



City of Hamilton

## ROAD NETWORK STRATEGY

---



WORKING PAPER

MAY 2007



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### **Note to Readers**

***This Working Paper was prepared in support of the City of Hamilton Transportation Master Plan Class Environmental Assessment. It is intended to provide information and discussion on the analysis and evaluation of Road Network Strategies and related policies. Where there are differences between this Working Paper and the Transportation Master Plan (Volume 1), the latter shall be the governing document.***

## **1. INTRODUCTION**

The City of Hamilton Transportation Master Plan is a major planning effort being undertaken in conjunction with the Growth Related Integrated Development Strategy (GRIDS) process. The overall purpose of the Transportation Master Plan is to develop policies and strategies for the transportation network over the next 30 years. This network includes roads, transit, cycling and walking facilities, as well as the City's connections to marine, aviation and rail facilities. Results of the Transportation Master Plan will be used during the City's Official Plan Review and the Development Charges Bylaw Review. It will also serve as a support document for the City's capital budgeting.

The Transportation Master Plan has been developed in three major components. The first phase consisted of the calibration of the existing transportation model to reflect current transportation conditions in Hamilton. The second phase focused on the development the underlying policies of the Transportation Master Plan, consisting of policies in 23 subject areas. The third phase is the preparation of the master plan itself, which was developed in an iterative manner in conjunction with the land use scenarios, developed through the broader GRIDS study.

The purpose of this Report – “The Roads Network Strategy” - is to present the infrastructure needs identified for the City by 2031. Needs are based on the preferred GRIDS Development option and associated population and employment. In considering future road needs, the effect of transit improvements and other travel demand management approaches identified as priorities by the City have been taken into account.

### **1.1 Outline of Report**

This report is structured, from this point forward, to present:

- Section 2 – Existing Conditions
- Section 3 – Developing a Road Network Strategy
- Section 4 – Capacity Implementation and Phasing Strategy
- Section 5 – Summary and Preferred Strategic Plan
- Section 6 – Other Considerations
- Section 7 – Costs (Capital, Operating, Maintenance)



## 2. EXISTING CONDITIONS

### 2.1 The Current Transportation System

The City of Hamilton is fortunate to have an extensive and capable road network consisting of two major highways (Highway 403 and QEW), the Lincoln Alexander Parkway and an extensive network of arterial and collector roads (some 5,352 lane kilometres of paved roads and 713 lane kilometres of un-paved roads). The Red Hill Valley Parkway connecting the QEW to the LINC is nearing completion and will be open in 2007. Exhibit 2.1 illustrates the existing transportation system.

The City of Hamilton is located in the heart of the Golden Horseshoe Region, which experiences some of the greatest volume of goods movement per capita in Canada. The City is strategically located, with good highway, port and air access to attract a number of industries and goods movement requirements. Within Hamilton, manufacturing remains one of the City's major economic clusters. This consists of growing number of mid-sized manufacturing firms as well as the existing large port related industries that dominate parts of Hamilton's waterfront. Servicing of these industrial areas requires a significant amount of internal goods movement on the local road network. The agricultural industry also plays a large role in Hamilton's economy which results in goods movement issues and opportunities in the rural areas of the City.

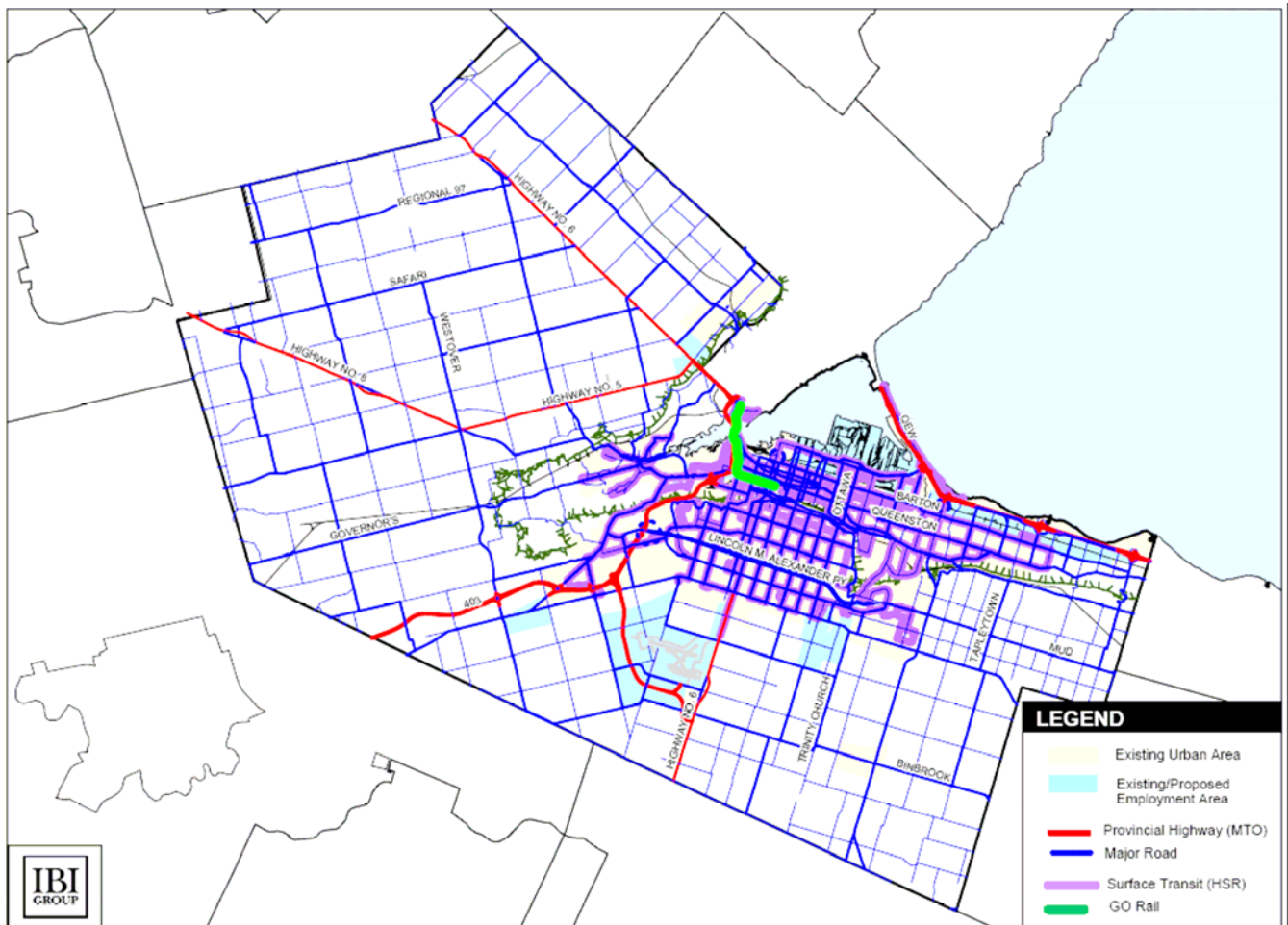
### 2.2 Existing Transportation Network Deficiencies and Opportunities

One important and tangible measure of roadway level-of-service (LOS) involves the number of roadway sections operation beyond an acceptable **Volume-to-Capacity** ratio (**V/C**). Travel demand modelling for present conditions indicates that there are a number of sections of the road network with poor performance in the morning peak hour, as illustrated in Exhibit 2.2.

#### **Deficiencies**

- Highway 403 is experiencing pressure north of the Lincoln Alexander Parkway from through traffic.
- Commuters crossing the Escarpment experience poor levels of service as the Hamilton Mountain accesses are generally at capacity.
- There are also unfavourable conditions in the Centennial Parkway area as well as along several sections of the QEW.

Exhibit 2.1: Existing Road Network



**Opportunities**

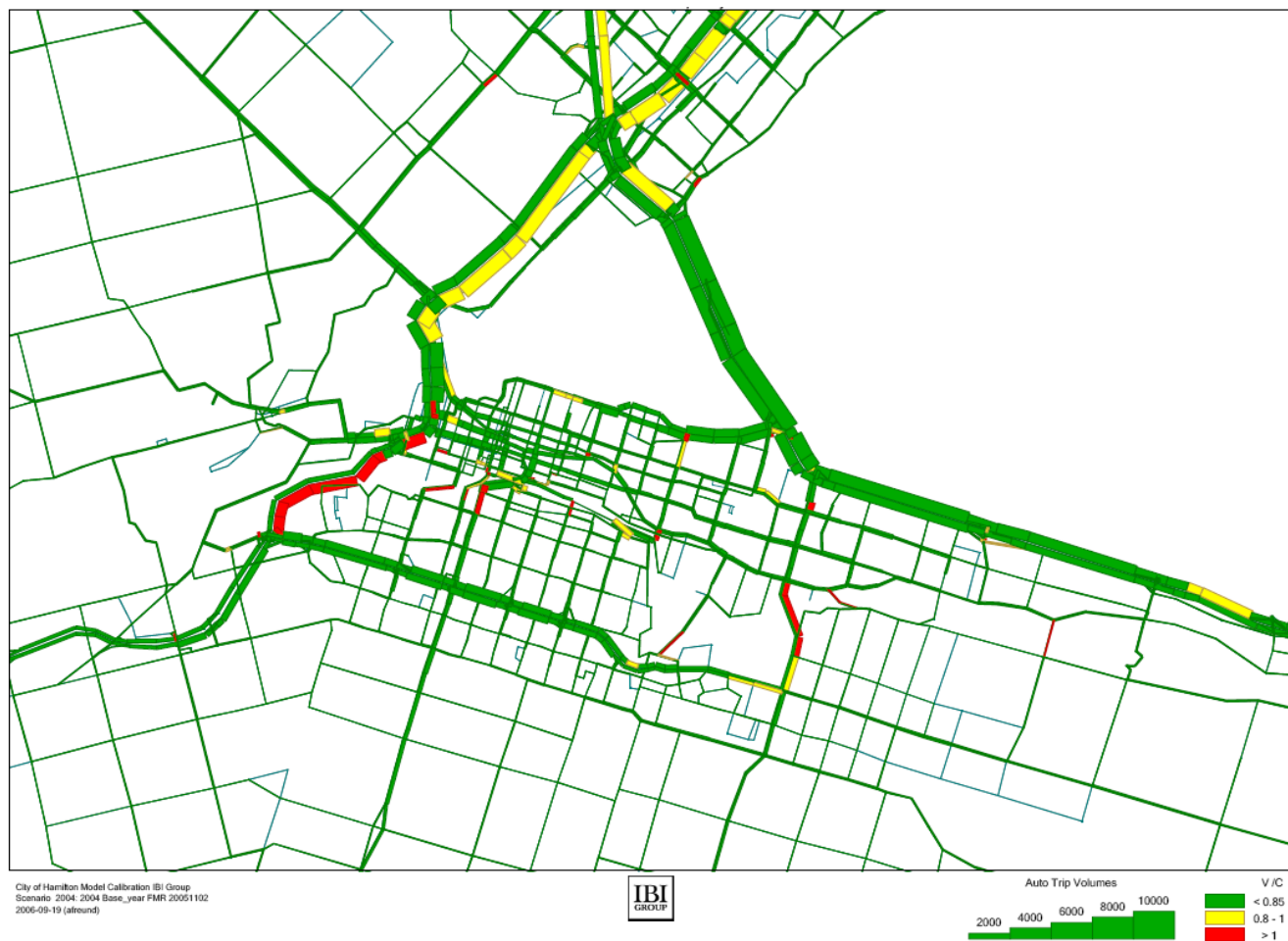
Completion of the Red Hill Valley Parkway between the Linc and the QEW will result in a redistribution of traffic volumes that will off load other facilities including Highway 403. Exhibit 2.3 illustrates the potential impact based on an assignment of AM peak hour traffic with and without the Red Hill Valley Parkway<sup>1</sup>.

The impact of this major new facility will be reduced pressure from the Mount Albion Road/ Centennial Parkway corridor, but potentially increased traffic volumes on the QEW south of the QEW-403 interchange. The Red Hill Valley Parkway may also relieve some pressure from the Hamilton Mountain accesses for commuters travelling to the 403.

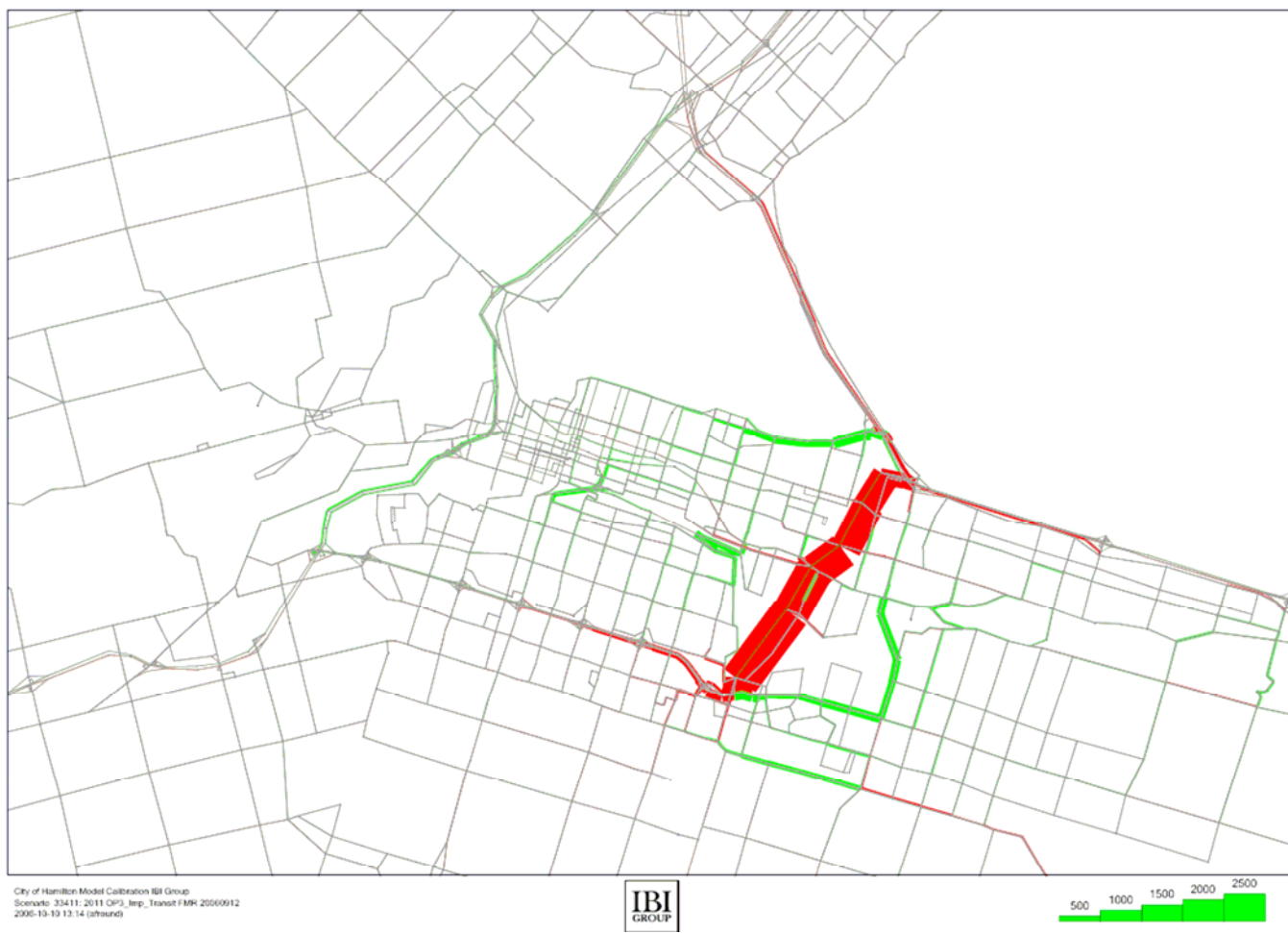
In general, the road network in Hamilton operates fairly well, particularly compared to other areas of the GTA. This is an opportunity in that there is some flexibility to re-balance the network to also accommodate other transportation modes such as dedicated transit and cycling lanes. However, it is important to maintain an acceptable level of service as this is essential for goods movement.

<sup>1</sup> Based on the Hamilton Transportation Model. Caution should be used in interpreting these figures, as truck trips are not explicitly modelled.

**Exhibit 2.2: Existing Road Network Volumes and Level of Service (2004 AM Peak Hour)**



**Exhibit 2.3: Projected Impact of Red Hill Valley Parkway (2011 AM Peak Hour)**



**Note: Green indicates volume decrease, Red indicates volume increase.**

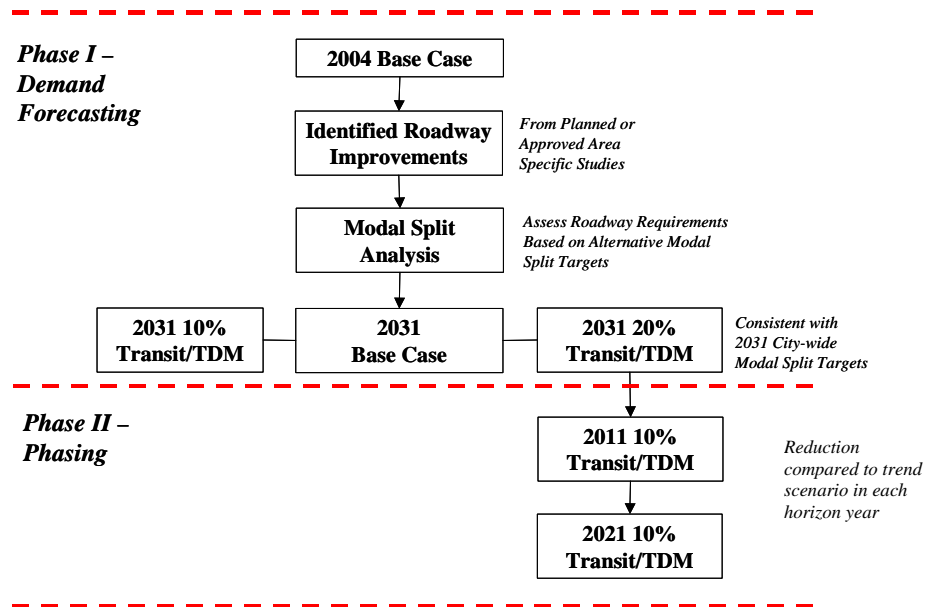
### 3. DEVELOPMENT OF THE ROAD NETWORK STRATEGY

#### 3.1 Planned Infrastructure Improvements and Policy Directions to Date

##### 3.1.1 METHODOLOGY

The development of a 2031 road network strategy for the Hamilton Transportation Master Plan underwent a transportation demand modelling exercise to determine 2031 network deficiencies and possible improvements. This is illustrated in **Exhibit 3.1**.

**Exhibit 3.1: 2031 Transportation Demand Forecasting Methodology**



##### 3.1.2 2004 BASE CASE

The assessment of 2031 network deficiencies began with a detailed network analysis to assess the 2004 roadway deficiencies in the City based on the existing conditions (network capacity and volumes). The purpose of beginning here was to quantify the magnitude of the transportation problem throughout the network.

The network analysis was developed using the City of Hamilton’s A.M. Peak Hour Model to determine travel demand needs and phasing between 2004-2031. The model “runs” established the anticipated demand on the area network. The strategy then, was to determine how to best serve this demand within the conditions established through the study process.

### 3.1.3 2031 COMMITTED ROAD NETWORK IMPROVEMENTS

The next step incorporated approved or planned roadway improvements into the model from multi-year capital budgets, Development Charge studies, transportation master plans, and EA studies that have been undertaken by the City of Hamilton within the 2031 committed horizon year.

**Appendix A** of this report presents a summary of the documents reviewed, and its implications in the development of the model roadway network for the City-wide Transportation Master Plan. Updates to the model were limited to the arterial and collector road network, and did not include the local roadway network. Where plans are in the early stages of development (without firm recommendations made), assumptions were made regarding the future road network based on a review of project alternatives and/or preliminary recommendations.

For the purposes of the TMP, roadway improvements in the base case model included new facilities, widenings and major intersection improvements and channelizations. The committed road network improvements to the year 2031 form the “2031 Committed Road Network” Scenario, or simply the 2031 “Base” Condition. The list of significant improvements included in the City-wide TMP transportation model 2031 Base Scenario is illustrated in Exhibit 3.2 and includes:

- Red Hill Valley Parkway.
- Arvin Avenue extension.
- Dartnall Road extension to Dickenson Road.
- Garth Street extension from Twenty Road to Dickenson Road.
- New east-west road from Tradewind to Trinity Road.
- Trinity Church Corridor (being examined as part of ROPA 9)
- Upper Ottawa St. extension
- Waterdown network improvements.
- Highway 6 widening to five lanes (3 northbound and 2 southbound) south of Dundas Street, and the construction of an interchange at Highway 6 and Dundas Street (EA was recently completed).

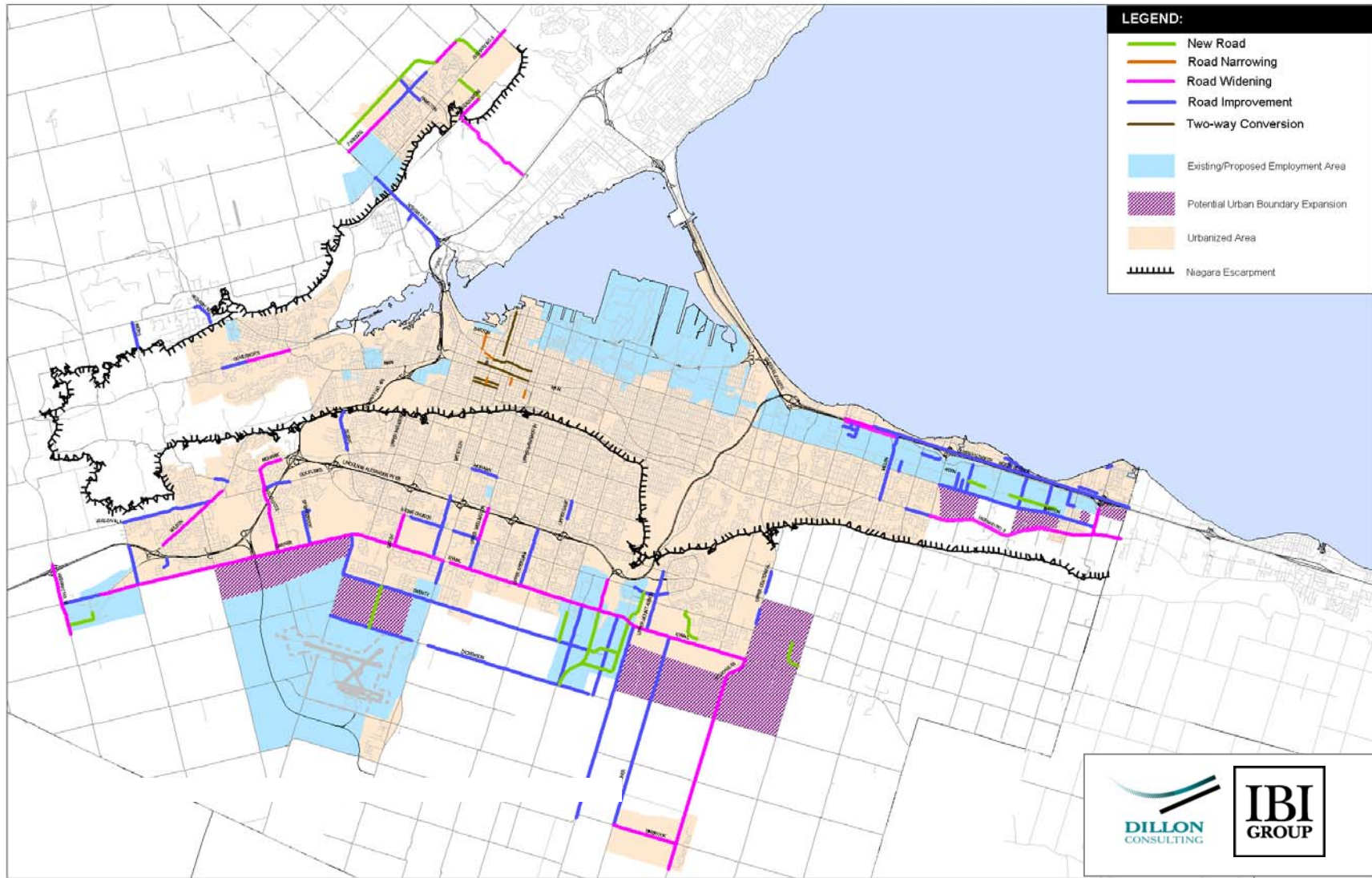
### 3.1.4 TRIP REDUCTION ANALYSIS

The 2031 Network with committed roadway improvements was assessed to reflect alternative levels of investment in travel by transit, Travel Demand Management (TDM), cycling and walking. Therefore, three 2031 planning horizon scenarios were assessed to reflect this range of travel behaviour, from current trends to a 20% reduction – a City target. The performance of the City’s 2031 roadway network under each of these conditions is discussed in the following sections:

- 2031 Base (committed improvements);
- 2031 Base (committed improvements) with a 10 percent trip reduction due to transit and TDM; and
- 2031 Base (committed improvements) with a 20 percent trip reduction due to transit and TDM.



Exhibit 3.2: Base Case Roadway Improvements (to 2031)



## 3.2 Future Road Network Needs (2031)

### 3.2.1 2031 CONDITIONS

A transportation demand forecasting model for the 2031 horizon year was undertaken for all three mode split scenarios identified above. The model included committed roadway improvements identified in Section 3.1.3 of this report.

The purpose of the exercise was to assess roadway deficiencies and potential improvements based on various levels of transit and Transportation Demand Management investment and to quantify the magnitude of the transportation problem throughout the network.

The network analysis was developed using the City of Hamilton's A.M. Peak Hour Model to determine travel demand needs and phasing between 2004-2031. The model "runs" established the anticipated demand on the area network. The strategy then, is to determine how to best serve this demand within the conditions established through the study process.

**Exhibit 3.3** through **Exhibit 3.5** illustrate the projected A.M. Peak Hour volumes on the 2031 primary road network for all three scenarios. The simulated volumes are for the a.m. peak hour. It can be expected that p.m. peak hour volumes in the reverse direction will be higher by 0% to 30%. Volume to capacity (v/c) ratios in excess of 0.85 is therefore an indicator of potential problems. Potential capacity problems in each of the three problems is discussed below.

