2. THE CURRENT TRANSPORTATION SYSTEM

2.1 The Planning Context

An assessment of the current transportation system serves as the starting point from which future improvements and modifications can be identified. To understand the performance level of the existing transportation system, it is necessary to review all components. These include: road and transit system usage; trip purpose and modal split statistics; travel behaviour patterns; and truck movements.

The Official Plan, current development patterns and transportation desire lines will be discussed in order to define immediate and long-term strategies. In this document, recent and emerging trends in travel behaviour have also been considered, using information from the Transportation Tomorrow Surveys (TTS) (1996 and 2001), the Region of Peel Cordon Count program and other sources. This is intended to broaden the discussion from existing conditions towards future conditions.

The City of Brampton Official Plan (1993, Office Consolidation 2000) outlines strategic goals for the City. These goals carefully balance economic growth and quality of life with the need to protect the environment and create healthy and prosperous communities.

Both the Region and the City are experiencing rapid population and employment growth. The Region of Peel Official Plan (Interim Office Consolidation 1998) outlines strategic goals for the Region. These are in general similar to those of the City. Transportation infrastructure of both the Region and the City needs to be complementary, and the jurisdictional responsibilities of each agency must be recognized and coordinated.

2.1.1 Official Plans

The City of Brampton Official Plan policies related to transportation provide the basis for a multi-modal transportation plan that balances demands among modes while protecting communities. The Region of Peel Official Plan policies are complementary to those of the City of Brampton in this regard. The Official Plans both address all modes of transportation.

Brampton policies also define a complementary land use framework, through the definition of a strong central area, nodes and corridors, which can support a transportation system balanced between public and private transportation.

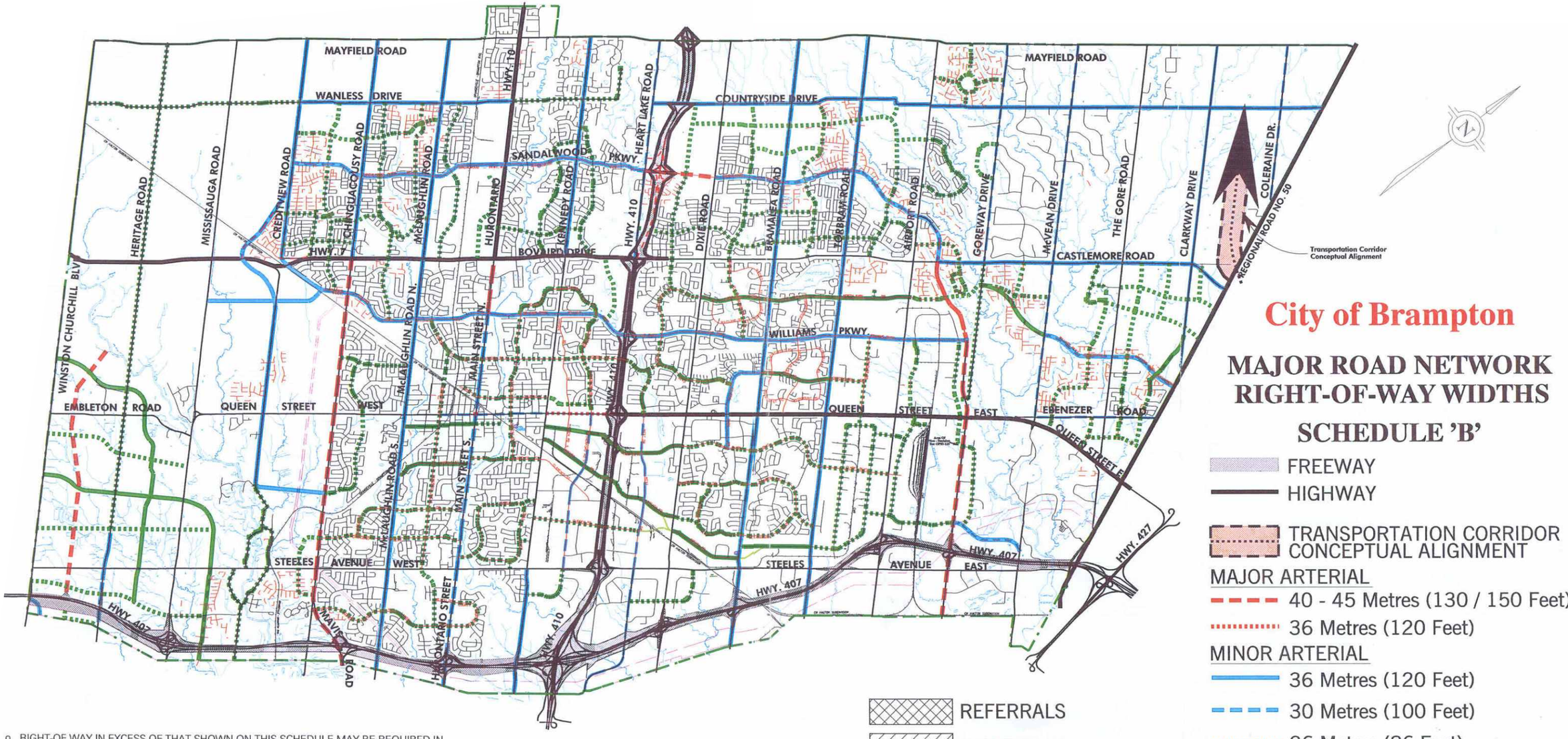
The major road and transit networks of the City are shown in **Figure 2.1a** and **Figure 2.1b**, respectively.

The City has recently completed its "PathWays Master Plan". The PathWays Plan needs to be taken into consideration in planning for roads and transit, including supporting policies.

The policies with respect to transit modal split and transit support are a key component of the Official Plans, given the basic objective of the Transportation & Transit Master Plan. The Region of Peel OP cites support for a minimum transit modal split target of 20% "within the Urban System served by transit" by the year 2021. The City's target of approximately 25% is obviously higher, but is also stated more generally. It should be noted that this is an ambitious target, given that the current transit share is approximately 6 to 7% for the municipality. The experience of other municipalities in the Greater Toronto Area has been to focus the definition of the transit modal split target so as to better reflect the potential for transit in light of current realities, and specifically in terms of time periods and geographical origin-destination pairs. This study has assessed that target's viability and appropriateness.

Additionally, the City has issued the Six Pillars Strategic Plan to provide services in order to achieve the City's goals and objectives. These are:

- A Modern transportation system;
- Managing growth;
- Protecting the environment, enhancing the community;
- A Dynamic and prosperous economy;
- Community lifestyle; and
- Excellence in local government



City of Brampton

MAJOR ROAD NETWORK RIGHT-OF-WAY WIDTHS SCHEDULE 'B'

- FREEWAY
- HIGHWAY
- TRANSPORTATION CORRIDOR CONCEPTUAL ALIGNMENT

MAJOR ARTERIAL
- 40 - 45 Metres (130 / 150 Feet)
- 36 Metres (120 Feet)

MINOR ARTERIAL
- 36 Metres (120 Feet)
- 30 Metres (100 Feet)
- 26 Metres (86 Feet)

COLLECTOR
- 30 Metres (100 Feet)
- 23 - 26 Metres (76 - 86 Feet)
- Alternative Alignment

REFERRALS

DEFERRALS

- RIGHT-OF WAY IN EXCESS OF THAT SHOWN ON THIS SCHEDULE MAY BE REQUIRED IN CERTAIN LOCATIONS IN ACCORDANCE WITH THE POLICIES OF THIS PLAN.
- THE BOUNDARIES AND ALIGNMENTS ARE APPROXIMATE AND NOT INTENDED TO BE SCALED, AND ARE SUBJECT TO AN APPROVALS PROCESS AS APPROPRIATE.
- THIS MAP FORMS PART OF THE OFFICIAL PLAN OF THE CITY OF BRAMPTON, AND MUST BE READ IN CONJUNCTION WITH THE TEXT, OTHER SCHEDULES AND SECONDARY PLANS.
- INFORMATION REGARDING REGIONAL ROAD RIGHT-OF-WAY REQUIREMENTS IS INCLUDED AS APPENDIX N TO THIS PLAN.

Brampton TRANSPORTATION & TRANSIT MASTER PLAN

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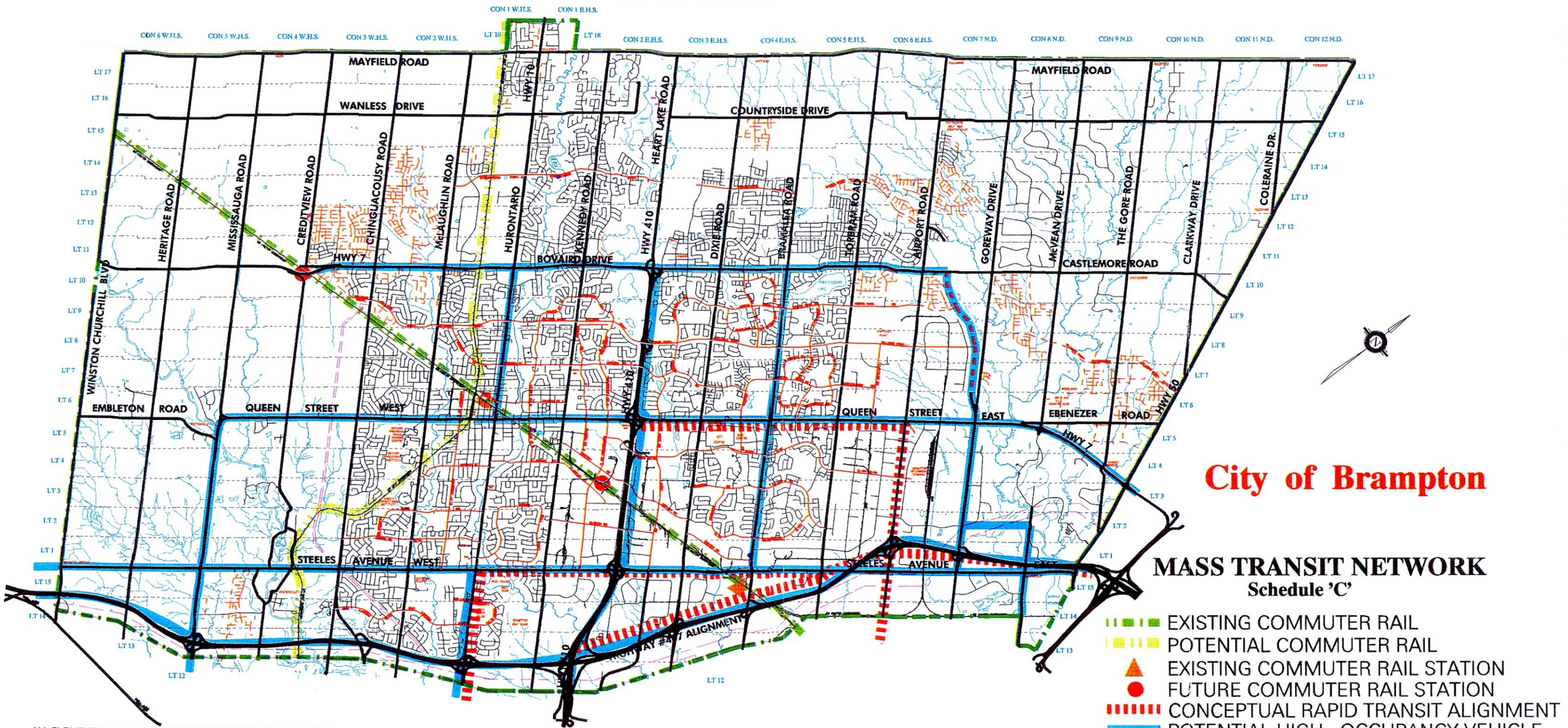
Figure 2.1a: City of Brampton Major Road Network and Right-of-Way Widths

