



# GUELPH-WELLINGTON TRANSPORTATION STUDY

## JULY 2005 FINAL REPORT





## EXECUTIVE SUMMARY

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### 1.0 BACKGROUND AND PURPOSE

The 2005 Guelph-Wellington Transportation Study (GWTS) presented in this report is part of a periodic transportation planning exercise to assess long term transportation needs in the Guelph-Wellington area and identify specific transportation system improvements. The last area study was the Guelph and Area Study (GATS) completed in 1994. The present study addresses the transportation needs in the study area (see Figure I) for the planning period from 2001 to 2021.

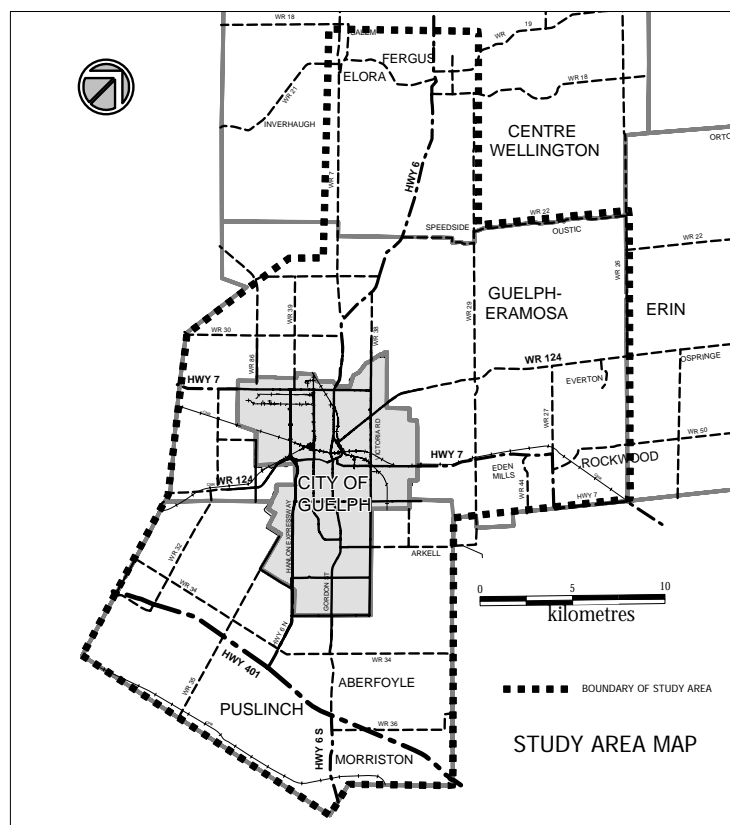


FIGURE I: STUDY AREA MAP

The specific study objectives include:

- Identify transportation needs and recommend practical improvements for specific areas such as new Growth Areas, the Downtown, Older Built-up Area, the University Precincts in Guelph, and areas such as Aberfoyle and Fergus in Wellington County;

- Recommend Transportation Demand Management (TDM) measures, as appropriate to different areas, that will encourage reduced use of the automobile and greater use of alternative modes such as transit, walking and cycling;
- Identify improvements to City and County roadways, establish need and justification to meet the Provincial EA process, and recommend a coordinated implementation strategy;
- Review Provincial highway initiatives affecting Guelph and Wellington County and identify priorities based on inter-regional travel and truck traffic patterns;
- Review the growing inter-regional travel between Guelph/Wellington, Region of Waterloo and the GTA, and identify opportunities for transit initiatives to serve this need.

The GWTS has been undertaken in accordance with the Official Plan policies of Guelph and Wellington County, the City's Transportation Strategy and SmartGuelph Principles. The study is based on the most recent population, employment and travel data contained in the 2001 Census and the 2001 Transportation Tomorrow Survey data.

The study was undertaken jointly by the City of Guelph and the County of Wellington, and was carried out by a consortium of consultants comprising Paradigm Transportation Solutions Limited, Totten Sims Hubicki Associates and the GSP Group. During the course of the study, consultations were held with staff of the Ministry of Transportation, Southwestern Region, and the Regional Municipality of Waterloo. The study commencement was publicly advertised and workshops and public meetings were held to obtain public input to the study and its recommendations. The final report of the study addresses the following:

- Existing Travel Patterns in the Study Area
- Future Planning Context and Needs Assessment
- Transportation Demand Management (TDM), Land Use, and Non-motorized Modes
- Public Transit
- City of Guelph Roadways
- Wellington Road 124 and other County Roadways
- Provincial Highways
- Transportation Master Plan

The findings and recommendations in regard to each of the above-noted study components are summarized herein.

## **2.0 EXISTING TRAVEL PATTERNS**

Historically, and also between the last two census years (1996 and 2001), the vehicular travel demand in the Guelph-Wellington study area has been increasing at a significantly faster rate than the growth in population. The extent of this growth can be appreciated from the following trends:

- 50% increase in the daily per capita trip rate from 1.97 (1996) to 3.05 (2001)



- Increasing number of households with more than one car
- Increasing use of the car for all travel purposes and declining shares of other modes
- Increasing number of people from the study area working in Kitchener-Waterloo-Cambridge and GTA areas
- Increasing number of people from Kitchener-Waterloo-Cambridge working in Guelph

These trends are manifested in the growing vehicular traffic on the principal roadways within the study area, including:

- Highway 7, Highway 6 North of Woodlawn, the Hanlon Expressway (Provincial highways)
- Wellington Road 124 West, WR 32 and WR 30 (County of Wellington)
- Gordon Street/Wellington Road 46 Corridor (City of Guelph/County of Wellington)
- Sections of Edinburgh Road, Imperial Road, Woolwich Street, Speedvale Avenue, Paisley Road and York Road (City of Guelph)

The main roadways in the study area are also used by pass-through trucks, creating both traffic and community implications for study area residents and travelers.

### **3.0 FUTURE PLANNING CONTEXT AND PLANNING APPROACH**

The existing trends and travel patterns were used in assessing future transportation needs corresponding to anticipated population and employment increases in the study area. As discussed in Section 3.0, the Guelph-Wellington population is projected to increase from 193,500 in 2001 to 258,500 by 2021; employment will similarly increase from 85,900 to 118,600 over the same period. A post-2021 horizon, corresponding to the Ontario Ministry of Finance population projection of 281,000 for Guelph-Wellington by 2031, was also considered in the future needs assessment.

The traditional approach to accommodating transportation needs has been the expansion of roadway capacity. This approach, called the supply side approach, suffers from three main limitations: (a) the significant direct costs of increasing capacity; (b) the no less significant indirect costs associated with environmental and community impacts; and (c) the physical and practical limits to expanding roadway capacity. In addition, increased road capacity could induce more car travel, encouraging people to shift from other modes to the car (modal), divert from other roads to the new facility (spatial), and travel during the peak hour rather than avoiding it (temporal): the so called *triple convergence*. Conversely, restricting capacity and allowing congestion could produce the opposite effects modally, spatially and temporally: the *triple divergence*.

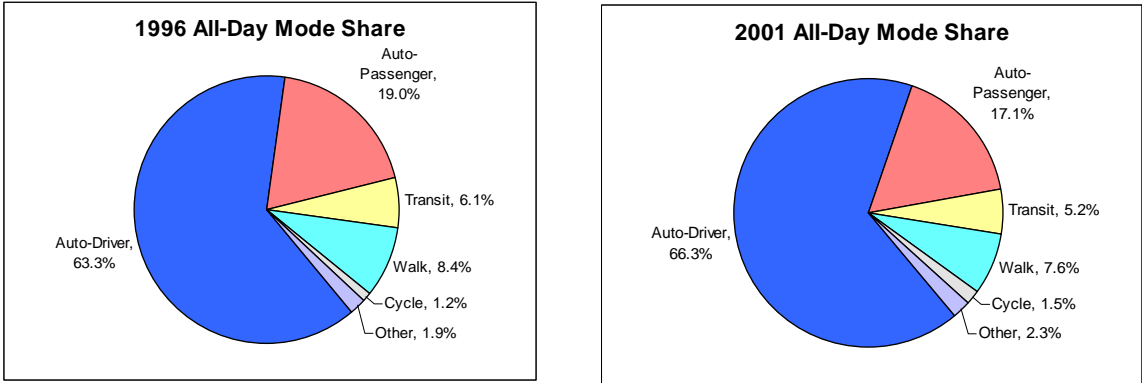
A second approach, called the demand side approach, is being adopted in many jurisdictions and tries to address the ever increasing demand for vehicular travel. This demand is not just the negative result of growth or new developments but is equally attributable to positive demographic changes (smaller households, more working women, and more women and younger people driving),

increasing affluence in society that is manifested in two-income households and increasing car ownership, and the growing propensity to commute longer distances than in the past. Transportation Demand Management (TDM) is the collective description for the policies and practical steps that are undertaken to discourage single occupancy car use and encourage ridesharing and alternative modes such as walking, cycling and transit. Put another way, TDM is the transportation equivalent of energy conservation in the energy sector, water conservation in the water sector, and waste reduction programs in solid waste management.

The two approaches are not mutually exclusive and an effective and successful transportation plan should be based on a synthesis of the two approaches. The GWTS plan is premised on a balanced approach that uses both demand side and supply side measures to address the future transportation needs in the Guelph-Wellington area.

The TDM measures including land use policy recommendations, incentives to walking and cycling, and other policy initiatives are outlined in Section 4, while Section 5 deals with the role of public transit both within Guelph (Guelph Transit) and in capturing a share of the growing inter-regional travel demand. The supply side measures for increasing roadway capacity are described in Section 6 (Guelph and Wellington Roads) and Section 7 (Provincial Highways).

The 1996 and 2001 modal shares in Guelph (see Figure II) show that the proportion of trips using non-auto modes has declined during the five-year period. For analytical purposes, this study has assumed that the 2001 modal shares will not decline during the planning period from 2001 to 2021. The purpose of the proposed TDM measures is, in fact, to reverse the current trend and increase the share of non-auto modes. In particular, the use of transit should be promoted to reach the Official Plan target of 10% within Guelph, and to provide an effective alternative to the automobile for inter-regional travel.



**FIGURE II: MODAL SHARES 1996/2001**

It is worth noting that even a minimal reduction in auto volumes will have a magnified impact on roadway capacity. The very successful program of congestion pricing in Central London, England, has shown that a 15% drop in traffic levels amounted to 30% reduction in congestion and further benefited public transit by improving service reliability and schedule adherence.

Congestion or road pricing are measures that can only be initiated at the Provincial level or by larger municipalities. However, it is necessary to take note of the growing technical and political emphasis on road pricing. The 2004 British White Paper, *The Future of Transport: A network for 2030*, highlights the need for public education and debate over road pricing involving all levels of government in Britain. The White Paper expects road pricing to be feasible in Britain by 2015 and, as a user-pay form of payment, to be superior to traditional fuel, property and transportation taxes and levies.

The rationale for road pricing is the concept of “locking in the benefits of new capacity” and preventing it from being consumed entirely by vehicular traffic. As a form of payment, road pricing is also more efficient and equitable than taxation. A second way of “locking in the benefits of new capacity” is to give priority to buses and High Occupancy Vehicles (HOV) in the use of new road improvements. This measure is applicable to the Guelph-Wellington study area and is discussed in Section 5 and Section 7.

#### **4.0 TRANSPORTATION DEMAND MANAGEMENT**

Section 4 of the report describes the TDM measures applicable to Guelph under the following headings:

- Land Use and Urban Design Practices
- Ridesharing
- Walking and Cycling
- Reducing Auto Use
- TDM Program

The University of Guelph provides an excellent TDM success story in the study area. In the core section of the campus, as a result of a number of TDM measures including priority to pedestrians, bicycle and pedestrian trails, the student bus pass system and parking restrictions, the level of single occupancy vehicle use has been reduced to 35% while the modal shares of walking/cycling and transit are 35% and 23% respectively. This is an encouraging base to start a TDM program for other areas in the City, especially the Downtown and other major employment areas.

The study recommends the establishment of a TDM Committee to develop and implement a comprehensive TDM Program. The TDM measures identified in this study are more applicable in Guelph and less so in the townships. However, a successful TDM program in Guelph including inter-regional transit services will positively benefit the County and Provincial roadways.

#### **5.0 PUBLIC TRANSIT**

Public transit in Guelph enjoys remarkable support in the community and at Council, and Guelph Transit is one of the better performing transit operators among municipalities of comparable size in Canada. The GWTS study builds on the recent transit planning studies undertaken by Guelph Transit and its ongoing initiatives, and makes recommendations in a number of areas including the following:

- Transit Route/Service Improvements: Gradually change from the existing radial route/fixed transfer system to a modified radial-grid system; initially focus on a perimeter route that connects residential and employment areas directly and avoids the need for a downtown transfer; increase service frequency by providing buses at 15-minute intervals on critical routes instead of the current 30-minute intervals; implement the proposed inter-regional transportation terminal at the VIA Station to benefit both local and inter-regional travelers.
- Roadway Transit Priority Measures: Roadway transit priority measures help buses avoid delays on mixed-traffic roadways. With increasing traffic volumes on some of the main transit routes, Guelph Transit will require transit priority measures including signal priority and queue bypass lanes at intersections. Candidate intersections for bypass lanes are: Gordon/Wellington, Gordon/Stone, Gordon/College, Edinburgh/Stone, Edinburgh/College, and Woolwich/Eramosa. Priority treatment will also be required at the Carden Street and Macdonell Street entry points to the proposed Transportation Terminal.
- Transit Technology and Fleet: Guelph Transit should continue its initiatives to acquire new technologies, especially in regard to automatic vehicle location/communication and the fare medium. Fleet replacement and expansion should continue to reach the ten year target of 60 buses (from the current fleet of 51 buses) and the long term requirement of 80 buses, including both replacement buses and new additions.
- Transit Fare Strategies: Guelph Transit should build on the successful bus pass system used by the University of Guelph students as a model for similar fare arrangements with the University, City of Guelph and private sector employees. Payroll deductions and/or employer subsidies for employee bus passes are other fare strategies for consideration.
- Transit Ridership Strategies: There is potential for attracting “choice bus users” within the five inner planning districts by providing a more frequent service. New direct routes, more frequent service and fare incentives are strategies to promote transit usage in the outer eight districts (see maps in Section 5).

The transit share of inter-regional travel is not significant at the present time, but with the growing demand for travel between Guelph-Wellington, Kitchener-Waterloo-Cambridge and GTA areas the level of inter-regional transit serving these areas will have to be significantly enhanced. Guelph and neighbouring municipalities are involved in a number of initiatives to enhance inter-regional transit service in their areas. These include the proposal to develop a new transportation terminal in Guelph, the North Mainline Municipal Alliance to provide a higher speed and more frequent train service between London/Stratford and Toronto, intercity GO/private bus service in the Highway 401 corridor, and an initiative to pursue the connection of Guelph Transit to Grand River Transit (GRT) route networks through pooled services.

The GWTS study further recommends that improvements to Provincial highways in the study area (Highway 7 and the Hanlon Expressway–Highway 6) and Wellington Road 124 West (the former Highway 24) should also be used for implementing rapid bus transit to serve inter-regional travel between Guelph, Wellington and Kitchener-Waterloo-Cambridge areas. These improvements will facilitate a coordinated bus service by Grand River Transit and Guelph Transit to serve commuters

in these areas.

### **6.0 CITY OF GUELPH ROADWAYS**

The City roadway improvements recommended in Section 6 and Section 8 fall under three categories:

- 1) Improvements for which Environmental Assessments have already been completed: These include sections of Gordon Street (Clair to Maltby), Stone Road (Monticello to Victoria to Watson Parkway), Watson Road (Watson Parkway to Speedvale), Clair Road (Laird to Victoria) and Victoria Road (York to Clair). These roadway sections are included in the City's current 5-year capital budget/forecast. Their implementation timing is indicated in Section 8.
- 2) Improvements for which Environmental Assessments will have to be completed: These include York Road (East City Limits to Wellington), Woodlawn Road (Hanlon to Nicklin), Laird Road (realigned section from Hanlon to Downey), Edinburgh Road (Wellington to London), Stone Road/Elmira Road connection to Wellington Road 124 West, and Watson Road/Woodlawn Road connection to Wellington Road 124 East. Of these, York Road and Woodlawn Road are included in the 5-year capital budget/forecast. The realignment and widening of Laird Road will depend on the development of the Hanlon Creek Business Park. The Stone/Elmira and the Watson/Woodlawn connections are not required before 2021, but the need for these improvements could be advanced if improvements to the Hanlon Expressway and the construction of the new Highway 7 are not completed before 2021. As sections of both Stone/Elmira and Watson/Woodlawn connections will be located within Wellington County's jurisdiction, their environmental assessment and implementation will have to be coordinated between the City and the County.
- 3) Pre-approved projects: The roadway upgrades and intersection improvements listed in Table 8.3 are considered pre-approved in terms of the Class EA Guidelines for municipal road projects insofar as they do not involve capacity expansion but include only geometric and structural improvements and auxiliary turn lanes at intersections. Most of these projects are included in the 5-year capital budget/forecast.

### **7.0 WELLINGTON ROAD 124 (OLD HIGHWAY 24) AND OTHER COUNTY ROADWAYS**

The County roadway improvement in the study area that is most urgently required is the upgrading of Wellington Road 124 as a divided, 4-lane expressway. WR 124 was formerly Provincial Highway 24, and an Environmental Assessment for its improvement was completed by the Ministry of Transportation before the road was transferred to the County in 1997.

The present GWTS study confirms the earlier EA recommendation to widen WR 124 as a divided, 4-lane expressway. The existing roadway is already over capacity and the recommended improvements are required regardless of whether or not the upgrading of the Hanlon Expressway and the construction of the new Highway 7 are implemented. However, given the cost of this

project, estimated to be nearly \$50 million, the County is not in a position to implement it without Provincial support.

Other major County roadway projects to be undertaken during the planning period include the widening of Wellington Road 46 (Maltby to WR 34, the EA for which has been completed along with Gordon Street) and the reconstruction of Wellington Road 7 (Elora to Hwy 6).

### **8.0 PROVINCIAL HIGHWAYS**

Provincial highways are important links in the study area road network, serving long distance and inter-regional vehicular and truck traffic. As discussed in Section 7, improvements to these highways are consistent with Ontario's strategic transportation directions and the emphasis on public transit. The critical improvements required during the planning period (2001–2021) and the status of their environmental assessments are as follows:

- 1) Highway 6 South (Morrison to Guelph) Bypass: The EA for the Bypass has been completed and is under MoE review. The review is expected to be completed by December 2005.
- 2) Highway 7 West (Kitchener to Guelph): The EA Addendum for the new Highway 7 is currently under MoE review, which is expected to be completed by August 2005.
- 3) The Hanlon Expressway: Hanlon is currently a north-south, 4-lane divided roadway with one interchange at Wellington Road and several at-grade intersections to the north and south of Wellington Road. A recent operational review of the Hanlon intersections also indicates that the existing intersections will have to be upgraded as interchanges or grade-separated before 2021. As indicated in Table 8.5, an environmental assessment will be required for interchange upgrades south of Wellington Road, while an addendum will be required to the earlier EA undertaken for upgrades to the north of Wellington Road.

The Ministry of Transportation Southwestern Region will be undertaking a transportation needs study to specifically address Provincial highway issues in Guelph and Wellington. As discussed in Sections 7 and 8, the GWTS recommends the following highway improvements for further consideration in the proposed Guelph-Wellington Transportation Needs Study:

- 1) The Hanlon Expressway northerly extension to connect with Highway 6 North
- 2) Highway 6 North Bypass at Fergus
- 3) Easterly connection to Highway 401—a new north-south corridor to the east of Guelph

The proposed needs study should also examine opportunities to use future highway improvements for accommodating bus transit service in the Guelph-Wellington and the Kitchener-Waterloo-Cambridge areas.

### **9.0 THE GUELPH-WELLINGTON TRANSPORTATION MASTER PLAN**

Section 8 of this report includes the Guelph-Wellington Transportation Master Plan. It summarizes the recommendations to be undertaken during the planning period in the areas of:

- Transportation Demand Management
- Public Transit
- City of Guelph Roadways
- County of Wellington Roadways
- Provincial Highways

The proposed improvements are interconnected and mutually supportive. If the use of alternative modes in Guelph and the use of inter-regional transit do not increase during the planning period, there will be significant strains on the area road system and congestion on specific roadway sections.

Roadway improvements in Guelph are necessary not only to accommodate passenger vehicular traffic but also to accommodate walking, cycling and buses. The County and Provincial roadway improvements should also promote inter-regional transit and efficient goods movement.

Delays in implementing the recommended improvements on identified roadways will create traffic congestion on them, adversely affect transit service, and will lead to traffic infiltration of neighbourhoods and communities. With the exception of the upgrading of Wellington Road 124 (the former Highway 24), the City and County roadway improvements identified in this study are not excessive, involving, at most, widening from 2 to 4 lanes. However, if the identified Provincial highway improvements are not implemented during the planning period, there will be significant impacts to adjacent City/County/Township roadways. Additional widening to these roadways would involve significant social and community impacts.





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# 1. INTRODUCTION

## 1.1 BACKGROUND

The Guelph and Area Transportation Study (GATS) was undertaken jointly by the City of Guelph and the County of Wellington in 1991 to anticipate and address some of the transportation impacts of continued growth and changes to the provincial highway network. The findings and recommendations of the study, completed in 1994, covered all areas of the transportation system, including (a) Road Network; (b) a Cycling Master Plan; (c) Local Transit; (d) Pedestrian Facilities; (e) Rail Facilities; (f) Inter-City Transit Service; and (g) Downtown Parking.

In April, 2001, the City of Guelph adopted a Transportation Strategy Update following an extensive consultation process that included Guelph residents, businesses, stakeholder groups, institutions, as well as the County of Wellington and Ministry of Transportation Southwest Region representatives. The new strategy embodies a transportation vision and general and mode-specific goals, objectives and policies (see Figure 1.1). The strategy also provides a framework based on community consensus for developing long-term transportation plans. The framework challenges land use and transportation planning to work towards a transportation system that is economically, socially and environmentally sustainable. It recognizes that the automobile and freight truck, given their cost/time/convenience advantages, are the preferred modes of choice for individuals and businesses. At the same time, it is necessary to provide alternative modal choices to minimize the social and environmental costs of transportation without reducing economic efficiency. Accordingly, the framework stipulates that the road right-of-way should accommodate both the automobile/truck and alternative modes of travel and that the roadway improvements should be evaluated on the basis of safety, mobility, community impacts and efficient goods movement.



FIGURE 1.1: TRANSPORTATION PLAN—A COMPONENT OF THE OFFICIAL PLAN

1.2 STUDY PURPOSE

The City of Guelph and the County of Wellington initiated the 2005 Guelph-Wellington Transportation Study (GWTS) to address the long-term transportation needs and improvements in accordance with the Official Plan policies of Guelph and Wellington County, the City’s Transportation Strategy and SmartGuelph Principles. Figure 1.2 below shows the Study Area.

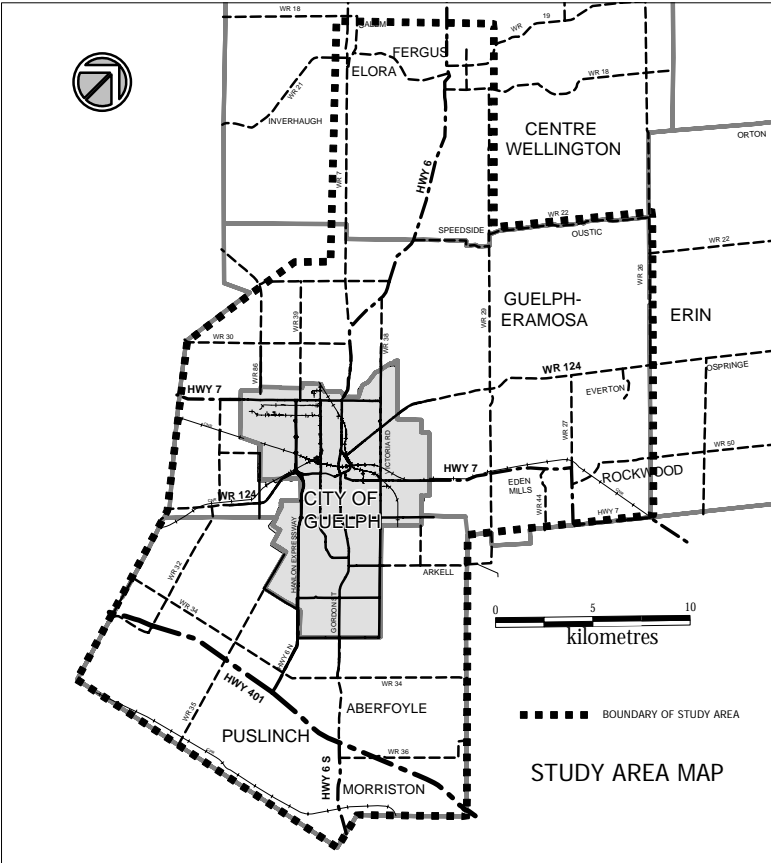


FIGURE 1.2: STUDY AREA

The specific Study Objectives identified in the Terms of Reference (included in the Technical Appendix) are:

- Identify transportation needs and recommend practical improvements for specific areas such as new Growth Areas, the Downtown, Older Built-up Area, the University Precincts in Guelph, and areas such as Aberfoyle and Fergus in Wellington County;
- Recommend Transportation Demand Management (TDM) measures, as appropriate to different areas, that will encourage reduced use of the automobile and greater use of alternative modes such as transit, walking and cycling;



- Identify improvements to City and County roadways, establish need and justification to meet the Provincial EA process, and recommend a coordinated implementation strategy;
- Review Provincial highway initiatives affecting Guelph and Wellington County and identify priorities based on inter-regional travel and truck traffic patterns;
- Review the growing inter-regional travel between Guelph/Wellington, Region of Waterloo and the GTA, and identify opportunities for transit initiatives to serve this need.

**1.3 THE TRANSPORTATION PLANNING PROCESS**

*1.3.1 Basic Planning Process*

The typical transportation planning process is composed of four essential stages, as shown in Figure 1.3 below:

- 1) Forecasting the location and amount of future population and employment growth within and external to the study area.
- 2) Based on the above growth forecast, estimate the amount of travel within, external and through the study area and determine the need for transportation improvements based on the impact of increased travel demands on the area transportation system.
- 3) Identify and evaluate alternative transportation improvements and initiatives to meet future transportation needs leading to selection of a preferred solution.
- 4) From the foregoing, prepare an overall plan, policy framework and prioritized implementation strategy to establish an overall transportation master plan for the area.



**FIGURE 1.3: THE GENERIC TRANSPORTATION PLANNING PROCESS**

### *1.3.2 Data Sources*

Transportation planning relies on an assortment of traffic, demographic and socio-economic data to determine existing and future travel demands and patterns. The primary data sources used in the study include the following:

- 1) *The 1996 and 2001 Transportation Tomorrow Survey*: A household telephone survey of residents identifying their travel rate, origin and destination locations and the travel mode used on a typical weekday. TTS surveys are undertaken every five years by the Ministry of Transportation, the GTA municipalities and external municipalities, including the City of Guelph and Wellington County. While this survey attempted to tabulate all travel during a typical 24-hour period, trip data for the afternoon peak hour (the highest hour of traffic during the day) was the focus of this study.
- 2) *Historical and 2001 Statistics Canada Census Data*: The 2001 census and historical census information provided existing and historical population and employment information and historical growth rates for the study area and beyond. This data was used to assist with population and employment forecasts for the study area.
- 3) *City of Guelph Household and Population Projections 2001–2027* (C.N. Watson and Associates Ltd., April 2003). Supplementary data provided by the City's Planning Department.
- 4) *Wellington County Population and Household Forecast by Local Municipality 2001–2022* (C.N. Watson and Associates Ltd., January 2003). Supplementary data provided by the County's Planning Department.
- 5) *External Cordon Origin Destination Data*: To identify the amount of travel into and out of the study area, roadside interview travel surveys were undertaken to identify the origin, destination and trip purpose of traffic entering, leaving and traveling through the study area. The survey was conducted during weekday afternoons between the hours of 3:00 PM to 6:00 PM during September and October of 2003. The travel survey set-up, time and locations are summarized in Figure 1.4.
- 6) *Traffic Count Data*: The City of Guelph conducted intersection traffic counts at most key intersections in the study area between 2001 and 2003. The County of Wellington provided a limited amount of available data on the County roads. This data was used to determine the existing travel demands on the roadway system.
- 7) *The City of Guelph Transportation Strategy Update: Public Attitude Survey* (Harry Cummings & Associates, October 2000).

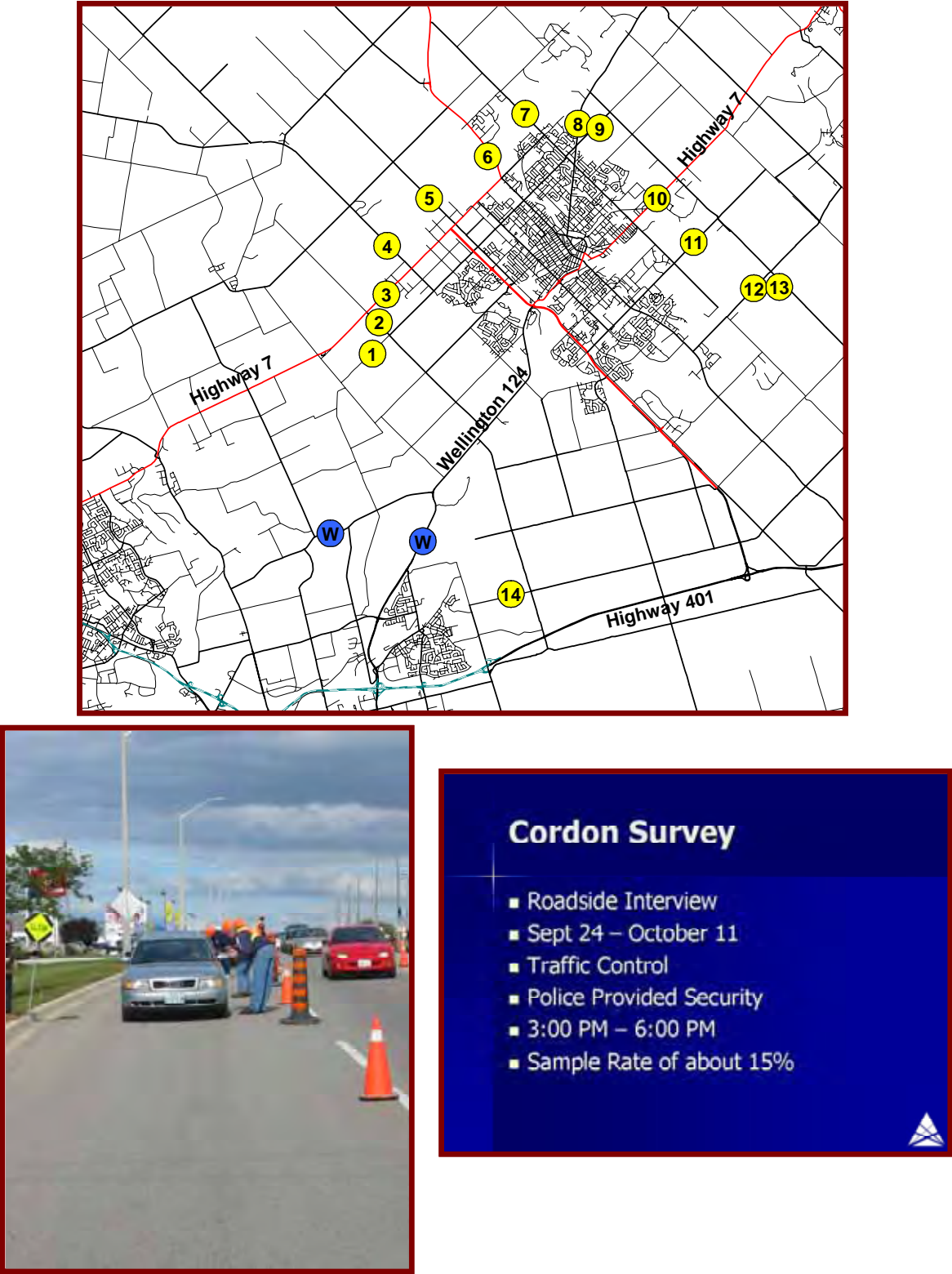
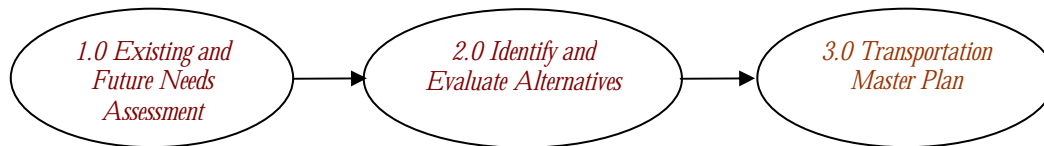


FIGURE 1.4: EXTERNAL CORDON ORIGIN-DESTINATION SURVEY (2003)

### *1.3.3 The Guelph-Wellington Study Process*

The study was undertaken in three phases to meet the requirements outlined in the Terms of Reference (included in the Technical Appendix). Public consultation was a major part of the study process, as well as consultation with elected officials and sharing of technical information with the Ministry of Transportation (Southwestern Region) and the Regional Municipality of Waterloo.



- 1) *Phase 1.0 Existing and Future Needs Assessment:* The focus of this phase was in the identification of existing and future transportation demands and conditions throughout the study area for all modes (walk, cycling, public transit, trucks, automobile, rail) assuming no changes to the transportation network. The findings of this phase identify how the travel experience will change in Guelph, if no improvements are made.
- 2) *Phase 2.0 Identify and Evaluate Alternatives:* The findings of this phase identify the opportunities and constraints associated with achieving a more balanced transportation system while accommodating traffic into and through Guelph and Wellington. At this stage of the study, alternative improvements are systematically identified, screened and evaluated based on available information.
- 3) *Phase 3.0 Transportation Master Plan:* The results of the above were used to further refine the plan, develop an implementation strategy and carry out further consultation with City and County Council and the public.

### *1.3.4 The Study Organization*

The study was directed by a Project Team comprising City of Guelph and County of Wellington staff, as well as members of the consultant team:

- *City of Guelph:* Rajan Philips, Geoffrey Keyworth, Don Kudo (Engineering Department); Paul Kraehling (Planning Department).
- *County of Wellington:* Gord Ough (County Engineer).
- *Consultant Team:* Phil Grubb, Jim Mallett, Bill O'Brien (Paradigm Transportation Solutions Limited); Ernst Heinrichs, Stewart Elkins (Totten Sims Hubicki Associates); Glenn Scheels (GSP Group).

Throughout the study, the Project Team obtained input and comments from other City and County departments including the City and County Planning Departments, Guelph Transit Services, Parks Department and Traffic Services Division.

At key points in the study, the Project Team shared information and findings with the Ministry of Transportation (Southwest Region) and the Regional Municipality of Waterloo.

### *1.3.5 The Public Consultation Process*

The study commencement was advertised in the *Guelph Tribune*, the City's web page and by letters to residents' organizations, stakeholder groups, institutions and business associations. An initial workshop with members of City and County Councils and senior staff was held on April 22, 2004, to obtain input on study scope and identify priorities. A similar workshop open to the public was held on May 4, 2004. The workshop was well attended and input was obtained through facilitated group discussions and through questionnaire responses. A second public presentation and discussion was held on November 3, 2004, to present the findings, conclusions and proposed recommendations of the transportation study. This meeting was also well attended and the participants discussed the proposed recommendations and provided input.

The two public meetings/workshops focused on issues, alternatives and recommendations under two sets of transportation system improvements:

- 1) *Non-Structural Improvement Alternatives*: Involving increased walking and cycling, increased transit use, mixed and higher density land use, increased ridesharing and TDM strategies involving transit fare strategies, parking supply and price management, congestion pricing, etc.
- 2) *Structural Improvement Alternatives*: Such as provincial highway improvements, pedestrian bicycle routes and facilities, preferential transit facilities and increased capacity on City and County roadways.

The draft final report and recommendations of the study were made available for public review and comment in March 2005. The study conclusions and recommendations were also presented at a public meeting on March 23, 2005, and at a joint meeting of the City's Planning, Environment and Transportation Committee and the County's Roads Committee on March 30, 2005. The final study report and the Transportation Master Plan were presented to County and City Councils on June 30 and July 18, 2005, respectively. Accounts of the public meetings and summaries of public comments are included in the Consultation Appendix to this report.



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## 2. EXISTING TRAVEL PATTERNS

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### 2.1 PREVIOUS AND CURRENT TRANSPORTATION STUDIES

#### *2.1.1 Guelph/Wellington Studies*

Numerous transportation planning and environmental assessment studies have been conducted in the past by Guelph and Wellington. Their results and recommendations have been reviewed as part of this study. The transportation planning studies include:

- Fergus/Elora Transportation Needs Study (1991)
- Guelph and Area Transportation Study (GATS) (1994)
- Guelph Transportation Strategy Study (2001)
- Guelph Transit Route Planning Study (2002)
- Centre Wellington Official Plan Transportation Background Study (2002)
- Transportation Model Development (2003)
- Bicycle and Trails Master Plan (in progress)
- City of Guelph Development Charges Study (2003)

The Class Environmental Assessment studies include:

- Gordon Street/Wellington Road 42 Class Environmental Assessment
- Stone Road Class Environmental Assessment
- Clair Road Class Environmental Assessment
- Gordon Street/Norfolk Street Class Environment Assessment
- Watson Road Environmental Assessment
- Victoria Street Class Environmental Assessment

#### *2.1.2 Provincial Highway Studies*

A number of past and current provincial transportation studies were also consulted for this study. These include:

- Highway 24 West Environmental Assessment Study: Cambridge to Guelph (1994)
- Highway 7 East (Guelph to Brampton) Role and Function Study (2001)
- Highway 24 Corridor Planning Study: Cambridge to Brantford (2004)
- Highway 7 West-Kitchener: Guelph Environmental Assessment Study (2004)
- Hanlon Expressway Traffic Operations Study (2004)
- Highway 6 Study—Morrison to Guelph: Environmental Assessment (2004)
- Highway 6 North Corridor Study—Marden to Chatsworth (in progress)

- Shape the Future: Central Ontario Smart Growth Panel, Ministry of Municipal Infrastructure Renewal and related document Places to Grow Better Choices, Brighter Future Discussion Paper (2004)

## **2.2 EXISTING TRANSPORTATION SYSTEM**

### *2.2.1 Roads*

#### City of Guelph Road Network

The major road network in the City of Guelph is characterized by three continuous north-south roadways and a largely discontinuous grid of east-west roadways as shown in Figure 2.1.

The Hanlon Expressway under Provincial jurisdiction, the Gordon Street/Norfolk Street/Woolwich Street corridor and Victoria Road, supplemented by discontinuous roadways such as Watson Road, Edinburgh Road, Stevenson Street, Downey Road and Elmira Road, make up the major north-south arterial road network.

In the east-west direction almost all arterial roadways are discontinuous or disconnected making east-west movements into the City very awkward and disjointed. Woodlawn Road, Speedvale Avenue, Paisley Road, the Wellington/York Road and Wellington/Eramosa Road corridors along with Stone Road and Laird/Clair road provide the main east-west linkages to the adjacent County Road System. These are supplemented by very short sections of arterial roads such as College Avenue, Willow Road, Kortright Road and Elizabeth Street.

#### South Wellington Road Network

Figure 2.2 illustrates the network of Wellington County roads and Provincial highways serving the Study Area and connecting with City of Guelph roads. The key roadways include the existing Provincial highways such as Highway 401, Highway 6 and Highway 7 and former highways such as Highway 24 (now Wellington Road 124) and Highway 6 (now Wellington Road 46). All these roadways accommodate increasing traffic volumes to/from and through the City of Guelph and will be impacted by future growth within and external to the City.

Other key linkages between the County and the City are provided by Wellington Road 35 (Downey Road within City limits), Wellington Road 41 (Watson Road), Wellington Road 38 (Victoria Road), Wellington Road 39 (Silvercreek Parkway), Wellington Road 86 (Elmira Road) and Wellington Road 31 (Paisley Road).



