Transportation & Transit
Master Plan

Sustainable Update 2009

Final Report

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City of Brampton
Planning, Design and Development

Transportation and Transit Master Plan Sustainable Update 2009 Final Report

Brampton, ON

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Project # 4587

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Section 1
Introduction

1.1 PURPOSE OF THE TRANSPORTATION & TRANSIT MASTER PLAN SUSTAINABLE UPDATE

The City of Brampton's (City) Transportation & Transit Master Plan (TTMP) Sustainable Update 2009 is a platform to move forward with the implementation of the transportation vision defined by the previous 2004 Brampton TTMP. This vision embraces compact communities, sustainable development, protection of the natural environment, economic vitality, and healthy communities while providing safe, affordable, and efficient transportation for people and goods.

The 2004 Brampton TTMP developed an integrated and balanced transportation system incorporating all travel modes. The plan focused on enhancing transit accessibility for residents and workers in Brampton, improving air quality, and ensuring a healthy, active community.

1.2 WHY IS A TRANSPORTATION PLAN NEEDED?

The City continues to strongly support the vision outlined in the 2004 TTMP. However, new planning initiatives such as the Provincial *Places to Grow Act*, transportation initiatives from Metrolinx and other jurisdictions, recent growth trends, and the need to update the City of Brampton Development Charge By-law require an update to the TTMP that builds on the vision outlined in the 2004 TTMP.

This 2009 TTMP is a practical guide for implementing transportation investments, policies, and actions to the year 2031. This product builds upon and expands the transportation vision and supports strategies developed in 2004. The guiding principles from the 2004 document firstly ensure consistency with other City objectives and secondly provide for clear monitoring to ensure that the course, once set, is followed.

1.3 GOALS AND OBJECTIVES OF THE STUDY

1.3.1 Interdependent Transportation, Economic, Social, and Environmental Goals

The 2009 TTMP considers a comprehensive, system-wide approach that includes, in addition to its transportation goals, the economic, social and environmental objectives of the City. The following key points illustrate the importance of ensuring such interdependence:

- **The various goals should be mutually supportive** – Transportation goals will not be achieved unless other goals are achieved (and vice-versa). The various goals also influence each other. For example, economic vitality depends, in part, upon adequate transportation services but the demand for travel is in turn driven to some degree by economic growth.
- **The nature of passenger and goods travel is highly complex and variable** – Municipal government alone cannot meet all these needs cost-effectively and in accordance with today's constraints on public finances. Coordination with other governmental bodies, ability to seek and attract funding partners, and a careful valuation of the cost of growth becomes critical.
- **We cannot build our way out of congestion** – The need to develop and apply new transportation solutions geared at increased network efficiency, higher return on investment, and halting urban sprawl are pressing. Designing an integrated mobility system capable of addressing the needs of person travel and goods movement is essential.
- **The needs and expectations of society are changing** – New population driven factors have emerged and created new challenges for policy makers. Issues triggered by the aging population, increased growth pressure, and environmental protection have to be faced, resolved, and assimilated.
- **The need to protect our natural heritage is critical** – Transportation is known to be a significant source of air contaminants and of greenhouse gas emissions attributed to climate change and health problems. Decreasing auto dependence and shifting travel to more efficient and cleaner transportation modes is vital.

1.3.2 A Sustainable Transportation Planning Approach

The Transportation and Transit Master Plan Update builds on the approaches and ideas conveyed in the ***Sustainable Planning Guidelines*** report (developed by Transport Canada and the Transportation Association of Canada), is supported by the Province of Ontario ***Places to Grow Act,*** and adheres to the Municipal Class Environmental Assessment process. This multilayered process ensures that the appropriate transportation investments, policies, and actions can be verified, proposed, accepted, and implemented both to accommodate the City's rapid growth and to support goals of sustainability, economic vitality, and healthy communities.

The 2009 TTMP process incorporated, to various degrees, the 12 key principles identified by Transport Canada for sustainable transportation planning as featured in **Exhibit 1-1**.

Key principles for Sustainable Transportation Planning	
Sustainable Communities & Transportation Systems	**Sustainable & Effective Transportation Planning**
Principle 1: Integration with land use planning	*Principle 7:* Strategic approach
Principle 2: Environmental health	*Principle 8:* Implementation guidance
Principle 3: Economic and social objectives	*Principle 9:* Financial guidance
Principle 4: Modal sustainability	*Principle 10:* Performance measurement
Principle 5: Transportation demand management	*Principle 11:* Public involvement
Principle 6: Transportation supply management	*Principle 12*: Plan maintenance

Exhibit 1-1: Key Principles for Sustainable Transportation Planning, Transport Canada

1.3.3 Coordination with the City's Growth Management Program

The 2009 TTMP is one of the key components of the City of Brampton's Growth Plan Response. The TTMP study has thus been conducted in close coordination with the City's Growth Management Program and Official Plan conformity exercise to implement the Growth Plan. It will support the Growth Plan key areas of focus:

1. Creating compact, vibrant, and complete communities
2. Supporting a strong and competitive economy
3. Optimizing infrastructure to support growth
4. Protecting natural resources

The 2009 TTMP is an integral element of the City's Response to the Provincial Growth Plan, as seen in **Exhibit 1-2.**

The recommendations of the 2009 TTMP result in updates to the City's Official Plan (OP), including amendments to specific transportation-related policies and to schedules in the OP. **(Section 10)**

Exhibit 1-2: Brampton's Growth Plan Response

1.3.4 Provide a Framework for Transportation Decisions and Investments

This study focuses on implementation of the transportation recommendations and will provide a framework for decisions on priorities and investments by the City (and other jurisdictions). The implementation strategy is based on objective analyses of transportation needs and priorities to establish priority setting. (**Sections 5** to **7**)

1.3.5 Provide Financial Guidelines and Input to Development Charges By-Law

A key outcome of this study will be updates to the City's Development Charges (DC) By-law. The updates are documented and discussed in a separate report. (**Section 9**)

1.3.6 Plan Monitoring and Maintenance

It is essential that the recommendations resulting from this Master Plan update be monitored and maintained. Key indicators and measures of effectiveness need to be identified to ensure that the City stays on course in meeting its goals. (**Section 11**)

1.4 THE TTMP STUDY PROCESS AND PUBLIC CONSULTATION

This study has been carried out through an open public process as a Master Plan study under the Municipal Class Environmental Assessment Guidelines (June 2007) so that the study results can properly serve as direct input to any subsequent EA studies that may be deemed appropriate. The study addresses Phases 1 and 2 of the Transportation Master Plan process in the Municipal Class EA guidelines. Phase 1 defines the problem and / or opportunity while Phase 2 identifies alternative solutions, considers environmental implications, and consults with the public and affected agencies.

Public consultation was designed to:

- Provide an open line of communication with the public, other municipalities, and agencies

- Provide information to the public as a basis for engaging in active dialogue with the public and ensuring public participation
- Seek the public's input on the identification of issues, the development of alternative solutions, and the selection of the preferred alternative
- Ensure that the plan has general support from the community

Public consultation in this study involved:

- Public notices of study commencement and public open houses
- References to the study through the City of Brampton web site
- Two public open houses held at Brampton City Hall in September 2008 and February 2009

Details on the public consultation process are provided in **Appendix A**.

1.5 TTMP ORGANIZATION

The study was directed by Mr. Adrian Smith, Director of Planning and Land Development Services for the City of Brampton, and coordinated by Mr. Henrik Zbogar, Manager of Long Range Transportation Planning.

The consultant project team was led by Mr. Tyrone Gan of HDR|iTRANS. He was supported by Ms. Elizabeth Szymanski who served as Team Leader and by Mr. Jonathan Chai, Project Engineer.

Meeting at key stages in the study, the Technical Advisory Committee included representatives from the following agencies and departments:

- Town of Caledon
- Credit Valley Conservation
- GO Transit
- Town of Halton Hills
- Halton Region
- Metrolinx
- Ministry of Transportation Ontario
- City of Mississauga
- Peel Region
- Smart Commute Brampton-Caledon
- Toronto & Region Conservation Authority
- City of Vaughan
- York Region

Section 2
City of Brampton 2004 TTMP

2.1 2004 TTMP VISION

The 2004 City of Brampton Transportation & Transit Master Plan (TTMP) identified development of "A Balanced Road and Transit System" as the preferred direction for the growth and evolution of the transportation system in the City. The TTMP acknowledged that the:

> "*...continued expansion of the road network will be necessary to accommodate new growth areas, address deficiencies and facilitate reliable and accessible transit service. However, the emphasis must turn to greater investment in the transit network and infrastructure, recognizing the limits for road network expansion. Also, restructuring of the transit concept is needed, to support higher-order transit in a few key corridors or 'spines' of the system, and to provide the direct, effective connections Brampton residents are asking for.*"

The restructuring of the transit concept postulated in the TTMP report found its conclusion in the creation of a branded BRT service, conversion to a grid-based system, and the overall increase in transit level of service.

The key components of 2004 TTMP's transportation vision includes:

- An integrated and balanced transportation system
- Enhanced transit accessibility for residents and workers in Brampton
- Improved air quality
- A healthy, active community

Again, the vision of the 2004 TTMP remains strongly supported, but the need to update the plan is evident in the wake of new development trends, growth management planning, the development charges by-law update, etc., to ensure that continuing transportation decisions and investment for an integrated transportation network can be made with confidence and with current best practices regarding sustainable transportation planning.

To understand the City's current situation since adopting the 2004 TTMP, the following sections identify previous recommendations and then evaluate the progress of the short-term initiatives set forth by the 2004 TTMP.

2.2 2004 TTMP RECOMMENDATIONS

The final report on the 2004 Brampton Transportation and Transit Master Plan (TTMP) was issued in September 2004 and the contents were later incorporated into the City's Official Plan. For each horizon year (short term; 2011; 2021; and 2031), specific recommendations were identified for:

- Transit
- Roads
- Policies and Programs
- Transit Corridors

An implementation progress report card summarizes the 2004 TTMP Recommendations in **Appendix B**.

The TTMP recommended 2031 road network is shown in **Exhibit 2-1** and the recommendations for the 2021 strategic transit network are illustrated in **Exhibit 2-2.**

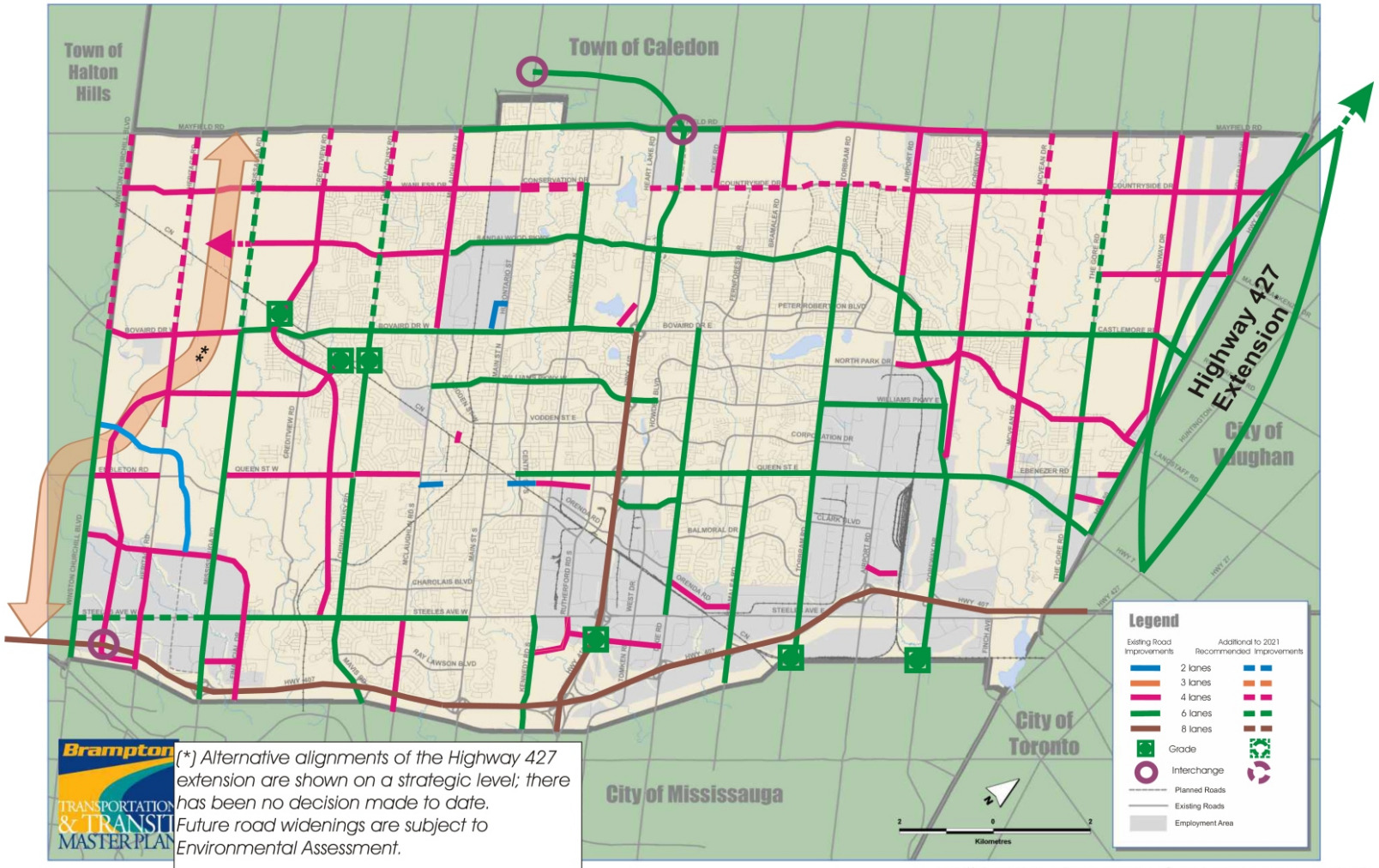

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Figure 3.17: 2031 Road Network

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Exhibit 2-1

2004 Brampton TTMP 2031 Road Network

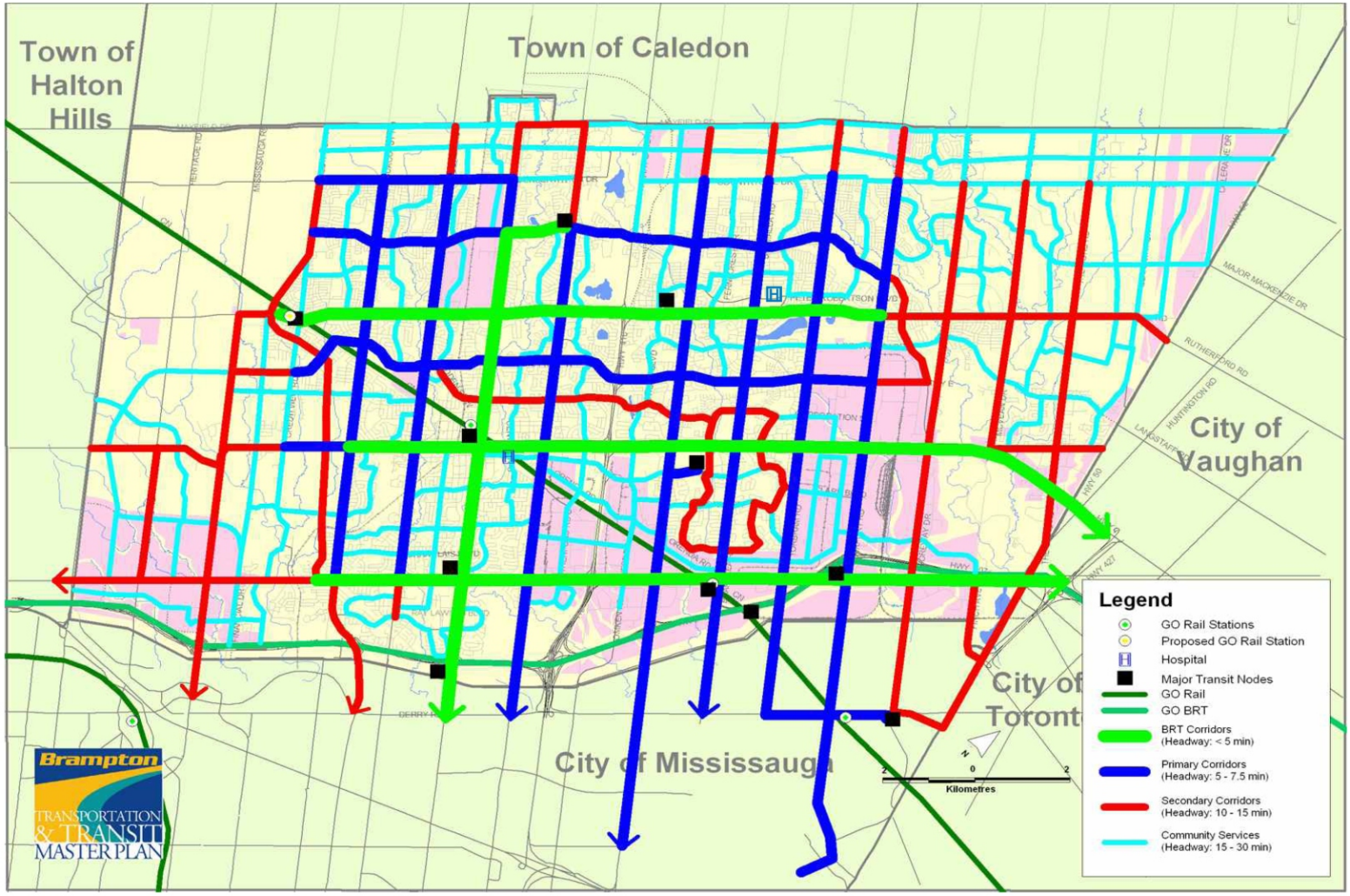

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Figure 3.22: 2021 Strategic Transit Framework

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Exhibit 2-2

2004 Brampton TTMP 2021 Strategic Transit Network

Not To Scale

2.3 2004 TTMP IMPLEMENTATION PROGRESS

The previous 2004 TTMP was adopted by Council in October 2004. Since then, the City has invested a significant amount of money and effort in implementing and planning for the key initiatives recommended in the 2004 TTMP.

