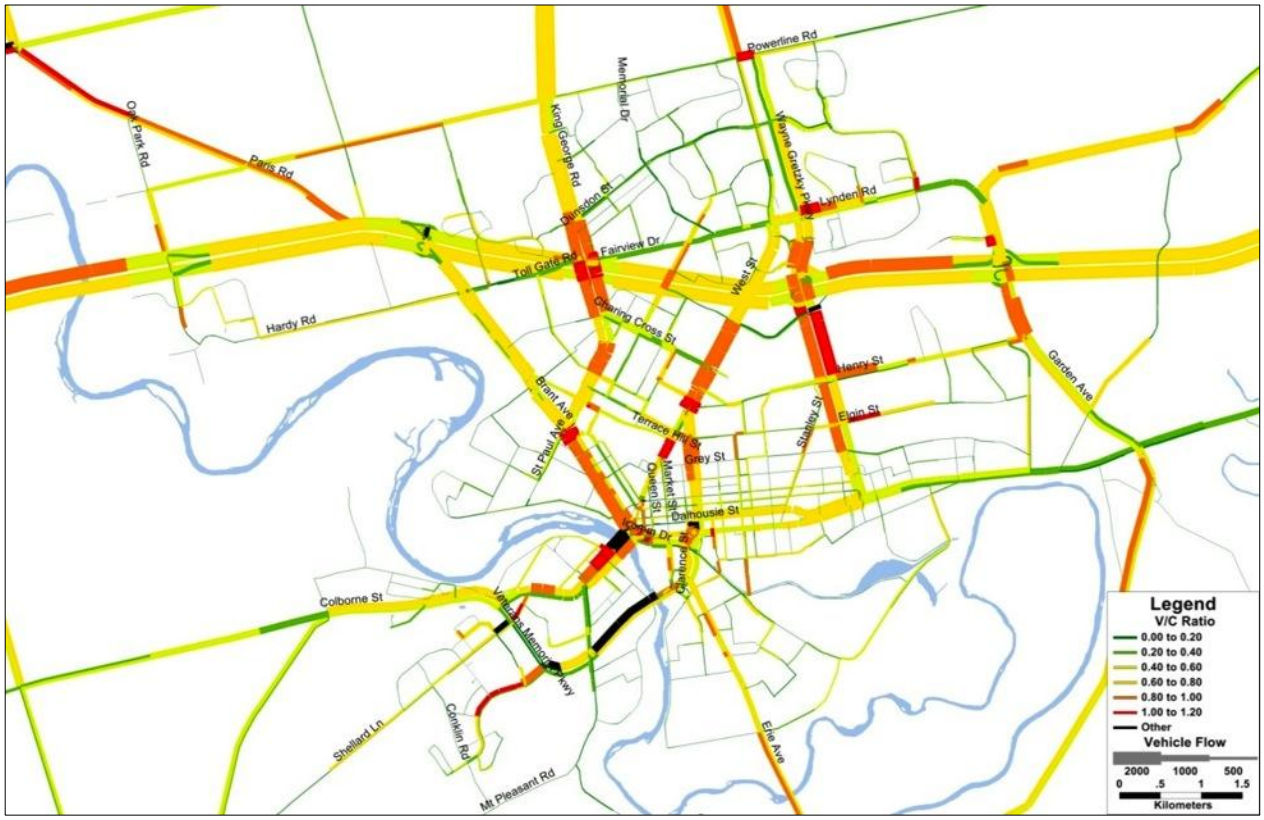
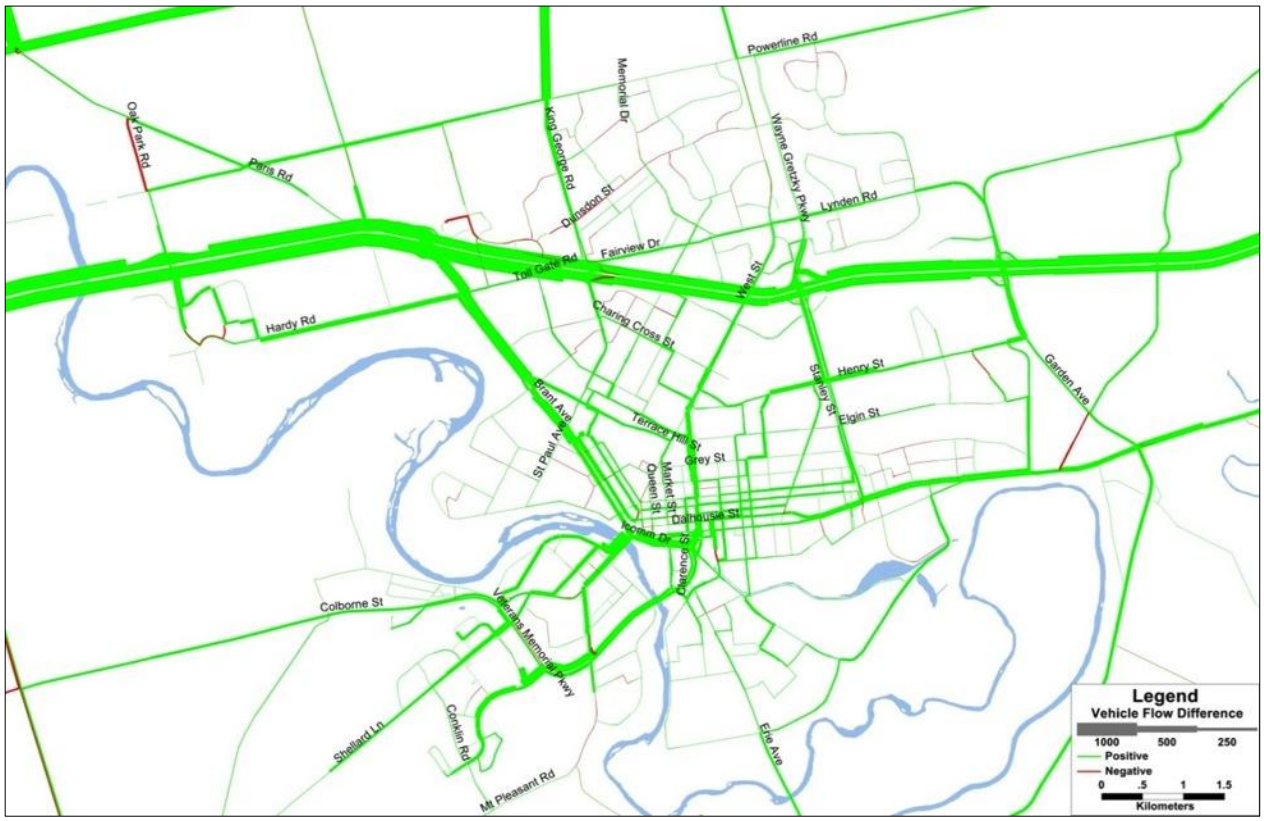


Exhibit 2.9b – Private Auto Volume Growth 2011-2031 PM Peak Hour (Do Nothing)



2.5 Updated Travel Demand Forecasting Model

The City of Brantford's TransCAD travel demand model used for forecast auto trips in the 2007 TMP was updated in 2013 for the TMP Update. This update included new population and employment growth forecasts provided by the Province (Places To Grow) and the City as previously noted in Section 2.1, updates to the City's road network attributes, new traffic counts, an improved road mapping layer and added roadway improvements made since 2007. The updates are detailed in the Transportation Model Update Report prepared by IBI Group dated September 2013 and included as **Appendix 3** of this TMP. Detailed in this report include:

- A 2011 base year, incorporating the most recent population and employment forecasts, traffic counts and transit ridership data;
- A new road layer with higher-resolution GIS data to allow better mapping and road and transit representation;
- A new auto assignment algorithm with a faster and more accurate origin-based user-equilibrium method;
- Developed a new transit model component that reflects 2011 transit operations data; and,
- A range of model network or parameter adjustments to improve base-year validation and refine future-year forecasts.

The auto-mode of the model was validated against 19 screenlines with extensive updated traffic count data. For transit, the model was validated at the overall ridership scope and on individual routes against data in the *2011 Transit Service Review*. The model is limited in forecasting stop-by-stop boardings and alightings due to the layout of centroid connectors shared with the private auto traffic network. Nevertheless, many of the routes were consistently modelled with trends observed.

As previously reported in Section 2.1 of this TMP, population and employment forecasts for the City of Brantford are expected to growth by 29% and 27%, respectively, between 2011 and 2031. A 20-year horizon with a "do-nothing" policy (no road improvements or mode-share changes) was modelled according to the new model processes. The following network results were observed:

- There is significant growth for travel within the City of Brantford, with a 27% to 29% increase in vehicle-kilometres of travel, and a 200% increase in traffic delay;
- Commuter travel continues to play a key role for travel both into and out of the City, with trips towards the west, east and south showing strong growth;
- City roads continue to serve trips that bypass the City, i.e. trips that travel between zones in Brant County;
- Highway 24 will continue to be an important route for northbound traffic into and out of the City;
- There will be continued capacity stress on key existing corridors – King George Road, Brant Avenue, West Street, Wayne Gretzky Parkway, Colborne Street and Veterans Memorial Parkway;
- New capacity stresses were observed on Brant Avenue between Toll Gate Road and King George Road; Clarence Street north of Veterans Memorial Parkway; Shellard Lane and Blackburn drive leading into the southwest subdivisions; and the

1-way couplets of Colborne Street and Dalhousie Street west of Wayne Gretzky Parkway; and,

- There were significant increases in ridership along routes 1, 6, 7 and 9.

These observations were generally consistent with the 2010 model findings for the 2031 horizon. However, as previously reported in Section 2.4.1, King George Road, West Street and Wayne Gretzky Parkway were observed to be operating nearer to capacity than forecasted in the 2010 model for both peak hours. The noted stresses on the road and transit network and differences with the 2010 model forecasts were noted for the 2013 TMP update.

3 ALTERNATIVE TRANSPORTATION STRATEGIES

Chapter 4 of the 2007 TMP describes the process of selecting the strategic direction for transportation planning in Brantford over the next 20 years to 2031. This direction includes how to both increase the supply of transportation infrastructure (optimize, expand and new facilities), and manage travel demand (cost, behaviour, land use). All of these and other strategic planning options from 2007 remain valid in 2014. However, their impacts on the 2031 roadway network have been updated to reflect the new growth forecasts and network capacity improvements made since 2007.

3.1 Strategic Directions

3.1.1 Strategies to Increase Supply

The 2007 TMP describes the process of selecting the strategic direction for transportation planning in Brantford over the next 20 years to 2031. This direction includes how to both increase the supply of transportation infrastructure (optimize, expand and new facilities), and manage travel demand (cost, behaviour, land use). In the new TMP Update, the forecasted impacts of these strategic directions on the 2031 roadway network have been updated to reflect the new growth forecasts and network capacity improvements made since 2007.

Road network improvement scenarios to 2031 show that even with strategic expansion of the existing roadway system combined with new facilities and system optimization, some capacity deficiencies will continue.

3.1.2 Strategies to Manage Travel Demand

The Update confirms that an emphasis on only increasing the supply of transportation infrastructure in the city (i.e. roadway capacity enhancements) still results in sections of critically poor Level-of-Service (LOS) areas in the City's road network. Therefore, the TMP Update assessment of strategies to manage travel demand has been included as a way of enhancing the effectiveness of the network to 2031. Some of the management strategies, such as encouraging shifts to walking and cycling, as well as transit are supported by the Active Transportation and transit planning recommendations resulting from the update.

3.1.3 Transportation Strategy Options

The basic strategic transportation planning options available to the City of Brantford to year 2031 are as follows:

1. Minimal Change
2. Modest Change
3. Aggressive Change

Furthermore, the concluding recommendation of the 2007 TMP for a balanced approach to transportation remains valid today based on community consultation conducted for the update. The result is a transportation strategy that is based on:

- Investment in providing and promoting Active Transportation (walking and cycling) as an alternative mode of transportation across the city;

- Management of downtown parking to provide an adequate supply to meet downtown growth needs, while still pricing this parking (off street and on street) in ways that encourage more transit use (i.e. monthly parking cost must be more than monthly transit pass);
- Invest in added transit fleet and resources to meet future transit mode share targets, including terminal facilities and transit route rationalization; and
- Optimize existing roadway capacity using a city-wide corridor management and optimization program focused on intersection capacity optimization, signal priorities and arterial access management

Even with these and other related policy directions, the TMP Update still concludes, as it did in 2007, that with plans to increase transportation supply and manage travel demand associated with population and employment growth to 2031, the City of Brantford will still face congestion in key areas of the roadway network

The message here is that the City cannot expect to be able to "build itself out" of these future operational and capacity deficiencies. It is expected that they may have to be addressed through a combination of travel demand changes and reduced Level-of-Service in parts of the roadway network, most notably:

* The two Grand River crossings (Colborne Street West and Veterans Memorial Parkway);
* Highway 403 access points (King George Road, Wayne Gretzky Parkway); and
* Along the City's continuous arterial corridors (i.e. West St./Colborne St, Wayne Gretzky Parkway).

3.2 Evaluation of Alternative Transportation Strategies

3.2.1 Roadway Network Alternatives to 2031

The 2007 TMP evaluated roadway network alternatives for the City, each involving a series of roadway capacity enhancements involving strategic roadway widenings and extensions. Using criteria representing the transportation/traffic, socio-cultural, natural and economic environments, the TMP concluded that the Hybrid network (Network Alternative 5) was technically preferred because it provided the best benefits, and best served the City's growth needs, while potentially negative impacts could be mitigated as part of more detailing planning and design.

In updating the TMP, consideration has been given to whether the evaluation of alternative networks required updating. The conclusion is that the network alternatives still represent roadway planning needs in the city to the year 2031. Three projects in the technically preferred network have been implemented, namely the ongoing access control on King George Road, widening of Henry Street and widening/extension of Grey Street from James Avenue to Rowanwood Avenue. The remaining roadway projects in the Hybrid network have not been constructed, and with one exception (widen Toll Gate Bridge at King George Road), they remain valid recommendations to 2031 based on the updated growth volumes and directions in the City to that year.

The 2007 TMP also included a recommendation to provide a new connection between Highway 24 and Wayne Gretzky Parkway north of the City in response to potential city growth north of Powerline Road.

The 2007 Plan added that this road connection need may also be influenced by recommendations of the MTO Highway 24 Corridor Study underway at that time. The ministry initiated the Brantford to Cambridge Transportation Corridor Environmental Assessment (EA) study to develop a strategy to address the long-term transportation problems and opportunities between Brantford and Cambridge, looking ahead to the year 2031. The Minister of the Environment approved EA Terms of Reference for the study in 2009. Numerous transportation alternatives, including transit, will be considered as part of the study. The ministry is currently assessing its planning priorities and schedule for starting the Individual EA study. This project is listed on the 2013 - 2017 Southern Highways Program under "Planning for the Future".

Although that MTO study is currently on hold, the 2007 recommendation that the City and County work together to protect this corridor once identified by MTO should be maintained. Once identified, other corridors beyond the existing City boundary should also be protected to meet longer term transportation needs beyond the TMP 20 year planning horizon. These longer term needs are addressed in Section 4.5.4 of this report.

3.2.2 Updated Travel Mode Shifts

By 2031 in the PM peak hour, the TMP Update uses increased trips made by walking and cycling to a 10% mode share based mainly on continued expansion of the Active Transportation network envisioned by the Update. The transit mode share would increase to 6% and the overall use of private autos would reduce by seven percentage points compared to today. As shown in Exhibit 3.1, the current TMP Update's share of auto trips is reduced from that used in the 2007 TMP, and the auto passenger share is increased. These changes reflect a reduction in the use of single-occupant vehicles and an increase in ride-sharing, both of which are positive TDM features.