J:\2002jobs\16-02083.jwg\Reports\Final Report\Figures\Figure 2.1a - OP Road Network & ROW.cdr



City of Brampton

MASS TRANSIT NETWORK

Schedule 'C'

- EXISTING COMMUTER RAIL
- POTENTIAL COMMUTER RAIL
- EXISTING COMMUTER RAIL STATION
- FUTURE COMMUTER RAIL STATION
- CONCEPTUAL RAPID TRANSIT ALIGNMENT
- POTENTIAL HIGH - OCCUPANCY VEHICLE LANE OR RESERVED BUS LANE

ALL ELEMENTS OF THE MASS TRANSIT NETWORK ARE CONCEPTUAL AND SUBJECT TO INDIVIDUAL ENVIRONMENTAL AND OTHER STUDIES INCORPORATING NEED AND JUSTIFICATION, FEASIBILITY, EVALUATION OF ALTERNATIVES AND PUBLIC INPUT. THIS MAP FORMS PART OF THE OFFICIAL PLAN OF THE CITY OF BRAMPTON AND MUST BE READ IN CONJUNCTION WITH THE TEXT AND OTHER SCHEDULES, AS WELL AS WITH THE RELVANT SECONDARY PLANS.

Brampton TRANSPORTATION & TRANSIT MASTER PLAN

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Figure 2.1b: City of Brampton Mass Transit Network

J:\2002jobs\16-02083.jwg\Reports\Final Report\Figures\Figure 2.1b - OP Mass Transit Network.cdr

2.2 Road Network

The Master Plan study area encompasses the entire City of Brampton road network, and addresses the roads under the jurisdiction of other agencies but which are located within Brampton. The municipal boundaries extend from Highway 50 / Highway 427 in the east to Winston Churchill Boulevard in the west, and from a line south of Highway 407 in the south to Mayfield Road in the north.

2.2.1 Screenline Analysis

A screenline is an imaginary line crossing a number of roads (such as the roads linking the City of Brampton and the City of Mississauga), which is used to assess the need for additional transportation capacity across that boundary or division point. A screenline comparison of volume to capacity is a basic transportation planning tool, used to address the performance of the routes which link major destinations, and to define the need for additional capacity. Screenlines are often defined at municipal boundaries and at natural and man-made barriers to travel (such as the Credit River or a rail line).

A comparison of demand to capacity has been completed for a number of screenlines around the City of Brampton. The link capacities are based on capacities per hour per lane, for the various road classifications.

This analysis has been based on 2001 data from the City and the Peel Region Cordon Count Program. The year 2001 has been used as a base year because there is comprehensive data available for that year. The Cordon Count data includes automobile, truck and bus volumes. The a.m. peak period (7 – 9 a.m.) and the p.m. peak period (4 – 6 p.m.) have been analyzed in detail. Based on this analysis, it has been possible to identify the screenlines, or segments of them, that are operating at full capacity ("full capacity" has been taken as a volume to capacity ratio above 0.90). Automatic Traffic Recorder (ATR) counts and intersection traffic counts on several traffic corridors have been collected from the Region of Peel and the City of Brampton to supplement the Cordon Count data. These counts do not include any breakdown of automobiles, trucks and buses. Counts conducted by MMM have supplemented the municipal and regional data as necessary.

The details of the existing traffic data and volume over capacity calculations are shown in **Appendix B**.

2.2.2 Screenline Results

Key results of the comparison of volume to capacity on the screenlines are shown in **Figure 2.2**, for the City at a municipal-wide level. The screenlines have been divided into segments in order to clearly define the existing condition: Queen Street is the divider for north/south segments and Highway 410 is the divider for east/west segments.

A volume/capacity ratio of 0.90 or higher (i.e. 90 percent of capacity) has been taken as the criterion for considering remedial action.

Road capacity deficiencies are generally concentrated in the south end of the City, and are heavily related to travel to and from the adjacent municipalities of Mississauga and York Region; however, internal growth in the north end along Bovaird Drive has created the need to address the road network in that area, as well.

Eastbound and southbound traffic through the City dominate the traffic patterns during the a.m. peak hour (7:30 a.m. to 8:30 a.m.). The capacity deficiency is most acute in the Peel-York boundary area. Eastbound traffic on Steeles Avenue operates over capacity at Hurontario Street and Highway 410. Eastbound traffic on Queen Street operates near capacity at Highway 50. Highway 407, Queen Street and Steeles Avenue provide good continuity and access to York Region and the various industrial/commercial districts along the Highway 7/Steeles corridor.

In comparison, other east-west arterials perform at a good level of service eastbound and westbound during the a.m. peak period. Traffic across Highway 50 is low on Mayfield Drive and Castlemore Road, reflecting the lower level of development in northeast Brampton.

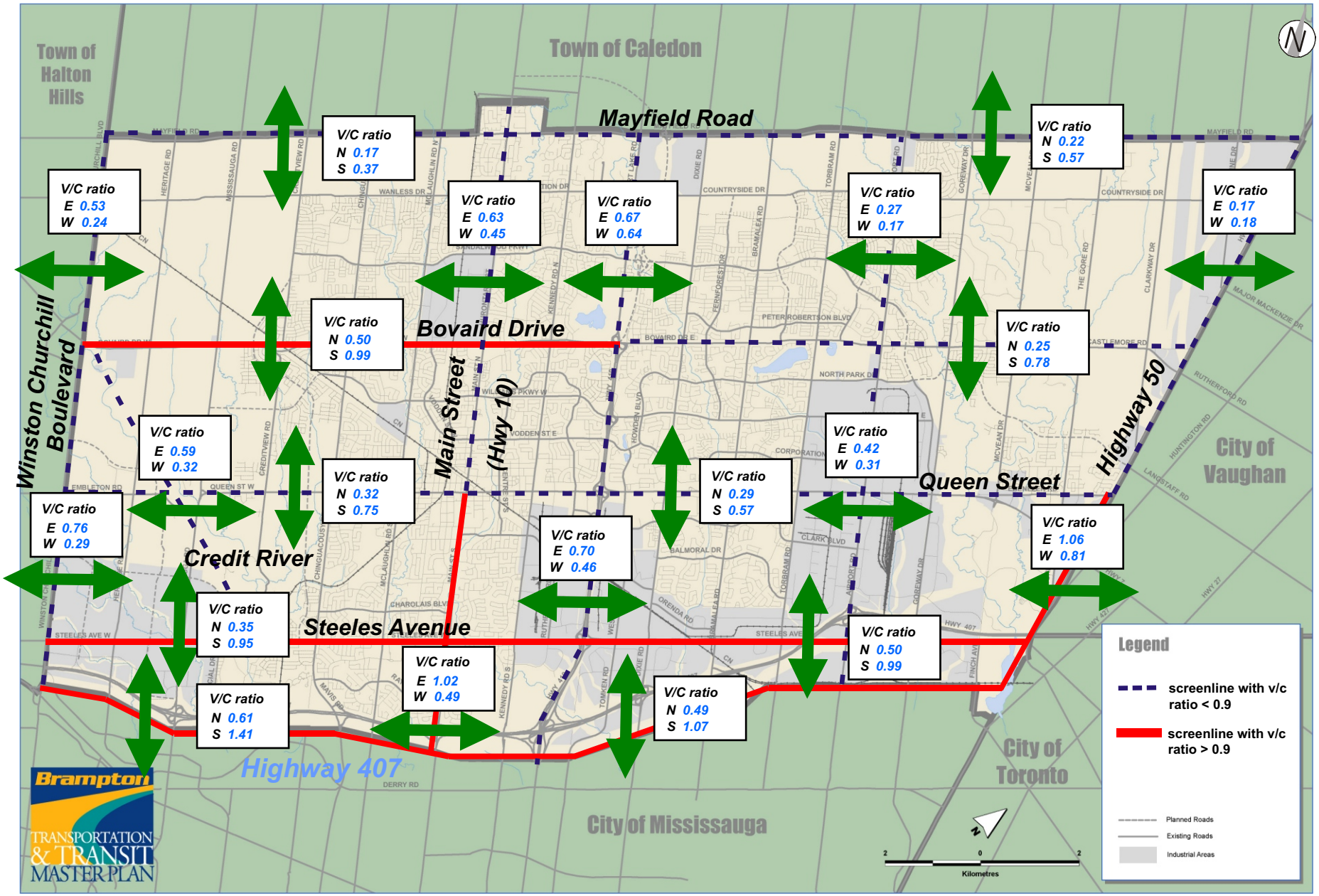

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Figure 2.2: Screenline Comparison of Existing Volume to Capacity Ratios (AM Peak Hour)

J:\2002jobs\16-02083.jwg\Reports\Final Report\Figures\Figure 2.2 - Screenline Analysis (existing cond.).cdr

Southbound traffic volumes are significantly higher than the northbound volumes crossing all the east-west screenlines during the a.m. peak hour. Highway 410 volumes are high throughout the City; this serves as a major link to other areas of the GTA via Highways 401, 403, 407 and the QEW. Traffic volumes on Highway 410 at Queen Street and Steeles Avenue are not available from MTO, and therefore traffic volumes on Highway 410 at Bovaird Drive and at the City boundary were adopted for these two locations. Southbound traffic on Mississauga Road, McLaughlin Road, Highway 10 and Kennedy Road at the Mississauga boundary are also over capacity, reflecting the need to increase person-carrying capacity between the two cities in this area.

It is noted that while Highways 7, 410 and 407 provide good access between Brampton and the other cities in GTA, inbound trips during the a.m. peak hour are not significant relative to the outbound flows. Brampton is a net outbound trip generator to the south and the east. Traffic in the north is much lower than in the south, reflecting the lower level of development and transportation capacity in northern Brampton, Caledon and other outlying municipalities.