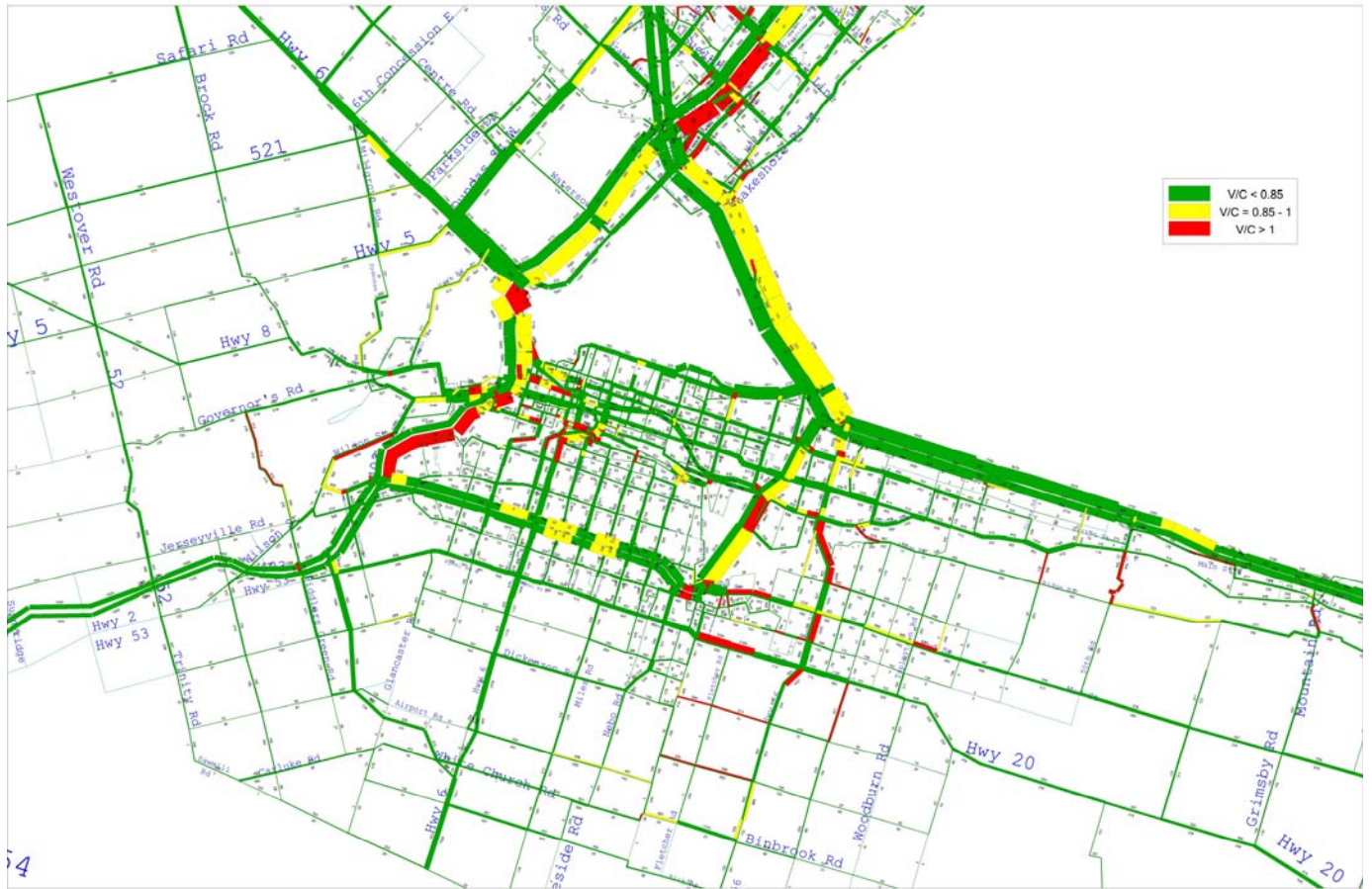
#### 2031 Base

As illustrated in **Exhibit 3.3**, without significant transit or TDM improvements, five significant problem areas are identified that will need to be addressed through roadway improvements:

1. **Downtown Hamilton/Central Escarpment Crossings** – In 2031, many of Hamilton's Downtown streets would operate at a poor level of service. However, due to the existing built up urban form in the downtown, increasing road capacity will be difficult.
2. **Highway 403** – In 2031, Highway 403 would operate at a poor level of service between the Lincoln Alexander Parkway (The Linc) and Highway 6. Since Highway 403 is a provincial roadway, any required road improvements will be outside of the jurisdiction of the City of Hamilton. There are also limited parallel corridors that could accommodate additional traffic or increases in capacity (due to the constraints presented by the Escarpment and environmentally significant areas).
3. **Red Hill Valley Parkway** – In 2031, the Red Hill Valley Parkway would operate at a poor level of service north of Greenhill Avenue. With the exception of Regional Road 56, there are few parallel corridors that could accommodate the overflow of traffic at a screenline level. Regional Road 56/Upper Centennial would also be operating at a poor level of service in 2031, which limits its ability to take on overflow traffic.
4. **Skyway Bridge** – In 2031, the Skyway Bridge connecting Hamilton to Burlington would operate at a poor level of service. Since there is no sufficient right-of-way on the bridge to widen the number of lanes, roadway capacity improvements will not solve this problem.
5. **Lincoln Alexander Parkway** – In 2031, the Linc would operate at a poor level of service at points between Garth Street and Centennial Parkway/Regional Road 20.

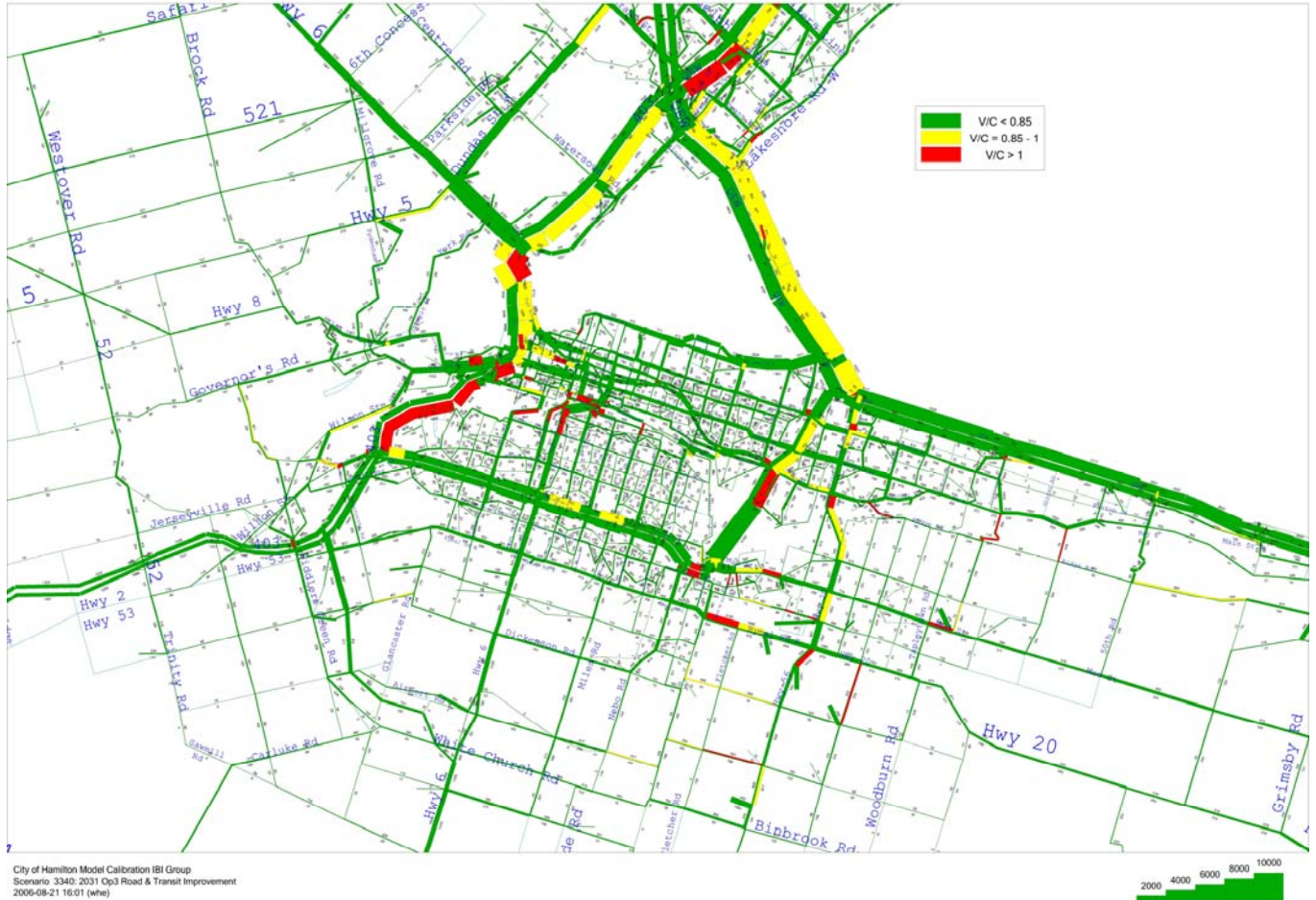


**Exhibit 3.3: 2031 Base Case Level of Service (Current Travel Behaviour with Committed Improvements)**

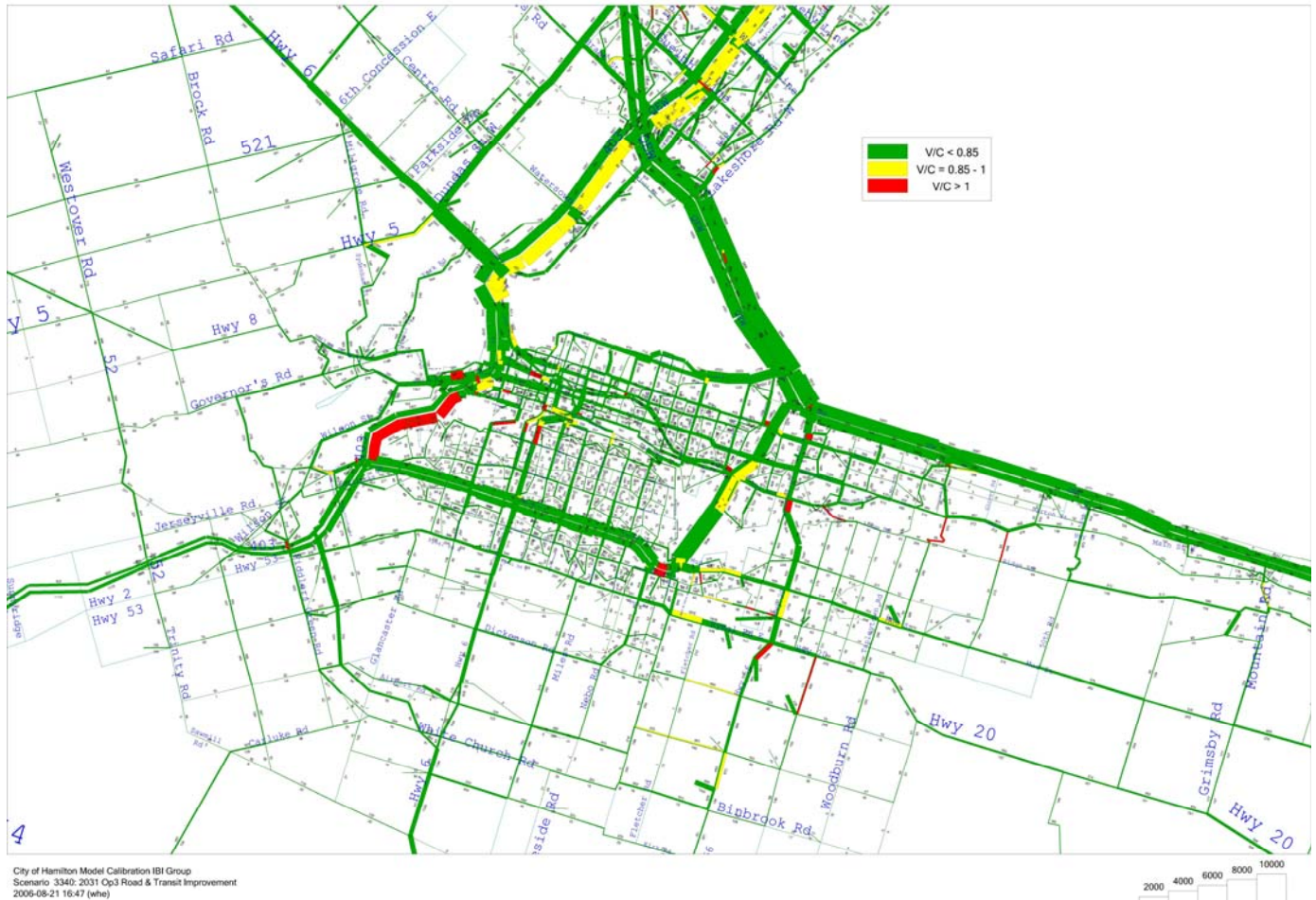


City of Hamilton Model Calibration IBI Group  
Scenario: 3341: 2031 OP3 R&T Improve without Fruitland&Excavation Crossing  
2006-09-03 09:55 (ywh)

**Exhibit 3.4: 2031 Base Case Level of Service (Committed Improvements with 10% Reduction Due to Transit and TDM)**



**Exhibit 3.5: 2031 Base Case Level of Service (Committed Improvements with 20% Reduction Due to Transit and TDM)**



**2031 Base with a 10 Percent Trip Reduction due to Transit and TDM**

As illustrated in Exhibit 3.4, a 10 percent reduction in trips due to transit and/or TDM improvements will improve the level of service on a number of roadways, however, will not preclude the need for roadway improvements in each of the five problem areas identified above.

1. **Downtown Hamilton/Central Escarpment Crossings** – would still require significant capacity improvements to ensure it is operating at an acceptable level of service
2. **Highway 403** – would continue to operate at a poor level of service between the Lincoln Alexander Parkway (The Linc) and Highway 6.
3. **Red Hill Valley Parkway** – will continue to operate at a poor level of service north of Greenhill Avenue. Regional Road 56/Upper Centennial would also continue to operate at a poor level of service.
4. **Skyway Bridge** – would continue to operate at a poor level of service.



5. **Lincoln Alexander Parkway** – road improvements between Garth Street and Highway 6 will no longer be required, however, the Linc will continue to operate at a poor level of service at points between Highway 6 and Centennial Parkway/Regional Road 20.

#### 2031 “Do-nothing” Condition with a 20 Percent Trip Reduction due to Transit and TDM

As illustrated in Exhibit 3.5, a 20 percent reduction in trips due to transit and/or TDM improvements will further improve the level of service in a number of roadways. With a more aggressive transit and TDM strategy in place, the following observations can be made about the roadway network performance:

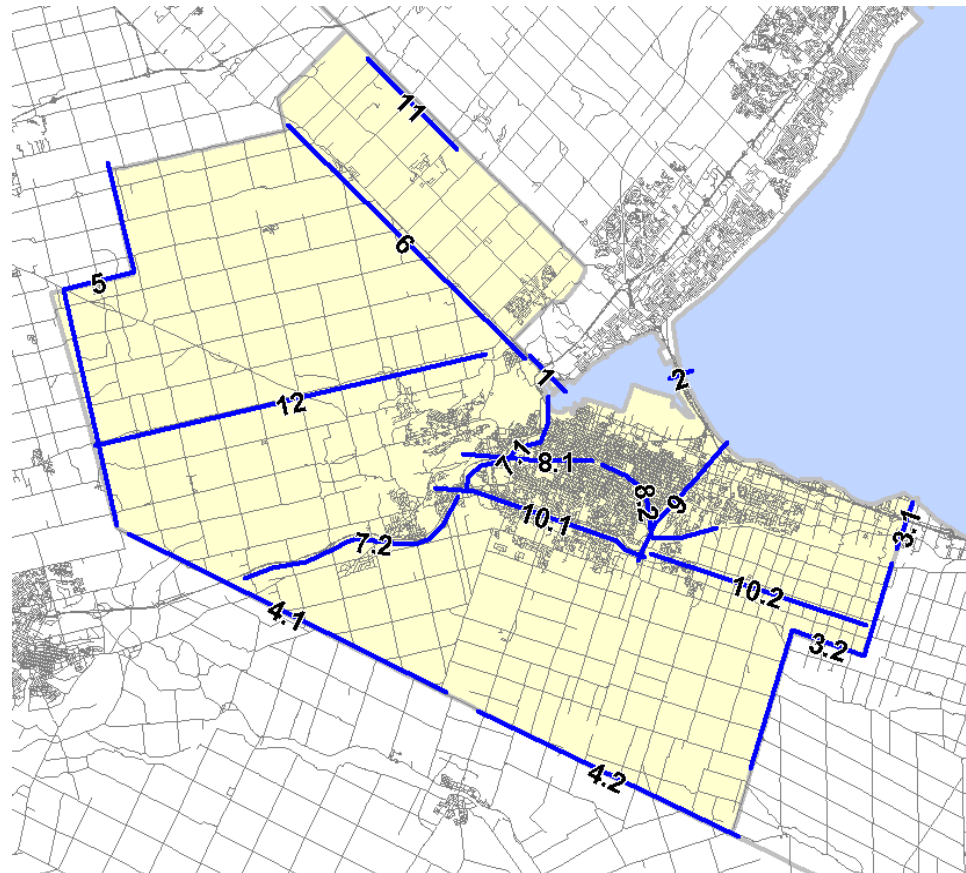
1. **Downtown Hamilton/Central Escarpment Crossings** – most of the Downtown area would operate at an acceptable level of service, with minimal improvements required.
2. **Highway 403** –improvements would only be required between the Linc and Aberdeen Avenue, minimizing the need for infrastructure investment by the Province.
3. **Red Hill Valley Parkway** – would operate at a good level of service, with the exception of a small section between Greenhill Avenue and Barton Street. Centennial Parkway/Regional Road 20 would also operate at a good level of service and may be able to take on some of the traffic flow from the congested areas of the parkway.
4. **Skyway Bridge** –would operate at an acceptable level of service (although this assumes transit and TDM improvements in neighbouring municipalities)
5. **Lincoln Alexander Parkway** – would operate at a good level of service, with only slight improvements required at the Red Hill Valley Parkway

#### 3.2.2 SCREENLINE ANALYSIS

A screenline analysis was completed for the 2031 scenario with a 20 percent adjustment for transit/TDM. The purpose of this analysis is to understand network deficiencies across a broader network of corridors instead of individual link volumes. Exhibit 3.6 illustrates the screenlines that were used in this analysis. As indicated earlier, the simulated volumes are for the a.m. peak hour. It can be expected that p.m. peak hour volumes in the reverse direction will be higher by 0% to 30%. Volume to capacity (v/c) ratios in excess of 0.85 are indicators of potential problems.

For phasing purposes, a screenline analysis was also completed for the 2011 and 2021 study horizon. For these earlier scenarios, only a 10 percent reduction in trips due to improved transit and TDM was assumed.

Exhibit 3.6: Screenline Locations



See Exhibit 3.7 for description of Screenline Numbers

2031 Network

By 2031, it was assumed that a 20 percent reduction in vehicle trips due to improved transit and TDM policies could be reached. With this reduction in place, Exhibit 3.7 presents the screenline volumes, capacities, and volume/capacity ratios along the screenlines presented in Exhibit 3.6. As illustrated, there will be few capacity deficiencies with the committed road improvements in place and an increase in transit/TDM modal share.

**Exhibit 3.7: 2031 Base (Committed Improvements) Screenline Analysis with a 20 Percent Trip Reduction due to Transit and TDM**

| Screenline  | Direction | Simulated Volumes (veh/h) |        | Total Capacity (veh/h) |        | V/C ratio |       |
|---|-----------|---------------------------|--------|------------------------|--------|-----------|-------|
|   |           | EB/NB                     | WB/SB  | EB/NB                  | WB/SB  | EB/NB     | WB/SB |
| 1 Hamilton/Burlington boundary                      | E/W       | 5,130                     | 3,065  | 7,200                  | 7,200  | 0.71      | 0.43  |
| 2 Beach Strip                                       | N/S       | 5,665                     | 4,172  | 9,100                  | 9,100  | 0.62      | 0.46  |
| 3.1 Hamilton/Niagara boundary (south of Escarpment) | E/W       | 2,592                     | 4,448  | 8,700                  | 8,700  | 0.30      | 0.51  |
| 3.2 Hamilton/Niagara boundary (north of Escarpment) | E/W       | 689                       | 1,616  | 6,000                  | 6,000  | 0.11      | 0.27  |
| 4.1 Hamilton/Haldimand boundary (west of Hwy 6)     | N/S       | 1,580                     | 1,573  | 10,600                 | 10,600 | 0.15      | 0.15  |
| 4.2 Hamilton/Haldimand boundary (east of Hwy 6)     | N/S       | 1,391                     | 234    | 6,900                  | 6,900  | 0.20      | 0.03  |
| 5 Hamilton/Brant/Cambridge boundary                 | E/W       | 330                       | 439    | 4,000                  | 4,000  | 0.08      | 0.11  |
| 6 Highway 6 (west side)                             | E/W       | 2,663                     | 1,159  | 7,400                  | 7,400  | 0.36      | 0.16  |
| 7.1 East of Highway 403 (north of LAP)              | E/W       | 6,450                     | 8,718  | 11,300                 | 12,200 | 0.57      | 0.71  |
| 7.2 East of Highway 403 (south of LAP)              | N/S       | 2,877                     | 2,272  | 10,800                 | 10,800 | 0.27      | 0.21  |
| 8.1 Escarpment (west of Wentworth)                  | N/S       | 9,440                     | 4,507  | 12,400                 | 12,200 | 0.76      | 0.37  |
| 8.2 Escarpment (east of Wentworth)                  | N/S       | 6,665                     | 2,635  | 10,200                 | 8,400  | 0.65      | 0.31  |
| 8.3 Escarpment east                                 | N/S       | 1,291                     | 503    | 1,900                  | 1,400  | 0.68      | 0.36  |
| 9 Red Hill Creek                                    | E/W       | 6,394                     | 11,852 | 17,000                 | 17,000 | 0.38      | 0.70  |
| 10 Lincoln Alexander Parkway (south side)           | N/S       | 10,624                    | 6,625  | 23,300                 | 23,300 | 0.46      | 0.28  |
| 10 Mud Street (south side)                          | N/S       | 3,696                     | 1,399  | 9,800                  | 9,800  | 0.38      | 0.14  |
| 11 Milton West End                                  | E/W       | 1,055                     | 506    | 3,000                  | 3,000  | 0.35      | 0.17  |
| 12 Highway 5 (south side)                           | N/S       | 1,452                     | 802    | 6,500                  | 6,500  | 0.22      | 0.12  |
| 13 Highway 5 (Waterdown)                            | E/W       | 2,350                     | 2,784  | 6,800                  | 6,800  | 0.35      | 0.41  |

LAP – Lincoln Alexander Parkway

**2011 Network**

By 2011, it was assumed that a 10 percent reduction in vehicle trips due to improved transit and TDM policies would be reached. With this reduction in place, Exhibit 3.8 presents the screenline volumes, capacities, and volume/capacity ratios along each screenline. As illustrated, there are no capacity deficiencies on any of the screenlines with the 2011 committed road improvements in place.

Exhibit 3.8: 2011 Base (Committed Improvements) Screenline Analysis with a 10 Percent Trip Reduction due to Transit and TDM

| Screenline  | Direction | Simulated Volumes (veh/h) |        | Total Capacity (veh/h) |        | V/C ratio |       |
|---|-----------|---------------------------|--------|------------------------|--------|-----------|-------|
|   |           | EB/NB                     | WB/SB  | EB/NB                  | WB/SB  | EB/NB     | WB/SB |
| 1 Hamilton/Burlington boundary                      | E/W       | 5,215                     | 3,411  | 7,200                  | 7,200  | 0.72      | 0.47  |
| 2 Beach Strip                                       | N/S       | 5,249                     | 4,565  | 9,100                  | 9,100  | 0.58      | 0.50  |
| 3.1 Hamilton/Niagara boundary (south of Escarpment) | E/W       | 2,921                     | 3,662  | 7,700                  | 7,700  | 0.38      | 0.48  |
| 3.2 Hamilton/Niagara boundary (north of Escarpment) | E/W       | 1,049                     | 1,274  | 6,000                  | 6,000  | 0.17      | 0.21  |
| 4.1 Hamilton/Haldimand boundary (west of Hwy 6)     | N/S       | 1,651                     | 1,533  | 10,600                 | 10,600 | 0.16      | 0.14  |
| 4.2 Hamilton/Haldimand boundary (east of Hwy 6)     | N/S       | 1,482                     | 258    | 6,900                  | 6,900  | 0.21      | 0.04  |
| 5 Hamilton/Brant/Cambridge boundary                 | E/W       | 349                       | 457    | 4,000                  | 4,000  | 0.09      | 0.11  |
| 6 Highway 6 (west side)                             | E/W       | 2,403                     | 816    | 7,400                  | 7,400  | 0.32      | 0.11  |
| 7.1 East of Highway 403 (north of LAP)              | E/W       | 6,683                     | 8,176  | 11,300                 | 12,200 | 0.59      | 0.67  |
| 7.2 East of Highway 403 (south of LAP)              | N/S       | 1,865                     | 1,198  | 9,100                  | 9,100  | 0.20      | 0.13  |
| 8.1 Escarpment (west of Wentworth)                  | N/S       | 8,896                     | 3,597  | 12,400                 | 12,200 | 0.72      | 0.29  |
| 8.2 Escarpment (east of Wentworth)                  | N/S       | 6,345                     | 2,652  | 10,200                 | 8,400  | 0.62      | 0.32  |
| 8.3 Escarpment east                                 | N/S       | 639                       | 236    | 1,400                  | 900    | 0.46      | 0.26  |
| 9 Red Hill Creek                                    | E/W       | 6,680                     | 10,353 | 17,000                 | 17,000 | 0.39      | 0.61  |
| 10 Lincoln Alexander Parkway (south side)           | N/S       | 10,048                    | 5,877  | 22,000                 | 22,000 | 0.46      | 0.27  |
| 10 Mud Street (south side)                          | N/S       | 2,196                     | 937    | 9,800                  | 9,800  | 0.22      | 0.10  |
| 11 Milton West End                                  | E/W       | 1,177                     | 176    | 3,000                  | 3,000  | 0.39      | 0.06  |
| 12 Highway 5 (south side)                           | N/S       | 1,301                     | 719    | 6,500                  | 6,500  | 0.20      | 0.11  |
| 13 Highway 5 (Waterdown)                            | E/W       | 1,907                     | 1,806  | 5,600                  | 5,600  | 0.34      | 0.32  |

LAP – Lincoln Alexander Parkway

## 2021 Network

By 2021, a 10 percent reduction in vehicle trips due to improved transit and TDM policies is a represents a conservative scenario. With this reduction in place, Exhibit 3.9 presents the screenline volumes, capacities, and volume/capacity ratios along each screenline. As illustrated, there continues to be no capacity deficiencies on any of the screenlines with the 2021 committed road improvements in place.

Exhibit 3.9: 2021 Base (Committed Improvements) Screenline Analysis with a 10 Percent Trip Reduction due to Transit and TDM

| Screenline  | Direction | Simulated Volumes (veh/h) |        | Total Capacity (veh/h) |        | V/C ratio |       |
|---|-----------|---------------------------|--------|------------------------|--------|-----------|-------|
|   |           | EB/NB                     | WB/SB  | EB/NB                  | WB/SB  | EB/NB     | WB/SB |
| 1 Hamilton/Burlington boundary                      | E/W       | 5,383                     | 3,433  | 7,200                  | 7,200  | 0.75      | 0.48  |
| 2 Beach Strip                                       | N/S       | 5,806                     | 4,672  | 9,100                  | 9,100  | 0.64      | 0.51  |
| 3.1 Hamilton/Niagara boundary (south of Escarpment) | E/W       | 3,036                     | 4,189  | 8,700                  | 8,700  | 0.35      | 0.48  |
| 3.2 Hamilton/Niagara boundary (north of Escarpment) | E/W       | 850                       | 1,621  | 6,000                  | 6,000  | 0.14      | 0.27  |
| 4.1 Hamilton/Haldimand boundary (west of Hwy 6)     | N/S       | 1,687                     | 1,656  | 10,600                 | 10,600 | 0.16      | 0.16  |
| 4.2 Hamilton/Haldimand boundary (east of Hwy 6)     | N/S       | 1,513                     | 266    | 6,900                  | 6,900  | 0.22      | 0.04  |
| 5 Hamilton/Brant/Cambridge boundary                 | E/W       | 358                       | 425    | 4,000                  | 4,000  | 0.09      | 0.11  |
| 6 Highway 6 (west side)                             | E/W       | 2,805                     | 1,062  | 7,400                  | 7,400  | 0.38      | 0.14  |
| 7.1 East of Highway 403 (north of LAP)              | E/W       | 7,019                     | 8,732  | 11,300                 | 12,200 | 0.62      | 0.72  |
| 7.2 East of Highway 403 (south of LAP)              | N/S       | 2,502                     | 1,656  | 10,800                 | 10,800 | 0.23      | 0.15  |
| 8.1 Escarpment (west of Wentworth)                  | N/S       | 9,733                     | 4,200  | 12,400                 | 12,200 | 0.78      | 0.34  |
| 8.2 Escarpment (east of Wentworth)                  | N/S       | 6,521                     | 2,660  | 10,200                 | 8,400  | 0.64      | 0.32  |
| 8.3 Escarpment east                                 | N/S       | 1,045                     | 364    | 1,900                  | 1,400  | 0.55      | 0.26  |
| 9 Red Hill Creek                                    | E/W       | 6,830                     | 11,378 | 17,000                 | 17,000 | 0.40      | 0.67  |
| 10 Lincoln Alexander Parkway (south side)           | N/S       | 10,929                    | 6,439  | 23,300                 | 23,300 | 0.47      | 0.28  |
| 10 Mud Street (south side)                          | N/S       | 2,467                     | 1,017  | 9,800                  | 9,800  | 0.25      | 0.10  |
| 11 Milton West End                                  | E/W       | 1,307                     | 231    | 3,000                  | 3,000  | 0.44      | 0.08  |
| 12 Highway 5 (south side)                           | N/S       | 1,374                     | 668    | 6,500                  | 6,500  | 0.21      | 0.10  |
| 13 Highway 5 (Waterdown)                            | E/W       | 2,546                     | 2,850  | 6,800                  | 6,800  | 0.37      | 0.42  |

LAP – Lincoln Alexander Parkway

### Summary

Exhibit 3.10 presents a summary of screenline volume/capacity ratios between 2011 and 2031.



