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Project #:
60117440

Date:
October 2010

County of Lanark
Transportation Master Plan

County of Lanark

Transportation Master Plan

Prepared by:

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Project Number:

108515 (60117440)

Date:

November 2010

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November 5, 2010

Mr. Steve Allan, P. Eng, Director
Public Works Department
County of Lanark
PO Box 37, 99 Christie Lake Road
Perth, ON K7H 3E2

Dear Mr. Allan:

Project No: 108515 (60117440)

Regarding: Transportation Master Plan (TMP)

AECOM Canada Ltd. is pleased to submit the Lanark Transportation Master Plan (TMP), for your distribution.

The report details the consultation activities that were completed as part of the Transportation Master Plan Study, identifies the problems and opportunities within the Lanark road network and documents policies for traffic calming and speed management, assessment and mitigation of accessibility barriers, assessment and mitigation of traffic noise and capital planning coordination. The TMP develops transportation strategies for addressing the problems and opportunities and provides recommendations regarding how the various strategies should be implemented. A list of expected infrastructure modification projects over the next 20 years is provided. In addition, the TMP documents a Development Charges Feasibility and Background Study, along with an assessment of the current funding for the County road system. Finally, the activities needed to monitor the progress of the TMP are outlined.

Thank you for the opportunity to undertake this interesting study for the County. We have enjoyed working with you, your staff and TAG members on this assignment.

Sincerely,
AECOM Canada Ltd.

Valerie McGirr, P.Eng.
Valerie.McGirr@aecom.com

/vm
Encl.

Distribution List

# of Hard Copies	PDF Required	Association / Company Name
2	1	Stephen Allan, P. Eng., Public Works Director, County of Lanark

Revision Log

Revision #	Revised By	Date	Issue / Revision Description
0	VS/VM	July 27, 2009	Draft to Lanark
1	VS/VM	August 5, 2009	Revised Draft to Lanark
2	VS	August 10, 2009	Minor revisions and removal of highlighting.
3	VM	September 20, 2010	Update with policies as adopted by the County.

AECOM Signatures

Report Prepared By: Original Signed By

Vanessa Skelton, P.Eng. Stamp

Report Reviewed By: Original Signed By

Valerie McGirr. P.Eng. Stamp

Executive Summary

Introduction

The purpose of the Transportation Master Plan (TMP) study is to determine the long-term (20-year) needs of the County's transportation network. The TMP must provide a balance between current and future transportation standards and needs, as well as between public safety, the environment, business needs and aesthetic considerations. This Master Planning study was carried out in accordance with the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment (EA) process.

Background

The County of Lanark is a largely rural municipality comprised of eight local municipalities including three Towns (Carleton Place, Perth and Mississippi Mills). The permanent population is 63,800 (2006 census) but increases substantially during the summer months. The population of the County in 2026 is expected to be 77,300. This increase in population represents an average growth of 1% per year over the 20 year timeline.

Consultation

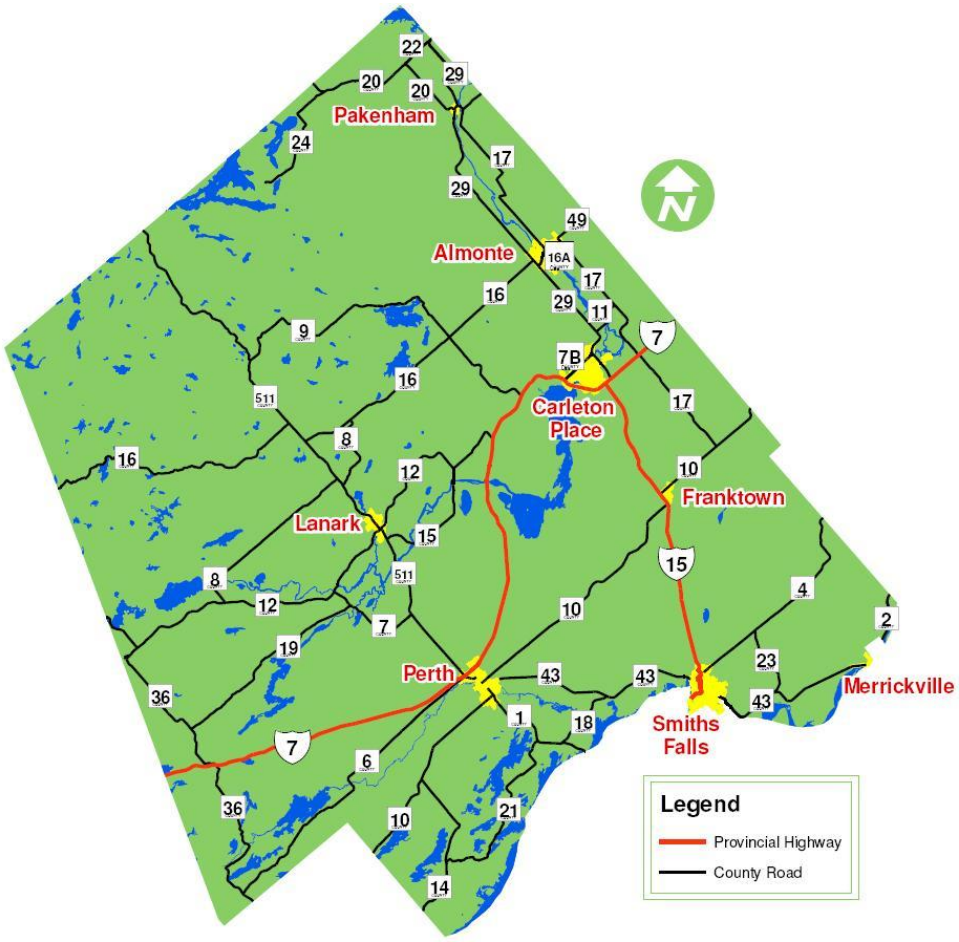
During the TMP process, federal, provincial and municipal agencies were contacted for input. Public groups and individuals were also consulted through Focus Groups, a web site questionnaire and two series of Public Information Centres. The municipalities that make up the County, plus the Separated Town of Smiths Falls, participated on a Technical Advisory Group that met regularly throughout the study. Presentations were made to the Lanark Public Works Committee at key milestones.

Existing Transportation Network

The County's transportation database and Geographic Information System was used to assess existing and future conditions for the 570 km of County roads within Lanark illustrated on the map below.

The collision history showed that statistics were generally comparable to neighbouring Counties. Collision severity was lower than in Ontario as a whole, partially due to the large number of low severity deer and other wild animal collisions. The prevalence of deer collisions was also evident in the higher numbers of collisions occurring in darkness.

The rural nature and rugged terrain of much of Lanark has resulted in numerous locations with curvilinear alignments, narrow lanes and shoulders, rock faces and embankments within the clear zone and wetlands and water adjacent to the road. Signs, pavement markings and roadside barriers are installed to provide drivers with information and protection from the hazards.



Problems and Opportunities

In 2005, the County of Lanark established a Strategic Plan and Vision for 2025. This work provided direction for the TMP by articulating community values. Official Plans and Development Charges Studies for the local municipalities provided information on expected growth, which is higher in the eastern portion of the County, adjacent to the City of Ottawa.

Given the current traffic volumes and the capacity of the existing roads, only four road sections were identified with potential level of service concerns over the next 20 years, three in Carleton Place and one in Mississippi Mills. Several intersections were identified as having operational or safety issues including two in Perth, two in Mississippi Mills and one in Lanark Village.

County road connectivity is inconsistent in urban areas with some County roads designated through urbanized areas and other County roads stopping at town boundaries. New roads to improve connectivity and support growth were suggested in Perth and Carleton Place. Current forecasts did not show a need for a new County road route around Almonte or a connection between Hwy 511 and White Lake.

Cycling in Lanark is gaining in popularity and was the focus of much public discussion. The types of provisions for cyclists in Lanark are currently limited and practice in other Ontario locations was examined.

Park and ride locations were also of interest to the public. Use of existing parking lots for commuter use at locations such as community centres, arenas and municipal properties was suggested to minimize the amount of new infrastructure needed for this activity.

Use of roads by farm vehicles is more common in the agricultural areas of the southern and eastern portions of the County. Safety concerns were evident where sight distance on the road is limited due to alignments, cross-section elements and structures.

The County of Lanark is considering accessibility within the County road network for persons with disabilities. Much of the focus on accessibility is related to pedestrian facilities, which are under the jurisdiction of the local municipalities and therefore the County intends to work cooperatively with the municipalities to improve accessibility.

Commercial vehicles are permitted on all County roads with seasonal reduced load restrictions during spring thaw. In some locations, truck movements have been identified as a concern, specifically at the Pakenham Bridge, Andrewsville Bridge, in Appleton and in Perth.

Policies

Traffic Calming and Speed Management:
Most concerns on County roads relate to the speed of traffic through hamlets and in urban areas. From an examination of successful practices elsewhere, a process was developed to allow the County to assess traffic complaints and determine an appropriate course of action. The list of applicable measures for consideration include: horizontal deflections, changes to the road environment, new signage and pavement marking and education and enforcement techniques. The list of measures and the process were incorporated into the County policy.

Assessment and Mitigation of Accessibility Barriers:
The County adopted a policy to provide a consistent process for the identification of accessibility needs and the selections of measures to be incorporated into the infrastructure capital planning process. Planning Guidelines from the Transportation Association of Canada and the Ontario Provincial Standards and Manuals will be used. The proposed Accessible Built Environment Standard from the Ministry of Community and Social Services will set a standard for new construction that will be incorporated into County practice once it is adopted.

Assessment and Mitigation of Traffic Noise:
The Ministry of the Environment has guidelines to help determine warrants for noise studies and for the design and construction of noise mitigation measures. These established guidelines will be the reference for this activity in Lanark. Where warranted, noise mitigation measures including earth berms and noise walls will generally be constructed on the County Road allowance by the developer at their expense. The County will be responsible for retrofit noise walls, where a need is determined.

Capital Planning Coordination:
Annual coordination between the County and local municipalities and adjacent municipalities is recommended in order to maximize efficiency and minimize the impact of construction activities on the travelling public. Meetings with utility companies and emergency services are also important to identify their scheduling and other needs.

Transportation Strategies

Three major strategies were described for the Lanark transportation system, along with the methods involved in each of the strategies:

Strategy	Summary of Methods
Optimizing Existing Transportation Network	Access management Operational improvements: • intersection improvements • alignment improvements • re-designating lanes • roundabouts • one-way streets Safety improvements: • signage and pavement markings • sight distance improvements • traffic calming measures Accessibility improvements
Managing Transportation Demand	Cycling • promotion of cycling • paved shoulders • bicycle lanes Flexible Hours and Telecommuting • high speed internet Ridesharing and Ride matching Transit • carpool lots • park and ride lots Land use planning • increased density • mixed use • transit supportive
Expanding/Improving the Transportation Network	Widen roads • additional through lanes • two way left turn lanes Build new roads

During the TMP, each method was examined and different levels of implementation were assessed, ranging from status quo (no change to what the County is doing now) to moderate or major activity towards improvement. Each level was evaluated for each method and a recommended level of activity was determined.

Strategy Recommendations

The following table summarizes the recommended levels of activities for each method within the strategies.

Strategy	Recommended Level
Optimize Existing Network	
Manage Access	Moderate to Major: Review access policy to minimize impacts on existing and future higher volume county roads
Improve Operations	Moderate: Monitor traffic volumes and make operational improvements when level of service is approaching capacity
Improve Accessibility	Moderate: Create an accessibility policy (underway). Undertake a review for each capital project and include accessibility improvements where identified
Improve safety	Moderate to Major: Conduct County-wide assessment of signage, pavement markings and roadside barriers and implement improvements on a priority basis. Install traffic calming measures where issues have been identified

Strategy	Recommended Level
Reduce seasonal restrictions	Moderate: Assess pavement improvements on known truck routes during rehabilitation projects
Manage Demand	
Promote flex hours and telecommuting	Major: Actively support high speed internet initiatives by facilitating the building of required infrastructure by service providers.
Promote ridesharing	Moderate: Promote existing car pool lot use and identify spaces in existing public parking lots for commuter use.
Plan land use	Moderate: Develop County Official Plan. Review traffic impact study for new development.
Promote transit	Status quo: Support work by others for increasing use of alternative transportation modes.
Promote cycling	Moderate: Develop Cycling Plan. Construct paved shoulders on roads being rehabilitated. Re-stripe urban roads to delineate bike lanes. Work with Trails Corporation to find funding for recreational trails.
Expand/Improve Network	Moderate: Maintain assets. Support roadwork by others for development. Widen roads that have reached capacity when other solutions are not sufficient.

Infrastructure Project Recommendations

The following table lists the recommended infrastructure projects.

Period:	Location of Infrastructure Modifications	Potential work	EA Schedule	Cost
2008 to 2013	North Street and Wilson Street	Intersection improvements	Schedule A	$175K
	North Street and Gore Street	Curbs, signs, markings	Schedule A	$20K
	Perth Street and Christian Street (CR 29)	Speed management and turn lanes	Schedule A+	$200K
	CR 511, Mill and South Streets	Signs, markings	Schedule A	$1K
	Queen Street (CR 16A) and Martin Street	Curbs, signs, markings	Schedule A	$25K
	Tatlock Road (CR 9) and Bellamy Mills Road	Curbs, signs, markings	Schedule A	$125K
	Arterial Road Perth, Highway 7 to North Street and Craig Street (Town of Perth)	New arterial road	EA Approval obtained	$6M
	McNeely Avenue extension Highway 7 to Highway 15 (Town of Carleton Place)	New arterial road	Schedule C ongoing	$3M
2013 to 2018	McNeely Avenue, Coleman to Lake Street	Road widening suburban (0.6 km)	Schedule C	$2.2M
	Pine Grove (CR 12) and Ferguson Falls (CR 15) and Upper Perth Road	Signs, pavement markings	Schedule A+	$2K
2018 to 2023	March Road, Appleton Side Road to Ottawa Boundary	Turn lane, intersection improvements	Schedule B	$400K
2023 to 2028	Townline Road East, McNeely to Ramsay 8	Road widening/ intersection improvements	Schedule B	$200K
	Townline Road West, Mississippi Mills Boundary to Bridge Street	Demand management or alternative route	Schedule A or Schedule C	N/A
2028 and Beyond	County Road 43, Port Elmsley Road to Station Road	Intersection improvements	Schedule A+	$200K
	Queen Street, Bridge to Martin Street	Turn lane designation through re-striping, signs, markings	Schedule A+	$2K

Roadway Design Criteria
Design standards from the Transportation Association of Canada and the Ontario Ministry of Transportation are recommended for Lanark roads, depending on their design speed.

Development Charges Study
A Development Charges Background Study and By-law to help pay for growth-related infrastructure were completed and the by-law adopted in June 2010. The cost of road projects suggested in the TMP and their timing, as well as costs associated with ambulance, Homes for the Aged and studies were assessed in order to calculate the charge, which was established at $605 for a single family home, $264 - $426 for an apartment dwelling unit (depending on size) and $0.29/square foot for non-residential development.

Assessment of Current County Road Funding
There is currently a funding gap between what the County spends and the expenditure needed to maintain current assets. Recommended updates to the system increase the current funding gap. Possible sources of funding include the municipal levy, reserve funds, debentures, development charges and grants from other levels of government. The pressures to keep tax increases low and the uncertainty of grants from provincial and federal governments presents a funding challenge.

TMP Updates / System Monitoring
There are a number of activities required on an ongoing basis to monitor the progress of the TMP. In general, a transportation update is needed every 5 years to advise Council on trends in the transportation network and the need to update the TMP.

Summary of Recommendations and Implementation
The following table summarizes the recommendations found in the TMP

Period	Activity
Now	• Liaise with local municipalities to agree on appropriate design standards to be applied in Lanark County for each accessibility measure
	• Establish standards to ensure access and safety to pedestrians during construction projects
	• Establish a standard practice that centre lines and edgelines are immediately reapplied following any roadwork (repaving, crack sealing, reconstruction)
	• Request that all pedestrian projects comply with recognized design standards
2009-2013	**Analyses and Policies**
	• Review stop sign installation at all intersections in order to ensure that the sign placement meets guidelines
	• Conduct a review of all horizontal curves using a ball bank indicator to determine the need for curve warning signs, speed advisory tabs, and/or chevrons
	• Conduct a conformance review of all warning signs in use on County of Lanark roads
	• Review all tourist destination signing in order to determine whether signs meet existing placement criteria. Remove and replace all tourism destination signs not meeting existing criteria
	• Review access policy to minimize impacts on existing and future higher volume county roads
	• Conduct a review of crossing roadway signs on all intersection approaches
	• Review the use of centre lines and consider the use of edge lines
	• Implement a prioritized pavement marking program to paint intersection markings
	• Carry out an inventory of roadside hazards and existing roadside protection systems
	• Develop a program for reviewing sight distance requirements on the road network

Period	Activity
2009-2013	**Studies**
	• Develop County Official Plan.
	• Develop a defensible policy for the setting of speed limits on rural County roads
	• Promote existing car pool lot use and identify spaces in existing public parking lots for commuter use
	• Develop Cycling Plan
	• Participate in the development of an “Active & Safe Routes to School” program
	• Work together with the Lanark Health Unit to promote cycling as a healthy and environmental choice for transportation
2009-2013	**Infrastructure Projects**
	• Intersection improvements at North Street and Wilson Street
	• Curbs, signs, markings at Queen Street (CR 16A) and Martin Street
	• Install rumble strips along paved shoulders where history of SMV collisions occur
	• Install centreline rumble strips or profiled thermoplastic strips where history of head-on collisions occur
	• Remove/relocate objects in hazardous locations at roadside
	• Curbs, signs, markings at North Street and Gore Street
	• Speed management and turn lanes at Perth Street and Christian Street (CR 29)
	• Signs, markings at CR 511, Mill and South Streets
	• Curbs, signs, markings at Tatlock Road (CR 9) and Bellamy Mills Road
	• Provide enhanced delineation of sharp curves
	• Construct Arterial Road Perth, Highway 7 to North Street and Craig Street (Town of Perth)
	• Construct McNeely Avenue extension Highway 7 to Highway 15 (Town of Carleton Place)
2013-2018	**Studies**
	• Create an awards program that recognizes cycling related accomplishments or projects by individuals, businesses and community organizations
	• Create a cycling map
2013-2018	**Infrastructure Projects**
	• Signs, pavement markings at Pine Grove (CR 12) and Ferguson Falls (CR 15) and Upper Perth Road
	• Road widening of McNeely Avenue, Coleman to Lake Street
	• Provide skid-resistant pavement
	• Eliminate shoulder drop-off and design safer slopes and ditches
	• Install median treatments where history of head-on collisions occur
	• Improve roadside hardware and barrier and attenuation systems
	• Consider selective use of illumination at rural intersections
	• Connect cycling facilities in a network
2018-2023	**Infrastructure Projects**
	• Turn lane, intersection improvements at March Road, Appleton Side Road to Ottawa Boundary
	• Improve horizontal curve geometry on roads being rehabilitated
2023-2028	**Infrastructure Projects**
	• Road widening/ intersection improvements at Townline Road East, McNeely to Ramsay 8
	• Provide demand management or alternative route for Townline Road West, Mississippi Mills Boundary to Bridge Street

Period	Activity
2028+	**Infrastructure Projects**
	• Intersection improvements at County Road 43, Port Elmsley Road to Station Road
	• Turn lane designation through re-striping, signs, markings at Queen Street, Bridge to Martin Street
Continuous	**Analyses and Policies**
	• Monitor retroreflectivity of signs and update signs as required
	• Include consideration for cycling strategies in new development projects
	• Consult with the County and Local Municipal Accessibility Advisory Committees concerning projects to be undertaken and the list of recommended measures for each project
	• Monitor traffic volumes and make operational improvements when level of service is approaching capacity
	• Provide information to developers of new workplace locations concerning the need to provide showers and change rooms for employees who commute by cycling
	• Encourage the installation of bicycle parking facilities at existing work locations and multi-unit residential buildings
	• Coordinate efforts with Planning Departments of local municipalities to ensure that connections between on-street and off-street facilities are well designed
	• Encourage local municipalities to install bicycle parking
	• Actively support high speed internet initiatives by facilitating the building of required infrastructure by service providers
	• Promote cycling by schoolchildren through supporting special events and educational programs
	• Review traffic impact study for new development
	• Support work by others for increasing use of alternative transportation modes
	• Consider cyclists and cycling facilities when planning and conducting road maintenance
	• Support roadwork by others for development
Continuous	**Studies**
	• Undertake a review for each County capital project and liaise with local municipalities to include accessibility improvements where identified
	Work with Trails Corporation to find funding for recreational trails
Continuous	**Infrastructure Projects**
	• Improve roadway delineation
	• Install traffic calming measures where issues have been identified
	• Assess pavement improvements on known truck routes during rehabilitation projects
	• Install signage and parking facilities for cyclists where cycling paths are constructed
	• Implement operational measure that support cycling at intersections
	• Construct paved shoulders on roads being rehabilitated
	• Re-stripe urban roads to delineate bike lanes
	• Maintain assets

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1. Introduction

1.1 Purpose and Scope of the Transportation Master Plan

The purpose of the Transportation Master Plan (TMP) study is to determine the long-term (20-year) needs of the County transportation network. The TMP is a comprehensive, long-range planning document that will guide transportation system decision-making over the next 20 years to meet the objectives of the Lanark County Vision 2025 (Vision) while supporting local municipal growth management strategies and Official Plans. The study examined the financial implications and strategies to accommodate anticipated growth and it will help set the direction for road and bridge capital programs and provide a basis for budget planning.

The TMP must provide a balance between current and future transportation standards and needs, as well as between public safety, the environment, business needs and aesthetic considerations. The TMP study was initiated in 2008, completed in 2009 and provides direction for the County over a 20 year horizon to 2028.

1.2 Master Plan Objectives

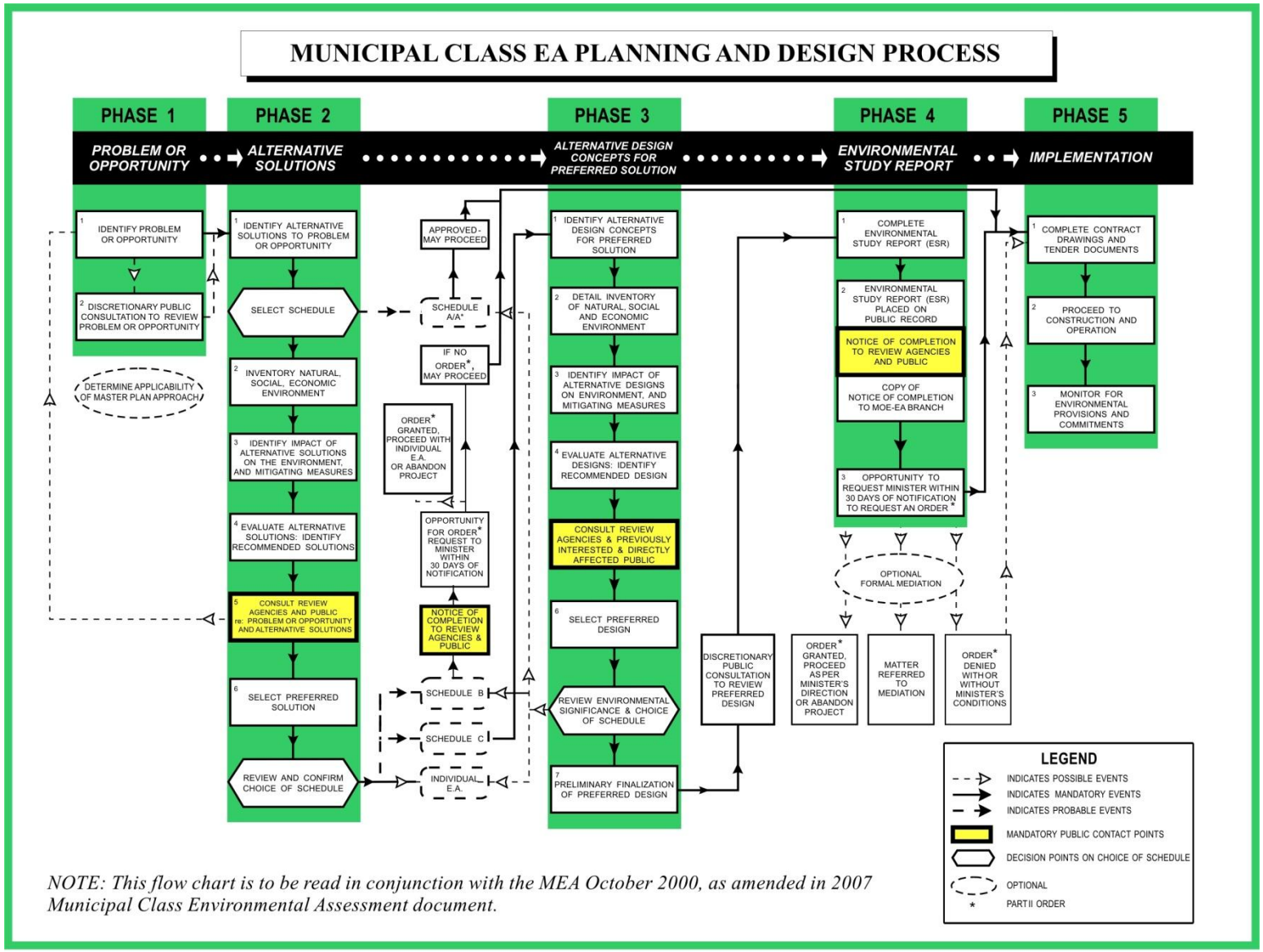
To satisfy the goals of the study and to obtain the endorsement of County Council, the following objectives were identified:

- Provide a context for the best use of transportation resources
- Provide guidance on what policies, services and infrastructure should be implemented to address community values, desires and mobility needs in an effective and responsible manner
- Reflect the rural character of the County of Lanark and its quality of life in the Transportation Master Plan
- 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 Vision articulated in the County's Strategic Plan

1.3 The Environmental Assessment Process

This Master Planning study was carried out in accordance with the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment (EA) process. The overall process is illustrated in **Figure 1.1**, which is reproduced from the Municipal Class EA document.

Figure 1.1. Municipal Class EA Planning and Design Process



1.4 Study Issues

The TMP must reflect the County's social, environmental and economic realities while addressing a wide range of issues, such as:

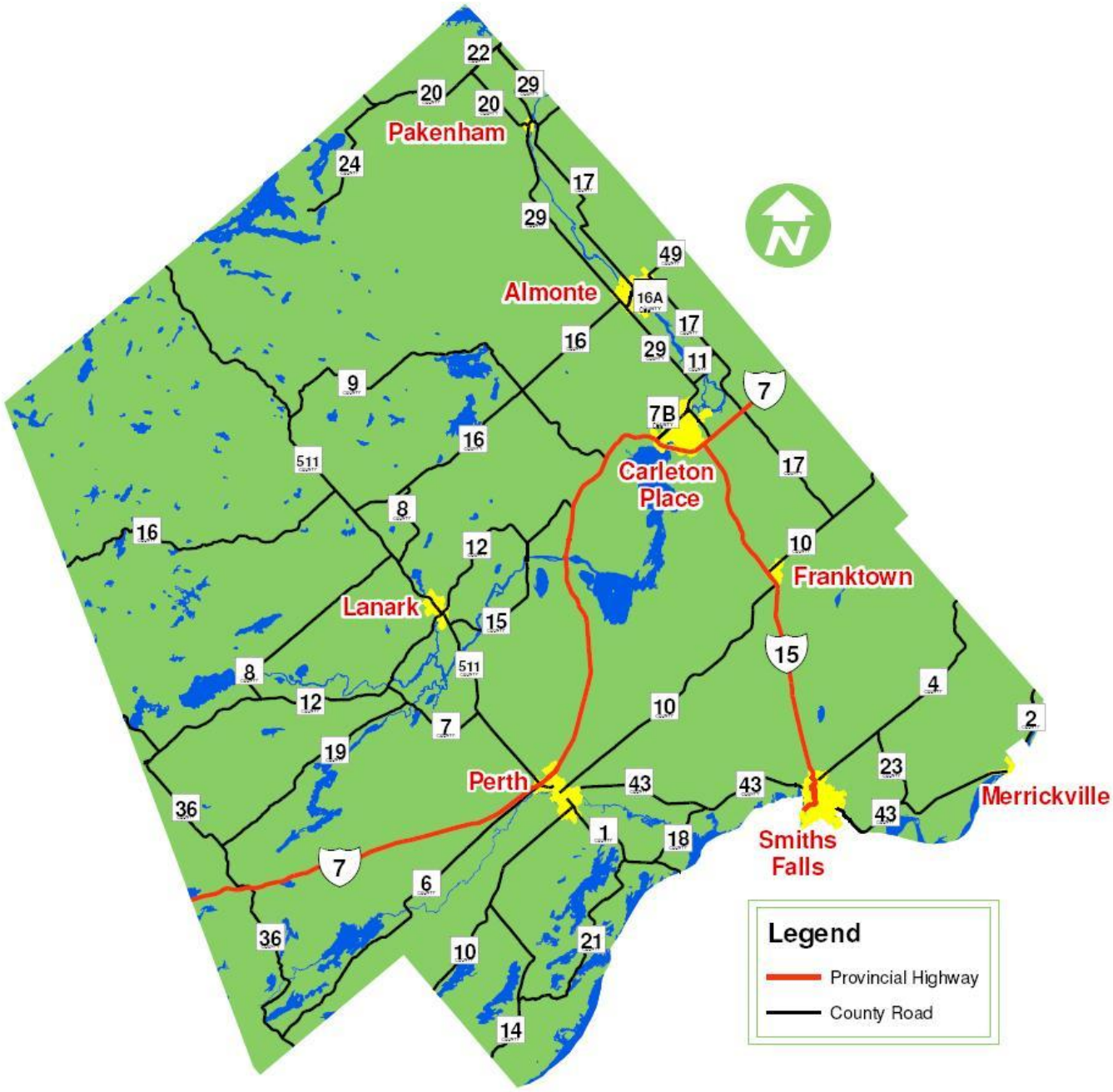
- Identifying transportation network strengths, weaknesses, needs, alternatives and constraints
- Prioritizing new road construction, selective widening and other necessary improvements
- Identifying by-pass route needs and recommending alternatives to improve traffic flow and to divert heavy truck traffic around urban centres
- Enhancing transportation links to isolated parts of the County
- Identifying congestion problems and recommending alternatives
- Recommending traffic calming and other potential measures to make residential areas safer
- Identifying the need and recommending alternatives for on-road cycling
- Protecting communities from unacceptable traffic noise levels
- Protecting transportation corridors and rights-of-way for future needs
- Developing Levels of Service standards that balance public safety and affordability
- Recommending safety improvements to mitigate locations with unacceptably high collision rates
- Identifying potential Park n' Ride locations
- Accommodating road use by farm/agricultural vehicles and equipment
- Recommending measures to promote and improve accessibility for disabled persons
- Evaluating the potential use of roundabouts and other road design innovations
- Recommending design changes and construction upgrades to accommodate year-round heavy truck traffic on selected roads with heavy quarry and lumber traffic
- Integrating local municipal and County capital planning for roads and bridges

1.5 Study Area

The primary study area encompasses those areas bounded Lanark County, as illustrated in **Figure 1.2**.

A secondary study area was also considered to include regional transportation needs and opportunities beyond the County's borders. Lanark is bounded by the City of Ottawa to the east, the County of Leeds and Grenville to the south, Frontenac County to the west and Renfrew County to the north.

Figure 1.2. Lanark County Study Area



2. Background

The County of Lanark is a largely rural municipality comprised of eight local municipalities including three Towns (Carleton Place, Perth and Mississippi Mills). The permanent population is 63,800 (2006 census) but increases substantially during the summer months.

The population of the County in 2026 is expected to be 77,300 according to the projections produced by the Ontario Ministry of Finance in May 2008. This increase in population represents an average growth of 1% per year over the 20 year timeline. The forecasted population increase will bring significant change, and with it new opportunities and challenges. For example, the expansion of Highway 7 from two to four-lanes, between Highway 417 and Carleton Place, will spur residential and commercial development in the County and increase traffic on municipal roads.

Roads are the backbone of the County's transportation network. In addition to meeting the needs of automobiles and trucks, they also serve pedestrians, cyclists, farm equipment and emergency services vehicles. The 2,500-kilometre network for moving goods and people in the County includes about:

- 70 km of provincial highways
- 570 km of County roads
- 1860 km of local municipal roads

The County does not have an Official Plan. Development and transportation issues are addressed in the Official Plans and the Zoning By-laws of the local municipalities. The County has recently completed the first stage of a long-term strategic planning process: Lanark County Vision 2025 – "What the Future May Hold for Lanark County". Through the TMP, the County of Lanark seeks to adequately fund, effectively coordinate and efficiently manage and deliver transportation services and improvements.

The following data collection supported the transportation analysis:

- Official Plans from the townships and towns within the County
- Strategic Plans from Carleton Place and Lanark County
- County Geographic Information System (GIS)
- County WorkTech database information on existing County roads network and collision experience
- Information on municipal roads from local municipalities
- Reports on previous and current Class Environmental Assessment studies for roads within the County
- Traffic Impact studies for recent developments
- Data and documents from agencies such as the Ministry of Natural Resources, the Rideau Valley Conservation Authority and Mississippi Valley Conservation Authority
- Information, comments and opinions from groups and individuals

3. Consultation

3.1 Introduction

The program of consultation included the public, First Nations, Federal and Provincial Agencies, Municipalities and Municipal Agencies as well as community organizations such as interest groups, lake and cottage associations, business associations and service clubs.

Opportunities for general public input were available throughout the study, by means of Focus Group discussions, Public Information Centres (PIC) and the Lanark County website. Input from local municipal representatives was solicited throughout the study through the creation of a Technical Advisory Group (TAG). In addition, presentations were made to the Public Works Committee of Lanark Council on several occasions to obtain their input and direction.

Information on the study was placed on the Lanark County Web Site as it became available (www.county.lanark.on.ca). Links to this material from many of the web sites of the Local Municipalities were also provided.

3.2 Agency Involvement

The following external Ministries, Agencies and Authorities in **Table 3.1** were contacted during the course of the Study, notifying them of project commencement, public information centre dates and requesting comments:

Table 3.1. External Contacts

Federal Agencies
Fisheries and Oceans Canada
Transport Canada Rail Safety
Environment Canada
Canadian Pacific Railway
Parks Canada
Canadian Environmental Assessment Agency
First Nations
Algonquins of Pikwakanagan First Nation
Provincial Agencies
Ministry of Transportation
Ministry of Agriculture, Food and Rural Affairs
Ministry of Natural Resources
Ministry of Culture
Ministry of the Environment
Ministry of Tourism
Municipalities and Municipal Agencies
Mississippi Valley Conservation Authority
Rideau Valley Conservation Authority
Lanark County Ambulance Service
Lanark County OPP Detachment
Town of Perth
Township of Beckwith

Table 3.1. External Contacts
Town of Carleton Place
Township of Drummond/North Elmsley
Township of Tay Valley
Township of Lanark Highlands
Town of Mississippi Mills
Township of Montague
Town of Smiths Falls
Town of Smiths Falls
Upper Canada District School Board
Catholic District School Board of Eastern Ontario
Conseil des écoles publiques de l'Est de l'Ontario
Conseil scolaire de district catholique du Centre-Est de l'Ontario

3.2.1 Technical Advisory Committee

A Technical Advisory Group (TAG) was formed with representatives from each of the local municipalities that make up Lanark County (Beckwith, Carleton Place, Drummond-North Elmsley, Lanark Highlands, Mississippi Mills, Montague, Perth, Tay Valley) and a representative from the Separated Town of Smiths Falls and County staff. TAG addressed technical issues; commented on the work as it progressed, assessed the alternatives and communicated with their local municipal staff and Councils. Notes of the TAG meetings were placed on the County web site for access.

Eleven meetings of TAG were held over the course of the project from April 2008 to May 2009.

3.2.2 County of Lanark Public Works Committee

Lanark Council was kept informed of the progress of the study through presentations to Public Works Committee. These were held in October 2008, April 2009 and June 2009. From Fall 2009 to Spring 2010, The Director of Public Works presented Public Works Committee and Council with a series of recommendations from the study for consideration. This Transportation Master Plan Report reflects Council resolutions pertaining to this work.

3.3 Public Involvement

During the Transportation Master Plan Study, input was solicited from members of the public, volunteer bodies, clubs, residents groups and various interest groups. Comments received from participants at the Focus group meetings, the PICs and through the web site questionnaire and comments received at other points throughout the study where considered in the development of the TMP.

3.3.1 Notice of Study Commencement

At the beginning of the study, a mailing list was assembled with input from the local municipalities and the County as detailed in **Table 3.2**.

Table 3.2. Public Contacts
Municipal Organizations
Lanark County Municipal Trails Corporation
Accessibility Advisory Committee
Lake and Cottage Associations
Adam Lake Property Owner's Association
Bennett & Fagan Lake Association
Big Rideau Lake Association
Black Lake Property Owners Association
Christie Lake Association
Clear Lake Cottage Association
Dalhousie Lake Association
Davern Lake Cottage Association
Farren Lake Property Owners' Association Inc.
Greater Bobs & Crow Lakes Association
Little Silver and Rainbow Lakes Property Owners Association
Long Lake Association
Long Lake Watershed Property Owners' Association
Mississippi Lakes Association
Mississippi Lake Cottage Group
Otty Lake Association
Pike Lake Property Owner's Association
Pike Lake Cottage Association
Robbs Lake
South Lavant Association
Upper Rideau Lake Association
White Lake Property Owner's Association
Community and Business Associations
Appleton Community Association
Mississippi Mills Residents Association
Montague Ratepayers' Association
Perth BIA
Service Clubs and Interest Groups
Almonte District Civitan Club
Almonte MMRA
Carleton Place & District Civitan
Community Transit Solutions
CPRC
Eastern Ontario Trails Alliance
Friends of the Tay
Knights of Columbus Council 3531
Lanark District & Civitan Club
Lanark Health Unit
Lanark, Leeds & Grenville Legal Clinic
Leeds, Grenville & Lanark Health Unit
Loyal Orange Lodge, 512 Montague
Mississippi Valley Field Naturalists
Pakenham District Civitan Club
Perth Civitan Club

Table 3.2. Public Contacts
Perth Rotary Club
Perth Bicycle Users Group
Rideau Valley Field Naturalists
Royal Canadian Legion
Smiths Falls Civitan Club
The Rotary Club of Carleton Place & Mississippi Mills

Letter and emails were sent to notify groups of the study and to invite their participation. A Study Commencement Notice was published in the EMC newspapers that are delivered free to Lanark County residents on Thursday May 15, 2008 and was published in the Almonte, Carleton Place, Perth and Lanark newspapers on Wednesday May 14, 2008. The notice was also sent to the two local radio stations.

3.3.2 Focus Group Meetings and Web Site Questionnaire

Focus Groups were formed to meet prior to the first series of PICs to provide a voice for the community to raise issues and concerns. The role of the Focus Groups was to provide a voice for the community on local issues and concerns.

Participants were solicited via newspaper notices, radio announcements and interviews, web site, contact with potentially interested community groups, lake associations, interest groups and business groups as well as through word of mouth. A media release was prepared and circulated on August 8, 2008 regarding the focus group meetings. Newspaper articles were published in the Lanark Era on August 19, 2008 and in the Perth Courier on August 20, 2008. A radio interview on Lake88 was held on August 21, 2008 with the County Director of Public Works.