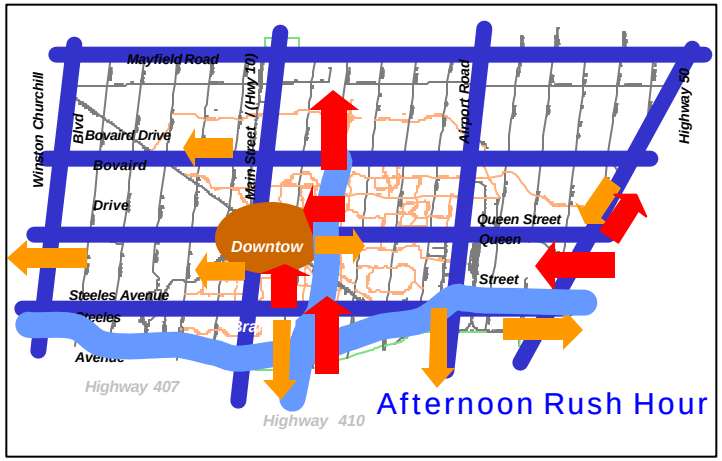

Figure 2.3 - Afternoon Rush Hour Traffic Flow

The p.m. peak hour screenline v/c ratios are generally slightly higher than the a.m. peak hour values. This is primarily explained by the addition of non-work-related trips during the p.m. peak period. The dominating traffic pattern is westbound and northbound traffic through the city, reflecting the tidal traffic pattern throughout the City (as shown in **Figure 2.3**).

It is noted that traffic across the Mayfield Road screenline to the north is very light, reflecting the low level of development in Caledon to the north.

Another important traffic flow is from the Halton Region heading southeast. This demand loads additionally the Brampton's road network.

In terms of the overall magnitude of trips and level of congestion, the Highway 50, Mississauga-Brampton boundary, Steeles Avenue and southern section of Highway 10 screenlines are the most heavily loaded relative to capacity.

2.2.2.1 Results on screenline segments

Examining the east/west segments of the screenlines, the east and west segments are generally similar. Only crossing Bovaird Drive are the western values significantly higher than in the east. In the west, Bovaird Drive, Steeles Avenue and the Mississauga boundary screenlines are all exhibiting demands equal to capacity.

Comparing the north/south segments of screenlines, the overall v/c ratios on Highway 410 are significantly higher in peak direction in the south than the north. The southern segment of the Airport Road shows much higher v/c values, in both directions, than the northern segment. The same trend is observed on Highway 50. The values show the need for additional east/west capacity between the Mississauga boundary and Queen Street.

2.3 Modal Split

Brampton residents are highly dependent on the automobile to meet their travel needs. Ninety-four percent of the City's households have access to at least one private vehicle. The average car ownership per household is 1.7.

Figure 2.4 shows the trip modes for trips made to Brampton. Based on trips made to the City, local transit and GO Train users account for 5 percent and 2 percent of trips, respectively, during the a.m. peak period (6 to 9 am), and 4 percent and 1 percent of trips, respectively, over the 24-hour period. Over these same periods, auto driver trips represent 65 percent (a.m. peak period) and 70 percent (24-hour period) of all trips.

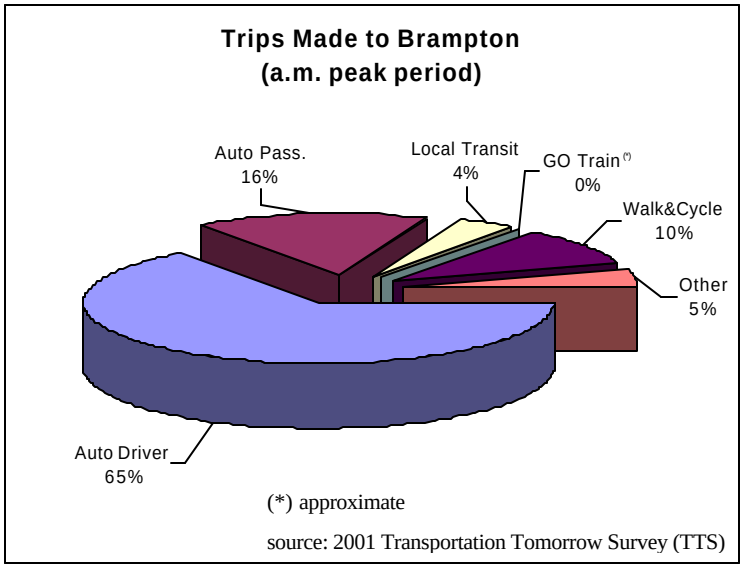

Figure 2.4 - Modal Split (based on trips made to Brampton)

Figure 2.5 shows the trip modes for trips made by residents of Brampton (i.e. trips from Brampton). The percentages confirm the low transit usage described above.

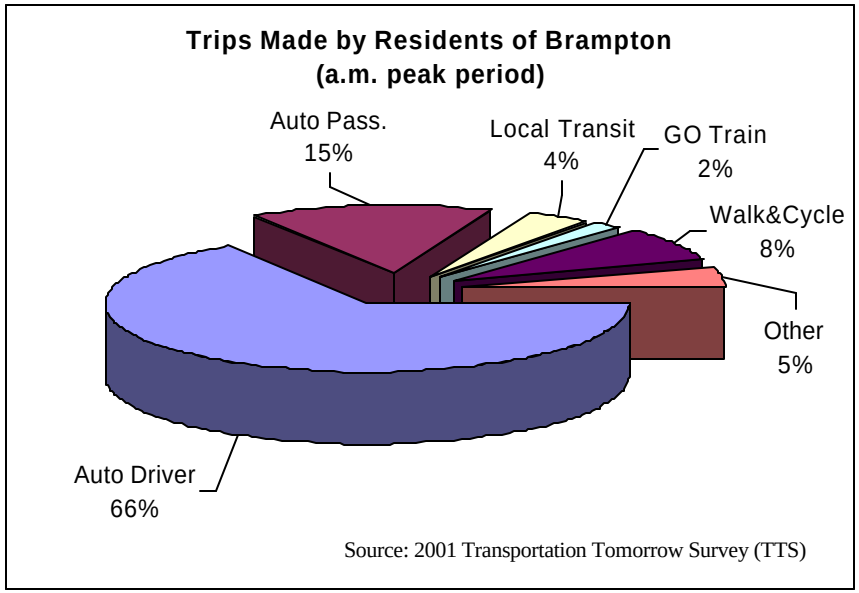

Figure 2.5 - Modal Split (based on trips made from Brampton)

Comparisons with other municipalities' experience is always a worthwhile means of gaining perspective. **Table 2.1** provides a comparison of transit shares across the GTA, ranging from older, largely self-contained municipalities, such as Hamilton, to more suburban areas, such as Etobicoke.

Table 2.1 - Modal Split Comparison - A.M. Peak Period

(Based on the trips made by the residents of the relevant jurisdiction)

Jurisdiction	Population	Auto (%) (driver + passenger)	Transit (%) (Local + GO Train)	Other (%) (Walk, Cycle & Other)
City of Brampton	***313,000***	***81***	***6***	***13***
Town of Oakville	140,000	77	11	12
City of Vaughan	188,800	81	9	12
City of Oshawa	134,400	79	6	15
Town of Markham	198,200	80	9	11
Etobicoke	324,500	69	20	11
City of Hamilton	328,000	74	9	17
City of Mississauga	592,100	76	11	13
Scarborough (East Toronto)	557,200	67	23	10
North York (North Toronto)	575,300	65	25	10
Average	**337,600**	**74.2**	**13.7**	**12.3**

Source: TTS 2001 Report

Comparing the modal splits to other nearby cities, the City of Mississauga shows a similar high auto accessibility, but a higher transit modal split. Brampton has the highest auto split of the comparators.

In terms of walking and bike trips, compared to Mississauga and to Richmond Hill, Brampton presents a more positive picture for the a.m. peak period and the 24-hour period. During the a.m. period, the total of 13% of all trips made by Brampton residents represents approximately 14,000 combined walking plus bike trips.

2.4 Public Transit

2.4.1 Brampton Transit

System Characteristics

Transit in Brampton is provided on many levels. **Figure 2.6** shows the existing services. Brampton Transit provides fixed routes throughout the urban area of Brampton as well as connections to Mississauga, Vaughan, and Toronto to accommodate a service population of 321,265. Door to door accessible services for persons with disabilities in Brampton are provided by Peel Transhelp.

Over the years, the service area population of the Brampton Transit has increased based on the population. The increase in ridership, after 1997 has been bigger than this increase. **Figure 2.7**. shows the annual transit ridership generated by the service area population.

