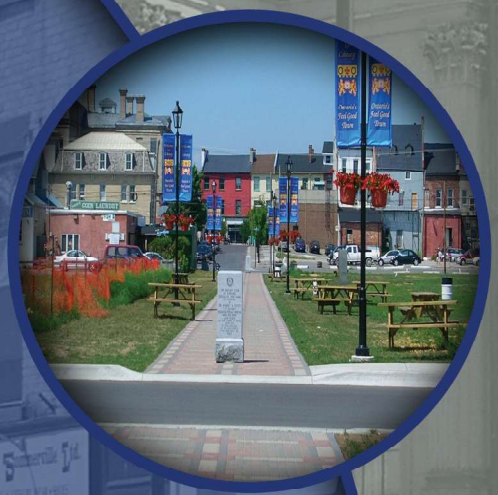

TRANSPORTATION MASTER PLAN FOR THE TOWN OF COBOURG

FINAL REPORT

August 2011

HDR | iTRANS | pA HORIZON DATA SERVICES

Town of Cobourg

Transportation Master Plan
Final Report

Cobourg, ON

August 2011

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Project # 6184

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EXECUTIVE SUMMARY

A. Introduction

The Transportation Master Plan (TMP) will guide the development of Cobourg's long-term transportation network in a coordinated manner, while addressing existing issues and concerns of Cobourg residents, such as traffic congestion and safety at localized "hot spots."

The TMP will:

- Provide a context for ***how best to utilize transportation resources***.
- Give direction on ***what transportation related policies, services and infrastructure should be implemented*** to address community values, desires and mobility needs in an effective and responsible manner.
- Reflect the ***rural and urban character*** of Cobourg, and its ***high quality of life***.
- Recognize the ***importance of the transportation network to the economic competitiveness*** of the Town.
- Examine how ***changes in community values, emerging trends, environmental considerations, financial constraints and other societal trends*** have changed the public's focus on transportation.

Provide a framework, from a transportation perspective, for the establishment of an ***economically sustainable and environmentally respectful growth management strategy***, which supports the growth objectives articulated in the Town's Official Plan.

B. Existing Transportation Conditions

Level of Service Definitions

Traffic conditions are measured by what is known as a "Level of Service" (LOS) which is a measure used to determine the effectiveness of the operations of a transportation system. The transportation LOS system uses a lettering system ranging from "A" to "F" which is used to identify the typical amount of delay a motorist would experience when traveling along a roadway or through an intersection. LOS "A" provides the best level of service with the least amount of delay, whereas LOS "F" refers to the worst level of service or the highest amount of delay.

Table ES-1 outlines the average amount of delay experienced for each LOS category at signalized and unsignalized intersections.

Table ES-1: Level of Service (LOS) Definitions

LOS	Delay (seconds)	
	Signalized Intersections	Unsignalized Intersections
A	< 10 s	< 10 s
B	10 – 20 s	10 – 15 s
C	20 – 35 s	15 – 25 s
D	35 – 55 s	25 – 35 s
E	55 – 80 s	35 – 50 s
F	> 80 s	> 50 s

Capacity constraints

Capacity constraints for movements at intersections are measured by a volume-to-capacity (v/c) ratio. This ratio compares the total volume of traffic traveling on a roadway through an intersection with the road capacity available at that intersection. For example, a v/c ratio of 0.60 indicates that the intersection is operating at 60% of its roadway capacity.

Generally, intersections in Cobourg operate with LOS C or better and with acceptable v/c ratios. At a few of the major intersections, specific movements are constrained and experience higher delays during the peak periods. These constrained intersections include:

- Elgin Street / Burnham Street
- Elgin Street / Division Street
- Elgin Street / Strathy Road
- Elgin Street / Ontario Street
- DePalma Drive / Strathy Road
- DePalma Drive / Burnham Street
- Division Street / Densmore Road -Veronica Street
- Division Street / Park Street-Munroe Street

Collision History Review

As part of the scope of this TMP, the consultant reviewed the collision history of five collision "hot spots" identified by Town staff with input from Cobourg Police Services. The purpose of the collision analysis was to identify trends in collision history and determine whether the "hot spots" intersections are subject to operational issues.

The collision history review did not identify any serious safety issues at any of the "hot spot" locations. A common element at each of these intersections is the presence of driveways, commercial or residential, in close proximity to the intersection. It is recommended that the Town adopting access management guidelines to prevent future situations where closely-spaced driveways reduce queue storage potential at the intersection results blocked driveways and driver frustration.

The intersection with the highest frequency of collisions is the jogged intersection at Division Street / Munroe Street-Park Street. Division Street carries relatively high traffic volumes and the "jogged" intersection could cause driver confusion for drivers unfamiliar with the area. Eliminating the jog between Park Street on the west and Munroe Street on the east and/or reducing the number of driveways in close proximity to the intersection could reduce the collision rate at this location. Several options for improvement are identified in **Appendix F**. With the planned redevelopment of the commercial property on the northeast quadrant, the Town may have an opportunity improve the intersection geometrics at this location.

Transit Network

Cobourg Transit operates two transit routes which provides weekday and weekend service within Cobourg. A weekday and Saturday shuttle service to Port Hope is also available in coordination with Port Hope Transit. Cobourg Transit also provides Wheels and Accessible Taxi services during conventional transit hours. Cobourg Transit has implemented many of the recommendations identified in the 2006 Transit Ridership Growth Plan and 10-year Transit Asset Management Plan, which included such initiatives as; redesign of the route network, providing transport for students, extending service hours throughout the evening and on Saturdays and Sundays and improving transit connections to Port Hope.

The results of these initiatives show that transit ridership increased from approximately 67,000 annual transit riders in 2004, peaking at 80,000 annual transit riders by 2008, reducing slightly to 77,000 annual riders by 2009.

The transit network is currently reviewed and updated on a regular basis in response to requests from existing and potential transit riders. This process should continue and opportunities should be explored in the future to expand transit service into new development areas of the Town.

Active Transportation Network

The Town of Cobourg has a variety of on and off-road active transportation facilities, including boulevard pathways, on-road bicycle lanes, signed-only cycling routes and multi-use trails. Although there is wide variety of cycling and pedestrian facilities provided throughout Cobourg, the existing active transportation network is fragmented and few existing routes connect directly to other dedicated cycling and pedestrian facilities.

The Town has an extensive pedestrian network of sidewalks constructed along the majority of roadways within in the built up areas of the Town. Sidewalks are typically provided on at least one side of all arterial, collector and locals roads throughout the Town. The sidewalk system in the downtown core is also very extensive, with sidewalks provided on nearly every street downtown. However, there are locations where discontinuities within the sidewalk system result in sidewalks ending abruptly along certain streets as well as location where pathways do not connect to the sidewalk network.

C. Summary of Transportation Challenges

Based on the assessment of the existing transportation network, traffic forecasts and analyses of existing and future conditions, the Town of Cobourg is faced with several key transportation challenges:

- Arterial and County roads in Cobourg experience localized capacity constraints under existing conditions and traffic congestion worsen under future conditions.
- Population is projected to increase by 57% from 18,210 persons to 28,500 persons by 2031. Employment is projected to increase by 27% from 12,060 jobs to 15,300 jobs by 2031.
- Additional network capacity is needed to support planned growth, with east-west travel most constrained.
- Transportation requirements are closely related to economic activity. In economic terms, however, transportation is a "diseconomy" factor, meaning that the increase in cost of transportation is directly related to increases in cost of purchasing goods and services. Increased traffic congestion and delays could have potential negative impacts on the Town's economic well-being and competiveness.
- Improved connectivity to Highway 401 is needed to support future population growth and economic activity.
- Multi-use pathways, bicycle facilities and sidewalks need better connectivity to support and encourage alternative modes of transportation.
- Environmental sustainability is becoming increasingly important for residents of Cobourg. A sustainable transportation system that promotes alternative modes of travel and reduces the environmental impacts of users and facilities is desired, along with the provision of services and facilities that support these initiatives (e.g. infrastructure improvements, policies and programs).

D. Transportation Plan

Land Use and Sustainable Design

Implementation of the intensification directives and policies set out in the Provincial Growth Plan are the essential prerequisites for changing travel patterns, modal choices and the environmental conservation that are part of the recommended transportation plan.

Redevelopment and intensification in the high density residential areas, major transit station area, and the main central area (see land use plan in **Exhibit 1**) should be focused towards high density, transit-oriented development that encourages higher transit usage, lower auto dependency, and walking and cycling. In turn, reliance on auto travel and accompanying traffic pressures will be reduced. To maximize the benefits of high density development along major corridors and improve quality of living in low density residential areas, development planning and design principles should follow the Transit-Supportive guidelines prepared by the Province of Ontario. Additionally, the Town's 2006 *Transit Ridership Growth Plan and 10-year Asset Management Plan* provided transit supportive development design guidelines to ensure transit needs are addressed in new growth areas.

The Town should also protect designated employment areas for employment-based development. Attracting jobs to the Town of Cobourg will provide residents with local employment choices that allow for shorter commutes and non-auto commutes.

Travel Demand Management

Travel Demand Management (TDM) refers to various strategies that are used to change travel behaviour, including how, when and where people travel, in order to increase the efficiency of the transportation system and achieve specific planning objectives.[1] Specifically, TDM is often used to encourage sustainable, non-auto modes of transportation.

The implementation and monitoring of TDM programs and strategies need to be supported by allocating funds to alternative (non-auto) travel modes, increased support for TDM programs and changes in land-use planning practices. The implementation of TDM strategies can support the Town in its transportation planning objectives and assist in reduced traffic congestion, road and parking facility cost savings, energy conservation, pollution emissions reduction and improved mobility for non-motorists.
The Town of Cobourg should develop a Transportation Demand Management Master Plan to address the following:

- Development of an effective Town-wide promotion plan that includes the major employers within Cobourg.
- Development of a "TDM culture" for Cobourg, including the consistent application of TDM principles within the Town's administration processes. This should include reviewing and modifying site design guidelines, traffic impact study requirements and site plan approval process to encourage applicants to adopt TDM initiatives.
- Development of TDM supportive parking policy such as paid parking, shared parking and other parking management strategies.

Transit Network

With planned development in the Town and the upcoming opening of the new Cobourg Community Centre, additional transit service is needed. Recommendations for improved service and operational efficiencies include:

- Bus stop at Cobourg Community Centre (CCC). The site plan for the CCC indicates a bus stop area on the east side of the building away from D'Arcy Street that would require buses to circle the perimeter of the building. Any deviation of Route 2 from D'Arcy Street should take into account travel time and the need to maintain timed transfers at the Northumberland Mall and Downtown stops. Providing a bus stop along D'Arcy Street would eliminate the need for the bus to deviate from its existing route at this location. However, if there is no deviation, it must be ensured that transit users can conveniently access the CCC to/from the bus stop.

[1] "What is Transportation Demand Management?", Victoria Transport Policy Institute, 21 Jan. 2011 <http://www.vtpi.org/tdm/tdm12.htm>

- Extended evening service hours to encourage transit usage for evening programs/events at the CCC.
- Initiation of service for new development in the New Amherst and Densmore Road areas by a) extending existing routes, b) redesigning existing routes and schedules or c) introducing low-cost alternative methods of transit service delivery. Alternative methods include feeder services, taxi shuttle service to major bus stop at an activity node, etc.
- As development occurs in Cobourg East, transit service should be initiated as soon as possible to provide new residents with an alternative to auto travel.
- Assess the duplication of service to Northumberland Hills Hospital by Route 1 and the Port Hope Shuttle to determine if the duplication of resources be better allocated elsewhere.
- Encourage transit use by high school students through promotion and ensuring that route schedules are compatible with school hours. The future of transit is dependent on encouraging transit use by students, who are more likely to continue using transit later in life.
- Complete a 5-year update of the Transit Ridership Growth Plan in 2011. A joint study with the Town of Port Hope, similar to the 2006 study, is recommended.

Road Network

Recommendations for intersection and road improvements were made to improve the traffic operations, capacity or to accommodate cycling infrastructure. The road network improvements are summarized in **Table ES-2** and illustrated in **Exhibit ES-1**.

Table ES-2: Summary of Recommended Road Improvements

Location		Improvement [1]	Timing	Estimated Cost
Division Street / Park Street / Munroe Street intersection		Intersection improvements	2011-2016	$900,000
Elgin Street / Burnham Street-William Street intersection (County intersection)		*Monitoring and intersection improvements*	*2011-2016*	$900,000
Elgin Street / Division Street intersection (County intersection)		*Monitoring and intersection improvements*	*2011-2016*	$900,000
Elgin Street / D'Arcy Street intersection (County intersection)		*Traffic signals*[2]	*2011-2016*	$250,000
Elgin Street / Brook Road North intersection (County intersection)		*Traffic signals*[2]	*2021-2031*	$250,000
Elgin Street / Greer Road intersection		Traffic signals[2]	2021-2031	$250,000
Kerr Street / William Street intersection		Traffic signals[2]	2011-2021	$250,000
Kerr Street / Ontario Street intersection		Traffic signals[2]	2011-2021	$250,000
Kerr Street / Division Street intersection		Traffic signals[2]	2011-2021	$250,000
Kerr Street / D'Arcy Street intersection		Traffic signals[2]	2011-2021	$250,000
Kerr Street / Brook Road North intersection		Traffic signals[2]	2021-2031	$250,000
Kerr Street / Workman Road intersection		Traffic signals[2]	2021-2031	$250,000
Nagle Road / Danforth Road intersection		Traffic signals[2]	2021-2031	$250,000
Brook Road North	Elgin Street East to Danforth Road	2021-2031	2021-2031	$3,800,000[5]
Brook Road North (County Road)	*Elgin Street East to King Street East*	*2021-2031*	*2021-2031*	$6,500,000[5]
Burnham Street (County Road)	*DePalma Drive to Elgin Street East*	*Implement designated cycling facility*	*2011-2016*	$700,000
Densmore Road	across Parkview subdivision to Parkview Hills Drive (E)	2-lane collector reconstruction	2011-2016	$3,700,000

Location		Improvement [1]	Timing	Estimated Cost
Densmore Road-Danforth Road	Parkview Hills Drive (E) to Brook Road North extension	2-lane collector reconstruction[4]	2021-2031	$3,500,000
Danforth Road	Brook Road North extension to the east boundary.	2-lane arterial reconstruction[4]	2021-2031	$7,800,000[5]
DePalma Drive	existing terminus to Rogers Road extension	New 2-lane collector extension	2011-2016	$650,000
Elgin Street W-Elgin Street E (County Road)	*Rogers Road toD'Arcy Street*	*Implement designated cycling facility*	*2011-2016*	$4,300,000
Elgin Street East	*D'Arcy Street to Brook Road North*	*4-lane arterial widening*[4]	*2021-2031*	$3,300,000
Elgin Street East	Brook Road North to Workman Road	4-lane arterial widening[4]	2021-2031	$4,800,000
Elgin Street East	Workman Road to the east boundary	2-lane arterial reconstruction[4]	2021-2031	$2,100,000
Jarvis Road	Elgin Street East to Danforth Road.	2-lane arterial reconstruction[4]	2021-2031	$2,500,000
Kerr Street	New Amherst Boulevard to Prince of Wales Drive	New 2-lane arterial extension	2021-2031	$2,500,000
Kerr Street	Westwood Drive to D'Arcy Street	New 2-lane arterial extension	2011-2021	$9,200,000
Kerr Street	D'Arcy Street to Workman's Road	New 2-lane arterial extension	2021-2031	$6,500,000
King Street East	D'Arcy Street to Brook Road North	4-lane arterial widening[4]	2016-2021	$3,400,000
King Street East	Brook Road North to east boundary	4-lane arterial widening[4]	2021-2031	$6,400,000
Nagle Road	Danforth Road to Highway 401.	2-lane arterial reconstruction[4]	2021-2031	$2,100,000
New Amherst Boulevard	existing terminus to future Kerr Street	New 2-lane collector extension	2021-2031	$2,700,000
Rogers Road	Elgin Street West to future DePalma Drive extension	New 2-lane collector extension	2011-2016	$2,200,000
White Street	Connection over Cobourg Creek	New 2-lane structure	2021-2031	$400,000
White Street	Ontario Street to Division Street	New 2-lane extension and realignment	2021-2031	$3,500,000

Location		Improvement [1]	Timing	Estimated Cost
White Street	Burnham Street to Ontario Street	New-2 lane extension[3]	2021-2031	$2,400,000
William Street	Elgin Street West to Burnham Street cul-de-sac	Implement designated cycling facility	2011-2016	$400,000
Workman Road	Elgin Street East to King Street East	2-lane arterial reconstruction	2021-2031	$9,600,000
Burnham Street at rail crossing		Protect for future grade separation	2031+	$3-5,000,000
Ontario Street at rail crossing		Grade separation	As funding permits	$3-5,000,000
D'Arcy Street at rail crossing		Grade separation	As funding permits	$3-5,000,000
Brook Road North at rail crossing		*Grade separation*	*As funding permits*	$3-5,000,000
Willmott Street extension at rail crossing		Protect for future grade separation	2031+	$3-5,000,000
Nagle Road at Highway 401		Protect for future interchange	2031+	$5-10,000,000

Items in *italics* are under the jurisdiction of Northumberland County.