The progress report card presented in **Table 2-1** evaluates the implementation of Short-Term initiatives as well as initiatives planned for the horizon years from 2011 to 2031. Detailed assessments of the initiatives are provided in **Appendix B**.

Table 2-1: 2004 TTMP Progress Summary

Initiatives	Completed	In progress	Started	Outstanding
2009 Short-Term				
Transit		6 out of 7	1 out of 7	
Roads		4 out of 4		
Policies & Programs	2 out of 17	10 out of 17		
2011 Horizon Year				
Transit	1 out of 9	3 out of 9	3 out of 9	1 out of 9
Transit Corridors		3 out of 3		
Roads		1 out of 6	5 out of 6	
2021 Horizon Year				
Transit			4 out of 6	2 out of 6
Transit Corridors			1 out of 2	1 out of 2
Roads				4 out of 4
2031 Horizon Year				
Transit				1 out of 1
Roads				2 out of 2

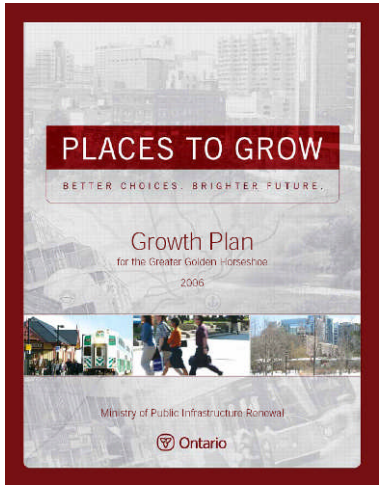
There has been significant progress on the Short Term Priorities with respect to key transit and road improvements. Since 2004, Brampton Transit has made the change from suburban operations serving communities to more grid-like operations, putting into place the building blocks for the high frequency BRT service in the city's key corridors. Some of these very aggressive goals identified in the 2004 TTMP have already been realized.

Section 3
The Planning Context

The vision in the Transportation & Transit Master Plan Update has been developed within the context of provincial and municipal planning policies and initiatives.

3.1 PROVINCIAL PLANNING CONTEXT

Adopted by Provincial Parliament in 2005, the Ontario Ministry of Public Infrastructure Renewal's (MPIR) ***Places to Grow Act*** provided the legislative authority to adopt the Growth Plan, Places to Grow, which focuses on overcoming the problems of urban sprawl and gridlock in the Greater Golden Horseshoe (GGH) area. More travel choices and a greater mix of housing, parks, employment opportunities, and community services are to be provided in order to make communities more liveable. This is to ensure the economic future and quality of life of the GGH to 2031 when an additional 3.7 million people are expected to be living in the area.



The final ***Growth Plan for the Greater Golden Horseshoe*** was released in June 2006. The objectives of the Growth Plan are to:

- Stimulate economic prosperity
- Encourage more compact communities with services, shops, and businesses close to home
- Preserve greenspace and agricultural lands that are under pressure in the GGH
- Curb urban sprawl and cut down on car dependency
- Contribute to better air quality
- Spur transit investment and create conditions favourable to public transit use
- Promote a culture of conservation

Central to the Growth Plan is the concept of urban growth centres across the GTA, linked by transit supportive intensification corridors. Downtown Brampton is designated as one such urban growth centre, connected by high order transit to York Region to the east, Mississauga to the south, and Milton to the west.

Exhibit 3-1 shows the City of Brampton in the context of the Growth Plan.

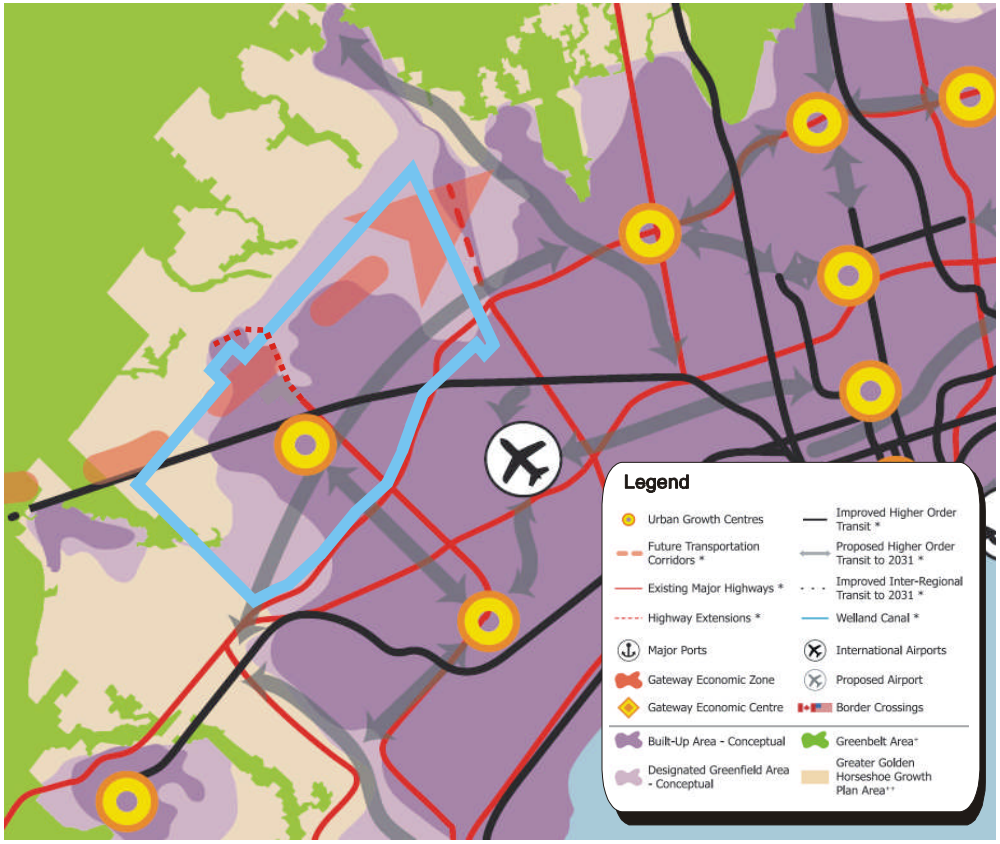


Exhibit 3-1: Growth Plan Places to Grow and the City of Brampton

3.2 METROLINX REGIONAL TRANSPORTATION PLAN (RTP)

In November of 2008, Metrolinx adopted a Regional Transportation Plan for the Greater Toronto and Hamilton Area (GTHA), entitled ***The Big Move: Transforming Transportation in the Greater Toronto Area and Hamilton***. The Plan calls for an integrated, multi-modal transportation system that:

- Takes into account all modes of transportation
- Makes use of intelligent transportation systems
- Promotes the integration of local transit systems with each other and with GO Transit
- Works toward easing congestion and commute times, and reducing transportation-related emissions of smog precursors and greenhouse gases
- Promotes transit-supportive development and the viability and optimization of transit infrastructure

The RTP developed by Metrolinx is the third piece of the three-part approach by the Province of Ontario to prepare the GTHA for growth and sustainability, the first two of which are the ***2005 Greenbelt Plan*** and the aforementioned ***2006 Growth Plan for the Greater Golden Horseshoe***.

Nine priority actions or Big Moves are identified in the Plan – concrete actions that comprise a "to-do" list needed to implement the overall strategy. The nine Big Moves are:

1. A fast, frequent, and expanded regional rapid transit network
2. High-order transit connectivity to the Pearson Airport district from all directions

3. An expanded Union Station – the heart of the GTHA's transportation system
4. Complete walking and cycling networks with bike-sharing programs
5. An information system for travellers, where and when they need it
6. A region-wide integrated transit fare system
7. A system of connected mobility hubs
8. A comprehensive strategy for goods movement
9. An investment strategy to provide immediate, stable, and predictable funding

A number of key policies based upon these Big Moves are set forth in the Plan and are considered in the development of Brampton TTMP recommendations. **Exhibit 3-2** shows the City of Brampton in the context of the Metrolinx 25-year plan.

Exhibit 3-2: Metrolinx RTP 25-year Plan and the City of Brampton

3.3 REGIONAL PLANNING CONTEXT

3.3.1 Region of Peel Official Plan

The Region of Peel Official Plan (adopted in November of 2005 but subjected to later amendments in June 2007) covers coordinated planning of the transportation system in Peel Region focusing on protecting rights-of-way and ensuring integration between area municipalities. This planning is intended to adjust to projected travel demands for commuters and through-traffic. General transportation objectives affecting area municipalities within Peel incorporated into this plan include:

- Achieving convenient and efficient movement of people and goods in the region and the GTA
- Ensuring an integrated transportation system in Peel balances travel demand with transportation capacity
- Planning and implementing a transportation system in Peel that is safe and sensitive to the protection of the Greenlands System
- Encouraging increased public transit modal share
- Encouraging increased accessibility (road and transit) to Pearson Airport
- Integrating the Peel transportation system with the plans of area municipalities, neighbouring municipalities, and the Province
- Supporting the objectives and policies in this Plan and area municipal official plans
- Providing for bicycle and pedestrian opportunities in design of roadways

The plan supports the creation of additional transit facilities, including where appropriate, dedicated transit lanes, multimodal terminals, and fare integration. Specifically, it promotes the establishment of all-day service on the Milton and Georgetown GO rail lines as soon as possible,

together with improved service on the Lakeshore line and other services / corridors to be added where demand warrants. The plan also supports the development of an additional major road to run northward from the existing interchange of Highways 7 and 427, and the protection of a corridor for this road.

3.4 MUNICIPAL PLANNING CONTEXT

3.4.1 City of Brampton Official Plan

Approved by the City of Brampton in October 2006 and incorporating the 2004 TTMP recommendations, the plan contains a comprehensive series of objectives and policies covering a variety of areas of transportation (**Section 4.4**). The broad objectives for developing the transportation system in a manner consistent with the City's Strategic Plan are:

- To develop a balanced, integrated, and accessible multi-modal transportation system which provides for the safe, economic, and efficient movement of people, (including persons with disabilities), as well as goods and services
- To ensure the provision of adequate and accessible road, transit, pedestrian, and bicycle links between Brampton and adjacent municipalities
- To promote the development of an efficient transportation system and land use patterns that foster strong live-work relationships and encourage an enhanced public transit modal share
- To promote a high standard of environmental management and aesthetic quality in the routing, design and construction of transportation and associated structures
- To work cooperatively with the neighbouring Municipalities and the Regions to develop an integrated transportation plan

Specific policies supported by the City for implementing these objectives are divided into eleven categories as summarized below (with road and transit maps to illustrate the changes in those areas):

1. Transportation System
2. Road Network Hierarchy and Rights-of-Way (**Exhibit 3-3** and **Exhibit 3-4**)

3. Transportation System and Demand Management Measures
4. Public Transit (**Exhibit 3-5)**
5. Parking Management
6. Pathways System (**Exhibit 3-6**)
7. Trucking and Goods Movement
8. Adverse Impacts
9. Railways
10. Airport
11. Implementation and Monitoring

