



CITY OF BRANTFORD

**2020 BRANTFORD  
TRANSPORTATION  
MASTER PLAN UPDATE  
- 2051 ADDENDUM**

September 2021

**FINAL**





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A	Public Consultation – Updated
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C	Transportation Demand Forecasting Model – Updated
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# Executive Summary

## Introduction

### Background

This Transportation Master Plan (TMP) addendum has been prepared to assess the impacts of the incorporation of the most recent 2051 growth forecasts from the Province into the City's Official Plan – Envisioning Our City 2051. The assumptions and recommendations from the 2020 Transportation Master Plan based on a 2041 horizon land use forecasts have been re-assessed and confirmed for a 2051 horizon.

Technical elements of the 2020 TMP Update have been updated as appropriate to reflect 2051 forecast conditions. The reallocation and incremental change in growth have been assessed to understand the impact of these differences on the recommended capital projects arising from the 2020 TMP.

### Addendum Objectives

The following objectives were set for this TMP Addendum:

1. Compare the new Provincial Growth Plan 2051 land use forecasts to the previous 2041 forecasts used for the 2020 TMP Update;
2. Incorporate the 2051 land use forecasts into the City's strategic transportation model and assess the network performance changes for the various network alternatives tested;
3. Confirm the TMP findings for the long-term horizon related to the network constraints and the adequacy of the TMP recommended transportation strategy; and
4. Re-assess as necessary the implementation costs for the recommended transportation strategy.

### Addendum Approach

The approach used for this addendum is described as follows:

- Allocate the 2051 land use forecasts to the Traffic Analysis Zones (TAZ);
- Re-assess the strategic transportation model trips generation, distribution, and assignment to the alternative networks tested on the 2020 TMP Update:
  - Do-Minimal;
  - Maximize Travel Demand Management (TDM Max); and
  - Maximize Infrastructure Supply (Infrastructure Max).
- Assess the differences between the original TMP, based on the 2041 assessment of the alternatives and the new 2051 assessment to determine residual or new capacity constraints in the network; and
- Identify additional service or infrastructure required to address the 2051 constraints and prepare cost estimates for the recommended transportation strategy.



## Foundations

### Impacts of Growth

The Growth Plan for the Greater Golden Horseshoe identifies the growth directions for population and employment growth within the City.

Ultimately, as per the Growth Plan, the City's population is expected to grow from 101,700 people in 2016 to 165,000 people by 2051. Employment is expected to grow from 44,900 in 2016 to 80,000 people by 2051, as shown in **Table ES-1**.

**Table ES-1: Population and Employment Growth - Brant and Brantford**

Demographic Area	2016	2051	Growth
<b>Population</b>			
County of Brant	38,000 <sup>1</sup>	59,000 <sup>2</sup>	55%
City of Brantford	101,700 <sup>3</sup>	165,000 <sup>2</sup>	62%
<b>Total</b>	<b>139,700</b>	<b>224,000</b>	<b>60%</b>
<b>Employment</b>			
County of Brant	15,000 <sup>1</sup>	26,000 <sup>2</sup>	73%
City of Brantford	44,900 <sup>3</sup>	80,000 <sup>2</sup>	78%
<b>Total</b>	<b>59,900</b>	<b>106,000</b>	<b>77%</b>

Source: <sup>1</sup> Greater Golden Horseshoe: Growth Forecasts to 2051, Hemson Consulting Ltd., 2020

<sup>2</sup> A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2020

<sup>3</sup> SGL Planning and Design Inc., 2021

The new population and employment data for 2051 was disaggregated to a Traffic Zone level of detail, accounting for detailed planning information within Greenfield Areas, Intensification Corridors and Settlement Area Boundary Expansion Lands, for incorporation into the City's strategic forecasting model. **Table ES-2** provides the 2051 totals as per the Growth Plan forecast and as distributed to the Traffic Zone level.

**Table ES-2: 2051 Brantford Population and Employment – Comparison of Growth Plan and Traffic Zone Forecasts**

	Growth Plan <sup>1</sup>	Traffic Zone <sup>2</sup>
2051 Population	165,000	164,736
2051 Employment	80,000	83,365

Source: <sup>1</sup> A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2020

<sup>2</sup> SGL Planning and Design Inc., 2021

The TMP considers the 2051 population and employment at a Traffic Zone level for the City of Brantford, and as per the Growth Plan for the County of Brant, for its analysis. **Figure ES-1** and **Figure ES-2** provide plots of the changes in allocation for each traffic zone between the 2041 forecast used for the 2020 TMP Update and the more recent 2051 forecasts.

Figure ES-1: Population Growth Allocation – Comparison of 2041 and 2051 Forecasts

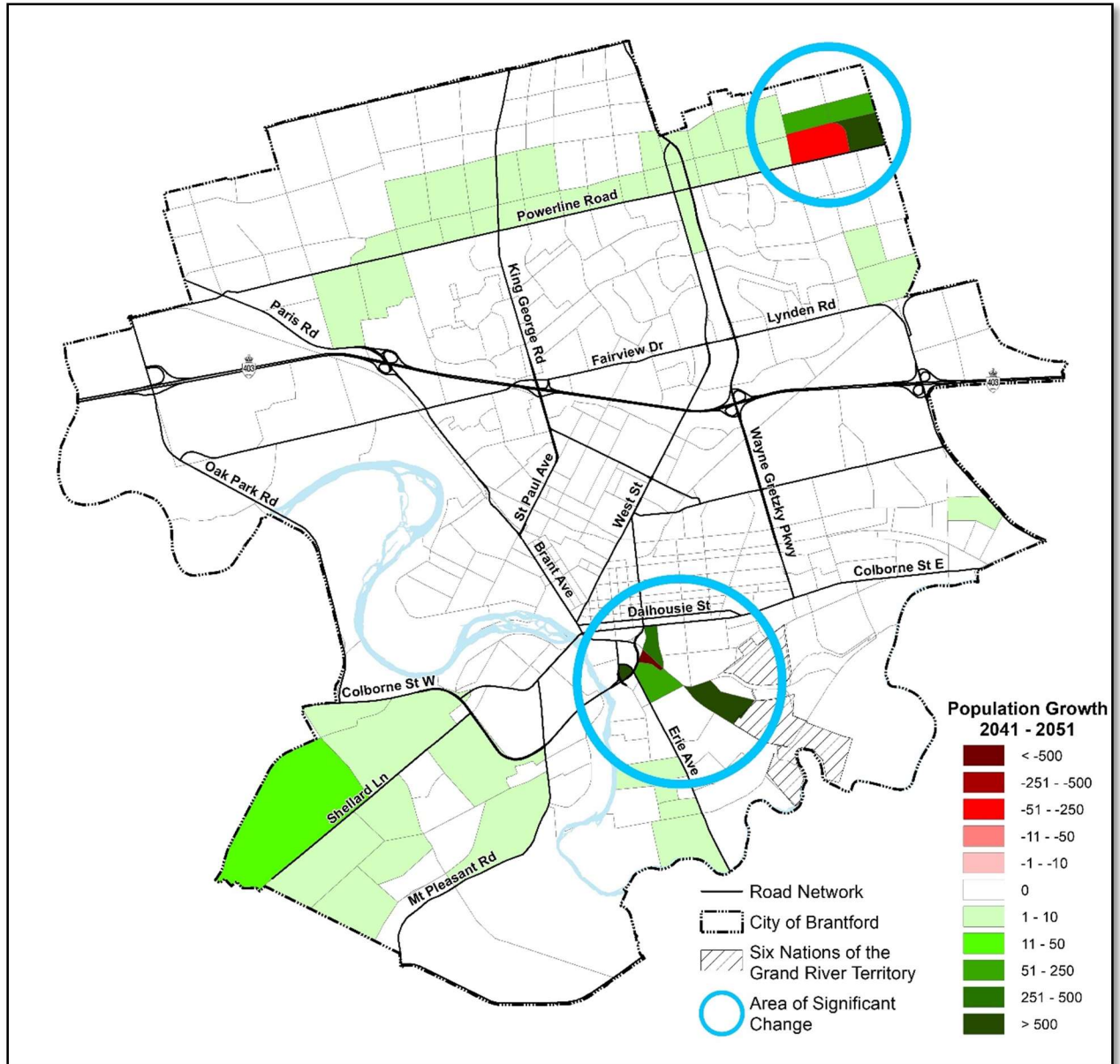
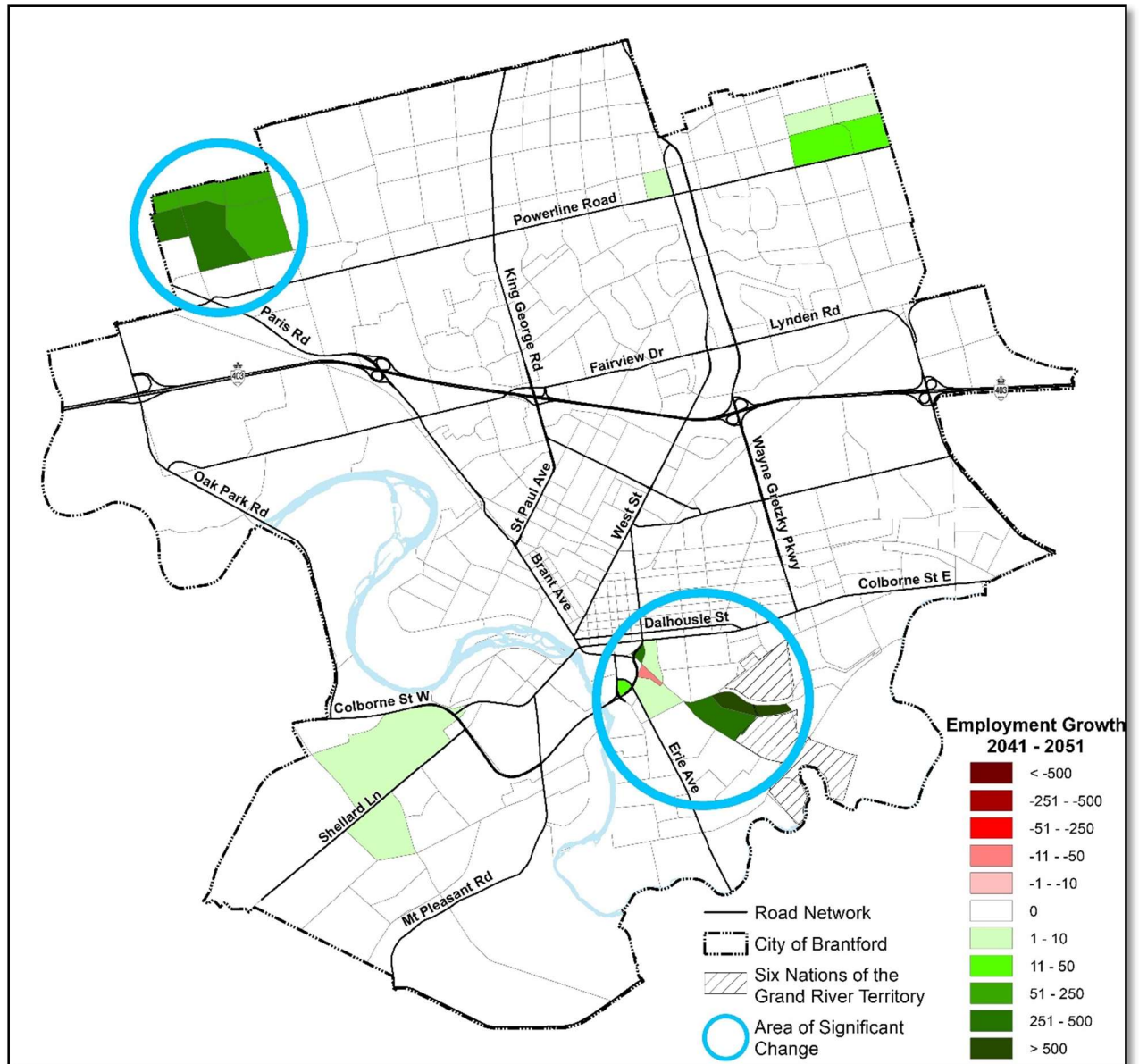


Figure ES-2: Employment Growth Allocation – Comparison of 2041 and 2051 Forecasts



The following is noted with respect to the 2051 forecasts:

- The 2051 not only reflects an increase in population and employment over the 2041 forecasts, it also represents a redistribution of land use between areas. This means the 2051 forecasts do not simply reflect a 10-year growth scenario over 2051, but also a change in the way growth occurs over the short, medium, and long term;
- Areas of population most impacted by the change:
  - North Expansion area - Powerline East block is shown to have an increase in population and redistribution between development blocks; and

- Mohawk Lake District – population from the Casino area has been reallocated to the Mohawk District
- Areas of Employment most impacted by the change:
  - North Expansion area – Paris Road Employment and the Powerline Road Employment blocks are shown to have an increase in employment.

Growth to 2051 was assessed for a ‘Do Minimal’ network scenario (reflecting no changes to mode shares or roadway network capacity with the exception of the proposed arterial/collector road network for the expansion lands in Tutela Heights and North Brantford to facilitate access to future lands).

The following 2051 capacity issues are consistent with 2014 TMP model findings for the 2031 horizon:

- Wayne Gretzky Parkway between Henry Street and Highway 403;
- King George Road crossing Highway 403;
- Veterans Memorial Parkway between Mt. Pleasant Street and Market Street South;
- Colborne Street crossing the Grand River;
- Paris Road between Highway 403 and Powerline Road;
- Brant Avenue between St Paul Avenue and Colborne Street; and
- West Street between Charing Cross Street and Henry Street.

However, there are a few notable capacity issues that have emerged in 2051, most notably as a result of the settlement boundary expansion, that were not present in the 2014 TMP findings for the 2031 horizon:

- Powerline Road between Paris Road and Wayne Gretzky Parkway;
- Wayne Gretzky Parkway north of Highway 403;
- Hardy Road between Ferrero Boulevard and Paris Road;
- Paris Road south of Highway 403;
- Erie Avenue between Veterans Memorial Parkway and Birkett Lane; and
- Highway 403 / Oak Park Road interchange.

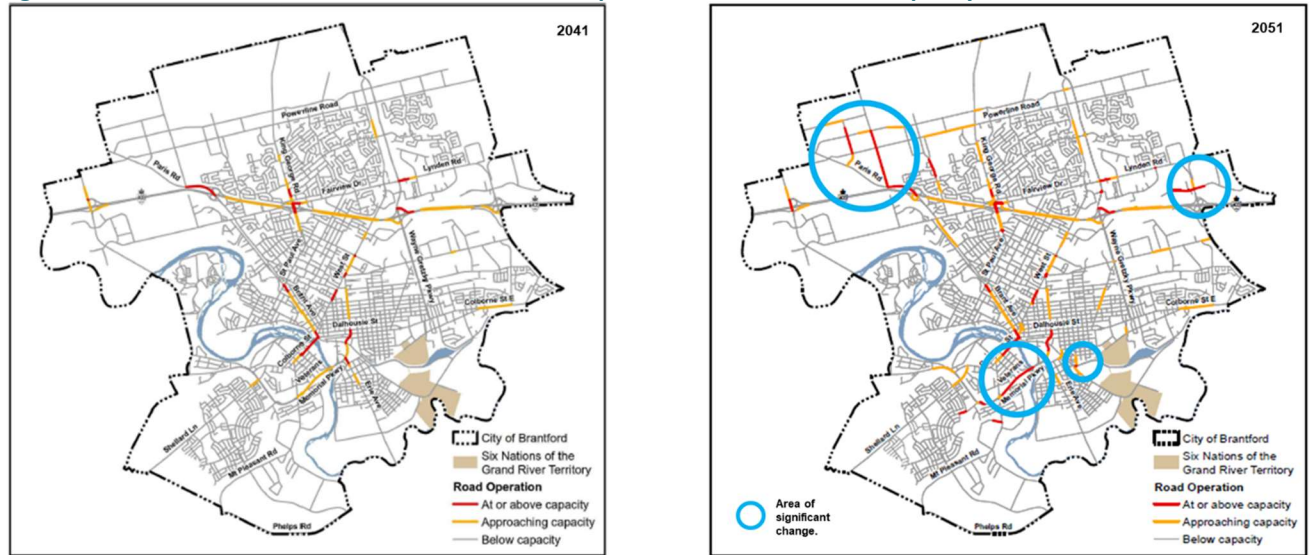
## Transportation System Review

The updated land uses were used to generate new volume forecasts for the recommended 2051 network strategy, including increased Travel Demand Management (TDM, including target increases in active transportation and transit) and infrastructure projects. The results of the 2051 assignment to the recommended network revealed the following potential capacity issues in the network, beyond those identified in the TMP 2041 assessment:

- Highway 403 / Oak Park Road interchange;
- Golf Road between Paris Road and the new East-West Road north of Powerline Road; and
- Mohawk Street/Greenwich Street/Murray Street intersection.

**Figure ES-3** provides a summary of the comparison of the 2041 and 2051 capacity conditions on the TMP recommended network.

**Figure ES-3: 2020 TMP Recommended Network – Comparison of 2041 and 2051 Capacity Conditions**



A detailed review of the volume-to-capacity assessment revealed the following related to these constraints.

- Highway 403 / Oak Park Road interchange:
  - The interim design for the interchange was shown to be working at full capacity in 2041
  - The increased volume on the bridge structure related to the ultimate 2051 land use in the Paris Road and Powerline employment blocks results in traffic demands on the bridge being over its capacity in the peak period
  - The full buildout of the employment areas to the north will necessitate the implementation of the ultimate interchange design
  - **MTO/City undertaking: EA complete, Design complete, timing of improvement to be confirmed**
- Golf Road between Paris Road and the new East-West Road north of Powerline Road:
  - The 2041 recommendation: implement Transportation System Management (TSM) initiatives to address the performance constraints
  - **Minor enhancements of the proposed TSM will accommodate the increase in volume to 2051**
- Mohawk Street/Greenwich Street/Murray Street intersection:
  - The 2051 assignment results do not identify the need for a strategic capacity improvement, meaning the 2041 recommendations remain valid
  - The 2051 assignment does identify the need for a local operational improvement to accommodate Mohawk Lake District site traffic

- **Technical study (Traffic Impact Study) required to confirm operational requirements as part of development application**

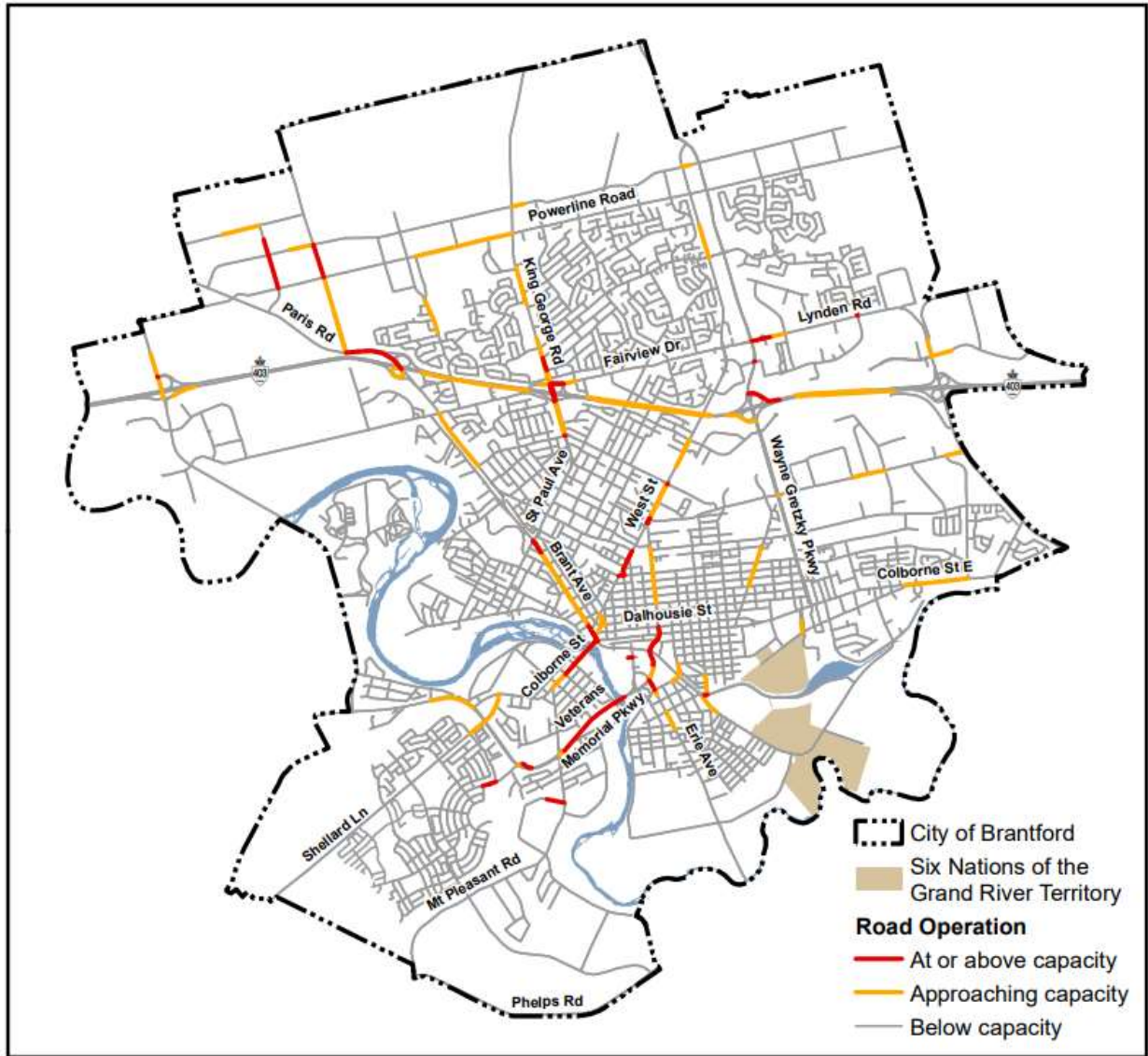
### Recommended Network

The preferred solution to address the forecast growth of the City to 2051 is a combined scenario that includes the following elements: transit service improvement/enhancements to promote increased transit use; the provision of active mode infrastructure to promote increased cycling and walking; and network infrastructure improvements to address the capacity constraints in the network. This solution results in a network and demand solution that addresses the identified long-term network deficiencies.

The performance of this combined scenario 2051 Recommended Plan shows that almost all of the anticipated roadway capacity issues identified for 2051 Do-Minimal condition (where no long-term investment was made in transit service, active transportation, or infrastructure) are resolved.

**Figure ES-4** identifies the few remaining capacity/operational issues in the 2051 Recommended Network. The remaining capacity/operational issues include the Lorne Bridge, Clarence Street/Clarence Street South between Icomm Drive and Colborne Street East, and Paris Road. The transportation assessment suggests that while these are identified as capacity constraints in the long term, the magnitude of the issue has been significantly reduced. These issues are now forecast to be marginal and can be successfully managed in the near- and mid-term. These locations should continue to be monitored to identify the significance of any emerging issue. It is also recommended that lands be protected in the Veterans Memorial Parkway partial extension (to Murray Street) corridor such that the opportunity to implement this improvement is not lost in the very long term.

Figure ES-4: 2051 Recommended Network: Capacity Constraints



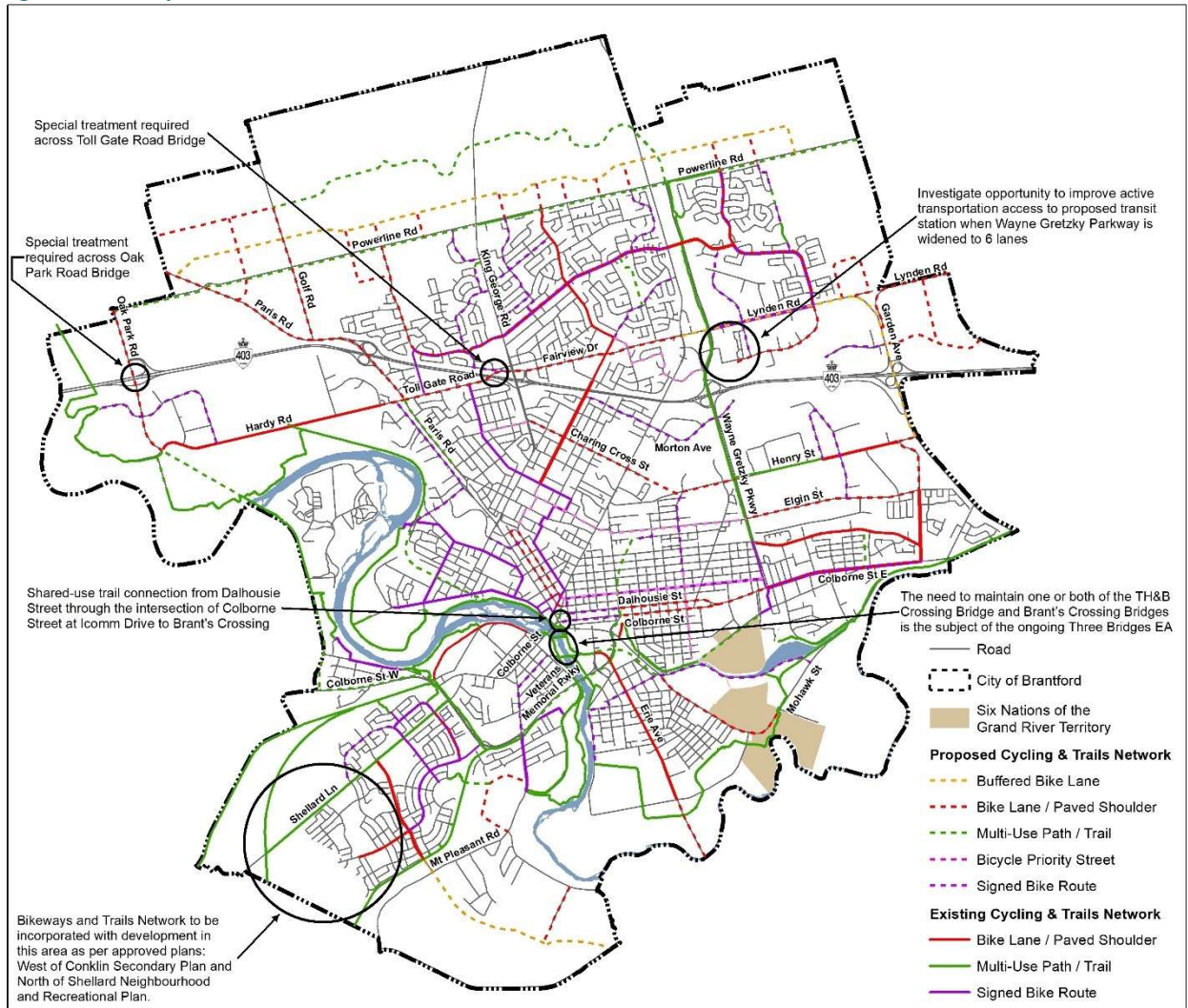
## Recommended Plan

### Active Transportation

The Active Transportation Plan remains as documented in the 2020 TMP Update.

