Town of Lakeshore

TRANSPORTATION MASTER PLAN

FINAL REPORT

JUNE 2008

IBI GROUP

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1. INTRODUCTION

1.1 Purpose and Objectives of the Transportation Master Plan

The purpose of the Town of Lakeshore Transportation Master Plan is to provide a comprehensive long range plan that integrates the transportation infrastructure requirements of existing and future land use, with the community planning principles of the municipality for growth management, public safety, affordability, economic vitality and quality of life developed through the Town's new Official Plan.

The objectives of the Transportation Master Plan (hereafter referred to as the TMP or Master Plan) are to:

- Identify short and long term needs of the Town's transportation system resulting from proposed, planned and approved growth over the next 20 years to 2025;
- Consider alternative planning strategies for transportation system improvements to meet the Town's needs;
- Provide the municipality with a broad framework on which to plan and implement specific transportation improvement projects relating to municipal roads, public transit, cycling, walking, traffic management and transportation system operations over the next 20 years in 5, 10 and 20 year planning horizons (2010, 2015 and 2025);
- Provide the municipality with transportation and related standards and guidelines to aid in the planning and approval of land development projects;
- Satisfy Phases 1 and 2 of the Municipal Class EA Process by establishing the "need and justification" for specific transportation infrastructure projects, and evaluating alternative solutions leading to a set of preferred transportation solutions for the Town. This will eliminate the need to justify each individual project the municipality may intend to implement, thereby accelerating the transportation planning, design and approval process;
- Provide for early and continual public consultation during the Master Plan preparation;
- Consider the effects of the transportation system on the Town's natural, social and economic environment; and
- Integrate the transportation planning process with other planning initiatives in the Town such the Official Plan review and secondary plan preparation.

1.2 Conformance to Municipal Class Environmental Assessment Process

The Lakeshore TMP was prepared following the Master Planning Process of the *Municipal Engineers Association Municipal Class Environmental Assessment Process (Class EA), June 2000.* This accepted master planning process applies to long range plans that integrate infrastructure such as transportation systems, including roads, public transit systems, bikeways, pedestrian systems and the parts of air, marine and rail systems that include involvement of the local

municipality. To help expedite these types of transportation projects, the EA process provides for the preparation of Master Plans described as follows.

Through the **Master Planning** process, the Class EA recognizes that it is sometimes advisable to plan infrastructure as part of an overall system, rather than as specific projects such as a roadway improvement project. The scope of a master plan is broad and comprehensive, usually including analysis of an entire system, such as a municipal transportation system, in order to develop a framework for future works and developments. The master plan is not typically prepared to address site-specific problems such as traffic operations at individual intersections or in specific neighbourhoods.

The Town of Lakeshore's TMP conforms to the Class EA description of a master plan using **Approach #1** in Appendix 4 of the Municipal Class EA process. Following this approach, Phases 1 and 2 of the Municipal Class EA process were concluded by broadly establishing the problems and opportunities associated with the Town's transportation system over the next 20 years, and selecting a preferred transportation planning solution to address these needs and opportunities.

Once approved by the municipality, the Transportation Master Plan then provides the context for the implementation of specific minor (Schedule B) and major (Schedule C) transportation infrastructure projects and transportation management initiatives, and can be referenced in subsequent Class EA projects to establish the need and justification for these improvements.

The Master Plan is also a stand-alone document with a broad level of assessment to describe the Town of Lakeshore transportation system, and provides the context for implementing specific projects within this system by satisfying Phases 1 and 2 of the EA process dealing with the system problems and opportunities, and alternative solutions respectively. More detailed investigations will be required for specific Schedule B and C projects recommended in this TMP. Schedule B projects will require the filing of the project file for public review, while Schedule C projects will have to fulfill Phases 3 and 4 of the Class EA process prior to filing an Environmental Study Report (ESR) for public review. In both cases, the public review period includes a Part II Order appeal mechanism, where an individual can make a written request to the Minister of the Environment to extend the project to a higher level of EA investigation.

Note: A Part II Order request can only be made on a project-specific EA, and not on a Transportation Master Plan on which such a project is based.

1.3 Project Direction

Preparation of this Master Plan was directed by a team of technical staff of the Town and their consulting team, including:

- Daniel Piescic, P. Eng., Director of Engineering & Infrastructure Services
- Alex Shinas, AICP, MCIP, RPP, Development Services Manager
- Chris Masterson, Engineering & Infrastructure Service
- Tom Storey, M.Sc., MCIP, RPP, Consulting Planner
- Chuck Chevalier, CRS, Manager of Public Works
- Tony DiCiocco, CET, Manager of Engineering Services

- Don Drackley, MITE, MCIP, RPP, IBI Group, Project Management & Transportation Planning
- Russell Brownlee, M.A. Sc. P. Eng., IBI Group, Transportation Engineering

1.4 Public Consultation

1.4.1 PUBLIC MEETINGS

A Notice of Study Commencement and two Public Information Centres were provided during the preparation of this TMP. At the first Public Consultation Centre held on Monday, April 24, 2006 in the Emeryville community, the public was welcome to drop in to discuss concerns and opportunities associated with the Lakeshore TMP Project as well as several other on-going projects within Lakeshore, namely the:

- Community Strategic Plan;
- Official Plan Growth Study;
- Economic Development Master Plan;
- Transportation Master Plan; and
- Water and Wastewater Master Plan.

In addition to these projects, several Secondary Planning Study Areas were also displayed for discussion purposes. In total, 24 members of the public signed in to the first PIC. A second Consultation Centre was held on Monday, September 18th, 2006 in Emeryville community. The public commented on the proposed recommendations regarding:

- Road classification;
- Walking and bicycling policies and the proposed primary bicycle routes;
- Parking and subdivision design policies; and
- The roadway improvement options.

1.4.2 PUBLIC ISSUES

The following summarizes the comments and concerns raised regarding the Lakeshore TMP categorized by topic. These summarize public input to this study recorded by IBI Group and Lakeshore staff, and are not intended to be a verbatim account.

Pedestrian Issues

- Safe off-road walking/bike paths are needed within Lakeshore connecting to Tecumseh and the City of Windsor trail systems.
- Sidewalks should be mandatory on all streets. Specific locations include Orchard Park, Seasons by the Creek, north-south routes such as Rourke and Renaud Line Road.

- Walking and bike path systems are required in the West Pike Creek Road area and should be protected for in the Wallace Woods area.
- More parks are needed in Lakeshore.
- The River Ridge/Puce subdivision should include a trail system linking to the new schools on Oakwood Drive.
- Sidewalks are in need of repair on Old Tecumseh Road.
- Sidewalks need extending on south side of CR 22 from King John to Emery in order for pedestrians to access the school.

Safety Concerns

- High traffic speeds on Amy Croft Drive within the residential area.
- Skewed layout of Gracie Sideroad/CR 37/Tecumseh intersection and lack of signing results in driver confusion.
- All-way stop in Orchard Park is not obeyed and requires a more effective means of intersection control.
- Advance eastbound phase at the CR 22/CR 25 intersection to address sight line deficiencies and heavy westbound volumes.
- Alternate access for Mill Street residents to address sight line deficiencies for southbound left turning movements at CR 22.
- Secondary access for Lighthouse Cove residents.
- Realignment of CR 39 to remove sharp turns in roadway.
- Realign CR 2 at CR 22.

Traffic Operations

- Advance east-west traffic signal phases at CR42/CR25.
- Heavy traffic volumes and congestion on CR 22 from Manning Road to Patillo Road.
- Too many accesses and traffic signals on CR 22.
- Upgrade CR 42 as a measure of relieving congestion on CR 22.
- Divert traffic from CR 22 to CR 42 by creating a by-pass route at Wallace Line Road.
- Access constraints to/from CR 22 (with widening) for school buses traveling between schools.
- Exclusive turning lanes are required on CR 22 and CR 42 between Manning Road and Belle River.

Transit Opportunities

- Provide bus transit services to the key areas within Lakeshore such as St. Clair Beach, Belle River and Tilbury areas with connections to Windsor.
- Convert the rail line for transit usage between Lakeshore and Windsor.
- Construct car-pooling lots along CR 22.

Truck Traffic

- Minimize truck traffic in smaller communities within Lakeshore while promoting it in the southern areas in proximity to Highway 401.
- Heavy truck traffic traveling at high speeds on CR 42 avoiding the weight station on Highway 401.
- Heavy truck traffic on westbound off ramp at CR 35 and Highway 41 destined south towards Leamington
- Too many transport trucks on CR 22 and Patillo Road.

2. EXISTING LOCAL TRANSPORTATION SYSTEM

2.1 Community Context and Planning Approach

Existing transportation trends and travel patterns in the Town of Lakeshore are influenced primarily by the location and form of residential and employment areas. This in turn dictates home-work-home patterns, as well as other discretionary trip-making (i.e. shopping, recreation, social). In other words, ***Land Use Drives Transportation.*** As discussed in **Section 3.2**, the Town is expected to grow to 56,260 residents by 2025, with 20,200 jobs. The majority of this growth is expected in Urban Areas and Employment Areas designated by the Town's new Official Plan.

In the past, the Town's large geographic area and its multiple urban centres and hamlets has generated auto-dominated travel patterns over relatively long distances. The community structure envisioned by the new Official Plan, shown in **Exhibit 2-1**[1], provides an opportunity over the next 20 years to better focus urban and employment growth primarily in the northwest quadrant of the Town and along the west portion of Highway 401. While this new growth focus supports shorter trip-making and the use of alternative travel modes within more intensive communities, it will also place increasing pressure on the major roadways within these growth areas to serve growing traffic volumes with an adequate level of service. The projected impacts of this growth on the Town's roadway network is addressed in **Section 3** of this TMP.

One result of this new community context in Lakeshore will be that the traditional approach to accommodating transportation needs through expanded road capacity (i.e. road widening) will become more limited because of:

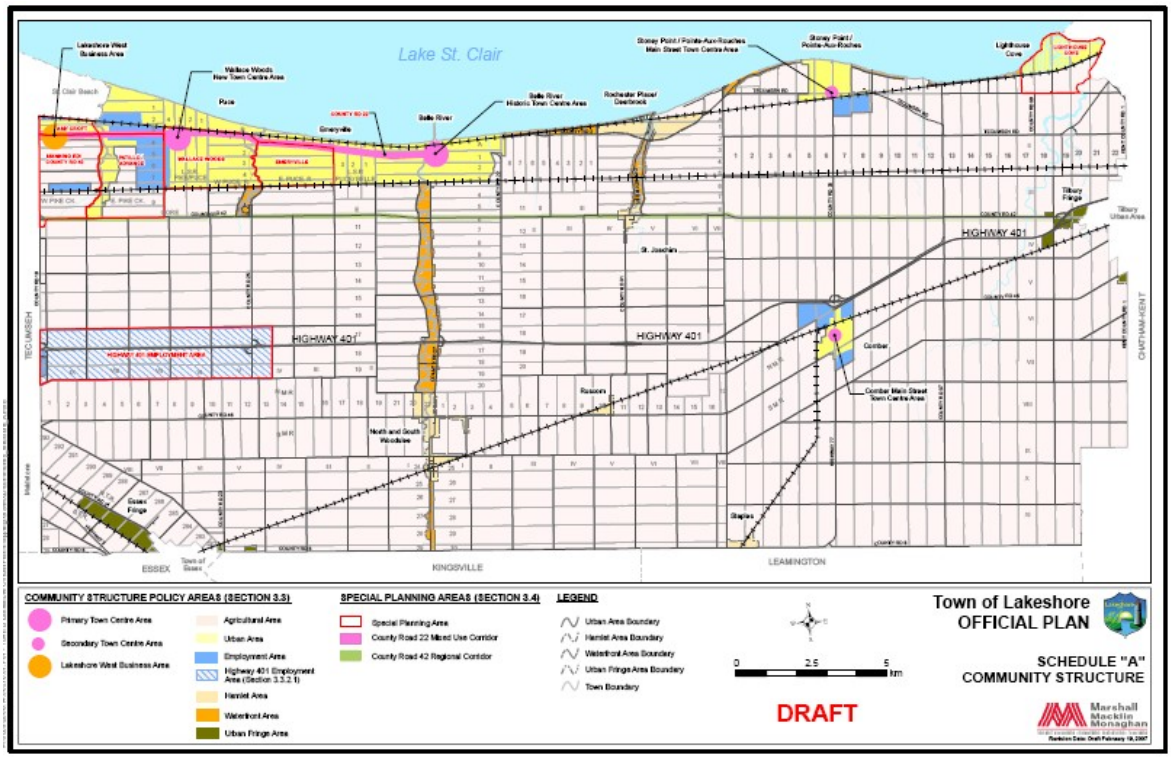
- Significant direct costs of increasing capacity;
- Indirect costs from environmental and community impacts; and
- Physical and practical limits to continued roadway capacity expansion.

This supply-side approach to transportation planning also induces more car travel, which does not support the objectives of this TMP and the new Official Plan.

Conversely, many municipalities have now added a demand-side approach to transportation planning to address the ever-increasing demands for vehicular travel, especially by Single Occupant Vehicles (SOV). This demand-side approach is not just the result of the supply-side limitations, but is also attributable to changing public value, about air quality for example, and demographic changes (smaller households, Baby Boom and Bust, two-income families). Transportation Demand Management (TDM) is the collective term given to policies and practices that can be undertaken to discourage SOV use and encourage alternative forms of transportation by transit, cycling and walking, as well as ride-sharing and telecommuting. TDM measures also include land use planning strategies that support use of transit, cycling and walking, as discussed further in **Section 4.6** of this TMP.

[1] First Draft Town of Lakeshore Official Plan, Marshall Macklin Monaghan, February 19, 2007

Exhibit 2-1: Community Structure



The supply and demand side approaches to transportation planning are not mutually exclusive. A successful transportation plan should be based on a synthesis of these two approaches, as shown in **Exhibit 2-2**. This Lakeshore TMP is based on achieving a balance between supply and demand-side planning that is appropriate and achievable for the Lakeshore community context.