Notes:
(1) Improvements include other related network facilities such as pedestrian and cycling facilities and appropriate street amenities suitable for the classification of roadway being improved. Refer to Appendix C as well as the Town of Cobourg's Urban Design Guidelines
(2) Includes minor intersection improvements
(3) Includes reconstruction of the existing street west of Ontario Street
(4) Includes cycling facilities
(5) Estimated cost is based upon an urban cross section (i.e. with curb and gutter)

Exhibit ES-1: Recommended Road Network

Active Transportation Network: Cycling

In the past, the accommodation of cyclists along roads, specifically the arterial road system, has not been a priority. The Town's Official Plan however, identifies a comprehensive active transportation network (see **Exhibit 3**, Schedule 'B' of the OP), with the proposed cycling network focused primarily on on-road cycling routes along the arterial road network and off-road routes within the Town's Greenland system.

Since the Town's Official Plan policies are to provide for cycling facilities within the road right-of-way, the provision of designated facilities along the existing arterial road network may require extensive reconstruction of some of these roads, making it difficult to implement the OP's active transportation network in the shorter-term due to high costs. The opportunity exists however, to implement a "cycling spine" network utilizing existing cycling facilities and the Town's collector and local road network to provide a network of signed-only cycling routes that could be implemented in the short-term.

A series of short term (within the next 5 years) and long-term (beyond 5 years) goals and initiatives are recommended for the Town of Cobourg as part of an active transportation strategy. Detailed recommendations for the implementation and application of signage, pavement markings, lane widths for bikes, autos and parking, and off-street pathways are provided in **Appendix J**. Furthermore, preliminary recommended initiatives to support the Town's goal to encourage walking, cycling and the implementation of the active transportation network are also provided in **Appendix J**.

Short-Term Improvements – "Cycling Spine Network"

A spine cycling network would consist primarily of bike lanes and signed-only bicycle routes, with connections provided to existing off-road paths and trails and on-road cycling facilities. These two types of cycling facilities are most appropriate in the short-term as major road reconstruction or widening, beyond the installation of appropriate signage and adjustments to pavement markings, are not required. The short-term cycling network priorities are shown in blue in **Exhibit ES-2.**

From a network-connectivity perspective, there are some roadways that may require physical modifications or reconstruction to accommodate cycling and pedestrian facilities, primarily for cycling routes along the arterial road network. Although the main objective of the cycling spine network would be to implement cycling routes that would not require physical road reconstruction or modifications, some roads should be considered short-term priorities and reconstructed when funding becomes available to accommodate cycling facilities. Construction of these links would ensure that a connected, Town-wide cycling network could be implemented in the short-term.

Key corridors that should be considered for reconstruction to accommodate cycling facilities are as follows:

- Elgin Street (Rogers Road to D'Arcy Street): Separate, designated cycling facilities are recommended such as paved shoulders / bike lanes or a boulevard multi-use pathway.

Cycling facilities provided along this corridor should be developed in conjunction with Northumberland County as part of the County-wide cycling plan study.

- Burnham Street-William Street (DePalma Drive to Burnham Street cul-de-sac at Carlisle Street): Designated cycling facilities along this segment would provide a direct north-south connection from the commercial and residential areas north of Elgin Street West to the existing Waterfront Trail route along Burnham Street south of Carlisle Street.
- A pedestrian/cycling connection between the VIA train station and existing/proposed cycling routes along Division Street and George Street.

The off-road network priorities illustrated in **Exhibit ES-2** will not be as easy to implement as the on-road priorities (many of which require only additional signage and pavement marking adjustments). However, as opportunities become available, the Town should consider constructing and/or upgrading these off-road routes to complete the initial cycling spine network.

Mid to Long-Term Improvements (Beyond 2016)

Longer-term cycling initiatives would build upon the initial spine network recommended above. Longer-term initiatives would include the provision of designated cycling facilities along arterial roadways as proposed in the Town's Official Plan when these roads are reconstructed or rehabilitated, upgrading current signed-only cycling routes to designated cycling facilities where appropriate, and extending the cycling network along new roadways in future development areas.

The ultimate, long-term cycling network that should be considered for the Town of Cobourg, including the short-term priorities, is illustrated in **Exhibit ES-2**.

Active Transportation Network: Pedestrian

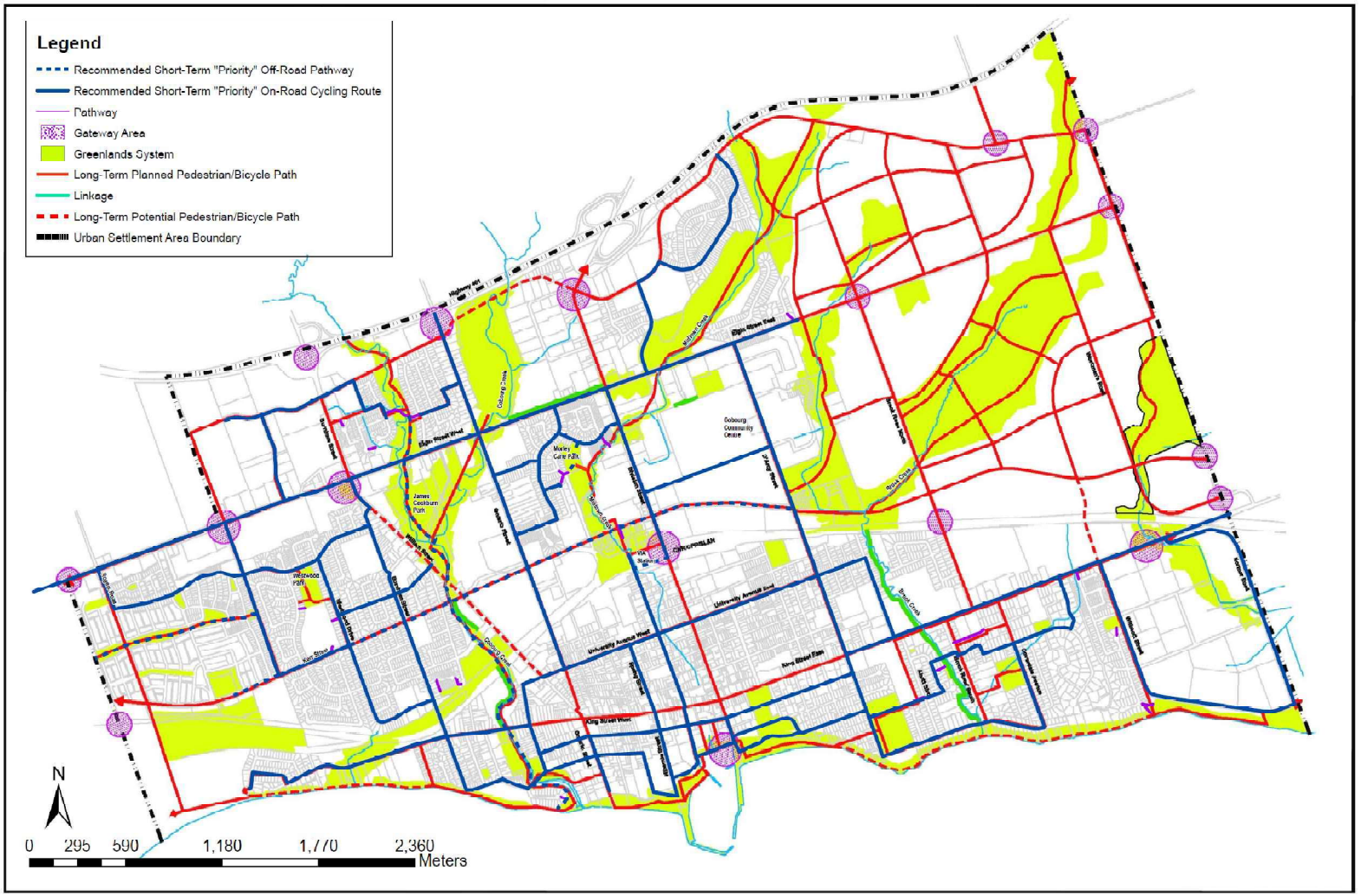
The Town of Cobourg has undertaken many initiatives to improve the Town's pedestrian system, including policy direction developed as part of the Town's Official Plan and *Urban and Landscape Design Guidelines*. It is vital that communities are designed to encourage walking and provide safe and attractive pedestrian facilities. Linking neighbourhoods together through a network of sidewalks and trails will support walking as a viable transportation mode – an essential element to building healthy communities.

The Town should follow the recommendations provided in the Official Plan and *Urban and Landscape Design Guidelines*, ensuring that policies for the provisions of sidewalks along the arterial, collector and local road network are followed so that all discontinuities in the sidewalk system are connected.

Building from the active transportation network illustrated in the Official Plan, the Town should develop its own pedestrian (and cycling) master plan to address the pedestrian and cycling needs for the Town, establish a formalized active transportation network, identify connections with Northumberland County's network, and outline an implementation schedule. The plan should include:

- Recommendations for supportive programs to encourage the participation of walking.
- Identification, evaluation and selection of designated pedestrian routes.
- Development of maintenance and monitoring program.
- Development of implementation and funding strategies.
- Expansion of the pedestrian pathway network within the Town's Greenland system. This should be undertaken in conjunction with a cycling master plan since most pathways are multi-use and used by pedestrians and cyclists.
- Recommendations regarding specific details, derived from the *Urban and Landscape Design Guidelines*, which can be incorporated into future roadworks projects, including curb-cuts, illuminated cross-walks, audible signals, and ramp treatments in an effort to improve accessibility and safety.
- Recommendations regarding specific details, derived from the *Urban and Landscape Design Guidelines*, which can be incorporated into future roadworks projects, including bike lanes, trails, drainage and treatments in an effort to improve sustainability through better storm water management.

Exhibit ES-2: Recommended Active Transportation Network



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1. INTRODUCTION

HDR Corporation (HDR | iTRANS), in association with Horizon Data Services Ltd. (Horizon) and planning Alliance (pA), was retained by the Town of Cobourg to prepare an updated and expanded comprehensive Transportation Master Plan (TMP). This Plan will guide the development of Cobourg's long-term transportation network in a coordinated manner, while addressing existing issues and concerns of Cobourg residents, such as traffic congestion and safety at localized "hot spots."

The TMP will:

- Provide a context for ***how best to utilize transportation resources***.
- Give direction on ***what transportation related policies, services and infrastructure should be implemented*** to address community values, desires and mobility needs in an effective and responsible manner.
- Reflect the ***rural and urban character*** of Cobourg, and its ***high quality of life***.
- Recognize the ***importance of the transportation network to the economic competitiveness*** of the Town.
- Examine how ***changes in community values, emerging trends, environmental considerations, financial constraints and other societal trends*** have changed the public's focus on transportation.
- Provide a framework, from a transportation perspective, for the establishment of an ***economically sustainable and environmentally respectful growth management strategy***, which supports the growth objectives articulated in the Town's Official Plan.

1.1 Master Plan and Environmental Assessment Process

The Cobourg Transportation Master Plan has been conducted in accordance with the master planning process outlined in the Municipal Class Environmental Assessment process (June 2000) as approved by the Minister of the Environment.

The Cobourg TMP study process addresses Phase 1 and Phase 2 of the environmental assessment process. Phase 1 defines the problem or opportunity while Phase 2 identifies alternative solutions, consults with the public and affected agencies, and selects the preferred solution.

Public consultation was designed to:

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

Public consultation in this study has involved:

- Public notices of study commencement and of public open house.
- Notices on the study through the Town of Cobourg web site.
- Public open house held at the Cobourg Fire Hall on October 5, 2010 and presentation to Council was held on May 24, 2011.

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

1.2 Study Organization

The study was coordinated by Barry Thrasher, Deputy Director of Public Works for the Town of Cobourg.

Consultation with representatives of the following departments was undertaken during the study:

- Public Works
- Planning Services
- Engineering (including Transit)
- Parks and Recreation

2. BACKGROUND DOCUMENTS

2.1 Transportation Master Plans

2.1.1 Town of Cobourg Transportation Study, 2002

The September 2002 *Town of Cobourg Transportation Study* is the most recent town-wide transportation study for Cobourg. The study was completed as an update to the 1992 *Town of Cobourg Transportation Study* to reflect new transportation-related issues that had arisen since the completion of the earlier study which required updates to current and long-term plans. Some of these issues were the restructuring of the municipal boundaries, traffic growth, expansion of population and employment growth beyond the central area, developments that precluded and/or potentially restricted transportation infrastructure previously identified, and a desire to increase opportunities for alternative, non-auto modes of travel.

The study provided a series of recommendations with suggested implementation timing up to the 2021 horizon for the related Town administration/staff activities, planning/study requirements, or actual construction. The recommendations were subdivided into the following categories: collision analysis, intersection and operational details, transportation planning, signal control systems, bicycle policies, road jurisdiction, road classification, capital construction funding, and study maintenance/system monitoring.