Exhibit 3.1 - Change in Travel Modes

MODE OF TRAVEL	%AGE OF PM PEAK PERSON TRIPS FROM BRANTFORD HOUSEHOLDS			
	2011 TTS *	TMP 2016 Target	TMP 2031 Target	2007 TMP 2031
Auto Driver	71	67	63	73
Auto Passenger	16	17	17	10
Transit	2	3	6	6
Cycle/Walk	8	9	10	10
Other (taxi, school buses, etc.)	3	4	4	1

* The Transportation Tomorrow Survey (TTS) is a comprehensive travel survey conducted in the Greater Toronto and Hamilton Area (GTHA) and surrounding areas once every five years. Alternative Roadway Strategies to 2031

As previously reported in Section 2.1, population and employment forecasts have the City of Brantford growing by 29% and 27% respectively between 2011 and 2031. A 20-year horizon under a 'Do Nothing" scenario previously shown on Exhibit 2.8 would result in the following roadway network impacts

- Significant growth for travel within the City and a 200% increase in traffic delay;
- Commuter travel continues to play a key role for travel both into and out of the City, with trips towards the west, east and south showing strong growth;

- City roads continue to serve trips that bypass the City, i.e. trips that travel between zones in the County of Brant;
- Highway 24 will continue to be an important route for northbound traffic into and out of the City;
- There will be continued capacity stress on key existing corridors – King George Road, Brant Avenue, West Street, Wayne Gretzky Parkway, Colborne Street and Veterans Memorial Parkway;
- New capacity stresses were observed on Clarence Street north of Veterans Memorial Parkway, Shellard Lane and Blackburn Drive leading into the southwest subdivisions and the one-way couplet of Colborne Street and Dalhousie Street west of Wayne Gretzky Parkway; and,
- There were significant increases in ridership along Transit Routes 1, 6, 7 and 9.

These observations are generally consistent with the 2009 model findings for the 2031 horizon. However, King George Road, West Street and Wayne Gretzky Parkway were observed to be operating nearer to capacity than forecasted in the earlier model for both the AM and PM peak hours. In response to these challenges, the following two alternative transportation strategies were evaluated, plus the 'Do Nothing' strategy for the City as part of the TMP Update:

1. **Manage Travel Demand** – A Transportation Demand Management (TDM) strategy would address the growth of traffic in the City by achieving the new TMP mode share targets shown in Exhibit 3.1. This includes a reduction in the auto driver share, maintenance of the auto passenger share, a significant tripling of the transit share and increase in Active Transportation. In this strategy, there are no changes to the roadway network capacity that would be provided by planned roadway widening, extensions and/or additions.

   The impact of this strategy on roadway network Level-of-Service measured by Volume/Capacity Ratios is shown on Exhibit 3.2. When this plot is compared with the 'Do Nothing' plot in 2031 previously shown on Exhibit 2.8, the conclusion is that the Demand Management strategy alone would not be effective in addressing a number of major capacity deficiencies forecast in the City's road network by 2031, most notably along Colborne Street and VMP at the bridges and to the west, along sections of King George Road at Highway 403, West Street, Clarence Street in the downtown, Wayne Gretzky Parkway and along the entire length of Brant Avenue.

2. **Strategies to Increase Road Network Capacity** – The alternative strategy to address travel demands on the City's road network is to enhance the carrying capacity of that network through strategic road widenings and extensions, plus roadway operational improvements for example at key intersections. The impacts of this strategy on network LOS is shown in Exhibit 3.3, showing that strategic road capacity improvements provide the opportunity to maintain an acceptable and efficient Level-of-Service on Brantford roads over the next 20 years.

   The Exhibit shows that LOS condition problems are improved at the Colborne Street and VMP river crossings, along Wayne Gretzky Parkway and most of West Street and along Clarence Street in the downtown.

   The specific roadway network improvements that provide this 20-year result in network LOS are listed in the Section 4.5 Road Network Improvement Plan to 2031.

Exhibit 3.2 - Manage Travel Demand LOS Forecast 2031

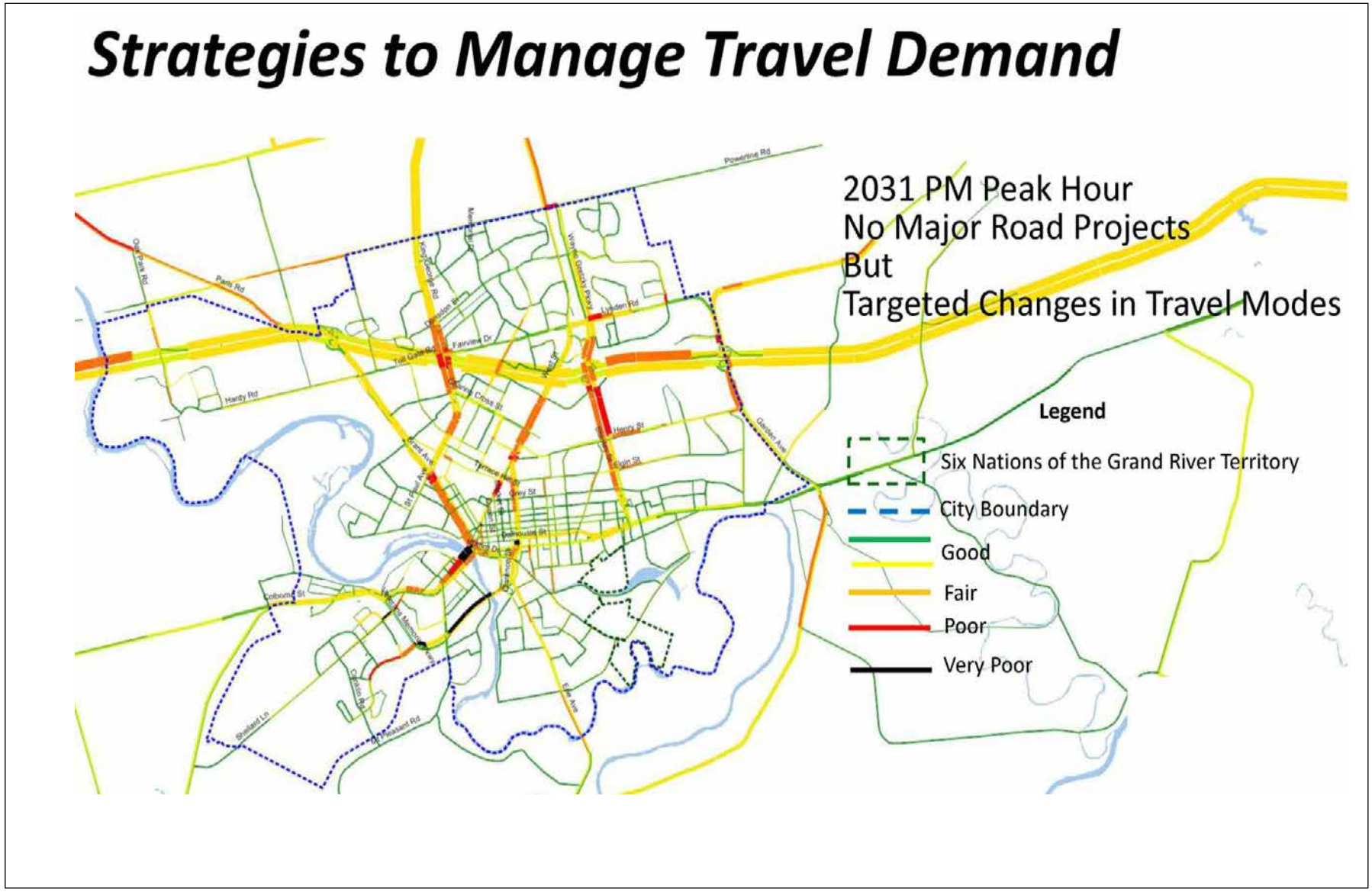
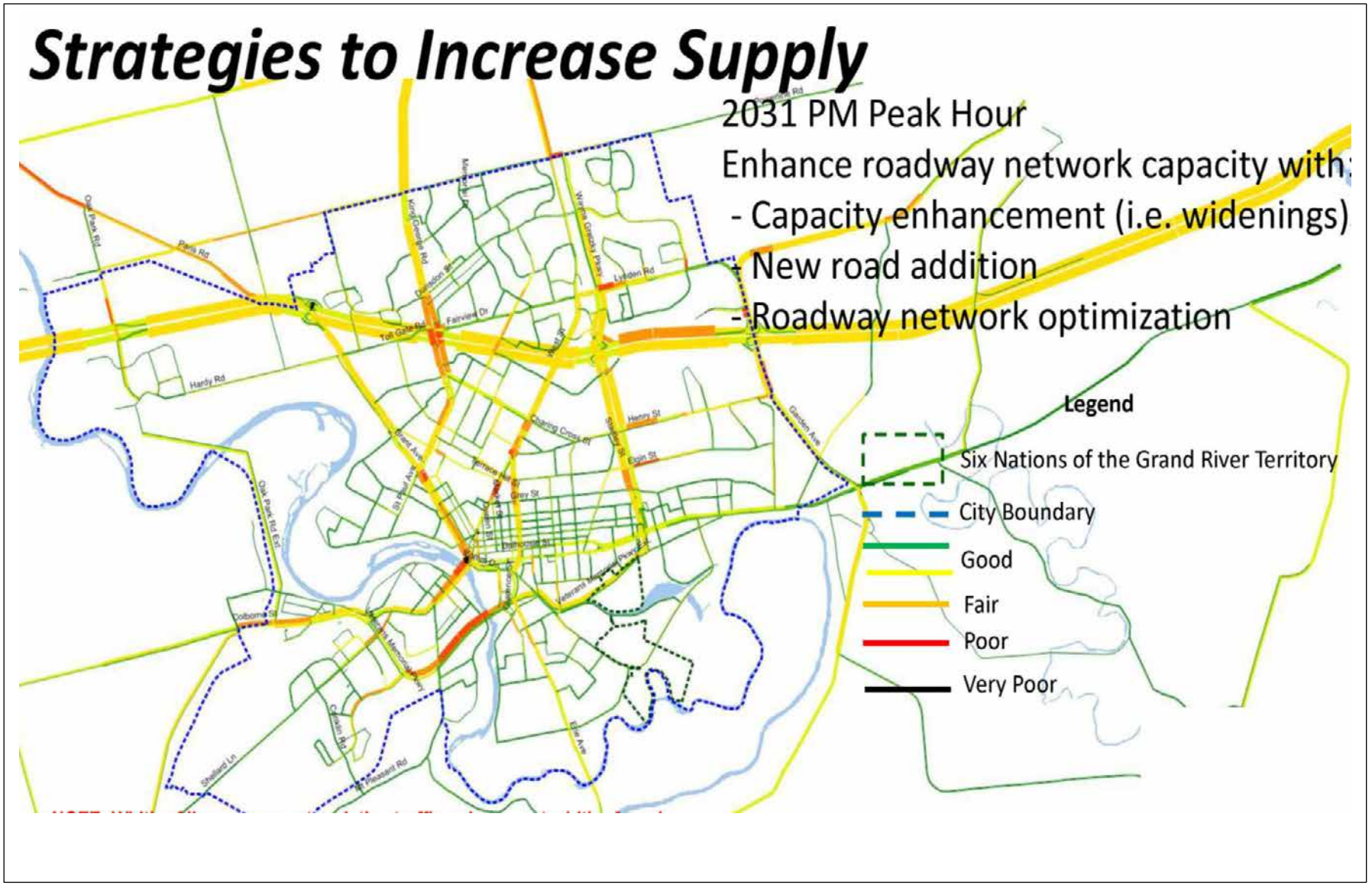


Exhibit 3.3 – Increase Road Network Capacity LOS Forecast 2031



3.2.3 Alternative Public Transit Strategies to 2031

Conventional Transit

The conventional transit system (Brantford Transit) serves the 93,000 city residents using a fleet of 31 accessible, low-floor buses operating on nine fixed routes during the day. The frequency of service on each route is 30 minutes. During the evening and on Sundays, five routes utilizing five buses cover the city with service operating every 60 minutes. The routes are large one-way loops. During all service hours, buses operate from the transit terminal on Darling Street. The 2013 ridership totalled 1.64 million representing a market penetration of 17.7 rides per City resident. The estimated overall transit modal share is currently 2% with peak hour mode share at 1.7%.

Based on the 2012 Eco study and review of the existing transit system, the following alternative investment strategies could be implemented in the future:

Option 1: Status Quo - Maintain transit services at current investment levels. Maintain current service levels at 0.81 revenue-hours per capita, rides per capita at 17.7 and mode share of 2% (1.7% of peak period trips). This would result in marginally increased service levels and investment as population grows in the future, with projected service levels in the order of 86,000 revenue-hours by 2021 and 100,000 by 2031, and estimated ridership of 1.8 million (2019) and 2.2 million (2031).

Option 2: Peer Level Investment. Implement service improvements on key performing routes, add routes to new areas and increase service levels to improve mode share to 4% of peak period demands. This would require increased transit investment and revenue-hours to peer level, including extending the half hour daytime service into the evenings and on Sundays. Performance targets would include a ridership level of 20 rides per capita by 2021 and 25 by 2031 and an overall modal split of 6% by 2031. This would result in moderately increased service and investment levels over the period of the plan to 2031, with a projected service level of 120,000 revenue-hours by 2021 (1.1 revenue-hours/capita) and 135,000 by 2031, and estimated ridership of 2.2 million by 2021 and 3.0 million by 2031.

Option 3: Transit Focus – Enhanced Level of Investment. Implement significant service improvements during all service hours. This would include enhanced (more frequent) service in key corridors during peak hours supplemented by express routes between key residential and employment areas in the City and neighbourhood circulators. Other improvements would include upgrading and expanding the downtown transit terminal, and the construction of enhanced transfer facilities in the vicinity of the Lynden Park Mall and Brantford Commons or other locations as identified through more specific location studies. The targeted transit ridership level would be of 20 rides per capita by

2021 and 30 rides per capita by 2031. An improved overall mode share target of 6% would increase to 10% of peak period travel demands. This would result in significantly increased service and investment levels over the period of the plan, resulting in projected service levels in the order of 120,000 revenue-hours (1.1 revenue-hours/capita) by 2021 and 160,000 (1.3 rev-hrs/capita) by 2031, and estimated ridership of 2.2 million by 2021 and 3.6 million by 2031.

Specialized Transit

With the specialized transit service, Brantford Lift, providing parallel service for people with disabilities who are unable to use the conventional transit service, continued growth in the demand for the specialized service is expected to continue in the future due to both

increased accessibility for people with disabilities, as well as changing demographics. However, as the conventional transit service now utilizes fully accessible transit buses, and considering the requirements under the Provincial Accessibility for Ontarians with Disabilities Act (AODA) that the conventional transit service infrastructure (stops, shelters and terminals) be made accessible by 2024, greater use of the conventional service by people with disabilities especially those using mobility devices will occur. This should be encouraged by the City to ensure that the specialized transit service resources are focused on meeting the needs of people who are unable to use the conventional transit service.

On this basis, the City should pro-actively review its eligibility criteria for use of Brantford Lift regularly to ensure that the service is used only by those people unable to use the conventional transit service. The City should also actively encourage maximum use of the conventional service. This approach would optimize the capacity and use of the specialized service by those who most need the service. Even with a strategy to optimize the use of Brantford Lift service, it is anticipated that the service resources (vehicles, revenue-hours and budget) will need to expand in proportion to the future increase in the population.

Interregional Transit

The GO Transit Business Case Report prepared by IBI Group (January 31, 2014) concluded in part that establishing inter-municipal transit links with Brantford's municipal neighbours (Hamilton, Burlington, Cambridge) would be beneficial for the City. It would enhance personal mobility by reducing reliance on the automobile, would promote economic links and business opportunities for Brantford and provide greater access to important business, job, social, education and health resources in the GGH and GTHA for Brantford residents. For residents that do have access to a vehicle, new transit service would provide the opportunity to save money by leaving the car at home or at a park-and-ride lot. Long-term mitigation of congestion and air pollution would benefit a much wider group of people. Improved inter-municipal public transit links also support the province's growth strategy. As the operator of such services in the GGH, Metrolinx/GO Transit has an interest in meeting the demand for travel between Brantford and the surrounding communities as well as meeting the objectives of the Province's growth strategy, "Places to Grow".