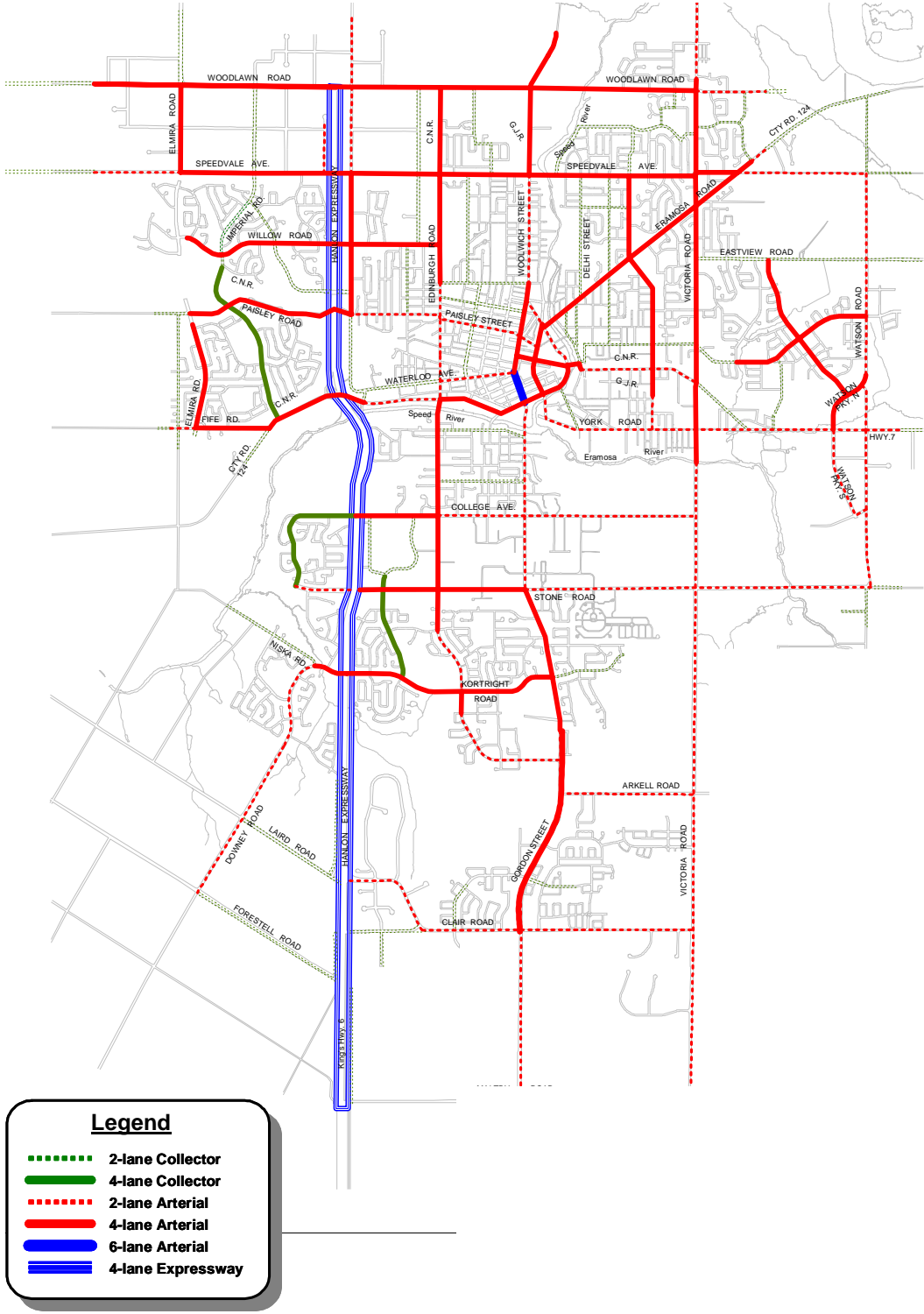


FIGURE 2.1: EXISTING ROADS

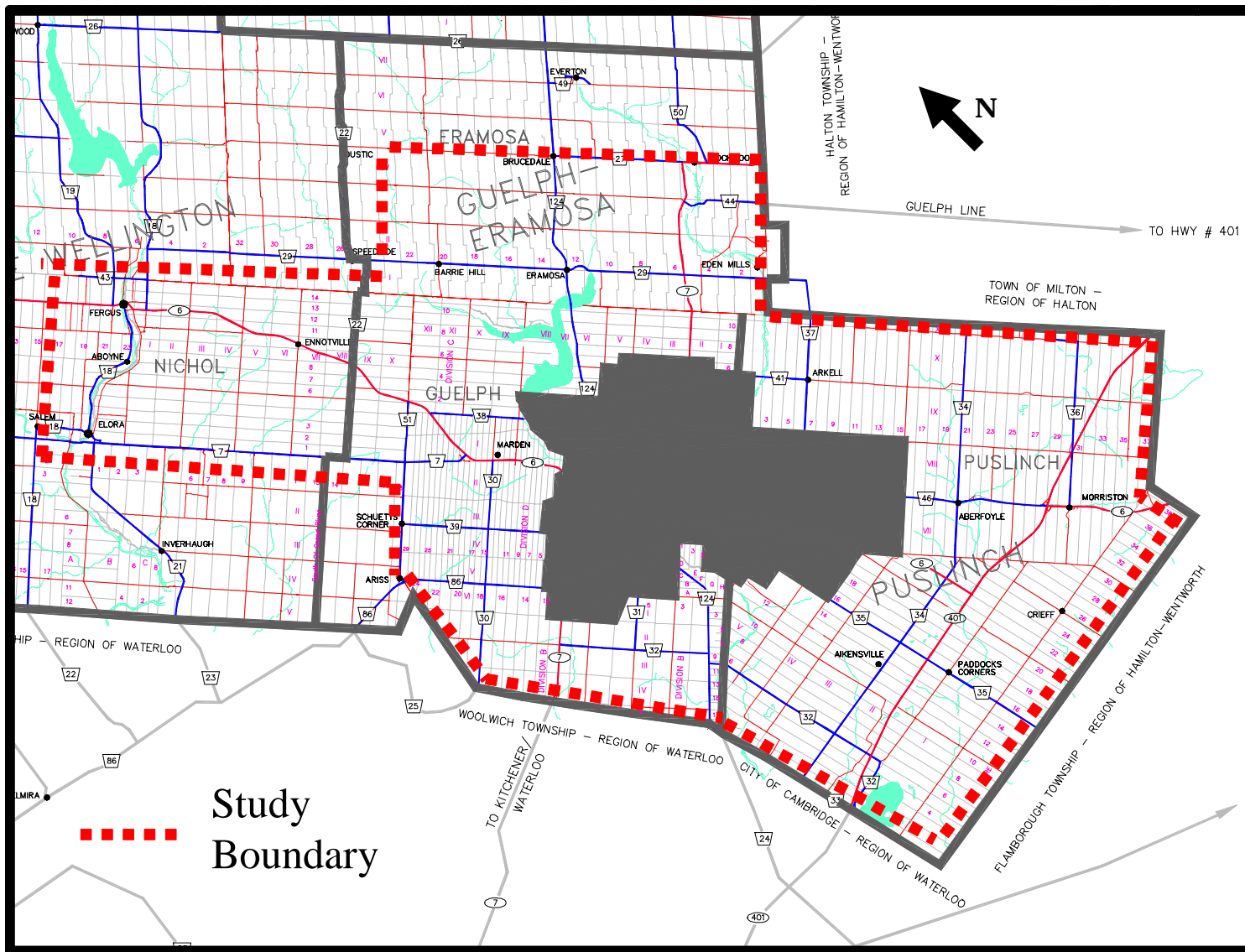


FIGURE 2.2: WELLINGTON COUNTY ROADS AND PROVINCIAL HIGHWAYS

### *2.2.2 Transit*

Public transit services within Guelph are provided by Guelph Transit, a service owned and operated by the City of Guelph. The general features of the service are as follows:

- The transit system consists of 15 regular bus routes, as shown in Figure 2.3, and several special/extra routes that provide service to most areas of the City. Fourteen of the 15 bus routes are routed to St. George's Square in downtown Guelph, with connections at 30 minute intervals. Most routes are inter-lined (i.e. two routes connected to form a combined route) through St. George's Square.
- Trips between different areas of the City are required to transfer at St. George's Square except where these different areas are located on inter-lined routes that provide a direct connection through the downtown area. To accommodate these transfers, the buses are scheduled to arrive and leave at a common time (e.g. 15 minutes to the hour and 15 minutes past the hour).
- Transit services are provided from 5:45 AM until 12:45 AM on Weekdays and Saturdays and from 9:15 AM until 6:45 PM on Sundays. All routes provide service every 30 minutes throughout the day on weekdays, Saturdays and Sundays.

The current fare structure (effective May 2004) for persons using the Guelph Transit service is as follows:

- Exact cash fare is \$2.00 for all customers.
- Ten tickets cost \$17.00 for adults and \$13.50 for senior citizens and students (up to high school graduation).
- Monthly passes cost \$58.00 for adults and \$52.00 for senior citizens and students.
- Transfers between routes are provided free.

University of Guelph undergraduate students have a universal pass program under which all students are assessed a fee at registration and then have unlimited free access to the transit service throughout the semester.

The transit system has 38 buses in operation during peak periods with a total bus fleet of 50 buses. Guelph Transit currently has 17 wheelchair accessible low floor buses in the fleet. Eight routes have low floor buses assigned to specific runs to accommodate persons with mobility aids as well as to improve boarding and alighting by all customers. In the current bus fleet, 20 buses are under five years of age while the majority of the rest are 18 years of age or older. Guelph Transit is operated from a modern garage facility on Watson Road on the east side of the City that provides bus storage, bus maintenance and transit staff office functions for the system.

In 2003, Guelph Transit's operating costs for the conventional transit system were \$10.3 million, revenues of \$5.8 million, and the difference of \$4.5 million was funded by City.

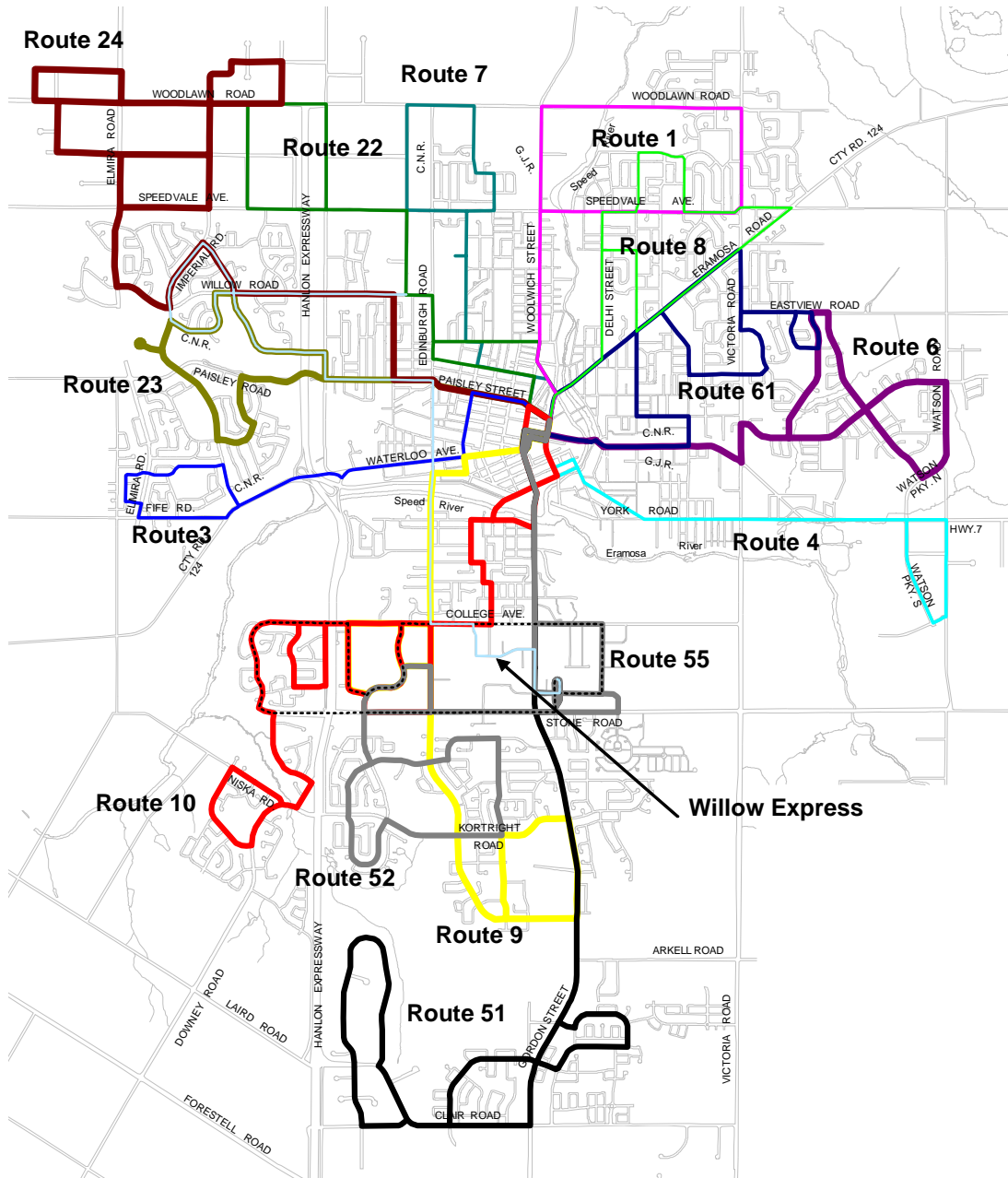


FIGURE 2.3: EXISTING TRANSIT ROUTES

In addition to the conventional public transit service, Guelph Transit also provides Guelph Transit Mobility Service, a specialized public transit service for persons with disabilities. This service provides pre-booked, door-to-door service for persons who meet the eligibility criteria and have registered in advance. The hours of service and fare structure are similar to the conventional transit service. In 2003, the Mobility Service provided approximately 52,000 trips to 1314 registered customers. The total operating cost of this service in 2003 was \$710,000, revenue \$43,000, leaving a deficit of \$667,000 funded by the City.

### *2.2.3 Inter-Regional Transit*

Guelph is currently served by inter-city transportation services that include VIA Rail train service, GO Transit bus service, and commercial inter-city bus services. These services primarily serve discretionary travel as opposed to home-to-work commuting from/to Guelph.

VIA Rail provides daily train services from the downtown station on Carden Street eastbound to Toronto Union Station and westbound to Kitchener, London and Sarnia. There are typically 3 or 4 trains in each direction daily. Eastbound trains provide service to downtown Toronto with some intermediate stops while westbound trains provide service to Kitchener and London as well as other stops. Typical travel time from Guelph to Toronto Union Station is about 1 ¼ hours with a one-way economy fare of \$21.40. A one-way economy fare to Kitchener is \$14.98 from Guelph.

GO Transit provides inter-regional bus service connecting Guelph to destinations in the Greater Toronto Area (GTA) along the former Highway 7 corridor through Georgetown and Brampton. The service consists of about 7 eastbound bus trips leaving Guelph and 7 westbound bus trips arriving at Guelph on weekdays, 5 eastbound and 5 westbound trips on Saturdays and 4 eastbound and 4 westbound trips on Sundays. All GO Transit bus trips start or end at the bus terminal on Carden Street. On weekdays some of the bus trips are timed to connect to the Georgetown GO Train while the remaining trips are routed through to at least the Brampton bus terminal. Typical peak period travel times to downtown Toronto are about 1 ¾ hours with the GO train connection and longer with the through bus service. The 10 ride ticket adult fare from Guelph to Union Station is equivalent to \$9.65 per trip.

A number of commercial inter-city bus operators provide service to the downtown inter-city bus terminal on Carden Street as follows:

- Greyhound operates regular bus service between Guelph and downtown Toronto with about 16 trips in each direction on weekdays. This service includes some peak period express trips designed to accommodate commuters. A typical travel time to downtown Toronto is about 1 ¾ hours during the peak period and 1 ¼ hours in the off-peak. A single trip fare (Guelph to Toronto, one-way) is about \$18.83 but a variety of discounts are available that offer regular commuters significantly reduced prices (e.g., 8-day commuter pass for \$95.00).
- Greyhound also operates regular bus service between Guelph and the Kitchener bus terminal with about 10 trips in each direction on weekdays. The travel time is about 30 to 40 minutes and the fares are priced at about \$8.83 for a single one-way trip but various discounts are available such as the 8-day commuter pass for \$42.00. Some trips are provided to the Waterloo universities as well as to the University of Guelph.
- Coach Canada operates regular bus service between Guelph and Hamilton with connections to Niagara Region. There are about 3 daily trips in each direction on most weekdays with a travel time of about 70 minutes. A single trip fare is \$10.45 plus tax and 10 trip tickets are available at 85% of the single trip fare.
- Overland Trails provides a couple of daily trips on weekdays between Guelph and Cambridge.

- Greyhound provides 3 trips weekly to Fergus and north along the Highway 6 corridor to Owen Sound.
- A private operator provides weekday service between Fergus and Guelph—one Guelph-bound AM trip and one Fergus-bound PM trip, which is mostly used by Fergus residents working in Guelph.

Overall, the combined inter-city rail and bus service between Guelph and the GTA provides about 26 trips in each direction on weekdays and the combined inter-city rail and bus service between Guelph and Kitchener provides about 13 trips in each direction on weekdays. This combination of services offers travelers an excellent range of inter-city travel choices. The fare levels between the GO service and the commercial bus services are very competitive.

### *2.2.4 Cycling and Walking*

The City of Guelph recognizes all modes as being integral to its transportation system: walking, cycling, public transit, automobiles, trucks and railways for the movement of people and goods. With respect to walking and cycling the policy objectives of the City are:

- To support measures to improve the pedestrian environment and system.
- To implement programs to facilitate and encourage greater and safer use of the bicycle as a mode of transportation.

Several policies of the City of Guelph Official plan relating to land use intensification and compact urban form are intended to make walking and cycling convenient and attractive options with origins and destinations located within short distances. The development of dense urban commercial and employment nodes and suburban neighbourhood centres are policies which also support and encourage walking and cycling in these areas.

Currently, walking is supported mainly by the system of sidewalks with the right-of-way of roads, while an off-street trail system is also available. Guelph has a citywide sidewalk system which is continually extended as part of new development. The Official Plan provides for a system of on-road and off-road dedicated and on-road non-dedicated bicycle facilities. The existing and the proposed components of the cycling network are shown in Figure 2.4. On-road facilities are implemented along with road reconstruction. Aside from recreational trails, a planned network of bicycle facilities has not been prepared for the County.

Trail systems and linkages are implemented through subdivision development, while urban design, maintenance standards and bicycle parking facilities are also used to support walking and cycling.

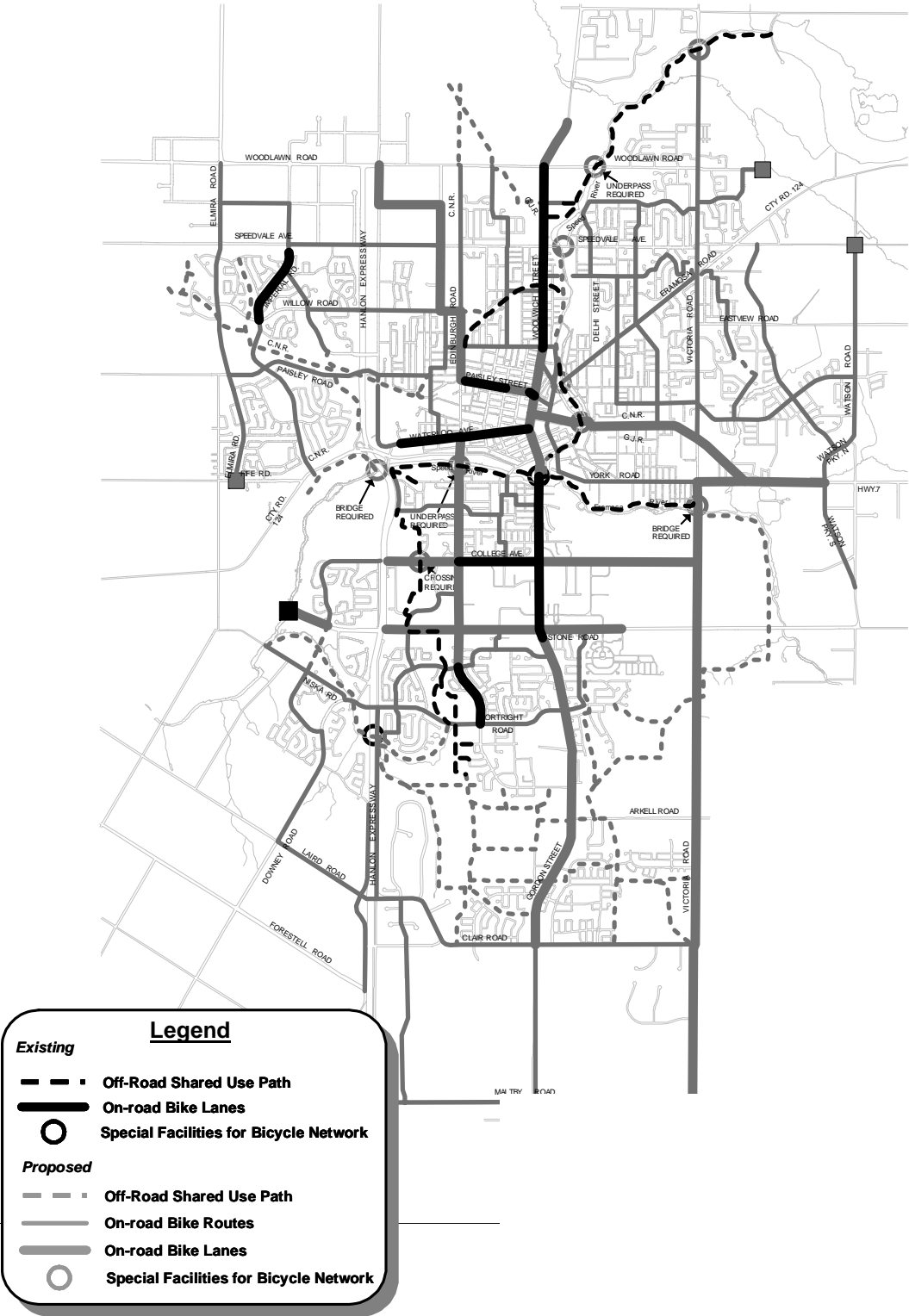


FIGURE 2.4: EXISTING AND PLANNED CYCLING NETWORK

## 2.2.5 Goods Movement

The City and County recognize the need for truck and railway transportation modes to provide for the movement of goods within and through the City. The City of Guelph operates a federally chartered railway known as the Guelph Junction Railway Company. This rail line is about 37 km long and serves several local area industries.

The City has developed a permissive truck route system, shown in Figure 2.5, to encourage the use of arterial roadways for the movement of trucks and reduce conflicts in residential areas. Within the study area, all provincial highways, County roads and designated Township roads accommodate truck traffic.

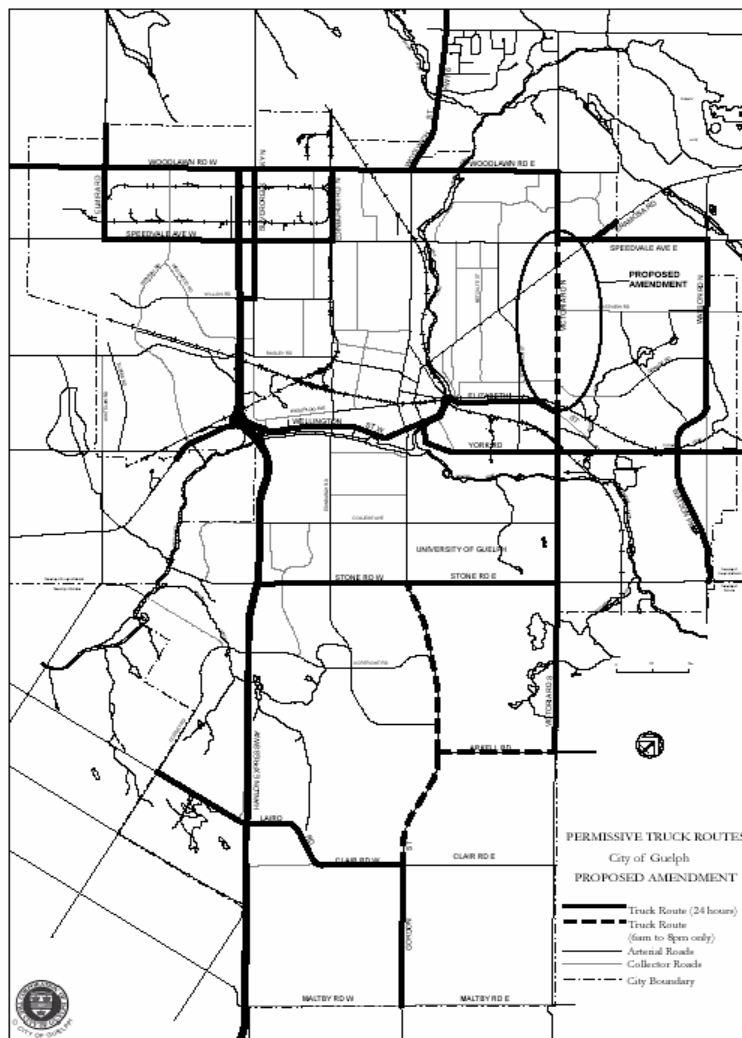


FIGURE 2.5: TRUCK ROUTE NETWORK



### **2.3 EXISTING TRAVEL CHARACTERISTICS**

#### *2.3.1 Travel Demand (Frequency and Trends)*

Historical travel survey data indicates that travel demands in the study area are growing significantly faster than the population, placing accelerated demands on the transportation system as shown in Figure 2.6 below. Since the mid-1990s, travel demands considering all modes have increased by 50% per capita from 2 to 3 trips per person per day.

A number of factors have contributed to this as follows:

- The number of vehicles per household has increased and continues to increase, averaging 1.67 per household in 2001, up from 1.55 in 1996 in the City. In the County, vehicle ownership rate is approaching 2 per household and is increasing. The increase in vehicle ownership is probably attributable to suburban population growth, two-income households and increasing affluence in society.
- With more vehicles available for use there is less of a constraint in the decision to make a car trip and fewer people share the same vehicle, as shown by the vehicle occupancy rate dropping from 1.3 persons/vehicle in 1991 to 1.26 persons per vehicle in 2001 in Guelph during a typical day. In the County, the proportion of single occupancy vehicle trips is generally higher than in the City, presumably because destinations are less concentrated, resulting in the need for multiple vehicle trips with lower vehicle occupancy. In simple terms, low vehicle occupancy means that more people are driving alone on trips (i.e. Single Occupancy Vehicle (SOV) trips).
- The travel demand is two to three times higher during the morning and afternoon peak periods of a typical day than during the midday period. The time periods of 7-9 AM and 4-6PM are when the maximum demand on the transportation system occurs and traffic congestion during these time periods generally govern the need for road improvements.

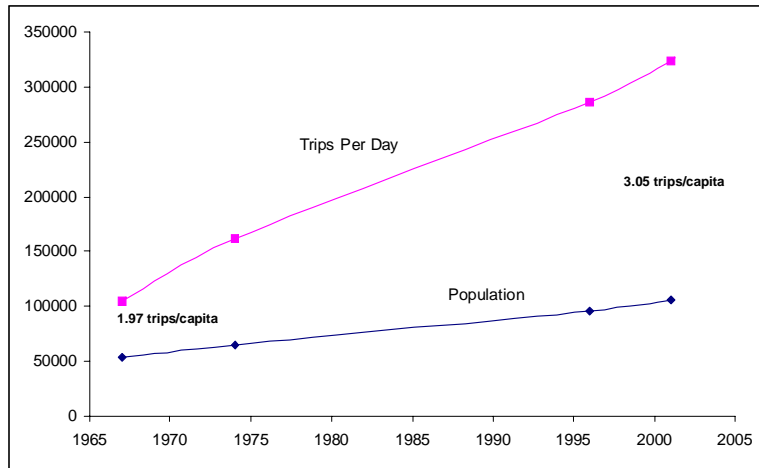
All of the above indicates that more and more pressure is being placed on the transportation infrastructure at a rate that is faster than growth within the City.

#### *2.3.2 Travel by Mode Characteristics*

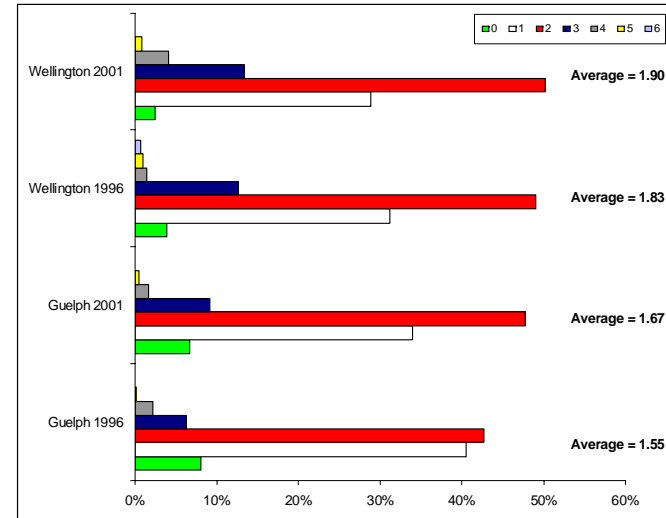
The large majority of trips are made by private vehicle in Guelph with over 83% of the trips being made by a person driving alone or with one or more passengers. Walking is the second most frequent mode of travel at close to 8% of all trips while public transit accommodates just over 5% of all trips. Figure 2.7 illustrates the modal shares and purposes of daily trips.

Auto trips clearly dominate the travel mode of choice for most trip purposes with over 90% of the trips for work, discretionary travel (shopping, personal service, recreation etc) and trips that do not start or end at one's place of residence (i.e. non-home-based trips). However, for home-based school trips, walking and private auto each make up almost 40% of the total trips followed by public transit at close to 20%. Cycling is the least used mode of travel under all trip purposes.

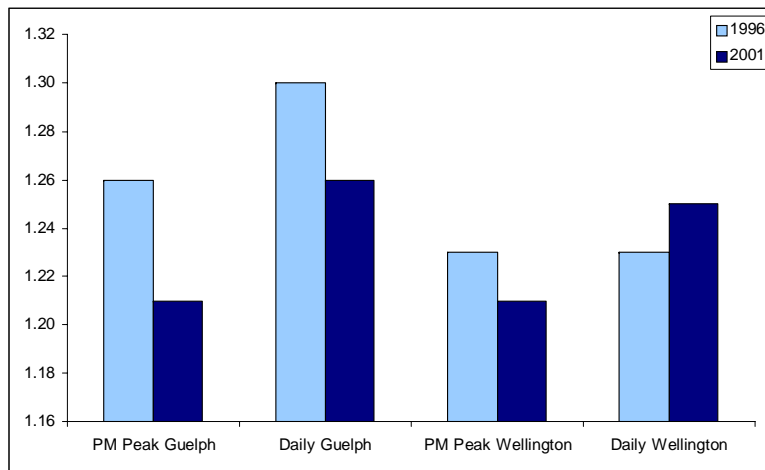
### Daily Trips Per Capita



### Vehicle Ownership/Household



### Number of Persons Per Vehicle



### Travel Demand vs. Time of Day

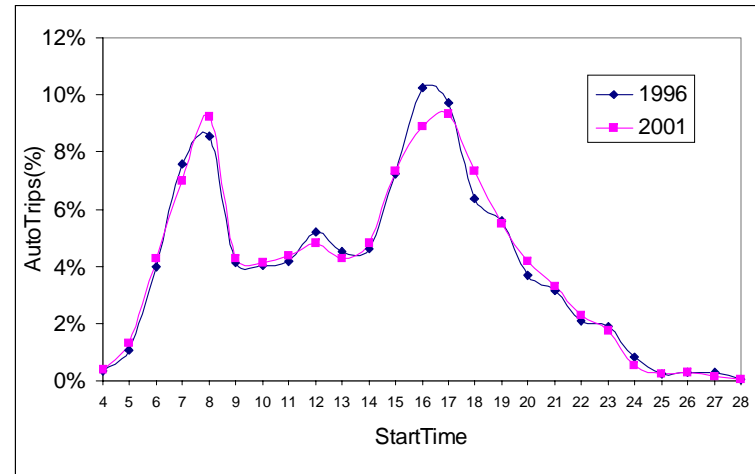
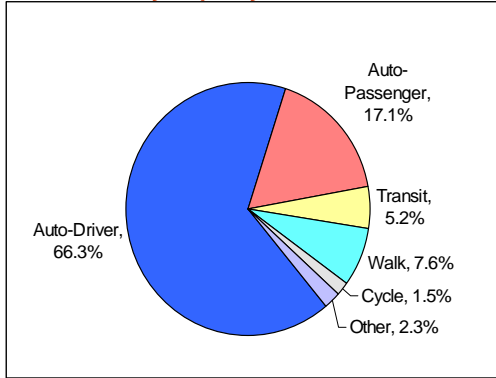
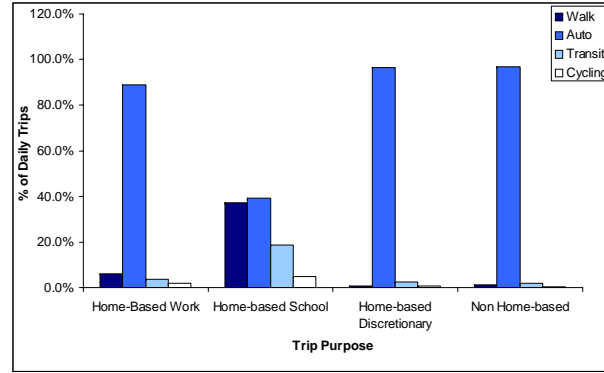


FIGURE 2.6: HISTORICAL TRAVEL DEMAND

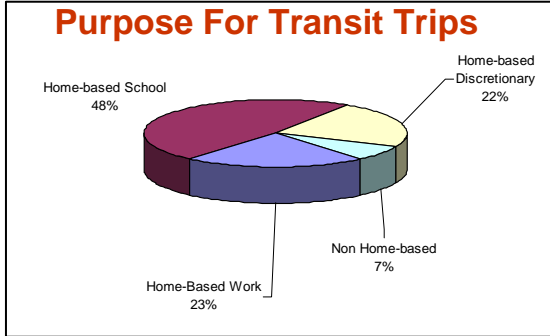
**Daily Trips By Mode of Travel**



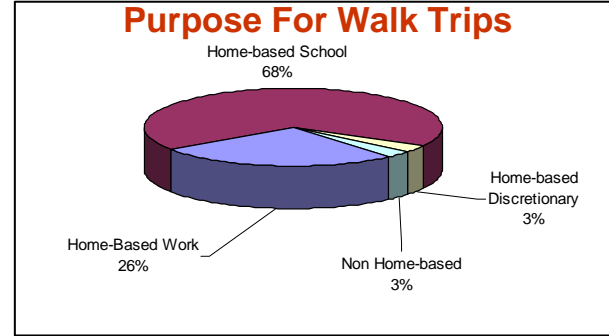
**Trip Purpose By Mode of Travel**



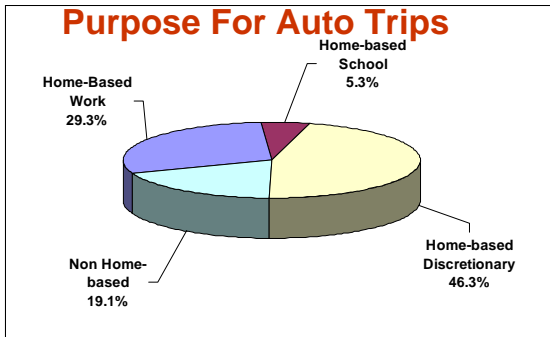
**Purpose For Transit Trips**



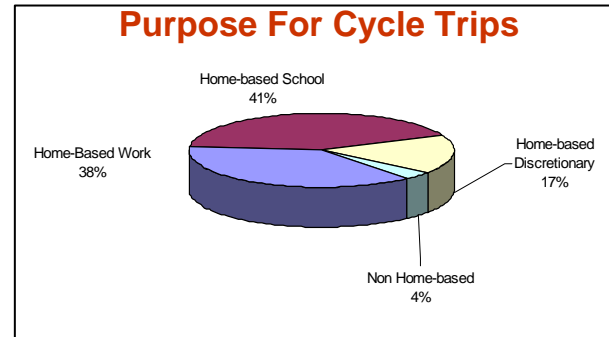
**Purpose For Walk Trips**



**Purpose For Auto Trips**



**Purpose For Cycle Trips**



**FIGURE 2.7: TRIP PURPOSE BY MODE**

In comparison to Provincial averages, Guelph has higher proportions of auto, walk and cycling usage, but a lower proportion of transit usage.

In examining trip purpose by each individual mode, the following characteristics are noted:

- 1) The majority of public transit trips are university and school trips (48%). Work and discretionary trips account for almost equal shares of 23% and 22% respectively, while non-home-based transit trips make up the balance (7%). The high proportion of discretionary trips using transit is remarkable.
- 2) The distribution of walk trips by purpose is very similar to that of transit trips.
- 3) Only 30% of the trips made by private auto are work trips, which is the trip purpose most easily served by public transit as they are concentrated during specific periods and are often single purpose/single destination trips to areas of large employment. 46% of auto trips are discretionary trips, for which transit is not usually an attractive mode. 19% of auto trips are non-home based while only 5% accounts for school trips.
- 4) Work and school trips make up the majority of cycling trip purposes.

The above noted travel characteristics are very typical of medium-sized cities such as Guelph. However, it is recognized that the Guelph Transit System does accommodate more trips and operates more cost-effectively than in most similar sized cities.

### *2.3.3 External Travel Demands*

About 75% of all trips generated in Guelph have an origin and destination with the City (see Figure 2.8). About 25% of all trips have an origin or destination outside the City. By comparison, only 40% of trips generated in South Wellington stay within Wellington County while the remainder goes elsewhere.

About 43% of the home-based external trips involve travel to/from work outside the City. Shopping, recreational and personal service trips also make up a similar amount of the external trip making to/from home. About 15% of the external trips do not start and end at home.

Guelph continues to be a net importer of jobs: 17,400 Guelph residents had jobs outside Guelph in 2001 (up from 13,000 in 1996), while it attracted 22,400 workers from outside municipalities in 2001 compared to 17,000 five years earlier.

In terms of external work activity the following is noted:

- A majority of Guelph residents work in Guelph while most Wellington residents work outside of Wellington County. More than 7000 Wellington County residents work in Guelph, while 2400 Guelph residents work in the surrounding townships.
- The single largest attractor of external work trips out of Guelph is Waterloo Region which accounts for over 4100 jobs held by Guelph residents. The three GTA municipalities of Toronto (1570), Peel (2255) and Halton (1525) account for 5350 jobs,

while about 375 Guelph residents have jobs in Hamilton.

- The largest number of people coming into Guelph is from the Waterloo Region, totaling more than 9500, while the three GTA municipalities account for 2000 external workers and Hamilton accounts for an additional 1000 of them.

The trends between 1996 and 2001 indicate that external trip making for work is continuing to grow, indicating that an increasing amount of stress can be expected on the regional transportation system, particularly the highways connecting Guelph and Waterloo Region (Hwy. 7 and County Road 124), Guelph and Wellington (Hwy 6) and Guelph and the GTA (Hanlon, Brock Road/Hwy 401).

### 2.3.4 Local and Inter-City Transit Ridership Characteristics

The annual ridership on Guelph Transit has been increasing significantly since the mid-1990s as indicated in Figure 2.9. Over the period 1996 to 2001, the number of annual passenger trips using the Guelph Transit services increased by approximately 47% while the City population increased by 11% over the same period of time. The increased transit ridership is attributed to population growth, expanding transit service, and increases in University student ridership following the introduction of a universal pass arrangement for undergraduate students in the mid-1990s.

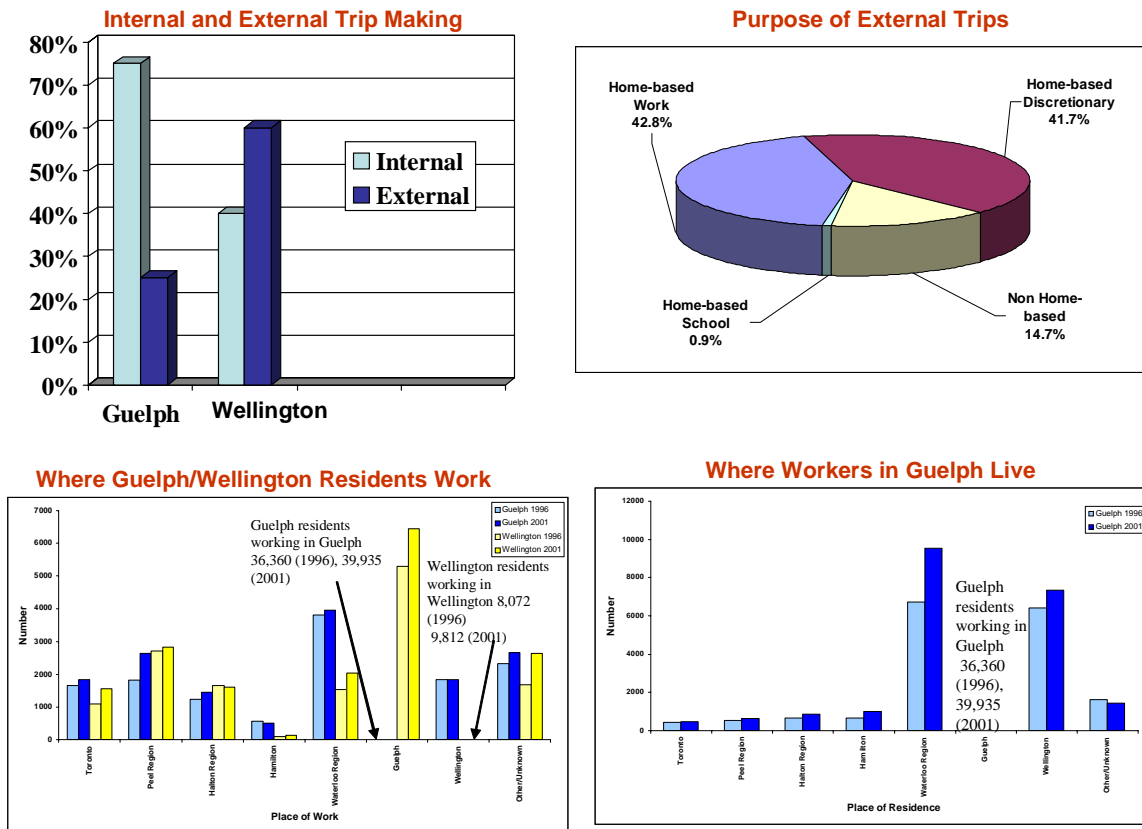


FIGURE 2.8: EXTERNAL TRIP MAKING CHARACTERISTICS

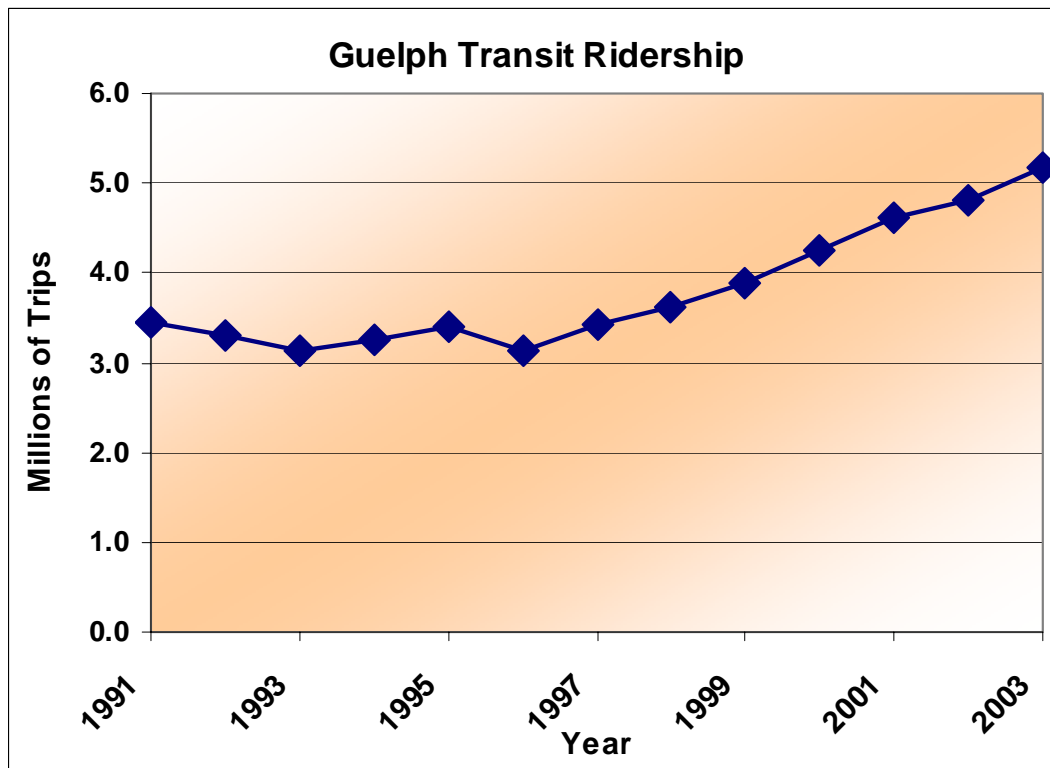


FIGURE 2.9: HISTORICAL TRANSIT RIDERSHIP

The level of transit ridership in Guelph is equivalent to about 43 annual trips per capita for the overall City population. This is a relatively high level of ridership for a community size of Guelph. The average Canadian ridership level in communities of 50,000 to 150,000 is about 23 annual trips per capita and in communities of 150,000 to 400,000, it is about 44 annual trips per capita (Reference: CUTA Canadian Transit Fact Book, 2002 Operating Data). Guelph’s relatively high use of public transit services is attributed to:

- The presence of the University of Guelph generates a significant amount of ridership.
- Guelph has a strong, active downtown area that is well served by the public transit system.
- The Guelph Transit service has provided a high level of reliable, convenient transit service to all areas of the City for many years and this has encouraged ongoing use of the service.