The proposed cycling infrastructure is shown in **Figure ES-5**. The implementation of this plan will increase the current 67.4 km of on road cycling to 141 km by adding 74 center-line kilometres of bike lanes; 30 km of multi-use paths and trails and a program for encouraging more AT as the city expands.

**Figure ES-5: Proposed 2051 Active Mode Network**



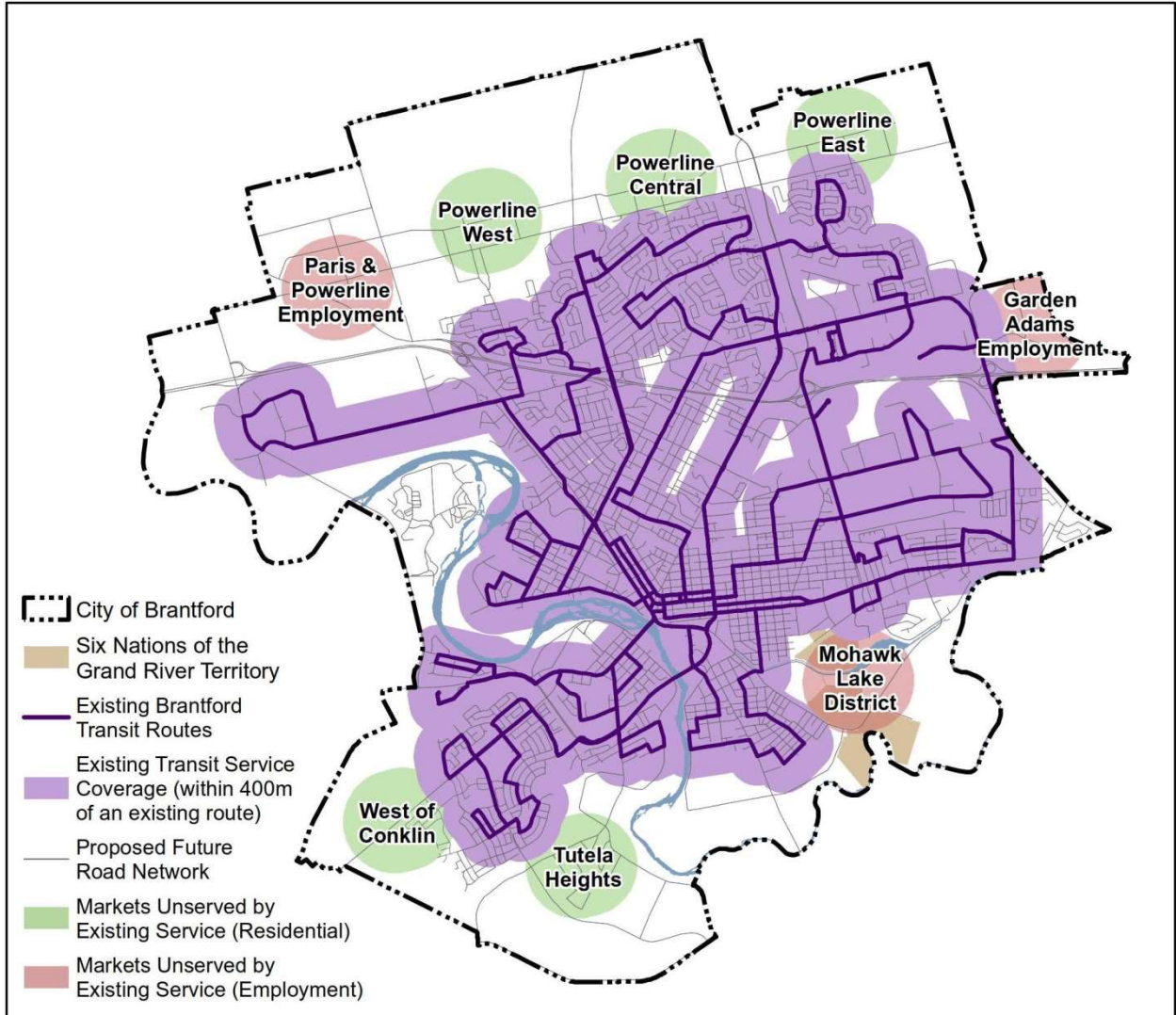


**Transit**

The Transit Plan remains as documented in the 2020 TMP Update.

The objectives with respect to the system coverage and expansion requirements for transit system are identified in **Figure ES-6**.

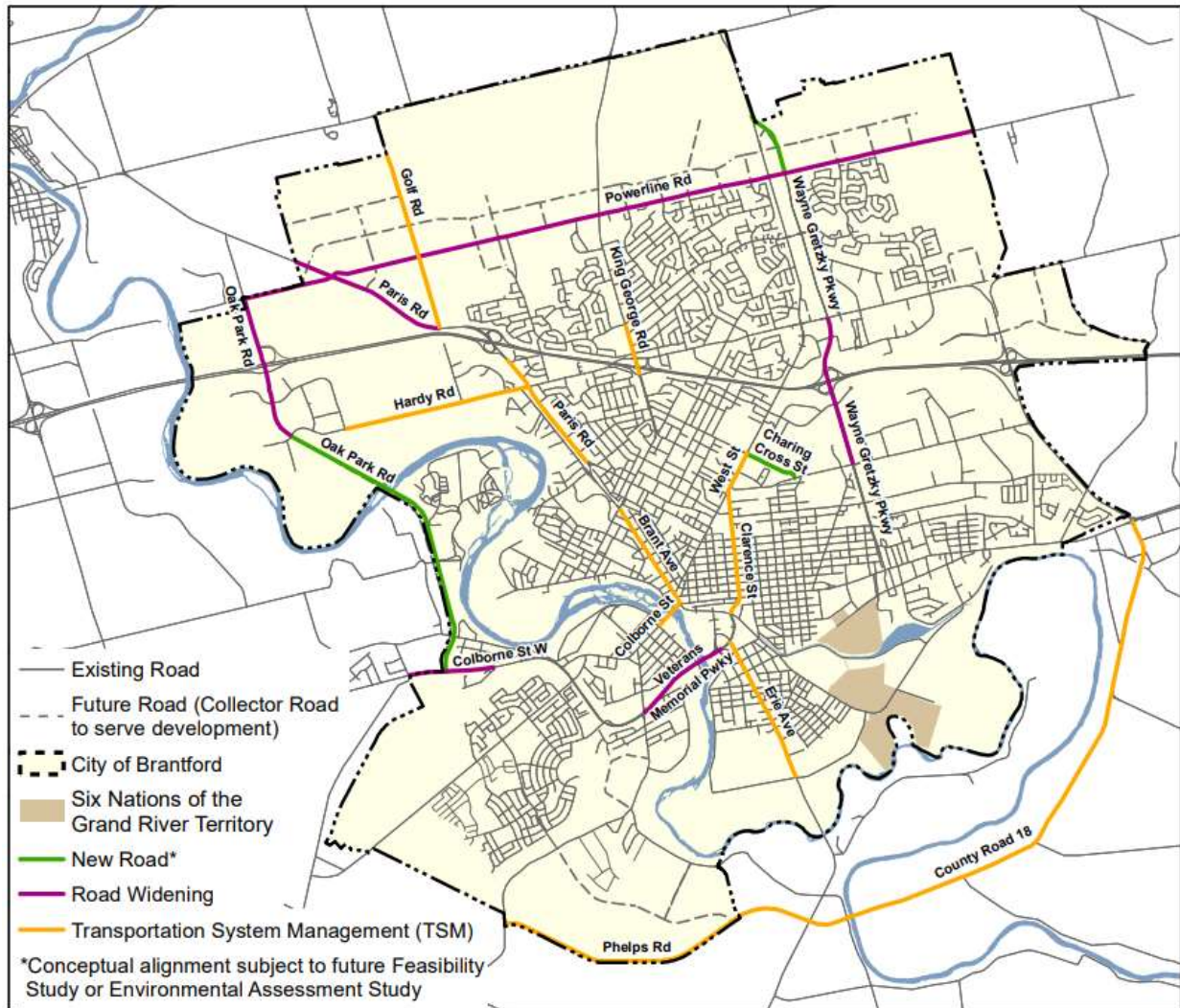
**Figure ES-6: Proposed 2051 Transit Service Expansion and Enhancement**



## Road Infrastructure

From the transportation assessment, the road infrastructure improvements for the 2051 horizon year have been identified as shown on **Figure ES-7**.

**Figure ES-7: Proposed 2051 Road Network**



The enhancements include infrastructure widening on:

- Wayne Gretzky Parkway between Henry Street and Lynden Road;
- Veterans Memorial Parkway between Mount Pleasant and Market Street South;
- Colborne Street West from County Road 7 to the existing 4-lane section;
- Paris Road from Golf Road to City Limits;
- Oak Park Road from Hardy Road to Powerline Road (including the Highway 403 interchange upgrade to ultimate design); and
- Powerline Road from Oak Park Road to the City east limits.

New road additions include:

- Oak Park Road extension to Colborne Street West;
- Wayne Gretzky Parkway extension to connect with Park Road;
- East-West Collector Road north of Powerline from Oak Park Road to East City Limits;
- Conklin Road Extension from Mt. Pleasant Road to Phelps Road; and
- Charing Cross Street extension to Henry Street.

TSM improvements to enhance the existing capacity (through urbanization, parking restrictions, and operational improvements) are proposed for several corridors including:

- Golf Road;
- Paris Road;
- Brant Ave;
- Hardy Road;
- West Street;
- King George Road;
- Erie Avenue;
- Clarence Street; and
- County Road 18 (note that this is a County Road. The City will work with the County to determine potential for improvements to the corridor).

It is also recommended that lands be protected in the Veterans Memorial Parkway partial extension (to Murray Street) corridor such that the opportunity to implement this improvement is not lost in the very long term

All of the projects identified will require a Schedule B or C MCEA to be completed, which would include significant public/stakeholder consultation, before they can be implemented.

## Implementation Plan

### Active Transportation Plan

As the Active Transportation plan elements were derived based on the provision of connected and continuous infrastructure the plan does not change from that recommended in the 2020 TMP Update.

### Transit Service Plan

The Short and Mid-Term transit improvements for the transit system do change from that recommended in the 2020 TMP Update. However, in extending the time horizon from 2041 to 2051 additional maintenance and equipment replacement costs are required to support the future transit service. **Table ES-3** summarizes the additional costs to support the additional transit service requirements.

**Table ES-3: Additional 2051 Transit Service Recommendations**

Capital Item	Description	Cost (\$'000)*
<b>Long Term [2042 – 2051]</b>		
Fleet	5 new vehicles, 12 replacement vehicles	\$18,700
Building	-	-
Transfer Points	-	-
Route Infrastructure	New Stops/ Shelters Expansion Routes/ITS	\$1,620
Studies	Transit Master Plan Update	\$100
Specialized	Vehicle Replacement, Software Upgrade	\$5,800
	<b>Total</b>	<b>\$26,220</b>

\* All costs stated in 2020 dollars

### Road Infrastructure Plan

The capital cost to provide the additional infrastructure recommended for the 2051 condition, beyond that recommended in the 2020 TMP Update is provided in **Table ES-4**. There are no additional capital costs associated with the subsequent minor TSM enhancements on Golf Road.

**Table ES-4: Additional 2051 Road Infrastructure Recommendations**

Project	Description	Cost (\$'000)*
<b>Mid Term [2026 – 2031]</b>		
Mohawk Street / Greenwich Street / Murray Street Intersection	Intersection realignment and improvements	\$3,600
<b>Long Term [2042 – 2051]</b>		
Highway 403 / Oak Park Road Interchange	Upgrade to ultimate configuration	\$18,000
	<b>Sub-Total</b>	<b>\$21,600</b>

\* All costs stated in 2020 dollars & Contingency of 20% for Construction and 30% for Engineering assumed unless stated specifically in reference reports (i.e. feasibility reports).

## Conclusions

The impacts of the change in provincial land use projections from the 2041 to 2051 horizon on the recommended transportation strategy and infrastructure requirements as identified in the 2020 TMP Update have been assessed. The following is concluded:

- The overall change in long term population and employment between 2041 (as assessed for the TMP) and 2051 is not significant. City of Brantford population increases by approximately 2,000 persons and employment increases by approximately 3,000 persons by the revised horizon year;
- The most significant growth is in the Northwest /Powerline Industrial Park Employment Area;
- There is a slight change in the way that population and employment growth is allocated within the City. The most significant change is the reallocation of population and employment growth from the Casino area to the Mohawk Lake District;

- The 2051 transportation demands as assigned to the 2041 recommended network strategy show only a few areas where additional improvements will be required:
  - Mohawk Street / Greenwich Street / Murray Street – local improvements;
  - Golf Road from Paris Road to north of Powerline Road – additional TSM; and
  - Highway 403 / Oak Park Road Interchange – new infrastructure.
- The recommendations in the 2020 TMP Update related to Active Transportation and Transit remain valid;
- The implementation strategy is not affected by the change from the 2041 to 2051 horizon; and
- Costs have been added to reflect the additional service and infrastructure required to support growth the 2051 horizon year.

The following report updates the sections of the 2020 Transportation Master Plan Update for those assessment elements that have been updated to reflect the 2051 condition.

## 1.0 Study Foundation

### 1.1 Background

This Transportation Master Plan (TMP) addendum has been prepared to assess the impacts of the incorporation of the most recent 2051 growth forecasts from the Province into the City's Official Plan – Envisioning Our City 2051. The assumptions and recommendations from the 2020 Transportation Master Plan based on a 2051 horizon land use forecasts have been re-assessed and confirmed.

Technical elements of the 2020 TMP Update have been updated as appropriate to reflect 2051 forecast conditions. The reallocation and incremental change in growth have been assessed to understand the impact of these differences on the recommended capital projects arising from the 2020 TMP.

### 1.2 Study Objectives

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

1. Plan to accommodate city growth to 2051, including the urban boundary expansion of the City of Brantford, the intensification target for development within the Built-Up Area, and density targets within the Designated Greenfield Area as set out in the new Official Plan;
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 the planning phase of 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:

- **Continue to strive for 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 “Status Quo” approach to system management**, in terms of addressing deficiencies, level-of-service, and ability to meet planning targets.
- **Coordinate TMP preparation with the City's concurrent Municipal Comprehensive Review (OP) and the Master Servicing Plan (MSP) 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 up to 2051, and translate these strategies into Official Plan policy.
- **Work towards becoming a Bicycle Friendly Community** and receiving a designation by Share the Road Cycling Coalition by providing a clear, concise pathway towards a more bicycle friendly future.
  - **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, by considering inter-municipal and inter-regional links, and by considering new micro-transit technologies in support of first/last mile solutions.
  - **A Complete Streets philosophy** has been applied to this TMP Update so that streets are planned, built, and maintained for all users.
  - **Preparation for Connected and Autonomous Vehicles (CAVs).** Consider how the emergence of CAVs will impact small-sized cities, such as Brantford, and how to strategically prepare for them.

### 1.3 Study Approach

The approach used in this TMP Update was organized into five (5) distinct project phases:

- **Phase 1: Develop a Study Foundation** – Set the stage and boundaries for the City of Brantford’s transportation system.
- **Phase 2: Integrated Transportation Strategy** – Determine integrated strategies for developing networks, programs, and policies for all travel modes in a manner that supports community-building objectives.
- **Phase 3: Street Network Capacity Needs** – Define problems and opportunities for the transportation system.
- **Phase 4: Review of Key Transportation Issues** – Review and assess the relationship between regional and local needs of the transportation network and identify a plan and role for the local system.
- **Phase 5: Implementation Plan** – Bring the elements of the TMP together and develop a practical approach to implement and monitor the TMP transportation network and guide the City forward to the 2051 horizon year.

Our approach and methodology is designed to satisfy EA requirements for the planning phase of Schedule ‘B’ undertakings, and Phases 1 and 2 for Schedule ‘C’ projects of the Municipal Class Environmental Assessment (EA) process and follows Master Planning Process Approach #1. The integration of technical and consultation activities is a core element of the process.

Technical analysis and studies required in support of the Schedule B projects in development areas will be undertaken as part of the design process by the developer and approved through the Planning Act Municipal development review process. Other Schedule B projects will be satisfied through separate class EA studies prior to design and construction.

## 1.4 Stakeholder Agency Consultation

Stakeholder Agency Consultation remains as documented in the 2020 TMP Update.

## 1.5 Public Consultation

The stakeholder and public consultation session that was conducted as part of the TMP addendum is as follows:

- Notice of Addendum – Posted June 17, 2021 with the 45-Day Review Period ending August 4, 2021.

The notice and public comments for the aforementioned consultation event is included in **Appendix A**.

## 1.6 Existing Road Network

The Existing Road Network remains as documented in the 2020 TMP Update.

## 1.7 Existing Local Roadway Travel Demands

### 1.7.1 Approach

Approach remains as documented in the 2020 TMP Update.

### 1.7.2 Existing Automobile Traffic Level of Service (LOS)

Existing Automobile Traffic Level of Service (LOS) remains as documented in the 2020 TMP Update.

### 1.7.3 Primary Trip Markets

Primary Trip Markets remains as documented in the 2020 TMP Update.

## 1.8 Existing Transit Network Use

Existing Transit use remains as documented in the 2020 TMP Update.

## 1.9 Existing Active Transportation

Existing Active Transportation remains as documented in the 2020 TMP Update.



## 2.0 Transportation Impacts of Growth

### 2.1 Population and Employment Growth

The most recent *Places to Grow* (August 2020) policies include growth forecasts for the City of Brantford with a residential population of 165,000 and an employment level of 80,000 by 2051.

As part of the City of Brantford's Official Plan Review process, the Ministry growth forecasts were incorporated into a Municipal Comprehensive Review (MCR) as input to the City's new Official Plan (undertaken by SGL Planning and Design Inc. (SGL)). The MCR Part 1 Report, identified an alternative intensification target for the delineated Built-up Area and an alternative Designated Greenfield Area (DGA) density target appropriate for the City of Brantford as well as lands to convert from employment use and whether there was a need for a settlement area boundary expansion and the quantum of that need. The MCR Part 2 Report identified what part of the Boundary Adjustment Lands will be included in the settlement area boundary expansion to accommodate the identified need for urban lands. A majority of the work for the MCR predates the Mohawk Lake District Plan.

The 2051 population and employment forecasts were disaggregated by SGL to match the Traffic Analysis Zone (TAZ) structure within the City's strategic transportation model. The allocations were based on intensification policies and targets, Schedule 1: Growth Management in the City's draft Official Plan, land use designations, and sites with known development potential.

At a summary level, the growth forecasts used in this TMP growth analysis are shown in **Table 2-1** and **Table 2-2** below for the City of Brantford and County of Brant respectively. Detailed TAZ level population and employment data for Brantford and Brant County (2016 and 2051) can be found in **Appendix C**.

**Table 2-1: City of Brantford Population and Employment to 2051 - TAZ Distribution**

Horizon Year	Population (Persons)	Employment (Jobs)
2016	101,700 <sup>1</sup>	44,900 <sup>1</sup>
2021 Est	111,300	53,600
2026 Est	125,200	60,300
2031	139,000 <sup>2</sup>	67,000 <sup>2</sup>
2036	152,000 <sup>2</sup>	72,000 <sup>2</sup>
2041	162,150 <sup>1</sup>	80,150 <sup>1</sup>
2051	164,736 <sup>1</sup>	83,365 <sup>1</sup>

Source: <sup>1</sup> SGL Planning and Design Inc., 2021

<sup>2</sup> A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2019

**Table 2-2: County of Brant Population and Employment to 2051 - Growth Plan**

Horizon Year	Population (Persons)	Employment (Jobs)
2016	38,000 <sup>1</sup>	15,000 <sup>1</sup>
2021 Est	41,000	17,000
2026 Est	44,000	19,000
2031	49,000 <sup>2</sup>	22,000 <sup>2</sup>
2036	53,000 <sup>2</sup>	24,000 <sup>2</sup>
2041	57,000 <sup>2</sup>	26,000 <sup>2</sup>
2051	59,000 <sup>3</sup>	26,000 <sup>3</sup>

Source: <sup>1</sup> Greater Golden Horseshoe: Growth Forecasts to 2051, Hemson Consulting Ltd., 2020

<sup>2</sup> A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2019

<sup>3</sup> A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2020

Applying updated growth forecasts, disaggregated to the TAZ level-of-detail, the City's model was utilized to forecast future travel demands (i.e. Future Conditions) resulting from population growth, employment growth, and future land use patterns and densities as provided by the City. These were further enhanced using output from the ongoing Official Plan Update. Forecasted Future Conditions and various alternative transportation strategies were subsequently assessed based on the strategic direction criteria are identified in **Section 2.4** and in **Chapter 4.0**.

The population and employment forecasts for the City of Brantford and County of Brant indicate significant growth in the period from 2016 to 2051. The population and employment are expected to grow by 60% and 83% respectively during this 35-year period as shown on **Table 2-3**.

**Table 2-3: Population and Employment Growth - Brant (Growth Plan) and Brantford (TAZ Distribution)**

Demographic Area	2016	2041	2051	Growth
<b>Population</b>				
County of Brant	38,000 <sup>1</sup>	57,000 <sup>2</sup>	59,000 <sup>3</sup>	55%
City of Brantford	101,700 <sup>4</sup>	162,140 <sup>4</sup>	164,736 <sup>4</sup>	62%
<b>Total</b>	<b>139,700</b>	<b>219,140</b>	<b>223,736</b>	<b>60%</b>
<b>Employment</b>				
County of Brant	15,000 <sup>1</sup>	26,000 <sup>2</sup>	26,000 <sup>3</sup>	73%
City of Brantford	44,900 <sup>4</sup>	80,153 <sup>4</sup>	83,365 <sup>4</sup>	86%
<b>Total</b>	<b>59,900</b>	<b>106,153</b>	<b>109,365</b>	<b>83%</b>

Source: <sup>1</sup> Greater Golden Horseshoe: Growth Forecasts to 2051, Hemson Consulting Ltd., 2020

<sup>2</sup> A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2019

<sup>3</sup> A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2020

<sup>4</sup> SGL Planning and Design Inc., 2021

**Figure 2-1** and **Figure 2-2** present the population and employment growth from 2016 to 2051. These figures include an expansion of the current urban boundary (Settlement Area) and assign population and employment growth to these areas in conjunction with the parallel Brantford Expansion Area study developed by Dillon in consultation with the City of Brantford. Based on current growth and growth anticipated in the expanded urban boundary, the following trends to the 2051 horizon year are noted:

- High employment growth in the Oak Park Road & Hardy Road (Northwest Industrial Park) and Henry Street/Wayne Gretzky (Braneida Industrial Park) areas;
- High employment growth in the expansion lands east of Garden Avenue at Highway 403 and north of Powerline Road just east of Paris Road;
- High population growth in the southern zones surrounding Shellard Lane, Mt Pleasant Road and Erie Avenue;
- High population growth in the northern expansion zones (north of Powerline Road) from Balmoral Drive in the west to Coulbeck Road in the east;
- High population and employment growth along the King George Road corridor; and
- High population and employment growth in the downtown core.

Intensification within downtown Brantford and along the King George Road corridor will increase the densities within these areas of the city. Denser, more urban areas contribute to modal shifts away from the single occupancy vehicle as the distance to many amenities will decrease, making them more bikeable and walkable, while transit service will increase, as higher densities support higher service frequency.