From August 21 to September 25, 2008, Focus Groups met in 6 locations through the County: Maberly, Lanark Village, Almonte, Carleton Place, Montague and Perth. Attendance varied, with a total of 55 people coming out to the meetings.

The questionnaire was also placed on the County of Lanark web site so that members of the public who were unable to attend a Focus Group meeting could express their views on the transportation network. This was available on line from August 20 to September 24, 2008. A total of 105 responses were received.

Individuals were invited to indicate their intention to attend a meeting, and in advance of the meeting they were sent a copy of a questionnaire to review. The questionnaire included questions about the travel habits of the respondent as well as their comments on existing conditions and future needs of the transportation network. They were asked to complete the questionnaire in preparation for discussing issues of particular interest to them at the Focus Group meeting. The questions are summarized in **Table 3.3**:

Table 3.3. Web Site Questionnaire
1. Which of the following best describes your travel frequency in Lanark County – how much travelling by car or truck do you do on a regular weekday from home?
2. Are you generally aware of the different jurisdiction of roads (Provincial Highway, County Road, Township Road, Town or City Road) when you travel by car or truck?
3. In general, what percentage of your average daily car or truck travel is on Provincial Highways, County Roads, Township Roads, Town Roads?

Table 3.3. Web Site Questionnaire

4. The province defines minimum maintenance standards for municipal roads based on the volume of traffic and posted speed. Are you satisfied with the physical condition of the roads (Provincial Highways County Roads Township Roads Town or City Roads) you travel on in the summer?
5. The County of Lanark has initiated a Transportation Master Plan (TMP) to help guide the County's transportation programs and investments for the next twenty years. In order to plan for the future and budget for future road projects, we would like to define which roads should belong to the County Road network. We want to understand what criteria are important to citizens in determining whether a road should be part of the County Road system or should be a local Township or Town Road.
    - Connects towns and hamlets
    - Connects to County roads in adjacent County or to former regional roads in the City of Ottawa
    - Connects major commercial/industrial areas to provincial highways
    - Provides service to places that are major generators of truck movements
    - Provides service across or along barriers to travel such as major lakes, rivers, controlled access highways
    - Provides service to public recreational areas (public beaches, provincial parks, conservation areas)
    - Connects an urban arterial to the County road network
    - Has a posted speed of 80 km/h for most of its length
    - Carries more than 100 vehicles per peak hour on an average day throughout the year (1.5 – 2 cars per minute)
    - Carries more than 100 vehicles per peak hour on an average summer day (1.5 – 2 cars per minute)
6. Do you regularly use the road network (Provincial Highways, County Roads, Township Roads, Town Roads) for walking or cycling?
7. Recognizing that there are extra costs for constructing and maintaining sidewalks and paths, what importance would you place on improvements to allow for the walking and cycling modes of travel, such as paved shoulders or off-road pathways in rural areas and sidewalks or extra road width in urban areas?
   A. Paved Shoulders on Provincial Highways, County Roads, Township Roads, Town Roads (without curbs)
   B. Bike Lane or Wider Curb Lane on Town Roads
   C. Off-road pathways
   D. Sidewalks on Town Roads
8. Do you commute beyond your local community to go to work?
   Are you considering car-pooling in light of the rising price of fuel?
   Where would a car pool lot be useful for you?
9. Studies have been done for a new truck route around the Village of Lanark, a new arterial road in Perth and an improved access road to White Lake. Do you drive in any communities, including those mentioned above, that you think would benefit from a bypass because of congestion and delays? Are there any locations where you believe that another road is needed to serve the County better?
10. Are there any locations where you believe there is a safety concern?
11. Do you believe that excessive speed is a problem on Provincial Highways County Roads Township Roads Town Roads
12. What influences you to slow down along rural roads and along urban roads?
    Under what conditions do you think traffic calming measures should be introduced on County roads?
    Traffic calming measures include pavement markings, signage, landscaping, curbs, textured or coloured pavement.
13. Do you live along or drive along a road with significant truck traffic?
    How does the use of a road by trucks influence your behaviour or route choice?

Table 3.3. Web Site Questionnaire
14. Besides getting employees to and from work, businesses use the roads to deliver their goods and services to their customers. Where are improvements to the transportation network necessary to better support business?
15. Did you consider the response time for emergency services when you selected your home or business location?
16. Do you have a home on a private road? If yes, what are your issues in relation to County Roads?
17. Growth areas are predicted in the eastern and southern portions of the County with good access to the City of Ottawa for people who live in Lanark County and work in Ottawa. Growth areas include the Towns of Carleton Place, Almonte and Perth as well as rural residential subdivisions in some areas. The expansion of Highway 417 and now Highway 7 is facilitating this trend. Residential growth will fuel growth of local service businesses, further strengthening the economy. Lanark will also continue to strive to attract industry and employment to its larger centres having an available skilled labour force. Increased transportation demand will affect all parts of the transportation network but particularly in locations where the existing roads will require improvement to handle the increased traffic volumes. What are your views on growth within the County? • Should an improved transportation system lead or follow growth and development? • What should be done to ensure that the transportation system meets the needs of the future?
18. Would you support a tax increase to help pay for improvements: • For growth (road widening, new traffic signals)? • For pedestrians and cyclist facilities? • For new roads? (bypass, road in a new area) • For traffic calming measures? • For road and bridge condition?

The focus group meetings were held on the following dates and locations:

Maberly Community Hall	August 21, 2008
Lanark Highlands Council Chambers	August 28, 2008
Almonte Fire Hall	September 4, 2008
Carleton Place Town Hall Auditorium	September 11, 2008
Montague Township Council Chambers	September 18, 2008
Perth Council Chambers	September 25, 2008

At each meeting, the project team presented an overview of the study progress and then reviewed the questionnaire. A copy of the presentation was placed on the web site. To maximize the number of people with an opportunity to comment on the study, the questionnaire was placed on the County web site.

Between August 20 and September 25, 105 questionnaires were completed by people living, working and visiting Lanark County. Comments reflected the value that people place on the quality of life in Lanark County, as documented in the Strategic Plan and Vision. Members of the Health Unit stressed the relationship between healthy communities and a healthy population and transportation choices.

Many specific safety and operational issues were identified. The team reviewed the public's issues and then updated the list of problems and opportunities. Provision of cycling lanes or paved shoulders was highlighted as an

important consideration for the promotion of alternate transportation, recreation and cycling tourism. The future of public transit, while not part of this TMP was of interest to many people, especially those who commute into Ottawa for work. It was felt that better transit would increase employment opportunities. Increased rail use in the future was suggested. People were concerned about the cost of infrastructure.

A number of people noted their concern with current economic uncertainties and how that might impact the assumptions made in the development of this Transportation Master Plan.

Table 3.4 summarizes the broad range of opinions heard on the issues raised in the questionnaire (numbers refer to questions posed).

Table 3.4. Summary of Questionnaire Responses

Q #	Summary of Responses
1-3	Respondents were frequent travelers with 80% having trips every day or several times a week. They were generally aware of the various road jurisdictions. The amount of time spent on each type of road varied with the location of their residence.
4	65-80% of people were satisfied or very satisfied with the summer condition of Provincial Hwys and County roads while 30-35% had similar views on Township and Town roads.
5	70% or more people identified the following criteria as important for the designation of a County road: connecting towns and hamlets, connecting to other County roads, connecting commercial and industrial areas to Provincial Hwys and connecting urban arterials to the network.
6-7	People who walk or cycle tend to use Township/Town roads (and County roads as necessary). Most considered improvements important, especially sidewalks and bike lanes in Towns and paved shoulders on County roads.
8	Over half of respondents commute outside their community to work and one third have considered car pooling. People identified locations for future car pool lots to serve most built-up areas.
9	About 40% of respondents felt new roads and bypasses were needed. The ones receiving the most support were Perth, Lanark Village, Almonte. Concerns were expressed about the impact of some bypasses on businesses.
10-12	Safety concerns were identified by 68% of people for many intersections and sections of road with substandard horizontal and vertical curves. Speeding was a concern for 67% of respondents. Over 70% identified County, Town and Township roads. About 50% identified provincial highways. As drivers, respondents were influenced to slow down by: signs, enforcement, gateway features at hamlets, pedestrians and cyclists on the road, potholes, deer, farm vehicles
13	About half of the people live on roads with significant truck traffic. Few changed their route as a result of trucks.
14	Businesses were noted as important to the economy
15	Response time for emergency services did not factor into the selection of a residence location for 60% but there were anecdotal stories of families and older residents moving into Towns due to response time concerns for ambulance.
16	Only a few private road residents completed the survey and they did not identify unique issues with the County road system.
17	Some people were opposed to growth and other saw it as inevitable in Lanark. The County was congratulated at Focus Group meetings for undertaking this study to plan for the future.
18	When it comes to paying for the transportation network, respondents were concerned about taxes used for growth projects and most new roads. They prioritized facilities for pedestrians and cyclists but noted the need to maintain existing roads and bridges.

3.3.3 First Public Information Centres

Following the Focus Group meetings, two Public Information Centres were held on October 2, 2008 in Carleton Place and October 9, 2008 in Perth.

The Notice of PICs was placed in the EMC newspapers during the weeks of September 22 and 29, 2008.

The County of Lanark also included notice of upcoming consultation activities in their regular column on County events in various newspapers. Newspaper reporters attended several of the Focus Group meetings and published articles in their newspapers, including notice of upcoming events.

Emails inviting people to the PICs were sent out in September to provincial, federal and municipal agencies, community groups, lake associations, interest groups, business groups and people who were on the County's stakeholder list for other transportation studies. This direct contact involved several hundred emails. Some individuals also forwarded these emails to their community organizations, substantially increasing the effective notification.

The County purchased announcement spots on the local radio station and Steve Allan, County Engineer, was interviewed on the radio to discuss the Transportation Master Plan and the consultation events.

A total of 20 people signed the register at these two events. The purpose of the PICs was to present and obtain public input on the following:

- Study Introduction and Background
- Study Purpose, Objectives, Issues
- Class EA Process
- Consultation Process, Schedule and Purpose
- Existing Conditions
- Traffic Data and Results
- Results of Focus Groups and Questionnaire
- Analysis of Road Network and Criteria for a County Road
- Problems and Opportunities
- Alternative Solutions
- Next Steps

Seven written comments were received, summarized as follows:

- Request for improved/ support for transit (6)
- Improvements for cyclists and pedestrians is important (1)
- County of Lanark needs an Official Plan (1)
- Support for enforcement using cameras (e.g. speeding) (1)
- Provide signage at Lanark boundary indicating ATVs are not legal on roads in Lanark County (1)
- Request for information (1)
- Support for use of roundabouts instead of traffic signals (1)

The people attending the PICs were supportive of the Transportation Master Plan process and had many comments to offer. Safety and improvements for cyclists and pedestrians were topics of particular interest. While participants understood why transit was not included in the scope of this study, they felt that transit should play a significant transportation role in the future and encouraged the County's involvement in transit.

3.3.4 Second Public Information Centres

Four Public Information Centres were held during the second round of consultation. The Notice of PICs was published on the following dates in the EMC newspapers that are available free of charge to all households in the County:

- March 12, 2009
- March 26, 2009
- April 2, 2009

A copy of the notice was also emailed or mailed out in March to provincial, federal and municipal agencies, community groups, lake associations, interest groups, business groups and people who were on the study mailing list, including those who had attended the Focus Group meeting in the fall of 2008.

The PICs were held on the following dates and locations:

Almonte Old Town Hall	March 19, 2009
Carleton Place Town Hall Auditorium	April 2, 2009
Perth Council Chambers	April 9, 2009
Lanark Highlands Township Office	April 16, 2009

A total of 30 people signed the register at these two events. The purpose of the PICs was to present and obtain public input on the following:

- Consultation Process
- Policies for noise, traffic calming, accessibility and capital planning coordination
- Alternative Transportation Strategies to take Lanark towards its vision
- Infrastructure requirements identified and solutions proposed
- Recommendations for the Transportation Master Plan
- Cycling Study
- Next Steps

Seven written comments were received, summarized as follows:

- Request for information (2)
- Support addition / widening of shoulders for pedestrians/cyclists and farm equipment (3)
- Enjoyed presentation and appreciated level of effort of study (3)
- Want transit and active transportation to be considered as part of this study (1)
- Support use of berm for noise attenuation (1)
- Support a dedicated tax surcharge of 1 to 3% for road improvement as opposed to a general tax increase (1)
- Support recommendations (1)
- Suggest imposing fee for bicycles to travel on paved shoulders (1)
- Provide routes for ATVs and snowmobiles (1)

The people attending the PICs were supportive of the Transportation Master Plan process and the proactive work done by the County to consider future needs and infrastructure requirements. Attendees understood the County's need to be fiscally responsible while achieving progress towards the County Vision. They provided the team with

anecdotes illustrating the balance required between providing improved services and the cost of those services. The Cycling Study was of particular interest to many attendees.

3.3.5 County Review

This Transportation Master Plan Report (TMP) was prepared and presented to County Council by the Director of Public Works in sections between Fall 2009 and Spring 2010. Input from County Council was used to update the TMP in Fall 2010.

4. Existing Transportation Network

4.1 Data Collection And Review

4.1.1 WorkTech Database

The County of Lanark uses WorkTech software, which is a fixed asset inventory system containing information related to all the County roads, to manage their road assets in terms of maintenance planning and capital needs forecasting. Each defined section of road is described in terms of:

- traffic information (e.g. speed limit, Average Annual Daily Traffic, growth rate, % trucks)
- road dimensions (e.g. length of section, number of lanes, surface width, platform width, depth of granular materials and asphalt)
- roadway features (e.g. drainage, roadside environment, surface type)
- other pertinent data (e.g. year built, service classification, local municipality)

Information is primarily used by the County to categorize the roads and to determine required maintenance and capital needs for each of the roads. The length of the County road network in each municipality, shown below in **Table 4.1**, is largely dependent on the geographical size of the municipality and the distribution of population centres. The towns of Carleton Place and Perth have the shortest length of County roads within their boundaries.

Table 4.1. Length of County Roads by Municipality

Local Municipality	km
Beckwith	33
Carleton Place	5
Drummond/North Elmsley	71
Lanark Highlands	160
Mississippi Mills	116
Montague	43
Perth	4
Tay Valley Township	129

Collision data is entered into the WorkTech database once it is received from the police. Lanark County regularly undertakes traffic volume counts on its road network and estimates an AADT (Annual Average Daily Traffic) for each segment in its database. Other counts, such as turning movement counts at intersections, are undertaken as a need is identified.

4.1.2 County Geographic Information System

The County GIS displays graphical information related to planning and transportation. The database used by the GIS includes information on:

- land uses (residential, industrial, recreational, commercial, institutional, environmental areas)
- infrastructure (roads, bridges, culverts, signs)
- water bodies and watercourses and other natural features

The map of the County road system illustrated in Figure 1.2 was prepared from the County GIS.

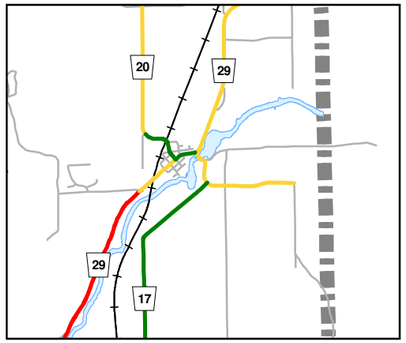
4.1.3 Field Review

At various times throughout the study, team members drove on the road network in Lanark County to assess safety, operational and level of service issues as well as to gain a better perspective of the issues and challenges noted in the project documents and references.

4.2 Collision History

The County of Lanark provided the consultant team with five years of collision records for the period of January 1, 2002 to August 31, 2008. In total, 2654 collisions were reported on County of Lanark roads during this time period. The collisions are graphically presented on maps of the County in **Figure 4.1**. **Figure 4.2** shows the location of all the collisions in the database (2654), **Figure 4.3** shows the location of deer collisions in the database (890) and **Figure 4.4** shows the location of all non-deer collisions in the database.

The following sub-sections describe where these collisions occurred, what types of collisions occurred in Lanark and the environmental characteristics associated with the collisions. In particular, the number and characteristics of deer collisions in Lanark is examined.



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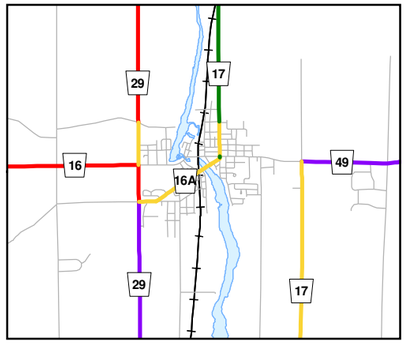

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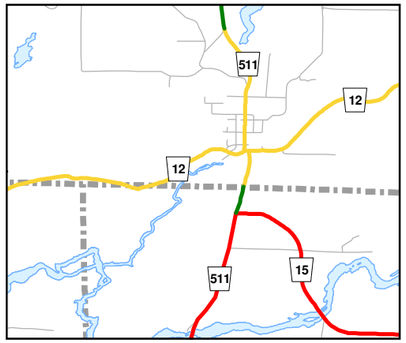

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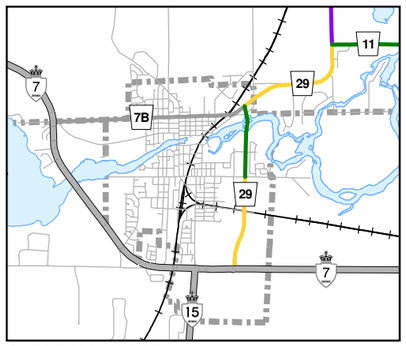

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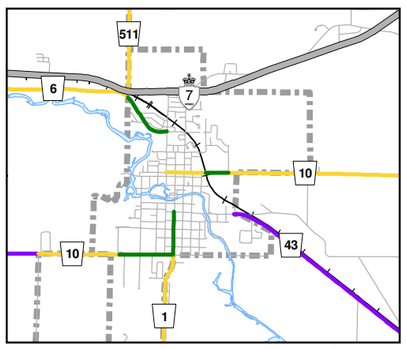

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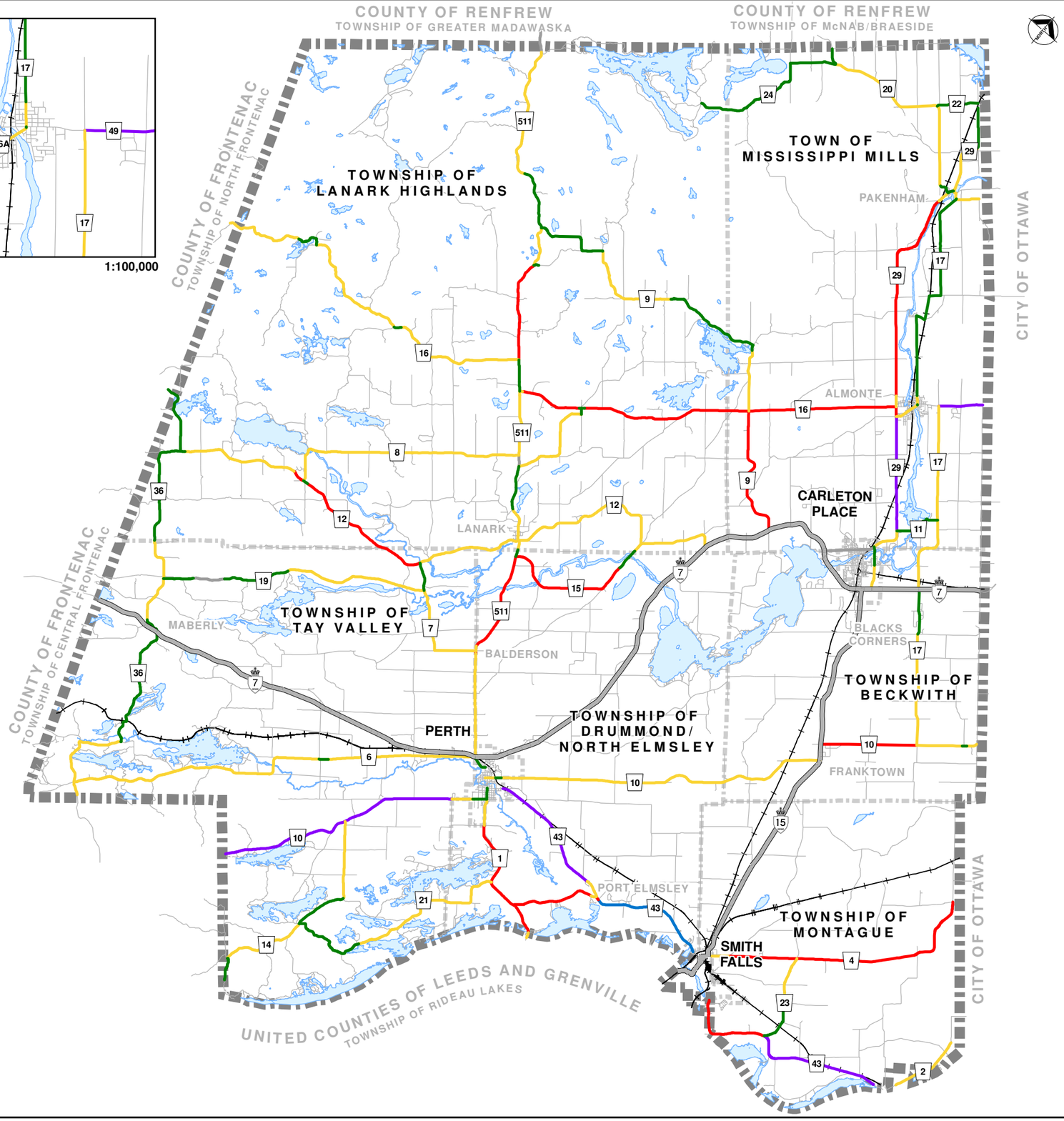

LEGEND

NUMBER OF COLLISIONS
- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 75
- GREATER THAN 75
- NONE

OTHER FEATURES
- PROVINCIAL HIGHWAY
- LOCAL ROAD
- RAILWAY
- WATERBODY
- MUNICIPAL BOUNDARY

NOTE:
ROAD INVENTORY SEGMENTS AND ASSOCIATED COLLISION DATA PROVIDED BY COUNTY OF LANARK.

AECOM
AECOM Canada Ltd.
300 Water Street, Whitby, Ontario, Canada L1N 9J2
T 905.668.9363 F 905.668.0221

CLIENT: LANARK COUNTY

PROJECT:
LANARK COUNTY TRANSPORTATION MASTER PLAN

DRAWING:
COUNTY ROAD NETWORK COLLISIONS 2003-2008

PREPARED BY:	CHECKED BY:	PROJECT No.:
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DESIGNED BY:	APPROVED BY:	MAP:
---	---	Figure 4-1
SCALE: 1:275,000	DATE: JUNE - 2009	

Map Document: (C:\GIS Projects\18-100045\18-100045County Roads - Collisions.mxd)
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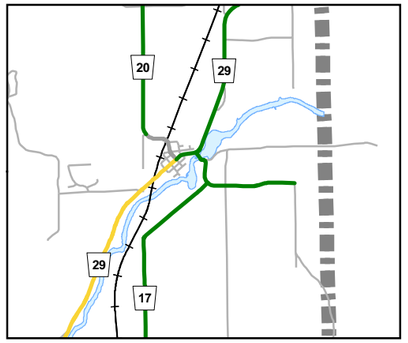

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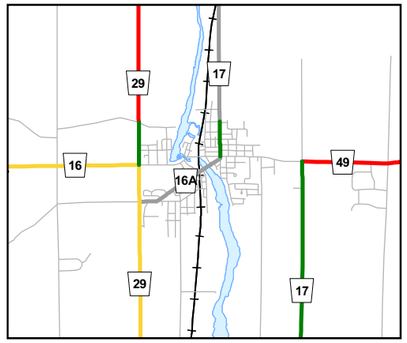

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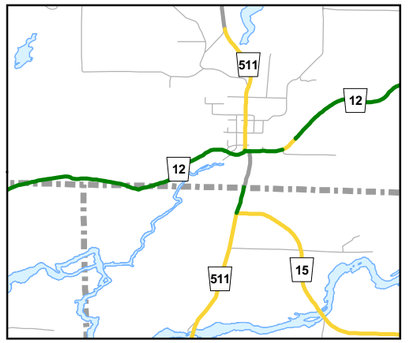

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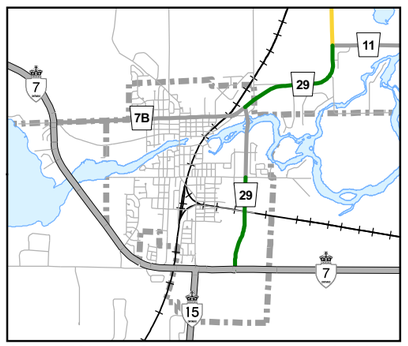

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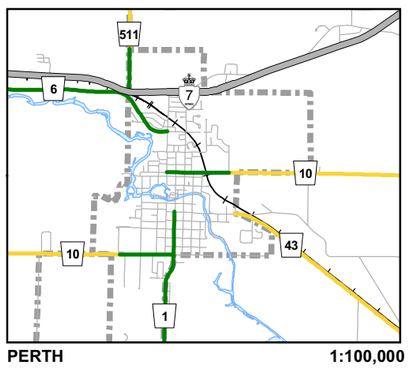

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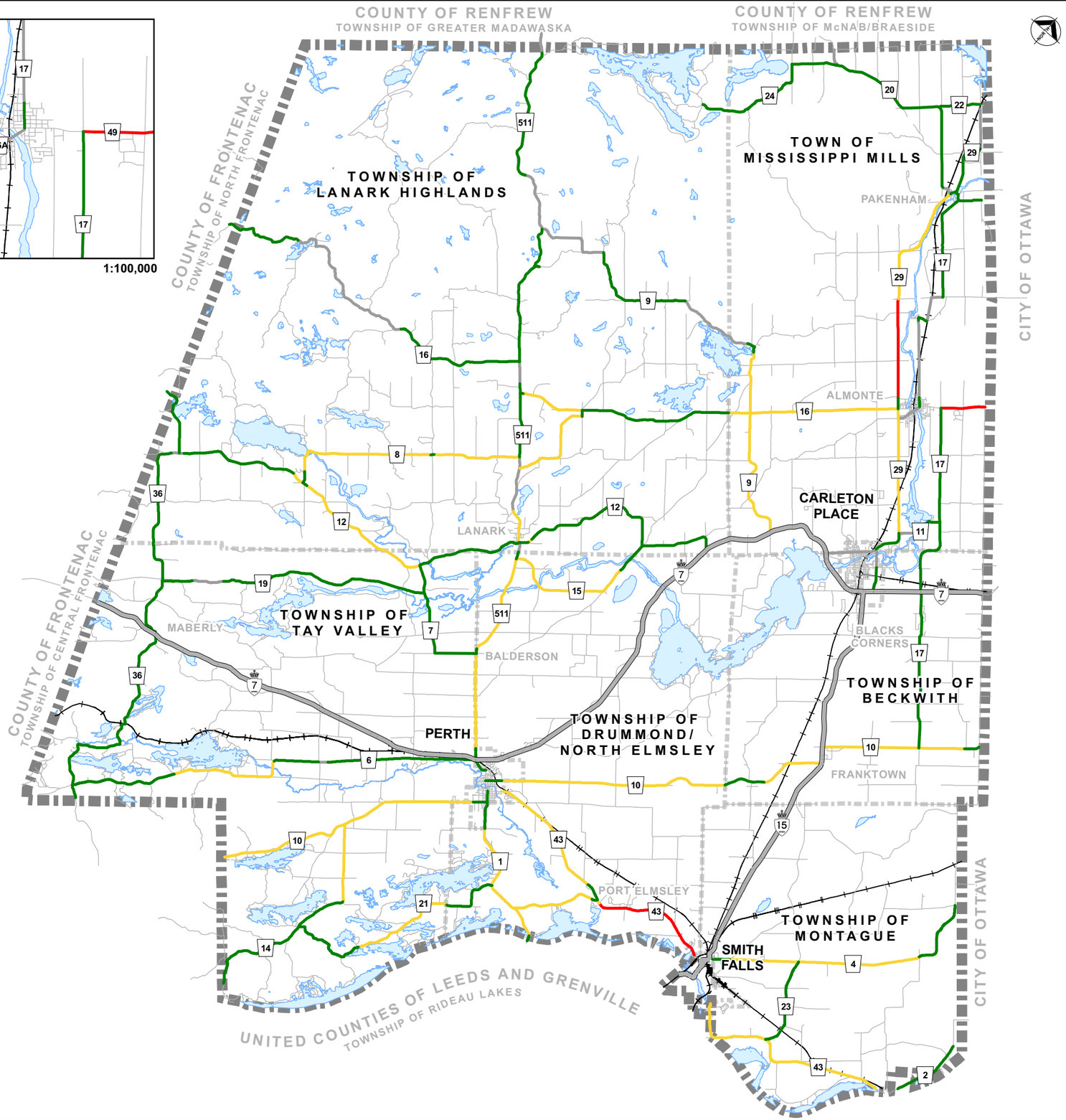

LEGEND

NUMBER OF DEER COLLISIONS

- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 75
- GREATER THAN 75
- NONE

OTHER FEATURES

- PROVINCIAL HIGHWAY
- LOCAL ROAD
- RAILWAY
- WATERBODY
- MUNICIPAL BOUNDARY

NOTE:
ROAD INVENTORY SEGMENTS AND ASSOCIATED COLLISION DATA PROVIDED BY COUNTY OF LANARK.

AECOM
AECOM Canada Ltd.
300 Water Street, Whitby, Ontario, Canada L1N 9J2
T905.668-9363 F905.668.0221

CLIENT: LANARK COUNTY

PROJECT:
LANARK COUNTY TRANSPORTATION MASTER PLAN

DRAWING:
COUNTY ROAD NETWORK
DEER COLLISIONS 2003-2008

PREPARED BY:	CHECKED BY:	PROJECT No.:
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DESIGNED BY:	APPROVED BY:	MAP:
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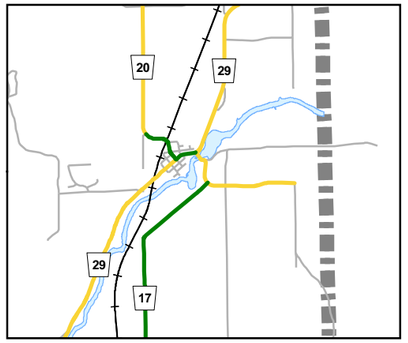

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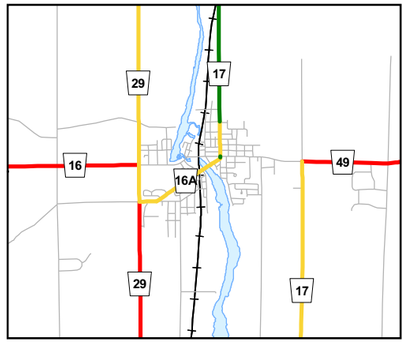

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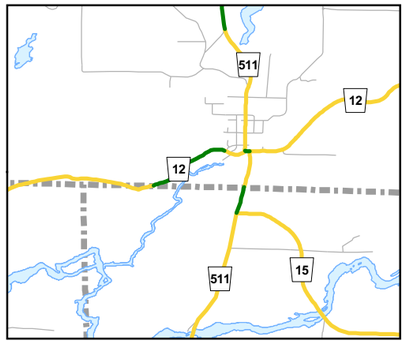

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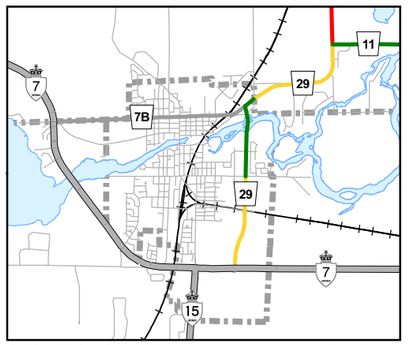

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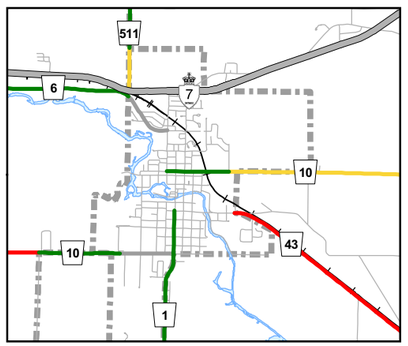
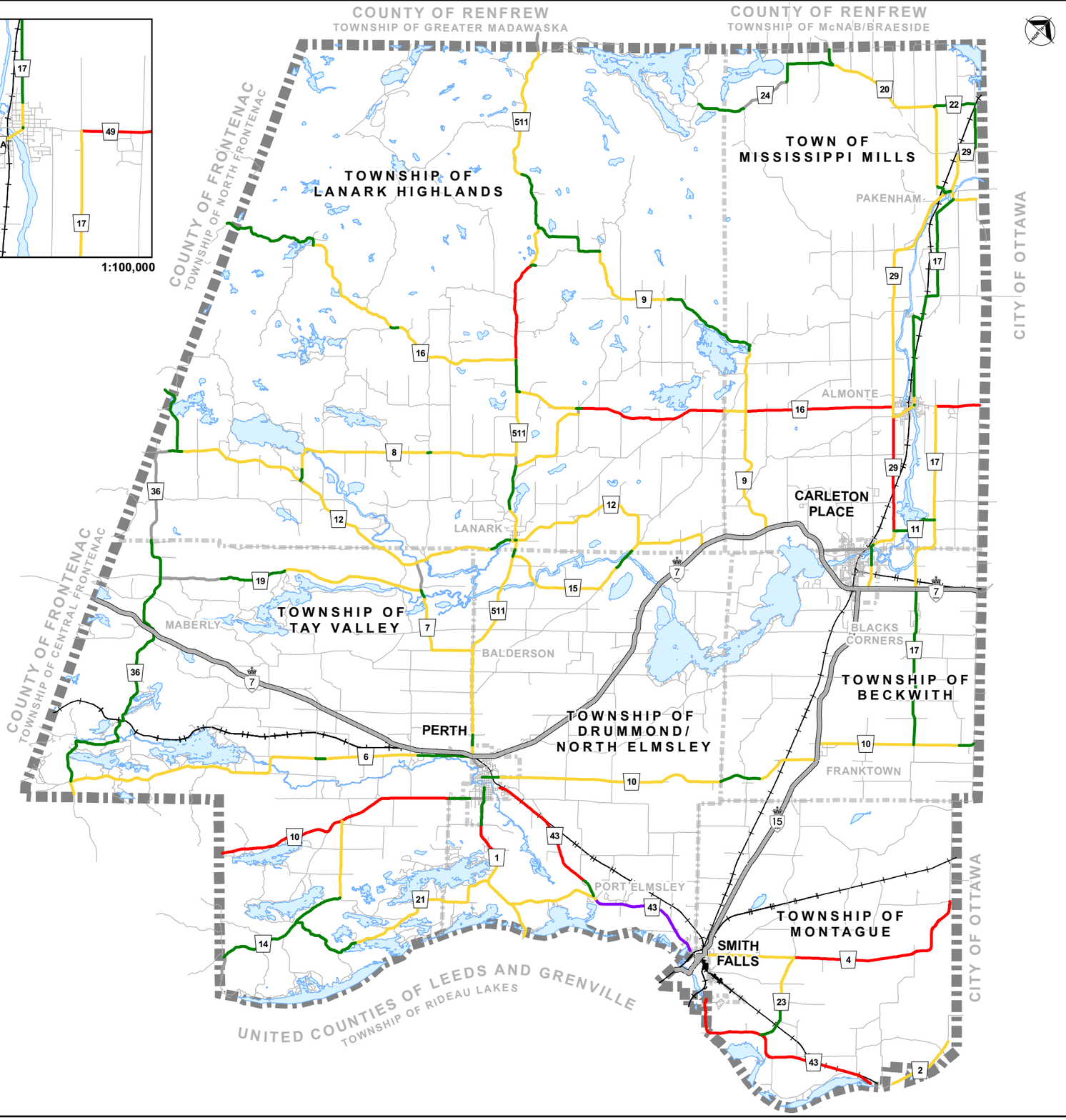


PERTH 1:100,000



LEGEND

NUMBER OF NON-DEER COLLISIONS

- 1 - 5
- 5 - 25
- 25 - 50
- 50 - 75
- GREATER THAN 75
- NONE

OTHER FEATURES

- PROVINCIAL HIGHWAY
- LOCAL ROAD
- RAILWAY
- WATERBODY
- MUNICIPAL BOUNDARY

NOTE:
ROAD INVENTORY SEGMENTS AND ASSOCIATED COLLISION DATA PROVIDED BY COUNTY OF LANARK.

AECOM

AECOM Canada Ltd.
300 Water Street, Whitby, Ontario, Canada L1N 9J2
T905.668-9363 F905.668.0221

CLIENT: LANARK COUNTY

PROJECT:

LANARK COUNTY
TRANSPORTATION
MASTER PLAN

DRAWING:

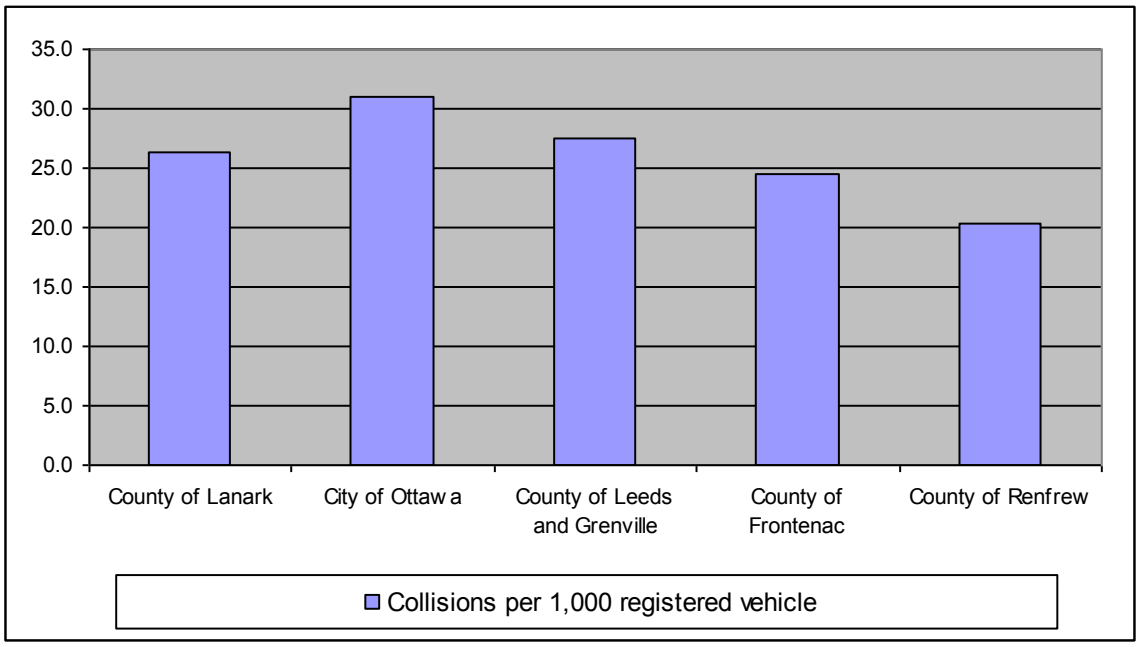
COUNTY ROAD NETWORK
NON-DEER COLLISIONS 2003-2008

PREPARED BY:	CHECKED BY:	PROJECT No.:
---	---	108515
DESIGNED BY:	APPROVED BY:	MAP:
---	---	5
SCALE: 1:275,000	DATE: JULY - 2009	

Map Document: (C:\GIS Projects\18-100045\18-100045\County Roads - Collisions\Deer.mxd)
7/31/2009 -- 3:17:18 PM

Figure 4.4 shows the collision rate in the County of Lanark compared to neighbouring jurisdictions using 2005 data from the Ontario Road Safety Annual Report. The collision rate was calculated by dividing the total number of collisions reported in each jurisdiction (including all provincial, County and local roads) by the total number of motor vehicle registrations.[1] Vehicle registrations are used as a measure of the relative risk of conflict in the geographical area. A comparison of collision rates suggests that the County of Lanark has a similar collision rate to other rural neighbouring counties (County of Leeds and Grenville and County of Frontenac) but its collision rate is somewhat higher than the County of Renfrew. The City of Ottawa's collision rate is approximately 20 percent higher than the County of Lanark's.