A route planning study in 2002 (Reference: City of Guelph, Route Planning, Service Design and Downtown Transfer Point Relocation Study, August 2002) provided data on the nature of the transit ridership. This study found that:

- The transit system carries about 16,000 passenger trips on a typical weekday.

- About 40% of the passenger trips make a transfer connection between bus routes to complete the trip.
- The two major transit passenger activity areas are the University of Guelph and downtown Guelph. A secondary transit passenger activity area is the Stone Road Mall at Edinburgh Road and Stone Road. Other identifiable passenger activity areas are secondary schools and hospitals, but the level of ridership is much lower at these locations in comparison to the University, downtown and Stone Road Mall.
- Guelph Transit passenger activity is well distributed over the time of day. This is somewhat unique in that most transit systems experience distinct morning and afternoon peak passenger activity periods. However, in Guelph, the high component of University student trips that occur over the full day together with a mix of work trips, high school trips and other trip types causes the more evenly distributed time of day passenger profile.

According to GO Transit the current weekday ridership level on the GO bus service to Guelph is approximately 64 passenger trips in each direction (i.e. 128 daily trips).

Greyhound Canada indicated that the typical weekday ridership on the Guelph–Toronto commuter express trips is about 20 to 30 passengers per bus, which is a relatively high level of ridership and would suggest an average weekday total of 600 to 900 bus users.

The 2001 TTS data indicate about 1200 daily transit trips between Guelph and the GTA in both directions, representing a modal split of 4.5%. Between Guelph and Waterloo, there are about one hundred trips at a modal split of 1%.

### *2.3.5 Truck Traffic Characteristics*

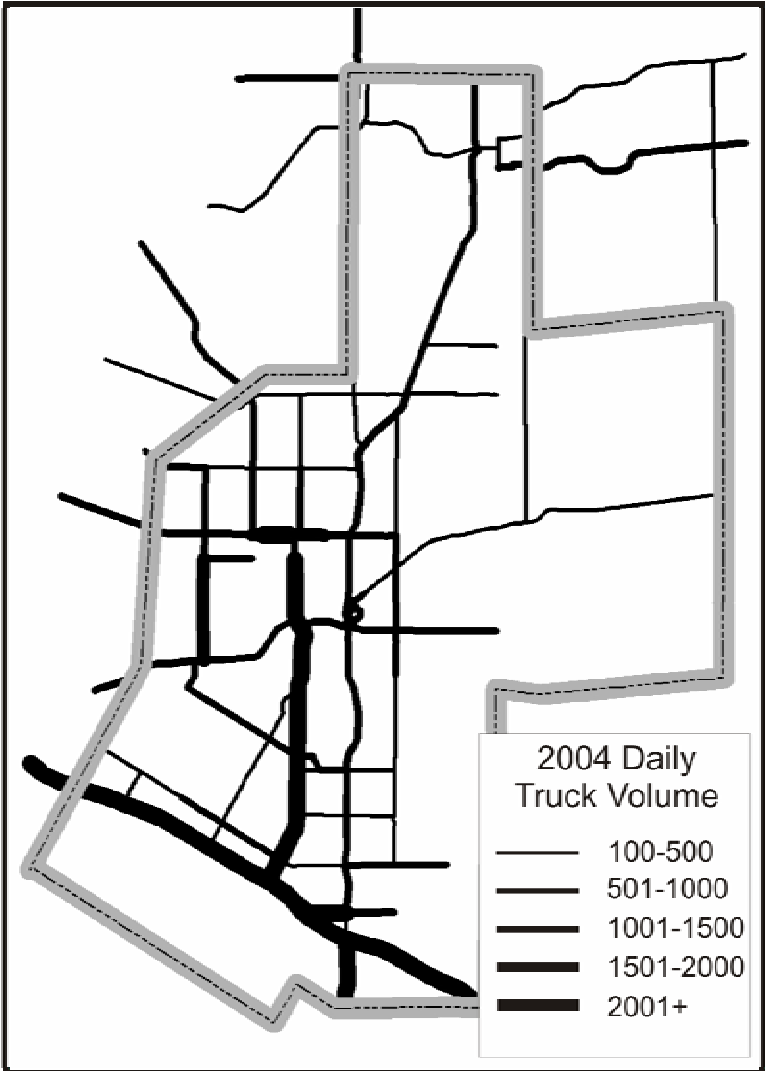
The truck traffic on area roadways has been growing in the City of Guelph by an average of 2% per year and by a higher rate of 3–4% on County roadways based on available historical data. Truck volumes generally range from between 100 and 2800 vehicles per day on area roadways (see Figure 2.10) with the highest volume roadways consisting of:

- Hanlon Expressway
- Highway 6 South
- Woodlawn Road
- Wellington Road 32

Other roadway sections accommodating more moderate but significant truck volumes include Gordon Street/WR 46, Speedvale Avenue, Wellington Street and Highway 7 West. Busy truck traffic locations include:

- Northwest Industrial Park
- Hanlon Industrial Park
- Victoria Road at York Road

County of Wellington



City of Guelph

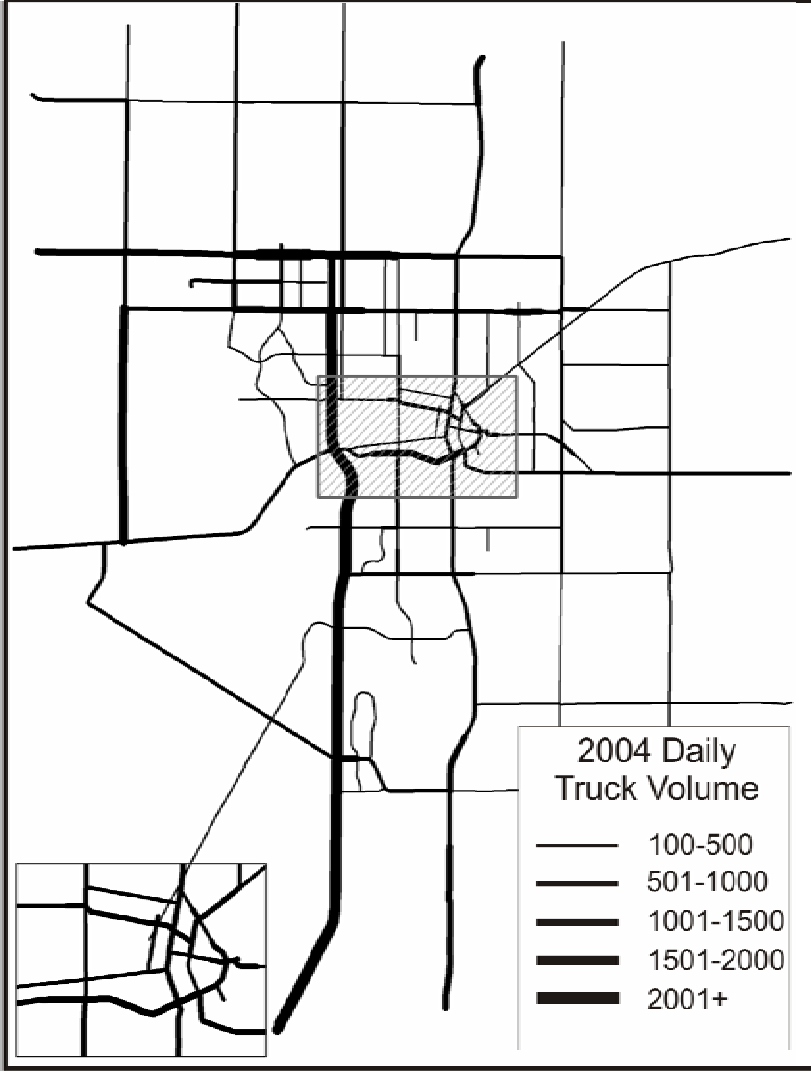


FIGURE 2.10: TRUCK FLOW CHARACTERISTICS



- Wellington Street—Edinburgh Road to York Road
- Gordon Street—Arkell Road to McLean Road

In terms of external truck movements entering and exiting the City, approximately 60% enter/exit on east-west roadways while about 40% enter on north-south roadways.

### *2.3.6 Summary of Key Transportation Characteristics*

The key transportation characteristics in Guelph and Wellington County include:

- Car ownership and vehicle trips are increasing faster than population.
- Two and three car households are increasing.
- Driving alone is increasing.
- Transit serves a small part of the transportation demand and even doubling the existing usage to 10% of all trips will only decrease traffic demands by 5%.
- Walking is used more than transit but mostly by students.
- Cycling is a very small part of the overall travel (1.5%).
- Auto, walk and cycle modal shares in Guelph are higher than corresponding average shares in Ontario.
- Significant and increasing work travel between Guelph, Wellington and Waterloo Region is occurring, requiring improved transportation facilities (i.e. Hwy. 7, County Road 124, Hwy. 6 North and improved inter-city transit).
- 55% of Guelph commuters travel less than 5 km, compared to the Ontario average of 35%; just over 10% commute more than 30 km in Guelph.
- About 80% of travel on Highway 7 (W) and WR 124 (W) is inter-regional travel between Waterloo Region, Guelph and Wellington County.
- The Provincial, County and City roads in the study area also accommodate a significant amount of truck traffic originating from and destined to places outside the study area.



### 3. FUTURE PLANNING CONTEXT AND NEEDS ASSESSMENT

#### 3.1 FUTURE PLANNING CONTEXT AND TRANSPORTATION NEEDS

The context for the transportation master plan is defined by the population and employment projections for 2021. A post-2021 horizon was also considered to account for potential additional growth in Guelph and Wellington. Travel demand projections are based on existing travel patterns and their relationship to current and future population and employment levels. In assessing future transportation infrastructure needs, this study considered not only the capacity to accommodate future travel demands for vehicular travel but also measures to manage that demand by identifying alternatives to vehicular travel. This section describes the rationale for managing vehicular travel demand and outlines the capacity needs assessment corresponding to the planning horizons.

#### 3.2 POPULATION AND EMPLOYMENT PROJECTIONS

Population, employment and travel demand projections are undertaken at different levels of spatial disaggregation, namely, the study area as a whole, the City of Guelph, its 13 Planning Districts and 50 Traffic Zones, and the 372 Model Zones for the entire study area.

Figure 3.1 illustrates the spatial disaggregation used in the analysis. The 2021 population and employment projections were obtained from the Development Charges Studies undertaken separately by Guelph and Wellington in 2004, and are summarized in Table 3.1. Table 3.2 gives the distribution of Guelph’s population and employment among its 13 planning districts. Figure 3.2 illustrates the population and employment changes in the planning districts between 2001 and 2021. The projections for the horizon beyond 2021 are based on Ontario Ministry of Finance population projections for municipalities and the historical employment to population ratios for Guelph and Wellington. According to the Ministry of Finance projections, the population of Guelph and Wellington together will reach 281,000 by 2031.

**TABLE 3.1: POPULATION AND EMPLOYMENT FORECAST**

	Population		Employment	
	2001	2021	2001	2021
Guelph	110, 696	149,625	57,853	79,500
Wellington	82, 811	108,895	28,009	39,096
Total	193, 507	258, 520	85,862	118,596

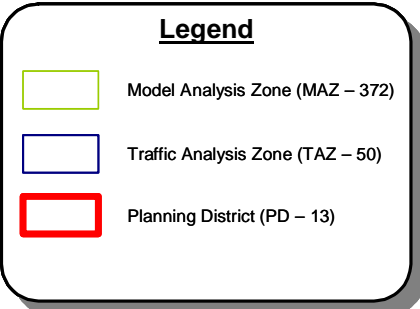
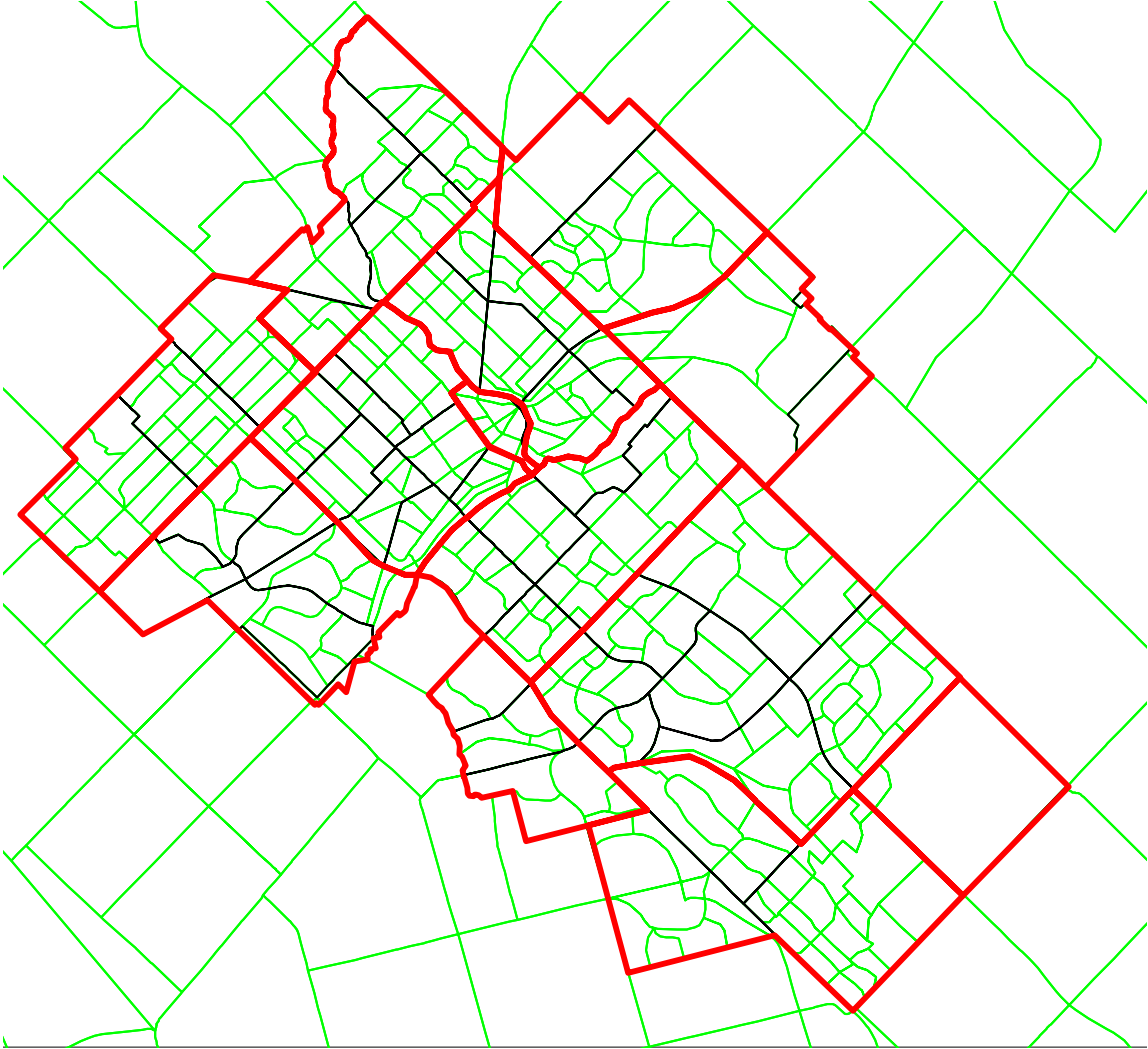


FIGURE 3.1: CITY OF GUELPH ZONAL HIERARCHY

TABLE 3.2: POPULATION AND EMPLOYMENT BY PLANNING DISTRICT IN GUELPH

Planning District	Population		Employment	
	2001	2021	2001	2021
<b>1</b>	11,200	15,555	3,966	5,485
<b>2</b>	18,195	18,900	800	3,030
<b>3</b>	20,705	23,925	5,716	6,600
<b>4</b>	1,610	3,200	7,974	8,770
<b>5</b>	13,385	16,900	4,996	6,030
<b>6</b>	8,420	17,200	710	1,690
<b>7</b>	12,435	14,525	7,867	9,255
<b>8</b>	6,340	6,450	287	305
<b>9</b>	17,700	29,750	3,618	4,595
<b>10</b>	175	2,100	132	660
<b>11</b>	0	60	15,799	18,750
<b>12</b>	311	750	2,724	6,280
<b>13</b>	220	315	3,264	8,050
<b>Total</b>	110,696	149,625	57,853	79,500

3.3 TRAVEL DEMAND PROJECTIONS

To assist with the development of travel forecasts, a transportation network model was developed for the study area. The network model is a mathematic computer representation of the study area land use and transportation system. It consists of a system of interconnected links, nodes and centroids which represent the existing roadway network and development areas and provides an efficient tool to understand the implications of both strategic non-structural and structural transportation improvements. The model uses the TransCAD software based on the traditional four-step process involving trip generation, trip distribution, modal split and traffic assignment.

The model simulates the PM peak hour of travel demand and for three trip categories: Home-Based Work (HBW), Home-Based Other (HBO) and Non-Home-Based (NHB). Trip generation equations were developed based on current population, employment and travel data in Guelph. These equations were used to establish the future travel demand corresponding to the projected population and employment growths. Trip tables (indicating trips to and from each traffic zone) were created for the City’s fifty traffic zones and the 372 model zones corresponding to 2001, the base year. Trip tables for the 2021 and post-2021 horizons were developed (a) by using the trip-generation equations within Guelph; and (b) by growth-factoring for the zones outside Guelph.

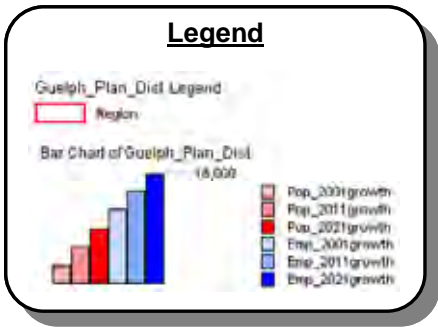
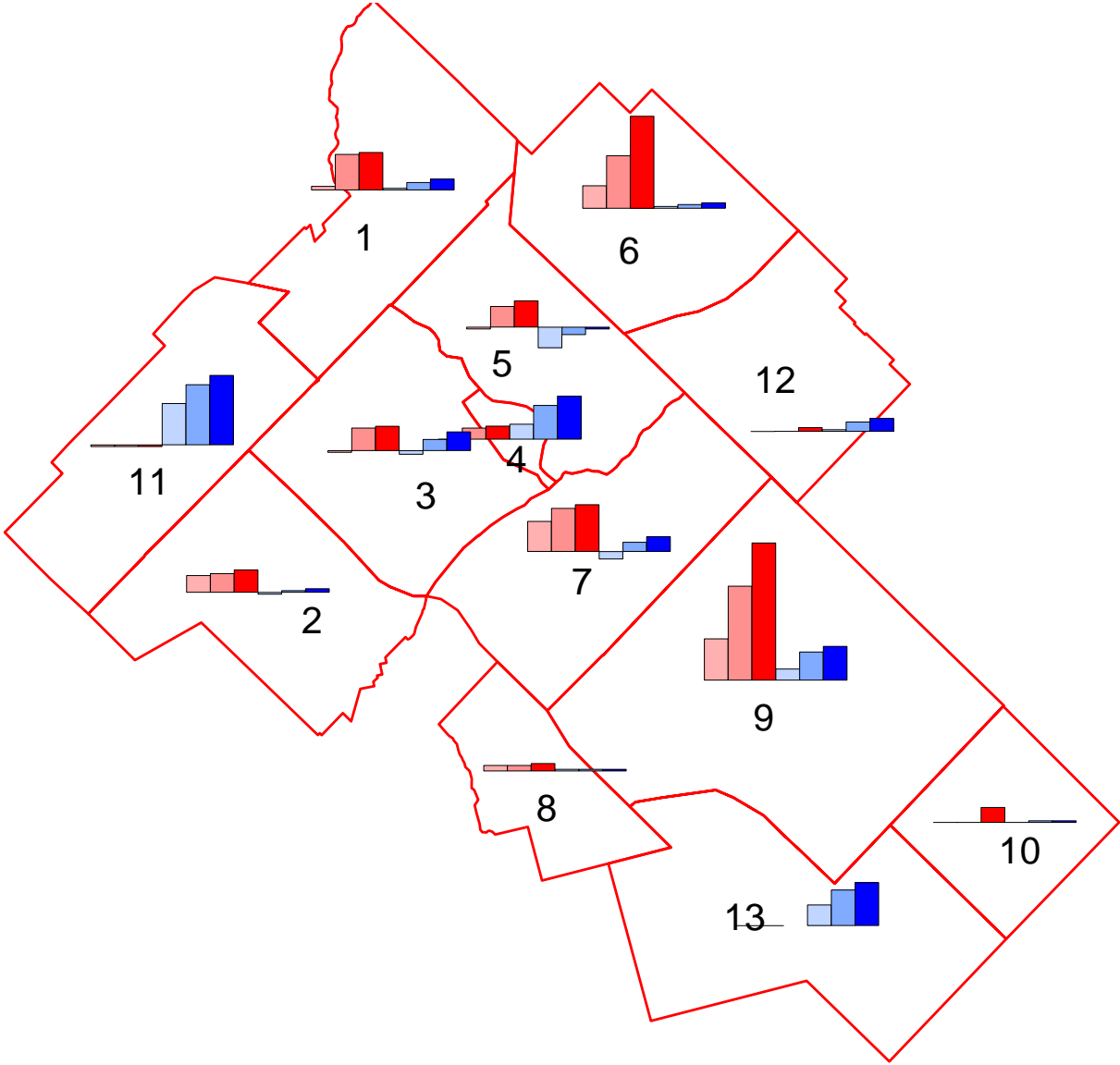
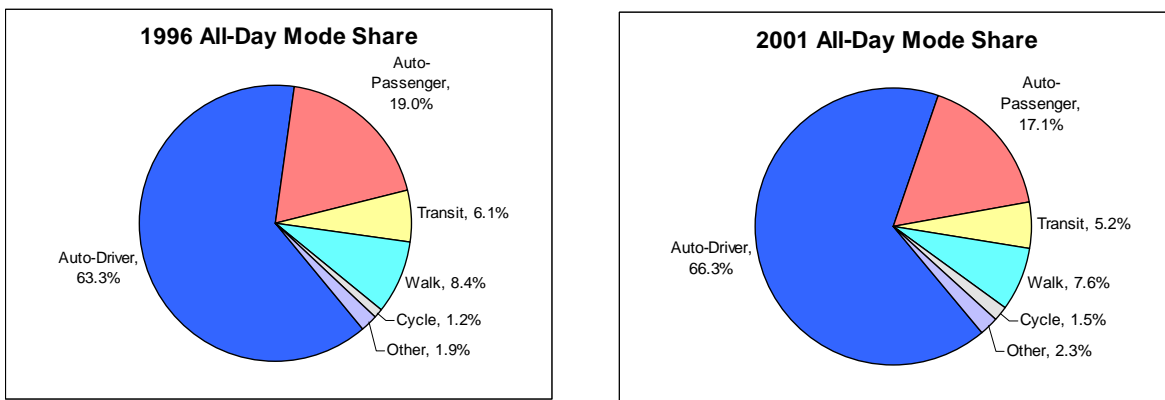


FIGURE 3.2: LOCATION AND MAGNITUDE OF PROPOSED GROWTH

The trip distribution was developed using the gravity model approach. The model was calibrated to 2001 conditions to adequately reflect recent traffic counts during the afternoon peak hour (i.e. the highest hour of traffic demand) on the road network. The 2001 and 2021 trip tables indicating PM peak hour vehicle trip interchanges between Guelph’s planning districts and zones outside Guelph are included in the Technical Appendix.

The forecasts assume that the proportion of walk, cycling, transit ridership and ridesharing does not change from 2001 conditions even though, as illustrated in Figure 3.3 below, these modal shares show a declining trend while the auto modal share has kept increasing since 1996. From an analytical standpoint, keeping the modal shares constant at 2001 levels and not increasing the non-auto shares enables the simulation of the worst vehicular traffic conditions in the future. As will be seen in Sections 6 and 7, these conditions also demonstrate the limits to road feasible improvements within the study area. Put another way, they demonstrate the need for identifying and implementing Transportation Demand Management measures to restrain the rapid increase in auto use and to enhance the use of alternative travel modes.



**FIGURE 3.3: RECENT TRENDS SHOWING INCREASED AUTO USE**

### **3.4 ROAD NETWORK DEFICIENCIES**

The future travel projections and roadway assignments were generated by the transportation model to determine the impact of future traffic conditions on the existing road network in the Guelph/Wellington area. Figure 3.4 illustrates the study area road network used in the model.

Level of service is a recognized method of quantifying the efficiency of traffic flow on the road network. It is based on the number of vehicles on the road link, compared to the estimated capacity of the road. The highest possible rating is Level of Service A, under which the average total delay is equal to or less than 10.0 seconds per vehicle at intersections on average. Level of Service D/E is the point used by municipalities to determine the timing of improvements, while Level of Service F represents severe congestion or gridlock. The common practice is to plan and implement road improvements prior to this point. Figure 3.5, Figure 3.6 and Figure 3.7 show the Levels of Service corresponding to the following assignments:

- 2001 traffic volumes on 2001 (i.e. existing) road network;
- 2021 traffic volumes also on 2001 road network (i.e. no improvements are assumed); and
- Post-2021 traffic volumes again on 2001 road network (i.e. no improvements are assumed).

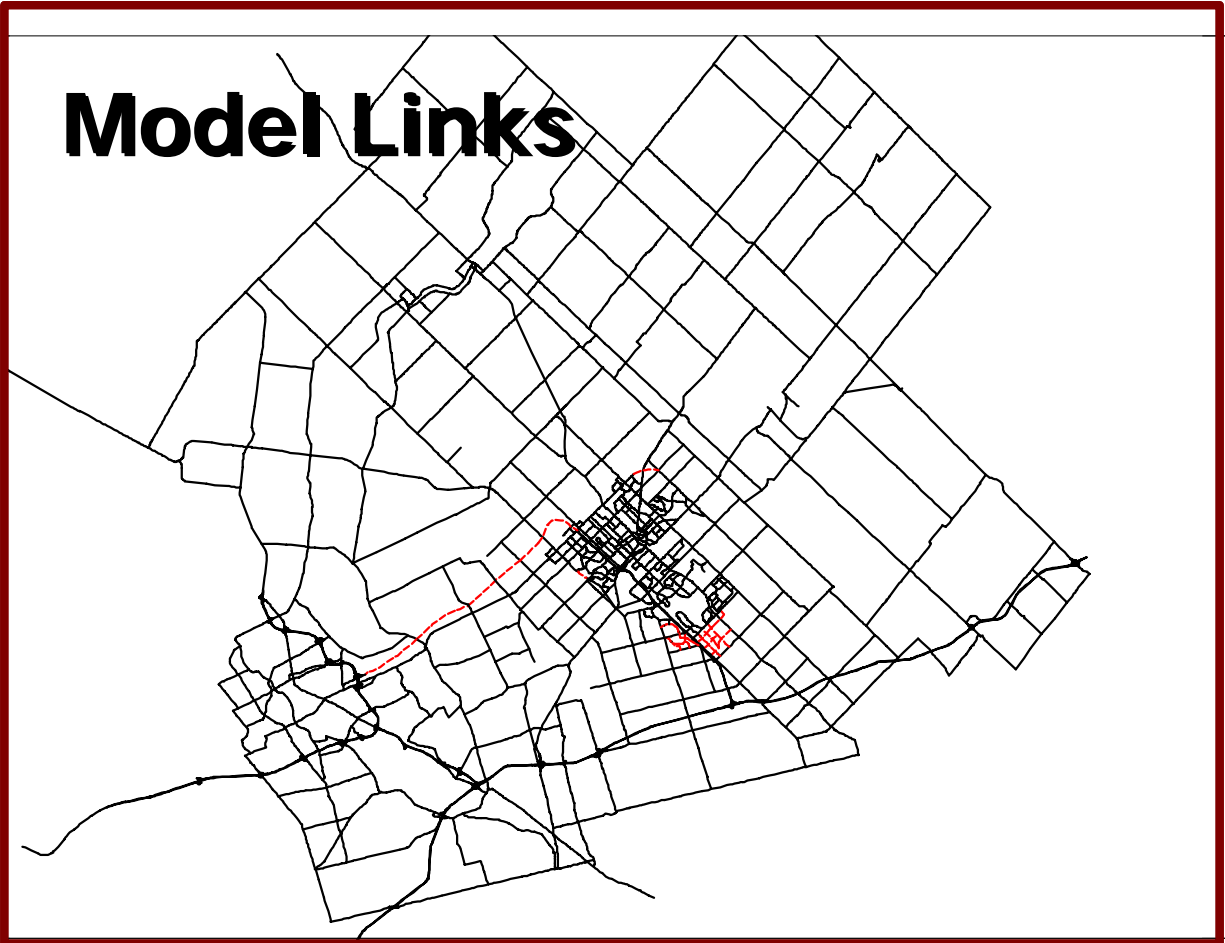


FIGURE 3.4: TRANSPORTATION PLANNING MODEL LINKS



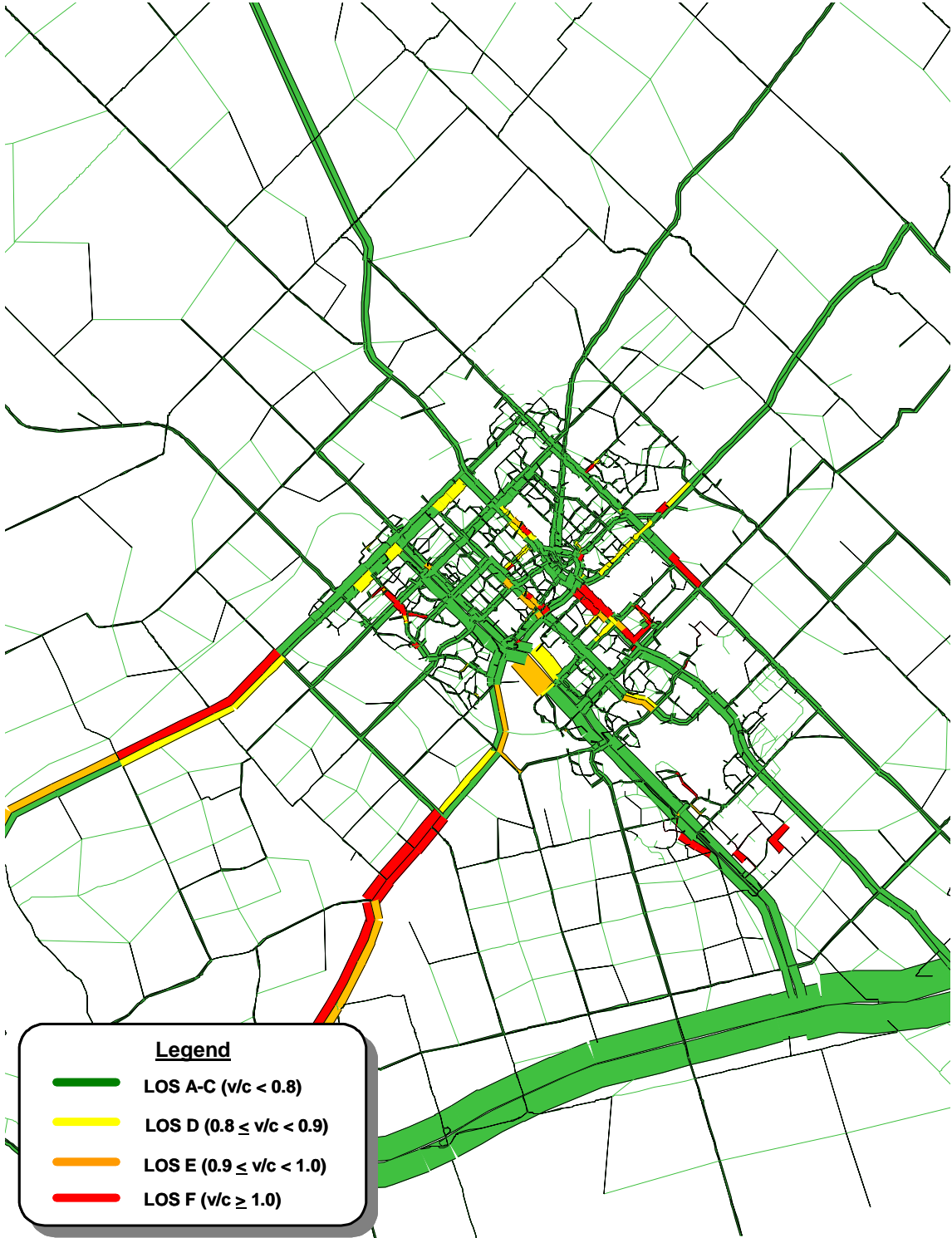


FIGURE 3.5: 2001 ROADWAY NETWORK DEFICIENCIES: 2001 ROADWAY WITH 2001 TRAFFIC VOLUME

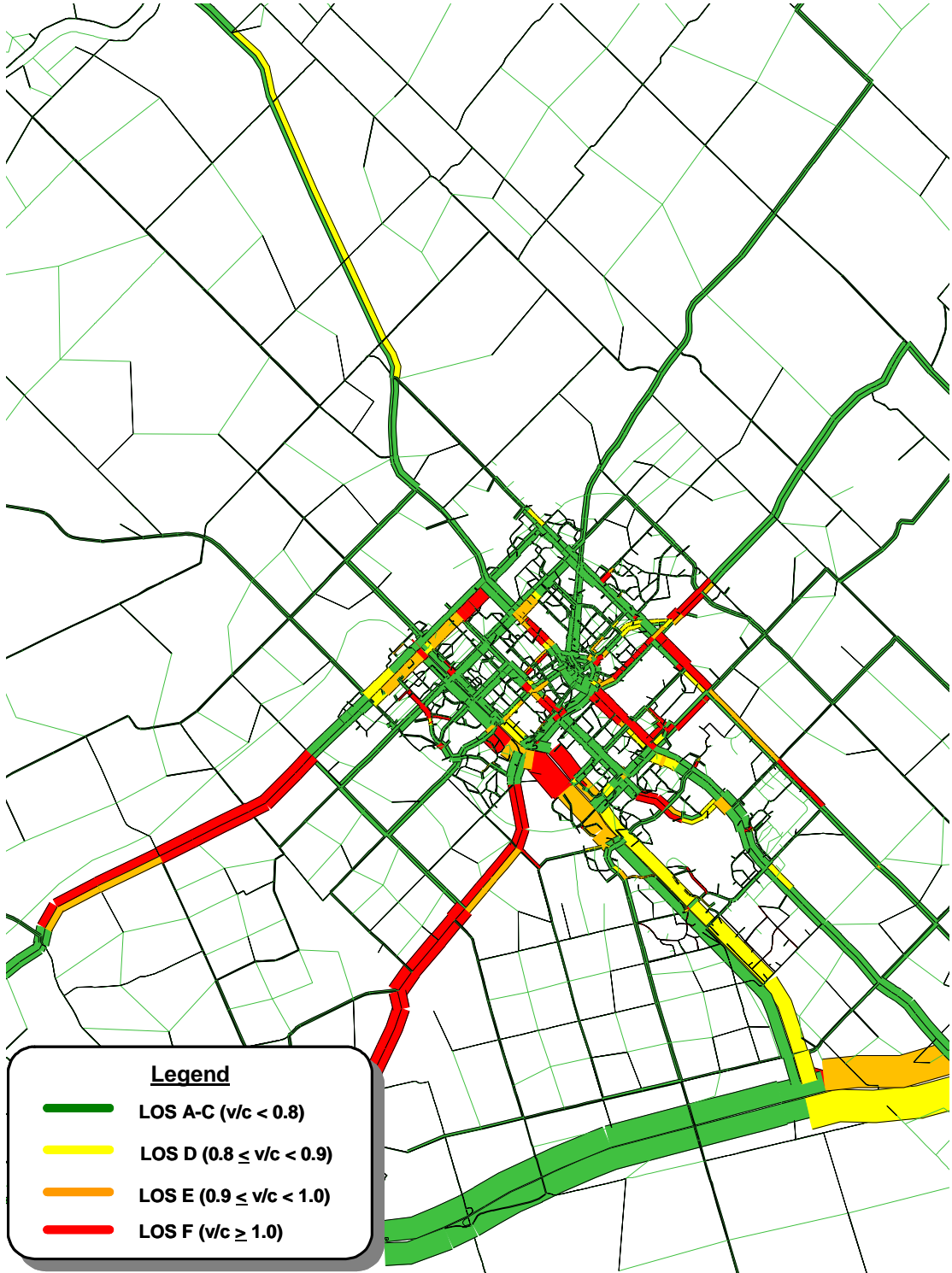


FIGURE 3.6: 2021 ROADWAY NETWORK DEFICIENCIES: 2001 ROADWAY WITH 2021 TRAFFIC VOLUME

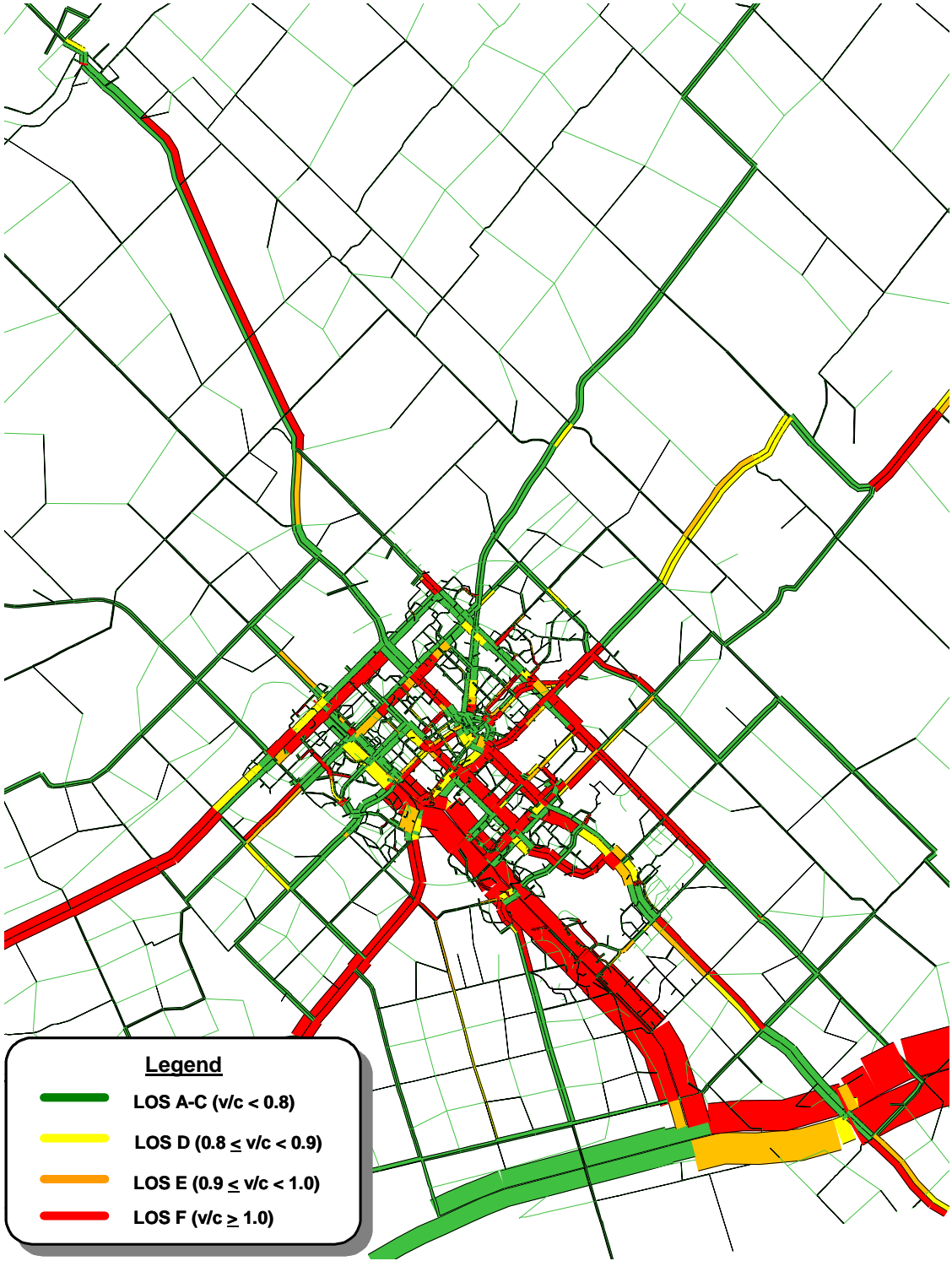


FIGURE 3.7: POST-2021 ROADWAY NETWORK DEFICIENCIES: 2001 ROADWAY WITH POST-2021 TRAFFIC VOLUME

The roadway sections indicating capacity deficiencies are listed in Table 3.3. The deficiencies in 2021 and Post-2021 correspond to what is also known as the “Do Nothing” scenario, or the scenario that tests the transportation system under future traffic loads without assuming any improvements to the system. The roadway sections with deficiencies are the first set of candidates for considering improvements, as discussed in Sections 6 and 7.

**TABLE 3.3: EXISTING AND FUTURE ROAD NETWORK DEFICIENCIES**

- **2001**
  - Highway 7
  - Wellington 124 W
  - Hanlon (College – Wellington)
  - Gordon (Stone-Wellington)
  - Edinburgh (Kortright-Ironwood, Wellington-London)
  - Imperial (Massey-Willow)
  - Woolwich (London-Speedvale)
  - York (Downtown – Watson)
  - Victoria (College – Stone)
  
- **2021 Do-Nothing**
  - Highway 7
  - Wellington 124 W
  - Highway 6 (end of 4-lane - Fergus)
  - Imperial (Woodlawn – Paisley)
  - Hanlon (Paisley – Highway 401)
  - Gordon (Stone – Downtown)
  - Norfolk (Downtown – Speedvale)
  - Victoria (Clair – York)
  - Woodlawn (Elmira to Highway 6)
  - York (Downtown to Watson)
  - College (Edinburgh – Victoria)
  - Stone (Hanlon – Victoria)
  
- **Long-Term Do-Nothing**
  - Significant deficiencies across arterial grid
  - Hanlon (Speedvale – Highway 401)
  - Severe congestion in south Guelph
  - Severe congestion north of Downtown, west of Norfolk, east of Hanlon.

3.5 TRANSPORTATION STRATEGIES: DEMAND SIDE AND SUPPLY SIDE APPROACHES

Traditionally, increases in transportation demands have been accommodated by increasing the supply of capacity, mainly in the form of roadway capacity to accommodate increasing vehicular traffic. This approach, called the supply side approach, has three main limitations: (a) the significant costs of increasing capacity; (b) the negative environmental effects; and (c) the physical limit to increasing roadway capacity.

An alternative approach, called the demand side approach, tries to address the ever-increasing demand for vehicular travel. Many municipalities and senior levels of governments are now turning to this approach and undertaking specific measures that are collectively called Transportation Demand Management (TDM) measures. Guelph’s Transportation Strategy recognizes the role of TDM measures, and a number of initiatives have already been undertaken in Guelph.

It is also the experience everywhere that the two approaches are not mutually exclusive, and that an effective and successful transportation plan should be based on a synthesis of the two approaches, as illustrated in Figure 3.8.