Figure 2-1: Population Growth by TAZ, 2016 to 2051

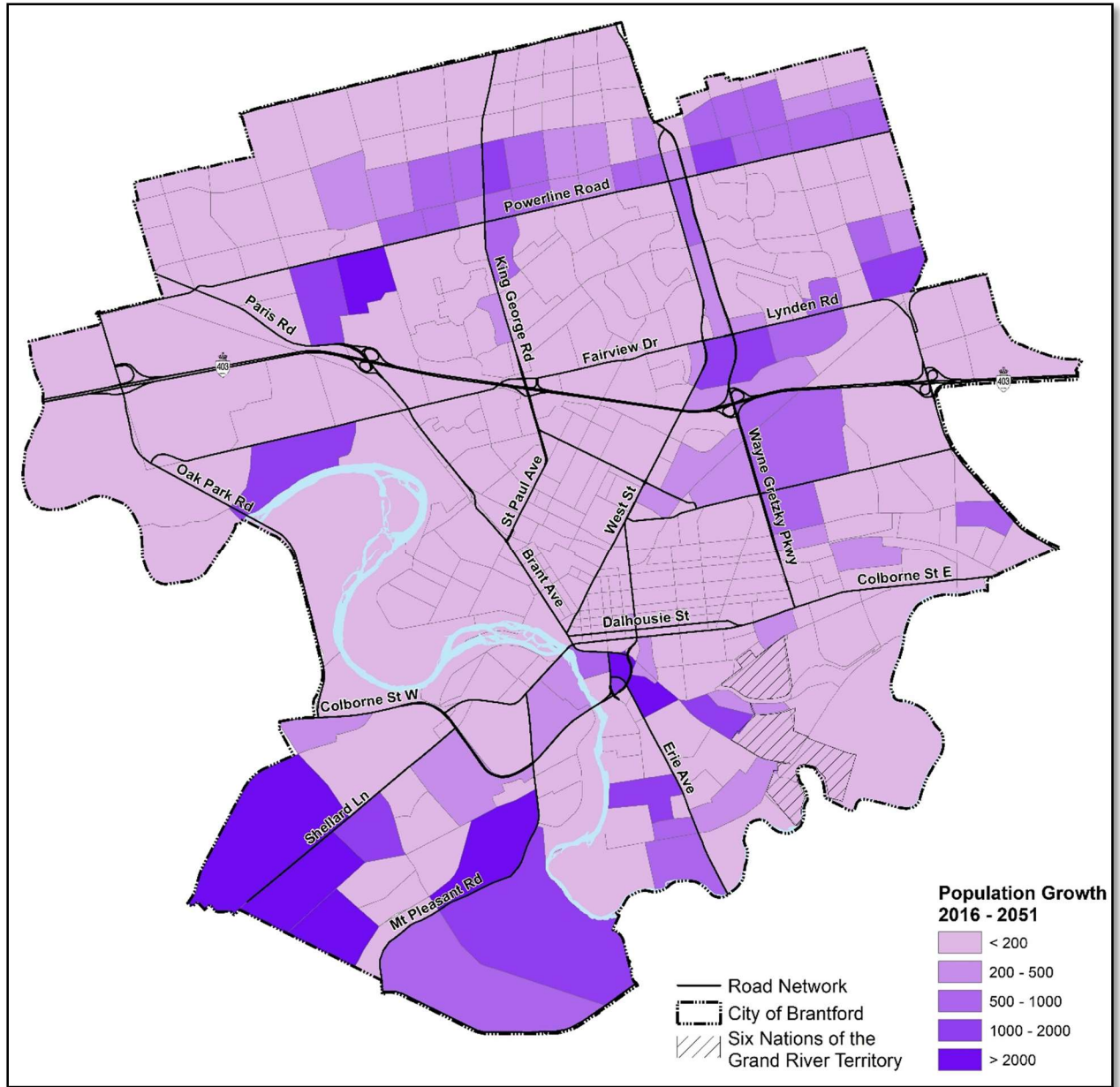
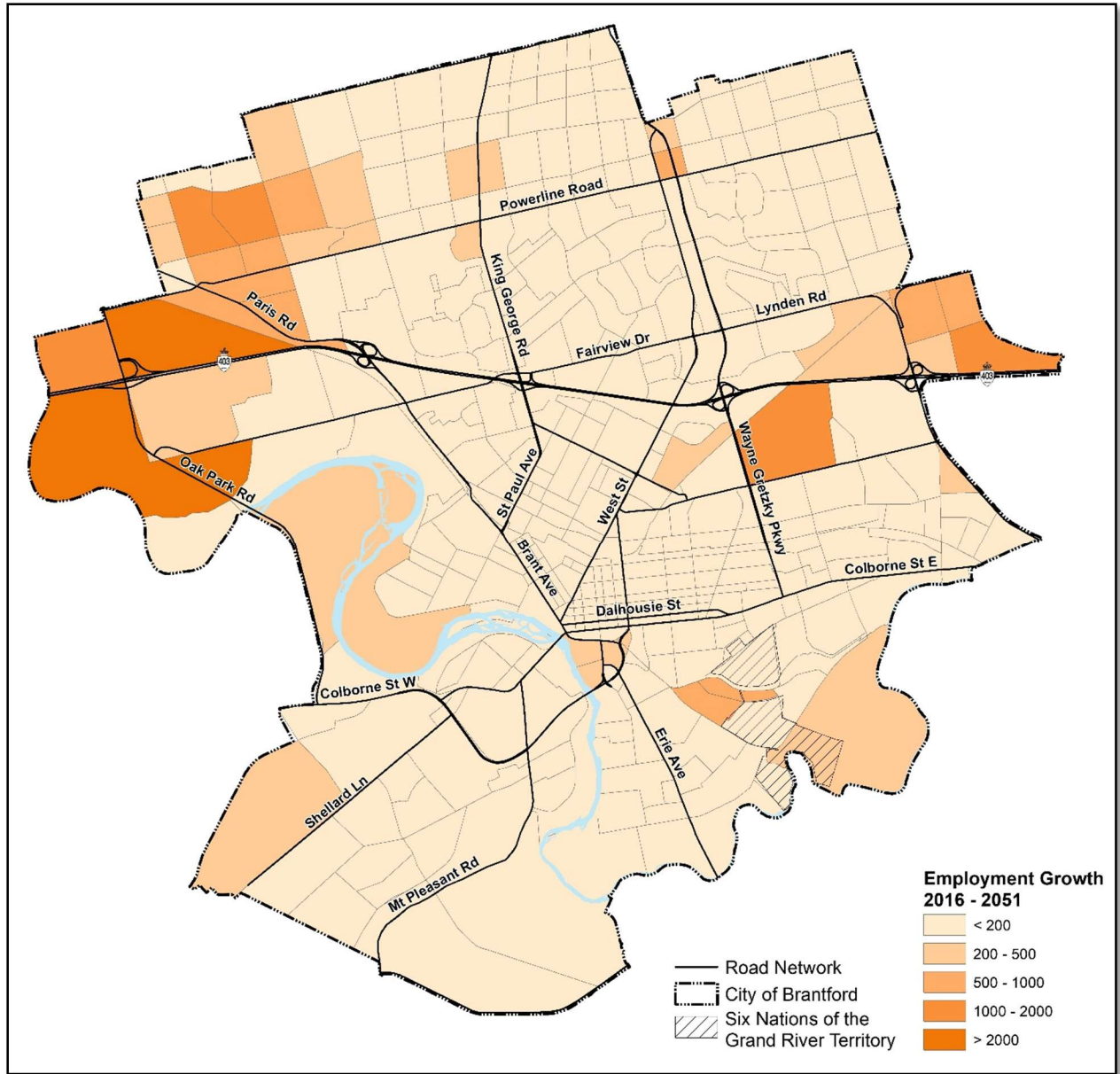


Figure 2-2: Employment Growth by TAZ, 2016 to 2051



**2.2 Change in Travel Mode Choice**

Change in Travel Mode Choice remains as documented in the 2020 TMP Update.

**2.3 Local Travel Growth to 2051**

The updated travel forecasting model forecasts travel in the City of Brantford and County of Brant in 2051 first under a “Do Minimal” scenario. In this case, the travel mode choices are unchanged from

2016, and no further capacity improvements (i.e. road widenings, extensions) are included in the model. However, a small number of infrastructure modifications that have been completed since 2016 were included along with the proposed arterial/collector road network for the expansion lands (Tutela Heights & North Brantford). As a result of the Tutela Heights Slope Stability EA, the potential closure of Tutela Heights Road in the vicinity of Davern Road is also incorporated.

Brantford's forecasted growth will significantly alter the local travel demands within the City. **Table 2-4** displays the existing (2016) and forecast (2051) trips by mode that originate in Brantford during the AM peak period. By 2051 Brantford is forecast to generate more than 85,900 AM peak period person trips on an average weekday. That's an increase of 72% over 2016 person trips.

**Table 2-4: Total trips by mode: Trips Originating in Brantford (Brantford to All) - AM Peak Period**

Mode \ Year	2016		2051	
	Trips	%	Trips	%
Auto Driver	36,520	73.2%	63,070	73.4%
Auto Passenger	5,370	10.8%	10,000	11.6%
Transit	1,350	2.7%	1,840	2.1%
Bicycle	330	0.7%	480	0.6%
Walk	3,190	6.4%	5,010	5.8%
Other	3,130	6.3%	5,530	6.4%
<b>Total</b>	<b>49,890</b>	<b>100.0%</b>	<b>85,930</b>	<b>100.0%</b>

The total existing (49,890) and forecast (85,930) person trips can be further broken down based on where the trips are destined to. This is displayed in **Table 2-5**.

**Table 2-5: Total trips by destination: Trips Originating in Brantford - AM Peak Period**

Destination \ Year	2016		2051	
	Trips	%	Trips	%
Brantford to Brantford	36,980	74.1%	64,720	75.3%
Brantford to Brant County	5,250	10.5%	9,150	10.6%
Brantford to External East (Hwy 403 east)	4,310	8.6%	6,250	7.3%
Brantford to External West (Hwy 403 west)	490	1.0%	750	0.9%
Brantford to External North (Hwy 24 north)	1,440	2.9%	2,100	2.4%
Brantford to External Other	1,420	2.8%	2,960	3.4%
<b>Total (Brantford to All)</b>	<b>49,890</b>	<b>100.0%</b>	<b>85,930</b>	<b>100.0%</b>

**Table 2-5** indicates that in the 2051 forecasted scenario there is higher proportion (1.2 percentage points) of internal (Brantford to Brantford) trip making, while conversely an equal reduction of the proportion of Brantford to External trip making. The increase in local trips is likely the result of the significant increase in employment and participation rate that is forecast for Brantford.

## 2.4 2051 Local Travel Assignment and Network

The updated population and employment forecasts for the horizon year, travel mode choice, and trips distribution information, as described in **Sections 2.1** through **2.3** above, were incorporated into the City's travel demand model and assigned to the horizon year network to produce future base year volume forecasts on the road network. This process and the resultant forecasts are described in the following sections.

### 2.4.1 Updated Mobility Model for Transportation

Update Mobility Model for Transportation remains as documented in the 2020 TMP Update.

### 2.4.2 Private Auto Traffic

As previously reported in **Section 2.1** of this TMP, population and employment forecasts for the City of Brantford are expected to grow by 62% and 78%, respectively, between 2016 and 2051. A 2051 'Do Minimal' scenario reflects no changes to peak hour mode shares and only short term committed projects (e.g. The 2020 Oak Park Road/Highway 403 interchange upgrade) and the arterial/collector roads required to support the expansion lands (Tutela Heights & North Brantford). **Figure 2-3** displays the 2051 'Do Minimal' road network. The proposed additional roads in Tutela Heights (Conklin Road Extension) and North Brantford (New East/West Road, etc.) are illustrated in this figure. **Figure 2-4** illustrates the assignment of private auto vehicles on the 2051 network in the PM peak hour and **Figure 2-5** illustrates the same assignment of private auto vehicles on the 2051 network measured against roadway capacity as a volume/capacity (V/C) ratio. **Table 2-6** provides an overview of the AM and PM screenline summaries, using the same screenlines defined for the model validation (illustrated in **Figure 2-3** of the 2020 TMP Update). Unlike the screenline analysis used to validate the auto travel within the model, the screenline summaries in **Table 2-6** evaluate the cumulative travel demand on the roadways crossing the screenline. The cumulative travel demand crossing the screenline is compared to the cumulative capacity crossing the screenline in order to establish V/C ratio, which provides an indication of how well a specific corridor/screenline is operating. It is important to note that while some screenlines are operating within capacity, there may be links on the screenline that have operating deficiencies, as identified in **Figure 2-5**. Detailed link summary tables for each screenline can be found in **Appendix C**.

The aforementioned figures and table illustrate the following 2051 PM peak hour capacity issues that are consistent with 2014 TMP model findings for the 2031 horizon:

- Wayne Gretzky Parkway between Henry Street and Highway 403;
- King George Road crossing Highway 403;

- Veterans Memorial Parkway between Mt. Pleasant Street and Market Street South;
- Colborne Street crossing the Grand River;
- Paris Road between Highway 403 and Powerline Road;
- Brant Avenue between St Paul Avenue and Colborne Street; and
- West Street between Charing Cross Street and Henry Street.

However, there are a few notable capacity issues that have emerged in 2051, most notably as a result of the settlement boundary expansion, that were not present in the 2014 TMP model findings for the 2031 horizon:

- Powerline Road between Paris Road and Wayne Gretzky Parkway;
- Wayne Gretzky Parkway north of Highway 403;
- Hardy Road between Ferrero Boulevard and Paris Road;
- Paris Road south of Highway 403; and
- Erie Avenue between Veterans Memorial Parkway and Birkett Lane.



Figure 2-3: Future (2051) 'Do Minimal' Road Network

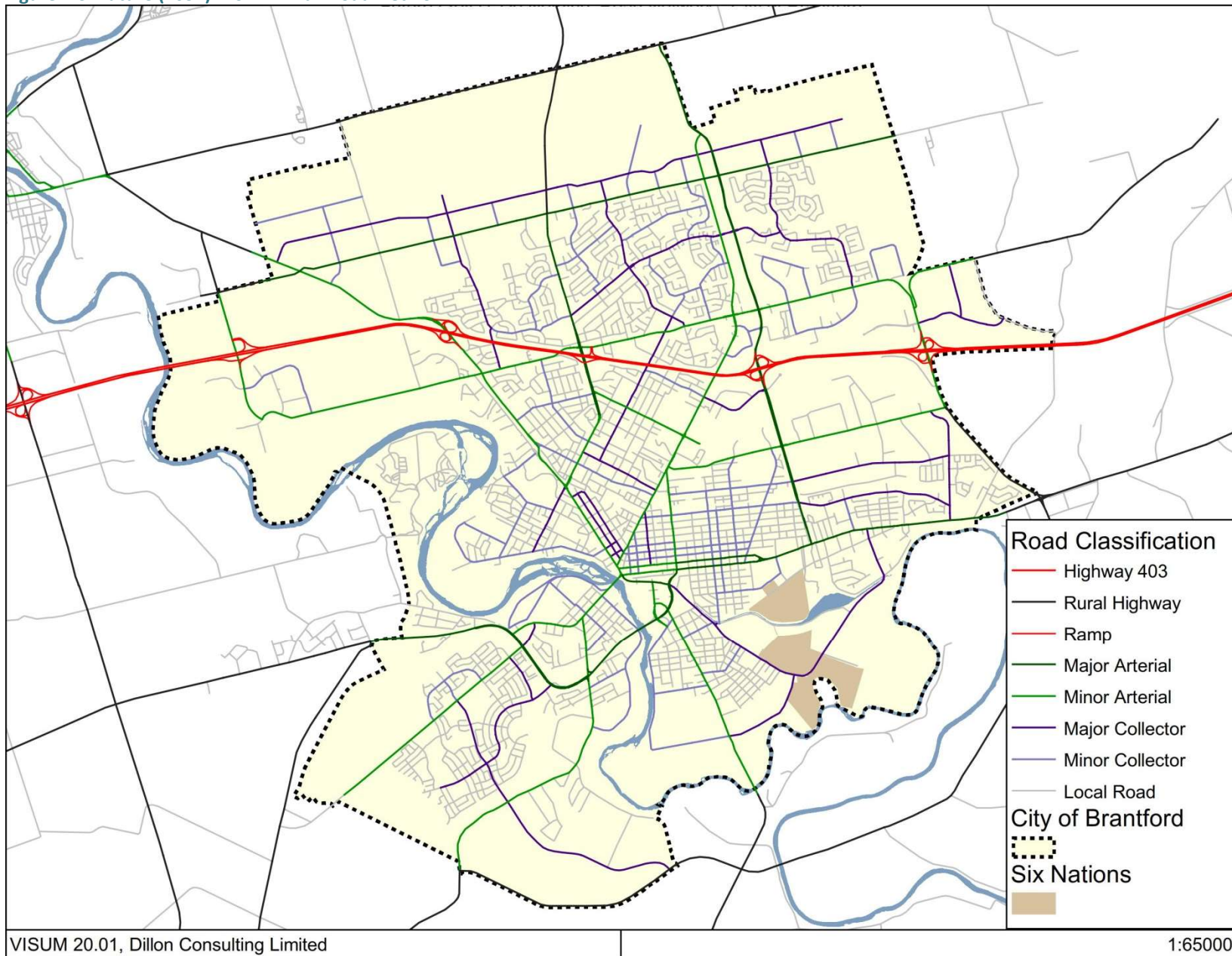


Figure 2-4: Future (2051) 'Do Minimal' Traffic Volumes- PM Peak Hour

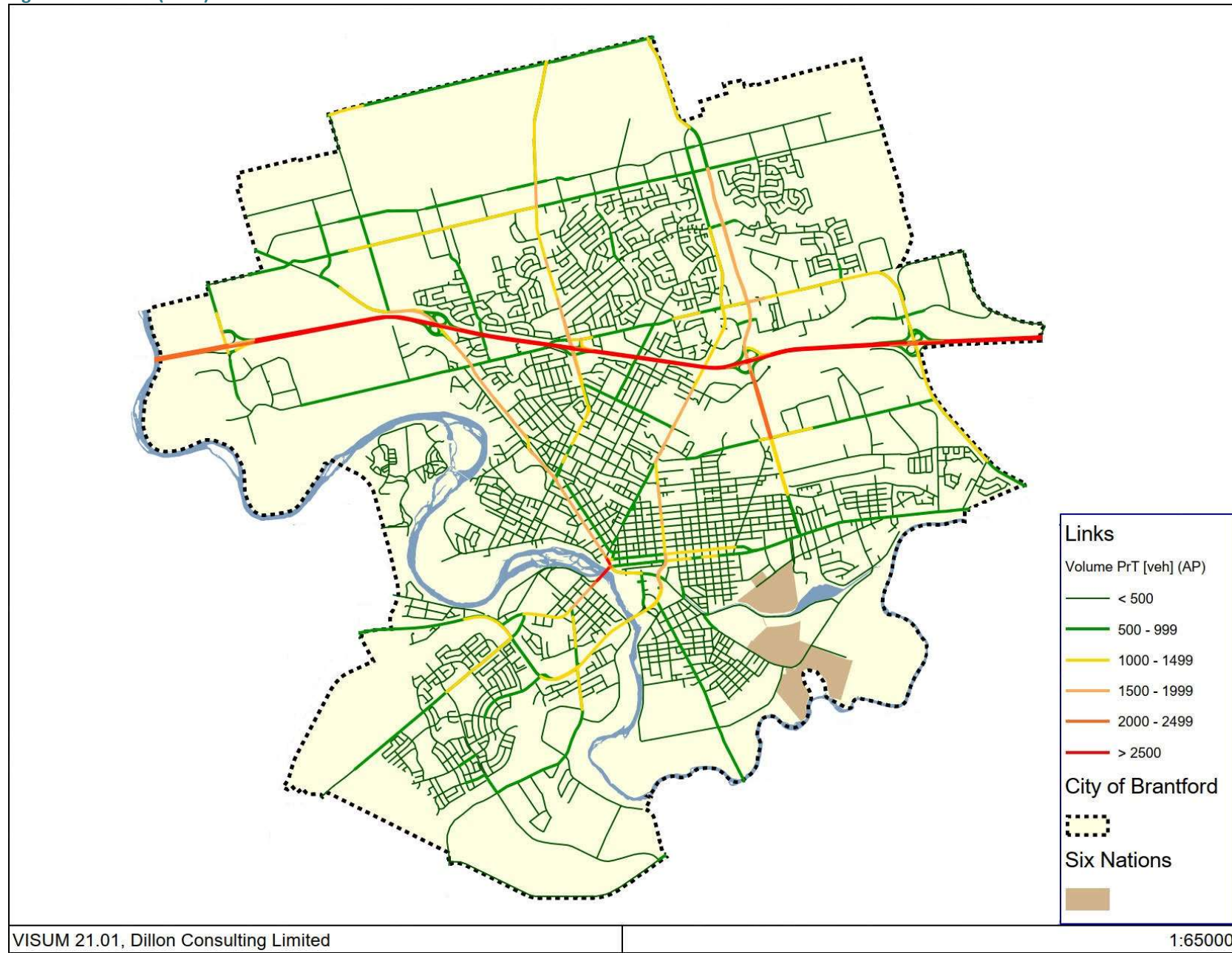
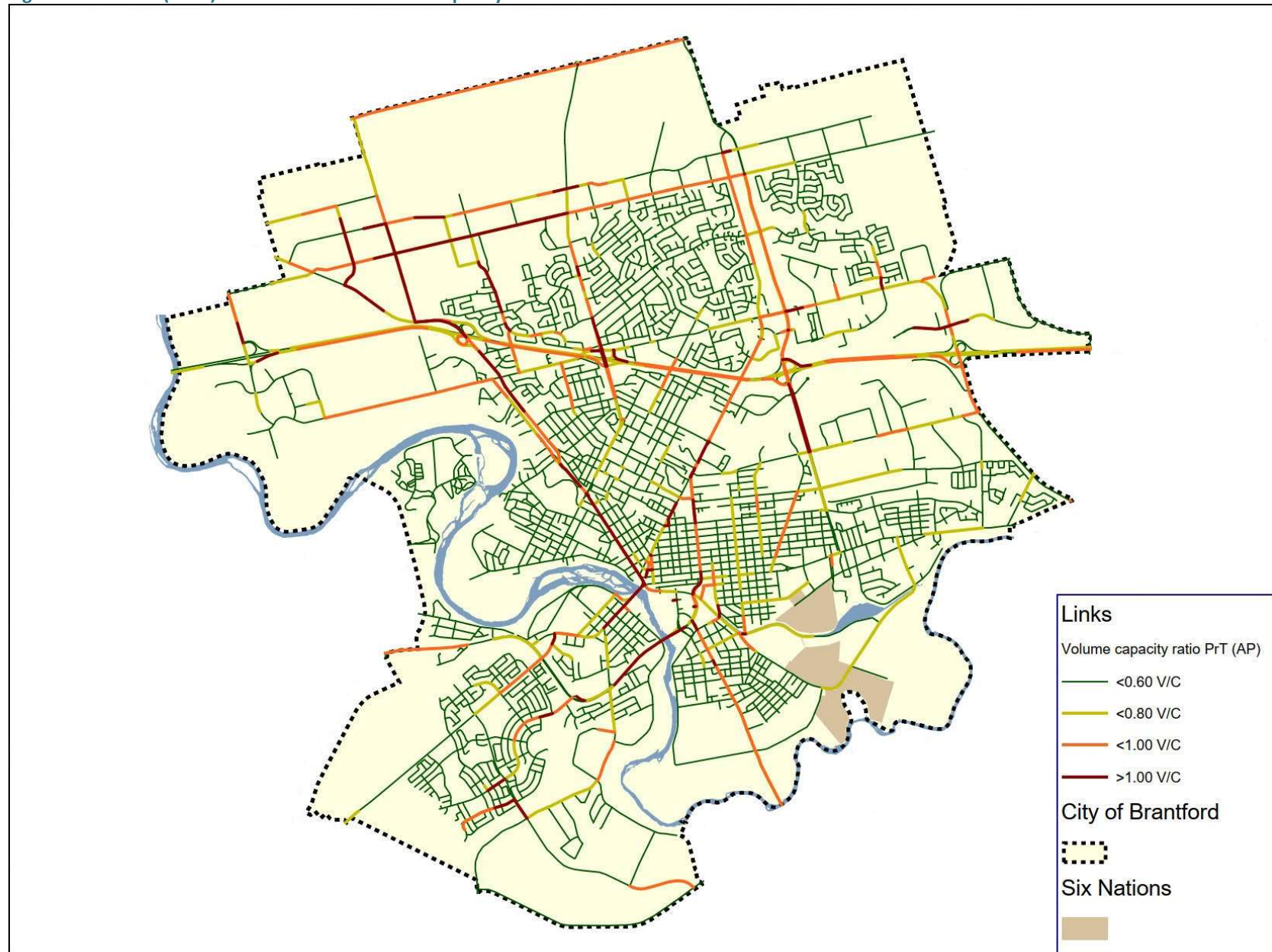


Figure 2-5: Future (2051) 'Do Minimal' Volume-to-Capacity Ratio - PM Peak Hour



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Table 2-6: Future (2051) 'Do Minimal' Screenline Summary

#	Name	Direction	Capacity		AM Peak Hour		PM Peak Hour	
			Lanes	Total	Volume	V/C	Volume	V/C
1	Grand River South	EB	7	8,100	6,752	0.83	6,199	0.77
1	Grand River South	WB	7	8,100	4,433	0.55	7,639	0.94
2	Grand River North	EB	4	5,200	3,176	0.61	4,185	0.80
2	Grand River North	WB	5	6,000	2,779	0.46	3,918	0.65
3	Highway 403	NB	13	10,800	7,023	0.65	9,262	0.86
3	Highway 403	SB	13	10,800	7,463	0.69	9,431	0.87
4	King George Road	EB	11	9,600	5,254	0.55	8,699	0.91
4	King George Road	WB	11	9,600	6,998	0.73	7,417	0.77
5	Wayne Gretzky Parkway (North)	EB	7	7,600	4,518	0.59	6,592	0.87
5	Wayne Gretzky Parkway (North)	WB	7	7,600	5,604	0.74	5,969	0.79
6	Wayne Gretzky Parkway (South)	EB	7	4,900	1,950	0.40	2,336	0.48
6	Wayne Gretzky Parkway (South)	WB	7	4,900	1,621	0.33	2,802	0.57
7	Memorial Drive	EB	9	6,100	1,670	0.27	3,158	0.52
7	Memorial Drive	WB	9	6,100	2,434	0.40	2,690	0.44
8	West Street	EB	6	4,300	2,165	0.50	3,109	0.72
8	West Street	WB	6	4,300	2,661	0.62	3,076	0.72
9	CNR Corridor	NB	11	7,900	4,413	0.56	5,190	0.66
9	CNR Corridor	SB	11	7,900	4,398	0.56	6,196	0.78
10	Garden Avenue	EB	9	8,800	4,717	0.54	6,071	0.69
10	Garden Avenue	WB	9	8,800	4,646	0.53	6,236	0.71
11	Powerline Road	NB	13	9,400	4,243	0.45	6,005	0.64
11	Powerline Road	SB	13	9,400	4,807	0.51	6,360	0.68
12	Murray Street	EB	7	4,400	2,131	0.48	1,965	0.45
12	Murray Street	WB	8	5,200	1,657	0.32	2,623	0.50
13	West External	EB	7	7,300	1,707	0.23	2,286	0.31
13	West External	WB	7	7,300	1,681	0.23	2,249	0.31
14	South-West External	NB	4	4,300	1,560	0.36	1,201	0.28
14	South-West External	SB	4	4,300	960	0.22	1,622	0.38
15	East External	EB	5	6,900	3,152	0.46	3,828	0.55
15	East External	WB	5	6,900	3,298	0.48	3,948	0.57
16	North-East External	NB	3	3,200	1,444	0.45	1,729	0.54
16	North-East External	SB	3	3,200	1,254	0.39	2,347	0.73
17	North-West External	NB	3	3,300	809	0.25	931	0.28
17	North-West External	SB	3	3,300	800	0.24	1,000	0.30

**Legend:**

	V/C Range	From	To
X	Good Capacity Conditions	0.00	0.70
X	Approaching Capacity Conditions	0.70	0.85
X	Over Capacity Conditions	0.85	-

Note: i) Screenlines are illustrated in **Figure 2-3** of the 2020 TMP Update.

- ii) Total (capacity) = the total roadway vehicle capacity of all lanes that cross a particular screenline in a particular direction.
- iii) Volume = the total number of vehicles that cross a particular screenline in a particular direction during a particular peak hour.