Figure 4.4. Collisions per 1,000 Motor Vehicle Registrations in 2005 in County of Lanark and Neighbouring Jurisdictions (All Roads)



4.2.1 Deer Collisions

Collisions related to deer strikes were analysed separately since this type of collision represented 34% of the total collisions with 890 deer collisions. There were an additional 375 collisions where wild animals were noted. Many of these (76%) were classified as "approaching" collision type. It is possible that deer were involved in some of these collisions as well.

Roadway characteristics and the environmental conditions related to the collisions were examined. In each of the sections, the relationship between all collision types and deer collisions is noted.

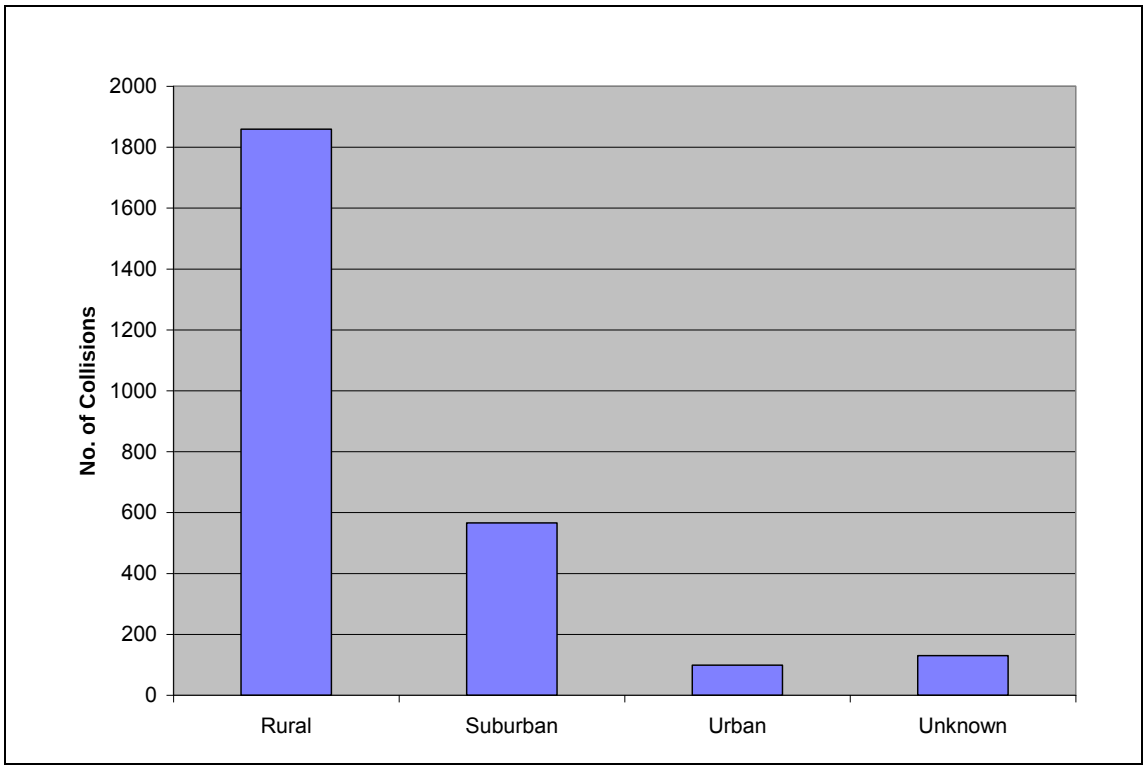
[1] *See http://www.mto.gov.on.ca/english/safety/orsar/orsar05/index.shtml*

4.2.2 Roadway Environment

The collision data provided included collisions occurring within the County on roads under its jurisdiction. Collisions on provincial highways or local municipal roads were not included in the collision review. These data were combined in order to determine the collision distribution by roadway environment. The results are shown in **Figure 4.5**. The majority of collisions (1859 or 70%) occurred on rural roadways, which constitute about 89% of the County road network length. Suburban roads, which constitute close to 10% of the County road network length, had 566 or 21% of the collisions. Urban roads, which constitute about 1.5% of the road network length, had 99 or 4% of the collisions. For 5 percent of the collisions (130), the roadway environment was not specified.

The higher proportion of collisions occurring in suburban and urban locations is not unusual since there are more conflicts present due to larger numbers of vehicles, intersections and driveways. In Ontario over half of collisions occur near or at intersections or private driveways.[2]

Figure 4.5. Roadside Environment



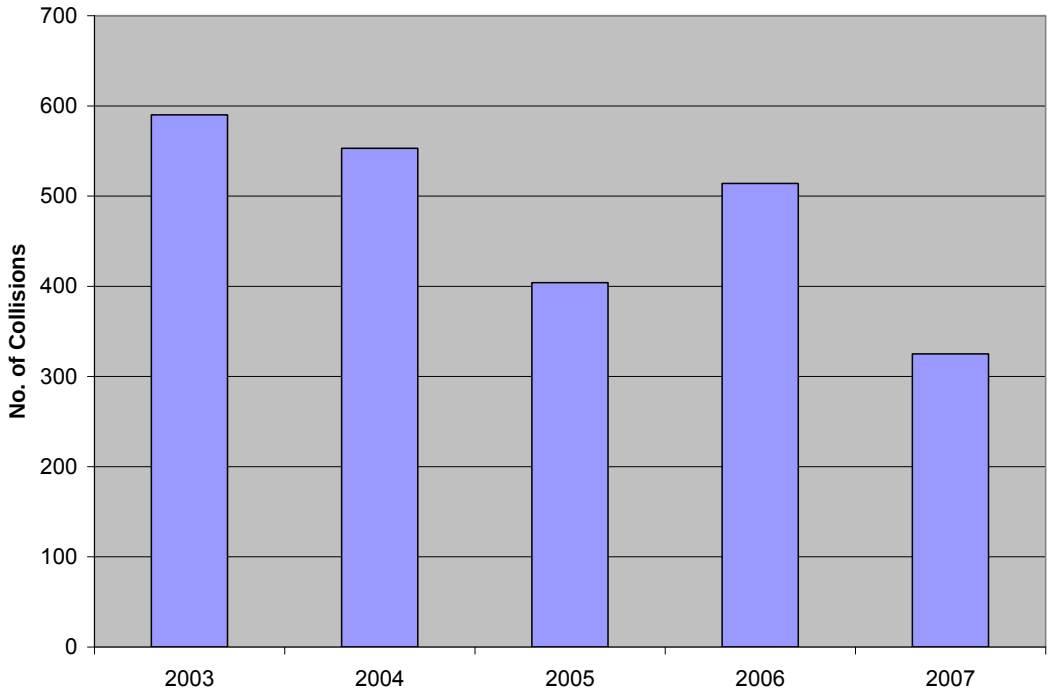
For deer collisions, the distribution between the various roadside environments was similar for rural roads, lower for suburban roads and higher for urban roads. The database has 71% of deer collisions recorded as rural, 9% as suburban, 15% as urban and 5% as unknown.

[2] Ministry of Transportation of Ontario, *Ontario Road Safety Annual Report 2006. MTO, Downsview, ON,* p. 67.

4.2.3 Collision Characteristics

The yearly distribution of collisions occurring in the County of Lanark is shown in **Figure 4.6**. Only the years 2003 to 2007 are shown as the data from the WorkTech database was incomplete for the years 2002 and 2008 when this analysis was done. The collisions from 2002 and 2008 are included in other statistics presented.

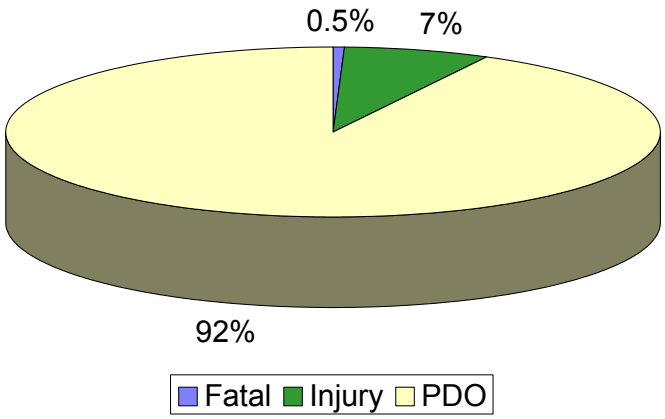
Figure 4.6. Yearly Collision Distribution: Lanark County (2003 - 2007)



The severity of collisions (sub-grouped by fatal, injury or property damage only) occurring in the County of Lanark is shown in **Figure 4.7**. The majority of the collisions are property damage only (PDO) representing approximately 89 percent, followed by injury collisions representing approximately 11 percent and fatal collisions with 0.4 percent. Compared to province-wide data, collisions in the County of Lanark have lower severity. According to the 2005 Ontario Road Safety Annual Report, 21% of all collisions in the province resulted in an injury. Provincially, 0.3% of all collisions resulted in a fatality[3]. This lower severity may be partially a result of the large number of deer collisions in Lanark County. These collisions are typically of low severity. Of the 890 single vehicle collisions involving deer, only 20 of them resulted in injuries and all injuries were either minimal (6) or minor (14). In addition to the deer collisions, there were another 375 collisions of varying types involving wild animals. Of these, 360 had no injuries.

[3] *See http://www.mto.gov.on.ca/english/safety/orsar/orsar05/chp3_1_05.shtml*

Figure 4.7. Severity of Collisions: Lanark County (2002 – 2008)



The three most common collision impact types in Lanark County are:

- Single motor vehicle (SMV) collisions with animals (40 percent)
- Approaching (head-on) collisions (23 percent)
- SMV collisions with fixed objects (19 percent)[4]

SMV collisions (either animals or fixed objects) are occurring in significantly higher quantities than province-wide trends. In the 2005 Ontario Road Safety Annual Report, 27 percent of motor vehicle collisions were classified as single motor vehicle.[5] This is likely due to the rural nature of roads in Lanark County. Approaching (or head-on) collisions are also occurring in significantly higher quantities than province-wide trends. In the same report, only 2 percent of motor vehicle collisions were classified as approaching (head-on).

Other impact types and their frequency are:

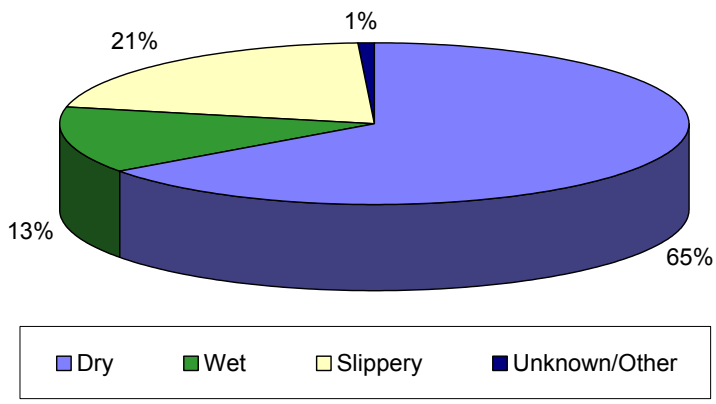
- Angle (6 percent)
- Rear end (6 percent)
- Turning movement (3 percent)
- Sideswipe (2 percent)
- Other (1 percent)

4.2.4 Environmental Characteristics

Road surface conditions are summarized in **Figure 4.8**. Approximately 65 percent of the collisions occurred under ideal conditions (dry). Another 20 percent of the collisions occurred on a slippery road surface (either ice, packed snow, loose snow or slush). Another 14 percent of the collisions occurred on a wet road surface. The proportion of collisions occurring on a slippery or wet road surface is similar to province-wide trends.

[4] *This includes single motor vehicle collisions with unattended vehicles.*
[5] *See http://www.mto.gov.on.ca/english/safety/orsar/orsar05/index.shtml*

Figure 4.8. Road Surface Condition



Road surface condition was not as large a factor in deer collisions when compared with all collision types as 81% of deer collisions occurred on dry pavement. Wet conditions prevailed for 13% of deer collisions and slippery conditions prevailed for 6%, with 1% unknown road surface conditions.

Lighting conditions are summarized in **Figure 4.9**. A majority of the collisions occurred in darkness or at dawn/dusk (55 percent in all). This is significantly higher than province-wide trends. Approximately 30 percent of all collisions province-wide occurred in darkness or at dawn/dusk.[6]

The high proportion of collisions outside of daylight hours, are partially due to the high incidence of deer collisions. **Figure 4.10** illustrates the lighting conditions for only the 890 single motor vehicle collisions involving deer. Only 28 percent of deer collisions occurred during daylight hours. Dark plus dusk accounted for 68 percent of deer collisions.

Looking at deer collisions another way, while they account for 34 percent of all collisions, they are over represented in hours of darkness and dawn and dusk. Deer collisions account for 62 percent of all collisions at dawn, 61% of all collisions at dusk and 45% of all collisions during hours of darkness.

[6] *See http://www.mto.gov.on.ca/english/safety/orsar/orsar05/chp3_3_05.shtml*

Figure 4.9. Lighting Conditions (all collisions)

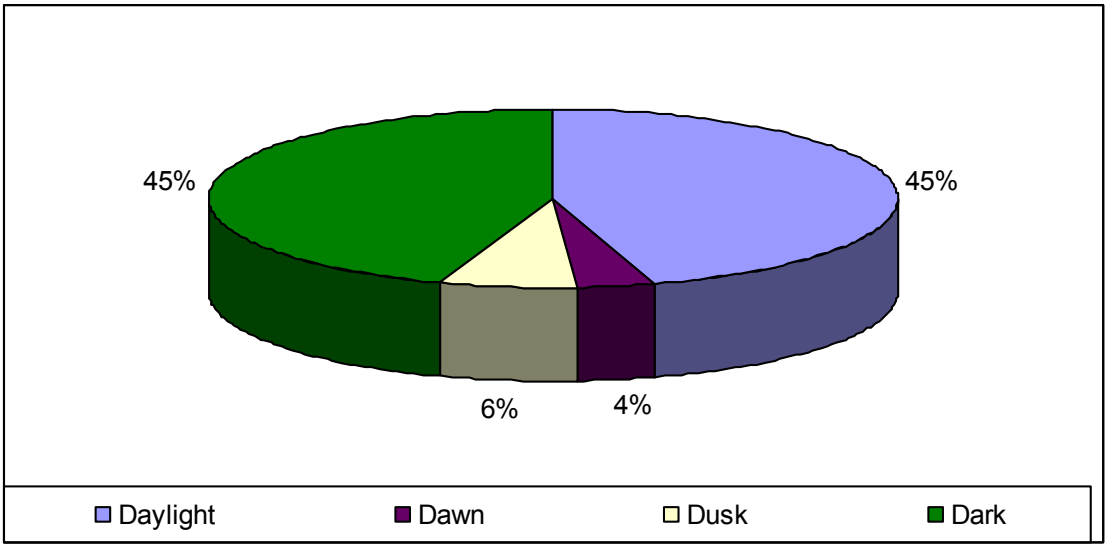
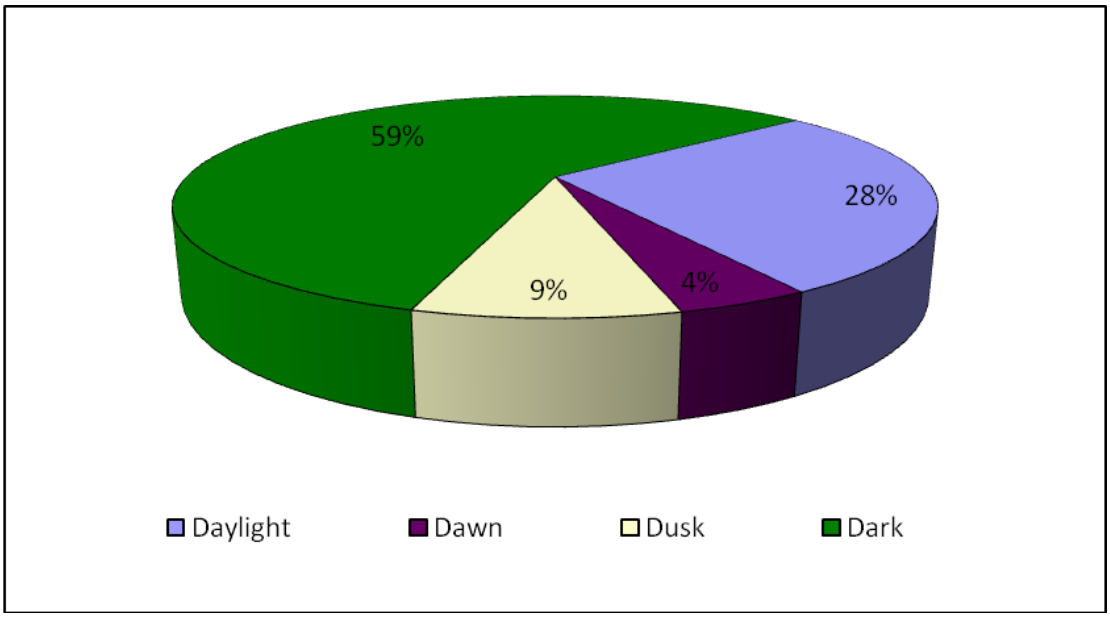


Figure 4.10. Lighting Conditions (deer collisions)



Only 42 of the 1441 collisions occurring during dark, dawn or dusk conditions were recorded at intersections or intersection-related. This indicates that intersection illumination is not a significant safety issue in Lanark.

4.2.5 Collision Summary

The following is concluded from the review of collisions occurring during the period 2002 – 2008:

- The County of Lanark has a collision rate (per 1,000 motor vehicle registrations) that is similar to neighbouring County jurisdictions
- The yearly frequency of collisions generally decreased between 2003 and 2007
- A majority of collisions are occurring on rural roads, which also make up the majority of the network
- Collisions on County Roads have a lower severity compared to province-wide trends. One reason may be the large number of collisions involving deer as a low proportion of deer collisions involve injuries
- The three most predominant impact types are single motor vehicle collisions with animals; approaching (head-on) collisions and single motor vehicle collisions with fixed objects. These three impact types have a substantially higher occurrence than noted in province-wide trends
- Collisions on a slippery or wet road surface are occurring in similar proportions to province-wide trends
- More collisions in the County of Lanark occur in darkness or at dawn/dusk than in Ontario as a whole. Deer collisions are over-represented during hours of darkness and at dawn and dusk

4.3 Road Safety Operations

A field review was undertaken to collect data and to gain a first-hand appreciation of the physical and operational characteristics of the County roads. The field review was used as an opportunity to observe the existing traffic control devices and the consistency of their application, as well as to note other characteristics such as:

- Sight distance
- Pavement and shoulder condition
- Roadside hazards and roadside protection systems
- Regulatory signs
- Warning signs
- Guide and information signs
- Pavement markings

Based on observations made along a selection of the County Roads, typical issues and problems included:

- Skewed intersections
- Horizontal and vertical curves with inadequate sight lines
- Roads with poor pavement and shoulder condition
- Fixed objects hazards in the clear zone
- Hamlets with traffic speeds in excess of the posted limits and curvilinear sections of road with design speeds lower than the posted speed limit
- Intersections with potential illumination needs
- Inconsistent or inadequate pavement markings, delineation and signage
- Lack of clarity with regard to right-of-way at some stop-controlled intersections
- Discontinuous sidewalks
- Inconsistent use of flashing beacons where amber beacons are present on the major roadway but red beacons are not installed facing the minor approach (County Road 7 and 19)
- At-grade rail crossings (skewed crossings and abrupt changes in vertical grade on County Road 17)

A detailed description of the road safety review is provided in **Appendix A – Safety Review Report**.

4.3.1 Horizontal and Vertical Alignment

The County of Lanark road network has a wide variety of road sections ranging from those that are largely straight and flat (found mainly in the urbanized areas) to those with a curvilinear alignment combined with rolling terrain. In the latter areas, sight distances at intersections and driveways may be limited.

4.3.2 Pavement and Shoulder Conditions

The condition of the pavement along County roads in Lanark is variable. While some roads are in good condition, extensive cracking and potholes were observed on others. Patching of potholes and sealing of cracks is evident. On some road sections the crack sealing has obscured centre line pavement markings, which reduces a driver's ability to determine the alignment of the roadway, particularly at night or during adverse weather conditions. This happens because crack sealing is generally done in the spring when the cracks are more open while the re-application of centre line pavement markings must be done during dry weather later in the spring or summer, leaving a period of time when pavement markings do not provide as much guidance as normal.

In rural areas, gravel shoulders have been provided. According to the 1999 TAC Geometric Design Guide for Canadian Roads, rural shoulders are typically between 2.5-3.0 metres depending on design hour volumes. Shoulder widths appear to be adequate on some roads and would allow a driver to safely pull onto the shoulder in an emergency situation. On other roads, shoulder width is limited due to topography, rock or other constraints.

In some areas pavement rutting is present.

4.3.3 Roadside Safety and Protection

Standards for minimum roadside clear zones, identification of roadside hazards, and the design and application roadside safety devices in Ontario, are found in the 1993 Ministry of Transportation, Ontario (MTO) document Roadside Safety Manual. Minimum roadside clear zone standards increase on higher speed and higher volume roadways. Additional clearance is required on the outside of horizontal curves.

Given the rugged terrain and presence of rock in portions of Lanark County, not all fixed object hazards can be removed from the clear zone. For example, with an AADT of 500 and a posted speed of 80 km/h, the clear zone should be 4 metres according to the Roadside Safety Manual[7].

The County of Lanark uses a combination of three cable guide rail and steel beam guide rail systems on their road network to protect road users, who inadvertently leave the roadway, from roadside hazards such as fixed objects, ditches, or embankments. The method for determining the appropriate type and location for guide rail systems is found in the MTO Roadside Safety Manual.

4.3.4 Signage

4.3.4.1 Regulatory Signs

Regulatory signs include stop signs and posted speed limit signs.

[7] Ministry of Transportation of Ontario. *Roadside Safety Manual*. MTO, Downsview, Ontario, 1993.

At unsignalized intersections, the County of Lanark uses Stop signs on the minor approaches in order to assign the right-of-way to motorists on the through road. The County makes limited use of all-way Stop signs. Ontario Traffic Manual (OTM) Book 5 has guidelines regarding the location for the placement of Stop signs in relation to the intersection and in relation to the edge of the roadway. In addition, the signs should be visible upstream from a distance of at least the minimum stopping sight distance (given the design speed of the roadway). In cases where this visibility cannot be practically achieved, a STOP AHEAD (Wb-1) sign should be used (see OTM Book 6). Roadside foliage can be an issue affecting the visibility of stop signs in Lanark.

The review of the County of Lanark road network indicated the general use of 80 km/h posted speed signs along the rural road sections and the use of 50 km/h posted speed signs within built up areas. Posted speed signs appear to generally conform to standards outlined in OTM Book 5, Regulatory Signs.

As a whole, 50 km/h posted speed signs with a BEGINS tab are being used on approaches to built-up areas (e.g. County Road 511 through the community of Balderson). In some locations, such as rural hamlets along County roads, the reduction of vehicle speeds to the 50 km/h posted speed limit is not achieved as the rural cross section and set back of structures from the road convey the message that higher speeds are still acceptable. This may be a concern for pedestrians wishing to cross the roadway.

4.3.4.2 Warning signs

Curve warning signs - In the OTM Book 6, Warning Signs, roadway alignment signs are described as signs used to warn of changes in road direction. Abrupt turns or curves, or the termination of roadway sections in T-intersections may result in hazardous driving situations unless road users are advised of these conditions in advance.

Field observations indicated that the application of the SHARP CURVE Sign (Wa-2L) and CURVE Sign (Wa-3L) were generally consistent and conformed to the OTM application guidelines. Field observations indicated that some additional signage on specific roadway sections might be beneficial to motorists. In addition to the turn/curve warning signs, some supplementary delineation (chevrons) may be required to highlight the change in horizontal alignment of the roadway.

In addition to the turn/curve warning signs, in situations where a speed reduction is required to negotiate a curve, it is important that the indicated advisory speed be both safe and realistic. Speed advisory signage should be erected based on the prevailing speed of traffic, not the posted maximum speed. Ball-bank indicator tests are the most common and practical way of determining advisory speeds.

Non-standard warning signs - In addition to curve warning signs, OTM Book 6 contains guidance on the selection and application of a number of warning signs in use in the Province of Ontario. Signs contained in the manual are intended to provide advance notice to road users of unexpected and potentially dangerous conditions on or near the road. The manual covers a wide range of hazards. Over the course of the field review, a number of instances of non-standard warning signs were observed. Warning signs that differ from OTM Book 6 in text and use of symbols are more likely to be misinterpreted by road users, reducing their effectiveness.

4.3.4.3 Guide and Information Signs

Prioritization - The County of Lanark makes use of crossing roadway or street name signs, route markers, destination signs and tourism signs to assist drivers in navigating along its road network. In terms of prioritization, crossing roadway and route markers should be considered first (in their placement) followed by destination signing (to communities). Tourism signing should be considered last (in its placement). A combination of information signs is illustrated in **Figure 4.11.** Route markers, street names, destination and tourism signing have been combined in a single assembly, increasing driver workload. In this assembly, tourism destination signs have been given greater

prominence than the community destination signs, crossing roadway signs and route markings. The font in the crossing roadway signs (shown on the street name blade) has a significantly smaller font than the tourism destination signs.

Figure 4.11. Guide and Information Signs (Junction of CR 511 and 12)

There is also a lack of consistency in the signs used in the County of Lanark. For example, some destination tourism signing uses brown lettering on a white background while other signs use white lettering on a blue background.

Advance guide signs and turn off crossing roadway signs - Crossing roadway signs, also known as street name signs, identify public roadways that intersect with County Roads at at-grade intersections. Crossing roadway signs provide information on route numbers, roadway names and cardinal direction for the purposes of wayfinding. This signage serves to orient and guide motorists who may have little knowledge of the local area.

To be effective, crossing roadway signage must be conspicuous relative to their surroundings, and therefore easily detected. They must also be legible at a sufficient distance to permit the motorist to read, understand and respond to the message by reducing speed, making lane changes and preparing to turn at the intersection, should this be part of their intended route.

Generally it was observed that on rural roadways, the crossing roadway signage was not easily visible. There was an absence of advance guide signs and turn-off signs on the higher volume roadways such as CR 511. Advance guide signs and turn-off signs or markers were noted to be absent on some County roads at the approach to Highway 7.

4.3.5 Pavement markings

The field observations included a review of centerline, edge line and intersection pavement markings. Pavement markings are refreshed on a regular basis by the County. These observations were made in advance of painting work that had been delayed due to weather conditions.

Directional Dividing Lines (Centre Lines) are used to designate the portion of a two-way roadway available for traffic traveling in each direction. As outlined in the OTM Book 11, Pavement, Hazard and Delineation Markings, there are specific criteria for use on rural roadways. Low-volume, rural roadways must be marked where the pavement width or where the two-way, peak hour volume exceeds a given threshold, on road with significant night time or tourist traffic or where there is a history of collisions.

Otherwise, the centre lines of rural roadways that do not exceed the thresholds outlined in OTM Book 11, and which do not exhibit the collision, traffic or climatic conditions outlined, need only be marked at specific roadway features (i.e., vertical and horizontal curves, intersections, railway crossings, bridges and other obstructions within the roadway).

A review of County of Lanark center lines showed that an overall use, although they were noted to be faded along some road sections. At night or in rainfall, the center line would be difficult to detect.

Ideally, centre line road markings should be reapplied as soon as possible following the resurfacing of the road. Reapplication to roads that are surface treated should be completed when possible, recognizing that excess material may spall off for a period of time. It may also be necessary to reapply markings after surface materials have stabilized.

Edge line markings delineate the outside edges of the traveled pavement. Edge lines adjacent to gravel shoulders and on or adjacent to partially paved shoulders have the potential to reduce shoulder maintenance and collision frequency, while providing effective travel lane delineation, particularly in conditions of poor visibility. Motorists often use edge lines as a guide in poor lighting conditions such as at night or in fog.

On two-lane roadways, edge lines help motorists stay on the proper path and reduce the likelihood of a vehicle leaving the designated roadway and losing control on a gravel shoulder or pavement edge drop-off. Where shoulders are gravel or partially paved, and where pavement drop-off necessitates an abnormal frequency of shoulder grading, an edge line may be placed. Where the pavement width prior to marking provides 3.6 metres or more per lane, the edge line must be placed at a distance from the pavement edge so that the lane is consistently 3.3 metres wide.

The use of edge lines in Lanark County varied from roadway to roadway. Where the lines have been provided, the markings varied widely in condition.

Intersection pavement markings are used to reduce vehicle and pedestrian conflicts, improve the capacity of the intersection, and clarify information used in driver decision-making. Intersection markings also alert motorists that they are approaching an intersection and give them adequate time to respond. The standard approach markings are to consist of the following components:

- Stop Bars – used to indicate the point at which a vehicle must stop in compliance with the Stop sign. Must be a solid white retro-reflective line between 30 cm and 60 cm wide
- Guide Lines – used to guide vehicles though an intersection and delineate the proper course to be taken by vehicles traversing the intersection to help prevent driver confusion

- Crosswalks – used to define and delineate the path for pedestrians to cross the roadway. In rural areas crosswalks are usually only marked at signalized intersections, but they should be marked at all intersections where there is substantial conflict between vehicle and pedestrian movements

Treatment of the higher-volume rural intersections and at local roads intersecting with County roads was found to be inconsistent. The practice of providing stop bars and guide lines at all urban and rural intersections was not consistently applied. As stated in the OTM Book 11, Pavement, Hazard and Delineation Markings, a stop line (also called a stop bar) must be used at both rural and urban intersections, to indicate the point at which a vehicle must stop in compliance with the stop sign, however, the County is inconsistent with this treatment.

5. Problems and Opportunities Analysis

In order to determine a plan for the future, the existing situation described in Section 4 was considered and the strategy (direction) for making improvements or addressing deficiencies was identified.

5.1 Strategic Plan and Vision

The establishment of needs and the development of an overall strategy for transportation in the County of Lanark must consider local characteristics, the vision articulated in the Strategic Plan and community trends. Of the top 25 themes describing what people value about Lanark County and their life, the following are relevant to transportation[8]:

- Proximity to Ottawa/urban area
- Public access to trails, lakes and rivers
- Good business and economic opportunity
- Low population density and lack of congestion
- Government is responsible and forward-thinking

Of the top 25 issues and challenges identified for Lanark, a number are directly related to transportation[9]:

- Controlling and planning for growth
- Protecting the natural environment
- Maintenance of aging infrastructure
- Lack of transportation and transportation alternatives
- Providing services for all ages

The Strategic Plan further described what needs to be done to achieve the type of community that residents would like to have in 2025. Some of the actions that rely on the transportation system are described below[10]:

Protect and Enhance the Natural Environment
- Improve public access to the county's natural heritage assets while protecting sensitive resources

Maintain High-Quality Services
- Provide appropriate, quality services to meet the needs of a widespread population with diverse needs
- Encourage healthy living and adequate health-care services for all
- Take advantage of opportunities afforded by geographic proximity to major centres (e.g. Ottawa and Kingston)

Strengthen and Diversity the Economy
- Build and maintain adequate infrastructure to support economic development

- Invest in Infrastructure to Meet Needs and Keep Pace with Growth
- Improve the transportation system and road access within the county and links to other communities in the region
- Work toward a county-wide, accessible and environment-friendly public transportation alternative
- Maintain, upgrade and profile county facilities

[8] The Rethink Group with Bourrie and Associates. *Lanark Community Vision and County Strategic Plan.* 2005. p. 10.
[9] Ibid. p. 11.
[10] Ibid. p. 13

Manage Growth through Good Planning and Effective Government

- Utilize Lanark County Vision 2025 (Vision) and the County Strategic Plan to help guide planning and decision making and to manage growth
- Plan for and provide services and infrastructure in synch with growth and ensure that growth is sustainable across the county

In particular, the Vision recognized the need to invest in public assets such as transportation infrastructure. By 2025 the Vision sees that "road access has been improved to parts of the county that were most isolated. Roads and bridges are being well maintained with upgrades to improve safety and to increase capacity where required. There have been road and rail and other mass transit improvements to create better links to Ottawa, Kingston and elsewhere in the region. Advancements in propulsion, fuel systems and vehicle and rail design have made public transportation faster, more efficient, affordable and environment friendly." [11]

The Vision articulated will help to determine needs and later to develop alternative solutions and strategies. Addressing concerns such as safety, roadway operations, traffic level of service and network connectivity will help Lanark achieve the Vision.

5.2 Growth and Development in Official Plans

Growth in Lanark County will have a significant impact on the transportation network by increasing the demand for travel. The eight local municipalities that make up the County of Lanark each have an Official Plan to guide future growth and development. Other documents such as Development Charges Studies, Growth Management Studies and Strategic Plans help to define and predict growth.

The following discussion focuses on the anticipated growth described in documents for each of the local municipalities that will influence transportation. Population information was taken from Census data and Official Plans.

5.2.1 Township of Lanark Highlands

According to the Township of Lanark Highlands Official Plan, 2003, residential growth is encouraged in the existing settlement areas including the Village of Lanark and the hamlets of McDonalds Corners, Watson Corners, Elphin, Hopetown and Middleville. Major shoreline development has also taken place on a number of area lakes and further development is likely depending on the capacity of the lakes to accommodate development. However, serviced land is not available in most hamlets and due to the constraints related to lot size on non-serviced lots and the space available within defined settlement areas, development is more likely to occur in rural areas. There is an expectation that housing construction could increase in Lanark Village once new water and sewage treatment plants are built. The Township's Official Plan will be updated in 2009.

The Lanark Highlands Development Charges Study (2004) predicts an annual growth rate of approximately 1.0% for the next 10 to 20 years. There were 4940 people in Lanark Highlands Township in 2004 based on census information from Statistics Canada and the 2014 population is predicted to be 5455. While the population continues to increase, the number of people per household is expected to decrease based on information provided by the Municipal Property Assessment Corporation (MPAC). The Development Charges study predicts that housing starts will be 40 units per year for the next ten years.

[11] The Rethink Group with Bourrie and Associates. *Lanark Community Vision and County Strategic Plan.* 2005. p. 6

The growth in Lanark Highlands may be attributed in part to the reasonable commuting distance to Ottawa from the eastern and southeastern parts of the Township, the easy access to Highway 7 and the expansion of this highway, the development of existing hamlets, and the availability of lakefront property.

5.2.2 Drummond/North Elmsley

The Official Plan of the Township of Drummond/North Elmsley, 2004, indicates that most growth will be along the Highway 7 corridor or in the vicinity of Perth. The Official Plan is currently being updated. Growth in the township is primarily a result of commuters moving out of the city although there are some houses being built in areas further away from the main commuting routes. Few residential lots are available and the severance process is limited to a maximum of 3 lots per larger property. Drummond/North Elmsley receives an average of 10 to 15 requests for severances per year. In the year 2008, 40 new lots were created. In total approximately 60 houses per year are constructed and the housing market is still quite strong in this area.

The full-time population is 7118 according to the 2006 census and the 5 year growth projection is for another 1000 people. This growth is approximately 1.3% per annum and is predicted based on population growth since 1996.

Provincial policy encourages growth around existing development in order that homes can be connected to municipal services. The Development Charges Study of 2004 estimated that growth will be evenly split between the Drummond and North Elmsley sections of the Township, with the majority of the growth near Perth and Smiths Falls. The limited supply of developable land in Drummond/North Elmsley, is restricting growth.

Ferguson's Falls is a hamlet that is likely to grow, as is Innisville. Innisville has 15 lots to be developed and the hamlet boundary will be expanded in the next Official Plan. Port Elmsley is surrounded by wetlands and so its growth is limited. There is the potential for 5 or 6 lots. The Smiths Falls area is not experiencing much growth due to the economic downturn in the local area but if commuter rail transit is implemented from Smiths Falls to Ottawa, then growth will be spurred.

5.2.3 Tay Valley Township

According to Official Plan of Tay Valley Township, 2003, the Township's population is expected to be approximately 7,300 permanent residents by the year 2020. This represents an average annual increase of 100 persons or an average annual growth of 1.7% based on projections from the 2004 Development Charges Study.

Tay Valley Township is not considered within a reasonable daily commuting distance to the Ottawa area and as such has not experienced the same amount of growth as the more eastern parts of Lanark County. Residential growth is stable at about 20 new dwellings per year based on trends since 1998. There have been few new residential lots created in the last 10 years and they are scattered throughout the township. While annual housing construction starts are anticipated to be stable in the future, the population will not increase at a constant rate since average household size is expected to decrease from 2.97 persons per household in 1996 to 2.65 in 2011 and beyond.

It is anticipated that many of the properties along the water that previously served as secondary residences will become principal residences by the year 2020. This will account for approximately half of the population growth.

5.2.4 Town of Carleton Place

The Official Plan of the Town of Carleton Place was approved by the Minister of Municipal Affairs and Housing in 2005. According to the Official Plan, the Town had a population of 9,400 in 2002 and it was expected to reach 11,000 by 2006. The Census data states that the 2001 population was 9083 and the 2006 population was 9453. Carleton Place is located within a reasonable commute to Ottawa and over 75% of the Town's employed population commute to places outside Carleton Place for work. The Town's road network includes easy access to Highways 7 and 15.

Household size has been increasing in Town of Carleton Place, opposite to the trend in other areas in Ontario. The Town has about a 10 year supply of residential land based on historical growth. There are approximately 700 lots within draft approved or registered plans of subdivision within the Town as well as additional land designated for residential use.

Growth in Carleton Place is limited by the capacity of the water treatment and sewer treatment plants. The Development Charges study anticipates an annual growth rate of 1.7% in the number of homes. Residential growth is expected in the area south of the Mississippi River where serviced land is available. In terms of people growth, the Development Charges study determined that 60 units would result in a growth of 144.8 people. By scaling this population growth to match the projected 75 units built annually, the population would be expected to increase by 180 people annually.