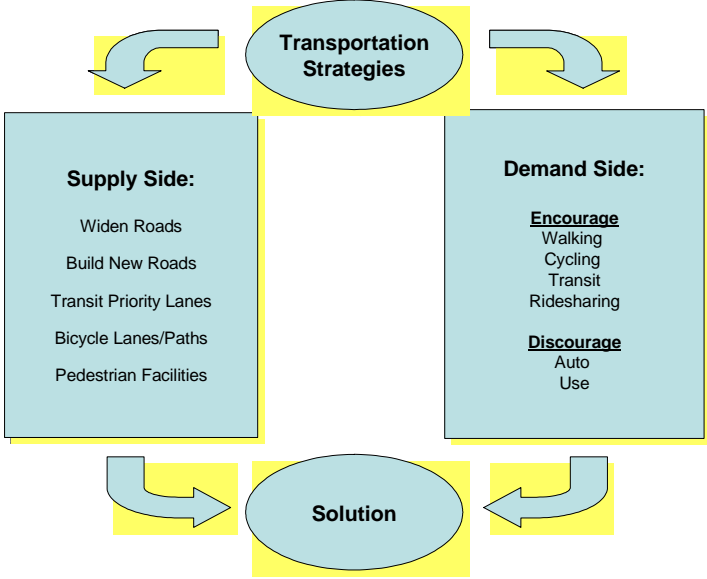


FIGURE 3.8: ALTERNATIVE SOLUTIONS TO TRANSPORTATION PROBLEMS

The rationale for including TDM measures in the Master Plan is as follows:

- The cost associated with constructing and maintaining roads can be reduced.
- The impacts of auto use on air quality and related health issues will be reduced as a result of fewer vehicle trips.
- The impacts of new roads and traffic on natural features and environmentally sensitive areas will be reduced.

- The impacts of traffic noise and the social disruption of new or wider roads in residential areas will be reduced.
- Reducing auto use will provide surplus capacity on the available road system for the movement of goods and captive auto users, which are important to support economic development in Guelph.
- A 2001 survey of about 400 households in Guelph indicated about 80% supported action to take steps to reduce car use.
- The focus group residents and businesses assembled for this project indicated a high degree of support for 14 of the 18 potential measures to reduce auto use.
- Strategies to reduce auto use are consistent with today's Smart Growth and Sustainable Community policies supported by the Provincial and Federal agencies.

At the same time, the plan should balance efforts to reduce demand by supply side measures which involve widening existing arterial roads and constructing new roads for the following reasons:

- Many strategies available to reduce traffic demand will take several years and/or decades to be effective given the current urban form and low density nature of Guelph.
- Adequate road network capacity is required by local businesses to move people and freight and remain economically sustainable.
- The increases in density and intensification necessary to reduce auto demand are not currently being supported by market realities and lower density neighbourhoods where increased densities are desirable.
- Wider and new roads provide right of way for non-auto modes such as cycling, walking and public transit.
- There are many barriers that prevent travel by modes other than the private automobile.
- There are no proven examples in small to medium-size cities demonstrating that significant travel demand reductions that will obviate the need for capacity increases can be achieved.

Accordingly, this transportation plan considers both demand and supply side measures to address the study area transportation needs. The demand side measures are gathered under the rubric of TDM and include policy initiatives, increasing auto-occupancy, incentives to use walking and cycling, and the emphasis and promotion of public transit both for local and inter-regional travel. These measures are discussed in Sections 4 and 5.

The supply side measures involve improvements to the City and County roadways and Provincial highways. As well, roadway improvements, apart from providing additional capacity for passenger vehicular traffic and goods movement, accommodate and even facilitate the use of non-auto modes, namely walking (sidewalks), bicycles (bike lanes) and transit (transit priority measures). The roadway improvements are discussed in Section 6 (City and County Roadways) and Section 7 (Provincial Highways).

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## 4. TRANSPORTATION DEMAND MANAGEMENT

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### 4.1 TDM OVERVIEW

The Transportation Demand Management (TDM) measures identified in this study are more applicable in Guelph than other parts of the study area. However, TDM will become more relevant outside Guelph as areas in the County continue to grow. At the same time, TDM measures implemented in Guelph will benefit not only Guelph but also the County and the Provincial road systems. The TDM measures applicable to Guelph are described in this section under the following headings:

- Land Use and Urban Design Practices
- Ridesharing
- Cycling and Walking
- Alternative Measures for Reducing Auto Use
- TDM Program

### 4.2 LAND USE AND URBAN DESIGN PRACTICES

#### *4.2.1 Land Use and Transportation*

There are a wide range of approaches and strategies which a municipality can implement and promote to minimize the number of automobile trips, and in particular single occupancy vehicle trips, in the community. This section outlines a number of land use concepts which may be applicable to development in the City of Guelph (and to a lesser extent the County of Wellington), and which can influence transportation behaviour and the choice of alternative modes of travel such as transit, walking, cycling and ridesharing.

The arrangement of land uses and the urban form of the community are the ***most important and effective long-term influences*** on how people move throughout the community. The way in which land is used generates trips which in turn lead to the need for construction of transportation facilities. These transportation facilities provide accessibility which in turn influences land value and affects the use of land. Land uses directly influence transportation systems, and in turn, transportation systems directly influence land uses adjacent to the transportation facilities.

Many communities are putting greater emphasis on the relationships between land use and urban form and their transportation system, particularly in relation to supporting increased walking, cycling and public transit use. Contemporary community planning promotes mixing of land uses, concentration of activities in nodes and corridors and an emphasis on the “3 Ds” (density, diversity and design) in those areas where public transit is provided. The objective is to create highly pedestrian- and bicycle-friendly urban environments which also support the provision of public transit. An urban form based on a series of nodes and corridors provides an ideal setting for an

efficient transit system and continued investment in transit operations. In this manner, activities are concentrated in certain locations, thereby reducing the need to travel by car given the other choices available (walking, cycling and transit). This urban form also maximizes the number of people living and working in close proximity to transit and provides the support base for higher frequency operations.

The City of Guelph Official Plan contains a series of goals and objectives which promote compact urban form, mixed use development, intensification and increased residential densities, and service by all forms of transportation. There is also a goal to increase the transit modal share to 10% of all trips. As discussed in this section, there are some specific urban form and planning policy changes which the municipality should consider in order to strengthen and more effectively implement the objectives of the Official Plan. The strategies are all related and supportive of each other.

### *4.2.2 Urban Form*

An urban form that is supportive of transportation alternatives to the auto would consist of system of nodes and corridors which provide for concentration of activities and mix of land uses in proximity to each other, thereby minimizing the need to use automobiles for many trips. Nodes are locations for a diverse concentration of activities at higher densities while corridors are areas between nodes along transit routes where higher densities and a mix of uses are also found. The nodes provide catchment areas for transit service and the intersection of transit corridors.

Development in nodes and corridors should orient activity towards the street to create very walkable environments.

#### Current Situation

The Downtown, Stone Road Mall area and the University of Guelph are nodes consisting of dense and varied uses and are currently the locations where the highest transit, walking and cycling uses are found. These are the primary nodes of the City. The community shopping areas and recreation centres are secondary nodes.

Major corridors with transit potential include Gordon/Woolwich and Stone Road. Other arterial roads are secondary corridors.

The general objectives of the Official Plan support the development and strengthening of the concept of nodes, mix of use and compact form. As well, the Transportation Strategy Update contains a vision statement emphasizing high density multi-use nodes and medium density mixed-use development along the connecting corridors.

There is not a series of defined nodes and corridors based on transit in the Guelph Official Plan. Policies for shopping centres, the University and the Stone Road Mall area, for example, can be strengthened to promote intensification and a broader mix of use in these nodes. The corridors should be the roads with potential to contain the highest frequency transit routes, and they may not necessarily be the roads carrying the highest traffic volumes.



### Practicality/Appropriate for Guelph

Guelph has logical areas which could intensify as nodes of activity and arterial roads which could serve as corridors connecting the nodes. The mid-sized shopping centres could be more dense and diverse nodes in the long term.

Changes to urban form and density take time to achieve. There will be limited change in the short term and that is a disadvantage of this approach. Economic incentives may be considered to stimulate development while public policy can address some barriers.

### How do we Implement?

In order to implement changes to urban form the City should specifically identify nodes and connecting transit corridors, such as the example in Figure 4.1. The identified nodes and corridors should be integrated with the City's transit route network. A policy framework can be developed to promote this form.

The City should also consider shopping centre policies to accommodate high/medium density residential permissions along with a full range of other appropriate uses. Medium density mixed-use policies can be prepared for application along the corridors. The nodes and corridors form and uses could be facilitated through proactive zoning changes rather than waiting for individual proposals.

The City's design guidelines for new development generally support buildings being located closer to the street at transit stops and place parking at the side and rear of buildings to support pedestrian movement along the street. Policy and zoning in the nodes and corridors could provide incentives for this type of development and minimize regulations. Each node and corridor should have an implementation plan to address density, uses, design and implementation.

Recognizing that a municipality's Official Plan policies regarding urban form are not always consistent with short-term market pressures for development in specific locations, the City should work with the development industry to facilitate urban form and intensification objectives at the nodes.

### *4.2.3 Density*

By increasing the density of residential and employment land uses, they can be located closer to one another, thereby encouraging walk/cycle trips between them. Increased residential densities provide a larger market, which will help sustain nearby business establishments without relying as much on access by car. Future development and intensification in Guelph/Wellington will create more walking and cycling.

Density and transit usage are found to be positively correlated in many situations. Increasing density of uses along established transit corridors will facilitate greater usage, while transit planning should pay attention to providing appropriate service coverage in areas with higher than normal density of uses. As a minimum, a density of 8 units/acre is recommended for residential areas to support local transit service.

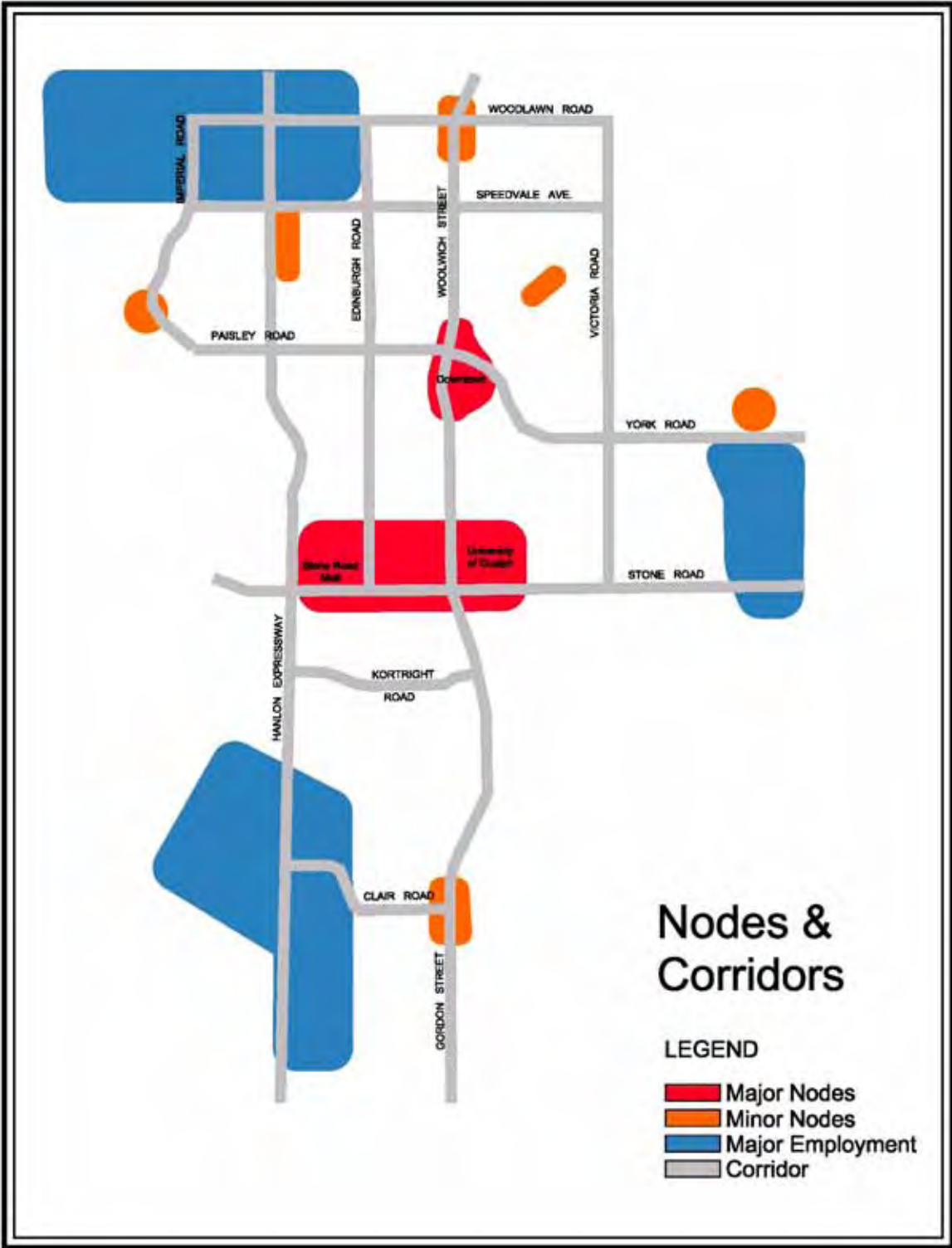


FIGURE 4.1: PROPOSED NODES AND TRANSIT CORRIDORS

Higher density provides a larger market to help support nearby businesses in nodes and corridors, thereby minimizing auto trips to access services. Higher density and a mix of uses are also known to significantly increase the number of walk trips. It provides other benefits such as reduced land consumption, energy use and air pollution.

### Current Situation

Guelph is primarily a low density community with some scattered pockets of high density development outside of the Downtown. Infill projects and higher density development are not always attractive to surrounding neighbourhoods.

### Practicality/Appropriate for Guelph

There are opportunities in Guelph to accommodate higher densities, both through greenfield development and the intensification of already urbanized areas. Guelph's OP policies support intensification subject to certain criteria. Changing demographics and household size also support increased levels of multiple unit development.

Market forces are still strongest for lower density housing forms. Detached residential units are very affordable for many Guelph homebuyers. There are negative perceptions of what an increase in density really means in terms of built form (i.e. need to clarify that higher density does not necessarily mean high rise apartments).

Community acceptance and political commitment to intensification are essential for this strategy to succeed. Educating the public on the benefits of intensification and gaining their support for infilling is also important.

### How do we Implement?

In conjunction with the previous discussion on nodes and corridors, the City of Guelph should identify appropriate areas where higher residential densities should be permitted and consider proactive OP and zoning changes to permit higher densities as of right in these areas. Key sites in nodes and corridors should also have minimum densities in addition to maximums in order to achieve desired results. Guidelines and zoning criteria should be prepared to ensure that medium and high density development next to neighbouring low rise areas is sensitively designed and sited to promote compatibility.

The strategy to promote intensification and re-urbanization needs firm political commitment and public acceptance. Strategies to educate and promote intensification may be necessary.

#### *4.2.4 Mix of Uses*

Locating a mix of residential, commercial, recreational, institutional and employment land uses in close proximity to each other directly connected by footpaths, sidewalks and bicycle routes reduces the need to drive for many trips. Travel distances are reduced, thereby increasing the probability that trips will be made by walking or cycling rather than by auto. Locating residential and commercial

developments close to the street with parking in behind also creates a more interesting, pedestrian-oriented environment which encourages walking and cycling. This will reduce the need for auto trips for work, school, shopping, recreation and personal business. An additional benefit is that both daytime and nighttime activity is created, promoting safer streets and neighbourhoods.

Mixed use development can be vertically integrated in a building, extended along a corridor, or included in a node. As Guelph matures, opportunities for vertically mixed buildings should increase.

### Current Situation

The Downtown is the most diverse area in the City of Guelph in terms of land use. Other areas such as the Stone Road Mall area and the University of Guelph are also diverse but have lower densities. These areas generate a high frequency of walking, cycling and transit trips which support the notion that mixed use and higher densities encourage these modes of travel.

The Official Plan has mixed use designations but they have specific applications and are not used extensively. There is limited application of Mixed Office-Residential, Commercial Mixed Use and Mixed Industrial-Residential designations across the City.

### Practicality/Appropriate for Guelph

Many areas of the city could support a mix of uses, particularly the nodes and corridors and sites along the major roads. Opportunities include intensifying shopping centres by adding residential or office buildings to the site and providing for a variety of different land uses along transit routes/arterial roads at medium and high densities, depending on the location.

The primary barriers to promoting mixed use development in Guelph include the current policies' limitations, economic factors and specialization of the development industry, including difficulties in obtaining financing for mixed use projects.

There is a need to influence a change in the prevailing mindset of the development industry and the financial institutions to consider the notion of mixed uses.

### How do we Implement?

Firstly, it is necessary to identify appropriate locations for mixed use development, in conjunction with the nodes and corridors review. The Official Plan can be amended to create new mixed use policies and integrate them with nodes and corridors. This would lead to implementation of new zoning in these areas, including design guidelines to ensure that development supports all modes of transportation and is appropriately scaled to its neighbourhood.

#### *4.2.5 Neighbourhood Design*

Urban design can provide and promote a comfortable pedestrian environment which encourages people to walk, cycle or take public transit. There are also growing public health concerns being identified which appear to be related to community design. People are driving for almost all trips in

many communities, particularly newer neighbourhoods where uses are segregated and neighbourhood design does not promote alternative modes of travel. Rates of obesity, asthma, and poor air quality are all growing and are high, in particular, in newer greenfield communities.

Good neighbourhood design, especially the street network, is important to avoid future problems (such as speeding and shortcutting) which require retrofit actions.

### Current Situation

The City of Guelph has had mixed results in terms of walkability/transit supportive neighbourhood design. Generally there is car-oriented design in newer communities and more pedestrian-oriented design in older communities. The City has general Urban Design Guidelines and specific guidelines for the Stone Road Mall Area and South Guelph District Centre. The wide “over-designed” road networks in some communities lack the enclosure and quality of the public realm necessary for pedestrian-oriented streets. There are no guidelines to encourage good design of new communities to promote walking, cycling and transit use.

### Practicality/Appropriate for Guelph

The City of Guelph can implement this strategy through the subdivision and site plan process using design guidelines. However, there is a need to educate and promote the City’s approach with the development industry. There may be some increased private and public cost to develop better streets and neighbourhoods.

### How do we Implement?

In order to implement more pedestrian, cycling and transit friendly urban design, a series of actions are recommended. Community Plans should be prepared for new communities to identify the road network and the neighbourhood design principles. Grid-oriented street systems should be promoted to obtain a high level of connectivity and minimize off-road walkway connections. Street right-of-ways should be narrow and provide on-street parking opportunities in appropriate locations. Buildings should be oriented to the street (physical location and activity) and with extensive streetscaping to provide a good public realm which supports walking and transit.

In addition, City public works and street improvements should have a high quality of design, similar to that undertaken in the South Gordon node and as proposed in the Gordon/Norfolk EA study.

## **4.3 RIDESHARING**

### *4.3.1 Car Pooling*

Car pooling increases the average number of persons per vehicle during the peak hours and thereby reduces the number of vehicles using the road network while transporting the same number of people. This involves a small investment for large return (1 carpool trip every 10 working days means 10% less traffic). This can be achieved through the use of employer vanpools and employee

carpools and provision of park and ride facilities. In Guelph and Wellington, where multiple car ownership in households is increasing, promoting home-based ride-sharing will contribute to reduced auto use and less traffic on roads.

Carpools or vanpools can be introduced as area wide programs sponsored by public/private agencies, informal arrangements, formed by a group of individuals acting on their own, or they can be formal, formed deliberately by a public agencies or an employer. The driver and the automobile can be alternated to adjust expenses and the participants are able to reduce the cost of driving alone. Ridesharing inherently recognizes the convenience of the automobile in the absence of alternatives to reduce auto travel.

### Current Situation

The current average PM peak hour auto occupancy is 1.26 persons per vehicle and appears to be on a decreasing trend as shown in Figure 3.3. The low rate of auto-occupancy indicates that most auto trips involve single-occupancy vehicles (SOVs) rather than carpooling.

### Practicality/Appropriate for Guelph

Carpooling in Guelph could be promoted at the community level by encouraging households to minimize the use of separate cars for normal household travel purposes. Long-distance commuters, such as Guelph residents who work outside of Guelph and Wellington residents who work in Guelph, should be encouraged to carpool for their home-work trips.

Carpooling could also be promoted at the employer level by encouraging employees to carpool to work. Limiting parking facilities or giving preferential parking to carpooling employees is a common form of incentive offered by employers. In Guelph, the major employers should be encouraged to provide carpooling incentives to their employees.

### Barriers

Among the barriers to carpooling are:

- Trip chaining (multiple destinations) behaviour makes carpooling more difficult.
- Work schedules are demanding and variable.
- Employee carpooling will be practical only at workplaces with reasonably large workforces.

### How do we Implement?

Educational and promotional measures will be required to promote carpooling at the community level and in workplaces. Examples of carpooling incentives include:

- Preferential spaces in City-owned lots to car pooling vehicles.
- Discounts for carpools (i.e. 50% parking reduction for 2, 100% for 3).
- A reduction or end to free parking at major employers.
- Home-based ride sharing as a community initiative.

### 4.3.2 *Parking Supply Management*

Preferential parking, reduced parking fees or free parking are incentives which have been used to encourage carpooling, particularly for long stay employee parking. Employers who promote carpooling provide parking for rideshares close to buildings or in designated stalls. A more effective approach to encourage ridesharing is to require employees who drive alone to pay higher rates for parking. Limiting the number of long stay stalls that an employer or developer can provide is also effective in promoting carpooling.

Parking supply management includes managing the supply of parking to ensure that parking is not over-supplied and priced appropriately. It includes discouraging or limiting the use of long-term “storage” parking and recognition that surface parking lots are an inefficient use of land in Downtown. The over-supply of parking encourages SOV travel. As redevelopment occurs in Downtown without increased management of parking the City will be required to invest in structured parking @ \$25,000 per stall. Experience elsewhere indicates that it is difficult to recover the money invested in construction and maintenance of a parking structure.

#### Current Situation

Currently, there is pay parking in Downtown Guelph with the City controlling a significant share of the available lots. There is pay parking in place at the University of Guelph, but most major employers offer free parking to their employees.

#### Practicality/Appropriate for Guelph

Parking in Downtown Guelph is already not free, so there is little opportunity to affect change in that area beyond parking rate increases. Considering the City as a whole, however, opportunities may present themselves as the City continues to mature and land becomes more valuable.

#### Barriers

It may be difficult to change the status quo of free parking offered by major employers, particularly outside of Downtown Guelph where land is available and relatively inexpensive. There are concerns that limiting parking supply or forcing employers to pay high charges for parking may discourage growth and economic development. Parking rates must also be carefully set, because rates that are too high may cause parking spill over into adjacent residential areas.

In the Downtown area, demand for core redevelopment is currently limited, which means that surface parking is a viable business. Reducing the availability of short term parking may cause difficulties for established small businesses in the area.

#### How do we Implement?

A parking supply management program must start with a critical review of parking needs and available supply. After this review, parking supply management would have two separate components, one for Downtown Guelph parking and one for parking outside of the Downtown.

One possibility for managing Downtown parking supply is to increase parking rates until usage drops to a sustainable level. Some spaces could be converted to preferential carpool parking or to bicycle storage. Ideally, such spaces would be close to high activity areas such as large buildings or transit stops.

Outside of the Downtown area, the parking supply management plan could be developed in conjunction with the nodes and corridors concept shown in Figure 4.1. Since the nodes and corridors are intended to support transit routes, the Zoning By-law for these locations could be amended by removing the minimum parking requirement and perhaps by setting a maximum parking standard. This could also allow the nodes and corridors to achieve higher density, since more land might become available for development.

### *4.3.3 Guaranteed Ride Home*

Guaranteed Ride Home (GRH) measures are often included as part of a ridesharing program and provide employees a free or reduced cost ride home in the event of occasional inability to utilize the car or vanpool due to illness, an emergency or working late. The GRH can be provided by a backup vehicle, subsidized taxi ride home, use of a company car or subsidized public transit. It has been found that the cost to employers who provide this is very small as it is used infrequently. However, it is effective in encouraging participation in ridesharing.

A guaranteed ride home is part of the supporting strategy for carpoolers as well as cyclists and transit users. The program knocks down the barrier/perception of being “trapped” or “missing my ride” if emergencies arise.

#### Current Situation

There is no known GRH program in Guelph.

#### Practicality/Appropriate for Guelph

A GRH program cannot operate in the absence of other programs such as carpooling, so this would have to be offered in coordination with other services. Employers could offer the service directly or in conjunction with local taxi companies.

#### Barriers

As noted above, Guaranteed Ride Home programs cannot function in the absence of carpools, improved transit, and so on. This would only be one aspect of a coordinated approach.

#### How do we Implement?

A GRH program could be implemented in a pilot project with the City, University of Guelph or some other major employer as part of a coordinated carpool initiative. Education and promotion of the program could be performed together with the Chamber of Commerce, Economic Development Department and other business groups.



### 4.3.4 HOV Lanes

This is a travel lane especially dedicated to vehicles with more than one person. It is used to encourage ridesharing by providing preferential treatment and shorter travel time for carpools, vanpools and buses in congested areas.

#### Why?

HOV lanes help enhance more efficient use of roadway infrastructure. Since roadway capacity is determined by the number of vehicles in a certain area, having more passengers in each vehicle helps increase the number of people served by the roadway without requiring additional construction. Also, HOV lanes can be used to create priority for transit vehicles.

#### Current Situation

There are currently no HOV lanes in Guelph or Wellington County.

#### Practicality/Appropriate for Guelph

The current narrow right-of-way of many Guelph roadways means that HOV lanes cannot be introduced without eliminating vehicle or parking lanes. Since HOV lanes are typically considered only when examining the widening of roadways to 6 lanes, there are few locations where they would be practical. The Hanlon Expressway is one location where they might be introduced. Transit Queue Bypass Lanes, which are discussed further in section 5.3.4, are another related option that could be added at key locations.

#### Barriers

There are limited corridor opportunities for 6 lane roadways. Woodlawn Road and Watson Road are possibilities, but these roads are on the periphery and currently serve only limited amounts of traffic in many locations.

#### How do we Implement?

HOV lanes could be considered as an option for evaluation in EA studies for roadway improvements that may involve a six-lane cross section. The City may wish to consider a policy whereby roads cannot be widened from 4 to 6 lanes unless HOV lanes are provided.

### 4.3.5 Ridesharing Education/Promotion

In order to initiate ridesharing programs and to ensure that they continue to be effective, education and encouragement programs are necessary. Public sector and private employers must provide staffing to maintain and enhance the programs. The initiative requires continuous and ongoing programs and time commitment by public and private agencies to constantly promote and manage programs. Social marketing is an important aspect of the education component. Many individuals are unaware of the potential benefits of ridesharing. Others have tried it once and perhaps had a bad

experience and never reconsidered it. Still others would like to but finding a partner is difficult. It is important to reconnect with those people.

### Current Situation

There is no known ridesharing education and promotion plan in Guelph/Wellington.

### Practicality/Appropriate for Guelph

An education and promotion program should be included as part of a comprehensive TDM strategy.

### Barriers?

Education programs require continuous and ongoing time commitment by public and private agencies to promote and manage them.

### How do we Implement?

These programs actively promote ridesharing and other TDM measures. The program would ensure that municipal publications on conservation and recycling include transportation information such as public transit and carpooling. Carpooling can be assisted through active relationships with [www.carpool.ca](http://www.carpool.ca), such as already exists at the University of Guelph, and [www.carpooltool.com](http://www.carpooltool.com), two Canadian carpooling resources.

## **4.4 CYCLING AND WALKING**

### *4.4.1 Cycling Routes and Facilities*

Providing direct connections to major points of attraction through the construction of a network of bicycle lanes and paths which provide safe and convenient access to major origin/destination points (such as transit stations or bus stops places of employment, shopping, institutions, recreation centres) has been planned by the City of Guelph. Also, providing showers and secure and preferential bicycle parking at places of employment will encourage cycling. The lack of linkages and facilities and the resulting safety issues associated with cycling on or adjacent to major roadways are significant barriers to walking and cycling.

Improved opportunities for cycling as an alternative transportation choice through both on road and off road routes provides an alternative non-polluting means of travel, promotes a healthy lifestyle and can be part of a longer trip (i.e. cycle to transit stop).

### Current Situation

About 1.5% of all trips made in Guelph are on bicycles. There are some trail and cycling lanes in place across the City, but there is currently a lack of overall connectivity between areas. The new Trail Master Plan establishes suggested cycling routes and proposes locations for the creation of new

cycling lanes. On-street bike lanes identified in the 1994 GATS are implemented as part of roadway improvements.

### Practicality/Appropriate for Guelph

There are opportunities to implement an improved cycling network with better route connectivity. Guelph has a culture supportive of cycling, with a young population, heavy use in the University area and active cycling clubs.

### Barriers

Inclement weather and the winter climate limit cycling as an option for many people. A general lack of facilities at employment locations (i.e. secure parking/storage, showers) is also a problem.

Commuter cyclists must be in good physical condition and be comfortable riding in traffic. There are currently gaps in cycling lanes on major roads. The provision of on-road bicycle facilities may require road widening or fewer lanes for buses and cars, and may reduce the ability to provide on-street parking. Driver attitudes and awareness of cyclists also need improvement.

### How do we Implement?

Implementing the proposed Trails Master Plan will provide a comprehensive cycling network for the City. The site planning process should encourage the provision of secure bicycle storage and locker/shower facilities where possible. Bicycle parking space criteria can also be added to design guidelines, and some spaces in parking structures can be converted to bicycle parking spaces.

The cycling network also needs to be improved. Route and network connectivity (i.e. through a grid system) should be improved in all new communities. The City should continue to improve on-street cycling facilities as part of road reconstruction. Mixed use urban form, higher densities and infill projects will all contribute to shortening trip distances, and cycling routes should be better integrated with transit routes and building locations.

#### *4.4.2 Pedestrian Trails and Walkways*

The provision of sidewalks on all streets, smaller intersections, increased protection and right-of-way priority at crosswalks and intersections, a more attractive streetscape, adequate lighting for security and where possible protection from inclement weather are important measures to promote increased walking. Walking is a low cost transportation alternative and is non-polluting in nature. It promotes a healthy lifestyle, is a key part of the transit trip at both ends and requires a pedestrian-supportive urban environment.

### Current Situation

Currently, about 8% of all trips in Guelph are made on foot. These numbers are highly variable dependent on distance and purpose: there are many walking trips made in the Guelph Downtown and University of Guelph area, and many walking trips are from home to school. On the other hand,

some of the newer communities are not as supportive of walking as they could be, and the number of trips declines significantly with distance.

### Practicality/Appropriate for Guelph

Walking in Guelph is currently a popular recreational activity. If this aspect can be connected with other health and environmental benefits, it will likely become more attractive for other short trips.

A long term method of making walking a more feasible travel mode is to encourage changes in urban form towards more mixed use development, which will decrease the average trip distance.

### Barriers

There is currently a lack of compact, mixed use urban form at the periphery of the City. Many new developments are also planned as largely single use, which increases the average trip distance and discourages walking. Weather conditions and unfavourable winter climate for walking are also barriers which are largely impossible to mitigate.

Improvements to walking infrastructure, such as wider sidewalks and improved crosswalks, often compete with the efficient movement of vehicles. Widening sidewalks often requires wider right-of-ways or narrower on-street parking and vehicle travel lanes.

### How do we Implement?

Improvements to existing sidewalks and walking trails can include better physical infrastructure, but can also include improved maintenance. Existing sidewalks and trails should be improved, with pedestrian-oriented streetscapes through the use of street trees, seating areas and street-oriented building design. Better connectivity and shorter walking distances can be created through mixed use urban form, higher densities and infill development.

New communities can be made more accessible on foot by improving the street connectivity and walking network, such as through the use of a grid system. The relationship of the transit network to the walking network can also be improved through a better integration of transit routes and stops to building locations.

### *4.4.3 Education and Encouragement*

Other ways to increase the number of walk and cycle trips are complimentary programs and promotions that increase awareness about the social and environmental impacts of auto use and more roads, and the health benefits of walking and cycling. Adult cycling programs such as “Can Bike” increase rider skills and address fears about riding in traffic, thus resulting in increased cycling use. Working with employers to provide support and related facilities and programs (travel cost incentives) to increase walking and cycling and reduce parking needs (i.e. bicycle parking and showers). Increased education and awareness will build a social conscience within the community and health benefits will offer encouragement.

### Current Situation

There is currently no known comprehensive education and encouragement program for the City and County area, beyond periodic efforts such as those mentioned above.

### Practicality/Appropriate for Guelph

While alone it cannot hope to have a great impact on trip making behaviour, education and encouragement programs will be an integral part of any comprehensive strategy to promote TDM measures.

### Barriers

Continuous and ongoing time commitment by both public and private agencies is required to ensure that these programs are properly promoted and managed.

### How do we Implement?

Educational programs should actively promote walking and cycling. Municipal publications on energy conservation and the environment should include transportation information, both on the environmental effects of automobile use and the benefits of walking and cycling.

Such social marketing campaigns also require branding to promote their identity and increase their profile. The public relations and media officer would be a key resource to help promote the programs.

## **4.5 ALTERNATIVE MEASURES FOR REDUCING AUTO USE**

### *4.5.1 Parking Pricing/Supply Management*

Limiting the supply of long stay employee parking in Guelph/Wellington through zoning bylaws can reduce auto use as Guelph/Wellington employees would then have to consider alternative modes to the automobile. Free parking by employers provides a strong incentive to drive alone to and from work. Encouraging employers to charge for parking or to pay a transportation benefit to employees who do not use parking are measures which are being used in other cities to encourage transit ridership, ridesharing and use of non-auto modes. Reducing the amount of parking provided by employers and increasing the price charges for long stay parking would further discourage auto use and increase public transit, walk and/or bicycle trips.

One of the main barriers to this approach is that limiting long stay employee parking in Guelph/Wellington to a significant degree may discourage economic development in downtown as employers may choose to move or locate in suburban areas where sufficient parking for employees is available and free.

### *4.5.2 Telecommuting*

With the advent of the personal computer and other ancillary communications equipment, an increasing number of workers may not need to leave their neighbourhood or homes to commute to work. Telecommuting means working at least part time in a location other than a central office such as at home or in some sort of regional centre. A recent study by the U.S. Department of Transportation estimates that work trip commuting could be reduced by 4.5% over the next decade due to growth in telecommuting.

Issues associated with lack of supervision, changes in management style, lower productivity, liability of personnel and computer equipment, file access and security and lack of social interaction are the major barriers to this strategy.

### *4.5.3 Alternative Work Schedules*

Another means of reducing peak hour traffic is to encourage work trips during other hours of the day. This can be done if employers are more flexible with their employees' working hours. Staggered work hours require employees to start and end work at different times, which can have a significant effect on peak traffic where large employers are involved. Flextime or variable time programs require employees to be at work during core periods (say 9:00 AM to 3:00 PM). Start or finish times are then flexible and up to the employee. A four day work week with longer hours each day is another way of reducing peak hour traffic demands.

Many employers already have flex time or variable work hours, so the benefits of this initiative may be minimal. This type of program also makes carpooling less effective.

### *4.5.4 Allow Traffic Congestion to Increase*

Traffic congestion on its own will discourage auto trips and increase the use of alternative modes while causing discretionary trips to occur during other periods of the day due to delays which are experienced as a result. This involves making no improvements to accommodate vehicular traffic.

This approach raises issues associated with increased time and operating costs for business and transit trips, emergency vehicle response times, increased use of streets in residential neighbourhoods and increased air emissions and fuel consumption. Economic development and maintaining vitality in Guelph/Wellington are other barriers to this approach.

### *4.5.5 Congestion Pricing*

This term is used to describe measures which could be used to increase the cost of travel by automobile, especially during peak hours, in order to reduce/eliminate trips, encourage them to occur during less congested periods or by alternative modes. Toll roads are especially suited for this as charges for using roadways will discourage unnecessary trip making. Further, higher tolls could be charged during peak periods to reduce discretionary trips. Increasing parking charges during peak

hours is another form of congestion pricing. Technology associated with electronic toll and automatic vehicle identification (which is currently being tested in North America) provides the potential for congestion pricing to have greater application throughout cities without the delays and costs associated with toll collection as it is applied to-day.

Toll roads will be difficult to operate in a grid type network such as Guelph/Wellington and will create issues associated with social equity and negative impacts on economic development and maintaining vitality of Guelph/Wellington.

### *4.5.6 Increase Driving Cost*

Reducing peak hour congestion could be accomplished by raising the cost of driving in order to discourage single occupancy auto use. Driving costs can be increased through higher gasoline prices, insurance rates, import or sales taxes and licensing.

Lack of public support, impact on the business community, changes to legislation and economic development issues are associated with this approach.

### *4.5.7 Vehicle Use Restrictions*

Vehicle use restrictions can be voluntary or mandatory and can include a wide variety of programs such as “no-drive” days and route or area specific restrictions such as auto restricted zones (ARZ), pedestrian malls, transit malls, and residential traffic controls. No-drive days can apply on a special occasion or throughout the year in a specified area.

In a region-wide program, no drive days for certain license numbers may be applied for alternating days or certain days throughout the year. Route or area restrictions are sometimes implemented for a specific reason, such as reducing auto congestion in a popular tourist location or improving air quality. Reserving lanes for transit use only or high occupancy vehicle lanes is a special case of auto restriction covered previously. Vehicle use restrictions have been used in Freiburg (Germany), Athens, Mexico City, Santiago, New York City, Denver (Colorado), Singapore and Boston.

Lack of public support, requires special legislation or regulations, and affects personal choice and individual freedom. May affect economic development and encourage relocation of business to suburban locations.

## **4.6 TRANSPORTATION DEMAND MANAGEMENT PROGRAM**

### *4.6.1 Recommended TDM Measures*

TDM focuses on reducing auto trips by increasing the use of alternative modes of travel such as transit, cycling and walking. In addition to diverting trips from the auto to other modes, TDM includes programs to increase the number of people in a car through efforts such as ridesharing. The

measures that are recommended can be implemented through education and promotion programs, employer trip reduction programs, changes to land use planning policies and provision of improved facilities.

Table 4.1 summarizes the preceding discussion of alternative TDM measures considered appropriate for Guelph, along with their barriers and limitations, below:

**TABLE 4.1: ALTERNATIVE TDM STRATEGIES**

	<b>Strategy</b>	<b>Practical</b>	<b>Limitations/Barriers</b>
Encourage Walking, Cycling, Transit and Ridesharing	Urban Form	Yes	Long term effectiveness, market barriers
	Increased Density	Yes	Community acceptance, political commitment
	Mixed Uses	Yes	Development specialization, economics
	Neighbourhood Design	Yes	Some increase in private and public cost
	Car Pool/Van Pool Programs	Yes	Large employers, longer distance trips
	Guaranteed Ride Home	Yes	Part of a TDM program - not stand alone
	Parking Supply Management	Yes	Large employers and downtown
	HOV Lanes	No	Road right of way restrictions
	Cycling Routes and Facilities	Yes	Climate, fitness level, cost, trip length
	Pedestrian Trails and Walkways	Yes	Climate, fitness level, cost, trip length
	Increased Transit Service and Routes	Yes	Budget constraints, bus shelters, traffic congestion
	Transit Fare Strategies	Yes	Lack of tax incentives, cost
Programs to Discourage Auto Use	Preferential Transit Facilities	Yes	Right of way constraints, traffic congestion
	Improved Inter-City Transit	Yes	Inter-city licensing, reduced fare
	Telecommuting	Yes	Type of work, lack of supervision, security issues
	Alternative Work Schedules	Yes	Many in use - benefits may be minimal
	Vehicle Use Restrictions	No	Public acceptance and economic development issues
	Increasing Traffic Congestion	No	Emissions, emergency service, neighbourhood infiltration
	Congestion Pricing	No	Public acceptance and economic development issues
Increase Driving Cost	No	Legislation changes, economic development issues	
	Parking Pricing and Supply Management	Yes	Limited to downtown and University, economic development issues

#### 4.6.2 TDM Roles and Responsibilities

Ideally, responsibility for implementing TDM programs should be led by one department of the City of Guelph. A full time staff person from this department, with a title such as TDM Coordinator, should be focused on the TDM program to initiate actions and provide input into all decision-making matters which may affect increased use of alternative modes to low occupancy automobiles (e.g. land use, zoning, parking, bicycle routes, pedestrian issues, etc.). Many municipalities currently have TDM Coordinators with similar responsibilities.

However, as an initial step Guelph could start by establishing a TDM Implementation Committee to provide direction for implementation and assist with various components of the implementation actions. This group should include representation from the following outside agencies, Wellington County and City Departments:

- University of Guelph
- Businesses/Employers/Institutions
- Chamber of Commerce
- Wellington County
- City of Guelph (Engineering, Planning, Transit, Traffic, Parking, Parks)



The TDM Implementation Committee would be responsible for detailing the necessary work plan and associated schedule for the TDM implementation strategy outlined in this report.

This Implementation Committee should also solicit input from stakeholders who are both advocates of TDM and others who may be potentially adversely impacted by some of these initiatives. This includes, but would not be limited to: environmental groups, bicycle user groups, urban development institutes and industry and community groups.

### *4.6.3 Develop Education and Promotion Programs*

One of the most important components of the TDM implementation strategy is the development of educational and encouragement materials to support the TDM initiative and to assist in influencing current travel characteristics and trends with respect to frequency, mode and time of travel by single occupancy vehicle. Promotional materials would include the preparation of flyers, newsletters, newspaper articles, slide shows and video presentations designed to increase public awareness regarding:

- the rationale for TDM including the financial, environmental and social benefits for the City of Guelph;
- information on TDM programs and initiatives in other cities;
- facts about local travel characteristics and the existing and potential future impacts of continuing these trends (e.g. cost to society, employers and individuals to travel by single occupancy vehicle versus other modes, frequency of short distance trips by auto, environmental benefits of ride sharing, etc.);
- experience with area wide or employer TDM programs in other cities including programs such as ridesharing, telecommuting, staggered work hours, parking pricing, etc.;
- the healthy living benefits of walking and cycling; and
- elimination of discretionary trips.

Encouragement programs which should be considered include presentations to community, business groups, large employers and schools, implementing a “ride share” week campaign and soliciting employers to implement TDM programs. Training programs and manuals can be provided to assist employers in developing trip reduction plans.

As noted previously, many cities, regions and agencies in North America have already developed marketing materials and implemented promotional programs to assist with TDM implementation. Therefore, there is no need for Guelph to develop them; rather, they can be enhanced or customized to meet local needs. It is recommended that the City of Guelph obtain information on the programs, materials and experience in other communities and “build” upon this already existing base of information.

Continuous and regular promotional efforts are required to build community support for TDM and

to create a public conscience about transportation consumption as has been done with waste management, water consumption and energy use. Promotional material should be developed by the TDM Coordinator with direction from the TDM Implementation Committee.

### *4.6.4 Identify Specific TDM Market and Barriers*

Implementation of a successful TDM program requires a good understanding of the travel market in order to select the specific TDM strategies which are likely to be effective. For example, efforts to shift the peak time of travel through staggered work hours or flex time may not be very effective if employee start and end times are already well spread out. Information is also required to determine the most effective mechanisms by which to implement the TDM, identify specific issues which must be addressed and initiate their resolution.