Exhibit 3.10: Summary of Screenline Analysis (2011 to 2031)

| Screenline  | 2011 (@ 10%<br>Transit/TDM) |       | 2021 (@ 10%<br>Transit/TDM) |       | 2031 (@ 20%<br>Transit/TDM) |       |
|---|-----------------------------|-------|-----------------------------|-------|-----------------------------|-------|
|   | EB/NB                       | WB/SB | EB/NB                       | WB/SB | EB/NB                       | WB/SB |
| 1 Hamilton/Burlington boundary                      | 0.72                        | 0.47  | 0.75                        | 0.48  | 0.71                        | 0.43  |
| 2 Beach Strip                                       | 0.58                        | 0.50  | 0.64                        | 0.51  | 0.62                        | 0.46  |
| 3.1 Hamilton/Niagara boundary (south of Escarpment) | 0.38                        | 0.48  | 0.35                        | 0.48  | 0.30                        | 0.51  |
| 3.2 Hamilton/Niagara boundary (north of Escarpment) | 0.17                        | 0.21  | 0.14                        | 0.27  | 0.11                        | 0.27  |
| 4.1 Hamilton/Haldimand boundary (west of Hwy 6)     | 0.16                        | 0.14  | 0.16                        | 0.16  | 0.15                        | 0.15  |
| 4.2 Hamilton/Haldimand boundary (east of Hwy 6)     | 0.21                        | 0.04  | 0.22                        | 0.04  | 0.20                        | 0.03  |
| 5 Hamilton/Brant/Cambridge boundary                 | 0.09                        | 0.11  | 0.09                        | 0.11  | 0.08                        | 0.11  |
| 6 Highway 6 (west side)                             | 0.32                        | 0.11  | 0.38                        | 0.14  | 0.36                        | 0.16  |
| 7.1 East of Highway 403 (north of LAP)              | 0.59                        | 0.67  | 0.62                        | 0.72  | 0.57                        | 0.71  |
| 7.2 East of Highway 403 (south of LAP)              | 0.20                        | 0.13  | 0.23                        | 0.15  | 0.27                        | 0.21  |
| 8.1 Escarpment (west of Wentworth)                  | 0.72                        | 0.29  | 0.78                        | 0.34  | 0.76                        | 0.37  |
| 8.2 Escarpment (east of Wentworth)                  | 0.62                        | 0.32  | 0.64                        | 0.32  | 0.65                        | 0.31  |
| 8.3 Escarpment east                                 | 0.46                        | 0.26  | 0.55                        | 0.26  | 0.68                        | 0.36  |
| 9 Red Hill Creek                                    | 0.39                        | 0.61  | 0.40                        | 0.67  | 0.38                        | 0.70  |
| 10 Lincoln Alexander Parkway (south side)           | 0.46                        | 0.27  | 0.47                        | 0.28  | 0.46                        | 0.28  |
| 10 Mud Street (south side)                          | 0.22                        | 0.10  | 0.25                        | 0.10  | 0.38                        | 0.14  |
| 11 Milton West End                                  | 0.39                        | 0.06  | 0.44                        | 0.08  | 0.35                        | 0.17  |
| 12 Highway 5 (south side)                           | 0.20                        | 0.11  | 0.21                        | 0.10  | 0.22                        | 0.12  |
| 13 Highway 5 (Waterdown)                            | 0.34                        | 0.32  | 0.37                        | 0.42  | 0.35                        | 0.41  |

### 3.3 Identified Options and Recommended Improvements

#### 3.3.1 STRATEGIC AREAS

Based on the policy direction committed to in the City of Hamilton, the 2031 transportation model used to assess roadway deficiencies included a 20 percent reduction in vehicle trips due to transit improvements and TDM initiatives. However, without a successful implementation of the 20 percent reduction, the screenline analysis indicated three general areas of roadway capacity deficiency would be required in future phases of study. This includes the following screenlines:

1 Hamilton/Burlington boundary (NB/EB v/c = 0.89)

8.1 Escarpment West of Wentworth (NB v/c = 0.95)

8.2 Escarpment East of Wentworth (NB v/c = 0.82)

### 8.3 Escarpment East (NB v/c = 0.85)

The four screenlines can be generalized into three general corridors illustrated in Exhibit 3.11, which includes:

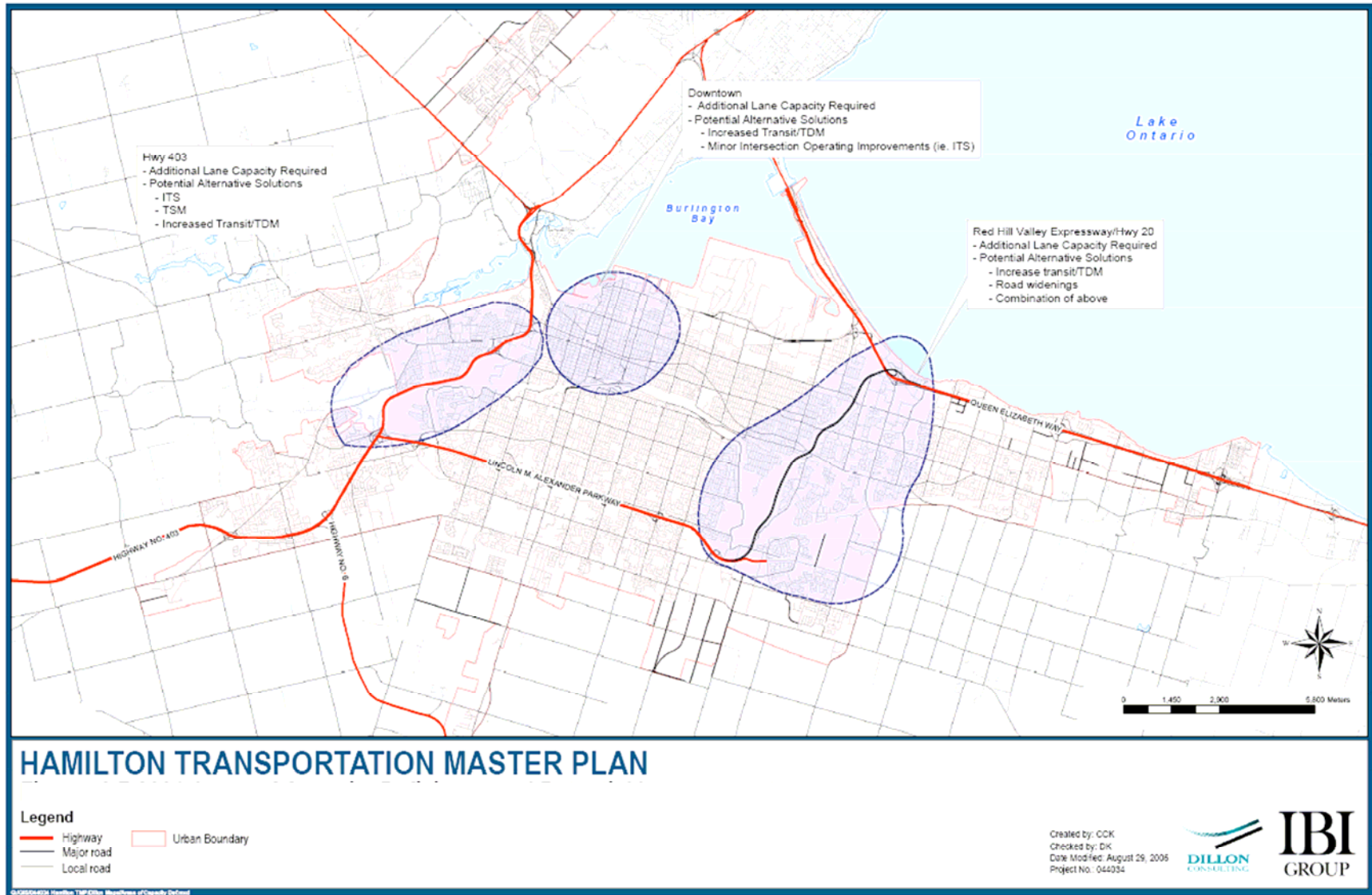
1. Highway 403 corridor;
2. Downtown Area/Central Escarpment Crossings; and
3. Red Hill Valley Parkway.

Deficiencies on the Highway 403 corridor are identified between the Lincoln Alexander Parkway and Aberdeen Avenue. Since Highway 403 is a provincially controlled and maintained roadway, improvements on this road are outside of the jurisdiction of the City of Hamilton.

Downtown and Central Escarpment Area crossing deficiencies are identified in 2031, even with the construction of committed capital improvements in the area. Further capacity may need to be added to this area in the form of optimized road capacity, if ITS, TDM, or further transit improvements do not achieve set targets.

It is critical to note that should the trip reduction targets not be met, the infrastructure needs will be significant.

Exhibit 3.11: Areas of Potential Road Network Deficiencies and Potential Improvements



### 3.3.2 SPECIFIC ISSUES

Several specific roadway issues were considered in development of the recommended 2031 roadway network for the City of Hamilton. A brief summary of the conclusions of these analysis is provided below.

- **Fruitland Road** - The extension of Fruitland Road between Barton Street and Ridge Road (as identified in the 2000 Official Plan) was determined not to be warranted as part of this analysis.
- **New Link to Airport** – Appropriate goods movement access to the Hamilton Airport from the north and east has been identified as a significant issue. The 2005 Hamilton Goods Movement Study identifies the need to provide a connection between the Red Hill Valley Parkway and the Airport as a designated truck route. This is due to the current lack of truck access opportunities from the northeast to the Airport, south of the Lincoln Alexander Parkway. Following this TMP, a Schedule C EA should be initiated to identify specific routing alternatives as well as a phasing strategy. It is possible that existing roads could serve to provide this link in the short-medium term. The specific routing also depends to some extent on the location of the proposed GTA-Niagara Corridor.
- **Waterdown** – The findings of the Waterdown/Aldershot Transportation Master Plan (Phase 2) as approved by Hamilton Council on March 1, 2006, have been confirmed by this study.
- **One-way to Two-way Street Conversions** – With the intensification targets identified by the Provincial Planning Policy “Places to Grow”, significant population and employment increases are expected in Downtown Hamilton. Even with the changes in current travel behaviour, most of the major downtown streets will operate close to capacity in the peak hours. The Downtown Transportation Master Plan also identifies further one-way to two-way conversions, which will reduce the overall capacity of the system, albeit providing numerous other benefits. Given that road widening is not an option in the Downtown, other strategies will need to be considered to manage congestion.

## 3.4 Other Considerations

### 3.4.1 NIAGARA TO GTA TRANSPORTATION CORRIDOR

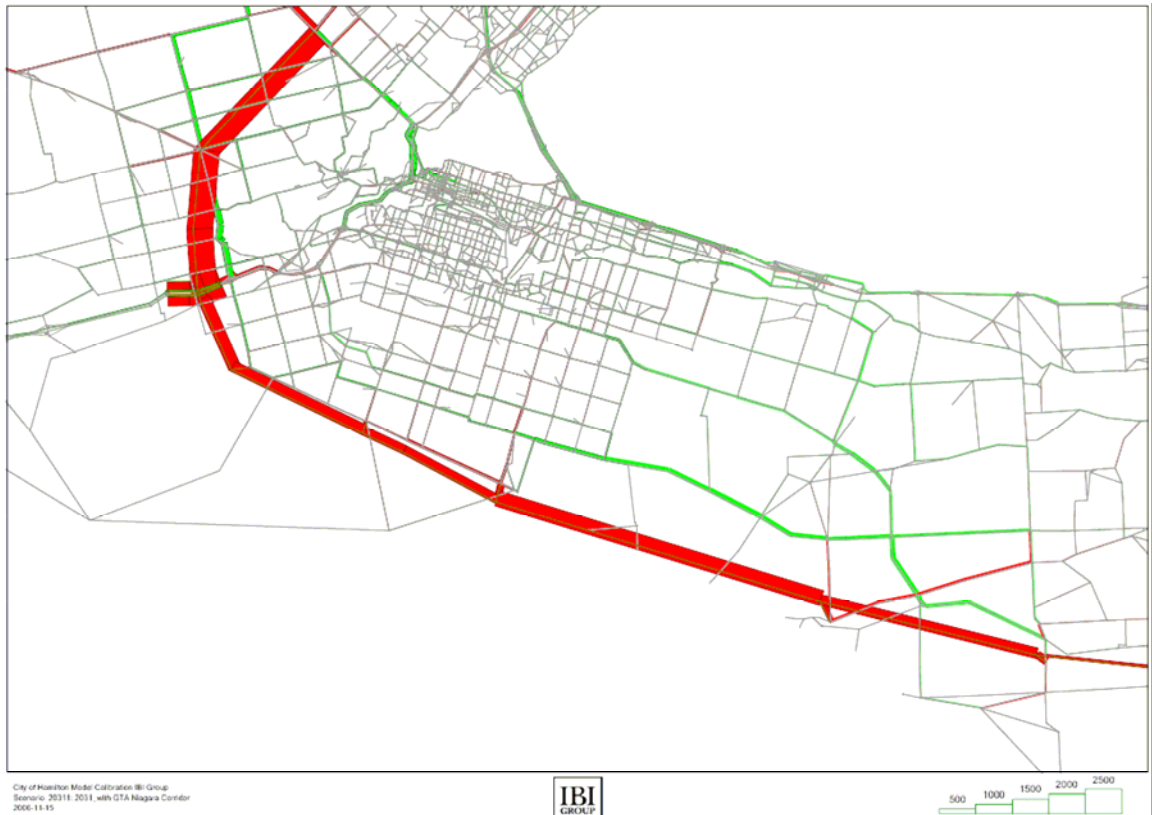
The Ministry of Transportation – Ontario (MTO) completed the Niagara Peninsula Transportation Needs Assessment Study in May 2003, which recommended a new Niagara to GTA Highway. The study is a component of the MTO’s long range planning program to improve transportation through Ontario’s international gateways and highway corridors. This corridor is now referred to as the Niagara to GTA Transportation Corridor. This is a proposed facility linking Fort Erie with Hamilton.

The Ministry of Transportation has initiated a new “Full Environmental Assessment” for this project in early 2005. The implementation of this facility is most likely beyond the 2031 planning horizon of the Hamilton TMP and was, therefore, not incorporated in the basic evaluation. However, a sensitivity test of the potential impacts of the Niagara to GTA corridor was conducted.

Exhibit 3.12 provides an illustration of the potential changes in roadway volumes in 2031 that could occur with the introduction of the Niagara-GTA corridor. This should be considered indicative only

as the specific alignment has not yet been determined. As shown, the proposed facility will generally reduce volumes on all Hamilton-area roads, most significantly on Highway 403 through Dundas/Ancaster and the Burlington Skyway.

**Exhibit 3.12: Impacts of Potential GTA-Niagara Corridor on Hamilton Area Roadways**



**Note:** Green indicates volume decrease, Red indicates volume increase.

#### 3.4.2 PROVINCE OF ONTARIO PROVINCIAL TRANSPORTATION STRATEGY

A Provincial Transportation Strategy is being developed by MTO in conjunction with the province's Growth Management Plan to address growth challenges over the next 30 years. The Strategy will provide the basis for integrating land use and transportation planning decisions, identifying strategies for the future development of inter-regional and multi-modal highway corridors that support the growth management objectives and infrastructure investment priorities identified in the Growth Management Plan.

#### 3.4.3 GREATER TORONTO TRANSPORTATION AUTHORITY

The Province recently established a Greater Toronto Transportation Authority (GTTA). The GTTA will play an important part in providing a balanced, effective, sustainable regional transportation framework in the GTA and City of Hamilton that will implement the Provincial vision for a stronger Ontario built around stronger communities, a vibrant economy, a healthy environment and a high quality of life.

## 4. PREFERRED STRATEGIC ROAD IMPROVEMENTS

### 4.1 Summary and Preferred Strategic Plan

The study was undertaken to fulfil Phase 2 of the Municipal Class Environmental Assessment Planning and Design Process (Class EA). In preparing a Class EA, one of the issues addressed is the evaluation of alternative improvement scenarios ("alternative solutions"). An evaluation process was undertaken to consider the range of improvement alternatives and to prioritize system improvements within a preferred transportation network. This employed a methodology that not only assesses the differences between the improvement options under consideration, but also has the ability to address the potentially diverse views and objectives of stakeholders.

Therefore, the strategic plan to maintain an efficient and effective transportation system to accommodate private, commercial and public vehicles as recommended by this study is summarized in Exhibit 4.1. Through **Phase 3** of the Class Environmental Assessment process, "alternative designs" will be considered and a preferred design will be recommended subject to public input. Hence in this study (Phase 2), only "corridors" and capacity needs are confirmed, however, the specific infrastructure needs will only be defined at the end of Phase 3.

### 4.2 Capacity Implementation and Phasing Strategy

The implementation/phasing strategy presents the timelines when the capacity improvements must be in place to support the forecasted growth to 2031 identified through the GRIDS study.

As population and employment grows within the City, additional capacity must be provided when the need arises so as to accommodate the demand. Thus, the capacity improvements must be staged in a timely fashion so that they are in-place to accommodate growing traffic demand, and alleviate traffic congestion. The implementation/phasing strategy evaluated the roadway network adjacent for 2011 and 2021 conditions, in addition to the 2004 Base Case and 2031 Committed Improvements scenarios and estimated the infrastructure needed.

In terms of staging the various capacity improvements and measures identified through the strategies plans and guidelines, a preliminary staging plan has been developed based on the planning horizon years evaluated in the TMP. Exhibit 4.2 presents a preliminary implementation strategy and estimate of individual project costs.

Exhibit 4.1: Proposed Road Capital Improvements to 2031

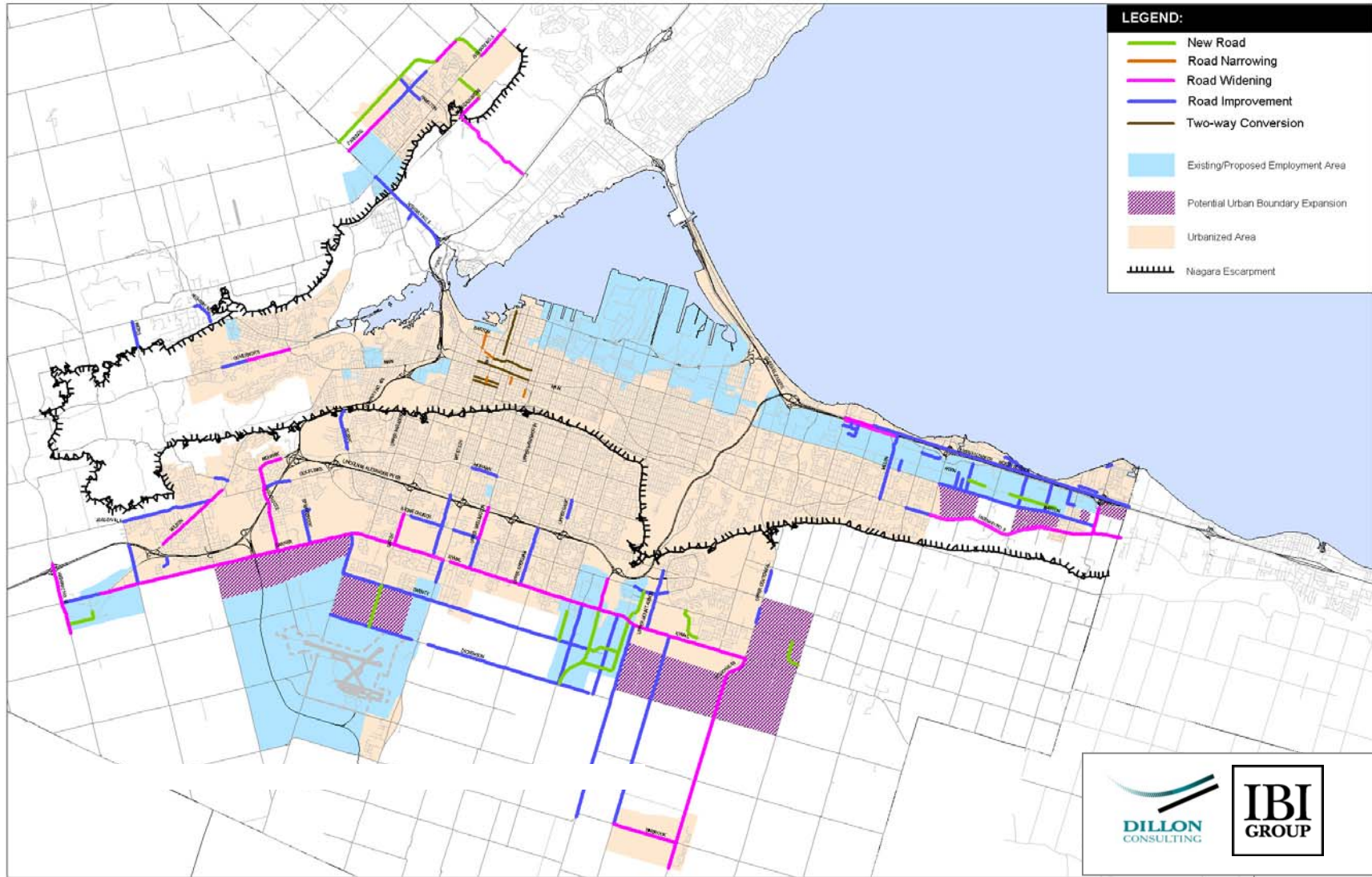




Exhibit 4.2: Proposed Road Infrastructure Improvements

| Road Name                                      | From                             | To                         | Description of Works                     | Anticipated Timing | Total Project Costs (Millions) | EA Schedule |
|--|----------------------------------|----------------------------|--|--------------------|--------------------------------|-------------|
| Airport Access Facility                        | Red Hill Valley Parkway          | Hwy 6                      | New Road                                 | 2007-2011          | TBD                            | C           |
| <b>Ancaster Development (Trinity @ Wilson)</b> |                                  |                            |  |                    |                                |             |
| New E/W Road (Ancaster)                        | Tradewind Drive / Cormorant Road | Trinity Road               | New Road                                 | 2007-2011          | \$2.40                         | C           |
| New Mid-block Collector (Ancaster)             | Cormorant Road                   | Tradewind Drive            | New Road                                 | 2007-2011          |                                |             |
| Arvin Avenue                                   | McNeilly Road                    | just east of Lewis Road    | New Road                                 | 2007-2011          | \$3.89                         | C           |
| Arvin Avenue                                   | Jones Road                       | existing end               | New Road                                 | 2007-2011          |                                |             |
| Arvin Avenue                                   | existing end                     | extend to McNeilly Road    | New Road                                 | 2007-2011          |                                |             |
| Barton Street                                  | Fruitland                        | Glover Road                | Two-way Left-turn Lane                   | Beyond 2021        | \$12.57                        | C           |
| Barton Street                                  | Glover Road                      | Fifty Road                 | Two-way Left-turn Lane                   | Beyond 2021        |                                |             |
| Baseline Road                                  | Winona Road                      | North Service Road         | Two-way Left-turn Lane                   | 2007-2011          | \$1.48                         | B           |
| Binbrook Road                                  | Fletchers Road                   | 3 km west of Hwy 56        | Road Widening                            | 2012-2021          | \$7.80                         | C           |
| Binbrook Road                                  | E and W of Hwy 56                |                            | Intersection Improvements                | 2012-2021          |                                |             |
| Bold St  | Queen Street                     | James Street               | Two-way conversion from one-way          | 2007-2011          | \$0.10                         | B           |
| <b>Centre Road/Hamilton Street</b>             |                                  |                            |  |                    |                                |             |
| Centre Road                                    | Northlawn Avenue                 | Parkside Drive             | Two-way Left-turn Lane                   | 2012-2021          | \$2.12                         | B           |
| Hamilton Street                                | Parkside Drive                   | John Street                | Two-way Left-turn Lane                   | 2012-2021          |                                |             |
| Community Avenue                               | Stoney Creek limits              | Teal Avenue                | Conversion to urban cross-section        | 2012-2021          | \$0.99                         | A           |
| Dartnall Road                                  | Rymal Road                       | Dickenson Road             | New Road                                 | 2007-2011          | \$8.97                         | C           |
| Dartnall Road                                  | Stone Church Road                | Rymal Road                 | Road Widening and Two-way Left-turn Lane | 2007-2011          |                                |             |
| Dickenson Road E.                              | west of Nebo Road                | west of Glover Road        | Conversion to urban cross-section        | 2012-2021          | \$12.35                        | B           |
| Dickenson Road E.                              | east of Hwy 6                    | west of Nebo Road          | Addition of Left turn lanes              | 2012-2021          |                                |             |
| Dickenson Road W.                              | west of Hwy 6                    | Glancaster Road            | Conversion to urban cross-section        | 2012-2021          |                                |             |
| Duke St  | Queen Street                     | James Street               | Two-way conversion from one-way          | 2007-2011          | \$0.10                         | B           |
| Falcon Road                                    | Fifty Road                       | West limits                | Conversion to urban cross-section        | 2007-2011          | \$0.19                         | A           |
| Fifty Road                                     | QEW                              | Hwy 8                      | Road Widening                            | Beyond 2021        | \$2.32                         | C           |
| Fletcher Road                                  | Rymal Road                       | Binbrook Road              | Addition of Left turn lanes              | 2012-2021          | \$8.10                         | B           |
| Fruitland Road                                 | Arvin Avenue                     | Barton Street              | Road Widening                            | Beyond 2021        | \$0.79                         | C           |
| Garden Avenue                                  | Teal Avenue                      | Pinelands Avenue           | Conversion to urban cross-section        | 2007-2011          | \$0.48                         | A           |
| <b>Garner Road</b>                             |                                  |                            |  |                    |                                |             |
| Garner Road                                    | 50m east of Miller Drive         | 50m west of Southcote Road | Road Widening and Two-way Left-turn Lane | 2012-2021          | \$28.95                        | C           |
| Garner Road                                    | Hwy 2                            | 50m west of Shaver Road    | Road Widening and Two-way Left-          | 2012-2021          |                                |             |



| Road Name                         | From                            | To                              | Description of Works                     | Anticipated Timing | Total Project Costs (Millions) | EA Schedule |
|-----------------------------------|---------------------------------|---------------------------------|--|--------------------|--------------------------------|-------------|
|                                   |                                 |                                 | turn Lane                                |                    |                                |             |
| Garner Road                       | 50m west of Fiddlers Green Road | 50m east of Fiddlers Green Road | Road Widening and Two-way Left-turn Lane | 2012-2021          |                                |             |
| Garner Road                       | 50m east of Fiddlers Green Road | 50m west of Miller Drive        | Road Widening and Two-way Left-turn Lane | 2012-2021          |                                |             |
| Garner Road                       | 50m east of Southcote Road      | 50m west of Kitty Murray La     | Road Widening and Two-way Left-turn Lane | 2012-2021          |                                |             |
| Garner Road                       | 50m east of Kitty Murray La     | 50m west of Glancaster Road     | Road Widening and Two-way Left-turn Lane | 2012-2021          |                                |             |
| Garner Road                       | 50m east of Glancaster Road     | Old Hamilton boundary           | Road Widening and Two-way Left-turn Lane | 2012-2021          |                                |             |
| Garner Road                       | 50m west of Miller Drive        | 50m east of Miller Drive        | Road Widening                            | 2012-2021          |                                |             |
| Garner Road                       | 50m west of Kitty Murray Lane   | 50m west of Kitty Murray La     | Road Widening                            | 2012-2021          |                                |             |
| Garner Road                       | West of Shaver Road             | 50m east of Shaver Road         | Two-way Left-turn Lane                   | 2012-2021          |                                |             |
| Garner Road                       | 50m west of Southcote Road      | 50m east of Southcote Road      | Two-way Left-turn Lane                   | 2012-2021          |                                |             |
| Garner Road                       | 50m west of Glancaster Road     | 50m east of Glancaster Road     | Two-way Left-turn Lane                   | 2012-2021          |                                |             |
| Garner Road                       | 50 m east of Shaver Road        | 50m west of Fiddlers Green Road | Road Widening and Two-way Left-turn Lane | 2012-2021          |                                |             |
| Wilson Street / Hwy 2             | Hwy 52                          | Hwy 53                          | Two-way Left-turn Lane                   | 2012-2021          |                                |             |
| Garth Street                      | Stone Church Road               | Rymal Road                      | Two-way Left-turn Lane                   | 2007-2011          | \$1.60                         | C           |
| Garth Street Extension            | Twenty Road                     | Dickenson Road                  | New Road                                 | Beyond 2021        | \$3.06                         | C           |
| Glancaster Road                   | Hwy 53                          | Twenty Road                     | Addition of Left turn lanes              | 2007-2011          | \$1.56                         | B           |
| Glover Access Road (Stoney Creek) | Glover Road                     | North Service Road              | Conversion to urban cross-section        | 2007-2011          | \$0.75                         | A           |
| Glover Road (Hamilton)            | Rymal Road                      | Dickenson Road                  | Conversion to urban cross-section        | 2007-2011          | \$6.26                         | A           |
| Golf Links Road                   | McNiven Road                    | Kitty Murray La                 | Two-way Left-turn Lane                   | 2012-2021          | \$2.07                         | C           |
| Governor's Road                   | Creighton Drive                 | Bridlewood Drive                | Two-way Left-turn Lane                   | 2012-2021          | \$5.23                         | C           |
| Governor's Road                   | Creighton Drive                 | Osler Drive                     | Road Widening                            | 2012-2021          |                                |             |
| Hamilton Drive                    | Hwy 403                         | 0.35km south                    | Intersection Improvements                | 2007-2011          | \$0.65                         | A           |
| Hwy 20                            | Ridge Road                      | 300m south of Ridge Road        | Intersection Improvements                | 2012-2021          | \$4.65                         | C           |
| Hwy 20                            | 100m south of Green Mountain    | 800m south of Gm Mtn            | Two-way Left-turn Lane                   | 2012-2021          |                                |             |
| Hwy 20                            | 350m south of Mud Street        | 830 m south of Mud Street       | Two-way Left-turn Lane                   | 2012-2021          |                                |             |
| Hwy 8                             | Hillcrest Avenue                | Park Street                     | Two-way Left-turn Lane                   | Beyond 2021        | \$1.97                         | C           |
| Hwy 8                             | Bond Street                     | Dundas Limits                   | Two-way Left-turn Lane                   | Beyond 2021        | \$6.27                         | C           |
| Hwy 8                             | Fruitland Road                  | Hamilton Boundary               | Road Widening                            | Beyond 2021        | \$10.54                        | C           |