4 TRANSPORTATION MASTER PLAN UPDATE

4.1 Elements of the TMP Update

Section 5 of the 2007 TMP provides a planning update to the previous 1998 TMP for the following seven (7) master planning elements. How they are addressed in the 2014 TMP Update is summarized below:

TMP ELEMENT	GENERAL PLANNING PROVISIONS	UPDATED DIRECTIONS 2014
Managing Future Transportation Demand . .	Municipal leadership by example; Community education & awareness; Development tools & incentives; and Land Use Policies.	City should still develop a TDM Program for employees; Report on TDM pilot program(s); Coordinate with Official Plan Update and examples of Places To Grow policy application.
Optimization of the Existing Transportation System .	Access management; Arterial road optimization; and Traffic signal management.	Continue policies and plans; Continue policies and plans; and System control and communication upgrades (see Traffic Signal Control System Assessment, January 24, 2014, IBI Group).
Managing Truck Routes & Goods Movement .	Management of all truck movements through use of the existing permissive truck route system can be difficult to enforce. The TMP Update recommends using a 'hybrid' truck route management system. .	The TMP Update recommends that the 'hybrid' truck route management system be maintained. This continues the use of permissive truck routes, while also identifying areas of the City that may require additional truck restrictions, using signing, to discourage truck traffic. For these areas, alternative truck routing may be identified.
Transit Improvements .	The main planning provision for Brantford transit service in the TMP Update is to achieve a 6% mode share over overall city PM peak hour travel demand by 2031. Short, medium and long term improvements including express routes, enhanced transfer facilities, improved fixed route services, a new downtown transit terminal and intercity GO	See TMP Update Section 4.4. The TMP Update uses new future population growth and development expansion forecasts, and the role of specialized transit; Includes recommendations for GO Transit inter-municipal service based on 2013 business case study; Reconfirm the role, modal splits and ridership targets for transit,

	Transit service.	plus associated financial investment needs.
Plan for Walking & Cycling (Active Transportation) .	Policies and recommended cycling and trails network plan	See TMP Update Section 4.3. Update Active Transportation Strategies including new proposed 2031 bikeway and trails network and policy directions.
Plan for Road Network Improvements	Screening of improvement alternatives; Evaluation of network improvement alternatives.	See TMP Update Section 4.5 Road Network Improvement Plan for the major network capacity improvements now recommended in the short, medium and long term to 2031.
Plan to Support Downtown Revitalization	Role of downtown street system is maintained in the TMP Update to: • Create a "People" Place; • Downtown Road Network • Improvements including strategic intersection improvements and associated one-way Colborne/Dalhousie Street conversion; • Enhanced transit service; • Improved walking & cycling facilities; • Develop Parking strategy to manage growth in demands	Most of this 2007 TMP section dealing with the downtown has been replaced by recommendations of the Master Plan for Downtown Brantford: Towards a Stronger Future, prepared by Urban Strategies Inc. and IBI Group dated April 2008. Review of recommendations from 2010 parking strategy for downtown

4.2 Transportation Policy Review

4.2.1 Guideline for the Preparation of Transportation Impact Studies (TIS)

The City's current TIS preparation guidelines are basic in nature and have been appropriate for development in Brantford. This TMP Update recommends updating the TIS guidelines to be consistent in the use of the term 'Transportation' since the previous guidelines also use the term "Traffic" impacts, and traffic is usually interpreted as involving only motorized road vehicle movement. A 'Transportation Impact Study' can include impacts on other travel modes including transit, cycling, walking and parking. Development can have a large impact on the existing parking supply on a development site or in the immediate area, and especially in the downtown. A draft of the recommended Transportation Impact Study Guidelines update dated June 2014 is included in **Appendix 4**.

4.2.2 Transportation Demand Management Policy

There is also no mention of Transportation Demand Management (TDM) in the existing TIS guidelines. Requesting a TIS presents an opportunity for the City to have an applicant

present ways in which the demand for travel by personal vehicle will be managed, for example through provision of walking and cycling support facilities, transit-oriented design and preferential parking for ride-sharing.

Alternatively, modifications can be made to the existing Official Plan Policy 11.10 on how TDM can be integrated into the development approval process. This includes adding policy directions to the Official Plan that support TMP implementation in the City through the development approval process, including:

- Parking supply and management policies to manage the amount of long-term off-street parking in the Downtown;
- Reference to roadway network policies that balance the demand for transportation infrastructure with supply;
- Require that a TDM Plan be prepared as part of the development application process for commercial, employment and mixed use projects over a set size;
- Manage the cost of public parking so that it is not a disincentive to transit use; and
- Implement TDM through other development incentives (i.e. LEED credits, development approval process, zoning bylaw parking provisions).

This especially includes provisions for walking and cycling since Active Transportation is an important component of the updated TMP, and so should be embedded in the both the TIS guidelines and TDM policy.

4.2.3 Downtown Parking Policies

The 2007 TMP addressed downtown parking management in terms of the supply, price and regulation of parking facilities. This is an important component of Transportation Demand Management because it has the potential to significantly affect travel behaviour. When appropriately applied, parking management can significantly reduce the number of parking spaces required, the cost of building new parking facilities, and provide a variety of economic, social and environmental benefits.

The 2007 TMP concluded that there was a demand for additional parking spaces in the downtown, and identified three general policy options to address this:

Option 1 – Improve the supply of on street and off street parking through the construction of new lots, a new parking garage, or additional on street parking in the core area. Develop policies to encourage development of new private parking facilities.

Option 2 – Manage the demand for parking in the downtown to encourage alternative modes of travel through the implementation of higher parking rates for long term (all day) parking and management of the supply of long term parking. Continue to manage short term parking to maximize turnover in commercial districts. Develop policies and incentives to limit the construction of new private parking facilities and encourage higher parking rates within private parking lots.

Option 3 – Implement a combination of both approaches, by increasing the supply of long and short term parking to address growth requirements but implementing price increases to encourage more transit use. Develop policies and incentives to restrict the supply of private parking facilities through the use of cash in lieu payments that will be used to fund limited construction of new public parking facilities that are managed with higher long term parking rates.

The 2007 TMP recommended increasing the supply of downtown parking, but also managing the demand for All Day parking in the downtown. This involved:

- Increase the supply of all day and short term parking to address growth needs;
- Increase price for long term parking to encourage more transit use; and
- Discourage new private parking facilities, invest in municipal parking spaces, and manage demand through pricing.

Since 2007, the demand for parking has continued to increase, in part due to the increase in enrolment at the post-secondary education institutions operating in the downtown. New employment growth in the downtown core will also increase this demand. In response, the demand, supply and management of downtown parking has since been addressed in the following five (5) major planning initiatives summarized as follows.

Downtown Master Plan 2008

The Downtown Master Plan prepared by Planning Initiatives in 2008 concluded that in the downtown, there was a *"fairly immediate need to increase off-street parking supply to support and facilitate growth". It is critical that this is achieved in a manner that does not detract from the existing Downtown environment, nor in a way that encourages excessive automobile use".* The Master Plan also recommended that *"the City consider charging for the use of on-street parking spaces* (i.e., no free on-street parking) *to encourage turnover and reduce problems associated with enforcing the two-hour free parking time limit".*

Feasibility Study for Proposed Transit terminal / Parking Structure / Commercial Facility 2009

This study concluded that as part of constructing an expanded transit terminal in downtown Brantford, it would be feasible on the preferred site to combine that construction with a six level parking structure with 960 parking spaces on top of the transit terminal. The estimated cost of this combined transit terminal / parking structure was estimated at $33.8 Million, with $28.8 Million just for the parking structure.

Annual Downtown Parking Studies 2007 through 2013

These City studies have concluded that re-parking continues to be a problem for on-street parking in the downtown. Lower turnover rates are also being experienced in the eastern and western fringes of the downtown, which is not desirable in a downtown setting. In terms of off-street parking, parking lot occupancy can be low at certain times of the day and in certain lots.

Downtown Parking Implementation Strategy 2010

The Downtown Brantford Parking Implementation Strategy (2010) recommended in the immediate short term:

- Implementation of a pay an display system; and
- Increase the monthly fee for off-street parking.

Other recommendations for future consideration include the development of a new parkade in the downtown, and various operational changes to increase the level of parking services in the downtown. However, it was noted that before any major changes to the downtown parking system or capital expenditures are made, appropriate consultation with stakeholders should be undertaken.

Downtown Parking Task Force 2014

In February 2014, City Council adopted a resolution to create a downtown parking task force to guide development and implementation of the re-introduction of a pay and display system for on-street parking in downtown Brantford. The initial report of this task force in August 2014 recommended a phased implementation of pay and display for on street parking over three years from 2015 to 2018.

4.2.4 Traffic Calming Policy

The City's Traffic Calming Policy (No. Engineering-008) was consolidated in 2010 and notes that the next review is required in 2013. This has been conducted as part of the TMP Update. Since 2010, widespread implementation of numerous types of traffic calming measures across Canada provide valuable information on experiences, lessons learned and best practices that should be considered in reviewing the current policy and practice.

The objectives of the Traffic Calming policy remain sound with some exceptions. The objective to '*increase the driver's awareness of the street functions and thereby reduce vehicular speeds'* should be modified by stating that this awareness can be accomplished by including physical measures within the road right-of-way, including deflections and side friction (i.e. blvd trees, parked cars) that encourage slower vehicle speeds.

The list of traffic calming measures, under vertical deflections, should include speed 'cushions' that allow large emergency vehicles with wider wheel bases to pass over these cushions at faster speeds compared to standard passenger vehicles that must slow to travel over them. Also, use of 'roundabouts' can differentiate between modern roundabouts, for example as used throughout the Region of Waterloo, and smaller mini-roundabouts or buttons that are located within the standard road right-of-way. The City's policy should also remove the term 'Traffic Circles" and use the currently used term "Modern Roundabout'.

The City's existing quantitative evaluation process to initiate a traffic calming study is sound and used in other municipalities. However, for public involvement, the City should also consider how traffic calming studies are initiated. The current policy has City Staff conducting the study, but the policy is unclear as to who else can request a study, for example area residents or a ward councillor. The Policy could be updated to include a five-step traffic calming process; 1) Initial Request (by staff, resident, councillor, agency), 2) Review Warrants, 3) Traffic Calming Study including Neighbourhood Opinion Survey, 4) Decision and 5) Implementation and Monitoring.

4.2.5 Roundabouts Policy

The following information is intended to be incorporated into a new City of Brantford policy for the use of roundabouts. It deals with roundabout screening, planning considerations and inappropriate applications.

Roundabout Screening

Modern roundabouts have become a standard alternative to signalized intersections where appropriate design guidelines can be met and the operational, safety and financial benefits are superior to alternative forms of intersection control. A modern roundabout should be considered when planning/designing:

- installation of traffic signal control at an existing intersection, where signals have met the applicable warrants;

- a new City road intersection; and/or
- improvements at a City intersection to address safety or capacity concerns.

When considering the use of modern roundabouts in Brantford under any of these conditions, it is recommended that the following screening information be used to determine if a roundabout is feasible:

- Description of the intersection (number of legs, number of lanes, total AADT, AADT on each road, existing and horizon year turning movement counts);
- Type of existing traffic controls (stop control, all-way stop, etc.);
- Status of corridor improvements;
- Collision history over past 5 years;
- User by persons with disabilities;
- Traditional road improvement planned (i.e. traffic signals, all-way stop, auxiliary lanes, etc.);
- Traffic signal warrants;
- Proposed roundabout size (number of lanes); and
- 20-year life cycle cost estimate as a comparison of the implementation cost and injury collision cost present value for a roundabout vs. other traffic control. This calculation is presented as follows based on the Roundabout feasibility Screening Tool developed by the Region of Waterloo:

20-Year Life Cycle Cost Estimate

10-Year AADT: _____

Injury Collision Cost (ICC): _____

Discount Rate: (i): _____

20 YEAR LIFE-CYCLE COST COMPARISON		
Cost Item	**Other Traffic Control**	**Roundabout**
Implementation Cost	$	$
Injury Collision Cost (Present Value)	$	$
Total Life Cycle Cost	**X**	**Y**

Notes:

- Implementation Cost
  = sum of costs for construction, property utility relocations, illumination, engineering (20%), contingency (20%) and maintenance (5%);
- Present Value of 20 Year Injury Collision Cost
  = expected annual collision frequency x ICC $((1 + i)^{20}-1) / i(1+i)^{20}$

Intersection Control Study

The feasibility and benefit of providing a modern roundabout should be determined through an Intersection Traffic Control Study. An intersection traffic control study includes a review of the reasonable forms of traffic control for a particular location or corridor and would include, but not be limited to, the following primary measures:

- Road user safety for all potential users including a detailed review of the societal costs of collision potential;
- Level of service and delay for all potential users;
- Environmental impacts such as fuel consumption, vehicle emissions and noise;
- Capital and operating costs;
- Compatibility with road/corridor traffic control strategies, and adjacent land use and access;
- Property impacts; and
- Effects on transit operations, emergency service provision, accommodation of persons with disabilities and farm vehicle operations.

Planning Considerations

The installation of a traffic modern roundabout is beneficial only if an environment is appropriate for its use. This is an important aspect of the planning process since placing a roundabout in an inappropriate location may not help its cause and may lead to adverse effects. Roundabouts should be constructed for the primary purpose of improving operations and/or safety at intersections, but they may also be considered for traffic calming or aesthetic reasons. Considerations for the various appropriate applications of roundabouts are provided in the following subsections.

Improved Intersection Safety - Roundabouts offer a possible solution at existing intersections that experience a high frequency of severe collisions, and planned intersection with this potential, especially locations with frequency collisions related to cross movements or left-turn or right-turn movements. Many studies have found that roundabouts have been successful in improving overall safety performance at intersections. In particular, single-lane roundabouts have been found to perform better than two-way stop-controlled (TWSC) intersections. Although the frequency of reported crashes is not always lower at roundabouts, reduced injury rates and severity are usually reported. Also, as drivers become more familiar with the operation of roundabouts, collision frequency is likely to reduce over time. The reasons for the increased safety level at roundabouts are as follows:

- Roundabouts have fewer conflict points at which the paths of opposing vehicles intersect. The potential for hazardous conflicts, such as right-angle and head-on crashes is eliminated with roundabout geometry. A 4-leg single lane roundabout has 75% fewer conflict points than a conventional 4-leg intersection (8 points compared to 32 points respectively). As roundabout designs become more complex (multilane roundabouts), the potential conflict points increase and the safety benefit is not as prominent. However, even with an expected lower overall crash reduction, multilane roundabouts should still result in fewer serious injuries and fatalities as compared to the alternative intersection control;

- Low absolute speeds forced by roundabout design (i.e. entry deflection and diameter of central island) allow drivers more time to react to potential conflict and, in the event of a collision, reduce the severity of the impact; and
- Pedestrians need only cross one direction of traffic at a time at each approach as they traverse roundabouts, as compared with unsignalized intersections.

Improved Intersection Capacity - The modern roundabout may be a preferable alternative to stop-controlled or signalized treatments for increasing the capacity of an intersection. Under conventional types of traffic control, only alternating streams of vehicles are permitted to proceed through the intersection at one time. This causes a loss of capacity when the intersection clears between phases. In contrast, the only restriction on entering a roundabout is the availability of gaps in the circulating flow. The slow speeds within the circulating roadway allow road users to safely select a gap that is relatively small. Because roundabouts do not favour one approach over another, they offer a particular advantage for improving capacity at locations where the proportions of minor street movements are high. Also, by eliminating the need for a separate pedestrian signal phase, a possible advantage in capacity can be achieved, especially where left or right turning volumes are high.

The design of any roundabout should include a detailed capacity analysis, but the following assumptions are proposed for a planning level comparison between intersection treatments:

- A roundabout will always provide a higher capacity and lower delays than all-way stop-controlled intersections operating with the same traffic volumes and right-of-way limitations;
- A roundabout it unlikely to offer better performance in terms of lower overall delays than two-way stop control intersections with minor movements that do not currently experience, nor are expected to experience, operational problems under two-way stop control;
- A single-lane roundabout may be assumed to operate within its capacity at any intersection that does not exceed the peak-hour volume warrant for signals; and
- A roundabout that operates within its capacity will generally produce lower delays than a signalized intersection operating with the same traffic volumes and right-of-way limitations.