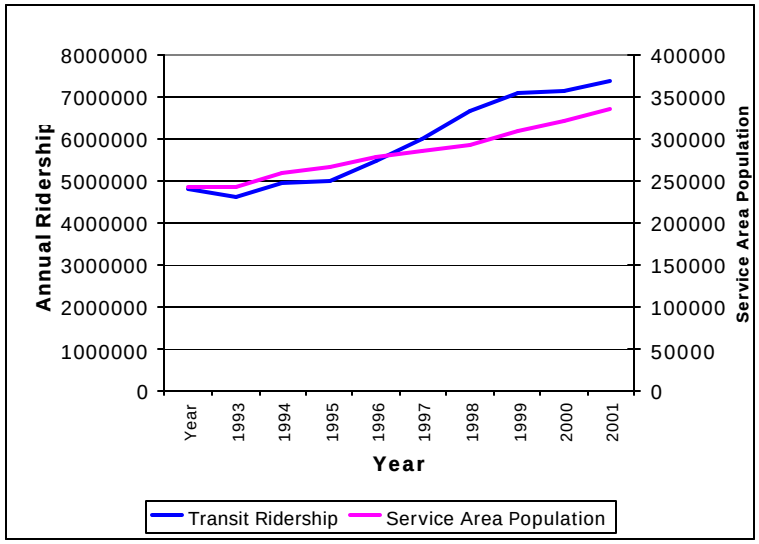

Figure 2.7 - Transit Ridership vs. Service Area Population

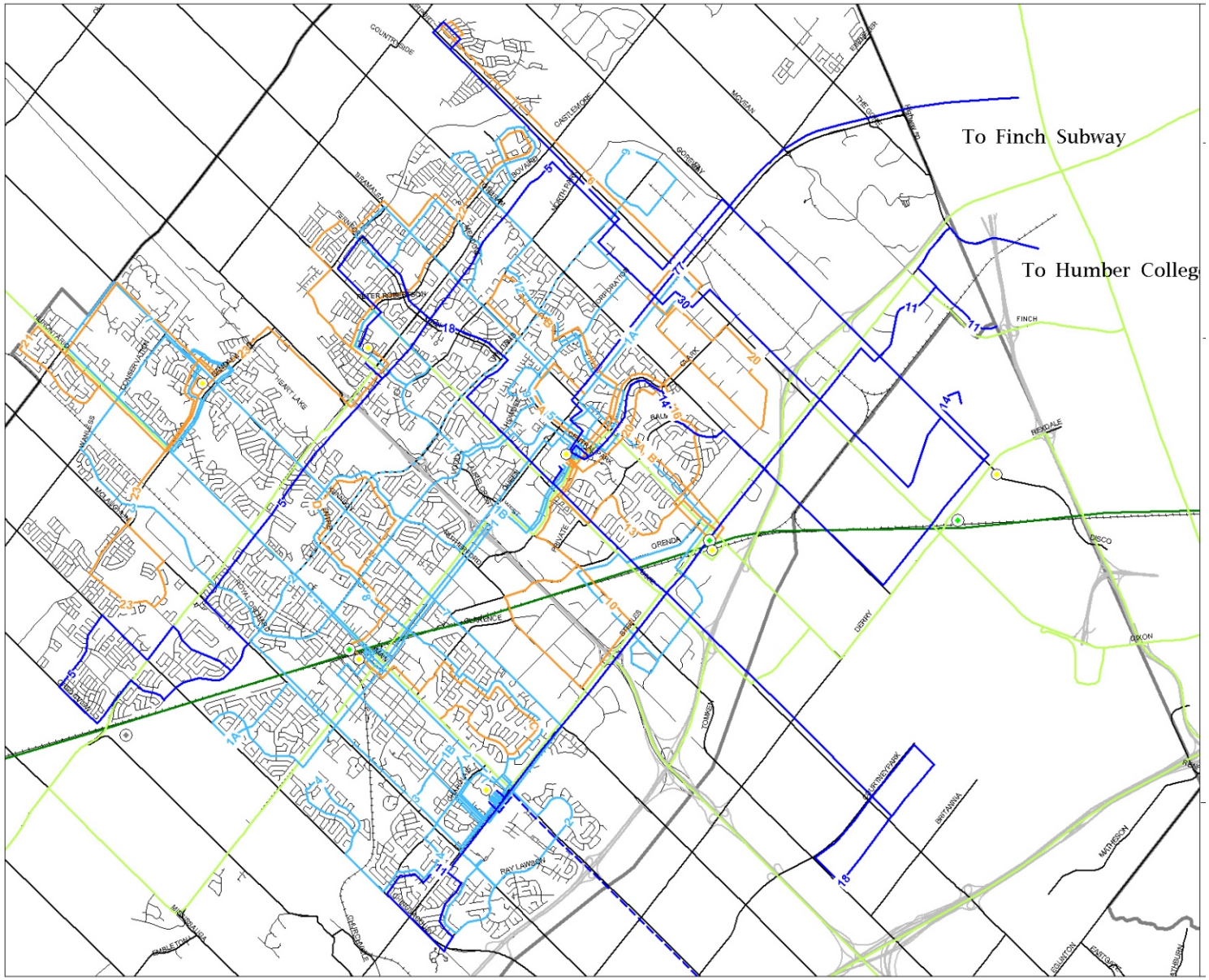

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Figure 2.6: Brampton Transit Route Map

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Brampton Transit provides 34 fixed routes using 85 standard buses, 27 low floor buses, and one double-decker bus. Some key statistics on this system are presented in **Table 2.2.**

Table 2.2 - Brampton Transit System Profile (2001)

Active Vehicles	Total Operating Expenses	Cost / Recovery Ratio	Per Service Area Capita Ridership	Per Capita Operating Expenses
113	$22,181,191	66%	22.15	$0.95

Source information provided by CUTA Transit Fact Book 2001.

Hours of Service

Brampton Transit operates from 5:00 a.m. to 1:00 a.m. Monday to Saturday and from 7:10 a.m. to 11:30 p.m. on Sundays. There are 13 routes that run throughout the day and evening, 4 routes that operate during the peaks and afternoon period, and an additional 8 routes that run only during the peak hours. Four express busses are provided to help the system interface with GO Transit's services and 5 routes run school services in the morning and afternoon.

Service Frequencies

Service frequencies during the peak periods range from 10 - 15-minute service on three of the corridor routes (18 Dixie, 2 Main and 77 Finch) to 60 minute service on Route 23 Sandalwood, which operates as a peak period neighbourhood circulator service. The average route frequency during the peaks is between 20 and 30 minutes. During the midday period, service frequencies range from 30 to 60 minutes and during the evening, service frequencies for routes still in operation range from 30 to 45 minutes.

Terminals

Brampton has three major transit terminals: Bramalea City Centre, Shoppers World, and Downtown Brampton. There are also three minor terminals in Brampton with four routes meeting at each: Heart Lake, Trinity Common, and the Bramalea GO.

Transit Connections
Brampton Transit provides direct connections with surrounding municipalities, via the following routes:

- Route 19A Hurontario: a Mississauga Transit route that connects into Shoppers World
- Route 77 Finch: a Brampton Transit and York Region Transit route that operates on Highway 7 to the Finch Subway station;
- Route 18 Dixie: connects into Mississauga at Courtney Park Drive and Dixie Road;
- Route 14 Torbram: connects into Westwood Mall in the Malton Community in Mississauga;
- Route 30 Industrial: connects into Westwood Mall in the Malton Community in Mississauga;
- Route 5 Bovaird: connects into Westwood Mall in the Malton Community in Mississauga; and
- Route 11 Steeles: connects to Humber College in the City of Toronto.

Fare and service coordination is varied on each of these inter-municipal routes.

2.4.2 GO Transit

2.4.2.1 GO Rail

The Georgetown GO Train runs between Georgetown GO Station in Halton Hills to Union Station in downtown Toronto. The line carries 4,631 a.m. peak period passengers (1999), and is projected to increase to 7,520 by 2009. There are two stations located in the City of Brampton, Brampton GO Station and Bramalea GO Station. A third GO Station, named Mount Pleasant, is expected to open at Highway 7 West and Creditview Road in 2004/2005. In 1999, approximately 60 percent of passengers disembarking from the Georgetown Line at Union Station boarded at the Brampton and Bramalea GO Stations. Some key information can be found in **Table 2.3**.

Table 2.3 - Brampton and Bramalea GO Station Data (2001)

	Total Daily Trips		Egress Mode			
GO Station	**Total**	**% of System Total**	**Walk**	**Transit**	**Drive & park**	**Kiss n' Ride**
Bramalea	1,905	3%	1%	14%	68%	17%
Brampton	2,269	3%	9%	12%	63%	16%

The Georgetown GO Train runs four peak period a.m. trips into Union Station from the Brampton and Bramalea GO Stations, and five peak period p.m. trips from Union Station to the Bramalea and Brampton GO Stations, at approximately twenty-five minute intervals. Five additional trains start service at the Bramalea GO Station heading south to Union Station. In the reverse direction, four additional trains terminate at Bramalea GO Station from Union Station.

The corridor is supplemented by train-bus services between Georgetown and Union Station. In 2001, the Georgetown train-bus carried 242,320 annual passengers on weekdays and 28,565 annual passengers on weekends.

2.4.2.2 GO Bus

GO Transit also provides a number of GO Bus service through Brampton. The Guelph - Georgetown GO Bus service connects the City of Guelph to Georgetown, Brampton, Yorkdale, and York Mills. Thirteen runs are made throughout the day in each direction, running at half-hour intervals in the peak period peak direction and every hour to two hours in the off-peak and reverse direction. In 2001, the route carried 182,000 passengers during the weekdays and approximately 24,000 passengers during the weekend.

The Brampton Local, Highway 27 and Highway 427 Express GO Bus service runs seven days a weeks between Brampton and Yorkdale and York Mills subway station in Toronto. During the weekday, the service provides three alternative routes: Express, Highway 27 and Dixon routes. The Express service travels with limited stops towards Yorkdale and York Mills. The Highway 27 service provides a stop at Humber College in Toronto. The Dixon service provides a stop at Lester B. Pearson Airport. In 2001, the Dixon service carried just under 300,000 annual weekday passengers while the Express and Highway 27

services each carried just under 200,000 passengers. On weekends, the Dixon service carried approximately 105,000 passengers while the Highway 27 service carried 58,000 passengers.

The Orangeville GO Bus service is a weekday train-meet service that connects Orangeville via Highway 10 to the Brampton and Bramalea GO Stations. The service runs trips to meet the GO Train at Brampton GO Station, In 2001, the service carried just over 30,000 passengers, up 29 percent from the previous year.

The Highway 407 GO Bus Service is a weekday route primarily along the Highway 407 corridor that provides service between the City of Hamilton and the City of Pickering. The service stops at the Bramalea GO Station approximately 32 times in each direction per day. In 2001, approximately 150,000 passengers used this service, a 965 percent increase from the previous year. Since then the service has continued to expand and grow.

2.4.3 Performance Assessment

Route Performance

Brampton Transit operates three types of service: fixed route services, GO Train Express services, and School services. **Table 2.4** displays some key statistics for each service.

Proportionately, the most successful services in the system are the School services and GO Train express services. These services operate during the peak hours and are focused on specific markets.

Overall, most of the routes that Brampton Transit provides routes are operated efficiently. The only deficiency is the insufficiency of the coverage area.

Table 2.4 - Brampton Transit Service Statistics (January to April 2002 Year to Date Total)

Service Type	Route	Peak Bus Utilization	Total Service Hours	Revenue Psgnr	Cost of Operation	Total Revenues	Rev Psgnr Per Hour	R/C Ratio	Transfer Ratio	Cost per Revenue Psgnr	Net Cost per Rev Psgnr
Fixed Route Service	Total	78	97,188	2,282,128	$6,148,089	$4,062,188	485			$133.65	$89.15
	Averag	3	3,888	91,285	$245,924	$162,488	19	55%	30%	$5.35	$3.57
GO Train Express Ser	Total	4	779	22,788	$49,259	$40,563	110			$9.96	$2.84
	Averag	1	195	5,697	$12,315	$10,141	28	77%	6%	$2.49	$0.71
School Serv	Total	12	1,470	57,121	$92,992	$101,675	447			$10.45	-$0.23
	Averag	2	245	9,520	$15,499	$16,946	74	209%	16%	$1.74	-$0.04

Fixed Route Services

The most successful fixed route in terms of cost recovery ratio is Route 7 Kennedy, which provides a corridor service along Kennedy Road between Mayfield Road and the Shoppers World terminal. This route runs seven days a week, every twenty minutes during the peak period, every thirty minutes during the day, and every forty minutes in the evening. Route 7 Kennedy has a cost revenue ratio of 108 percent, accommodating approximately 53 passengers per hour of service.

The next most successful routes are 1A and 1B Queen, which have revenue to cost ratios of 86 percent and 85 percent respectively. These routes provide a corridor service along Queen Street, connecting the Bramalea City Centre Terminal with the Downtown Brampton terminal and the Shoppers World Terminal respectively. Both services run every 20 minutes during the peak, every 30 minutes during the day and every 40 minutes during the evening.

Route 2 Main Street operates at an 83 percent cost recovery ratio providing a corridor service along Main Street/Hurontario Street between Shoppers World terminal and the Heart Lake terminal with a connection to the Downtown Terminal and Brampton GO Rail Station.

Route 14 Torbram and 17 Howden both operate at an 82 percent cost recovery ratio. Both operate primarily on collector roads and provide two terminal connections, the Bramalea City Centre as the terminus for each route, and the Westwood Mall stop in Mississauga and the Trinity Common terminal respectively as mid-way points of both routes. Both routes access denser

development in Brampton including apartments on Hanover Road and North Park Drive on Route 17 Howden, and medium density residential on Clark Boulevard and Balmoral Drive on Route 14 Torbram.