5.2.5 Township of Beckwith

The Township of Beckwith's Official Plan will be updated in 2009. The previous plan was approved in 1989 and has been amended over the years. Beckwith has experienced a significant population growth of 40% from about 4,560 in 1991 to 6,390 in 2006 based on census data. The close proximity to the City of Ottawa has contributed to the popularity of the Township for commuters who prefer a rural life style. The growth is slowing however, since there was 20% growth between 1991 and 1996, 11% growth between 1996 and 2001 and 6% growth between 2001 and 2006.

Future development of the Township is expected to be based primarily the communities of Black's Corners, Franktown, Prospect, Ashton and Gillies Corners. Approximately 40 % of the Township's past growth was within the Black's Corners Community. Recent subdivision applications have indicated plans for the creation of 464 residential lots in the near future. 73% of all lots currently planned for development are in Black's Corners.

5.2.6 Township of Montague

The Official Plan of the Township of Montague, originally approved in 1987 and last amended 2001, will be updated in 2009. Development Policy areas are located outside of Smiths Falls and in the vicinity of Numogate/Walsh Station, Rosedale, Nolan's Corners, Andrewsville and Kilmarnock. Population and housing statistics were provided by the Municipal Property Assessment Corporation (MPAC) for the Montague Development Charges Study of 2006. The population figures are based upon an enumeration that was taken every 3 years while housing unit counts were updated annually. While the number of households has been increasing slightly on an annual basis, the population of Montague has undergone a period of decline between 1996 (population 3800) and 2006 (population 3595) which can be attributed partially to the closure of the Rideau Regional Centre which housed approximately 380 people. It is expected that the number of houses and the population of Montague will remain fairly stable for the foreseeable future.

5.2.7 Town of Mississippi Mills

The Town of Mississippi Mills Community Official Plan, 2006 includes a growth strategy that encourages growth primarily within the existing serviced areas. More specifically, residential growth is directed to occur in the following areas: 50% in Almonte, 30% in rural areas and 20% in existing villages and hamlets of Pakenham, Clayton, Appleton, and Blakeney. The population is predicted to increase from 11,650 in 2001 to about 18,500 by 2026. This represents an annual growth rate of 1.9%, which is consistent with the growth experienced between 1981 and 2001. Based on these projections, Almonte will have an increase of 3500 residents, the rural areas will have an increase of 2000 in population and existing villages and hamlets will have an increase of 1350.

With its location abutting the City of Ottawa, the Town of Mississippi Mills is an attractive location for commuters.

5.2.8 Town of Perth

The Town of Perth Official Plan, 2000, projected the population of Perth to reach about 6500 by 2006 and 6930 by 2021. An Official Plan Amendment from May 2008 updated the Town's population projections to indicate an expected population of 8200 in 2026. Similar to many eastern Ontario communities, the number of people per household is decreasing. The number of jobs in Perth is expected to grow with a focus on commercial development in the downtown and Highway 7 areas. Growth will require improvements to the water and sewage systems.

The 2004 Development Charges study noted that the population has not been increasing as projected in the 1999 Development Charges Study but housing construction is proceeding as predicted. There was an average of 25 units constructed per year in the period between 2001 and 2004. The 2004 Development Charges study projected the construction of 28 housing units per year between 2005 and 2019. The Official Plan amendment of May 2008 projects a housing need of 560 units to 2026.

Residential development is spread throughout the areas designated for growth within the Town. The rate of growth is not consistent with the adjacent townships and there is an increased demand for housing that is not being met in Perth.

5.2.9 Separated Town of Smiths Falls

Smiths Falls is not part of the County of Lanark politically; however, its population and employment influence the transportation network in the County. The Official Plan of the Town of Smiths Falls, 2008, indicates that the current population of 9,000 is expected to reach 13,000 at full build-out. The year of build-out is not specified. While Smiths Falls serves as an employment centre within the region, many residents also commute to the Ottawa area for work.

5.2.10 Summary of Growth and Development

In general, growth rates between 2006 and 2026 are expected to be about 1-2% annually. Growth in Lanark County has been heavily influenced by the proximity of the City of Ottawa and improvements to the provincial highways, either completed or ongoing, such as to Highway 417 and Highway 7. Local municipalities, such as Carleton Place, Mississippi Mills and Beckwith in particular, have seen significant residential growth attributable to people living in Lanark and commuting to Ottawa for work. The expansion of Highway 7 to Carleton Place will continue this trend as travel times are reduced. With increased travel demand, County roads have also seen increased traffic and this trend is expected to continue as drivers chose a variety of routes to their destinations.

The predicted population growth in the different areas of the County was compared to the traffic growth factors in the same area. The areas with the higher predicted population growth correlated to the roadways with higher traffic growth factors. The population growth projections and predicted traffic growth factors vary across Lanark County and are illustrated in **Figure 5.1**.

5.3 Future Traffic Conditions

Future traffic volumes for this study were estimated using:

- Lanark County counts and forecasts
- Intersection turning movement counts from MTO for intersections with provincial highways
- Traffic analysis by others for current/recent development projects
- Information of potential future development from local municipalities

Annual growth rates on County roads in Lanark vary from about 1% per year to over 4% per year based on historical estimates that have been put into the County's WorkTech database.

5.3.1 Vehicle Volume Growth Rates

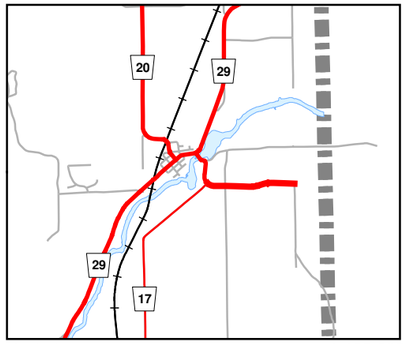
The existing Annual Average Daily Traffic (AADT) for the County roads in Lanark is shown in **Figure 5.2**.

5.3.2 Road Capacity Analysis

An analysis of road capacity was undertaken for 17 road sections that had an existing AADT greater than 6500. This threshold volume was selected because AADT volumes of less that 6500 are unlikely to cause capacity problems on two-lane, rural roadways. The volume to capacity ratio was calculated for each section of road. The capacity of the road was based on the number of lanes, including turning lanes and the roadside environment, which is reflected in the posted speed limit.

The AADT volumes were projected into the future in 5 year increments based on the growth factors provided by the County. The volume to capacity ratios were calculated for each of these time periods. Road sections with a volume to capacity ratio greater than 0.90 were flagged as potential problems.

In addition to forecasting AADT volumes using the growth rate from WorkTech, several different traffic scenarios were considered in order to assess the sensitivity of the results and to provide a robust analysis of potential future traffic conditions. One scenario predicted that after 10 years of growth at the projected growth rate, the growth would slow to 2% per year. Another scenario considered that the future AADT's would be reduced by 5% due to Transportation Demand Management measures and that after 10 years of growth at the projected growth rate, the growth would slow to 2% per year. A third scenario was developed assuming that the maximum capacity of all County roads would be limited to 800 vehicles per lane per hour in one direction.



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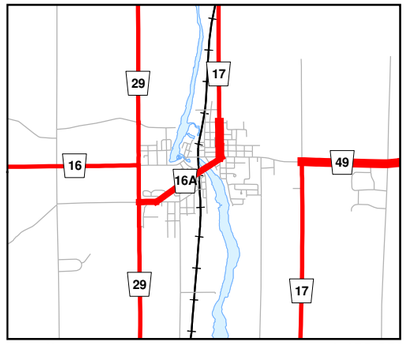
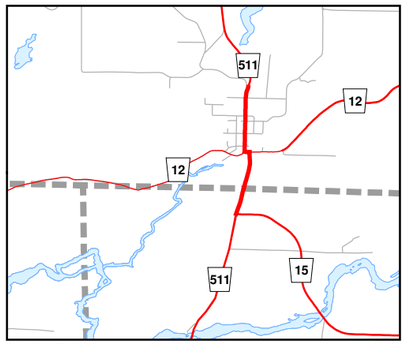
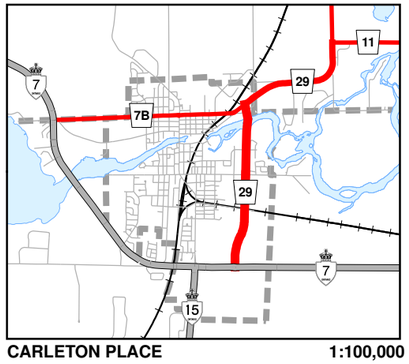


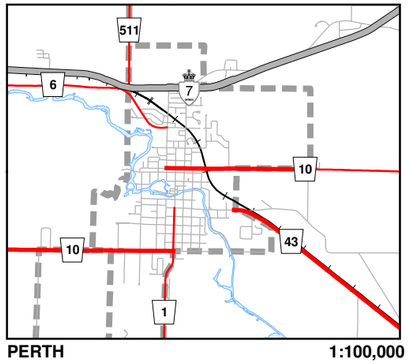
ALMONTE 1:100,000



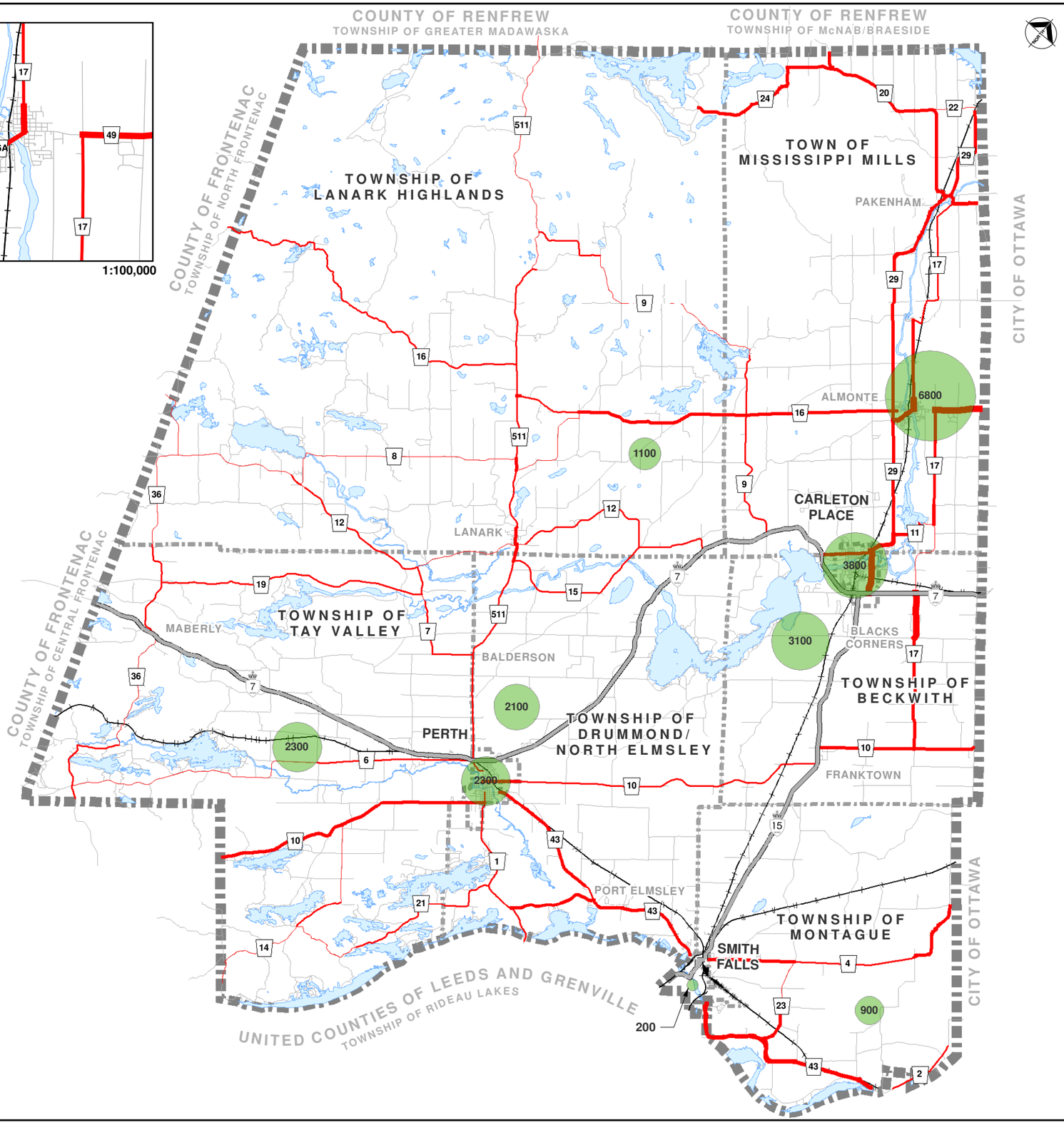
LANARK 1:100,000



CARLETON PLACE 1:100,000



PERTH 1:100,000



LEGEND

- PROJECTED POPULATION GROWTH (#)

COUNTY ROAD 10 YEAR GROWTH FACTOR

- 1.10 - 1.19
- 1.20 - 1.29
- 1.30 - 1.39
- 1.40 - 1.49
- 1.50 and Over

OTHER FEATURES

- PROVINCIAL HIGHWAY
- LOCAL ROAD
- RAILWAY
- WATERBODY
- MUNICIPAL BOUNDARY

NOTE:
-GROWTH IN RURAL MUNICIPALITIES IS NOT NECESSARILY CONCENTRATED IN THE LOCATION OF THE DOTS.
-GROWTH BASED ON MUNICIPAL OFFICIAL PLAN PROJECTIONS.

AECOM
AECOM Canada Ltd.
300 Water Street, Whitby, Ontario, Canada L1N 9J2
T 905.668.9363 F 905.668.0221

CLIENT: LANARK COUNTY

PROJECT:
LANARK COUNTY TRANSPORTATION MASTER PLAN

DRAWING:
PROJECTED POPULATION GROWTH TO 2026

PREPARED BY:	CHECKED BY:	PROJECT No.:
---	---	108515
DESIGNED BY:	APPROVED BY:	MAP:
---	---	Figure 5-1
SCALE: 1:275,000	DATE: MAY - 2009	

Map Document: (C:\GIS Projects\18-100045\18-100045\County Roads - 10_Year_GrowthFactor.mxd)
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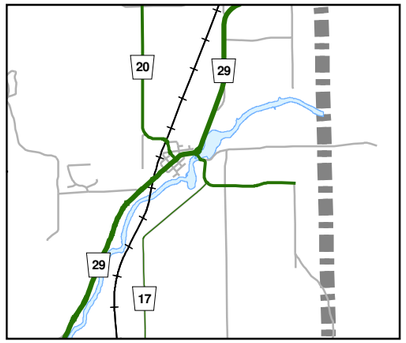

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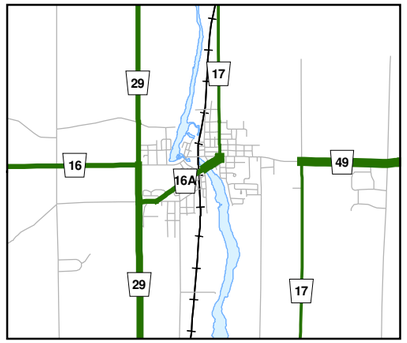

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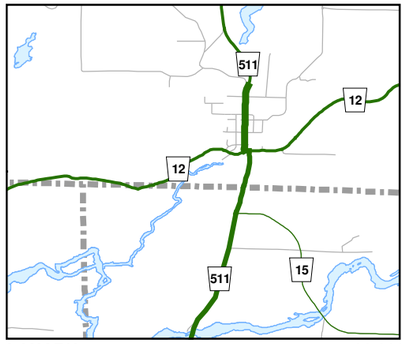

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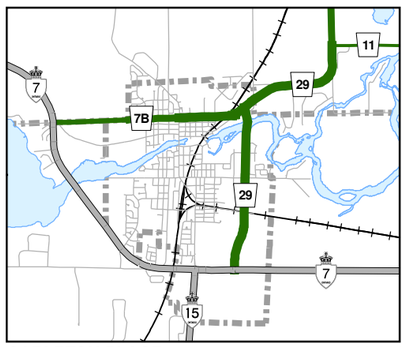
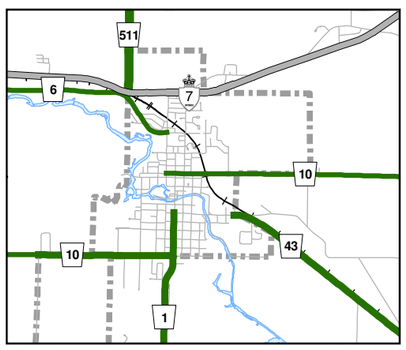
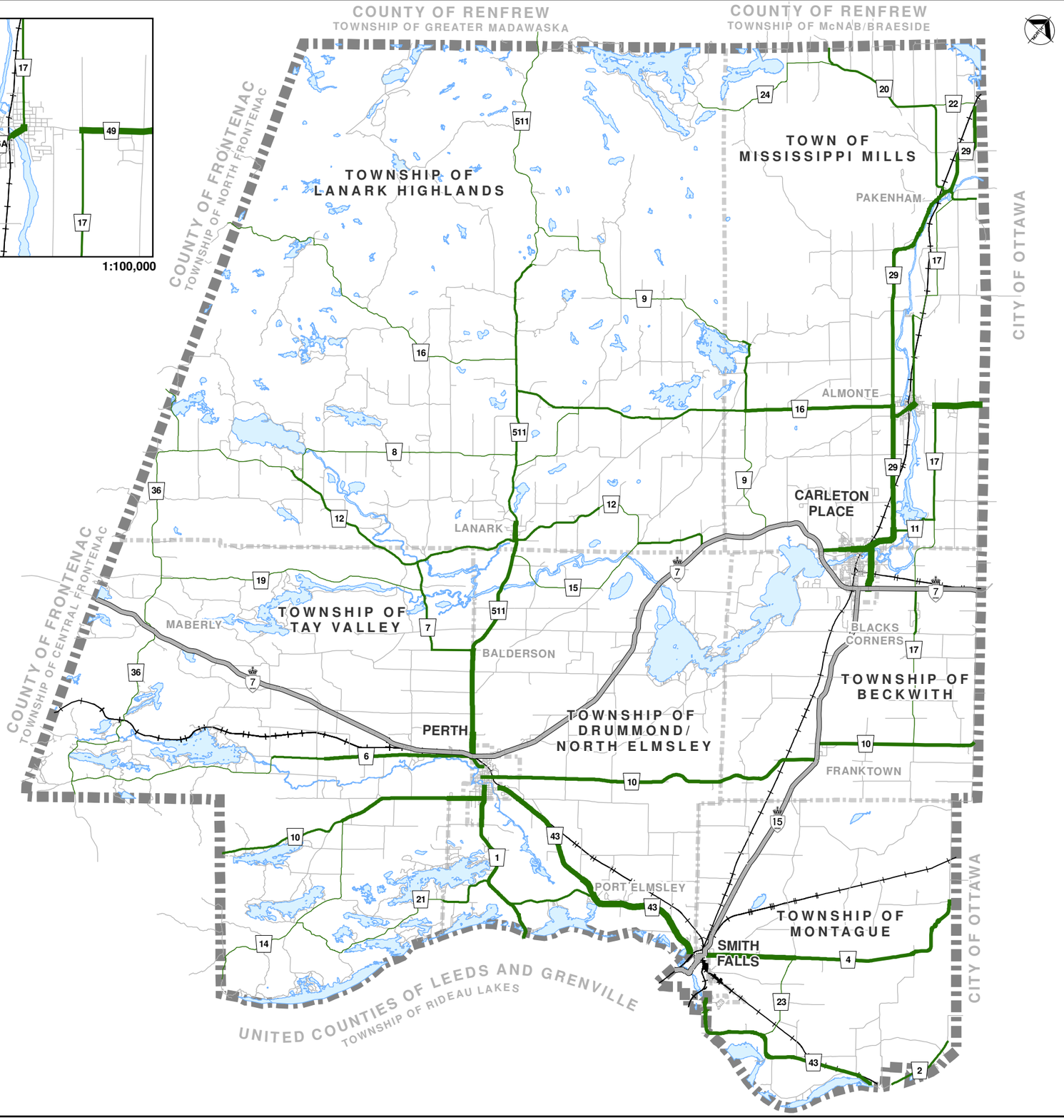


CARLETON PLACE 1:100,000



PERTH 1:100,000



LEGEND

AADT

- AADT Less Than 1000
- AADT 1000 to 2500
- AADT 2500 to 5000
- AADT 5000 to 7500
- AADT Greater Than 7500

OTHER FEATURES

- PROVINCIAL HIGHWAY
- LOCAL ROAD
- RAILWAY
- WATERBODY
- MUNICIPAL BOUNDARY

NOTE:
ROAD INVENTORY SEGMENTS AND ASSOCIATED AADT PROVIDED BY COUNTY OF LANARK.

AECOM

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CLIENT: LANARK COUNTY

PROJECT:

LANARK COUNTY TRANSPORTATION MASTER PLAN

DRAWING:

COUNTY ROAD NETWORK AADT

PREPARED BY:	CHECKED BY:	PROJECT No.:
---	---	108515
DESIGNED BY:	APPROVED BY:	MAP:
---	---	Figure 5-2
SCALE: 1:275,000	DATE: MAY - 2009	

Based on the capacity analysis using the various scenarios, the following County road segments are expected to require improvement to address capacity needs. The year associated with the required improvements could be sooner if development is more rapid than currently estimated or later if development occurs more slowly:

2013 to 2018:

- McNeely Avenue, Coleman to Lake Street, Carleton Place

2018 to 2023:

- March Road from Appleton Side Road to Ottawa Boundary, Mississippi Mills

2023 to 2028:

- Townline Road East from McNeely Avenue to Concession 8, Carleton Place
- Townline Road west of Bridge Street in Carleton Place

Beyond 2028:

- County Road 43 in Port Elmsley
- Queen Street, Almonte between the bridge and Martin Street

5.4 Intersection Operations

An assessment of traffic operations at several intersections within the County of Lanark was undertaken as part of this study. Some intersections were considered for specific analysis related to safety issues while others were evaluated based on anticipated capacity problems.

A preliminary investigation of twelve intersections was undertaken related to expected capacity issues. Of these twelve intersections, three were carried forward for a more thorough analysis and an additional two intersections were investigated related to safety concerns. A detailed analysis of intersection operations is provided in **Appendix A – Safety Review Report**.

5.4.1 North Street (County Road 10) and Gore Street, Town of Perth

The intersection of North Street and Gore Street, located in the Town of Perth, is currently two-way stop controlled on the North Street approach. The County of Lanark has raised concerns over the level of safety at this intersection, particularly with regard to the existing traffic control.

The stop signs on North Street are not ideally placed. The westbound stop sign is located on a pole approximately 3 metres in advance of the intersection rather than at the intersection itself. The view of the eastbound stop sign is partially blocked by a trailblazer sign assembly which is not standard. **Figure 5.3** and **Figure 5.4** show the eastbound and westbound view of the stop signs.

Figure 5.3. View of Stop Sign on Westbound Approach

Figure 5.4. View of Stop sign on Eastbound Approach

A set of three transverse pavement markings have been placed on the eastbound and westbound approaches. These markings appear to be the same width and length as stop bars. These markings do not seem to clearly indicate the need to stop as several collisions each year are caused by drivers failing to stop.

North Street and Gore Street each have a straight and flat alignment and meet at right angles. Visibility of the stop signs on North Street is essentially unlimited by the geometry of the road, however, as mentioned previously, the eastbound stop sign is partially blocked by directional signs. Drivers on North Street wishing to make a turn onto Gore Street or proceed straight through the intersection have severely restricted visibility of traffic approaching on Gore Street due to the presence of structures on all four corners of the intersection, trees, planters and on-street parking on Gore Street. Drivers on North Street are required to edge out into Gore Street in order to determine if there is a sufficient gap in traffic.

A review of volumes indicates that current hourly counts meet warranting conditions for an all-way stop based on the guidelines in the Ontario Traffic Manual (OTM) Book 5 Regulatory Signs. All-way stop controls may be considered where the total vehicle volume on all intersection approaches exceeds 500 vehicles per hour for each of any eight hours of the day. Counts provided by the Town of Perth for the intersection from the year 2006 indicate a total volume on all four approaches combined of between 500 and 600 vehicles per hour during the eight hour period of 10 am to 6 pm.

OTM Book 5 Regulatory Signs considers the use of an all-way stop to be appropriate where there is an average of four or more collisions per year over a three-year period that would be corrected by an all-way stop. An all-way stop should correct the right angle collision pattern occurring at the intersection. According to the collision history, there were eight right angle collisions in the most recent three year period (2005 – 2007). Almost all of the collisions involved vehicles on North Street heading west.

5.4.2 North Street (County Road 10) and Wilson Street, Town of Perth

The intersection of North Street (CR 10) and Wilson Street, also located in the Town of Perth, is currently two-way, stop controlled on the North Street approach. The County of Lanark requested that the intersection be included in the field investigation to identify any safety concerns and the need for an all-way stop control. The site was visited in November 2008 to examine the intersection configuration, sight lines, pavement markings and existing signs. In addition, traffic counts and the collision history were reviewed.

Stop signs have been placed in appropriate locations on the east and west approach. **Figure 5.5** and **Figure 5.6** show the eastbound and westbound view of the stop signs. No issues were identified with pavement markings.

Figure 5.5. View of Stop Sign on Westbound Approach

Figure 5.6. View of Stop Sign on Eastbound Approach

North Street and Wilson Street each have a straight and flat alignment and meet at right angles. Parking is permitted on all four approaches and parked vehicles may block the view of the stop signs on the east and west approaches as well as the view of approaching motorists. The presence of structures also restrict visibility on the eastbound approach (of northbound and southbound traffic) and on the westbound approach of northbound traffic. Where visibility is restricted, motorists are required to edge past the stop bar to obtain a clear view of traffic.

A review of available traffic volumes was performed in order to determine appropriate traffic control at the intersection. Traffic signal warrants require turning movement count data and this data, which was available for the pm peak period only, indicated that the warrants, as per OTM Book 12 Traffic Signals, are met during the 3 hours of the peak period. In order for the traffic signal justification criteria to be 100% fulfilled, the warrant must be met during 8 hours. Because of the proximity of Foster Street, signals at North Street would require coordination with Foster Street.

The collision history indicates that there were six collisions associated with the intersection between 2003 and 2008. One of which was a right-angle collision associated with the stop sign control and two of which were related to parked vehicles that were too close to the intersection. Given the lack of a collision pattern, it is believed that the intersection is not experiencing any significant safety issues.

5.4.3 Martin Street South (County Road 17) and Queen Street (County Road 16A), Town of Mississippi Mills

The intersection of Martin Street South (CR 17) and Queen Street (CR 16A) is located in Almonte. The intersection is in an urban area and is located 35 metres immediately south of a signalized intersection. The intersection has an

unusual Y-shaped configuration. The north leg (Martin Street South) and the west leg (Queen Street) have the dominant flow of traffic and currently have no controls. The south leg (Martin Street South) is stop-controlled. **Figure 5.7** shows a view of the intersection from the perspective of a southbound driver stopped at Ottawa Street.

Figure 5.7. View of Martin Street South and Queen Street (North Approach)

In addition, a commercial garage is located on the east side of the intersection adjacent to the north leg of the intersection. There is continuous pavement between the roadway and the parking lot of the auto repair business that increases the potential for conflicts between vehicles on the roadway and vehicles entering or exiting the garage. The lack of clear guidance may also create confusion regarding the location of the edge of the road. The County of Lanark has raised concerns over the unusual alignment and have suggested changing the south leg of Martin Street South to one-way (northbound only).

The site was visited in July 2008 to examine the intersection configuration, sight lines, pavement markings and existing signs. In addition, traffic counts and the collision history were reviewed.

Given the alignment of Martin Street South, southbound drivers wishing to continue on Martin Street South, rather than proceed on Queen Street, may mistakenly believe that they have the right of way over northbound traffic approaching from Queen Street. Based on the collision data provided, at least one collision appears to have occurred due to the ambiguity of the right-of-way.

5.4.4 George Street (CR 511), Mill Street (CR 12), South Street (CR 12) and CR 511, Township of Lanark Highlands

George Street (CR 511) and Mill Street (CR 12) together with South Street (CR 12) and County Road 511 are a set of offset tee intersections spaced approximately 75 metres apart at the south side of the Village of Lanark. The western intersection (Mill/George/South) is all-way stop controlled while the eastern intersection (South/CR 511) has a stop sign for westbound South Street and northbound County Road 511. An aerial photo (from Google) showing the configuration of the offset intersection is shown in **Figure 5.8** where the stop bars can be seen.

Figure 5.8. Intersection Configuration

County Road 511 is a major north-south road that connects the Town of Perth and Highway 7 at the south end of the road with Renfrew County, including the ski resort at Calabogie, to the north. According to the County of Lanark's road inventory database, the AADT on County Road 511 in Lanark Village ranges between 4000 and 5000 vehicles. In contrast, the AADT on County Road 12 in Lanark Village ranges between 1000-1450 vehicles. The majority of traffic is travelling north and south along County Road 511.

The intersection of George Street (CR 511) and South Street (CR 12), pictured in **Figure 5.9**, further conveys that County Road 511 is the dominant movement since the road curves to the left.

Figure 5.9. All-way Stop Controlled Intersection (CR 511 and CR 12) Taken on the North Approach Looking South

A stop sign is present; however at the time of the site visit the yellow guide line and stop bar had faded. Motorists were observed proceeding through the Stop sign without stopping. The lack of pavement markings at the time of the

July site visit, together with the width of the road and the relative inconspicuousness of the stop sign increases the risk of a southbound motorist proceeding through the stop sign and striking a vehicle turning left or right from South Street (CR 12) onto County Road 511.

Entering Lanark Village from the south on County Road 511, there is limited advance visibility of the Stop sign approaching County Road 12 (South Street) due to a vertical crest curve in advance of the intersection. This is illustrated in **Figure 5.10**. A Stop Ahead sign has been placed approximately 200 metres upstream of the intersection.

Figure 5.10. Stop Sign Placement on CR 511 Approaching CR 12 (South Street) – South Approach

Heading west on County Road 511, approaching George Street (CR 511), the Stop sign is partially blocked by a No Parking sign and a hanging flower basket until approximately 50 metres in advance of the intersection as seen in **Figure 5.11**. A Stop Ahead sign has been placed in advance of the intersection.

Figure 5.11. Stop Sign Placement on CR 511 Approaching CR 12 (George St) – East Approach

5.4.5 Perth Street (County Road 16A) and Christian Street (County Road 29), Town of Mississippi Mills

The intersection at Perth and Christian Streets in Almonte is a 4-way intersection that is stop controlled on Perth Street (the east leg) and on Old Perth Road (west leg). In the northbound direction, there is a free-flow right turn lane as shown in **Figure 5.12**. Streetlighting is present at the intersection that improves nightime visibility. This intersection is located on the western edge of Almonte and the majority of traffic is northbound or southbound on County Road 29. There is relatively little traffic on Old Perth Road. Concerns were raised about the speed of traffic through this intersection and the number of left turning vehicles.

Figure 5.12. Aerial view of Perth St (CR 16A) and Christian St (CR 29) intersection

A traffic volume count was completed on May 23, 2007 between 7:25 am and 6:00 pm. These volumes were used to perform a capacity analysis and to determine whether traffic signals may be warranted at the intersection. The analysis indicated that there is currently sufficient capacity and the vehicles do not experience delays. Using the MTO left turn lane warrants for two lane highways with unsignalized intersections, the current volumes indicate that a left turn lane is not required. Although the current traffic volumes indicate that neither a traffic signal nor an auxiliary left turn lane is warranted, the traffic volumes are approaching the thresholds for intervention; therefore this intersection should be monitored annually.

Collision data specific to the intersection was not available, but using the collision data for the road sections in the vicinity of the intersection, the two road sections to the north and the east were ranked 26th and 30th in terms of global collision risk as compared to the other 185 County road sections in Lanark County. The long, straight stretch of CR 29 is conducive to speeding. The location of the intersection at an entry into Almonte would suggest that it is an appropriate candidate for speed management measures such as a gateway feature or transverse pavement markings.

5.5 Road Network

5.5.1 County Road Continuity in Urban Areas

The majority of County roads are located in rural areas; however, there are several County roads that are within town boundaries. They constitute about 1.6% of the County road system. The designation of the County roads in an urban setting is inconsistent. Currently, within an urban area, the County road may:

- terminate at the town boundary (e.g. CR 43 in Perth and CR 49 in Almonte)
- continue through the urban area as a County road (e.g. Townline Road and McNeely Avenue in Carleton Place)
- continue partially through the urban area and terminate (e.g. CR 1 and CR 10 in Perth)

Where county roads continue into or through urban areas, the slopes and ditches found in rural areas are replaced by curbs and sidewalks. Urban roadway maintenance requirements and procedures differ from those for rural roads. Urban roads require different techniques for street sweeping, winter maintenance, patching, line painting, and in addition potentially have traffic signal maintenance and additional signage requirements. Municipal services such as water and sanitary sewer are usually located under the roadway. Also, all sidewalks on County roads are under municipal jurisdiction, which means that two agencies share responsibilities within the right-of-way and coordination is required. In order to adequately maintain and operate roads in urban areas, the County needs to train its staff and buy and maintain the equipment dedicated to the needs of urban roads. Because of the small percentage of the County road system (1.6%) that is classified as urban, the maintenance of urban roads requires a disproportionate amount of County resources and these resources cannot be efficient.

Consideration may be given to establishing agreements with each of the local municipalities with urban County roads that would divide responsibilities between the County and the local municipality. Possible approaches that could be considered would be:

- Maintain the status quo with the County responsible for the operation and maintenance of all County roads, regardless of their location
- Provide revenue-neutral funding from County to the local municipalities for the operation and maintenance of County roads within urban areas
- Trade fiscally-equivalent responsibilities between the county and local municipalities. This may include exchanging jurisdiction over roads, bridges or both

5.5.2 Connectivity

In general, the Lanark County road network has good connectivity and continuity within the road network. Provincial highways (7, 15, 417) also serve the eastern and southern portions of the County. There are some locations; however, where connectivity is an issue between County roads or between County roads and provincial highways.

The Town of Perth has identified a need to connect County Roads 10 and 43 to Highway 7 in order to address the increase in traffic demands through the Town due to residential and commercial growth.

In Carleton Place, a connection between Highway 7 and Highway 15 would improve traffic flow as the areas south Highway 7, east of Highway 15 and east and west of McNeely Avenue continue to develop. The extension of McNeely Avenue will help address the increasing traffic destined for the commercial development in the area by providing an alternative route between the provincial highways.

In Almonte, the need for another crossing of the Mississippi River to provide an alternative east-west route to the existing Wolf Grove Road to March Road was raised during consultation. While the capacity and safety analysis did not indicate a need for this new route within the next 20 years, it should be re-considered during future TMP updates so that this need may be identified at an early stage. Issues with another river crossing will include the environmental impact (natural, social, economic) and cost. The Town should consider these issues during future Official Plan and growth management updates. The Town and County may consider undertaking a route location study to assess the feasibility of another crossing to support future planning. Should the County develop their own Official Plan, it may be beneficial in coordinating the impact of growth in adjacent local municipalities.

In the northern part of the County, roads tend to radiate from CR 511 and CR 29, especially where the severe topography (characterized by rock and wetlands) makes road-building difficult. The lack of a connection between the White Lake area and CR 511 was raised during consultation as it creates out of way travel for those wishing to travel in an east-west direction in Lanark Highlands. The Township of Lanark Highlands has studied this connection for a Township road. Traffic demand does not warrant the construction of a new road to the White Lake area and a new road would not fulfill needs typically associated with a County road. The environmental impacts would include the destruction of wetlands and the cost to achieve reasonable road standards.

5.6 Cycling

Cycling in Lanark County is a popular recreational activity and is also used for transportation by some people. It has the potential for significant individual, social, environmental and economic benefits, including reduction of the number of vehicles on the road, as well as improved public health.

In Lanark County as in many rural counties, the use of cycling as a transportation mode is limited by the distances required for many trips, the cross-section width of many roads and bridges, the high speed of traffic on County roads and the inclement winter weather. Regardless of its limitations, the inclusiveness of cycling and its suitability for many shorter distance trips makes it desirable to encourage this mode of travel.

The examination of cycling involved the following tasks:

- Review of background materials including cycling plans and cycling sections contained in Transportation Master Plans for other municipalities and counties
- Identification of existing facilities
- Consultation with the public and obtain input
- Assessment of cycling potential as an alternative mode
- Suggestions for measures to be implemented and priority locations (described in Section 6)

A cycling plan contains engineering components, an educational aspect for cyclists and motorists, enforcement of regulations by authorities and a program for the encouragement of cycling. Measures to promote cycling include providing on or off road facilities, managing vehicle speeds, providing bike parking, publishing maps and introducing incentive programs.

5.6.1 Background Review

Many Ontario municipalities have studied cycling as part of their Transportation Master Plans (TMP) or as standalone studies. These documents have many similarities as municipalities recognize the benefits of cycling as well as its limitations in addressing travel demand, especially in rural areas. The background material reviewed included:

- City of Ottawa Cycling Plan, January 2008
- City of Ottawa Transportation Master Plan 2003 and 2008
- County of Lennox and Addington Transportation Master Plan, 2001
- County of Simcoe Transportation Master Plan, 2008
- Oxford County Transportation Master Plan, 2009
- Region of Waterloo Cycling Master Plan, 2004
- Durham Region Transportation Master Plan, 2005

The **City of Ottawa Cycling Plan**, 2008, provides a detailed documentation of goals and an overview of the proposed network. It describes methods to improve the road network for cyclists, the costs to complete the improvement work and proposes an implementation plan. A Technical Appendix provides detailed design guidelines. Design criteria are drawn from the 1999 Transportation Association of Canada (TAC) Guidelines and from the 1996 Ministry of Transportation (MTO) Ontario Bikeways Planning and Design Guidelines.

One of the goals in the City of Ottawa Cycling Plan is to triple the number of cycling trips over a 20 year time period by creating an integrated cycling network, which would provide a safer environment for cyclists. On rural roads, paved shoulders are recommended for the roads identified as part of the cycling network. Routes identified in the proposed network that connect to Lanark County include Panmure Road, March Road (CR 49), Trans Canada Trail, Perth Road (CR 10) and Heritage Drive (CR 2). Where funding is limited, the Ottawa plan recommends paved shoulders on up grades to provide additional room for cyclists where they are moving more slowly. A paved shoulder width of 1.2 to 1.5 m is recommended with an additional 0.5 to 1.0 granular shoulder.

Bike lanes adjacent to curbs on roads with an urban cross-section are recommended to be a minimum of 1.2 m wide with a desirable width of 1.5 to 2.2 m. Wider lanes are recommended where the posted speed limit is 60-80 km/h. Where off-road multi-use paths are constructed they are typically a minimum of 3.0 m wide, though narrower widths are acceptable for short distances where there are physical or property constraints.

The cost of the 20-year plan for cycling infrastructure in Ottawa is $40 million ($49 per capita).

The Ottawa Transportation Master Plan emphasizes demand management and alternative transportation modes such a transit, cycling, walking and ridesharing. The City has aggressive targets to reduce peak hour traffic and to promote active transportation in order to reduce the demands for additional road infrastructure. Through the TMP and Official Plan, Ottawa has committed to making cycling a priority. Key factors are described as suitable distance, positive public attitudes, safe and direct routes, adequate maintenance and facilities at destinations for parking and showers. The City will lead cycling initiative programs through publishing a cycling map and providing parking at City facilities and bike racks on buses, as well as through other education and encouragement programs.