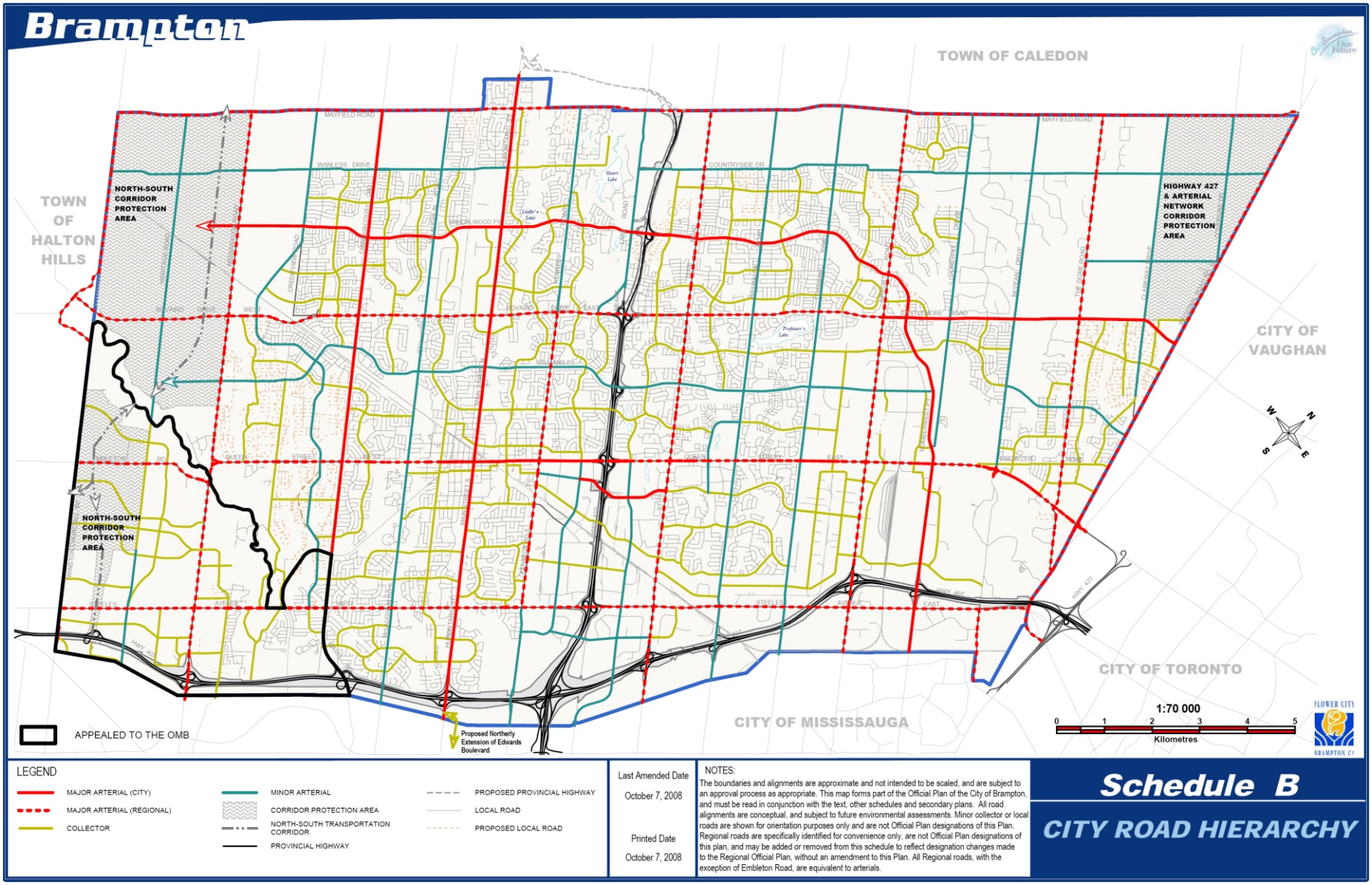


Exhibit 3-3

City of Brampton Official Plan - City Road Hierarchy

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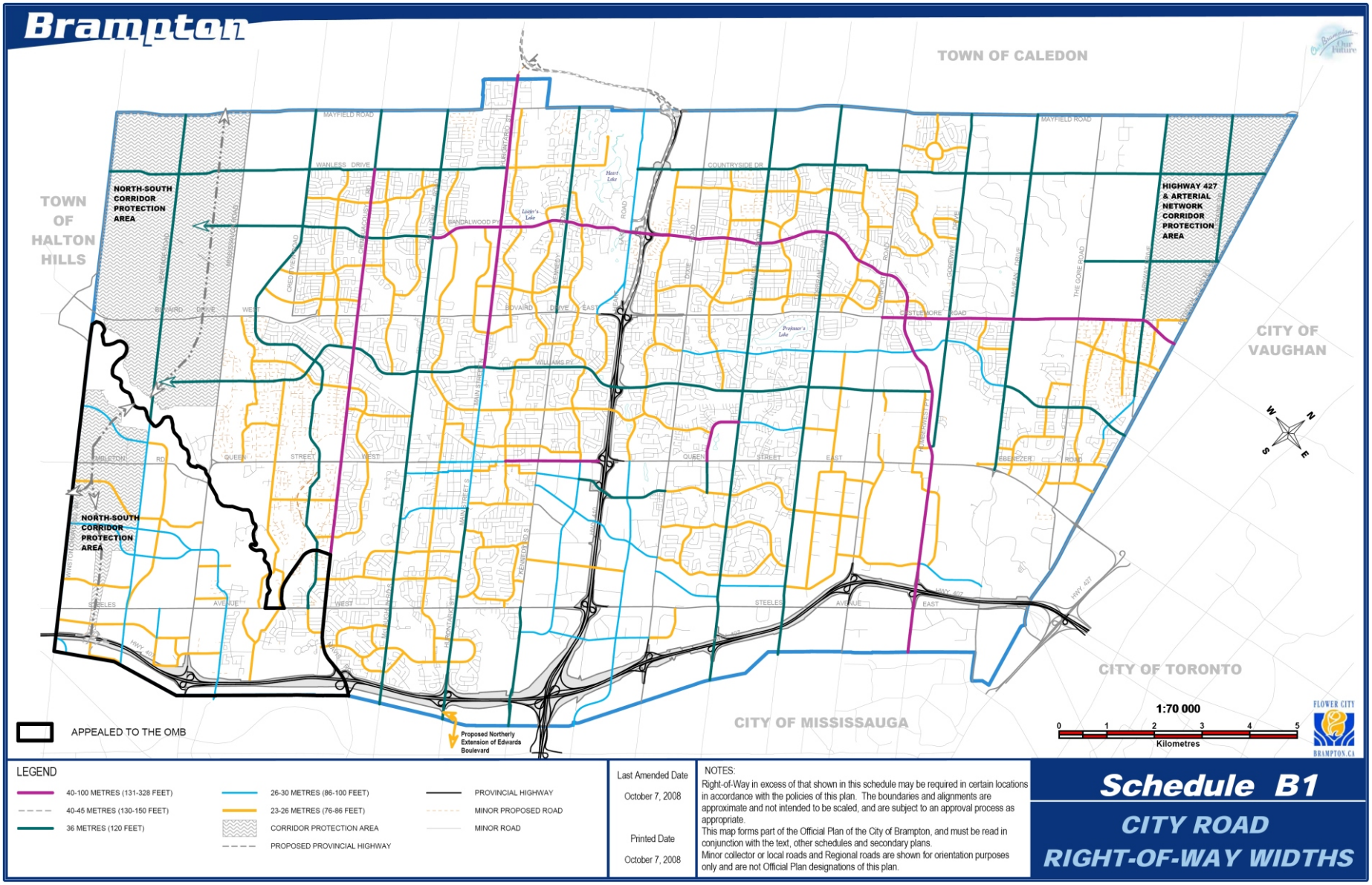

Exhibit 3-4

City of Brampton Official Plan - City Road Right-of-Way Widths

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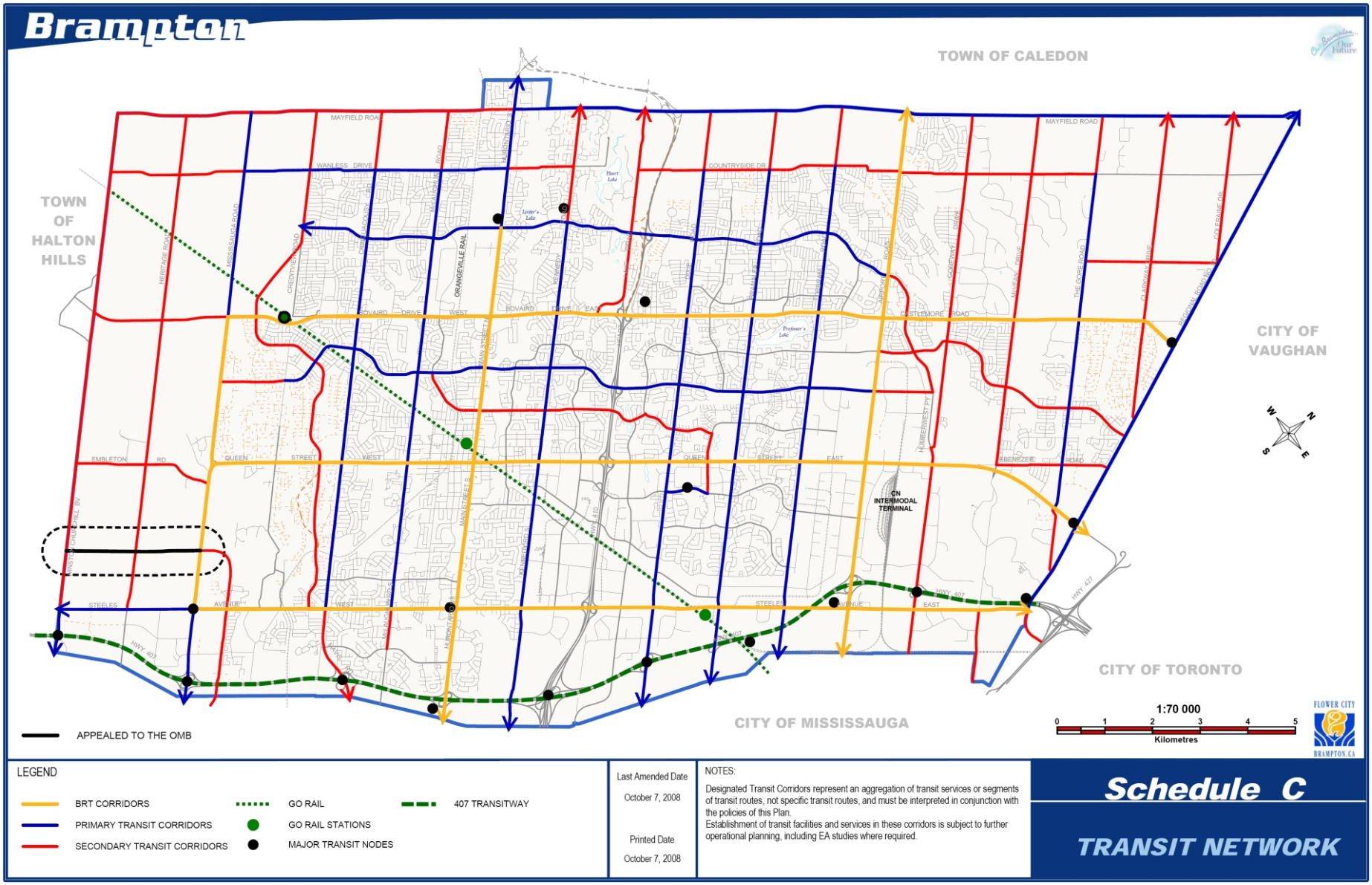

Exhibit 3-5

City of Brampton Official Plan - Transit Network

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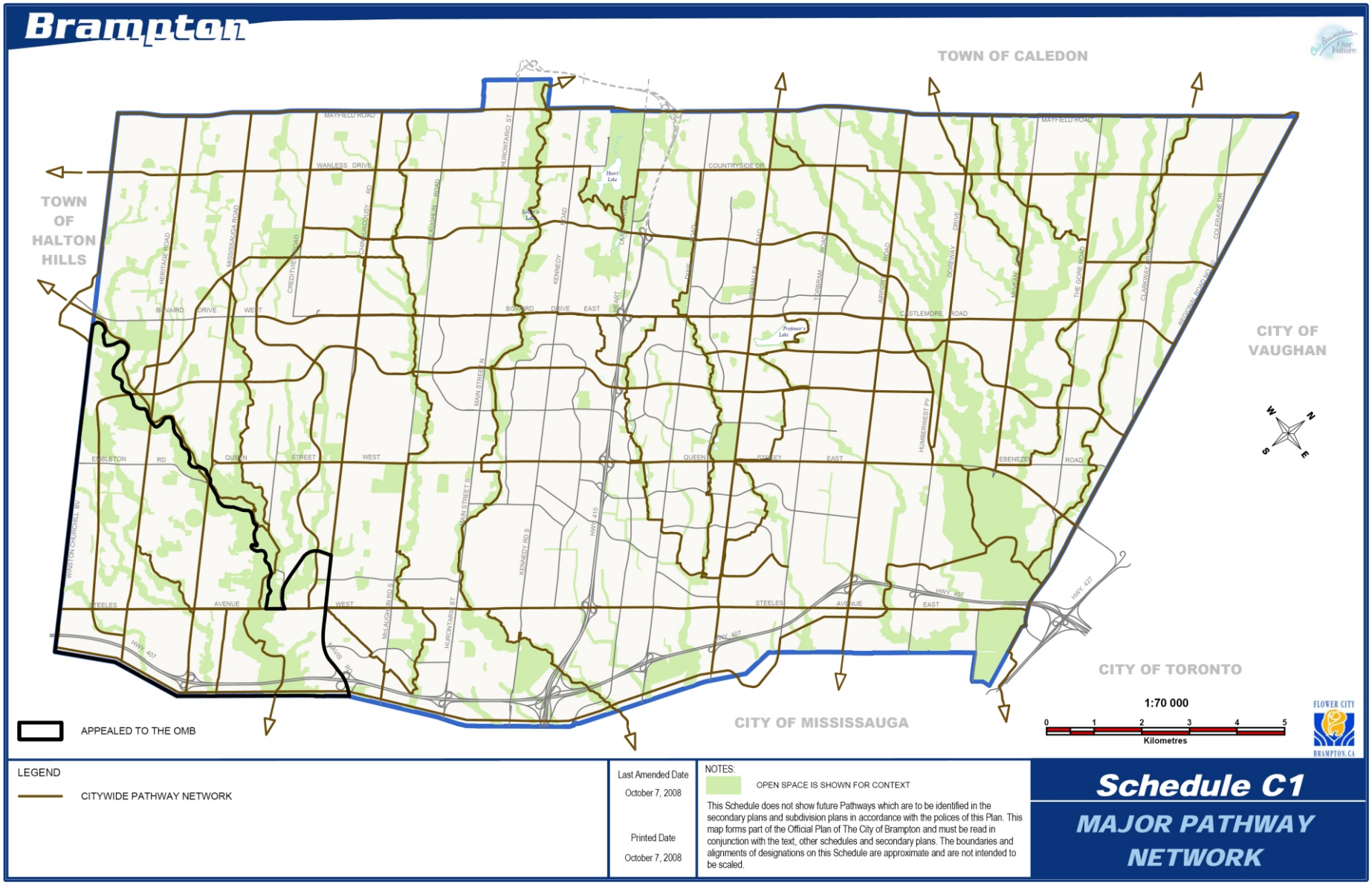

Exhibit 3-6

City of Brampton Official Plan - Major Pathway Network

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Section 4
The Current Transportation System

This chapter discusses the extent, characteristics, and travel conditions observed on the existing transportation network in the City of Brampton.

4.1 TRANSIT NETWORK

4.1.1 Brampton Transit System Characteristics

Brampton Transit service is designed to facilitate passenger transport within Brampton and to Mississauga, Vaughan, Toronto, and Halton Region. The transit system has been growing since 1996 by every metric by which growth can be measured: ridership, service hours, etc. This growth is tied to Brampton's rapidly growing population, which has expanded from less than 270,000 people only 13 years ago to greater than 450,000 people today. Brampton is now one of Canada's largest urban centres. A measure of Brampton Transit's ability to serve the City is found in a comparison of Service Area Population with total population. Service Area population is calculated as the total residents living within 300 to 400 metres of a transit route. The percentage of Service Area Population to total population is called **coverage**, and this data is summarized in **Table 4-1** for the census years 1996, 2001, and 2006.

Table 4-1: Census Population and Service Area Population

Year	Census Population	Service Area Population	Coverage
1996	268,300	265,000	98.8%
2001	325,400	321,300	98.7%
2006	433,800	414,200	95.5%
2008	n/a	n/a	97%

Looking at **Table 4-1**, we see significant growth over 10 years, with the population almost doubling from 268,300 in 1996 to 433,800 in 2006. Transit coverage unfortunately appears to be decreasing from 1996 to 2006. However, this is likely a function of the tremendous population growth that the City of Brampton has seen over this time. By 2008, transit coverage appears to increase back up to about 97% as estimated by Brampton Transit. Brampton Transit has done well in keeping up with this growth and ensuring that transit service is provided to all of the new growth areas in the City.

Brampton Transit provides conventional fixed route transit service throughout the urban area of Brampton, as seen in **Exhibit 4-1**. Accessible service for persons with disabilities is provided through conventional Brampton Transit service and specialized service provided by Peel Transhelp.

As of January 2009, Brampton Transit operates 38 high-floor and 196 low floor buses on 36 fixed routes. Of these 36 fixed routes, 24 are accessible. The latest available information for the 2006 and 2007 years regarding Brampton Transit system characteristics is presented in **Table 4-2**.

Table 4-2: Brampton Transit System Profile (2006)

Year	Active Vehicles	Total Operating Expenses	Cost/Recovery Ratio	Per Capita Service Area Ridership	Per Capita Operating Expenses
2006	183	$46,294,038	46%	24.48	$106
2007	195	$48,860,910	49%	25.76	$108

Brampton Transit provides service on weekdays from 04:00 to 01:00, Saturday from 04:45 to 01:30, and Sunday / Holidays from 06:45 to 00:30. Of Brampton Transit's 36 routes, 22 operate from morning to night, and 10 operate during peak periods only.

Service frequencies during the peak periods include six minutes on Steeles, seven on Dixie, 10 on Main, Queen, and Kennedy, and 60 minute service on McVean, which operates as a peak period neighbourhood circulator. The average route frequency during the peaks is approximately 20 minutes. During the midday period, service frequencies range from 10 to 45 minutes, and during the evening service frequencies for routes still in operation range from 20 to 60 minutes.