Brampton's worst performers are Routes 21 Mayfield Park, 22 Springdale, and 23 Sandalwood. All three of these routes operate a single bus each during only the peak hours. Routes 21 and 22 run at thirty-minute headways. Route 23 runs at sixty-minute headways. These routes travel close to the outermost edges of Brampton, mostly in newly developed residential areas, in the case of Route 21 Sandalwood, without access to any major destinations. Much of these routes are also duplicated by fixed routes that lead to one of the primary transit terminals. Routes 21, 22, and 23 have revenue to cost ratios of 5 percent, 11 percent, and 14 percent respectively. These routes were put in place to lead development in new areas of Brampton.

2.5 Trucking Network And Activity

Goods movement is an important consideration in the transportation system. Safe and efficient movement of goods and services within and through the City of Brampton is essential for sustainable economic growth.

Goods movement is closely integrated with the structure of the municipal/regional transportation system, urban form and the location and conduct of industry and commerce. Trade is the engine of the region's economy and it is highly dependent on an efficient and effective transportation system, particularly the highway network, because of the prevalence of trucking in moving goods.

Road and highway improvements typically lead to lower operating costs and savings in travel time for commercial users. Road improvements result in less wear and tear on vehicles, improved fuel efficiency and shorter trips. With lower transport costs, trucking firms can direct these savings to reductions in the cost of goods and services, or they can derive a higher profit. An efficient road system can provide savings for local goods manufacturing and shipping industries that will in turn improve the economy of the City of Brampton within the GTA network.

2.5.1 Analysis

Truck traffic has been analyzed using information from the Region of Peel Cordon Count program. Truck traffic data has been collected for four classifications of commercial vehicles, namely light, medium, heavy and aggregate trucks. "Truck traffic"

includes trucks with dual rear tires, box vans, heavy-duty pick-up trucks and tractor-trailer units. Light trucks are those with characteristics similar to automobiles and small vans, and are distinguished by having only four tires on the pavement.

Figure 2.8 displays the two-way truck traffic percentages across segments of the screenlines. These segments have been chosen to highlight developed areas with substantial truck activity. Truck percentages are presented for the a.m. peak period (7 – 9 a.m.), p.m. peak period (4 – 6 p.m.) and 15-hour period (5:30 a.m. – 8:30 p.m.). The figure shows the following key results:

- The percentages are generally highest during the a.m. peak period;
- Truck percentages are high during all times of day. This is important to note because of the disproportionate impact trucks have on traffic operations and road degradation;
- The highest values are on the Halton-Brampton boundary (21.3%) and the Brampton-Vaughan boundary (22.6%); and
- The screenlines crossing Mayfield Road, Highway 410, Airport Road and the Mississauga boundary all have high percentages.

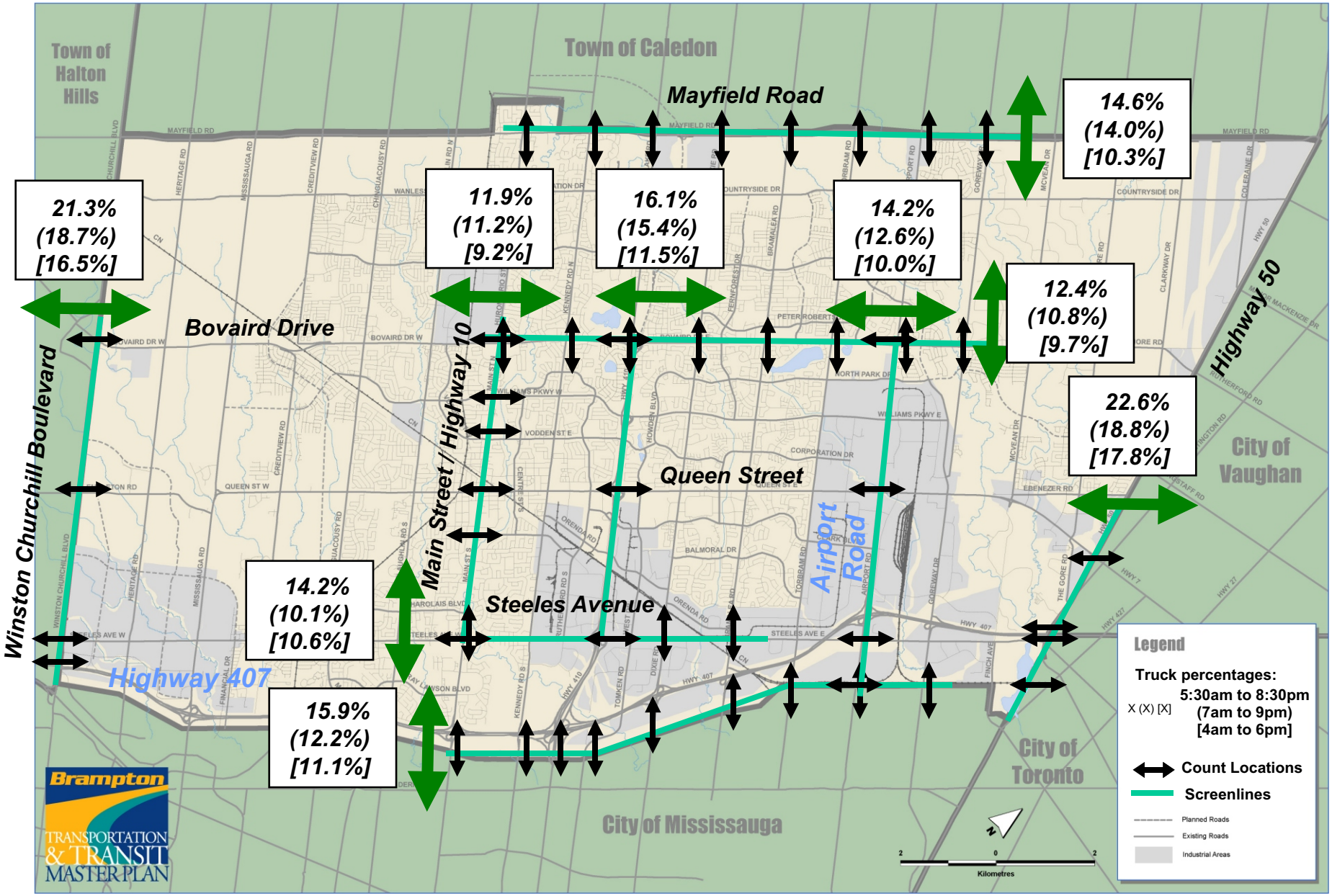

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Figure 2.8: Truck Traffic Percentages (Two-Way) Across Screenlines

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Table 2.5 summarizes the two-way truck traffic percentages across the entire screenline lengths (i.e. spanning the entire City) during the three periods. The truck traffic volumes have not been converted to passenger car units for this assessment.

Table 2.5 - Truck Traffic Percentages on Screenlines (Two-Way)

Screenline	5:30 a.m. – 8:30 p.m.	A.M. Peak (7 – 9 a.m.)	P.M. Peak (4 – 6 p.m.)
Winston Churchill Boulevard	20.7%	18.1%	16.0%
Steeles Avenue	14.0%	10.1%	10.6%
Mayfield Road	15.6%	15.3%	11.1%
Bovaird Drive	12.5%	11.0%	10.0%
Highway 410/Heart Lake Road	17.9%	17.3%	12.9%
Highway 50	22.2%	18.7%	17.6%
Highway 10/Hurontario Street	14.2%	13.9%	10.5%
Brampton-Mississauga	15.6%	12.5%	11.0%

The truck percentages are quite high across the City, showing the prevalence of truck transportation. The a.m. peak period percentages range from 11 to 19 percent, which is a substantial percentage of the traffic stream. During the p.m. peak period, truck percentages form a slightly smaller fraction of the traffic stream, from 10 to 18 percent. That is likely due to the larger number of discretionary trips on the road at this time, not a lower absolute number of trucks. It is noted that from 5:30 a.m. to 8:30 p.m., truck traffic forms a larger component than it does during only the peak hours, ranging from 13 to 22 percent.

The Winston Churchill Boulevard and Highway 50 screenlines show much higher truck percentages than average. This reflects the high level of cross-boundary truck traffic demand with York Region, Halton Region and other municipalities. It is noted that the Brampton-Mississauga screenline does not show a high truck percentage.

Most of the major industrial land area is designated in the vicinity of Queen Street, Highway 407 and Steeles Avenue, east of Kennedy Road and west of Gorewood Drive. With their continuity and high capacity across the GTA, these east-west roads serve as major east-west truck routes. Currently neither the City nor the Region has any restrictions on truck traffic on these roads. Trucks pay a higher toll than passenger cars on Highway 407. Highway 410, Dixie Road, Bramalea Road and Airport Road serve as major north-south truck routes.

2.6 Needs, Opportunities and Future Challenges for the Transportation Network

The context for the analysis of future road and transit improvements is defined below in terms of needs, opportunities and constraints.

2.6.1 Constraints to Network Development

Major constraints for expansion of the road network exist at a number of key locations across the City:

- The rapid pace of growth in the City has left gaps in the road infrastructure in many locations. This poses a constraint to development in some planned areas;
- Some provincial highway initiatives (Highway 410 and 427 extensions) previously factored into the City's development have not materialized. This has resulted in capacity deficiencies;
- The Credit River poses a challenge for transportation on the western side of the City. This important waterway and its valleylands result in a number of constraints on existing and potential road links, both north-south and east-west. In the north-south direction, one example is Creditview Road – north and south of Steeles Avenue, Creditview is in the Credit Valleylands, which has historically limited its ability to function as a major road on the typical 1.36-km grid spacing;
- In the eastern section of the City, the Claireville Conservation Area and Humber River valleylands pose a major constraint to the network, particularly south of Queen Street;

- Railway lines also pose an obstacle for municipal transportation linkages. The CN Halton Subdivision bisects the city in a northwest-to-southeast direction. The CP (Orangeville Subdivision)/SL&H corridor runs north-south through the City. The CN Intermodal Yard east of Airport Road poses a constraint to the introduction of new east-west linkages in the segment from the south City boundary to Queen Street;

- Several municipal road networks include a number of major jogs at intersections, due to the presence of natural or man-made obstructions. In Brampton, major jogs occur at the following locations:

  - Queen Street West / Mississauga Road / Embleton Road
  - Creditview Road / Bovaird Drive;

- Some intersections of Brampton/Peel roads with Highway 50 and/or roads in the Regional Municipality of York (to the east) occur at highly skewed angles, due to the different orientations of the two networks. These include The Gore Road and Coleraine Drive. At this boundary, the road networks are somewhat discontinuous. This issue has been addressed by the York/Peel Boundary Area Transportation Study (June, 2002);

- Highway 407 on the south limits opportunities for connections to Mississauga;

- There are limited road right-of-ways running east/west. These are spaced at 3 km, wider than the north/south roads.

2.6.2 Land Use

The City of Brampton is experiencing high growth in population and employment. Over the next 30 years, population and employment levels are forecasted to more than double from 1996 levels. **Table 2.6** illustrates population and employment forecasts for the City, prepared by the City's Planning, Design & Development Department.