Additional analysis on the system behaviour was also extracted from the model. With population and employment growth, there will be an increase in demand on the road network. This means an increase in VKT, VHT, average travel time, and the percent of the network that is at or approaching capacity. The results of the system performance metrics for 2016 and 2051 'Do Minimal' road networks are summarized in **Table 2-7**, which shows significant increases in travels times, due to the network congestion.

**Table 2-7: Brantford Modeled System Performance - PM Peak Period**

Network performance measure \ Year	2016	2051 (Do Minimal)
Vehicle Kilometres Travelled (VKT)	183,200	335,850
Vehicle Hours Travelled (VHT)	2,880	6,590
Average Trip Travel Time (minutes: seconds)	05:35	07:44
Percent of network approaching or over capacity	0.31%	6.44%

Note: All trips originating from or destined to Brantford

### 2.4.3 Transit Ridership

Overall transit person trips in Brantford are projected to grow significantly, between 2016 and 2051, as illustrated in **Table 2-8**. This can be attributed to strong population and employment growth that is projected for Brantford over the same time period.

**Table 2-8: Projected Transit Person Trip Growth, 2016 to 2051**

Transit Service	AM Peak Period (6:00 – 9:00 AM)			PM Peak Period (3:00 – 6:00 PM)		
	Person Trips		Growth	Person Trips		Growth
	2016	2051		2016	2051	
Local (Brantford Transit)	1,188	1,689	42%	1,625	2,461	51%
Regional (GO Transit, VIA Rail, Greyhound, etc.)	241	257	7%	249	281	13%
<b>Total</b>	<b>1,429</b>	<b>1,946</b>	<b>36%</b>	<b>1,874</b>	<b>2,742</b>	<b>46%</b>

Likewise, transit ridership by route is also projected to grow significantly between 2016 and 2051, as illustrated in **Table 2-9**. Transit route growth is directly related to the growth in population and/or employment that is planned in the immediate vicinity of the transit route. For example, significant population growth, illustrated previously in **Figure 2-1**, is planned for the Shellard Lane area of Southwest Brantford and as a result ridership on Route 6 – West Brant/Shellard is expected to increase by 74% during the AM peak period and 100% during the PM peak period. Significant employment growth, illustrated previously in **Figure 2-2**, is planned for the Northwest Industrial Area and as a result ridership on Route 8 – Holmedale/Mayfair is expected to increase by 75% during the AM peak period and 91% during the PM peak period.

**Table 2-9: Projected Local Transit Route Ridership Growth, 2016 to 2051**

Route	AM Peak Period (6:00 – 9:00 AM)			PM Peak Period (3:00 – 6:00 PM)		
	Ridership		Growth	Ridership		Growth
	2016	2051		2016	2051	
1 - Eagle Place	205	295	44%	228	374	64%
2 - West Street/Brier Park	216	273	26%	409	517	26%
4A - Mall Link	264	352	33%	372	484	30%
4C - Mall Link	217	292	34%	318	433	36%
5 - West Brant/Oakhill	84	99	18%	116	157	36%
6 - West Brant/Shellard	289	503	74%	215	429	100%
7 - East Ward/Braneida	197	212	8%	280	396	42%
8 - Holmedale/Mayfair	195	342	75%	239	456	91%
9 - Echo Place	230	302	31%	349	520	49%
<b>Total</b>	<b>1,897</b>	<b>2,670</b>	<b>41%</b>	<b>2,526</b>	<b>3,766</b>	<b>49%</b>

Note: i) Route ridership numbers are based on model assignments; and

ii) Total route ridership numbers exceed local transit persons trips (Table 2-10) because route ridership numbers include transfers.

**Figure 2-6** and **Figure 2-7** illustrate the 2051 AM transit origin trips and the 2051 AM transit destination trips respectively. Collectively, these figures provide a high-level summary of where transit users are coming from and going to during the AM Peak Period.

Figure 2-6: Future (2051) Origin Transit Trips (per km<sup>2</sup>) by TAZ – AM Peak Period

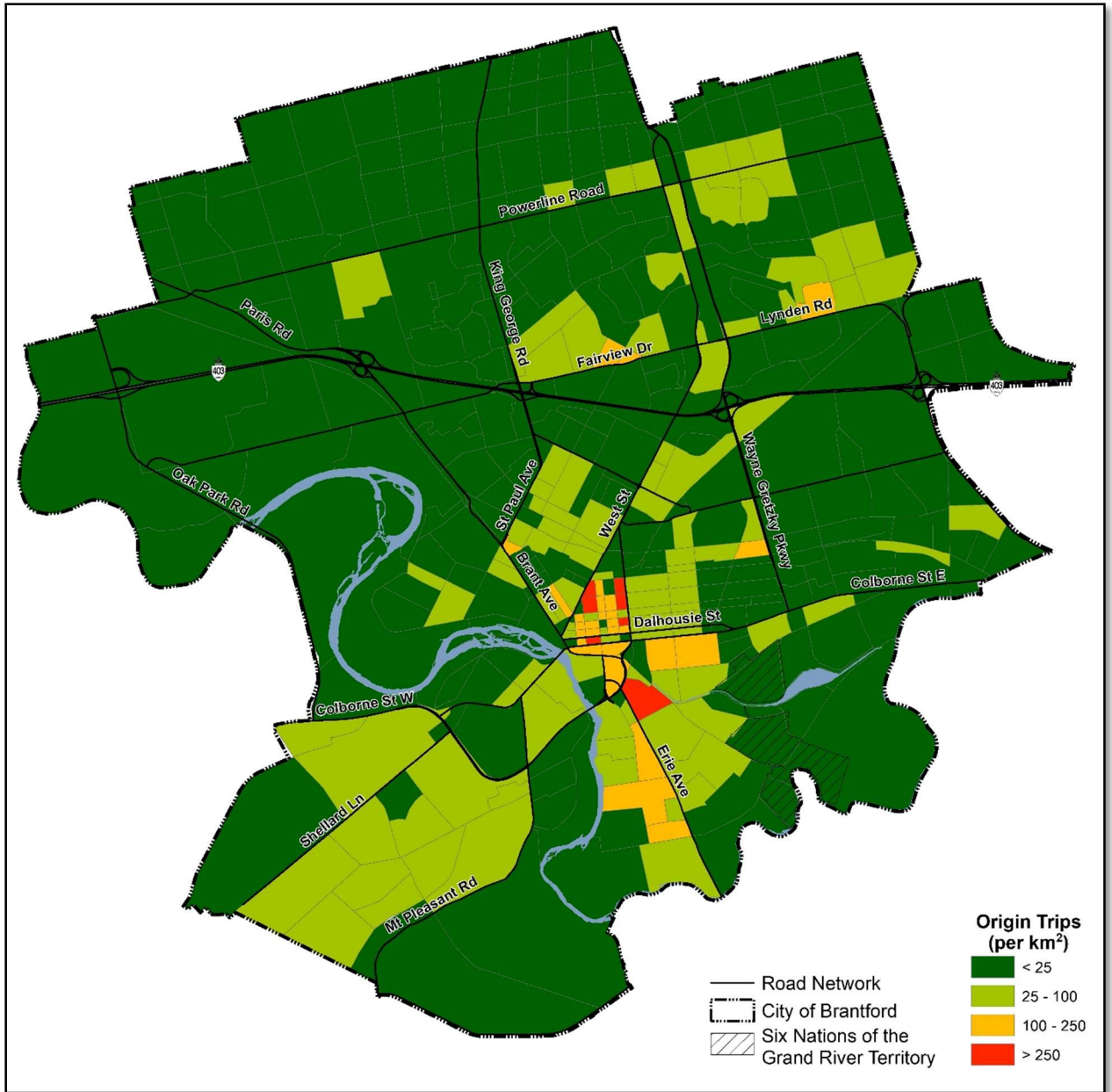
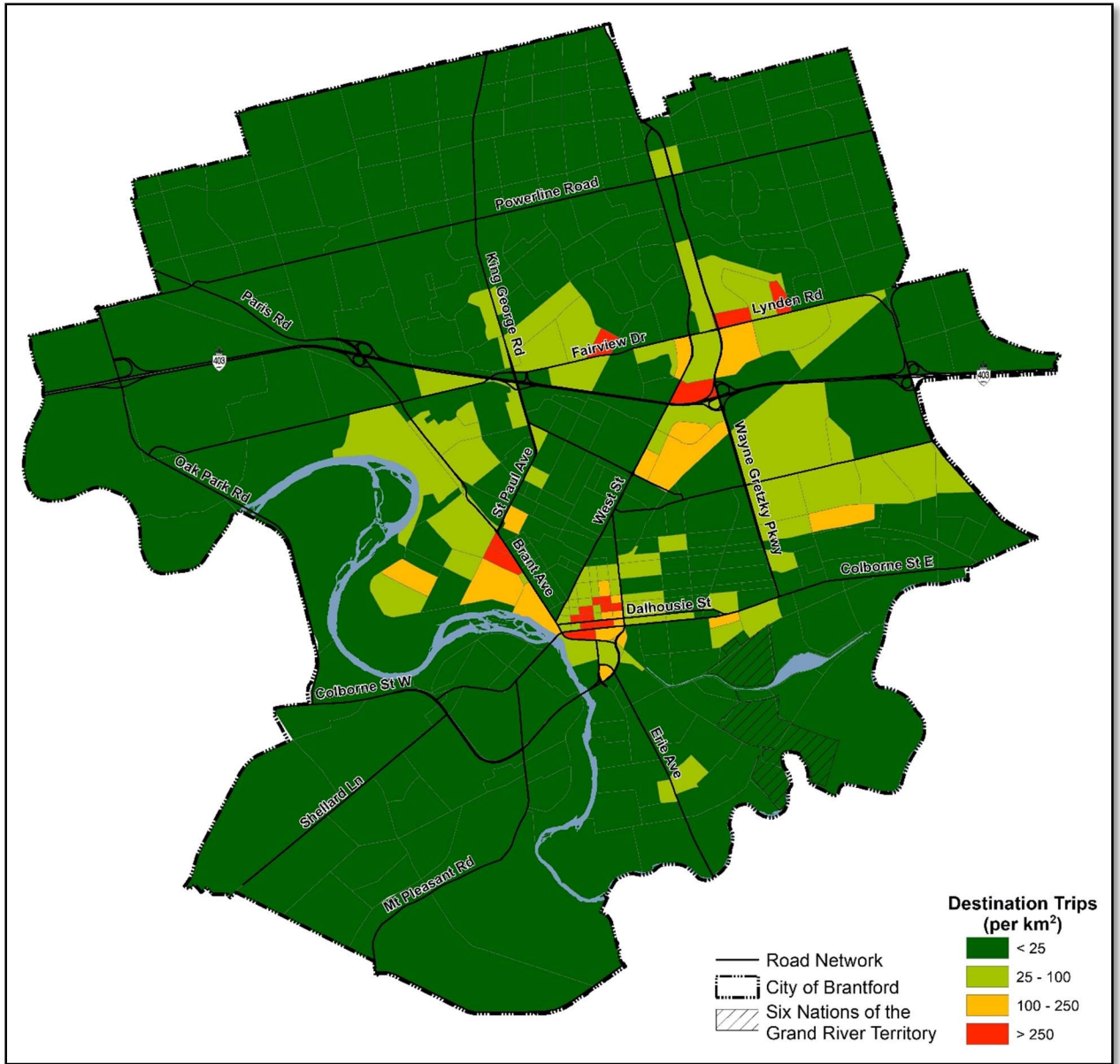


Figure 2-7: Future (2051) Destination Transit Trips (per km<sup>2</sup>) by TAZ – AM Peak Period





## 3.0 Complete Streets Framework

### 3.1 Introduction

Introduction remains as documented in the 2020 TMP Update.

#### 3.1.1 Objective

Objective remains as documented in the 2020 TMP Update.

#### 3.1.2 Complete Streets

Complete Streets remains as documented in the 2020 TMP Update.

### 3.2 Existing Policies and Plans

Existing Policies and Plans remains as documented in the 2020 TMP Update.

#### 3.2.1 Draft Official Plan (2020)

Draft Official Plan remains as documented in the 2020 TMP Update.

#### 3.2.2 Transportation Master Plan (2014)

Transportation Master Plan (2014) remains as documented in the 2020 TMP Update.

#### 3.2.3 Linear Municipal Infrastructure Standards

Linear Municipal Infrastructure Standards remains as documented in the 2020 TMP Update.

### 3.3 Network Philosophy

Network Philosophy remains as documented in the 2020 TMP Update.

### 3.4 Network Elements

Network Elements remains as documented in the 2020 TMP Update.

#### 3.4.1 Walking

##### 3.4.1.1 Sidewalks

Sidewalks remains as documented in the 2020 TMP Update.

##### 3.4.1.2 Multi-Use Paths

Multi-Use Paths remains as documented in the 2020 TMP Update.

<b>3.4.1.3</b>	<b>Trails</b>
	Trails remains as documented in the 2020 TMP Update.
<b>3.4.1.4</b>	<b>Crossings</b>
	Crossings remains as documented in the 2020 TMP Update.
<b>3.4.2</b>	<b>Cycling</b>
	Cycling remains as documented in the 2020 TMP Update.
<b>3.4.2.1</b>	<b>Signed Bike Route</b>
	A signed bike route remains as documented in the 2020 TMP Update
<b>3.4.2.2</b>	<b>Bicycle Priority Street</b>
	Bicycle Priority Street remains as documented in the 2020 TMP Update.
<b>3.4.2.3</b>	<b>Paved Shoulders</b>
	Paved Shoulders remains as documented in the 2020 TMP Update.
<b>3.4.2.4</b>	<b>Bike Lanes</b>
	Bike Lanes remains as documented in the 2020 TMP Update.
<b>3.4.2.5</b>	<b>Buffered Bike Lanes</b>
	Buffered Bike Lanes remains as documented in the 2020 TMP Update.
<b>3.4.2.6</b>	<b>Cycle Tracks</b>
	Cycle Tracks remains as documented in the 2020 TMP Update.
<b>3.4.2.7</b>	<b>Crossrides</b>
	Crossrides remains as documented in the 2020 TMP Update.
<b>3.4.3</b>	<b>Transit</b>
	Transit service remains as documented in the 2020 TMP Update.
<b>3.4.3.1</b>	<b>Streets</b>
	Streets remains as documented in the 2020 TMP Update.
<b>3.4.3.2</b>	<b>Terminals</b>
	Terminals remains as documented in the 2020 TMP Update.

## 3.4.3.3

**Stops**

Transit stops remains as documented in the 2020 TMP Update.

## 3.4.4

**Goods Movement**

## 3.4.4.1

**Truck Routes**

Truck Routes remains as documented in the 2020 TMP Update.

## 3.4.5

**Automobiles**

## 3.4.5.1

**Streets**

Streets remains as documented in the 2020 TMP Update.

## 3.4.5.2

**Intersections**

An intersection is an at-grade junction where two or more streets meet. These locations have significant potential for conflicts (vehicle-vehicle and or vehicle-bike/pedestrian movements) and delay (reduction in the capacity of a road segment due to these conflicts). To manage these issues, where warranted by volume and safety considerations, traffic control measure are implemented to designate priority to specific movements.

Based on the concept of volumes and priorities, intersections can be divided into traffic control categories according to whether they are uncontrolled, stop/yield control (unsignalized, simple priority), signal control (time sharing), roundabout (space sharing), or grade separated (interchanges, with or without signal control). **Figure 3-1** shows an example of a roundabout.

**Figure 3-1: Roundabout - Wilson Street and Shaver Road in Ancaster, ON**



Image Credit: Google Maps

The Roads and Transportation, Design and Construction Manual, Linear Municipal Infrastructure Standards (4-May-2020), provides the general requirements and assessment tools to be used in the assessment of the most appropriate traffic control to be implemented.

Over the course of the last three to four years, a specific vision for intersections has been developed which promotes the application of roundabouts as the preferred method of traffic, where volumes, types of activity, land availability, and cost permit. Specifically, on March 21, 2017 Council directed through a Resolution, for:

- Staff to INVESTIGATE and report back to Council with a process to develop a policy, standards and appropriate traffic control/parking by-law amendments to support the implementation of modern roundabouts in the City of Brantford, considering the policies in adjacent communities, such as the Region of Waterloo; and
- Staff to DEVELOP these policies and report back to Council with candidate locations for roundabouts in the community where a feasibility study can be implemented in conjunction with approved road construction projects in the City's ten-year capital forecast.

Further to this Council Resolution, staff investigated and developed policy positions toolkits for calming and roundabout implementation, as is documented in the following staff reports:

- April 16, 2019 (Report No. 2019-164), Roundabout Installation Policy Development;
- October 8, 2019 (Report No. 2019-377), Roundabout Installation Policy Development Update; and
- March 2, 2020 Vision Zero Road Safety Committee – Traffic Calming Update [Financial Impact – None], 2020-159 and Traffic Calming Policy – Amendment [Financial Impact – None], 2020-160.

The culmination of these investigations was Policy Number: Public Works-021, Roundabout Installation Policy. To summarize:

- Policy Statement: To provide a guideline for the City of Brantford to determine if a roundabout is the appropriate intersection control for arterial or collector roadways in new subdivisions, and provide for a standardized procedure for the planning, design and implementation of such.
- Objective: Roundabouts should be considered the default intersection control for new developments unless all way stop or signal control is proven to be a superior choice, particularly at two-lane road intersections. As such, the goal of this policy is to develop a set of procedures to screen and assess whether subject intersections should be roundabout controlled: define a roundabout and its core elements, in comparison to other types of circular intersections; discuss principles of considerations (advantages vs. disadvantages); lay out the initiation, planning (screening and assessment phases), review and approval process.

This procedural and analysis tool kit to achieve this objective relative to intersection control has now been incorporated into the Linear Design Manual and the City's Roundabout Installation Guidelines.

<b>3.5</b>	<b>Network Planning Guidelines</b>	Network Planning Guidelines remains as documented in the 2020 TMP Update.
<b>3.5.1</b>	<b>Principles</b>	Principles remains as documented in the 2020 TMP Update.
<b>3.5.2</b>	<b>Guidelines</b>	Guidelines remains as documented in the 2020 TMP Update.
<b>3.5.3</b>	<b>Performance Measures</b>	
<b>3.5.3.1</b>	<b>Completeness</b>	Completeness remains as documented in the 2020 TMP Update.
<b>3.5.4</b>	<b>Street Types</b>	Street Types remains as documented in the 2020 TMP Update.
<b>3.5.4.1</b>	<b>Walking</b>	Walking remains as documented in the 2020 TMP Update.
<b>3.5.4.2</b>	<b>Cycling</b>	Cycling remains as documented in the 2020 TMP Update.
<b>3.5.4.3</b>	<b>Transit</b>	Transit remains as documented in the 2020 TMP Update.
<b>3.5.4.4</b>	<b>Goods Movement</b>	Goods Movements remains as documented in the 2020 TMP Update.
<b>3.5.4.5</b>	<b>Automobiles</b>	Automobiles remains as documented in the 2020 TMP Update.
<b>3.6</b>	<b>Network Assessment</b>	Network Assessment remains as documented in the 2020 TMP Update.
<b>3.6.1</b>	<b>Walking</b>	Walking remains as documented in the 2020 TMP Update.

3.6.2	<b>Cycling</b>
	Cycling remains as documented in the 2020 TMP Update.
3.6.3	<b>Transit</b>
	Transit remains as documented in the 2020 TMP Update.
3.6.4	<b>Goods and Services Movement</b>
	Goods and Services remains as documented in the 2020 TMP Update.
3.6.5	<b>Road Network</b>
	Road Network remains as documented in the 2020 TMP Update.

## 4.0 Transportation Assessment

This chapter describes the process of assessing the future 2051 travel conditions, evaluating alternative strategies for addressing identified issue, and selecting a strategic recommended plan for transportation planning in Brantford to 2051. The assessment builds on the data and analysis approach identified in the *Study Foundation* (Chapter 1) and *Complete Streets Framework* (Chapter 3).

The performance of the transportation system was assessed using the City’s strategic travel demand forecasting model. This model accounts for land-use (at a traffic zone level of detail, as provided by the Municipal Comprehensive review process) trip generation, trip distribution, and mode split in assigning travel demands to the transportation network. The assigned vehicle volumes are then compared to the capacity of the infrastructure at a corridor and roadway link level (i.e. volume to capacity assessment). This analysis tool also allows for the detailed evaluation of the origins and destinations for trips using specific infrastructure.

Travel demands were then used to identify the impacts of the alternative strategies on the corridor performance and assist in the identification of the impact of alternatives considered to address the identified roadway constraint.

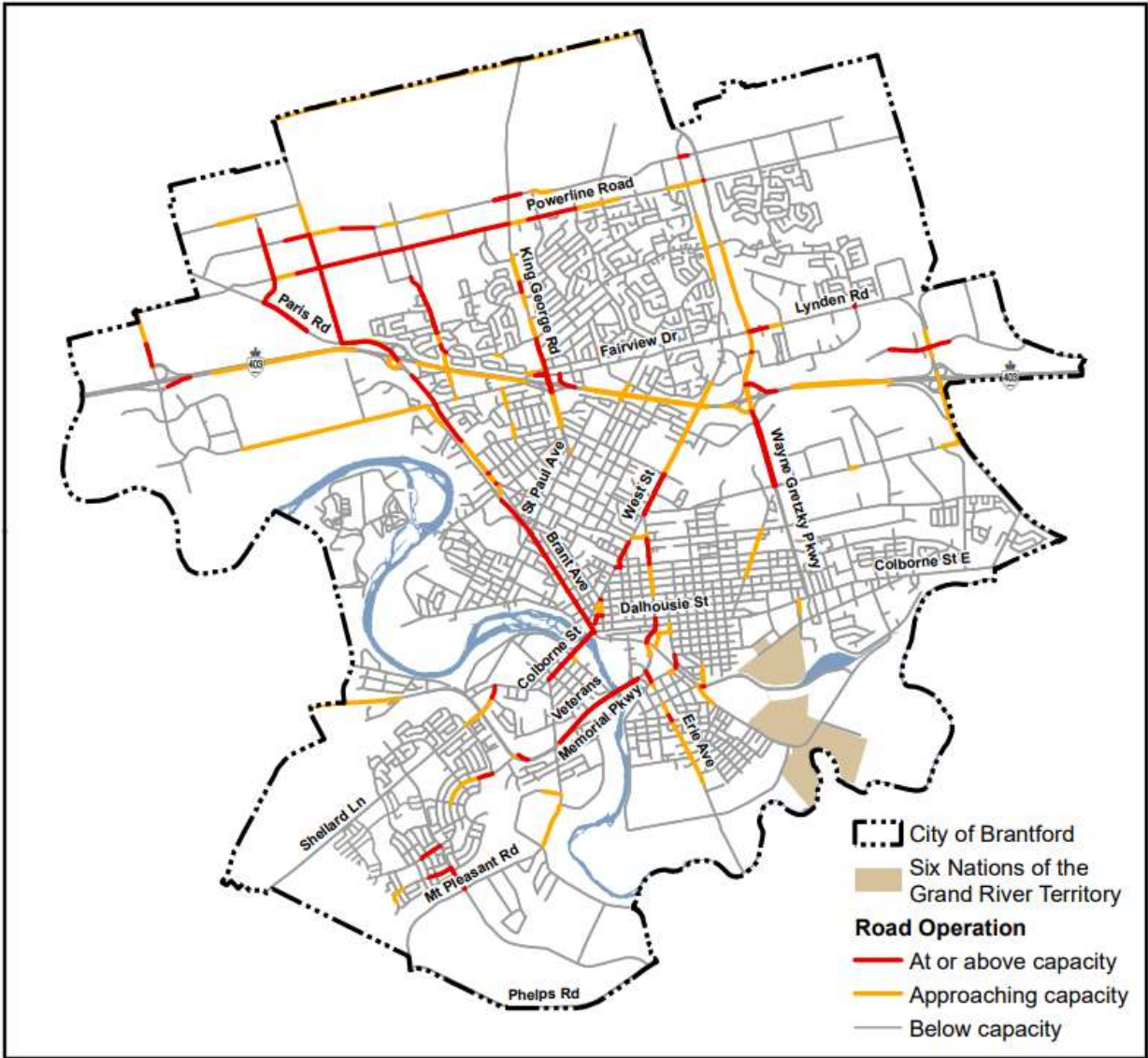
It is important to understand that infrastructure and service provisions in one corridor can have impacts, positive and negative, in other corridors. Problems identified and solutions assessed during the transportation analysis are mindful of this interdependency between corridors.

The resulting recommended plan includes a combination of: optimising existing transportation infrastructure, adding additional transportation infrastructure, and managing travel demand.

### 4.1 Do Minimal

The capacity constraints by 2051, accounting for proposed growth under a transportation network scenario with minimal improvements over today’s condition, were identified. The changes to the road network include only short term committed projects (e.g. The Oak Park Road/Highway 403 interchange upgrade), collector roads required to support the expansion growth areas (required to provide access to future development), and the potential closure of Tutela Heights Road in the vicinity of Davern Road (as a result of the Tutela Heights Slope Stability EA). An overview of the link and screenline capacity and performance in the PM peak hour for the 2051 Do Minimal network are illustrated *Figure 4-1* and *Table 4-1* respectively.

Figure 4-1: 2051 Do Minimal Network: Capacity Constraints



Overall, the 2051 Do Minimal network assessment shows that many of the arterial roads will be operating at or above capacity in the PM peak hour. Growth in travel has resulted in a significant decrease in network performance. Existing issues crossing Highway 403 and the Grand River are exacerbated by growth, and new issues have emerged (as a result of boundary expansion) along the north-south roadways connecting the downtown and growth areas to Highway 403.