| Road Name          | From                        | To                              | Description of Works                     | Anticipated Timing | Total Project Costs (Millions) | EA Schedule |
|--------------------|-----------------------------|---------------------------------|--|--------------------|--------------------------------|-------------|
| Hwy 8              | Dewitt Road                 | Fruitland Road                  | Road Widening and Two-way Left-turn Lane | Beyond 2021        |                                |             |
| Hwy 5 / Hwy 6      | East of Hwy 6               | West of Hwy 6                   | Intersection Improvements                | 2012-2021          | \$16.90                        |             |
| Jerseyville Road   | Martin Road                 | Lloyminn Avenue                 | Two-way Left-turn Lane                   | 2012-2021          | \$6.99                         | C           |
| Jerseyville Road   | Shaver Road                 | Martin Road                     | Two-way Left-turn Lane                   | 2012-2021          |                                |             |
| Jerseyville Road   | Wilson Street               | Lloyminn Avenue                 | Two-way Left-turn Lane                   | 2012-2021          |                                |             |
| Jones Road         | Barton Street               | South Service Road              | Conversion to urban cross-section        | 2012-2021          | \$1.94                         | A           |
| Kenmore Avenue     | Arvin Avenue                | Barton Street                   | Conversion to urban cross-section        | 2012-2021          | \$0.86                         | A           |
| King St            | Queen Street                | Wellington Street               | Two-way conversion from one-way          | 2007-2011          | \$2.98                         | C           |
| Leaside Avenue     | Arvin Avenue                | Barton Street                   | Conversion to urban cross-section        | 2012-2021          | \$0.65                         | A           |
| Lewis Road         | Barton Street               | South Service Road              | Conversion to urban cross-section        | 2007-2011          | \$1.75                         | A           |
| MacNab St          | Cannon Street               | Guise Street                    | Two-way conversion from one-way          | 2007-2011          | \$0.25                         | C           |
| McNeilly Road      | Barton Street               | South Service Road              | Conversion to urban cross-section        | 2007-2011          | \$1.87                         | A           |
| McNiven Road       | Rousseaux Street            | Golf Links Road                 | Road Widening                            | 2007-2011          | \$1.72                         | C           |
| Millen Road        | South Service Road          | Hwy 8                           | Two-way Left-turn Lane                   | 2012-2021          | \$4.92                         | C           |
| Mohawk Road        | McNiven Road                | Hwy 403                         | Road Widening                            | 2007-2011          | \$3.55                         | C           |
| Nebo Road          | Rymal Road                  | Former Hamilton Limits          | Two-way Left-turn Lane                   | 2012-2021          | \$5.50                         | C           |
| Nebo Road          | Former Hamilton Limits      | Dickenson Road                  | Conversion to urban cross-section        | 2012-2021          |                                |             |
| North Service Road | Grays Road                  | Green Road                      | Road Widening                            | 2007-2011          | \$18.94                        | C           |
| North Service Road | Green Road                  | East City Limits                | Conversion to urban cross-section        | 2007-2011          |                                |             |
| Oriole Avenue      | South Service Road          | Winona Road                     | Conversion to urban cross-section        | 2007-2011          | \$1.08                         | A           |
| Parkside Drive     | Braeheid Avenue             | East part of industrial section | Two-way Left-turn Lane                   | 2012-2021          | \$9.12                         | C           |
| Parkside Drive     | Hwy 6                       | Braeheid Avenue                 | Road Widening                            | 2012-2021          |                                |             |
| Pinelands Avenue   | Community Avenue            | South Service Road              | Conversion to urban cross-section        | 2007-2011          | \$0.65                         | A           |
| Queen St           | Cannon Street               | Stuart Street                   | Road Narrowing                           | 2012-2021          | \$0.42                         | B           |
| Regional Road 56   | Community Core              | North Limits                    | Road Widening and Two-way Left-turn Lane | 2012-2021          | \$21.72                        | C           |
| Regional Road 56   | Community Core              | South Limits                    | Road Widening and Two-way Left-turn Lane | 2012-2021          |                                |             |
| Regional Road 56   | South Limits of ROPA 9      | Binbrook Road                   | Road Widening                            | 2012-2021          |                                |             |
| Regional Road 56   | Rymal Road                  | Street M                        | Road Widening                            | 2012-2021          |                                |             |
| Rymal Road         | Ryckmans Street             | Trinity Church Road             | Road Widening                            | 2012-2021          | \$39.55                        | C           |
| Rymal Road         | Trinity Church Road         | Hwy 20                          | Road Widening                            | 2012-2021          |                                |             |
| Rymal Road         | Garth Street                | West 5th                        | Road Widening                            | 2012-2021          |                                |             |
| Rymal Road         | Upper Paradise Road         | Garth Street                    | Road Widening                            | 2012-2021          |                                |             |
| Rymal Road         | former west Hamilton limits | Upper Paradise Road             | Road Widening                            | 2012-2021          |                                |             |
| Rymal Road         | West 5th Street             | Upper James Street              | Road Widening                            | 2012-2021          |                                |             |
| Rymal Road         | West 5th Street             | Upper James Street              | Road Widening                            | 2012-2021          |                                |             |
| Scenic Drive       | Old City limits             | Lavender Drive South Leg        | Two-way Left-turn Lane                   | 2007-2011          | \$3.05                         | C           |

| Road Name                                     | From                        | To                             | Description of Works                     | Anticipated Timing | Total Project Costs (Millions) | EA Schedule |
|---|-----------------------------|--------------------------------|--|--------------------|--------------------------------|-------------|
| Seabreeze Crescent                            | Glover Road                 | McNeilly Road                  | Conversion to urban cross-section        | 2007-2011          | \$1.35                         | A           |
| Seaman Street                                 | South Service Road          | Dewitt Road                    | Conversion to urban cross-section        | 2007-2011          | \$1.30                         | A           |
| Shaver Road                                   | Wilson Street               | Garner Road                    | Two-way Left-turn Lane                   | 2012-2021          | \$4.08                         | C           |
| Shaver Road                                   | Hwy 403                     | Wilson Street                  | Conversion to urban cross-section        | 2012-2021          |                                |             |
| South Service Road                            | Millen Road                 | Grays Road                     | Road Widening                            | 2012-2021          | \$6.44                         | C           |
| Southcote Road                                | Golf Links Road             | Garner Road                    | Road Widening                            | 2012-2021          | \$5.73                         | C           |
| Springbrook Road                              | Meadowlands Blvd            | Garner Road                    | Two-way Left-turn Lane                   | 2012-2021          | \$2.40                         | C           |
| Stone Church Road                             | Pritchard Road              | Winterberry Drive              | Two-way Left-turn Lane                   | 2012-2021          | \$2.73                         | C           |
| Stone Church Road                             | East of Garth Street        | West 5th Street                | Two-way Left-turn Lane                   | 2007-2011          | \$3.25                         | C           |
| Stone Church Road                             | Upper Wellington Street     | Upper James Street             | Two-way Left-turn Lane                   | 2007-2011          |                                |             |
| Sulphur Springs Road                          | Wilson Street               | Mansfield Drive                | Conversion to urban cross-section        | 2012-2021          | \$0.75                         | A           |
| Sunnyhurst Avenue                             | Barton Street               | North end                      | Conversion to urban cross-section        | 2012-2021          | \$1.12                         | A           |
| Teal Avenue                                   | Garden Avenue               | South Service Road             | Conversion to urban cross-section        | 2012-2021          | \$0.65                         | A           |
| Trinity Church Road                           | Rymal Road                  | Golf Club Road                 | Conversion to urban cross-section        | 2012-2021          | \$12.38                        | C           |
| Trinity Church Road                           | Golf Club Road              | Binbrook Road                  | Addition of Left turn lanes              | 2012-2021          |                                |             |
| Trinity Church Road Extension                 | Rymal Road                  | Stone Church Road              | New Road                                 | 2007-2011          |                                |             |
| Trinity Neighbourhood / ROPA 9 Collector Road | Second Road West            | Highland Road                  | New Road                                 | 2007-2011          | \$2.23                         |             |
| Trinity Road                                  | 1 km S of Wilson Street     | Hwy 403                        | Road Widening                            | Beyond 2021        | \$6.28                         | C           |
| Twenty Road                                   | Glancaster Road             | Glover Road                    | Two-way Left-turn Lane                   | 2012-2021          | \$9.76                         | C           |
| Twenty Road Extension                         | Glover Road                 | Trinity Church Road            | New Road                                 | 2012-2021          |                                |             |
| Upper Gage Avenue                             | Mohawk Road                 | Thorley Drive/Edwina Pl.       | Two-way Left-turn Lane                   | 2007-2011          | \$2.40                         | C           |
| Upper James Street                            | Rymal Road                  | Former South Hamilton Limits   | Two-way Left-turn Lane                   | 2012-2021          | \$1.92                         | C           |
| Upper Mount Albion Road                       | Rymal Road                  | Mud Street                     | Two-way Left-turn Lane                   | 2012-2021          | \$4.75                         | C           |
| Upper Mount Albion Road                       | Rymal Road                  | Highland Road                  | Road Closure                             | 2012-2021          |                                |             |
| Upper Ottawa Street Extension                 | Former City Hamilton Limits | Twenty Road                    | New Road                                 | 2012-2021          | \$2.05                         | C           |
| Upper Sherman Avenue                          | Stone Church Road           | Rymal Road                     | Two-way Left-turn Lane                   | 2012-2021          | \$4.67                         | C           |
| Upper Sherman Avenue                          | Stone Church Road           | Lincoln Alexander Parkway      | Two-way Left-turn Lane                   | 2007-2011          |                                |             |
| Upper Wellington Street                       | Rymal Road                  | Stone Church Road              | Two-way Left-turn Lane                   | 2012-2021          | \$5.63                         | C           |
| Upper Wellington Street                       | Limeridge Road              | Stone Church Road              | Road Widening and Two-way Left-turn Lane | 2012-2021          |                                |             |
| <b>Waterdown New East-West Link</b>           |                             |                                |  |                    |                                |             |
| New East West Link/Hwy 6 (Waterdown)          | West of Hwy 6               | East of Hwy 6                  | Intersection Improvements                | 2012-2021          | \$18.02                        | C           |
| New East-West Link (north of Parkside)        | Hwy 6                       | Churchill Avenue (at Parkside) | New Road                                 | 2012-2021          |                                |             |
| New East-West Link/Centre St (Waterdown)      | North of New East West Link | South of New East West Link    | Intersection Improvements                | 2012-2021          |                                |             |

| Road Name                                      | From                             | To  | Description of Works              | Anticipated Timing | Total Project Costs (Millions) | EA Schedule |
|--|----------------------------------|---|-----------------------------------|--------------------|--------------------------------|-------------|
| Parkside Drive                                 | Churchill Avenue (at Parkside)   | New N-S Link (East of Upcountry Boundary) | Road Widening                     | 2012-2021          |                                |             |
| New North-South Link (E of Upcountry Boundary) | Parkside Drive                   | Dundas Street                             | New Road                          | 2012-2021          |                                |             |
| Dundas Street/New North-South Link (Waterdown) | West of New N-S Link (Waterdown) | East of New N-S Link (Waterdown)          | Intersection Improvements         | 2012-2021          |                                |             |
| Dundas Street                                  | New N-S Road (Waterdown South)   | Hamilton Boundary                         | Road Widening                     | 2012-2021          |                                |             |
| <b>Waterdown Road</b>                          |                                  |   |                                   |                    |                                |             |
| Waterdown Road                                 | Mountain Brow Road               | Hwy 403                                   | Road Widening                     | 2012-2021          | \$18.20                        | C           |
| Mountain Brow Road                             | Waterdown Road                   | New North-South Road                      | Road Widening                     | 2012-2021          |                                |             |
| New North-South Link (Waterdown South)         | Mountain Brow Road               | Dundas Street                             | New Road                          | 2012-2021          |                                |             |
| Weir's Lane                                    | Hwy 8                            | Escarpment                                | Conversion to urban cross-section | 2007-2011          | \$2.81                         | A           |
| Wellington St                                  | Hunter Street                    | Young Street                              | Road Narrowing                    | 2007-2011          | \$0.31                         | B           |
| West 5th Street                                | Stone Church Road                | Rymal Road                                | Two-way Left-turn Lane            | 2012-2021          | \$5.02                         | C           |
| West 5th Street                                | Limeridge Road                   | Stone Church Road                         | Two-way Left-turn Lane            | 2012-2021          |                                |             |
| Wilson Street                                  | Hamilton Drive                   | just west of Halson Street                | Road Widening                     | 2012-2021          | \$7.10                         | C           |
| York Blvd / Wilson St                          | Bay Street                       | Wellington Street                         | Two-way conversion from one-way   | 2012-2021          | \$2.28                         | C           |
| <b>Total</b>                                   |                                  |   |                                   |                    | <b>\$418.19</b>                |             |

## 5. COSTS (CAPITAL, OPERATING, MAINTENANCE)

### 5.1 FINANCIAL CAPABILITY

A Capital Expenditure Plan for the City's road network to 2031 has been developed as part of this master plan study.

Costing is based on benchmark costs and typical cross-sections. The benchmark costs contain normal engineering and construction contingency allowance. Benchmark costs were developed for the various types of roadway improvements/modifications.

#### 5.1.1 CURRENT AND PROJECTED CAPITAL OPERATING COSTS

The City's 2006 Capital Programme for roadway infrastructure totals approximately \$42 million (gross) (i.e. before deducting grants, DC contributions, etc.). To address a backlog of road maintenance and rehabilitation, it is estimated that this will need to increase significantly over the coming decades, potentially up to \$100 million annually by 2031.

In addition, in order to keep the current network operating within the City's established levels of service, approximately \$32 million was budgeted in 2006 for Operations and Maintenance (O&M).

Based on these projected trends, Exhibit 4.3 presents an estimate of the costs to keep the "status quo" of the City's roadway network to 2031 (in current dollars).

Exhibit 4.3: Capital and Operating Cost Estimates (Status Quo)

| Year | Capital Investment (\$ million) | O&M (\$ million) | Total (\$ million) |
|------|---------------------------------|------------------|--------------------|
| 2006 | \$42                            | \$32             | \$74               |
| 2011 | \$55                            | \$38             | \$93               |
| 2021 | \$84                            | \$46             | \$130              |
| 2031 | \$93                            | \$56             | \$149              |

#### 5.1.2 PROJECT COSTING

As presented earlier in this report, there are also a number of infrastructure improvements that have been identified through other sources, such as environmental assessments, development charges studies, secondary plans, etc. These projects are generally related to "growth" and as such would be covered largely through development charges.

Collectively, additional projects are estimated to require approximately \$418 million over the next 25 years. Thus the total investment into the City's roadway network would increase by an annual average of \$16.7 million from current commitments. Based on the preliminary timing developed in this Master Plan, the bulk of the expenditures would need to occur in the medium term horizon (i.e. 2011-2021). The projected incremental annual expenditures for the short, medium and long-term horizons are as follows:

2007 – 2011 – \$20.84 million/year

2011 – 2021 – \$29.10 million/year

2021 – 2031 - \$4.38 million/year

These costs do not include major roadway projects beyond those identified in Exhibit 4.2, which may be required if the City does not meet its transit and TDM targets.



# **Appendix A: Roadway Network Development Background Report**





**Hamilton Transportation Master Plan  
Roadway Network Development –  
2021 Base Case Scenario**

*Final Report*  
*December 2006*

04-4034-2000

*Submitted by*

**Dillon Consulting  
Limited**



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## **1.0 INTRODUCTION**

The following report represents an inventory of future road improvements (to 2021) based on a review of existing plans, the Development Charges by-law, capital plan, and other transportation studies recently completed, or currently being undertaken, in the City of Hamilton.

Each of the proceeding sections in this report represent a summary of the document reviewed, and its implications in the development of the model roadway network for the city-wide Transportation Master Plan (HTMP). Updates to the 2021 model were limited to the arterial and collector road network, and did not include the local roadway network. Where plans are in the early stages of development (without firm recommendations made), assumptions were made regarding the future road network based on a review of project alternatives and/or preliminary recommendations.

## **2.0 NIAGARA ESCARPMENT CROSSING STUDY**

### ***2.1 Document Highlights***

The purpose of this study is to review existing north/south Escarpment crossings in the Regional Municipalities of Hamilton-Wentworth and Niagara and “confirm ‘short term’ (5 year) and ‘long term’ (10 year) commercial truck traffic demands and requirements and to develop a transportation plan which achieves a balance between the safe and efficient movement of commercial vehicles and the social, environmental, and financial impacts that area associated with this type of traffic.”

The study evaluated a number of travel corridors and concluded that Victoria Avenue, Highway 20, and either Mountainview Road or Park Road should be designated as the preferred routes across the Escarpment for commercial truck traffic.

Long-term recommendations include:

- Construct and designate Mountainview Road or Park Road as the commercial trucking route in the central corridor
- Designate Victoria Avenue and Highway 20 as the commercial trucking routes in the east and west corridors respectively.

### ***2.2 Infrastructure Improvements Incorporated Into HTMP Modeling***

Of the recommendations, only Highway 20 (Centennial Parkway) is located in the City of Hamilton. Designation of this road to a commercial trucking route would not significantly impact roadway capacity. Therefore, no significant road network improvements are identified that would impact the HTMP model.

### 3.0 AINSLIE WOOD WESTDALE SECONDARY PLAN

#### 3.1 Document Highlights

The Ainslie Wood/Westdale Neighbourhoods Transportation Master Plan (TMP) forms part of the Ainslie Wood/Westdale Secondary Plan, and was adopted by City Council in October 2003. The TMP contains a number of policies largely aimed at encouraging the use of more energy-efficient forms of transportation and reducing single-occupant automobile use. These include the following:

- Traffic calming measures on local streets east of McMaster University (e.g., Forsyth Ave., Arnold St., Traymore Ave.), to direct through traffic to arterial and collector roads;
- Additions and extensions to the bicycle network, notably the extension of the Hamilton-Brantford Rail Trail from Ewen Road East to Highway 403 and toward downtown;
- Improvements to pedestrian facilities and traffic calming measures along Cootes Dr. in the vicinity of Sanders Blvd; and
- A transit review, including the potential to establish a transit terminal in the area.



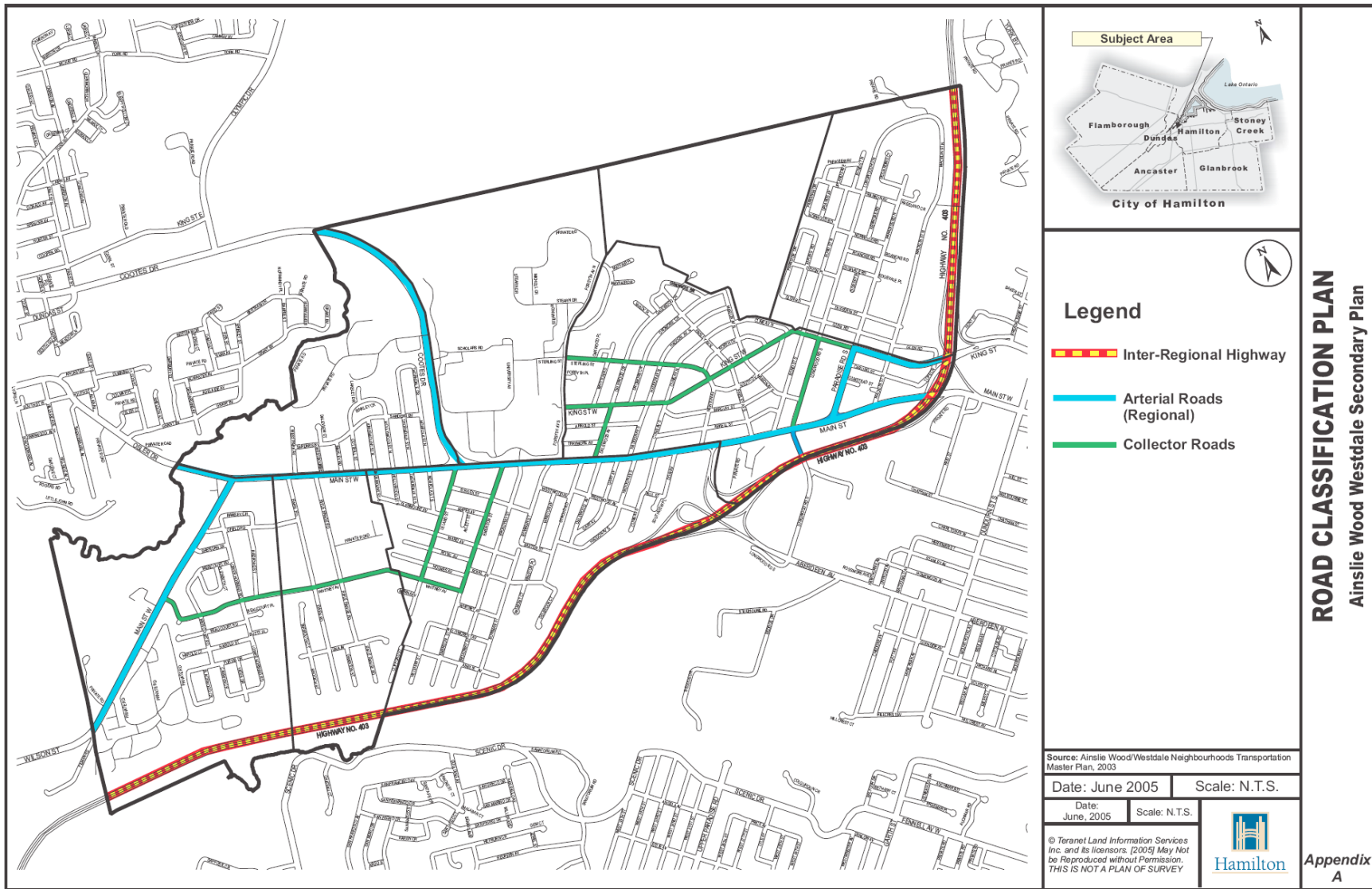
A road classification system for Ainslie Wood/Westdale was defined and is illustrated in *Exhibit I*. This road classification system is not part of the Secondary Plan, and may be revised without amendment to the Plan. The road classification for Ainslie Wood Westdale will comply with the policy paper guidelines for the City-wide Transportation Master Plan, when these are adopted.

#### 3.2 Infrastructure Improvements Incorporated Into HTMP Modeling

No significant road network improvements are identified that would impact the HTMP model.



**Exhibit 1 – Ainslie Wood Westdale Secondary Plan – Road Classification**



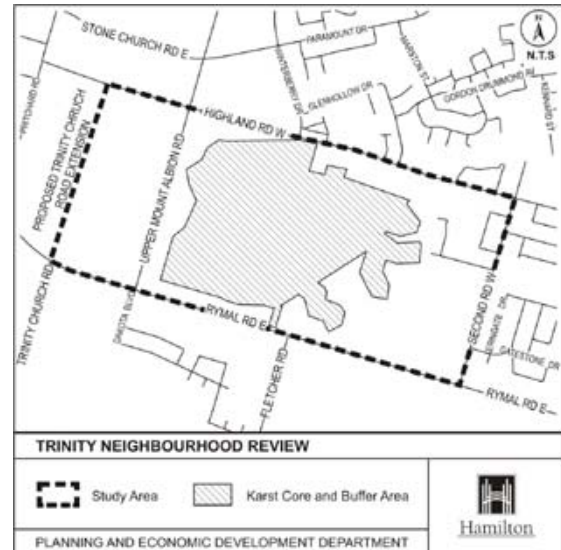
## 4.0 TRINITY NEIGHBOURHOOD PLAN REVIEW

### 4.1 Document Highlights

The Trinity area is bounded by:

- Highland Road (to the north);
- Rymal Road (to the south);
- Second Road West (to the east); and
- A proposed new road in the vicinity of Trinity Church Road (to the west).

A new land use plan must be prepared to guide development of this area. Future plans must also recognize the intended closure of Second Road West and Upper Mount Albion Road, and the construction of the Trinity Church Road extension. The interior collector road must be located accordingly to allow access through the neighbourhood. The Public Works Department is studying traffic access, and has held previous public meetings on these matters for the Rymal Road Planning Area Study (ROPA 9).



The first Public Information Centre on this study was held on Monday March 27, 2006. As a recap to the recommendations and plans discussed at PIC #1, the following are the planning recommendations for the Rymal Road Planning Area:

- Widen Rymal Road from Trinity Church Road to Regional Road 56;
- Widen Regional Road 56 from Rymal Road to approximately 900 m to the south; and
- A new road link from Stone Church Road/Red Hill Valley Parkway ramps to Rymal Road (on an alignment to be determined).

#### Phase 2 Solutions

- Implement new road connections as soon as possible to provide additional north-south capacity:
  - A new collector road in the Trinity Neighbourhood;
  - New roadway from Stone Church Road/Red Hill Valley Parkway to Rymal Road;
  - Implement road closure on Second Road West north of Gatestone Drive, and on Upper Mount Albion Road;
  - Closure of Second Road West should be coordinated with the construction of the new collector road;
  - Closure of Upper Mount Albion Road should be coordinated with a new north-south link from Stone Church Road to Rymal Road.

The Collector Road Potential Alignments presented in the first PIC is illustrated in *Exhibit 2*; the Site Analysis is illustrated in *Exhibit 3*.

### 4.2 Infrastructure Improvements Incorporated Into HTMP Modeling

Preliminary road recommendations from this plan were incorporated into the 2021 network.