For the City of Guelph, it is recommended that TDM planning be focused initially at high employment nodes such as the downtown, University of Guelph and large employers such as McNeil and Linamar and Co-operators. Of highest priority are the downtown and University areas as they offer the greatest potential benefit for trip reduction, and road network deficiencies are expected to occur. For these employment areas, the following approach is recommended:

- Identify major employers in the selected areas and solicit their participation in a market survey and partnership in the TDM program.
- Design a market survey to obtain data on employee profiles and commuting characteristics. This will provide specific information on the number of daytime employees, work start and end times, mode of travel to work, degree of employer subsidized parking, location of employee parking, charges for parking, need for access to car at work and barriers to increased use of transit, ridesharing, telecommuting and use of other travel modes. An internet based survey has been used in other similar situations.
- Conduct the survey and summarize the results.

Based on the above, identify the TDM approaches which are likely to be most effective and develop the implementation mechanisms and incentives necessary to initiate the trip reduction plan. The TDM Market Survey would be directed by the TDM Implementation Committee.

### *4.6.5 Employer Trip Reduction Programs*

Reported experience with employer trip reduction programs have resulted in as much as a 30-40% reduction in peak hour trip making at some individual sites. At other locations, the effectiveness has been much lower due to a lack of corporate commitment, legislation or employee incentives. Actions recommended for promoting and assisting employers with trip reduction programs should focus on the downtown and other areas of employment concentration as note earlier and include:

- distributing marketing and promotion materials to major employers;
- obtaining senior corporate commitment to implement a trip reduction program and

- identify staff coordinator;
- providing employer trip reduction manual and staff training;
- collecting work site data on employment profiles and travel characteristics;
- evaluating the appropriateness of TDM alternatives including telecommuting, ridesharing, transit subsidies, eliminating parking subsidies, staggered work hours, transportation allowances, car pool matching, showers/bicycle racks, etc.; and
- establishing trip reduction targets as well as identifying incentives and disincentives to assist with the trip reduction plan.

The City of Guelph should lead by example and develop its own trip reduction program using TDM strategies. This experience will assist with broader application to other employers, and could begin by selecting a pilot project.

The City should consider the need to implement a trip reduction bylaw to encourage greater private sector involvement.



## **5. PUBLIC TRANSIT**

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### **5.1 GUELPH TRANSIT**

Guelph Transit has a long history of association with the development of Guelph from its early stages to its present status. Transit enjoys remarkable support in the community and at Council. The City's Official Plan has set a target of 10% transit share for all daily trips in Guelph. As discussed in Section 2, although the transit ridership has been increasing steadily over the years, its share of the total trips has not grown at the same rate because of the continuing predominance of auto usage. The goal of increasing transit share therefore requires not only increases in transit ridership but a reduction in the use of the automobile.

Urban form, increased densities, mixed use developments and the neighbourhood design methods described in Section 4 are potential ways of promoting alternatives to the automobile, including transit. However, operational and service improvements, as well as transit fare and ridership strategies, are also needed to make transit an attractive alternative to the automobile and increase its use in Guelph. To that end, Section 5 focuses on the following:

- Ongoing Initiatives
- Transit Service and Routing Issues/Challenges
- Transit Service and Routing Opportunities
- Transit Route Structure Changes
- Roadway Transit Priority Measures
- Advanced Transit Technology
- Transit Fleet and Facilities
- Transit Accessibility
- Transit Fare Strategies
- Transit Ridership Strategies

### **5.2 ONGOING INITIATIVES**

As a result of the 2002 route planning study and other planning activities, Guelph Transit has developed a number of key initiatives for improvements to the current transit services, as follows:

- 1) A new downtown transit terminal located on Carden Street adjacent to the VIA/GO Station and the Intercity Bus Terminal is under active consideration as a replacement to the current downtown transfer point in St. George's Square. This new terminal will facilitate safe and convenient passenger transfer movements between bus routes, it will relieve the current on-street congestion at St. George's Square, it will offer more convenient transfers between local public transit and inter-city transportation services and it may provide more efficient bus routing patterns in the downtown area. The timing of the improvement is tentatively within the next five years.

- 2) A new bus route (Route 55) has been introduced to connect the north side of Guelph directly to Stone Road Mall and University of Guelph. This route provides a shorter trip time to these two major destinations without the need for transfer connections in the downtown area.
- 3) The 2002 study also recommended a new perimeter route to provide direct bus service from the east, north and west areas of the City to the University and Stone Road Mall areas without transferring at St. George's Square. The new route, which will be a significant change to the traditional radial route system, has been approved and will be inaugurated in September 2005.
- 4) Improvements to the transit fleet include the acquisition of wheelchair accessible low floor buses as replacements for older buses being retired from service. As additional low floor buses are added to the fleet, they will be assigned to specific routes to gradually move towards a fully accessible transit service. The City also plans to move towards a 12-year bus replacement cycle to reduce the overall cost of maintaining and rehabilitating older buses. The conversion of the fleet to low floor buses and the conversion to a 12-year bus life cycle is being carried out as existing buses are retired, and is expected to take another 5 to 10 years.
- 5) The City is currently in a pilot project for providing priority at traffic signals for buses. The purpose of transit priority is to enable buses to pass through intersections sooner than under normal signal control measures. The experience from this project will provide a basis for implementing a transit priority system on corridors where buses experience delays due to high traffic volumes. In some situations, even coordinating the signal timings at successive intersections will facilitate transit along with the general traffic movement.

### **5.3 TRANSIT ISSUES, CHALLENGES AND STRATEGIES**

#### *5.3.1 Transit Service and Routing Issues/Challenges*

The input received through public consultation indicates a relatively high level of public and customer satisfaction with the current transit service and strong support for improved public transit services as part of the overall transportation plan. The key areas of concern are as follows:

- Additional service is needed during peak periods to reduce crowding on the buses. Although service is augmented by extra buses during rush hours, there are concerns that excessive crowding occurs during peak periods and reduces the attractiveness of the service. This condition is related to the current provision of 30-minute frequency service during all time periods on all routes.
- Schedule times are currently at their maximum, and transit is faced with the challenge of adhering to tight schedules. The dependence on a central timed transfer connection in the downtown requires that all buses be there at the same time, and delays on any particular route cause this connection to be missed or all routes to be delayed to maintain the connection.

- The current route structure does not readily accommodate many desired trips between different areas of the City without the inconvenience of transfer connections in the downtown. This is viewed as a deterrent to the use of the service.
- The current downtown transfer point is congested for bus operations and inconvenient for passenger circulation.
- The transit information (route maps, schedule times along the route) needs to be improved.
- Better sidewalks and more bus shelters will also enhance customer access to the service. It should be noted that there are ongoing programs for sidewalk extension and for providing bus shelters.

The current route pattern has been identified as a key issue. With all routes focused on the downtown, a high portion of trips are required to transfer between routes in the downtown to complete trips. This has been alleviated to some extent by inter-lining routes through the downtown terminal, but the 40% transfer rate is still relatively high in comparison to other transit services. The radial configuration of routes requires a timed transfer connection at the downtown terminal, which has led to uniform service frequencies (i.e. every 30 minutes) throughout the system to enable transfers. This means that bus routes have to be 30 or 60 minutes in length to maintain efficient schedules. As the City expands and routes need to be extended, it becomes increasingly difficult to meet this schedule requirement in an efficient manner. Also, as ridership levels change on different routes, the standard 30-minute service frequency may not be adequate.

On-street traffic congestion, especially during peak periods, is another issue that has contributed to current difficulties in maintaining reliable and efficient transit schedules. Additional delays and increased variability in travel times tend to occur primarily in the downtown core and along the Gordon Street corridor between the downtown area and the University. Transit buses are required to compete with general traffic as well as to maintain local service to customers along the route.

The street patterns and staging of development in several of the newer residential areas has required the use of large one-way bus route loops to provide service within a reasonable walking distance. However, this pattern of routing has the disadvantages of being more difficult for new customers to understand, requiring longer route travel times and having routes that may be difficult to extend if the area further expands. In some cases, it has led to route duplication (i.e. different routes operated on the same segment of roadway) and an excessive number of bus turning movements, which reduces service operational efficiency.

### *5.3.2 Transit Service and Routing Opportunities*

In general terms, there are several strategic options to respond to the issues related to the routing pattern and the on-street operations. These options include the following:

- 1) Develop some non-radial bus routes, such as the proposed Perimeter route, to provide service between outlying areas, thereby reducing transfer requirements. The Perimeter route is intended to provide direct service to the University and Stone Road Mall, which

- are the two most significant destinations, other than the downtown, from neighbourhoods in both the northeast and the northwest areas of Guelph.
- 2) Give priority to transit vehicles over the general traffic at congested locations to reduce travel time and improve schedule reliability. The planned traffic signal priority demonstration will provide further experience with this option.
  - 3) Reduce route travel times through routing changes that reduce the travel distance and turning movements along the route. Areas with high levels of route duplication and large one-way loops offer the most potential for reductions in travel time and distance. However, each local area needs to be investigated separately to assess local service needs and conditions.
  - 4) Investigate further changes to the overall route structure to reduce the dependence on the single timed transfer connection between routes in downtown Guelph. For example, the development of a second transit terminal on the south side at the University or Stone Road Mall with a mainline connection to downtown Guelph may enable the higher passenger loads in the central corridor to be accommodated, to offer more flexibility in the provision of transfers for trips between different areas of the City and to facilitate service expansion to future development in the south area of the City.
  - 5) Utilize advanced automatic vehicle location and communication (AVLC) technology to improve the on-street monitoring and control of transit vehicles. AVLC systems provide the capability to improve schedule adherence and to collect data on operations for route and service design purposes.

Through some of the planned transit developments, a number of opportunities will be available to make further changes that respond to issues noted above.

The implementation of a new transit terminal at the VIA Station site on Carden Street will offer several opportunities for related improvements to the Guelph transit services. Firstly, the new terminal will require rerouting of buses within the downtown core. This offers the potential to develop direct routing patterns with fewer turning movements and subsequent reductions in overall route running time. At the same time as these routing changes are being considered, it may also provide the opportunity to consider changes to bus routes in outlying areas in cases where there is excessive route duplication or large one way loops. Secondly, the new terminal will be located in close proximity to the various inter-city services (GO, VIA, inter-city bus) and will enable direct connections to these services. This will offer the potential for increased ridership and this might be further enhanced by developing greater coordination with these inter-city services on transit information and fares. The new transit terminal also offers possible opportunities to implement some transit priority measures in conjunction with the new downtown area routes. Since a number of intersections around the downtown area have higher congestion during peak periods, transit priority measures at these locations could provide some reductions in overall running time as well as reducing the variation in running time.

Implementation of the proposed new Perimeter Route has been identified as an important strategy to reduce the dependence on the single downtown transfer point arrangement. This initiative could provide the opportunity to further develop the University area as a second major terminal and transfer point serving the south side of Guelph. Since the major growth areas are in the south, a



south side terminal with a mainline connection to the downtown and possibly Stone Road Mall could enable the south side to be served more efficiently. For example, routes could be connected through to the downtown during peak periods and “short-turned” at the south side terminal during mid-day, evening or weekend time periods.

It was noted earlier that some rationalization of existing bus routes may help to reduce duplication and also improve public understanding of the services. It is also noted that local bus route changes need to be investigated carefully in each neighbourhood to assess the neighbourhood needs and sensitivities. However, the planned residential growth in the south side of Guelph, in the northeast and the northwest will occasionally require bus route changes to maintain service to the new areas. At the time these route changes are under consideration, there is also the opportunity to investigate the current bus route pattern in the area and assess possible options to reduce route duplication and reduce large one-way loops to improve service efficiency and effectiveness.

The traffic signal priority project for transit will provide useful experience with the specific approach and the level of improvements in on-street operation that may be expected. This demonstration project could establish a working arrangement between traffic and transit staff to identify other on-street operational problems and to develop transit priority solutions to these problems.

### *5.3.3 Transit Route Structure Changes*

The current bus route structure in Guelph consists of a pattern of radial routes focused on a single downtown terminal that serves as the primary destination for transit travelers as well as a transfer point to connect to other buses to continue journeys to other destinations outside the downtown area. This route structure has served Guelph transit travelers well for many years but it also has several inherent disadvantages:

- Since transfers between routes are necessary for many trips, it is required that all vehicles are at the transfer point at the same time. This requires that all routes maintain the same service headway (e.g. 30 minutes) even though the ridership levels differ between routes.
- If buses on one route are delayed by traffic congestion or other problems, transfer connections are missed or other routes are also delayed to maintain the connection.
- The presence of all buses at the downtown transfer point at the same time requires a significant amount of bus stop space in an area where space is limited.
- The University of Guelph has become a major destination in the City, attracting a similar number of trips as the downtown area.

To satisfy the longer term needs of improved transit services to meet customer travel needs, to serve new development areas of the City and to offer greater flexibility in the design of the local bus services, a modified route structure is recommended. The modified route concept for Guelph is shown in Figure 5.1 below and consists of:

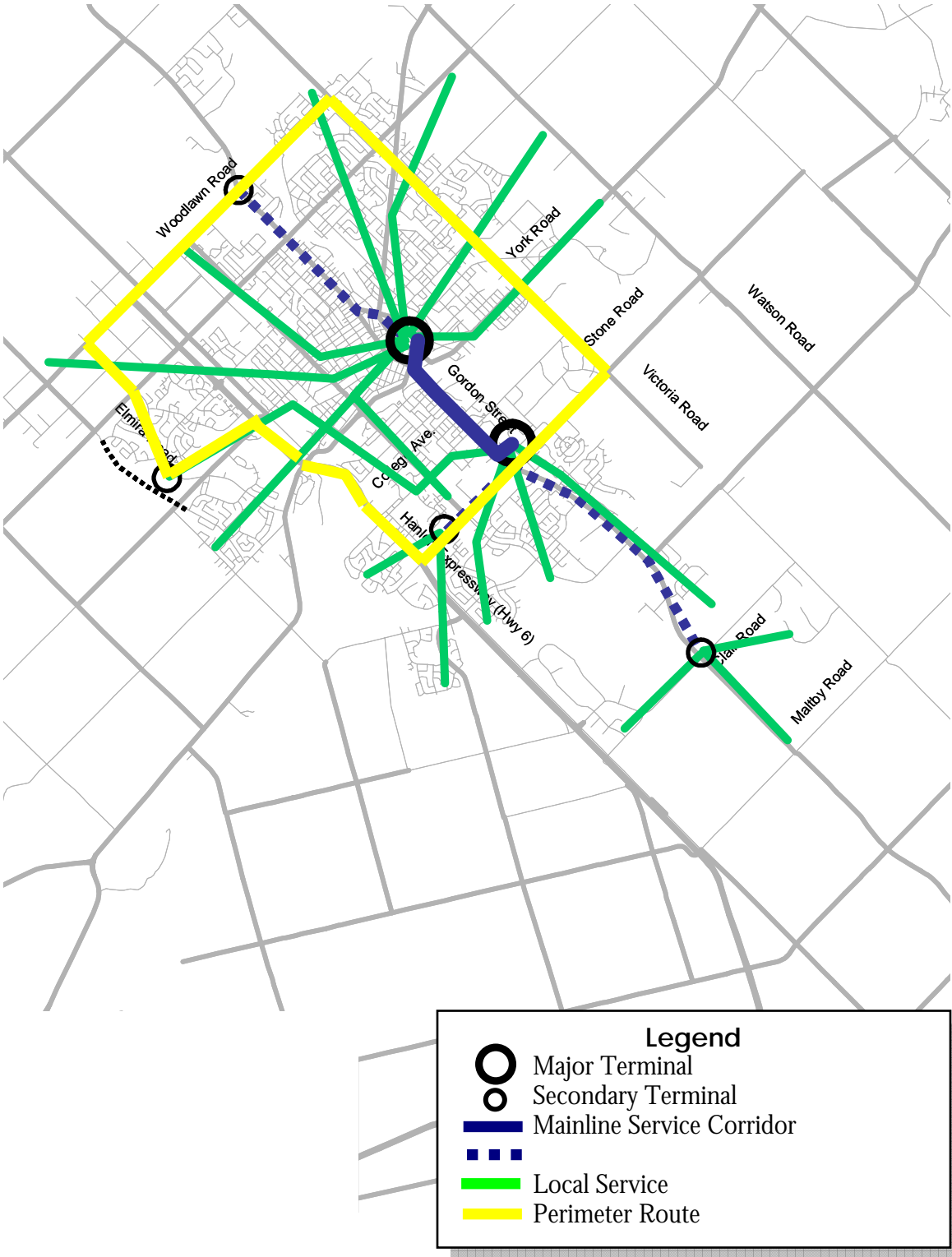


FIGURE 5.1: TRANSIT ROUTE CONCEPT

- Maintaining a major transit terminal in the downtown area and developing a second major transit terminal at the University of Guelph. Transfer connections would be provided between local bus routes at each of these terminals.
- Providing secondary transit terminals at other locations as appropriate, including the West End Recreation Centre, Willow West Mall, Stone Road, the emerging South Gordon District Centre, and the Woodlawn and Woolwich commercial area.
- Developing a higher frequency and capacity mainline bus service between the downtown transit terminal and the University transit terminal based on the already initiated Route 55 operation. Future extensions of this mainline corridor would likely be to Stone Road Mall, south along Gordon Street and north along Woolwich Street.
- During peak periods and at other times when ridership levels warrant, bus routes would be interlined through the two major terminals with additional services interlined or extended along the Gordon Street corridor. At least one bus route would be interlined to connect the two major transit terminals with the Stone Road Mall during all time periods.

This route concept will provide a basis for the development of additional local services to accommodate new development, and will also provide flexibility for route extensions when necessary by extending services along the central corridor. Further, the utilization of two major transit terminals provides flexibility, for example, to provide bus service between the north areas of Guelph and the University without the requirement to be routed through the downtown transit terminal. During low demand periods such as late evening and Sundays, south side bus routes could be “short-turned” at the University transit terminal to improve operational efficiency.

This route structure concept plan represents an evolution of the existing radial bus route pattern and does not require major changes from the current routing structure. It does, however, provide a framework for the more detailed design of bus routes as conditions change over time. At the present time, the Guelph transit route structure has 10 routes serving the north area of the City and 5 routes serving the south side. There are presently 4 bus routes interlined between the north side and the south side, with two of these operating in the Gordon Street corridor. With most of the future growth in Guelph planned for the south side of the City, additional routes and services are expected to be focused in this area. The development of the University transit terminal will help to accommodate the growth in transit services on the south side of the City.

### *5.3.4 Roadway Transit Priority Measures*

Transit priority measures have been used in many Canadian cities to improve the efficiency and reliability of transit operations. The benefits of well designed transit priority measures include:

- Reduced running time for buses through congested areas reduces travel time for transit customers and increases the attractiveness of transit service.
- Reductions in travel times for buses may enable routes to be extended without the addition of more buses, improving the efficiency of the services.

- Reductions in the variability in running times due to random congestion improve the reliability of service schedules and improve transfer connections.

There are a wide variety of transit priority measures that have been successfully demonstrated in Canada and elsewhere (Reference: STRP Report 15, Design and Implementation of Transit Priority at Signalized Intersections, Canadian Urban Transit association, November, 2000.) The most promising measures that should be considered for Guelph are outlined below and illustrated in Figure 5.2 and Figure 5.3.

- *Traffic Signal Priority.* Priority for buses approaching signalized intersections can be provided through the use of a transmitter or detection device on the bus, a receiver or detector at the signal controller, and a special signal timing plan that reduces the delay for buses. The technology is readily available to enable active traffic signal priority to extend green phases or to shorten red phases to reduce bus waiting times. In conjunction with the traffic signal priority, the placement of bus stops near the intersection should be reviewed and adjusted to take advantage of the signal priority. The City is currently planning to proceed with a traffic signal priority demonstration for one route and this will provide a basis to refine the techniques and to expand to other routes. Careful monitoring of this initial demonstration will be important to develop refinements for other locations. The provision of traffic signal priority for the high volume bus movements in the downtown and University areas should be considered in the short term. Also, special traffic signal timing provisions should be considered at the intersections entering and leaving the new downtown transit terminal.
- *Queue Bypass Lanes.* This feature can take many forms such as an extended bus-only lane through an intersection, allowing buses to use exclusive turn lanes for through movements and a special bus only traffic signal phase to allow buses to advance ahead of mixed traffic. Some of the intersections that warrant consideration of a transit queue bypass lane include Woolwich St & Eramosa Rd, Gordon St & Wellington St, Gordon St & College St, Gordon St & Stone Rd, College St & Edinburgh Rd and Stone Rd & Edinburgh Rd. The feasibility and impacts of a queue bypass lane and most appropriate approach at these intersections need detailed investigation by traffic engineering and transit operations staff.
- *On-street Operational Measures.* Minor on-street measures can improve the ease and efficiency of transit vehicle operations in congested and constrained urban streets. Typical measures include avoiding bus bays except at extended duration stops, providing adequate turning radii or turning space at street corners where buses are turning, and using bus stop bump outs on streets with extensive on-street parking. Each bus route should be examined by transit operation staff to identify locations where these measures would facilitate bus operations.

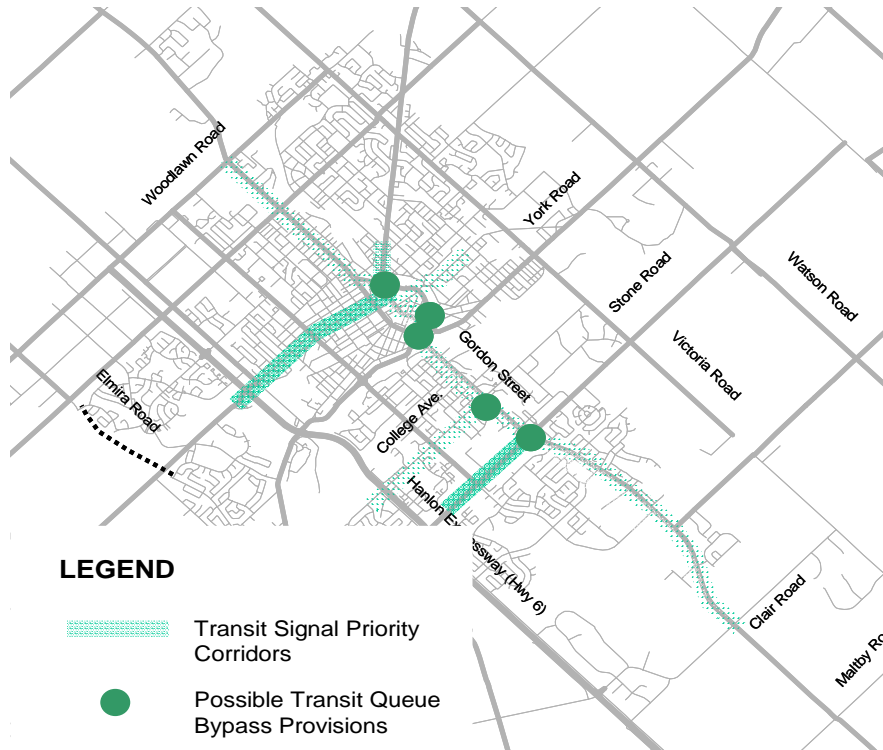


FIGURE 5.2: TRANSIT PRIORITY STRATEGY

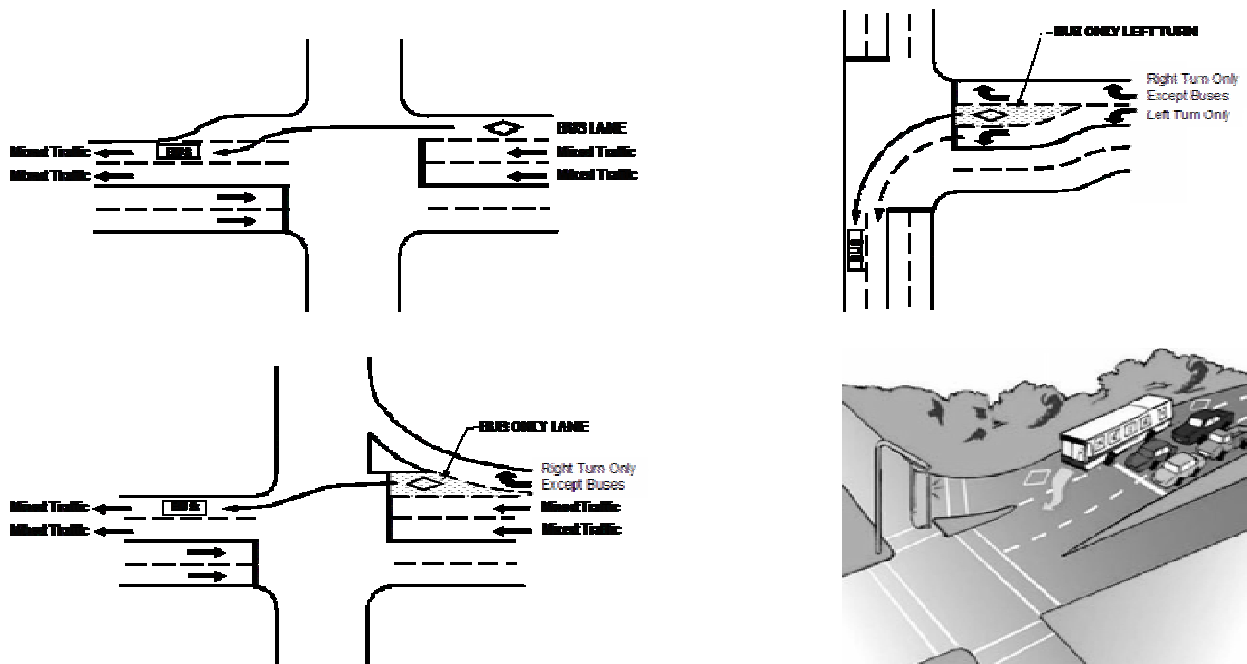


FIGURE 5.3: EXAMPLES OF TRANSIT QUEUE BYPASS PROVISIONS

### *5.3.5 Advanced Transit Technology*

A number of new transit technologies have been introduced that offer significant potential to improve customer service, operating efficiency and improved data on transit services. Advanced transit technologies for Guelph Transit that warrant consideration or are being experimented with include:

- *Automatic vehicle location and communication (AVLC) systems.* AVLC enables the location of each transit vehicle to be monitored on an ongoing basis in relation to its geographic location and also its location in relation to the schedule. This capability can reduce the amount of on-street supervision required, it can enable improved schedule adherence to be maintained and it provides historical data for refined schedule design. It can also enable improved communication between individual buses and central control to help manage a variety of possible situations. Various AVLC technologies are available for transit applications. Successful implementation of these technologies will also require changes to current operational procedures.
- *Advanced fare collection systems,* such as stored value “smart cards”, bus pass readers, ticket and coin counting modules offer the potential of greater convenience for transit customers, faster boarding of buses and historical data on fare payment and ridership. There has been considerable experience in the transit industry with automated fare boxes (i.e. pass readers, ticket counters, coin counters). More recently, there is interest in the use of stored value “smart cards” among Greater Toronto Area (GTA) transit systems as a means of facilitating fare integration between adjacent transit services. This technology again offers the potential of improved fare and customer data, greater customer convenience and faster boarding of buses as well as the management of fare collection for trips transferring between different transit services. Guelph Transit has examined these technologies and approval has been given in the 2005 Budget to acquire new fare collection/passenger identification systems.
- *Automatic Passenger Counting (APC) systems* enable detailed passenger boarding data to be collected by bus route, bus stop and time period. While the experience in other transit systems has demonstrated the limitations of this technology, there is a need at Guelph Transit for improved transit passenger data for the planning and design of services. APC systems can be installed and used on a few buses that are rotated around the routes on a regular basis to develop a complete ridership database. In the short term, an annual route counting program should be developed and carried out to provide passenger counts by route to enable more detailed planning of services.
- *Alternative transit bus fuels* are being developed and have been tested in some Canadian transit systems. Alternative transit fuels include ultra-low sulphur “clean diesel” fuel, biodiesel, natural gas, ethanol, electric hybrid buses and hydrogen fuel cells. Alternate fuels offer the potential of reduced fuel costs and reduced engine emissions. It is also noted that new federal government emissions standards for new vehicles will become effective in 2007 and will also result in reduced emissions from any new buses purchased after that date. Guelph Transit has been using bio-diesel exclusively since July 2003 and is committed to continuing the use of bio-diesel even though it costs 5 to 8 cents more

than conventional diesel. Since the City of Guelph has committed to maintaining and expanding the role of public transit, use of alternative bus fuels should be encouraged as it would potentially reduce engine emissions in areas where buses are congregated, such as the downtown and the University. The City should closely monitor the experience with other alternative fuels in the transit industry and consider utilization of the proven types of alternative fuels. As Guelph has a relatively small transit system, the costs and risks of testing an unproven alternative transit fuel are relatively high.

### *5.3.6 Transit Fleet and Facilities*

Guelph Transit currently has a fleet of 50 conventional transit buses that is used to support a weekday scheduled peak bus requirement of 38 buses. The transit services are operated from a relatively new facility (i.e. about 5 years old) on Watson Road that accommodates the transit operation staff, vehicle maintenance activities and vehicle storage. The garage was designed to store 36 buses, so it presently does not have adequate space to meet the fleet needs, resulting in crowding and inefficient operations within the garage.

Guelph Transit has a fleet replacement plan to shift to a bus life of 12 years over a period of time. Recent studies have indicated that a 12-year bus life cycle is more economical than the typical 18-year bus life cycle. The City has also established a fleet reserve with ongoing annual contributions that will enable an ongoing annual bus purchase of 4 to 5 new vehicles to maintain the 12-year vehicle life cycle.

With the suggested improvements to transit services, the weekday peak period scheduled services are expected to require 46 to 48 buses in approximately 10 years with a resulting total fleet size of approximately 60 buses. This will require that an additional 8 to 10 buses be purchased over the next ten years, in addition to the ongoing annual bus replacements. Further, at the end of the ten year period, the contribution to the transit vehicle reserve fund will need to be increased to support the purchase of 5 new buses each year.

In the longer term, an increased modal shift to public transit will require an expanded bus fleet to support approximately 60 to 80 scheduled peak period buses. This will require a total fleet of 75 to 95 buses. There is a great deal of uncertainty related to the level of increased transit modal usage that will actually be realized. Therefore, significant capital investments in fleet and facilities to accommodate this longer term potential fleet size are not justified at this time. However, it would be prudent to recognize this potential in current planning activities.

The current transit garage facility does not have adequate bus storage space for the current fleet of 50 vehicles and for the existing transit staff compliment. To address this deficiency and to provide flexibility for expanded and improved services over the next 10 years, capital improvements to the transit facility are required and should be programmed within the short term. Expansion of the garage storage to accommodate at least 60 buses should be planned and provision should be made for a possible long term further expansion of the garage.

### *5.3.7 Transit Service Accessibility*

The City of Guelph and Guelph Transit have undertaken a number of measures to improve accessibility to transit services for persons with disabilities and mobility limitations. The key measures are:

- The City provides a specialized parallel transit service (i.e. Guelph Transit Mobility Service) for persons unable to use the conventional transit service due to their disability.
- The transit fleet currently has a number of low floor wheelchair accessible buses in operation and is following a policy of purchasing low floor buses for all bus replacements. The low floor buses are not only wheelchair accessible but are also more accessible for persons with mobility limitations (e.g. frail elderly persons or ambulatory disabled persons) who wish to use the conventional transit services.

Continuing with efforts to improve the accessibility of the conventional transit service through measures such as an increased number of low floor buses in service, accessibility improvements to bus stops and terminals, fare incentives to encourage persons with disabilities to use conventional transit will help to contain the costs of the specialized service and improve overall mobility for persons with disabilities.

### *5.3.8 Transit Fare Strategies*

The strong support for transit by the City of Guelph and the University is an opportunity to develop some more convenient forms of fare payment for transit customers. A payroll deduction bus pass plan, for civic employees in the case of the City and for faculty and staff in the case of the University, could offer a further convenience to existing transit customers and an incentive to potential new customers. While there would be some administrative effort involved in setting up a program of this nature, it would encourage ridership for employees of these two organizations and would provide a model that could be used to encourage other major employers to participate.

In addition, reduced transit fares by increasing subsidies from the public sector (provincial governments or transit agencies), the private sector (employers) or a combination of the two could be considered. Individual or corporate transit fare subsidies make transit more attractive by reducing the out-of-pocket cost of travel compared to auto use. For example, free employee transit passes are a benefit commonly provided by transit agencies and transportation organizations, and have been known to increase transit usage among employees. Businesses can write off subsidized employee parking and other costs of auto use while this tax advantage does not apply to transit. Vancouver, Ottawa, Phoenix (Arizona), Portland (Oregon) and Denver (Colorado) have implemented employer subsidized transit passes. Bill C-209, which still has not been considered by the Federal Government, proposes to make transit fares tax deductible for employers.

Another variation on this strategy is to charge lower fees during off-peak hours to increase transit utilization during these periods. Increasing transit use can reduce parking needs and costs for employers and road improvement needs by public sector agencies.



### 5.3.9 Transit Ridership Strategies

In addition to operational and service improvements, specific strategies are also necessary to attract more riders and further increase Guelph Transit's continuously increasing ridership levels. The challenge is to increase the share of transit relative to that of the automobile and focus on the Official Plan target of 10% modal share. There are four areas which ridership strategies should target:

- Choice and Captive Transit Users
- High Transit-usage Areas
- Low Transit-usage Areas
- New Growth Areas

#### Choice and Captive Transit Users

As noted previously, university and school trips account for the largest share (48%) of transit trips. It is also noteworthy that work and discretionary trips account for equal shares, over 20% each. Normally, transit is not an attractive mode for discretionary trips such as shopping and recreational trips. Among auto users, 30% use auto for work trips and 46% use it for discretionary trips. Within each of the two primary trip purposes, Home-Work (41%) and Home-Other (32%), auto accounts for more than 85% of the trips.

The available data does not suggest how many of the current transit users are *captive* (i.e. they have no alternative modes) users, and how many are *choice* (i.e. they choose transit even though have alternative modes available) users. However, the Guelph household telephone survey on Transportation Strategy, undertaken in 2000, indicates that of those who drive to work, 40% will not switch to another mode, while 25% would consider choosing transit with improved service. According to the same survey, 35% of the respondents indicated a willingness to use transit for travel in general. These are encouraging indicators of the potential for attracting choice users to transit, both for home-work trips and home-based discretionary trips.

Transit Service improvements and attractive fare strategies, as already discussed, are essential to capture potential choice riders. In addition, Guelph Transit should also focus on specific transit market segments in Guelph.

#### High Transit-usage Areas

Figure 5.4 shows the transit share of all trips in each of the 13 Planning Districts. The University District (which includes the University Campus and the Stone Road Mall) has registered the highest transit share of 10%, which is also the OP target for the City as a whole. The Downtown (8%) and

Edinburgh District (6%) transit shares are higher than the citywide share of 5%. The Eramosa and the Hanlon Districts have a transit share of 4% each, which is higher than the transit share in each of the remaining districts.

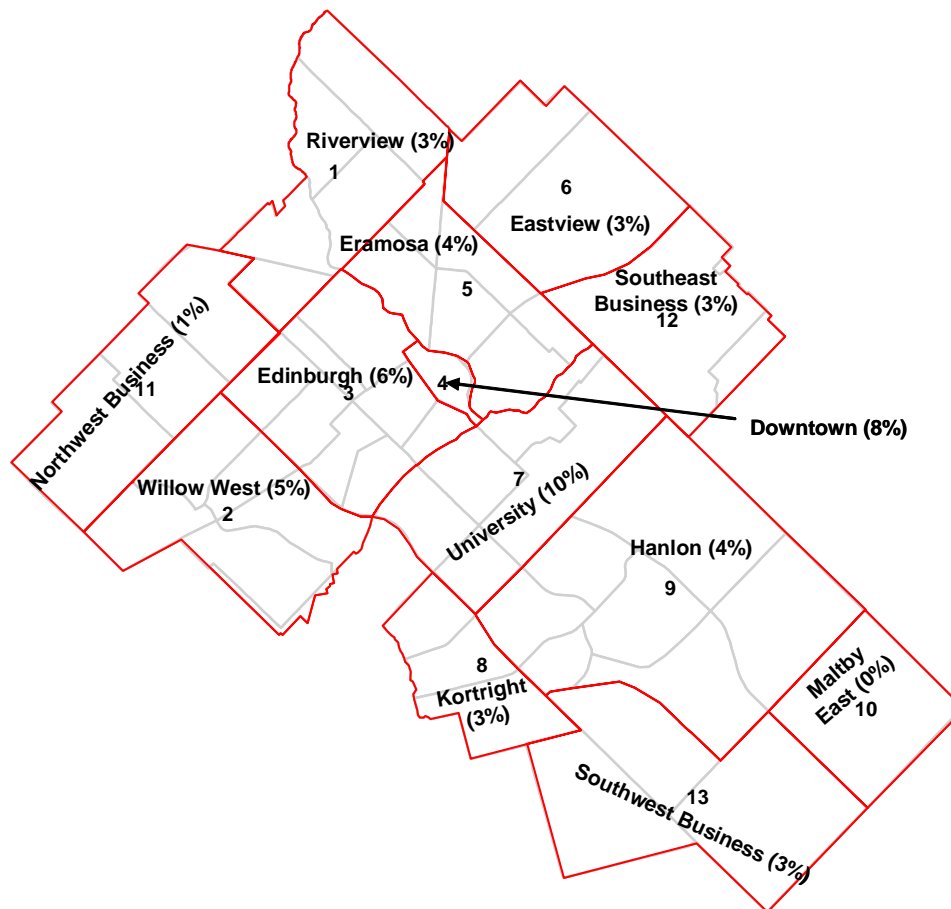


FIGURE 5.4: TRANSIT MODAL SHARE IN EACH PLANNING DISTRICT

Figure 5.5 illustrates the contribution of each district to the transit trips undertaken daily in all of Guelph. The above noted five core districts account for 80% of all transit trips in the City. Looking at it another way, Downtown Guelph, the University and the Stone Road Mall account for 90% of all transit destinations, while more than 50% of the residential origins of these trips are from the two Planning Districts of Eramosa and Edinburgh located to the east and west of the Downtown. These two districts, along with the Planning District of Hanlon to the south of the University, account for two-thirds of all home-based transit trips.

Although these five districts account for the majority of all transit trips in the City, there is considerable potential for increasing transit usage in each of them. The existing radial system of bus routes offers convenient transit connections between the five districts, and one of the measures to increase ridership on these routes should be the provision of a higher frequency service. In introducing higher frequency (i.e. 15 min headway in place of the current 30min headway) service, Guelph Transit should consider giving priority to routes currently serving the five core districts. A second measure would be to vigorously pursue employer support and incentives for employees in the downtown and the University districts to use transit and not auto for home-work trips.

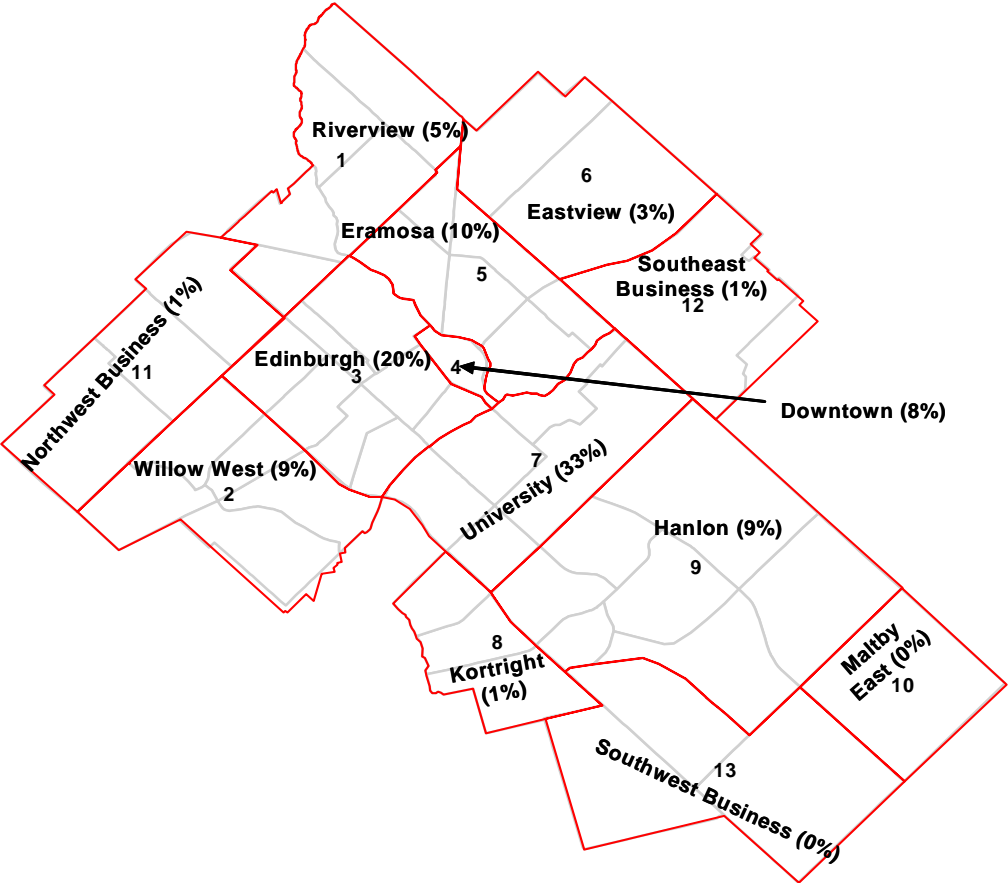


FIGURE 5.5: DISTRICT SHARE OF ALL TRANSIT TRIPS

Expanding transit usage in these districts will also require capturing people who live in these districts and work in Guelph’s other three employment districts, and capturing those who live outside the city’s core area and work in the downtown, the university, or the Stone Road Mall areas. These outer employment and residential districts are currently low transit-usage areas, as discussed below.

Low Transit-usage Areas

As can be seen from Figure 5.4 and Figure 5.5, the outer residential and employment districts have low transit shares relative to other modes and account for only 20% of all daily transit trips in Guelph. The four residential planning districts (Riverview, Eastview, Willow West and Korrtright) account for about 30% of all home-based daily transit trips, while the three employment districts (Northwest, Southeast and Southwest) account for less than 10% of all transit trip destinations.

Although all of these districts are currently served by Guelph Transit in the same manner as it serves the core districts, the service to these districts are disadvantaged by the radial route system that is in place. The proposed perimeter route and future changes towards a modified radial-grid system will address this shortcoming and facilitate direct transit trips between residential and employment

points. Therefore, introducing direct route connections and avoiding the downtown transfer is recommended as the basic approach to increasing ridership levels in the outer residential and employment districts. Employer support for employee use of transit should also be pursued to increase the ridership levels in the three outer employment areas.

### New Growth Areas

The projected population and employment growths in Guelph offer Guelph Transit its third market segment of transit users. Future population growth is expected to be mostly in the Planning District of Hanlon, in the south end of the City, while the Hanlon Creek Business Park and South Industrial Park, also in the south, are the two areas where most of the future jobs are expected to be located. These areas will require transit service extensions as the anticipated developments are completed. Guelph Transit should also look into the possibility of using the Hanlon Expressway and the reconstructed Victoria Road as future transit routes to serve the new growth areas.

## **5.4 INTER-REGIONAL TRANSIT**

### *5.4.1 Growing Potential for Inter-Regional Transit*

The transit share of inter-regional travel is not significant at the present time. However, with growing demand for travel between Guelph-Wellington, Kitchener-Waterloo-Cambridge and the GTA areas, the level of inter-regional transit service will have to be significantly improved during the planning period.