The cycling section within the **County of Lennox and Addington Transportation Master Plan**, 2001, describes the types of cycling facilities (bicycle routes, bicycle lanes and bicycles paths), the types of users (recreation, touring, utilitarian) and design guidelines. Design criteria are drawn from the 1999 TAC Guidelines and from the 1996 MTO Ontario Bikeways Planning and Design Guidelines. Within these guidelines the TMP notes that separate bicycle facilities must be financially viable and practical. Roads with a speed limit of 80 km/h or with a paved lane width of less than 3.5 m should not be considered for on-road facilities. The width of a paved shoulder on rural roads to suit on-road cycling is specified based on the daily traffic volume and the percentage of trucks. A priority list of roads for designation as bike routes was identified.

The **County of Simcoe Transportation Master Plan** describes an existing off-road trail network not dissimilar to the one in Lanark County, including abandoned rail lines and the Trans-Canada Trail. They also have a volunteer trails corporation that is active in promoting and developing the network. Walking and cycling in Simcoe County tend

to be recreational activities and in order to encourage more use, the County requires the design of new developments to encourage cycling and walking by connecting existing cycling infrastructure into a network with an emphasis on access to commercial locations and by ensuring safe routes to school. On higher speed, higher volume roads, an off-road path at the back of ditch is suggested in place of a paved shoulder. Policies focus on a leadership role by the County in promoting active transportation by including bike racks and other infrastructure at their buildings and public facilities and through education and cooperation with municipalities, school boards and others.

The cycling policies in the **Oxford County Transportation Master Plan**, 2008, note that non-motorized modes like cyclists and pedestrians contribute to greater transportation choices, less traffic congestion, cleaner air, healthier citizens, stronger communities, a more sustainable economic climate and a higher quality of life for residents. This TMP quotes a study in Kingston that determined that over half of cycling trips are less than 5 km and about 85% are less than 10 km. During consultations, the public in Oxford County were supportive of cycling initiatives but felt that use would not grow significantly due to the same types of constraints found in most rural counties. Local municipalities in Oxford County have been responsible for cycling initiatives to date. The TMP cycling policies recommend that the County help integrate the municipal cycling network by extending existing facilities onto County roads where appropriate, facilitate the establishment of a County-wide Cycling Advisory Committee and consider undertaking a Cycling Master Plan. Because of the low population density, the TMP suggested focusing cycling infrastructure in the vicinity of the larger communities. For design criteria it references the Canadian Institute for Planners Report entitled Community Cycling Manual, along with the TAC and MTO guidelines.

The Region of Waterloo Cycling Master Plan, 2004, has as its goal the doubling of cycling trips from 1% to 2% of all trips by 2016. To achieve this goal, a 20-year implementation plan has been developed that aims to harmonize the cycling network through the region and have the regional cycling network within a 15 minute ride for rural residents and within a 5 minute ride for urban residents. The Cycling Plan includes a network, design strategies and policies and supporting initiatives. There is a route evaluation matrix involving a series of questions to assess the suitability of a particular road for inclusion in the cycling network. It includes cost sharing where the cycling network is located along a local road or where off-road facilities are proposed. The Core and Long Term networks include routes on regional roads, local roads and trails managed by others. The capital cost of the Plan is $10 million for Core network route development and $23 million for Long Term network route development. A number of potential outside funding sources were identified including:

- Green Municipal Funds, Federation of Canadian Municipalities
- Moving on Sustainable Transportation, Transport Canada
- Ontario Trillium Foundation, Ministry of Culture
- Human Resources Development Canada (HRDC), Government of Canada
- Various Charitable Foundations
- Corporate Environmental Funds and Donations

In the **Durham Region Transportation Master Plan**, 2005, the goal is to shift 15% of peak period travel to other modes such as transit, ridesharing, work at home, cycling and walking. Cycling and walking facilities are the responsibility of the local municipalities but the Region recognized the potential to increase the use of these modes by providing facilities on Regional roads in the vicinity of larger trip generators such as the university and college campuses. Development of a Regional Cycling Plan was recommended to better connect and integrate the network across all municipalities. The TMP also recommended that cycling facilities be considered during capital projects on regional roads and provided guidelines for this work.

Publications relevant to the use of **cycling for school trips** were also researched. In the past, cycling and walking were prevalent as a means for children to travel to school but this has changed. A 2008 study was completed in

Montreal and Trois-Rivières, Quebec on travel to elementary schools. Based on origin-destination results from Montreal, it was found that between 1998 to 2003 walking to school dropped from 40.5% to 34.2% of travel while trips to school by car rose from 22.0% to 30.7%[12]. The reasons for this increase in vehicular trips to school include the distance between home and school, parental fears and concerns and lack of cycling or pedestrian facilities. In the Upper Canada District School Board (UCDSB), which serves Lanark County, 78% of students are eligible for bussing and the remaining 22% live within the walking zone. Students are in the walking zone if they are in grades JK to 3 and live within 0.8 km of school or are in grades 4 to 8 and live within 1.6 km of the school. Some schools also have a 100% bussing policy if the school is located on a road with an 80 km/h speed limit.

North Grenville Cycling Policies have been developed to encourage people to ride bicycles. Bike racks will be required in new development or during re-development. Bike lanes and bike racks will be included when the Municipality is constructing public works. In addition a cycling plan is to be created to identify cycling routes in urban and rural areas with a goal to improve the feasibility of cycling as an alternative mode.

5.6.2 Existing Facilities

In Lanark County, there are few existing facilities for cyclists; however recreational cycling was identified as a popular choice during consultations. Existing informal bicycling facilities include paved shoulders that have been constructed in recent years on CR 21, Martin Street North and sections of CR 15, shared use lanes in some urban locations where a wider pavement area provides space for vehicles and bicycles and several off-road recreational paths including Riverwalk in Almonte, the path from Appleton to Carleton Place and the Trans Canada Trail.

Lanark County has established a Municipal Trails Corporation to foster development and to promote the use of trails within Lanark County. They are currently working on the identification and establishment of a Trans Canada Trail link in Lanark as well as an accessible trail. They advocate on behalf of an interconnected trail system at local, provincial and national levels. The Lanark County Municipal Trails Corporation is working in cooperation with similar groups such as the Ontario Trails Council, Rideau Trail Association, Mississippi Valley Field Naturalists and Eastern Ontario Trail Alliance.

The choice of cycling as the travel mode for commuting in Lanark County is not frequent and hence cycling has and will have limited impact on roadway level of service during peak periods. As noted, many factors including time (distance), requirement for a vehicle on the job and weather limit the attractiveness of cycling for many commuters during peak hours.

5.6.3 Results of Consultation

Recognition of the value of cycling for commuting and recreation is increasing and includes an understanding of the health and environmental benefits. While the application of cycling may have its limitations due to the travel distances and weather in this area, many people place value on providing facilities to encourage cycling. During the Focus Groups and though the web-based questionnaire completed in August-September 2008, the public provided comments on existing conditions for cycling in Lanark and their interest in future facilities. Some of the comments included:

- Prefer cycling on Township roads but also use County roads when necessary
- Do not use County roads due to traffic speeds and steep slopes of road shoulders
- Recreational and commuter users have different needs and challenges

[12] *Lewis, P., Bussière, Y., Carlier, M., Fortin-Lacasse, K., Gagné, S., Lapierre, L. et al. Active Travel and School in Montreal and Trois-Rivières. Groupe de recherché Ville et mobilité. 2008.*

- There is a lot of use by cyclists on weekends
- There is a high use and potential use between towns and hamlets
- Wolf Grove Road (CR16), Tatlock Road (CR9) and Maberly-Elphin/ Bolingbrooke (CR 36) are regularly used by cyclists
- Concerned about personal security on off-road path from Appleton to Carleton Place
- Council reviews every road construction job to decide on whether paved shoulders should be included

During the development of the cycling plan, a member of the Almonte Bicycle Club provided some information regarding the selection of routes by the bicycle club. Many of the time trial and touring routes use county roads and the routes are mainly selected based on set distances of 15 km, 40 km and 100 km. Other important considerations are lower volume roads and good pavement conditions when routes are chosen. Cyclists also value painted edge lines.

As discussed under Background, many counties and municipalities in Ontario have recognized the importance of cycling in their Transportation Master Plans as well as the difficulties with encouraging cycling on a County-wide basis given the distances involved. As a result, a number of Counties and other municipalities have decided to incorporate paved shoulders on their rural county road network, where feasible, in order to provide more space for cyclists and to increase the stability of the road structure along the edge of the road.

Several Counties and municipalities were contacted regarding their policies related to paved shoulders.

In the County of Frontenac, all County Roads are now part of the municipal road infrastructure system. **South Frontenac** has initiated a practice such that when a Township arterial road (formerly a county road) is reconstructed or rehabilitated a 1.2m shoulder is paved in each direction. A 1.2m paved shoulder meets the minimum requirements for a cycling facility. This paved shoulder also improves safety for the motoring public and reduces maintenance.

United Counties of Stormont, Dundas and Glengarry (SDG) started their shoulder paving program when the former Highway 2 was downloaded to SDG. In conjunction with the Township, through a cost-sharing program, a few bike lane sections were paved along County Road 2 where the road was within sight of the St. Lawrence River. The comments received after the work were very positive. Council then adopted the concept of paved shoulders and paved shoulders are now included in the resurfacing budget as part of the cost per km. Currently SDG is about 5 years into a 15 to 17 year cycle of resurfacing with partially paved shoulders. Where the existing shoulder is wide enough, a 1.25m shoulder is paved on each side of the road, otherwise 1.0m is paved. Any rural road that is being resurfaced automatically gets a partially paved shoulder.

Although **Northumberland County** does not have a policy in place, sufficient funds are included in the budget to complete the paving of select road shoulders as part of the annual capital program. The practice followed is that, on any current road rehabilitation projects, the length of the project is reviewed for possible locations for future safety device installations and then the road shoulder in that area is paved. Generally, the following year the safety device is installed.

In the **United Counties of Prescott & Russell** there is an informal policy that offers local municipalities the opportunity, through a cost-sharing agreement (50% County- 50% municipality), to widen or pave shoulders up to a maximum of 2 meters and usually approximately 1.5 meters. This paved shoulder is intended as a cycling path or a pedestrian path which is less expensive than a typical sidewalk. These shoulders are usually paved along the County roads at village limits. Another common practice in Prescott & Russell, in order to provide wider shoulders, is to pave roads with an additional width of 200 to 300 mm and to paint edge lines. Recently, discussions have been held with County Council regarding the paving all shoulders to a width of 1.5 metres.

At the **City of Quinte West** the common practice is to widen the roadway and partially eliminate the granular shoulder of all rural asphalt paved roads with a minimum paved shoulder of 1.0 meters when repaving occurs. On some roadways, where there is a designated bicycle lane, the road surface is widened for the full width of the granular shoulder when road resurfacing or reconstruction occurs.

In **Prince Edward County**, the policy has been to widen the road surface on most roads a minimum width of 200mm on each side when the road is repaved. On the former MTO highways, the shoulders have been widened to the MTO standard that was already in place on those roads.

5.6.4 Assessment of Cycling in Lanark County

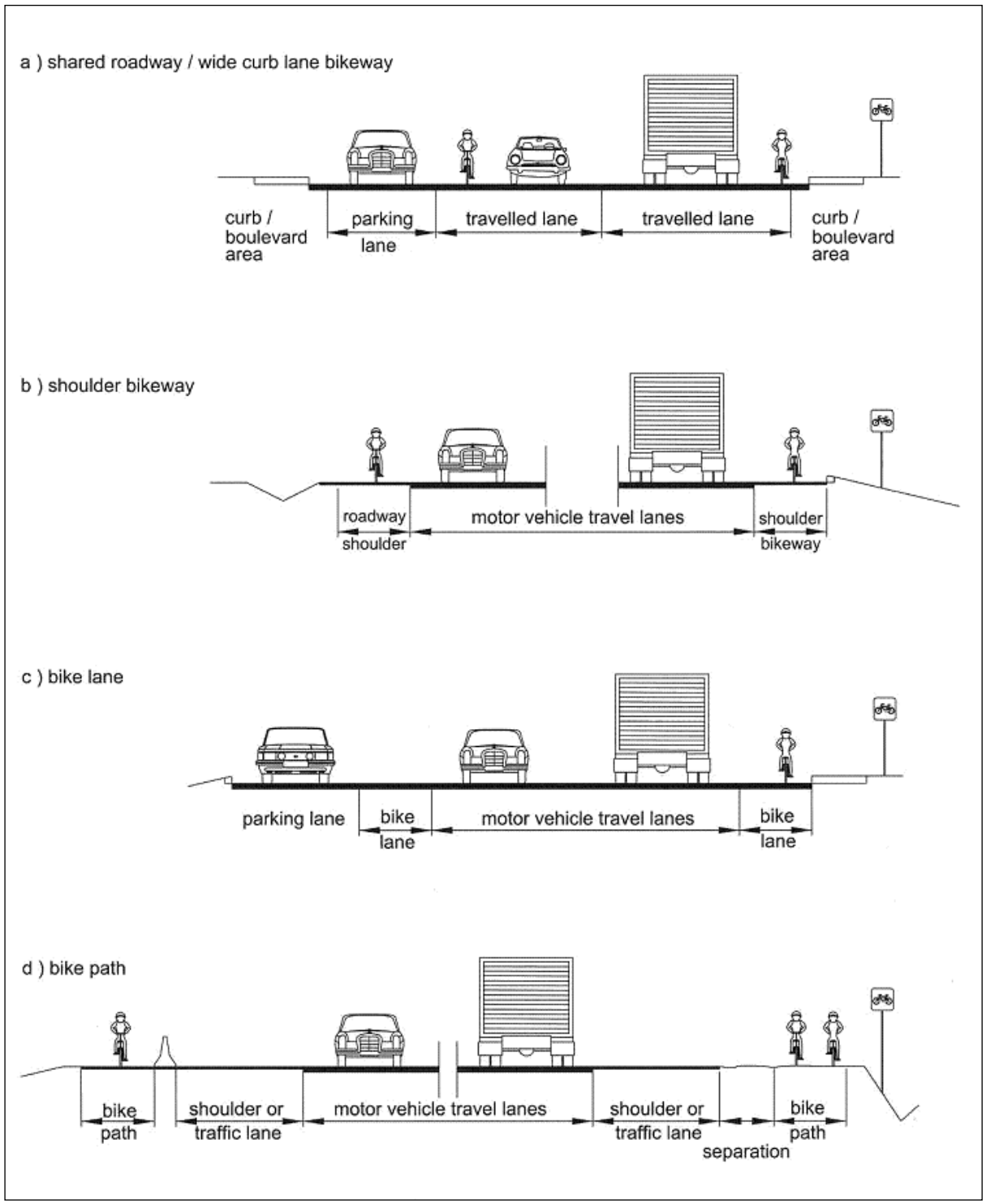
Lanark seeks to provide a safer environment for cyclists and improve the cycling experience for its residents and visitors. This Cycling Plan includes bicycling facilities within the road right-of-way along County roads. These facilities can either be on the roadway or adjacent to the roadway. Trails that are beyond the road right-of-way are not included in the scope of this Cycling Plan.

Improvements to the cycling facilities and expansion of the cycling network can be used to promote bicycle tourism with the County. In the Region of Niagara, cycle tourism has large economic benefits with cycling tourism responsible for 12% of the total tourism expenditures.[13] The Region has invested in promoting cycling routes of different distances and with different landscapes and has printed cycling maps and cycling tourism guides.

In order to encourage more cycling within the County, several measures can be considered. For less experienced cyclists, bike lanes on busier two-lane roads, paved shoulders or bike paths separated from the roadway provide the space needed to increase the comfort level for cyclists. These facilities can appeal to more experienced cyclists as well, who may also be comfortable sharing lanes with motorists on busy roads. Typical cycling facilities are illustrated in **Figure 5.13** below[14].

[13] *York Region Pedestrian and Cycling Master Plan Study. April 2008.*
[14] *MMM Group, Ottawa Cycling Plan Technical Appendix No. 1, January 2008, p. 3-3.*

Figure 5.13. Various Types of Facilities for Cyclists



5.7 Park and Ride Lot Locations

There are existing park and ride lots located at:

- CR 17 at Highway 7
- CR 15 at Highway 7
- CR 10 at Highway 15
- CR 1 and CR 21

These lots are used primarily on weekdays for people commuting to work but also on weekends for people who park and then enjoy the recreational facilities in the County. Commuters also use informal locations throughout the County for parking.

During the focus groups sessions and in the web based questionnaire, people identified many locations where they believed park and ride lots would be helpful. Identified locations were frequently close to population centres such as Almonte, Carleton Place, Perth and Smiths Falls as well as villages and hamlets. Preferred locations were near major intersections. Suggestions were to park in existing parking spaces which are not generally used during the workday time period such as at arenas, community centres, halls and churches, in order to make better use of existing infrastructure.

5.8 Agricultural Vehicle and Equipment Use

The southern and eastern portions of Lanark County have a significant portion of agricultural lands. Farm vehicles and specialized equipment use County and Township roads to travel between properties and farms. Depending on the size of the vehicle/equipment and the width of the road, they may travel along the shoulder or use the full lane. The movement of specialized equipment can also be seasonal in nature.

At this time, the collision experience does not indicate a significant safety issue with farm vehicles; however, slow moving farm vehicles can be a concern along roads in areas where sight distance is limited due to horizontal and vertical alignments, vegetation, rock cuts and structures.

The Ministry of Transportation publishes a Farm Guide[15] that discusses rules for farm equipment on roadways. In general, most rules of the road apply to farm vehicles. They are, however, allowed to operate on the shoulder of the road and to travel at slower speeds. They are encouraged to use the travel portion of the road unless they believe they can operate safety on the shoulder. Wide equipment may need to use both the shoulder and travel portions of the road.

Farm equipment is exempt from the maximum width, length and weight rules when operating on a road; however, the farmer is liable for any damage caused. A farmer may also use an off road vehicle across or along a roadway.

A slow-moving vehicle sign is required for any vehicle travelling at 40 km/h or less. The sign must be displayed on the back of the tractor and any equipment that is being towed.

County roads where farm vehicles are more prevalent include CR 29 (Almonte to Pakenham); CR 10 (Perth to Franktown); CR 1 (south of Perth); CR 4 (near Rosedale); CR 6; CR 17 (around Blakeney) and CR 20 (north of Pakenham).

[15] *See http://www.mto.gov.on.ca/english/pubs/farm-guide/index.shtml*

A variety of road signs have been used over the years to warn of the potential presence of farm vehicles and equipment. Some signs that can be seen along the roadside are not included in the Ontario Traffic Manual. Warning signs currently found in Book 6 of the Ontario Traffic Manual that may have some application for agricultural vehicles and equipment include:

- cattle crossing sign where livestock must occasionally cross between fields
- horse-drawn vehicle sign where these vehicles may be present
- soft shoulders sign (temporary) where erosion or recent grading may create a potential hazard

5.9 Accessibility

The County of Lanark has identified a need to consider accessibility within the County road network for persons with disabilities. Much of the focus on accessibility is related to pedestrian facilities, which are under the jurisdiction of the local municipalities and therefore the County will work cooperatively with the municipalities to improve accessibility. Pedestrian facilities within the County road system can be made safer and more user friendly by ensuring that new or replacement pedestrian facilities provide barrier-free access for persons with mobility issues.

The following issues were raised by Accessibility Committees within the County and the by the public:

- Sidewalks and the need to accommodate wheelchair users on urban streets
- Crosswalks, line painting and the fading of the paint lines
- Visual and auditory aids for pedestrians such as auditory traffic signals
- Lighting and signage legibility
- Recommended Planning Guidelines for the identification of accessibility issues on roadways and sidewalks

The County road network is comprised mainly of rural roads (89%) although there are some urban (1%) and suburban roads (10%) as well. There are several potential measures for improving accessibility that are applicable to the County road system in Lanark, some of which are only relevant in an urban setting while others may be considered across the entire County road network. A policy for the assessment and mitigation of accessibility barriers on the County Road system has been prepared and is included in the Policy section of this TMP.

In July 2009, the Ontario Ministry of Community and Social Services provided for public review a proposed Initial Proposed Accessible Built Environment Standard. This standard recommends that once passed into law, new construction be compliant within 12 months and major renovations to the built environment be compliance within 12 to 36 months. The goal is to remove barriers by 2025.

5.10 Commercial Vehicles

All County roads are considered truck routes. Truck movements are particularly prevalent in the vicinity of pits and quarries, population centres, local commercial areas and industries. The WorkTech database estimates that the following County roads experience higher volumes of trucks:

- CR 29 McNeely Avenue and from Carleton Place to Almonte
- CR 7 and 29 Townline Road East
- CR 511 south of Lanark Village
- CR 1 in Perth
- CR 16A in Almonte
- CR 10 within Perth
- CR 43 Smiths Falls to Perth

- CR 49 Almonte to Ottawa boundary
- CR 4 Roger Stevens from Smiths Falls to CR 23

Every spring County roads have reduced load restrictions (5 tonnes per axle) to protect roads that are susceptible to damage during the spring thaw. All County roads are affected by these load restrictions except the following:

- CR 29
- CR 43
- CR 49
- CR 511
- Part of CR 10 from CR 1 westerly to St. John's High School
- Part of CR 6 from Wilson Street westerly to Lanark Lodge
- Part of CR 12 from CR 511 to 7th Concession of Lanark

During the course of consultation for the Transportation Master Plan, many people noted that they live on roads with significant truck traffic. Few people expressed concern with truck traffic. Cyclists do tend to choose routes with fewer trucks, such as Township roads, where possible.

Some specific problem locations with trucks were identified:

- Traffic operations on the bridge at Pakenham can be restricted by the width of the bridge when trucks and farm equipment cross. As traffic volumes increase in the future, queues may extend back from the bridge as larger vehicles wait for their turn to cross. Because of the barrier created by the Mississippi River and the need for farmers to move equipment across this bridge, a prohibition of trucks was not deemed practical
- There are load restrictions on several bridges that limit the usefulness of those roads for some trucks. The load limit on the bridge over the Rideau River in Andrewsville occasionally results in a truck forced to back-up along the Township road to CR 2
- The bridge on CR 11 in Appleton is used by aggregate trucks and others to cross the Mississippi River. Residents have expressed concern due to the curvilinear alignment of the road and limited sight distance in some locations
- Truck traffic through Perth is required to travel through the downtown as there are no alternative truck routes

5.11 Summary of Problems and Opportunities

Lanark County's Strategic Plan and Vision provide a basis for the assessment of problems and opportunities by articulating community values and concerns. The Official Plans and Development Charges Background Studies of the constituent municipalities predict continued growth, particularly in the eastern portion of the County with good transportation links to Ottawa.

The County's traffic data collection program has revealed significant growth in developing areas. Population and traffic growth has revealed a number of road sections where the level of service is expected to deteriorate over the next 20 years.

Time Period:	Location:
2013 to 2018	McNeely Avenue, Coleman to Lake Street, Carleton Place
2018 to 2023	March Road from Appleton Side Road to Ottawa Boundary, Mississippi Mills
2023 to 2028	Townline Road East from McNeely Avenue to Concession 8, Carleton Place
	Townline Road west of Bridge Street in Carleton Place
Beyond 2028	County Road 43 in Port Elmsley

Queen Street, Almonte between the bridge and Martin Street

In addition to the road sections, several intersections were identified as having safety problems currently with the potential for additional operational or level of service problems in the future:

- CR 10 (North Street) and Gore Street, Perth
- CR 10 (North Street) and Wilson Street, Perth
- Martin Street South (CR 17) and Queen Street (CR 16A)
- George Street and Mill Street and South Street and CR 511, Lanark Village
- Perth Street (CR 16A) and Christian Street (CR 29), Almonte

County road continuity / connectivity in urban areas is an issue with respect to the effective and efficient use of resources. While urban roads make up only 1.6% of the County road network, they have unique requirements for operations and maintenance that place a disproportionate burden on the County to provide service.

During consultation, the public identified only a few locations where they felt a new road was required. A road around Perth was identified as a priority. Some people also noted issues with access to the White Lake area and also a road around Almonte.

Measures to improve conditions for cycling were noted by many people during consultation, similar to what has been found in other Counties in Ontario. The speed and volumes of traffic makes cycling less comfortable on many County roads.

Park and Ride locations are becoming more popular as drivers look to reduce the impact of commuting. Some park and ride lots have good usage, particularly on weekdays.

Farm vehicles and equipment travel on County roads as needed to access properties and transport hay and other crops. Some roads in the east and south of the County have more prevalent farm usage.

The County of Lanark has developed an Accessibility Plan as part of their interest in improving transportation for people with disabilities. Accessibility barriers have been identified.

Commercial vehicles use many County roads, especially around population centres, near pits and quarries, commercial areas and industries. Half load restrictions affect truck travel on many County roads during the spring thaw. Trucks were identified as an issue at the Pakenham bridge, Andrewsville bridge, through Appleton and in Perth along CR 10 (North Street) and Wilson Street.

6. Policies

As part of the Transportation Master Plan process, policies for the following areas were investigated:

- Traffic calming and speed management
- Accessibility barriers
- Traffic noise
- Capital planning coordination

During consultation, input was obtained from members of the community and municipal staff on these issues and draft policies were presented to the County Public Works Committee for their comments. County Council subsequently adopted these policies, which are reproduced in the section below, along with introductory and background information.

6.1 Traffic Calming and Speed Management Policy

6.1.1 Introduction and Background

The County of Lanark identified a need for a traffic calming policy in order to standardize the approach for addressing traffic concerns. The primary purpose of traffic calming is to influence drivers to behave appropriately to the functional classification of the road and its surrounding land uses to enhance the safety of vulnerable road users (pedestrians and cyclists).

Roads under the jurisdiction of the County of Lanark are rural arterial and collector roads and hence the speed management component of traffic calming is the principle focus identified for locations along Lanark County roads. Literature notes that on arterial roads, traffic calming measures are best suited for locations where vulnerable road users are present, including in built-up areas and transition areas. A cumulative effect can be achieved by introducing a number of complementary measures.[16]

Traffic calming developed in the 1970s and 1980s in Europe and the concept was then introduced to North America. The Canadian Guide to Neighbourhood Traffic Calming, 1998, was prepared for the Transportation Association of Canada (TAC) and the Canadian Institute of Transportation Engineers (CITE). It provides design guidelines for traffic calming measures throughout Canada. The Traffic Calming and Speed Management Policy for the County of Lanark builds on established guidelines with information specific to conditions in the County, such as the goals for resolving traffic concerns, the applicability of various traffic calming devices to conditions in Lanark County, and the approach to implementing traffic calming or speed management measures. Research is ongoing on speed management for arterial roads passing through rural communities. Experience in Lanark and elsewhere may be used to update this policy as the relative effectiveness of measures is better understood.

Residents, staff and elected officials wish to achieve two key goals in undertaking projects for traffic calming and speed management:

- Safety – Traffic calming and speed management can increase the safety of roads for all road users, including pedestrians, cyclists and motorists.
- Appropriate driver behaviour – Traffic calming and speed management can encourage driver behaviour that is appropriate for the class of the road and the environment of the roadside.

Objectives to achieve the goals of improving safety and encouraging appropriate driver behaviour include:

- Minimize conflicts – Reducing the potential for conflicts between road users may reduce the likelihood of a collision occurring, thereby improving safety, particularly for pedestrians, cyclists and other vulnerable road users.
- Reduce vehicle speeds – Speeds that are suitable along one section of a County road, may be considered excessive when the road travels through a built-up area. Measures that reduce vehicle speeds may help to reduce the likelihood of a collision and the severity of a collision.

The Canadian Guide to Neighbourhood Traffic Calming and the traffic calming policies for other municipalities have identified approximately 25 measures that are commonly used in Canada for traffic calming. However, not all measures listed have been found to be appropriate or effective as traffic calming measures. For example, all-way stop signs, which are intended to alternate the right-of-way at an intersection, have become synonymous with traffic calming and yet have unintended negative impacts within a neighbourhood. Unwarranted all-way stop signs can

[16] Van Schagen, Ingrid (ed.). *Traffic calming schemes,* Institute for Road Safety Research, the Netherlands for the Swedish National Road Administration, 2003, pg. 30-31

result in poor stop sign compliance at the site and towards signs in general. The perceived safety benefits of all-way stops can be outweighed by an increase in traffic speeds away from the stop signs and pedestrian safety can be compromised at the intersection itself.

As noted in the literature, a combination of traffic calming measures may be needed to effectively address identified problems. For example, when a community safety zone is introduced, an education and enforcement campaign would be beneficial to coincide with the initial implementation. This was done when the community safety zone was introduced in Glen Tay. Enforcement of the new speed limit was done with drivers initially receiving warnings followed by issuing of fines. Another example of combining measures is the construction of curb extensions or pavement markings in addition to the installation of a gateway feature.

Some traffic calming measures are not appropriate for the arterial roads under the jurisdiction of Lanark County. In general these include vertical and horizontal deflections as these measures have design speeds (typically 30 km/h) that are much lower than the design speed of the County road. Diversion of traffic from County roads is also not a suitable approach.

6.1.2 Policy – Traffic Calming and Speed Management

1.0 PURPOSE

The purpose of this Policy is to establish the process for the assessment and the resolution of traffic calming and speed management concerns on County Roads.

2.0 LEGISLATIVE AUTHORITY

The *Municipal Act* permits municipalities to pass by-laws to establish policies under spheres of jurisdiction.

3.0 DEFINITIONS

For the purpose of this Policy:

"Traffic Calming" - the combination of mainly physical measures that reduces the negative effects of motor vehicle use, alters driver behaviour and improves conditions for non-motorized road users of urban road sections.

"Speed Management" - the combination of physical and non-physical measures that reduces the negative effects of motor vehicle use, alters driver behaviour and improves conditions for non-motorized road users of rural road sections.

4.0 SCOPE

This Policy provides a consistent process for the identification of traffic calming and speed management concerns and the selection of mitigation measures that can be incorporated into the capital planning of existing and new infrastructure on County Roads. The Policy is intended to respond to the concerns of the general public while balancing a technically sound process with the efficient use of County resources.

5.0 ACCOUNTABILITY FRAMEWORK

The Director of Public Works is responsible for ensuring compliance with this Policy and established procedures.

6.0 APPROVAL AUTHORITY

Lanark County Council.

7.0 RESPONSIBILITY AND AUTHORIZATION

Traffic Issues Resolution Process. The need for traffic calming or speed management measures may be suggested by a member of Council, a citizen or through the identification of a problem by the County or Local Municipal Staff. The resolution process will include three stages: initiation, evaluation and implementation. There will be close coordination between the County and all stakeholders throughout the process. The Traffic Issues Resolution Process is at Appendix "A" (see below).

Initiation Stage. A preliminary Traffic Assessment, of the subject location(s), will be conducted by staff using available data such as Collision Reports, Traffic Volumes and Speed Data. The preliminary investigation will also include an initial site visit to verify road grade, sightlines, pavement markings and placement of Regulatory and Warning Signs. The preliminary Assessment of a potential traffic calming/speed management location will include the Application of Warrant 1 (Safety Requirements) and Warrant 2 (Technical Requirements), as per Appendix "B". If one of the Warrants is met, the location will move to the evaluation stage. If neither Warrant is met, the Initiator will be advised that their concern cannot be resolved by traffic calming/speed management measures.

Evaluation Stage. During this stage, updated speed and traffic volumes will be collected, Collision Reports will be reviewed and the police will be asked if there has been a history of complaints with regard to inappropriate driver behaviour at the subject location. Traffic volumes will be collected for a 24 hour period and the peak hour volumes will be calculated. Vehicular speed will be measured and the average and 85^{th} percentile speeds will be calculated. The implementation of traffic calming or speed management measures will be considered if the following threshold parameters are met:

If the posted speed is less than 80 kph. and the 85th percentile speed is 15 kph over speed limit, or
If the posted speed is 80 kph and the 85th percentile speed is 20 kph over speed limit.

If a threshold is met, a Staff Report recommending the initiation of a Traffic Calming Study will be presented to County Council and the Local Municipality.

Implementation. If Council supports the initiation of a Traffic Calming Study, the development and evaluation of alternatives will be completed by Staff or a Consultant, in consultation with the Local Municipality. A Public Information Centre (PIC) will be held and public consultation will also include the circulation of a Survey, to the affected households in the immediate area of the proposed measures, to determine the level of support for the recommended alternative. The area affected by the proposed Project will be based on the type of traffic issue, the operational characteristics, and the local road network. The response rate from the Survey should be at least 50% and more than 50% of the affected residential units should be in favour of pursuing the recommended traffic calming or speed management measures in order to proceed with implementation. A Staff Report and recommendations arising from the Traffic Calming Study will be presented to County Council and the Local Municipality. The scope, complexity and cost of an approved Project may affect the construction date. Typical physical and non-physical traffic calming/speed management measures are at Appendix "C".

8.0 EXCLUSIONS

None.

9.0 POLICY REVIEW

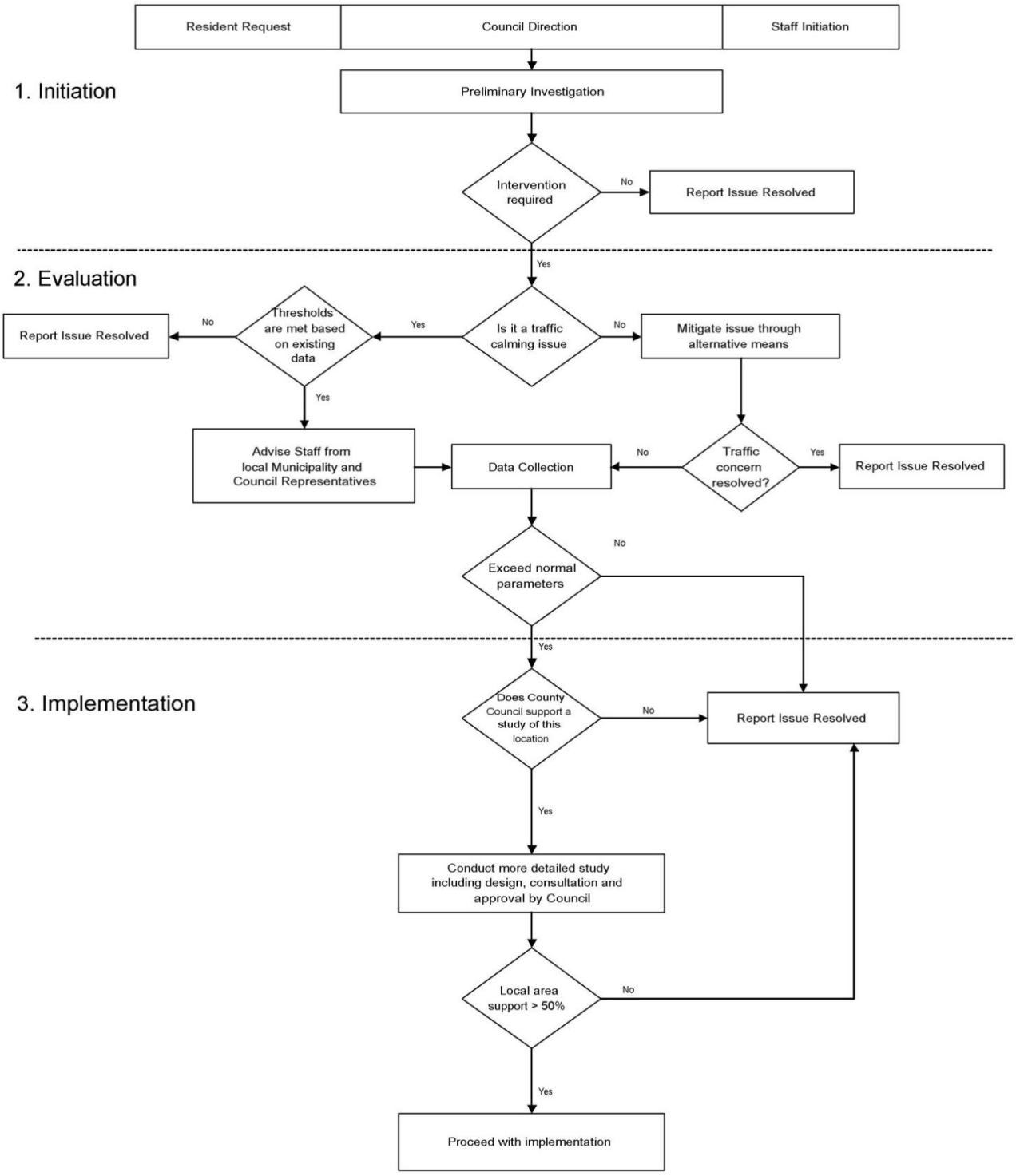
Every effort will be made to maintain this Policy, within currently prescribed regulations and will, therefore, be amended, as soon as possible, to reflect any legislative changes.

10.0 RESTRICTIONS

None.

TRAFFIC CALMING AND SPEED MANAGEMENT POLICY - APPENDIX "A"

TRAFFIC ISSUES RESOLUTION PROCESS



TRAFFIC CALMING AND SPEED MANAGEMENT POLICY - APPENDIX "B"

PRELIMINARY ASSESSMENT OF TRAFFIC ISSUES

Warrant	Criterion	Requirement
Warrant 1 Safety Requirements	1.1 Road Grade	The road grade is less than 5%.
	1.2 Emergency Response	On streets where traffic calming is proposed, impacts on Emergency Services will not be significant as determined in consultation with Emergency Services (Fire, Ambulance, and Police) staff.
	1.3 Sightlines	Sightlines can be improved.
	1.4 Collision History	There is a history of collisions.
Warrant 2 Technical Requirements	2.1 Minimum Speed	The average operating speed is at least 10 km/h above the posted speed.
	2.2 Minimum Volumes	AADT is at least 1000 vehicles per day.
	2.3 Pavement Markings	Pavement markings require modifications.
	2.4 Signage	Regulatory signs or warning signs need improvement.

If any one of the criteria is met, the issue is taken forward to the evaluation stage for further investigation. If none of the criteria are met, the unsuitability of the issue for remediation is reported back to the Initiator.

TRAFFIC CALMING AND SPEED MANAGEMENT POLICY - APPENDIX "C"

APPLICABILITY OF TRAFFIC CALMING MEASURES

Calming Measure	Type of problem addressed	Appropriate location
Physical Measures		
Horizontal Deflection		
• Curb Extension	Vehicle Speed, Pedestrian Safety	Posted speed < 70 km/h
• On-Street Parking	Vehicle Speed	All roads
• Raised Median Island	Vehicle Speed, Pedestrian Safety	All roads
• Mini Roundabout	Vehicle Speed, Vehicle conflicts	Posted speed < 60 km/h
Road Environment		
• Textured Crosswalk	Pedestrian Safety, Driver behaviour	Posted speed < 70 km/h
• Streetscaping	Vehicle Speed, Pedestrian Safety, Driver Behaviour	All roads
• Gateway	Vehicle Speed, Driver Behaviour	All roads
Non-Physical Measures		
Signage and Pavement Marking		
• Speed Zones	Vehicle Speed, Pedestrian Safety	All roads
• Transverse Pavement Markings	Vehicle Speed	All roads
• Centreline Painting	Vehicle Speed	All roads
• Edgeline Painting	Vehicle Speed, Pedestrian Safety	All roads
Education and Enforcement		
• Speed Watch	Vehicle Speed	Posted speed < 70 km/h
• Targeted Enforcement	Vehicle Speed, Driver Behaviour	All roads
• Safety and Education Campaign	Vehicle Speed, Driver Behaviour	All roads

6.2 Policy for the Assessment and Mitigation of Accessibility Barriers on the County Road System

6.2.1 Introduction and Background

In 2001, the Ontario Government passed legislation known as the Ontarians with Disabilities Act (ODA) and then in 2005 passed updated legislation known as the Accessibility For Ontarians with Disabilities Act (AODA). The purpose of these two pieces of legislation was to help create a society that is open to all, including persons with disabilities.