Exhibit 2-2: Planning Approach

Supply-Side	Demand-Side
• Widen Roads • Add Travel Lanes • Build New Roads • Add Bike Lanes • Improve Geometric Conditions • Divert Traffic	Land-Use Based: • Density Intensification • Mixed Land Use Behaviour-Based: • Transit • Telecommuting • Ride-Sharing • Peak Hour Travel Shifts Market-Based: • User Pay • Parking Pricing

2.2 Road Network

2.2.1 PROVINCIAL FACILITIES

The Town of Lakeshore is served by three Provincial Highway facilities, namely:

Highway 401 – an east-west controlled access freeway roughly bisecting the physical boundaries of the Town along its entire length. The freeway is currently a four-lane facility with full movement accesses provided at Manning Road (CR 19), East Puce River Road (CR 25), Belle River Road 9(CR 27), French Line Road (CR 31), Highway 77/CR 35, and CR 42. Ongoing reconstruction and widening of Highway 401 between Tilbury and Windsor will result in a six lane freeway facility throughout the Town limits. Highway 401 is an integral component of the Town's transportation network, and accommodates longer distance trips to the United States, Windsor, Chatham-Kent and other major Ontario centres to the east.

Highway 77 – a provincial highway linking Highway 401 to the Leamington community. This provincial facility travels through the community of Comber; however, does not provide much utility to the remainder of the Town; and

Highway 3 – a provincial highway linking the Windsor and Leamington communities; however, providing little utility to the majority of the urban areas or residents of Lakeshore.

2.2.2 ESSEX COUNTY ROAD NETWORK

Essex County has jurisdiction over most of the arterial roadways that service the Town of Lakeshore, including all connections to Highway 401 and the E.C Row Expressway in the City of Windsor. **Exhibit 2-3** illustrates the location and extents of the County roadways in the Town.

In most cases, County roadways in the Town of Lakeshore are two-lane rural roadways. The County of Essex, the local municipalities and the City of Windsor identified a Regional Road System in the development of the Essex-Windsor Regional Transportation Master Plan (October 2005).[2] It should be noted that not all County roads were designated as Regional Roads as shown in **Exhibit 2-4.**

[2] IBI Group with Paradigm Transportation Solutions

Exhibit 2-3: County Road Network

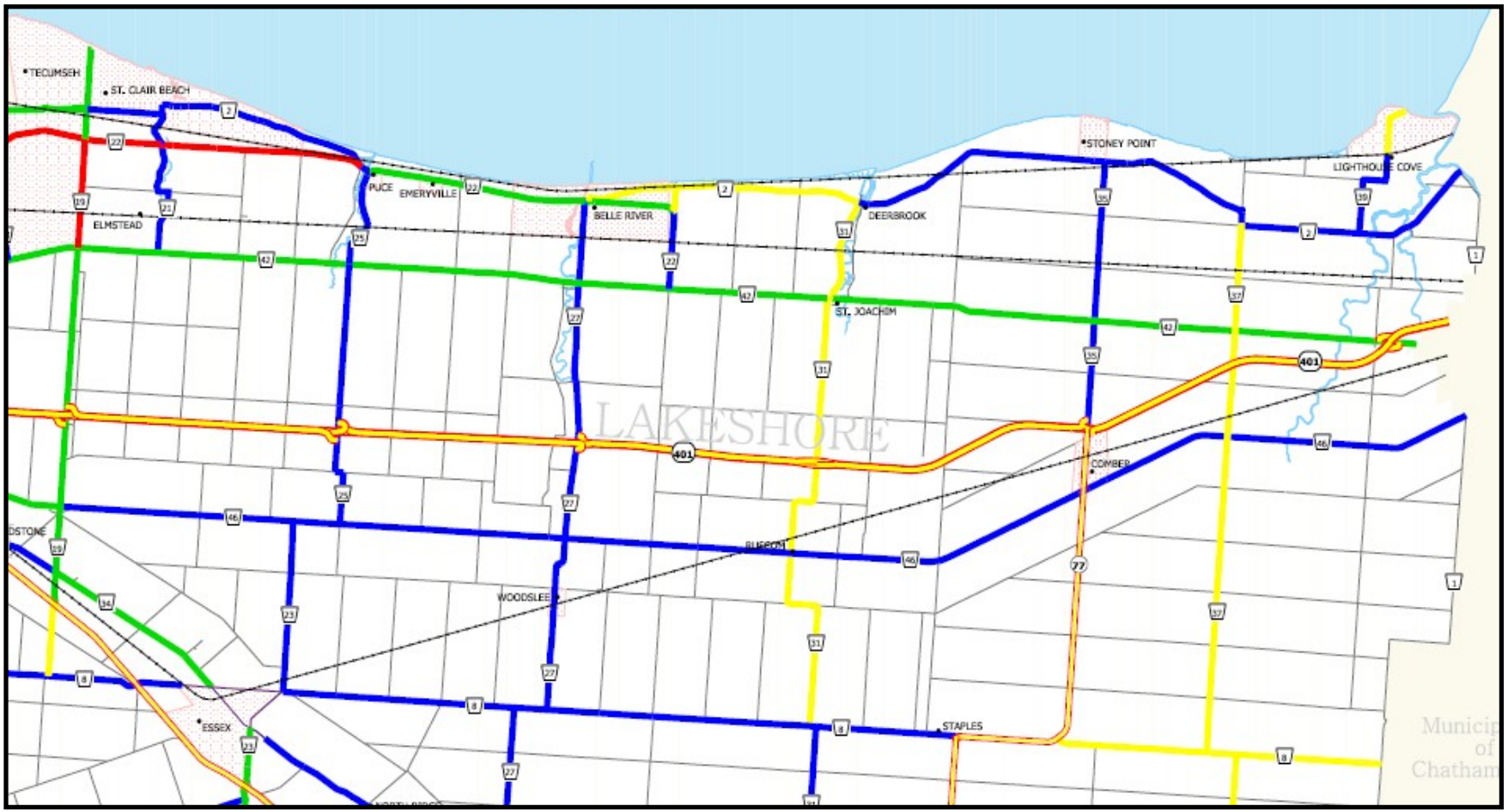
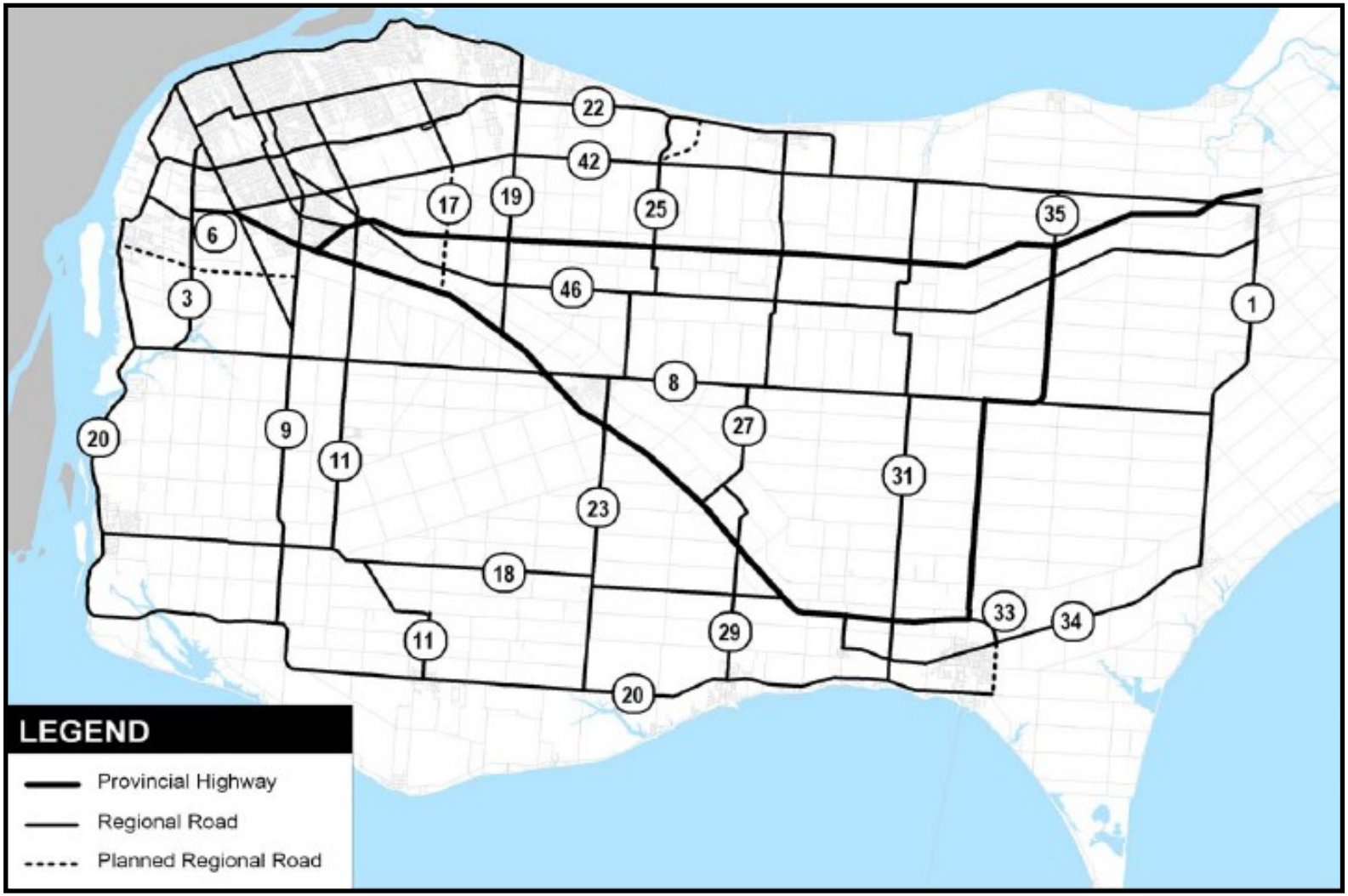


Exhibit 2-4: Region Road Network



2.2.3 ROADWAY CLASSIFICATION

A formal roadway classification system was developed during the Essex-Windsor Area Regional TMP. This classification system provides guidance for the function of the higher order roadways generally under the jurisdiction of the County of Essex. Included in **Exhibit 2-5** and **Exhibit 2-6** are the defining characteristics for rural and urban County roads respectively.

A roadway classification system within the Town of Lakeshore for their arterial, collector and local roadways is not currently available. The Town's Development Manual makes reference to design standards and characteristics for the aforementioned roadway types; however, this information is not sufficiently robust to provide guidance to the Town, its residents and the development community. Through the preparation of this Master Plan, a policy paper (Road Classification Policy Paper, IBI Group, July 2006) was developed to formulate and define a classification system for all roads in the Town. **Section 5.1.1** describes the proposed classification system.

Exhibit 2-5: County of Essex Rural Road Classification System

Criteria	FREEWAY / EXPRESSWAY	HIGHWAY	REGIONAL ROAD	SECONDARY ROAD	TERTIARY ROAD
Land Use Served	does not serve land use	land access is secondary consideration	connects urban areas	rural development areas	access to individual properties
Land Service	no access	limited access	limited access	full access	access primary consideration
Service Function	Optimum mobility	optimum mobility	Traffic movement primary consideration	Traffic movement/land access equally important	Traffic movement is secondary consideration
Traffic Volume AADT	more than 10,000	more than 10,000	1,000 – 20,000	200 – 10,000	not applicable
Traffic Flow Character	free flow	uninterrupted flow except at signals	uninterrupted flow except at signals	interrupted flow	interrupted flow
Design Speed (not posted speed)	100 -120 km/h	80-100 km/h	80 –100 km/h	60 – 100 km/h	60 – 80 km/h
Average Running Speed	80 – 120 km/h	80-100 km/h	60 – 100 km/h	60 – 90 km/h	50 – 80 km/h
Vehicle Type	all types, heavy trucks average 20 – 30%	all types, heavy trucks average 20 – 30%	all types, up to 20% trucks	all types up to 30% trucks mostly single unit type	predominantly passenger cars and light to medium trucks and occasional heavy trucks
Connects to	Freeways arterials	freeways arterials	freeways arterials collectors	arterials collectors locals	collectors locals

Exhibit 2-6: County of Essex Urban Road Classification System

Criteria	FREEWAY / EXPRESSWAY	HIGHWAY	ARTERIAL (Major/Minor, Class I, Class II	COLLECTOR (Major/Minor, Class I, Class II)	LOCAL
Land Use Served	does not serve land use	land access is secondary consideration	connects districts & development nodes	internal area connections	Access to individual properties
Land Service	no access	limited access	limited access	full access	access primary consideration
Service Function	Optimum mobility	optimum mobility	Traffic movement primary consideration	Traffic movement & land access equal importance	Traffic movement is secondary consideration
Traffic Volume AADT	more than 75,000	more than 50,000	5,000 – 50,000	1,000 – 20,000	not applicable
Traffic Flow Character	free flow	uninterrupted flow except at signals	uninterrupted flow except at signals	interrupted flow	interrupted flow
Design Speed (not posted speed)	100 -120 km/h	80-100 km/h	80 –100 km/h	60 – 100 km/h	60 – 80 km/h
Average Running Speed	80 – 120 km/h	80-100 km/h	60 – 90 km/h	60 – 70 km/h	40 – 60 km/h
Vehicle Type	all types, heavy trucks average 20 – 30%	all types, heavy trucks average 20 – 30%	all types, up to 20% trucks	all types	predominantly passenger cars and light to medium trucks
Connects to	Freeways arterials	Freeways arterials	freeways arterials collectors	arterials collectors locals	collectors locals

2.2.4 EXISTING TRAVEL CHARACTERISTICS AND OPERATIONS

The following current and previous transportation studies and environmental assessments have been conducted and were reviewed during the preparation of this Master Plan:

Exhibit 2-7: Background Studies

Study	Jurisdiction	Date
Essex-Windsor Regional Transportation Master Plan	County of Essex	October 2005
County Road 22 Environmental Assessment	County of Essex	May 2006
County Road 19 Environmental Assessment Final Report	County of Essex	December 2005
Manning Road/Amy Croft Drive Commercial Area Transportation Study	Town of Lakeshore	November 2006
Advance Boulevard / Patillo Road Area Transportation Study (Draft)	Town of Lakeshore	February 2006
Wallace Woods Secondary Planning Area Transportation Study	Town of Lakeshore	March 2007
River Ridge Area Transportation Study	Town of Lakeshore	May 2005
Puce Secondary Plan Update Transportation Study	Town of Lakeshore	January 2006
County Road 22 2006 Traffic County Summary	Town of Lakeshore	July 2006
Transportation Impact Study Guidelines (Draft)	Town of Lakeshore	November 2006
Town of Lakeshore Population, Household and Employment Forecast	C.N. Watson and Associates Ltd	April 2006
Highway 401 Reconstruction and Widening, Belle River to Highway 77	Ministry of Transportation	December 2005
Belle River Parking Review	Town of Lakeshore	March 2007
Town of Lakeshore Official Plan (First Working Draft)	Town of Lakeshore	February 2007

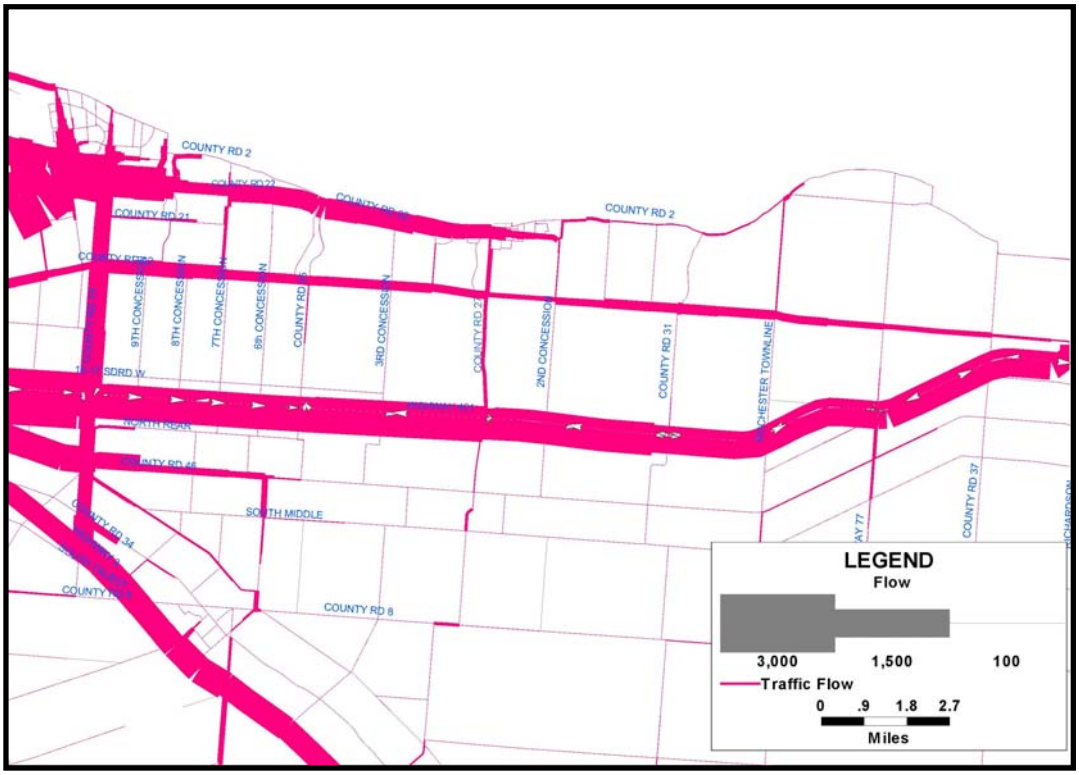
Study	Jurisdiction	Date
Corridor Management and Access Control Policy	Town of Lakeshore	March 2007
Walking and Cycling Policy Paper	Town of Lakeshore	July 2006
Subdivision Design Policy Paper	Town of Lakeshore	July 2006
Parking Policy Paper	Town of Lakeshore	July 2006
Road Classification Policy Paper	Town of Lakeshore	July 2006

A Household Travel Survey conducted for the Essex-Windsor Regional TMP in 2002 provided some information on how people currently travel in the suburban and rural parts of Essex. The conclusion from these surveys is that travel within, to and from the Town of Lakeshore is highly auto-dominated, and is explained by the long rural travel distances between communities, commuting patterns to and from Windsor and the lack of public transit service.

While the Belle River downtown and the CR 22 corridor provide some commercial and personal services for the Town of Lakeshore, residents also need to travel to larger centres to obtain many goods and services.

These longer distance daily trips result in substantial peak hour demands on CR 22, CR 42 and CR, plus the intersections associated with these roadways. Provided in **Exhibit 2-8** is a graphic summary of the relative traffic volumes during the peak travel periods in the Town. Specific capacity issues are addressed in **Section 3**.

Exhibit 2-8: Existing Traffic Volume Patterns



2.3 Pedestrian Facilities and Networks

2.3.1 SIDEWALKS AND PATHWAYS

Sidewalks exist along one or both sides of many of the mature roads within the historic urban areas of the Town, including the Belle River, St. Joachim and Comber communities. Conversely, road networks within other historic areas such as the Emeryville community do not provide sidewalks to this extent, with many roads have no pedestrian facilities.

A number of rural communities within Lakeshore have developed along County and Town arterial road corridors including Rourke Line Road, East and West Pike Creek Road, East and West Puce River Roads, and North Woodslee. These rural built up areas do not provide any formal pedestrian facilities.

Current Town standard is to provide sidewalks on both sides of all arterial and collector roadways and one side of local roads. Sidewalks are not required on any cul-de-sac roadways. Through the development of the Official Plan, the Town encourages the development and enhancement of pedestrian facilities.

For a period between the historic development areas noted above and the current standard, residential development within the Town did not include the construction of sidewalk on many collector and local roadways. This is evident within residential communities such as the areas bounded by:

- CR 22 to the north, West Belle River Road to the east, CP Rail mainline to the south and Rourke Line Road to the west; and

- Country Road 2 to the north, Wallace Line to the east, CR 22 to the south and Patillo Road to the west.

Likewise, recent commercial and industrial developments, such as the Amy Croft commercial areas and the Silver Creek Industrial Road/Jutras Drive industrial area, make no provision for pedestrian travel.

Through the preparation of this Plan, a policy paper (Walking and Cycling Policy Paper, IBI Group, July 2006) was developed to provide a vision and design standards for pedestrian facilities within the Town's transportation network. **Sections 4.4, 5.2.1 and 5.4** of this Master Plan describe the pedestrian facility improvement opportunities and proposed policies.

2.3.2 PEDESTRIAN CONNECTIVITY

The Town encourages pathways and walking trails in all new development areas; however, at present the Town does not have a formal system of pedestrian pathways or walking trails.

There are a number of major barriers to pedestrian travel within the Towns existing and planned urban areas, including:

- **Watercourses** – Pike Creek, Puce River and Belle River have limited crossings and are generally at the major County and concession roadways;

- **County Road 22** – the general lack of sidewalk facilities along this important road, and the limited number of controlled crossings of Country Road 22 limit north-south

pedestrian travel between residential, commercial and recreational areas of the Town; and

- **Subdivision Networks** – A number of the newer residential areas were planned with long residential blocks and cul-de-sac roadways, which do not lend themselves to pedestrian travel within the block or to adjacent areas.

Through the preparation of this Plan, a policy paper (Subdivision Design Policy Paper, IBI Group, July 2006) was developed to provide design guidelines for new development areas within the Town. **Sections 4.4 and 5.2** of this Master Plan describe these proposed policies.

2.4 Cycling Facilities

The Essex-Windsor Regional TMP encourages the local municipalities to consider the development of pedestrian walkways and bicycle paths within their transportation networks. However, little support is provided for cycling facilities along County Road transportation corridors.

Through the development of the Official Plan, the Town recognizes that cycling contributes to community health and a sustainable transportation system. At present, the Town does not have dedicated on-road or off-road bicycle facilities or an identified bicycle network. The Town's Development Manual indicates:

The Municipality encourages bikeways and walking trails in all new developments. Bikeways may be requested on collector and arterial roads, at the discretion of the Municipality, and at the Developer's expense ... "

Through the preparation of this Plan, a policy paper (Walking and Cycling Policy Paper, IBI Group, July 2006) was developed to provide a vision and design standards for cycling facilities, including bicycle parking, within the Town's transportation network. **Sections 4.5 and 5.5 of this Master Plan** describe the bicycle facility and network opportunities in the Town.

2.5 Transit Service

At present, no public transit service is provided within the Town of Lakeshore. However, current transportation initiatives associated with the development of new communities in the Town have been completed with the intention of accommodating future transit service.

The City of Windsor provides public transit services within their City limits with the easterly services to neighbourhoods in the Banwell Road area. The Town of Tecumseh provides a seniors transit service, but provides no formal general public transit service.

The lack of public transportation in the Town was identified as an issue by a number of residents during the public forums. These concerns revolved centred on the lack of transit service for home-work-home trips to larger urban centers and for local school, recreational and personal trips.

2.6 Parking

The Town has an established set of parking standards for specific building types and/or uses, as defined in the Maidstone Zoning Bylaw. Through the preparation of this Master Plan, a Parking Policy Paper (IBI Group, July 2006) was developed to promote efficient and sustainable off-street parking policies and update the existing parking standards, as required.

Overall, parking was not identified by Lakeshore residents as a key issue in the community at any of the public forums. The Belle River downtown area represents the primary public parking district in the Town, which is not solely associated with a specific development. Parking surveys conducted in 2006 in this commercial core area suggests that the average parking stall occupancy on Friday and Saturday is below 50%.

2.7 Rail Service

There are three railways lines traversing the Town of Essex, the CPR, CNR and CASO lines. The busiest rail line is the CPR freight line to the Detroit railway tunnels, handling CPR's import and export traffic, plus all the automotive industry-related traffic. The CNR line handles VIA passenger train service on the Chatham subdivision.

The main issue associated with the rail system in Lakeshore involves high speed VIA trains at numerous level crossings, some of which are located in urban areas such as Belle River and Lighthouse Cove. The Essex-Windsor Regional TMP concluded that with the CPR line having the largest traffic volume and the most direct route into and from Windsor, it is possible that future rail rationalization may focus on this line, with the possible abandonment of the CNR and perhaps the CASO lines.

Should such rationalization occur, it would impact on the Town's policy and proposal to reintroduce a VIA passenger station stop at the Belle River community. An analysis conducted by IBI Group of ridership potential, service levels, a station site and cost/revenue impacts shows the potential for some 2,550 new riders annually added to the VIA service by introducing a Lakeshore stop at Belle River. Approximately 100,000 residents of Lakeshore and the adjacent communities of Leamington, Kingsville, Essex and Tilbury are currently underserved by VIA. Long driving distances for these travellers to VIA stations in Windsor and Chatham discourage ridership. The Town hopes this proposal will provide an important background in further discussions with VIA Rail regarding a Belle River stop.

3. FUTURE TRANSPORTATION NEEDS

3.1 Town Growth

Land Use Drives Transportation, so future transportation needs in a community originate from the type, amount and location of new development, the traffic levels and patterns generated by this growth and the capability of the existing roadway network to accommodate this growth within accepted levels of service. As part of preparing the Town's new Official Plan, four growth options were developed with alternative locations and patterns of future population and employment growth in the Town by 2025 and beyond. These growth options are described as follows.

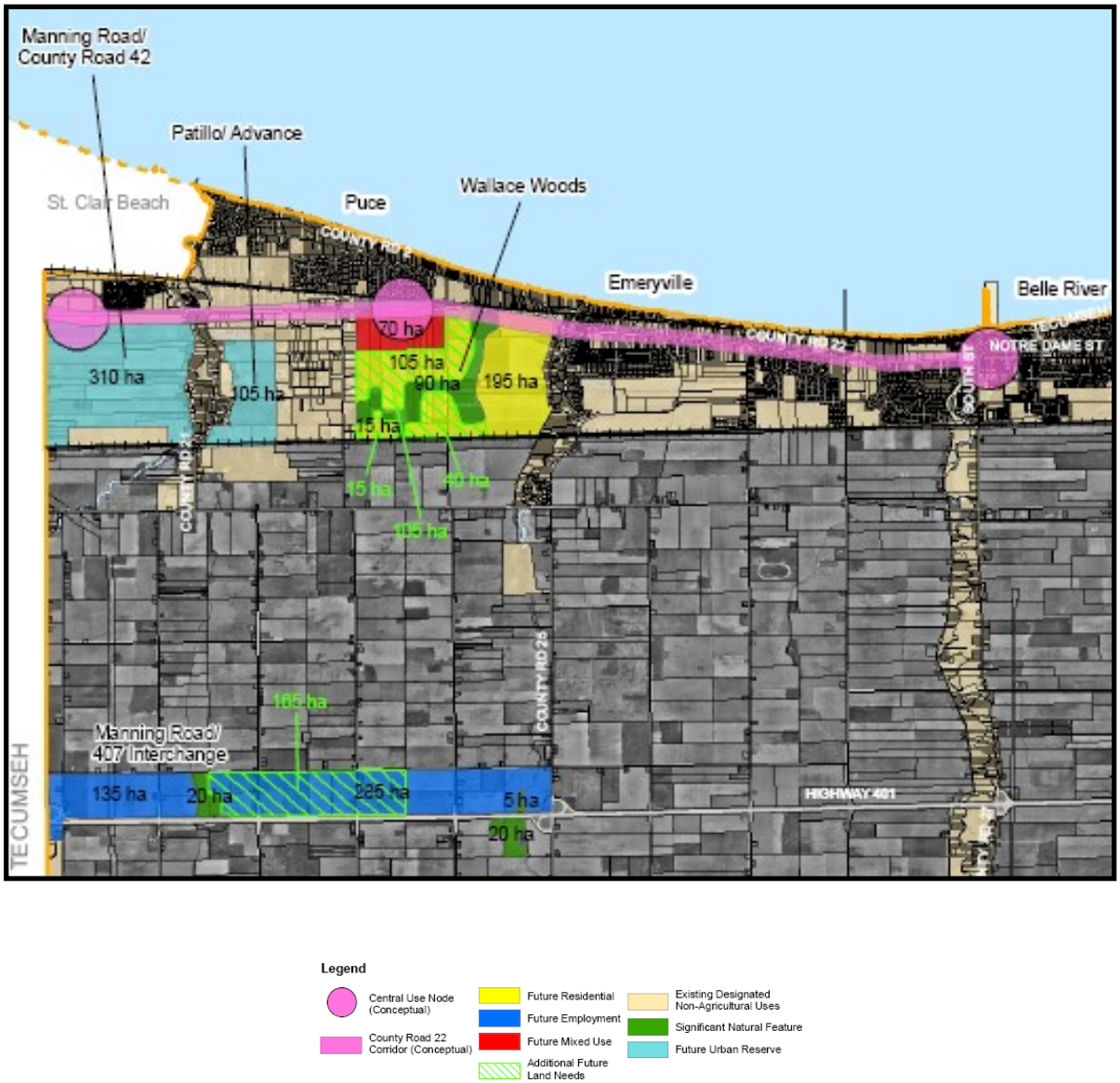
3.1.1 OPTION A – NORTHWEST AND 401 CORRIDOR GROWTH

This growth option was based on a continuation of existing growth patterns in the Town, with most future residential growth occurring in the CR 22 corridor extending south to the CP rail line between CR 19 and CR 25. This area includes the existing Puce and Emeryville residential communities, plus the planned Wallace Woods community. The CR 22 corridor links development in this area with Central Use Nodes located at CR 19, the Wallace Woods area and Belle River.