**Exhibit 2 – Trinity Neighbourhood Plan Review – Collector Road Potential Alignments**

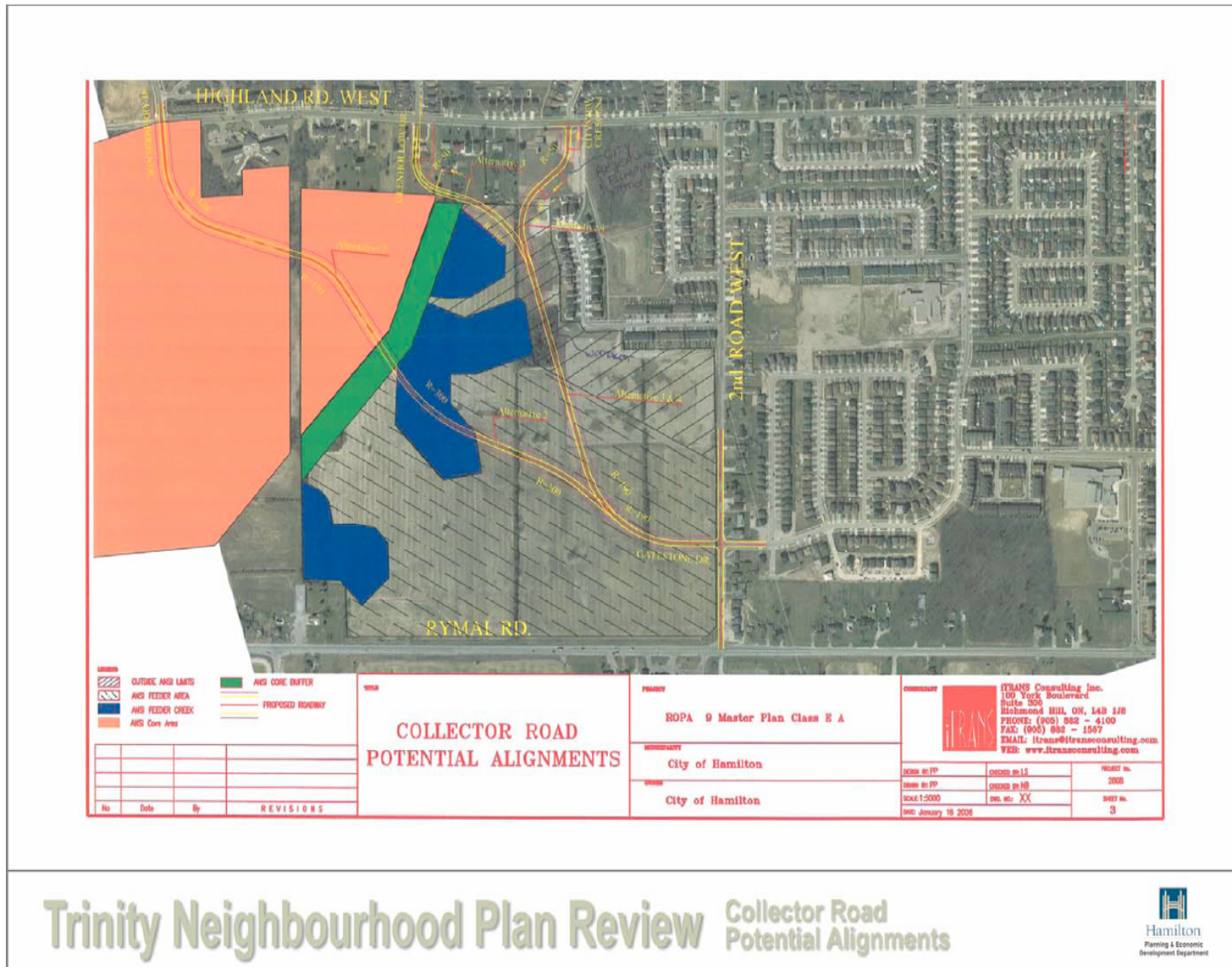
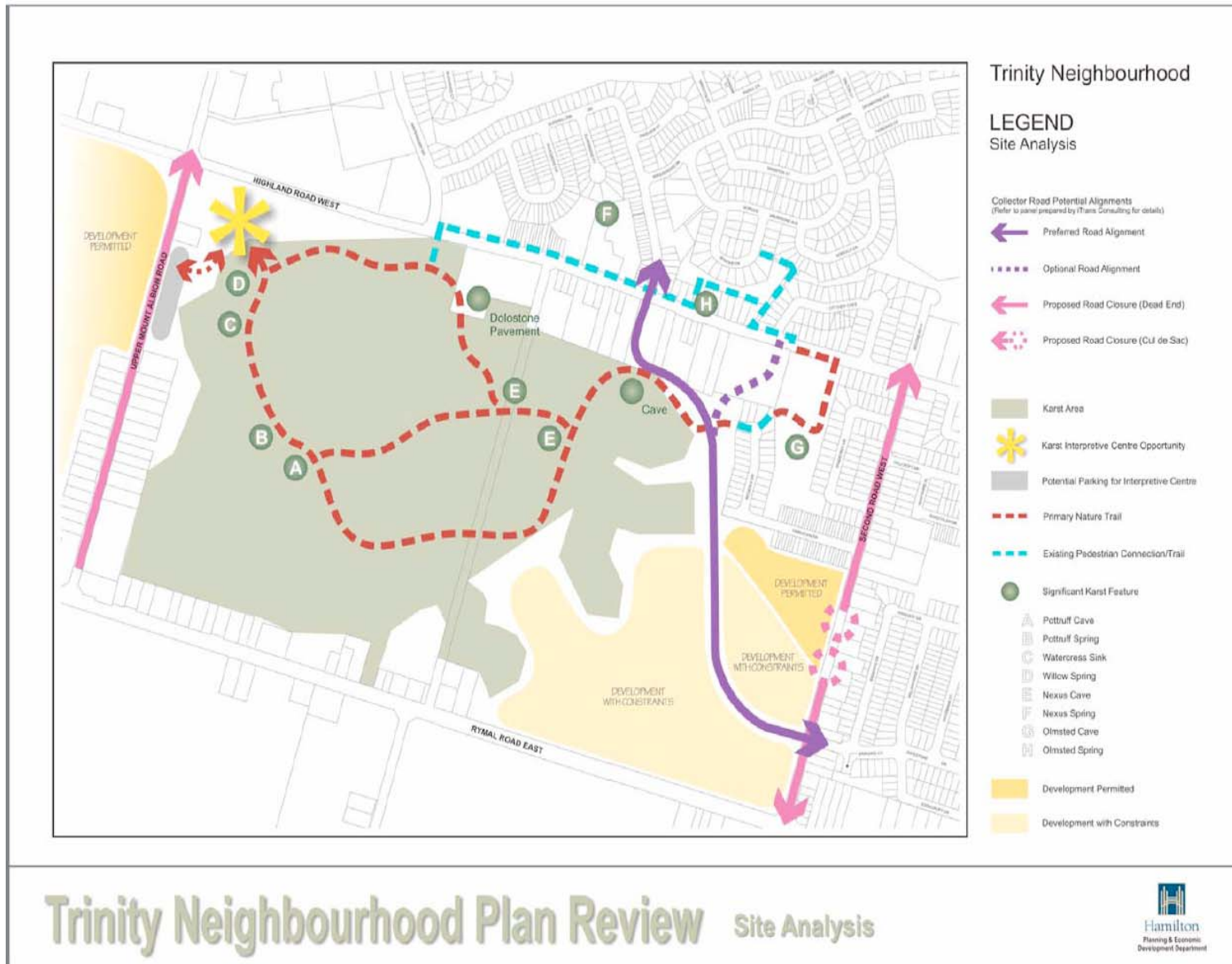




Exhibit 3 – Trinity Neighbourhood Plan Review – Site Analysis

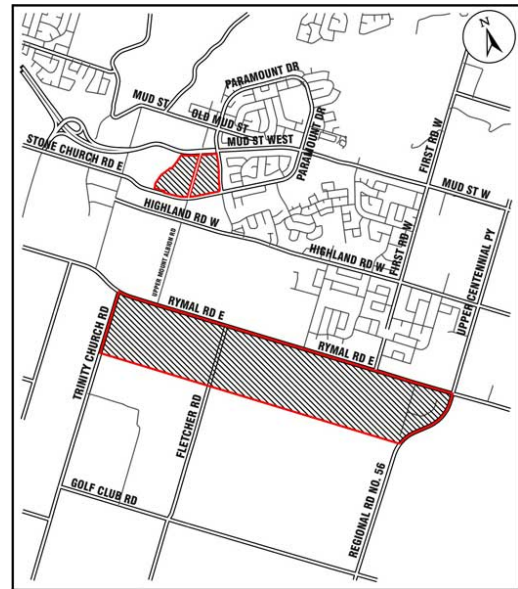


## 5.0 RYMAL ROAD PLANNING AREA STUDY (ROPA 9)

### 5.1 Document Highlights

Regional Official Plan Amendment (ROPA) 9 redesignated 190 hectares (470 acres) of land in this area, to allow urban development in the area south of Rymal Road, between Trinity Church Road and Centennial Parkway (the Rymal Road Planning Area). It is expected that the area will support 3,590 residential units and 21.4 hectares (53 acres) of large-scale and smaller-scale commercial space. The City of Hamilton initiated a Master Plan Class EA study to determine the transportation infrastructure required to service this development.

The study's findings included the following recommended roadway improvements:



- A widening of Rymal Road from Centennial Parkway to Trinity Church Road;
- A widening of Centennial Parkway (Regional Road 56) from Rymal Road for approximately 900 metres southerly;
- A new arterial road from Stone Church Road to Rymal Road, in the area of Trinity Church Road, providing an additional point of access from the Lincoln M. Alexander Parkway and Red Hill Valley Parkway;
- A new collector road between Second Road West/Gatestone Drive and the Highland Road/Glenhollow Drive intersections;
- In conjunction with the new collector road, the closure of Second Road West north of Gatestone Drive (via two culs-de-sac); and
- In conjunction with the new arterial road, the closure of Upper Mount Albion Road (location to be determined through the upcoming Trinity Church Corridor EA).

The above items comprise the ultimate build-out conditions. In the interim, until the recommended network is in place, Phase 1 improvements are recommended, consisting of improved traffic control measures such as additional speed/advisory signage and pavement markings to improve safety on Second Road West and Upper Mount Albion Road.

### 5.2 Infrastructure Improvements Incorporated Into HTMP Modeling

The HTMP model will need to incorporate the Rymal Road and Centennial Parkway widenings; the new arterial connection from Stone Church Road (and the parkway network) to Rymal Road; and the new collector road. The Second Road West closure will not impact the model, since Second Road West is not currently included in the existing conditions model. The Upper Mount Albion Road closure may need to be included, depending on the Trinity Church Corridor EA findings.



**Exhibit 4 – ROPA 9 – Collector Road Potential Alignments**

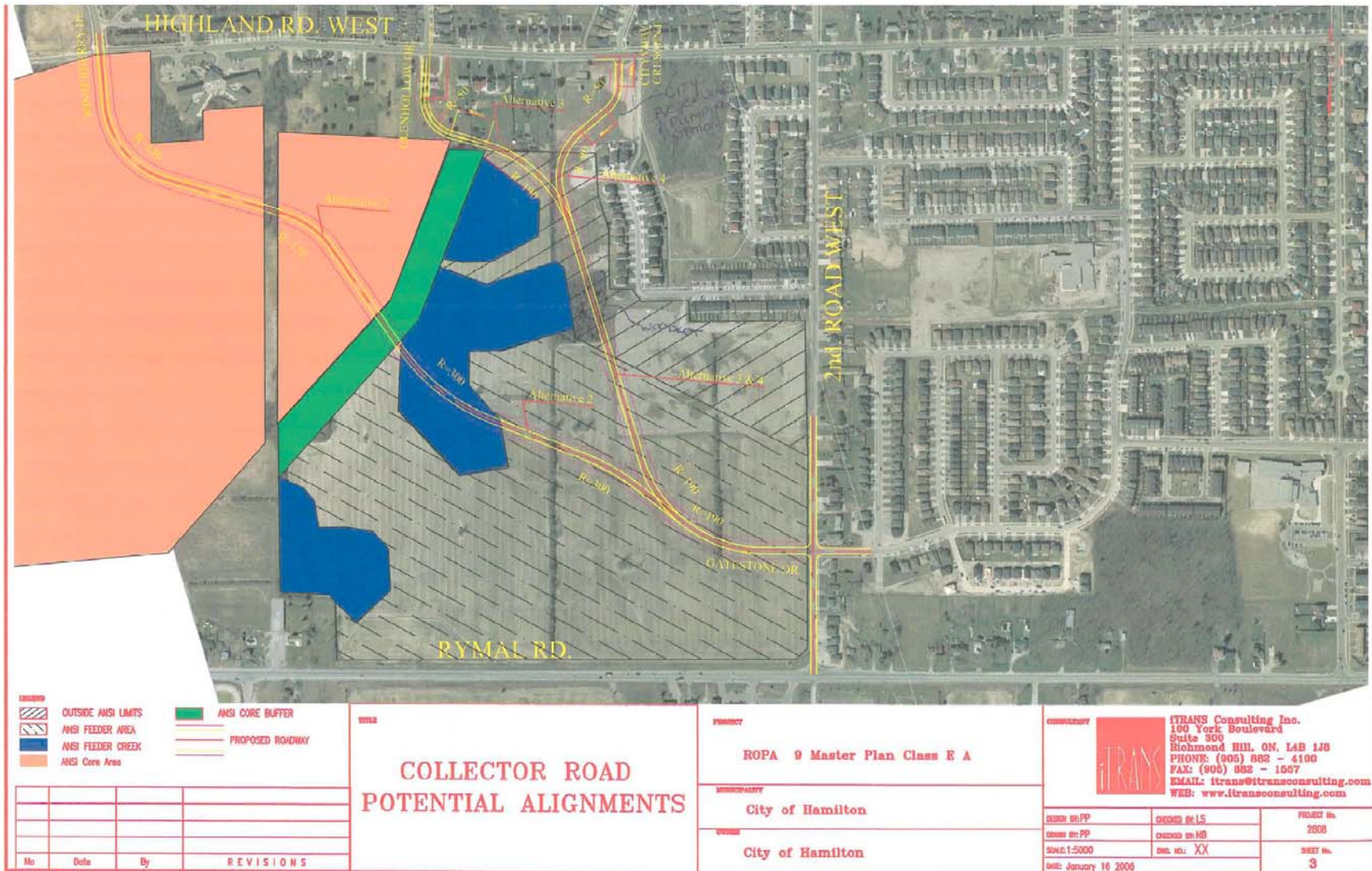
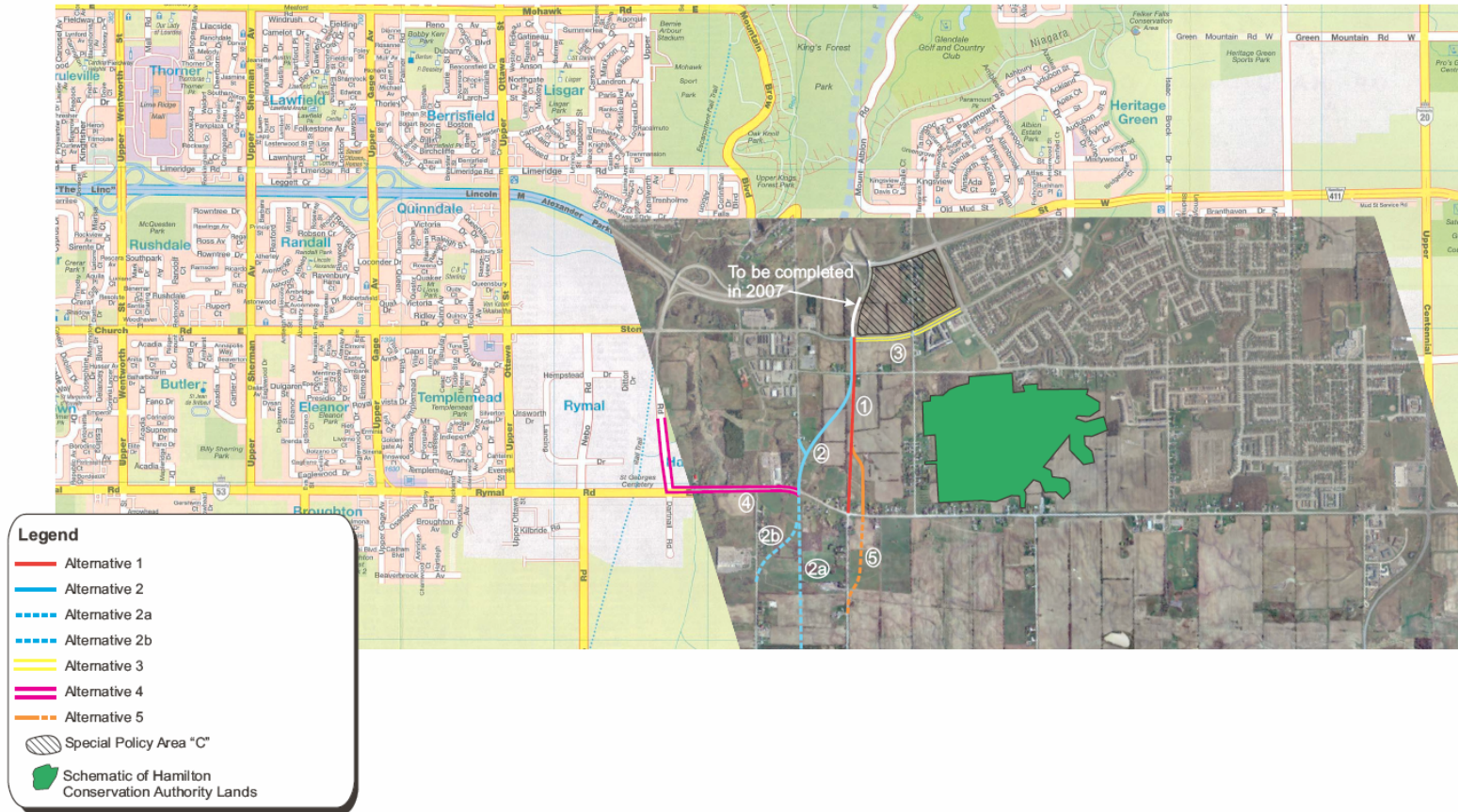


Exhibit 5 – ROPA 9 Conceptual Alignments

City of Hamilton

Trinity Neighbourhood



Not to Scale  
 January 2006

Trinity Church Conceptual Alignments

ITRANS



## 6.0 HAMILTON-WENTWORTH OFFICIAL PLAN - FRUITLAND ROAD

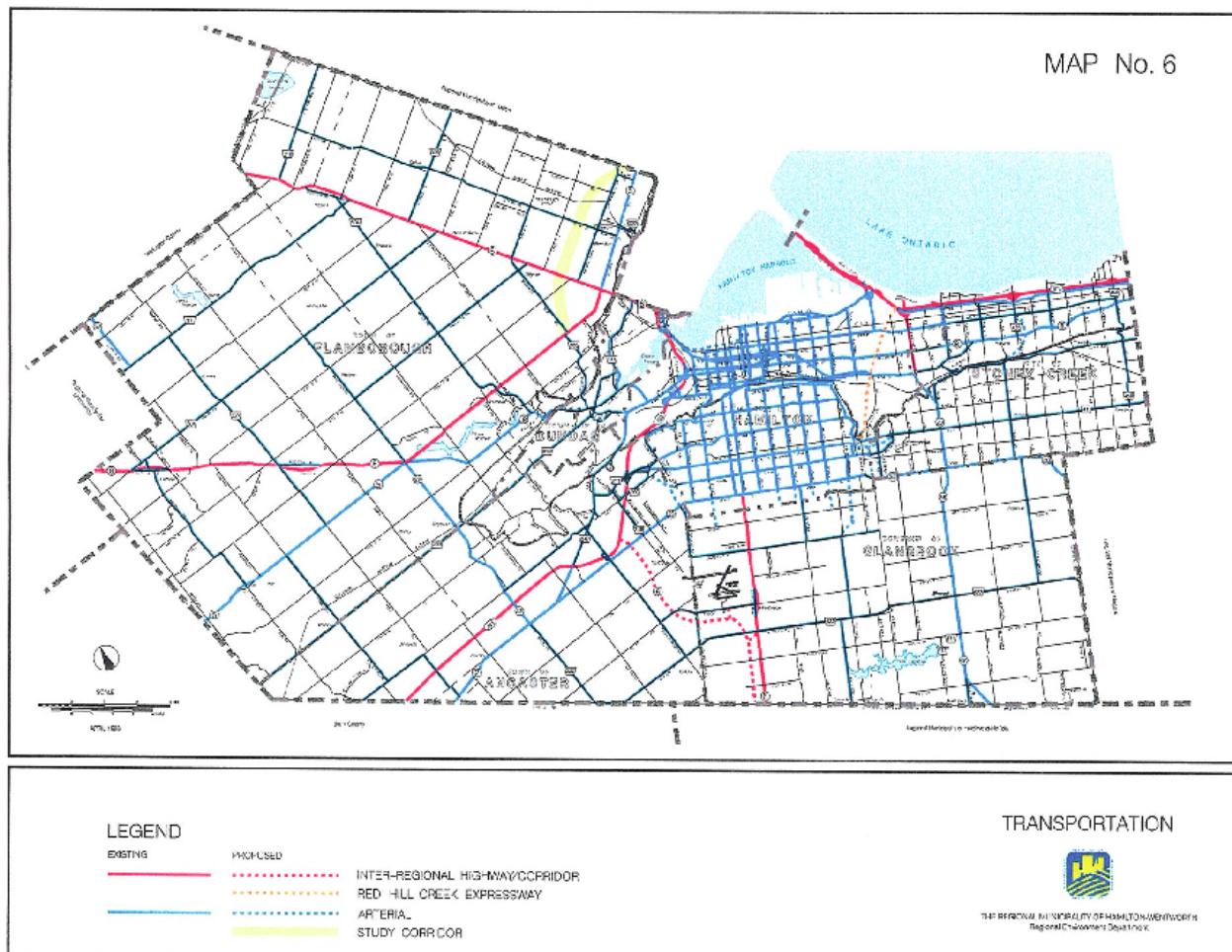
### 6.1 Document Highlights

The Transportation Schedule in the 2000 Hamilton-Wentworth Official Plan identifies a proposed Fruitland Road bypass between Barton Street and Ridge Road. This was also identified in the May 2004 Hamilton Development Charges Background Study – Transportation Projects. Based on conversations with municipal staff, the extension of Fruitland Road was a Regional initiative that was to provide another major access up the escarpment. Based on existing and projected travel patterns, it is believed that traffic across the escarpment can be accommodated using the existing crossings.

### 6.2 Infrastructure Improvements Incorporated Into HTMP Modeling

No identified changes to the road network were identified for the HTMP.

**Exhibit 6 - 2000 Hamilton Wentworth Official Plan Transportation Schedule**





## 7.0 NORTH GLANBROOK INDUSTRIAL BUSINESS PARK TRANSPORTATION MASTER PLAN

### 7.1 Document Highlights

The North Glanbrook Industrial Business Park (NGIBP) Transportation Master Plan was completed to support the development of the lands in accordance with the current approved land uses identified in the Secondary Plan for the area. The study was necessary in order to plan for the expected increase in traffic on roadways within and adjacent to the NGIBP when development occurs. It is anticipated that the opening of the Red Hill Valley Parkway (RHVP) in late 2007 will be an impetus for the development of these lands.

The area is bounded (approximately) by Rymal Road to the north, Trinity Church Road to the east, Dickenson Road to the South, and Upper Ottawa Street to the West.

### 7.2 Infrastructure Improvements Incorporated Into HTMP Modeling

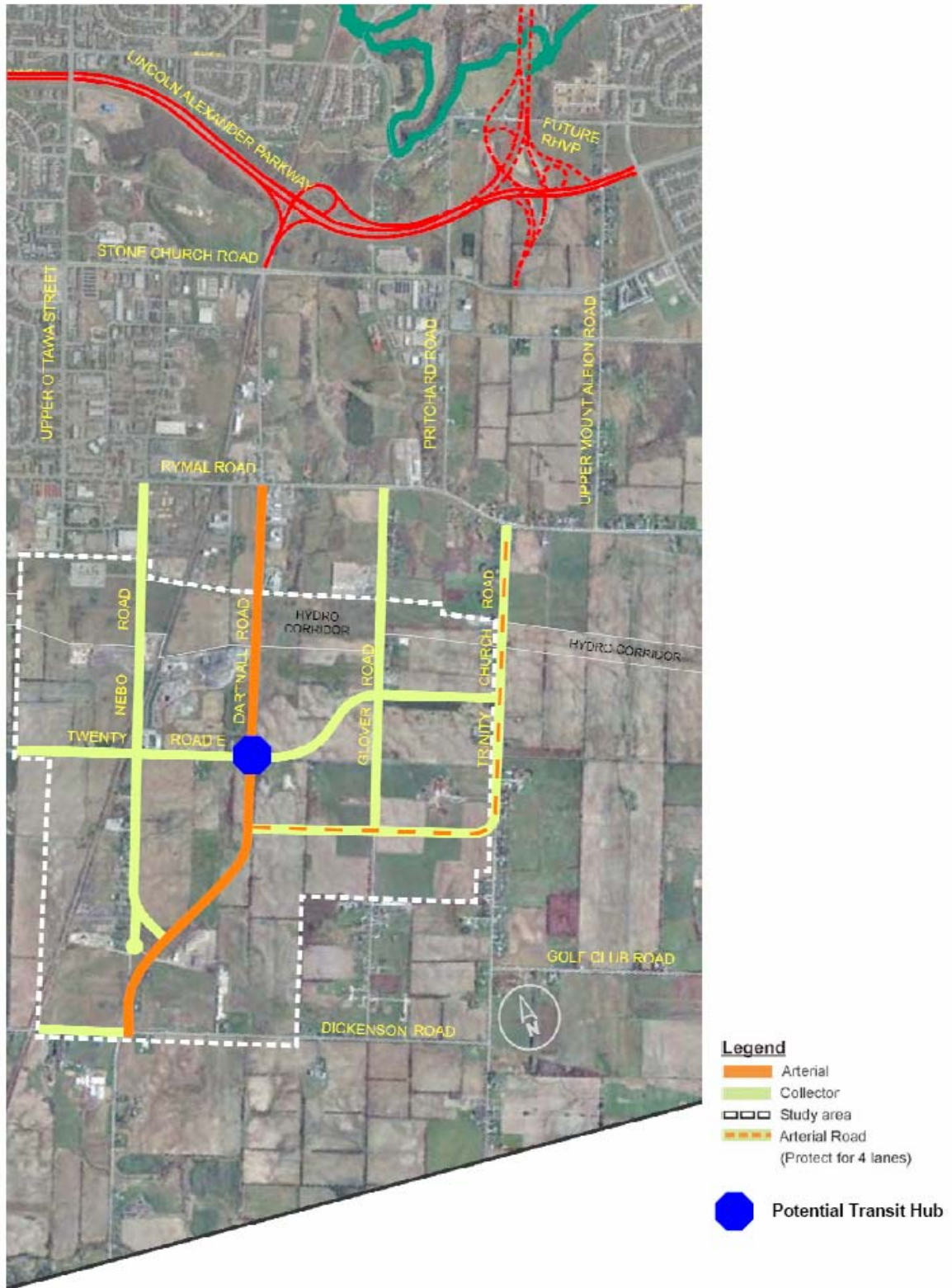
The preferred road network recommended in the TMP is illustrated in Exhibit 7. Recommended Schedule B projects include:

- **Nebo Road** (Rymal Road to future Dartnall Road Extension) – roadway reconstruction (2 lanes) with intersection improvements;
- **Twenty Road** (600m west of Nebo Road to future Dartnall Road Extension) – roadway reconstruction (2 lanes) with intersection improvements; and
- **Glover Road** (Rymal Road to approximately 1950m south) – roadway reconstruction (2 lanes) with intersection improvements.

This EA only completes Phases 1 and 2 of the Class EA process. The remaining phases (i.e. phases 3 and 4) required for Schedule C projects will be completed subsequent to this Master Plan. Further EA Approvals are required for the following recommended Schedule C projects:

- **Dartnall Road Extension** (Rymal Road to Dickenson Road)
  - widen to 4 lanes from Rymal to existing terminus at hydro corridor
  - new 4 lane arterial road from hydro corridor to Dickenson Road
- **Twenty Road** (from future Dartnall Road Extension to Trinity Church Road) – Two-lane collector road on a new alignment; and
- **Trinity Church Road** – (Rymal Road to future Dartnall Road Extension) two lane arterial road (protect for four lanes).

### Exhibit 7 – Preferred Transportation Network



## 8.0 SETTING SAIL

### 8.1 Document Highlights

*Setting Sail* is the City's long-term planning project for Hamilton's West Harbour. The West Harbour area has witnessed tremendous change in recent years, and is expected to undergo additional changes in the future, both in terms of waterfront attractions and other general redevelopment areas in the North End further from the waterfront.

An initial component of the study was an updated assessment of the need for the Perimeter Road, which had been planned for many years along the rail corridor south of Strachan Street. The *Needs Assessment for the Hamilton Perimeter Road* (July 29, 2003) concluded that the Perimeter Road will not be required for traffic capacity reasons, both for existing and projected future volumes. Therefore, it was recommended that the Perimeter Road concept be abandoned and that north-south connections be strengthened.