In a community with a population of over 10,000 people, the ODA (2001) requires that an Accessibility Advisory Committee be created. In all municipalities, an Accessibility Plan must be prepared annually to identify the barriers that exist in the community and to prepare a plan to address the removal of the barriers.

The County of Lanark has an Accessibility Advisory Committee comprised of community members with disabilities, staff representatives, a county councillor, a professional from the stakeholder community and a citizen volunteer. The committee meets throughout the year with a mandate to prepare the Accessibility Plan, to advise council regarding accessibility issues, to promote awareness of disabilities and to keep informed of accessibility in other communities and of the provincial and federal government legislation.

The following issues were raised by Accessibility Advisory Committees within Lanark and the public during the TMP process:

- Sidewalks and the need to accommodate wheelchair users on urban streets
- Crosswalks, line painting and the fading of the paint lines
- Visual and auditory aids for pedestrians such as auditory traffic signals
- Lighting and signage legibility
- Recommended Planning Guidelines for the identification of accessibility issues on roadways and sidewalks

Pedestrian accessibility is defined as the provision of sidewalks and pathways to promote and sustain a walking environment to/from all areas within a community and between communities where vehicular transport is not the only viable transportation alternative. This includes incorporating safety into the walkway designs and accommodating persons of all abilities.

Publications of the Transportation Association of Canada (TAC) provide recommended planning guidelines to address accessibility barriers.

6.2.2 Policy – Assessment and Mitigation of Accessibility Barriers

1.0 PURPOSE

The purpose of this Policy is to establish the process for the assessment and the mitigation of accessibility barriers on County Roads.

2.0 LEGISLATIVE AUTHORITY

The *Municipal Act* permits Municipalities to pass by-laws to establish policies under spheres of jurisdiction.

3.0 DEFINITIONS

None.

4.0 SCOPE

This Policy provides a consistent process for the identification of accessibility needs and the selection of measures that can be incorporated into the capital planning of existing and new infrastructure on County Roads, with emphasis on pedestrian facilities.

5.0 ACCOUNTABILITY FRAMEWORK

The Director of Public Works is responsible for ensuring compliance with this Policy and established procedures.

6.0 APPROVAL AUTHORITY

Lanark County Council.

7.0 RESPONSIBILITY AND AUTHORIZATION

7.1 Process. The need for an accessibility measure may be suggested by the County Accessibility Advisory Committee, by a citizen request or through the identification of a problem by County or Local Municipal Staff. Close coordination between the County and all Stakeholders will occur during the problem identification, data collection, analysis and evaluation, recommendations and implementation phases of an Accessibility Project. Potential measures should be evaluated based on their ability to solve the problem and cost effectiveness.

7.2 Capital Planning Accessibility Considerations. Typical accessibility considerations for Road and Bridge Projects are at Appendix “A” (see below).

7.3 Design Standards. Accessibility Projects, on County Roads shall comply with Provincial design standards.

8.0 EXCLUSIONS

None.

9.0 POLICY REVIEW

Every effort will be made to maintain this Policy within, currently prescribed regulations, and will, therefore, be amended, as soon as possible, to reflect any legislative changes.

10. RESTRICTIONS

None.

ASSESSMENT AND MITIGATION OF ACCESSIBILITY BARRIERS - APPENDIX "A"

RECOMMENDED PLANNING GUIDELINES

Topic	Recommended	Reference
Access for People with Disabilities	In general, accessible design requires the elimination of obstacles within the route of travel, a minimum 1.5 m width of travel route widening to 3.0 m to accommodate passing wheelchairs. Slopes ranging between 2 and 4%.	TAC 2.2.6.5, Figure 2.2.6.3 OPSD 310.010
Sidewalks	The minimum acceptable width for sidewalks is 1.5 m widening to 3.0 m to accommodate higher pedestrian volumes and passing wheelchairs.	TAC 2.2.6.5 TAC figures 2.2.6.1, 2.2.6.2 & 2.2.6.3
Sidewalk Cross-Slope	An acceptable range of sidewalk cross-slope is 0.01 m/m to 0.05 m/m. A normal cross-slope on a sidewalk is 0.02 m/m to prevent water ponding and icing. It is ideal not to exceed 0.02 m/m for the safety of persons with disabilities and wheelchairs.	TAC 2.2.6.5
Sidewalk and Pathway Surface	Smooth surfaces such as concrete or asphalt are firm and stable enough to support wheelchair wheels, crutch tips, walkers and other mobility aids. Compacted and smooth gravel pathways may be acceptable in recreational settings; however, loose gravel and wood chips generally do not provide for an accessible surface.	TAC 2.2.6.5
Curbs	Curbs are useful to provide a physical separation between pedestrians and traffic. They stop vehicles from mounting the boulevard when parking and the gutter acts as a path for storm water drainage. Ramps are particularly useful for all people with mobility difficulties as well as people with baby strollers or rolling luggage, in-line skaters, bicyclists, and people in wheelchairs. They provide accessibility at intersections, building entrances, and other areas where elevated walkways are edged with curbing. It is recommended that curb ramps have a detectable warning surface for people who are visually impaired.	TAC 2.2.7 OPSD 310.030 TAC figure 2.2.6.4
Street Furniture	Street furniture, signs, trash cans, and utility boxes may be hazards to the visually impaired person. In general, it is suggested that street furniture be grouped together to be more noticeable than they would be individually and to take up less room. Others ideas include: add contrast with a brighter color, maintain a clear height and width of pedestrian walkways, and place grouped objects in an area with a different surface, and/or mark with a tactile strip.	
Catch Basins	Catch Basins are best located outside the route of pedestrian travel and should be mounted flush with the surrounding sidewalk surface where present.	OPSD 610.010 OPSD 610.020

Topic	Recommended	Reference
Crosswalks	A marked crosswalk includes the use of pavement markings and signs. The County will install painted crosswalks and crosswalk warning signs at locations where required for school pedestrians if the local municipality places and retains an adult crossing guard during the time required for school pedestrians. Crosswalks can be better defined by using texture to aid in their identification by persons with disabilities and to provide non-slip surfaces for wheelchairs.	OTM Book 11 TAC 2.2.6.5 OPSD 561.030
Traffic Signals	Pedestrian heads on County traffic signals are installed in urban areas. Each design is evaluated on a site by site basis by Public Works staff. Pedestrian signals are installed only as warrants demand (e.g., mid-block signal for pedestrian crossing).	OTM Book 12
Lighting, signage and pavement markings	Sign design principles are followed to improve visibility and create consistency, which makes it easier for everyone and in particular those with reduced vision to read. Lighting is desirable at decision points such as intersections. Pavement markings should be applied on County roads on a regular basis and with a sufficient level of retroreflectivity.	OTM Book 1B OTM Book 11

6.3 Policy for the Assessment and Mitigation of Traffic Noise on County Roads

6.3.1 Introduction and Background

The Ontario Ministry of the Environment (MOE) developed guidelines in the 1970s to help municipalities with noise control in land use planning. The current MOE guidelines are dated 1997. The noise sources covered in the MOE document include surface transportation (road and rail corridors), aircraft and airports and stationary sources (industrial facilities, aggregate facilities, major commercial facilities, sewage treatment facilities and waste sites).

The MOE guidelines have been used by the majority of Ontario municipalities to help them make appropriate land use decisions to minimize the impact of noise and to identify where noise mitigation measures are warranted. In a 2002 survey of 18 municipalities in Ontario, almost all said that they rely on the MOE guidelines to assess noise impacts and potential mitigation. The larger, more urban municipalities tended to have a noise policy in place. Currently none of the municipalities within Lanark County have adopted noise policies or guidelines and generally rely on the MOE guidelines.

The MOE guidelines outline the position of the MOE on noise criteria for planning of sensitive land uses including residential developments, seasonal residential developments, hospitals, nursing/retirement homes, schools and day-care centres. In most cases, it is the developer's responsibility to ensure that any proposed development meets the guidelines for sound levels.

Noise impact from transportation corridors may include road, rail and air traffic. **Table 6.1** provides the noise criteria for sensitive developments as provided in the MOE guidelines.

In **Table 6.2** below, numerical sound levels are compared with typical sources.

Table 6.1. Summary of Noise Criteria for Sensitive Developments

Receiver Category		Time Period	Source Type							
			Road Traffic		Rail Traffic		Aircraft		Stationary	
			Criterion Averaged over Time Period		Criterion Averaged over Time Period		Criterion Averaged over 24 Hours		Criterion Averaged over any Hour during Time Period	
			L_{eq}	Applies	L_{eq}	Applies at	NE	Applies at	L_{eq}	Applies at
Outdoor	Class 1	0700-2300	55[1]	OLA	55[1,4]	OLA	302	ANYWHERE ON PROPERTY	50[3]	OPOR
		2300-0700	-		-				-	
	Class 2	0700-1900	55[1] (16 hr)	OLA	55[1,4] (16 hr)	OLA	302	ANYWHERE ON PROPERTY	50[3]	OPOR
		1900-2300							45[3]	OPOR
		2300-0700	-		-				-	
Plane of Window	Class 1	0700-2300	-		-		-		50[3]	POW
		2300-0700	-		-				45[3]	POW
	Class 2	0700-1900	-		-		-		50[3]	POW
		1900-2300							45[3]	POW
		2300-0700	-		-				45[3]	POW
Indoor[6]	Class 1 & 2	0700-2300	45	Living Quarters	40[5]	Living Quarters	5	Living Quarters	-[7]	Living Quarters
		2300-0700	40	Sleeping Quarters	35[5]	Sleeping Quarters	0	Sleeping Quarters	-[7]	Sleeping Quarters

(Reference: MOE Table 7 in Technical Publication "Noise Assessment Criteria in Land Use Planning: Requirements, Procedures and Implementation, LU-131, October 1997)

Notes:

1. *The criterion may be exceeded by an amount not greater than 5 dBA, subject to justification and use of a Warning Clause.*
2. *Redevelopment of existing residential uses and other sensitive land uses or infilling of residential and other sensitive land uses may be considered above 30 NEF/NEP if it has been demonstrated that there will be no negative impacts on the long term function of the airport. This is subject to implementation of appropriate control measures including a Warning Clause.*
3. *or Hourly L_{eq} of road traffic, whichever is higher.*
4. *Whistle noise excluded.*
5. *Whistle noise included.*
6. *Other guidelines for offices, hotels, places of worship, stores, etc. are contained in Annex to LU-131.*
7. *Compliance with the plane-of-window criteria should ensure that the indoor sound levels are acceptable. Special care must be exercised with some sources.*

Definitions:
OLA means Outdoor Living Area
POW means Plane of Window
OPOR means Outdoor Point of Reception

Table 6.2. Sound Levels and Human Perception

	SOUND LEVEL IN DECIBELS (dBA)	AVERAGE HUMAN PERCEPTION	TYPICAL SOURCE
	140	Average Human Ear Pain Threshold	Shotgun blast, jet plane at takeoff
	130		
	120	Uncomfortably Loud	Rock music, hockey game crowd, severe thunder, pneumatic jackhammer
	110		
	100	Extremely Loud	Lawn mower, tractor, motorcycle, snowmobile
	90		
Typical range of road noise measured at 15 m, ranging from low volume, low speed road to multi-lane freeway	80	Moderately Loud	Window air-conditioner, crowded restaurant, diesel truck/tractor
	70		
	60	Quiet	Singing birds, normal conversation
	50		
	40	Very Quiet	Rustle of leaves, dripping faucet, light rainfall
	30		
	20		
	10	Just Audible	Whisper
	0		

Information from: "Noise Hazard and Control" Health and Welfare Canada Report 79-END-29 March 1979

For information, **Table 6.3** indicates the distance between the road and the 55 dBA noise contour for a variety of traffic volumes and two scenarios with different percentages of heavy trucks. A noise study is needed to assess the impacts corresponding to actual site conditions. The percent of trucks, in particular heavy trucks, has a significant impact on the noise level.

Table 6.3. Noise Contour for Typical Traffic Volumes

Vehicles per day (vpd)	Automobiles per day	Scenario 1			
		Trucks = 10%		Distance to 55 dBA contour (m)	Distance to 55 dBA contour (m)
		Medium	Heavy		
		2 axles: 85%	3 or more axles: 15%	Speed 80 km/h	Speed 50 km/h
1500	1350	128	23	23	--
2000	1800	170	30	28	--
3000	2700	255	45	35	18
4000	3600	340	60	42	22
5000	4500	425	75	48	25
vpd	Automobiles per day	Scenario 2			
		Trucks = 10%		Distance to 55 dBA contour (m)	Distance to 55 dBA contour (m)
		Medium	Heavy		
		2 axles: 50%	3 or more axles: 50%	80 km/h	50 km/h
1500	1350	75	75	27	16
2000	1800	100	100	33	19
3000	2700	150	150	42	24
4000	3600	200	200	49	29
5000	4500	250	250	57	33

In all traffic volumes, the following parameters were used in the calculation:

- trucks constitute 10% of the traffic but the amount of heavy truck traffic varies
- posted speed limit 80 km/h and 50 km/h as noted in the table
- road grade flat
- terrain generally flat
- ground between the road and the receptor is non-reflective
- no shielding (dense woods) between the road and the receptor

6.3.2 Policy – Traffic Noise on County Roads

1.0 PURPOSE

The purpose of this Policy is to establish the process for the assessment and the mitigation of traffic noise impacts for existing and new developments along county roads.

2.0 LEGISLATIVE AUTHORITY

The Municipal Act permits municipalities to pass by-laws to establish policies under spheres of jurisdiction.

3.0 DEFINITIONS

None.

4.0 SCOPE

This Policy applies to all residential, commercial and institutional developments, on County Roads, that may be affected by traffic noise.

5.0 ACCOUNTABILITY FRAMEWORK

The Director of Public Works is responsible for ensuring compliance with this Policy and established procedures.

6.0 APPROVAL AUTHORITY

Lanark County Council.

7.0 RESPONSIBILITY AND AUTHORIZATION

7.1 Requirement for Studies. When potential noise impacts arising from a proposed development are foreseen, the Director of Public Works, in consultation with the Planning Coordinator and the local municipality, will require the Developer to complete a Noise Impact Study. Such studies will be completed in accordance with the current Ministry of Environment Guidelines and they will be based on predicted traffic data 10 years after build-out.

7.2 Types of Noise Mitigation. Depending on the topography, property constraints and the visual impact earth berms and/or noise barriers may be used for noise mitigation. The design, the location and the construction of noise mitigation measures will be in accordance with Ontario Provincial Standards and subject to the approval of the Director of Public Works.

7.3 Location and Ownership of Noise Mitigation Measures. For residential developments, noise mitigation measures will normally be constructed on the County Road Allowance by the Developer, at their expense. After construction, ownership will be transferred to the County, as stipulated in the Subdivision Agreement. To permit future maintenance, when noise barriers are located along the back of private properties, the Subdivision Agreement will normally include the requirement for the Developer to provide for easements, with each property owner, for noise barrier maintenance. Such easements will stipulate that vegetation may be subject to removal, if needed, to maintain the noise barrier.

7.4 Retrofit Noise Mitigation Measures. Road widening or other factors may increase traffic beyond the volumes predicted by the Pre-Development Noise Impact Study and trigger the need for noise mitigation. In such cases, the County shall undertake a Noise Impact Study to determine if noise mitigation measures are needed. The County will be responsible for the construction of noise mitigation measures, if they are required.

8.0 EXCLUSIONS

None.

9.0 POLICY REVIEW

Every effort will be made to maintain this Policy, within currently prescribed regulations, and will, therefore, be amended, as soon as possible, to reflect any legislative changes.

10.0 RESTRICTIONS

None.

6.4 Policy for Road and Bridge Capital Planning Coordination between the County and Local Municipalities

6.4.1 Introduction and Background

The County and local municipalities each have asset management programs with regular condition assessments of their infrastructure in order to identify needs and determine priorities in their capital plans for their roads and bridges. In addition, day-to-day operations will identify the need for some localized upgrades and reconstruction. In order to maximize the mutual benefits of these investments, it is recognized that there is a need to establish a more formal consultation process to discuss and coordinate planned works for the near term (next construction season), the medium term (2-5 years) and potential long term projects.

Consultation would involve the County and the local municipalities, making all parties aware of the others plans. Where feasible and appropriate, the County and local municipalities could choose to adjust the timing and nature of some of their planned projects to coordinate construction activities within a geographic area minimizing inconvenience and adverse impacts on the local community and the natural environment and better managing the expectations of the public.

It is recognized that capital planning is a fluid process with implementation dependent on funding and local priorities, which can change. There is sometimes a need to coordinate with developers on works such as road construction and service upgrades to achieve efficiencies and to ensure that infrastructure is in place when needed. Developers' projects can occur on relatively short notice, requiring the municipality and County to revise their contract schedule. Challenges also arise when trying to coordinate construction with adjacent jurisdictions such as the City of Ottawa, with utility companies, with the rail lines and with the Ministry of Transportation of Ontario (MTO).

6.4.2 Policy – Capital Project Coordination

1.0 PURPOSE

The purpose of this Policy is to establish the process for the annual exchange of road and bridge capital planning information between the County and Local Municipalities.

2.0 LEGISLATIVE AUTHORITY

The *Municipal Act* permits Municipalities to pass by-laws to establish Policies under spheres of jurisdiction.

3.0 DEFINITIONS

None.

4.0 SCOPE

This Policy applies to all Capital Road and Bridge Projects which may require coordination between the County, the Local Municipalities and utilities.

5.0 ACCOUNTABILITY FRAMEWORK

The Director of Public Works is responsible for ensuring compliance with this Policy and established procedures.

6.0 APPROVAL AUTHORITY

Lanark County Council.

RESPONSIBILITY AND AUTHORIZATION

7.1 The Director of Public Works shall coordinate the following Annual Meetings to coordinate Road and Bridge Capital planning:

7.2 Meeting with Local Municipalities. The Meeting with all Local Municipalities shall be held, annually, during the month of September. The Meeting will focus on County and Local Municipal Projects planned for the next five years.

7.3 Meeting with Adjacent Municipalities. The Meetings with the City of Ottawa, the United Counties of Leeds and Grenville, Renfrew County and Frontenac County shall be held annually, if needed. The Meetings will focus on future projects involving roads and bridges that have shared jurisdiction, projects on roads that extend between the County and these adjacent Municipalities and Projects involving detours which may affect these Municipalities. Interested local Municipalities will also be invited to attend these Meetings.

7.4 Meetings with Utilities. The Meetings with Utility Companies shall be held, annually, to facilitate coordination of utility relocates for Projects in Rural Municipalities. Each Local Municipality will be responsible for the utility issues related to their Projects.

7.5 Meeting with Emergency Services. A Meeting with police, fire and ambulance service providers may be held to assure continuity and readiness of these services in the face of proposed road closures, construction disruptions and detours. Interested Local Municipalities will also be invited to attend these Meetings.

8.0 EXCLUSIONS

None.

9.0 POLICY REVIEW

Every effort will be made to maintain this Policy within, currently prescribed regulations, and will, therefore, be amended, as soon as possible, to reflect any legislative changes.

10.0 RESTRICTIONS

None.

7. Transportation Strategies

Various transportation strategies are available to address the range of problems and opportunities facing the County of Lanark as listed in the needs analysis section. The strategies include providing additional transportation infrastructure as well as making the best use of existing infrastructure. In many cases, different strategies can be used to address a single problem or opportunity. Also, an individual strategy may be used to manage more than one problem or the same problem in more than one location. Strategies are often considered on a County-wide basis, though they may be more relevant in some communities than others.

The Transportation Strategies considered for the County of Lanark are:

- Optimizing the Existing Transportation Network
- Managing Transportation Demand and
- Expanding/Improving the Transportation Network

These are described and defined in the following section. An assessment and evaluation is then provided so that a preferred strategy can be selected.

7.1 Description of Transportation Strategies

7.1.1 Optimizing the Existing Transportation Network

Optimization of the existing Transportation Network is often referred to as Transportation Systems Management (TSM). TSM deals with relatively minor or localized improvements to the road network that result in a better level of service for users. Existing roads can be improved to serve more demand and may also have an extended service life. Examples of optimization methods include:

- Access Management – Access management is used in conjunction with land use policies to control or consolidate the number of entrances that are permitted on key road corridors. A recent study, undertaken as part of the City of London Transportation Master Plan, found that arterial road optimization and access management could increase the capacity of an arterial road by up to 5%. Access management is particularly effective in suburban areas, hamlets and other areas of growth where the increasing number of movements into and out of access points such as private and commercial driveways is impacting the through movement on the main road.

- Operational Improvements to Existing Roads – Since the operation of key intersections in the County road network will often deteriorate before the roadway has reached its functional capacity, intersection improvements can be an effective method to optimize the existing road network. Typical operational improvements include changes to traffic control such as signalization or signage, additional lanes on the approach to an intersection such as right and left turn lanes, construction of right turn islands to channelize that movement and removal of parking in the vicinity of the intersection. The construction of turn lanes will increase intersection throughput by removing turning vehicles from the through lanes. Constructing a roundabout is another method of improving intersection operations. A further example of an operational improvement is the creation of two adjacent one-way streets to reduce conflicts at intersections and improve traffic flow compared with two-way streets.

- Safety Improvements – Safer roads allow drivers to use the road network more effectively by providing a consistent driving environment and a forgiving roadside. Safer roads also reduce delays due to incidents and emergency response. The least costly safety improvements include the erection of consistent and correct

warning signs, clear and appropriate pavement markings and clear and consistent directional and tourist signage. More costly safety upgrades include road reconstruction to improve sight distance due to the horizontal or vertical curvature of the road and the removal of obstacles in the clear zone. Traffic calming measures to improve safety can vary in cost, depending on the problem that is to be addressed and the extent of work recommended.

- Accessibility Improvements – Considering the demographic trends of an aging population, identifying, removing and preventing barriers to persons with disabilities or mobility challenges allows a greater proportion of the population to use existing transportation infrastructure and services more effectively and enables them to participate more effectively in the community. These improvements include provisions for people using wheelchairs and walkers and those with visual, hearing and intellectual impairments.

Other methods to optimize the existing transportation network include:

- using the pavement width available, re-designate through and turning lanes to better suit the traffic volumes
- manage existing assets through annual maintenance and periodic renewal to encourage effective use of the network
- improve the road geometry at at-grade railway crossings to maintain traffic speeds
- upgrade roads to accommodate heavy vehicles year round
- rationalize the road network to maximize efficiency and resource use within the County and local municipalities

7.1.2 Managing Transportation Demand

The objective of Transportation Demand Management (TDM) is to reduce the number of vehicles on the road during peak travel periods, thereby reducing the need for the construction of additional lanes or roads. Also by reducing the number of vehicles on the road overall, the existing pavement structure will have a longer lifespan. By implementing a range of TDM solutions, it may be possible to delay physical improvements to address capacity deficiencies at an intersection or along a roadway.

Managing peak demands has much to do with the availability and the promotion of alternative transportation choices as well as influencing the number and timing of trips that people choose to make. The available alternative transportation modes within Lanark County are walking, cycling, carpooling and, to some extent, transit. Ways to reduce the number of timing of trips includes flexible hours, telecommuting and ridesharing. The methods of managing transportation demand are described as follows:

- Cycling – Cycling has significant individual, social, environmental and economical benefits, including reducing automobile trips as well as improving public health. For managing demand, the cycling mode must appeal to as many users as possible. For less experienced cyclists, bike lanes on busier two-lane roads, paved shoulders or bike paths separated from the roadway are best. These bikeways also appeal to more experienced cyclists, along with proposed wide lanes to share with motorists on busy roads. Other ways to encourage cycling include speed management through traffic calming, provision of bike parking, and incentive programs.

- Travel to School – In the past, walking and cycling were prevalent as a means for children to travel to school. A 2008 study was completed in Montreal and Trois-Rivières, Quebec on active travel to elementary schools. Based on Origin-Destination results from Montreal it was found that from 1998 to 2003 walking to school dropped from 40.5% to 34.2% of travel while trips to school by car rose from 22.0% to 30.7%[17]. The reasons for

[17] *Lewis, P., Bussière, Y., Carlier, M., Fortin-Lacasse, K., Gagné, S., Lapierre, L. et al. Active Travel and School in Montréal and Trois-Rivières. Groupe de recherché Ville et mobilité. 2008.*

this decline in walking and biking trips to school include the distance between home and school, parental fears and concerns and lack of cycling or pedestrian facilities.

In the Upper Canada District School Board (UCDSB), which serves Lanark County, 78% of students are eligible for transportation and the remaining 22% live within the walking zone. Students are in the walking zone if they live within 0.8km of school and are in grades JK to 3 or if they live within 1.6km of the school and are in grades 4 to 8. Some schools also have a 100% busing policy if the school is located on a road with an 80km/h speed limit. To address the special pedestrian needs of school-aged children, Active and Safe Routes to School (ASRTS) has been developed as a nationwide program to encourage walking and other safe transportation modes to and from school. This program has been credited with reducing traffic congestion around schools.

- Flexible Hours and Peak Spreading – The use of flexible work hours can be key part of transportation demand management program to reduce the number of vehicles in the peak hour. Flexible work hours have be implemented in a number of ways depending on the type of business, and type of employee. This includes flexible schedules and shift change times that avoid peak travel times.

- Telecommuting – Telecommuting is an alternative for workers due to the wider availability of high speed internet service, which the County of Lanark has promoted. The implementation of telecommuting programs is typically initiated at the employer level. In the City of Ottawa, Nortel Networks ran a telecommuting program for many employees. Municipalities can contribute to the spread of the high speed wireless network in their communities through partnerships with internet providers to facilitate the erection of towers.

- Ridesharing – One of the key barriers to the formation of carpools is finding suitable partners for the commute. The most common form of ridesharing is between family members, since ridesharing among co-workers is more difficult to organize and sustain. There are now a number of formal ride matching services on the internet. The City of Ottawa operates a ride matching program that will try to match people that travel during the same time periods and have origin and destination points within close proximity. The County of Lanark has a number of existing carpool lots. The lot locations were selected based on observations of informal use for this purpose.

- Land-use based Strategies – Transportation demand may be reduced if people live and work in close proximity. In Lanark County, land use decisions are made by local municipalities and hence are not under the control of the County. Increasing density and mixed land use within neighbourhoods are generally considered ways of promoting alternative transportation modes such as walking, cycling, and transit and reducing the demand for trip-making. Some land use strategies have been used in the Towns and Villages of Lanark County that may benefit demand management such as:
  - Accommodate the reuse of closed, decommissioned, or obsolete institutional uses
  - Provide incentives for ground-floor retail and upper-level residential uses in existing and future development
  - Design communities to encourage walking to school
  - Use visual cues and design elements to indicate pedestrian rights of way and minimize conflicts
  - Require building design that makes commercial areas more walkable and connected to the community

- Transit – Because of the concentration of trips that occur during the peak hour, transit is a primary method of managing the number of vehicles on the road. The amount of traffic reduction attributable to transit will depend on ridership achieved. In general, larger urban centres with higher densities and greater congestion will have greater ridership to support transit use. At present a private transit service provides commuter service to Ottawa-Gatineau from Mississippi Mills (Pakenham and Almonte), Carleton Place and Perth with stops along the way. Community groups and local municipalities continue to assess transit options suitable for Lanark County.

7.1.3 Expanding the Transportation Network

This strategy increases the capacity of the road network by adding to the network, either by improving existing transportation facilities or by building new transportation infrastructure. Examples of the methods included in this strategy include:

- Widen Existing Roads – Widening of existing roads includes adding through lanes, widening to add a continuous left turn lane (Two Way Left Turn Lane) and construction of passing lanes and truck climbing lanes. Widening existing roads will have less impact on buildings and property in areas where existing development is back from the road and where the width of the right-of-way is sufficient to accommodate the proposed widening. Many of the older built-up corridors in the urban areas of Lanark County would be difficult to widen due to the potential social, community and business impacts where buildings are close to the street.

- Construction of new roads on new alignments– The construction of new roads require significant capital and operating investment, as well as a comprehensive planning, design and implementation process. New roads are generally classed as Schedule C projects under the Municipal Class Environmental Assessment process. McNeely Avenue in Carleton Place is an example of a new County of Lanark road constructed in the 1990's.

7.1.4 Summary of Transportation Strategies and Methods

Table 7.1 provides a summary of the transportation strategies for addressing transportation problems and opportunities.

Table 7.1. Summary of Transportation Strategies

Strategy	Summary of Methods
Optimizing Existing Transportation Network	Access management Operational improvements: • intersection improvements • alignment improvements • re-designating lanes • roundabouts • one-way streets Safety improvements: • signage and pavement markings • sight distance improvements • traffic calming measures Accessibility improvements

Strategy	Summary of Methods
Managing Transportation Demand	Cycling • promotion of cycling • paved shoulders • bicycle lanes Flexible Hours and Telecommuting • high speed internet Ridesharing and Ride matching Transit • carpool lots • park and ride lots Land use planning • increased density • mixed use • transit supportive
Expanding/Improving the Transportation Network	Widen roads • additional through lanes • two way left turn lanes Build new roads

7.2 Development of Transportation Strategy Alternatives

For the purposes of developing a preferred transportation strategy for the Transportation Master Plan for Lanark County, the three basic strategies described above (Optimizing the existing network, Managing demand and Expanding/Improving the network) were divided into three levels according to the resources required for implementation: status quo, moderate and major alternatives.

The **status quo** level relates to existing practices in the County, including maintenance of the existing system. Policies are in place to provide a framework for decisions on Public Works projects, but may not cover all issues reflected in Vision 2025. The asset management system that is in place in the County currently allows for a systematic review of the road system to help establish priorities and address immediate needs. Comments from the public and local municipalities are also considered in the review of the transportation network and capital planning.

The **moderate** level incorporates additional policies and more resources to work towards the transportation network articulated in Vision 2025. The application of the policies seeks to optimize the use of existing infrastructure while including localized improvements and road construction where needs have been confirmed.

The **major** level places a higher priority on transportation projects to advance Vision 2025. It includes a systematic review of the County-wide road network to identify requirements for improvements to areas such as accessibility, safety and cycling. These improvements are then prioritized and implemented with consideration for funding and county priorities. The major level also addresses capacity concerns proactively and places a greater emphasis on alternative modes.

Table 7.2 describes each of the levels for each of the transportation strategies.

Table 7.2. Alternative Transportation Strategies

Strategy	Level		
	Status Quo	Moderate	Major
Optimizing Existing Roads:			
Access management	Control access in accordance with policy	Review access policy to minimize pressures on roads and intersections with capacity constraints	Review access policy to minimize pressures on roads and intersections with projected capacity constraints based on traffic volumes and possible development
Operational improvements	Review intersections for operational improvements as need identified	Construct intersection improvements and make operational improvements where existing level of service is approaching capacity	Construct intersection improvements and make operational improvements where level of service will approach capacity within 5 years
Accessibility improvements	Create an accessibility policy	Create an accessibility policy, undertake a review for each capital project and include accessibility improvements where identified	Create an accessibility policy, undertake systematic review of road network and identify locations where accessibility improvements are needed. Implement through related capital projects for roads or through independent projects

Table 7.2. Alternative Transportation Strategies

Safety	Maintain signage and pavement markings as identified by County staff and the public Review roadside barriers in areas of capital projects	Maintain signage and pavement markings as identified by County staff and the public. Conduct a review of signage and pavement markings in areas slated for capital projects and in areas with related collision experience and implement an improvement plan where appropriate. Implement a systematic roadside barrier assessment and installation plan across the county road network Implement traffic calming measures to manage speeds on county roads where issues have been identified by staff and the public.	Conduct a County-wide signage and pavement marking review and implement a systematic improvement plan across the county road network Implement a systematic roadside barrier assessment and installation plan across the county road network with an emphasis on the removal of obstacles in the clear zone where feasible Undertake a comprehensive assessment of traffic calming needs on county roads and implement on a priority basis Reconstruct roads to improve sight distance on vertical and horizontal curves to be suitable for the posted speed limit Improve road alignment where the design speed of the curve is 20 km/h or more below the posted speed limit
Year round truck use	Maintain spring half load restrictions	Assess the cost of pavement improvements to accommodate all-season truck traffic on known truck routes during rehabilitation projects	Design pavement during rehabilitation to accommodate all-season truck traffic on known truck routes
Managing Demand:			
Flexible Hours and Telecommuting	Encourage high speed internet initiatives	Support high speed internet initiatives	Actively support high speed internet initiatives by facilitating the building of required infrastructure by service providers
Ridesharing	Maintain existing car pool lots	Continue and promote existing car pool lot use and identify spaces in existing public parking lots for commuter use	Undertake a County-wide review of commuter parking lot needs. Identify suitable locations in existing public parking lots for commuter use and build additional carpool lots to serve County residents

Table 7.2. Alternative Transportation Strategies

Land use planning	Review municipalities' Official Plans and comment on zoning and development Require traffic impact study for new development	Develop County Official Plan Require traffic impact study for new development	Develop County Official Plan Require traffic impact study for new development
Transit	Support work by others for increasing use of alternative transportation modes	Contribute resources to a transit system	Develop a public transit system for the County
Cycling	Develop a cycling plan Consider installing paved shoulders as part of road capital projects Support the Lanark Trails Corporation in their development of a integrated network of recreational trails	Develop a cycling plan and support strategies to promote cycling Construct paved shoulders on roads undergoing rehabilitation Create bicycle lanes on county roads in urban areas through re-striping (no widening) Construct priority recreational trails and connections in conjunction with available grants in cooperation with the Trails Corporation	Develop a cycling plan and support strategies to promote cycling Systematically construct paved shoulders on all County Roads Construct bicycle lanes on county roads in urban areas by widening Construct network of recreational trails and connections in accordance with a County-wide plan established in conjunction with the Trails Corporation

Table 7.2. Alternative Transportation Strategies

Expanding the Transportation Network			
See list of anticipated projects in the table below	Perform annual maintenance and periodic renewal in accordance with asset management schedule Support road widening and new construction by others to serve new development.	Perform annual maintenance and periodic renewal in accordance with asset management schedule Support road widening and new construction by others to serve new development Widen roads where traffic volumes have reached capacity and optimization of the road network and demand management will not result in an adequate level of service.	Perform annual maintenance and periodic renewal in accordance with asset management schedule Support road widening and new construction by others to serve new development Widen roads where needed within 5 years in accordance with ongoing growth. Build new roads to expand road network for capacity and to improve County road network

Based on current and projected traffic volumes and existing operational issues, the following road segments and intersections were identified for improvements as shown in **Table 7.3**. Two of the projects are under the jurisdiction of local municipalities (the Town of Perth and the Town of Carleton Place) but are included in this list due to their arterial road function and potential consideration for county road designation:

Table 7.3. Infrastructure Projects to 2028

Period	Location of Infrastructure Modifications	Identified Problems
2008 to 2013	North Street and Wilson Street	Level of service
	North Street and Gore Street	Level of service and safety
	Perth Street and Christian Street (CR 29)	Level of service and safety
	CR 511, Mill and South Streets	Operations and safety
	Queen Street (CR 16A) and Martin Street	Operations and safety
	Tatlock Road (CR 9) and Bellamy Mills Road	Operations and safety
	Arterial Road Perth, Highway 7 to North Street and Craig Street (Town of Perth)	Level of Service, safety and operations on alternative routes
	McNeely Avenue extension Highway 7 to Highway 15 (Town of Carleton Place)	Level of service serving new development
2013 to 2018	McNeely Avenue, Coleman to Lake Street	Level of service
	Pine Grove (CR 12) and Ferguson Falls (CR 15) and Upper Perth Road	Operations and safety
2018 to 2023	March Road, Appleton Side Road to Ottawa Boundary	Level of service
2023 to 2028	Townline Road East, McNeely to Ramsay 8	Level of service
	Townline Road West, Mississippi Mills Boundary to Bridge Street	Level of service

Period	Location of Infrastructure Modifications	Identified Problems
2028 and Beyond	County Road 43, Port Elmsley Road to Station Road	Level of service
	Queen Street, Bridge to Martin Street	Level of service

7.3 Evaluation of Transportation Strategies

The three levels were then assessed with respect to:

- Their ability to address the problems and opportunities identified in the needs section of this report
- The degree to which each level met the vision for 2025 in the Lanark County Strategic Plan
- Potential environmental impacts resulting from implementation

To fulfill this requirement, criteria were developed for consideration during the evaluation of the alternatives. The criteria are described as follows:

- Transportation / technical considerations
  - ability to provide improvements to safety
  - ability to improve traffic operations or level of service
  - ability to promote/improve connectivity to other County/Provincial roads
  - ability reduce auto demands / improve overall transportation network performance
- Potential benefits to social / cultural environment
  - impacts on noise
  - impacts on air quality
  - impacts to heritage resources areas
  - impacts to agricultural resources
- Potential benefits to natural environment
  - impacts on environmentally sensitive areas
  - impacts to watercourses, habitat areas
- Potential economic benefits
  - impacts on commercial development
  - support for future growth areas
  - impacts on tourism
- Land use planning considerations
  - capability to influence desirable development patterns
  - impact on existing residences, businesses, institutions or community facilities
  - potential to enhance accessibility
- Costs
  - potential costs to users / businesses
  - potential costs to the County / Municipalities

For the purpose of evaluation, the strategies were compared for each the evaluation criterion. A description of the potential impacts and benefits are provided in **Table 7.4**. Based on the descriptions provided, each alternative strategy was ranked in terms of how effective it was in addressing the criteria.