In this option, most employment growth is directed to lands along the north side of Highway 401 between CR 19 and CR 25. The resulting Option A land use pattern is shown on **Exhibit 3-1**.[3]

[3] Town of Lakeshore and Marshall Macklin Monaghan

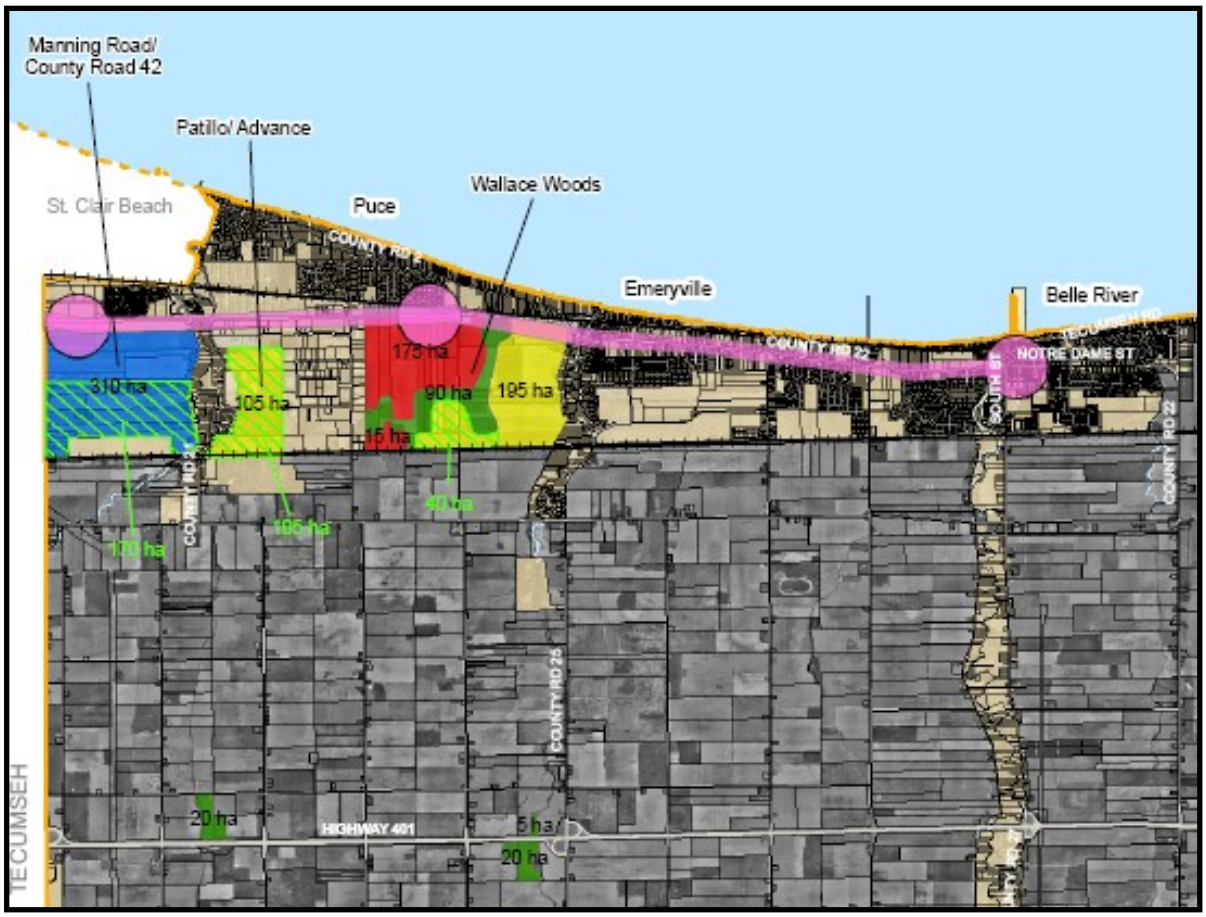
Exhibit 3-1: Growth Option A: Northwest and 401 Corridor Growth



3.1.2 OPTION B – NORTHWEST GROWTH

In this Option, most future employment growth is located in the Manning Road/CR 42 area between CR 19 and CR 21. More residential growth is also planned for the Patillo/Advance area, with more mixed use development directed to the Wallace Woods area. The result is more intensified population and employment growth focused in the northwest area with more mixed use development opportunities, closer home-work distances and trip length reduction potential, all linked by the CR 22 corridor and nodes shown in **Exhibit 3-2**:

Exhibit 3-2: Growth Option B: Northwest Growth

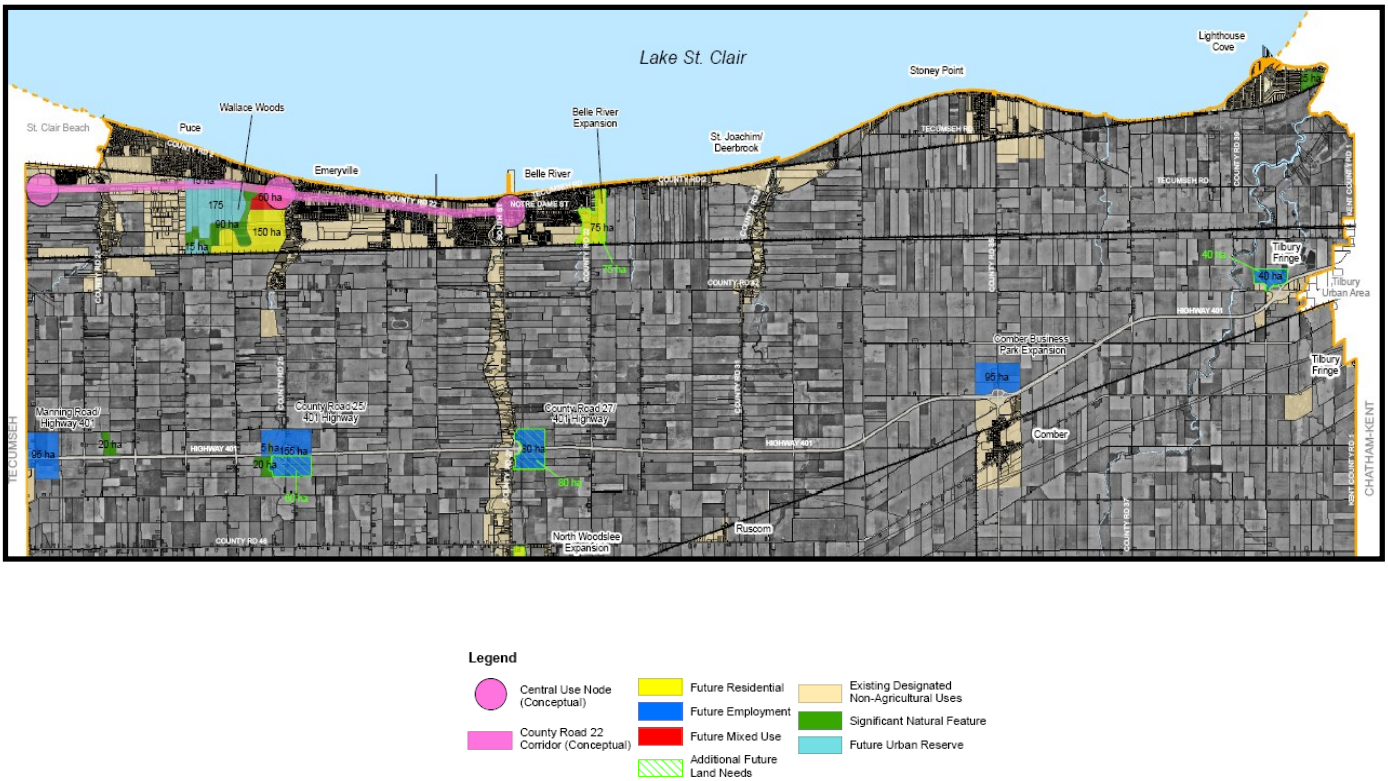


3.1.3 OPTION C – MULTI-NODAL GROWTH

Growth Option C provides for more dispersed population and employment growth in Lakeshore to a number of new development nodes shown on **Exhibit 3-3**. These include the Wallace Woods and Belle River residential nodes with expansion provided for the Belle River node. Employment growth is directed to five strategically located nodes on Highway 401 at Manning Road, CR 25, CR 27, Comber and the Tilbury fringe.

This multi-nodal development is expected to generate longer home-work trip lengths, but also disperse the associated traffic growth beyond the CR 22 corridor.

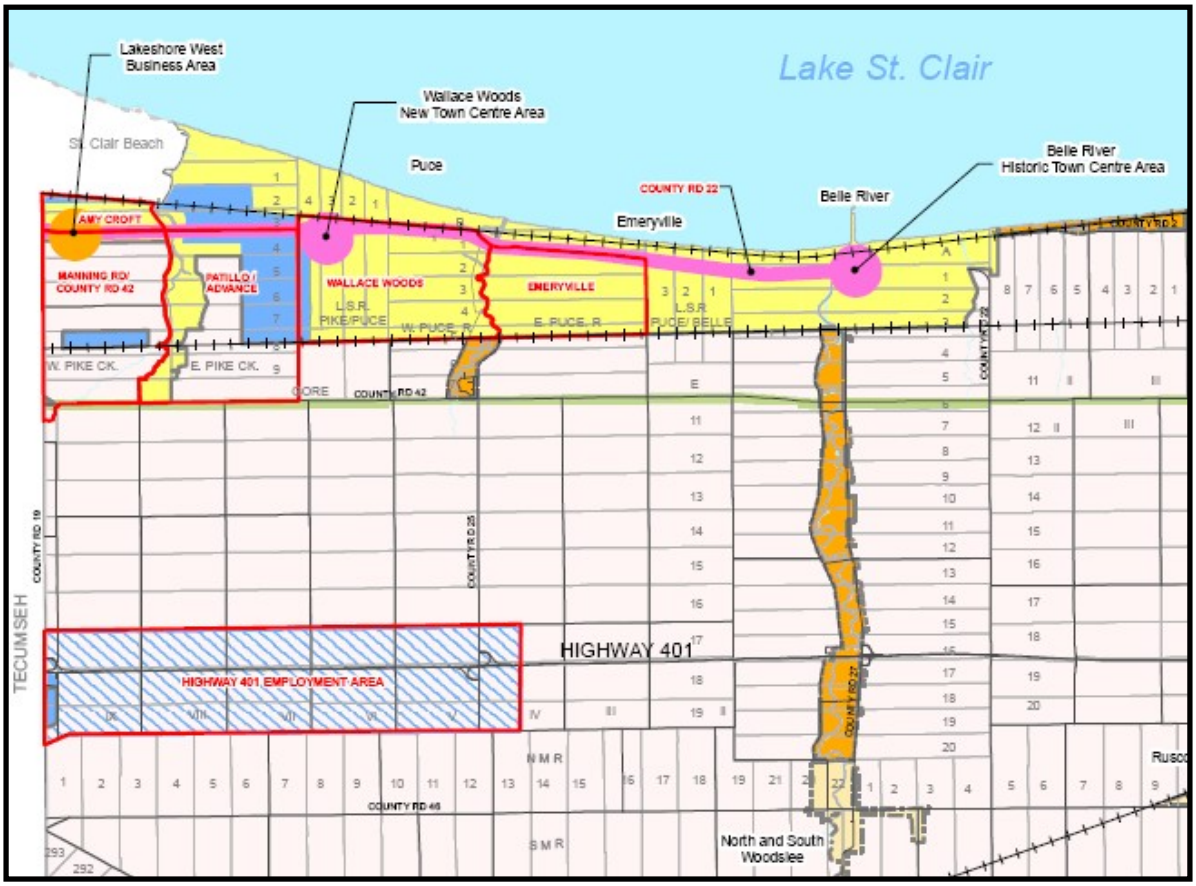
Exhibit 3-3: Growth Option C: Multi-Nodal Growth



3.1.4 OPTION D – HYBRID GROWTH

A hybrid growth option was developed and eventually selected as the preferred community structure for the Town's new Official Plan. It involves settlement areas as the focus of growth, providing for development patterns that efficiently use land, resources, infrastructure and public services. As shown on **Exhibit 3-4**, the Hybrid Growth pattern directs growth to Urban Areas and Employment Areas clustered primarily on the northwest quadrant of the Town.