Table 4-1: 2051 Do Minimal: Screenline Assessment

#	Name	Direction	Capacity		AM Peak Hour		PM Peak Hour	
			Lanes	Total	Volume	V/C	Volume	V/C
1	Grand River South	EB	7	8,100	6,752	0.83	6,199	0.77
1	Grand River South	WB	7	8,100	4,433	0.55	7,639	0.94
2	Grand River North	EB	4	5,200	3,176	0.61	4,185	0.80
2	Grand River North	WB	5	6,000	2,779	0.46	3,918	0.65
3	Highway 403	NB	13	10,800	7,023	0.65	9,262	0.86
3	Highway 403	SB	13	10,800	7,463	0.69	9,431	0.87
4	King George Road	EB	11	9,600	5,254	0.55	8,699	0.91
4	King George Road	WB	11	9,600	6,998	0.73	7,417	0.77
5	Wayne Gretzky Parkway (North)	EB	7	7,600	4,518	0.59	6,592	0.87
5	Wayne Gretzky Parkway (North)	WB	7	7,600	5,604	0.74	5,969	0.79
6	Wayne Gretzky Parkway (South)	EB	7	4,900	1,950	0.40	2,336	0.48
6	Wayne Gretzky Parkway (South)	WB	7	4,900	1,621	0.33	2,802	0.57
7	Memorial Drive	EB	9	6,100	1,670	0.27	3,158	0.52
7	Memorial Drive	WB	9	6,100	2,434	0.40	2,690	0.44
8	West Street	EB	6	4,300	2,165	0.50	3,109	0.72
8	West Street	WB	6	4,300	2,661	0.62	3,076	0.72
9	CNR Corridor	NB	11	7,900	4,413	0.56	5,190	0.66
9	CNR Corridor	SB	11	7,900	4,398	0.56	6,196	0.78
10	Garden Avenue	EB	9	8,800	4,717	0.54	6,071	0.69
10	Garden Avenue	WB	9	8,800	4,646	0.53	6,236	0.71
11	Powerline Road	NB	13	9,400	4,243	0.45	6,005	0.64
11	Powerline Road	SB	13	9,400	4,807	0.51	6,360	0.68
12	Murray Street	EB	7	4,400	2,131	0.48	1,965	0.45
12	Murray Street	WB	8	5,200	1,657	0.32	2,623	0.50
13	West External	EB	7	7,300	1,707	0.23	2,286	0.31
13	West External	WB	7	7,300	1,681	0.23	2,249	0.31
14	South-West External	NB	4	4,300	1,560	0.36	1,201	0.28
14	South-West External	SB	4	4,300	960	0.22	1,622	0.38
15	East External	EB	5	6,900	3,152	0.46	3,828	0.55
15	East External	WB	5	6,900	3,298	0.48	3,948	0.57
16	North-East External	NB	3	3,200	1,444	0.45	1,729	0.54
16	North-East External	SB	3	3,200	1,254	0.39	2,347	0.73
17	North-West External	NB	3	3,300	809	0.25	931	0.28
17	North-West External	SB	3	3,300	800	0.24	1,000	0.30

**Legend:**

	V/C Range	From	To
X	Good Capacity Conditions	0.00	0.70
X	Approaching Capacity Conditions	0.70	0.85
X	Over Capacity Conditions	0.85	-

Notes: i) For more details on screenlines in general please see **Chapter 2.0. Transportation Impacts of Growth** in the 2020 TMP Update.

ii) Screenlines are illustrated in **Figure 2-3** of the 2020 TMP Update. *Error! Reference source not found.*

iii) Total (capacity) = the total roadway vehicle capacity of all lanes that cross a particular screenline in a particular direction.

iv) Volume = the total number of vehicles that cross a particular screenline in a particular direction during a particular peak hour.

The following critical deficiencies were identified in the road network for the PM peak hour:

- Inter-regional (significant number of trips in the corridor are to/from areas outside of Brantford)
  - Brant Avenue - St Paul Avenue to Colborne Street
  - Wayne Gretzky Parkway - Henry Street to Highway 403
  - Wayne Gretzky Parkway - North of Highway 403
  - King George Road - Crossing Highway 403
  - Oak Park Road – Crossing Highway 403
  - Paris Road - Highway 403 to Powerline Road
- Intra-regional (significant number of trips in the corridor are to/from areas within Brantford)
  - Lorne Bridge (Colborne Street) - Grand River Crossing
  - West Street - Charing Cross Street to Henry Street
  - Veterans Memorial Parkway - Mt. Pleasant Street to Market Street
  - Paris Road - South of Highway 403
  - Powerline Road - Paris Road to Wayne Gretzky Parkway
  - Hardy Road - Ferrero Boulevard to Paris Road
  - Erie Avenue - Veterans Memorial Parkway to Birkett Lane
- Local System (trips primarily local in nature)
  - Clarence Street/Clarence Street South – Dalhousie Street to Icomm Drive
  - Colborne Street West – County Road 7 (Pleasant Ridge Road) to D’Aubigny Road
  - Mohawk Street/Greenwich Street/Murray Street

## 4.2 Alternative Transportation Strategies

Alternative Strategies remains as documented in the 2020 TMP Update.

### 4.2.1 Travel Demand Management

Travel Demand Management (TDM) is a wide range of policies, programs, services and products that influence how, why, when, and where people travel to create a more sustainable transportation network. The objectives are to encourage individuals to:

- utilize alternate modes of transportation (walk, cycle, take transit or carpool instead of driving alone);
- travel less (telework, link several purposes in one trip); or
- change trip times or routes (choose off-peak hours or less congested roads).

Ultimately, a TDM strategy focuses on the modification of travel behaviour by encouraging people to use sustainable modes of transportation, rather than driving alone, or making fewer trips by car. For example: increased use of transit, increased cycling and walking for shorter distance trips, and taking advantage of ride sharing opportunities would address the growth of traffic in the City by achieving new mode share targets in 2051 (as illustrated in **Table 4-2**). They include a reduction in the auto driver/passenger mode share from 85% in 2016 to 80% in 2051, a significant increase in the transit

mode share from 2.8% today to 5.8% in 2051 and an increase in the Active Transportation mode share from 7.8% today to 9.9% in 2051.

**Table 4-2: Brantford Travel Mode Share Targets: Internal Trips (Brantford to Brantford)**

Mode \ Year	2016	2051	Difference
Auto Driver	70.8%	67.5%	- 3.3%
Auto Passenger	14.6%	12.5%	- 2.1%
Transit	2.8%	5.8%	+ 3.0%
Cycle/walk	7.8%	9.9%	+ 2.1%
Other	4.0%	4.3%	+ 0.3%
	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

This TDM strategy does not include any increases to the roadway network capacity that would be provided by roadway widening, extensions and/or additions. However, improvements (expansion, higher frequency) to the transit system would be required to facilitate the penetration of new or underserved markets in the City.

Travel Demand Management initiatives do not completely replace the need for road improvements or system expansion. They are, however, effective in deferring costly infrastructure improvements or expansion. In deferring the need for infrastructure improvements and supporting alternative modes of travel, TDM provides for health and environmental benefits, consistent to OP goals.

#### Active Transportation

Active Transportation remains as documented in the 2020 TMP Update.

#### Transit

Travel Demand Management relies heavily on the use of transit. While the use of transit is growing, today approximately 3% of weekday peak hour trips are made by transit. The success of transit depends on the availability, convenience and reliability of service, and the proximity of that service to residences, jobs, and schools. The greater the access to transit for people and jobs, the higher the potential for transit ridership.

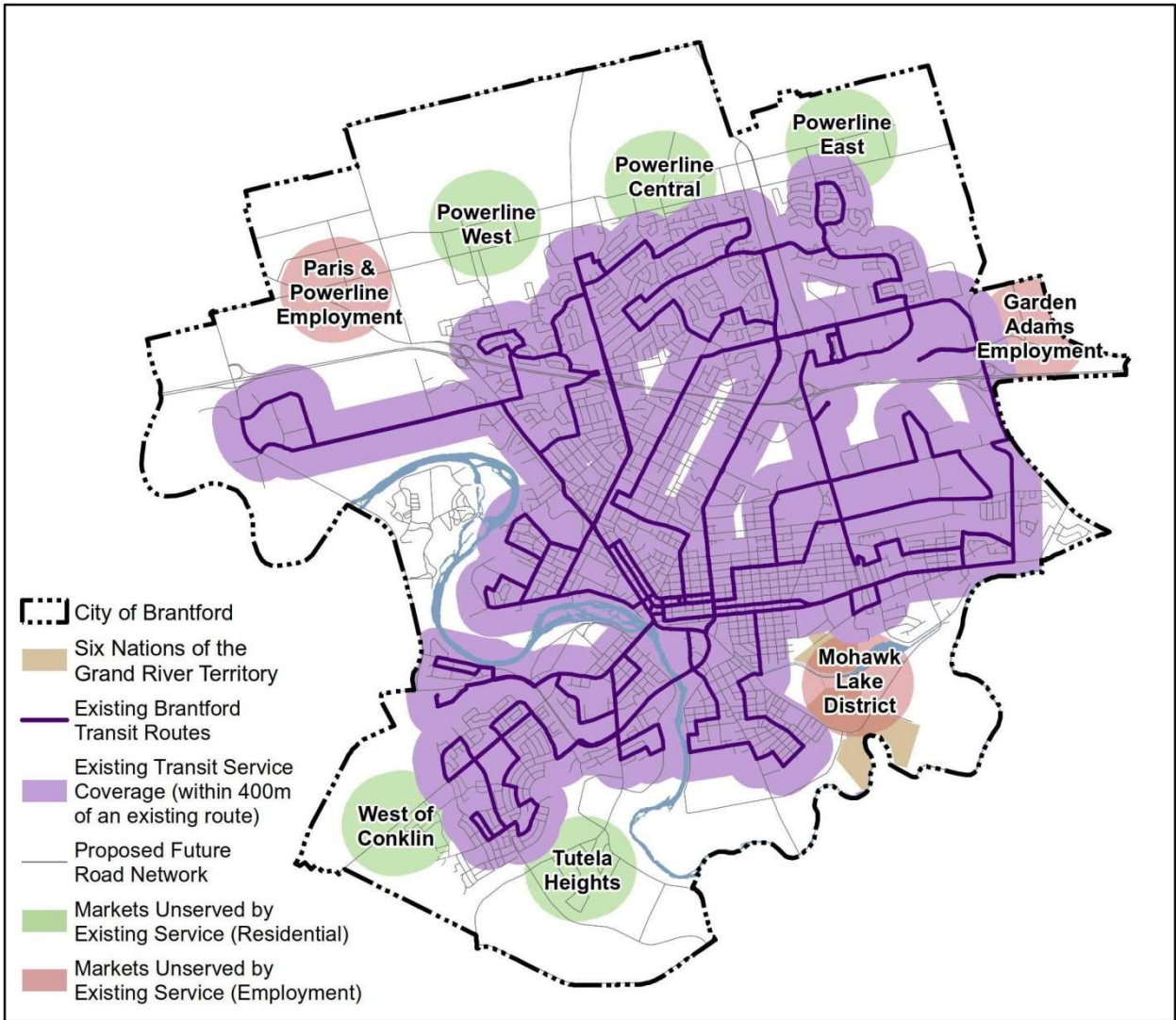
The approach to determining the future potential for transit in Brantford was as follows:

- Assess existing transit system coverage;
- Review existing mode splits to transit for traffic zones;
- Set appropriate targets for land use type and density, and in consideration of available transit;
- Apply targets to 2051 trip ends;
- Adjust total travel demands for vehicles;
- Assign transit trips to enhanced/expanded transit service coverage; and
- Outcome:

- Overall system improvement in transit use results in reduction of vehicle trips;
- Corridor transit use increase;
- Increase in transit use, decreases auto trips; and
- Capacity analysis reassessed using reduced auto demand scenario (TDM).

Achieving these increases requires significant expansion of existing service (new routes) and service frequency (more buses, smaller headways between buses) to serve existing areas more efficiently and to provide service in new areas. **Figure 4-2** identifies the existing transit system coverage and future market opportunities.

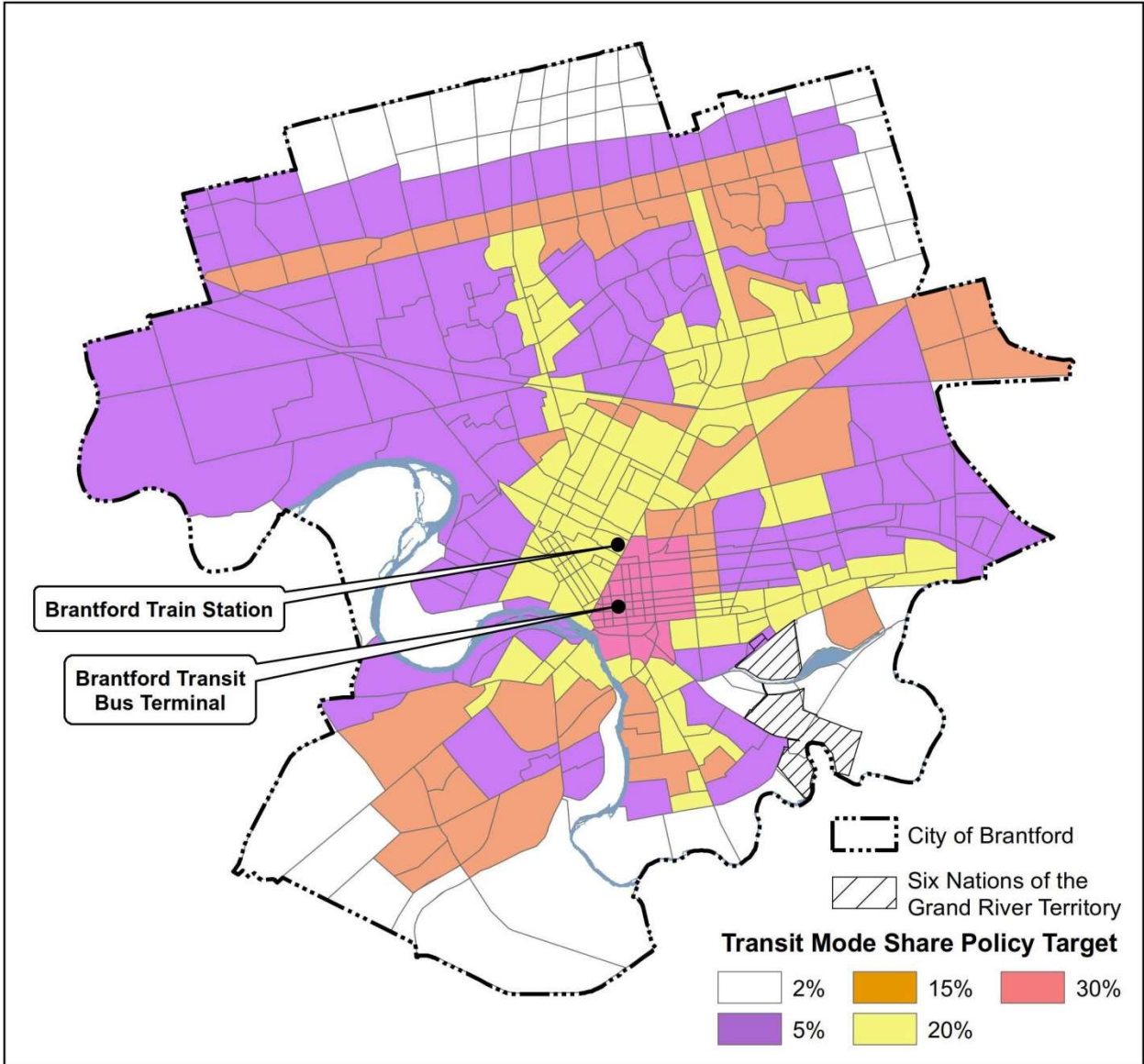
**Figure 4-2: Existing Transit System Coverage and Future Market Opportunities**



A review of existing mode splits was undertaken to establish the penetration of the transit market. Population and employment densities in the 2051 condition were reviewed to identify areas where

transit service would have the most impact. New mode share targets were identified and applied to future trip generation to establish new transit ridership levels and make corresponding adjustments to the auto trip making. **Figure 4-3** identifies the 2051 mode split targets for transit.

**Figure 4-3: 2051 Transit Mode Split – Zone Policy Targets**

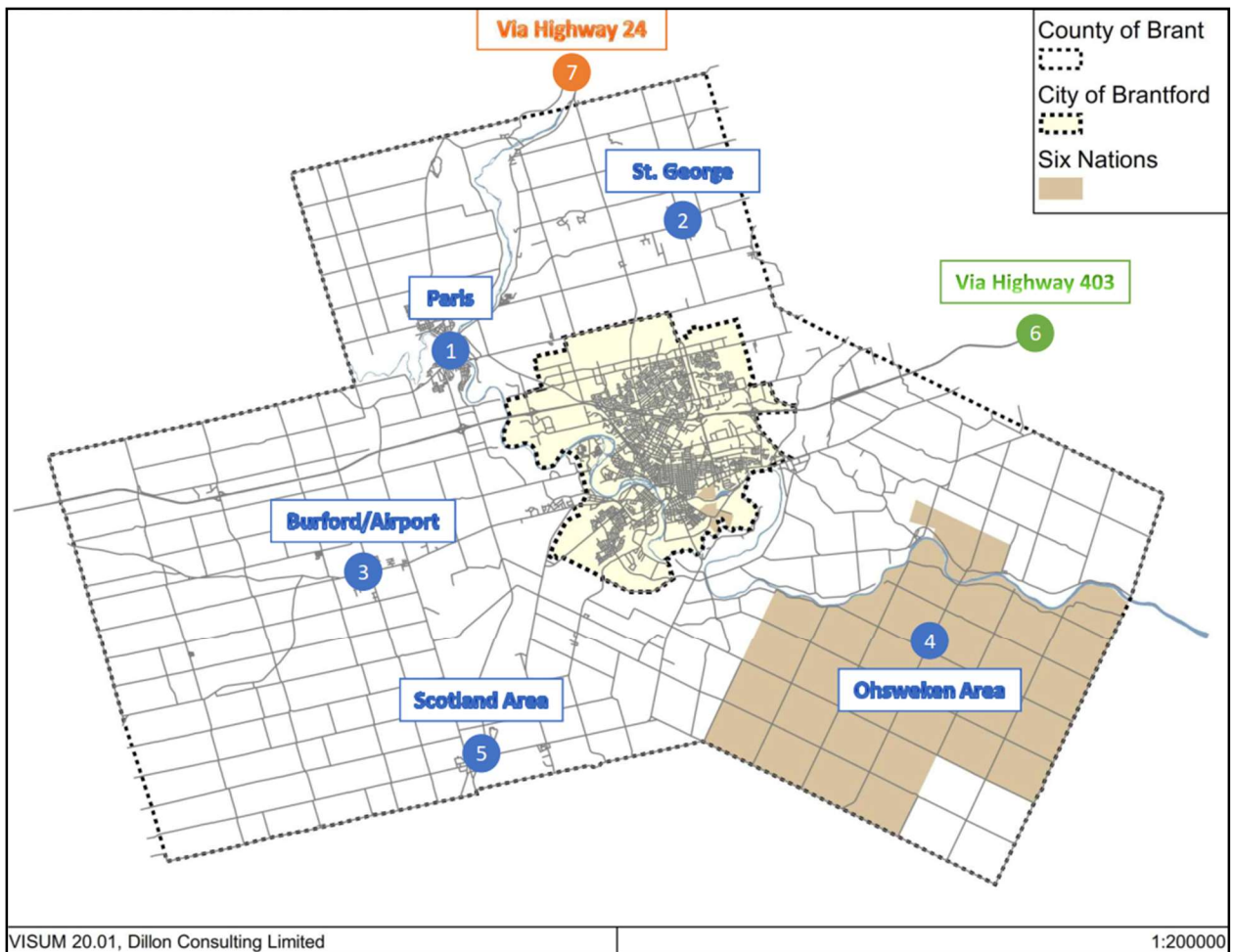


The application of the new transit mode share targets results in a significant increase in transit ridership. Overall, the city-wide transit mode share is forecast to increase from 2.8% in 2016 to 5.8% in 2051. This mode share target is aggressive (more than double the current share) but achievable if married to land use intensification strategies identified in the OP and if a commitment is made to transit service improvements and expansion as identified in the City’s 2016 transit service plan.

The impact of this increased focus on transit is a tripling of route ridership (remembering that route ridership includes transfers between multiple routes by a single rider to facilitate their trip). Such a service expansion will require significant investment in capital and operating costs. The current transit system comprises approximately 175 km of linear routes, which would need to expand to over 220 km of linear routes to access the growth areas. This reflects a 25% increase in transit coverage in the City that will also require additional vehicle hours to maintain the required service levels to meet demand.

In addition to the local Brantford to Brantford transit service, there are opportunities to partner with other agencies to connect communities outside the City limits by public transit. While there is some existing regional transit via GO Transit to Hamilton, McMaster University, and Aldershot GO Station (Burlington), these markets are under served, and the County connections are very limited. Providing more consistent transit connectivity will reduce the vehicle travel demands resulting in benefits to the City’s road system performance. Travel markets to/from Brant County, the GTA, and the Tri-Cities (Cambridge/Kitchener/Waterloo) are significant. They are displayed in **Figure 4-4**.

**Figure 4-4: Inter-Regional Transit Opportunities**



A review of the forecasted 2051 PM peak period person trips identified the following market potentials:

- From Brantford to Brant:
  - (1) Paris - 6,700 person trips (all modes)
  - (2) St. George - 1,250 person trips (all modes)
  - (3) Burford/Airport - 250 person trips (all modes)
  - (4) Ohsweken area - 250 person trips (all modes)
  - (5) Scotland area - 900 person trips (all modes)
- From Brantford to GTA:
  - (6) Via Hwy 403 - 7,700 person trips (all modes)
- From Brantford to Cambridge/Kitchener/Waterloo
  - (7) Via Hwy 24 - 2,250 person trips (all modes)

Not all of these trips are divertible to transit, but even achieving 2%-5% market penetration could result in significant auto trip reduction on critical roadways. This inter-regional potential would also be beneficial to captive ridership (i.e. seniors, students, and mobility challenged users).

The development of such service has the potential to reduce auto volumes on the critical north-south arterials within the City but will require inter-agency collaboration (at both ends of trip) to implement (e.g. planning and funding).

#### **Manage Travel Demand Assessment**

The effect of the 5.8% transit mode share, in combination with a 9.9% mode share to active modes (walking and cycling) significantly reduces the 2051 vehicle demand on the network. This TDM scenario, as assigned to the Do Minimal network, results in a noticeable improvement in network operations across the city compared with the 2051 Do Minimal forecasts. **Figure 4-5** illustrates an overview of the link capacity constraints in the 2051 TDM network, while **Table 4-3** displays the screenline capacity results in the 2051 TDM network.

The TDM network is forecast to work much more reliably in the downtown area and crossing Highway 403. However, specific problem areas still remain: Paris Road between Highway 403 and Golf Road, King George Road crossing Highway 403, and the Grand River Crossings.

A TDM strategy alone does not address all of the transportation network system constraints. Transportation issues remain in the north along Powerline Road and on the two Grand River vehicle bridge crossings (Lorne Bridge [Colborne Street] and Veterans Memorial Parkway).

Figure 4-5: 2051 Manage Travel Demand Network: Capacity Constraints

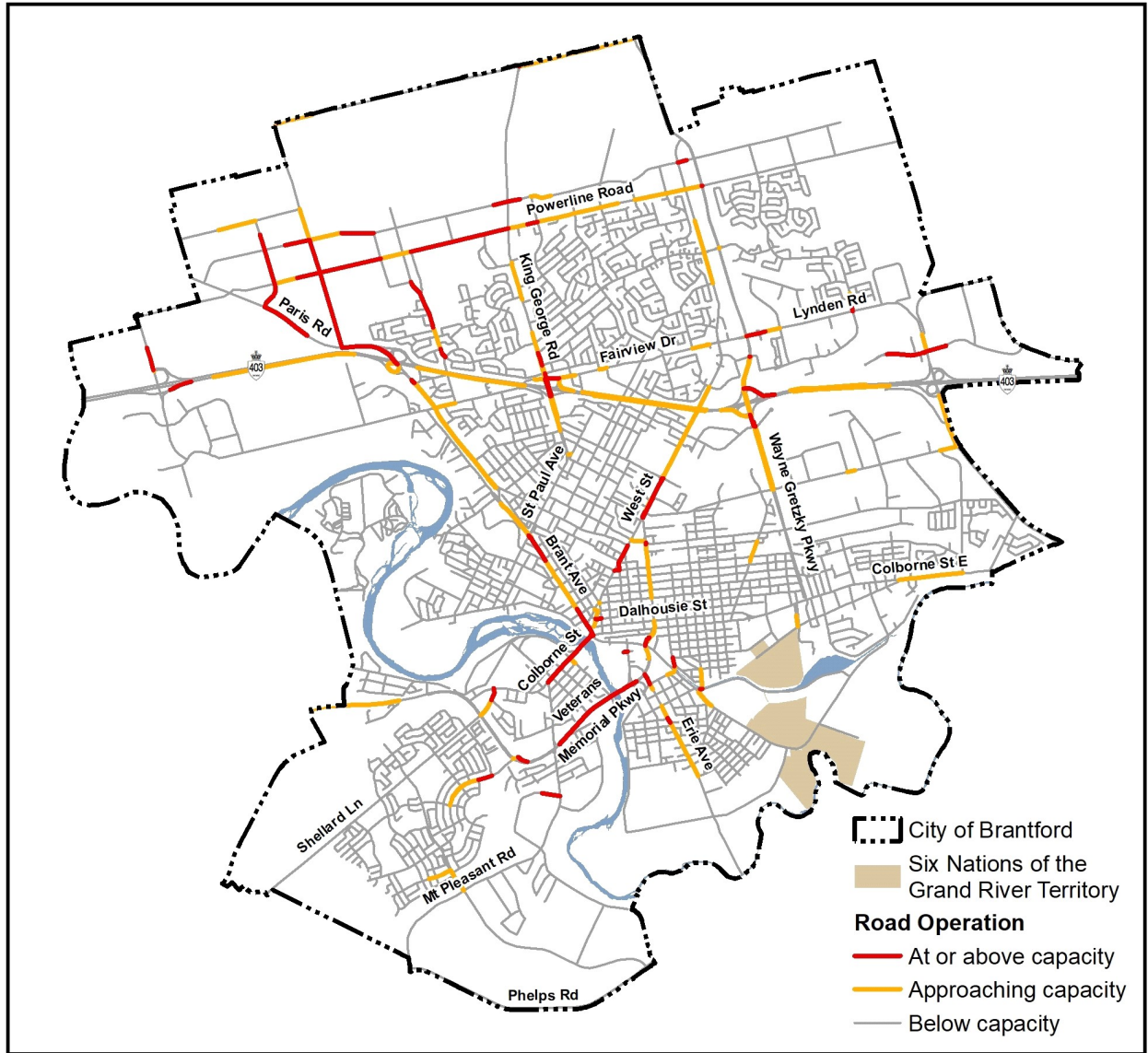




Table 4-3: 2051 Manage Travel Demand: Screenline Assessment

#	Name	Direction	Capacity		AM Peak Hour		PM Peak Hour	
			Lanes	Total	Volume	V/C	Volume	V/C
1	Grand River South	EB	7	8,100	6,509	0.80	5,926	0.73
1	Grand River South	WB	7	8,100	4,145	0.51	7,179	0.89
2	Grand River North	EB	4	5,200	3,012	0.58	4,039	0.78
2	Grand River North	WB	5	6,000	2,586	0.43	3,697	0.62
3	Highway 403	NB	13	10,800	6,521	0.60	8,655	0.80
3	Highway 403	SB	13	10,800	7,141	0.66	8,912	0.83
4	King George Road	EB	11	9,600	5,030	0.52	8,319	0.87
4	King George Road	WB	11	9,600	6,599	0.69	6,890	0.72
5	Wayne Gretzky Parkway (North)	EB	7	7,600	4,379	0.58	6,331	0.83
5	Wayne Gretzky Parkway (North)	WB	7	7,600	5,464	0.72	5,774	0.76
6	Wayne Gretzky Parkway (South)	EB	6	4,100	1,854	0.45	2,154	0.53
6	Wayne Gretzky Parkway (South)	WB	6	4,100	1,468	0.36	2,664	0.65
7	Memorial Drive	EB	7	4,900	1,573	0.32	2,898	0.59
7	Memorial Drive	WB	7	4,900	2,269	0.46	2,398	0.49
8	West Street	EB	6	4,300	2,010	0.47	3,027	0.70
8	West Street	WB	6	4,300	2,581	0.60	3,054	0.71
9	CNR Corridor	NB	11	7,900	4,115	0.52	4,873	0.62
9	CNR Corridor	SB	11	7,900	4,093	0.52	5,895	0.75
10	Garden Avenue	EB	8	8,000	4,593	0.57	5,781	0.72
10	Garden Avenue	WB	8	8,000	4,574	0.57	6,013	0.75
11	Powerline Road	NB	12	9,000	4,008	0.45	5,741	0.64
11	Powerline Road	SB	12	9,000	4,617	0.51	5,978	0.66
12	Murray Street	EB	7	4,400	2,095	0.48	1,846	0.42
12	Murray Street	WB	8	5,200	1,570	0.30	2,497	0.48
13	West External	EB	7	7,300	1,667	0.23	2,259	0.31
13	West External	WB	7	7,300	1,615	0.22	2,179	0.30
14	South-West External	NB	4	4,300	1,546	0.36	1,186	0.28
14	South-West External	SB	4	4,300	942	0.22	1,644	0.38
15	East External	EB	5	6,900	3,162	0.46	3,825	0.55
15	East External	WB	5	6,900	3,304	0.48	3,960	0.57
16	North-East External	NB	3	3,200	1,430	0.45	1,712	0.54
16	North-East External	SB	3	3,200	1,245	0.39	2,325	0.73
17	North-West External	NB	3	3,300	774	0.23	920	0.28
17	North-West External	SB	3	3,300	796	0.24	955	0.29

**Legend:**

	V/C Range	From	To
X	Good Capacity Conditions	0.00	0.70
X	Approaching Capacity Conditions	0.70	0.85
X	Over Capacity Conditions	0.85	-

Notes: i) For more details on screenlines in general please see **Chapter 2.0. Transportation Impacts of Growth** in the 2020 TMP Update.

ii) Screenlines are illustrated in **Figure 2-3** of the 2020 TMP Update.

iii) Total (capacity) = the total roadway vehicle capacity of all lanes that cross a particular screenline in a particular direction.

iv) Volume = the total number of vehicles that cross a particular screenline in a particular direction during a particular peak hour.