Table 7.4. Evaluation Tables

Optimizing Existing Roads: Access Management			
Strategy/ Evaluation Criteria	**Level**		
	Status quo	**Moderate**	**Major**
Addressing Problems and Opportunities	Potential for degradation to road safety and operations as traffic growth occurs	Fewer accesses on higher volume roads will reduce conflict points, improving operations and safety. There will be a minor positive impact on level of service	
Compatibility with actions in the Strategic Plan and Vision	May not allow the County to keep pace with growth	Helps the County improve the transportation system and road access. Facilitates County planning for sustainable growth	
Potential Environmental Impacts	Currently have some influence on development pattern. No impact on existing land use	Fewer accesses should not have a significant impact on the economic environment. Better able to influence future development pattern without impact on existing. The additional cost over the status quo is limited to reviewing/updating the existing access policy	
Access Management Results	Moderate to Major: Review access policy to access the access spacing for categories of road. The existing policy considers access spacing depending on the type of road. Review of the requirements would ensure that the capacity of busy County roads is protected into the future. Looking to the future important as accesses cannot be taken away once granted		

Optimizing Existing Roads: Operational Improvements			
Strategy/ Evaluation Criteria	**Level**		
	Status quo	**Moderate**	**Major**
Addressing Problems and Opportunities	Reactive improvements require that a problem exist to warrant action	"In time" improvements will reduce the extent and duration of operational issues.	Advanced improvements will minimize the extent and duration of operational issues.
Compatibility with actions in the Strategic Plan and Vision	May not allow the County to keep pace with growth	Fulfils requirement in Vision to plan for and provide infrastructure in synch with growth.	
Potential Environmental Impacts	Local noise and air quality and farm vehicle movements can be affected by excessive stops and delays at intersections. Growth and tourism hindered	Local noise and air quality and farm vehicle movements can be improved by reduced stops and delays at intersections. Timely or proactive operational improvements support/influence growth and tourism.	
Operational Improvements Results	Moderate: Monitor traffic volumes and make operational improvements when level of service is approaching capacity. If improvements are delayed beyond when they are needed, safety issues may worsen. Expenditures should be made "just in time"		

Optimizing Existing Roads: Accessibility Improvements			
Strategy/ Evaluation Criteria	**Level**		
	Status quo	**Moderate**	**Major**
Addressing Problems and Opportunities	A policy will facilitate removal of barriers and improve accessibility where it is applied	Accessibility improved on those roads with capital projects	Accessibility improved using a systematic approach to maximize removal of barriers
Compatibility with actions in the Strategic Plan and Vision	The policy must be implemented in order to be effective	Helps fulfil requirement to provide appropriate quality services to meet the diverse needs of the population and supports economic development	
Potential Environmental Impacts	Some potential noise impacts with audible signals	Some potential noise impacts with audible signals. Improved accessibility may enhance growth and tourism	Some potential noise impacts with audible signals. Improved accessibility may enhance growth and tourism
Accessibility Improvements Results	Moderate: Create an accessibility policy (underway). Undertake a review for each capital project and include accessibility improvements where identified. Independent projects to improve accessibility may be undertaken where specific issues are brought to the County's attention. Cost will be relative to the number and type of projects identified and the period of time over which they are implemented. Assess requirements of the Accessible Built Environment Standards when they have been established by the Ministry of Community and Social Services. (Draft standards were placed for public review in July 2009.)		

Optimizing Existing Roads: Safety			
Strategy/ Evaluation Criteria	**Level**		
	Status quo	**Moderate**	**Major**
Addressing Problems and Opportunities	Level of safety and traffic operations maintained. No change to level of service	Enhanced safety in improvement areas through consistent signage, markings, barriers, traffic calming and road improvements to address deficiencies	Enhanced safety through consistent signage, markings, barriers, traffic calming and road improvements to address deficiencies on the County road network
Compatibility with actions in the Strategic Plan and Vision	Does not improve infrastructure quality	Helps fulfil need to improve the transportation system	Helps fulfil need to improve the transportation system
Potential Environmental Impacts	No impacts unless crash occurs in environmentally sensitive area	Reduced demand for emergency response. Potential natural impacts during roadside improvements. Moderate costs for assessment of safety needs and implementation of works. Societal cost savings from reduction in crashes	Reduced demand for emergency response. Potential natural impacts during re alignments, improvement of clear zones. Moderate costs for assessment of safety needs. Significant cost for realignments and cross-section improvements. Societal cost savings from reduction in crashes
Safety Results	Moderate to Major: Conduct County-wide assessment of signage, pavement markings and roadside barriers and implement improvements on a priority basis. Install traffic calming measures where issues have been identified. Some measures, such as the removal of rock face within the clear zone, would be prohibitively expensive to undertake.		

Optimizing Existing Roads : Year round Truck Use			
Strategy/ Evaluation Criteria	**Level**		
	Status quo	**Moderate**	**Major**
Addressing Problems and Opportunities	Additional truck trips may be required during half load season	Fewer truck trips may be required on roads with no half load restrictions	Fewer truck trips may be required with fewer roads with half load restrictions
Compatibility with actions in the Strategic Plan and Vision		Support for economic development	Best support for economic development
Potential Environmental Impacts	Local noise levels are related to volume of trucks. No benefit to businesses that rely on trucking. No impact on current maintenance costs	Local noise levels are related to volume of trucks Support for businesses that transport heavy loads. Increased pavement costs in areas of lower subgrade strength along truck routes. Some savings in spring construction costs possible	Local noise levels are related to volume of trucks. Support for businesses that transport heavy loads. Potential substantial capital costs to improve pavement. Some savings in spring construction costs possible
Year round Truck Use Results	Moderate: Assess pavement improvements on known truck routes during rehabilitation projects. Selective improvement will be necessary with consideration for the truck volumes on a road and the cost of the required upgrades. Roads with significant poor subgrade may be prohibitively expensive to upgrade.		

Managing Demand: Flexible Hours and Telecommuting			
Strategy/ Evaluation Criteria	**Level**		
	Status quo	**Moderate**	**Major**
Addressing Problems and Opportunities	High speed internet service has potential to reduce some peak hour trips, reducing conflicts and improving network performance		
Compatibility with actions in the Strategic Plan and Vision		Support for economic development	Best support for economic development
Potential Environmental Impacts	Reduced travel will improve noise and air quality. Work at home can support growth in outlying areas. No cost associated with encouraging high speed initiatives	Reduced travel will improve noise and air quality. Work at home can support growth in outlying areas. Some cost possible if County land provided, permit fees reduced or other active support provided in the building of infrastructure	Reduced travel will improve noise and air quality. Work at home can support growth in outlying areas. Some cost possible if County land provided, permit fees reduced or other active role taken in the building of infrastructure
Flexible Hours and Telecommuting results	Major: Actively support high speed internet initiatives by facilitating the building of required infrastructure by service providers.		

Managing Demand: Ridesharing			
Strategy/ Evaluation Criteria	**Level**		
	Status quo	**Moderate**	**Major**
Addressing Problems and Opportunities	Existing lots have potential to reduce some peak hour trips	Facilitating greater ridesharing has potential to further reduce peak hour trips, reducing conflicts and improving network performance	
Compatibility with actions in the Strategic Plan and Vision	No improvement in commuter parking	Fulfills need to improve transportation system and links to other communities	
Potential Environmental Impacts	Reduced number of vehicles will improve noise and air quality. Cost to maintain existing lots	Reduced number of vehicles will improve noise and air quality. Little added cost to allow commuters to use existing spaces	Reduced number of vehicles will improve noise and air quality. Cost to undertake study of needs and construct any new lots identified
Ridesharing results	Moderate: Promote existing car pool lot use and identify spaces in existing public parking lots for commuter use. Some car pool lots, such as the MTO lot at CR 17 and Highway 7 are well used, often with few empty spaces. Other lots have room for growth. Providing more options for people to meet should increase the popularity of ridesharing.		

Managing Demand: Land Use Planning			
Strategy/ Evaluation Criteria	**Level**		
	Status quo	**Moderate**	**Major**
Addressing Problems and Opportunities	Trips can be reduced through infill, mixed use and other community design measures	County OP could encourage infill, mixed use and other community design measures to reduce trips	
Compatibility with actions in the Strategic Plan and Vision	No county-wide planning	Fulfills plan to provide infrastructure in synch with growth and ensure that growth is sustainable across the County	
Potential Environmental Impacts	Noise and air quality impacts can be reduced if trips are reduced.	Noise and air quality impacts can be reduced if trips are reduced. Compact development minimizes impact on farms and undisturbed lands. County OP can add protection of sensitive areas, support growth/ development. Cost to develop County Official Plan	
Land Use Planning Results	Moderate: Develop County Official Plan. Review traffic impact study for new development. A County Official Plan provides the opportunity for an overall vision for Lanark as well as coordination with the planning by local municipalities.		

Managing Demand: Transit			
Strategy/ Evaluation Criteria	**Level**		
	Status quo	**Moderate**	**Major**
Addressing Problems and Opportunities	Transit has potential to reduce some peak hour trips, reducing conflicts and improving network performance depending on ridership	Encouraging transit has potential to further reduce peak hour trips, reducing conflicts and improving network performance	Improving transit has potential to further reduce peak hour trips, reducing conflicts and improving network performance
Compatibility with actions in the Strategic Plan and Vision	Transit is not considered county-wide	Helps work towards county-wide public transportation alternative	Works towards county-wide public transportation alternative
Potential Environmental Impacts	Where transit ridership achieved, reduced traffic will reduce noise, improve air quality, and support growth and development	Where transit ridership achieved, reduced traffic will reduce noise, improve air quality, and support growth and development. Higher density is transit supportive. Cost related to amount of resources contributed	Where transit ridership achieved, reduced traffic will reduce noise, improve air quality, and support growth and development. Higher density is transit supportive. Large capital and operating cost for public transit system
Transit Results	Status quo: Support work by others for increasing use of alternative transportation modes. While transit received public support during consultation, the cost is currently a deterrent to a public system.		

Managing Demand: Cycling			
Strategy/ Evaluation Criteria	**Level**		
	Status quo	**Moderate**	**Major**
Addressing Problems and Opportunities	Cycling can reduce some peak hour trips, reducing conflicts and improving network performance	Facilitating cycling has potential to further reduce peak hour trips, reducing conflicts and improving network performance	
Compatibility with actions in the Strategic Plan and Vision	Fewer cycling facilities	Encourages healthy living and meets needs of diverse population.	
Potential Environmental Impacts	Reduced number of vehicles will improve noise and air quality. Public health benefit. Cost for construction of paved shoulders where funding allows	Reduced number of vehicles will improve noise and air quality. Public health benefit. Increased tourism from cycling groups. Cost for construction of paved shoulders on roads undergoing rehabilitation and re-striping	Reduced number of vehicles will improve noise and air quality. Public health benefit. Increased tourism from cycling groups. Cost to pave shoulders, construct bike lanes and trails to create cycling network
Cycling Results	Moderate: Develop Cycling Plan. Construct paved shoulders on roads being rehabilitated. Re-stripe urban roads to delineate bike lanes. Work with Trails Corporation to find funding for recreational trails. Public input during consultation revealed good support for cycling improvements. The cost of paved shoulders must be considered on a case by case basis.		

Road Network Improvements			
Strategy/ Evaluation Criteria	**Level**		
	Status quo	**Moderate**	**Major**
Addressing Problems and Opportunities	Network changes by others will improve level of service, safety and operations in selected areas	Timely network improvements by the County and others will improve level of service, safety and operations in areas affected	Proactive network improvements by the County and others will improve level of service, safety and operations in areas affected
Compatibility with actions in the Strategic Plan and Vision	Does not keep pace with growth.	Fulfills need for infrastructure to keep pace with growth	
Potential Environmental Impacts	Local noise and air quality and farm vehicle movements can be affected by excessive stops and delays. Improvements by others will have impacts where additional right-of-way required.	Local noise and air quality and farm vehicle movements will be improved by reduced stops and delays. Natural impacts where additional right-of-way required. New routes often have significant impacts. Timely network improvements support growth and tourism. Substantial infrastructure cost is “just in time”	Local noise and air quality and farm vehicle movements will be improved by reduced stops and delays. Natural impacts where additional right-of-way required. New routes often have significant impacts. Proactive network improvements support growth and tourism.
Road Network Improvement Results	Moderate: Maintain assets. Support roadwork by others for development. Widen roads that have reached capacity when other solutions not enough.		

8. Strategy Recommendations

A summary of the recommended levels for each strategy is provided in **Table 8.1**.

Table 8.1. Recommended Levels

Strategy	Recommended Level
Optimize Existing Network	
Manage Access	Moderate to Major: Review access policy to minimize impacts on existing and future higher volume county roads
Improve Operations	Moderate: Monitor traffic volumes and make operational improvements when level of service is approaching capacity
Improve Accessibility	Moderate: Create an accessibility policy (underway). Undertake a review for each capital project and include accessibility improvements where identified
Improve safety	Moderate to Major: Conduct County-wide assessment of signage, pavement markings and roadside barriers and implement improvements on a priority basis. Install traffic calming measures where issues have been identified
Reduce seasonal restrictions	Moderate: Assess pavement improvements on known truck routes during rehabilitation projects
Manage Demand	
Promote flex hours and telecommuting	Major: Actively support high speed internet initiatives by facilitating the building of required infrastructure by service providers.
Promote ridesharing	Moderate: Promote existing car pool lot use and identify spaces in existing public parking lots for commuter use.
Plan land use	Moderate: Develop County Official Plan. Review traffic impact study for new development.
Promote transit	Status quo: Support work by others for increasing use of alternative transportation modes.
Promote cycling	Moderate: Develop Cycling Plan. Construct paved shoulders on roads being rehabilitated. Re-stripe urban roads to delineate bike lanes. Work with Trails Corporation to find funding for recreational trails.
Expand/Improve Network	Moderate: Maintain assets. Support roadwork by others for development. Widen roads that have reached capacity when other solutions are not sufficient.

More detail regarding the recommended strategies is provided in the following sections and in some cases specific examples are cited.

8.1 Optimizing the Existing Transportation Network

The recommendations regarding the optimization of the existing network are:

Manage Access: Review access policy to minimize impacts on existing and future higher volume county roads

Improve Operations: Monitor traffic volumes and make operational improvements when level of service is approaching capacity

Improve Accessibility: Create an accessibility policy (underway). Undertake a review for each capital project and include accessibility improvements where identified

Improve safety: Conduct County-wide assessment of signage, pavement markings and roadside barriers and implement improvements on a priority basis. Install traffic calming measures where issues have been identified

Reduce seasonal restrictions: Assess pavement improvements on known truck routes during rehabilitation projects

Each of these is described below with specific and general examples of the recommended work.

8.1.1 Access Management

RECOMMENDATION:

Review access policy to minimize impacts on existing and future higher volume county roads

The County's current access policy allows the County to control the number of accesses that are permitted along County roads, in particular, along higher volumes roads. This access policy should be reviewed to ensure that the development predicted by each of the local municipalities is reflected in the determination of the roads that have been designated with more restrictive access provisions.

8.1.2 Operational Improvements

RECOMMENDATION:

Monitor traffic volumes and make operational improvements when level of service is approaching capacity

Of the infrastructure requirements described in Table 7.3, a number are operational improvements, which include intersection improvements, alignment improvements, re-designation of lanes, construction of roundabouts and designation of one-way streets. These projects include:

Period:	Location of Infrastructure Modifications	Potential work	EA Schedule	Cost
2008 to 2013	North Street and Wilson Street	Intersection improvements	Schedule A	$175K
	Queen Street (CR 16A) and Martin Street	Curbs, signs, markings	Schedule A	$25K
2018 to 2023	March Road, Appleton Side Road to Ottawa Boundary	Turn lane, intersection improvements	Schedule B	$400K
2023 to 2028	Townline Road East, McNeely to Ramsay 8	Road widening/ intersection improvements	Schedule B	$200K
2028 and Beyond	County Road 43, Port Elmsley Road to Station Road	Intersection improvements	Schedule A+	$200K
	Queen Street, Bridge to Martin Street	Turn lane designation through re-striping, signs, markings	Schedule A+	$2K

8.1.3 Accessibility

RECOMMENDATION:

Create an accessibility policy (underway). Undertake a review for each capital project and include accessibility improvements where identified

The study of accessibility undertaken as part of the Transportation Master Plan provided the following recommendations for actions by the County:

- Liaise with local municipalities prior to the start of County road rehabilitation and reconstruction projects to ensure accessibility measures are considered
- Consult with the County and Local Municipal Accessibility Advisory Committees concerning projects to be undertaken and the list of recommended measures for each project
- Liaise with local municipalities to agree on appropriate design standards to be applied in Lanark County for each accessibility measure
- Coordinate efforts with Planning Departments of local municipalities to ensure that connections between on-street and off-street facilities are well designed
- Establish standards to ensure access and safety to pedestrians during construction projects
- Request that all pedestrian projects comply with recognized design standards, such as:
  - Ontario Provincial Standard Specifications and Drawings (OPSS and OPSD)
  - Transportation Association of Canada Guidelines
  - Municipal Engineers Association (MEA) Municipal Works Design Manual and
  - Ontario Traffic Manuals (OTM)
- Encourage local municipalities, where they construct sidewalks, to construct them wide enough for two persons to move side by side where feasible and where a need has been indicated. This includes persons with disabilities and persons in wheelchairs

8.1.4 Safety Improvements

RECOMMENDATION

Conduct County-wide assessment of signage, pavement markings and roadside barriers and implement improvements on a priority basis. Install traffic calming measures where issues have been identified

8.1.4.1 Regulatory signs

The County of Lanark should review Stop sign installation at all intersections on their road network in order to ensure that the sign placement meets OTM Book 5 guidelines and the sign is visible upstream at least the minimum stopping sight distance. If minimum stopping sight distances cannot be met, a Stop Ahead sign should be installed. All foliage growing near a Stop sign should be trimmed.

The County of Lanark should consider developing a defensible policy for the setting of speed limits on rural County roads. All rural speed zones with a posted speed of 70 km/h or less should be reviewed for their appropriateness.

8.1.4.2 Warning signs

It is suggested that the County of Lanark conduct a review of all significant horizontal curves using a ball bank indicator to determine the need for curve warning signs, speed advisory tabs, and/or chevrons. Where curve warning signs already present, the OTM Book 6 guidelines should be used to assess whether the sign is the appropriate type, whether its placement is sufficiently in advance of the curve given the posted speed on the

roadway and whether a speed advisory tab is warranted. In rural areas that are not illuminated, consideration should be given to the use of chevrons on sharp curves and posted mounted delineators on moderate curves.

It is suggested that the County of Lanark conduct a conformance review of all warning signs in use on County of Lanark roads. All signs should be verified for their conformance to OTM Book 6 standards. The sign should be placed in according to OTM Book 6 standards using Tables 3 and 4 which provide guidance on the appropriate placement in warning signs in advance of the hazard.

8.1.4.3 Guide and Information Signs

It is suggested that the County of Lanark:

- Review all tourist destination signing in order to determine whether tourism destination signs meet existing criteria for placement on the County of Lanark road network
- Remove and replace all tourism destination signs not meeting existing criteria for placement
- Consider placing tourism destination signs upstream of the intersection at a location of at least 50 metres away from other regulatory or warning signs as space permits

It is suggested that the County of Lanark conduct a review of crossing roadway signs on all intersection approaches. Advanced warning using a combination of advance and turn-off signs or through the placement of a single sign in advance of the decision point should be considered with one or more of the following conditions are met:

- The size of the sign limits reading distance to 60 metres or less
- The sign is only visible to an approaching motorist from a distance of 60 metres or less; or
- The posted speed limit is 50 km/h or greater

8.1.4.4 Pavement markings

As per OTM Book 11 guidelines, the County of Lanark should:

- Review the use of centre lines on their road network
- Reapply pavement markings as soon as possible following the resurfacing of the road
- Consider a prioritized program of painting edge lines on higher volume roadways
- Implement a prioritized pavement marking program to paint intersection markings as per the OTM guidelines, beginning with intersections having higher volumes

8.1.4.5 Roadside Safety and Protection

It is suggested that the County of Lanark carry out an inventory of roadside hazards and existing roadside protection systems on a prioritized basis, beginning on higher speed and volume roads first and continuing on to lower speed and volume roads. Roadside hazards should be assessed in terms of the collision risk (considering probability, exposure and consequence) and a list of corresponding remedial treatments should be developed. The list of remedial treatments should be prioritized based on the benefit (expected reduction in collisions based on societal costs) versus the cost (of removing the roadside hazard or installing/upgrading the roadside protection system). Low-cost treatments yielding a high benefit-cost ratio should be undertaken first, followed by medium to high-cost treatments still yielding a high benefit-cost ratio.

8.1.4.6 Horizontal and Vertical Alignment

The County of Lanark may wish to consider a prioritized program of reviewing sight distance requirements on their road network and addressing sight distance issues as they are identified. Various low cost means of improving sight distances can be undertaken. These include trimming vegetation and other sight obstructions and installing Intersection Ahead signs. Priority should be given to higher volume and higher speed roadways.

8.1.4.7 Pavement and Shoulder Conditions

In terms of pavement and shoulder conditions, the County of Lanark may wish to consider as standard practice that they reapply centre lines and edge lines immediately following any work undertaken to seal pavement cracks, when weather conditions permit. On an annual basis the condition of shoulders should be reviewed to identify ruts and other discontinuities.

8.1.4.8 Reducing Collision Risk

Single motor vehicle collisions involving fixed objects include any event in which the driver left the roadway and struck an object. According to NCHRP Report 500: Volume 6 – A Guide for Addressing Run-off Road Collisions, the following treatments could be considered for reducing the frequency and severity of these types of collisions.[18]

Short-term:
- Install rumble strips (if 1.0 metre shoulder is present)
- Provide enhanced delineation of sharp curves
- Provide enhanced pavement markings such as edge lines
- Remove/relocate objects in hazardous locations

Medium-term:
- Provide skid-resistant pavement
- Eliminate shoulder drop-off
- Provide shoulder treatments or four-lane sections at key locations (based on volumes)
- Design safer slopes and ditches
- Improve roadside hardware
- Improve barrier and attenuation systems

Long-term:
- Improve horizontal curve geometry

Approaching (head-on) collisions include any event in which the driver crossed the centerline of the roadway and struck another vehicle approaching in the opposite direction. According to NCHRP Report 500: Volume 4 – A Guide for Addressing Head-on Collisions, the following treatments could be considered for reducing the frequency and severity of these types of collisions[19].

Short-term:
- Install centerline rumble strips (on two-lane roads)
- Install profiled thermoplastic strips for centrelines
- Provide centre two-way left-turn lanes for four and two-lane roads

[18] *See http://onlinepubs.trb.org/Onlinepubs/nchrp/nchrp_rpt_500v6.pdf*
[19] *See http://onlinepubs.trb.org/Onlinepubs/nchrp/nchrp_rpt_500v4.pdf*

Medium-term:

- Reallocate total two-lane roadway width (lane and shoulder) to include a narrow 'buffer median'
- Use alternating passing lanes or four-lane sections at key locations (based on volume and capacity of roadway)
- Install median barriers for narrow-width medians on multilane roads

Long-term:

- Provide wider cross sections on two-lane roads

A majority of the collisions occurred in darkness or at dawn/dusk (55 percent in all), including many deer collisions. The County of Lanark may wish to consider the following countermeasures for locations that are experiencing lighting-related collisions (other than deer collisions) as these may be effective at reducing night time collisions:

- Improving roadway delineation (thermoplastic pavement markings)
- Improving roadside delineation (post-mounted delineators, guiderail reflectors)
- Retroreflective signs (warning, regulatory and guide)
- Selective use of illumination at rural intersections (see the Transportation Association of Canada's Illumination of Isolated Rural Intersections)

8.1.4.9 Traffic Calming

The County of Lanark should consider developing a rural traffic calming program on County roads entering hamlets where the posted speed has been lowered to 50 km/h. The County of Lanark should consider the use of gateway features (e.g. community signs) and making the character of the roadway more urban (install curb and gutter) in areas where they are attempting to create a lower speed driving environment.

Of the infrastructure requirements described in Table 7.3, a number of projects are safety improvements:

Period:	Location of Infrastructure Modifications	Potential work	EA Schedule	Cost
2008 to 2013	North Street and Gore Street	Curbs, signs, markings	Schedule A	$20K
	Perth Street and Christian Street (CR 29)	Speed management and turn lanes	Schedule A+	$200K
	CR 511, Mill and South Streets	Signs, markings	Schedule A	$1K
	Tatlock Road (CR 9) and Bellamy Mills Road	Curbs, signs, markings	Schedule A	$125K
2013 to 2018	Pine Grove (CR 12) and Ferguson Falls (CR 15) and Upper Perth Road	Signs, pavement markings	Schedule A+	$2K

8.1.5 Reduce Seasonal Restrictions

RECOMMENDATION

Assess pavement improvements on known truck routes during rehabilitation projects.

8.2 Managing Transportation Demand

8.2.1 Promote Flexible Hours and Telecommuting

RECOMMENDATION

Actively support high speed internet initiatives by facilitating the building of required infrastructure by service providers.

The County promotes the availability of high speed internet to facilitate working remotely and to support business in Lanark.

8.2.2 Promote Ridesharing

RECOMMENDATION

Promote existing car pool lot use and identify spaces in existing public parking lots for commuter use.

The County has identified informal commuter parking and been involved in the construction of park and ride lots to serve identified demand. The future use of existing parking spaces for park and ride purposes makes for effective use of existing infrastructure and resources.

In addition to the existing lots on Highway 7 at CR 15 and CR 17, on Highway 15 at CR 10 and at the intersection of CR 1 and CR 21, the County should investigate opportunities in the vicinity of Almonte to designate commuter parking, in consultation with the Town of Mississippi Mills. These opportunities may include existing municipal parking west of CR 16 and CR 29 and at the arena along CR 16A. Another option would be new or existing commuter parking along Ottawa Street, if suitable land is available. Businesses may benefit from drop-by shoppers from the commuters using nearby lots and be prepared to participate in providing parking.

Other population centres in Lanark would also benefit from commuter parking within the communities as this would allow some people to walk to meet their car pool. The County should work with local municipalities to promote ride-sharing as the most suitable places may be within local jurisdictions.

8.2.3 Plan Land Use

RECOMMENDATION

Develop County Official Plan. Review traffic impact studies for new development.

The County currently reviews traffic impact studies affecting County roads as well as Official Plans of the local municipalities. Development of a County Official Plan would assist in the coordination of planning between local municipalities at the County level.

8.2.4 Promote Transit

RECOMMENDATION

Support work by others for increasing use of alternative transportation modes.

The supply and demand for transit services varies from one local municipality to the other. As a result, active County involvement in a leadership role is not supported at this time. In the case of transit, interested local municipalities will need to take the lead.

8.2.5 Cycling

RECOMMENDATION

Develop Cycling Plan. Construct paved shoulders on roads being rehabilitated. Re-stripe urban roads to delineate bike lanes. Work with Trails Corporation to find funding for recreational trails.

The cycling study undertaken as part of the Transportation Master Plan provided the following recommendations for actions by the County:

Physical and Operational Measures:

- Provide cycling facilities for new, widened and reconstructed County roads within the road right-of-way where funding allows. The different types of facilities to be considered are:
  - Bicycle lanes in urban areas
  - Wider lanes to be shared with cyclists
  - Re-striped pavement to delineate a driving lane and a cycling lane where sufficient width is available
  - Paved shoulders in rural areas
  - Separated bike paths
- Install signage where on-road cycling facilities are constructed
- Install bicycle parking facilities at County buildings and at carpool lots
- Implement operational measure that support cycling at intersections such as:
  - Turn lanes
  - Separate signage and signals
- Connect cycling facilities together in a network
- Consider cyclists and cycling facilities when planning and conducting road maintenance

Education and Incentive Measures:

- Create a cycling map to promote the cycling routes in the County
- Promote cycling by schoolchildren through supporting special events and educational programs
- Provide safe cycling routes to school. This can be accomplished through the development of an “Active & Safe Routes to School” program, which is a method of promoting active transportation to school. The process involves the identification of stakeholders such as parents, school staff and municipal traffic engineers, the organization of a site visit to identify safety concerns and potential changes to improve safety, and the documentation of potential improvements to encourage walking/cycling. Improvements that may involve the County include roadside lighting, maintenance, volume and speed of traffic, pedestrian crossing devices, traffic light timing, sight distances, school driveway locations and traffic signs. This program has been developed by Green Communities Canada and projects are funded by Transport Canada’s ecoMobility program. This federal program provides funding to municipalities for transportation demand management projects such as the Active and Safe Routes to School program or other educational and promotional programs
- Work together with the Lanark Health Unit to promote cycling as a healthy and environmental choice for transportation

- Create an awards program that recognizes cycling related accomplishments or projects by individuals, businesses and community organizations
- Encourage local municipalities to install bicycle parking at their facilities and in locations where there is cycling traffic, such as on main streets
- Include consideration for cycling strategies in new development projects
- Provide information to developers of new workplace locations concerning the need to provide showers and change rooms for employees who commute by cycling
- Encourage the installation of bicycle parking facilities at existing work locations and multi-unit residential buildings

Priority cycling routes are recommended between communities and in locations where connections are needed to close gaps between off-road pathways. Other priorities are along County roads where there are no reasonable local road alternatives for cyclists. Some specific locations and recommended programs include:

- Develop Cycling to School and Active & Safe Routes to School programs in Carleton Place, Port Elmsley, Lanark Village, Pakenham, Almonte, Perth and Smiths Falls
- Construct bicycle lanes on County Road 1 (Gore Street, Perth)
- Incorporate into cycling network off-road recreational paths and existing paved shoulders on CR 10 near Franktown, CR 21, Martin Street North and sections of CR 15
- Pave shoulders on County roads along:
  - County Rd 1 (from CR 10 to Rideau Ferry)
  - County Road 2 (Heritage Drive)
  - County Road 6 (Christie Lake Road from Perth to Christie Lake)
  - County Road 10 (west from CR 1 to CR 14 and east from Perth to Ottawa)
  - County Road 11 (through Appleton)
  - County Rd 15
  - County Road 16 (Wolf Grove Road from Hopetown to Almonte)
  - County Road 17 (from Appleton to Pakenham)
  - County Road 43
  - County Road 49 (March Road)
  - County Road 511 (from Perth to Lanark)

In addition to the routes described above, bike routes on existing and future roads under the jurisdiction of local municipalities are needed to provide network connectivity. This is particularly necessary in Beckwith Township and Mississippi Mills in the vicinity of Carleton Place as the presence of provincial highways, Mississippi Lake, wetlands and other natural features limit the number of County roads available.

The on-road Trans Canada Trail route that has been proposed by the County will offer another alternative for cyclists.

In order to select the type of cycling facility that should be placed on each road, **Table 8.2** provides guidance.

Table 8.2. Design Guidelines for Cycling Facilities under Retrofit Conditions

Facility Type and Characteristics	ROW	Posted Speed	Daily Traffic Volume	Potential Cycling Facility	Cycling Facility Width (m)[1]
Provincial Highway	Established by province			Cycling not recommended	
Rural County Road	Varies	Up to 60	<1200	Signed Route	N/A
		Up to 80	< 5000 > 5000	Shoulder bikeway	2.0 (1.2) 2.0 (1.5)
Urban Arterial Road – 2/ 4 Lanes	Unconstrained ROW	N/A	N/A	Bike Path (separated from the roadway)	1-Way - 1.5 2-Way - 3.0
	Constrained ROW	≤50	<5000 >5000	Shared roadway/ wide curb lane[2]	0.8 (0.5) 1.5 (1.0)
Urban Collector – 2/ 4 Lanes	20-26 m	≤80	<5000 >5000	Shared roadway/ wide curb lane[2]	0.8 (0.5) 1.5 (1.0)
Local Road – 2 Lanes	18-20 m	≤50	< 1000	Signed Route	N/A

Notes:

1. *Widths shown are desirable (minimum). Width should be increased by 0.5 m where traffic is composed of 10% or more commercial vehicles.*
2. *The total width of pavement to be shared by cyclists and vehicles is 4.3 m (4.0 m) for daily traffic volumes of less than 5000 and 5.0m (4.5m) for daily traffic volumes of greater than 5000.*

8.3 Expanding the Transportation Network

RECOMMENDATION

Maintain assets. Support roadwork by others for development. Widen roads that have reached capacity when other solutions are not sufficient.

Of the infrastructure requirements described in Table 7.3, several are planned or potential expansions to the transportation network:

Period:	Location of Infrastructure Modifications	Potential work	EA Schedule	Cost
2008 to 2013	Arterial Road Perth, Highway 7 to North Street and Craig Street (Town of Perth)	New arterial road	EA Approval obtained	$6M
	McNeely Avenue extension Highway 7 to Highway 15 (Town of Carleton Place)	New arterial road	Schedule C ongoing	$3M
2013 to 2018	McNeely Avenue, Coleman to Lake Street	Road widening suburban (0.6 km)	Schedule C	$2.2M
2023 to 2028	Townline Road West, Mississippi Mills Boundary to Bridge Street	Demand management or alternative route	Schedule A or Schedule C	N/A

9. Infrastructure Project Recommendations

Tables 9.1 to 9.15 below provide a description of the problem, the alternatives and an evaluation for each of the individual infrastructure projects listed in this section. In a number of cases, additional data collection and monitoring is required to confirm the timing of the need and to detail the required elements of the recommended solution.

Table 9.1. Street and Wilson Street

	Alternatives		
	Do Nothing	Re-configure intersection lanes	Redesign intersection/ Add Signals
 Wilson Street facing away from downtown			
Description of Problem	The movement from Wilson Street to North Street is a truck route. The existing two-way stop control is at capacity. Improvement is desirable in the short term.		
Description of Alternatives	Keep the existing configuration and traffic control	Remove parking and improve radius to facilitate turns from Wilson to North for trucks and cars.	Redesign intersection and monitor for potential traffic signals installation. Signals will be coordinated with those at Foster. Improve the intersection for truck turning.
Potential positive and negative environmental impacts	Will not address level of service problem or safety.	Will improve safety. Level of service will not improve. At least 1 on-street parking spot removed. Minor property impact	Will improve safety and level of service. The proximity of Foster Street is a concern. At least 1 on-street parking spot removed. Minor property impact
Cost		Sidewalk and curbs $25K	$175K (part of Wilson Street improvements)
Recommendation	The Town of Perth will take the lead on this project as they have jurisdiction on 3 of the 4 legs of the intersection. The County will cost-share, where appropriate for improvements at this location. As a stand-alone project, this will be pre-approved under the Municipal Class EA. Undertake 12 hour turning movement count to confirm warrant for all-way stop or signals. Then run analysis to determine the anticipated queue length for each traffic control option to assess operations of the two adjacent intersections. Town of Perth to estimate property cost		

Table 9.2. North Street and Gore Street

	Alternatives			
	Do Nothing	Curbs, Signs, Markings		Signalization
	 Gore Street facing away from downtown		 CR 10 (North Street) with downtown to the right	
Description of Problem	There is a history of right angle collisions at this intersection. Improvement is desirable in the short term.			
Description of Alternatives	Keep the existing configuration and traffic control	Install new stop signs and stop bars on North Street. Remove one parking spot on Gore	Install bulb outs on Gore Street and move stop bar and signs to improve sight distance	Install signals in coordination with the signals at Gore and Foster
Potential positive and negative environmental impacts	Will not address safety problem.	Will improve stopping location and sight distance	Will improve sight distance down Gore Street and shorten crossing distance for pedestrians	Will address safety problem; however proximity of Foster Street is a concern and may create other issues
Cost		$1K	$10K	$150K
Recommendation	The Town of Perth will take the lead on this project as they have jurisdiction on Gore Street, where physical changes are suggested. Schedule A project under the Municipal Class EA (pre-approved). Install two bulbouts on the east side of Gore Street and relocate stop bar and signage. Town of Perth may review downtown traffic and signals to assess future operations once new arterial road capacity is available.			

Table 9.3. Perth Street and Christian Street

	Alternatives			
	Do Nothing	Speed Management	Add left turn lanes on CR 29	Signalization
 CR 16A facing westbound across CR 29				
Description of Problem	The volume of traffic using this intersection is approaching a level where intervention is required. Turning movement counts and specific collision information are needed to confirm requirements. Improvement is desirable in the short term. A fatality occurred in this area.			
Description of Alternatives	Keep the existing configuration and traffic control	Install speed management (transverse pavement markings, peripheral stimulation, gateway)	Add turn lanes on CR 29 (Christian) using 80 m lane and 130 m taper.	Construction roundabout or signalize intersection and add left turn lanes on CR 29
Potential positive and negative environmental impacts	Will not address the safety problem	May help to reduce speeding and increase driver awareness	Will reduce conflicts, improve operations. Possible property need	Will address safety and operational problems. Possible property need
Cost		$1K to $10K	$200K	$500K or more
Recommendation	Schedule A+ project under the Municipal Class EA (pre-approved with consultation required). Undertake 12 hour turning movement count to assess warrant for turn lanes, signals or roundabout. Add transverse pavement markings and gateway feature as short term speed management measure. Monitor traffic volumes and speeds and construct further improvements when warranted.			

Table 9.4. County Road 511 and Mill/South Streets

	Alternatives		
	Do Nothing	Curbs, Signs, Markings	Traffic Control
	 CR 511 facing southbound	 South St facing westbound (Mill St to left, CR 511 to right)	
Description of Problem	The traffic control is not clear at this intersection, coupled with complex driver actions due to parking access for bank, chip wagon and other businesses. Improvement is desirable in the short term.		
Description of Alternatives	Keep the existing configuration and traffic control	Install oversize stop signs, apply pavement markings more frequently, improve access and parking	Remove stop signs for CR 511 traffic and adjust signs and pavement markings
Potential positive and negative environmental impacts	Will not address problem	Larger sign may conflict with pedestrians on sidewalk.	This was the previous layout and also resulted in confusion.
Cost		$1K (plus repeated pavement marking applications	
Recommendation	Schedule A project under the Municipal Class EA (pre-approved). Install oversize stop sign (if feasible) and apply pavement markings more frequently when weather allows. Work with business owners including the bank to improve access and parking to reduce confusion/ unexpected manoeuvres at the intersection. More durable pavement markings may be investigated in the future if problems persist.		

Table 9.5. Queen Street and Martin Street

	Alternatives		
	Do Nothing	Curbs, Signs, Markings	Roundabout
 CR 16A (Queen Street)/Martin Street facing southbound at Ottawa/Main			
Description of Problem	The movement along Queen Street has the right-of-way over movements to/from Martin Street South. The right-of-way is not clear at this intersection, which is within close proximity to the signalized Ottawa/Main Street and Martin Street North intersection. The commercial driveway entrance contributes to the problem. Improvement is desirable in the short term. New subdivisions planned will attract more unfamiliar drivers.		
Description of Alternatives	Keep the existing configuration and traffic control	Install oversized stop sign for Martin South. Narrow the curb drop for the commercial driveway and add signage to guide drivers. Build bulb-out and prohibit left turns between Queen and Martin South	Install roundabout at Queen and Martin S
Potential positive and negative environmental impacts	Will not solve the safety and operational problem	Will improve driver guidance and reduce conflicts. Out-of-way travel will be required for a few drivers.	Will improve driver guidance and reduce conflicts. Property with building required. High cost.
Cost		$25K	$300K (no property)
Recommendation	Schedule A project under the Municipal Class EA (pre-approved). Install oversized stop sign. Narrow the curb drop for the commercial driveway and add signage to guide Queen Street drivers. Build bulb-out and prohibit left turns between Queen and Martin South.		