Community Enhancement - Roundabouts may be proposed as part of community enhancement projects rather than as a solution to safety or operational problems. Such aesthetic applications are used as a gateway treatment to convey a change of environment and to encourage traffic to slow down. These roundabout applications require minimal analysis as a traffic control device as traffic volumes are typically low and are not a concern. However, the planning focus should be to demonstrate that the installation of a community enhancement roundabout will not introduce traffic or safety problems that currently do not exist.

Traffic Calming - A roundabout may present a solution to a demonstrated need for traffic calming along the intersecting roadways. Roundabouts encourage slower and more consistent vehicles speeds, resulting in a traffic calming effect that results in a more balanced operating environment for all road users. Roundabouts of smaller geometric dimensions are most appropriate for traffic calming purposes and capacity should not be an issue as volumes should be low. Roundabouts for traffic calming purposes should generally be located on collector and local roads in residential areas.

Inappropriate Applications

The following locations are generally noted as being unfavourable for modern roundabouts:[1]

- Locations where there is insufficient space for an acceptable outside diameter. Single-lane roundabouts generally consume more space than equivalent signalized intersections at the junction itself, but their approaches are often narrower. Multi-lane roundabouts compare more favourably in terms of space consumption;
- Locations where it would be difficult to provide a flat plateau for the roundabout. Most guides recommend maximum grades of 3% to 5% depending on design speed;
- Locations within a coordinated signal network, where the roundabout would disrupt the platoons; and/or
- Locations with heavy flows on the major road and low flows on the minor road, where the equal opportunity treatment of the approaches causes undue delays to the major road.

Other site-specific conditions can be potentially problematic at roundabouts, but, as with any other intersection, these conditions can be addressed with special attention to design and operational aspects. Such conditions include the following:

- High volumes of cyclists, pedestrians or heavy vehicles (including large farm vehicles);
- Presence of numerous disabled and visually impaired users;
- Along emergency services primary response routes;
- Close proximity to at-grade rail crossings;
- Intersections at the top or bottom of a grade where adequate sight distance is a concern; and/or
- Proximity of adjacent downstream signals and potential blocking due to queuing.

4.2.6 Sidewalk Policy

This policy involves community petitioning to initiate construction of new sidewalks in established residential areas where no sidewalk currently exists, and reconstruction of existing sidewalks. Adding a new sidewalk where there is not one today is termed 'sidewalk infilling'. It can be opposed by property owners who will be impacted by the new sidewalk construction. Therefore, the City has a policy and procedure to ensure infilling decisions are made based on the needs of the affected area, and involves a petition of area property owners and tenants. This process is supported in this 2014 TMP Update since it allows for public input, while still addressing the mobility needs of the overall community or affected area. No modifications to the process are recommended, but see Section 4.3 for further recommendations on walking policies as part of Active Transportation.

[1] Modern Roundabout Practice in the United States, NCHRP Synthesis 264, Transportation Research Board, Washington D.C., 1998

4.2.7 Roadway Capacity Optimization Policy

The need to optimize existing transportation network is a key requirement for any municipality today. This existing transportation system optimization includes maximizing the capacity of existing roadway and traffic control facilities, improving the performance and reliability of existing services, and making what may usually be minor operational improvements to improve system performance.

Based on an updated review of the City's existing road network, opportunities available to enhance existing network capacity, and best practises used in other comparable jurisdictions, the following key capacity optimization policy directions are recommended.

Access Management

Access management is a technique used in conjunction with land use policies to control the number of entrances that are permitted on key arterial road corridors. It can increase the capacity of an arterial road by up to 5%. Within this context, the City of Brantford should implement the following key access management policies into their site planning and development processes and policies:

- Access to major commercial, industrial, residential land uses should be spaced at 250-300 m apart on Major Arterial Roads;
- Access should be restricted to side roads where feasible and the City should encourage combining entrances where feasible;
- Restrict entrances to right-in, right-out within 50m of signalized intersections;
- Manage / control new accesses in designated intensification corridors (King George Road, West Street); and
- Wayne Gretzky Parkway and VMP should remain controlled access roads to protect their operational ability to accommodate future traffic demands. New access to these corridors should be via new municipal road connections, where these connections can be shown to improve the operation of existing intersections.

Arterial Road Optimization

Since the operation of key intersections in the City will often deteriorate sooner than the roadway will reach its functional capacity, the construction of turning lanes at key intersections can increase the capacity of the through lanes by removing turning vehicles from the through lanes. Studies have also indicated that traffic signal coordination along a busy arterial road can improve capacity and reduce vehicle delays along major corridors by 10-15% during peak periods, in addition to improving on-time service performance for transit. Within this context the City of Brantford should implement the following optimization measures and policies:

- All arterial roads should receive signal priority during peak hours;
- Adopt a maximum peak hour volume to capacity ratio of 0.90 before road widening should be considered;
- Consider intersection operational improvements, such as turning lanes, in key arterial road corridors; and
- Consider separate left turn lanes where turning volumes exceed 60 vph. Consideration of right turn lanes is more context-sensitive based on the number of lanes, design consistency with adjacent intersections, pedestrian activity and available right-of-way.

4.2.8 Complete Streets Policy

Recent City of Brantford visioning and policy development associated with the mandatory Official Plan five year review process has identified the concept of 'Complete Streets' as being an important strategic direction for the city.[2] "Complete Streets" is a city planning policy direction whereby all public streets are designed, operated and maintained to enable safe access for all users. Pedestrians, cyclists, transit riders and motorists of all ages and abilities must be able to safely move along and across the complete streets. For Brantford, a Complete Streets policy can assist the City in developing a coordinated and integrated transportation system that provides realistic alternative travel options to the auto, thereby creating a City that is truly accessible to all.

4.2.9 Healthy Communities Policy

According to the City of Brantford visioning exercise to guide the Official Plan review process, three of the 10 guiding principles of its 2041 vision are transportation-related:[3]

*"… endeavour to achieve **healthy communities** that are **accessible and inclusive** with a diversity of housing options, and amenities and services close to where people live."*

*"The local transit network will connect core uses groups, neighbourhoods and key destinations within the City and beyond, with direct routes and street-side amenities that make taking public transit an **attractive and practical** travel option. Transit planning will be integrated with land use planning to ensure development densities support the planned level of service."*

*"**Walking and cycling** will be recognized as safe, convenient and appealing options for traveling around the City. Pedestrian-friendly community design and a connected bikeway network will provide enhanced mobility options across the City for people of all ages and abilities."*

This TMP Update is part of this strategic direction by planning a transportation system that supports the health and vitality of the city. It supports the overlapping Health Community characteristics of social, environmental and economic well-being with:

1. physical accessibility improvements in City facilities;
2. a balanced approach to replacing and/or expanding infrastructure including roads to support current and anticipated growth; and
3. a Transportation Demand Management strategy to support efficient, environmentally friendly transportation policies and programs for the future.

4.3 Active Transportation Plan

The Plan for Walking and Cycling in the 2007 TMP has been updated in Exhibit 4.1 with the City's proposed new Bikeway and Trails Network. The full AT Report is provided in **Appendix 5** of this TMP.

As previously noted, Brantford already has a strong presence of multi-use trails (also called shared use trails) in non-roadway corridors. Thus, the majority of updates focus on on-road facilities. The updates are divided in three groups:

[2] Envisioning Brantford – Our City 2041: Vision Report: Findings of the Official Plan 5 Year Review Visioning Workshops City Report CD2013-235, December 2, 2013
[3] Visioning Report: The Planning Partnership, December 20, 2013

1. Upgrade existing and proposed signed routes with improved bike facilities such as marked shared use lanes, bike priority streets or bike lanes, as appropriate;
2. Upgrade existing and proposed wide curb lanes on multi-lane and/or arterial roads to bike facilities with designated or separated space for cyclists; and
3. Modify existing and proposed routes, or add new routes where possible, to provide more comfortable, direct and continuous connections.

There are additional opportunities to improve the Bikeway and Trails Network as part of the road network improvements for motor vehicle traffic described later in Section 4.5. For example, Active Transportation is being incorporated into southwest Brantford based on Council-approved plans *West of Conklin Secondary Plan* and *North of Shellard Neighbourhood and Recreational Plan.*

There are currently 23.6km of existing signed routes in the City, 7.6km proposed within the next year and 14.9km in the planning stages. These routes provide a great opportunity to improve visibility of the Bikeway and Trail Network along the road network. Along the majority of these routes, it is proposed that the existing or proposed signed route be upgraded to marked shared use lanes. As with signed routes, marked share use lanes consist of signage treatments. However, they are further enhanced with “sharrow” pavement markings that increase visibility of the bike route. This visibility is an important consideration for bringing awareness of the routes to both for cyclists (including potential cyclists) and motorist. The sharrow markings are intended to show an appropriate line of travel for cyclists under typical conditions. They can improve safety by encouraging more predictable behaviour between the cyclists and motorist.

Along other corridors, more substantial bike facilities such as bike lanes and bike priority streets are proposed. Typically, these facilities are proposed along routes that serve as the most direct connections to the urban core. Examples are Elgin Street, Memorial Drive, North Park Street and St. George Street to Somerset Road (via Tollgate Road). Examples of these bike facility types are shown on Exhibit 4.2.

Exhibit 4.1 - Bike Facility Types

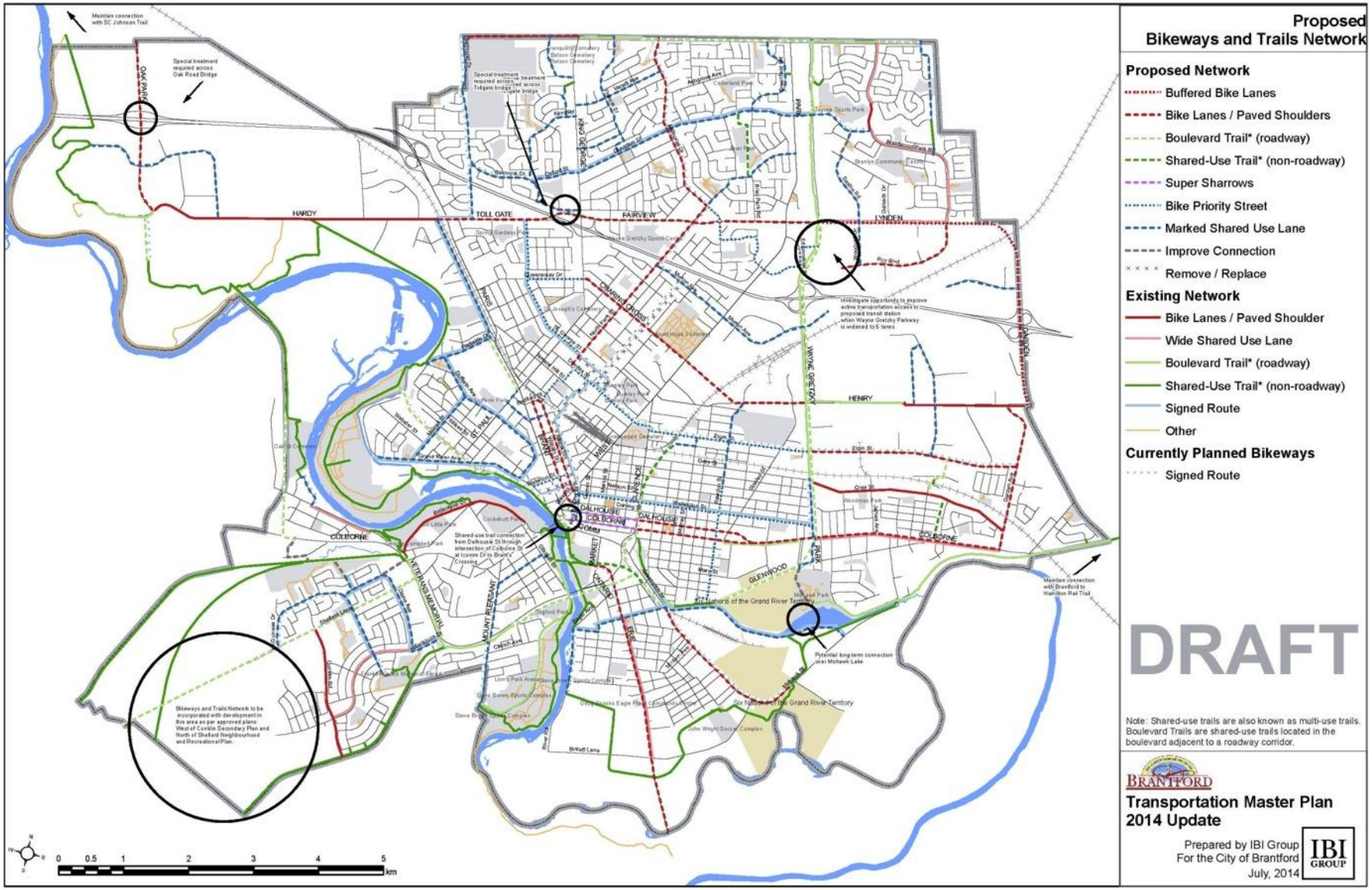
Signed Route

Wide Shared Use

Bike Lane

Bike Priority Street

Exhibit 4.2 - Active Transportation Plan Update

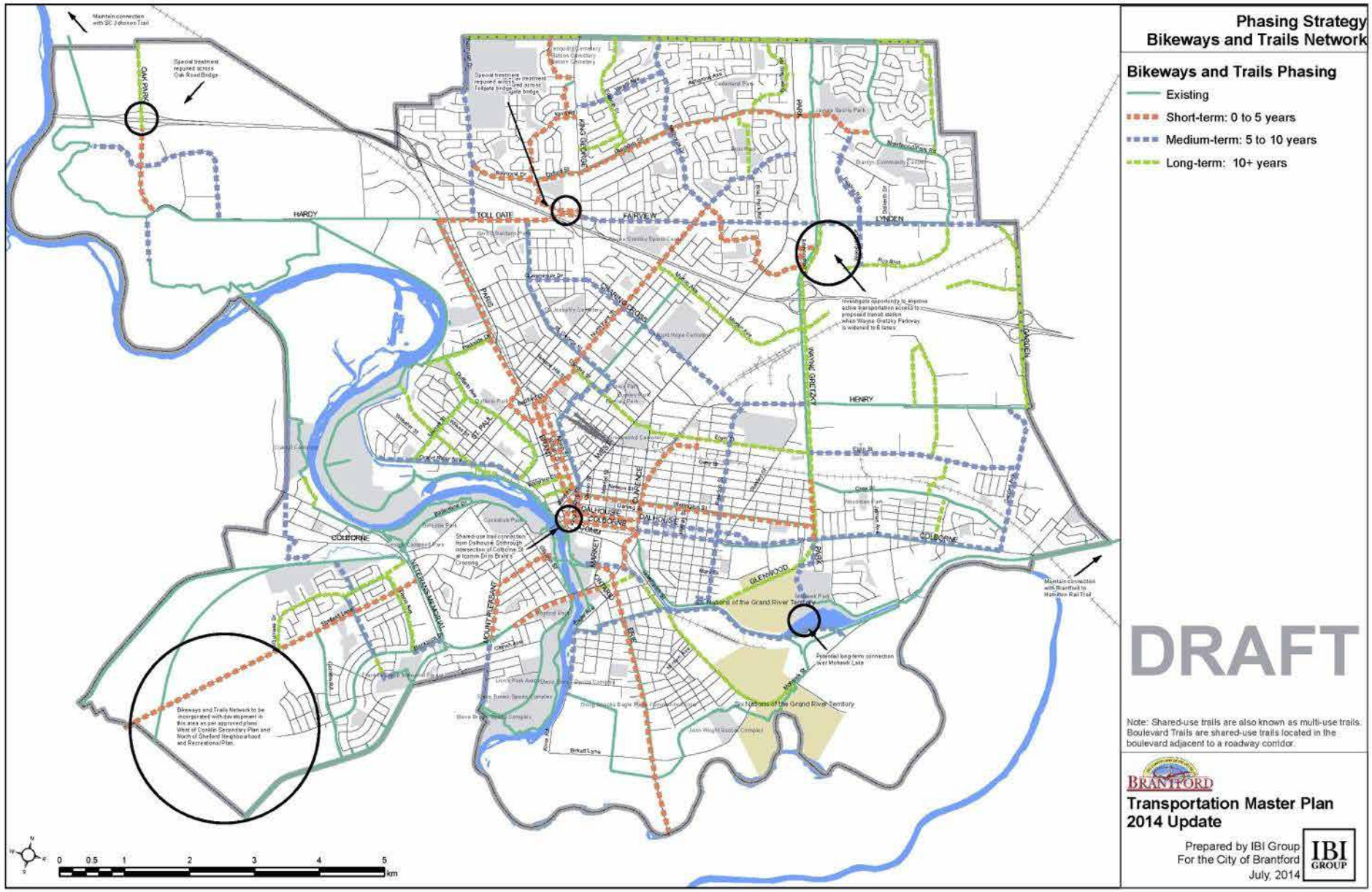


In terms of implementing the new Bikeways and Trails Network, the length of staged facilities and the associated capital cost estimate over the short, medium and long term phases are shown in Exhibit 4.3, estimated at $11.125 Million over the 20 year timeframe of the TMP to 2031, or an average annual investment of about $550,000. Exhibit 4.4 presents the recommended phasing plan.