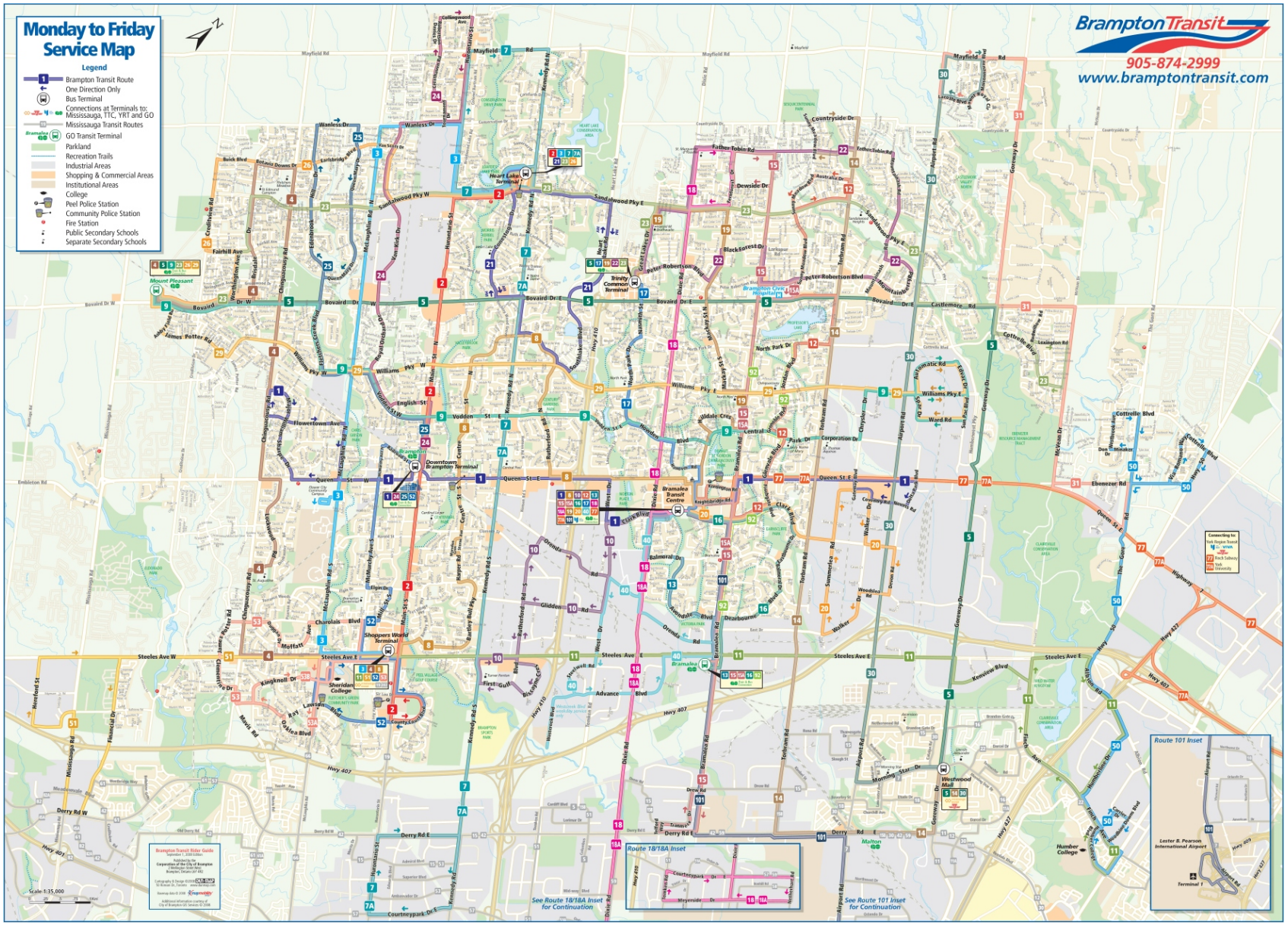

Exhibit 4-1
Existing Brampton Transit Routes

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Brampton Transit services five of their own terminals plus the Westwood Mall terminal in Mississauga, providing connections to other local routes. Three GO Transit terminals provide connections to both inter-regional and local routes. Of the five Brampton Transit terminals, Bramalea Transit Centre facilitates the most connections while the remaining terminals facilitate connections for a similar number of routes. Of particular interest is the geographic location of these terminals which are spread throughout the City. This suggests that Brampton Transit and its grid-based fixed route system are designed to service a relatively high number of major nodes within the City.

- Direct inter-municipal transit services connecting with Mississauga, York, and Toronto are provided on the key north-south and east-west transportation corridors, including:
- Route 5 on Goreway Drive, connecting to Mississauga at Westwood Mall
- Route 7 on Kennedy Road, connecting to Mississauga
- Route 14 on Torbram Road, connecting to Mississauga at Westwood Mall
- Route 15 on Bramalea Road, connecting to Mississauga
- Route 18 in Dixie Road, connecting to Mississauga
- Route 30 on Airport Road, connecting to Mississauga at Westwood Mall
- Route 101 on Bramalea Road, Derry Road, and Airport Road, connecting to Mississauga at Pearson Airport, Terminal 1
- Route 11 on Steeles Avenue, connecting to Toronto at Humber College
- Route 50 on The Gore Road, also connecting to Toronto at Humber College
- Route 51 on Mississauga Road, connecting to Mississauga
- Route 77 on Highway 7, connecting to York Region Viva service on Highway 7and the City of Toronto at Finch Station

Existing ridership levels on potential BRT, primary, and secondary corridors are shown in **Exhibit 4-2**.

	Annual Ridership Average for Acceleride Corridor (July 2005 - June 2008)		
	ROUTE #	CORRIDOR	RIDERSHIP
Future Acceleride Corridor	1	Queen	1,465,898
	2	Main	585,575
	11	Steeles	1,063,161
	5	Bovaird/Goreway	659,808
	77	Highway 7	493,850
Future Acceleride Support Corridor	3	McLaughlin	243,432
	4	Chinguacousy	485,785
	7	Kennedy	825,865
	14	Torbram	410,486
	15	Bramalea	318,829
	18	Dixie	657,426
	23	Sandalwood	231,546
	29	Williams	113,332
	30	Airport	338,016
	51	Steeles West	141,680

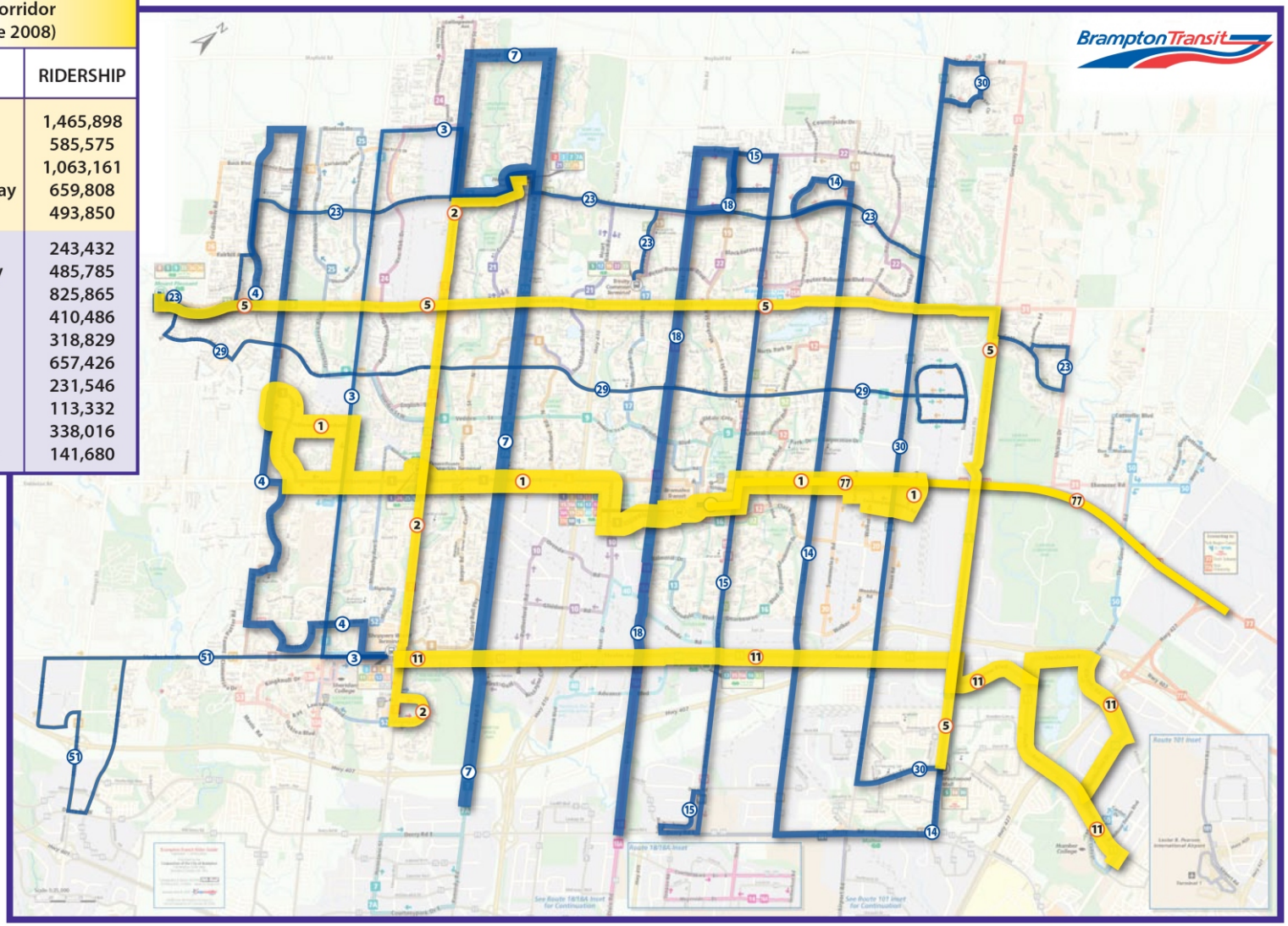

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Exhibit 4-2
Existing Ridership on Future BRT and Support Corridors

4.1.2 GO Transit System Characteristics

GO Transit services Brampton with one rail line, the GO Georgetown line. The Georgetown GO Train runs between Georgetown GO Station in Halton Hills and Union Station in Downtown Toronto. The line carried 6,991 A.M. peak period passengers in 2006 and 7,085 in 2007. There are three stations located in the City of Brampton: Bramalea GO Station, Brampton GO Station, and Mount Pleasant GO Station. In 2006, approximately 70% of eastbound passengers disembarking from the Georgetown Line at Union Station boarded at Bramalea GO Station, Brampton GO Station, and Mount Pleasant GO Station. Some key information is shown in **Table 4-3**.

Table 4-3: Ridership and Mode Share along Georgetown Rail Corridor

Georgetown GO Rail Corridor		**Egress Mode**					
GO Station	**Daily Ridership**	**Drive**	**Kiss 'n' Ride**	**Brampton Transit**	**GO Bus**	**Walk**	**Bicycle**
Bramalea	2,636	73%	15%	8%	2%	4%	0%
Brampton	1,949	66%	15%	7%	1%	10%	1%
Mount Pleasant	765	72%	17%	6%	0%	4%	1%

Source: GO Transit Cordon Count 2006-07, GO Transit Marketing & Planning Branch

Along the Georgetown corridor GO Transit runs six eastbound A.M. peak trips servicing all stations and four off-peak trains between Bramalea GO Station and Union GO Station. Westbound, GO Transit runs one A.M. peak trip, two off-peak trips, and six P.M. peak trips.

The corridor is supplemented by train-bus service between Georgetown and Union Station. In 2006, the Georgetown train-bus daily ridership was 840 compared to GO Georgetown's rail daily ridership of approximately 15,000.

In 2006, GO Transit serviced Brampton with five routes. These routes are:

1. **Brampton Trinity Common GO Bus**: Brampton, Bramalea, Hwy 407, Thornhill, and Toronto
2. **Brampton Local, Hwy 27, and Hwy 427 GO Bus**: Brampton, Bramalea, Malton, Pearson Airport, Yorkdale and York Mills
3. **Georgetown GO Bus**: Guelph, Georgetown, Brampton and Toronto
4. **Hwy 407 West GO Bus**: Guelph, Hamilton, McMaster University, Oakville, Meadowvale, Streetsville, Square One, Bramalea and York University
5. **Orangeville GO Bus**: Orangeville, Caledon, Victoria, Snelgrove, and Brampton

Together, these five routes generated a total daily ridership of 2,987 which represented 9% of GO's total daily bus ridership in 2006. Some key information can be found in **Table 4-4**.

Table 4-4: Ridership and Mode Share along Georgetown Bus Corridor

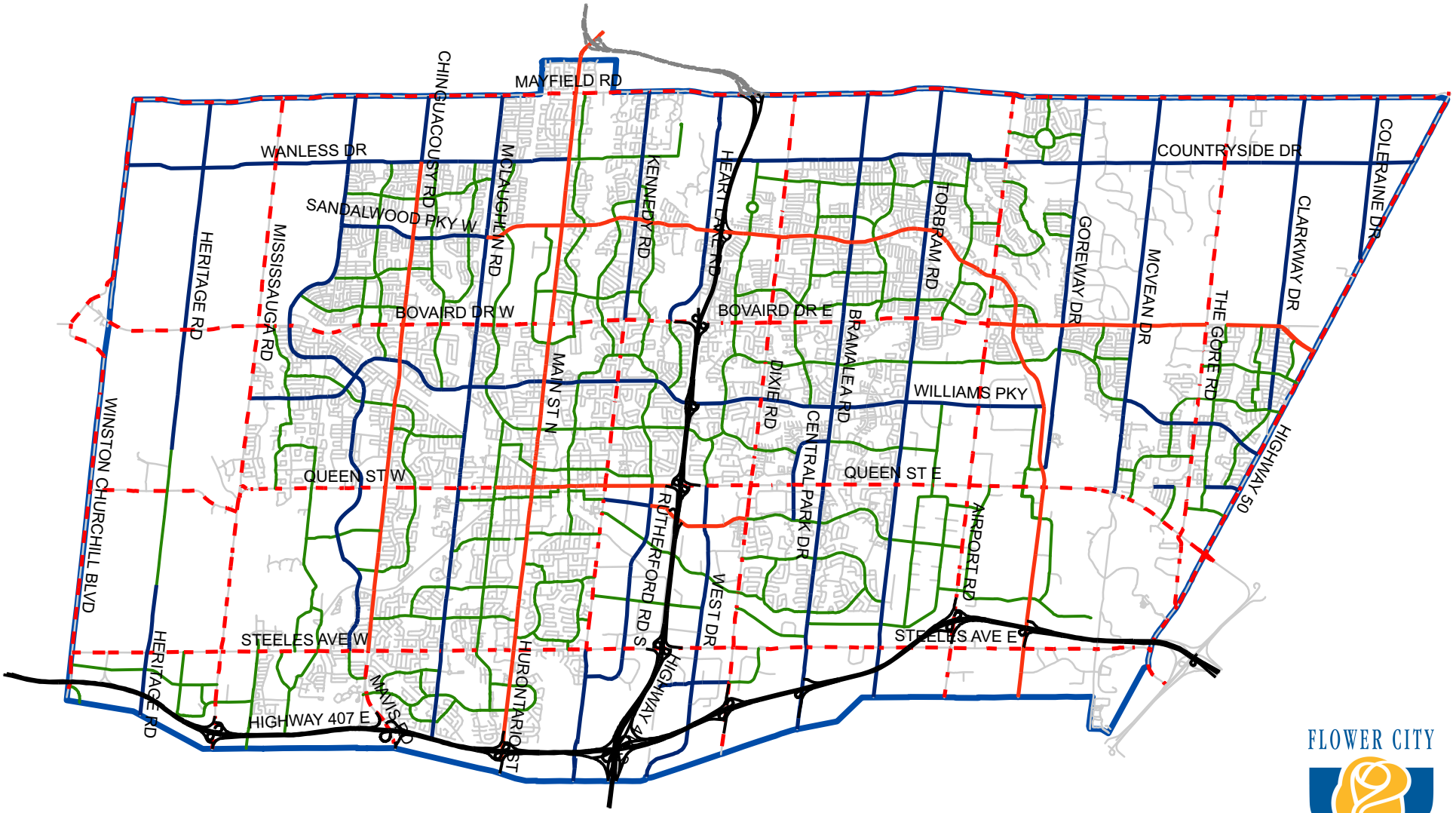
Brampton GO Bus Corridor		Egress Mode					
GO Bus Stops	**Daily Ridership**	**Drive**	**Kiss 'n' Ride**	**Brampton Transit**	**GO Bus**	**Walk**	**Bicycle**
All GO Brampton Stops	1,949	26%	21%	16%	2%	34%	1%

4.2 ROAD NETWORK

Exhibit 4-3 shows the existing Brampton road network hierarchy and jurisdiction. At present, the major freeway links are Highway 410, running north-south through the centre of the City, and Highways 401 and 407 running east-west along the southern border with Mississauga. Highway 407 is just north of the border and Highway 401, (not shown on the map), is just south. The Brampton arterial road network is connected to Highway 410 through interchanges at Mayfield Road, Sandalwood Parkway, Bovaird Drive, Williams Parkway, Queen Street, Clark Boulevard, and Steeles Avenue. The north-south arterials connecting to Highways 401 and / or the 407 ETR are Winston Churchill Blvd, Mississauga Road, Chinguacousy / Mavis Road, Main / Hurontario Road, Dixie Road, Bramalea Road, Airport Road, and Goreway Drive. Highway 427, just east of Brampton, provides additional access to Queen Street and Steeles Avenue. Road hierarchy for some of the collector roads, including roads south of Castelmore Road and east of The Gore Road will be further reviewed through the EA process.