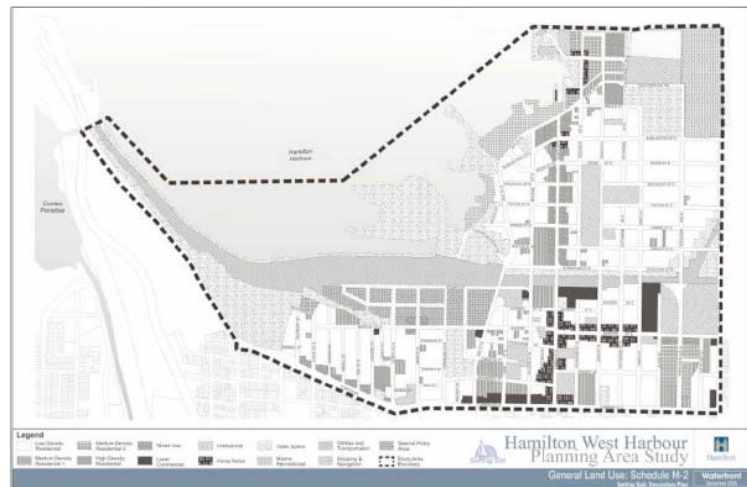


Figure 5.1  
General Land Use Plan (from *Setting Sail—Secondary Plan for the West Harbour Planning Area, Schedule M-2*)

The City of Hamilton, in August 2002, initiated an Integrated Land Use, Transportation and Infrastructure Master Plan Study for the area bounded by York Boulevard to the west, Cannon Street to the south, Wellington Street to the east and Hamilton Harbour to the north. The study, known as the West Harbour Planning Area Study or “Setting Sail”, is being completed under the Municipal Class Environmental Assessment process.

The Recommended Transportation Network for the West Harbour Planning Area is illustrated on **Figure 5.2**. It consists of:

- **Primary Mobility Streets**—Similar to the Downtown Mobility and Primary streets, the Primary Mobility Streets within the West Harbour study area provide for the mobility of through traffic, people and goods, connecting major activity centres and neighbourhoods within the study area, and connecting to points outside the area. The right-of-way of these streets is generally 20-m wide, however, widening may be required beyond this at intersections to allow for daylighting triangles at all intersections, or auxiliary (right or left-turn) lanes at intersections with Primary Mobility Streets and Neighbourhood Mobility Streets. Streets in this classification include:
  - York Boulevard;
  - Cannon Street from York Boulevard to Wellington Street/Victoria Avenue;
  - Barton Street from James Street to Wellington Street/Victoria Avenue;
  - Burlington Street from James Street to Wellington Street/Victoria Avenue;

- Guise Street/Dock Service Road/Ferguson Avenue from James Street to Burlington Street;
- Bay Street from Cannon Street to Strachan Street;
- James Street from Cannon Street to Guise Street;
- John Street from Cannon Street to Strachan Street; and
- Wellington Street (and Victoria Avenue, its one-way pair located outside the study area).

Current right-of-way designations for the following streets will remain:

- York Boulevard—36.58 m;
- Cannon Street—26.21 m;
- Wellington Street—26.21 m;
- Victoria Avenue—24.38 m; and
- York Boulevard/Wilson Street—26.21 m.

Potential cross-sections for Primary Mobility Streets consist of the following:

- One to two through lanes in each direction for cars, trucks and transit vehicles;
- On-street parking may be permitted, but may be limited to non-peak hours or restricted;
- Cyclists can generally be accommodated in shared lanes or on-street bike lanes;
- Sidewalks are required on both sides to accommodate pedestrians, and planting strips to separate pedestrians from the roadway may be provided where they do not diminish residential front yards;
- Traffic control at intersections will establish a higher order of right-of-way on the Primary Mobility Street compared to the side streets and may consist of traffic signals or stop control on the side streets; and
- These streets are expected to be part of the main transit routes through the study area. Transit service may be more frequent than 15-minute headways.

Potential cross-sections are illustrated on **Figure 5.3** and excludes current one-way streets.

- **Neighbourhood Mobility Streets**—Similar to the Downtown Traditional and Secondary streets, the Neighbourhood Mobility Streets within the West Harbour study area provide for the mobility of traffic, people and goods within the study area and to serve the local land uses. The right-of-way of these streets is 20-m wide, however, widening may be required beyond this at intersections to allow for day-lighting triangles at all intersections, or auxiliary (right or left-turn) lanes at intersections with Primary Mobility Streets and Neighbourhood Mobility Streets. Streets in this classification include:
  - Barton Street from Locke Street to James Street;
  - Strachan Street from Bay Street to John Street;
  - Stuart Street west of Bay Street;
  - Burlington Street west of James Street;
  - Guise Street west of James Street;
  - Locke Street from York Boulevard to Barton Street;
  - Queen Street;
  - Hess Street;

- Bay Street from Strachan Street to MacNab Street/Guise Street;
- John Street from Strachan Street to Burlington Street; and
- Ferguson Avenue from Cannon Street to Burlington Street.

Potential cross-sections for Neighbourhood Mobility Streets consist of the following:

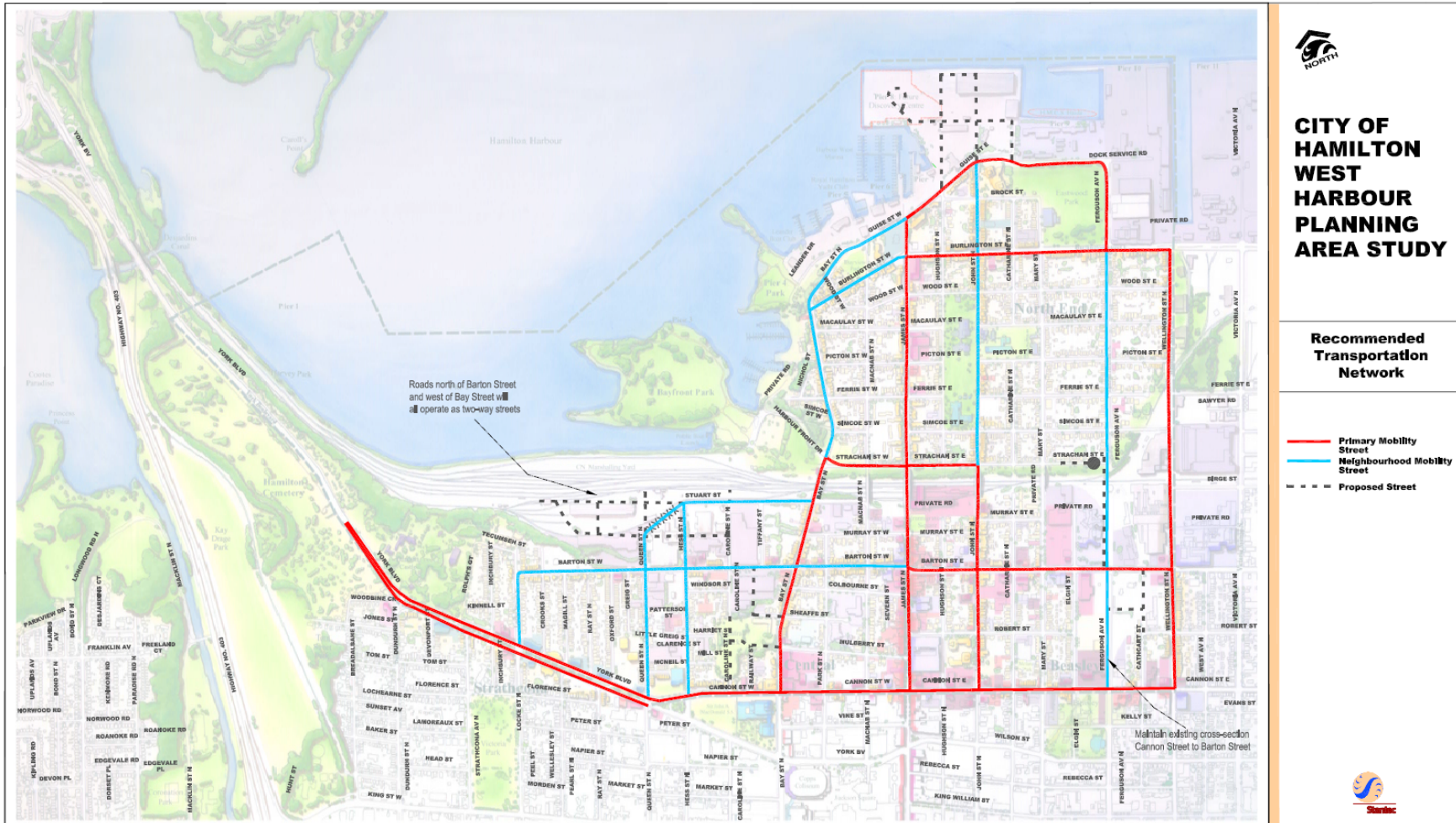
- One through lane in each direction for cars, trucks and transit vehicles;
- On-street parking may be permitted, but may be limited to non-peak hours or restricted to one side of the street;
- Cyclists can generally be accommodated in shared lanes or on-street bike lanes;
- Sidewalks are required on both sides to accommodate pedestrians, and planting strips to separate pedestrians from the roadway will be provided on Guise Street where they do not diminish residential front yards;
- Traffic calming features may be implemented to encourage through traffic to use the Primary Mobility Streets or to operate at a slower speed, but the features must maintain the integrity of the grid network and not shift traffic to local streets; and
- They may carry local transit routes in the study area. Transit service will be less frequent than 15-minute headways.

## ***8.2 Infrastructure Improvements Incorporated Into HTMP Modeling***

Street definitions were incorporated into the 2021 model in instances where size of ROW affected capacity.



**Exhibit 8 - West Harbour Planning Area Study – Recommended Transportation Network**

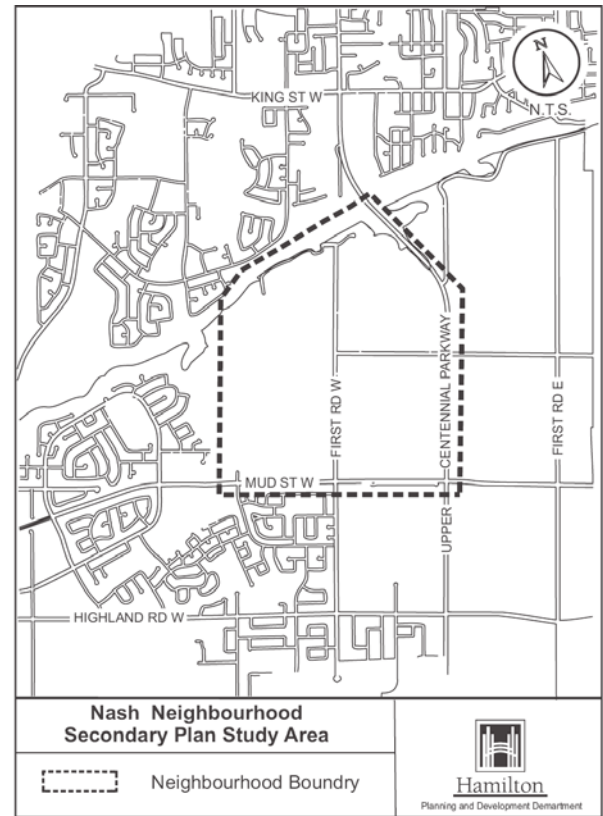


## 9.0 NASH NEIGHBOURHOOD SECONDARY PLAN

### 9.1 Document Highlights

The City of Hamilton is currently undertaking a Secondary Plan for the Nash Neighbourhood, a 319-hectare site located within the former City of Stoney Creek and generally bounded by the Niagara Escarpment, Centennial Parkway, Mud Street, and Felker Creek. The purpose of the study is to establish land uses, a transportation network, community facilities, infrastructure requirements, development standards and to protect the existing natural features and environmental resources within the subject lands.

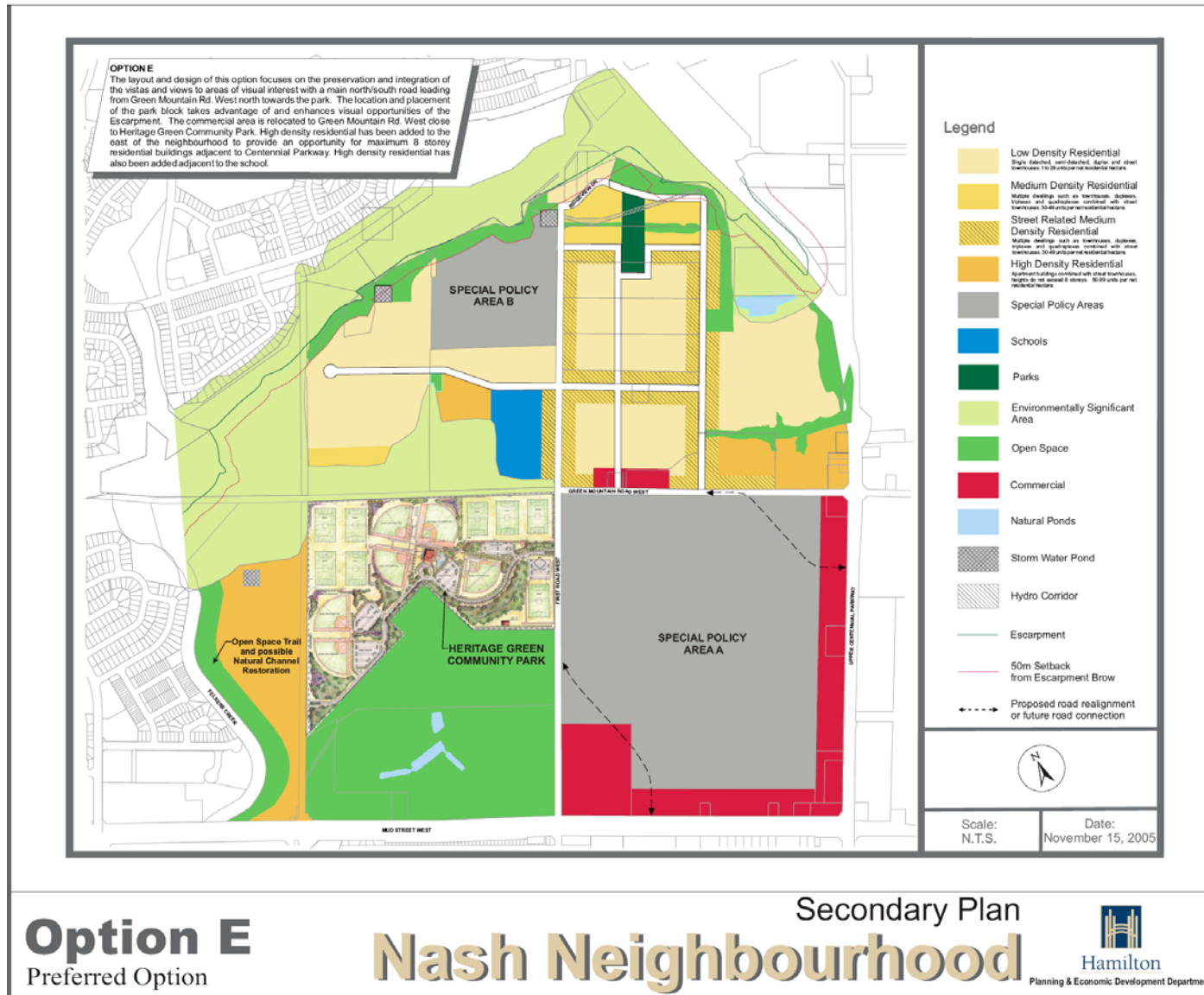
The second Public Information Centre was held in November 2005, at which a preferred land use plan was presented (Option E). This plan included a mix of low-, medium-, and high-density housing north of Green Mountain Road, with a small neighbourhood commercial node near Green Mountain Road and First Road West, and larger-scale commercial development along Mud Street and Centennial Parkway. Connections to the surrounding arterial roadway network will be via proposed realignments of the existing First Road West and Green Mountain Road.



### 9.2 Infrastructure Improvements Incorporated Into HTMP Modeling

The document indicates no significant road improvements are warranted on external roadways, other than some local intersection improvements and the possible relocation of the Mud Street/First Road West and Centennial Parkway/Green Mountain Road intersections. There will also likely be modifications to First Road West and Green Mountain Road within the neighbourhood, although the study does not specifically address internal collector road cross-sections. The document does note that such improvements would be subject to the Class EA process.

**Exhibit 9 – Nash Neighbourhood Secondary Plan – Preferred Option**

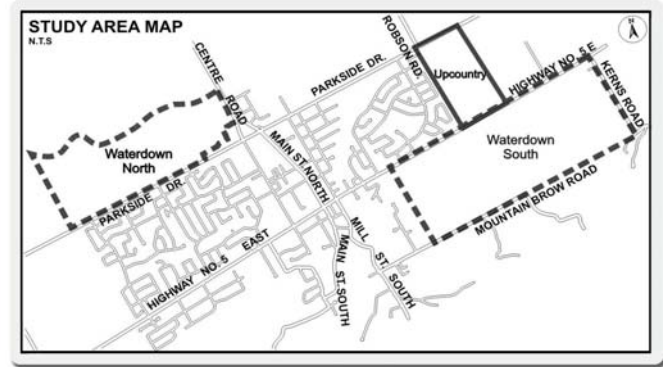




## 10.0 WATERDOWN NORTH & WATERDOWN SOUTH SECONDARY PLAN & CLASS ENVIRONMENTAL ASSESSMENT

### 10.1 Document Highlights

The City of Hamilton has initiated a number of studies to address future development within the Waterdown North and Waterdown South areas. The purpose of the studies is to establish land uses, a transportation network, community facilities, infrastructure requirements, and development standards, and to protect the existing natural features and environmental resources within these two areas.



#### Waterdown North

The City has undertaken an integrated land use study with Urban Design Guidelines for the Waterdown North Community that also integrates a Water/Wastewater Master Plan, Master Drainage Plan and Collector Road Master Plan following the Municipal Engineers Association Municipal Class Environmental Assessment (EA) Process (June 2000) as per Section A.2.9. The Waterdown North Secondary Plan was approved by Council on March 28, 2007. The Master Plans are currently under public review pursuant to the EA process.

The Collector Road Master Plan that was prepared for the Waterdown North Community followed Phases 1 and 2 of the Municipal Class Environmental Assessment planning process. The Master Plan identifies the recommended collector roads to service the future growth of the Waterdown North community while minimizing environmental impacts. The collector roads identified in Phases 1 and 2 are subject to the Schedule C requirements of the Municipal Engineers Association Class Environmental Assessment.

#### Waterdown South

The City has undertaken an integrated land use study with Urban Design Guidelines for the Waterdown South Community that also integrates the Water/Wastewater Master Plan identified above and a separate Collector Road Master Plan following the Municipal Engineers Association Municipal Class Environmental Assessment (EA) Process (June 2000) as per Section A.2.9. A Subwatershed Study is also underway to ensure land use changes are compatible with natural systems.

Alternative concept plans have been prepared for the Waterdown South Secondary Planning area and were presented to the public on January 24, 2006. A preferred concept is being developed based on public input, as well as the findings of various technical studies. The City anticipates bringing a preferred concept forward for public review in the fall of 2007.

#### Waterdown/Aldershot Transportation Master Plan

Both the Waterdown North and Waterdown South communities are affected by the recommendations of the Waterdown/Aldershot Transportation Master Plan. The Council adopted Waterdown North Secondary Plan restricts development within a broad corridor until

such time as the alignment of the recommended east-west arterial road that runs through this community has been appropriately defined.

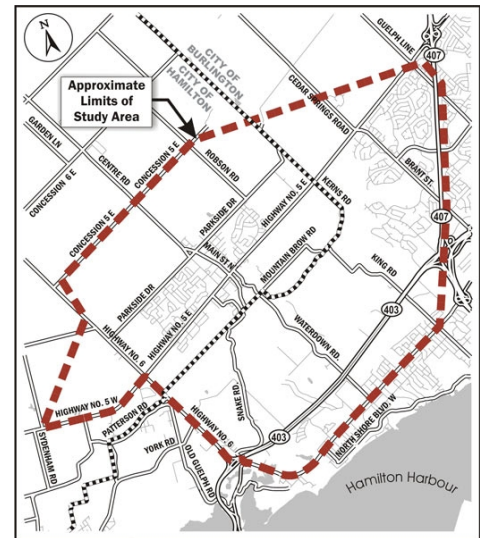
### ***10.2 Infrastructure Improvements Incorporated Into HTMP Modeling***

Plans for Waterdown North and South are preliminary at this point and not worth noting as part of the City-wide road network. Plans for the Waterdown/Aldershot Transportation Master Plan are noted in the following section.

## 11.0 WATERDOWN/ALDERSHOT TRANSPORTATION MASTER PLAN

### 11.1 Document Highlights

The Waterdown/Aldershot Transportation Master Plan (WATMP) is a study jointly undertaken by the City of Hamilton, the City of Burlington, and the Region of Halton, which addresses the transportation improvements required to service three separate residential developments expanding the urban boundary in the Waterdown area (Waterdown North, Waterdown South, and Upcountry Estates). The WATMP will provide input to Official Plan Amendment (OPA) 28, which includes the urban boundary expansion for all three developments. The study was completed in 2006 and approved by Hamilton Council in March 2006.



### 11.2 Infrastructure Improvements Incorporated Into HTMP Modeling

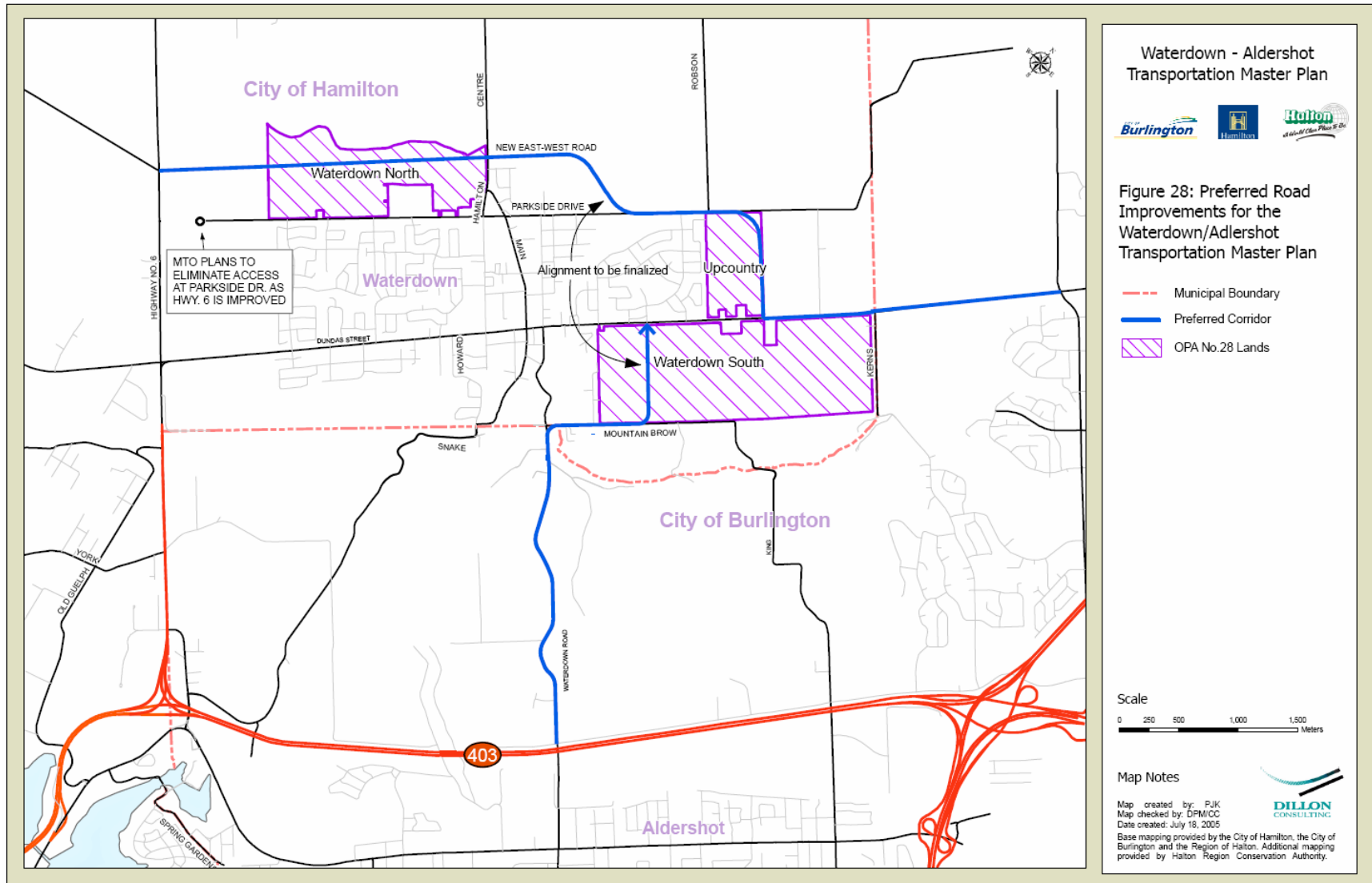
The study identified several corridors for new construction or for widening:

- A new two-lane east-west arterial extending easterly from the Highway 6/4<sup>th</sup> Concession West intersection, parallel to Parkside Drive, and curving southward to join Parkside Drive west of Grindstone Creek;
- A new two-lane north-south minor arterial extending southerly from Parkside Drive (between Robson Road and Evans Road) to Dundas Street;
- Widening of Parkside Drive from two to four lanes between the new east-west and north-south arterials;
- Widening of Dundas Street from four to six lanes between the above north-south arterial and Brant Street;
- A new two-lane north-south minor arterial extending southerly from Dundas Street (in the vicinity of Burke Street) to Mountain Brow Road;
- Widening of Mountain Brow Road from two to four lanes between the new north-south road and Waterdown Road; and
- Widening of Waterdown Road from two to four lanes between Mountain Brow Road and the North Service Road (Highway 403 interchange).

These road improvements were incorporated into the HTMP model.

The report also refers to the proposed modification (by the Ontario Ministry of Transportation) of the existing Waterdown Road/Highway 403 interchange, with the N/S-W ramp and North Service Road realigned to the north, and with new N/S-E and E-N/S ramps constructed to permit access to and from the east. In addition, the report notes that the Parkside Drive/Highway 6 intersection is expected to be closed as part of MTO efforts to control access to Highway 6.

**Exhibit 10 – Waterdown/Aldershot Transportation Master Plan – Recommended Transportation Network**



## 12.0 STRATHCONA SECONDARY PLAN

### 12.1 Document Highlights

The Strathcona Secondary Plan will provide a land use plan and policies to guide the future development of this area. This will be formalized as an OPA. A parallel Community Strategy will be prepared to address non land use issues.

The Strathcona Neighbourhood is located west of downtown Hamilton, and is bounded by Highway 403, the CNR rail line, Queen Street and Main Street. The Secondary Plan and Community Strategy will be initiated in October 2005, and be completed within a 16 – 18 month timeframe, by March 2007.



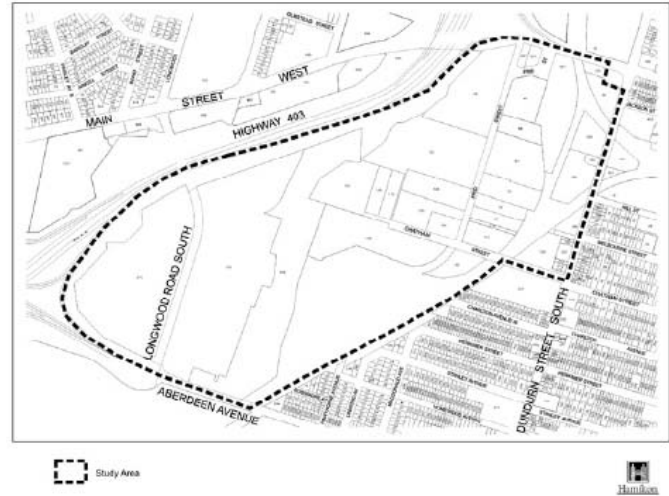
### 12.2 Infrastructure Improvements Incorporated Into HTMP Modeling

The recommendations will examine the design of York Boulevard, including bicycle lanes, on-street parking, traffic calming, wider sidewalks, however, alternatives will not be presented until June 2006 and recommended alternative will not be known until October 2006. Based on this information, and the local nature of this project, no significant road network improvements were identified that would impact the HTMP model.

## 13.0 WEST HAMILTON INDUSTRIAL AREA MCMASTER INNOVATION PARK LAND USE & SERVICING REVIEW

### 13.1 Document Highlights

The City of Hamilton has initiated a land use and servicing review of the West Hamilton Industrial Area. The study area includes the land to the south of Main Street West, west of Dundurn Street South and the CP railway line, north of Aberdeen Avenue, and east of Highway 403, as illustrated on the map. It contains the former Camco manufacturing site along both sides of Longwood Road between Highway 403 and Aberdeen Avenue. This site has been acquired by McMaster University for development of the McMaster Innovation Park. Public Information Centre #1 was held on October 11<sup>th</sup>, 2005.