Exhibit 4.3 - Bikeways and Trails Network Staging & Cost Estimate

SHORT-TERM 2014 – 2019		
Length	**Facility**	**Cost**
10.6 km	Bike Lanes	$ 668,000
2.0 km	Buffered Bike lanes	$ 114,000
5.4 km	Bike Priority Street	$ 206,000
1.5 km	Super Sharrows	$ 39,000
12.6 km	Marked Shared Use Lanes	$ 126,000
6.4 km	Boulevard Trails (adjacent to roadway)	$1,400,000
0.7 km	Shared- Use Rails (non-roadway corridor	$ 178,000
39.2 km	**Sub-Total Short-Term**	**$2,731,000**
MEDIUM –TERM 2020 – 2024		
17.3 km	Bike Lanes	$2,015,000
4.5 km	Bike Priority Street	$ 170,000
17.3 km	Marked Shared Use Lanes	$ 172,000
2.0 km	Boulevard Trails (adjacent to roadway)	$ 437,000
0.8 km	Shared- Use Trail (non-roadway corridor)	$ 194,000
0.5km	Bikeway or trail connection	$ 15,000
42.4 km	**Sub-Total Medium-Term**	**$3,003,000**
LONG-TERM 2025 – 2031		
5.8 km	Bike Lanes - $1,094,000	$1,094,000
2.1 km	Buffered Bike lanes - $1,325,000	$1,325,000
2.7 km	Bike Priority Streets	$ 104,000
16.0 km	Marked Shared Use lanes – $160,000	$ 160,000
10.1 km	Boulevard Trails (adjacent to roadway) - $2,231,000	$2,231,000
1.5 km	Shared- Use Trail (non-roadway corridor) - $364,000	$ 364,000
1.6 km	Bikeway or trail connection - $113,000	$ 113,000
39.8 km	**Sub-Total Long-Term**	**$5,391,000**
121.4 km	**GRAND TOTAL**	**$11,125,000**

Exhibit 4.4 - Active Transportation Network Phasing Strategy



4.4 Transit Improvement Plan

There has been significant transit ridership growth (approximately 15%) in Brantford over the last five years, resulting from a series of service improvements and the increased student population in the downtown area. Previous public attitudinal surveys suggest that there is willingness by auto users to shift to transit provided there is improved level of transit service, better transit information or financial incentive to use transit. The City is also poised for significant population and employment growth, with a significant portion of that growth to be accommodated within the downtown core area.

The preferred strategic direction for the TMP Update, as previously discussed in Section 3.2.4 is the "Peer Level Investment" option as the preferred short-term planning direction, with an ultimate target for an Enhanced focus on transit by 2031. Therefore, the TMP transit policies have been structured to provide an incremental approach to achieving these levels.

In the short to medium term, improvements to key performing transit routes will be provided through marketing, route changes and the addition of new routes as recommended in the 2012 ECO transit study. The objective of these changes is to increase transit ridership and improve the overall transit mode share to 3% overall and 4% of peak hour trips (compared to about 2% today). This would be more in line with Brantford's peer communities, and occur over the next 5 years, 2015 to 2019.

Between 2020 and 2031, the City will pursue the more aggressive "Transit Focus" approach in conjunction with continued population growth and growth in new areas of the city. The 'Transit Focus' will target improvements to key routes, increased service levels and frequencies and introduction of express routes between key residential and employment areas. It is envisioned that by 2031, this strategy will lead to an annual ridership level of 3 million and improve the transit mode share to 6% as a result of growth and increased use of transit.

However, achieving an increase in ridership of this magnitude will require increased financial investment by the City, supported by strong transit-supportive policies related to the supply and cost of parking, Transportation Demand Management, land use planning and development and transit priority measures on Brantford streets so that the conventional transit service is convenient, attractive to potential users and is competitive with the private automobile.

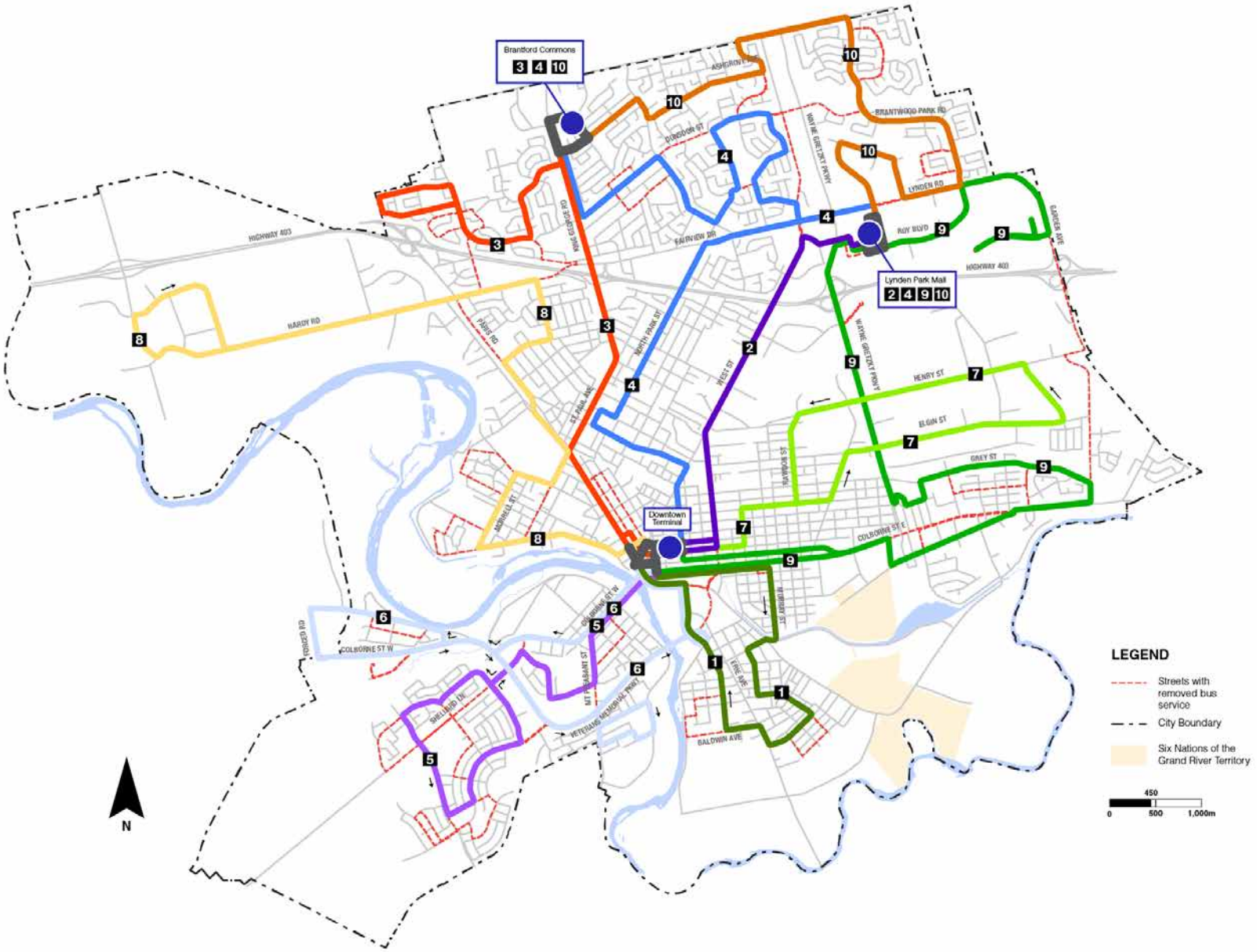
The following recommended policies to encourage increased transit use include a number of polices that are included in the Transportation Demand Management, Parking, and Active Transportation sections of this report. These transit-specific policies outline specific transit service improvements to achieve the ridership increases outlined in the preferred strategy.

4.4.1 Short Term Transit Improvements to 2014 - 2019

In the short term, the transit service improvement strategy should focus on the following recommended actions:

- Implement the recommendations of the 2012 Eco transit operations review study, including increases in service levels by extending half hour service on weekdays and on Saturdays and re-structuring of the route network as shown on Exhibit 4.5 to improve schedule adherence and travel times;

Exhibit 4.5 - Recommended Short Term Transit Route Modifications



- Increase the number of shelters at stops towards a coverage rate of 25% to increase the attractiveness and convenience of using transit;
- Make monthly passes more convenient to purchase and re-charge including on-line options;
- Prepare a marketing and communications plan and promotional materials to encourage and maintain transit ridership including a new transit route, schedule/information brochure;
- Investigate opportunities to implement transit priority on key corridors;
- Increase the number of shelters at stops towards a coverage rate of 25%;
- Renew the transit system's corporate image;
- Apply transit-supportive urban design guidelines to assist in making new developments easier to serve with transit;
- Implement transit service in new development areas to build ridership early;
- Work with GO Transit, as per GO Business Case study conducted with the TMP, to have the City and County included in the GO Transit service area and to have GO Transit bus service introduced between Brantford and Hamilton initially, followed by routes to Cambridge and Aldershot/Burlington; and
- In conjunction with the County of Brant, explore the re-introduction of transit service to Paris. The 2008 County TMP concluded that the recent history of providing transit service beyond the boundary of Brantford had shown low demand and a break-even financial performance at best. As a result, the County TMP recommended that a private operator offer a Brantford terminal-to-Paris shuttle service, but that the County of Brant and City of Branford actively support and help promote such a service.

Two other key components of the recommended transit infrastructure improvements in the short-term period to 2019 are:

- **Enhanced Transfer Facilities:** These facilities (i.e. shelters) should be established in the vicinity of the major malls in the east and north ends of the City (Lynden Park Mall and Brantford Commons respectively) to provide improved passenger amenities for transit users destined to these malls, as well as for transit users transferring between routes. Transit routes would link to these facilities with the objective of reducing travel times and to improve service coverage in new growth areas; and
- **Provide a New Brantford Downtown Transit Terminal**: There is a distinct advantage to having a high profile, focal point for transit in the downtown, particularly if transit is to be viewed as a viable alternative for access to the area for those who work, shop or access the numerous attractions in the downtown and to effectively increase transit's profile in downtown. The central transit terminal would facilitate the connection between local transit and interregional transit services as it would also function as the GO Transit transfer location, as per GO Transit Business case study carried out in parallel with the TMP. The location of the terminal should ideally be integrated into the downtown core area, such that major employers or destinations are within walking distance of the terminal (to reduce the need to transfer for short trips). The City completed a preliminary transit terminal expansion and parking structure study in 2009 and a site selection study in 2012

which confirmed the existing terminal location as the optimum site for an expanded and improved terminal.

4.4.2 Medium Term Transit Improvements to 2020 - 2024

The recommended medium-term transit improvements to 2024 include continued investment in two additional conventional buses and one specialized bus, transit garage expansion and additional transit shelters.

4.4.3 Long Term Transit Improvements to 2025 - 2031

Within the long term, the City should begin the process to implement trunk routes with enhanced service frequencies along key corridors. Other key transit service improvements should focus on:

- Restructuring routes to shorten travel times;
- Introducing new or extending existing routes to new growth areas;
- Introducing express routes linking key residential and employment areas; and
- Increase core and peak hour service frequencies on key routes.

More specifically, the longer term improvement recommendations to 2031 include the following:

- **Express Routes:** These routes would be introduced to link, for example, outlying areas of the city with key employment and shopping areas to supplement the regular route network and to reduce travel times;
- **Transit Priority Measures:** These measures further enhance transit service reliability by reducing delays at major intersections and congestion points. Transit priority measures include transit priority signals and queue jump lanes at intersections; and
- **Increase Core and Peak Hour Service**: Service frequencies would generally be increased on all routes from 30 minutes to 20 or 15 minutes with more frequent service up to 7.5 minute headways on key routes. Evening, weekend and particularly Sunday service levels would be improved to 30 minute headways.

Inter-municipal / GO Transit Service

As part of the 2013 TMP Update, a separate Business Case study was conducted to assess the feasibility of having GO Transit introduce bus service to the City of Brantford and Brant County. The study concluded there was significant potential and the priority destination was the City of Hamilton.

Two routes to Hamilton were identified, one via Highway 403, McMaster University and Main Street to the GO Centre in downtown Hamilton (Option 1A) and, the second via Highway 403, the Lincoln Alexander Parkway and Mohawk College to the GO Centre in downtown Hamilton (Option 1B). Secondary and future inter-municipal routes to Aldershot/Burlington Option 2) and Cambridge (Option 3) GO stations were also identified.

Ridership, revenue and operating cost estimates together with estimates of vehicle requirements and other capital improvements were identified. The first step towards the introduction of GO Transit service to Brantford/County of Brant requires the extension of GO Transit's service area to include the city and county. Expansion of GO Transit service to the city is also supported by the Province, in the Places to Grow growth plan as well as other regional studies which identify Hamilton as a major transportation hub for the area.

The total cost of the recommended transit improvement plan to 2031, excluding the GO service, is $18.6 Million. A breakdown of the capital costs is summarized in Exhibit 4.6:

Exhibit 4.6 - Recommended Public Transit Improvements Cost Estimates

SHORT-TERM 2014 – 2019		
Program	**Description**	**Cost**
Fleet	3 Conventional and 2 specialized transit buses	$1,980,000
Building	Replacement of Transit terminal	$7,000,000
Transfer points	Two Enhanced Transfer facilities	$3,000,000
Route infrastructure	Additional shelters	$ 127,500
Studies	Transit Master Plan	$ 100,000
Inter-regional	Extension of GO Transit Service area to include Brantford/Brant County	GO Transit Cost
	Sub-Total Short-Term	**$12,207,500**
MEDIUM –TERM 2020 – 2024		
Fleet	2 Conventional and 1 Specialized transit buses	$1,560,000
Building	Transit Service Centre (Garage) Expansion	$1,625,000
Route infrastructure	Additional shelters	$ 47,500
	Sub-Total Medium-Term	**$3,232,500**
LONG-TERM 2025 – 2031		
Fleet	4 Conventional and 1 specialized transit buses	$3, 010,000
Route infrastructure	Additional shelters	$ 200,000
	Sub-Total Long-Term	**$3,210,000**
	GRAND TOTAL	**$18,650,000**

4.4.4 Transit Monitoring

Monitoring and assessment of the City's transit services (conventional and specialized) should continue on a periodic (e.g., 5-year) interval using the TTS data, rider surveys, boarding counts, statistical data from the electronic fareboxes and schedule adherence data from the AVL (Automated Vehicle Location) system to assess specific route performance. Monitoring of the transit services involves three activities:

1. On-going monitoring of the performance of each transit service against performance indicators such as total ridership, rides per capita and modal split, ridership per revenue-hour of service, rides per trip (specialized only), registrants (specialized only), average age of fleet, and revenue-hours per capita and other criteria as proposed in the Eco transit study.