According to the 2001 TTS data, there are about 1200 daily transit trips between Guelph and the GTA, representing a modal split of 4.5%, while there are 100 transit trips between Guelph and the Waterloo Region at a modal split of 1%. The main Guelph destination for inter-city transit trips is the University of Guelph, accounting for 25% of the trips in either direction.

Overall, the number of home-work trip interchanges involving Guelph, Wellington County, the Region of Waterloo and the GTA municipalities is showing a growing trend. This is supported by the place-of-residence/place-of work information based on the 2001 Census. As noted in Section 2, the number of Guelph/Wellington residents working in other municipalities and the number of residents from other municipalities working in Guelph are both increasing.

A reasonable projection of future transit trips by 2021 would suggest 3500 daily transit trips at 10% modal split between the GTA and Guelph, and 650 daily trips at 5% modal split between Guelph and the Waterloo Region. Needless to say, these targets cannot be achieved without improvements to the existing inter-regional transit services.

### *5.4.2 Inter-Regional Transit Improvements*

The feedback from the public consultation indicates the main areas of interest related to inter-city transit services are as follows:

- Improved transit services to the Greater Toronto Area (GTA) in terms of reduced travel times, more frequent service, and access to a range of destinations in the GTA, not just Downtown Toronto.
- Improved transit services to Kitchener, Waterloo and Cambridge.

A number of initiatives are currently being pursued to provide higher frequency and faster transit service connecting Guelph and the County of Wellington to the GTA and the Waterloo Region. They include the following:

- The City of Guelph has completed a feasibility study for an inter-regional and inter-modal transit station at the current VIA Station location in Guelph, and is exploring funding support for its development from the senior levels of Government.
- Guelph is part of the North Mainline Alliance, comprising municipalities from London to Halton Hills along the North Mainline railroad, that is promoting improvements to the train service on the North Mainline, that could involve a coordinated service by VIA and GO Rail in the future.
- Guelph has requested the Province to implement a GO bus service on Hwy 401 as an interim measure to provide a transit service between Guelph-Wellington and the GO train station in Milton.
- Guelph and Wellington are supportive of the Park-and-Ride intercity bus station north of Highway 401 along Wellington Road 46 that was proposed in partnership between the Province and a private operator.
- Guelph Transit will explore opportunities to provide transit service between Guelph, the Region of Waterloo, and areas in the County in coordination with Grand River Transit.
- Guelph Transit is supportive of the proposed initiative to introduce a smartcard fare medium to achieve seamless fare integration between different public transit operators.

### *5.4.3 Inter-regional Transit and Highway Improvements*

As outlined in Section 7, the Provincial Government is placing a renewed emphasis on public transit. In addition to promoting transit in urban areas, inter-regional transit service could be facilitated by including inter-regional bus transit needs in undertaking highway improvements. To that end, as discussed in Section 7, future improvement to Provincial/County roadways in the study area should accommodate the provision of transit service.



## **6. ROADWAY IMPROVEMENTS**

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### **6.1 METHODOLOGY**

One of the purposes of a Transportation Master Plan is to establish need and justification for road network improvements as well as alternatives to these improvements. While alternative improvements are identified at specific locations, in a number of instances there may not be practical alternatives for evaluation. In such instances, evaluations are carried out in relation to the “Do-Nothing” option.

It is important to note that all identified road network improvement options are subject to a future Municipal Class EA process, and EA studies will be undertaken for each of them as appropriate. Such EA studies will further evaluate in more detail the impact of identified road network improvements and their alternatives based on detailed criteria including:

- 1) *Impacts on the Economic Environment:* An adequate road network is necessary to support growth and economic development by providing the efficient movement of people and goods throughout the City and to/from external areas. At the same time, the costs associated with property, construction costs and fuel consumption affect the economic environment.
- 2) *Impacts on the Social Environment:* Minimizing impacts associated with displacement of land uses, placement of roadways close to existing properties (proximity impacts), noise and visual impacts, through traffic on residential streets (while maintaining/enhancing accessibility), enhancing and/or encouraging alternative modes to the private automobile are important social criteria to consider.
- 3) *Impacts on the Natural Environment:* Minimizing impacts on wild life, vegetation, wetland and watercourses and emission levels are important natural environment considerations.

Section 6 summarizes previously identified improvements along with their EA status, and additional improvements that will be required to address the deficiencies identified in Section 3.

### **6.2 IDENTIFICATION OF IMPROVEMENTS**

#### *6.2.1 Previously Identified Improvements*

In evaluating the need for future road network improvements, roadway improvements that have been previously identified in the study area were included in the future road networks evaluated as part of this study. These improvements (shown in Figure 6.1) are in various stages of environmental assessment, approval and implementation. Therefore, the need and justification for these improvements has been established as part of these environmental studies and as such they are considered to be committed for implementation in the future. They are as follows:

- *Gordon Street/Wellington Road 46*—The Gordon Street / Wellington Road 46 EA, jointly undertaken by Guelph and Wellington County, was completed in 2001. The EA recommended widening from 2 to 4 lanes the section of Gordon Street from south of Kortright Road to Maltby Road and the section of Wellington Road 46 from Maltby Road to Wellington Road 34. The 4-lane widening has been completed up to Clair Road, and widening further south will proceed in conjunction with the development of adjacent lands.
- *Stone Road*—The Stone Road EA, which was completed in 2002, has identified a 4-lane cross-section between east of Gordon Street and Victoria Road, and a 2-lane cross-section further east to Watson Parkway. The latter section is expected to be widened to four lanes to accommodate anticipated future development of Provincial lands to the north of Stone Road. The upgrading of Stone Road between Victoria Road and Watson Parkway, as a realigned 2-lane road with a new bridge crossing at the Eramosa River, will be completed in 2005.
- *Watson Road*—The Watson Road EA was completed in 2003. The recommended improvements indicate a 4-lane widening from Watson Parkway to Grange Road and a 2-lane upgrading north of Grange Road with provision for future widening to 4 lanes. Improvements from Watson Parkway to Eastview Road are being implemented in conjunction with the development of adjacent lands.
- *Clair Road*—The Clair Road Class EA was approved in 2003 indicating the need to widen this corridor to 4 lanes between the Hanlon Business Park and the future Beaver Meadow Drive (east of Gordon Street), and upgrade it as a 2-lane road further east to Victoria Road. The reconstruction of Clair Road is scheduled for 2005.
- *Gordon Street/Norfolk Street*—The EA for the Gordon/Norfolk corridor was completed in 2003. The main purpose of the EA was to assess the implications of narrowing the roadway to accommodate bike lanes, wider sidewalks and enhanced landscaping. The recommendations include: narrowing Gordon Street from 6 lanes to 4 lanes between Wellington Street and Waterloo Avenue; upgrading Norfolk Street as a 4-lane road from Waterloo Avenue to Paisley Road; and narrowing Norfolk Street from 4 lanes to 2 lanes, between Paisley Road and Norwich Street. The implementation of the improvements will be undertaken in stages beginning in 2005.
- *Victoria Road*—The Victoria Road EA, which was completed in early 2005, has identified a 4-lane cross-section from York Road to south of Stone Road and a 2-lane cross-section further south to Clair Road. The proposed improvements are expected to be implemented in stages beginning in 2006.
- *Highway 6 (Morrison to Guelph)*—The updated EA for the Highway 6 realignment (Morrison Bypass), including a new interchange on the Hanlon, was submitted by the Ministry of Transportation in March 2004 for review and approval by the Ministry of the Environment.
- *Highway 7 (Kitchener to Guelph)*—The updated EA for realigning Highway 7 as a new freeway between Wellington Street in Kitchener and the Hanlon Expressway in Guelph was filed by the Ministry of Transportation in December 2004 for review and approval



by the Ministry of the Environment.

- *Hanlon Expressway Interchanges*—The Hanlon Expressway is expected to be upgraded as a grade-separated freeway in the future. At present, the Hanlon has one interchange at Wellington Street (which is a connecting link for Hwy 7) and at-grade intersections, mostly signalized, to the north and south of Wellington Street. MTO has completed an EA for upgrading the intersections north of Wellington Street, indicating an interchange north of Paisley Road, grade separation at Willow Road and an interchange at Speedvale Avenue. This EA will require updating before implementing these improvements, which were also identified in the 1994 GATS study. North of Woodlawn Road, as identified in the Highway 7 EA, the Hanlon will connect with Hwy 7 and will have ramp connections to Silvercreek Parkway and Woodlawn Road. No EA has been undertaken for the intersections south of Wellington Street, although the 1994 GATS study identified partial interchanges at College Avenue and at Kortright Road, and full interchanges at Stone Road and at Laird Road. The current study has included improvements at College Avenue, Stone Road and Laird Road, and has reviewed the feasibility of a full interchange at Kortright Road.

The above noted improvements were included in the 2021 and Post-2021 road networks evaluated in this study in order to determine what additional network improvements need to be considered.

The City and County roadway improvements listed above are expected to be completed before 2021. The timing of Provincial highways is indeterminate, and for this reason the study assessed the implications for the City and County road system if improvements to Provincial highways are not implemented by 2021.

### *6.2.2 Area-Specific Additional Improvements*

TransCAD model assignments were undertaken for 2021 and Post-2021 time horizons using a model road network that incorporated the previously identified road improvements (Section 6.2) in the existing road system.

Figure 6.2 and Figure 6.3 illustrate the level of service on the road network corresponding to 2021 and post-2021 traffic conditions. Future road improvements were identified and evaluated based on capacity deficiencies in the following areas:

- College/Kortright-Downey/Hanlon Area
- Stone/Elmira Area
- Watson/Woodlawn Area
- Central Area
- South Guelph Area

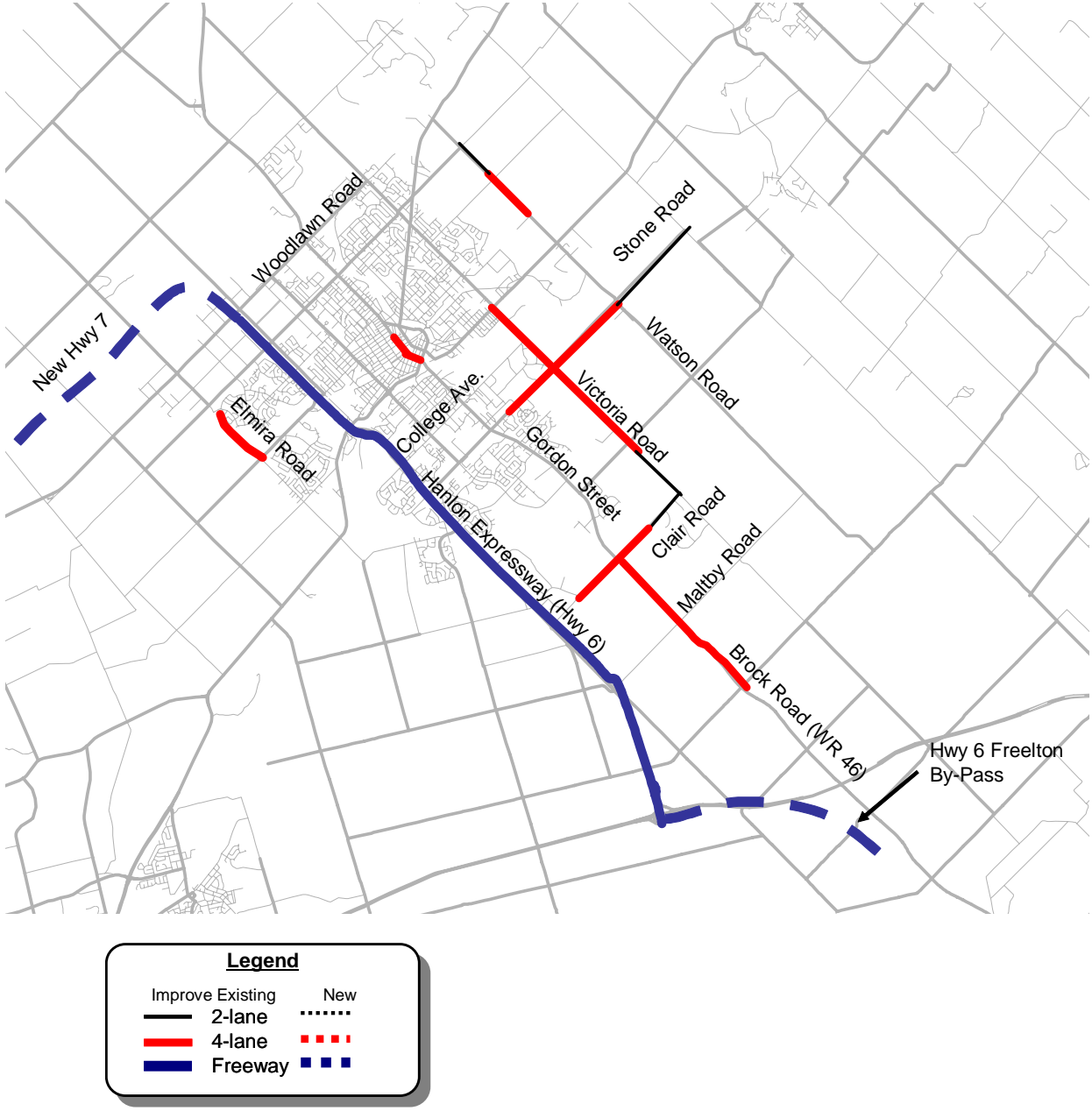


FIGURE 6.1: PREVIOUSLY IDENTIFIED IMPROVEMENTS

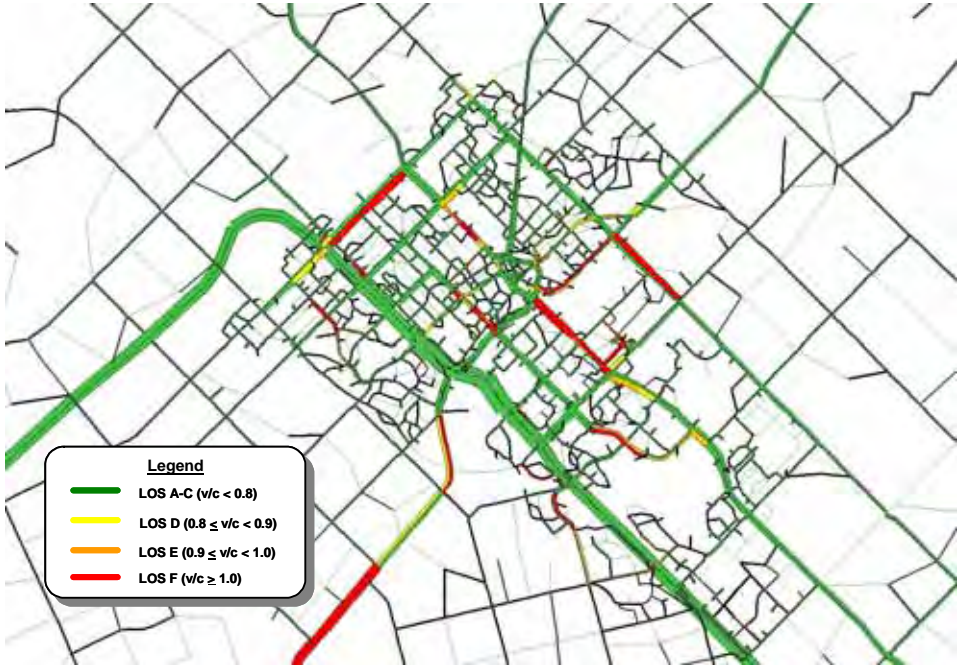


FIGURE 6.2: 2021 ROADWAY NETWORK DEFICIENCIES (AFTER IMPLEMENTATION OF IMPROVEMENTS)

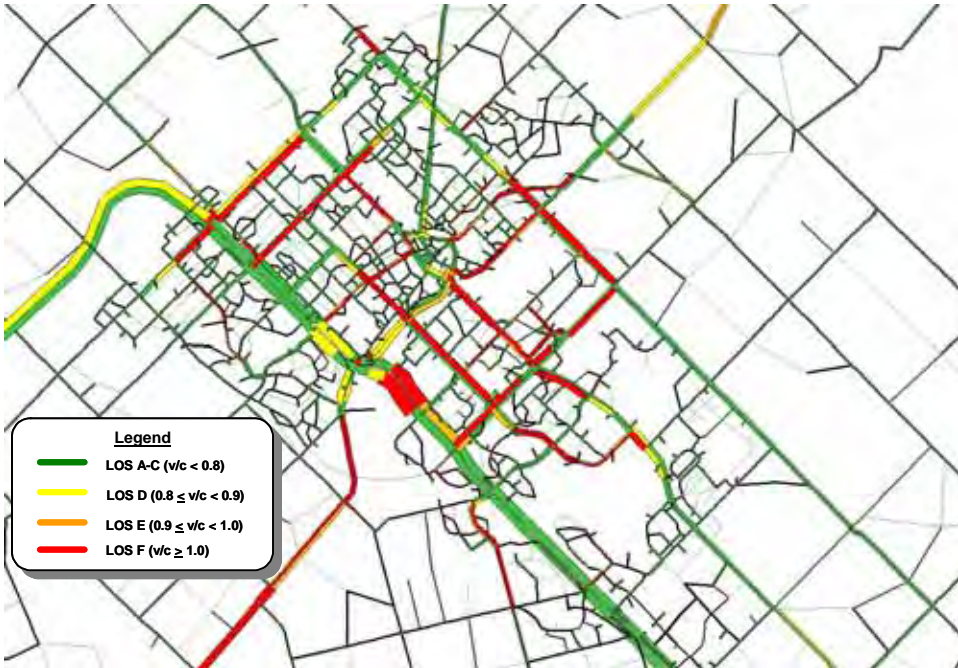


FIGURE 6.3: POST-2021 ROADWAY NETWORK DEFICIENCIES (AFTER IMPLEMENTATION OF IMPROVEMENTS)

### 6.3 COLLEGE/KORTRIGHT-DOWNEY/HANLON AREA

#### 6.3.1 Future Need and Justification

The Kortright-Downey Road corridor and its intersection with the Hanlon Expressway are currently operating at a reasonable level of service (see Figure 3.5). With future development and increasing traffic volumes on the Hanlon, the Kortright-Downey intersection will not be able to continue as an at-grade intersection with acceptable levels of service and safety. In the past, MTO has indicated that its preferred option is to grade-separate the intersection. However, this would remove the current access to the Hanlon Expressway through Kortright Road and Downey Road. This will cause a great deal of inconvenience for those who are now using Kortright/Downey, and will create traffic problems in the adjacent road system. In the 1994 GATS study and thereafter, Guelph has suggested a partial (to/from south) interchange as an alternative to grade-separation, as shown in Figure 6.4.

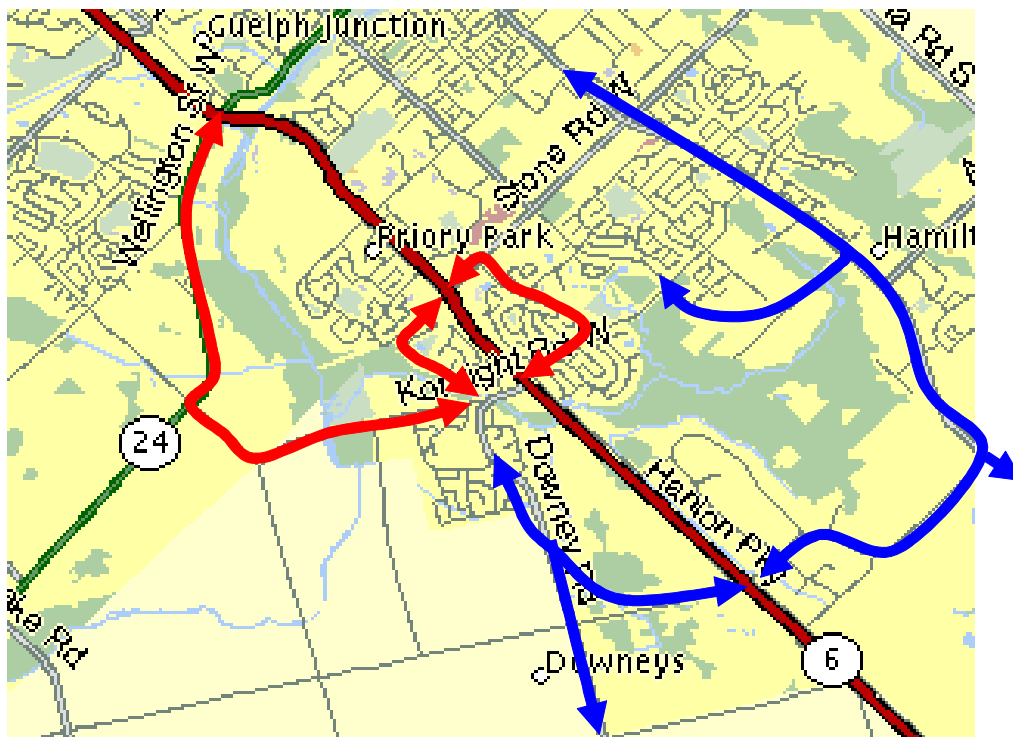


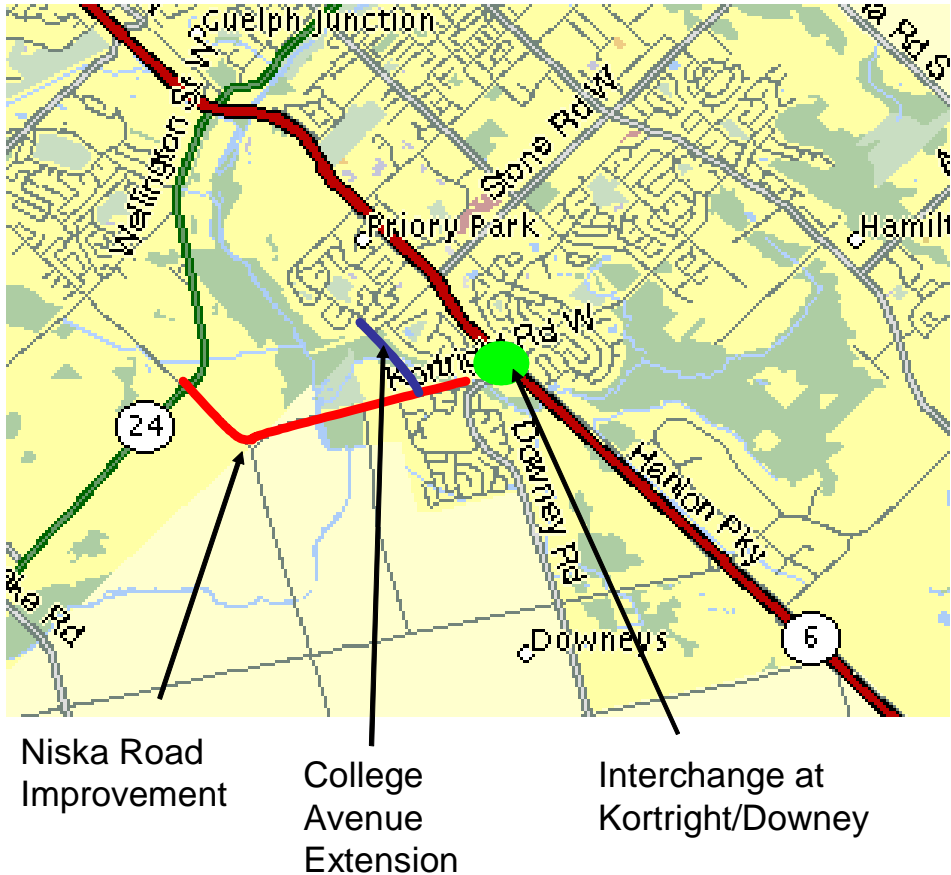
FIGURE 6.4: ALTERNATIVE ACCESS ROUTES TO HANLON EXPRESSWAY FROM KORTRIGHT/DOWNEY AREA

These issues were revisited in the current GWTS study. Existing and future traffic volumes at the intersection indicate that the heavier movement of traffic is to/from north and not to/from south. As well, the southerly movements have other alternatives, such as, on the west side, the use of Laird Road to access the Hanlon, and the use of Gordon Street and Edinburgh Road, on the east side. There are no convenient alternatives for the northerly movements. As a result, implementing a grade

separation or a partial interchange will result in northerly traffic accessing the Hanlon Expressway via the proposed Stone Road interchange using collector roads such as Woodland Glen Drive or Scottsdale Drive. Through traffic on these residential collector streets and an indirect connection to the Hanlon Expressway will have a significant social and economic impact on area residents. Traffic volumes will also increase on Edinborough Road without an improved connection to the Hanlon.

Three alternatives to having a grade separation or a partial interchange at the Kortright/Hanlon location are proposed, as shown in Figure 6.5:

- 1) *Alternative 1:* Develop a full interchange with the Hanlon Expressway at Kortright/Downey, providing a connection to the Hanlon for north- and south-oriented traffic.
- 2) *Alternative 2:* Construct a southerly extension of College Avenue to Niska Road through the Kortright Waterfowl Park to provide a connection to the Stone Road/Hanlon Interchange.
- 3) *Alternative 3:* Upgrade Niska Road to provide an improved connection to the Hanlon Expressway via Wellington Road 124.



**FIGURE 6.5: ALTERNATIVE IMPROVEMENTS**

### *6.3.2 Hanlon Expressway/Kortright Road Interchange*

One of the constraints to having an interchange at this location is the 1 km spacing it has from the Stone Road interchange. Interchange spacing in urban areas generally ranges from 2 km to 3 km, although with careful assessments of weaving impacts on traffic operation interchanges can be spaced closer than 2 km.

A possible interchange concept to allow all movements at the Hanlon/Kortright/Downey location is shown in Figure 6.6.

This concept would provide direct ramps to/from the south at Hanlon/Kortright and to/from the north at Stone Road. Access to the Hanlon south from Stone Road would also involve a direct ramp access, but access to Stone Road from Hanlon Road would require an exit at Kortright Road and use of the former Hanlon Road right of way to go north to Stone Road (unless an additional direct exit to Stone Road shown above proves to be feasible).

### *6.3.3 College Avenue Extension*

The College Avenue extension from Stone Road to Niska Road is currently included in Guelph's Official Plan as an alternative to providing a partial interchange at Kortright Road. In the absence of an interchange at Kortright Road, traffic to/from the north could be accommodated by this extension to/from the Stone Road interchange. This alternative will also require upgrading the Niska Road bridge to accommodate increased traffic using the Stone/College/Niska route to access Stone Road and University destinations. This option is illustrated in Figure 6.7 below.



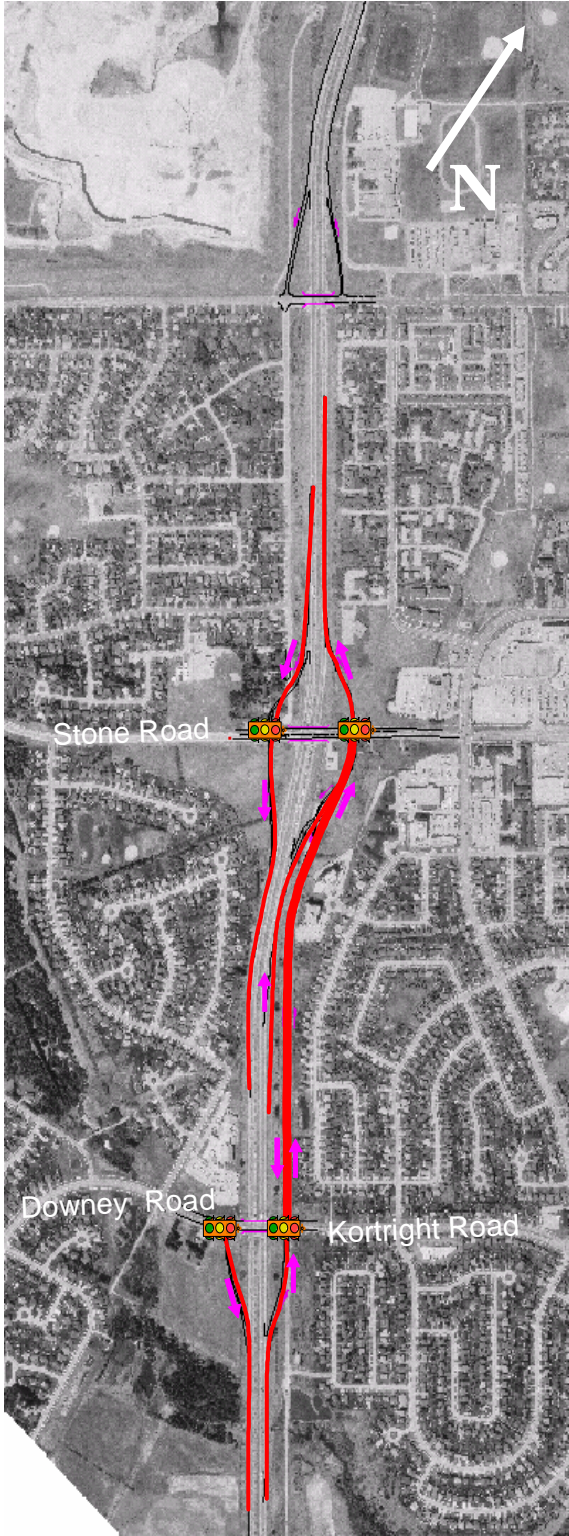


FIGURE 6.6: POSSIBLE INTERCHANGE CONCEPT



**FIGURE 6.7: POSSIBLE COLLEGE AVENUE EXTENSION**

#### *6.3.4 Niska Road Improvements*

A third alternative involves improvements to Niska Road between Downey Road and Wellington Road 124, particularly the widening of the single lane bridge. However, this improvement will not address the neighbourhood issues associated with increased traffic on Woodland Glen Drive, Ironwood/Scottsdale Drive and Edinburgh Road. It does not need further consideration.

#### *6.3.5 Alternatives for Future Consideration*

In light of the foregoing, the full Hanlon interchange and the College Avenue extension options should be examined as alternatives in the EA process. The Do-Nothing option in this instance would be to continue with the at-grade intersection, although it will not be a viable option when the Hanlon Expressway becomes a freeway between Hwy 401 to the south and the new Hwy 7 in the north. In addition, the option of grade-separating Hanlon at Kortright/Downey without interchange ramps may also be included as an option for evaluation, although it will not be able to address the problems identified by this study.

The City of Guelph's Official Plan currently includes a partial interchange as an alternative for consideration at the Hanlon/Kortright intersection. The OP should be amended to include a full interchange based on the findings of this study and the concept identified in it.



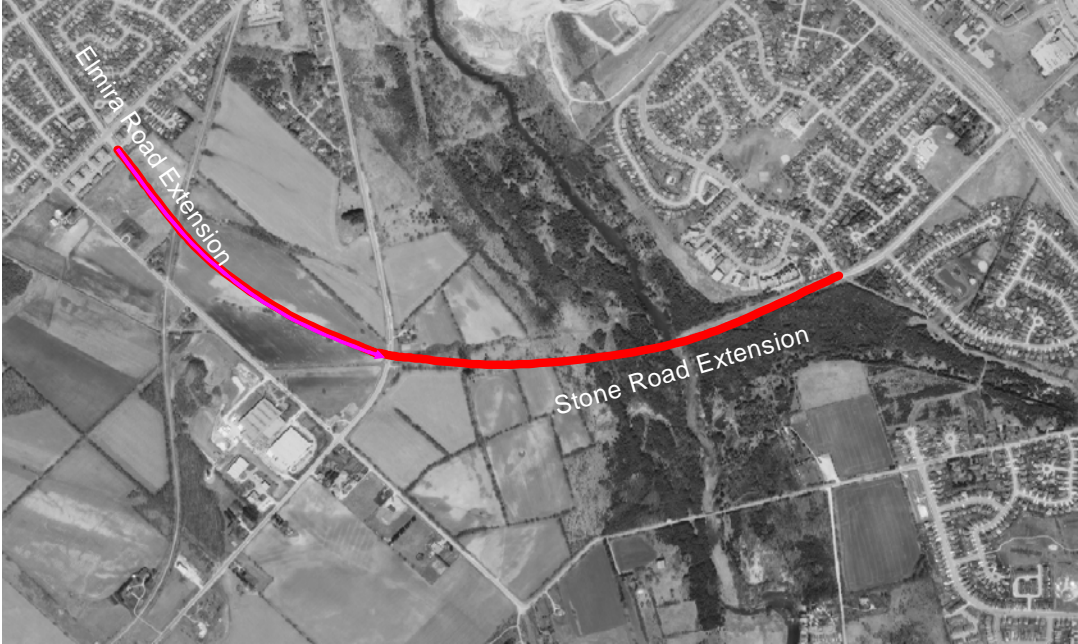
**6.4 STONE ROAD/ELMIRA ROAD LINKAGES**

*6.4.1 Need and Justification*

The extension of Stone Road across the Speed River to Wellington Road 124 and the extension of Elmira Road to the same County road are currently in the City of Guelph’s Official Plan. The 1994 Guelph and Area Transportation Study identified these improvements as part of an ultimate ring road system to divert regional traffic on provincial highways away from the City core as well as to serve internal cross-city trips.

The Stone Road extension would provide a direct link between WR 124 and the Stone Road commercial and University of Guelph areas and reduce north-south travel demands on the Hanlon Expressway and Edinburgh Road. With the further extension of Elmira Road, both improvements would also provide a direct link from the northwest part of the City to the Stone Road/University development area. This alternative is illustrated in Figure 6.8 below.

Without the Stone Road Extension, traffic to/from WR 124 would be required to use the Hanlon Expressway, Edinburgh Road and/or Gordon Street to reach destinations along the Stone Road corridor and the University of Guelph. Traffic forecasts indicate that, while Gordon Street will be congested on the 2-lane section north of Stone Road, there is adequate capacity on the Hanlon and Edinburgh Road at the Year 2021. However, beyond this time frame, all north-south corridors including the upgraded Hanlon Expressway with full interchanges are expected to be operating at capacity.



**FIGURE 6.8: POSSIBLE STONE ROAD/ELMIRA ROAD EXTENSIONS**

### *6.4.2 Economic Considerations*

The following are some of the economic considerations that are pertinent to the Stone Road and Elmira Road extensions:

- *Travel Cost/Energy Consumption:* Forecasts for 2021 indicate that the Stone Road extension to WR 124 will attract about 1100 vehicles during the PM peak hour (11,000 vehicles per day). Beyond 2021, up to 1500 per PM peak hour or 15,000 per day are expected to use the corridor. This indicates that the Stone Road extension will be very effective in reducing travel time, delay and energy consumption. On the other hand, the Elmira Road extension is projected to attract between 1500 to 2000 vehicles per day (150-200 vph) and its impacts will be limited.
- *Construction Cost:* The Stone Road extension is estimated to cost about \$5 million in the 2003 Development Charges Study while the Elmira Road extension is expected to be in the order of 3 million dollars. The Stone Road extension reduces traffic volumes on Niska Road, perhaps eliminating or reducing the need to upgrade this roadway.
- *Property Cost:* Both road improvements will require property privately owned in the Township of Puslinch or dedication through a future plan of subdivision.
- *Economic Development:* Both road projects will support future development of lands in the surrounding areas.

### *6.4.3 Social Environment*

The likely social impacts associated with the two extensions are summarized below:

- *Accessibility:* The Stone Road extension provides significant benefits in accessibility by reducing congestion on County Road 124 to the east of its intersection and on the Hanlon Expressway in the long term. There is improved accessibility for the area west of Imperial Road in the northwest part of the City.
- *Alternative Modes:* Both road projects provide excellent opportunities to accommodate shorter and more direct linkages for cycling, walking and public transit, as these modes are not well accommodated by the alternative route via the Hanlon Expressway.
- *Neighbourhood Impacts:* The Stone Road extension will have little impact on neighbourhood intrusion while the Elmira Road extension will have some impact on increased traffic on this roadway, which consists of both fronting and backing residential development.
- *Land Use Impacts:* The road projects both go through largely vacant or agricultural land having a minor social impact related to proximity and displaced land use.
- *Noise Impacts:* Residential development on Stone Road immediately west of the Hanlon and on the south part of Elmira Road is in the form of back lot development and any noise impacts can therefore be mitigated. Front lot development on Elmira Road will

- not require mitigation.
- *Visual Impacts:* Both the overpass of the CN railway line and the Speed River bridge will have some visual intrusion into the residential and natural areas, as will the road itself.
  - *Emergency Vehicles:* Both road extensions will enhance the flexibility of emergency vehicle routing and response.
  - *Heritage Impacts:* Archeological impacts associated with these road alignments can be mitigated.

In terms of social impacts, neither road extension has significant negative impacts. Many of the impacts are positive.

### *6.4.4 Natural Environment*

The potential for natural environmental impacts is significant, particularly in regard to the crossing of the Speed River by the extension of Stone Road. These impacts will need to be assessed and mitigation requirements identified through a future EA study.

### *6.4.5 Conclusion*

Both road corridors are supported by this study. However, neither project is required in the short term unless there is extensive development in the surrounding areas. The Elmira Road extension does not accommodate a high volume of future traffic without development occurring on adjacent lands. The Stone Road extension will effectively accommodate traffic to/from WR 124 and the Stone Road/University area to the east of the Hanlon.

The principal benefit in extending Stone Road and Elmira Road to WR 124 is the improvement in network connectivity that these extensions will bring about. They will facilitate a direct connection between areas to the west of the Hanlon and the University and Stone Road commercial areas. As part of a ring road, these extensions will also be of benefit to transit insofar as they will enable direct transit service between West End residential areas and the University/Stone Road employment nodes.

From a capacity standpoint, there will not be a requirement for these extensions before 2021, if improvements to the Hanlon Expressway south of Wellington Street are undertaken during the planning period. If the Hanlon improvements are not in place, the need for these extensions will arise before 2021. It should also be noted that these extensions also presuppose the improvements to WR 124, which will be discussed later. However, a functional planning and environmental assessment study should commence during the current planning period (ending 2021) to identify design solutions, mitigation needs and provide for corridor protection.

**6.5 EAST GUELPH AREA ROAD IMPROVEMENTS**

*6.5.1 Woodlawn/Watson Connection and Starwood Extension*

The extension of Woodlawn Road to connect with Watson Road was also identified in the 1994 Guelph Area Transportation Study as part of a ring road system that would connect Hwy 7 and WR 124 east of the City to Woodlawn Road and Hwy 7 west to Waterloo Region.

The Watson Road extension is intended to divert traffic out of the central part of the City to Woodlawn Road and result in a reduction of traffic on Victoria Road, Eramosa Road, Speedvale Avenue and York Road, as illustrated in Figure 6.9.



**FIGURE 6.9: POSSIBLE WOODLAWN ROAD/STARWOOD ROAD EXTENSIONS**

Future traffic forecasts indicate that Victoria Road north of Elizabeth Street is expected to operate adequately to 2021 and beyond, as will Eramosa Road. Speedvale Avenue will also operate adequately in 2021 and will begin to show some deficiencies in the vicinity of Delhi Street beyond this time frame. York Road is expected to exceed its capacity at both planning horizons.

The effect of the Watson/Woodlawn Road connection is largely to divert significant traffic from Victoria Road (north of Eramosa) and from Speedvale Avenue and Eramosa Road east of Victoria Road. Its effect on York Road is marginal.

Volumes in the order of 700 and 1000 vehicles per hour are expected to be diverted from Victoria

Road with the Woodlawn/Watson Road extension in place north of Speedvale Avenue for the two planning horizons. Very little reduction in traffic occurs on Victoria Road to the south of Speedvale due to the improvement. The Woodlawn Watson connection will, however, be effective in diverting traffic on WR 124 from passing through Guelph's central area along Eramosa Road.

Both Woodlawn Road and Watson Parkway/Watson Road are part of the City's truck route system, and a future connection of the two is consistent with their use as a truck route.

The Woodlawn/Watson Road extension is not required by 2021, given that Victoria Road north of Speedvale Avenue is expected to operate adequately. However, it is recommended that the future opportunity to extend Woodlawn Road and Watson Road at least to County Road 124 be protected for beyond the planning period. The EA and a functional planning study could commence during the planning period.

Also, the future traffic demands do not support the need to extend Starwood Drive north of Eastview Road or Speedvale as an arterial roadway, as currently identified in the City's Official Plan. Any future development between Eastview Road and Speedvale Avenue could have access to either of these roads identified as part of the development process. For these reasons, the extension of Starwood Drive shown in the OP should be removed.

### *6.5.2 York Road Improvements*

Traffic forecasts show the entire section of York Road, as a 2-lane roadway between Wellington Street and Watson Road, as capacity deficient at 2021 and beyond. There are property and community constraints to widening York Road to the west of Victoria Road. However, east of Victoria Road, the widening of York Road is identified in the capital budget and the Development Charges By-law. The EA for these improvements is expected to be undertaken in 2005. In light of the traffic volumes forecast in this study, it is recommended that the EA should also consider the option of widening the section of York Road west of Victoria Road from 2 lanes to 3 lanes by introducing a centre-turn lane that will separate turning traffic from the through moving vehicles.

## **6.6 CENTRAL AREA ROAD IMPROVEMENTS**

### *6.6.1 Edinburgh—CN Rail Grade Separation*

The CN-Edinburgh Road grade separation is included in the Guelph's Development Charges By-law. Based on the number of train movements per weekday and the frequency, speed and length of trains, combined with a conservative estimate of the cost of time, Table 6.1 illustrates that train movements annually cost about \$1 million. The estimated cost of \$7 million for the grade separation would easily be justified by delay savings over a 10 year period.

**TABLE 6.1: DELAY IMPACT AND ECONOMIC COST OF TRAIN MOVEMENTS**

<b>Data</b>	<b>Passenger</b>	<b>Freight</b>	<b>Total</b>	<b>Comments</b>
Trains/Day	6	3	9	Weekdays
Average Length (m)	100	1600	1700	For freight max=130 cars, min=30 cars)
Speed (m/sec)	4.5	4.5	9.0	10 mph
Avg. Delay per Train (mins)	0.4	5.9	6.3	
Total Delay (hours)	0.04	0.30	0.34	
Average Hourly Traffic Volume	1188	1188	1188	Daytime between 7AM and 9PM (est)
Total Vehicle Hours of Delay	44	356	400	
Annual Time Cost	\$ 114,352	\$ 926,250	\$ 1,040,602	Assuming \$10/hour *260 days/year

However, there will probably be significant impacts on adjacent properties and driveway access and property acquisition that may increase the growth estimates. A grade separation would, however, enhance safety and reduce emission levels and neighbourhood infiltration caused by stoppages at the at-grade crossing.

The main reason to construct a grade separation is to mitigate the projected crossing increases in the daily traffic volumes on Edinburgh Road and in the number of trains on the CN line. It is anticipated that during the planning period the product of the two volumes will exceed the cross-product threshold of 200,000 used by Transport Canada to warrant a road/rail grade separation.

### *6.6.2 Edinburgh Road Widening*

Future traffic forecasts to the horizon year of 2021 and beyond show that traffic volumes on Edinburgh Road will exceed the capacity of this roadway south of London Road. Currently, this section of Edinburgh Road is approaching its capacity during peak hours, indicating the need to widen it to four lanes.

Much of the adjacent property is residential, so this widening could have significant social impacts. However, given that there are limited north-south routes in the more central area of the City, it is recommended that widening of Edinburgh Road be considered for an environmental assessment so the benefits and implications of this improvement can be explored in more detail.