Some of the key recommendations and timings that were identified in the study are as follows:

RECOMMENDATIONS FROM 2002 TRANSPORTATION PLAN	TIMING
Collision Analysis	
▪ Review of road sections and intersection to confirm potential safety problems.	▪ Annual
▪ Establish database of collision data and confirm critical collision rates.	▪ 1-3 yrs
▪ Review operations of any road section or intersection where a collision has resulted in a fatality.	▪ Annual
▪ Review criteria for determining collision prone intersections.	▪ Every 5 yrs
Intersection And Operational Details	
▪ Implement timing and phasing modifications to various intersections throughout the Town.	▪ On-going
▪ Implement and monitor left-turn storage at various intersections.	▪ Every 3-5 yrs
▪ Plan for future signals at various locations.	▪ Immediate to 2011
▪ Establish signalized and unsignalized intersection and entrance guidelines	▪ 1-3 yrs
Transportation Planning	
Elgin Street	
▪ Request that County protect for and implement a four basic lane facility with left turn lanes on Elgin Street between Burnham Street and Division Street	▪ 2021
▪ Initiate feasibility study to provide left turn lanes at Ontario Street.	▪ 2006

RECOMMENDATIONS FROM 2002 TRANSPORTATION PLAN	TIMING
Kerr Street ■ Initiate the planning of an extension between Westwood Drive and Brook Road ■ Initiate EA for Kerr Street ■ Implementation of the new section between Westwood Drive and Division Street ■ Implementation of the new section between Division Street and Brook Road	 ■ 2003 ■ 2006 ■ 2011 ■ 2021
White Street ■ Detailed design for extension between Burnham Street and Ontario Street. ■ Construction of extension between Burnham Street and Ontario Street ■ Connection of White Street to Densmore Road ■ Initiate planning of White Street extension from Ontario Street to west of Division Street	 ■ 2006 ■ 2011 ■ 2003 ■ 2011
William Street ■ Implement centre turn lane south of Burnham Street.	 ■ 2006
Secondary Plan Area 'B' ■ Implement the extensions of Rogers Road northerly and DePalma Drive westerly as development of the Secondary Plan Area "B" proceeds and/or capacity constraints are realized on Burnham Street / Elgin Street.	 ■ 2011 – 2021, or as required
New Amherst Community ■ Implement associated infrastructure to accommodate traffic and support land access as development proceeds.	 ■ As required
Rail Grade Separation ■ Given the cost of grade separations and special government funding often required, it was assumed that only one road/rail grade separation will be constructed by 2021. ■ One potential location of the grade separation was identified as D'Arcy Street. ■ The second potential location was identified as Brook Road North which would have potential for cost-sharing with the County and/or Province.	 ■ 2021
Highway 401 Interchange ■ Initiate study to identify if the Nagle Road location is the most appropriate location for a new interchange to serve future development in Cobourg.	 ■ 2011
Signal Control Systems	
■ Establish signal coordination in sections where justified. ■ Establish a system that will allow monitoring and upload/download capabilities.	■ 1-5 yrs ■ Long-term
Bicycle Policies	
Reconfirm / refine the bicycle network plan for the Town and implement where technically feasible and financially viable.	■ 2006
Road Jurisdictions	
Road rationalization review of county roads within the Town.	■ 2001
Road Classifications	
■ Ensure that the road classification system is consistent with the long term lane and right-of-way requirements for arterials, collector and local roads.	■ 2006
Capital Construction Funding	
■ Review 10-year Capital Road Construction Program ■ Plan for increases in capital costs and additional expenses associated with	■ Immediate ■ On-going

RECOMMENDATIONS FROM 2002 TRANSPORTATION PLAN	TIMING
staff/project costs.	
▪ Update funding needs as part of Road Needs Study activities.	▪ 1-3 yrs
▪ Review funding alternatives and establish plan for long-term capital expenditure.	▪ 1-3 yrs
Study Maintenance / System Monitoring	
▪ Review major findings regarding long-term infrastructure requirements.	▪ 10 yrs
▪ Review operational and policy items.	▪ Every 3-5 yrs
▪ Update traffic data regularly.	▪ Annual or as required
▪ Review growth rates regularly.	▪ Every 3-5 yrs
▪ Undertake traffic studies in association with major new developments, planning assignment and/or reconstruction projects.	▪ As required
▪ Monitor traffic operations following installation of any recommended improvement.	▪ As required

A number of road network improvements that were identified in the 2002 Plan have not been constructed. These include:

- Kerr Street extension from Burnham Street to Brook Road. The Kerr Street extension from Westwood Drive to D'Arcy Street is currently proposed and the Environmental Assessment for two sections (Westwood Drive to William Street and Division Street to D'Arcy Street) has been completed.
- Road network within the New Amherst Community, located south of Elgin Street West between Rogers Road and Lovshin Street. This community will continue to develop over the next 20 years and new roads will be constructed as development proceeds.
- Rogers Road extension north of Elgin Street. This extension will service future development of the northern lands of the Town. Rogers Road is a boundary road with Hamilton Township and will require joint approvals.
- White Street extension between Burnham Street and Ontario Street, as well as further extension to Division Street.

2.1.2 Town of Cobourg Transportation Study, 1992

The 1992 *Town of Cobourg Transportation Study* was completed to evaluate existing (1992) conditions and to determine future transportation system requirements for the Town through to the year 2011. The study indicated that as of 1991, a number of arterial and collector roads were experiencing traffic congestion and other proposed developments in the Town would result in increased traffic volumes and traffic congestion. Transportation improvements that were either implemented or recommended in the earlier (1978) Cobourg Transportation Study (refer to **Section 2.1.3**) were no longer sufficient or viable.

Improvements to the transportation network identified in the 1992 TMP study included the provision of a new east-west arterial road between King Street and Elgin Streets, roughly parallel to the CN and CP rail corridor, the reconstruction of Division Street and Workman Road to a 2-lane arterial, improvements to Rogers Road and a new east-west collector road between Burnham Street and Division Street.

The study focused primarily on transportation improvements to reduce traffic congestion. The study indicated that transit ridership is relatively low, with less than 10 passengers per hour using transit services during the PM peak hour. The study also identified the need for pedestrian and bicycle facilities and indicated that all future roadway links be examined with the provision of separated or integrated pedestrian and cycling facilities in mind. The results of the 1992 study were used as a basis for developing a future pedestrian and cycling plan.

2.1.3 Town of Cobourg Transportation Study, 1978

The 1978 *Town of Cobourg Transportation Study* identified the methodology and results for collecting existing (1977) traffic volumes at major intersections and along screenlines serving the Town, traffic zones and districts, zonal population and employment figures and a functional classification for the roads serving the Town.

The study showed that the peak periods where traffic volumes were typically at their highest range between 7:30 to 9:00 AM and 3:45 to 5:15 PM. The study also concluded that the Town of Cobourg had reached its limits for residential expansion within the older residential core area, with new development occurring outside of the older core area of the Town.

2.2 Town of Cobourg Official Plan

The most recent Town of Cobourg Official Plan (OP) was completed in May 2010. The Plan identifies the vision, principles and objectives for guiding and managing future population and employment growth in the Town through to the year 2031. The Plan's vision is based upon the fundamental principle of enhancing the Town's position as a strong, liveable and healthy community that provides a range of opportunities to work, play and shop. The growth and land use vision fundamental to the OP has been documented in the Schedule 'A' of the Official Plan illustrated in **Exhibit 1.**

Relevant transportation-related goals and objectives under the principles of the Cobourg Official Plan include:

- Offering a balance of transportation choices that reduce reliance on a single mode (auto) and promote transit, cycling, walking and other active transportation modes;
- Recognizing the necessity for the creation of streetscapes which are attractive and comfortable for pedestrian as well as vehicular movement,
- Recognizing the importance of integrating transportation system planning and infrastructure investments with land use planning. Strengthening the relationship between land use pattern, density and mix of uses with the ability to minimize length of vehicle trips and support for public transit and active transportation modes.
- An emphasis on sustainable, accessible, compact and transit-supportive development. Promotion of mixed-use built form along main streets, to enhance Cobourg's position as a vibrant, environmentally-aware urban centre.
- Provision of a transportation system which will support multiple modes of travel including transit, cycling and pedestrian movement, as well as goods movements.

- Encouraging compact, mixed use development and appropriately scaled building forms accessible through an interconnected street network to foster compact, walkable neighbourhoods Encouraging active transportation by promoting the priority of pedestrians, cyclists and transit over vehicles through the design of streets and boulevards

Schedule 'E' Transportation Plan of the Town's Official Plan is illustrated in **Exhibit 2.** Schedule 'E' identifies proposed arterial and collector roads serving the Town, new potential pedestrian and cycling routes, potential grade-separated rail crossings and transit routes. Land use and transportation network schedules which are referenced in Schedule 'E' are included in **Appendix B**.

Chapter 6 of the Official Plan outlines specific planning objectives for the Road Network, Transit Service, Pedestrian and Bicycle Circulation, Rail Service, Parking and Travel Demand Management for the Town.

Exhibit 1: Official Plan Schedule 'A' Land Use Plan

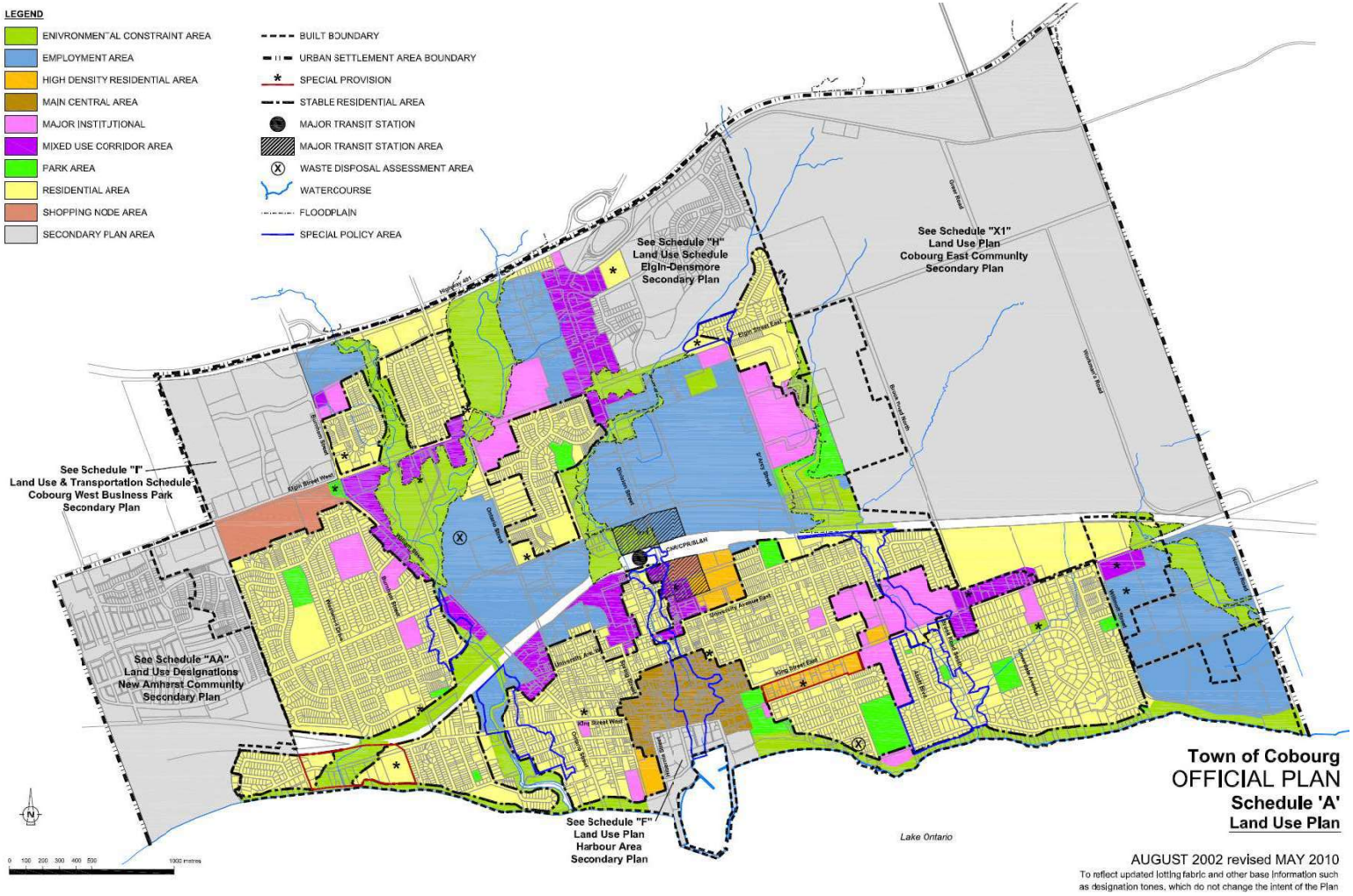
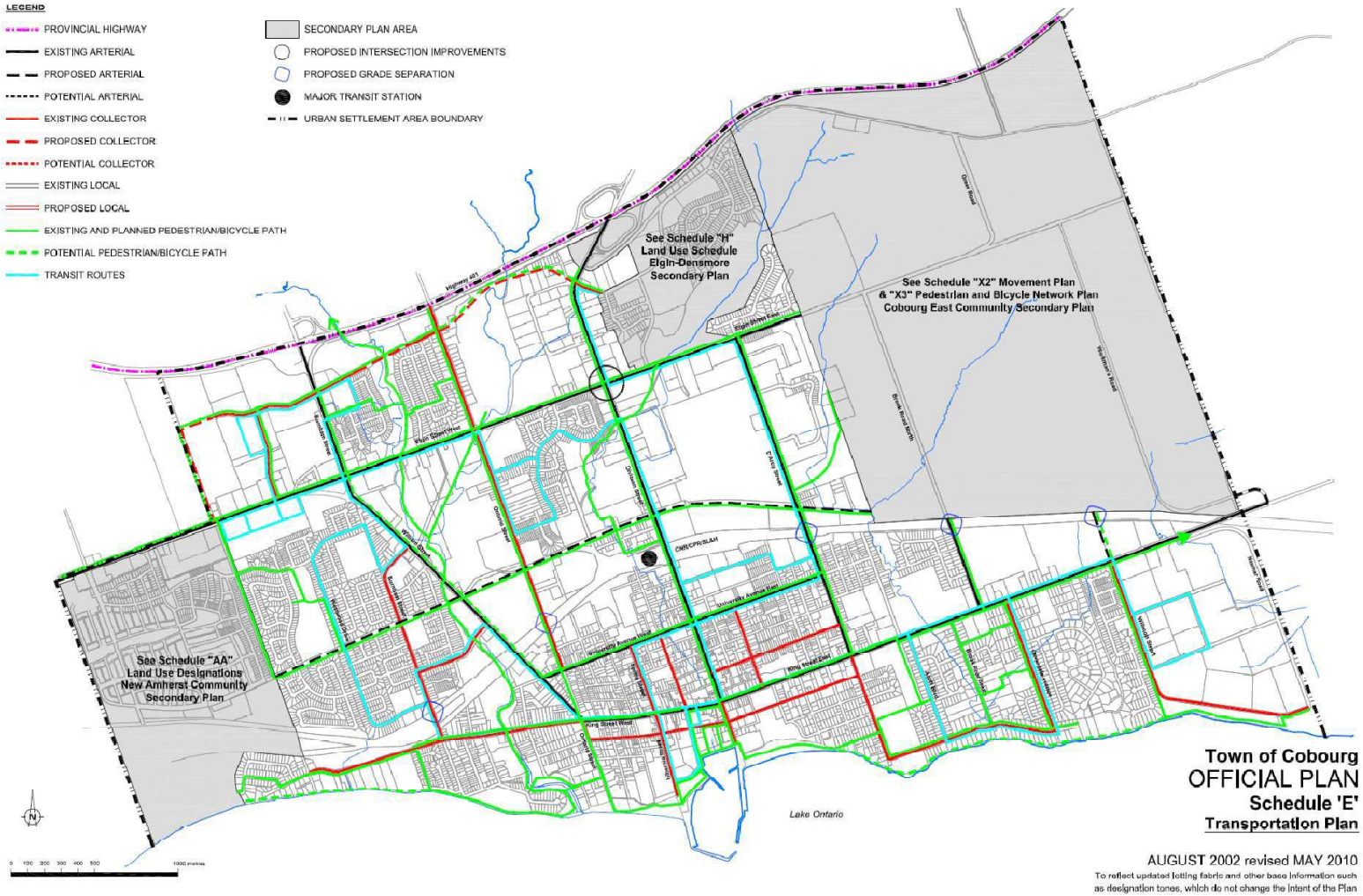