2. Performance should be monitored and evaluated on an annual basis and required adjustments made. The annual service planning and review process as proposed in the Eco study should be utilized.
3. Completion of periodic (i.e., every 5 years) comprehensive transit service reviews of both the conventional and specialized transit services to define changing needs and demand, assess the performance of each service and preparation of multi-year service plans with projected operating and capital budget requirements. A study is proposed for completion in 2017.

4.4.5 Policies & Programs to Support Transit

For transit to be successful, it must be attractive to the user and competitive with the automobile. To achieve this, the conventional transit service must provide competitive travel times, have a high level of on-time performance, offer increased service options and service frequencies, and provide enhanced customer amenities at stops and terminals with emphasis on achieving a fully accessible service. The specialized transit service must also be attractive and designed to provide eligible users with a convenient, reliable and responsive service.

Improvements in transit services, however, must be complemented by broader polices associated with Transportation Demand Management (TDM), parking, development and land-use, and walking / cycling as outlined in other sections of this report. The policies within the transit section of this report outline specific transit service improvements to achieve the ridership increases outlined in the strategy.

Land Use Planning & Growth Management Policies

1. Ensure all Official Plan amendments, site plans, zoning applications and severance applications are circulated to the City's transit staff so that transit concerns are identified and to provide transit with potential information that might impact transit operations and service planning (e.g. New or extended routes, realignments, etc.).
2. Increase employment and residential densities along current and planned transit routes and corridors and encourage intensification within designated intensification corridors through development incentives.
3. Encourage compact developments with a broad range and mix of uses that are compatible and transit and pedestrian friendly.
4. Provide transit service early on to new subdivisions such as in the southwest, northwest and east and in the northwest industrial area as people start moving in to help establish transit use.
5. Ensure transit-supportive design features are included for all new developments or re-developments (e.g. incorporate transit stops and shelters in all new subdivisions and other trip generators, locate bus stops near major retail and business entrances, ensure the built form is closer to street, provide a grid pattern of streets instead of cul-de-sacs and dead-end streets).
6. Apply transit-supportive urban design and transit accessibility guidelines as prepared by TAC, CUTA, OPTA or the Province to be used in preparation of secondary, subdivision plans, site plans and intensification of employment lands and residential uses, particularly in proximity to transit routes. These guidelines should include a checklist for site plan approvals that will ensure measures to encourage or increase transit use.

Expanded Transit Services Policies

1. Implement route network, routing and service level improvement recommendations in the 2012 ECO transit review study.
2. Expand geographic coverage with new routes and extended existing routes especially in the northwest industrial area and southwest residential growth area..
3. Undertake a comprehensive transit system review by 2017.
4. Undertake a comprehensive review of the specialized transit service, Brantford Lift, by 2017 with a focus on determining the demand for the service, developing a long term service and accessibility strategy, ensuring the effective and efficient delivery of the specialized service and the effective integration with the conventional transit service to meet accessibility needs.

Enhance Transit Service Efficiency & Reliability Policies

1. Improve on-road monitoring through regular analysis of Automatic Vehicle Location (AVL) system data and use of on-road Supervisors.
2. Strongly enforce parking restrictions at bus stops and along transit routes, turn restrictions, HOV lanes, Yield to Bus, etc.
3. Improve adherence to schedule by evaluating transit priority measure strategies at key locations and along the primary transit corridors such as West St., Fairview Dr., King George Rd. and North Park St.

Reduce Travel Time Polices

1. Implement route network and route change recommendations from ECO transit review.
2. Implement transit priority measures are congestion points.

Improve Convenience and Comfort Policies

1. Continue to provide special event-related services to the community including:
    - Canada Day: free shuttles to/from events on days when regular transit service is not available
    - United Way Air show: free shuttle service between transit terminal and airport
    - New Years Eve: free transit service on all regular routes after 6 pm on New Years Eve
    - Clean Air Day: free service throughout the day to promote use of transit to minimize environmental impacts
    - Zone Bus Service: provided during the evening periods in areas where regular transit service is not viable
    - School Specials: service provided throughout Brantford to address added demands during peak periods
2. Expand and enhance the downtown transit terminal.
3. Use downtown terminal as focal point for inter-municipal/intercity services.
4. Continue to serve the VIA Rail station.
5. Improve transit facilities by:

- Implementing a program to upgrade bus stop accessibility together with improved accessibility through sidewalk connections to stops, signage and shelters which will be compatible with provincial and industry accessibility guidelines
- Increase the number of shelters at bus stops towards a target coverage percentage of 25% of stops.

6. Provide additional locations for obtaining monthly passes and reloading B Cards.
7. Continue to provide a reduced pass for students during the summer months

Pricing & Fare Media Policies

8. Provide fare incentives to attract specific markets (i.e. students, seniors) including:
   - Continue the U-Pass for university and college students.
   - Seniors should continue to receive 10% discounts on multiple ride card and monthly passes.
   - Student should continue to receive discounts for monthly passes.
   - Pursue a U-Pass for university and college faculty and employees.
9. Reward frequent users with increasing discounts through passes:
   - Monthly Pass holders – deep discounts – up to 30% reduction compared to cash fare
   - Swipe Card 45 Ride – 20% reduction
   - Swipe card 10 Ride – 10% reduction
10. Explore opportunities to implement a payroll deduction program for transit passes; implement a pilot program for City employees.
11. Regularly review fare structure and rates to ensure that fare increases are reasonable (e.g., at rate of inflation) or tied to service improvements.

Marketing & Education Policies

12. Ensure public participation in transit planning through:
    - the Transit Liaison Advisory Committee, comprised of transit users and community stakeholders, which meet monthly to discuss transit issues
    - regular public information meetings to obtain input from stakeholders regarding service options and other transit initiatives early in the decision-making process
    - surveys to identify needs, receive suggestions and measure success and track complaints, inquiries and suggestions from the public as input and feedback into ongoing planning
    - Continue to have regular Transit staff meetings to discuss issues and receive suggestions for service improvements
13. Review the corporate image of the transit system and consider adopting a new image. Apply to buses, bus stops and all customer information and communications materials.
14. Prepare a new transit route map, schedule and information brochure dedicated to presenting only transit information.

15. Develop and implement a marketing and communications plan targeting current and potential customers, key decision-makers and specific groups (students, shoppers, business, etc.) to change the public image of the transit services, inform people of the benefits of transit and to promote increased transit use.
16. Continue to partner with organizations such as the Sanderson Centre for the Arts, local retailers at shopping malls and City-operated recreational centres for marketing and advertising campaigns. Continue to coordinate with local media outlets to advertise events and services. Enhance the City Website to profile and promote transit use and provide timely information on transit.
17. Maintain an email database of transit users and stakeholders and pursue greater use of social media as the basis for informing and communicating news items and promotional messages about transit.

Evaluation & Performance Measures Policies

18. Adopt and apply the transit service standards and performance measures criteria presented in the 2012 ECO transit review as the basis for planning, managing and monitoring the performance of the City's conventional transit service. Financial Performance Standard: maintain a revenue/cost ratio of 35%.
19. Monitor and report trends toward targets on an annual basis using cordon count data, transit ridership data and periodic surveys (e.g., Transportation Tomorrow Survey conducted every five years).
20. Adopt an annual service planning process outlined in the 2012 Eco transit study.

4.5 Road Network Improvement Plan

Forecasting of future trip-making in Brantford with associated Transportation Demand Management factors indicates that managing travel demand in Brantford over the next 20 years, using Active Transportation, public transit and other TDM improvements, is still expected to leave capacity deficiencies in the road network. The result is previously shown on Exhibit 3.2. Also, while some of the roadway projects identified in the 2007 TMP have been completed or have been approved through the Environmental Assessment process since that time, others have not been implemented. The TMP Update recommends that some of these projects remain in the TMP Update. Other projects from the 2007 have been removed from the TMP due to land-use policy changes since 2007.

The result is that twelve (12) main roadway network improvement projects are recommended for Brantford by 2031, summarized as follows and identified in Exhibit 4.8. Most projects will require further public consultation, Environmental Assessment and Council approval prior to implementation. The total estimated capital cost of these 10 projects is $179.98 Million as listed on Exhibit 4.7, not including property costs for new or widened corridors.

4.5.1 Short Term 2014-2019 (0-5 years)

Project 1A: Clarence St. Improvement Colborne St. to West St.	**Cost Estimate:** $13.275 Million	**EA Schedule:** Schedule 'C' with Project 1B
Rationale: Widen road to include two-way left turn lane and signals. Potential boulevard trail may be added if abandoned rail line is available. .		
Implementation Schedule:	0-5 years subject to EA approval	

Project 2: Colborne St./Dalhousie St. 1-Way Conversion, Phase 1	**Cost Estimate:** $90,000	**EA Schedule:** EA Completed and Approved
Rationale: Contribute to downtown revitalization initiatives and improve Active Transportation environment in the core while improving access to businesses, reduce circuitous traffic routing and slow traffic speeds. Involves turn lanes, other intersection works, markings, signs and signal modifications.		
Implementation Schedule:	0-5 years	

Project 3A: Shellard Lane Widening Stage 1 from Veterans Memorial Parkway to 1 km west of Conklin Rd.	**Cost Estimate:** $8.5 Million (funds committed in current capital plan)	**EA Schedule:** EA Completed and Approved
Rationale: Addresses traffic generated by build out of the southwest development area. Relieves traffic volumes on Blackburn Drive as one of only two existing connections in the southwest area to Veterans Memorial Parkway. Include a multi-use trail on one side of the road widening. This project is the initial phase of a complete 4 lane widening of Shellard Lane between the Veterans Memorial Parkway and west city limits.		
Implementation Schedule:	0-5 years but may be revised based on pace of growth in southwest Brantford.	

Project 4: Oak Park Rd Widening and Interchange reconstruction, Highway 403 to Hardy Rd.	**Cost Estimate:** $10.0 Million (includes City payment of interchange. MTO payment for land purchase not included)	**EA Schedule:** Schedule 'C' for Oak Park Rd. widening. Has MTO EA approval for interchange improvements.
Rationale: To serve growing business access needs in the northwest Brantford industrial area to/from Highway 403, and form phase 1 of the longer term planned Oak Park Road extension south to Colborne St.		
Implementation Schedule:	0-5 years	

Project 6: Veterans Memorial Parkway widening to 4 lanes, Mount Pleasant St. to Erie Ave.	**Cost Estimate:** $24.664 Million	**EA Schedule:** will require updated EA with Project 7.
Rationale: To increase Grand River crossing capacity to serve ongoing planned growth in southwest Brantford. Environmental impact and design to be undertaken with VMP extension (Project 7)		
Implementation Schedule:	0-5 years	

Project 9: Downtown Intersection Improvements.	**Cost Estimate:** $1.754 M	**EA Schedule:** Has EA approval.
Rationale: At Colborne St./ICOMM Dr. and Dalhousie St./Brant St. intersections with turn lanes, signals and property acquisition.		
Implementation Schedule:	0-5 years	

4.5.2 Medium Term 2020-2024 (6-10 years)

Project 1B: Clarence St./West St. Intersection Improvements.	**Cost Estimate:** $1.7 Million	**EA Schedule:** Schedule 'C' with project 1A
Rationale: Improving the West St./Clarence St. intersection operations will enhance access via these routes to and from the downtown. The existing intersection configuration and signal operation will not accommodate a significant increase in traffic volume owing to the intersection design and proximity to the adjacent Henry St. intersection. Therefore, in order to improve the intersection operation, West St, will need to be realigned at Clarence St. to eliminate the left turn movement and reduce the associated collision risk.		
Implementation Schedule:	6-10 years	

Project 3B: Shellard Lane Widening Stage 2 from 1km west of Conklin Rd. to west city limit	**Cost Estimate:** $6.0 Million	**EA Schedule:** EA Completed and Approved
Rationale: Addresses traffic generated by build out of the southwest development area. Relieves traffic volumes on Blackburn Drive as one of only two existing connections in the southwest area to Veterans Memorial Parkway. Include a multi-use trail on one side of the road widening. This project is the second phase of a complete 4 lane widening of Shellard Lane between the Veterans Memorial Parkway and west city limits.		
Implementation Schedule:	6-10 years but may be revised based on pace of growth in southwest Brantford.	

Project 5: Oak Park Rd. Extension, 4 lanes from Hardy Rd. to Colborne St.	Cost Estimate: $37.0 Million.	EA Schedule: Schedule 'C'
Rationale: To address projected road network capacity deficiencies across the Grand River, and significantly relieve the Paris Rd./Brant Ave. and West St. corridors to and from the central part of the city and the downtown. It will also connect the southwest development area with the northwest industrial area and Highway 403. The project requires construction of a 4 lane bridge across the Grand River.		
Implementation Schedule:	6-10 years	

Project 8: Charing Cross Extension, 4 lanes from West St. to Henry St.	Cost Estimate: $26.0 Million	EA Schedule: Schedule 'C'
Rationale: To address projected capacity deficiencies on West St. due to the jog between Charing Cross St. and Henry St., and to provide a new continuous east-west arterial road in central Brantford between King George Rd. and Garden Ave.		
Implementation Schedule:	6-10 years	

4.5.3 Long Term 2025 – 2031 (11-15+ years)

Project 7: Veterans Memorial Parkway 4-lane extension, Market St. to Colborne St.	**Cost Estimate:** $21.0 Million	**EA Schedule:** Schedule 'C' to be done in conjunction with Project 6
Rationale: New four lane arterial road extension to relieve road capacity deficiencies in the central city and downtown, especially on Colborne St., Dalhousie St., Clarence St. and West St. The extension will provide an alternative through traffic route and truck route around the downtown and its adjacent neighbourhoods by linking the southwest growth area and the Wayne Gretzky Parkway corridor. The result will be a continuous arterial 'loop' through the city from Highway 403 and the Parkway, to Highway 403 at Oak Park Rd. In addition, this arterial connection would provide convenient access to the brownfield lands being redeveloped in the Mohawk/Greenwich area, and to the First Nations' Glebe lands should redevelopment of this property be desired.		
Implementation Schedule:	11-15+ years; timing dependent on rate of growth in Southwest and South Brantford	

Project 10: 6 lane Wayne Gretzky Parkway Widening	**Cost Estimate:** $30.0 Million	**EA Schedule:** Schedule 'C'
Rationale: To address long term city growth and associated capacity deficiencies on Wayne Gretzky Parkway, especially across the Highway 403 and CN Rail screenlines. By 2031, the 6 lane widening is expected to ultimately be required from Lynden Rd south to Colborne St., although it may be possible to stage the widening south to Henry St. and then Elgin St. before full widening to Colborne. It will form part of the new arterial 'loop' around the downtown and adjacent neighbourhoods to avoid unnecessary traffic intrusion and better connect the city to Highway 403 to improve movement of people and goods.		
Implementation Schedule:	11-15+ years	

Exhibit 4.7 - Road Network Improvement Plan Capital Cost Estimates

SHORT-TERM 2014 – 2019		
1A	Clarence Street Improvement, Colborne St. to West Street – widening to include two-way left turn lane and signals*	$13,275,000
2	Colborne Street/Dalhousie St. 1-Way**	$ 90,000
3A	Shellard Lane Widening Stage 1 from Veterans Memorial Parkway to 1 km west of Conklin Road** (Funding committed in current capital budget (underway in 2014)	$ 8,500,000
4	Oak Park Road Widening and Interchange Reconstruction, Highway 403 to Hardy Road (MTO EA Completed)	$10,000,000
6	Veterans Memorial Parkway widening to 4 lanes, Mount Pleasant Street to Erie Avenue*	$24,664,000
9	Downtown Intersection Improvements**	$ 1,754,000
	Sub-Total Short-Term	**$58,283,000**
MEDIUM –TERM 2020 – 2024		
1B	Clarence Street/West Street Intersection Improvement* - $1.7 M	$ 1,700,000

3B	Shellard Lane Widening Stage 2 from 1 Km West of Conklin Road to West City Limit** (EA Completed)	$ 6,000,000
5	Oak Park Road Extension, 4 Lanes from Hardy Road to Colborne Street*	$37,000,000
8	Charing Cross Extension, 4 Lanes from West Street to Henry Street*	$26,000,000
	Sub-Total Medium-Term	**$70,700,000**
LONG-TERM 2025 – 2031		
7	Veterans Memorial Parkway 4-lane Extension, Market Street to Colborne Street*	$21,000,000
10	6 Lane Wayne Gretzky Parkway from Lynden Road south to Colborne Street*	$30,000,000
	Sub-Total Long-Term	**$51,000,000**
	GRAND TOTAL	**$179,983,000**

* EA required
** EA completed

4.5.4 Longer Term Road Network Improvement Analysis

Beyond 2031, city growth outside of the current boundary would place increased demands on the existing road network, especially north of the City where most of this longer term growth may take place. This is shown by the LOS plots for 2041 in Exhibit 4.9 for the Do Nothing Scenario and the Preferred Scenario. Both longer term plots show considerable growth in poor LOS conditions especially on the north-south arterial roads from lands north of Powerline Road, south to Highway 403 and further south into the city. This could involve King George Road, Balmoral Drive, Golf Road, Oak Park Road and Paris Road as the main connectors between growth north of Powerline Road and the rest of the City.