The exhibit also shows the authority that has jurisdiction over each of the roads, most of which are divided between the City of Brampton and the Region of Peel. The arterial and collector road network is divided with a ratio of approximately two to one between the City and the Region (1020 lane-km to 560 lane-km).

Exhibit 4-4 shows the location of signalized intersections in Brampton while **Exhibit 4-5** shows the current (as of June 2009) number of lanes on major arterials and collectors. From this we can see that high-capacity roads are essentially limited to the central and southern parts of Brampton. There are few continuous high-capacity roads. The arterial road network does not run all the way across the city from east to west, but is instead concentrated between McLaughlin Road and Airport Road. There is no high-capacity link with western Brampton or Halton Region north of Highways 401 and 407. The four-lane roads that do exist are widely spaced outside the central area. Congestion on arterial roads also leads to traffic spilling over onto residential collector roads, raising residents' concerns over traffic infiltration, safety, and speeding in residential areas.



Legend

- PROPOSED FREEWAY
- FREEWAY
- MAJOR ARTERIAL - CITY
- MAJOR ARTERIAL - REGIONAL
- MINOR ARTERIAL
- COLLECTOR
- LOCAL
- CITY LIMIT

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Exhibit 4-3
Road Hierarchy and Road Jurisdiction

November 2009
Revised February 2010

HDR | iTRANS

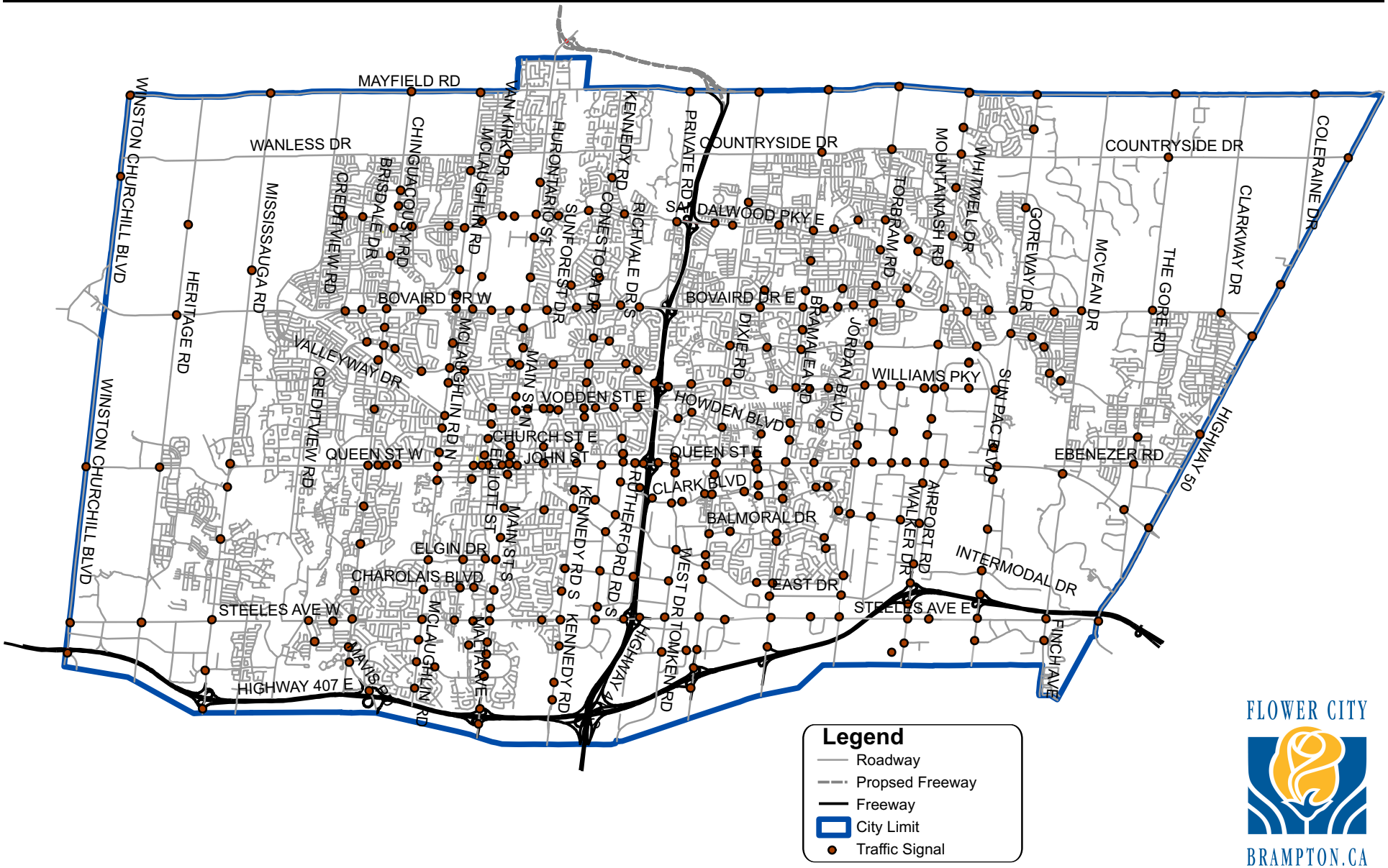

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Exhibit 4-4
Signalized Intersections

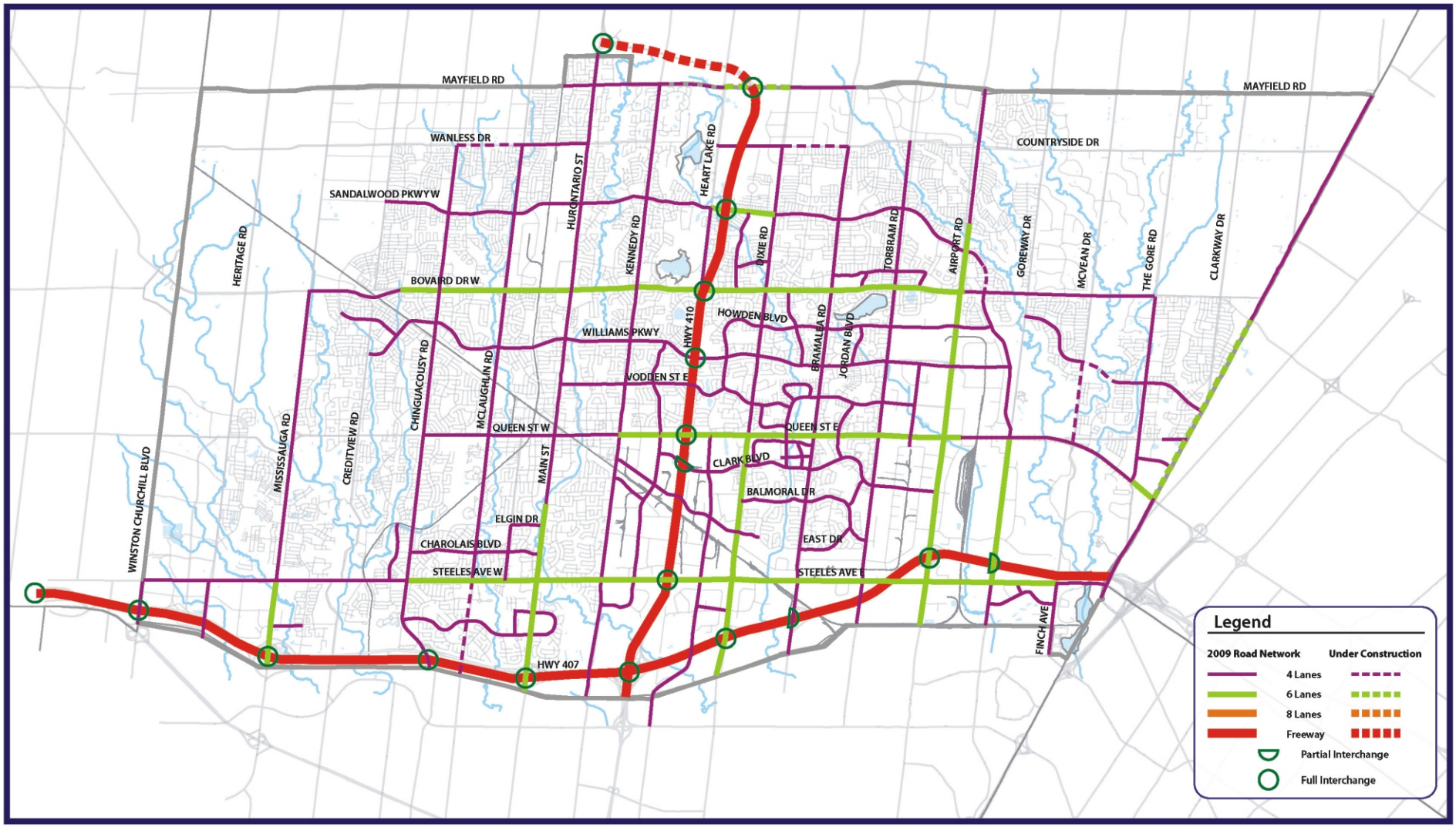

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Exhibit 4-5
Existing Road Network Number of Lanes

November 2009
Revised February 2010

4.3 GOODS MOVEMENT NETWORK

The road network in Brampton is significantly restricted for freight vehicles, as illustrated in **Exhibit 4-6**. Trucks are required to use specific segments of arterial roads that link industrial areas and intermodal goods terminals to the freeway network in order to protect residential communities from the impact of heavy vehicle traffic.

Major industrial areas in Brampton include the Highways 401 and 407 ETR area, the Highway 410 and Steeles Avenue area, and along Airport Road and the adjoining intermodal terminal. Other than on the freeways, cordon count data indicates that the heaviest truck volumes are on the arterial roads south of Steeles Avenue, in the vicinity of Highway 410 and along Airport Road.

On Queen Street / Highway 7, Steeles Avenue and Mayfield Road, 200-600 trucks were counted in each direction during the peak periods, forming a significant proportion of the overall traffic volume (around 15% on Steeles Avenue, over 20% on Highway 7, and 25-30% on Mayfield Road). The Airport Road volumes were in a similar range, reaching a maximum of 645 trucks northbound in the PM peak. These routes can be identified as trucking corridors, in addition to the freeway network, with most of the remaining road network allowing limited or no heavy vehicle movement. The arterial road links with the highest daily truck volumes and / or percentage of total vehicles are shown in Table 4-5.

Table 4-5: 2006 Brampton Heavy Vehicle Cordon Counts

2006 Brampton Truck Counts	Total Volume			Truck Percentage		
East-West Routes	**AM Peak**	**PM Peak**	**15 hour**	**AM Peak**	**PM Peak**	**15 hour**
Highway 7 East of Highway 10	761	925	6,606	21.1%	21.4%	24.3%
Steeles Avenue East of Airport Road	932	652	6,070	15.8%	8.2%	15.5%
Queen Street East of Highway 410	929	513	5,598	14.6%	6.4%	11.5%
Highway 7 West of Highway 50	566	717	4,938	11.1%	11.3%	14.2%
Steeles Avenue East of Highway 410	630	638	4,937	7.4%	7.9%	9.5%
Williams Parkway East of Airport Road	654	388	3,452	17.7%	12.0%	17.7%
Bovaird Drive East of Highway 410	497	312	2,978	9.2%	5.8%	9.1%
Williams Parkway East of Highway 410	344	438	2,921	8.4%	8.7%	9.8%
Mayfield Road West of Highway 50	448	426	2,632	30.1%	24.8%	30.5%
Castlemore Road West of Highway 50	517	330	2,299	21.6%	13.4%	17.4%
Mayfield Road East of Airport Road	212	519	2,216	11.6%	22.6%	19.6%
Queen Street East of Highway 10	263	334	2,059	7.6%	11.7%	10.3%
North-South Routes	**Total Volume**			**Truck Percentage**		
	AM Peak	**PM Peak**	**15 hour**	**AM Peak**	**PM Peak**	**15 hour**
Dixie Road South of Mayfield Road	929	439	5,499	18.6%	6.8%	17.5%
Airport Road South of Bovaird Drive	554	1,008	4,833	10.7%	15.7%	14.9%
Mississauga Road South of Steeles Avenue	746	511	3,733	14.9%	9.6%	15.6%
Winston Churchill Blvd. North of Highway 401	267	970	3,689	7.9%	19.2%	16.3%
Highway 10 South of Mayfield Road	427	278	2,537	13.5%	9.3%	14.4%
Bramalea Road South of Steeles Avenue	303	367	2,535	7.8%	10.6%	14.3%
Mississauga Road South of Bovaird Drive	449	402	2,351	17.5%	19.3%	19.9%
Dixie Road South of Bovaird Drive	403	464	2,308	10.9%	13.4%	12.5%

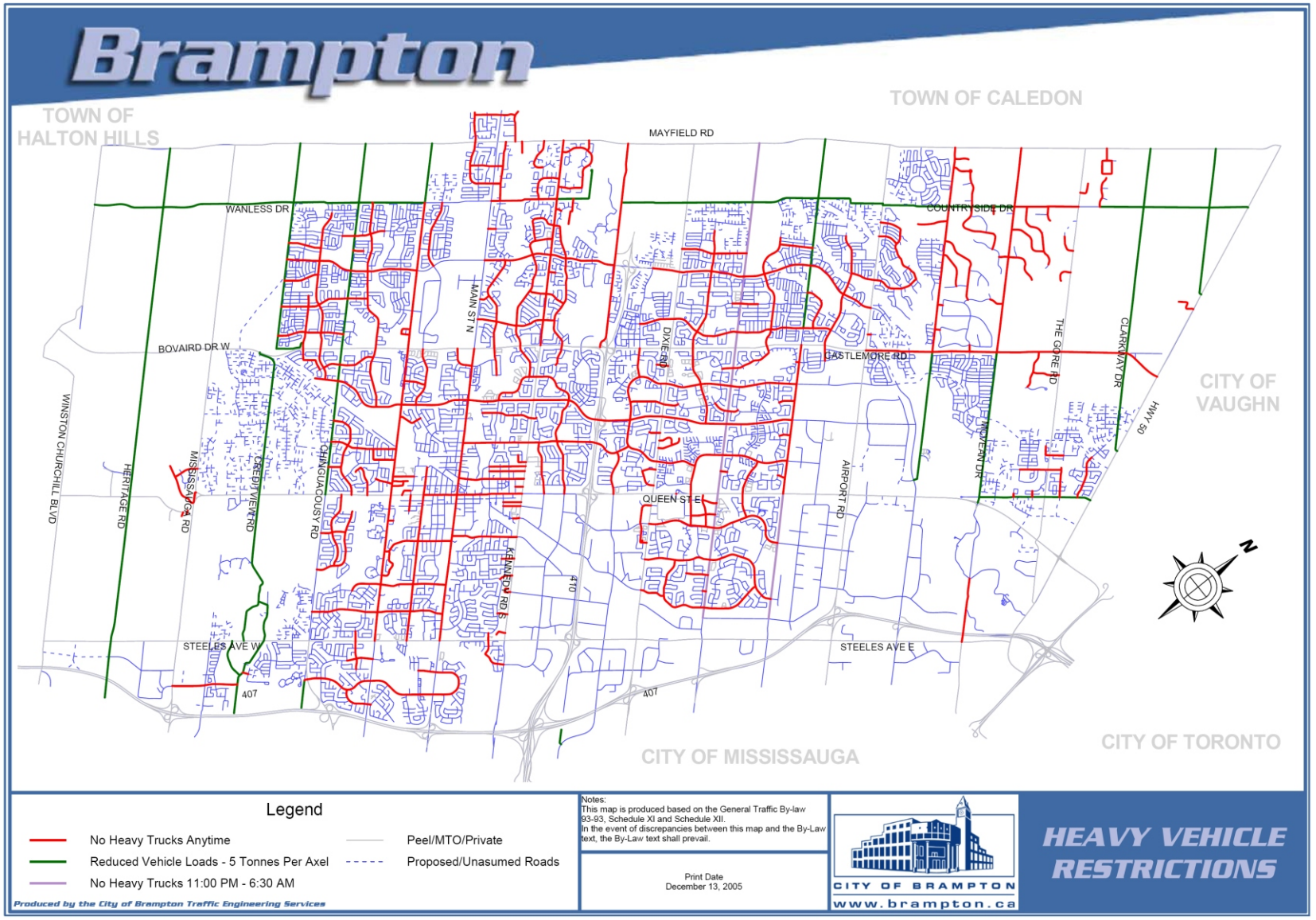

Exhibit 4-6

Heavy Vehicle Restrictions in Brampton

4.4 RAILWAYS AND RAILWAY CROSSINGS

Rail companies operating in Brampton include GO Transit (commuter passenger connections to Georgetown and Toronto from Bramalea, Brampton, and Mount Pleasant stations), VIA Rail (passenger connections at Brampton Station for the Toronto - Sarnia route twice-daily and the Toronto - London route daily), CN Rail (freight), and the CP Orangeville-Brampton Railway (freight and tourism).