## 4.2.2

**Transportation System Management**

A Transportation Systems Management (TSM) remains as documented in the 2020 TMP Update.

### 4.2.3 Increase Infrastructure

The Increase Infrastructure strategy addresses travel demands on the City's road network by enhancing the carrying capacity of the network through strategic road widenings and extensions. 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. **Figure 4-6** illustrates an overview of the link performance with respect to capacity in the 2051 Increased Infrastructure network, while **Table 4-4** displays the screenline demand to capacity results in the 2051 Increased Infrastructure network. The Increase Infrastructure strategy includes short-term committed improvements, as well as a full program of infrastructure projects as was identified in the 2014 Transportation Master Plan (excluding a Veteran's Memorial Parkway extension, due to recent Council Resolution regarding use of lands under the jurisdiction of Six Nations of the Grand River (i.e. Glebe Farm Lands) for a transportation corridor).

The increased infrastructure network will operate significantly better than the 2051 Do Minimal network in the following ways:

- Reducing congestion along Hardy Road and Brant Avenue as a result of the Oak Park Road extension; and
- Eliminating congestion on Wayne Gretzky Parkway as a result of a widening to six lanes.

However, the two main crossings of the Grand River are still anticipated to be significantly over capacity even with the addition of the Oak Park Road Grand River crossing (4 lanes) and a widening of the Veteran's Memorial Parkway Grand River crossing (2 to 4 lanes).

It is noted that improvements to the network required to support development in the expansion areas have not been specifically identified as strategic network needs, as they are driven by local development needs.

In short, the network will still experience some residual capacity issues under the 2051 growth scenario even with significant investment in infrastructure improvements (as recommended in the 2014 TMP).

Figure 4-6: 2051 Increased Infrastructure Network: Capacity Constraints

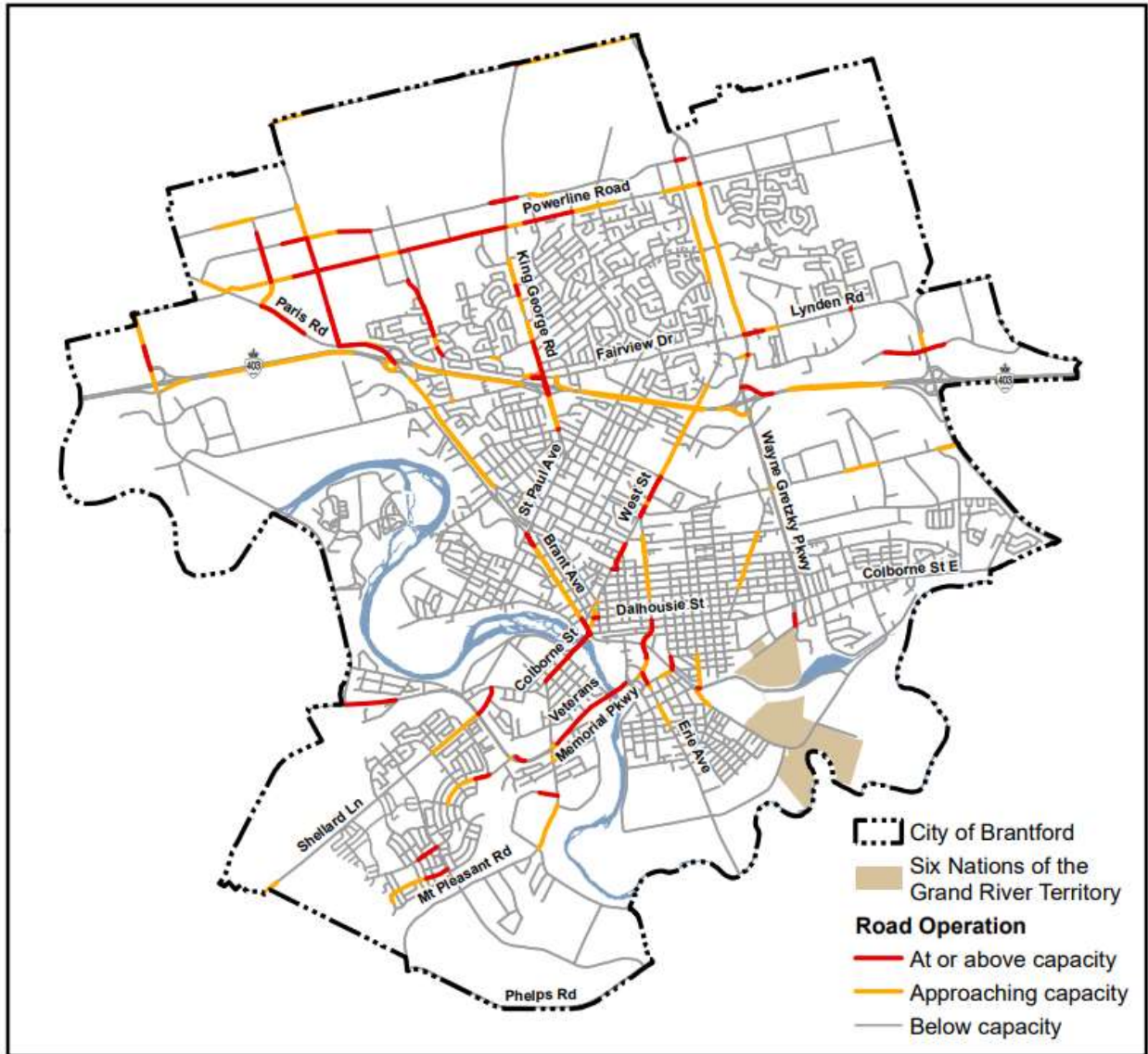


Table 4-4: 2051 Increase Infrastructure: Screenline Assessment

#	Name	Direction	Capacity		AM Peak Hour		PM Peak Hour	
			Lanes	Total	Volume	V/C	Volume	V/C
1	Grand River South	EB	10	11,100	6,423	0.58	7,305	0.66
1	Grand River South	WB	10	11,100	5,552	0.50	7,559	0.68
2	Grand River North	EB	4	5,200	2,933	0.56	4,290	0.83
2	Grand River North	WB	5	6,000	2,845	0.47	3,729	0.62
3	Highway 403	NB	14	11,800	7,351	0.62	9,334	0.79
3	Highway 403	SB	14	11,800	7,447	0.63	9,902	0.84
4	King George Road	EB	11	9,600	5,225	0.54	8,328	0.87
4	King George Road	WB	11	9,600	6,619	0.69	7,307	0.76
5	Wayne Gretzky Parkway (North)	EB	7	7,600	4,621	0.61	6,653	0.88
5	Wayne Gretzky Parkway (North)	WB	7	7,600	5,619	0.74	6,079	0.80
6	Wayne Gretzky Parkway (South)	EB	7	4,900	1,975	0.40	2,370	0.48
6	Wayne Gretzky Parkway (South)	WB	7	4,900	1,635	0.33	2,947	0.60
7	Memorial Drive	EB	9	6,100	1,684	0.28	3,110	0.51
7	Memorial Drive	WB	9	6,100	2,375	0.39	2,614	0.43
8	West Street	EB	6	4,300	2,130	0.50	3,111	0.72
8	West Street	WB	6	4,300	2,524	0.59	3,195	0.74
9	CNR Corridor	NB	12	8,800	4,419	0.50	5,393	0.61
9	CNR Corridor	SB	12	8,800	4,379	0.50	6,277	0.71
10	Garden Avenue	EB	9	8,800	4,858	0.55	5,982	0.68
10	Garden Avenue	WB	9	8,800	4,649	0.53	6,336	0.72
11	Powerline Road	NB	13	9,400	4,307	0.46	6,015	0.64
11	Powerline Road	SB	13	9,400	4,825	0.51	6,434	0.68
12	Murray Street	EB	7	4,400	2,168	0.49	1,921	0.44
12	Murray Street	WB	8	5,200	1,681	0.32	2,874	0.55
13	West External	EB	7	7,300	1,711	0.23	2,285	0.31
13	West External	WB	7	7,300	1,684	0.23	2,184	0.30
14	South-West External	NB	4	4,300	1,598	0.37	1,251	0.29
14	South-West External	SB	4	4,300	973	0.23	1,749	0.41
15	East External	EB	5	6,900	3,149	0.46	3,827	0.55
15	East External	WB	5	6,900	3,289	0.48	3,951	0.57
16	North-East External	NB	3	3,200	1,444	0.45	1,729	0.54
16	North-East External	SB	3	3,200	1,254	0.39	2,347	0.73
17	North-West External	NB	3	3,300	789	0.24	932	0.28
17	North-West External	SB	3	3,300	800	0.24	998	0.30

Legend:		V/C Range	From	To
X	Good Capacity Conditions		0.00	0.70
X	Approaching Capacity Conditions		0.70	0.85
X	Over Capacity Conditions		0.85	-

Notes: i) For more details on screenlines in general please see *Chapter 2.0. Transportation Impacts of Growth* in the 2020 TMP Update.

ii) Screenlines are illustrated in *Figure 2-3* of the 2020 TMP Update.

iii) Total (capacity) = the total roadway vehicle capacity of all lanes that cross a particular screenline in a particular direction.

iv) Volume = the total number of vehicles that cross a particular screenline in a particular direction during a particular peak hour.

### 4.3 Network Constraints and Solutions

While the TDM and Increased Network Infrastructure scenarios show significant potential to reduce congestion and delay in the network, neither strategy completely addresses the needs of the 2051 condition in isolation.

The next step in the transportation analysis was to assess the need for improvements in each of the constrained corridors, and consider the impact of each strategy (TDM, TSM, Increased Supply) on the constraint. This was done by assessing the 2051 Do Minimal scenario network performance to determine the magnitude performance issue (volume to capacity) and the travel characteristics of the demand in the corridor (select link analysis: origin and destination markets for future users).

Based on the critical deficiencies in the 2051 Do Minimal network alternative, an assessment of the impact of each strategy on each deficiency was undertaken, as well as an assessment of the alternatives for remediation. This analysis was primarily conducted for the PM peak hour which is considered the critical time period as it has the highest travel demands, unless otherwise noted.

#### 4.3.1 Brant Avenue - St Paul Avenue to Colborne Street

Brant Avenue remains as documented in the 2020 TMP Update.

#### 4.3.2 Wayne Gretzky Parkway - Henry Street to Highway 403

Wayne Gretzky Parkway remains as documented in the 2020 TMP Update.

#### 4.3.3 Wayne Gretzky Parkway - North of Highway 403

Wayne Gretzky Parkway remains as documented in the 2020 TMP Update.

#### 4.3.4 King George Road - Crossing Highway 403 to Dunsdon Street

King George Road remains as documented in the 2020 TMP Update.

#### 4.3.5 Paris Road - Highway 403 to Powerline Road

Paris Road remains as documented in the 2020 TMP Update.

#### 4.3.6 Colborne Street (Lorne Bridge) - Crossing the Grand River

Colborne Street (Lorne Bridge) remains as documented in the 2020 TMP Update.

#### 4.3.7 West Street - Charing Cross Street to Henry Street

West Street remains as documented in the 2020 TMP Update.

#### 4.3.8 Veterans Memorial Parkway - Mt. Pleasant Street to Market Street

Veterans Memorial Parkway remains as documented in the 2020 TMP Update.

4.3.9	<b>Paris Road - South of Highway 403 to Hardy Road</b>
	Paris Road remains as documented in the 2020 TMP Update.
4.3.10	<b>Powerline Road - Paris Road to Wayne Gretzky Parkway</b>
	Powerline Road remains as documented in the 2020 TMP Update.
4.3.11	<b>Hardy Road - Ferrero Boulevard to Paris Road</b>
	Hardy Road remains as documented in the 2020 TMP Update.
4.3.12	<b>Erie Avenue - Veterans Memorial Parkway/Clarence Street South to Birkett Lane</b>
	Erie Avenue remains as documented in the 2020 TMP Update.
4.3.13	<b>Clarence Street/Clarence Street South – Dalhousie Street to Icomm Drive</b>
	Clarence Street remains as documented in the 2020 TMP Update.
4.3.14	<b>Colborne Street West – County Road 7 to D’Aubigny Road</b>
	Colbourn Street West remains as documented in the 2020 TMP Update.
4.3.15	<b>Overall Combined Improvement Scenario Assessment</b>
	<p>The preferred solution network to address the forecast growth of the City to 2051 is a combined scenario that includes the following elements: transit service improvement/enhancements to promote increased transit use; the provision of active mode infrastructure to promote increased cycling and walking; and network infrastructure improvements to address the capacity constraints in the network. This solution results in a network and demand solution that addresses the identified long-term network deficiencies.</p> <p>The performance of this combined scenario 2051 Recommended Plan shows that almost all of the anticipated roadway capacity issues identified for 2051 Do-Minimal condition (where no long-term investment was made in transit service, active transportation, or infrastructure) are resolved.</p> <p><b>Figure 4-7</b> identifies the few remaining capacity/operational issues in the 2051 Recommended Network while <b>Table 4-5</b> displays the screenline capacity results in the 2051 Recommended Network. The remaining capacity/operational issues include the Lorne Bridge, Clarence Street South between Icomm Drive and Colborne Street East, and Paris Road. The transportation assessment suggests that while these are identified as capacity constraints in the long term, the magnitude of the issue has been significantly reduced. These issues are now forecast to be marginal and can be successfully managed in the near- and mid-term. These locations should continue to be monitored to identify the significance of any emerging issue.</p>

It is also recommended that lands be protected in the Veterans Memorial Parkway partial extension (to Murray Street) corridor such that the opportunity to implement this improvement is not lost in the very long term.

Figure 4-7: 2051 Recommended Network: Capacity Constraints

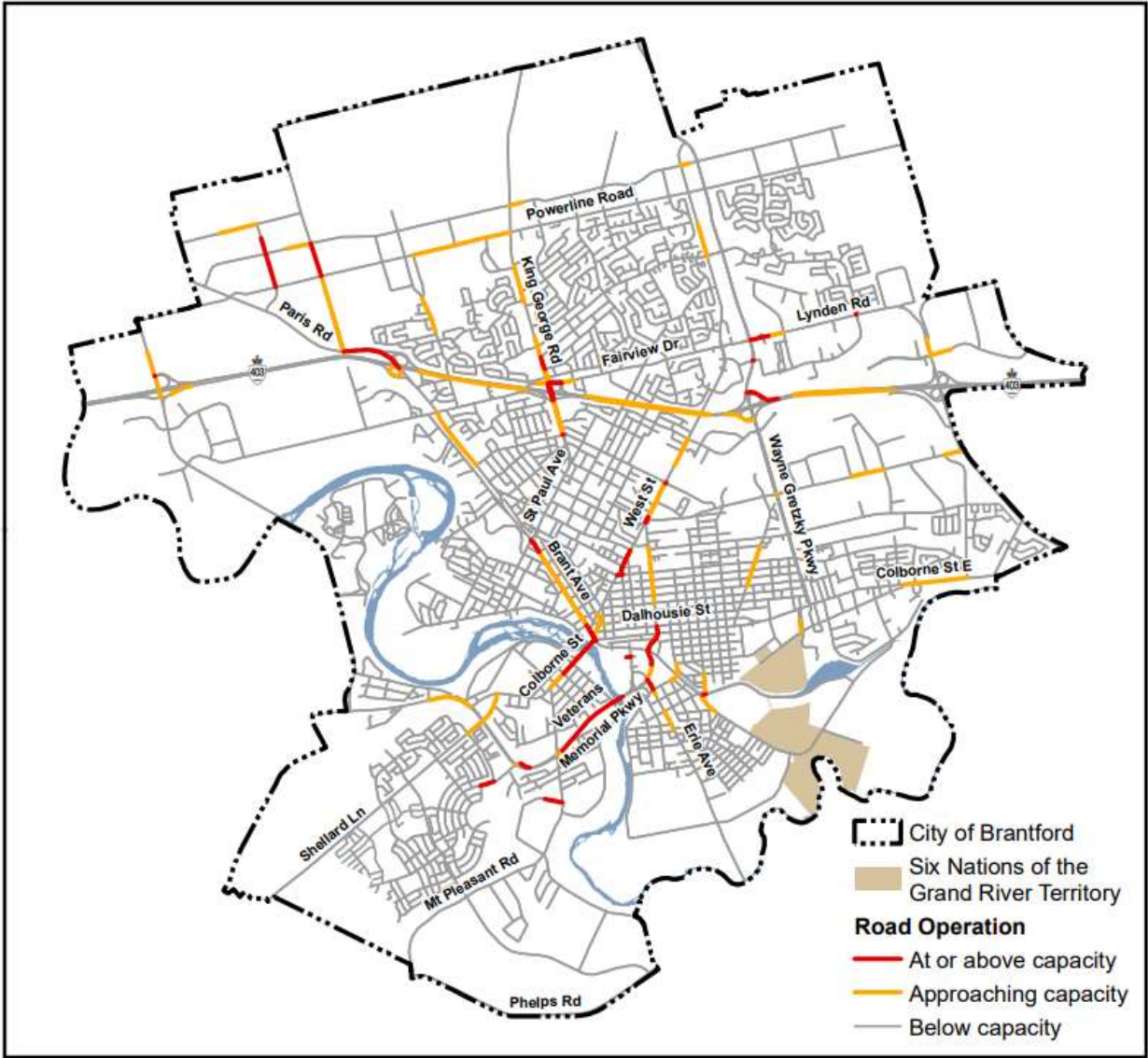


Table 4-5: 2051 Recommended: Screenline Assessment

#	Name	Direction	Capacity		AM Peak Hour		PM Peak Hour	
			Lanes	Total	Volume	V/C	Volume	V/C
1	Grand River South	EB	10	11,100	6,813	0.61	6,393	0.58
1	Grand River South	WB	10	11,100	4,376	0.39	7,693	0.69
2	Grand River North	EB	4	5,200	2,825	0.54	4,183	0.80
2	Grand River North	WB	5	6,000	2,738	0.46	3,611	0.60
3	Highway 403	NB	14	12,200	6,912	0.57	8,805	0.72
3	Highway 403	SB	14	12,200	7,177	0.59	9,378	0.77
4	King George Road	EB	12	10,600	5,028	0.47	8,235	0.78
4	King George Road	WB	12	10,600	6,421	0.61	7,052	0.67
5	Wayne Gretzky Parkway (North)	EB	8	8,600	4,444	0.52	6,408	0.75
5	Wayne Gretzky Parkway (North)	WB	8	8,600	5,472	0.64	5,921	0.69
6	Wayne Gretzky Parkway (South)	EB	6	4,100	1,887	0.46	2,186	0.53
6	Wayne Gretzky Parkway (South)	WB	6	4,100	1,496	0.36	2,774	0.68
7	Memorial Drive	EB	8	5,900	1,618	0.27	3,133	0.53
7	Memorial Drive	WB	8	5,900	2,396	0.41	2,491	0.42
8	West Street	EB	6	4,300	1,967	0.46	2,838	0.66
8	West Street	WB	6	4,300	2,359	0.55	3,024	0.70
9	CNR Corridor	NB	11	7,900	4,122	0.52	5,038	0.64
9	CNR Corridor	SB	11	7,900	4,062	0.51	5,843	0.74
10	Garden Avenue	EB	8	8,000	4,705	0.59	5,716	0.71
10	Garden Avenue	WB	8	8,000	4,568	0.57	6,082	0.76
11	Powerline Road	NB	14	11,500	4,634	0.40	6,317	0.55
11	Powerline Road	SB	14	11,500	4,831	0.42	6,609	0.57
12	Murray Street	EB	7	4,400	2,148	0.49	1,750	0.40
12	Murray Street	WB	8	5,200	1,633	0.31	2,707	0.52
13	West External	EB	7	7,300	1,672	0.23	2,301	0.32
13	West External	WB	7	7,300	1,660	0.23	2,153	0.29
14	South-West External	NB	4	4,300	1,581	0.37	1,178	0.27
14	South-West External	SB	4	4,300	942	0.22	1,732	0.40
15	East External	EB	5	6,900	3,160	0.46	3,825	0.55
15	East External	WB	5	6,900	3,302	0.48	3,962	0.57
16	North-East External	NB	3	3,200	1,430	0.45	1,713	0.54
16	North-East External	SB	3	3,200	1,243	0.39	2,329	0.73
17	North-West External	NB	3	3,300	755	0.23	919	0.28
17	North-West External	SB	3	3,300	794	0.24	953	0.29

Legend:		V/C Range	From	To
X	Good Capacity Conditions		0.00	0.70
X	Approaching Capacity Conditions		0.70	0.85
X	Over Capacity Conditions		0.85	-

Notes: i) For more details on screenlines in general please see *Chapter 2.0. Transportation Impacts of Growth* in the 2020 TMP Update.

ii) Screenlines are illustrated in *Figure 2-3* of the 2020 TMP Update.

iii) Total (capacity) = the total roadway vehicle capacity of all lanes that cross a particular screenline in a particular direction.

iv) Volume = the total number of vehicles that cross a particular screenline in a particular direction during a particular peak hour.



#### 4.3.16 Goods Movement

Goods Movement remains as documented in the 2020 TMP Update.

### 4.4 Recommended Plan

#### 4.4.1 Active Transportation

A key objective of the TMP is to work towards becoming a Bicycle Friendly Community by providing a clear, concise roadmap towards a more bicycle friendly future. Achieving this goal is dependent on providing full connectivity and the right environment to promote use and foster confidence in the system. This means addressing the needs of both recreational and utilitarian users. Full connectivity makes active transportation a feasible choice for any trip in the City. Providing the right space allows users of all skill to feel comfortable and choose routes that satisfy their safety and efficiency concerns by removing barriers to use.

Programs are also encouraged that support and encourage the use of active modes. Examples include bike-share/scooter share programs and employer/commercial incentives. While these are not within the scope of the TMP to define and implement, it is recognized that such programs can maximize the participation in active modes of transportation. These programs would be the subject of more focussed or detailed work (i.e. Active Transportation Plan or TDM tasks as part of development Traffic Impact Studies).