Exhibit 3-4: Hybrid Growth Option (Official Plan)



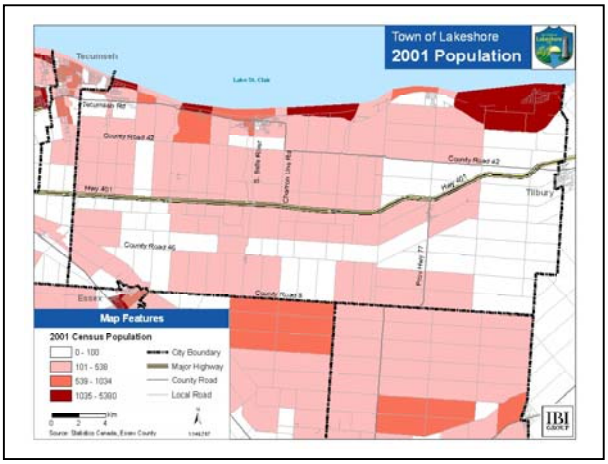
3.2 Town Growth Forecasts

3.2.1 POPULATION GROWTH

In 2001 Statistics Canada recorded that the Town of Lakeshore population was 28,746 residents. This represents a 10% increase from the 1995 population (26,127), and a 20% increase from the 1991 census population (23,775). This population was concentrated in the CR 22 corridor along the Lake St. Clair waterfront as shown on **Exhibit 3-5** with the Town's population growth forecast compared to forecasts prepared by C.N. Watson[4]:

[4] Town of Lakeshore Population, Household and Employment Forecast, C.N. Watson and Associates Ltd., December 2005

Exhibit 3-5: 2001 Population Distribution

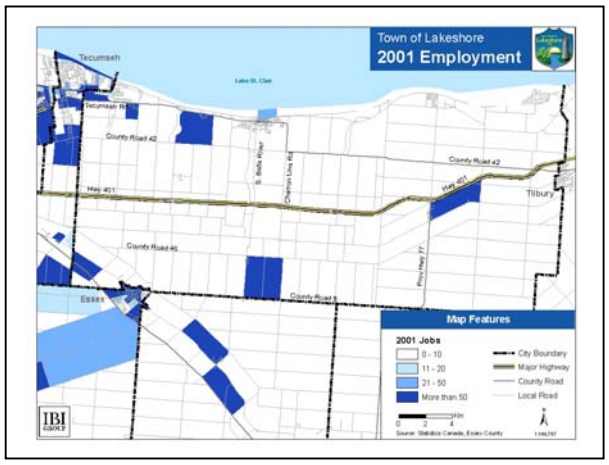


Year	Model Forecast	C.N. Watson Medium Forecast
2005	34,110	33,522
2010	39,500	n/a
2015	45, 240	45,233
2025	56,260	56,261

3.2.2 EMPLOYMENT GROWTH

In 2001, the Essex-Windsor TMP estimated that there were 4,720 jobs in the Town of Lakeshore. The C.N Watson Population, Housing and Employment Forecast estimates 9,332 jobs in 2005. **Exhibit 3-6** illustrates the distribution of these jobs within the Town of Lakeshore, plus the Town's employment growth forecast:

Exhibit 3-6: 2001 Employment Distribution



Year	Model Forecast	C.N. Watson Medium Forecast
2005	9,332	9,332
2010	12,700	n/a
2015	15,300	14,730
2025	20,200	18,537

3.2.3 EXISTING TRAVEL CHARACTERISTICS

The Household Travel Survey conducted for the Windsor Area Long Range Transportation Study (WALTS) in 1997 and the subsequent Essex-Windsor Regional TMP in 2002 provide some information on how people currently travel in the suburban and rural parts of Essex County. From this, travel characteristics were developed for use in the Town of Lakeshore travel forecasting model.

The conclusion from these surveys is that travel within, to and from the Town is highly auto-dominated that is explained by long rural travel distance between communities, commuting patterns to and from Windsor and the lack of public transit service. The previous household travel surveys indicated that in the PM peak period, about 80% of Windsor area travel is by private automobile, followed by 3% on transit, 4% on school buses, 10% walking, 2% cycling and 1% on an other mode of transportation (i.e. taxi). These findings were adjusted for the Town of Lakeshore as follows to reflect actual travel conditions:

Exhibit 3-7: Existing 2005 Travel Mode Shares

Mode	% of PM Peak Period Travel Urban Area	% of PM Peak Period Travel Rural Area
Auto Driver/Passenger	90%	95%
Transit	0%	0%
Cycling/Walking	10%	5%

3.3 Travel Demand Forecasting

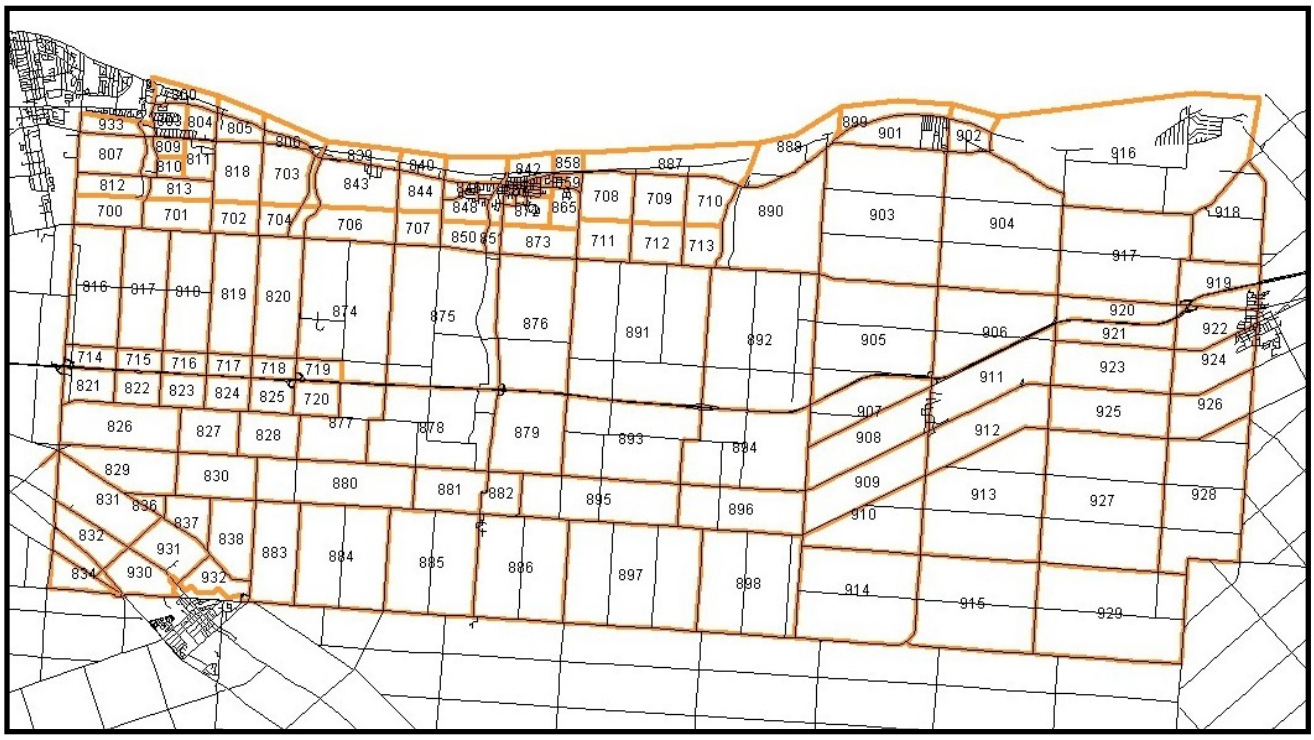
Future roadway travel demands in the Town of Lakeshore were generated using a transportation network model developed from the model used in the Essex-Windsor Regional TMP. This network model is a mathematical computer representation of the Town's road network and population and employment distribution in 2005 to represent existing conditions. Population and employment forecasts by traffic zones are also included in the model for 2010, 2015 and 2025. A 2031 planning horizon is also included in the model to forecast longer term travel demands beyond the 20 year horizon of this Master Plan and the Town's new Official Plan.

The demand forecasting model consists of a system on interconnected links, nodes and centroids that represent the existing roadway network and development areas, and provides an efficient tool to understand the implications of both strategic non-structural (demand-side) and structural (supply-side) transportation improvements. The model uses the TransCAD software based on the traditional four-step process involving:

- Trip Generation - The amount of trips made;
- Trip Distribution - Where those trips go;
- Modal Split - What mode of transportation is used; and
- Traffic Assignment - What routes are used for the trips.

The Lakeshore model simulates travel demands in the PM peak hour since this represents the highest period of trip-making, and therefore the worst case scenario. Travel in the PM peak hour typically generates about 15% more trips than in the AM peak hour since in addition to commuting, more discretionary trips also take place in the afternoon. Associated trip generation equations were developed based on current population, employment and travel data in Lakeshore (Refer to **Section 3.2.3**). These equations were used to establish the future travel demands in the Town corresponding to the projected population and employment growth presented in **Section 3.2**, and the three Town growth options developed as part of the Official Plan preparation summarized in **Section 3.1**. Trip matrices were then created for each growth option and time horizon indicating trips to and from each traffic zone. A total of 156 traffic zones were developed for the Town as shown in **Exhibit 3-8**.

Exhibit 3-8: Lakeshore Traffic Zones



The distribution of road trips within the Town was produced using a gravity model approach. The model was calibrated to 2005 actual traffic volume conditions using available traffic counts, and some new counts collected for this project, to adequately reflect actual traffic conditions in the PM peak hour on the road network.

The validation of the Lakeshore model included a comparison of observed 2005/06 weekday PM peak hour traffic volumes with modelled 2005 volumes across screenlines, rather than to and from each of the 156 traffic zones. Screenlines are imaginary lines drawn along geographic features such as roads, rivers, and railway tracks for the purpose of summarizing traffic and/or capacity along a corridor. North-south and east-west screenlines were created in the Town for calibration and forecasting purposes, shown on **Exhibit 3-9** along the following routes:

North-South Screenlines:

1. East of Essex CR 19;

2. East of Essex CR 25 & 23; and

3. East of Essex CR 27.

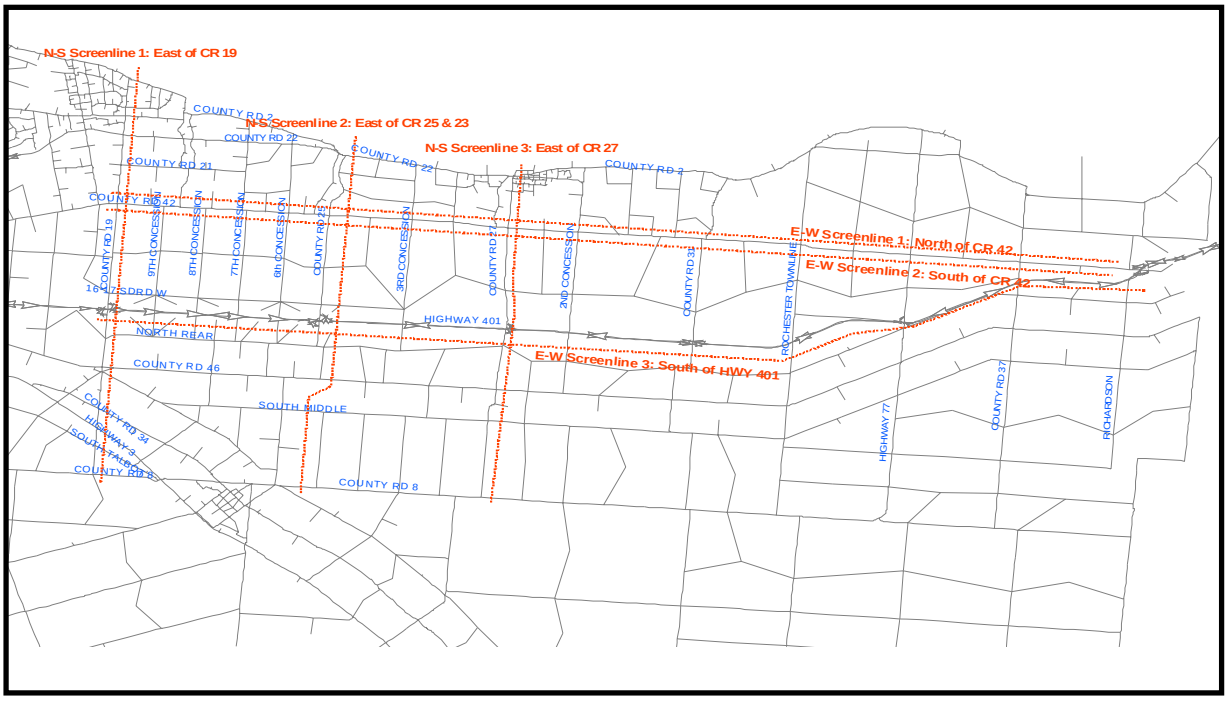
East-West Screenlines:

1. North of Essex CR 42;

2. South of Essex CR 42; and

3. South of Highway 401.

Exhibit 3-9: Screenlines



Spreadsheet results of the model calibration to 27005 conditions across these screenlines are included in the project file**.**

The calibration to 2005 existing conditions also assumes the same travel characteristics in the Town as currently experienced. That is, the proportion of trips by the private automobile, auto passenger, walking and cycling are as in 2006 (Refer to **Exhibit 3-7**), and that public transit is not available to Lakeshore residents now. For the purposes of model calibration, retaining these existing travel characteristics allows for the forecasting of worst-case conditions on roads in the Town. Travel forecasts resulting from these characteristics will also show the extent of network deficiencies resulting from continuation of auto-dominated travel in Lakeshore, and the impacts of alternative planning strategies.