The predominant rail line crossing Brampton is the CN Halton subdivision, which runs from the southeast, through downtown, and crosses into Halton at Winston Churchill Boulevard south of Wanless. CN Rail operates the Brampton Intermodal Terminal, their major terminal serving the GTA, located northeast of Airport Road and Highway 407. The Orangeville-Brampton railway operates weekly between Orangeville and Brampton under an agreement between the Town of Orangeville, CP Rail, and local manufacturers. This line crosses Brampton from south to north, west of the centre.

Crossings are evaluated for safety and improved annually two or three at a time by the City in conjunction with the rail operators. There is a mix of at-grade (in the more rural west end) and grade-separated crossings.

4.5 ACTIVE TRANSPORTATION

The 2002 Pathways Master Plan outlines the City's plan to create a unique comprehensive and safe trail system that connects all residents to neighbourhood, community, and city-wide destinations.

The routing plan, revised in 2006, proposes 510 kilometres of trails utilizing three classes of pathways, including:

1. Class I – Three metre wide multi-use trail
   - Boulevard trails alongside roads (i.e. Bovaird Drive) – 211 kilometres
   - Valleyland trails through parkland areas – 168 kilometres
2. Class II – Bike Lanes – 71 kilometres
3. Class III – Signed Routes – 60 kilometres

To date, the City has approximately 83 kilometres of trails, including 17 kilometres of Class I boulevard trails, 65 kilometres of Class I valleyland trails, and 0.4km of Class II bike lane. The Works and Transportation department installed Brampton's first Class II bike lane on Birchbank Drive in southern Bramalea in 2005.

The locations of existing and planned trails are shown in **Exhibit 4-7**. The green lines represent the existing trails, most of which are concentrated in residential neighbourhoods and away from major roads. These serve a useful recreational purpose but do not facilitate commuting; however, some routes such as the Class I boulevard along Bovaird Drive do help in this regard. Expanding the network to an effective grid system as planned should encourage greater use.

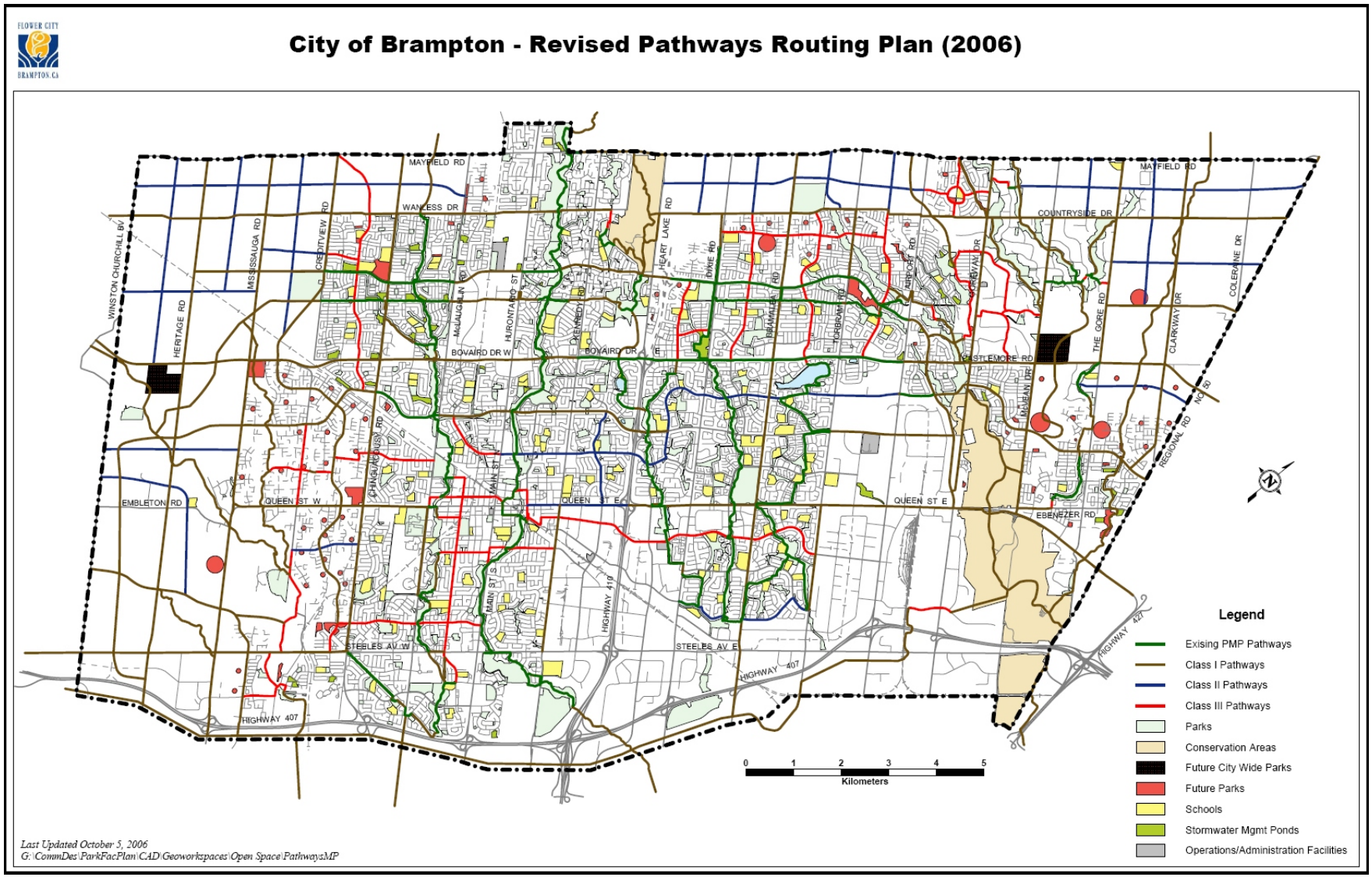

Exhibit 4-7

Pathway Network in Brampton

4.6 TRAVEL DEMAND MANAGEMENT

TDM programs are carried out under the Smart Commute banner. Launched in June 2006, Smart Commute Brampton-Caledon, a member-based NGO, offers programs and services to tackle congestion and reduce air pollution by educating, advocating, and promoting sustainable transportation options to employers and employees in the Brampton-Caledon area. It is a partnership between private and public organizations, with support from the Region of Peel, Metrolinx, and the Brampton Board of Trade.

This initiative is designed as a component of the GTHA-wide Smart Commute, which aims to reduce congestion, reduce greenhouse gas emissions and improve air quality across the region by encouraging people to find alternatives to commuting by driving alone. Planning for the Brampton-Caledon chapter was initiated in 2004 with participation from public and private stakeholders including government agencies, employers, trade associations, and property companies. The stated Brampton-Caledon aims are to improve travel options, reduce commute times, and encourage sustainable, balanced, and innovative transportation solutions.

Elements of the Smart Commute Initiative include:

- Creating a rideshare database and ride-matching programs
- Establishing an emergency ride home program
- Developing a “menu” of affordable alternative transportation options
- Encouraging employer participation in establishing alternative work arrangements or teleworking

4.7 TRAVEL CHARACTERISTICS

A brief summary of key travel characteristics for the City of Brampton is provided in this section. An in-depth analysis of existing travel characteristics can be found in **Appendix C**. Historical trends are evaluated based on the results of the Transportation Tomorrow Survey (TTS) for 1996 and 2001, with preliminary TTS results used for 2006.

4.7.1 Historic Trends

Historic trends over the past ten years, as obtained through the TTS show that as Brampton matures as a City, it is continuing to move towards sustainability.

Comparing average vehicles per household across various GTA municipalities in **Exhibit 4-8**, Brampton residents tend to own slightly more vehicles than Mississauga residents, and significantly more vehicles than Toronto residents. No major trend is seen across any of the municipalities from 1996 to 2006.

While Brampton residents have owned the same number of vehicles per household over the past ten years, **Exhibit 4-9** illustrates a very healthy and steady increase in public transit and GO trips, growing by 54% between 1996 and 2001, and by another 42% between 2001 and 2006.

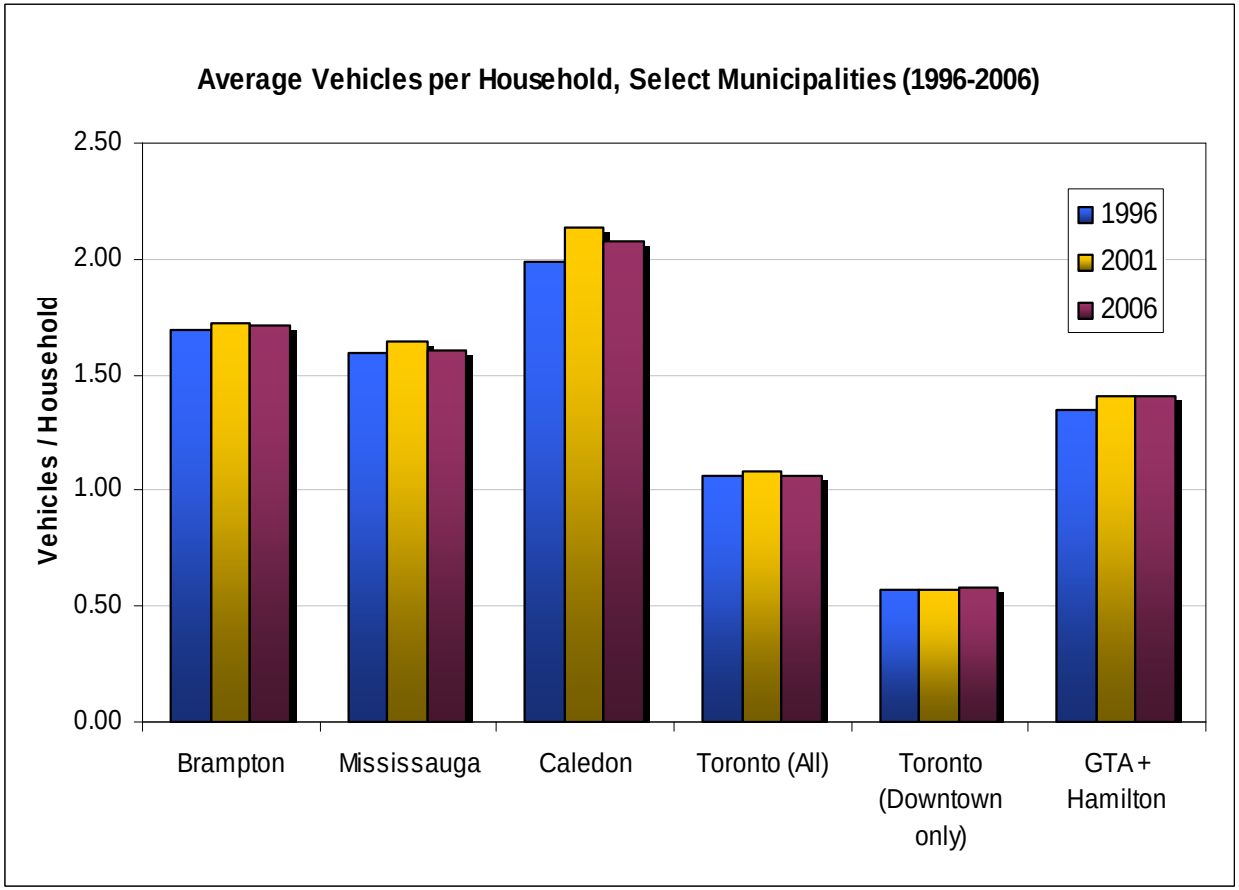

Exhibit 4-8: Average Vehicles per Household, 1996 to 2001

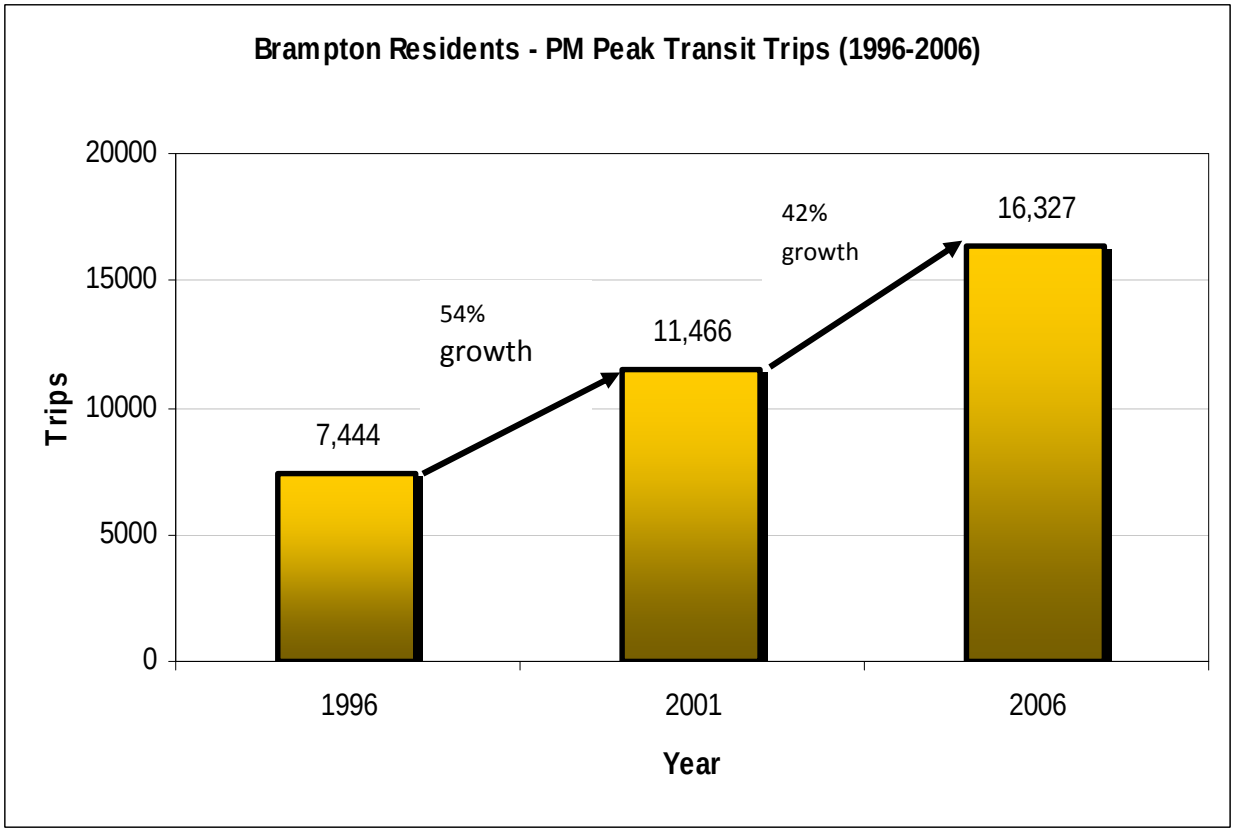

Exhibit 4-9: Transit Trips, 1996-2006

Similarly, auto passenger trips appear to be increasing at a healthy rate **Exhibit 4-10** shows modest growth of 14% from 1996 to 2001, and a higher 31% growth from 2001 to 2006.