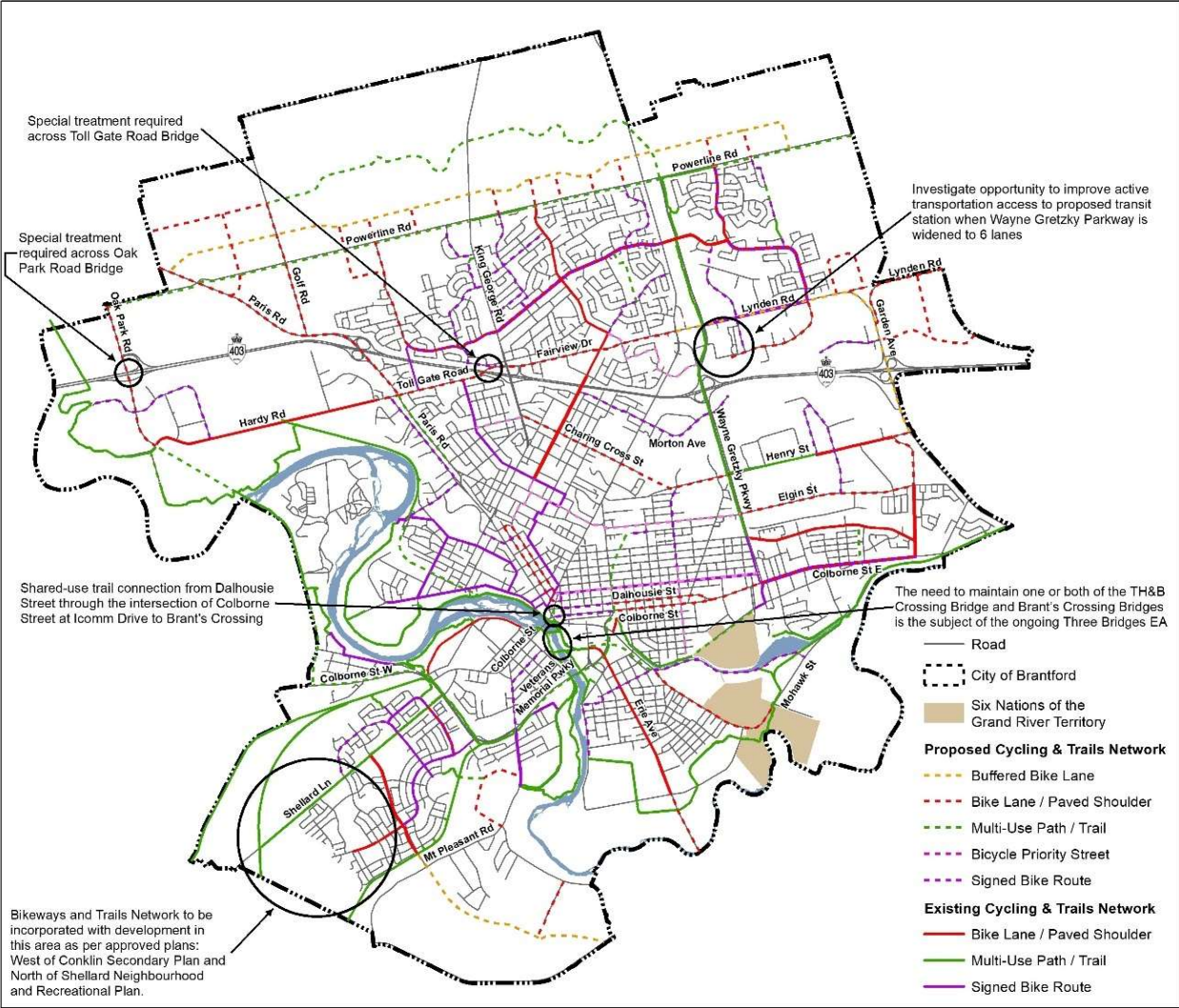
Barriers to active transportation modes include highway crossings, traversing large urban intersections, travelling in close proximity to high volumes of fast-moving vehicles, and the lack of user amenities (bike racks, lockers, shower facilities, rest areas).

The existing and proposed cycling and trails network is shown in **Figure 4-8**. The implementation of this network will add 145 km of additional cycling and trails facilities on to the existing 51 km of on road facilities and 96 km of off-road facilities. This network will provide a mix of on-road facilities (bike lanes and shared facilities) and off- road facilities (multi-use path and trails) that provide full connectivity for a full range of origins and destinations, and full range of user types/skills. **Table 4-6** summarizes the existing and proposed cycling and trails network by facility type.

As **Table 4-6** indicates, the majority of proposed Active Transportation Network changes are focused on on-road facilities. There are a few new multi-use paths / trails as a number of key roads are widened or extended. Overall, this strategy is taken because there is already a strong presence of multi-use paths / trails on non-roadway corridors and few additional corridors are available for exclusive use by Active Transportation use. A decided expansion of the Cycling and Trails Network along the road network is necessary to connect each community.

Sidewalks are incorporated into specific road design, where the cross-section elements have been defined for each roadway functional class to address the needs of all users. These design elements are part of the City’s Linear Infrastructure Design Guidelines and have been updated to reflect the enhanced focus on active transportation and allow connection to the City Transit network.

Figure 4-8: Proposed 2051 Cycling and Trails Network



**Table 4-6: Proposed 2051 Cycling and Trails Network Summary**

Facility Type	Existing Length (centre line km)*	Proposed Length (centre line km)	Future Length (centre line km)
	<b>On-Road</b>		
Buffered Bike Lane	0.0	13.2	13.2
Bike Lane / Paved Shoulder	20.2	61.2	81.4
Bike Priority Street	0.0	10.0	10.0
Signed Bike Route	30.7	30.4	61.1
<b>Sub Total</b>	<b>50.9</b>	<b>114.8</b>	<b>165.7</b>
	<b>Off-Road</b>		
Multi-Use Path / Trail	95.5	30.2	125.7
<b>Sub Total</b>	<b>95.5</b>	<b>30.2</b>	<b>125.7</b>
<b>TOTAL</b>	<b>146.4</b>	<b>145.0</b>	<b>291.4</b>

\* Existing lengths were calculated based on available information.

#### 4.4.2 Transit

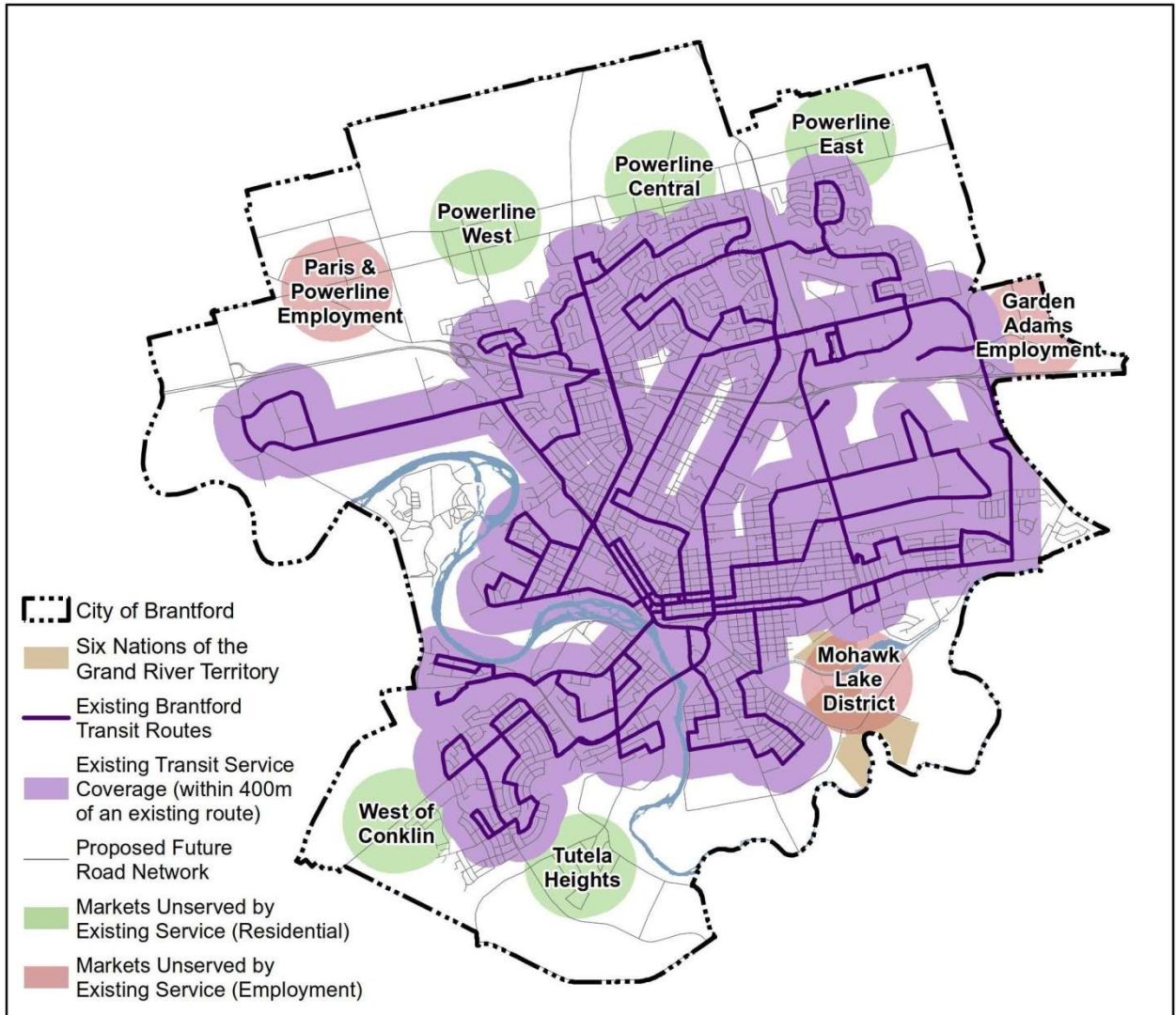
The scope of the Transportation Master Plan is to identify the role, need, and potential impact of the transit system in accommodating growth and moving people. The assessment has quantified the potential for ridership at the City wide and corridor levels.

The objectives with respect to the system coverage and expansion requirements for transit system are identified in **Figure 4-9**.

The specific implementation plan for transit is provided in the next phase of the TMP (Implementation Plan). The implementation plan will identify the high-level service expansion and strategic service needs. However, with the expansion of transit service it is anticipated that the city fleet will be expanded to approximately 57 vehicles (40 conventional and 17 specialized), representing an increase of 25% in equipment.

The future transit service, routes and operational characteristics will be identified by future studies, i.e. a Transit Master Plan or Transit Operational Study that will provide estimates of the operational hours of services required to maintain the desired level of services throughout the network.

Figure 4-9: Proposed 2051 Transit Service Expansion and Enhancement



### 4.4.3 Road Network

From the transportation assessment, the roadway classifications and the infrastructure improvements for the 2051 horizon year have been identified as shown on **Figure 4-10** and **Figure 4-11** respectively.

The enhancements include infrastructure widening on:

- Wayne Gretzky Parkway between Henry Street and Lynden Road;
- Veterans Memorial Parkway between Mount Pleasant and Market Street South;
- Colborne Street West from County Road 7 to the existing 4-lane section;
- Paris Road from Golf Road to City Limits;
- Oak Park Road from Hardy Road to Powerline Road (including the Highway 403 interchange upgrade to ultimate design); and
- Powerline Road from Oak Park Road to the City east limits.

New road additions include:

- Oak Park Road extension to Colborne Road West;
- Wayne Gretzky Parkway extension to connect with Park Road;
- East-West Collector Road north of Powerline Road from Oak Park Road to East City Limits;
- Conklin Road Extension from Mt. Pleasant Road to Phelps Road; and
- Charing Cross Street extension to Henry Street.

All of the projects identified will require a Schedule B or C MCEA to be completed, which would include significant public/stakeholder consultation, before they can be implemented.

TSM improvements to enhance the existing capacity (through urbanization, parking restrictions, and operational improvements, including roundabout implementation) are proposed for several corridors including:

- Golf Road;
- Paris Road;
- Brant Ave;
- Hardy Road;
- West Street;
- King George Road;
- Erie Avenue;
- Clarence Street/Clarence Street South; and
- County Road 18 (note that this is a County Road. The City will be required to work with the County in determining potential for improvements to the corridor, impacts, and costs).

TSM projects do not require Schedule B/C EA, but this TMP forms the basis for phase 1 and 2 of an EA for individual projects.

It is also recommended that lands be protected in the Veterans Memorial Parkway partial extension (to Murray Street) corridor such that the opportunity to implement this improvement is not lost in the very long term.

Figure 4-10: Roadway Classification

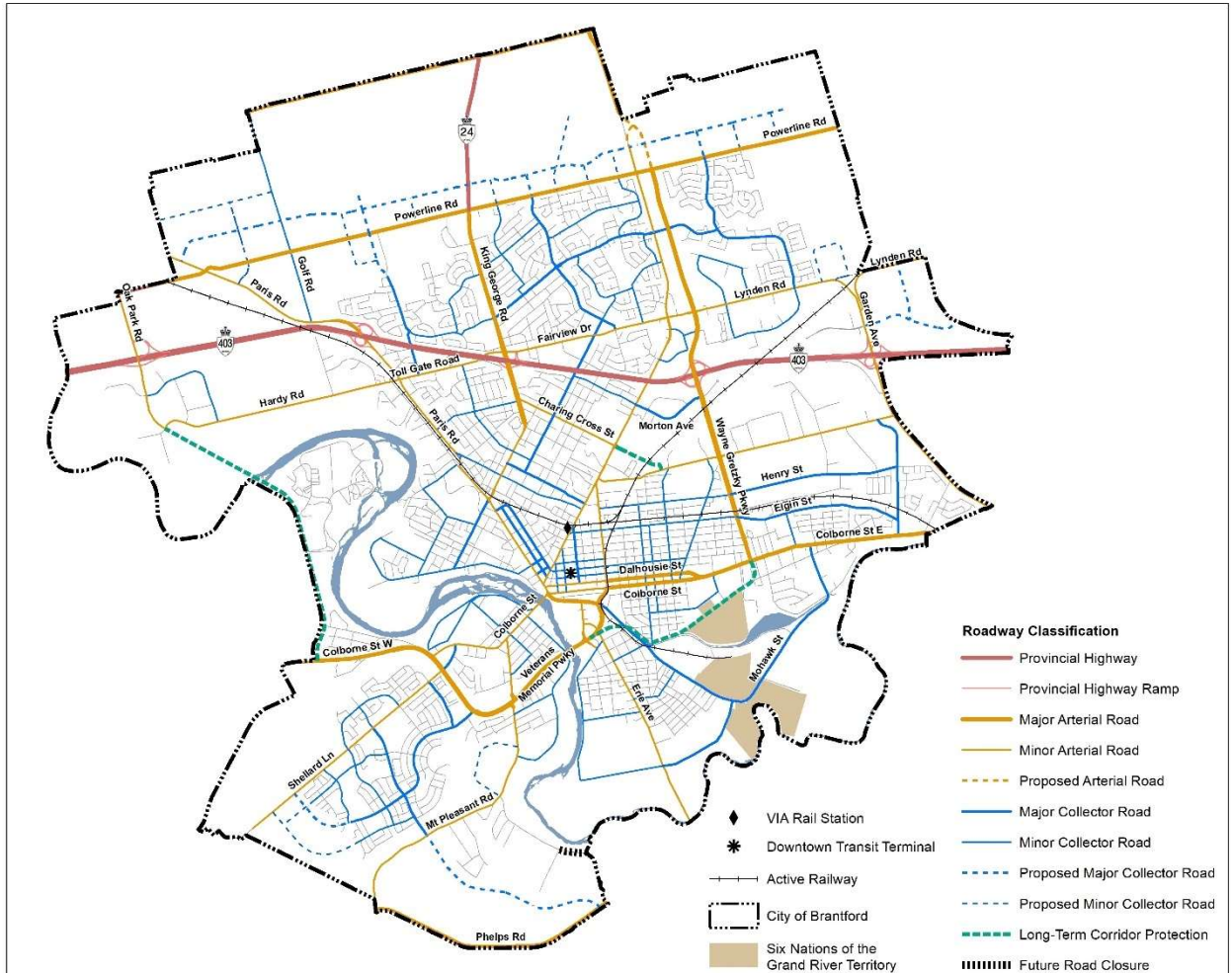
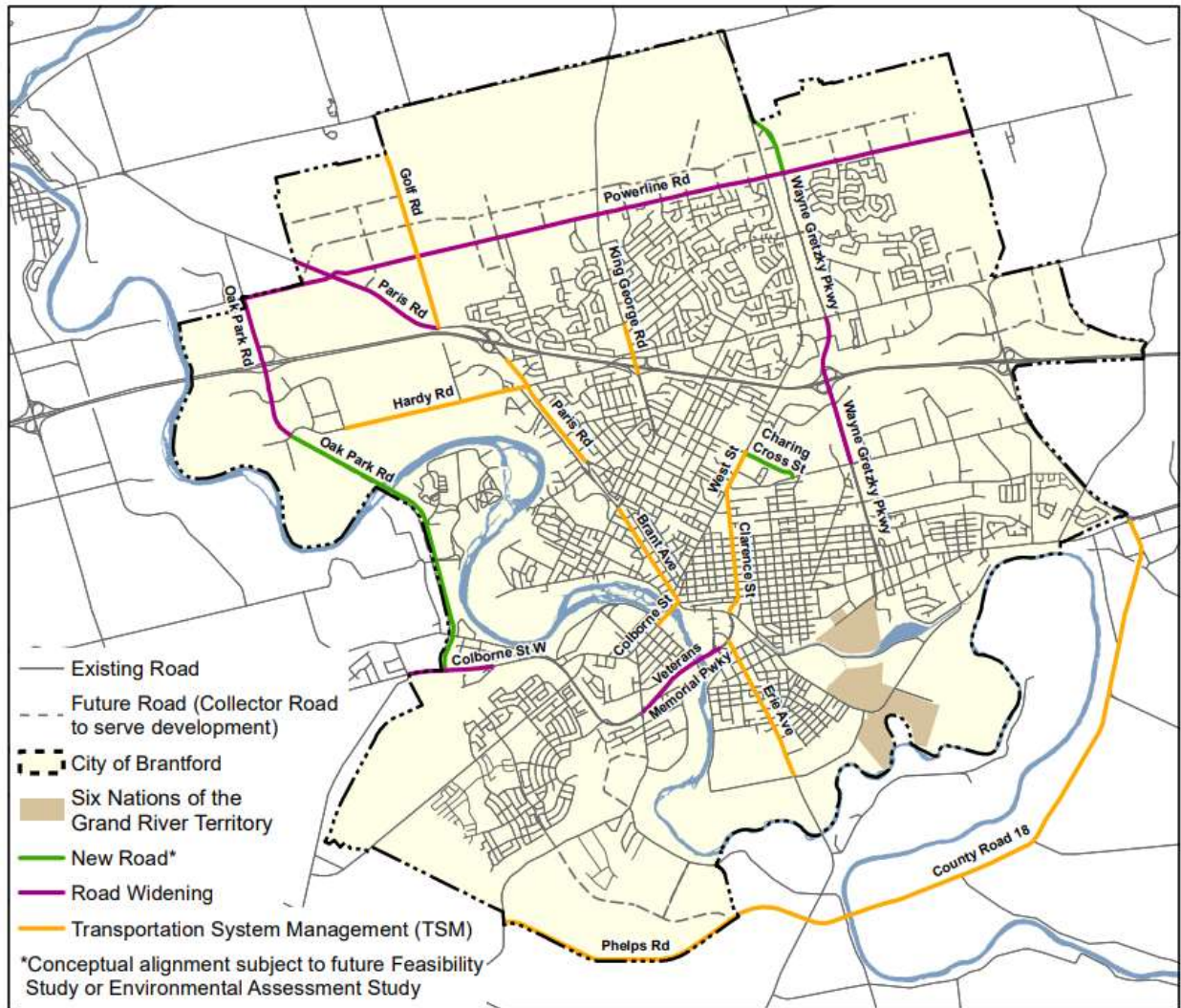


Figure 4-11: Proposed 2051 Road Network

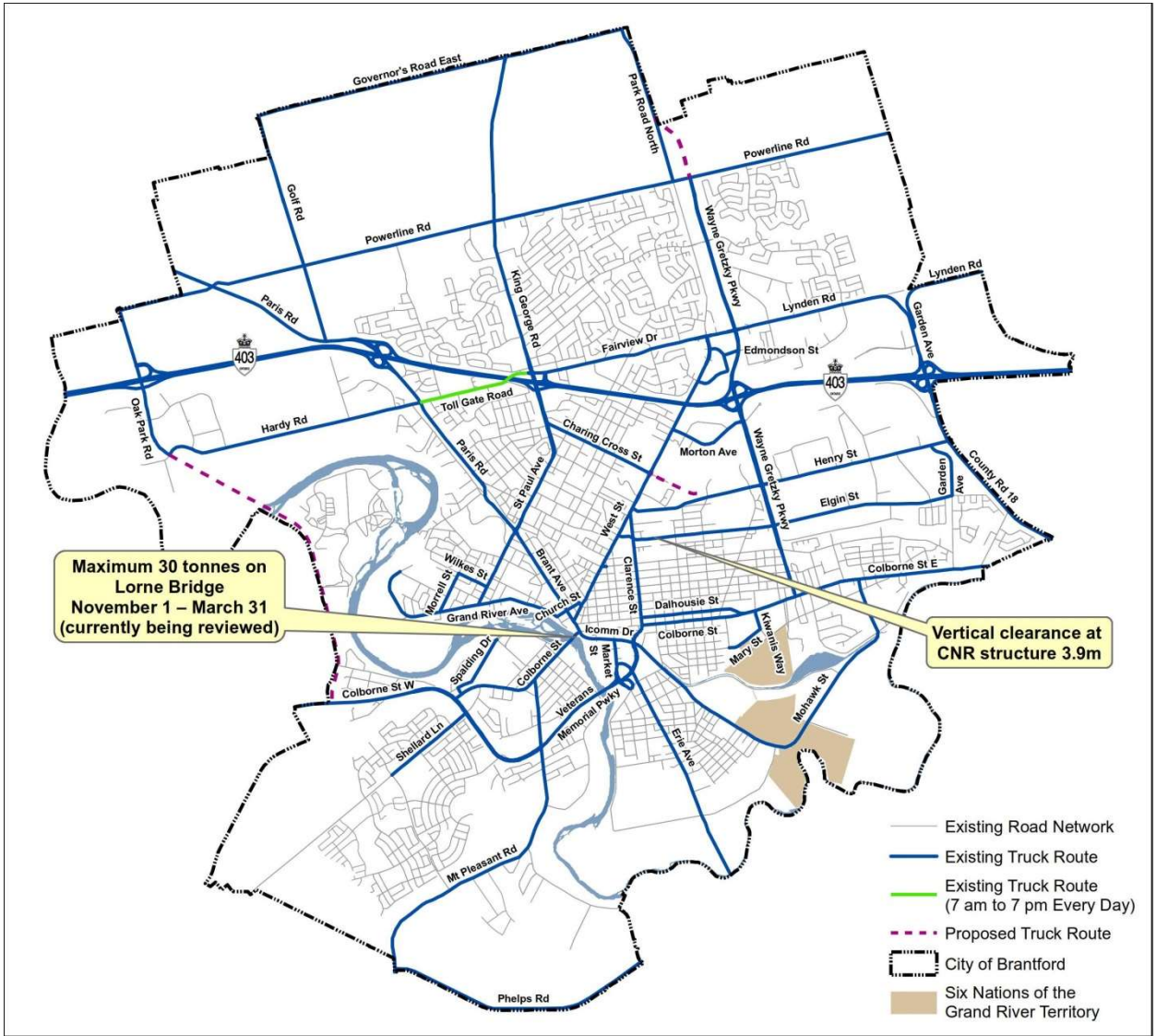


4.4.4 Goods Movement

Figure 4-12 highlights the existing truck route designations with modifications to reflect future potential changes. Specific changes include:

- Addition of the future Charing Cross Street Extension; and
- Additions of the future Oak Park Road Extension.

Figure 4-12: Proposed 2051 Truck Routes





## 5.0 Implementation Plan

### 5.1 Active Transportation

#### 5.1.1 Strategy

The 2020 TMP Update includes an expansion of the City Cycling and Trails Network, building on the 2014 TMP plan, to include the extension of multi-use paths and trails into the Tutela Heights and North Expansion lands. In addition, enhancements have been made to conform to new initiatives and policies now in place (OTM Book 18 revisions since 2014).

The capital cost to provide these facilities is estimated at \$31.7 Million to the year 2051. This includes **Table 5-1** summarizes the total length and estimated costs of the proposed facilities in the Cycling and Trails Network.

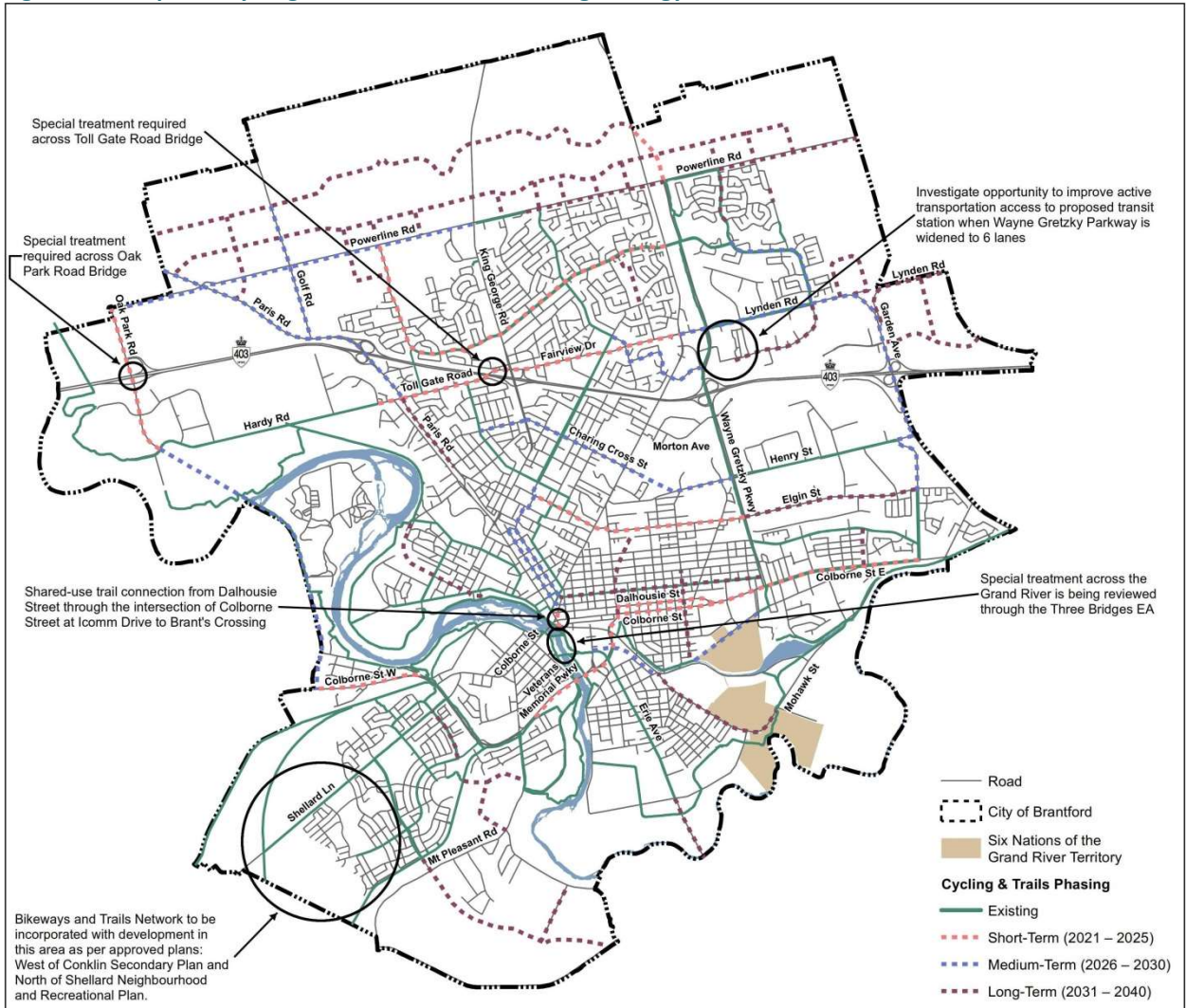
**Table 5-1: Proposed 2051 Cycling and Trails Network Summary**

Facility Type	Length (centre line km)	Cost (\$000)*
<b>On-Road</b>		
Buffered Bike Lane	13.2	\$4,244
Bike Lane / Paved Shoulder	61.2	\$17,434
Bike Priority Street	10.0	\$1,265
Signed Bike Route	30.4	\$42
<b>Sub Total</b>	<b>114.8</b>	<b>\$22,984</b>
<b>Off-Road</b>		
Multi-Use Path / Trail	30.2	\$5,851
<b>Sub Total</b>	<b>30.2</b>	<b>\$5,851</b>
<b>Other</b>		
Programs (Studies, Initiatives, Events)	-	\$2,885
<b>Sub Total</b>	-	<b>\$2,885</b>
<b>TOTAL</b>	<b>145.0</b>	<b>\$31,720</b>

\* All costs stated in 2020 dollars.