Exhibit 2: Official Plan Schedule 'E' Transportation Plan



The Town's Official Plan provides specific policy direction for pedestrian and cycling circulation in Cobourg. Relevant policies are as follows:

- Provision of sidewalks on both sides of all arterial and collector roads and one side of all local roads at a minimum, with the exception of cul-de-sacs and streets with a limited number of homes on them,
- Accommodating bicycle movement within the road right-of-way,
- Encouraging the development of a link-node system which will connect major pedestrian and bicycle destinations such as schools, parks and commercial areas with a system of pedestrian and bicycle paths,
- Designing the link-node system in a method that minimizes conflicts between other modes of transportation and pedestrian and cycling routes,
- Giving consideration to the inclusion of bicycle lanes in addition to those which form part of the link-node system, in road right-of-ways for new arterial and collector roads, and the addition of facilities for bicycles on existing arterial and collector roads where it is financially feasible to do so.

Schedule "B" Greenland System and Gateway Areas from the Town's Official Plan, illustrated in **Exhibit 3**, shows the existing and proposed pedestrian and bicycle pathway network for the Town.

Exhibit 3: Official Plan Schedule 'B' Pedestrian / Bicycle Path

2.3 Urban and Landscape Design Guidelines

The Town of Cobourg *Urban and Landscape Design Guidelines*, September 2010, is a comprehensive tool developed to guide the Town in the review and assessment of development proposals in both the private and public realm, to ensure that they promote the highest quality of urban design within the context of the Town. The Guidelines include recommendations that represent a flexible range of design principles.

Key transportation-related design principles identified in the plan include:

- Encourage Compact, Mixed Use Development: The interconnected street network will enhance mobility and foster compact, walkable neighbourhoods.
- Promote Active Transportation: Active transportation will promote the priority of pedestrians, cyclists and transit over vehicles through the design of streets and their boulevards.
- Promote Sustainable Development: The Town will actively encourage compact development. Compact development will be encouraged in the design of vacant or underutilized parcels of land. A mixture of uses and appropriately scaled building forms will contribute to active streetscape and increased densities in the community.
- Create and Celebrate Public Spaces: Continuity, connectivity and public spaces within and between these areas, neighbourhoods and employment areas will be a key design consideration.
- Promote Healthy Lifestyles and Physical, Mental and Spiritual Well-being: Compact mixed used development encourages alternative modes of transportation and a well connected Greenlands System affords year-round recreational opportunities, promoting a healthy and active lifestyle.
- A commitment to Universal Design principles to ensure individuals of varying ability are able to access public areas throughout the Town of Cobourg.

The document provides guidelines and treatments for the Town's street network, including sample cross-sections for Arterial Roads, Collector Roads and Local Roads, unique "Special Streets" and "Green Streets," parking (including on-street, surface and structured-parking) sidewalks and crosswalks. Examples of these sample road cross-sections can also be found in **Appendix C** of this document. The Urban and Landscape Design Guidelines also provide design guidelines for trail design, transit street furniture and transit shelters.

With respect to street cross-sections, the guidelines provide eight sample cross-sections which incorporate vehicular travel lanes, on-street parking, on-street bicycle lanes, shared travel lanes, off-street multi-use trails, sidewalks and furnishing/landscaping zones. These cross-sections are appropriate for the road classification system and typical right-of-way in the Town and should be incorporated in all future road works.

With respect to cycling, the Guidelines provide recommendations for incorporating cycling facilities into the Town's road network and bicycle parking. Guidelines provided in the document include:

- The provision of on-street bicycle lanes or off-peak shared bicycle / parking lanes on arterial roads, with pedestrian sidewalks along both sides.
- The provision of multi-use pathways on both sides of arterial roads adjacent to the Greenlands System.
- The provision of bike lanes on 4-lane collector roads, pedestrian sidewalks along both sides.
- The provision of pedestrian sidewalks on at least one side of all local roads except if they are dead-end or interior roads in a housing development.
- Providing preferential bicycle parking at regular intervals throughout mixed use corridors, commercial and employment areas, as well as indoor parking for high-density residential buildings.

The document also acknowledges the importance of the design of streets and streetscapes in the promotion of active transportation. It states that blocks should be limited to a length of generally less than 250 metres to facilitate active transportation, and adds that collector roads are to have a higher level of design than local roads through the integration of boulevards that include wide sidewalks on both sides, consistent paving, lighting and public art where appropriate.

2.4 County of Northumberland and its Member Municipalities – Growth Management Strategy (December 2009)

The *Growth Management Strategy* (GMS) was developed by the County with input from the Member Municipalities to allocate population and employment projections and derive timing for land use forecast prepared by the Province of Ontario in its Growth Plan.

The study indicated that a total of 11,837 new persons and 3,005 new jobs were forecasted for Northumberland County by the 2031 horizon year. Population allocations are based on an 80/20 urban/rural split with approximately 33.5%, or 3,975 population growth occurring within the Town of Cobourg. Of the 3,005 jobs forecasted for Northumberland County, 1,008 of those jobs were located in the Town of Cobourg.

Future policy directions identified in the GMS include:

- The majority of new growth should be accommodated on lands within urban areas that are or can be readily serviced by existing infrastructure, and that intensification within built-up serviced areas be given priority,
- Of the six urban municipalities in the County, Cobourg accounts for almost 42% of the urban allocation of population,
- No additional employment lands for Cobourg are necessary, however it is recommended that conversions of high quality, serviced employment lands be discouraged,
- Any expansions to existing Settlement Area boundaries shall only be considered in the context of a future Municipal Comprehensive Review in conformity with the Growth Plan and Provincial Policy Statement.

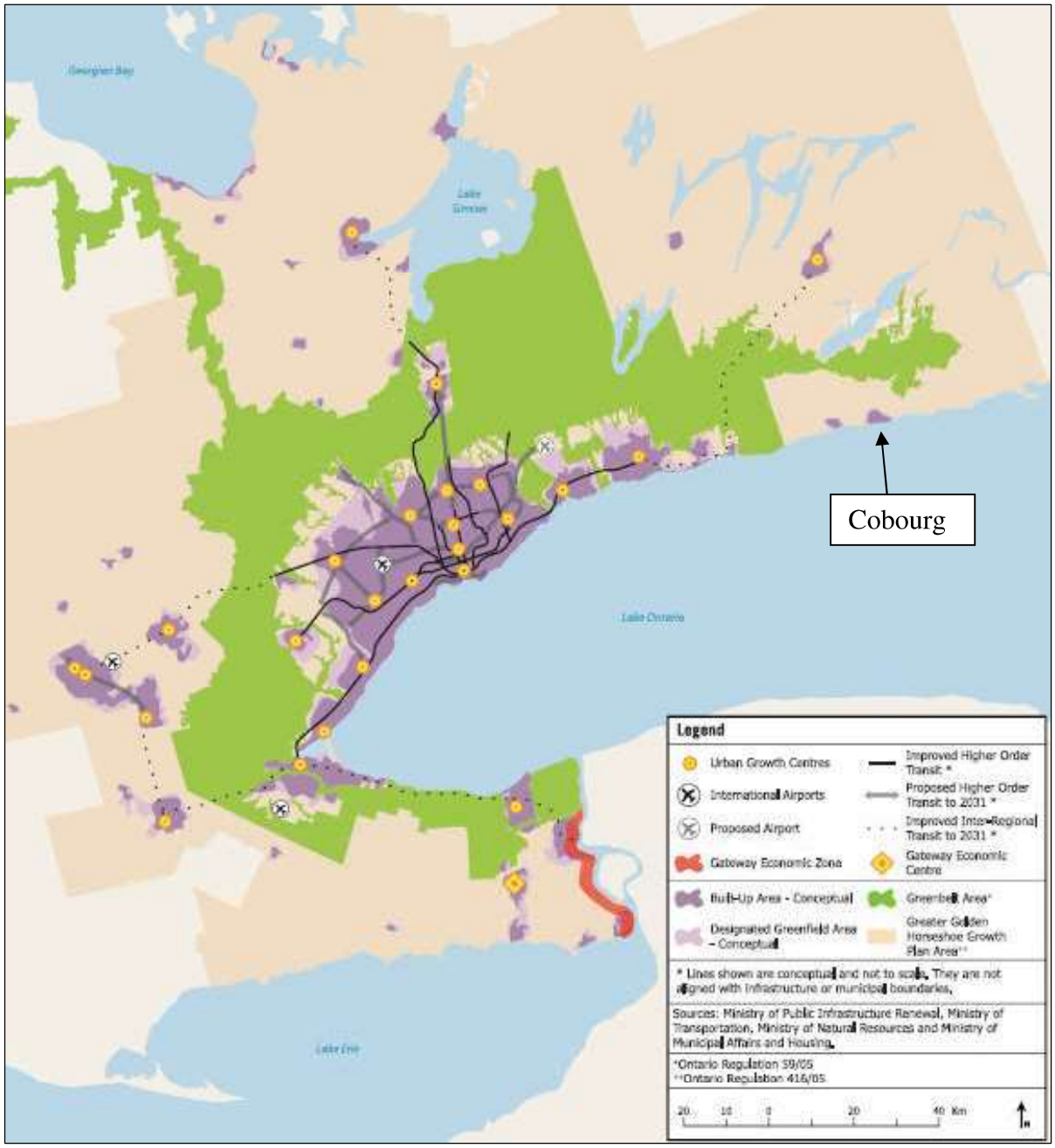
It should be noted however that the Town may exceed the population and employment forecasts identified in the GMS if the conditions identified in the Town's Amended Official Plan are met. Section 3.2.3 viii of the amended official plan indicates that where a proposed development will result in a situation where the Town's population allocation is exceeded, specific criteria must be met in order for the development to be approved. The criteria are as follows:

- The lands are located adjacent to an existing or approved development area,
- The lands are within the Urban Settlement Area Boundary,
- The infrastructure required to service the development has sufficient capacity and is available, and no additional costs shall be incurred by the Town to service the lands,
- A range of housing types and/or employment uses is proposed,
- The density of the development meets the minimum density target established in the Plan, and
- The development assists in maximizing the use of existing infrastructure and community facilities, or will provide community facilities for an area which has a deficit.

2.5 Provincial Growth Plan

The Provincial Growth Plan is a planning platform developed and legislated by the Ontario government and used to plan for growth and development across Ontario. The Town of Cobourg is included in *The Growth Plan for the Greater Golden Horseshoe.* The 25-year Growth Plan aims to revitalize downtowns; create complete communities that offer more options for living, working, learning, shopping and playing; curb urban sprawl, protect farmland and green spaces; and reduce traffic gridlock by improving access to a greater range of transportation options.

Exhibit 4: Growth Plan for the Greater Golden Horseshoe



Source: Place to Grow, Schedule 5 – Moving People – Transit

3. EXISTING TRANSPORTATION CONDITIONS

3.1 Road Network

The Town of Cobourg Official Plan provides guidelines on the role and function of road facilities throughout the Town. The road system in the Town is classified in four categories i) arterials and County roads, ii) collector roads, iii) local roads, and iv) laneways.

i) Arterial roads are high capacity transportation roads, typically 2 to 4 lanes wide, have posted speed limits that typically range between 50km/h and 80 km/h, and serve as major gateways into the Town of Cobourg. Examples of existing arterial roads within the Town include D'Arcy Street, Division Street and William Street.

County Roads typically have the same characteristics as arterial roads in terms of posted speed limits and traffic volumes, but are under the jurisdiction of Northumberland County. Elgin Street, Brook Road and Burnham Street north of Elgin Street are County Roads.

ii) Collector Roads are medium capacity roadways that are typically 2 to 4 lanes wide with posted speed limits typically between 40km/h and 50km/h. They connect neighbourhoods, provide connections within neighbourhoods and provide access to the Downtown and Greenlands System. Examples of collector roads include Ontario Street, Densmore Road, Albert Street and Queen Street.

iii) Local Roads are lower capacity and lower speed roadways that are generally 2 lanes wide and typically have posted speed limits of 40km/h. Local roads are located within specific communities and neighbourhoods within the Town and "feed" into the collectors and/or arterial roadways serving that neighbourhood. Examples of local roads include various smaller residential streets such as Parkview Hills Drive, Hamilton Avenue and Chipping Park Boulevard.

iv) Laneways are narrow 2-lane localized roadways that act as interior roads providing access to various developments such as housing developments, commercial buildings or institutions located alongside an arterial, collector or local road. They are low-volume road with posted speed limits ranging between 15 and 40 km/h. In many cases, laneways do not have specific street names.

Table 1 summarizes the typical number of lanes and right-of-ways for the four road classes.