Table 2.6 – Brampton Population and Employment Forecasts

Census Year	Population	% Increase over 1996 value	Employment	% Increase over 1996 value
1996	268,000	-	104,000	-
2001	325,400	21	139,500	34
2006	407,000	52	172,600	66
2011	474,700	77	204,500	97
2021	599,600	124	255,700	146
2031	692,900	159	294,100	183

(Updated as per data provided by the City of Brampton's Planning, Design & Development Department)

Figure 2.9 and **2.10** show the forecasted population and employment figures dispersed by secondary plan areas.

The growth from approximately 2021 to 2031 included for analysis purposes an expansion of the urban boundary to include the Northwest Brampton area, west of Creditview Road and north of Bovaird Drive. The historical and expected growth in housing for Brampton is summarized in **Table 2.7**. The data was obtained from the City of Brampton, Planning, Design and Development Department.

Table 2.7 – Housing Growth Forecasts for the City of Brampton

Year	Number of Dwelling Units	% Increase over 1996 value
1996	81,500	-
2001	97,600	20
2006	124,200	52
2011	147,400	81
2021	194,000	138
2031	230,600	183

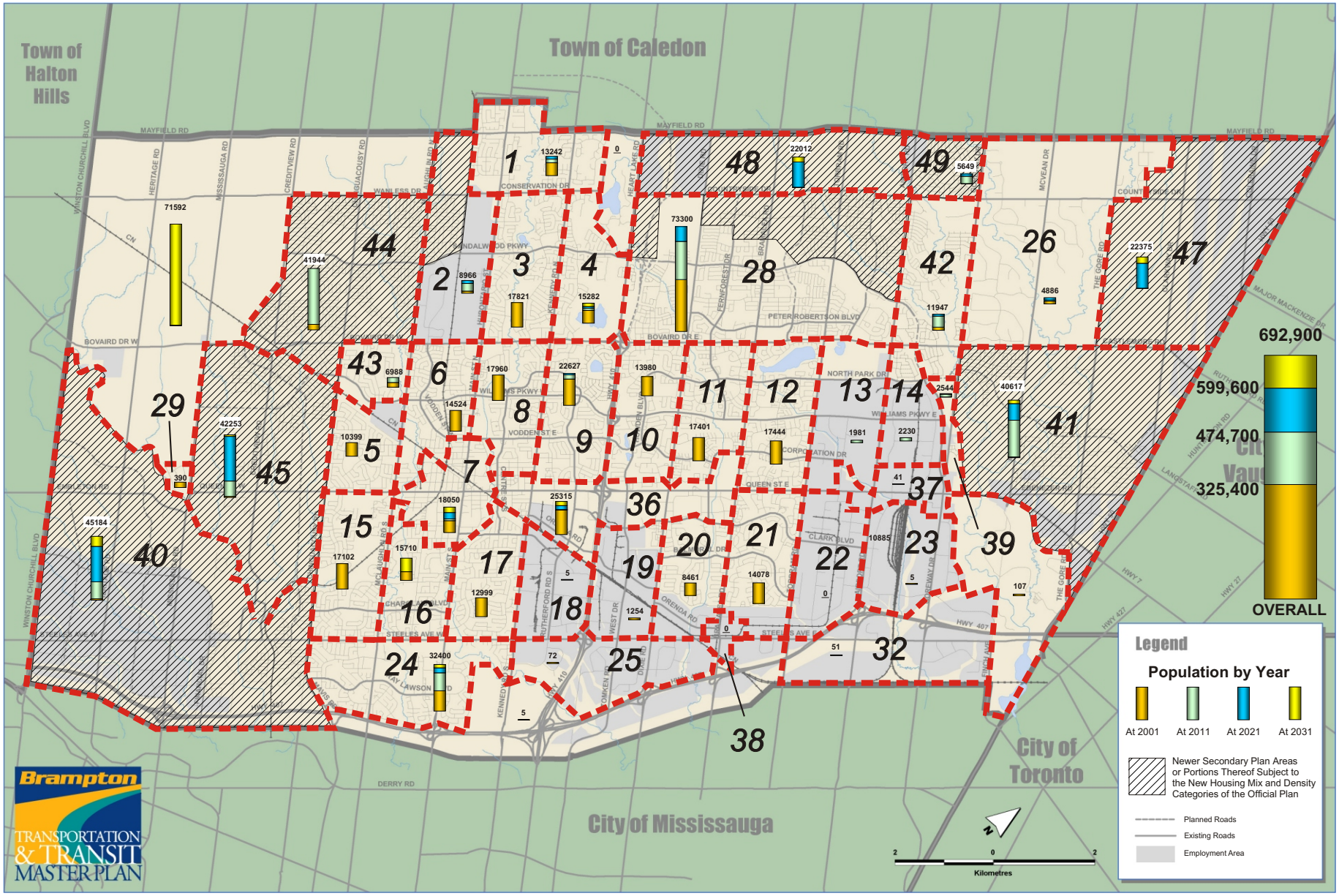

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Figure 2.9: Projected Population Level

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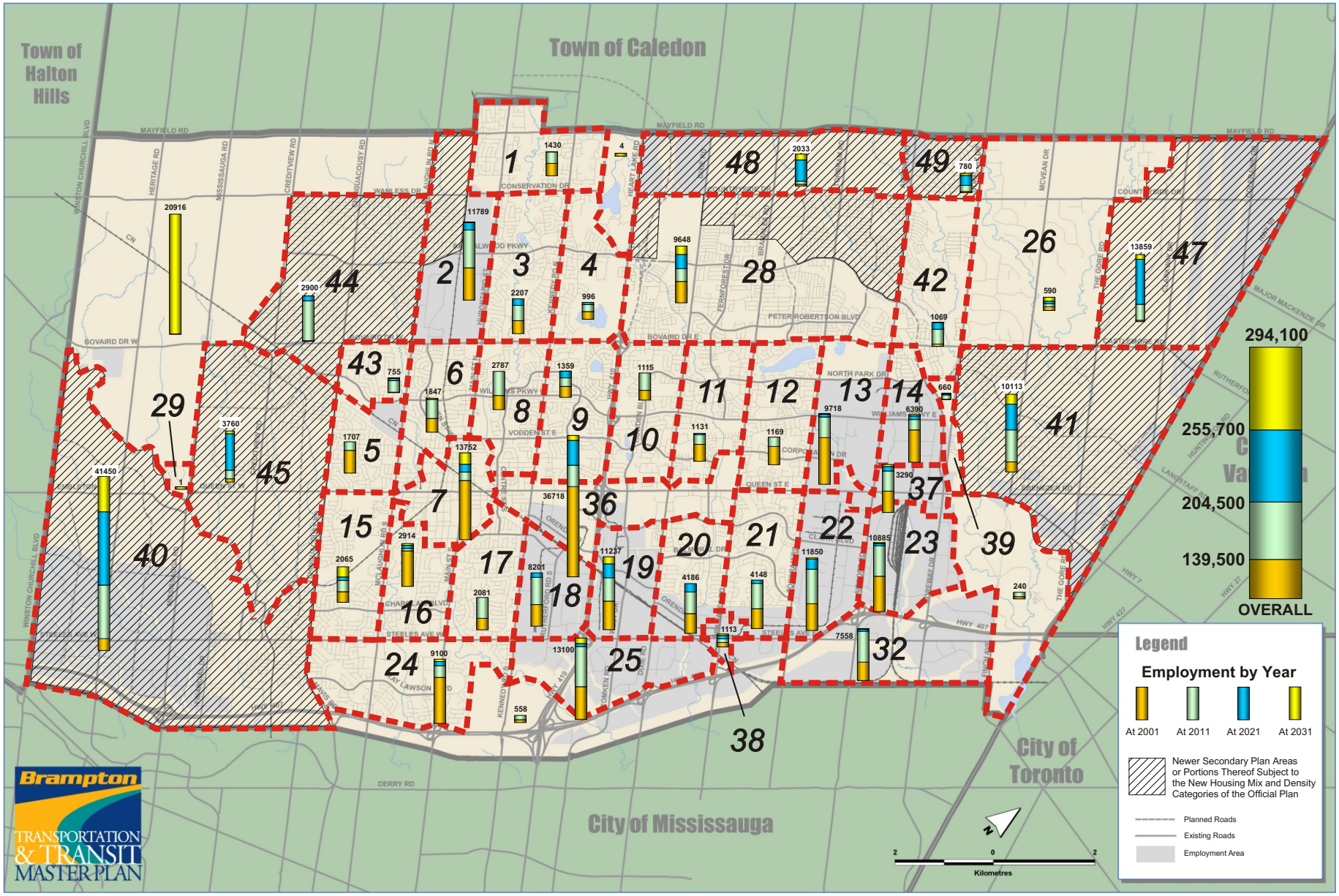

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Figure 2.10: Projected Employment Level

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Population and employment are primary factors used in determining travel demand and travel patterns. According to 2001 Census data, the City of Brampton has a population of approximately 325,000. The City provides approximately 139,500 jobs.

The jobs per capita ratio in the City of Brampton is 0.36, compared to the GTA average of 0.50 (including the City of Toronto). The number of Brampton residents working outside of the City is higher than the case in the rest of GTA. This indicates that effectively serving home-work trips by local transit will be a challenge that the City must address.

Under the status quo, at a strategic level, these projections of very high population and employment growth, taken in combination with the level of auto dependency (80 percent), low vehicle occupancy (1.15 persons per car) in the City and lower than average jobs per capita ratio, indicate that there is a high potential for significant growth in travel demand, particularly in the form of single occupant vehicle trips, within Brampton and across its boundaries.

2.6.3 Future Demands on the System

The TTS survey data for the years 1986, 1991, 1996 and 2001 constitute the basis of the analysis. Population in the study area has increased by 38 percent over the last 10 years (1991 to 2001). This has resulted in an increase of approximately 167,800 auto trips by the residents, which equates to a 34 percent increase.

Table 2.8 summarizes the historical trend of population versus trips made to and from Brampton for the 24-hour period. The numbers are from the TTS 2001 Report. As shown in the table, the trips per person ratio remains constant over the years (**Figure 2.11** shows the data graphically).

The importance of truck travel is anticipated to grow in the east and west parts of the City, based on the industrial-based land uses designated within Brampton and east of Highway 50 in Vaughan. It is important to control this growth in a manner so as not to worsen the road operations.