**Figure 5-1** illustrates the recommended phasing and implementation plan for the Cycling and Trails Network. Several factors were critical in developing the phasing and implementation. Priority of the proposed routes were assessed based on: the timing of new roadways / roadway upgrades, the lack of safe and comfortable routes for cycling in surrounding area, its ability to connect isolated communities, its ability to attract a wider range of the potential cyclists, project complexity, estimated costs and timing of related road improvement projects.

Figure 5-1: Proposed Cycling and Trails Network Phasing Strategy



5.1.2 Implementation

5.1.2.1 Short Term (2021-202 )

Routes in this phase represent those that complement the core network of existing / short-term routes. It may also include other critical links that are higher costs or require a more detailed analysis to implement. Examples are routes that require widening or road reconfiguration on arterial roads to accommodate on-street facilities. Projects related to a road improvement were phased according to the proposed road improvement project.

5.1.2.2 Medium Term (2026-2031)

Routes in this phase represent those that complement the core network of existing / short-term routes. It may also include other critical links that are higher costs or require a more detailed analysis to implement. Examples are routes that require widening or road reconfiguration on arterial roads to

accommodate on-street facilities. Projects related to a road improvement were phased according to the proposed road improvement project.

### 5.1.2.3 Long Term (2032-2051)

Routes in this phase represent remaining links that will enhance the Cycling and Trails Network. Some routes may represent a lower priority; however, some routes are anticipated over the long-term due to other restrictions such as necessary coordination with other municipalities, project complexity, and estimated costs. Projects related to a road improvement were phased according to the proposed road improvement project.

### 5.1.2.4 Cost

The capital cost to provide the proposed Cycling and Trails Network is estimated at \$31.7 Million to year 2051. **Table 5-2** summarizes the recommendations for the short, medium and long term to 2051.

**Table 5-2: Cycling and Trails Recommendations by Time Frame**

Facility Type	Length (centre line km)	Cost (\$'000)*
<b>Short Term [2021 – 2025]</b>		
Signed Bike Route	7.6	\$10
Bike Priority Street	3.0	\$380
Bike Lanes / Paved Shoulders	16.6	\$1,640
Multi-Use Paths	4.7	\$529
Programs (Studies, Initiatives, Events)	-	\$820
<b>Sub Total</b>	<b>31.9</b>	<b>\$3,379</b>
<b>Mid Term [2026 – 2031]</b>		
Signed Bike Route	7.6	\$10
Bike Priority Street	3.1	\$392
Bike Lanes / Paved Shoulders	22.4	\$7,146
Multi-Use Paths	10.1	\$845
Programs (Studies, Initiatives, Events)	-	\$690
<b>Sub Total</b>	<b>43.2</b>	<b>\$9,084</b>
<b>Long Term [2032 – 2051]</b>		
Signed Bike Route	15.2	\$21
Bike Priority Street	3.9	\$493
Bike Lanes / Paved Shoulders	35.4	\$12,891
Multi-Use Paths	15.4	\$4,476
Programs (Studies, Initiatives, Events)	-	\$1,375
<b>Sub Total</b>	<b>69.9</b>	<b>\$19,257</b>
<b>TOTAL</b>	<b>145.0</b>	<b>\$31,720</b>

\* All costs stated in 2020 dollars & Contingency of 30% for Engineering assumed (excludes Programs).

The proposed projects by time frame and estimated cost can be found in **Appendix D**.

### 5.1.1 Monitoring

Monitoring remains as documented in the 2020 TMP Update.

## 5.2 Transit

### 5.2.1 Strategy

The preferred strategic direction for the 2020 TMP Update is to provide enhanced focus on transit by 2051. 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 2016 Transit Service Plan *TRANSformation 2021* study. The objective of these changes is to increase transit ridership through the improvement of service efficiency and comfort.

Between 2031 and 2051, 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 2051, this strategy will improve the transit mode share to 5.8% as a result of growth and increased use of transit.

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 competitive with the private automobile.

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

### 5.2.2 Implementation

#### 5.2.2.1 Short Term (2021-2025)

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

- Implement the recommendations of the 2016 Transit Service Plan, including adjustments to existing routes and schedules to improve schedule adherence and travel times;

- 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;
- Apply transit-supportive urban design guidelines to assist in making new developments easier to serve with transit;
- Work with County to extend and improve GO Transit service to key destinations (GTA, Cambridge/Kitchener/Waterloo);
- In conjunction with the County of Brant, explore the re-introduction of transit service to Paris;
- Enhance suburban transfer facilities. The facilities (i.e. bus circulation and shelters) at the major malls in the east and north ends of the City (Lynden Park Mall and Brantford Commons respectively) need to be improved to provide 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 future growth areas; and
- Initiate Transit Master Plan Study to assess next level strategies and implementation, and identify performance metrics and operational details if the transit system. The transit master plan would identify the key policies required to achieve an improved transit focus for travel in the City.

**5.2.2.2****Medium Term (2026-2031)**

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

- Implement transit service in new development areas to build ridership early;
- Continued investment in conventional and specialized buses;
- Continued investment in additional transit shelters;
- Continue restructuring routes to shorten travel times; and
- Increase core and peak hour service frequencies on key routes.

**5.2.2.3****Long Term (2032-2051)**

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

- Implement and expand transit service in new development areas;
- Continued investment in conventional and specialized buses;
- Continued investment in additional transit shelters;
- Continue restructuring routes to shorten travel times;
- Introduce transit priority measure;
- Introduce express routes linking key residential and employment areas; and

- Build new / upgrade existing downtown transit terminal.

## 5.2.2.4

**Cost**

The capital cost to provide this system is estimated at \$97 Million to year 2051. **Table 5-3** summarizes the recommendations for the short, medium and long term to 2051.

**Table 5-3: Transit Service Recommendations by Time Frame**

Capital Item	Description	Cost (\$'000)*
<b>Short Term [2021 – 2025]</b>		
Fleet	1 new vehicle, 13 replacement vehicles	\$15,400
Building	-	\$ -
Transfer Points	Lynden Mall, Brantford Commons - Upgrades	\$500
Route Infrastructure	Signage and Shelters Upgrade, ITS	\$561
Studies	Transit TMP, Fleet Electrification Feasibility	\$375
Specialized	Vehicle Replacement, Telecom Software	\$1,570
	<b>Sub Total</b>	<b>\$18,406</b>
<b>Mid Term [2026 – 2031]</b>		
Fleet	2 new vehicles, 10 replacement vehicles	\$13,200
Building	Transit Center	\$1,100
Transfer Points	-	\$ -
Route Infrastructure	New Stops/ Shelters Expansion Routes/ITS	\$651
Studies	Transit Master Plan Update	\$100
Specialized	Vehicle Replacement	\$3,750
	<b>Sub Total</b>	<b>\$18,801</b>
<b>Long Term [2032 – 2051]</b>		
Fleet	5 new vehicles, 12 replacement vehicles	\$37,400
Building	New/Upgrade Transit Terminal	\$7,500
Transfer Points	-	\$ -
Route Infrastructure	New Stops/ Shelters Expansion Routes/ITS	\$3,240
Studies	-	\$ 100
Specialized	Vehicle Replacement, Software Upgrade	\$11,600
	<b>Sub Total</b>	<b>\$59, 840</b>
	<b>TOTAL</b>	<b>\$97,047</b>

\* All costs stated in 2020 dollars.

The proposed projects by time frame and estimated cost can be found in **Appendix D**.

## 5.2.3

**Monitoring**

Monitoring remains as documented in the 2020 TMP Update.

## 5.3 Road Network

### 5.3.1 Strategy

For Road Infrastructure, estimates of interim year population and employment, 2026 and 2031, and the 2051 network performance assessment were used to generate a timeline for emerging constraints. The performance constraints were compared with the 2051 network recommendations to determine the likely need for infrastructure improvement for the interim years.

These network improvements have been combined with the TDM and TSM strategies to provide solutions that leverage the benefits of non-structural improvement to defer, as much as possible, the costs of required infrastructure.

### 5.3.2 Implementation

#### 5.3.2.1 Travel Demand Management (TDM) Strategy

A TDM strategy is required for the City of Brantford with the objective of reducing single occupant vehicle travel and achieving the vehicle reduction targets identified in the transportation assessment. While based on the principles of this plan, the TDM strategy would be a separate exercise that could be done internally (i.e. with a TDM Coordinator) or by contracting it out to an external TDM expert if internal resources are not in place.

With the recent update to the City's Official Plan, the first priority for the overall TDM strategy would be to incorporate the TDM policies the City's planning documents. This stresses the importance of land use in helping manage transportation demand and meet single occupant vehicle reduction targets. A key component of the Official Plan is to identify policies that promote intensification, mixed use development, and pedestrian friendly design, which are supportive of the TDM strategy. The recommended TDM implementation Plan is provided in **Table 5-4**.

For all of the elements identified, the City must consult and engage: special interest groups, stakeholders, business community, accessibility agencies, community / senior centres, MTO, GO Transit, in the development of the program and plans. This includes projects initiated by others.

**Table 5-4: TDM Recommended Implementation Plan**

Proposed Action	1-5 years	6-10 years	11-30 years	Next Steps
Adopt a TDM Policy	x			Based on the Guiding Principles of this plan. Included in the Official Plan update.
Develop Trip Reduction Program for the Town Municipal Offices/Facilities	x	x	x	Internal Strategy developed by TDM Coordinator
Engage major employers and institutions to participate in trip reduction initiatives		x	x	Internal Strategy developed by TDM Coordinator
Encourage development of Activity Hubs	x	x	x	Include policies in Official Plan and Secondary Plans as appropriate
Include TDM in the development process	x	x	x	Include in Secondary Plans as well as approval of large development applications as appropriate

## 5.3.2.2

**Transportation System Management (TSM) Strategy**

A TSM Strategy should be developed for the City of Brantford. The objective of TSM is to maximize the use of the existing roadway infrastructure before expanding existing or constructing new facilities. Particular areas of concern in the longer term have been identified in the transportation assessment as: the existing bridge crossings of the Grand River; the Paris Road/ Brant Avenue corridor, and the King George Road Corridor. The recommended TSM implementation Plan is provided in **Table 5-5**.

**Table 5-5: TSM Recommended Implementation Plan**

Proposed Action	1-5 years	6-10 years	11-30 years	Next Steps
Prepare Access Management Guidelines	x			Initiate Separate Study. Include policies in Official Plan and Secondary Plans as appropriate.
Refine Right-of-Way Requirements to include Multi-Modal consideration for all roadway classifications	x			Per Complete Streets section of this TMP and ensure that objective are incorporated into City Design Guidelines Manual
Adopt Roundabout Implementation Strategy	x			Per Complete Streets section of this TMP, and City's Roundabout Installation Policy and Guideline toolbox.



With regard to the adoption of a roundabout strategy, the City has recently approved an installation Policy and developed guidelines for roundabout use and an analysis toolkit for their implementation. These elements include:

- Policy Direction (PW-022 Roundabout Installation Policy)
- Technical process checklist

The decision making process relies primarily on the technical elements: Initial screening criteria identified (which only confirms feasibility, not rationale for implementation); and Evaluation which identifies the criteria, weighting process, and scoring process for where a roundabout is preferred over traditional intersection control. The analysis toolkit still does not address the “role, desire, and overall rationale” for an implementation strategy.

The City’s policy recognizes that not all intersections are going to suit roundabout implementation. There are typically four reasons for implementing roundabouts, which answer the question “What are we trying to achieve with roundabout implementation?”:

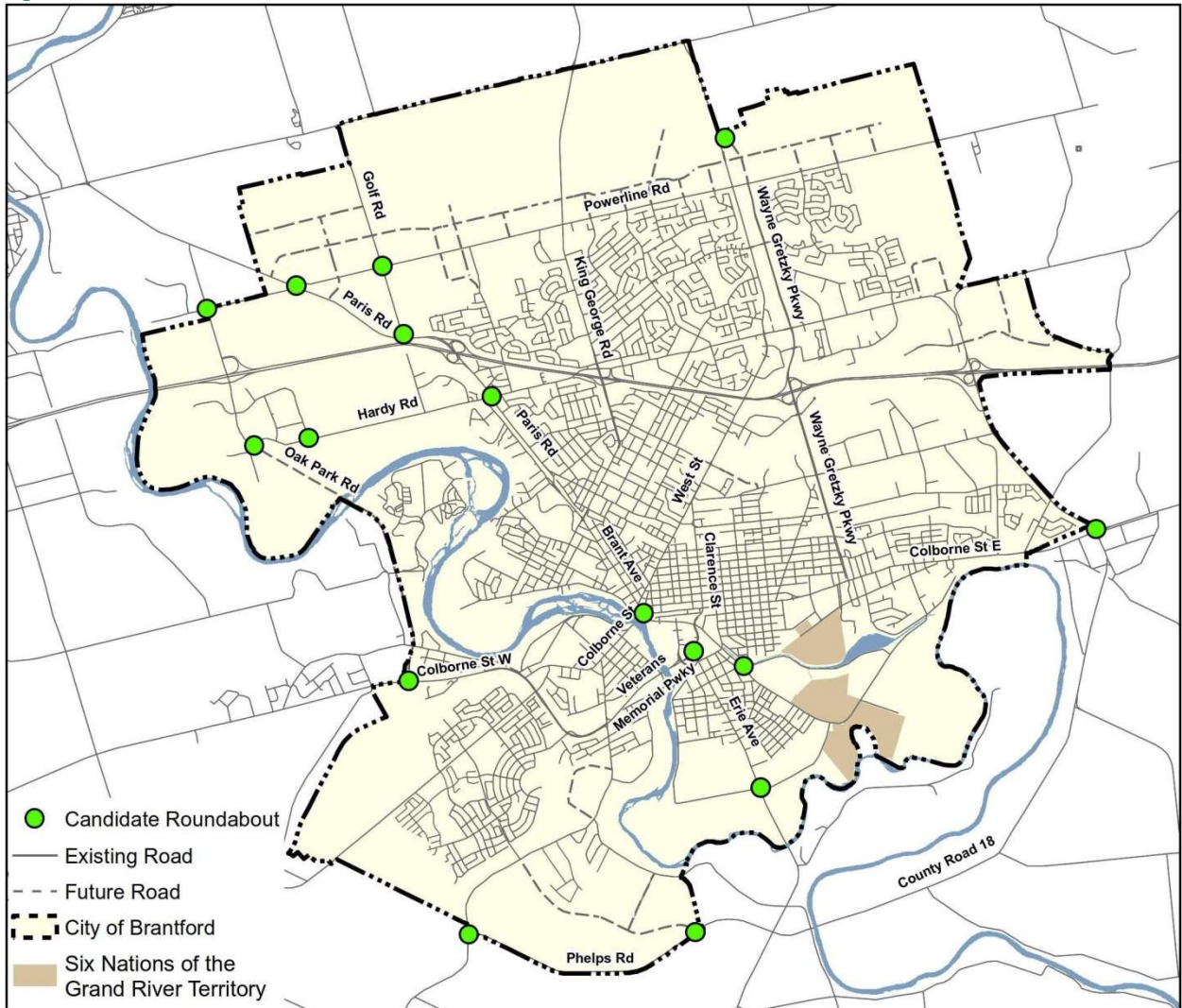
- Improve Operations – reduce delay for high volume turning movements
- Traffic Calming – reduce speed
- Improve Safety – reduce conflicts
- Gateway – visual cue re: changing environment

It is necessary to set goals, objectives, and direction for specific locations prior to undertaking technical analysis to justify / trade off against signalization.

With several corridors identified for consideration of TSM applications, it seems appropriate to target these corridors for potential roundabout implementation. In addition to having specific operational issues, several corridors transition from rural to suburban or suburban to urban environments making the good candidates for gateway treatments. Using the TSM findings as a guide, a list of candidate roundabout locations has been identified for this TMP, as shown in **Figure 5-2**.

These are only meant to be candidate locations to be subject of future analysis using the City’s roundabout guidelines. Through the development of a roundabout strategy, the City can expand the scope of this work to address local operational and safety issues. As well, any future Environmental Assessment or Traffic Impact Study will assess the need and feasibility of traffic control (including signalization versus roundabout implementation)

Figure 5-2: Candidate Roundabout Locations



5.3.2.3

**Short Term (2021-2025)**

In the short-term, the road infrastructure improvement strategy should focus on the following recommended projects:

- Veterans Memorial Parkway (MCEA Schedule C): Widening to 4 lanes from Mount Pleasant Street to Erie Avenue. To increase Grand River crossing capacity to serve ongoing planned growth in Southwest Brantford;
- Oak Park Road (MCEA Schedule C): Widening to 4 lanes from Powerline Road to Hwy 403 and Fen Ridge Court/Savannah Oaks Drive to Hardy Road. To serve growing business access needs in the northwest Brantford industrial area to/from Highway 403;
- Colborne Street West (MCEA Schedule C): Widening to 4 lanes from County Road 7 (Pleasant Ridge) to D’Aubigny Road. To serve trips travelling from the north and west into Downtown

Brantford and for trips travelling between southwest Brantford and northwest Brantford / Brant County; and

- Wayne Gretzky Parkway (MCEA Schedule C): 4-lane extension from Powerline Road to Park Road North. To provide continuous and consistent arterial capacity between Highway 403 and Governors Road, serving both new development trips and longer distance trips from the congested King George corridor.

## 5.3.2.4

**Medium Term (2026-2031)**

In the medium-term, the road infrastructure improvement strategy should focus on the following recommended projects:

- Oak Park Road (MCEA Schedule C): 4-lane extension from Hardy Road to Colborne Street West. To address projected road network capacity deficiencies across the Grand River, and significantly relieve the Paris Road/Brant Avenue 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;
- Paris Road (MCEA Schedule C): Widening to 4 lanes from City Limits to Golf Road. To address capacity needs for the northwest industrial area access to Highway 401 and for longer distance trips into Downtown Brantford;
- Powerline Road (MCEA Schedule C): Widening to 4 lanes (including urbanization) from Oak Park Road to King George Road. To address projected east-west road network capacity deficiencies along the south edge of the future north expansion area. It will connect the northwest industrial area to the north Brantford residential base;
- Charing Cross Street (MCEA Schedule C): 4-lane extension from West Street to Henry Street, with grade separation at CN Rail crossing. To address projected capacity deficiencies on West St. due to the jog between Charing Cross Street and Henry Street, and to provide a new continuous east-west arterial road in central Brantford between King George Rd. and Garden Avenue;
- Golf Road TSM (MCEA Schedule B): Paris Road to Proposed Development Limit north of Powerline Road. Widen roadway bed and urbanize road to provide multi-modal environment consistent with urban arterial (including appropriate traffic control and auxiliary turn lanes and/or roundabouts). Addresses traffic destined to / generated by build out of the northwest industrial area; and
- Mohawk Street / Greenwich Street / Murray Street intersection improvements (MCEA Schedule B or C to be confirmed through more detailed traffic study): Mohawk Street and intersection realignment and possible upgrade to a roundabout. Addresses traffic destined to / generated by build out of the Mohawk Lake development area.

## 5.3.2.5

**Long Term (2032-2051)**

In the long-term, the road infrastructure improvement strategy should focus on the following recommended projects:

- Wayne Gretzky Parkway (MCEA Schedule C): Widening to 6 lanes from Lynden Road to Henry Street. To address long term city growth and associated capacity deficiencies on Wayne Gretzky Parkway, especially across the Highway 403 and CN Rail screenlines.;
- Powerline Road (MCEA Schedule C): Widening to 4 lanes from King George Road to East City Boundary. To address projected east-west road network capacity deficiencies along the south edge of the future north expansion area. It will connect the northwest industrial area to the north Brantford residential base;
- Conklin Road (MCEA Schedule C): 2-lane extension from Mt. Pleasant Road to Phelps Road. Addresses traffic generated by build out of the Shellard Lane and Tutela Heights development areas. Provides alternate access to the east and north via Phelps Road/County Road 18;
- New East/West Collector Road (north extension area) (MCEA Schedule B): New 2 lane collector road from Oak Park Road to King George Road. Addresses traffic generated by build out of the north expansion development area. Relieves traffic volumes on Powerline Road and provide collector function for all travel modes;
- New East/West Collector Road (MCEA Schedule B): New 2 lane collector road from King George Road to East City Boundary. Addresses traffic generated by build out of the north expansion development area. Relieves traffic volumes on Powerline Road and provide collector function for all travel modes;
- Clarence Street TSM (MCEA Schedule B): Provide Intersection improvements at Colborne Street, Dalhousie Street, Darling Street and West Street and implement peak hour turning restrictions north of Darling Street to West Street;
- Highway 403 / Oak Park Road Interchange (Ontario Environmental Assessment Act (OEAA) Schedule A - complete): Upgrade interchange to the ultimate configuration (Parclo Interchange Design) and widen Oak Park Road to 4 lanes. Addresses traffic destined to / generated by build out of the northwest industrial area; and
- Protected lands in the Veterans Memorial Parkway partial extension (to Murray Street) corridor such that the opportunity to implement this improvement is not lost in the very long term.

The result is that fourteen (15) main roadway network improvement projects are recommended for Brantford by 2051, as previously identified in **Figure 4-11**. Most projects will require further public consultation, Environmental Assessment and Council approval prior to implementation.

#### 5.3.2.6

#### Cost

The capital cost to provide this infrastructure (some 80 lane kilometres of network) is estimated at \$328 Million to year 2051. **Table 5-6** summarizes the recommendations for the short, medium and long term to 2051.

**Table 5-6: Road Infrastructure Recommendations by Time Frame**

Project	Description	Cost (\$000)***
<b>Short Term [2021 – 2025]</b>		
Veterans Memorial Parkway Widening	4 lanes – Mount Pleasant Street to Erie Avenue*	\$40,500
Oak Park Road Widening	4 lanes – Powerline Road to Hwy 403 & Fen Ridge Court/Savannah Oaks Drive to Hardy Road	\$6,400
Colborne Street West Widening	4 lanes – CR7 to D’Aubigny Road	\$3,500
Wayne Gretzky Parkway Extension	4 lanes - Powerline Road to Park Road North	\$4,100
	<b>Sub-Total</b>	<b>\$54,500</b>
<b>Mid Term [2026 – 2031]</b>		
Oak Park Road Extension	4 Lanes – Hardy Road to Colborne Street **	\$98,900
Paris Road Widening	4 lanes – City Limits to Golf Road	\$10,800
Powerline Road Widening	4 lanes – Oak Park Road to King George Road	\$19,900
Charing Cross Extension	4 Lanes – West Street to Henry Street	\$19,000
Golf Road TSM	Paris Road to Proposed Development Limit	\$5,300
Mohawk Street / Greenwich Street / Murray Street Intersection	Intersection realignment and improvements	\$3,600
	<b>Sub-Total</b>	<b>\$157,500</b>
<b>Long Term [2032 – 2051]</b>		
Wayne Gretzky Parkway Widening	6 Lane – Lynden Road to Henry Street	\$29,100
Powerline Road Widening	4 lanes – King George Road to East City Boundary	\$21,000
Conklin Road Extension	2 lanes - Mt. Pleasant Road to Phelps Road	\$10,200
New East/West Road	2 lanes – Powerline Road east of Oak Park Road to King George Road	\$15,300
New East/West Road	2 lanes – King George Road to East City Boundary	\$16,400
Clarence Street TSM	Icomm Drive to West Street	\$6,300
Highway 403 / Oak Park Road Interchange	Upgrade to ultimate configuration	\$18,000
	<b>Sub-Total</b>	<b>\$116,300</b>
	<b>TOTAL</b>	<b>\$328,300</b>

\* Reference Costs Source: Veterans Memorial Parkway Widening and Extension, CIMA+, October 2018 - [Assume: Mt Pleasant to Bridge = 950 m (from feasibility study) and Bridge to existing 4-lane cross section west of Erie = 240 m]

\*\* Reference Costs Source: Oak Park Road Extension Feasibility Study, Parsons, July 2019

\*\*\* All costs stated in 2020 dollars & Contingency of 20% for Construction and 30% for Engineering assumed unless stated specifically in reference reports (i.e. feasibility reports).

The proposed projects by time frame and estimated cost can be found in **Appendix D**.

### 5.3.3

### Monitoring

Monitoring remains as documented in the 2020 TMP Update.