Table 1: Road Classification and Right-of-Way

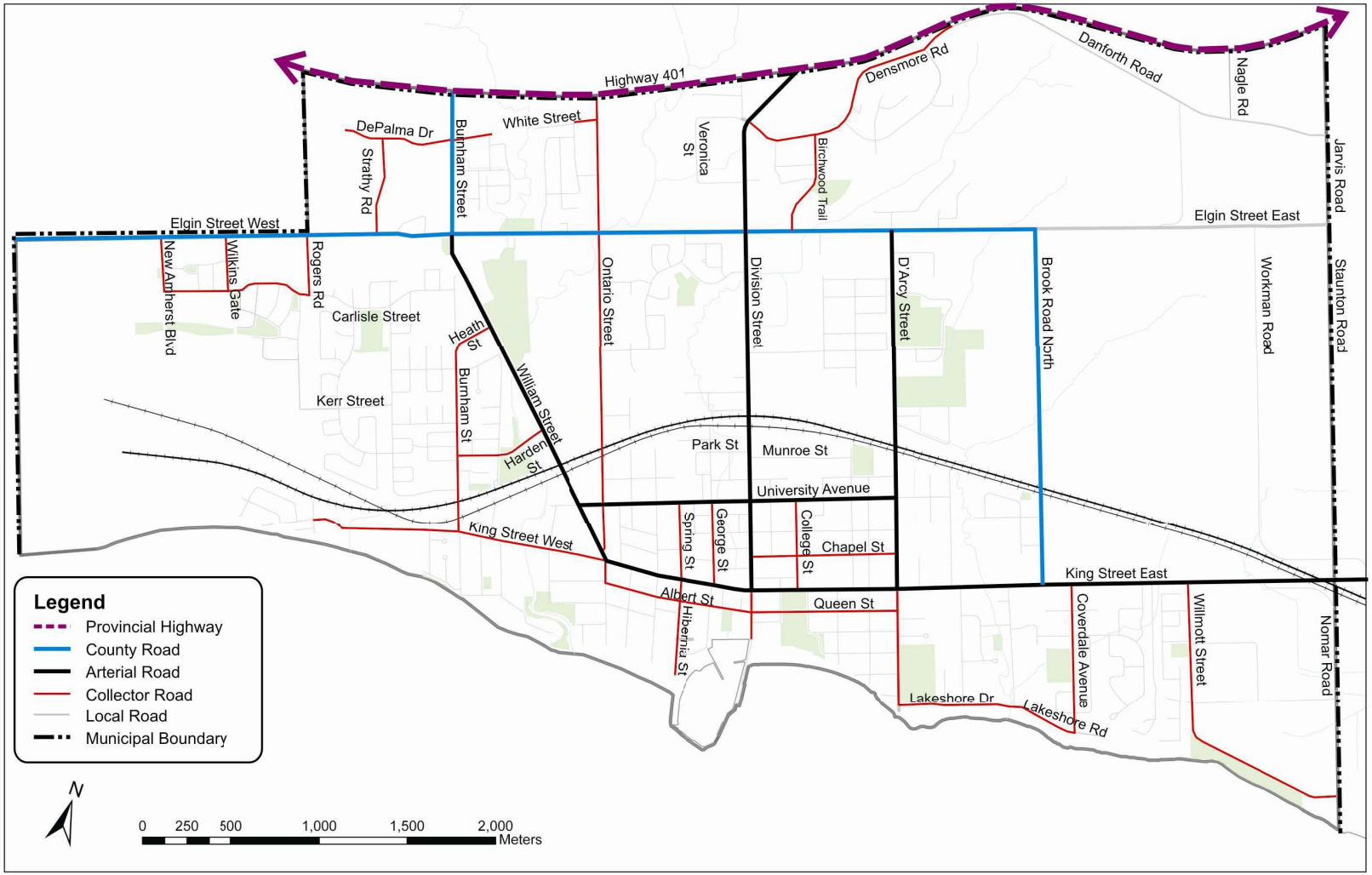
Classification	Number of Lanes	Typical Right-of-Way
Arterials and County Roads	2 – 4	26 – 36 m
Collector	2 – 4	20 – 30 m
Local	2	20 m
Laneway	2	7.5 m

The classification and jurisdiction of the existing road network in the Town of Cobourg are summarized in **Table 2** and illustrated in **Exhibit 5**.

Table 2: Classification and Jurisdiction of Road Network

Classification	Roadway	Jurisdiction
Freeway	Highway 401	Ministry of Transportation
County Road	Burnham Street (north of Elgin Street West)	Northumberland County
	Elgin Street West	
	Elgin Street East (Division Street to Brook Road North)	
	Brook Road North	
Arterial	D'Arcy Street (Elgin Street East to King Street East)	Town of Cobourg
	Division Street	
	King Street East	
	King Street West (William Street to Division Street)	
	University Avenue East and West	
	William Street	
Collector	Albert Street	Town of Cobourg
	Burnham Street (Heath Street to King Street West)	
	Chapel Street	
	College Street	
	Coverdale Avenue	
	D'Arcy Street (King Street East to Lakeshore Drive)	
	Densmore Road	
	DePalma Drive	
	Harden Street	
	Heath Street	
	Hibernia Street	
	King Street West (Tracey Road to William Street)	
	Lakeshore Drive	
	Ontario Street	
	Queen Street	
	Spring Street	
	Strathy Road	
	White Street West	
	Willmott Street	
Local	All other roads	Town of Cobourg

Exhibit 5: Existing Road Network



3.1.1 Traffic Volumes

At the commencement of the study in September 2010, intersection Turning Movement Counts (TMC) and Automated Traffic Recorder (ATR) surveys were conducted at 34 study intersections and 36 link segments by Horizon Data Services Ltd. The count locations and survey dates are provided in **Appendix E**. Average weekday daily traffic volumes are shown in **Exhibit 6**.

Due to construction on D'Arcy Street from Elgin Street to north of University Avenue during the traffic counting program in September 2010, counts could not be collected at the Elgin Street / D'Arcy Street intersection and the counts that were collected at the D'Arcy Street / University Avenue are likely influenced by the construction activities. For the analysis, the traffic volumes at Elgin Street / D'Arcy Street are estimated based on previous traffic counts that have been factored up based on growth at the adjacent intersection.

3.1.2 Existing Traffic Conditions Level of Service Definitions

Traffic conditions are measured by what is known as a "Level of Service" (LOS) which is a measure used to determine the effectiveness of the operations of a transportation system. The transportation LOS system uses a lettering system ranging from "A" to "F" which is used to identify the typical amount of delay a motorist would experience when traveling along a roadway or through an intersection. LOS "A" provides the best level of service with the least amount of delay, whereas LOS "F" refers to the worst level of service or the highest amount of delay.

Table 3 outlines the average amount of delay experienced for each LOS category.

Table 3: Level of Service (LOS) Definitions

LOS	Delay (seconds)	
	Signalized Intersections	**Unsignalized Intersections**
A	< 10 s	< 10 s
B	10 – 20 s	10 – 15 s
C	20 – 35 s	15 – 25 s
D	35 – 55 s	25 – 35 s
E	55 – 80 s	35 – 50 s
F	> 80 s	> 50 s

3.1.3 Capacity Constraints

Intersection operations analysis provides a detailed account of operational conditions. Signalized and unsignalized intersections were analysed according to the ***2000 Highway Capacity Manual***, using the Synchro (version 7) traffic simulation software.
The operations at both signalized and unsignalized intersections are measured in two ways:

- the level of service (LOS) based on the average control delay per vehicle which is indicated by a letter, and
- the capacity of the intersection movements, which is based on a volume to capacity ratio (v/c ratio). For example, a v/c ratio of 0.60 indicates that the intersection is operating at 60% of its roadway capacity.

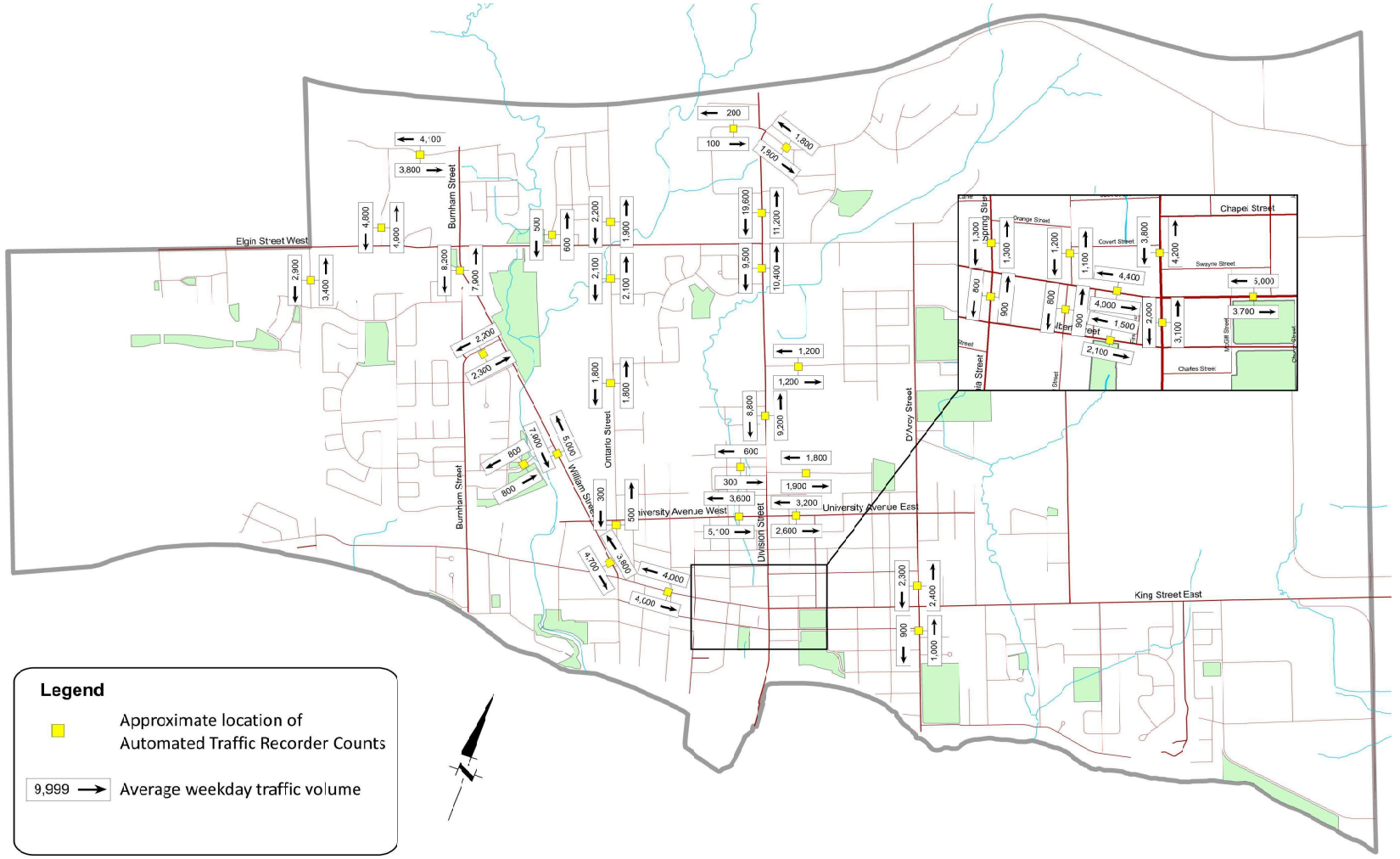
Both measures are used to indicate the operating conditions at an intersection. The LOS and v/c ratio are not directly related. For example, an intersection can have a low v/c ratio, due to low volumes, and poor LOS due to delays incurred by long cycle lengths.

LOS A and B describe operations with low delay, with good to very good progression, and typically shorter cycle lengths. LOS C describes operations with fair progression and longer cycle lengths. At LOS D, the influence of congestion is noticeable and longer delays are a result of unfavourable progression, longer cycle lengths and higher v/c ratios. LOS E and F have increasingly high delays and are considered unacceptable to most drivers.

The traffic operations analyses assumed the signal timings from the *Signal Timing Review* that was completed for the Town in 2007 which provided optimized and coordinated signal timings on the Elgin Street corridor along with intersections north of Elgin Street. South of Elgin Street, where signal timing plans are not available, traffic signals were optimized based on a cycle length of 60s, with the exception of intersections operating with a split phase where a cycle length of 80s was used.

For a planning study such as a Transportation Master Plan, the use of estimated signal timings are appropriate since the intended purpose of the traffic analyses at the Master Planning level are to identify areas of constraints. A more detailed set of signal timing plans would be more appropriate for a detailed assessment of site-specific traffic operations, typically undertaken as part of a traffic-impact study. This level of detail is typically not assumed at the transportation master planning level.

Exhibit 6: Average Weekday Daily Traffic Volumes



The existing typical AM and PM peak hour traffic operations at the study intersections are summarized in **Table 4** and **Table 5** for signalized and unsignalized intersections, respectively. The AM peak hour typically occurs between 8AM and 9AM, while the PM peak hour typically occurs between 4PM and 5PM. Generally, intersections in Cobourg operate with LOS C or better and with acceptable v/c ratios.

These results illustrate typical traffic operations and do not account for any seasonal variability that may occur at select times throughout the year, such as during long-weekends, or periods of extreme weather such as a snow storm for example. It was noted by Town of Cobourg staff however, that some intersections due experience higher traffic volumes during summer months, specifically near the waterfront.

At a few of the major intersections, specific movements are constrained and experience higher delays during the peak hour. These movements include:

Elgin Street / Burnham Street
In the AM peak hour, the northbound left-turn operates with LOS D but with v/c ratio of 0.45. In the PM peak hour, both the northbound and southbound approaches on Burnham Street operate with LOS D with v/c ratios ranging from 0.48 to 0.66. The signal timings favour the higher east-west traffic volumes on Elgin Street.

Elgin Street / Division Street
In the AM, the eastbound approach operates with LOS D. In the PM, both the eastbound and westbound approaches operate with LOS D. The signal timings favour the higher north-south traffic volumes on Division Street.

Elgin Street / Strathy Road
In the PM, the westbound right operates at LOS D with a v/c ratio of 0.13 and the southbound approach operates at LOS E with low v/c ratios ranging from 0.11 to 0.43.

Elgin Street / Ontario Street
In the AM and PM peak hours, the northbound and southbound Ontario Street approaches operate at LOS D. The signal timings give priority to Elgin Street which results in higher delays for traffic on Ontario Street.

DePalma Drive / Strathy Road
Although there are very low volumes at this intersection, the longer cycle lengths (which are coordinated with adjacent intersections) result in higher than expected delays resulting in an overall LOS C in both the AM and PM peak hours.

DePalma Drive / Burnham Street
In the AM and PM peak hours, the low traffic volumes on eastbound and westbound approaches experience LOS D as the signal timings give priority to north-south traffic on Burnham Street.

Division Street / Densmore Road -Veronica Street
In the AM peak hour, the low traffic volumes on the eastbound approach experience LOS D due to a short green phase. In the PM peak hour, both eastbound and westbound approaches experience LOS D as signal timings favour the higher traffic volumes on Division Street.

Division Street / Park Street-Munroe Street
Due to the jogged alignment Park Street and Munroe Street, the eastbound and westbound approaches each has its own green phase ("split" phase) and east-west pedestrians also have their own phase. This reduces the capacity of the intersection and results in higher delays. In the AM peak hour, the northbound approach operates with LOS D and a v/c ratio of 0.90. In the PM peak hour, the northbound approach operates with LOS E and a v/c ratio of 0.99. The intersection is at capacity.