Traffic impacts will be assessed through two studies: McMaster University has retained a traffic analyst as part of the consulting team preparing its master plan for the McMaster Innovation Park. In addition, the City of Hamilton has recently commenced the Kirkendall Neighbourhood Traffic Management Study, following the Municipal Class Environmental Assessment process. The study area for the traffic study includes both the Kirkendall North and South neighbourhoods. It covers the study area for the West Hamilton Industrial Area and extends further east to Queen Street, and south to the escarpment. The study will consider parking supply and demand, onstreet commercial vehicle loading, neighbouring traffic infiltration, traffic calming opportunities, and traffic impacts associated with the redevelopment of the former Camco site by McMaster University. The analyses will take into account the traffic that will be generated by the McMaster Innovation Park to determine what or if any new transportation infrastructure is needed and what mitigation process can be implemented to alleviate the impacts of the development on the adjacent neighbourhood, if necessary.

The Ministry of Transportation also will require a comprehensive traffic impact analysis which clearly addresses the impacts of anticipated traffic volumes generated by the proposed redevelopment in the West Hamilton Industrial Area/future McMaster Innovation Park on the Highway 403 interchanges. MTO's permit control area increases to 800 metres (2,625 feet) from any point along the Highway 403 right-of-way for large traffic generators, such as shopping centres, stadiums, theatres. The future traffic analysis of development proposals would determine if this expanded control area is warranted in this case, and should identify any recommended Highway 403 improvements.

### 13.2 Infrastructure Improvements Incorporated Into HTMP Modeling

The study is early in the process and no identified changes to the road network were identified for the HTMP. However, the study does recommend future Hwy 403 improvements.

## **14.0 DOWNTOWN TRANSPORTATION MASTER PLAN**

### ***14.1 Document Highlights***

The Downtown Transportation Master Plan was completed in 2001. It identified a number of key principles, including the following:

- Support a mix of land uses and built form, and ensure development can be supported by the transportation system and by appropriate land use and parking controls;
- Strengthen the links between the core and the harbour;
- Provide short-term business oriented parking, discourage long-term parking and provide public parking in strategically located structures or lots;
- Reduce the number of off-street parking lots and replace them with buildings, parkettes and landscaping;
- Divert through-traffic around the Core and implement traffic-calming measures where appropriate;
- Discourage through-traffic on local streets and in residential neighbourhoods; and
- Give priority to pedestrian safety over vehicles and create an attractive pedestrian environment.

The most significant recommendation of the plan was the conversion of a number of arterial and collector roads in the downtown area from one-way to two-way operations, including all or part of James Street, John Street, Wilson Street, King Street, Hunter Street, Park Street, MacNab Street, Hughson Street, Rebecca Street, King William Street, Charlton Avenue, St. Joseph's Drive, Hess Street, and Caroline Street.

Other recommendations included bicycle lanes on Hunter Street, Caroline Street, Ferguson Street, Locke Street, and York Boulevard; the consolidation of HSR terminal operations at MacNab Street; and improvements to the pedestrian realm on several streets (which may result in reduced lanes and/or lane capacity on impacted links).

### ***14.2 Infrastructure Improvements Incorporated Into HTMP Modeling***

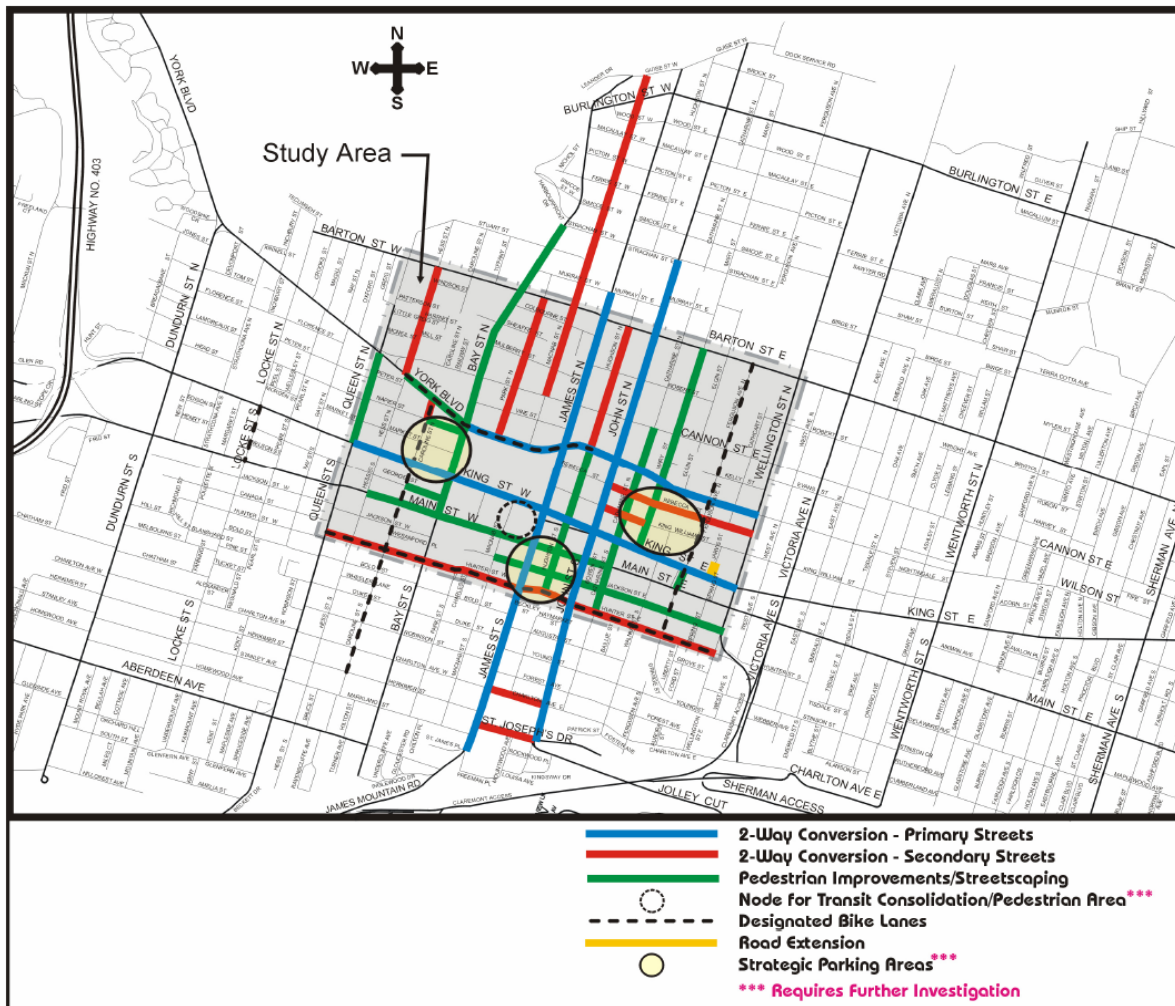
Numerous road links in the downtown area will need to reflect recently implemented and/or future proposed two-way links. Some links may also warrant consideration for reduced lanes and/or lane capacities resulting from implementation of bicycle facilities or enhanced pedestrian facilities. Those links in the model that may be impacted are identified in the table below (there are additional impacted links that have not been listed, since they are not included in the model).



| Conversion from One-way to Two-way Operations |                                 | Enhanced Pedestrian or Bicycle Facilities (Potential for Reduced Auto Capacity) |                                 |
|---|---------------------------------|---|---------------------------------|
| Street  | Limits (modelled sections only) | Street  | Limits (modelled sections only) |
| MacNab  | North of Cannon                 | Queen   | York to King                    |
| James   | St. Joseph's to Murray          | Bay   | Main to Strachan                |
| Hughson                                       | Wilson to Barton                | Hughson   | Main to Wilson                  |
| John  | St. Joseph's to Strachan        | Catharine   | Hunter to Main                  |
| Wilson  | Bay to Wellington               | York  | Hess to Bay                     |
| King  | Queen to Wellington             | Wilson  | Bay to Hughson                  |
| Hunter  | Queen to Wellington             | Main  | Hess to Catharine               |
| Charlton                                      | James to John                   | Jackson   | MacNab to James                 |
| St. Joseph's                                  | James to John                   | Hunter  | Queen to Wellington             |

Of the above, the conversion of James Street, John Street, Charlton Avenue, and St. Joseph's Drive to two-way operations has already been completed and is outlined in more detail in **Section 16** below.

**Exhibit 11 – Downtown Transportation Master Plan – Recommended Long-term Transportation Network Changes**

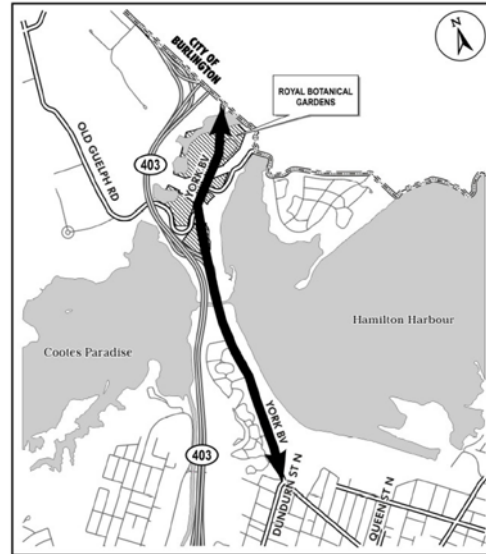




## 15.0 YORK BOULEVARD COMMUTER CYCLING CLASS ENVIRONMENTAL ASSESSMENT

### 15.1 Document Highlights

The City of Hamilton completed a Class EA study in April 2006 investigating alternatives for providing improved commuter cycling facilities along York Boulevard between Dundurn Street and Plains Road (the Hamilton-Burlington border). This section of York Boulevard is currently an urban arterial with a four-lane basic cross-section. It has sections of raised (curbed) median island between Plains Road and the south limit of the Highway 403 ramp terminals, and from the southernmost Dundurn Castle driveway southerly to Dundurn Street. Between these sections, York Boulevard has a flush (painted) median.

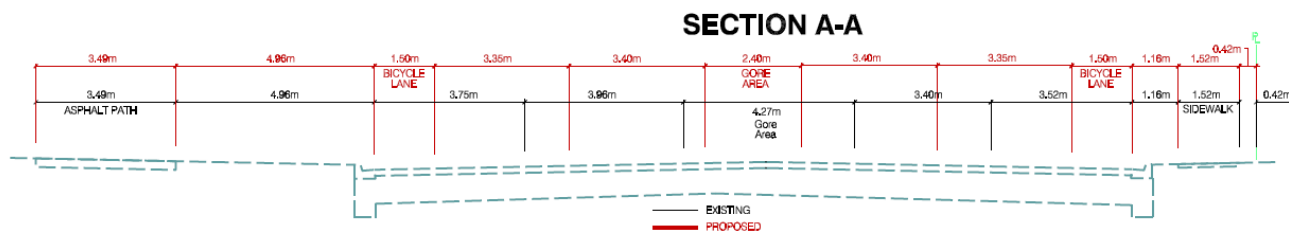
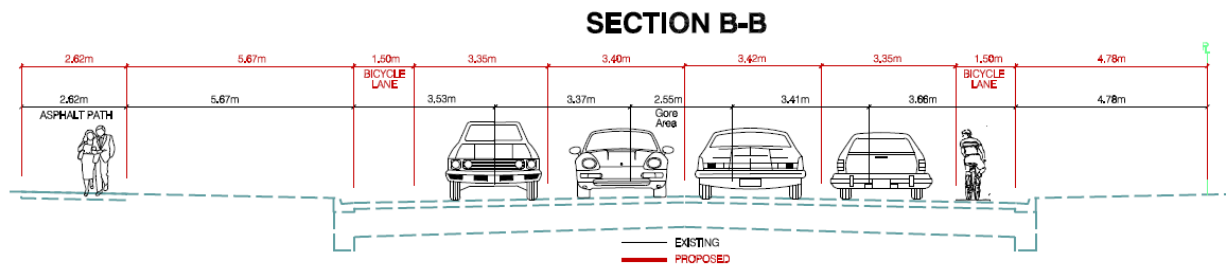
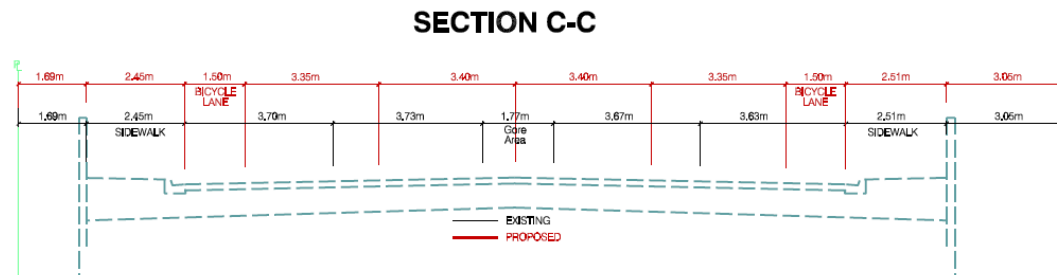
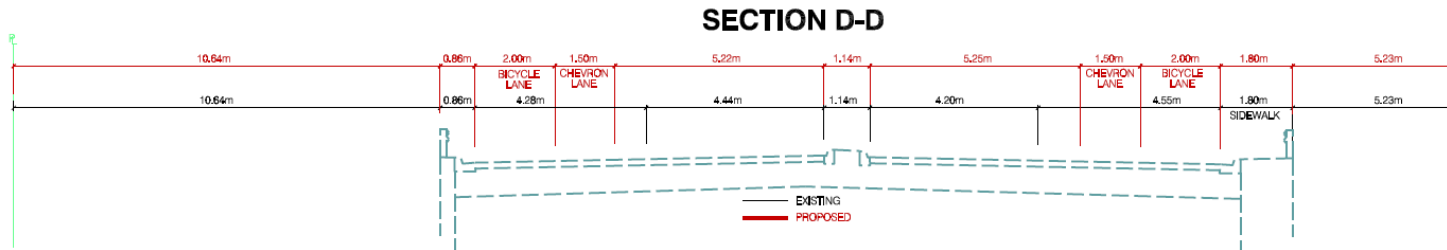


The preferred alternative (Alternative 2B) consists of new on-street bicycle lanes along the entire study area section. Between the Highway 403 interchange and Plains Road, the new bicycle lanes will be accommodated by eliminating one general traffic lane per direction. South of the Highway 403 interchange, the bicycle lanes will be accommodated by eliminating the existing painted median, narrowing slightly the existing lanes, and shifting the existing lanes inward.

### 15.2 Infrastructure Improvements Incorporated Into HTMP Modeling

The HTMP model will need to reflect the reduced vehicular cross-section between the Highway 403 ramps and Plains Road, reducing the number of lanes per direction from two to one.

**Exhibit 12 – York Boulevard Commuter Cycling Class EA – Option 2B Cross Section**



## **16.0 THE PHASE 2 CONVERSION OF JAMES AND JOHN STREETS**

### ***16.1 Document Highlights***

Part of the Downtown Transportation Master Plan included the conversion of several downtown streets from one-way to two-way traffic operations. The first streets to be implemented were James Street and John Street, which were converted to two-way traffic north of Main Street/King Street in September 2002 (Phase 1), and south of Main Street/King Street in November 2005 (Phase 2). The Phase 2 implementation also included the conversion of St. Joseph's Drive and Charlton Avenue to two-way operations between James Street and John Street.

### ***16.2 Infrastructure Improvements Incorporated Into HTMP Modeling***

The converted roadway links will need to be updated to reflect both the new two-way traffic flow, and the reduced number of lanes per direction on each roadway. This will particularly impact the model south of downtown, since both roadways lead directly to major escarpment crossings (James Street leads to James Mountain Road and West 5<sup>th</sup> Avenue; John Street leads to Arkledun Avenue and the Jolley Cut). The details of the conversions follow below:

#### **James Street**

Burlington Street (Guise Street) to Strachan Street: 1 lane per direction plus on-street parking  
Strachan Street to Murray Street: 2 lanes northbound, 2 lanes southbound  
Murray Street to Cannon Street: 1 lane southbound, 1 lane northbound  
Cannon Street to King William Street: 2 lanes southbound, 1 lane northbound  
King William Street to Hunter Street: 3 lanes southbound, 1 lane northbound  
Hunter Street to St. Joseph's Drive: 2 lanes southbound, 1 lane northbound (plus northbound curb lane parking north of Forest Avenue)  
South of St. Joseph's Drive: 1 lane southbound, 1 lane northbound

#### **John Street**

St. Joseph's Drive to Cannon Street: 2 lanes northbound, 1 lane southbound (plus southbound curb lane parking in some locations)  
Cannon Street to Strachan Street: 1 lane northbound, 1 lane southbound  
North of Strachan Street: 2 lanes northbound

#### **St. Joseph's Drive**

2 lanes eastbound, 1 lane westbound. Some turn restrictions will need to be coded (no left turn from westbound St. Joseph's Drive at James Street; no left turn from southbound John Street onto St. Joseph's Drive).

#### **Charlton Avenue**

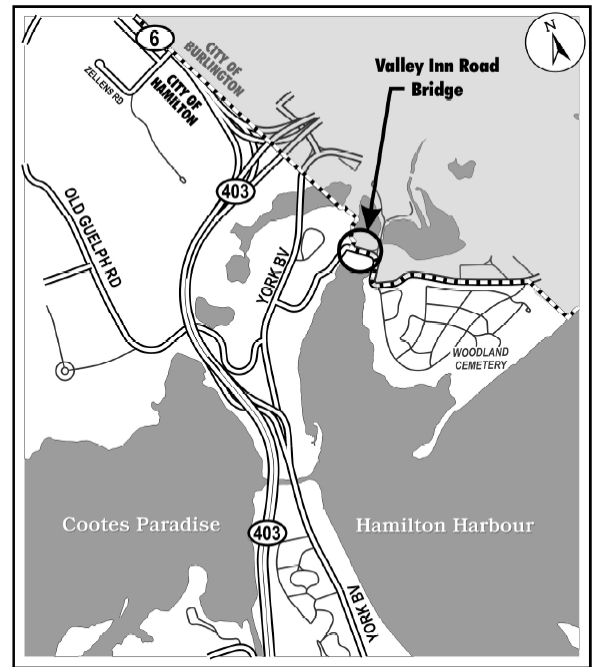
2 lanes westbound, 1 lane eastbound

## 17.0 VALLEY INN ROAD BRIDGE

### 17.1 Document Highlights

The Valley Inn Road Bridge is a single-lane Bailey bridge in the vicinity of the Royal Botanical Gardens, used by pedestrians and local and tourist traffic. It was installed in 1964 as a temporary measure following the collapse of the original bridge, and has been in service since then. A Class EA study was initiated by the City of Hamilton to determine a preferred alternative to address structural deficiencies and the frequent repairs currently required as a result of those deficiencies. A final report was completed in March 2006.

The study determined that the preferred alternative was to close Valley Inn Road permanently to vehicular traffic, and to construct a new bridge in the current location for use by pedestrians only.



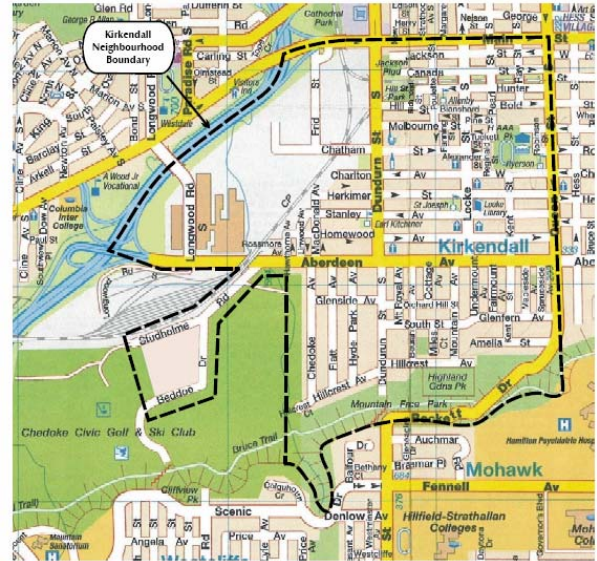
### 17.2 Infrastructure Improvements Incorporated Into HTMP Modeling

The roadway sections impacted are local roads not included in the HTMP existing conditions model, and as such the improvements do not impact the HTMP model.

## 18.0 KIRKENDALL NEIGHBOURHOOD TRAFFIC MANAGEMENT STUDY

### 18.1 Document Highlights

The City of Hamilton is currently in the process of conducting a Neighbourhood Traffic Management Study for the Kirkendall neighbourhood (bounded generally by Queen Street, the escarpment, Chedoke Avenue, Aberdeen Avenue, Highway 403, and Main Street). The study is being conducted to address neighbourhood concerns related to local traffic concerns, including pedestrian, bicycle, and traffic safety; pedestrian and bicycle network linkages; intersection operations (stop compliance; congestion; geometrics); and on-street parking requirements. One Public Information Centre (PIC) has been held to date (November 2005); the second PIC will be held in the Spring of 2006. A key consideration in the study is the proposed McMaster University redevelopment of the former Camco property along Longwood Road (the McMaster Innovation Park), which is intended to be operational by 2007.



Although the study is still underway, it is noted that options to be considered include:

- traffic calming;
- traffic/pedestrian signals;
- improved/extended transit service;
- one-way to two-way street conversions;
- changes to parking regulations; and
- improved signing (including bicycle routing).

### 18.2 Infrastructure Improvements Incorporated Into HTMP Modeling

Given that the study is still underway, no formal findings have been identified to date. It is possible that some links may need to be revised to reflect reduced lanes (due to traffic calming, bicycle lanes, or parking restrictions) or two-way conversions.

## 19.0 THE RED HILL VALLEY PROJECT

### 19.1 Document Highlights

The primary focus of the Red Hill Valley Project is the construction of the long-proposed Red Hill Valley Parkway linking the Queen Elizabeth Way (QEW) with Highway 403 (via the Lincoln M. Alexander Parkway), which will result in increased north-south road capacity across the escarpment in the east end of the city and a new alternate route for through traffic between Highway 403 and the QEW east of the city. It will result in expanded development in the southeast Mountain area, and may also result in changing travel patterns of City residents (e.g., more longer-distance trips to regional shopping centres). This project is now under construction, with an expected opening date of Fall 2007.

### 19.2 Infrastructure Improvements Incorporated Into HTMP Modeling

The new parkway through the Red Hill Valley Parkway will result in significant changes to the road network in the HTMP model. The primary change will be the parkway itself, consisting of two lanes per direction between the QEW and the existing end of the Lincoln M. Alexander Parkway. A southbound (upbound) truck climbing lane will also be incorporated between the Greenhill Avenue and Mud Street interchanges, although it will not necessarily add a full lane of capacity through this section given the upgrade across the escarpment.

Secondary changes will consist of new interchanges at the following locations:

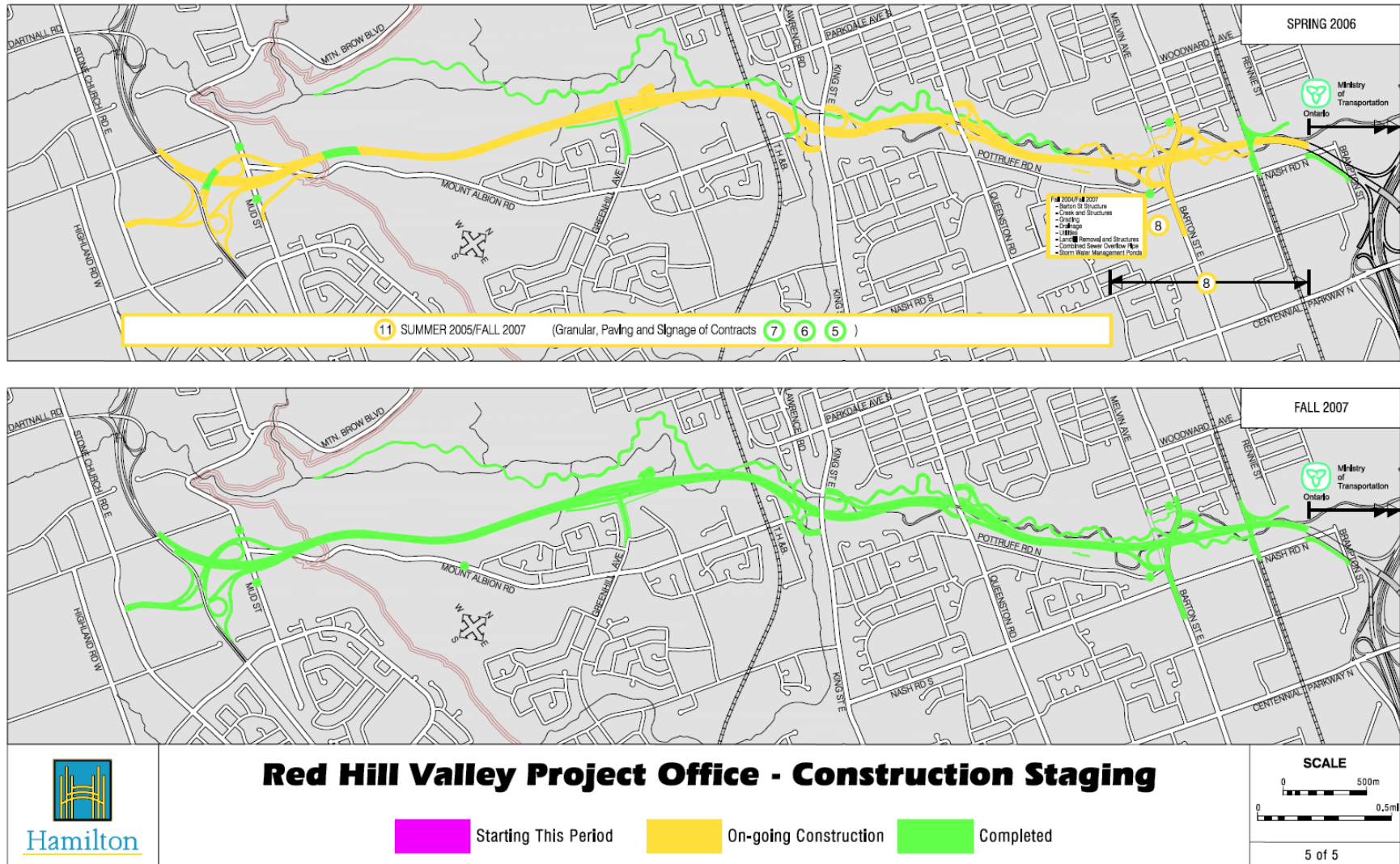
- Mud Street/new connection south to Stone Church Road (southern limit of parkway; direct continuation of Lincoln M. Alexander Parkway);
- Greenhill Avenue (extended westerly to meet parkway);
- King Street;
- Queenston Road;
- Barton Street; and
- Queen Elizabeth Way (no connection to/from Centennial Parkway).

Tertiary changes will consist of a number of road closures and relocations. Several of these changes are on a more local level and will not impact the modelled network. Those changes that will need to be considered consist of the following:

- **Mount Albion Road** – realignment through King Street interchange, to intersect with Lawrence Road west of King Street (rather than its current intersection with King Street, which will form part of the new interchange);
- **Mount Albion Road** – permanent closure south of Glen Castle Drive (i.e., will no longer cross the escarpment); and
- **Mud Street** – permanent closure across parkway (Pritchard Road to Winterberry Drive).



**Exhibit 13 – Red Hill Valley Project Office – Construction Staging**



## **20.0 MARY STREET BRIDGE EA (2004)**

### ***20.1 Document Highlights***

An Environmental Assessment was conducted in 2004 to determine a preferred alternative for the aging Mary Street Bridge across the CN railway tracks between Murray Street and Strachan Street. It was determined that the bridge would be replaced by a pedestrian bridge in that location, and that a new bridge would be constructed for vehicular traffic at Ferguson Avenue. The Mary Street Bridge was closed permanently to vehicular traffic in July 2005.

### ***20.2 Infrastructure Improvements Incorporated Into HTMP Modeling***

Neither Mary Street nor Ferguson Avenue is included in the HTMP model and as such the network will not be affected.



## **21.0 SOUTH MOUNTAIN TRANSPORTATION MASTER PLAN UPDATE**

### ***21.1 Document Highlights***

The South Mountain Transportation Master Plan update was completed in March 2006, and updates the approved 2000 South Mountain Transportation Master Plan. The area is roughly bounded by Mohawk Road to the north, Trinity Church to the east, Twenty Road to the south, and Glancaster Road to the west. Recommendations made from the 2000 TMP were reviewed based on changing conditions over the past five years. The review resulted in a number of road recommendations, which are attached to the following tables.