Table 2.8 – Trend in Trips per Capita (1986-2001) based on 24-hour trips

Years	Population	Trips made to Brampton	Ratio	Trips made by Residents of Brampton	Ratio
1986	180,000	335,000	1.86	366,600	2.04
1991	232,500	450,500	1.94	494,000	2.13
1996	255,700	472,000	1.85	528,900	2.07
2001	313,000	595,200	1.90	661,800	2.11

(Population figures may vary from the census results. The basis of the trips ratio is the TTS data)

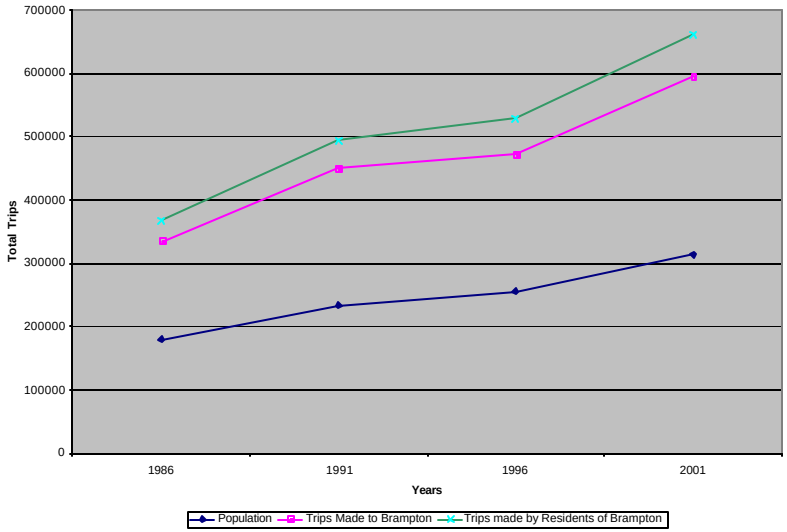


Figure 2.11 – Trends in Total Trips (24 hour)

The total number of trips has increased over the last 15 years. This trend, if extrapolated to the future planning horizons, could be unmanageable.

Based on the trip matrices used for the trip assignment within the modelling process, the growth over the 30-year period is projected to double (shown in **Figure 2.12**).

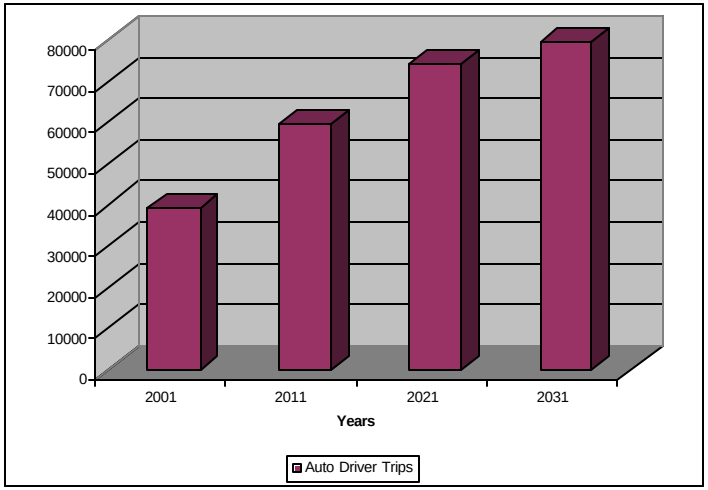


Figure 2.12 – Auto Driver Trips (from trip matrices)

2.6.4 Demand Management

The transportation vision developed for the TTMP emphasizes the importance of a more balanced transportation system to meet future challenges. In support of this goal, the TTMP also sets interim target years to gauge the level of transit use: 2011 and 2021.

Limited road space within the urban part of the City makes it difficult to accommodate future demand based on the current pattern of auto dependence. One way to reduce auto travel is through the introduction of a Transportation Demand Management (TDM) program. The key element of the TDM program is to improve transit, to provide a viable alternative. The City's current steps to handle the demand need to focus on transit alternatives. Providing the residents of Brampton with a more reliable transit system will help reach the general modal split target of 15% for intra-city trips.

2.6.5 Public Transportation

2.6.5.1 Brampton Transit Trends

Ridership

Ridership levels have been steadily growing in Brampton since 1994 as shown in **Figure 2.13**. The single highest ridership month was recorded in November of 2000 at 663,428. The trend in ridership growth for Canadian transit authorities in municipalities of similar size (between 150,000 - 400,000) has followed a somewhat different path. Overall, average ridership growth in the cities with the same size as Brampton has been relatively stagnant, with slight dips and bumps in the last few years. Between 2000 and 2001, the population group saw a large increase in ridership.

Part of the increase in transit ridership is due to the rapid population growth that Brampton has experienced. However, per capita ridership trends tell a very different story than overall ridership. As seen in **Figure 2.14**, ridership per capita is on a slight decline between 2000 and 2001 and has remained relatively unchanged since 1993.

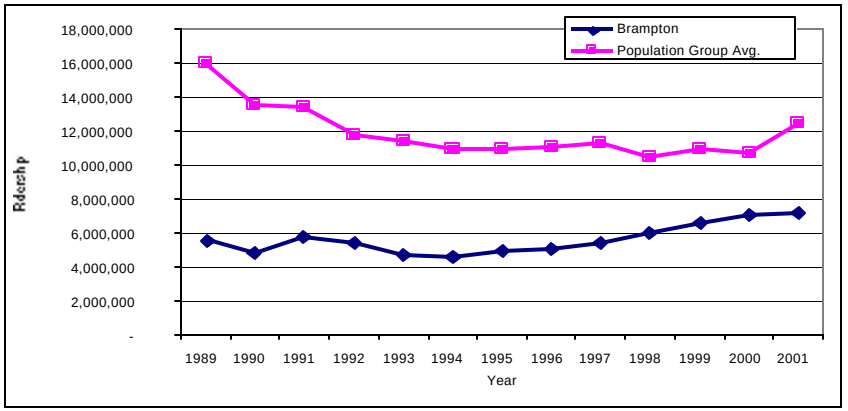


Figure 2.13 - Brampton Transit Ridership Trends Compared to Population Group

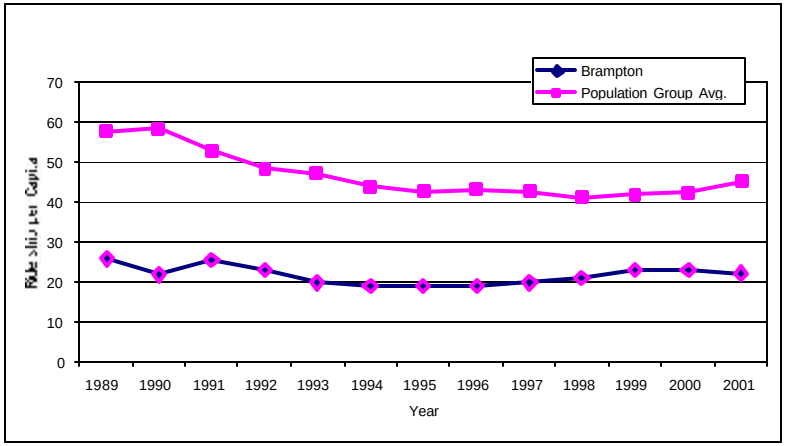
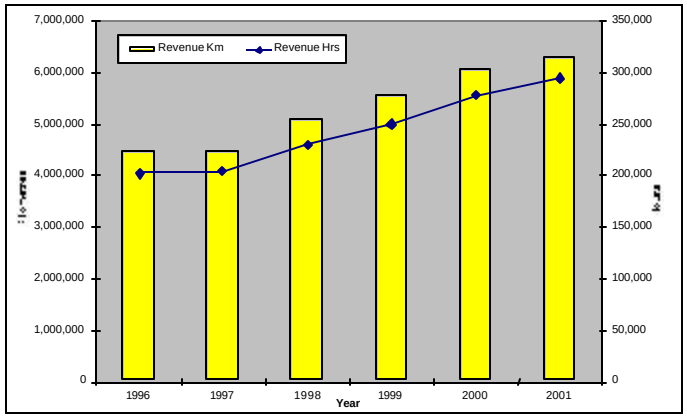


Figure 2.14 - Per Capita Ridership Trends

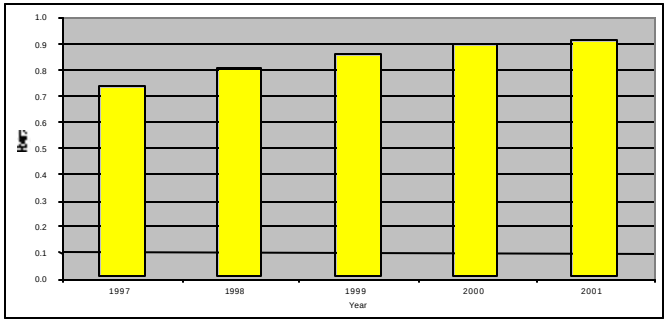
Service Hours and Kilometres

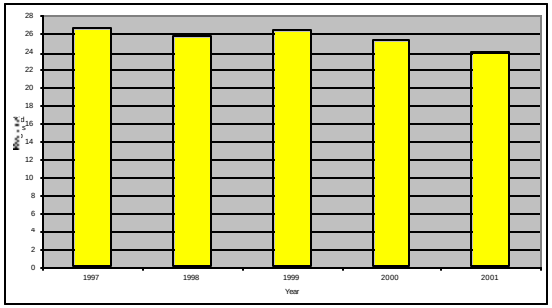
Over the past five years, Brampton has been increasing its revenue service hours and revenue kilometres of its bus services to meet the needs of Brampton's growing population and improve overall service, as shown in the figure. This includes an extension of Sunday service in September 2001 from 8:00 p.m. to 11:00 p.m., the extension of existing transit routes such as Route 5 Bovaird and Route 11 Steeles, and the addition of new transit routes such as Route 21 Springdale. Many new routes were put in place to lead development and get transit into new areas before the areas are fully built. While this may result in poor cost recovery for these routes, this is a policy decision designed to increase long-term ridership.



Hours per Capita

Revenue service hours has also grown at a similar rate to population growth, as indicated in the figure. Since 1997, revenue service hours per capita has increased steadily indicating that Brampton Transit is increasing service in proportion to population growth. However, this does not indicate that Brampton Transit is providing an adequate amount of service, since other factors will determine whether too much or too little service is being provided.



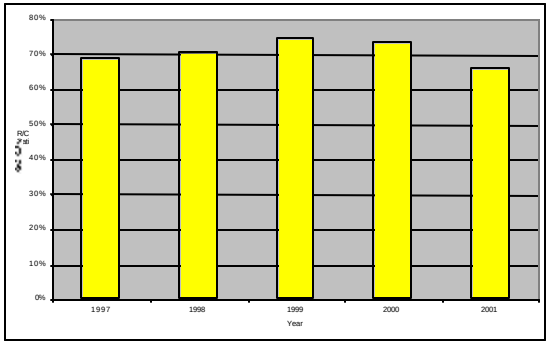


Passengers per Hour

While ridership is growing in Brampton in the past five years, passengers per hour have been steadily declining (as shown in the figure). This suggests that the increased service hours put on by Brampton Transit is not yet significantly adding to ridership.

Revenue/Cost Ratio

While Brampton Transit has the highest cost recovery in its peer group, this measure of financial performance has fluctuated significantly over the past five years from a high of 75 percent in 1999 to 66 percent in 2001. Between 2000 and 2001, the R/C ratio fell by 8 percent. While the current ratio is still meets the City's Revenue Performance Policy stating a target R/C of 65 percent, this large drop in the financial return on performance should be examined closely to ensure this decline does not continue. Cost recovery for the last five years is shown in the figure.