Table 4: Existing Signalized Intersection Operations

Intersection	2010 Existing Traffic Conditions			
	AM Peak Hour (8AM – 9AM)		PM Peak Hour (4PM – 5PM)	
	LOS	v/c	LOS	v/c
Elgin Street / New Amherst Boulevard	A	0.25	A	0.36
Elgin Street / Rogers Road	A	0.19	A	0.34
Elgin Street / Strathy Road	B	0.20	C	0.36
Elgin Street / Burnham Street	C	0.41	C	0.51
Elgin Street / Frei Street	A	0.23	A	0.32
Elgin Street / Ontario Street	B	0.28	B	0.38
Elgin Street / Division Street	C	0.54	C	0.60
Elgin Street / Birchwood Trail	A	0.20	A	0.16
DePalma Drive / Strathy Road	C	0.13	C	0.19
Wal-Mart Driveway / Strathy Road	A	0.08	A	0.17
DePalma Drive / Burnham Street	B	0.34	C	0.44
Heath Street / William Street	B	0.39	B	0.34
Harden Street / William Street	B	0.20	B	0.22
University Avenue / William Street	B	0.34	B	0.39
University Avenue / Ontario Street	B	0.34	B	0.39
University Avenue / George Street	A	0.33	B	0.38
King Street / William Street	C	0.39	C	0.39
King Street / Spring Street	B	0.27	B	0.26
King Street / George Street	A	0.20	A	0.26
King Street / Division Street	B	0.35	B	0.43
King Street / D'Arcy Street	B	0.51	B	0.41
King Street / Brook Road North	B	0.42	A	0.36
Albert Street / Hibernia Street	B	0.14	A	0.15
Albert Street / Third Street	A	0.11	A	0.13
Albert Street / Division Street	B	0.16	B	0.24
Division Street / Densmore Road-Veronica Street	B	0.38	B	0.34
Division Street / Veronica Street-Patterson Street	A	0.30	A	0.30

Intersection	2010 Existing Traffic Conditions			
	AM Peak Hour (8AM – 9AM)		PM Peak Hour (4PM – 5PM)	
	LOS	v/c	LOS	v/c
Division Street / Ewart Street	A	0.30	A	0.35
Division Street / Park Street-Munroe Street	D	0.90	E	0.99
Division Street / University Avenue	B	0.57	B	0.54

Table 5: Existing Unsignalized Intersection Operations

Intersection	2010 Existing Traffic Conditions			
	AM Peak Hour (8AM – 9AM)		PM Peak Hour (4PM – 5PM)	
	LOS	v/c	LOS	v/c
Elgin Street / D'Arcy Street * (All-way Stop)				
Eastbound Left-Through	B	0.32	B	0.40
Eastbound Right-turn	B	0.38	A	0.23
Westbound Left-Through-Right	B	0.45	B	0.41
Northbound Left-Through-Right	B	0.41	B	0.44
Southbound Left-Through-Right	A	0.08	A	0.05
University Avenue / Spring Street				
Eastbound Left-Through-Right	A	<0.01	A	<0.01
Westbound Left-turn	A	0.07	A	0.03
Westbound Through-Right	A	0.19	A	0.24
Northbound Left-turn	C	0.26	C	0.30
Northbound Through-Right	B	0.11	B	0.10
Southbound Left-Through-Right	B	<0.01	B	0.03
University Avenue / D'Arcy Street				
Eastbound Left-Through-Right	C	0.36	B	0.29
Westbound Left-Through-Right	C	0.34	B	0.17
Northbound Left-turn	A	0.11	A	0.10
Southbound Left-turn	A	0.03	A	0.02
Albert Street / Ontario Street				
Eastbound Left-Through-Right	B	0.04	B	0.05
Westbound Left-Through-Right	B	0.15	B	0.18
Northbound Left-turn	A	<0.01	A	<0.01
Southbound Left-turn	A	0.07	A	0.06

* Estimated volumes. Traffic counts could not be collected due to construction in Fall 2010.

3.2 Collision History Review

As part of the scope of this TMP, the consultant reviewed the collision history of five collision "hot spots" identified by Town staff with input from Cobourg Police Services. The purpose of the collision analysis was to identify trends in collision history and determine whether the "hot spots" intersections are subject to operational issues. This collision analysis should not be taken for a road safety audit, a more in-depth assessment of issues and solutions. For the purposes of the TMP, only intersections under the jurisdiction of the Town were investigated.

The 3-year collision history, 2007 to 2009 inclusive, were collected and reviewed for the following five intersections:

2. Division Street / Munroe Street-Park Street
3. Division Street / University Avenue
4. William Street / Heath Street
5. University Avenue / D'Arcy Street
6. King Street / George Street

The detailed review of collision history at these five intersections is presented in **Appendix F**.

The collision history review did not identify any serious safety issues at any of the "hot spot" locations. A common element at each of these intersections is the presence of driveways, commercial or residential, in close proximity to the intersection. It is recommended that the Town adopting access management guidelines to prevent future situations where closely-spaced driveways reduce queue storage potential at the intersection results blocked driveways and driver frustration.

Division Street / Munroe Street-Park Street
The intersection with the highest frequency of collisions is the jogged intersection at Division Street / Munroe Street-Park Street. Division Street carries relatively high traffic volumes and the "jogged" intersection could cause driver confusion for drivers unfamiliar with the area. Eliminating the jog between Park Street on the west and Munroe Street on the east and/or reducing the number of driveways in close proximity to the intersection could reduce the collision rate at this location. Several options for improvement are identified in **Appendix F**. With the planned redevelopment of the commercial property on the northeast quadrant, the Town may have an opportunity improve the intersection geometrics at this location.

3.3 Transit Network

In 2006, the Town of Cobourg and Municipality of Port Hope jointly undertook a study to prepare a *Transit Ridership Growth Plan and 10-year Transit Asset Management Plan*. The report was prepared to qualify both municipalities to receive 2 cent per litre dedicated gas tax funding from the Province of Ontario, a funding source that remains in place today. The Plan

addressed the operation of conventional transit (Cobourg Transit) and specialized transit (Wheels).

The main conclusions and recommendations from that study were:

- A redesigned route network for local service was needed
- An agreement to transport students would greatly benefit the transit system
- The transit link between Cobourg and Port Hope should be enhanced
- Evening and Saturday service needs to be expanded
- Sunday service should be added
- Service hours for those who require door to door accessible service (i.e. Wheels para-transit service) should eventually be expanded to meet the service hours of conventional transit
- A more coordinated strategy with Port Hope would better accommodate growing specialized transit needs
- Given the high cost of conventional transit buses, bus purchases (capital component) should be debentured to give service expansion priority (service enhancements)

Many of the recommendations *Transit Ridership Growth Plan and 10-year Asset Management Plan* have been implemented.
At the time of the study, existing service (2005) consisted of the following:

- Weekday: 7:20am – 6:50pm
- Saturday: 8:20am – 6:50pm
- Sunday: No service
- Holidays: No service

By 2011, Cobourg Transit has increased weekday and Saturday service hours, as well as adding Sunday service and shuttle service to Port Hope:

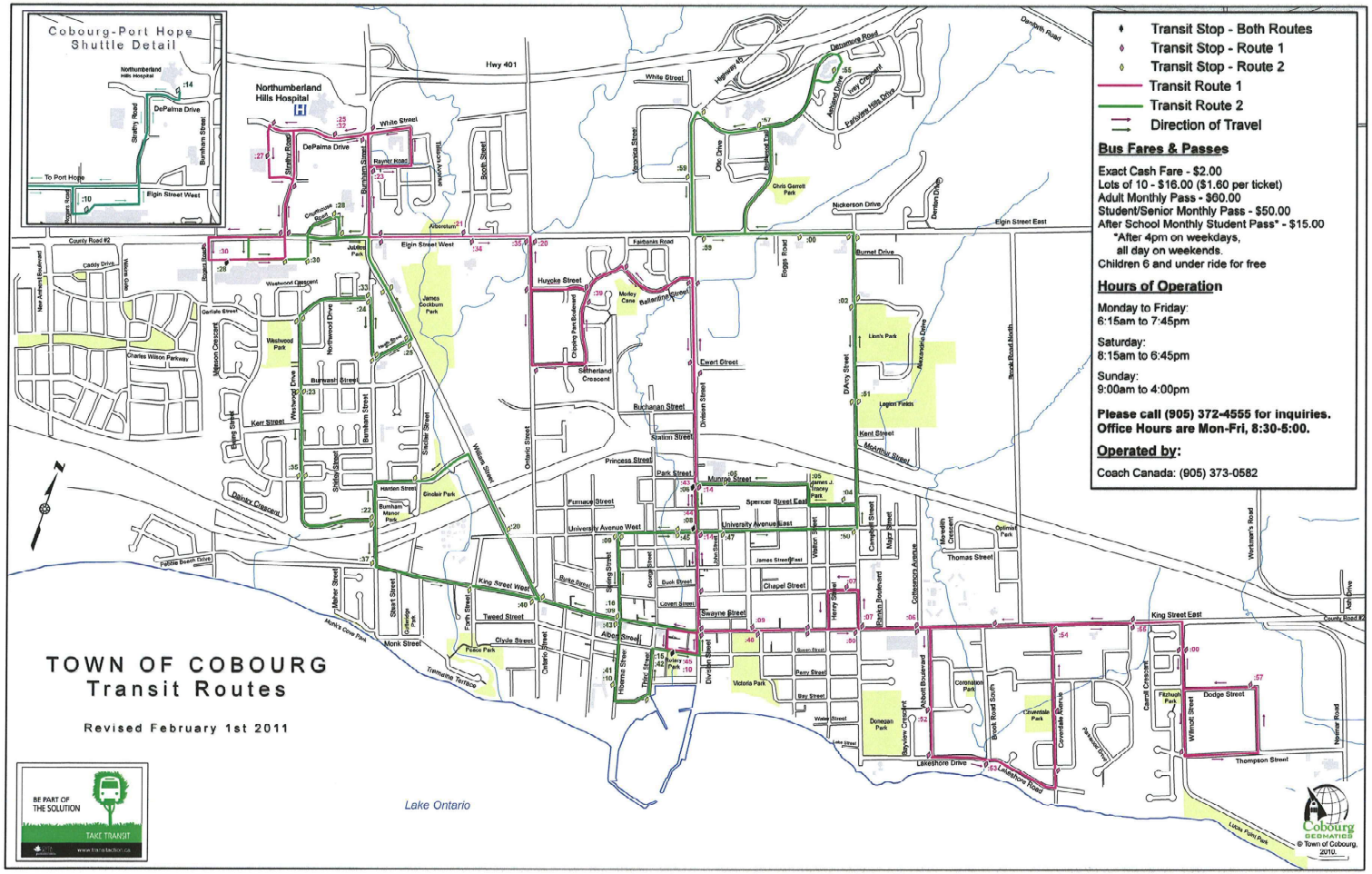
- Weekday: 6:15 AM – 7:45 PM
- Saturday: 8:15 AM – 6:45 PM
- Sunday: 9:00 AM to 4:00 PM
- Holidays: No service on Easter, Christmas, and New Years Day. All other holidays, service hours are the same as Northumberland Mall.
- Port Hope shuttle
  - Weekday: 6:10 AM to 10 PM
  - Saturday 8:00 AM to 5:00 PM
- Wheels and Accessible Taxi Service: same hours as conventional transit

The current fare structure follows the recommended fare structure from 2006:

- $ 2.00 Exact Cash Fare
- $ 1.60 Per Ticket in lots of 10
- $60.00 Adult Monthly Pass
- $50.00 Student/ Senior Monthly Pass
- $15.00 After School Monthly Study Pass

The current Cobourg Transit routes are illustrated in **Exhibit 7**.

Exhibit 7: Cobourg Transit Routes (as of February 2011)



The results of these initiatives show that transit ridership increased from approximately 67,000 annual transit riders in 2004, peaking at 80,000 annual transit riders by 2008, reducing slightly to 77,000 annual riders by 2009.

3.4 Active Transportation Network

The Town of Cobourg has a variety of on and off-road active transportation facilities, including boulevard pathways, on-road bicycle lanes, signed-only cycling routes and multi-use trails and an extensive sidewalk system.

A map of Cobourg's existing active transportation network, including existing cycling facilities, pathways and pedestrian sidewalks is illustrated in **Exhibit 8.** Examples of the Town's existing cycling and pedestrian facilities are illustrated in **Exhibit 9**.

3.4.1 Cycling Network

There are various designated cycling routes and facilities provided within the Town of Cobourg.

The primary east-west active transportation route serving the Town is the Waterfront Trail. The Waterfront Trail runs east-west across the Town, entering Cobourg along Elgin Street in the west, proceeding south to Downtown Cobourg, continuing in an easterly direction through development areas along Lake Ontario and continuing to the east along King Street. The trail consists of a combination of:

- signed-only bike routes running primarily along low-volume local and collector roads
- selective segments running along arterial roads where paved shoulders are provided, and
- paved and unpaved off-road pathways.

Boulevard pathways are provided along segments of D'Arcy Street, Division Street, DePalma Drive and Strathy Road; while on-road bicycle lanes are provided along Ontario Street, Rogers Road as well as D'Arcy Street between Elgin and Kent Street's. A series of short, local off-road pathways are also scattered throughout the Town providing connections between local streets and neighbourhood parks. Pedestrian sidewalks are provided on at least one side of most arterial, collector and local roads with urban cross-sections throughout the Town.

Although there is wide variety of cycling and pedestrian facilities provided throughout Cobourg, the existing active transportation network is fragmented and few existing routes connect directly to other dedicated cycling and pedestrian facilities. For example, there is no designated cycling route that connects cycling facilities along Ontario Street, Division Street or D'Arcy Street. Pathways along Strathy Road and DePalma Drive are also not connected to other cycling facilities in the Town. In addition, none of these routes extends through downtown Cobourg, with the exception of the signed-only Waterfront Trail bike route.

In addition, the following intersections have also been identified as "hot spots" for cyclists by the Sustainable Cobourg committee, where cycling through these locations can be difficult and potentially dangerous:

- Elgin Street and Strathy Road,
- Elgin Street and William Street,
- Elgin Street and Ontario Street,
- Elgin Street and Division Street,
- William Street and University Avenue,
- William Street and King Street West, and
- Division Street at VIA Station driveway.

The locations of these intersections are also illustrated in **Exhibit 8.**

In late 2010, the Northumberland County Cycling Steering Committee was established to prepare a County Cycling Master Plan which will include integrated routes through Cobourg.