3.4 Road Travel Forecasting and Network Deficiencies – Growth Option D: Hybrid

As stated earlier, the Town's new Official Plan is based on a new community structure represented by Growth Option D: Hybrid Growth in this TMP. Future travel forecasts and assignments were developed for Growth Option D in 2010, 2015, 2025 and 2031 on major roads within the Town. Three transportation planning scenarios were analysed for each of the four growth options considered for the Town in the Official Plan development (see Section 3.1). This forecasting exercise was conducted to determine the impacts of these growth options and transportation scenarios on the existing Lakeshore roadway network, its Level of Service and associated capacity deficiencies over each planning horizons.

Only the road travel forecasting and associated network deficiencies generated for Growth Option D: Hybrid are reported in this Master Plan as this growth option forms the new Official Plan's community structure. Forecasting analyses of the other three growth options are stored in the project files, but are no long relevant to this master Plan as they do not correspond to the Town's chosen community structure.

The transportation planning scenarios applied to Growth Option D for evaluation and comparison purposes are:

Scenario 1: Status Quo - provides no major roadway capacity enhancements, capacity optimization or changes in travel characteristics beyond that already under construction (i.e. Highway 401 widening). It represents a "business–as-usual" scenario in Lakeshore;

Scenario 2: Capacity Enhancement - involves strategic increases in the capacity of deficient roadway sections through widenings and/or extensions to address the forecasting of roadway LOS deficiencies under the Status Quo Scenario; and

Scenario 3: Transportation Demand Management (TDM) – involves changes in travel characteristics in the Town. In the Lakeshore context, this can be accomplished in three strategic ways that are included in Scenario 3 as follows:

1. Reduce reliance on the auto mode share by introducing a 3% urban mode split to transit in 2010 and 2015, increasing to a 6% urban mode split to transit in 2025 and 2031. This is consistent with goals established in the new Transit Windsor Master Plan, and represents the extension of public transit service into Lakeshore; and

2. Reduce the average travel distance in the Town to reflect changes in urban development forms, including more mixed use development with closer home-work distances, and more intense development forms in appropriate locations within the Town. This is represented in the travel forecasting by a further reduction in auto use as more short trips use expanded cycling and walking infrastructure. The resulting change in selected travel characteristics in Lakeshore over the next 25 years is shown in Exhibit 3-10.

Exhibit 3-10: Mode Share Scenarios

TDM Mode	2005		2010		2015		2025		2031	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Auto	90%	95%	87%	95%	87%	95%	79%	90%	79%	90%
Transit	0%	0%	3%	0%	3%	0%	6%	0%	6%	0%
Walking/Cycling	10%	5%	10%	5%	10%	5%	15%	10%	15%	10%

3. The third element of the TDM Scenario increases the capacity of each modelled link in the roadway network by 5% as a reflection of capacity optimization measures such as access management and intersection operation improvements.

Using the travel demand forecasting model developed for the Town, auto trip volumes across the six strategically selected screenlines were forecast in the typical weekday PM Peak Hour (PMPH) for each the three transportation scenarios and at 2010, 2015 and 2025. These volumes were then compared to the planning capacities assigned to roads in the model that cross a screenline based on the road classification, resulting in a volume-to-capacity or v/c ratio forecast for each road link crossing a screenline in each time horizon, growth option and transportation scenario. These ratios were translated to Level-of-Service (LOS) ratings.

LOS is a recognized method of rating and quantifying the efficiency of traffic flow on the road network. The optimum rating is LOS A, down to the worst LOS F which represents severe congestion or gridlock, and all the natural and social environment impacts associated with gridlock including travel delay, extended trip length, emergency response reduction and increased fuel consumption and air quality emissions. General descriptions of each LOS with its v/c ratio and associated traffic conditions are summarized as follows:

Exhibit 3-11: Level-of-Service (LOS) Ratings

Roadway V/C Ratio	LOS	General Traffic Description
< 0.8	A	Preliminary free-flow conditions at average overall travel speeds in the upper range. Vehicles are unimpeded in their ability to manoeuvre within traffic stream. Control delays at signalized intersections are minimal.
< 0.8	B	Reasonably unimpeded operations at average travel speeds still in the upper range, but dropped from LOS A due to increasing intersection delays and vehicular conflicts. The ability to manoeuvre within the traffic stream is only slightly restricted, and control delays at intersections are not significant.
< 0.8	C	Stable operations but the ability to manoeuvre and change lanes in mid-block locations may be more restricted than in LOS B conditions, with longer queues, adverse signal coordination or both contributing to lower average speed.

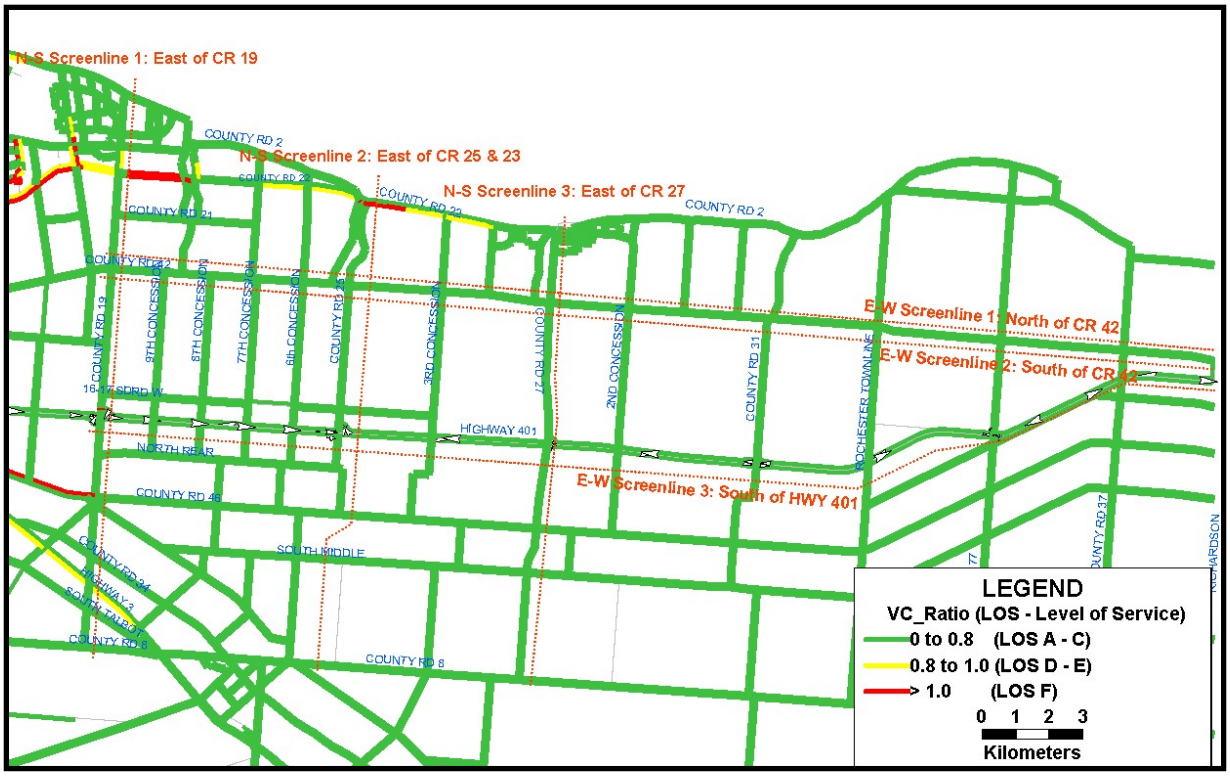
Roadway V/C Ratio	LOS	General Traffic Description
>=0.8 - <0.9	D	Borders on conditions of unstable traffic flow where a small increase in traffic may cause substantial increases in delay and decreases in travel speed. LOS D may be due to adverse signal progression along the streets, inappropriate signal timing, high volumes or a combination of these factors. Adjustments to signal timing and improvements to intersections such as adding left turn lanes may alleviate the LOS D conditions for a time, but if traffic volumes continue to grow, the ability of these and other optimization measures to improve the traffic flow will lessen.
<=0.9 - <1.0	E	Unstable traffic flow characterized by significant delays and low average speed caused by adverse progression, high density of traffic signals, high traffic volumes, extensive delays at critical intersections and inappropriate signal timing. Common LOS E features include continuous backups on approaches to signalized intersections, and motorists having to wait one or more signal cycles before proceeding through some intersections. This is considered by most traffic agencies as being the limit of acceptable delay on streets, and the level where the street is operating at its capacity.
>=1.0	F	Characterized by urban street flow at extremely low speed with intersection congestion at critical signalized locations formed by high delays, high traffic volumes and extensive queuing. This level of congestion is generally considered by most motorists to be unacceptable because of traffic congestion where intersection capacity is exceeded, there is no traffic flow progression and/or signal cycle lengths are very long in trying to accommodate the flow.

The common practice in North American transportation planning is to plan and implement roadway capacity improvements at LOS D/E in order to prevent LOS F conditions.

3.4.1 EXISTING ROAD NETWORK DEFICIENCIES 2005

Exhibit 3-12 shows the LOS calibrated on major roads in the Town in 2005 based on existing population and employment distributions, the existing road network, established roadway planning capacities and current travel characteristics. More detailed tabulation of the existing volume/capacity rations across the screenline is included in the project file**.**

Exhibit 3-12: 2005 Roadway LOS



This calibration of existing conditions shows that the main roadway capacity deficiencies currently in the Town in the PM peak hour, as established by the forecasting model, are on the links shown above and listed on **Exhibit 3-13**.

Exhibit 3-13: 2005 Road Capacity Deficiencies

2005 Level of Service	Locations
LOS F	• CR 22 both directions, CR 19 to CR 21; • CR 22 eastbound, CR 25 to Emeryville.
LOS D-E	• CR 22 eastbound, Patillo Road to CR 25 • CR 22 eastbound, Emeryville to Rourke Line Road • Highway 3 southbound, CR19 to CR 8

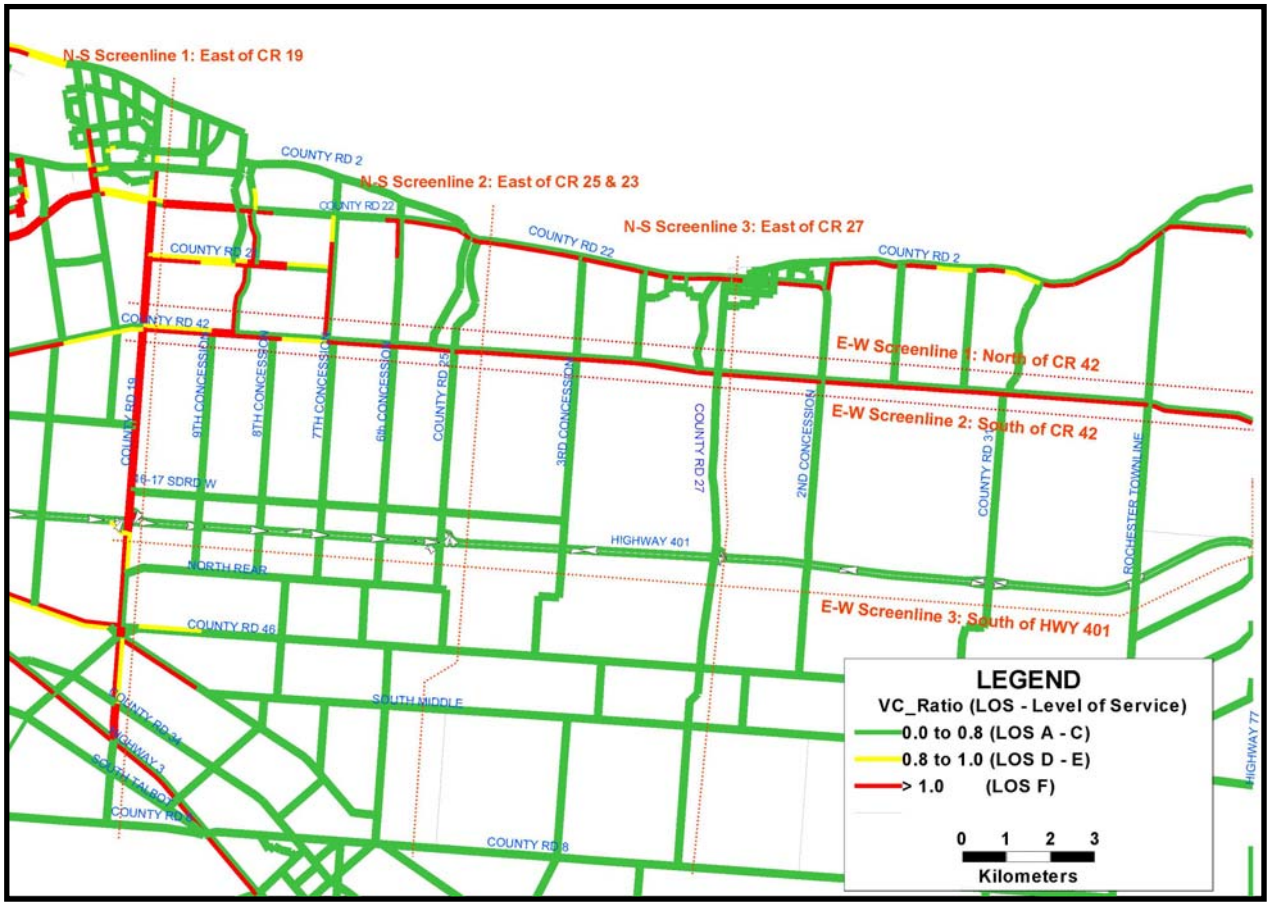
3.4.2 SCENARIO 1: STATUS QUO ROAD NETWORK DEFICIENCIES 2025 – HYBRID GROWTH

Exhibit 3-14 shows the roadway network LOS forecast in 2025 under the Scenario 1: Status Quo conditions in the Hybrid Growth Option from the new Official Plan. Status Quo assumes no addition to roadway capacity in the Town except for the widening of Highway 401 to six lanes as this construction is underway. Although an environmental assessment has been completed for the widening of CR 22, and another environmental assessment is underway to widen CR 19, this added capacity is not included in the Status Quo scenario, representing a worst-case transportation condition to show the impact of not completing these widening projects.