The figure above shows a revenue-cost performance that has been generally increasing over the past several years until 2001, where there is a marked decline. As shown in **Table 2.9**, operating costs increased significantly in 2001, particularly in relation to revenue. This increase in operating costs is a direct result of a policy decision by the City and Brampton Transit to increase investment in both transit levels of service and coverage.

This change is part of an attempt to lead development with transit services: introducing transit services in new developments early enough to attract new users to transit. While this direction leads to initial declines in revenue/cost and other financial performance indicators, it can be effective in increasing transit ridership and performance in the medium-term.

Table 2.9 - Transit Revenue and Operating Cost Growth

Year	Revenue		Operating Cost	
	Total	*Growth*	*Total*	*Growth*
1996	$8,726,145		$12,934,004	
1997	$9,698,674	11%	$13,150,690	2%
1998	$10,703,103	10%	$14,316,458	9%
1999	$11,654,410	9%	$15,260,040	7%
2000	$12,848,913	10%	$16,909,691	11%
2001	$13,789,874	7%	$20,243,738	20%

2.6.6 Walking and Cycling

Brampton's PathWays Master Plan study was completed in June 2002. This award winning plan for a multi-use trail network outlines Brampton's plan to create a unique community that builds on the city's natural, cultural, and heritage features.

Figure 2.15 shows the city-wide recommended pathways network (as described in the Master Plan, June 2002) along with the potential trail gateways to Brampton. The network represents a grid of north/south and east/west routes spaced approximately

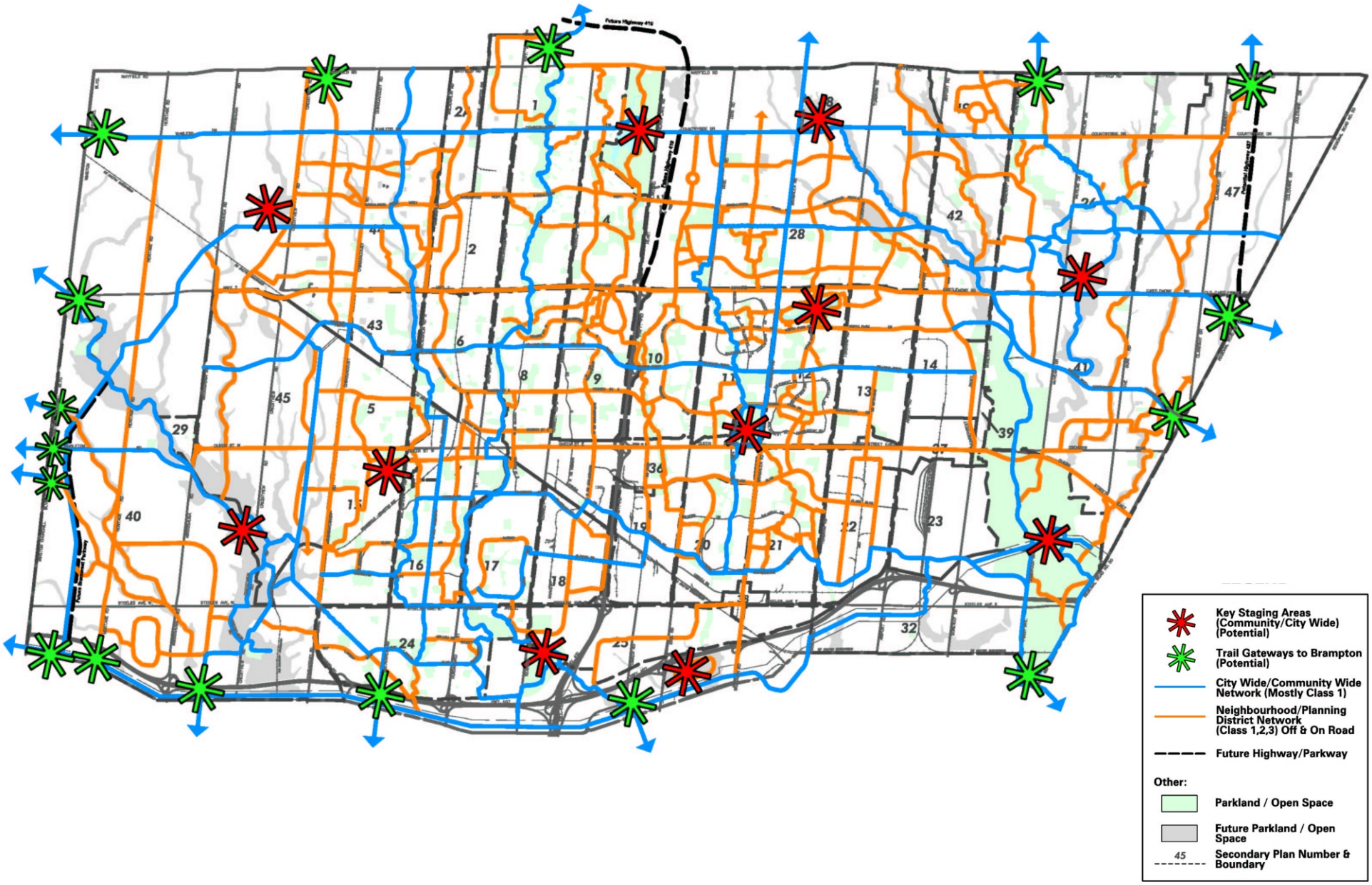


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Figure 2.15: Recommended Pathways Network (Pathways Report - June 2003)

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two kilometers apart. The PathWays Plan includes various types of walking and cycling paths: on-road bike lanes and off-road mixed-use trails. Multi-use trails form the backbone of the network. The recommended design for the off-road facilities is a 3.0m. wide asphalt path. The standard on-road facility is a 1.5m. wide bike lane on the paved road.

2.6.7 Goods Movement

Goods movement is an important consideration in the transportation system. Safe and efficient movement of goods and services within and through the City of Brampton is essential for sustainable economic growth. An efficient road system can provide savings for local goods manufacturing and shipping industries that will in turn improve the economy of the GTA and Brampton.

There is currently no overall municipal truck route or goods movement strategy. Although the Region of Peel is undertaking a Goods Movement Study, it will not include the recommendation of a truck route network. The City of Brampton and the Region have some route-specific restrictions on truck traffic. **Figure 2.16** shows the major industrial areas and trucking corridors. Truck corridors have been defined informally as corridors with a high truck percentage. These streets effectively function as a trucking network serving the major industrial areas in the City of Brampton. These streets and the industrial areas they serve are in accordance with the City and Regional OP policies regarding location of land uses requiring large trucks to be located close to expressways and major roads.

A more detailed goods movement strategy, including the identification of a proposed truck route network will be a beneficial next component of the ongoing TTMP. It should address:

- Efficient movement of goods by truck and rail
- Effective intermodal connections
- Protection of residential communities from undue impacts of goods movement

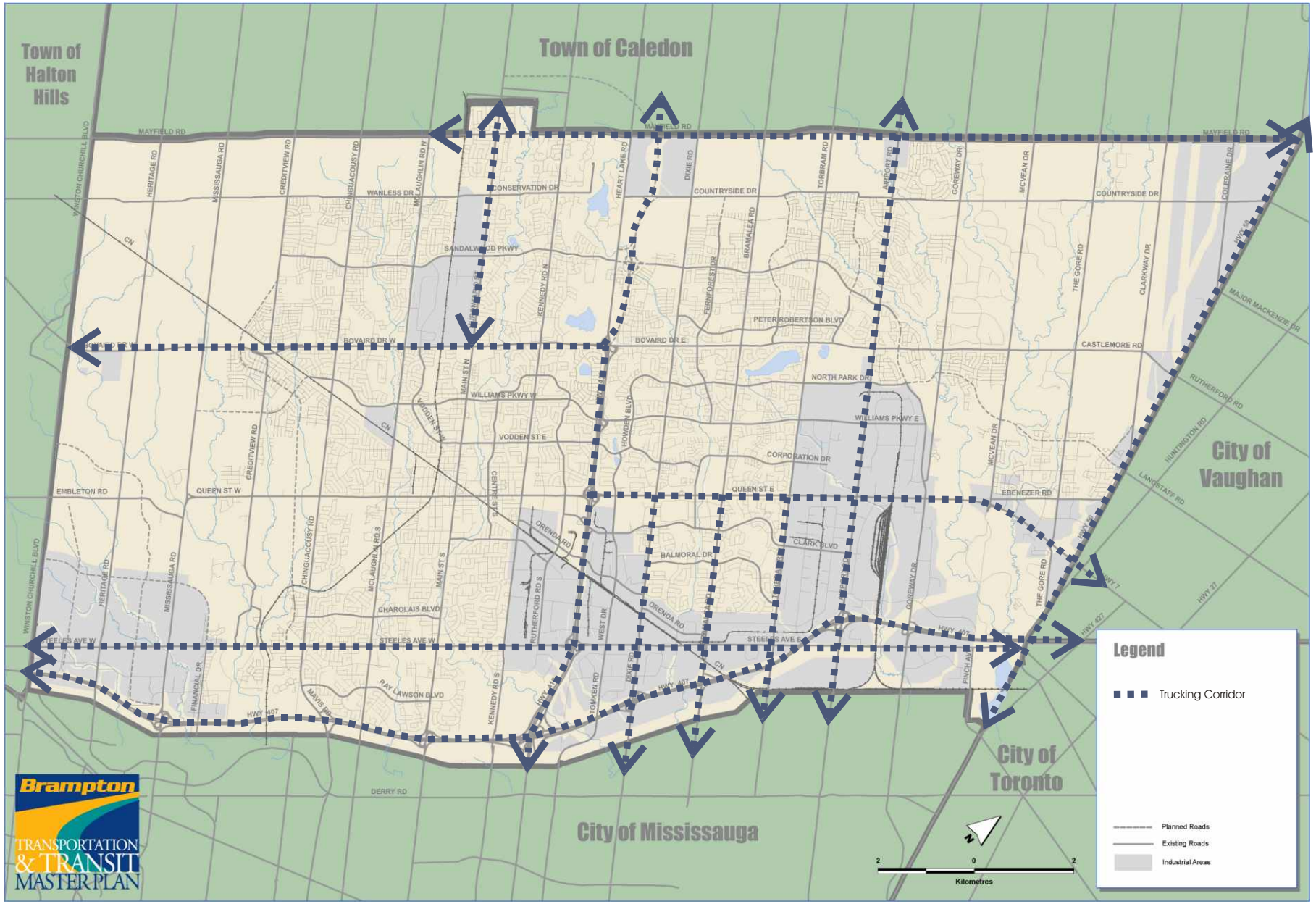

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Figure 2.16: Major Industrial Areas and Trucking Corridors

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2.6.8 Growth Management

Growth management is one of the key mechanisms to accommodate future demand in an orderly and controlled way. The City completed a Growth Management study in April 2003. The final report provides a program to relate the City's ability to provide infrastructure to development impacts in a practical way.