Exhibit 8: Town of Cobourg Existing Active Transportation Network

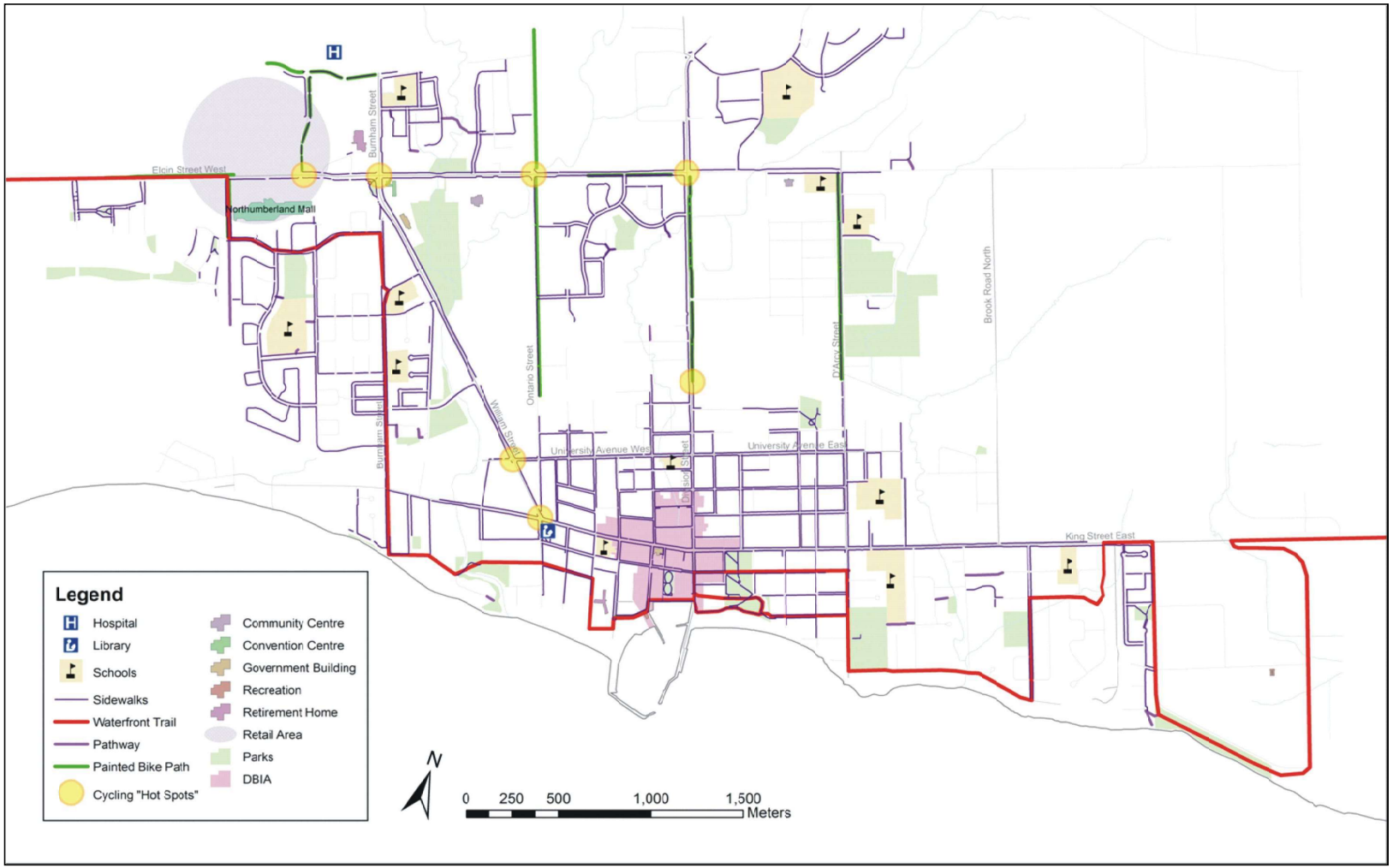


Exhibit 9: Examples of Existing Pedestrian and Cycling Facilities

A paved-shoulder, signed cycling route on Elgin Street that is part of the Waterfront Trail.

On-Road bike lane on Rogers Road.

Two-way boulevard pathway on DePalma Drive.

Paved pathway connecting a local neighbourhood street to valleyland and open space.

3.4.2 Pedestrian Network

The Town of Cobourg has an extensive pedestrian network of sidewalks constructed along the majority of roadways within in the built up areas of the Town. Sidewalks are typically provided on at least one side of all arterial, collector and locals roads throughout the Town. The sidewalk system in the downtown core is also very extensive, with sidewalks provided on nearly every street downtown.

Numerous short off-road pathways, as illustrated in the fourth photo in **Exhibit 9**, provide pedestrian (and cycling) connectivity between local neighbourhoods and adjacent parklands. However, there are also some locations where these pathways do not connect to the sidewalk network. The Town also lacks a connected system of off-road pathways and trails through the Greenland system. There are also locations where discontinuities within the sidewalk system result in sidewalks ending abruptly along certain streets.

The elimination of the network discontinuities should help promote walking and cycling. A discussion on other recommended initiatives for improving the Town's pedestrian network are detailed in **Section 6.6**.

4. FUTURE TRANSPORTATION CONDITIONS

4.1 Land Use

The land use projections that form the basis of the TMP forecasts are consistent with the Town's 2006 Development Charge (DC) study and the 2011 DC study, which is currently underway. The population and employment forecasts for Cobourg are summarized in **Table 6**.

Table 6: Town Population and Employment Targets

	Existing	2016	2021	2031
Population	18,210	22,360	24,532	28,500
Employment	12,060	12,069	13,218	15,300

To estimate the future travel demands, the Town's Planning Department provided the consultant with development projections, as of September 2010, for current, proposed, and potential developments within the Town for the 5, 10 and 20 year timeframe. The list of development projections changes on a monthly basis as new applications are received, projects are complete and development plans change. The list of developments used for the TMP represents the best estimate of future growth in Cobourg at the time. The detailed development table and map are included in **Appendix G**. A summary of the projected development is shown in **Table 7**.

Table 7: Summary of Development Projections

	5-year (2016)	10-year (2021)	20-year (2031)	Total New Development
Non-residential (s.f.)	392,832[a]	110,775	145,870[b]	649,477
New Jobs	695	196	258	1,150
Residential (single-detached)	315	155	0	470
Residential (semis, towns, multiples)	386	600	2,862	3,848
New Population	1,629	1,552	5,237	8,419

a. Includes retirement home.
b. Plus 70-room hotel
Assumptions: 565 s.f./employee as per 2006 DC study; 2.93 persons per low density household and 1.83 persons per medium density household as per Cobourg East study.

The development projections based on approved, planned and potential development applications do not provide sufficient population and employment mass to meet the growth targets for the Town as shown in **Table 6**. We estimate that an additional 1,900 in population (or approximately 735 residential units) and 2,100 in employment are required to meet the 2031 targets of 28,500 and 15,300 for population and employment, respectively. It is anticipated that the majority of this growth will occur in Cobourg East where, at this time, few development proposals have been submitted.

For the purpose of the long-term (2031) traffic analysis, we have added the 1,900 population to Cobourg East. On the employment side, 50% of the additional 2,100 jobs were added to Cobourg East area while the remaining 50% were added to other employment areas within Cobourg. Based on these numbers, Cobourg East is approximately 30% built out by 2031 in order to meet the Town's population and employment targets.

4.2 Future Traffic Conditions

Future traffic demand was estimated using trip rates from the Institute of Transportation Engineers (ITE) *Trip Generation (8th Edition)* publication. Trips were assigned to the road network based on location of the future developments, as indicated in the map of development projections shown **Appendix G,** and are consistent with existing traffic patterns.

4.2.1 Intersection Operations

For the near-term horizon (2016), intersection operations analysis was conducted using Synchro. The resulting 2016 operations at the study intersections are summarized in **Table 8** and **Table 9** for signalized and unsignalized intersections, respectively. For reference, the 2010 conditions are also presented.

As with the existing conditions assessment, construction on D'Arcy Street from Elgin Street to north of University Avenue during the traffic counting program in September 2010 meant that counts could not be collected at the Elgin Street / D'Arcy Street intersection and the counts at D'Arcy Street / University Avenue are likely influenced by the construction. Following completion of the D'Arcy Street construction and the opening of the Cobourg Community Centre, a traffic assessment of these two intersections is recommended using new traffic counts, following the completion of this study.

As expected, the study intersections have higher delays and v/c ratios with the projected development growth; however, the intersections generally operate with LOS C or better, with three exceptions.

Elgin Street / Division Street
In the PM peak hour, the overall intersection operates with LOS D. Each approach has at least one turning movement with LOS D.

DePalma Drive / Strathy Road
In the PM peak hour, the overall intersection operates with LOS D due to the longer cycle length (which is coordinated with adjacent intersections). The relatively low traffic volumes result in an overall v/c ratio of only 0.19.

Division Street / Park Street-Munroe Street
This jogged intersection is at capacity under existing conditions and continued traffic growth will exacerbate the problem resulting in an overall LOS of D and E in the AM and PM peak

hours, respectively. In both peak hours, the northbound approach is projected to operate with LOS F and v/c ratios in excess of 1.0.

Table 8: Existing and 2016 Future Intersection Operations

Intersection	2010				2016			
	AM Peak Hour (8AM to 9AM)		PM Peak Hour (4PM to 5PM)		AM Peak Hour (8AM – 9AM)		PM Peak Hour (4PM – 5PM)	
	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c
Elgin Street / New Amherst Blvd	A	0.25	A	0.36	A	0.30	A	0.42
Elgin Street / Rogers Road	A	0.19	A	0.34	A	0.25	A	0.46
Elgin Street / Strathy Road	B	0.20	C	0.36	B	0.27	C	0.44
Elgin Street / Burnham Street	C	0.41	C	0.51	C	0.45	C	0.72
Elgin Street / Frei Street	A	0.23	A	0.32	A	0.26	A	0.36
Elgin Street / Ontario Street	B	0.28	B	0.38	B	0.33	B	0.43
Elgin Street / Division Street	C	0.54	C	0.60	C	0.66	D	0.78
Elgin Street / Birchwood Trail	A	0.20	A	0.16	A	0.25	A	0.22
DePalma Drive / Strathy Road	C	0.13	C	0.19	C	0.13	D	0.19
Wal-Mart Dwy / Strathy Road	A	0.08	A	0.17	A	0.11	A	0.23
DePalma Drive / Burnham Street	B	0.34	C	0.44	B	0.34	C	0.50
Heath Street / William Street	B	0.39	B	0.34	B	0.42	B	0.39
Harden Street / William Street	B	0.20	B	0.22	A	0.23	B	0.27
University Ave / William Street	B	0.34	B	0.39	B	0.36	B	0.46
University Ave / Ontario Street	B	0.34	B	0.39	B	0.42	B	0.48
University Ave / George Street	A	0.33	B	0.38	A	0.41	B	0.49
King Street / William Street	C	0.39	C	0.39	C	0.43	C	0.46
King Street / Spring Street	B	0.27	B	0.26	B	0.31	B	0.32
King Street / George Street	A	0.20	A	0.26	A	0.23	A	0.31
King Street / Division Street	B	0.35	B	0.43	B	0.43	B	0.54
King Street / D'Arcy Street	B	0.51	B	0.41	B	0.64	B	0.66
King Street / Brook Road North	B	0.42	A	0.36	B	0.48	B	0.49
Albert Street / Hibernia Street	B	0.14	A	0.15	B	0.14	A	0.16
Albert Street / Third Street	A	0.11	A	0.13	A	0.11	A	0.15
Albert Street / Division Street	B	0.16	B	0.24	B	0.17	B	0.25
Division Street / Densmore Road -Veronica Street	B	0.38	B	0.34	B	0.45	B	0.42
Division Street / Veronica Street -Patterson Street	A	0.30	A	0.30	A	0.34	A	0.33
Division Street / Ewart Street	A	0.30	A	0.35	A	0.33	A	0.39
Division Street / Park Street - Munroe Street	C	0.53	C	0.56	D	0.63	E	0.68
Division Street / University Ave	B	0.57	B	0.54	B	0.68	B	0.70

Table 9: Existing and 2016 Future Unsignalized Intersection Operations

Intersection	2010				2016			
	AM Peak Hour (8AM – 9AM)		PM Peak Hour (4PM – 5PM)		AM Peak Hour (8AM – 9PM)		PM Peak Hour (4PM – 5PM)	
	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c
Elgin Street / D'Arcy Street (All-way Stop)								
Eastbound Left-Through	B	0.32	B	0.40	C	0.40	B	0.51
Eastbound Right-turn	B	0.38	A	0.23	C	0.64	B	0.50
Westbound Left-Through-Right	B	0.45	B	0.41	C	0.57	C	0.57
Northbound Left-Through-Right	B	0.41	B	0.44	C	0.71	D	0.79
Southbound Left-Through-Right	A	0.08	A	0.05	B	0.09	B	0.06
University Avenue / Spring Street								
Eastbound Left-Through-Right	A	<0.01	A	<0.01	A	0.01	A	<0.00
Westbound Left-turn	A	0.07	A	0.03	A	0.08	A	0.04
Westbound Through-Right	A	0.19	A	0.24	A	0.24	A	0.30
Northbound Left-turn	C	0.26	C	0.30	D	0.34	E	0.43
Northbound Through-Right	B	0.11	B	0.10	B	0.13	B	0.12
Southbound Left-Through-Right	B	<0.01	B	0.03	C	0.03	C	0.08
University Avenue / D'Arcy Street								
Eastbound Left-Through-Right	C	0.36	B	0.29	C	0.47	C	0.49
Westbound Left-Through-Right	C	0.34	B	0.17	C	0.45	C	0.34
Northbound Left-turn	A	0.11	A	0.10	A	0.13	A	0.15
Southbound Left-turn	A	0.03	A	0.02	A	0.03	A	0.02
Albert Street / Ontario Street								
Eastbound Left-Through-Right	B	0.04	B	0.05	B	0.06	B	0.08
Westbound Left-Through-Right	B	0.15	B	0.18	B	0.17	B	0.22
Northbound Left-turn	A	<0.01	A	<0.01	A	0.01	A	0.01
Southbound Left-turn	A	0.07	A	0.06	A	0.08	A	0.07

4.2.2 Screenline Analysis

For longer-term horizons, the road network was assessed on a screenline basis. A screenline is an imaginary line along a geographical feature such as a road or railway line used to measure traffic demand and capacity on road section to assist in identifying constraints and problem areas. Screenlines were defined along the major arterials within Cobourg as illustrated in **Exhibit 10**. Screenline levels of service are measured in terms of volume to capacity ratios.

Based on this assumption, the link capacities used for the different roadway-types in Cobourg were as follows:

Arterial and County Roads	700 veh/hr/lane (except in the central area where some arterial road function more like a collector road due to a high frequency driveways, including private residential driveways – 550 veh/hr/lane was used for University Avenue, King Street, Division Street and D'Arcy Street in the central area)
Collector	500 veh/hr/lane
Local	400 veh/hr/lane

The future year traffic volumes were assessed against the existing network capacity to identify when and where capacity improvements are needed. The screenline analyses for the future horizon years are summarized in **Table 10**. A detailed summary for each screenline by road link is provided in **Appendix H**.

The following corridors and screenlines were identified as constrained (v/c ratio >0.70) based on observed traffic counts and forecasted traffic volumes, and are locations throughout the Town that should be prioritized for improvements for the respective horizon years:

2016 Horizon
- The South of Elgin Screenline is approaching capacity.
- Localized constraints occur at the following locations:
  - Elgin Street at Burnham Street
  - University Avenue between Ontario Street and Division Street
  - King Street between Ontario Street and east of Brook Road North
  - Munroe Street at Division Street
  - Division Street near Elgin Street and between University Avenue and King Street

2021 Horizon
- The South of Elgin Screenline is approaching capacity.
- Localized constraints are expected on the following roadways:
  - Elgin Street at Burnham Street, Ontario Street and Division Street
  - University Avenue between Ontario Street and Division Street is at practical capacity
  - King Street between Ontario Street and Division Street is congested, with the section between Division Street and Brook Road North at practical capacity
  - Munroe Street at Division Street
  - Division Street at Elgin Street, the rail corridor, University Avenue and King Street from north of Elgin Street to King Street
  - D'Arcy Street from University Avenue to King Street

2031 Horizon
- All east-west screenlines approach or exceed capacity
- The north-south screenlines on both sides of Elgin Street approach capacity.
- Congestion is expected to occur on the major arterial roads.