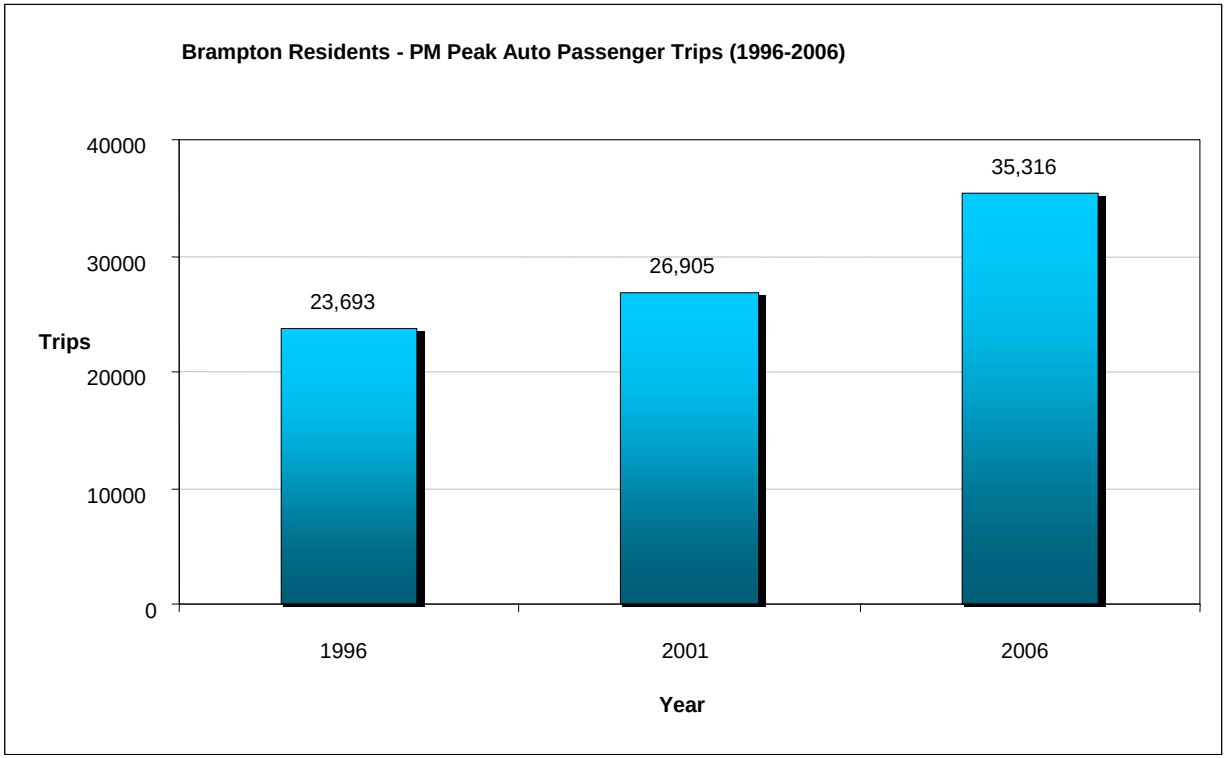

Exhibit 4-10: Auto Passenger Trips, 1996-2006

As positive as it is for total transit and auto passenger trips to increase, it is much more important that the proportions of this type of travel increase relative to non-sustainable modes. Brampton residents' modal share is illustrated below in **Exhibit 4-11**.

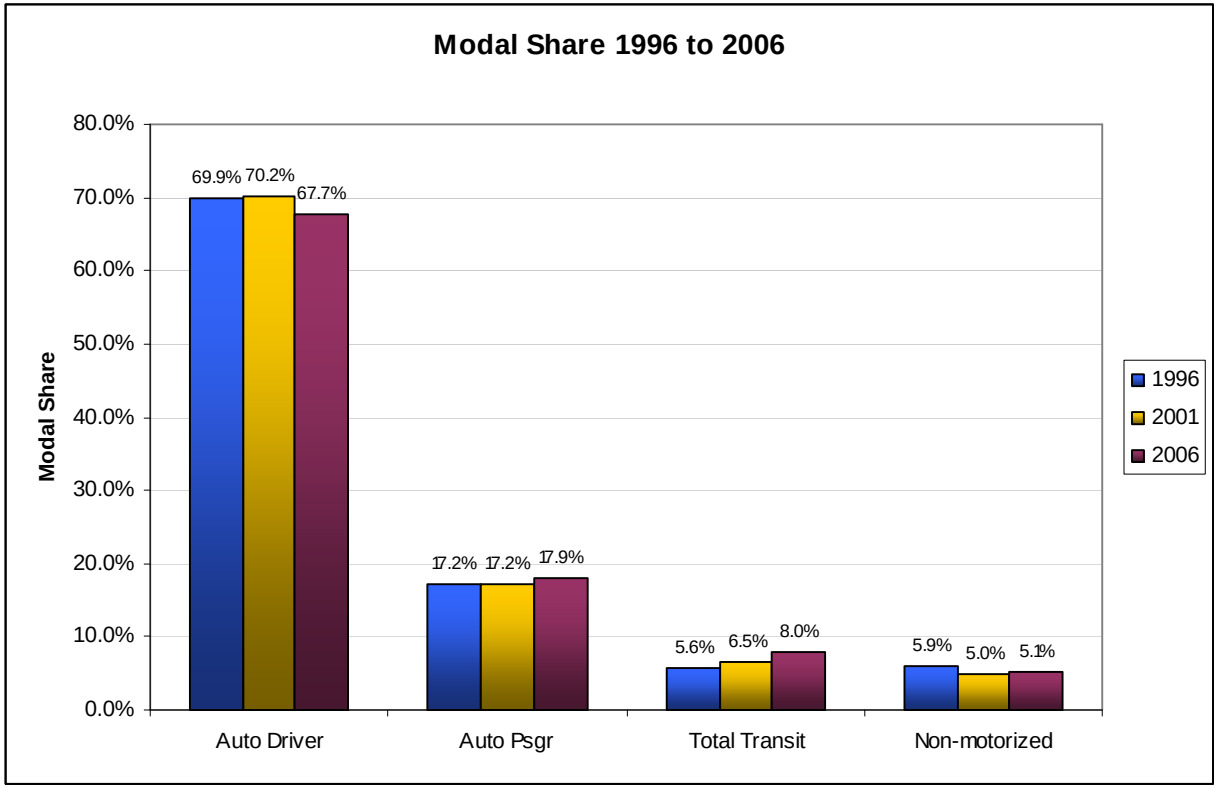

Exhibit 4-11: Modal Share for Brampton Residents, All Day Trips, 1996-2006

Looking at Brampton residents' daily travel, total transit share increases steadily from 5.6% in 1996 to 8.0% in 2006. Likewise, auto passenger trips increase from 17.2% to 17.9%, while auto driver trips decrease from 69.9% to 67.7% over the same time frame. All are positive indications that as the City of Brampton develops and matures, it is moving towards sustainability. Non-motorized travel however, is decreasing from 5.9% in 1996 to 5.1% in 2006. Further work on policies and programs to increase the viability of non-motorized travel must be done.

4.7.2 Travel Patterns

City of Brampton travel patterns are important in gaining a broad understanding of where people are going to and coming from. Based on the 2006 Transportation Tomorrow Survey, travel patterns are established for the afternoon peak period – the time of day when the City of Brampton sees the highest demand for travel. **Exhibit 4-12** and **Exhibit 4-13** below illustrate typical travel patterns to and from the City of Brampton during the PM peak hour in 2006.

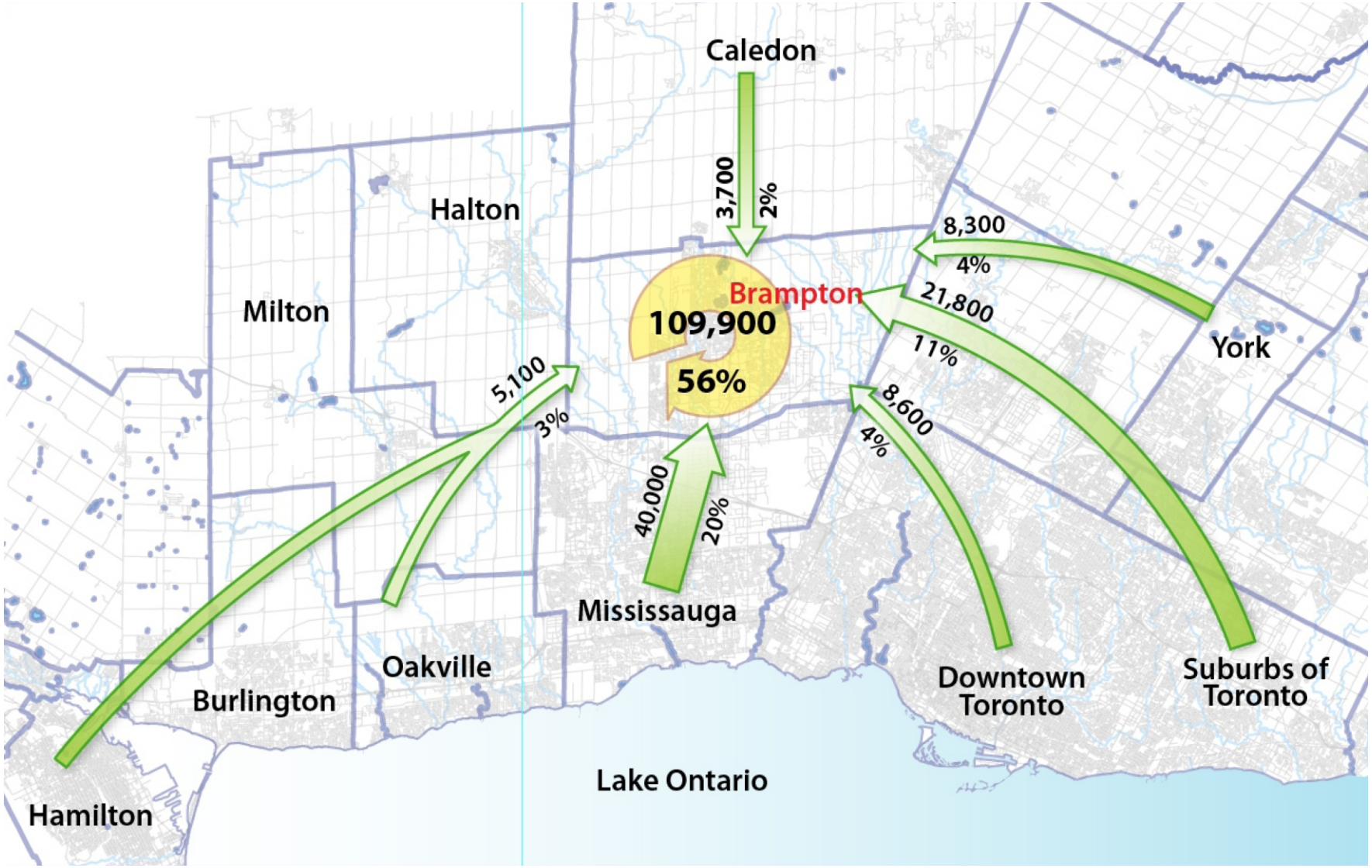

Exhibit 4-12

Travel to Brampton - PM Peak Period

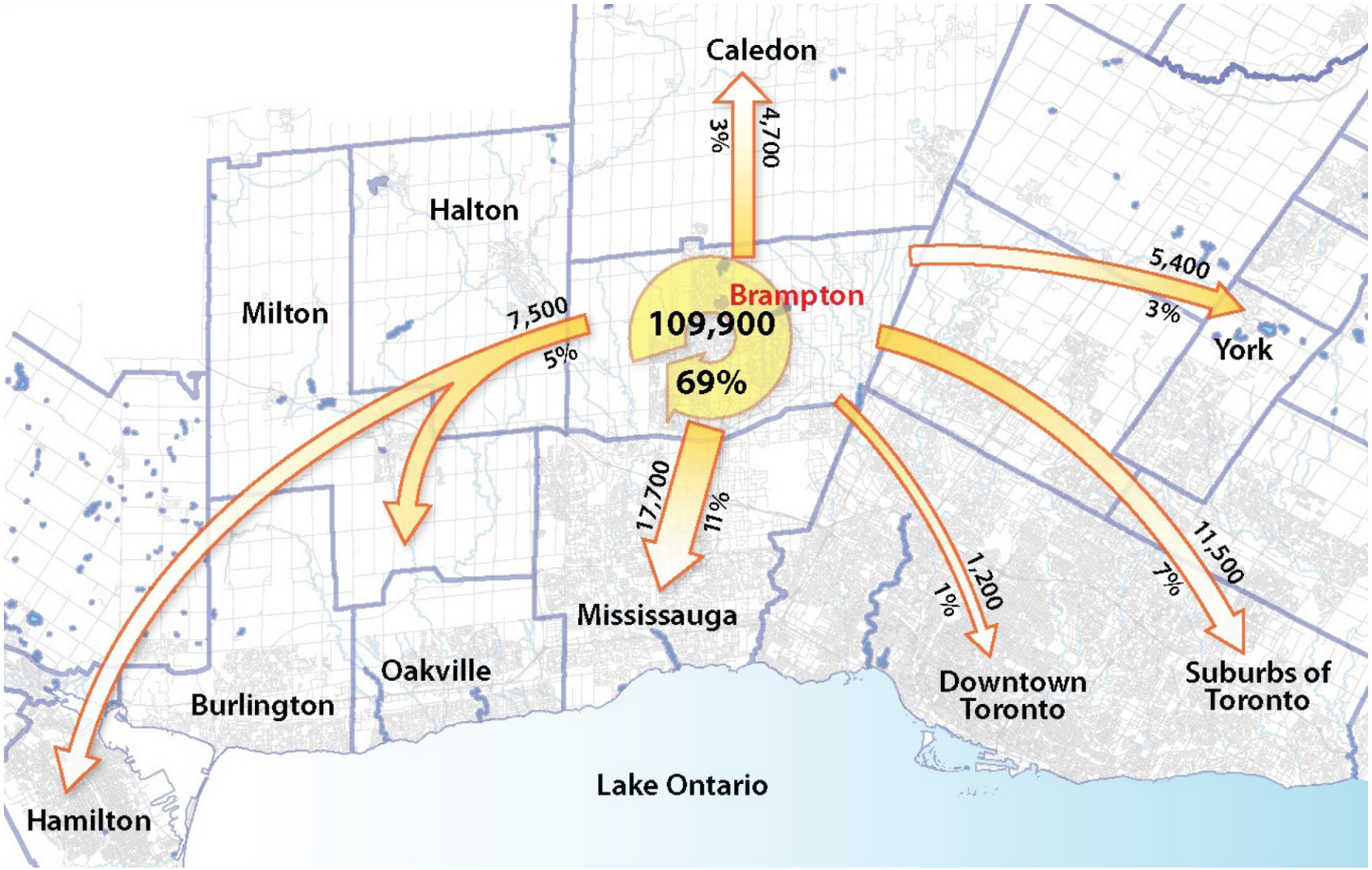

Exhibit 4-13

Travel from Brampton - PM Peak Period

In the PM peak hour, the majority of travel consists of people returning home from work. Approximately 110,000 trips or 56% of travel to Brampton also originates in Brampton. 40,000 trips or 20% of travel comes from Mississauga while about 30,000 trips or 15% of travel comes from the City of Toronto. In total, 91% of travel to Brampton is from Brampton itself, Mississauga, and Toronto.

In contrast, the 110,000 trips that begin and end in Brampton constitute 69% of travel from Brampton (as opposed to 56% of travel to Brampton). This indicates that Brampton employment is highly self-contained, whereas the population is more likely to work outside of the City. The same strong attraction between Brampton and Mississauga-Toronto is seen in travel from Brampton, though to a lesser degree.

4.7.3 Travel Volumes

Based upon the 2006 Cordon Count, during the PM peak hour the westbound and northbound peak directions of travel carry a combined volume of 177,400 passenger cars across all Brampton TTMP analysis screenlines. This stream of vehicles is provided with a capacity of 229,900 vehicles per hour, serving travel demand well. The majority of the screenlines are operating at the free-flow condition and no screenlines are above capacity. However, the eastern and western screenlines north of Queen Street and the southern screenlines east of Main Street / Hurontario Street, east of Highway 410, and east of Airport Road are all approaching capacity. Screenline analysis methodology is explained in detail in **Section 6.2.** This section identifies the screenline locations used for Brampton TTMP capacity analysis, while **Exhibit 4-14** and **Exhibit 4-15** illustrate existing traffic conditions along these analysis screenlines.