Note that the deficiency forecasting for the other three growth options, and the change in LOS between 2010, 2015 and 2025 are available from the project file.

The 2025 plot below shows expected deficient (LOS F) roadway sections, and those approaching deficient (LOS D-E) in the Town by this planning horizon, assuming no capacity enhancements, other than on Highway 401, and with no changes in travel characteristics.

Exhibit 3-14: Future Roadway Network Deficiencies – 2025 PMPH – Scenario 1: Status Quo



The section of Highway 3 in this exhibit is shown to be operating at LOS F in 2025. It should be noted that construction is presently underway for Phase 1 upgrading of the highway, with four laning from County Road 34 to 0.6 km east of County Road 8. Phase 2 upgrading will extend from County Road 11 to the west junction of County Road 34, and is indicated in the Southern Highway Program as a two lane to five lane widening starting in 2009. These projects are expected to significantly improve the project LOS by 2025.

Under this 2025 scenario, the following roadway sections in **Exhibit 3-15** are expected to operate under deficient LOS F conditions in the PM Peak Hour, and are the first set of candidate road sections to be considered for improvements either through capacity enhancements (widening, extensions) or Transportation Demand Management.

Exhibit 3-15: 2025 Road Capacity Deficiencies – Scenario 1: Status Quo

2025 Level of Service	Locations
LOS F	• CR 22 both directions, CR 19 to East Pike Creek Rd. • CR 22 eastbound, Wallace Line Rd to CR 2 east of Belle River
LOS F	• Portions of CR 2 eastbound east of Belle River • Portions of Little Baseline Rd from CR 19 to Patillo Rd. • CR 42 eastbound from CR 19 to Rochester Townline Rd. • North Talbot Rd eastbound from CR 19 to South Middle Rd. • CR 19 both directions from CR 22 to Highway 401 • East Pike Creek Rd/CR 21 southbound from CR 22 to CR 42 • Patillo Rd southbound from CR 22 to CR 42 • Portion of Wallace Line Rd southbound south of CR 22 • Highway 3 eastbound.

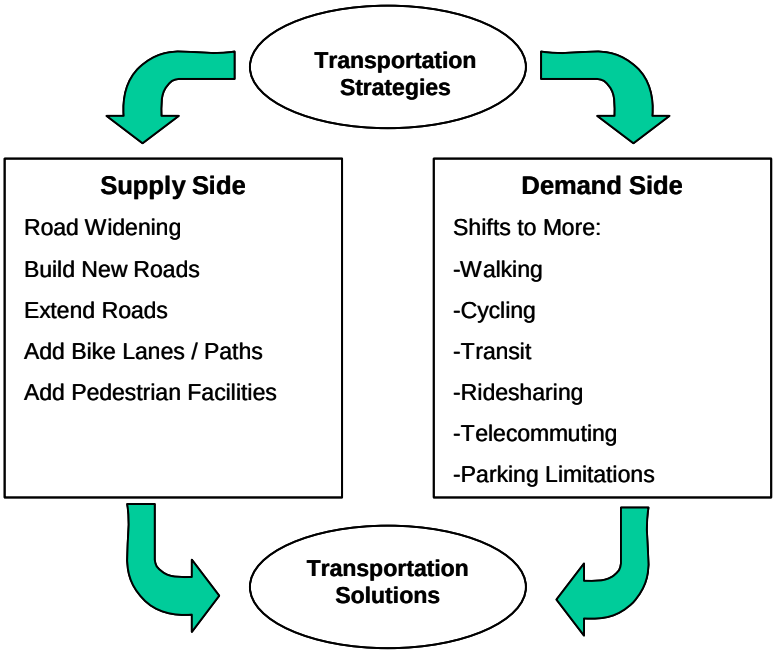
In summary, based on forecasted population and employment allocations in the Hybrid Growth Option, the Status Quo transportation scenario is expected to generate extensive roadway LOS deficiencies on major County and local roads within the urbanized northwest sector of the Town by 2025. Once again, this assumes no further roadway capacity enhancements or improvements in travel characteristics in the Town. As shown in **Exhibit 3-14** and listed above, roads most susceptible to LOS deficiencies in the northwest portion of the Town are CR 19, CR 21, CR 22, CR 42, Little Baseline Road, Patillo Road, Wallace Line Road and East Pike Creek Road.

3.4.3 SCENARIO 2: CAPACITY ENHANCEMENT ROAD NETWORK DEFICIENCIES 2025 – HYBRID GROWTH

Roadway capacity deficiencies are often addressed by adding capacity to the affected roadways through road windings, extension and addition of new roads. This is referred to as a supply-side solution to accommodate growing vehicular traffic volumes. Although this is an effective way of solving roadway network deficiencies, it comes with a number of important limitations and impacts, most notably the capital cost of such improvements, potentially negative environmental impacts of the associated construction and operations and the physical limitations of increasing road capacity (i.e. some municipalities will not support six lane roadways).

As shown in **Exhibit 3-16**, this approach is much different that a demand side approach that focuses on changing the growing demand for vehicular travel, which is the subject of Transportation Scenario 3.

Exhibit 3-16: Alternative Transportation Strategies



In response to the roadway network deficiencies forecast in Transportation Scenario 1: Status Quo, a number of strategic roadway capacity enhancements form Transportation Scenario 2: Capacity Enhancement. In this scenario, the following road widenings are expected to be completed and operating by 2025:

Exhibit 3-17: Transportation Scenario 2: Capacity Enhancements

Horizon	Planned Capacity Enhancements
To 2010	• Widen CR 22 to 6 through lanes from CR 19 to east of Lakeshore Blvd, and 4 through lanes to Patillo Road (County) • Widen Patillo Rd. to 4 through lanes and centre left turn lane from CR 22 to CPR tracks. • Widen Patillo Road to 4 through lanes from CPR tracks to CR 42 • Widen Rourke Line Road with 2 through lanes and centre turn lane from CR 22 to CPR tracks. • Widen Rourke Line Road to 2 through lanes from CPR tracks to CR 42.
To 2015	• Widen CR 22 to 4 through lanes from Patillo Road to I.C. Roy Drive (County) • Widen CR 19/Manning Road to 4 through lanes from VIA rail line to Highway 401 (County). • Widen CR 42 to 4 through lanes from City of Windsor Limits to CR 25 • Widen Wallace Line Rd to 4 through lanes from CR 22 to CPR tracks with grade-separation at CPR. • Widen Wallace Line Road to 4 through lanes from CPR tracks to CR 42.

	• Widen/extend Little Baseline Rd. to 4 through lane arterial from CR 19 to Wallace Line Road.
To 2025	• Widen CR 22 to a two lane roadway with a centre continuous two-way left turn lane between I.C Roy Drive and the Belle River Bridge (County) • Widen CR 19/Manning Road to 4 through lanes from Highway 401 to Highway 3 (County). • Extend/improve Little Baseline Rd. as a 2 lane Residential Collector Road from Wallace Line Rd. to East Puce Road/County Road 25 across the Puce River. • Widen North Talbot Road to 4 through lanes from CR 19 to South Middle Road.

Exhibit 3-18 shows that these strategic roadway capacity enhancements over the next 20 years would have a considerable impact in resolving forecast LOS deficiencies in the PM peak hour in the NW portion of the Town's roadway network, summarized as follows:

- Addresses most LOS deficiencies on CR 22 and CR 42 between CR 19 and CR 25, and eastbound on CR 42 east to CR 27; and

- Widen/extend Little Baseline Rd. to CR 25 is effective in alleviating traffic volume pressure on CR 22 and CR 42 in that area;

There are four roadway section deficiencies that are forecast to remain in the road network by 2025 that may not be resolved under the capacity enhancements scenario:

1. **County Road 22 –** In the PM Peak Hour, the capacity of the single eastbound lane on CR 22 from I.C. Roy Drive to just east of Rourke Line Road remains at LOS F in 2025. The approved EA for CR 22 improvements includes the addition of a continuous centre left turn lane in this section, with a single through lane per direction.[5] This was based on the expected traffic generation and distribution from a number of development proposals fronting along CR 22 in this area, including the Wallace Woods development south of CR 22 between Patillo Road and Pike Creek. The County used the regional travel demand forecasting model developed for the Essex-Windsor Regional TMP to forecast the traffic growth generated by these and other area development proposals, and concluded that the single through lane capacity on CR 22 east of I.C. Roy Drive will be sufficient to provide an adequate level of service.

   The Town of Lakeshore recognizes that adding a continuous centre turn lane to CR 22 between I.C. Roy Drive and the Belle River Bridge will improve traffic operations along this section of road attributed to heavy mid-block left turn movements. However, the Town evaluated the roadway's future capacity by using a more detailed Town travel demand model, expanded from the County model as previously described in Section 3.3 of this TMP. This enhanced model included more traffic zones and updated population and employment growth allocations throughout the Town, including in the vicinity of CR 22. One output of this model for 2025 is the continued LOS F deficiency in the PM Peak Hour on CR 22 eastbound between I.C. Roy and just east of Rourke Line Road shown on **Exhibit 3-18**.

[5] Environmental Assessment Report, Municipal Class Environmental Assessment for Improvements to County Road 22 (East of manning Road to County Road 42, Dillon Consulting for the County of Essex, May 2006

This forecasted deficiency is a long term condition that may evolve over time as a result of the amount and form of development along CR 22, such as the Wallace Woods development, and development in the Renaud Line Road and Rourke Line Road areas. Since the exact form of these developments is not currently known and will evolve over time, ranging from single use to mixed use or intensive development, this TMP concludes that the CR 22 capacity be monitored in association with surrounding area development to ensure this key road provides a proper level of service for the Town and the County. If these developments do in fact result in CR 22 capacity deficiencies, then further capacity enhancements may need to be considered in the context of the Environmental Assessment process.

2. **Rural Roads –** Exhibit 3-18 shows that by 2025 under the capacity enhancement scenario, CR 2 and CR 42 would remain at LOS F in the eastbound direction in the PM Peak Hour east of the Belle River area. Exhibit 3.19 also shows this forecast expanded further east into the predominantly rural area east of Belle River on CR 2 and 42, as well as CR 35, Rochester Townline Road and on local roads in the Stoney Creek area. The reason for this long term forecast relates to the amount of population growth assigned to the Stoney Point area in the Town's forecasting model. By 2025, the result is a forecasted growth of traffic volumes on roads crossing the N-S Screenline 3 (East of CR 27) that are in excess of the planning capacities assigned to these roads. The resulting LOS F conditions were measured as per the following example using CR 42 east of CR 27 in the PM Peak Hour:

   2025 Traffic Volume between CR 27 and CR 35 = 1,566 to 1,002 Eastbound

   Planning Capacity Assigned to CR 42 = 1,000 vehicles/lane/hour

   Resulting Volume/Capacity Ratio = 1.57 to 1.00

   Associated LOS = F (deficient)

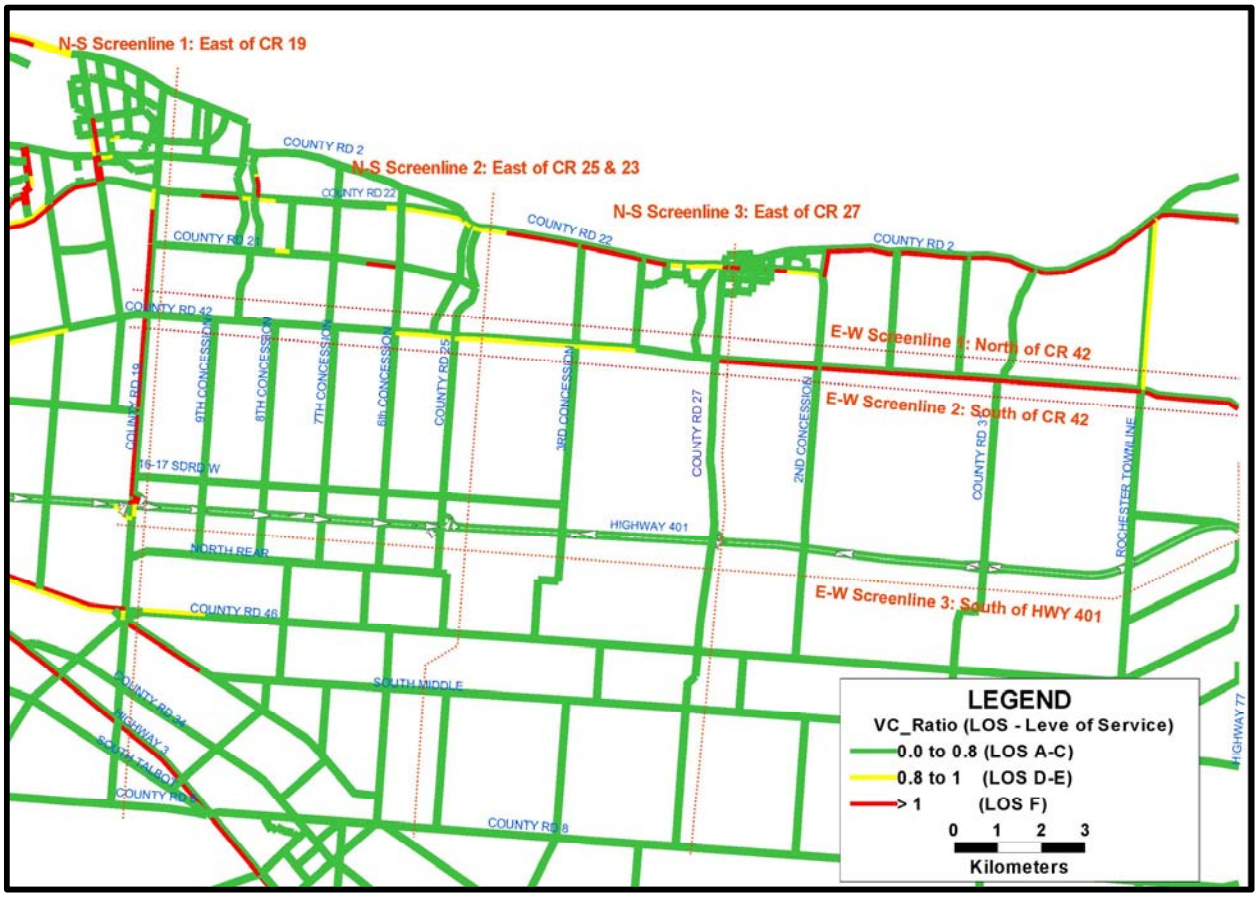
   This example illustrates that forecasted capacity deficiencies in rural areas is a direct result of population and/or employment growth forecast in specific rural locations, this case the Stoney Point and Rochester Place/Deerbrook and St. Joachim community areas and the Stoney Point/Pointe-Aux-Rouches main Street Town Centre Area as shown in the new Official Plan. By 2025 and the full built-out of these planned growth areas, PM Peak Hour eastbound commuter traffic is expected to grow along CR 2 and 42 through and to these growth areas at volumes that may exceed the planning capacity of these roads. If this occurs, the County and Town will have to consider whether to enhance road capacities through enhancements such as lane additions, or through road capacity optimization using corridor management and access control[6]. The latter would be expected to increase the planning capacity of the managed roads, thereby improving the volume/capacity ration and resulting LOS deficiency.