- Volumes greatly exceed capacity in Cobourg East on Elgin Street East and King Street East.

It is noted that the above traffic constraints are based on the existing road network, without any major network improvements such as Kerr Street. A portion of the traffic related to the developments in Cobourg East would disperse onto the new collector and local road system that will be built as development occurs which are not included in this assessment.

Exhibit 10: Screenline Locations

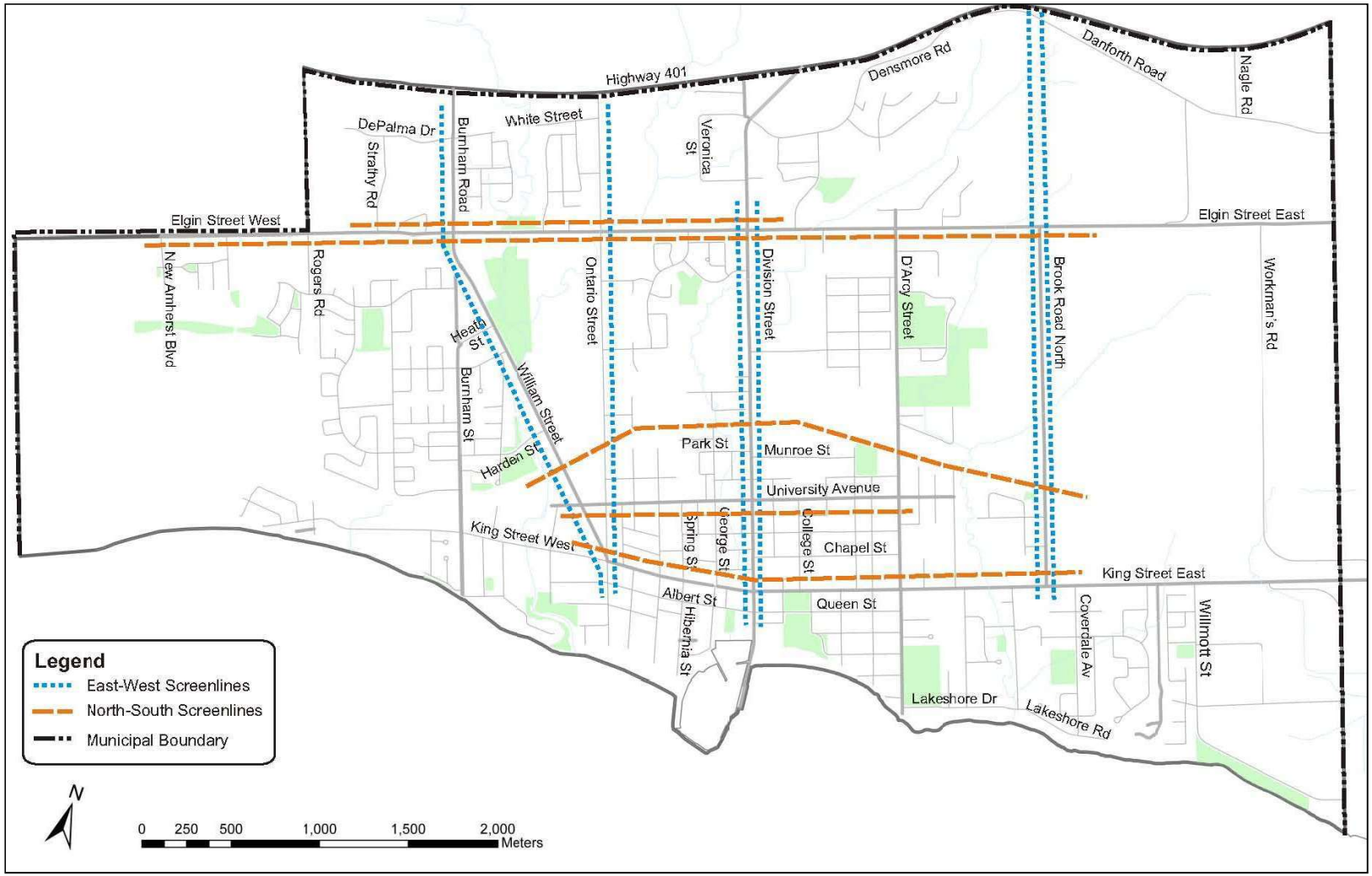


Table 10: Screenline Analysis Summary

Screenline	Dir.	Lanes per Direction	Total Capacity	2010 Existing Conditions				2016 Conditions				2021 Conditions				2031 Conditions			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	V/C	Volume	V/C	Volume	V/C	Volume	V/C	Volume	V/C	Volume	V/C	Volume	V/C	Volume	V/C
East-West Screenlines																			
West of Burnham-William	EB	9	4,500	1,191	0.26	1,739	0.39	1,480	0.33	2,130	0.47	1,589	0.35	2,458	0.55	2,391	0.53	3,352	**0.74**
West of Burnham-William	WB	9	4,500	1,275	0.28	1,567	0.35	1,500	0.33	2,014	0.45	1,701	0.38	2,299	0.51	2,379	0.53	3,392	**0.75**
East of Ontario Street	EB	5	3,000	1,343	0.45	1,450	0.48	1,575	0.53	1,758	0.59	1,688	0.56	2,027	0.68	2,293	**0.76**	2,902	**0.97**
East of Ontario Street	WB	5	3,000	1,237	0.41	1,588	0.53	1,461	0.49	1,944	0.65	1,689	0.56	2,175	**0.73**	2,280	**0.76**	2,946	**0.98**
West of Division Street	EB	6	3,400	1,283	0.38	1,769	0.52	1,510	0.44	2,066	0.61	1,622	0.48	2,337	0.69	2,230	0.66	3,171	**0.93**
West of Division Street	WB	6	3,400	1,217	0.36	1,461	0.43	1,445	0.43	1,837	0.54	1,707	0.50	2,088	0.61	2,483	**0.73**	2,961	**0.87**
East of Division Street	EB	8	4,300	1,541	0.36	1,655	0.38	1,911	0.44	2,144	0.50	2,086	0.49	2,503	0.58	3,013	**0.70**	3,796	**0.88**
East of Division Street	WB	8	4,300	1,660	0.39	1,817	0.42	2,039	0.47	2,351	0.55	2,364	0.55	2,660	0.62	3,597	**0.84**	3,913	**0.91**
West of Brook	EB	3	1,900	463	0.24	680	0.36	554	0.29	866	0.46	618	0.33	1,032	0.54	1,406	**0.74**	2,242	**1.18**
West of Brook	WB	3	1,900	763	0.40	564	0.30	869	0.46	775	0.41	1,029	0.54	916	0.48	2,265	**1.19**	2,107	**1.11**
East of Brook	EB	3	1,900	388	0.20	643	0.34	461	0.24	774	0.41	484	0.25	797	0.42	1,485	**0.78**	2,302	**1.21**
East of Brook	WB	3	1,900	683	0.36	529	0.28	769	0.40	689	0.36	796	0.42	752	0.40	2,249	**1.18**	2,231	**1.17**
North-South Screenlines																			
North of Elgin Street	NB	8	4,700	1,415	0.30	2,261	0.48	1,642	0.35	2,553	0.54	1,868	0.40	2,831	0.60	2,852	0.61	3,747	**0.80**
North of Elgin Street	SB	8	4,700	1,925	0.41	1,967	0.42	2,130	0.45	2,312	0.49	2,276	0.48	2,688	0.57	3,057	0.57	3,748	0.69
South of Elgin Street	NB	9	5,600	1,805	0.32	2,457	0.44	2,297	0.41	3,091	0.55	2,460	0.44	3,290	0.59	3,815	0.68	4,828	**0.86**
South of Elgin Street	SB	9	4,200	2,253	0.54	2,330	0.55	2,686	0.64	3,042	**0.72**	2,855	0.68	3,312	**0.79**	4,193	**1.00**	4,996	**1.19**
North of Rail	NB	7	4,700	1,532	0.33	1,871	0.40	1,723	0.37	2,137	0.45	1,914	0.41	2,461	0.52	2,595	0.55	3,356	**0.71**
North of Rail	SB	7	4,700	1,815	0.39	1,739	0.37	2,015	0.43	2,035	0.43	2,283	0.49	2,340	0.50	3,093	0.66	3,234	0.69
South of University	NB	7	4,000	1,018	0.25	1,240	0.31	1,194	0.30	1,502	0.38	1,344	0.34	1,664	0.42	1,775	0.44	2,119	0.53
South of University	SB	7	4,000	1,166	0.29	1,064	0.27	1,342	0.34	1,335	0.33	1,440	0.36	1,530	0.38	1,665	0.42	1,878	0.47
North of King	NB	7	4,200	1,121	0.27	1,162	0.28	1,292	0.31	1,432	0.34	1,508	0.36	1,776	0.42	2,137	0.51	2,630	0.63
North of King	SB	7	4,200	995	0.24	1,127	0.27	1,147	0.27	1,369	0.33	1,384	0.33	1,653	0.39	1,915	0.46	2,280	0.54

v/c ratios ≥ 0.70 shown in red text.

4.3 Summary of Transportation Challenges

Based on the traffic forecasts and analyses of existing and future conditions, the Town of Cobourg is faced with several key transportation challenges:

- Arterial and County roads in Cobourg experience localized capacity constraints under existing conditions and traffic congestion worsen under future conditions.
- Population is projected to increase by 57% from 18,210 persons to 28,500 persons by 2031. Employment is projected to increase by 27% from 12,060 jobs to 15,300 jobs by 2031, which will place increased demands on the transportation network
- Transportation requirements are closely related to economic activity. In economic terms, however, transportation is a "diseconomy" factor, meaning that the increase in cost of transportation is directly related to increases in cost of purchasing goods and services. Increased traffic congestion and delays could have potential negative impacts on the Town's economic well-being and competiveness.

The following measures will be required to address the transportation challenges that the Town will likely face in the future:

- Additional network capacity is needed to support planned growth, with east-west travel most constrained.
- Improved connectivity to Highway 401 is needed to support future population growth and economic activity.
- Multi-use pathways, bicycle facilities and sidewalks need better connectivity to support and encourage alternative modes of transportation.
- Environmental sustainability is becoming increasingly important for residents of Cobourg. A sustainable transportation system that promotes alternative modes of travel and reduces the environmental impacts of users and facilities is desired.

The following chapter provides a series of policy recommendations that the Town should consider to address future transportation challenges.

5. POLICY CONTEXT REVIEW

In its most recent update of May 2010, the Town's OP makes it clear that the Town desires to promote active transportation. The OP contains a Vision Statement, and part of this statement describes Cobourg's desire to be a community with "a transportation system which will support multiple modes of travel including transit, cycling and pedestrian movement, as well as goods movement." The OP also puts forth Community Development Objectives, of which one is to "encourage accessibility for pedestrian, bicycle, and other active transportation modes throughout the community."

Promoting Active Transportation is also cited as one of the Design Principles on which the Town's approach to community and site design are based: "active transportation will promote the priority of pedestrian, cyclists and transit over vehicles through the design of streets and their boulevards." The Transportation Master Plan and its subsequent implementation will address how this priority will be established.

The Growth Management Strategy (a section of the OP) states that development proposals will be evaluated under the criteria that transit and other transportation facilities are adequate to serve the proposed development, or specific measures are proposed to address the identified issues.

Furthermore, "active transportation" is set out in broad terms in the Vision Statement and Design Principles. Cobourg's OP includes many policies geared towards promoting active transportation, the most robust being in sections 5.2.7 and 6.4. The principles and directions in the OP are to be expanded and implemented in the Transportation Master Plan.

Section 5.2.7 of the OP states that a key consideration while considering the design of public and private facilities will be features which enhance pedestrian, cyclist, and other transportation modes. Such enhancements might include additions to the Town's trail system, the use of wide sidewalks, and the provision of bicycle parking and other facilities for bicycling. More specifically, the Town would like to see:

- Direct and clearly defined pedestrian connections which form an extension of the public transportation system throughout sites with one main pedestrian connection between all buildings and all adjacent municipal streets and sidewalks, and secondary connections for improved pedestrian access as appropriate;
- Principal pedestrian routes that are functionally separated from parking and driveway areas and utilize a variety of surface materials, textures, colour, landscaping and changes in elevation.

The Town's Transportation Strategy (Section 6 in the OP) also addresses active transportation. Its purposes are to allow for a transportation system that:

i) Offers a balance of transportation choices, reduces reliance on a single mode and promotes transit, cycling and walking and other active transportation modes

ii) Recognizes the importance of integrating transportation system planning and investment with land use planning, particularly the relationship of the land use pattern, density and mix of uses to the ability to minimize the length of vehicle trips and support public transit and active transportation modes.

In addition to promoting active transportation, the OP outlines transit-supportive guidelines. The Town has recognized that successful operation of the transit system depends upon the number of people living within proximity to transit. Policy 6.3.2 stipulates that during subdivision review and approval process, regard shall be had to the following transit-supportive guidelines:

a) new subdivisions shall generally be located as close to possible to existing transit service
b) contiguous development should be encouraged within new areas being built by multiple owners, so that planned transit service may be phased in efficiently along permanent routes
c) development shall be encouraged at densities and in locations which support a cost effective transit service
d) generally streets designated as transit routes should be designed to arterial or collector road standards and spaced to ensure full coverage and avoid duplication of service
e) collector road linkages to enable connectivity between neighbouring residential areas shall be required where possible in new development
f) where possible, transit facilities should be located between 300m and 700m (or less) actual walking distance from residences.

Although the OP includes many policies intended to promote active transportation, there is significant opportunity to incorporate the promotion of active transportation modes into the policies of the Transportation Master Plan. Ideally, this would be in the form of "hard" policies that require, rather than encourage, the promotion of active transportation.

Recommendations:

- The Town should require the incorporation of active transportation facilities within existing neighbourhoods and developments and provide regular maintenance of sidewalks and trails during the winter time to ensure that walking remains a safe and viable transportation mode all year long. The budget required for all-year maintenance should be confirmed through a Town-wide cycling and pedestrian master plan study, that should identify high-usage pedestrian and cycling corridors and prioritize them for potential year-round maintenance. It is recommended that all cycling routes within the Town that are signed should receive enhanced maintenance throughout the entire year if possible. However, priority should be placed on routes with cycling facilities located within the travel portion of the roadway (e.g. bike lanes or shared-road cycling routes) along high-volume roadways such as arterial and collector roads. It is on these types of roads where the need to provide separation between cyclists and motorists is highest. Poor maintenance along these roadways could potentially "narrow" the amount of roadway space available for shared-use. Boulevard pathways should also be cleared of any snow, leaves or any other debris that may accumulate during the year, as well as any other roads that provide key cycling/pedestrian linkages between well-utilized routes.