## **6.7 SOUTH GUELPH AREA ROAD IMPROVEMENTS**

The arterial road system, excluding the Hanlon Expressway serving the area south of Clair Road, consists of the two north-south roads, Gordon Street and Victoria Road, and Maltby Road which is an east-west road.

Of these, the widening of Gordon Street from 2 to 4 lanes has been EA approved. Future traffic forecasting does not indicate the need to widen Victoria Road south of Clair Road., or to widen Maltby Road between Victoria Road and the Hanlon Expressway. However both roads require upgrading of the existing two lanes for structural reasons, particularly Maltby Road which is currently an unpaved road.

The future development locations are the lands just south of Clair Road and the lands immediately to the east and west of the Hanlon Expressway. The Clair Road lands are well served by the

Clair/Gordon corridors and internal collector road systems. The lands to the west of the Hanlon Expressway are served by Laird Road, an extension of Clair Road, which will be realigned as part of the Hanlon Creek Business Park development.

The lands to the east of the Hanlon, between Clair Road and Maltby Road, are now served by Clair Road and Southgate Drive, an internal north-south collector road. As development proceeds in this area, Southgate Drive will be extended southerly to Maltby Drive. The latter will have to be upgraded in the short term, from Southgate Drive to the Hanlon Expressway, including at-grade improvements to the Hanlon/Maltby intersection as identified by the MTO.

Development of lands in the Gordon/Maltby area will require an internal collector road system accessing the two arterials, and it should be identified and developed as part of the planning process.

Increasing traffic volumes on the Hanlon Expressway and development traffic from surrounding lands will necessitate a future interchange at the Hanlon/Laird intersection in the short to medium term. Traffic forecasts indicate a similar need at the Hanlon/Maltby intersection in later years. These requirements are discussed in Section 7 on Provincial highways and County roads.

### **6.8 OTHER AREAS IN GUELPH**

The road network in specific areas, the Downtown and the surrounding area, and the University of Guelph, was examined under existing and future traffic conditions. The downtown road network will operate at an acceptable level of service even after the proposed narrowing of the Gordon/Norfolk corridor and the potential narrowing of Wyndham Street. The level of service could be further enhanced by implementing TDM measures in the downtown.

In the university area, congestion is expected to increase on the 2-lane section of Gordon Street north of Stone Road. However, this can be minimized through the continuation and expansion of the ongoing TDM Program at the university.

### **6.9 INTERSECTION UPGRADES**

In urban areas the roadway capacity is primarily determined by the traffic operation and capacity at the intersections, which are more closely spaced in the urban areas than in the rural areas. Intersection capacity is enhanced by adding auxiliary turn-lanes and/or signal time adjustments and coordination. Based on existing and future traffic conditions, the following intersections are identified for geometric improvements:

- Intersections on Victoria Road from Woodlawn Road to Eastview Road
- Speedvale Avenue at Stevenson Road, Silvercreek Parkway and Delhi Street
- Silvercreek/Greengate
- Stevenson/Elizabeth
- Eramosa/Delhi
- College/Scottsdale

### **6.10 COUNTY ROAD IMPROVEMENTS**

#### *6.10.1 Wellington Road 124 (West)*

Wellington Road 124 is former Highway 24 connecting Highway 401 in Cambridge to the Hanlon Expressway in Guelph. This section of former Highway 24 functions as an important economic corridor in South Western Ontario. It is a popular commercial truck route as well as an important tourist route-connecting Highway 401 west and the U.S. border crossing to areas to the north and east of the City of Guelph and the County of Wellington. In the future it could facilitate an inter-regional bus service between parts of the Region of Waterloo (Cambridge and parts of Kitchener) and Guelph and the southern half of the County.

In 1994 the MTO undertook an environmental assessment to identify needed improvements to this transportation corridor. The EA, completed in 1997, recommended an upgraded 11 km, 4-lane controlled access divided highway. About one half of the length of the upgrading was designed to be within or close to the existing right of way while the other half was recommended to be along a new alignment. On January 1, 1998 the Province downloaded the highway to the Region of Waterloo and the County of Wellington. The section of highway recommended as a new alignment falls within the County's jurisdiction and the County has not and will not be able to undertake the improvements without Provincial funding or support.

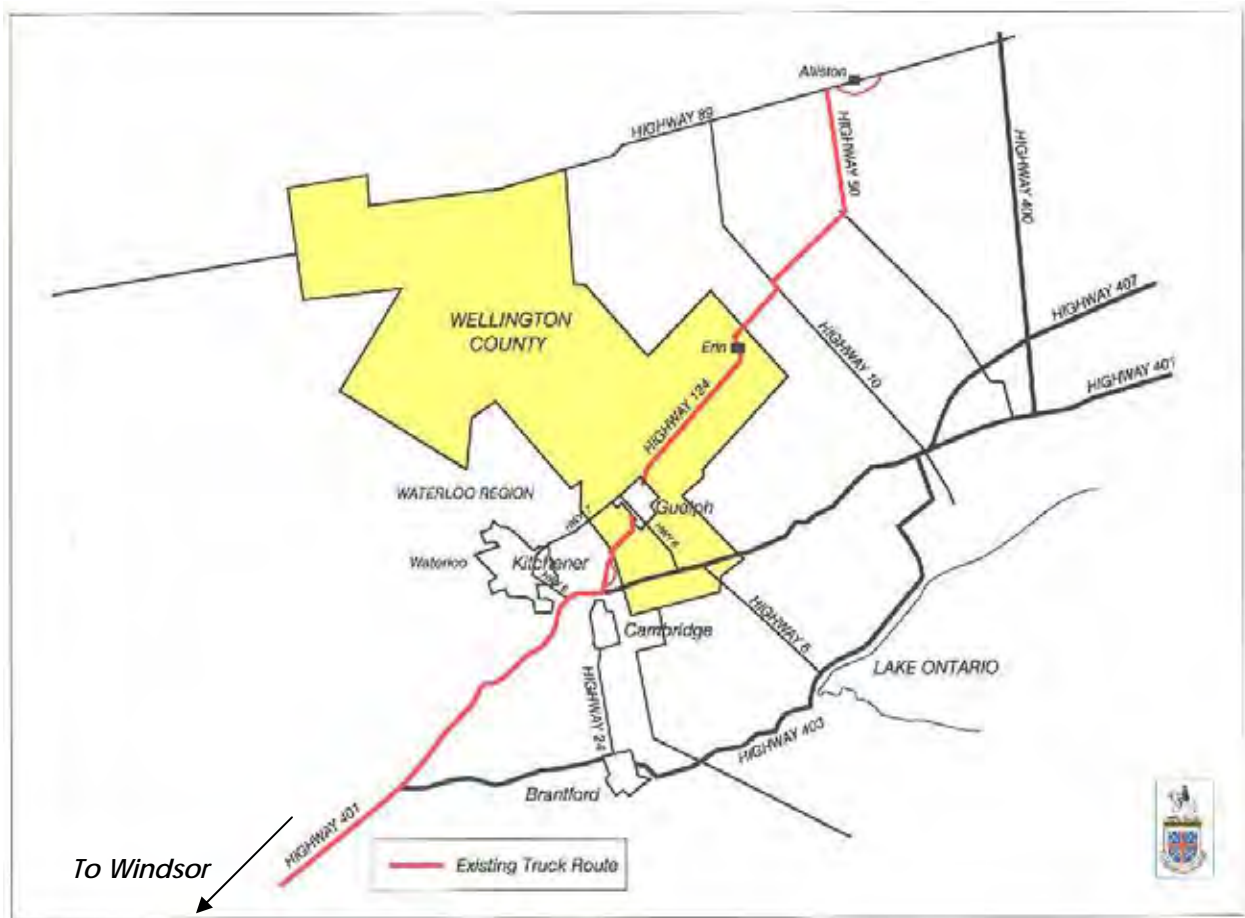
The Provincial EA recommended a new alignment as opposed to widening the existing highway based on the following considerations:

- Higher level of safety
- Improved geometry
- Greater flexibility in drainage design
- Higher potential for development
- Controlled access without individual driveways (the existing alignment had 103 individual property access points at the time of the study).

It is noted that the environmental study report, prepared as part of the Province's Environmental Assessment process, states that "Highway 24 is a major north-south transportation link in the Province of Ontario, extending from Lake Erie northerly some 250 km to Collingwood on the shores of Georgian Bay." It also states that the "accident rate" on this highway "is well above the provincial average for similar facilities," and that "this highway accident rate reflects the low level of service, poor geometry and numerous access points along this section of Highway 24."

The conclusion of the Environmental Assessment, that calls for a major four-lane controlled access facility, was arrived at with the inclusion of a fully developed Hanlon Expressway (Highway 6) in place with interchange accesses. The Hanlon links the City of Guelph to Highway 401, predominantly for Guelph easterly to the GTA and Guelph southerly to Hamilton movements. Highway 24 remains the link between Guelph and many points north and east of Guelph, such as Orangeville, Alliston and the Barrie area, and Highway 401 for westerly movements through Cambridge, Kitchener and on to London, Windsor and U.S. destinations. Figure 6.10 is a map





**FIGURE 6.10: HIGHWAY 24 (WR124) EAST AND WEST OF GUELPH**

showing the straight connection from the Honda plant in Alliston to Windsor via Highway 50 and Highway 24 to Highway 401, demonstrating the linking function of Highway 24.

In recognition of the importance of Highway 24 as a vital transportation corridor, the Province has invested heavily to encourage the movements of goods along this route. Over \$30 million was spent improving the access at Highway 401 with the Hespeler bypass, \$15 million was spent on the Wellington Street interchange at Highway 6 and Highway 24, and perhaps most importantly over \$20 million was spent creating an Alliston truck bypass to facilitate the westbound Honda truck traffic that ultimately goes through Guelph and onto Highway 401 via Highway 24.

Traffic on the section of former Highway 24 south of the City of Guelph has increased significantly since these Provincial initiatives have been completed. The traffic volumes predicted in the EA for the end of the earlier planning period (2011) are already being exceeded.

When the Highway Transfer List was created in 1997, the Province stated that the highways being transferred were, in its opinion, predominately of local interest and not of provincial interest. The GWTS suggests that the Province reconsider whether a four-lane controlled access highway

channeling goods movement off Hwy 401 at Cambridge to head north and northeast to destinations such as the Honda Plant in Alliston, was rightly classified as a local interest roadway.

The GWTS reviewed the need and justification for upgrading Wellington Road 124 as recommended by the Province and determined the following:

- The AM and PM peak hour traffic in the peak direction has been steadily increasing since 1991, as projected by the Provincial EA. Between 1991 and 2004 the actual PM peak hour, peak directional volume increased from 1,310 vph to 1,450 vph. The 2021 forecast is 2,500 vph.
- The roadway is currently over capacity.
- The recommended improvements are critical to meet the demand now and at the end of the planning period.
- The recommended improvements will be required regardless of whether or not improvements to the Hanlon Expressway and Highway 7 west are in place.
- Forecasting indicates a 6-lane section will be required for the post 2021 period. This will require a more detailed review.

The GWTS supports the implementation of the 1997 EA recommendations for a 4-lane controlled access divided highway on a new alignment for former Highway 24, south of the City of Guelph, (now Wellington Road 124).

Based on the findings of the GWTS, the City of Guelph and the County of Wellington should ask the Province to either reassume jurisdiction over the former Highway 24 or provide funding to the County for its reconstruction.

### *6.10.2 Other County Road Improvements*

Other major County roadway projects to be undertaken during the planning period include:

- The reconstruction/widening of Wellington Road 7 (Elora to Highway 6).
- The widening of Wellington Road 46 to from the City limits at Maltby Road to Wellington Road 34, the EA for which was completed with the Gordon Street EA

Given that the need to widen Wellington Road 46 from Maltby Road to Wellington Road 34 is driven by the substantial growth in the City of Guelph, the City and the County should discuss possible cost sharing arrangements for this project.

The County road improvements discussed herein are shown in Figure 6.11.

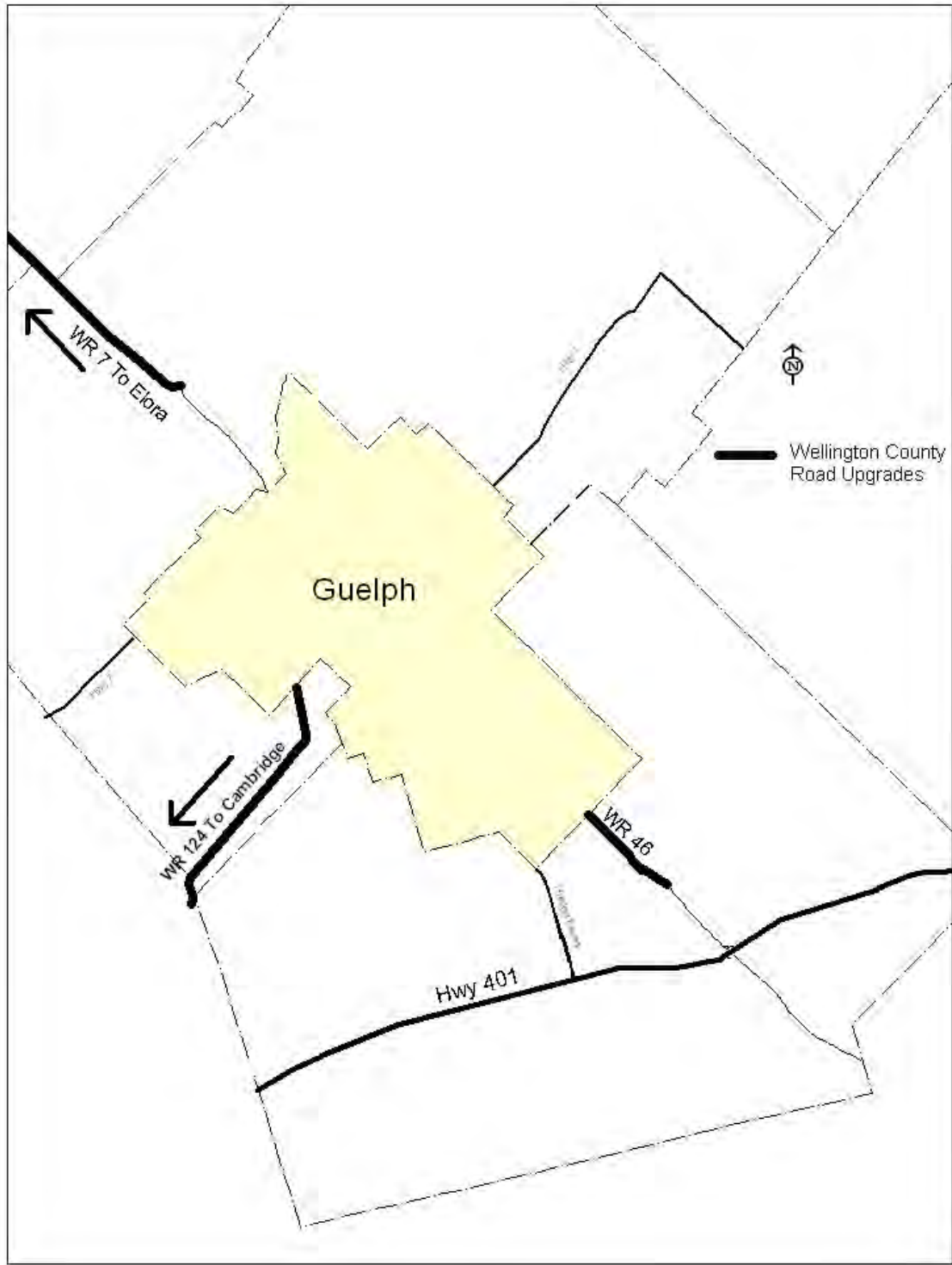


FIGURE 6.11: COUNTY/PROVINCIAL ROAD UPGRADES



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## **7. PROVINCIAL HIGHWAY IMPROVEMENTS**

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### **7.1 PROVINCIAL HIGHWAY POLICY AND PROGRAMS**

#### *7.1.1 Significance for Guelph and Wellington*

One of the key objectives of this study is to assess the need and priorities for improvements to the Provincial road network through the study area. From the City's and the County's standpoints, improvements to the Provincial highway system will reduce pressure on their roads by regional and provincial traffic, especially provincial truck traffic.

The Guelph-Wellington study area is strategically located within South Central Ontario, and can be considered a conduit for trade and tourism between the Greater Toronto Area, areas to the north and the United States. International and inter-provincial trade and goods movements through the study area are critical to the local, regional and provincial economies. The efficiency of the provincial highway system in the study area is therefore essential to the economic prosperity that the area has experienced as well as for trade flows through the area.

#### *7.1.2 Strategic Transportation Directions*

In 2003 MTO, through discussions with municipal governments, businesses and interest groups, developed the *Strategic Transportation Directions* documents for each of the MTO regional districts including Southwestern, Eastern, Northern, and Central Ontario.

*The Strategic Transportation Directions* documents set out a course of action for transportation in Ontario, taking into account the different needs of the various regions. The directions for Southwestern Ontario focused on the following:

- Provides an overview of the transportation network of the region;
- Examines the contribution of different transportation modes to the region's overall transportation system;
- Identifies social and economic factors in the region that affect transportation;
- Identifies growth patterns and their effect on future transportation needs;
- Identifies strategic directions for the development of the provincial transportation system;
- Sets out strategies that MTO may pursue in relation to the region's overall transportation network.

The analysis carried out for the Strategic Directions document for Southwestern Ontario identified several trends:

- As in the rest of the province, the automobile (including vans and light trucks) is the dominant intercity travel mode in Southwestern Ontario, accounting for over 90% of passenger-kilometres traveled. The remaining transportation modes (bus, rail, GO Transit, marine and air) account for 7.5% of passenger kilometres traveled.
- All major urban centres show improved commuter containment (i.e. live-work arrangements), however, total commuter kilometres will more than double for the Kitchener-Waterloo-Cambridge-Guelph area, London and Barrie, while Windsor and Sarnia are projected to grow by 21% and 34% respectively.
- The primary modes used for the transportation of goods in and through the region, based on tonnes shipped, are truck (68%), rail (18%) and marine (15%). Mode usage varies with the particular commodity transported, the market served, the need for “just in time” service, and the industry distribution system. Market trends indicate that truck transport will play a greater role in the future.
- Trucking is the primary means of moving goods in Southwestern Ontario. As the highway system links industry and markets in Southern Ontario and the U.S., there is substantial international truck freight movement on freeways in the region. The accessibility provided by the provincial and municipal road network makes trucking very competitive with other modes, except in the case of certain bulk goods and long distance hauls to markets outside Ontario.
- The provincial and regional level highways play a key role in the movement of intercity passengers and goods, and by 2026 will carry over 75% of the total system traffic in vehicle kilometres.
- A reduced level of service is forecast for the entire system, with the provincial and regional level routes showing substantial increases in the vehicle kilometres operating at congested conditions. This will be detrimental to trade, tourism and all travelers.

Based on these trends the Province identified several potential initiatives with implications for the study area:

- Continue to focus on the preservation and maintenance of the provincial highway system and improve highway sections with critical deficiencies to ensure that the provincial highway system is safe and financially sustainable for the long term.
- Focus particular attention on optimizing the operation of Highway 401 as a strategic trade corridor.
- Undertake a network study of the highways in the Kitchener-Waterloo-Cambridge, Guelph and Brantford areas, including Highways 8, 24 and 6. The study should also assess potential links from the Guelph area to the GTA, and the Kitchener-Waterloo and Guelph area to Hamilton.
- Undertake strategic improvements to the region’s highways, including potential widening of sections of Highways 6, 7, 24, and 85.

### *7.1.3 Emphasis on Public Transit*

The Province has also indicated a renewed emphasis on public transit not only for meeting urban travel demands but also for inter-regional travel. To that end, the Province has identified several priorities:

- Improve public transit by ensuring that seamless, safe, reliable and affordable public transit systems are available to Ontarians living in urban communities.
- Invest in critical transportation infrastructure by keeping people and goods moving smoothly and efficiently across Ontario and through the borders by making strategic and effective investments in provincial highways and border crossings.
- Improve road safety and enhance customer service by maintaining Ontario's road safety record among the top jurisdictions in North America as well as increasing access to, and developing new ministry products and services.

The main Provincial responsibilities are identified as:

- Building an integrated transportation system through effective transportation policies and planning.
- Investing in Ontario's transit systems, including GO Transit, which reports to MTO.
- Effectively managing the construction and maintenance of Ontario's highways and bridges.
- Promoting road safety through education, legislation and enforcement.
- Licensing drivers and registering vehicles and commercial carriers.
- Overseeing the maintenance and operation of 29 remote airports and eight ferry services.
- Using the latest technology to maintain safe roads in all weather conditions and provide driving condition information to the public.

## **7.2 NEED AND JUSTIFICATION FOR HIGHWAY IMPROVEMENTS**

### *7.2.1 Existing Provincial Highway System in the Study Area*

In identifying the need for future Provincial highway improvements in the study area, it is important to note the following features of the existing highway system.

#### Highway 401

Highway 401 is currently the only "400" series freeway serving the study area, and provides the only freeway linkage to major urban and industrial centres and international bridge crossings. Any disruption to traffic flow on Highway 401 due to accidents, construction, or inclement weather

results in significant delay and user costs for vehicles, including commercial vehicle traffic which could have time sensitive delivery. The significant delays are due in part to the lack of a major alternative east-west route capable of accommodating similar traffic volumes.

There are only two interchanges on Highway 401 serving the entire study area, at Wellington Road 46 (Exit #299) and at the Hanlon Expressway (Exit #295). The limited number of interchanges contributes to traffic pressures, especially truck traffic pressure, on the Wellington Road/Gordon Street corridor through the County and the City. The GATS study of 1994 identified the need for a future interchange east of the existing interchange at Wellington Road 46. There is also potential for an additional interchange to the west of the Hanlon Expressway at Wellington Road 35.

### The Highway 6 / Hanlon Corridor

The north-south Highway 6 corridor through the study area has been assessed in three sections: Highway 6 South, to the south of Highway 401; the Hanlon Expressway, between Highway 401 and Highway 7 West, is 4 km to the east of Highway 6 South; and Highway 6 North, north of the Highway 7 corridor (i.e. Woodlawn Road), is 2.5 km to the east of the Hanlon Expressway. The staggered arrangement and the resulting east-west traffic flows put significant pressure on Woodlawn Road, which is a City arterial road with a number of signalized intersections and commercial accesses, as well as on Highway 401, reducing its capacity to carry east-west traffic movement. North of Woodlawn Road, Highway 6 North continues to Fergus as an extension of the southerly corridor comprising Wellington Road 46, Gordon Street, Norfolk Street and Woolwich Street.

The proposed improvements to Highway 6 South and the future interchanges on the Hanlon Expressway were noted in Section 6 of this report. The required timing of the Hanlon intersections, the northerly extension of the Hanlon Expressway to connect with the existing Highway 6 North and the need for a bypass around Fergus in the Township of Centre Wellington will be discussed in this section.

### Highway 7

Highway 7 (West) between Kitchener and Guelph connects the City of Guelph and the northern parts of the County to the Cities of Kitchener and Waterloo in the Region of Waterloo. In Guelph and Kitchener, Woodlawn Road and Victoria Street respectively serve as connecting links for the existing Highway 7.

As noted in Section 6, an Environmental Assessment for realigning Highway 7 is currently under review by the Ministry of the Environment. The EA recommends a new alignment for Highway 7 located to the north of the existing alignment, to be built as a freeway connecting Highway 86 in Kitchener to the Hanlon Expressway in Guelph over a distance of 18 km.

East of the Hanlon Expressway, Highway 7 continues through 'connecting links' in Guelph, namely, Wellington Street and York Road, and proceeds further east through Wellington County, Halton Region and Brampton in Peel Region. In 2000, the Province undertook the Role and Function Study for Highway 7 (East) between Brampton and Guelph. Since then, the Province has identified the need for a strategic corridor study to the north of the existing Highway 7 East, called the GTA East



West Corridor, from Highway 400 in the GTA to the Hanlon Expressway in Guelph.

### *7.2.2 Wellington Road 124 (formerly Highway 24)*

The former Highway 24 (now Wellington Road 124 after it was downloaded by the Province to the County in 1997) continues to play a vital link between Highway 401 through Cambridge in Waterloo Region and the Hanlon Expressway in Guelph. Although an EA had been completed by the Province before the downloading, the EA recommendation to upgrade the roadway as a divided expressway along a new alignment has not been implemented. It has been acknowledged that the County of Wellington does not have the resources to build the new expressway, and the vehicular demand on the roadway has been steadily increasing. This study addressed the current status of WR 124 and the possibilities for its improvements.

### *7.2.3 Future Highway Capacity Deficiencies*

The travel demand forecasting methodology, population and employment projections, and the road network assumptions were summarized in Section 3. The following Provincial highway improvements are assumed to be in place by 2021:

- The new Highway 7, between Guelph and Kitchener, as a four lane divided facility with a lane capacity of 1800 vehicles per hour.
- The Highway 6 realignment and the connection to the Hanlon Expressway through Highway 401. The Highway 6 connection south of Highway 401 is assumed to be a 4 lane controlled access facility with a lane capacity of 1100 vph.
- The Hanlon Expressway as a 4 lane divided freeway with a lane capacity of 1800 vph.

The PM Peak Hour forecasting assignments under which the Provincial highway improvements were identified are as follows:

- 2021 Volumes—Existing Road Network (Do Nothing)
- 2021 Volumes—with previously identified road improvements (as noted above and in Section 4.0) and GWTS-proposed improvements
- Post-2021 Volumes—with previously identified improvements and GWTS-proposed improvements

Additional assignments were also undertaken to test the scenario in which the above-noted Provincial highway improvements are not completed by 2021.

Table 7.1, Table 7.2 and Table 7.3 identify the Provincial highway sections indicating capacity deficiencies under the different test scenarios:

**TABLE 7.1: CAPACITY DEFICIENCIES: 2021 VOLUMES—“DO NOTHING” NETWORK**

<b>Highway</b>	<b>Section</b>	<b>Direction(s)</b>
Highway 7 West	Wellington/Waterloo Boundary to County Road 32	Both
	West of Imperial Road to Hanlon Parkway	Eastbound
Wellington Rd 124	Wellington/Waterloo Boundary to Fife Road	Both
Hanlon Expressway	Downey Road/Kortright Road to Stone Road	Southbound
	Stone road to Wellington Street	Both
	Wellington Street to Paisley Road	Southbound

**TABLE 7.2: CAPACITY DEFICIENCIES: 2021 VOLUMES—NETWORK WITH IMPROVEMENTS**

<b>Highway</b>	<b>Section</b>	<b>Direction(s)</b>
Wellington Rd 124	Whitelaw Road to Fife Road	Eastbound
	West of Wellington Road 32 to the Region of Waterloo Boundary	Both
Highway 6 North	Wellington Rd 38 to Wellington Rd 51	Northbound

**TABLE 7.3: CAPACITY DEFICIENCIES: POST-2021 VOLUMES—NETWORK WITH IMPROVEMENTS**

<b>Highway</b>	<b>Section</b>	<b>Direction(s)</b>
Highway 7 East	East of County Road 29 to County Road 44	Both
	County Road 44 to County Road 27	Westbound
	County Road 27 to 7 <sup>th</sup> Line (Blue Springs)	Both
	7 <sup>th</sup> Line (Blue Springs) to Halton Region Boundary	Eastbound
Wellington Rd 124	Wellington / Waterloo Boundary to Fife Road	Both
Hanlon Expressway	Stone Road to College Avenue	Northbound
	College Avenue to Speed River	Both
Highway 6 North	Wellington Rd 7 to south of Wellington Rd 18	Northbound
	St. Andrew Street to Garafraxa Street	Northbound

### **7.3 ASSESSMENT OF FUTURE PROVINCIAL HIGHWAY IMPROVEMENTS**

#### *7.3.1 Highway 401*

In addition to the above-noted capacity deficiencies, sections of Highway 401 through the study area also indicated capacity constraints. While this is a matter to be reviewed by the MTO in greater detail, the forecast capacity problems on Highway 401 suggest that alternatives such as transit should be seriously promoted to accommodate inter-regional travel in the future.

The City of Guelph has been supportive of inter-regional transit promotion, including the introduction of GO Bus service on Hwy 401 to supplement private service providers, as well as the implementation of transit supportive measures such as providing shoulder bus lanes.

#### *7.3.2 The Hanlon Expressway*

Recent reviews of Hanlon operations indicate that the existing at-grade intersections should be upgraded as interchanges or converted to grade separations by 2013. This is consistent with the GWTS model forecast for 2021 under 'Do Nothing' conditions which shows that without these improvements, Hanlon will experience capacity deficiencies in the section between Kortright Road and Paisley Road. The 2021 assignment with the Hanlon improvements in place indicates no deficiency along the Hanlon. However, under post-2021 conditions capacity problems are predicted in the Stone-College-Speed River section of the Hanlon.

At present, there is one all-movement interchange at Wellington Street. To the north of Wellington Street, MTO has previously identified through an EA process the following improvements:

- Interchange to the north of Paisley Road and grade-separation at Paisley Road
- Grade-separation at Willow Road
- Interchange at Speedvale Avenue
- Connection to the proposed Highway 7 and interchange north of Woodlawn Road (included in the Highway 7 West EA)

The first three improvements will require an EA addendum prior to implementation. The improvements at Woodlawn Road are part of the Highway 7 EA which is currently under review by the Ministry of the Environment (MoE).

Improvements to the south of Wellington Street and the Speed River have been identified as follows:

- Partial interchange (to/from north) at College Avenue identified in the 1994 GATS study
- Full interchange at Stone Road identified in the GATS study
- A partial interchange (to/from south) at Kortright Road/Downey Road identified in the

- GATS along with an alternative for extending College Avenue to Downey Road
- Full interchange at Laird Road identified as part of the development of the Hanlon industrial lands
- Full interchange between Maltby Road and Wellington Road 34 identified in the Highway 6 South (Morrison) Bypass EA recommendation currently under MoE review.

The GWTS recommendation is for the undertaking of a comprehensive EA that will address all the required improvements south of the Speed River. This will include:

- the consideration of a full interchange at Kortright Road/Downey Road, as discussed in Section 6, along with a full interchange at Stone Road and a partial interchange at College Avenue;
- the proposed interchange at Laird Road; and
- consideration of providing separate interchanges at Maltby Road and Wellington Road 34 as an alternative to the currently proposed interchange between Maltby Road and Wellington Road 34, as shown in Figure 7.1. Should the interchange between Maltby Road and Wellington Road 34 be reconfirmed as the preferred option, the construction of this interchange should include connections to Maltby Road and Wellington Road 34.

It should be noted that the assumption that the above-noted Hanlon Expressway improvements, shown in Figure 7.1, would be in place by 2021 was made to establish the need and justification for their implementation during the planning period (2001-2021). The assumption, however, is not a confirmation that these improvements will be in place by 2021. The main considerations regarding the timing of Hanlon improvements are the following:

- The interchange at Laird Road should be undertaken to allow full development of the Hanlon industrial lands;
- There is limited potential for adding capacity through at-grade intersection improvements to intersections north of Laird Road. According to recent reviews, such improvements will not be effective beyond 2013; and
- The entire Hanlon Expressway should be upgraded as a freeway before it is connected the new Highway 7 from Kitchener.

On the other hand, if the Hanlon Expressway is not upgraded as a freeway before 2021, there will be significant impacts on the City and the County road networks. This is discussed in Section 7.4.

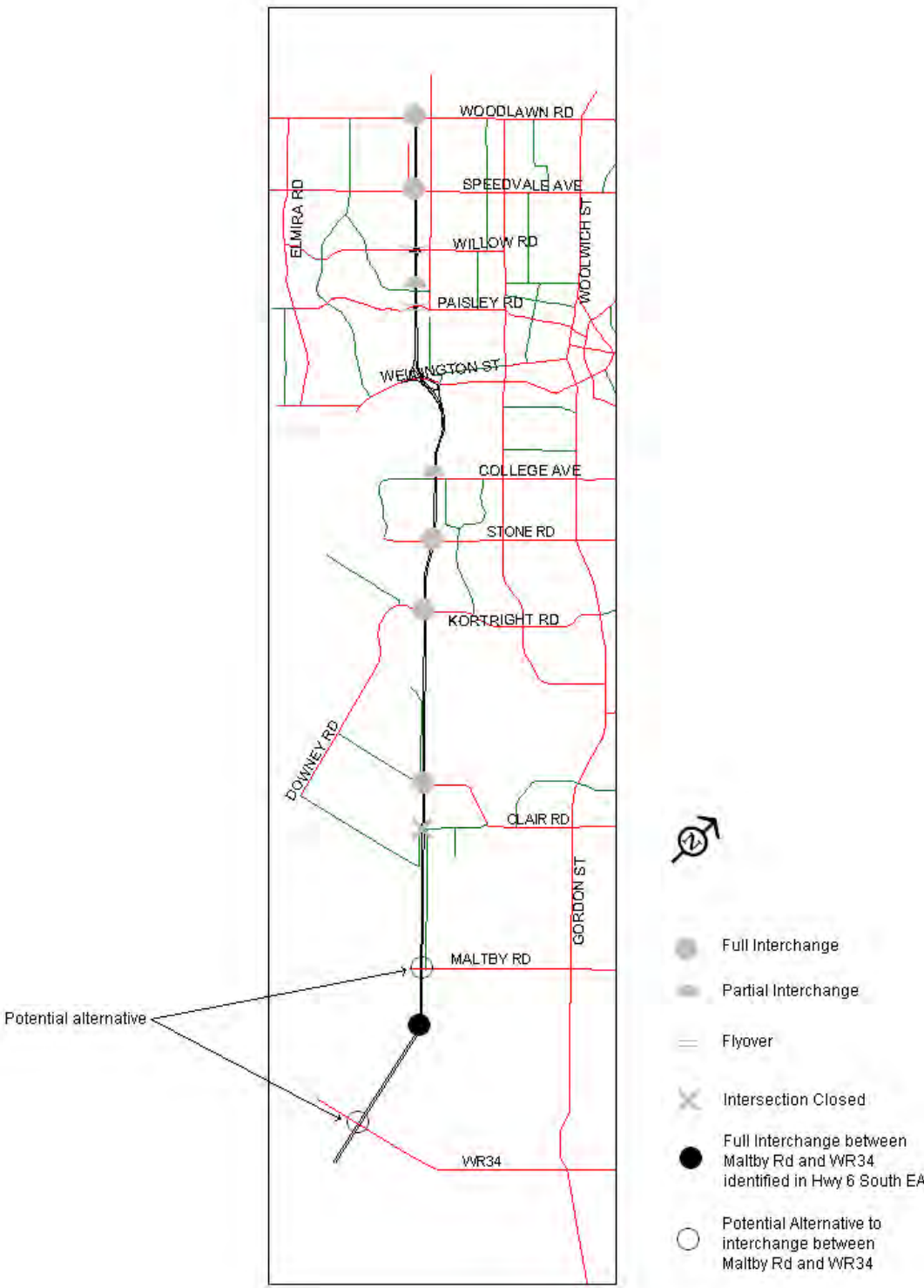


FIGURE 7.1: HANLON EXPRESSWAY PROPOSED INTERCHANGES

### 7.3.3 Highway 7 West Kitchener to Guelph

The Environmental Assessment Addendum for the new Highway 7 Recommended Route was submitted to the Ministry of the Environment in the Fall of 2004. The MoE review is expected to be completed by August 2005. The proposed roadway will be on a completely new alignment to the north of the existing Highway 7 alignment, as shown in Figure 7.2. The roadway will be 18 km long, with 11 km in the Region of Waterloo, 6 km in Wellington County and 1 km in Guelph. There will be two interchanges within the GWTS study area, one at Wellington Road 86/Elmira Road, and the other at the connection between Highway 7 and the Hanlon Expressway at Woodlawn Road/Silvercreek Parkway. The timing of construction, which is likely to be staged with the middle section and the Kitchener end given priority, is not known at the present time.

During the GWTS public consultation, participants identified the new Highway 7 as a priority undertaking in the study area. The GWTS recommendation is for the City and the County to support the early implementation of this project.

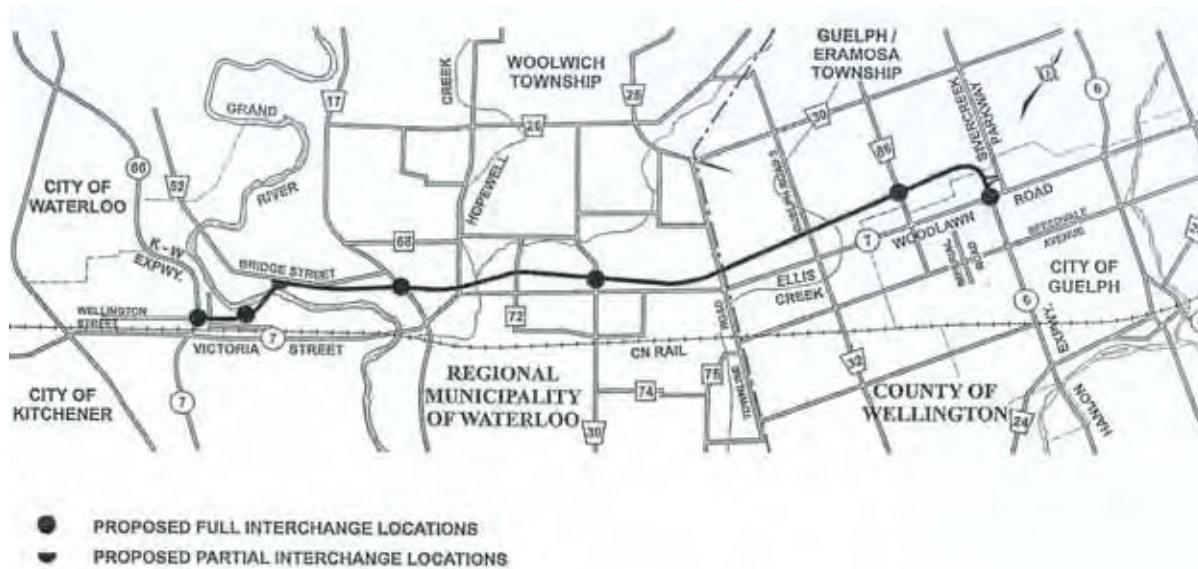


FIGURE 7.2: NEW HIGHWAY 7 RECOMMENDED ROUTE

### 7.3.4 Highway 6 South (Morrison to Guelph) Bypass

The Highway 6 South bypass, shown in Figure 7.3, includes the following four parts:

- 1) widening of Hwy 6 northerly up to Maddaugh Road;
- 2) a new 4-lane roadway from Maddaugh Road to Hwy 401, with a new connecting Road and interchange north of Morrison, and modifications to the existing Brock Road interchange;
- 3) extension of realigned Hwy 6 parallel to Hwy 401 (in the form of collectors separated

## Guelph-Wellington Transportation Study

- from the Hwy 401 express lanes) and the reconstruction of the Hanlon interchange; and,
- 4) Hanlon Expressway improvements from Hwy 401 to a new Connecting Road interchange north of Wellington Road 34.

The widening of Highway 6 up to Maddaugh Road has been EA approved and completed. The EA for the remaining three parts has also been and is currently under MoE review, which is expected to be completed in December 2005.

The GWTS recommendation is for the City and the County to request early implementation of this project as it would contribute to relieving the Gordon Street/Wellington Road 46 corridor of through traffic pressure, particularly due to long distance truck traffic.

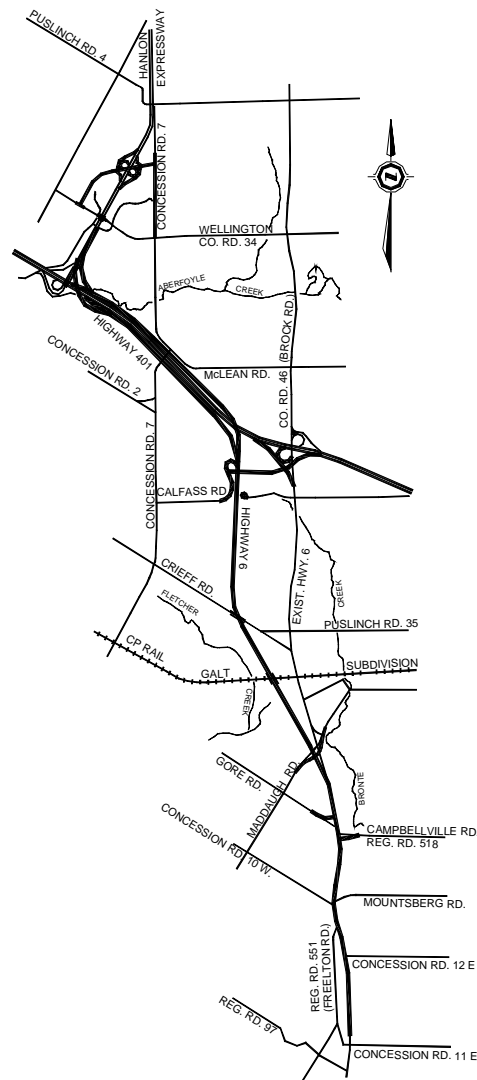


FIGURE 7.3: HIGHWAY 6 SOUTH MORRISTON BYPASS

### *7.3.5 Highway 6 North Fergus Bypass*

In 2004, MTO undertook the *Highway 6 Corridor Study* to identify corridor improvements in the section between Marden and Chatsworth. The GWTS examined the need for a Highway 6 bypass around Fergus. The 2021 traffic forecasts indicate that almost 66% of the northbound (peak directional) traffic (900 vph) entering Fergus in the afternoon peak hour stop in Fergus. Thus only a third of the PM peak hour traffic (or 300 vph) can be considered to be through traffic. A Fergus bypass is therefore not justifiable before 2021. Also, diverting traffic from a main street when traffic capacity is not a major issue may not be supported by local businesses that see potential customers in pass-by traffic. With increasing traffic volumes, the need for a bypass might be more justifiable in the post-2021 period. This should be further reviewed in the upcoming Guelph-Wellington Transportation Needs Study by the Ministry of Transportation.

### *7.3.6 Highway 6 North—Hanlon Extension*

The northerly extension of the Hanlon Expressway, shown in Figure 7.4, to connect with the existing Highway 6 North alignment (in the Gordon-Woolwich corridor) has long been advocated by the City as a means of diverting through traffic from City roads such as Woolwich Street and Woodlawn Road.

The model assignments indicate that a northerly extension of Hanlon will significantly benefit Silvercreek Parkway and Wellington Roads 30 and 51, but will divert traffic only marginally from Woodlawn Road and the parallel section of the existing Highway 6 North. Woodlawn is one of the few roadways in Guelph that is indicating future capacity constraints and the northerly extension of Hanlon does not appear to be providing it with any relief.

At the same time, connecting the Hanlon Expressway to the existing Highway 6 North will help in diverting long distance truck traffic from City roads, in addition to benefiting the surrounding County Roads. Its role and purpose should also be reviewed in the context of the new Highway 7 from Kitchener and the more long term plans for the GTA East-West corridor between Highway 400 and the Hanlon Expressway. This should be undertaken as part of MTO's proposed Guelph-Wellington Transportation Needs Study.