### ***21.2 Infrastructure Improvements Incorporated Into HTMP Modeling***

Recommendations noted in the plan were incorporated into the HTMP model.

**Exhibit 14 – South Mountain Transportation Master Plan Update – Summary of Short-term Recommendations**

| 2000 Recommendation   | Improvements Made/Justification  | 2000 Planned Construction Schedule | 2005 Recommendation <sup>1</sup>   | Short-term (2006-2011) | EA Schedule   | Cost   |
|---|--|------------------------------------|--|------------------------|---|--|
| <b>Road Improvements</b>  |  |                                    |  |                        |   |  |
| Widen Rymal Road from West 5 <sup>th</sup> to Upper James from 3 to 5 lanes   | Capacity Deficiency. Major arterial with 36m ROW.  | 2002-2005                          | Proceed with widening of Rymal Rd West 5 <sup>th</sup> to Upper James when Class EA requirements for the entire corridor (Glancaster to Upper James) have been met.            | Yes                    | The Class EA requirements for the entire section of Rymal Road from Glancaster to Upper James (see Long Term Recommendations) should be addressed as a single Schedule C project. Will need to reconfirm need for this improvement once the GRIDS work is complete. Once the Class EA is completed, implement the West 5 <sup>th</sup> to Upper James section in the short term and the remainder in the long term. | \$780,000 (estimated cost for the West 5 <sup>th</sup> to Upper James section only). Expected cost for entire corridor expected to exceed \$1.5 M limit for Schedule C Class EA. |
| Stone Church Road:<br><ul style="list-style-type: none"> <li>Widen mid-way between Garth Street and West 5<sup>th</sup> to West 5<sup>th</sup> from 2 to 3 lanes and;</li> <li>Upper James Street to Upper Wellington Street</li> </ul> | Part of a Schedule C for Stone Church from Garth Road to Mount Albion Rd approved in 1995. Construction has been phased. The widening from West 5 <sup>th</sup> to Upper James is completed (to 3 lanes instead of 4/5 as recommended in the 2000 SMATMP). | 2000-2005                          | Proceed with the widening of Stone Church mid-way between Garth Street and West 5 <sup>th</sup> to West 5 <sup>th</sup> and Stone Church from Upper James to Upper Wellington. | Yes                    | Schedule C Project. As approved in 1995 and reconfirmed in the SMATMP.  | \$1,750,000<br><br>\$1,500,000   |
| Widen Upper Gage Avenue – Mohawk to Thorley/Edwina from 4 to 5 lanes  | No works completed.  | By 2011                            | Proceed with widening.   | Yes                    | Schedule C Project.   | \$2,400,000  |
| Widen Mohawk Road between Upper James Street and Upper Wellington Street from 4 to 5 lanes  | In progress.   | By 2011                            | N/A  | Yes                    | N/A   | N/A  |

<sup>1</sup> All widenings need to be reconfirmed once GRIDS work is complete.

| 2000 Recommendation  | Improvements Made/Justification | 2000 Planned Construction Schedule | 2005 Recommendation <sup>1</sup>   | Short-term (2006-2011)                   | EA Schedule   | Cost   |
|--|---------------------------------|------------------------------------|--|--|---|--|
| Widen Garth Street between Rymal Road and Stone Church Road from 2 to 3 lanes  | No works completed.             | By 2011                            | Proceed with Schedule C Class EA prior to making improvements.   | Yes                                      | Schedule C Project.   | \$1.6 million  |
| Widen Upper Sherman Street between the Linc and Stone Church from 2 to 3 lanes | No works completed.             | By 2011                            | Proceed with Schedule C Class EA for entire corridor from Rymal to the Linc prior to making improvement. | Yes                                      | The Class EA requirements for the entire section of Upper Sherman from Rymal to the Linc (see Long Term Recommendations) should be addressed as a single Schedule C project. Reconfirm need for this improvement once the GRIDS work is complete. Once the Class EA is completed, implement the Rymal to Stone Church section in the short term and the remainder in the long term. | Unknown (assumed to exceed \$1.5 million thus requiring a Schedule C project). |
| <b>Cycling Network Recommendations</b>   |                                 |                                    |  |  |   |  |
| Add bike lanes on Upper Sherman between Linc and Stone Church                  | No works completed.             | 1999-2008                          | Proceed if timing of road reconstruction is between 2005-2010.   | Dependant on scheduled road improvement. | Include as part of larger road improvement Class EA.  | Include in Road Reconstruction Cost.   |
| Add bike lanes on Stone Church from Garth to Upper Wellington                  | No works completed.             | 1999-2008                          | To proceed along with road improvement if scheduled between 2005-2010.                                   | Dependant on scheduled road improvement. | Include as part of larger road improvement Class EA.  | Include in Road Improvement Cost.  |
| <b>Repaving and Road Reconstruction Recommendations</b>                        |                                 |                                    |  |  |   |  |
| Resurface West 5 <sup>th</sup> between Rymal and Mohawk Road                   | No works completed.             | Mohawk to Linc: 2000               | Proceed with resurfacing.  | Yes                                      | Schedule A Project (for all resurfacing projects).  | \$2,000,000  |
|  |                                 | Stone Church to Rymal: 2001        | Proceed with resurfacing.  | Yes                                      |   |  |
|  |                                 | Linc to Stone Church: 2006-2011    | Proceed with resurfacing.  | Yes                                      |   |  |
| Reconstruct Upper Wellington between Rymal Road and Stone Church Road          | No works completed.             | 2002-2005                          | Proceed with reconstruction.   | Programmed for 2010.                     | Schedule A Project.   | \$1,500,000 (in Capital Budget for 2010)                                       |

| <b>2000 Recommendation</b>  | <b>Improvements Made/Justification</b> | <b>2000 Planned Construction Schedule</b> | <b>2005 Recommendation<sup>1</sup></b> | <b>Short-term (2006-2011)</b> | <b>EA Schedule</b>  | <b>Cost</b> |
|---|--|---|--|-------------------------------|---------------------|-------------|
| Resurface Upper Sherman Avenue between Rymal Road and Stone Church Road       | No works completed.                    | 2003 (coincides with sewer installation)  | Proceed with resurfacing.              | Yes                           | Schedule A Project. | \$1,700,000 |
| Resurface Mohawk Road between Upper Ottawa Street and Upper Kenilworth Avenue | No works completed.                    | 2000                                      | Proceed with resurfacing.              | Yes                           | Schedule A Project. | \$1,850,000 |
| Resurface Rymal Darnall to Trinity Church                                     | In progress.                           | 2001-2005                                 | Proceed with resurfacing.              | Yes                           | Schedule A Project. | Unknown     |

**Exhibit 15 – South Mountain Transportation Master Plan Update – Summary of Long-term Recommendations**

| 2000 Recommendation  | Improvement Made/<br>Justification | 2000 Planned<br>Construction Schedule | 2005 <sup>2</sup> Recommendation   | Long - term<br>(2012-2021) | EA Schedule   |
|--|------------------------------------|---------------------------------------|--|----------------------------|---|
| <b>Road Improvements</b>   |                                    |                                       |  |                            |   |
| Widen Rymal Road between Glancaster Road and West 5 <sup>th</sup> Street from 2 to 4/5 lanes (in Long Term)                                  | Widened to 3 lanes.                | 2021                                  | Proceed with improvement to 4/5 lanes <sup>3</sup> need confirmed based on GRIDS work and Class EA is completed. | Yes                        | Schedule C Project (Class EA to be completed for entire section of Glancaster to Upper James – see short-term recommendations). |
| Widen Upper Wellington Street from Rymal Road to Stone Church from 2 to 3 lanes and from Stone Church to south of the Linc from 2 to 5 lanes | No works completed.                | By 2021                               | Confirm need based on GRIDS work. Prepare Class EA prior to project implementation.                              | Yes                        | Schedule C Project.   |
| Widen Upper Sherman Street between Rymal Road and Stone Church from 2 to 3 lanes   | No works completed.                | By 2021                               | Confirm need based on GRIDS work. Class EA to be prepared for Rymal Road to the Linc in the short term.          | Yes                        | Schedule C Project (Class EA to be completed for entire section of Rymal to Linc – see short-term recommendations).             |

<sup>2</sup> All widenings need to be reconfirmed once GRIDS work is complete.

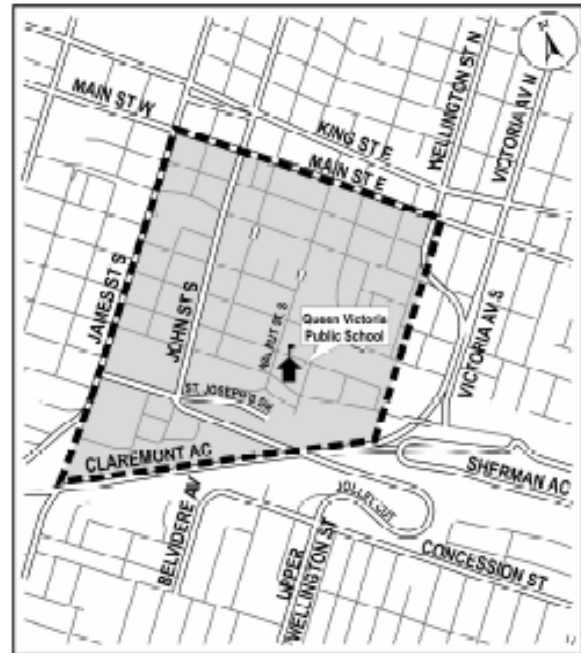
<sup>3</sup> Transportation modeling indicates v/c across West Mountain Screenline of 0.91 with 3 lane cross-section, which is close to capacity. The recommendation to widen to 4/5 lanes should remain and be rechecked when the City-Wide update based upon GRIDS is complete.

## 22.0 CORKTOWN NEIGHBOURHOOD STUDY (2005)

### 22.1 Document Highlights

The City of Hamilton completed the Corktown Neighbourhood Traffic Management Plan in 2005. The Corktown neighbourhood is bounded by Main Street, James Street, the Claremont Access, and Wellington Street. The study addresses a number of neighbourhood concerns related to traffic (volume, safety, pedestrians and speed) and parking within the neighbourhood.

The preferred solution identified a number of roadway improvements, including several curb extensions; some new traffic islands (channelized right turn islands and median islands); two mini-roundabouts on Charlton Avenue; and implementation of all-day parking on several links. The plan also includes some traffic control measures (new all-way stop controlled intersection; reduced speed limits; peak hour turn restrictions). Finally, the plan recommends that Hunter Street be converted to a single lane of one-way vehicular traffic, plus a parking lane and a two-way pair of bicycle lanes; this configuration differs from the Downtown Transportation Master Plan, which recommended that Hunter Street be converted to two-way traffic, and therefore this improvement requires further study.



### Phasing

In general, the recommendations coming out of this study will be implemented as soon as possible recognizing limitations with respect to the approvals process and funding availability. In terms of phasing, the proposed safety improvements are relatively minor changes that can be implemented immediately and are not tied to the approval of this study.

### 22.2 Infrastructure Improvements Incorporated Into HTMP Modeling

Although many of the proposed improvements relate to local traffic operations, a number of improvements will impact the HTMP model:

- **Hunter Street** – pending further study, to be converted to one lane (westbound) of vehicular traffic;
- **Catharine Street** – reduced from three to two lanes (due to curb extension and all-day parking on west side); and
- **Wellington Street** – reduced to a single lane of traffic per direction south of Hunter Street (due to curb extensions and all-day parking on both sides).



Proposed improvements to Charlton Avenue (all-day parking on north side between Catharine and Walnut; mini-roundabouts at Walnut and at Ferguson; narrowing at Victoria and underneath Claremont Access) will not impact the model, in which Charlton Avenue is already defined as one lane per direction.

**Exhibit 16 – Corktown Neighbourhood Traffic Management Plan – Preferred Plan**



## 23.0 GURNETT NEIGHBOURHOOD TRAFFIC REVIEW (2003)

### 23.1 Document Highlights

In response to a variety of concerns raised by the citizens, Synectics Transportation Consultants Inc. (Synectics) was retained by the City of Hamilton to assess existing traffic operations and safety issues in the Gurnett Neighbourhood. Traffic patterns in the neighbourhood changed when Upper Horning Rd was closed and most recently, an application for rezoning and development of a plan of subdivision has been proposed for a property located at 724 Upper Horning Road. The review examines concerns and offers a variety of solutions to identified issues.



### Recommendations

- Increased enforcement is recommended, but should possibly be coordinated with a citywide program;
- Increased traffic and parking enforcement aimed at school areas is recommended;
- Consideration should be given to the review of school route patterns to recommend possible changes to achieve the lowest risk routes to schools. In conjunction with this effort, an evaluation of possible changes to or the need for additional traffic controls and/or supervised crossing guards may be identified;
- In conjunction with both school representatives, consideration should be given to a more detailed evaluation of traffic circulation issues adjacent to school sites, considering caregiver drop-off and pick-up patterns;
- Consideration should be given to implementing parking restrictions in locations where school drop-off and pick-up activity interferes with pedestrian visibility;
- Opportunities to introduce a kiss-and-ride parking facility and/or intersection sidewalk extensions to improve the visibility of children crossing at intersections and to physically enforce no parking regulations near intersection corners may also be pursued;
- Additional traffic signal installations are not recommended. Monitoring should continue with respect to the potential need for traffic signals at neighbourhood access points;
- Consideration of alternative traffic control strategies at the intersection of Stone Church and Omni could be considered such as a roundabout; and
- It is not recommended that Susan Drive be connected to the west at this time.

### 23.2 Infrastructure Improvements Incorporated Into HTMP Modeling

Nothing of note for Citywide TMP.

## **24.0 DURAND NEIGHBOURHOOD CLASS ENVIRONMENTAL ASSESSMENT (EA)**

### ***24.1 Document Highlights***

The City of Hamilton completed the Durand Neighbourhood Traffic Study in October 2002. The Durand neighbourhood is bounded by Queen St. S., Main St. W., James St. S. and the Escarpment. The study is based on issues identified by residents and provides practical solutions to addressing traffic problems in the neighbourhood, particularly relating to traffic (volume, safety, pedestrians and speed) and parking within the neighbourhood.

The preferred solution includes safety improvements, the conversion of some one-way streets to two-way, traffic calming measures, such as curb extensions, turning restrictions, changes to parking restrictions on some streets and changes to the road classification.

### ***24.2 Infrastructure Improvements Incorporated Into HTMP Modeling***

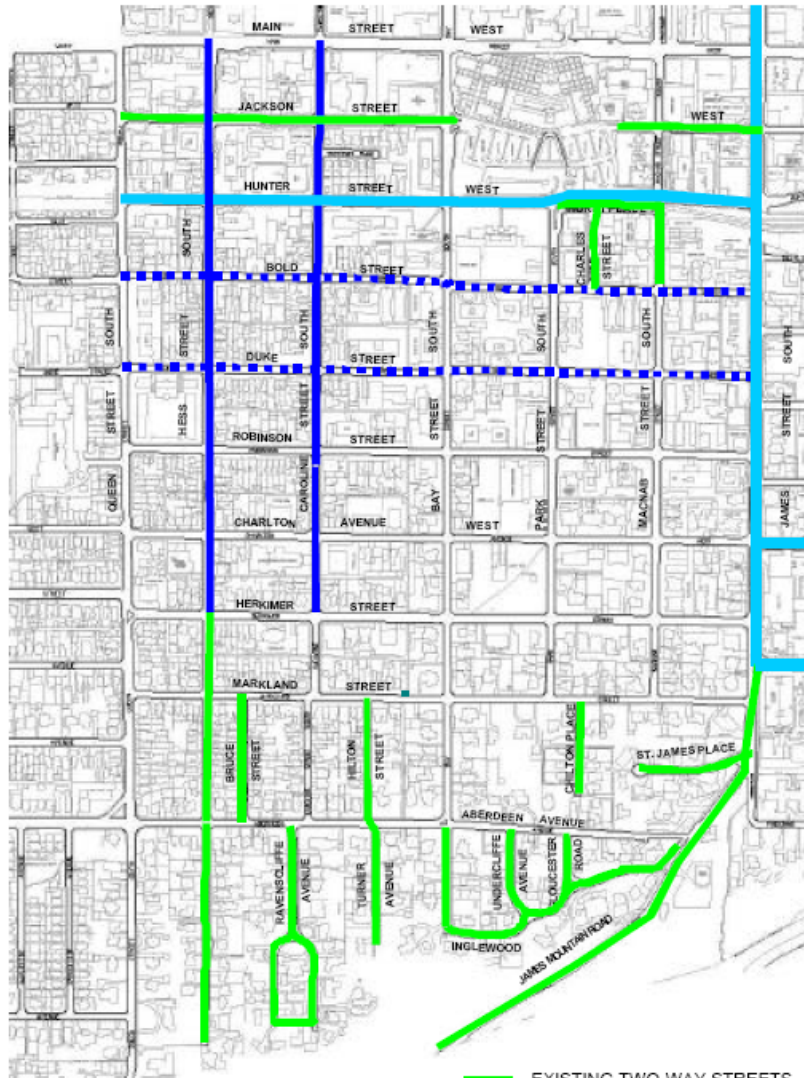
The majority of improvements identified relate to local traffic operations and will not impact the HTMP model, with the exception of the recently completed conversion of Hess Street to two-way operations south of Main Street. The study also makes reference to the two-way conversions of Hunter Street and James Street, as identified in the Downtown Transportation Master Plan. These conversions would also result in a reduction in the number of lanes per direction (e.g., Hess Street reduced from two one-way lanes to one lane in each direction).

In addition, the study recommended a number of improvements that may reduce the number of travel lanes on some links:

- ***Bay Street, between Aberdeen Avenue and Herkimer Street*** – permitting all-day parking (including rush hours) would reduce the number of effective traffic lanes from three to two;
- ***Bay Street, between Duke Street and Hunter Street*** – a widening of the east sidewalk (pending the Downtown Streetscaping Plan recommendations) may result in a lane reduction from three to two lanes; and
- ***Aberdeen Avenue, between Hess Street and Bay Street*** – curb extensions staggered on the north and south sides may reduce the roadway configuration to one through lane.

**Exhibit 17 – Durand Neighbourhood Class Environmental Assessment – Recommended One-way to Two-way Street Conversions**

## Recommended One-way to Two-way Street Conversions

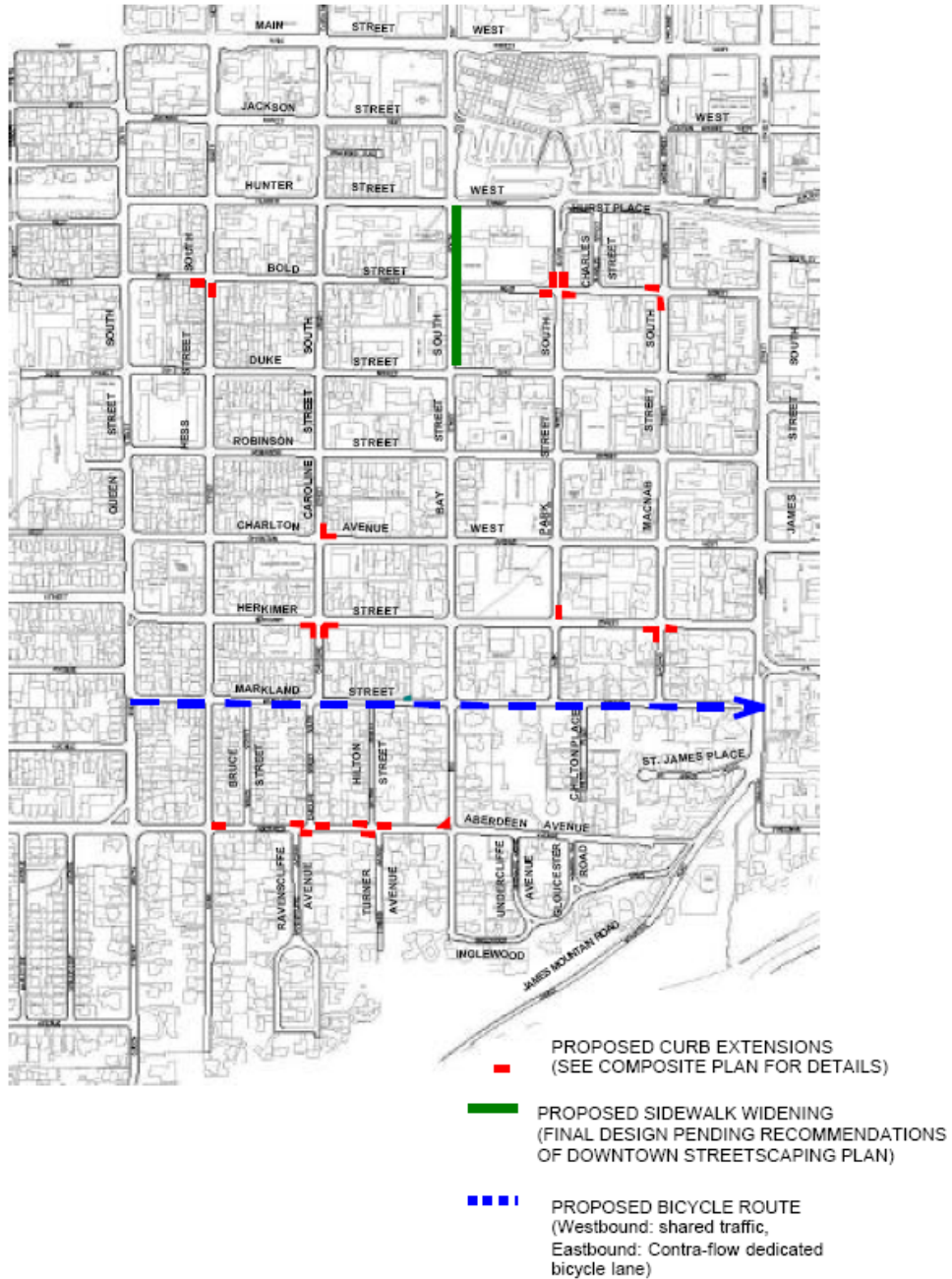


- EXISTING TWO-WAY STREETS
- PROPOSED TWO-WAY STREETS
- - - PROPOSED TWO-WAY STREETS (SUBJECT TO PARKING CONDITIONS ON DUKE STREET)
- PROPOSED TWO-WAY STREETS (AS PER DOWNTOWN MASTER PLAN)

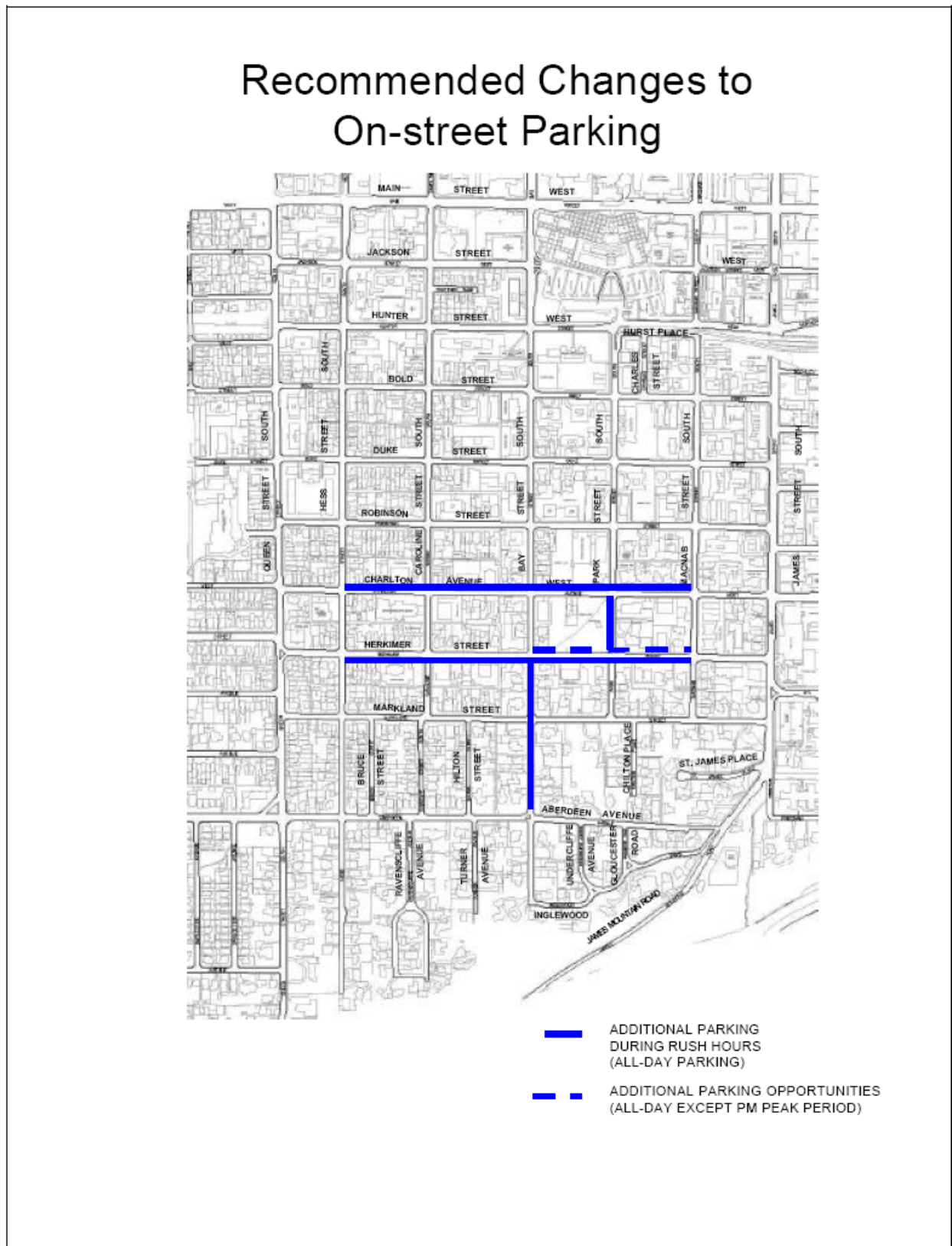


**Exhibit 18 – Durand Neighbourhood Class Environmental Assessment – Recommended Curb Extensions and Lane Reductions**

# Recommended Curb Extensions and Lane Reductions



### Exhibit 19 – Durand Neighbourhood Class Environmental Assessment – Recommended Changes to On-street Parking





## **25.0 UPPER WENTWORTH STUDY (2005)**

### ***25.1 Document Highlights***

The purpose of this study was to examine the traffic operations along Upper Wentworth Street between Mohawk Road and the Lincoln M. Alexander Parkway, to document any issues that could be addressed in the upcoming reconstruction project, expected to be designed in 2006 with construction taking place in 2007.

The study area was defined as Upper Wentworth Street from Mohawk Road to the north ramp terminal of the Lincoln M. Alexander Parkway, for a total length of approximately 1030 m.

The study recommended three alternative configurations for Upper Wentworth Street between Kingfisher Drive and the Lincoln M. Alexander Parkway. All involved redesign of the existing median island channelizations with no additional north-south capacity; the scenarios varied in their treatment of the current unsignalized Lime Ridge Mall driveway located south of Kingfisher Drive (close median and convert driveway to right-in, right-out only; signalize existing driveway; signalize driveway and relocate to the south). No changes were recommended to Upper Wentworth Street between Kingfisher Drive and Mohawk Road.

### ***25.2 Infrastructure Improvements Incorporated Into HTMP Modeling***

The only impacts of the recommendations are to local commercial accesses and will not impact the HTMP model. No additional capacity is recommended on Upper Wentworth Street.

## **26.0 BINBROOK VILLAGE URBAN DESIGN GUIDELINES PROJECT**

### ***26.1 Document Highlights***

In December of 2000 the former Township of Glanbrook approved an Official Plan, Binbrook Village Secondary Plan, for the future growth and development of the Binbrook Community. To support the implementation of this document, the City of Hamilton's Long Range Planning and Design Division is developing Urban Design Guidelines for the Community Core, as outlined in Binbrook Village Secondary Plan.

In conjunction with the Binbrook Village Urban Design Guidelines, the City of Hamilton's Public Works Department is also conducting a transportation study to determine the short and long-term requirements for vehicular traffic in the context of municipally approved future growth. This study will result in a new functional design of roadways in the village.

The final functional roadway configuration will be integrated with the Urban Design Guidelines, in order that traffic issues such as commercial parking and on-road cycling will be addressed appropriately within the overall vision of the core.

### ***26.2 Infrastructure Improvements Incorporated Into HTMP Modeling***

No significant road network improvements are identified that would impact the HTMP model.