Table 9.6. Tatlock Road and Bellamy Mills Road

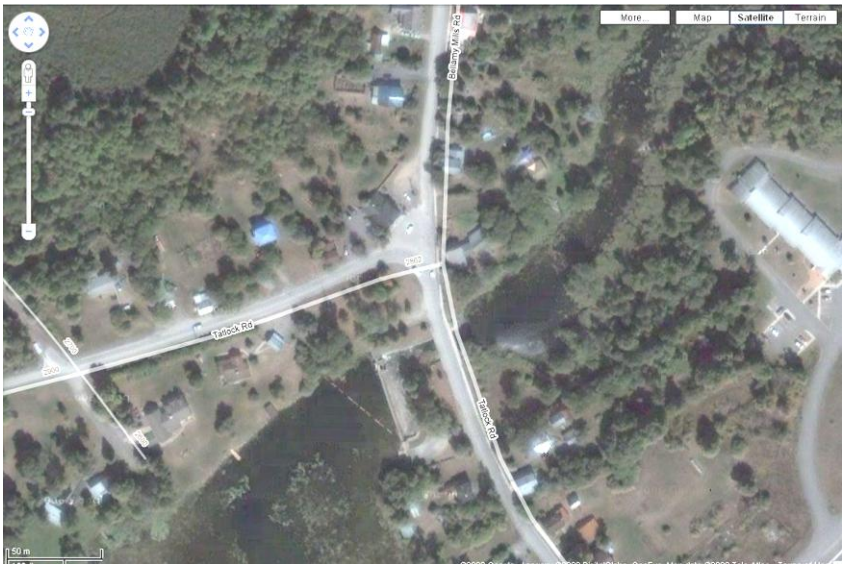
	Alternatives	
	Do Nothing	Curbs, Signs, Markings
	Google image of Tatlock Road and Bellamy Mills Road in Clayton	
Description of Problem	The right-of-way and continuation of CR 9 (Tatlock Road) is not clear at this intersection. The large area of asphalt in the northwest corner contributes to the confusion. Improvement is desirable in the short term. The profile of CR 9 to the west contributes to sight distance problems. Drainage must be addressed with new curbs.	
Description of Alternatives	Keep the existing configuration and traffic control	Add curbs, signs and pavement markings to better define right-of-way. Improve drainage and sight distance.
Potential positive and negative environmental impacts	Will not solve the problem	Will improve driver guidance and sight distance. No impact on store.
Cost		$125K
Recommendation	Schedule A project under the Municipal Class EA (pre-approved). The County has already undertaken design work and construction is planned for 2009.	

Table 9.7. Arterial Road Perth

	Alternatives		
	Do Nothing	Improve other Routes	New Route
	Plan of Recommended Route from Class EA Study	
Description of Problem	Perth has insufficient arterial capacity through the downtown. Additional development in the Perthmore area will require new access. A grade separation of the railway is desirable. A route for trucks around downtown is desirable.		
Results of EA process	The Town of Perth completed a Municipal Class EA (Schedule C project) for a new arterial route. The recommended plan was selected and approved. The cost is estimated at about $8.8M (2009) with developer funding of about $2.8M.		

Table 9.8. McNeely Avenue Extension Hwy 7 to Hwy 15

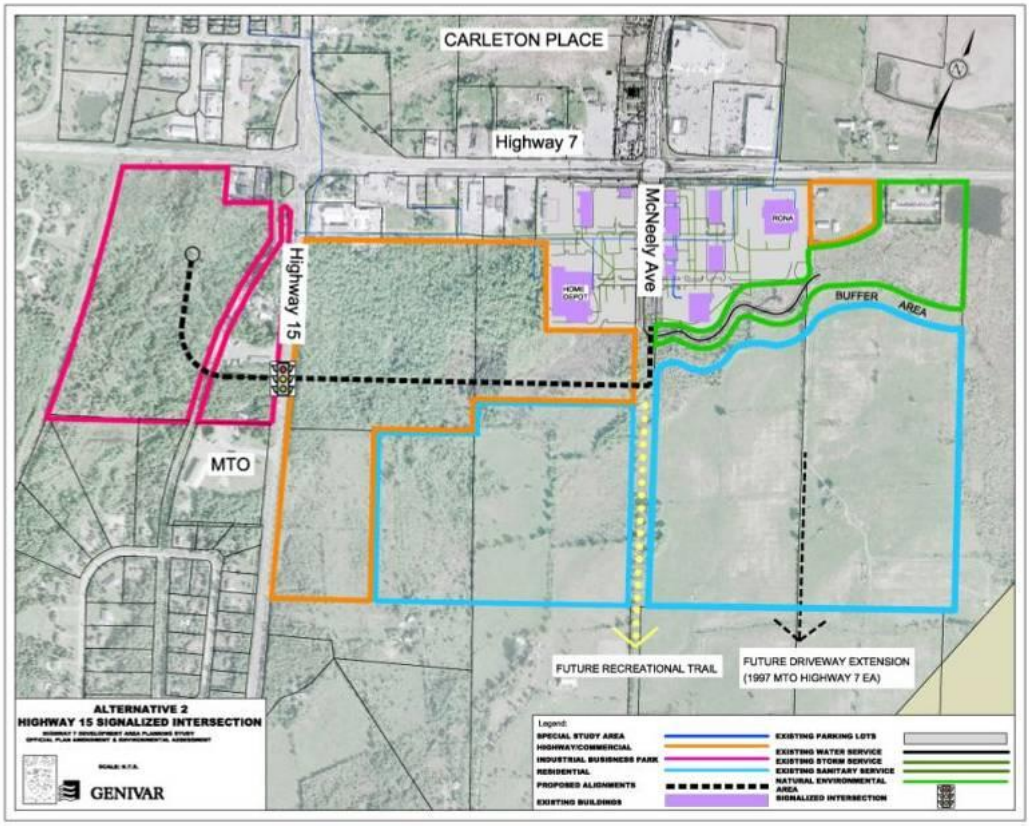
	Alternatives		
	Do Nothing	Improve other Routes	New Route
			Study Area map from Class EA Study
Description of Problem	Ongoing and planned development south of Highway 7 in the vicinity of McNeely Avenue necessitates an arterial road connection between Highway 7 and Highway 15		
Progress of EA process	This project is being examined as a Schedule C project under the Municipal Class EA. The cost is estimated at $3M (2009) for the portion east of Highway 15 that might be considered as a County road.		

Table 9.9. McNeely Avenue, Coleman to Lake Street

	Alternatives		
	Do Nothing	Improve other Routes	Widen
 McNeely Avenue facing Southbound			
Description of Problem	Ongoing commercial and residential development in the southeast area of Carleton Place is increasing traffic volumes on McNeely Avenue. Transportation systems management (intersection improvements) and transportation demand management (development is approved) have been screened out as alternatives. Level of service issues are expected in the 2013 to 2018 timeframe.		
Description of Alternatives	Keep the existing configuration	Widen Coleman and Lake Streets to attract more traffic from McNeely to other parts of Carleton Place	Widen McNeely Avenue from two to four lanes similar to the lane configuration to the south of Coleman
Potential positive and negative environmental impacts	Will not solve the problem	Will not solve the problem on McNeely. Social and land use impacts	Will serve traffic resulting from residential and commercial development. Negative impacts should be mitigatable
Cost			$2.2M
Recommendation	Approved project under the Municipal Class EA, currently in preliminary design. Traffic and funding will dictate the timing of the widening. (It will be necessary to manage growth in Carleton Place and Mississippi Mills to avoid a poor level of service north of Lake Street in the future as the crossing of the Mississippi River will be prohibitively expensive to widen.)		

Table 9.10. Line Grove Road and Ferguson Falls and Upper Perth Road

	Alternatives		
	Do Nothing	Signs, Markings, Sight Distance	Realignment
CR 15 facing Westbound before and at Upper Perth Road. Truck on left is exiting from CR 12  			
Description of Problem	The signage to direct travellers to CR 12 is complicated by the close proximity of the Upper Perth Road. Development may lead to a reduced level of service in the 2013 to 2018 timeframe. The County recently added the right turn lane and widened around the curve to improve operations.		
Description of Alternatives	Keep the existing configuration and traffic control	Install larger and relocate signage to clarify location of CR 12	Realign Upper Perth Road away from the intersection
Potential positive and negative environmental impacts		May address problem by providing better driver guidance	Impacts on farmland and property
Cost		$2K	(depends on length of realignment) Likely $50K plus property
Recommendation	Schedule A project under the Municipal Class EA (pre-approved). Improve signage to facilitate driver guidance. Intersection re-alignment would be a Schedule B project. Monitor traffic volumes and review traffic impact studies for development along CR 12 and CR 15 to ensure that any needed improvements are identified and funded by developers where appropriate.		

Table 9.11. March Road Appleton Side Road to Ottawa boundary

	Alternatives		
	Do Nothing	Manage Demand to limit traffic growth	Intersection Modifications
 CR 49 (March Road) facing Westbound			
Description of Problem	Traffic volumes are expected to experience reduced level of service in peak periods in the 2018 to 2023 timeframe. New subdivisions are adding new intersections and also traffic to existing intersections. Note that there are no plans within the City of Ottawa to widen their portion of March Road within their 2031 planning horizon.		
Description of Alternatives	Keep the existing configuration	Consider impact of growth in Mississippi Mills and Lanark Highlands on this section of road and limit growth	Construct turn lanes at intersections and improve traffic control where needed to serve demand at Greystone Drive and Ramsay Conc 12
Potential positive and negative environmental impacts	Will not address the problem.	Can address problem. Difficult to coordinate between local municipalities	Some mitigatable impacts likely
Cost		Lost development charges and tax base	$200K per intersection improvement
Recommendation	Potential Schedule A or B project under the Municipal Class EA. Since the City of Ottawa has not identified the widening of March Road, Lanark will need to address level of service through intersection improvements and potentially demand management.		

Table 9.12. Townline Road East, McNeely to Ramsay 8

	Alternatives	
	Do Nothing	Widening
		Google image of Townline Road East between McNeely and Ramsay Concession 8
Description of Problem	The level of service in the section of road that includes the Townline East and McNeely Avenue intersection is expected to drop to unacceptable levels in the 2023 to 2028 time frame.	
Description of Alternatives	Keep the existing configuration and traffic control	Introduce new westbound through lane on Townline Road east of McNeely and carry through intersection to existing 4-lane section
Potential positive and negative environmental impacts	Will not solve problem	Potential property impact and driveway impact
Cost		$200K
Recommendation	Monitor traffic volumes at Townline East and McNeely Avenue. When needed, undertake Schedule B project under the Municipal Class EA. Extend westbound 4-laning of Townline Road East to Ramsay Concession 8 (i.e. widen through the McNeely Avenue intersection). Eastbound is already 4 lanes as far as McNeely with a force-off right turn lane. This may be acceptable as is.	

Table 9.13. Townline Road West, Mississippi Mills Boundary to Bridge Street

	Alternatives			
	Do Nothing	Intersection Improvements	Widen	New Route
				Google image of Townline Road West
Description of Problem	The level of service in the section of Townline West in Carleton Place is expected to drop to unacceptable levels in the 2023 to 2028 time frame.			
Description of Alternatives	Keep existing configuration	Add westbound turn lanes where property permits	Widen to 2 through lanes in both directions	Construct new east-west route in Carleton Place
Potential positive and negative environmental impacts	Future level of service will deteriorate making access more difficult for residents	Effect on level of service may be limited. No significant environmental impacts	Right-of-way is constrained with homes close to road. Extensive social impacts if turn lanes as well as 4 lanes are required	Potential for significant environmental impacts depending on location.
Cost		$50K	$250K	significant
Recommendation	Monitor traffic volumes by collect turning movement counts at major intersections on a periodic basis. Consult with the Town of Carleton Place, Township of Beckwith and Town of Mississippi Mills regarding future planning and development. Re-visit the need during future TMP and OP updates and identify new route if indicated, in consultation with local municipalities.			

Table 9.14. County Road 43 Port Elmsley Road to Station Road

	Alternatives	
	Do Nothing	Intersection Improvements
 CR 43 looking east		 Google map of area
Description of Problem	Traffic volumes are growing and the level of service on this section of road is expected to reduce to unacceptable levels beyond 2028.	
Description of Alternatives	Keep the existing configuration and traffic control	Construct turn lanes at one or both intersections as needed.
Potential positive and negative environmental impacts	Will not address problem	Impact on property and local vegetation. Some buildings are close to the road.
Cost		$200K plus property (property expected to be significant cost due to buildings close to the road)
Recommendation	Schedule A+ project under the Municipal Class EA (pre-approved with consultation). Undertake periodic turning movement counts at Port Elmsley Road and monitor volumes. Construct turn lanes to improve level of service and safety when needed, minimizing property impacts.	

Table 9.15. Queen Street (CR 16A), Bridge to Martin Street

	Alternatives		
	Do Nothing	Managing Demand	Intersection Improvements
 CR 16A (Queen Street) facing Westbound			
Description of Problem	Future traffic volumes will lead to reduced level of service on this section of CR 16A beyond 2028.		
Description of Alternatives	Keep the existing configuration and traffic control	Improve intersections by delineating turn lanes as needed to improve capacity	
Potential positive and negative environmental impacts	Will not address problem	On-street parking lost in vicinity of intersections. Residential properties along street are often immediately behind the sidewalk.	
Cost		$2K signs and pavement markings	
Recommendation	Make improvements at Martin South and Queen Street as per previous discussion. Undertake turning movement count at Martin/Queen/Ottawa/Main, at Queen/Martin South, at Union Street South and at Clyde Street to monitor operations. Improve intersections where needed to maintain level of service by re-striping existing asphalt and removing parking where needed. Schedule A+ project under the Municipal Class EA (pre-approved with consultation).		

The following table, **Table 9.16**, summarizes the recommended improvements and their cost in 2009 dollars.

Table 9.16. Summary of Infrastructure Improvements

Period:	Location of Infrastructure Modifications	Potential work	EA Schedule	Cost
2008 to 2013	North Street and Wilson Street	Intersection improvements	Schedule A	$175K
	North Street and Gore Street	Curbs, signs, markings	Schedule A	$20K
	Perth Street and Christian Street (CR 29)	Speed management and turn lanes	Schedule A+	$200K
	CR 511, Mill and South Streets	Signs, markings	Schedule A	$1K
	Queen Street (CR 16A) and Martin Street	Curbs, signs, markings	Schedule A	$25K
	Tatlock Road (CR 9) and Bellamy Mills Road	Curbs, signs, markings	Schedule A	$125K
	Arterial Road Perth, Highway 7 to North Street and Craig Street (Town of Perth)	New arterial road	EA Approval obtained	$6M
	McNeely Avenue extension Highway 7 to Highway 15 (Town of Carleton Place)	New arterial road	Schedule C ongoing	$3M
2013 to 2018	McNeely Avenue, Coleman to Lake Street	Road widening suburban (0.6 km)	Schedule C	$2.2M
	Pine Grove (CR 12) and Ferguson Falls (CR 15) and Upper Perth Road	Signs, pavement markings	Schedule A+	$2K
2018 to 2023	March Road, Appleton Side Road to Ottawa Boundary	Turn lane, intersection improvements	Schedule B	$400K
2023 to 2028	Townline Road East, McNeely to Ramsay 8	Road widening/ intersection improvements	Schedule B	$200K
	Townline Road West, Mississippi Mills Boundary to Bridge Street	Demand management or alternative route	Schedule A or Schedule C	N/A
2028 and Beyond	County Road 43, Port Elmsley Road to Station Road	Intersection improvements	Schedule A+	$200K
	Queen Street, Bridge to Martin Street	Turn lane designation through re-striping, signs, markings	Schedule A+	$2K

10. Roadway Design Criteria

Design criteria applicable to County of Lanark roads are found in the Geometric Design Guide for Canadian Roads (GDGCR) by the Transportation Association of Canada (TAC) and the Geometric Design Standards for Ontario Highways (GDSOH) by Ontario Ministry of Transportation (MTO). **Table 10.1** provides the design criteria for rural arterial roads with a design speed between 80 and 100 km/h and for urban arterial roads with a design speed of 60 km/h. Design criteria for County roads that are designated as collector roads or for County roads with different design speeds may be taken from the TAC and MTO documents noted above. Design criteria for potential cycling facilities on County roads are provided in **Table 10.2** below.

Table 10.1. Design Criteria for County Roads

	Design Standards by Road Classification	
Classification	RAU80-100	UAU60
Lane Widths	3.5 – 3.7 m (>450 vph)	3.5 - 3.7 m
Shoulder Width	2.5 – 3.0 m (>450 vph)	N/A
Curb Offset	-	0.25 m
Minimum Stopping Sight Distance	115 – 160 m	75 - 85 m
Minimum Horizontal Radius	250 – 440 m	1290 m (normal crown) 130 m (4% superelevation)
Minimum Gradient	0% (ditch drainage)	0.5% - 0.6% (curbed road)
Cross Fall	2%	2%
Maximum Gradient	3 – 4%	6%
Maximum Superelevation	6%	4% (urban)
Boulevard Outer	-	1.5 - 3 m
Sidewalk	-	1.5 - 2.3 m
Design Speed	80 – 100 km/h	60 km/h
Posted Speed	60 – 80 km/h	50 km/h

Table 10.2. Design Guidelines for Cycling Facilities on County Roads under Retrofit Conditions

Facility Type	Posted Speed	Daily Traffic	Potential Cycling Facility	Cycling Facility Width (m)[1]
Rural County Road	Up to 60 km/h	<1200	Signed Route	N/A
	Up to 80 km/h	< 5000 > 5000	Shoulder bikeway	2.0 (1.2) 2.0 (1.5)
Off-Street	N/A	N/A	Bike Path (separated from the roadway)	1-Way - 1.5 2-Way - 3.0
Urban Arterial or Collector – 2/ 4 Lanes	≤80	<5000 >5000	Shared roadway/ wide curb lane[2]	0.8 (0.5) 1.5 (1.0)

Notes:

1. *Widths shown are desirable (minimum). Width should be increased by 0.5 m where traffic is composed of 10% or more commercial vehicles.*
2. *The total width of pavement to be shared by cyclists and vehicles is 4.3 m (4.0 m) for daily traffic volumes of less than 5000 and 5.0m (4.5m) for daily traffic volumes of greater than 5000.*

Paved shoulders have safety advantages and benefits for cyclists, pedestrians and road maintenance/ pavement life.

11. Development Charges

11.1 Introduction

Watson & Associates Economists Ltd. undertook an assessment of the possible imposition of development charges for road purposes by the County of Lanark in 2009 and subsequently completed a Development Charges (DC) Background Study and By-law. Their final Development Charges Background Study and By-law report is provided in full in **Appendix B** and summarized below.

The *Development Charges Act, 1997*, regulates the imposition of development charges including how they are calculated and administrated. The costs that can be recovered through development charges include services that are at least partially attributable to growth over a period of ten years or longer. Projects funded by developers or other levels of government cannot be included in the calculation.

An advantage of development charges is that they place the financial burden on those who are contributing to growth (buyers of new residential and non-residential buildings) rather than on all County taxpayers. Development charges are seen as equitable and promote economic efficiency. A disadvantage of development charges is that they can result in higher selling prices for new residential and non-residential development. A County development charges will be in addition to the development charge imposed by the local municipality. The two development charges are, however, for different projects and in no cases do the calculations of local and County development charges consider the same infrastructure and services. When a proposed development charge is small, supply and demand controls selling price with no impact from the development charge.

11.2 DC Background Study Process

The DC Background Study for Lanark County was prepared pursuant to Section 10 of the *Development Charges Act, 1997* (DCA) and, together with the proposed by-law, was made available to the public, as required by the Act, two weeks prior to the public meeting of Council to discuss the proposed by-law, the amount of the proposed development charge for various land uses and its planned implementation. An addendum to the report was submitted in June 2010 following the meeting to provide additional clarity in the Executive Summary. The 2010 DC by-law was adopted by Council on June 23, 2010 and approval was obtained for the Background Study as amended.

11.3 DC Calculations

The charges calculated represent those that can be recovered under the DCA, 1997, based on the County's capital spending plans and other assumptions that are responsive to the requirements of the DCA. A decision was made by Council, after receiving input regarding the magnitude of the charge for residential, commercial, industrial and/or institutional development.

Table 11.1 presents the proposed schedule of County-wide charges, based on the costing and related assumptions documented in the full report contained in Appendix B. The calculated charges are reflected in the adopted by-law.

Table 11.2 summarizes the County's Development Related Capital Program and the deductions made thereto, in accordance with the DCA. In summary, the gross development-related capital cost of the ten-year program is $2,194,000. Of this amount, $1,195,000 has been determined to be DC-recoverable ($1,163,000 from residential development and $32,000 from industrial/commercial/institutional development (non-residential)). The difference

between the gross and DC recoverable amounts comprises the following deductions, pursuant to the *Development Charges Act.*

-	$192,000	Benefit to Existing Development
-	$683,000	Subsidies, Other Contribution
-	$124,000	10% Statutory Deduction
	$999,000	

The capital costs of the Roads service is allocated over the 2010 to 2028 period. Of the total $3 million capital program, $660,000 has been deducted as a benefit to existing development. The DC recoverable share of $2.34 million is allocated $1.8 million to residential development and $0.54 million to non-residential development.

Table 11.1. Proposed Schedule of County-Wide Development Charges

Service	Per Residential Dwelling Unit				Non-Residential (per sq.ft. of Gross Floor Area)
	Single Detached Dwelling or Semi-Detached Dwelling Unit	Apartment Dwelling Unit - Two Bedroom or Larger	Apartment Dwelling Unit - Bachelor or One Bedroom	Other Dwelling Unit	
Ambulance	$37	$26	$16	$29	0.01
Homes for the Aged	263	$185	$115	$208	
General Government (Studies)	21	$15	$9	$17	0.02
Roads	284	$200	$124	$225	0.26
Total	**$605**	**$426**	**$264**	**$479**	**$0.29**

Table 11.2: County of Lanark DC Capital Program and Deductions

Service	Gross Capital Cost Est.	Less:					Potential DC Recoverable Cost		
		Ineligible re: Level of Service	Benefit to Existing Development	Post Period Capacity	Grants, Subsidies & Other Contributions Attrib. to New Development	Other (e.g. 10% Statutory)	Net Costs Benefiting New Development	Residential Share	Non-Residential Share
Ten Year Services									
Administration (Studies)	100,000	-	-	-	-	2,000	98,000	77,420	20,580
Emergency Medical Services	342,000	-	17,100	-	162,450	16,245	146,205	134,509	11,696
Long Term Care Facilities	1,751,574	-	175,157	-	520,218	105,620	950,579	950,579	-
Total Ten Year Services	2,193,574	-	192,257	-	682,668	123,865	1,194,784	1,162,508	32,276
2010-2028 Roads	3,000,000	-	660,000	-	-	-	2,340,000	1,804,140	535,860

Key policies incorporated into the DC By-law include:

- development charge payment due at the time of building permit issuance
- annual discretionary indexing of the charges
- full exemptions for industrial buildings, non-residential farm buildings, places of worship and hospitals
- full implementation of the calculated rates effective January 1, 2011 (no phasing in or discounting of charges)
- redevelopment credit for buildings that are demolished and replaced or converted within a 5-year period

11.4 Development Charges Comparisons

Existing development charges of the local municipalities in Lanark County vary. They are regularly reviewed and may be updated at any time. The following provides a summary of rates in effect as of January 1, 2010, in the local municipalities:

Local Municipality	Residential (per fully serviced single detached unit)	Non-Residential (per sq.ft. of gross floor area)
Beckwith	$3,500	-
Carleton Place	$3,473	$1.77
Drummond-North Elmsley	$2,000	-
Lanark Highlands	$2,865	$2.73
Mississippi Mills	$7,713	$4.14
Montague	$1,400 (in a reg'd plan) $1,900 (outside a reg'd plan)	-
Perth	$5,690 + $1,000 area-specific charge	$2.75 + $2.27 area-specific charge
Tay Valley	$2,500	-

12. Assessment of Current County Road Funding

12.1 Funding Programs and Opportunities

The County of Lanark has been aware of and eligible for various provincial and federal funding programs that have been made available over the past few years to help municipalities' pay for needed transportation network improvements. Some of the programs have been:

- Ontario Small Town and Rural (OSTAR) Development Infrastructure
- Ontario Municipal Economic Infrastructure Financing Authority (OMEIFA)
- Municipal Rural Infrastructure Fund (MRIF – Federal)
- Canada Strategic Infrastructure Fund (CSIF)
- Infrastructure Canada Program (ICP)
- The Strategic Highway Infrastructure Program (SHIP – Federal)
- Building Canada Fund (BCF)
- Infrastructure Stimulus Fund (ISF – Federal)

Since the removal of standard provincial funding and downloading of roads, the programs noted above have provided infrastructure money; however, these programs are not a guarantee of funding, making it difficult for the County to accurately plan for future funding needs. Most recently the County received money from the Building Canada Fund for the Clydesville Bridge. Throughout Lanark County, municipalities received almost $20 million from the Building Canada Fund and the Infrastructure Stimulus Fund.

In addition to the programs noted, a portion of the federal gas tax has now been earmarked for municipalities. The County of Lanark is eligible to receive $1.692 million in gas tax money, provided that the County spends at least $5.542 million. The currently (June 2009) anticipated expenditures over the next 5 years range from $5.542 to $6.2 million.

The only funding sources for County infrastructure that are reliable are the municipal tax levy and development charges. Lanark County does not have development charges at the present time. A feasibility study for the imposition of development charges was discussed in Section 11 above.

12.2 Current and Future Funding Needs

The County of Lanark, with a large geographical area of almost 3,000 km^2, serves its population with a road network of over 560 km and 43 bridges. The population of Lanark, which stood at 64,000 in the 2006 census, must support the maintenance and upgrading of this large transportation network, which includes a number of downloaded roadways, without the financial support of the Province.

The County has an asset management system that assists in the tracking of the condition and planning of maintenance and rehabilitation of infrastructure assets. While the focus is often on capital expenditures, operations and maintenance costs also reflect the size of the transportation network and its complexity. Improvements to the transportation network may result from population and employment growth or from policy initiatives such as the construction of more paved shoulders for cyclists, or reconstruction of roads to eliminate half load restrictions for trucks.

Lanark is facing an uncertain road ahead with pressures to keep tax increases low and with the pressures of increasing needs. The challenge for Lanark will be to undertake work when needed to minimize the life-cycle costs of the assets. Capital projects have been identified through the Transportation Master Plan along with an associated

timeline. Examining these expected needs now allows for planning of implementation and funding. The County regularly updates its Road Needs Study, which assesses the condition of infrastructure and suggests priorities for investment.

The capital budget for each year, which contains detailed information on sources of funding, is approved by Council and provides the authority for works to be undertaken in that year. The County also prepares projections for 5 and 10 years ahead to better plan for future needs for roads, bridges and culverts. The overall replacement cost of the County's 43 bridges, 33 culverts and 565.2 km of road has been calculated about $280 million. Looking at this replacement cost, expenditures of about $6.5M annually would be required to maintain the network, if the transportation system were currently in adequate condition. The gap between this $6.5 million and the $5.4 to $6.2 million that the County currently spends each year is exacerbated by future needs for upgrades to the system and current system deficiencies. Because the system adequacy is below what it should be now, the gap is actually larger than these numbers indicate.

Provincial mandated requirements for maintenance levels of service and future requirements for accessibility improvements add to the funding burden for the County.

Potential sources of capital funding include: current municipal levy, reserve funds, debentures, development charges, grants where obtainable, and miscellaneous sources. As noted, in the past few years, the County has received money from the federal and Ontario governments which has reduced the amount of money for roads and bridges that had to be funded through the municipal levy. This may not be the case in the future.

The anticipated expenditures over the next 5 years do not meet the average annual cost of the infrastructure. There will be a growing backlog of work that is unfunded. Community values and policies articulated in the Strategic Plan and Visions and during the Transportation Master Plan suggest additional funding shortfall.

The uncertainty of future funding programs at the provincial and federal levels place additional importance on the consideration of development charges to help fund growth-related transportation projects.

Over the next 20 years, the cost of the identified infrastructure requirements and the transportation strategies identified in this document are estimated as follows:

Period 2009 to 2013	
Location of Infrastructure Modifications	**Cost**
North Street and Wilson Street	$75K
North Street and Gore Street	$20K
Perth Street and Christian Street (CR 29)	$200K
CR 511, Mill and South Streets	$1K
Queen Street (CR 16A) and Martin Street	$25K
Tatlock Road (CR 9) and Bellamy Mills Road	$125K
Arterial Road Perth, Highway 7 to North Street and Craig Street (Town of Perth)	$6M
McNeely Avenue extension Highway 7 to Highway 15 (Town of Carleton Place)	$3M
Cost with no contribution to Perth and Carleton Place arterials	$571K
Per Year Cost for identified road improvements (without Perth and Carleton Place arterials)	$114K
Cost with all projects noted above	$9.57M
Per Year Cost for all identified road improvements	$1.91M

Period 2014 to 2018	
Location of Infrastructure Modifications	**Cost**
McNeely Avenue, Coleman to Lake Street	$2.2M
Pine Grove (CR 12) and Ferguson Falls (CR 15) and Upper Perth Road	$2K
2014 to 2018: Cost for projects noted above	$2.202M
Per Year Cost for identified road improvements	$440K

Period 2019 to 2023	
Location of Infrastructure Modifications	**Cost**
March Road, Appleton Side Road to Ottawa Boundary	$400K
Per Year Cost for identified road improvement	$80K

Period 2024 to 2028	
Location of Infrastructure Modifications	**Cost**
Townline Road East, McNeely to Ramsay 8	$200K
Townline Road West, Mississippi Mills Boundary to Bridge Street	N/A
Per Year Cost for identified road improvements could be substantial if new route is needed to relieve traffic on Townline Road West	

After 2028	
Location of Infrastructure Modifications	**Cost**
County Road 43, Port Elmsley Road to Station Road	$200K
Queen Street, Bridge to Martin Street	$2K
Beyond 2028: Cost for projects noted above	$202K
Per Year Cost for identified road improvements over a 5 year period	$40K

Note that future updates of the TMP will identify emerging trends and requirements for the transportation network that will change the forecasted expenditures.

Some additional studies identified in transportation strategies are scheduled primarily for the next 5 years. Many of the activities identified in the transportation strategies are activities that the County staff currently undertake on an as-needed basis and hence they will not have an impact on the budget. However, should the amount of development and construction increase, there may be an impact on workload requiring part time help or overtime for existing staff.

Period	Activity	Cost
2009-2013	Review access policy to minimize impacts on existing and future higher volume county roads	No additional cost (in-house)
2009-2013	Conduct County-wide assessment of signage, pavement markings and roadside barriers and implement improvements on a priority basis	No additional cost (in-house)
2009-2013	Promote existing car pool lot use and identify spaces in existing public parking lots for commuter use	Study: $3K (advertising)
2009-2013	Develop County Official Plan	Study: $200K

Period	Activity	Cost
2009-2013	Develop County Cycling Plan	Study: $20K
Continuous	Monitor traffic volumes and make operational improvements when level of service is approaching capacity	No additional cost (in-house)
Continuous	Undertake a review for each capital project and include accessibility improvements where identified	Potential municipal cost
Continuous	Install traffic calming measures where issues have been identified	Cost depends on needs
Continuous	Assess pavement improvements on known truck routes during rehabilitation projects	Some additional engineering fees on relevant projects
Continuous	Actively support high speed internet initiatives by facilitating the building of required infrastructure by service providers	No additional cost
Continuous	Review traffic impact studies for new development.	No additional cost (in-house)
Continuous	Support work by others for increasing use of alternative transportation modes.	No additional cost (in-house)
Continuous	Construct paved shoulders on roads being rehabilitated.	$20K /km
Continuous	Re-stripe urban roads to delineate bike lanes.	No additional cost
Continuous	Work with Trails Corporation to find funding for recreational trails.	No additional cost (in-house)
Continuous	Maintain assets.	$6.5M/year est. replacement cost
Continuous	Support roadwork by others for development.	No additional cost

13. TMP Updates/System Monitoring

13.1 Effects Of The Plan

13.1.1 Mobility

The plan is intended to maintain or improve mobility in Lanark County. While a public transportation system is beyond the identified needs and scope of the current plan, the County will continue to support the work of others in the implementation and development of transit and will support strategies to increase vehicle occupancy rates.

13.1.2 Safety

The recommendations of the plan will help to reduce the frequency and severity of collisions. Systematic review of elements of the road network are planned to provide consistency and positive guidance for motorists. Speed management in locations with vulnerable road users is an important aspect of the plan.

13.1.3 Natural Environment

The plan promotes the importance of protecting and conserving the County's natural features and agricultural lands in delivering transportation services through its recommendations. The TMP encourages optimization of the existing system and only recommends road construction when a lack of road capacity requires additional infrastructure. The plan also promotes cycling as an alternate means of travel, commuting through the maintenance of park and ride lots and telecommuting through its support of high speed internet initiatives in the County, all of which can help manage travel demand.

13.1.4 Community

Speed management through hamlets will help to reduce traffic impacts without encouraging through traffic to use alternative routes using local municipal roads where County roads are available.

Where property is required to construct the improvements described in this plan, the County will follow its practice to acquire land fairly, on a "willing buyer, willing seller" basis, if at all possible.

13.2 Plan Review and Update

The success of long-range plans depends on the ongoing monitoring of relevant conditions, actions, and impacts. The County of Lanark should monitor progress toward its Strategic Plan and change, add, or delete transportation priorities as it deems appropriate.

Through the TMP, the County has identified a transportation strategy and has established a number of measures to achieve progress towards its transportation goals. As noted in the TMP, there are a number of capital works required to address existing and future traffic safety and operational issues. In addition, several studies/assessment are recommended as part of the transportation strategies to identify further improvements required in the County.

The TMP must respond to changes in Lanark with the passage of time. Community values and priorities may shift. Ongoing monitoring would also be necessary in determining the effectiveness of the initiatives identified in the plan. The Transportation Master Plan should be monitored on an annual basis, taking into consideration the following:

- the results of the annual traffic count program on key roadways, in particular those locations where problems are expected to occur in the future
- new trends and technologies in traffic operations that may be applicable to the County
- private sector initiatives in implementing transportation demand management measures such as flexible work hours at major employers and expansion of private transit service
- the status of transportation related provincial initiatives, policies and funding programs
- population growth and land use changes within the community
- the need to re-assess, amend or update components of the Transportation Master Plan

A Transportation Update should be provided to Council every 5 years, to advise council on recent trends with respect to transportation patterns within the County, and the need to update the Transportation Master Plan.

14. Summary of Recommendations and Implementation

Provided below is a summary listing of the recommendations developed in the TMP together with a proposed timeline for the activity.

Period	Activity
Now	• Liaise with local municipalities to agree on appropriate design standards to be applied in Lanark County for each accessibility measure
	• Establish standards to ensure access and safety to pedestrians during construction projects
	• Establish a standard practice that centre lines and edgelines are immediately reapplied following any roadwork (repaving, crack sealing, reconstruction)
	• Request that all pedestrian projects comply with recognized design standards
2009-2013	**Analyses and Policies**
	• Review stop sign installation at all intersections in order to ensure that the sign placement meets guidelines
	• Conduct a review of all horizontal curves using a ball bank indicator to determine the need for curve warning signs, speed advisory tabs, and/or chevrons
	• Conduct a conformance review of all warning signs in use on County of Lanark roads
	• Review all tourist destination signing in order to determine whether signs meet existing placement criteria. Remove and replace all tourism destination signs not meeting existing criteria
	• Review access policy to minimize impacts on existing and future higher volume county roads
	• Conduct a review of crossing roadway signs on all intersection approaches
	• Review the use of centre lines and consider the use of edge lines
	• Implement a prioritized pavement marking program to paint intersection markings
	• Carry out an inventory of roadside hazards and existing roadside protection systems
	• Develop a program for reviewing sight distance requirements on the road network
2009-2013	**Studies**
	• Develop County Official Plan.
	• Develop a defensible policy for the setting of speed limits on rural County roads
	• Promote existing car pool lot use and identify spaces in existing public parking lots for commuter use
	• Develop Cycling Plan
	• Participate in the development of an “Active & Safe Routes to School” program
	• Work together with the Lanark Health Unit to promote cycling as a healthy and environmental choice for transportation
2009-2013	**Infrastructure Projects**
	• Intersection improvements at North Street and Wilson Street
	• Curbs, signs, markings at Queen Street (CR 16A) and Martin Street
	• Install rumble strips along paved shoulders where history of SMV collisions occur
	• Install centreline rumble strips or profiled thermoplastic strips where history of head-on collisions occur
	• Remove/relocate objects in hazardous locations at roadside
	• Curbs, signs, markings at North Street and Gore Street
	• Speed management and turn lanes at Perth Street and Christian Street (CR 29)

Period	Activity
	• Signs, markings at CR 511, Mill and South Streets
	• Curbs, signs, markings at Tatlock Road (CR 9) and Bellamy Mills Road
	• Provide enhanced delineation of sharp curves
	• Construct Arterial Road Perth, Highway 7 to North Street and Craig Street (Town of Perth)
	• Construct McNeely Avenue extension Highway 7 to Highway 15 (Town of Carleton Place)
2014-2018	**Studies**
	• Create an awards program that recognizes cycling related accomplishments or projects by individuals, businesses and community organizations
	• Create a cycling map
2014-2018	**Infrastructure Projects**
	• Signs, pavement markings at Pine Grove (CR 12) and Ferguson Falls (CR 15) and Upper Perth Road
	• Road widening of McNeely Avenue, Coleman to Lake Street
	• Provide skid-resistant pavement
	• Eliminate shoulder drop-off and design safer slopes and ditches
	• Install median treatments where history of head-on collisions occur
	• Improve roadside hardware and barrier and attenuation systems
	• Consider selective use of illumination at rural intersections
	• Connect cycling facilities in a network
2019-2023	**Infrastructure Projects**
	• Turn lane, intersection improvements at March Road, Appleton Side Road to Ottawa Boundary
	• Improve horizontal curve geometry on roads being rehabilitated
2024-2028	**Infrastructure Projects**
	• Road widening/ intersection improvements at Townline Road East, McNeely to Ramsay 8
	• Provide demand management or alternative route for Townline Road West, Mississippi Mills Boundary to Bridge Street
2028+	**Infrastructure Projects**
	• Intersection improvements at County Road 43, Port Elmsley Road to Station Road
	• Turn lane designation through re-striping, signs, markings at Queen Street, Bridge to Martin Street
Continuous	**Analyses and Policies**
	• Monitor retroreflectivity of signs and update signs as required
	• Include consideration for cycling strategies in new development projects
	• Consult with the County and Local Municipal Accessibility Advisory Committees concerning projects to be undertaken and the list of recommended measures for each project
	• Monitor traffic volumes and make operational improvements when level of service is approaching capacity
	• Provide information to developers of new workplace locations concerning the need to provide showers and change rooms for employees who commute by cycling
	• Encourage the installation of bicycle parking facilities at existing work locations and multi-unit residential buildings

Period	Activity
	• Coordinate efforts with Planning Departments of local municipalities to ensure that connections between on-street and off-street facilities are well designed
	• Encourage local municipalities to install bicycle parking
	• Actively support high speed internet initiatives by facilitating the building of required infrastructure by service providers
	• Promote cycling by schoolchildren through supporting special events and educational programs
	• Review traffic impact study for new development
	• Support work by others for increasing use of alternative transportation modes
	• Consider cyclists and cycling facilities when planning and conducting road maintenance
	• Support roadwork by others for development
Continuous	**Studies**
	• Undertake a review for each County capital project and liaise with local municipalities to include accessibility improvements where identified
	• Work with Trails Corporation to find funding for recreational trails
Continuous	**Infrastructure Projects**
	• Improve roadway delineation
	• Install traffic calming measures where issues have been identified
	• Assess pavement improvements on known truck routes during rehabilitation projects
	• Install signage and parking facilities for cyclists where cycling paths are constructed
	• Implement operational measure that support cycling at intersections
	• Construct paved shoulders on roads being rehabilitated
	• Re-stripe urban roads to delineate bike lanes
	• Maintain assets

15. References

Many of the documents referred to in this TMP are available on the internet. The list of references used in this document includes:

1. Bentzen, B.L., Tabor, L.S. *Accessible Pedestrian Signals.* Washington: U.S. Access Board, 1998.
2. Boulevard Transportation Group. Municipality of North Cowichan Traffic Calming Policy. North Cowichan, British Columbia. June 2005.
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