These travel demands could require east-west capacity enhancement along Powerline Road, and north-south enhancements linking longer-term growth areas with the rest of the City along arterial routes such as King George Road, Wayne Gretzky Parkway, West Street and Paris Road/Brant Avenue. However, because any longer term planning horizon is subject to the rate, location and type of development that occurs, any transportation impact conclusions will need to be updated to reflect future development, and to confirm the need and justification for improvements via the Environmental Assessment process.

These longer term forecasted LOS deficiencies are also based on the population and employment forecasts provided by the City in **Appendix 2**, targeted future travel mode shifts previously discussed in Section 3.2.2, and the roadway network capacity enhancements discussed in Section 4.5. With the TMP planning horizon being 2031, this TMP Update does not include specific recommendations to address longer term growth patterns and associated roadway network needs. These needs will be further assessed in the recommended five year TMP reviews and updates based on the pace of City growth.

Exhibit 4.8 - Road Network Improvement Plan

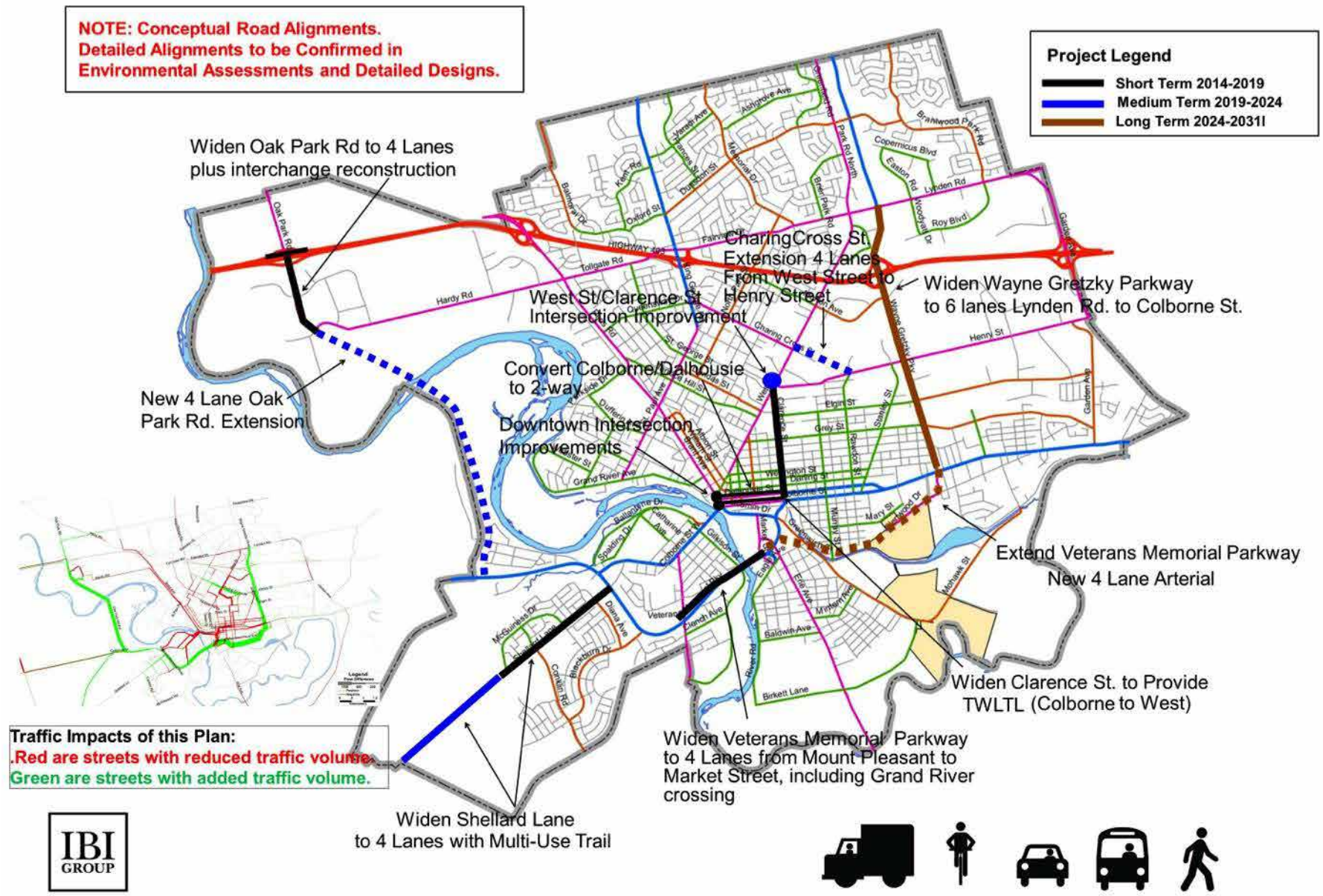


Exhibit 4.9 - 2041 Forecasted Roadway Network LOS - Do Nothing Scenario

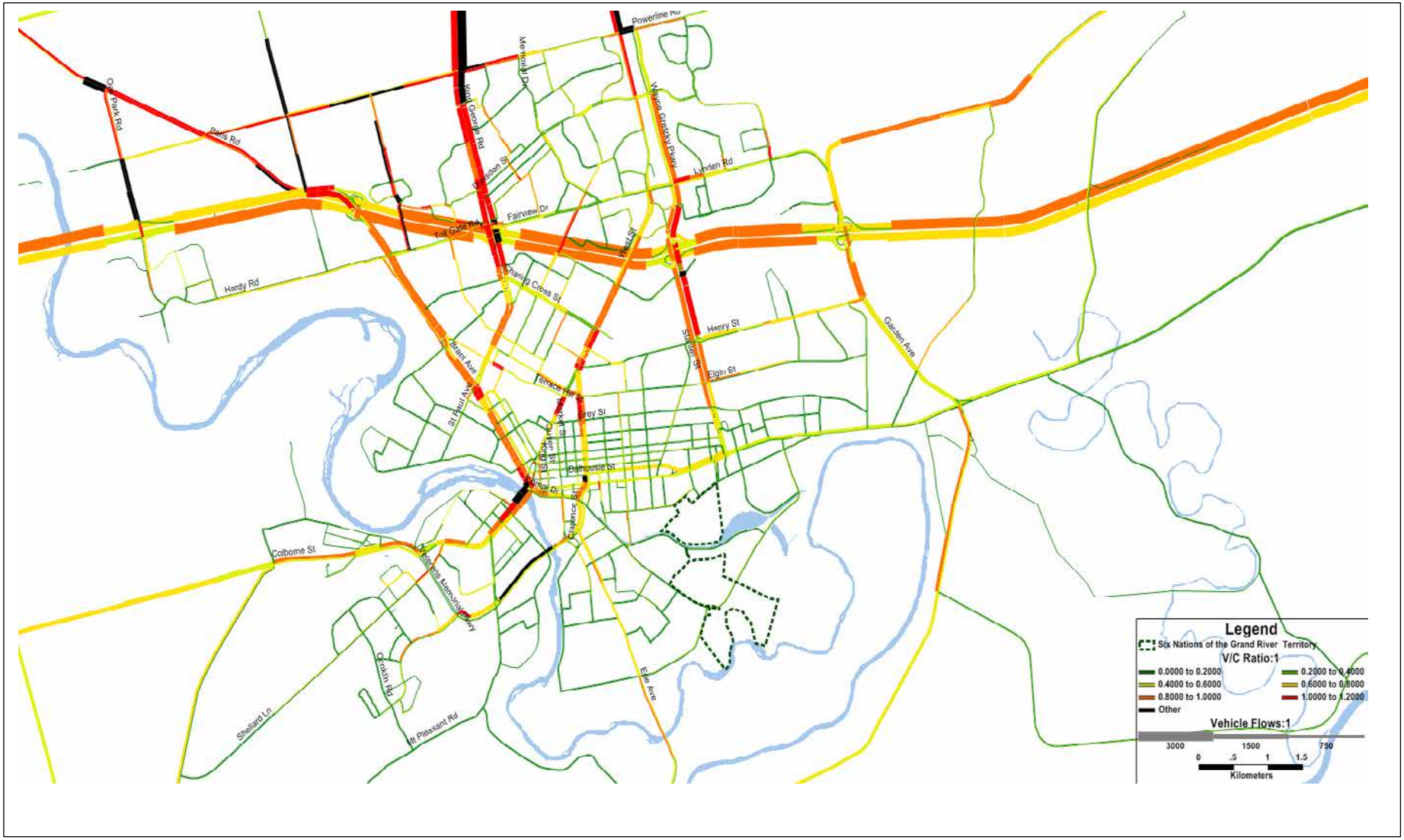
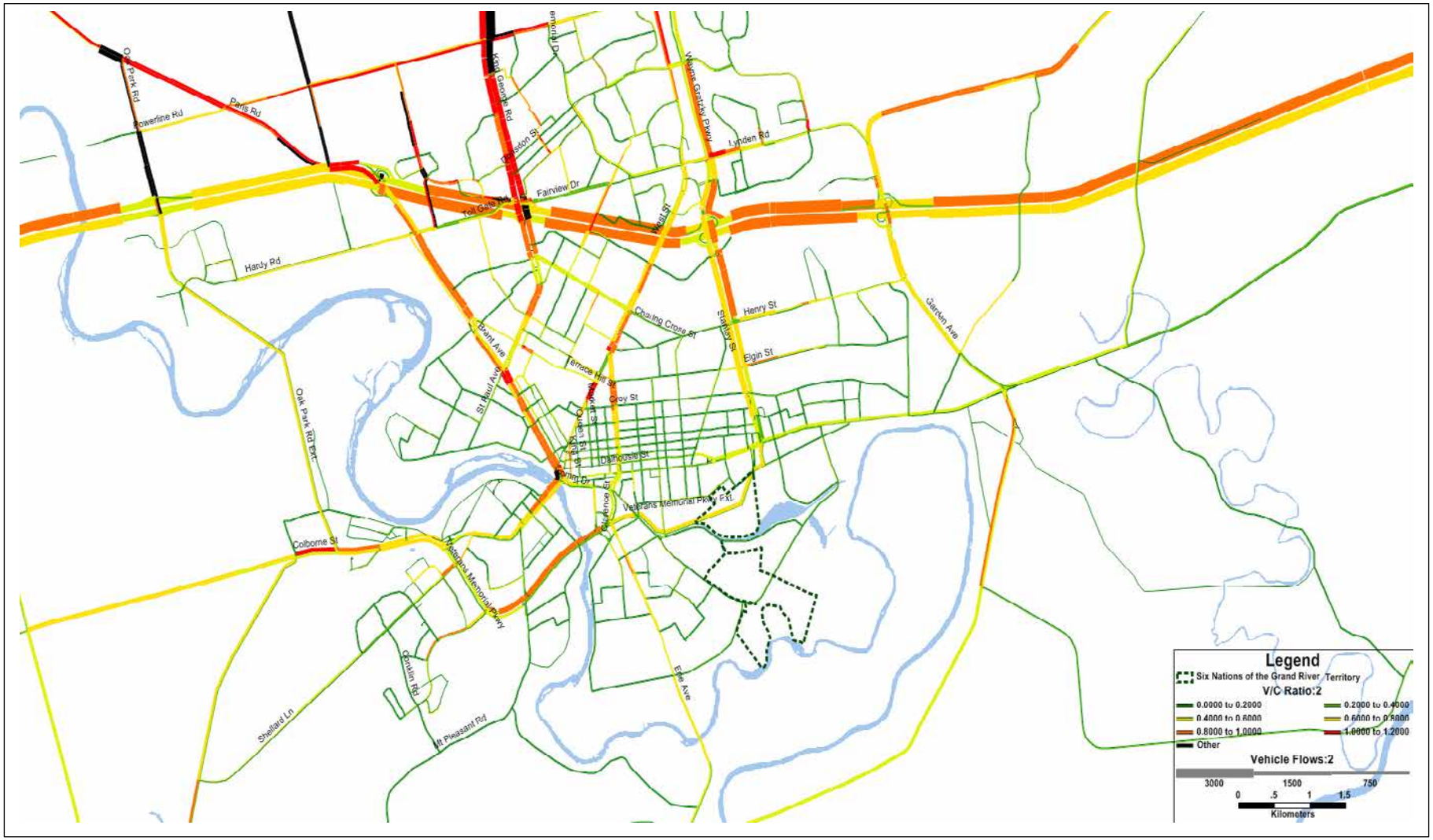


Exhibit 4.9 cont. 2041 Forecasted Roadway Network LOS – Preferred Scenario



4.6 Transportation Management

The following Exhibit 4.10 provides an estimate of City's costs to implement the Transportation Master Plan recommendations regarding transportation system management over the next 17 years to 2031. This includes TDM initiatives, neighbourhood traffic calming studies, and reviews and updates to the TMP and transportation model. The 17 year total cost for these services to 2031 is $6.43M.

Exhibit 4.10 - Transportation Management Costs

SHORT-TERM 2014 – 2019		
Program	**Description**	**Cost**
Transportation Demand Management (TDM)	Annual budget for programs directed at encouraging alternative travel behaviours in Brantford (i.e. ride-sharing, telecommuting, transit use): $200K/year x 5 years	$1,000,000
Neighbourhood Traffic Calming	Annual budget directed at neighbourhood traffic studies to address identified traffic volume and speed issues: $100K/year x 5 years	$500,000
Transportation Master Planning	Budget to review and update Brantford Transportation Master Plan every 5 years: @ $350K/update	$350,000
Transportation Model Updates and Inter-regional Transportation Studies	Required between TMP updates for model updates and studies when new travel characteristics data is released through TTS: ($50K + $20K x 1)	$70,000
	Sub-Total Short-Term	**$1,920,000**
MEDIUM –TERM 2020 – 2024		
Transportation Demand Management (TDM)	Annual budget for programs directed at encouraging alternative travel behaviours in Brantford (i.e. ride-sharing, telecommuting, transit use): $200K/year x 5 years	$1,000,000
Neighbourhood Traffic Calming	Annual budget directed at neighbourhood traffic studies to address identified traffic volume and speed issues: $100K/year x 5 years	$500,000
Transportation Master Planning	Budget to review and update Brantford Transportation Master Plan every 5 years: @ $350K/update	$350,000
Transportation Model Updates and Inter-regional Transportation Studies	Required between TMP updates for model updates and studies when new travel characteristics data is released through TTS: ($50K + $20K x 1)	$70,000
	Sub-Total Medium-Term	**$1,920,000**

LONG-TERM 2025 – 2031		
Transportation Demand Management (TDM)	Annual budget for programs directed at encouraging alternative travel behaviours in Brantford (i.e. ride-sharing, telecommuting, transit use): $200K/year x 7 years	$1,400,000
Neighbourhood Traffic Calming	Annual budget directed at neighbourhood traffic studies to address identified traffic volume and speed issues: $100K/year x 7 years	$700,000
Transportation Master Planning	Budget to review and update Brantford Transportation Master Plan every 5 years: @ $350K/update	$350,000
Transportation Model Updates and Inter-regional Transportation Studies	Required between TMP updates for model updates and studies when new travel characteristics data is released through TTS: ($50K + $20K x 2)	$140,000
	Sub-Total Long-Term	**$2,590,000**
	GRAND TOTAL	**$6,430,000**

4.7 Traffic Signal Control System Assessment

Part of the TMP Update scope included conducting an assessment of the City's existing traffic signal control system. The resulting Technical Report is included as **Appendix 6** of this TMP, and reviews the existing traffic signal control system (i.e. central software, and field equipment) and identifies technical equipment upgrades/replacement necessary to support the road network recommended by the TMP Update.