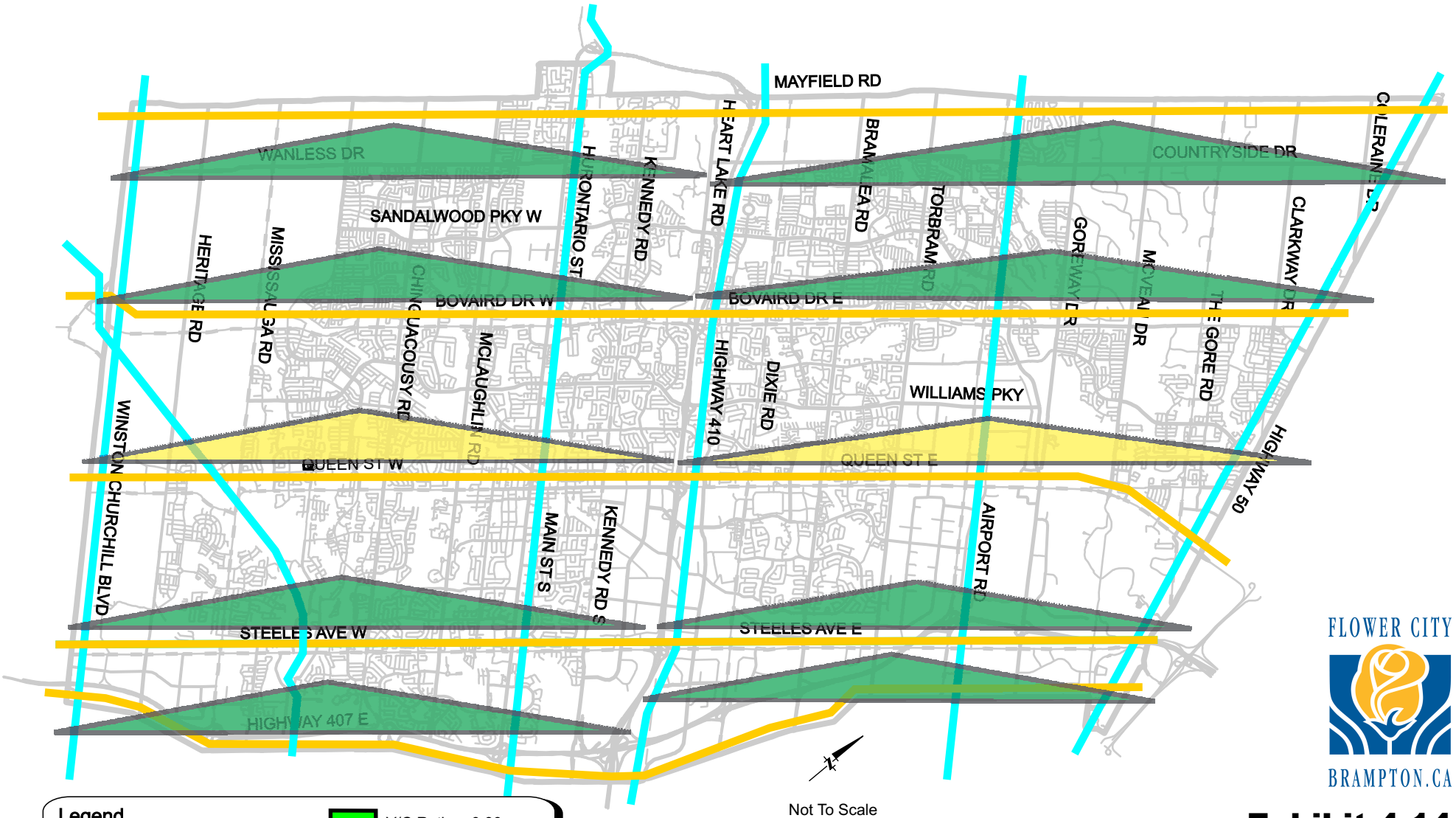

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Exhibit 4-14
Existing (2006) Screenline V/C Ratios
PM Peak Hour, North-South Traffic, Peak Direction

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Exhibit 4-15

Existing (2006) Screenline V/C Ratios

PM Peak Hour, East-West Traffic, Peak Direction

4.8 NEEDS, OPPORTUNITIES, AND CHALLENGES

A number of opportunities and constraints that have been identified are directly related to the provision of new infrastructure, capacity improvements for the existing network, and enhancements to the transit system in support of future development.

Opportunities and constraints to transportation system growth identified at this stage in the study include:

- Timing, function, and cost of the provision of the road network in North-West Brampton
- Timing, location, cost, role, and classification of the North-South corridor
- Timing and cost of the road network in Bram West
- Impact of environmental features and Greenbelt designated areas on the shape and function of the road network
- Further evolution of high-order transit in Brampton
- Enhanced connectivity between Brampton Transit, Mississauga Transit, York Region Transit, and GO Transit
- Impact of Metrolinx transit plan including the implementation of the Hwy 407 transitway and Mississauga transitway
- Existing congestion levels on area roads
- Need for additional road capacity crossing Hwy 410
- Need for additional road capacity north of Queen Street
- Need for improved connectivity with York Region roads
- East-west road requirements in the Central Area / Queen Street Corridor, with and without a Clark / Eastern Wellington connection
- Impact of the future East-West corridor

These areas of special interest are illustrated in **Exhibit 4-16.**

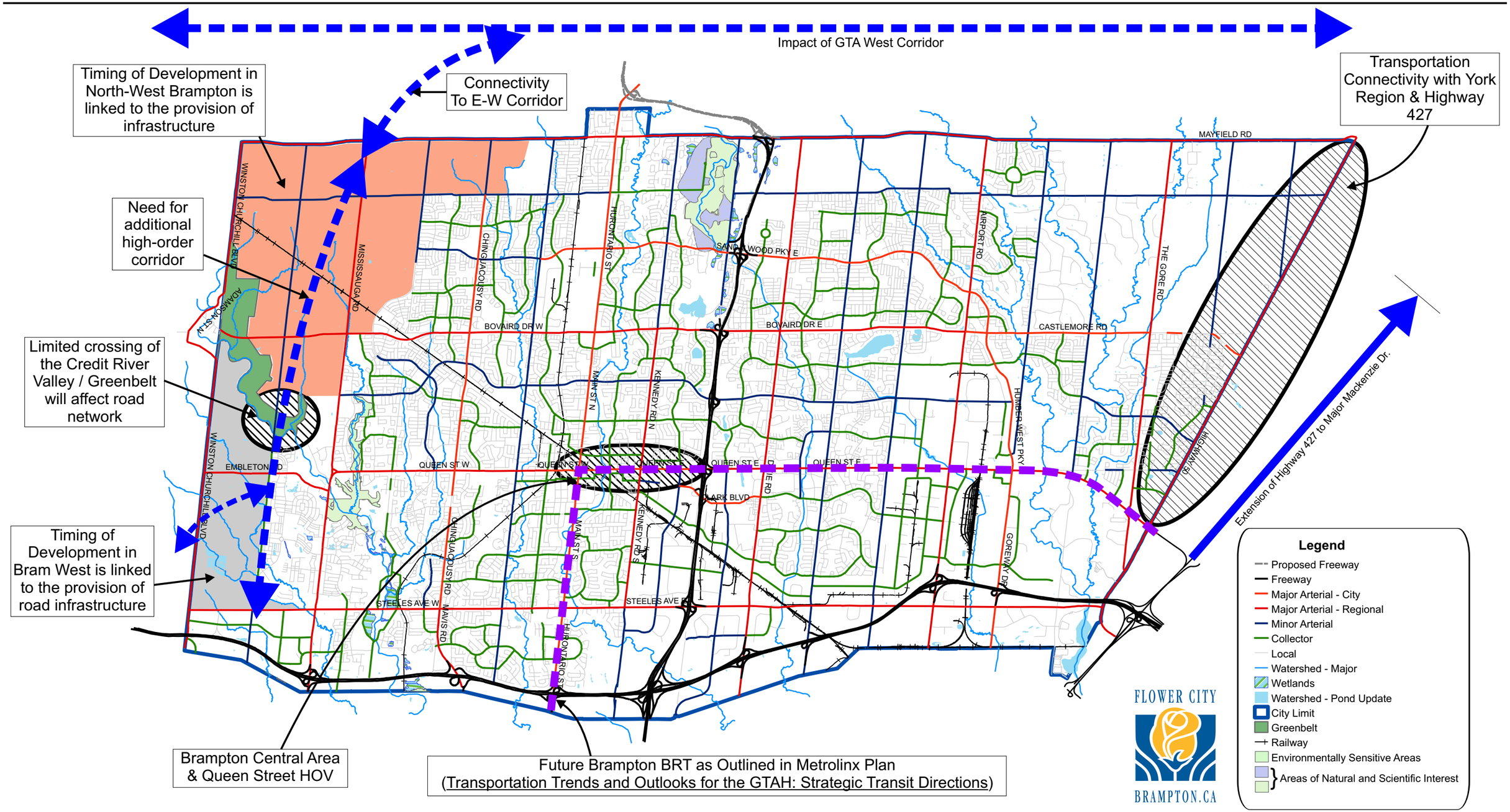

Exhibit 4-16
Constraints and Opportunities

4.8.1 Natural Environment

The City of Brampton, in its ecosystem approach to planning, has recognized the environment as a significant component in sustainable community growth. Protection and good stewardship of natural environment are as important in the promotion of sustainable development as social and economic concerns. The concept of ecosystem planning has been extended to transportation planning process as well where environmental considerations are evaluated equally with the efficiency and effectiveness of the transportation network in addition to the social and economic aspects of the road transportation system.

The Credit River watershed located in the west part of the City poses a considerable challenge for transportation. The Credit River watershed and associated system of Conservation Areas are designated to protect and enhance the existing ecosystem known for its terrestrial and aquatic diversity. Within the city of Brampton, the Credit River watershed consists of the main Credit River Valley and numerous tributaries. The system is located in the west and south-west of the City and spans the area from Winston Churchill Boulevard and south of CN Rail tracks in the north-west to Steeles Avenue and Highway 407 in the south-west. The Credit River Valley area located immediately north and south of Bovaird Drive and east of Winston Churchill Boulvard have been designated as Greenbelt Plan Area and Natural Heritage System in the Region of Peel Official Plan the Provincial Greenbelt Plan.

The Credit River Valley lands and some of its tributaries, associated wetlands and woodlots are extensively protected under the City of Brampton OP, see **Exhibit 4-17**. The Credit River watershed is under the authority of Credit River Conservation. Credit River Valley poses a major challenge for transportation network development affecting future North-South Corridor and treatments to Mississauga Road, Heritage Road and Steeles Avenue.

In the eastern section the City are the Claireville Conservation Area and Humber River valley lands. Clairville Conservation Area is a large, forested, unsupervised conservation area located along the West Humber River in the south-east corner of the City. The area is owned by the Toronto and

Region Conservation Authority (TRCA) and is home to significant natural and cultural heritage features. The area poses a major challenge to the transportation network, particularly south of Queen Street and west of Highway 50.

The Humber River Watershed is a hydrological feature located in the eastern part of the City. The Humber River valley and its tributaries are under the jurisdiction of Toronto and Region Conservation Authority (TRCA) and protected under Peel Region and City of Brampton Official Plan policies. Humber River Watershed runs mostly through built out urban areas and has been successfully integrated with the existing transportation network. Numerous bridges and culverts are either constructed or reconstructed to ensure the TRCA water crossing and habitat protection guidelines are met and adhered to.

The natural heritage system in the City of Brampton is presented in **Exhibit 4-17**.

Transportation including transit sources emit significant quantities of substances that directly impact the health of humans and change the climate. Worldwide emission estimates of substances that cause climate change indicate transportation sources account for approximately 24% of equivalent carbon dioxide (CO_2) emissions. In Ontario, the transportation sector is responsible for approximately 26.4% of the nitrogen oxide (NOx) emissions and 41.8% of the carbon monoxide (CO) emissions, but only 0.3% of the PM10 emissions province wide.

Greenhouse gases (GHGs) such as carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) exist naturally in the atmosphere, trapping heat and warming the air in much the same way glass warms the inside of a greenhouse. Human activities, including the combustion of fossil fuel (i.e., gasoline and diesel), also release these gases and further contribute to the warming trend. The most significant GHG in the context of climate change is carbon dioxide, and therefore the contributions by the other greenhouse gases are usually expressed as CO_2 equivalents. In 2006 transportation activities in Brampton have produced an estimated 1,577,000 tonnes of CO_2 emissions with 188,200 tonnes of Greenhouse Gases attributed to auto travel during weekday peak periods alone.

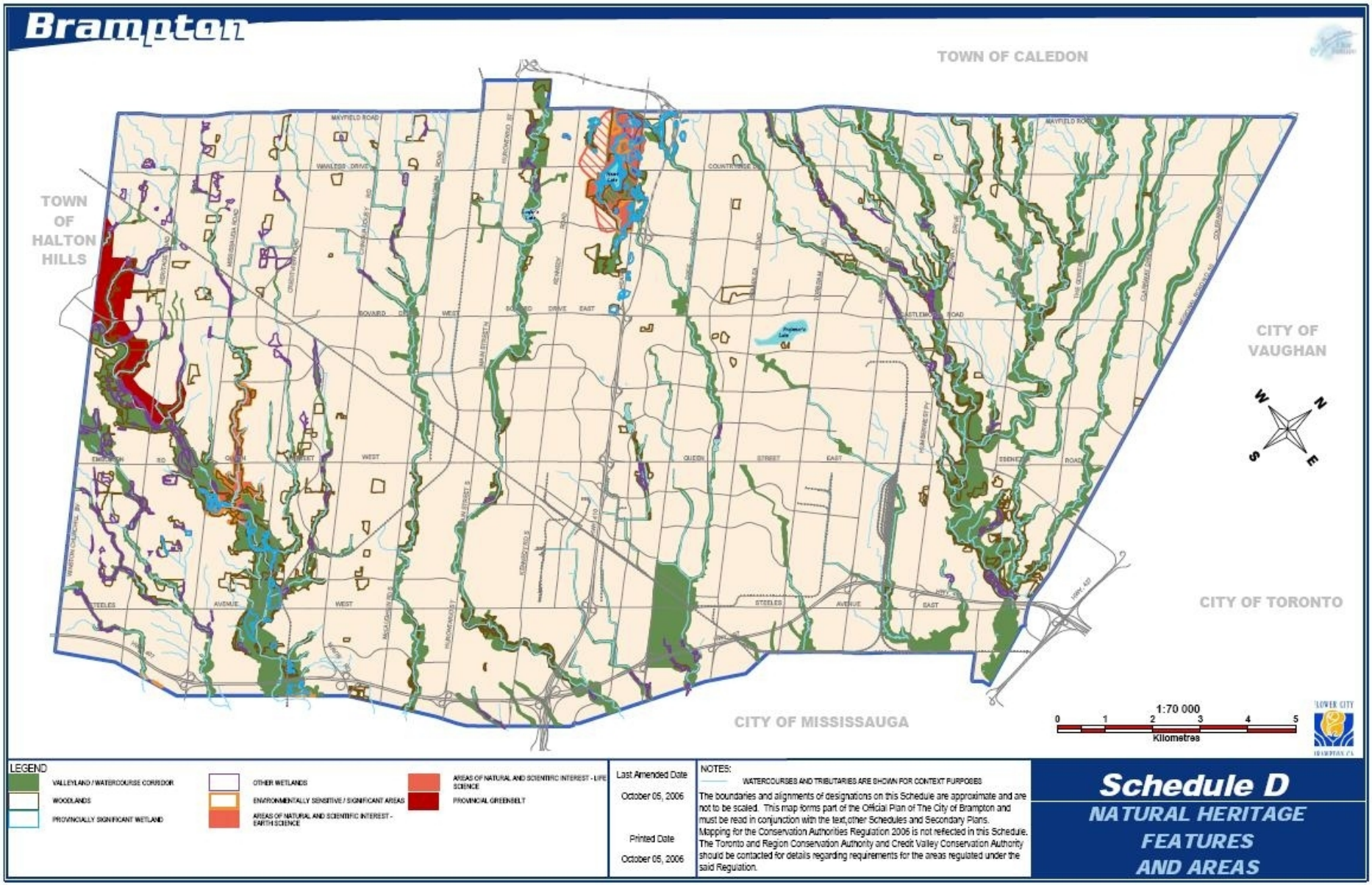

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Exhibit 4-17
Natural Heritage Features and Areas