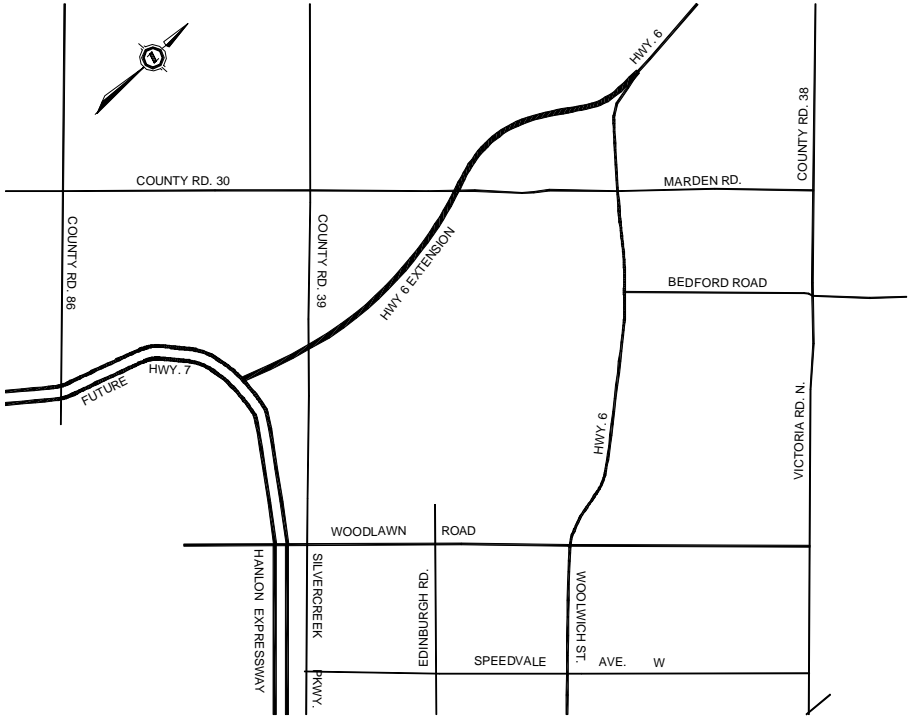


FIGURE 7.4: PROPOSED HIGHWAY 6 NORTH

7.3.7 Easterly Connection to Highway 401

The 1994 GATS study identified the need and potential alternatives for a new north-south connection from Highway 401 to the east of Guelph. As noted earlier, there is a distance of 13 km between the Guelph Line interchange (Exit 312) and the Wellington Road 46 interchange (Exit 299) on Highway 401, and it is feasible to locate a new interchange in between, as shown in Figure 7.5.

MTO’s *Highway 7 East Role and Function Study*, between Brampton and Guelph, identified significant volumes of north-south traffic between Highway 7 East and Highway 401 in the area between Guelph and Halton Region. Subsequently, MTO’s *Strategic Transportation Directions* indicated a potential north-south corridor in the same area linking two east-west corridors to the north (GTA East-West Corridor) and south (Mid-Peninsula Corridor) of Highway 401.

In light of these developments, GWTS recommends that MTO’s Transportation Needs Study should review the need and justification for an easterly connection to Highway 401.



FIGURE 7.5: EASTERLY CORRIDOR OPTIONS TO HIGHWAY 401

### 7.3.8 Strategic Provincial Initiatives

Two of the major economic/transportation corridors identified in the Provincial *Strategic Transportation Directions* have implications for the Guelph-Wellington study area: the Niagara-GTA Corridor (Mid-Peninsula Corridor) and the GTA East-West Corridor, shown in Figure 7.6.

#### Niagara-GTA Corridor

The Niagara-GTA Corridor is the new name for the Mid-Peninsula Transportation Corridor connecting the Niagara Frontier to the Greater Toronto Area (GTA). The identification of the need for a multi-modal Mid-Peninsula Transportation Corridor (MPTC) grew out of the Niagara Peninsula Transportation Needs Assessment study completed by MTO in June 2001. The extensive public consultation process for the Niagara Peninsula study and the EA Terms of Reference did not include Guelph and municipalities in Wellington County and Waterloo Region. However, one of the proposed route alternatives for a Mid-Peninsula highway includes a connection from Hwy 401 to

the east of Guelph in the vicinity of the southern and eastern boundaries of Wellington County (see attached Map, Alternative F). This alternative has implications for Guelph, the Township of Puslinch and the County of Wellington.

In 2003, MTO developed the Terms of Reference for an Environmental Assessment (EA) for the highway component of the corridor, specifically to determine the route location for a highway within the corridor, and invited public comments on the ToR. The County of Wellington and the City of Guelph provided comments and requested inclusion in the EA process. It is not known when the Environmental Assessment will get underway.

### GTA East-West Corridor

The Highway 7 East (Brampton to Guelph) Role and Function Study undertaken by MTO in 2000 tested the option of a new corridor to the north of the existing Highway 7 as an alternative to widening the latter to four lanes. The traffic movements on Highway 7 indicated mostly short-distance east-west trips and frequent north-south trips to/from Highway 401. A new corridor to the north will provide an alternative to Highway 401 and avoid widening the existing Highway 7 through a number of urban areas. The Strategic Transportation Direction identified a broad economic/transportation corridor from Highway 400 in the GTA to the Hanlon Expressway in Guelph. It is not known at this time as to when further studies on this corridor will be undertaken by MTO.

The GTA East-West Corridor was not a consideration during the EA planning process for the new Highway 7 between Guelph and Kitchener. The functional design for connecting the new Highway 7 and the expected extension of the Hanlon Expressway to the north is also not formally identified in the new Highway 7 EA. As such, the freeway-to-freeway connections involving the new Highway 7, the northerly extension of the Hanlon Expressway, and the future GTA East-West corridor will have to be examined before the Highway 7–Hanlon connection, as currently proposed in the Highway 7 EA, is implemented. Guelph and Wellington should ask the Province to examine design options for connecting the three corridors after the conclusion of the EA for the new Highway 7.

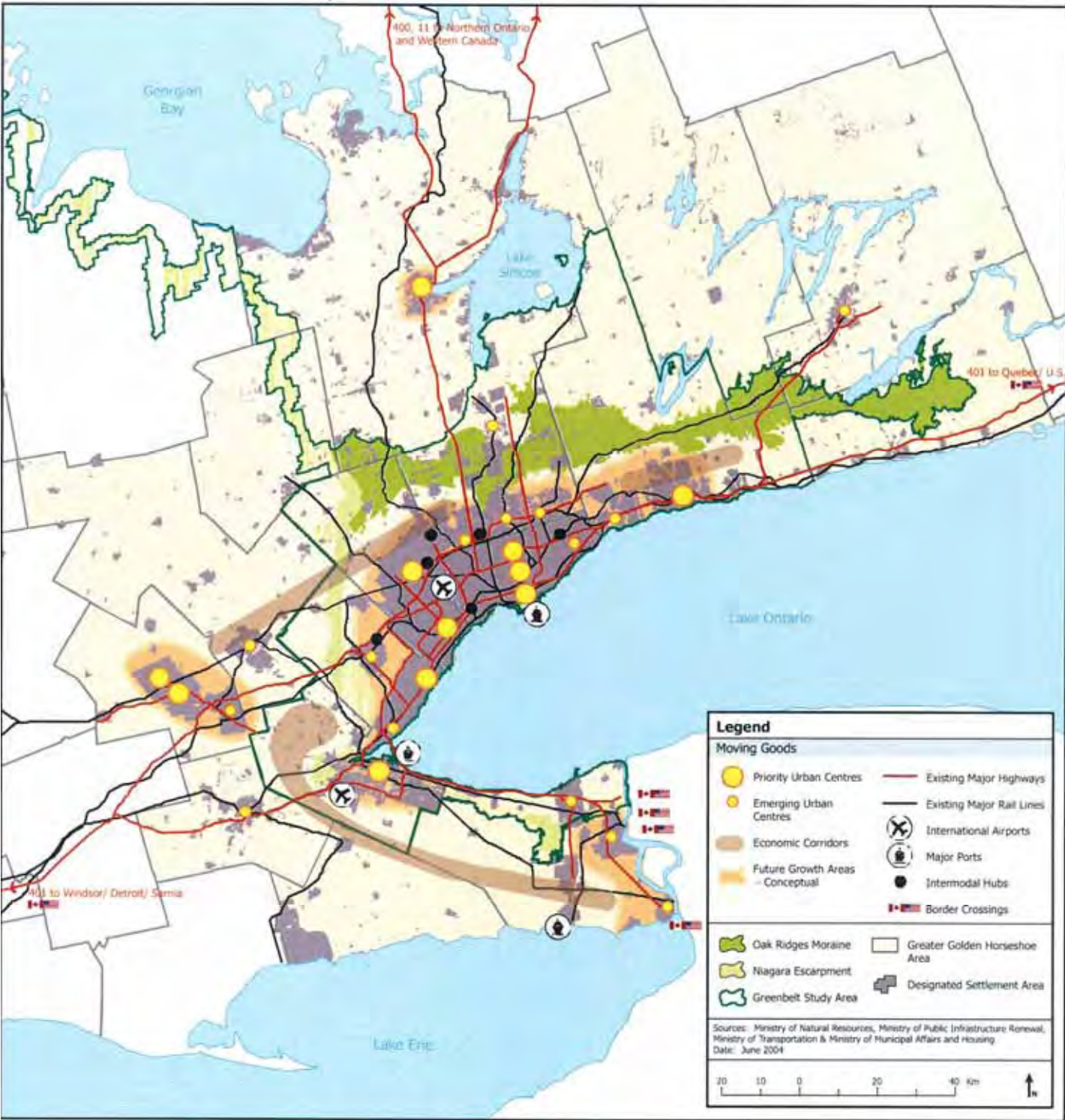


FIGURE 7.6: STRATEGIC DIRECTIONS

### **7.4 IMPLICATIONS FOR CITY AND COUNTY ROADS**

The 2021 and post-2021 analysis assumed the following Provincial highway improvements in place:

- Realignment of Highway 6 North
- Upgrading of the Hanlon Expressway as a freeway
- The completion of the new Highway 7 West between Kitchener and Guelph

There will be significant impacts on the City and the County roads if these improvements are not completed during the planning period. Delay in completing the realignment of Highway 6 North will affect the following County and City roads:

- County Road 46
- County Road 34
- Gordon Street
- Clair Road (mostly truck traffic)
- Arkell Road (mostly truck traffic)

If the Hanlon Expressway is not upgraded by 2021 there will be significant impacts on both north-south and east-west roads including:

- Silvercreek Parkway
- Edinburgh Road
- Gordon Street/Woolwich Street
- Stone Road (including the westerly extension of Stone Road)
- Laird Road/Clair Road
- Wellington Road 124

The 2021 forecasting also assumed the completion of the new Highway 7. Without Highway 7 in place before the end of the planning period, a number of City and County roads in the Highway 7 corridor will be affected. They include:

- Woodlawn Road
- Speedvale Avenue
- Elmira Road/Wellington Road 86
- Wellington Road 30
- Wellington Road 51

It should be noted that during the planning period all of the arterial roads in Guelph will be of a four-lane cross-section or less, with the exception of Woodlawn Road which will have a centre-turn lane in addition to four through lanes. There will be sufficient capacity on these roadways to accommodate the projected traffic increases assuming that the provincial highway improvements are completed during the planning period. If the highway improvements are not completed within the planning period, there will be significant traffic congestion on city roads, most of which cannot be widened to six lanes owing to property constraints and community impacts.

## **7.5 PROVINCIAL HIGHWAYS AND INTER-REGIONAL TRANSIT**

The highway improvements identified in this and earlier studies will address the projected traffic increases in the study area. As was pointed out in the earlier sections of this report, there are limits to roadway improvements in the study area and, if alternative modes are not increasingly used, resulting roadway traffic volumes will surpass the achievable road capacity in the post-2021 period. In addition to promoting transit usage within Guelph, consideration should be given to attracting inter-regional commuters to use transit by using the improvements to provincial highways to implement inter-regional transit service. The following inter-regional highway corridors can accommodate inter-regional bus transit service and High Occupancy Vehicle (HOV) operations:

- Wellington Road 124: To provide express bus service between Cambridge, southeast Kitchener, Guelph-Eramosa and Guelph.
- Highway 7 West Corridor: With the construction of the new Highway 7, the old alignment can be used to provide express bus service between Kitchener-Waterloo and Guelph.
- The Hanlon Expressway: Using shoulder lanes for local and inter-regional transit should be considered as part of upgrading the Hanlon Expressway.

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## 8. TRANSPORTATION MASTER PLAN

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### 8.1 MASTER PLAN OUTLINE

As discussed in the previous sections, the Guelph-Wellington Transportation Master Plan is based on strategies to manage transportation facilities from both the **demand** and **supply** sides. Specific recommendations were developed in regard to Transportation Demand Management (TDM) measures and non-motorized modes (Section 4), public transit (Section 5), City and County roadway improvements (Section 6), and Provincial highway improvements (Section 7). Section 8 summarizes these recommendations under the following headings:

- 1) Transportation Demand Management (TDM) Program
- 2) Land Use and Urban Design Measures
- 3) Walking and Cycling
- 4) Guelph Transit
- 5) Inter-regional Transit
- 6) Guelph Roadway Improvements
- 7) Wellington Roadway Improvements
- 8) Provincial Highway Improvements

### 8.2 TRANSPORTATION DEMAND MANAGEMENT PROGRAM

As discussed in Sections 4 and 5, TDM strategies in their broadest sense include all efforts to promote the reduced use of the automobile and the increased use of alternative travel modes. These strategies include land use and urban design measures, walking and cycling promotion, and the promotion of public transit. They also include the promotion of ride sharing and car pooling, the management of parking supply, and flexible hours at work places. TDM objectives can also be achieved as part of new developments: by limiting parking supplies, by giving parking priority to ridesharing employees, by facilitating walking and cycling, by transit-friendly subdivision design and by providing transit service in the early stages of major developments. All these measures are applicable in Guelph, and a majority of them are being implemented at the University of Guelph.

Sections 8.3, 8.4, 8.5 and 8.6 summarize specific recommendations in regard to land use and urban design, walking and cycling, Guelph Transit, and inter-regional transit. Additional steps are required to create public awareness about undertaking TDM measures in Guelph and to involve the residents, major institutions, employers and developers in actively promoting the use of alternative modes among Guelph residents and employees. To that end, the Transportation Master Plan recommends the following:

- 1) The establishment of a TDM Implementation Committee comprising City staff and representatives of residents, institutions, employers and developers to prepare a TDM Program and guidelines for implementation.

- 2) Identification of potential TDM users (i.e. institutions/employers/developers) and effective measures specific to each user.
- 3) Initial focus on areas where some TDM measures have been tried (University of Guelph), and areas where there is potential (Downtown, other employment areas and new developments).
- 4) Monitoring of TDM implementation and changes in travel characteristics.

### **8.3 LAND USE AND URBAN DESIGN MEASURES**

As discussed in Section 4, land use and transportation have a dialectical relationship, each influencing the other. Transportation choices can be influenced over a long period by land use and urban design measures, while the selection and implementation of transportation facilities have a bearing on the location of land uses and the choices people make about their residential and employment locations and modes of travel. The land use concepts and strategies applicable to the study area are as follows:

- 1) Changes to Urban Form: Promote an urban system of nodes and corridors that will support the concentration of activities and mix of land uses. A potential system applicable to Guelph was illustrated in Figure 4.1. As experience in other municipalities has shown, a system of nodes and corridors minimizes the need for car use and facilitates the use of alternative modes such as walking, transit and cycling. However, changes to urban form can only be achieved over a long period of time and depend on consistent policy in light of changing market pressures.
- 2) Increase Density: Increasing residential and employment densities is consistent with the nodes-and-corridors urban form, is favourable to the use of alternative modes, and provides other benefits such as reduced land consumption, energy use and air pollution. However, density increases should be compatible with preexisting land uses, especially residential land uses. Policy measures and design guidelines will be required to identify higher density areas in the study area and intensify development in those areas.
- 3) Promote Mixed Land Use Developments: Mixed land use developments involving residential, commercial and employment uses are also supportive of alternative travel modes, particularly walking. This is already evident in the downtown and university areas in Guelph. While these areas have evolved over a long period of time, it is possible to achieve similar results in other areas through proactive measures such as identifying appropriate locations for mixed use development and implementing mixed use policies through the development process.
- 4) Neighbourhood Design Measures: Urban design plays a key role in creating the ambience for walking, cycling and transit, as opposed to urban and roadway designs that discourage the use of these modes. Guelph has developed specific design guidelines for the Stone Road Mall and South Guelph District Centre. Design guidelines should also be used in new residential and employment areas.



### **8.4 WALKING AND CYCLING**

Guelph's Transportation Strategy provides the overall goals, objectives and specific policies for promoting cycling and walking as alternative modes of transportation in Guelph. Since the adoption of the strategy, Guelph has taken a number of ongoing measures for promoting these modes including:

- Provision of sidewalks in new subdivisions
- Extension of sidewalks in old development areas
- Provision of bicycle lanes as part of road reconstructions in accordance with the Official Plan

In addition to continuing these measures, the City should implement other measures recommended in the Transportation Strategy and discussed in Section 4 of this report. Specifically, they include:

- 1) Implement the recommendations of the new Trails Master Plan following its adoption by Council.
- 2) Improve connectivity between the on-street and off-street bicycle and walking facilities.
- 3) Improve cycling/walking connections between residential, employment and institutional areas.
- 4) Improve integration between transit routes/stops and walking/cycling facilities.

### **8.5 GUELPH TRANSIT**

As outlined in Sections 2 and 5, public transit plays an important role in Guelph's transportation system. The City Council and the community are remarkably supportive of Guelph Transit and its continual improvements to reach the Official Plan transit share target of 10% of all daily trips. Transit improvements to be undertaken during the planning period (2001-2021) should focus on the following areas:

- Transit Route Structure Changes
- Route Improvements
- Service Improvements
- Roadway Transit Priority Measures
- Downtown Transit Terminal
- Advanced Transit Technology
- Transit Fleet and Facilities
- Transit Fare Strategies
- Transit Ridership Strategies
- Transit Accessibility

Specific recommendations in each area were discussed in Section 5 and are summarized in Table 8.1.

**TABLE 8.1: TRANSIT IMPROVEMENT RECOMMENDATIONS**

<b>Improvement Areas</b>	<b>Improvement Measures</b>
Transit Route Structure Changes: Route Concept Plan (Figure 5.1)	<ul style="list-style-type: none"> <li>● Gradually change from radial system to modified radial-grid system;</li> <li>● In addition to the downtown and the University transit transfer points, develop other transfer points at Willow West Mall, Stone Road, South Gordon District Centre and the Woodlawn &amp; Woolwich commercial area;</li> <li>● Establish Gordon-Wellington-Woolwich corridor as the principal transit corridor with provisions for route interlining, other radial routes that have effective coverage of the outer areas.</li> </ul>
Route Improvements	<ul style="list-style-type: none"> <li>● Implement the perimeter route system as currently proposed and based on the 2002 transit study;</li> <li>● Implement transit priority measures along existing and new transit routes as appropriate;</li> <li>● Reduce the dependence on single timed transfer between the current routes and provide for flexibility by establishing additional transfer points and route connections.</li> </ul>
Service Improvements	<ul style="list-style-type: none"> <li>● Implement higher frequency service (15 min. instead of the current 30 min. headway);</li> <li>● Where possible, interline additional routes along corridors with higher demand;</li> <li>● Introduce new routes in critical corridors.</li> </ul>
Roadway Transit Priority Measures	<ul style="list-style-type: none"> <li>● Provide signal priority at critical intersections;</li> <li>● Provide Queue Bypass Lanes, as required, at intersections as shown in Figure 8.1: Gordon/Wellington, Gordon/Stone, Woolwich/Eramosa, Gordon/College, Stone/Edinburgh, and College/Edinburgh;</li> <li>● Implement other measures including adequate road geometry, avoiding parking conflicts and bus bays.</li> </ul>
Transit Fare Strategies	<p>Based on the successful bus pass system with University of Guelph students, explore the following:</p> <ul style="list-style-type: none"> <li>● Payroll deduction bus pass system for university employees;</li> <li>● Payroll deduction bus pass system for City of Guelph employees;</li> <li>● Payroll deduction bus pass system for private sector employees;</li> <li>● Monthly bus pass at discounted rates for all users;</li> <li>● Reduced Transit fare during off-peak periods;</li> <li>● Employer-subsidized bus passes for both private and public sector employees.</li> </ul>

TABLE 8.1: TRANSIT IMPROVEMENT RECOMMENDATIONS (CONTINUED)

Improvement Areas	Improvement Measures
Transit Ridership Strategies	<ul style="list-style-type: none"> <li>• Attract more choice riders (i.e. those with access to the automobile) to transit by providing convenient, reliable and direct transit service and by providing fare and workplace incentives;</li> <li>• Provide more frequent service and fare incentives to increase transit usage in the five core districts bounded by Woodlawn Road, Hanlon Expressway, Clair Road and Victoria Road;</li> <li>• Implement new direct routes, more frequent service and fare incentives to attract transit riders in the eight outer districts.</li> </ul>
Transit Accessibility	<p>Continue ongoing accessibility initiatives and expand them to include:</p> <ul style="list-style-type: none"> <li>• Increasing the number of low floor buses in service;</li> <li>• Accessibility improvements at bus stops and terminals;</li> <li>• Fare incentives, where possible, to encourage patrons with disabilities to use conventional transit.</li> </ul>

**8.6 INTER-REGIONAL TRANSIT**

Although the transit share of inter-regional travel is not very significant at the present time, transit should be promoted to play a bigger role in the future because of growing inter-regional travel and the limits to expanding highway capacity to accommodate this growth. As discussed in Section 5, the City of Guelph is involved in a number of initiatives to promote transit as an alternative mode to the automobile for inter-regional travel. Also, as pointed out in Section 7, unlike in the past, improvements to highways should not be limited to accommodating increasing automobile traffic only but should be used to promote inter-regional bus service as well. Ongoing and potential initiatives for inter-regional transit are listed below:

- 1) Inter-regional, Inter-modal Transit Station: Guelph has completed a feasibility study for developing an inter-regional and intermodal transit station at the VIA Station site. The City should pursue the implementation of this proposal with funding support from the Provincial and Federal Governments.
- 2) North Mainline Rail Service Improvements: Guelph is part of an alliance of municipalities, along the North Mainline, from London to Halton Hills, whose goal is to obtain more frequent and faster train service between London and Toronto. The alliance is preparing a business plan to support this goal and secure funding from senior governments. Guelph is ideally located to benefit from both an extension of GO Train service west of Georgetown and the introduction of a more frequent VIA Rail service to/from Toronto.
- 3) Intercity Bus Service: Guelph and Wellington should request the introduction of a GO

Bus and/or private intercity bus service on the Highway 401 corridor. This could connect Guelph, Wellington and Waterloo areas to the Milton GO Station and to Toronto. Guelph and Wellington have been supportive of the Provincial proposal to establish a Park & Ride intercity bus station on Wellington Road 46 to the north of Highway 401.

- 4) Guelph Transit & Grand River Transit Service Coordination: Guelph Transit should explore the possibility of providing coordinated bus service with Grand River Transit to serve Guelph-Wellington and Kitchener-Waterloo-Cambridge areas.
- 5) Integrated Fare Medium: Guelph Transit is planning to upgrade its fare collection system using the smartcard fare medium. In so doing, Guelph Transit should work with the Province and other municipal transit operators to obtain an integrated fare medium for transit transfers.
- 6) Highway Transit Corridors: Provincial and regional highway improvements in the study area and adjacent Waterloo Region should consider the potential for accommodating Rapid Bus Service and High Occupancy Vehicle (HOV) lanes on highway corridors. Specifically, Wellington Road 124, Highway 7 and the Hanlon corridors can be used to promote the use of transit in inter-regional travel between Cambridge, Kitchener, Waterloo, Wellington and Guelph.

## **8.7 THE ROAD NETWORK**

### *8.7.1 Roadway Improvements*

The road network improvements identified in Sections 6 and 7 and recommended for the Study Area are under three separate jurisdictions:

- City of Guelph roadway improvements
- Wellington County roadway improvements
- Provincial highway improvements

However, the recommended improvements are mutually supportive of each other and almost all of them are required within the planning period to enable the study area road network to accommodate the anticipated growth levels, not only within the study area but also in adjacent municipalities. Delays in undertaking improvements by one jurisdiction will affect the level of service on roads within the other two jurisdictions and affect the study area network as a whole.

The road improvements are not intended to serve passenger vehicular traffic only. Within the City, the roads accommodate passenger vehicles, walking, cycling, transit, as well as goods movement. The County roads accommodate both passenger vehicles and significant volumes of external truck traffic. The Provincial highways carry long-distance vehicular traffic and truck traffic. This study recommends that both the County roads (e.g. Wellington Road 124) and the Provincial highways (the Hanlon Expressway, Highway 6 North and Highway 7) should also be considered for promoting inter-regional transit.

The recommended improvements are in different stages of identification and environmental assessment, as categorized below:

- 1) Previously identified and EA approved improvements
- 2) Previously identified improvements and reconfirmed in this study, subject to EA approval
- 3) Improvements identified and justified by this study, subject to EA approval

### *8.7.2 City of Guelph Roadway Improvements*

The recommended roadway improvements within the City of Guelph are tabulated below as individual projects according to their EA requirements, as shown in Table 8.2, Table 8.3 and Table 8.4, and illustrated in Figure 8.1. They fall under three categories: projects for which the EA has been completed; projects for which EA has to be undertaken; and projects that are considered pre-approved in terms of the Municipal Class EA guidelines. All of the projects listed below are included in the City's 2004 Development Charges By-law. The need and justification statements for projects for which an EA is required are included in the Technical Appendix to this report.

**TABLE 8.2: ROAD IMPROVEMENTS WITH COMPLETED ENVIRONMENTAL ASSESSMENTS**

<b>Project Description</b>	<b>Anticipated Timing</b>
Clair Rd (Laird Rd to Victoria Rd): widen from 2 to 4 lanes (Laird Rd to east of Gordon St); 2-lane upgrading (east of Gordon St to Victoria Rd).	2005-2007
Gordon St (Clair Rd to Maltby Rd): widen from 2 to 4 lanes.	In conjunction with development of adjacent lands
Stone Rd (Monticello Cr to Victoria Rd): widen from 2 to 4 lanes.	Subject to Council approval, based on actual traffic volumes
Stone Rd (Victoria Rd to Watson Pkwy): widen from 2 to 4 lanes.	In conjunction with development of adjacent lands
Victoria Rd (York Rd to Clair Rd): widen from 2 to 4 lanes (York Rd to Stone Rd); 2-lane upgrading (Stone Rd to Clair Rd).	2006-2009
Watson Rd (Watson Pkwy to Speedvale Ave): widen from 2 to 4 lanes (Watson Pkwy to Eastview Rd); 2-lane upgrading (Eastview Rd to Speedvale Ave).	In conjunction with development of adjacent lands

**TABLE 8.3: ROAD IMPROVEMENTS SUBJECT TO EA APPROVALS**

<b>Project Description</b>	<b>Anticipated Timing</b>
Edinburgh Rd (London Rd to Wellington Rd): given the road right-of-way constraints in this section, a range of options will be considered including intersection improvements, adding a third centre-turn lane and widening to 4 lanes where possible, as well as a grade separation at CN Rail crossing (Schedule C).	Beyond 2010
Laird Rd (realigned section from Hanlon to Downey Rd): widen from the initial 3-lane cross section, that will be built as part of the Hanlon Creek Business Park Subdivision development, to the ultimate 4-lane mid-block cross section and 6-lane cross-section at the interchange (Schedule B/C).	Depends on Hanlon Business Park development and the timing of the Hanlon/Laird interchange
Niska Rd Bridge Replacement: from a single-lane bridge to a 2-lane bridge (Schedule B).	2008
Stone Rd to Elmira Rd connection: extension of Stone Rd and Elmira Rd to Wellington Rd 124 (West) (Schedule C).	Beyond 2021 (sooner if Hanlon is not upgraded by 2021)
Watson Rd to Woodlawn Rd connection: extension of Watson Rd and Woodlawn Rd to Wellington Rd 124 (East) (Schedule C).	Beyond 2021
Woodlawn Rd (Hanlon to Nicklin Rd): addition of centre-turn lane (Schedule B). The addition of a centre-turn lane between Nicklin Rd and Woolwich St will be undertaken in conjunction with adjacent developments.	2007-2009
York Rd (East City Limits to Wellington Rd): widen from 2 to 4 lanes east of Victoria Rd, and widen from 2 to 3 lanes west of Victoria Rd if existing right-of-way can accommodate a third lane (Schedule C).	2008-2009

**TABLE 8.4: IMPROVEMENTS CONSIDERED PRE-APPROVED (SCHEDULE A) IN THE EA PROCESS**

<b>Project Description</b>	<b>Anticipated Timing</b>
Arkell Rd (Gordon St to Victoria Rd): 2 lane upgrading	In conjunction with development of adjacent lands
Downey Rd (Forestell Rd to Teal Dr): 2 lane upgrading	2009
Eastview Rd (Starwood Dr to Watson Rd): 2 lane upgrading	2008
Maltby Rd (Hanlon to Gordon St): 2 lane upgrading	In conjunction with development of adjacent lands
Speedvale Ave (Elmira Rd to West City Limits): 2 lane upgrading	2007
Intersection upgrades on Victoria Rd from Woodlawn Rd to Eastview Rd	2008-2009
Intersection upgrades: Speedvale & Stevenson Speedvale & Silvercreek	2008-2009
Intersection upgrades: Silvercreek & Greengate Stevenson & Elizabeth Eramosa & Delhi Speedvale & Delhi College & Scottsdale	Beyond 2009



### *8.7.3 County of Wellington Roadway Improvements*

The County road network plays a critical role in the Guelph-Wellington transportation system, connecting Guelph's arterial roads to Provincial highways. The major County roadway projects to be undertaken during the planning period, as shown in Figure 8.2, include:

- The upgrading of Wellington Road 124 West (former Highway 24) between Guelph and Cambridge.
- The widening of Wellington Road 46 from the City limits at Maltby Road to Wellington Road 34, the EA for which was completed with the Gordon Street EA.
- The reconstruction/widening of Wellington Road 7 (Elora to Highway 6).

The need and justification for upgrading Wellington Road 124 West (former Highway 24) as a divided highway along a new alignment was earlier established through the 1997 EA undertaken by the MTO, and is reconfirmed through the present GWTS study. The upgrading is overdue in light of the existing traffic conditions, and will be required with or without improvements to the Hanlon Expressway and building of the new Highway 7. Wellington Road 124 was downloaded to Wellington County in 1997 and the County is not in a position to undertake the reconstruction of Wellington Road 124 without Provincial support. The County and the City should jointly approach the Province to expedite the upgrading of this roadway by either (a) reassuming jurisdiction over WR 124 between Cambridge and Guelph, or (b) providing funding support for its reconstruction in consultation with Wellington and Guelph.

Sections of two of the proposed City roadway improvements, the Stone Road-Elmira Road connection and the Watson Road-Woodlawn Road connection will be located within the County's jurisdiction. The environmental assessment and the implementation of the two projects will have to be coordinated between the City and the County. The County has also indicated that the County and the City should discuss cost-sharing possibilities for the widening of Wellington Road 46 (Brock Road, continuation of Gordon Street south of Maltby Road), insofar as the need for widening this roadway is also driven by growth in Guelph.



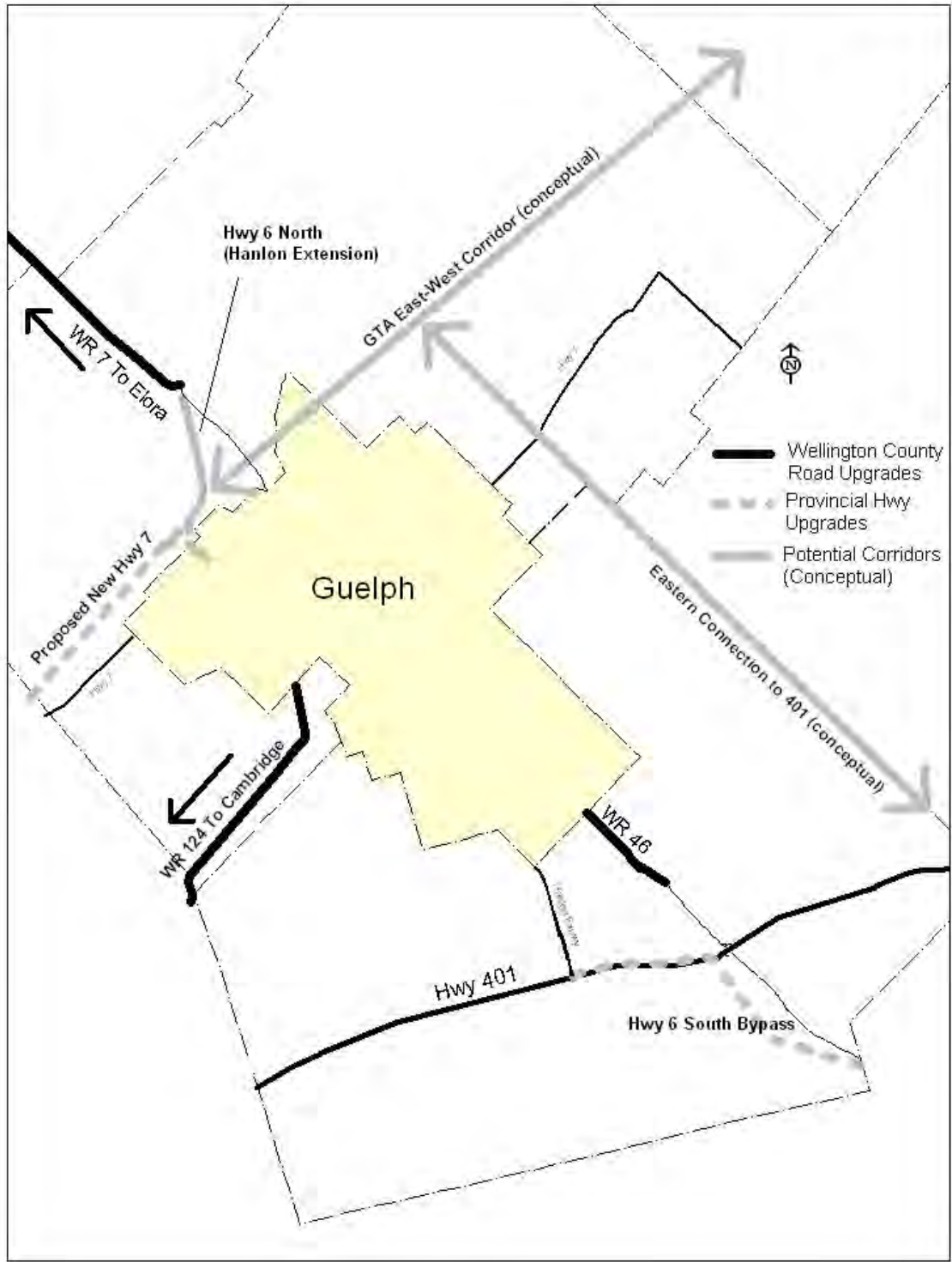


FIGURE 8.2: COUNTY AND PROVINCIAL ROAD UPGRADES

### *8.7.4 Provincial Highway Improvements*

The Provincial highway improvements discussed in Section 7 are the responsibility of the Ministry of Transportation. The timing of these improvements is undetermined, although the present study has identified the need for some of the improvements to be implemented during the planning period (2001-2021). The improvements required during the planning period and the status of their environmental assessment, as shown in Figure 8.2, are as follows:

- 1) Highway 6 South (Morrison to Guelph) Bypass: The EA for the Bypass has been completed and is under MoE review. The review is expected to be completed by December 2005.
- 2) Highway 7 West (Kitchener to Guelph): The EA Addendum for the new Highway 7 is currently under MoE review, which is expected to be completed by August 2005.
- 3) The Hanlon Expressway: The upgrading of the Hanlon Expressway is critical to the Study Area as a whole and to the City of Guelph in particular. Hanlon is currently a north-south, 4-lane divided roadway with one interchange at Wellington Road and several at-grade intersections to the north and south of Wellington Road. The required improvements relate to the upgrading of the at-grade intersections to interchanges, as was shown in Figure 7.1.

The status of each Hanlon intersection is summarized in Table 8.5 below.

The Ministry of Transportation Southwestern Region will be undertaking future transportation studies to specifically address Provincial highway issues in Guelph and Wellington. The GWTS recommends the following highway improvements, shown in Figure 8.2, for further consideration in future MTO studies:

- 1) The Hanlon Expressway northerly extension to connect with Highway 6 North
- 2) Highway 6 North Bypass at Fergus
- 3) Easterly connection to Highway 401—a new north-south corridor to the east of Guelph

The long term Provincial initiatives with implications for the Guelph-Wellington area include:

- 1) Niagara-GTA Corridor—the former Mid-Peninsula corridor that may connect with Highway 401 in the Guelph-Wellington Study Area.
- 2) GTA East-West Corridor—a potential transportation/economic corridor to the north of Guelph between Highway 400 in the GTA and the Hanlon/Highway 6 corridor.

The potential for an East-West Corridor between Highway 400 and the Hanlon Expressway that has been recently identified by the Province was not a consideration during the EA planning process for the new Highway 7 between Guelph and Kitchener. The functional design for connecting the new Highway 7 and the expected extension of the Hanlon Expressway to the north is also not formally identified in the new Highway 7 EA. As such, the freeway-to-freeway connections involving the new Highway 7, the northerly extension of the Hanlon Expressway, and the future GTA East-West corridor will have to be examined before the Highway 7–Hanlon connection, as currently proposed in the Highway 7 EA, is implemented. Guelph and Wellington should ask the Province to examine

design options for connecting the three corridors after the conclusion of the EA for the new Highway 7.

**TABLE 8.5: HANLON EXPRESSWAY INTERSECTION IMPROVEMENTS**

<b>At-Grade Intersections</b>	<b>GWTS Recommended Improvements</b>	<b>Planning/EA Status</b>
Hanlon at Woodlawn Road	Full interchange with connections to new Highway 7, Woodlawn Road and Silvercreek Parkway.	Included in the Highway 7 EA.
Hanlon at Speedvale Avenue	Full interchange.	EA completed in 1994. Addendum required. Need and justification confirmed by GWTS.
Hanlon at Willow Road	Grade Separation.	Identified in the 1994 EA.
Hanlon at Paisley Road	Grade Separation, but an interchange will be provided to the north of Paisley.	EA completed in 1994. Addendum required. Need and justification confirmed by GWTS.
Hanlon at College Avenue	Partial interchange with to/from north connections.	EA required. Need and justification confirmed by GWTS.
Hanlon at Stone Road	Full interchange.	EA required. Need and justification confirmed by GWTS.
Hanlon at Kortright Road	Full interchange.	EA required. Need and justification confirmed by GWTS.
Hanlon at Laird Road	Full interchange, along with closure of Clair Road/Phelan Drive at the Hanlon.	EA required. Need and justification confirmed by GWTS and area traffic studies.
Hanlon at Maltby Road	Full interchange.	EA required. Need and justification confirmed by GWTS and area traffic studies.
Hanlon at Wellington Road 34	Full interchange as an alternative to the interchange identified in the Hwy 6 South Bypass EA.	EA addendum required.

**8.8 TRANSPORTATION MASTER PLAN (TMP) IMPLEMENTATION**

The recommended Transportation Master Plan (TMP) has different components, which are interconnected and are mutually supportive. Conversely, non-implementation or delays in implementing some components will have adverse consequences in other areas.

If the use of alternative modes in Guelph and the use of inter-regional transit do not increase during

the planning period, there will be significant strains not only on City roads but also on the County and Provincial roadways in the study area.

Roadway improvements in Guelph are necessary not only to accommodate passenger vehicular traffic but also to accommodate walking, cycling and buses. The County and Provincial roadway improvements should also promote inter-regional transit and efficient goods movement.

Delays in implementing the recommended improvements on identified roadways will create traffic congestion on them, adversely affect transit service, and will lead to traffic infiltration of neighbourhoods and communities. The City and County roadway improvements identified in this study are not excessive, involving, at most, widening from 2 to 4 lanes and intersection improvements. However, if the identified Provincial highway improvements are not implemented during the planning period, there will be significant impacts to adjacent City/County/Township roadways. Additional widening of these roadways will create significant social and community impacts.

The funding sources and the implementing agency for the different components of the TMP are identified below:

- Transportation Demand Management (TDM) Program: This can be accomplished within the existing staff resources in the Engineering, Transportation, and Planning Departments. After a TDM program is developed in consultation with stakeholders, it should be presented to Council for approval. The cost of program implementation will likely be modest and could be covered under the Transportation Strategy Implementation budget which is entirely funded by development charges.
- Guelph Transit: The transit recommendations will be implemented by Guelph Transit. Since the withdrawal of Provincial funding support in 1997, Guelph Transit, like other municipal transit operators, has been relying on property taxes and, to a limited extent, on development charges, for its capital expenditure. The recent fuel tax rebate by the Province for transit expenditure is a move in the right direction, but hardly adequate. The City and Guelph Transit should work with other municipalities and transit operators to obtain more transit funding from the Provincial and Federal governments. This will enable Guelph Transit to proceed with fleet expansion, fare technology, transit transfer point relocation and other capital improvements identified in this report.
- City of Guelph Roadways: City roadway improvements are undertaken to facilitate all modes of travel, and are the responsibility of the City's Engineering Department. Since the withdrawal of Provincial funding in 1997, the roadway improvements are funded by development charges, property taxes and, in some instances, by direct developer contributions. The breakdown of costs of and DC contributions to roadway upgrades are included in the *2004 Guelph Development Charges Background Study and By-Law*. The Provincial contribution is limited to roadways that are considered to be "connecting links" to Provincial Highways. The \$1.5 million fuel tax rebate that has now been introduced to support transit in Guelph represents about 10% of the total fuel taxes collected annually in the City. In addition, the City is also expected to contribute through development charges to the construction of the Hanlon/Laird interchange because of

- the anticipated development at this location.
- Wellington County Roadways: The roadway improvements in the County, with the exception of Wellington Road 124 West, will be funded by property taxes and development charges. In regard to Wellington Road 124 (the former Highway 24), the County and the City should ask the Province to either reassume jurisdiction over this roadway or provide funding support for its reconstruction.
  - Provincial Highway Improvements in the Guelph-Wellington Area: In addition to the reconstruction of Wellington Road 124 (the former Highway 24), the Provincial improvements that need to be completed during the planning period are the Hanlon Expressway upgrades, the Highway 6 South realignment, and the new Highway 7 (Kitchener-Guelph). The EA for the last two have been completed and are awaiting approval. The City should ask the Province to prepare an implementation plan for the Hanlon upgrades in consultation with the City and undertake the Environmental Assessment as required. Given the growing funding constraints for Provincial highway improvements, Guelph and Wellington should work with other municipalities in asking the Province to look at alternative funding sources such as road/congestion pricing, including toll roads where appropriate, to fund highway improvements in the long term.
  - Inter-Regional Transit: Guelph and Wellington should collaborate with neighbouring municipalities to ask the Provincial and Federal governments to undertake inter-regional transit initiatives to enhance transit service between Guelph-Wellington, the Region of Waterloo and the GTA areas. Guelph Transit should work with Grand River Transit to implement a coordinated transit service between Guelph-Wellington and the Kitchener-Waterloo-Cambridge areas.