5 TMP REVIEW AND MONITORING

5.1 Official Plan Integration

The following recommendation were provided to the City on proposed amendments to the City's Official Plan (as amended January 29, 2013) relating specifically to transportation. The objective of these recommendations was to assist in integrating the key recommendations of this TMP Update into the concurrent OP review process.

OFFICIAL PLAN SECTION	POTENTIAL AMENDMENT RESPONSE
6.2.7 Transportation Goal / Objectives	Update based on "Envisioning Brantford – Our City 2041: Findings of the Official Plan Five (5) Year Review Visioning Workshop, i.e. *healthy, well connected community.*
6.2.8 Barrier Free Community Goal	May include need for AODA compliance.
7.6.10 Open Space Linkages	Reference new Bikeways and Trails Network as part of Active Transportation Strategy.
7.8.15.5 Mohawk/Greenwich Area 15	Update based on studies conducted over past five years, including internal street network concept connected to the Long-Term Corridor Protection for the Veterans Memorial Parkway extension (also see Section 11.3.11 below).
7.8.16 Market St. S and Newport St Extension Area 16	Include conceptual connection with Veterans Memorial Parkway extension.
7.8.40 Southwest Area 40 and West of Conklin Secondary Plan Area	Reflect approved Shellard Lane Corridor Improvements EA and North of Shellard Neighbourhood Plan (September 2011).
10.7. Energy Conservation, 10.7.7 re energy conserving modes	Supporting policy on accommodating alternative fuel vehicles and support infrastructure (i.e. electric).
11.2 Provincial Highways	The MTO Brantford to Cambridge corridor study is listed in the 2012 - 2016 Southern Highways Program under "Planning for the Future" but no funding has been committed at this time and the project is not progressing. The status needs to be confirmed with MTO.
11.3.11 Long-term Corridor Protection	Corridor protection is typically applied when the need for an undertaking is beyond the 20 year planning horizon of the

	OP and/or TMP. In the case of Brantford, the need for Veterans Memorial Parkway capacity enhancements and extension has been established within the 20 year TMP timeframe to 2031, especially in response to poor river crossing LOS on Colborne St. and Veterans Memorial Parkway. Therefore, the route should be reclassified as a **'Future Major Arterial'** rather than Corridor Protection. EA approval would still be required. This revised classification is included on Exhibit 5.1. Similarly, traffic growth forecasts to 2031 also show that the Oak Park Rd extension to the west will be required within the 20 year horizon of the TMP. This would address Grand River crossing capacity deficiencies to and from southwest Brantford to Highway 403. As a result, the extension should be reclassified as a **'Future Minor Arterial'** as shown on Exhibit 5.1. Extending Charing Cross Street from West Street to Henry Street is also recommended in the Exhibit 4.8 Roadway Network Improvement Plan, and so is included as a **'Future Minor Arterial'** as shown on Exhibit 5.1. Also note that according to Official Plan policy 11.3.3, incorporating new roads or reclassifying existing roads requires an Official Plan amendment. This reclassification amendment for the Veterans Memorial Parkway and Oak Park Road extensions as part of the Official Plan Update will also come with a further appeal opportunity to the Ontario Municipal Board.
11.5 Rail	A new sub-policy could be added supporting the provision of commuter rail service in Brantford.
11.6 Parking	Consider including additional sub-policies on; 1) Development-Related Bike Parking (intended to be different that Policy 11.7.7 which appears to apply to trails-related parking, and 2) Special Parking Provisions for Fuel Efficient Vehicles and Ride-Sharing.
11.7 Bikeways and Trails Network	A separate sub-section is needed here on Bikeway policies on: Cycling as a Safe and Attractive Transportation Option Separate Space for Cyclists Types of Bikeways Bikeway and Trails Network as a new Official Plan schedule
11.10 Transportation Demand Management (TDM)	Consider adding policies supporting implementation of TDM measures through the Development Approval process, for example using;

	Parking supply and management policies to manage the amount of long-term off-street parking in the Downtown; Reference to roadway network policies that balance the demand for transportation infrastructure with supply; Require that a TDM Plan be prepared as part of the development application process for commercial, employment and mixed use projects over a set size; Manage the cost of public parking so that it is not a disincentive to transit use; and Implement TDM through other development incentives (i.e. LEED credits, development approval process, zoning bylaw parking provisions).

5.1.1 Official Plan Transportation Schedules

The Schedule 5-1 Transportation Plan of the Brantford Official Plan should be amended based on the Road Network Improvement Plan and Recommended Road Classification shown as Exhibit 4.8 and Exhibit 5.1 respectively of this TMP Update. This includes roadway widening and extension recommendations for the recommended road network.

Policies on the role of each class of City road shown on Exhibit 5.1 are taken from the City's Official Plan (last consolidated February 7, 2014) should remain in place.

- *Major Arterial Road – is designed to carry large volumes of intra-municipal and inter-regional traffic through the City in association with other types of roads;*
- *Minor Arterial Road – is designed to carry moderate volumes of intra-municipal and inter-regional traffic through the City in association with other types of roads;*
- *Major Collector Road – is designed to carry moderate volumes of traffic within and through residential areas and connecting these areas to Minor Arterial Roads, Major Arterial Roads and Provincial Highways;*
- *Minor Collector Road – is designed to carry low to moderate volumes of traffic within residential areas; and*
- *Local Road – is designed to carry low volumes of traffic from abutting properties to Minor Collector, Major Collector and Minor Arterial Roads.*

  Source: Section 11.3.6 – 11.3.10, City of Brantford Official Plan

The main road classification change recommended by this TMP Update is to remove Policy 11.3.11 on Long Term Corridor Protection and reclassify the recommended Veterans Memorial Parkway capacity enhancements and extension as a 'Future Major Arterial', and the recommended Oak Park Road extension and Charing Cross Street extension each as a 'Future Minor Arterial'. These changes are included on Exhibit 5.1.

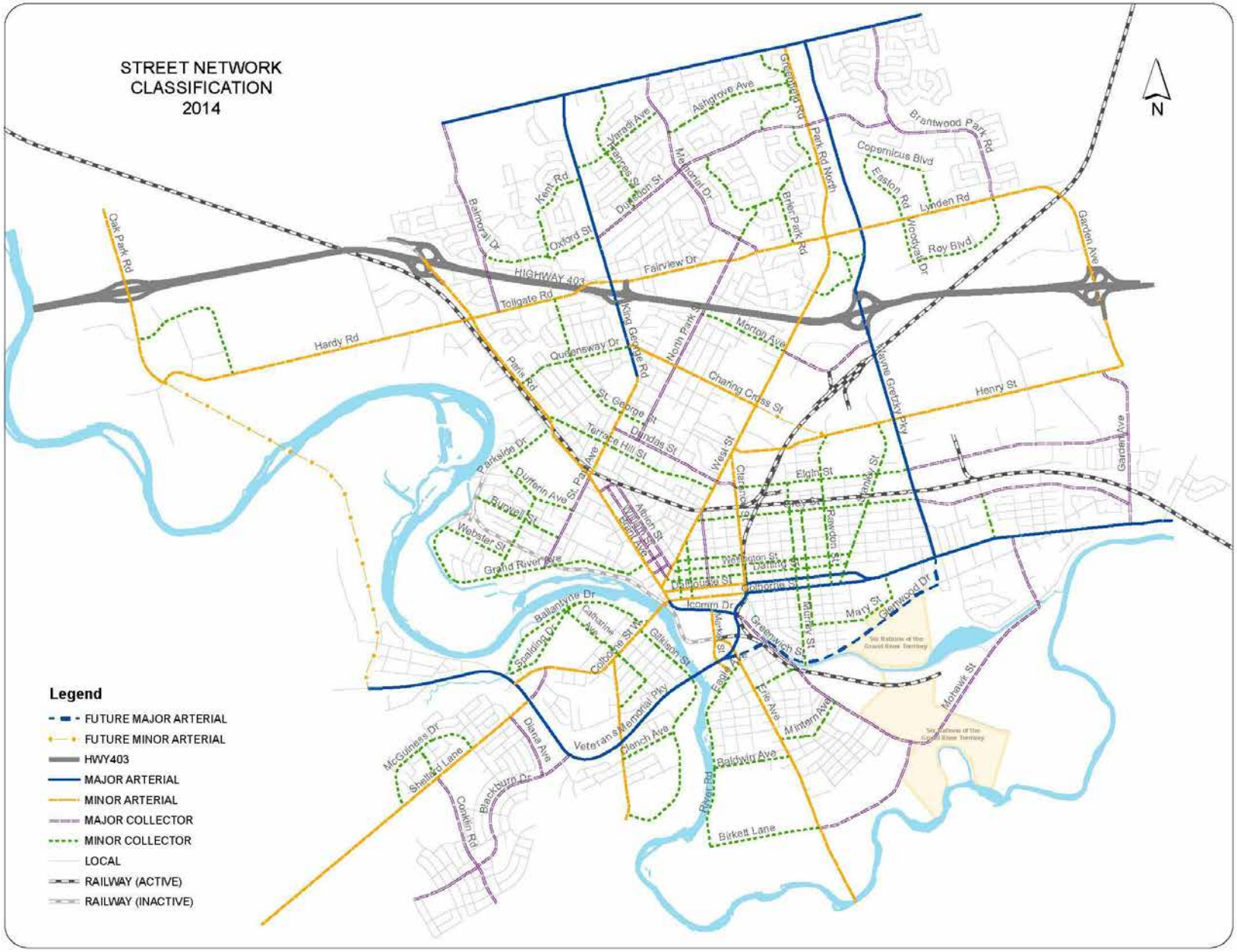
Two (2) other comparatively minor changes are also recommended to the road classification shown on Exhibit 5.1, namely:

- Reclassify Oak Park Road from Highway 403 north to the City boundary from a Local Road to a Minor Arterial Road. This road section will then form part of a Future Minor Arterial Road along the west side of the City extending from Colborne Street to Paris Road in the County of Brant; and
- Reclassify Burwell Street from a Local Road to a Minor Collector Road from St. Paul Avenue to Parkside Drive as recommended in the previous 2007 TMP.

Official Plan Schedule 5-3 Bikeway and Trails Network Plan also needs to be revised based on Exhibit 4.1 of the TMP Update with the Active Transportation (AT) Plan Update. For the AT network, generally road widening is expected only when the option of road reconfiguration to accommodate bike facilities (i.e. via lane narrowing or lane reduction) is not feasible, and so is subject to further study at the specific corridor or Environmental Assessment level. Otherwise, bike facilities are proposed to be built as part of on-going road improvements (i.e. road extensions and widening for motor vehicle capacity).

For most local/collector routes, especially where the right-of-way (ROW) is 20m or less, the proposed AT bikeway is typically a marked shared use lane or bike priority street that does not require additional ROW. For example, Mohawk St. (Greenwich to Birkett) is 20m ROW, however bike lanes can be implemented by narrowing the existing wide lanes, similar to Erie Ave. Most proposed widenings only involve cases where the existing lanes must be maintained, but it is recommended to subject these sections to further study with respect to impact on vehicle capacity and loss of parking.

Exhibit 5.1 - Recommended Road Classification



5.2 TMP Review

A TMP is not a static document. It is intended to be reviewed and updated as required every five years in association with the mandatory Official Plan review process. It also addresses only the Phases 1 and 2 requirements of the Municipal Class EA planning process, providing an assessment of the problem or opportunity and assessment of alternative planning solutions. It is not intended to address planning and design details that will be further addresses in Phases 3 and 4 of the complete process.

The TMP recommendations can be implemented in a number of ways. In the case of Brantford, many of the policy recommendations are being incorporated into policy documents within the Official Plan (OP) update. Other recommended additional OP policy updates involve:

- Transportation goals and objectives;
- Barrier Free Communities;
- Open space linkages;
- Energy conservation;
- Provincial Highways focused on the status of the Brantford to Cambridge Environmental Assessment as identified in the *2012-2016 Southern Highways Program* under “Planning for the Future” with no funding commitment;
- Long-Term Corridor Protection to update the VMP from ‘Corridor Protection’ to ‘Future Major Arterial”;
- Rail – support for commuter rail service for Brantford;
- Parking – include bike parking and special parking provisions for fuel efficient vehicles and ride-sharing;
- Add new bikeway policies from updated Active Transportation Plan;
- Continued recommendation from 2007 TMP to prepare a Detailed Sidewalk Master Plan; and
- Transportation Demand Management (TDM)

Many of these recommended policy directions should be implemented through processing of land use applications under the Planning Act. For infrastructure projects recommended as part of the TMP Update that fall within the Schedule B category, approval of this TMP Update constitutes approval to proceed with these projects. For more extensive Schedule C projects, with higher potential for environmental affects (both positive and negative), further project specific Environmental Assessment Studies will need to be completed by the City to examine alternative designs prior to implementation.

The need to undertake further Schedule C Class EA studies to determine the recommended design for road improvement projects includes route planning (for new road corridors), preliminary engineering design, mitigation of local impacts, refined cost estimates, and property acquisition needs where required.

It should be noted that the City may choose to implement the recommended projects in a different order or phasing that has been suggested in the TMP Update to

accommodate Council priorities, the need to coordinate with other infrastructure works (i.e. sewer work), planned developments in the area, or other considerations beyond the scope of this project to consider.

5.3 TMP Monitoring

The City should monitor the TMP by maintaining the traffic demand forecasting model to provide recommendations on the management of future travel demand, the Active Transportation system, the transit system and the roadway network. The TMP monitoring may also contain recommendations on updated traffic calming, parking management and truck route management.

It is recommended that the TMP be monitored on an annual basis, taking into consideration the following:

- results of the annual traffic count program at key screenlines and on key roadways;
- results of the annual traffic count program at selected key intersections and routes;
- trends and technologies in traffic operations and management;
- private sector initiatives in implementing traffic demand management measures;
- status and progress towards achieving transportation system performance targets;
- status of transportation related provincial initiatives, policies and funding programs;
- population growth and land use changes within the community; and
- the need to re-assess, amend or update components of the Transportation Master Plan.

The City should also establish and maintain guidelines for the preparation of transportation impact studies to be carried out to assess the impact on the TMP, the road system and adjacent land uses from proposed developments and land use changes that will result in a significant increase in traffic.

The City should continue to participate in the Transportation Tomorrow Survey (TTS), undertaken every 5 years, to provide an update of transportation patterns in the City and surrounding area and to ensure that up to date information is available to assess changing transportation trends in the community.

The Manager of Transportation and Parking Services should provide a Transportation Perspective Report to Council every 5 years, (scheduled for 6 months following the release of published TTS data), to advise council on recent trends with respect to transportation patterns within the City, and the need to update the TMP.

It is recommended that the TMP be reviewed and/or updated every 5 years, in conjunction with statutory requirements to review the Official Plan, given the close integration between land use planning, land use policy and transportation.

APPENDIX 1

PUBLIC CONSULTATION NOTICES AND SUMMARIES

(PROVIDED UNDER SEPARATE COVER)

APPENDIX 2

POPULATION & EMPLOYMENT FORECASTS BY TRAFFIC ZONES 2011 - 2041

APPENDIX 3

TRANSPORTATION MODEL UPDATE REPORT

APPENDIX 4

TRANSPORTATION IMPACT ASSESSMENT GUIDELINES

APPENDIX 5

ACTIVE TRANSPORTATION PLAN REPORT

APPENDIX 6

TRAFFIC SIGNAL CONTROL SYSTEM ASSESSMENT