3. **North Talbot Road –** By 2025, LOS F conditions are also forecast on the section of Talbot Road between CR 19 and South Middle Road. As with the rural roads example above, this is considered to be a result of the volume/capacity ratio created by growing traffic volumes compared to the planning capacity assigned to the road. If the capacity of 1,000 vehicle/lane/hour is increased to 1,100 as the result of corridor management and access controls, the LOS F deficiency is removed. The need for this improvement should be monitored over time, as the Highway 3 widening may provide the necessary capacity in the area.

[6] see Town of Lakeshore Corridor Management and Access Control Policy, March 2007, Dillon Consulting

4. **CR 19/Manning Road –** This important link is included in the forecasting model by 2025 with four through lanes from the VIA rail line to Highway 3. Even with this major capacity enhancement, required in part as part of the *Let's Get Windsor-Essex Moving Strategy*, by 2025 in the PM Peak Hour the southbound direction on CR 19/Manning Road is forecast to experience LOS F conditions between CR 22 and Highway 401. This is attributed in part to the amount of employment growth in the Manning Road area north of CR 42 and in the Highway 401 Employment Area planned in the new Official Plan, and in the role CR 19/Manning Road will play in linking Highway 401 with the U.S border.

Exhibit 3-18: Future Roadway Network Deficiencies – 2025 PMPH – Scenario 2: Capacity Enhancement



One alternative to roadway capacity enhancement focuses on the demand side of transportation previously shown on **Exhibit 3-16**. Many municipalities and government agencies are shifting to this transportation planning approach as a way of providing more cost-effective and sustainable transportation systems with less environmental impacts (natural, social and economic environments). These measures are referred to as Transportation Demand Management, or TDM.

Exhibit 3-19: Expanded Coverage
Future Roadway Network Deficiencies – 2025 PMPH –
Scenario 2: Capacity Enhancement

TDM is proving effective especially in larger metropolitan and city settings where incentives supporting alternative travel modes and characteristics have been in place for some time, for example involving the management of roadway congestion, associated major auto travel delays, limited and high priced parking, extensive transit systems and extensive cycling systems. Until recently, TDM effectiveness has been limited in smaller urban and suburban setting where roadway travel and commuting has remained relatively convenient and affordable. However, if roadway Level-of-Service (LOS) deteriorates on major travel routes in communities such as Lakeshore, as exhibited by LOS deficiency forecasts in this study, public demands for more efficient and sustainable transportation solutions are expected to grow over the next 20 years.

In the case of Lakeshore, the first and highest priority TDM initiative would be the introduction of some form of public transit as a viable alternative to auto use within the Town, especially to commuter and shopping destinations in Windsor. As discussed further in **Section 4.3** of this TMP, opportunities exist to provide new transit service in Lakeshore either through extensions of Transit Windsor services into the Town, or provision of private sector transit service between strategic Lakeshore locations and Transit Windsor suburban terminals.

Three forms of TDM determined to be appropriate for the Town of Lakeshore, and therefore modelled to forecast their possible impacts on roadway travel demands and associated LOS deficiencies, are:

1. Reduce reliance on the auto mode share by introducing a 3% mode split to transit in 2010 and 2015, increasing to a 6% mode split to transit in 2025 and 2031 in the urban area of the Town (see **Exhibit 3-10**). This is a very ambitious scenario, but is consistent with goals established in the new Transit Windsor Master Plan;

2. Reduce the average travel distance in the Town to reflect changes in long term urban development forms by 2025, including more mixed use development with closer home-work distances, and more intense development forms in appropriate locations within the Town. This would be accomplished over the long term through Official Plan policies, and is represented in the travel forecasting by a further reduction in auto use with more short trips using cycling and walking infrastructure; and

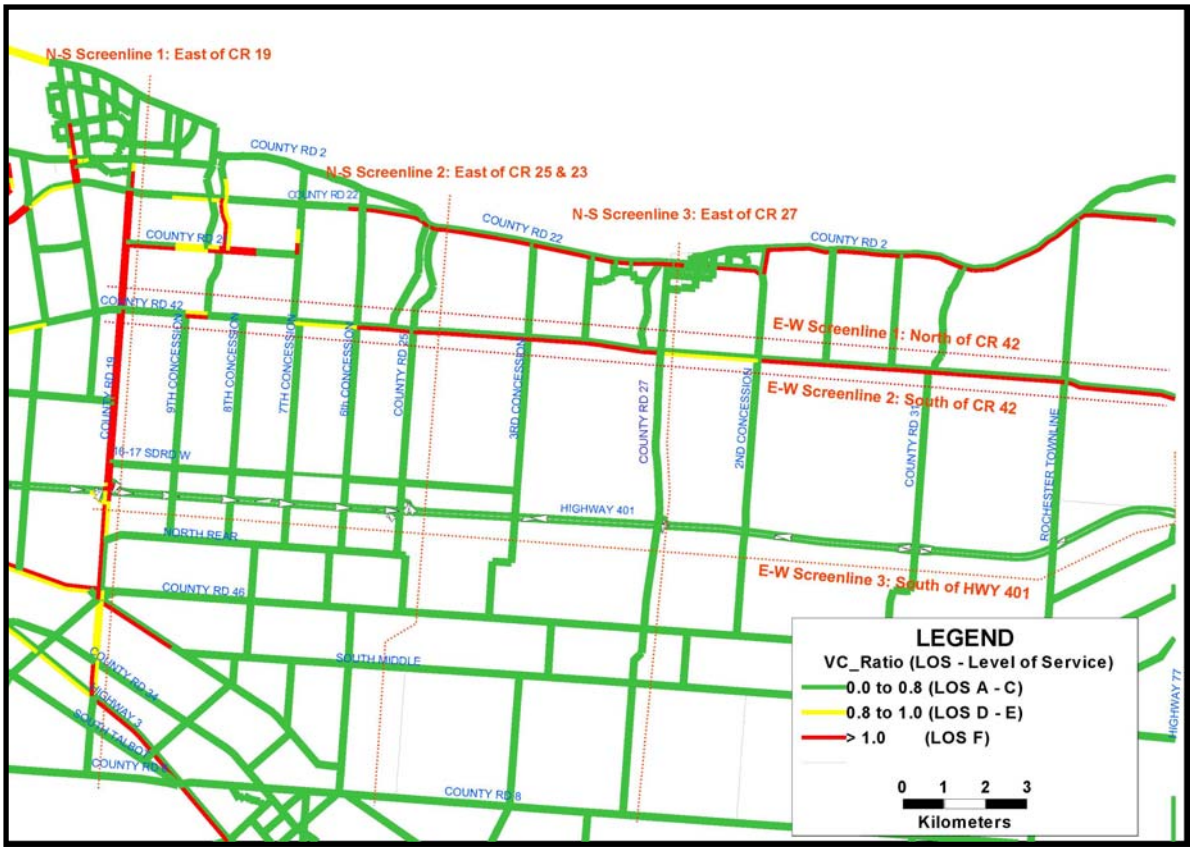
3. Increase the capacity of each modelled link in the roadway network by 5% as a reflection of capacity optimization measures such as access management and intersection operation improvements.

The LOS forecasts of this TDM scenario in 2025 are reflected in the following roadway network LOS plots in **Exhibit 3-19**.

The LOS forecasts in the TDM scenario are very similar to those forecast in the Status Quo scenario by 2025 (see **Exhibit 3-13**). This indicates that reliance on TDM as the main way of addressing roadway LOS deficiencies in the Town would not be effective in eliminating major LOS problems, including:

- Significant eastbound deficiencies forecast on CR 42 across the urban area from CR 19 extending east to Rochester Townline Road caused by PM commuting patterns;

Exhibit 3-19: Future Roadway Network Deficiencies – 2025 PMPH – Scenario 3: Transportation Demand Management



- Similar eastbound deficiencies forecast on CR 22 west of Belle River; and
- CR 19 deficiencies will extend from CR 22 to Highway 401 in both directions.

3.4.5 DEMAND FORECASTING CONCLUSIONS TO 2025

Existing traffic volumes and roadway capacities in the Town of Lakeshore show limited LOS deficiencies currently, although peak period congestion is observed on CR 22 and at key County road intersections in the urban and surrounding area. This is expected to worsen over time as the Town, and more specifically the urban area north of the CP mainline and west of CR 27, grows by some 22,000 residents and 11,000 jobs. The impact of this growth on the Town's transportation system, and more specifically the roadway network, is summarized as follows:

1. **LOS Deficiencies –** The LOS on numerous roadway sections in the northwest quadrant of the Town will deteriorate to unacceptable LOS F conditions by 2025 if the growth in traffic volumes is not reduced, and/or the network capacity is not enhanced at strategic corridors and locations. These deficiencies are most pronounced on CR 19, 22 and 42, as well as on Town roads including Little Baseline Road, North Talbot Road, East Pike Road and Patillo Road. In some cases, such as Talbot Road and on roads east of the Belle River area, capacity deficiencies can be avoid through application of corridor management and access controls but in most cases the

deficiencies will require capacity enhancements through strategic road widenings and extensions.

The forecasting also indicates that the six lane capacity of Highway 401 will adequately serve the regional access needs of the planned Highway 401 Employment Area. However, the County and local road network in this area will need to be enhanced and managed in order to connect the employment area land uses with the highway.

2. **Impacts –** Forecasted LOS deficiencies would negatively impact Lakeshore communities with increases in vehicle hours of delay, vehicle hours of travel and vehicle kilometres travelled on the Town's road network. This in turn will increase vehicle emissions, fuel consumption and collision rates in the Town as auto travel becomes less efficient and convenient.

3. **Highway 401 Employment Area Access –** Developments which fall within the MTO permit control area at interchanges are subject to MTO policies and standards. Public road intersections, commercial and private access connections located within close proximity if the interchange ramp terminals will be closed, or identified for future closure in keeping with currently accepted management practices to protect existing and future traffic operations, and improve safety in the vicinity of the interchanges. In all cases, access closures will be undertaken in conjunction with either new access connections, or using alternate routes along existing road networks to provide for the continuation and continuity of access to the interchanges.

4. **Role of TDM –** Changes in travel characteristics through Transportation Demand Management (TDM) will have some positive impacts on the transportation system, but mainly at the local level. Providing alternatives for local trip-making within subdivisions through land use planning, urban design and non-motorized travel will have the most noticeable benefits for the Town. However, since about 90% of urban and 95% of rural travel in Lakeshore is currently conducted by private automobile, any reductions in this preferred form of travel will still leave a very large part of the growing trip-making in the Town dependent on the private automobile and the associated road network.

5. **Capacity Enhancement –** It is possible to slow the "rate" of auto travel growth in the Town over the next 20 years through various behaviour-based, market-based and land use-based TDM initiatives, as further discussed **Section 4** of this Master Plan. However, the travel demand forecasting still shows traffic volumes growing to levels well beyond the current capacity of some key roads to accommodate at an acceptable LOS. As a result, future plans for the Lakeshore transportation system should include capacity enhancements along the key corridors, most notably CR 19, CR 22 and CR 42 at least as far east as CR 22/27, and on the Town's Little Baseline Road and Patillo Road.

6. **Plans and Policies –**An Environmental Assessment (EA) has been completed for the CR 22 widening to 6 lanes to Lakeshore Boulevard and 4 lanes to East Puce River by 2012. The EA for the CR 19 widening is currently underway. Essex County and the Town of Lakeshore both have new guidelines to manage access along CR 42 and all Town roads respectively, with the goal to maintain the existing capacity of these key routes as long as possible. For example, the demand forecasting shows growing LOS deficiencies on CR 42 east to CR 27 in the Status Quo and TDM scenarios, but with significant LOS improvements along this route if widened to four travel lanes by 2025 in the capacity enhancement scenario.

7. **Balancing Needs –** In planning for strategic roadway capacity enhancements in Lakeshore, the Town will have to balance the transportation and related socio-environmental benefits that come from maintaining an adequate LOS on the road network, with the socio-environmental and economic impacts of widening and extending roads such as Little Baseline Road east across the Puce River to CR25. This single project appears to have a significant benefit in the Town's northwest quadrant to alleviate LOS deficiencies on CR 22 and CR 42. These types of benefits and impacts will be addressed in an Environmental Assessments that will have to be conducted in order to implement such projects, including full public consultation.

8. **Public Transit –** Introduction of transit service in Lakeshore is expected to have a limited benefit in reducing roadway network deficiencies, since it would only replace up to 6 % of PM Peak Hour trips in the urban area by 2025. However, it is still recommended as a priority improvement for the Town's transportation system. Transit service would provide a choice for travel for both local and commuter trips that does not exist today, within resulting social and environmental benefits to the community. Transit service is discussed further in **Section 4** of this Master Plan.

9. **Extension of Deficiencies –** The long term geographic extend of roadway network deficiencies in the Town may extend on CR 2 and CR 42 east of CR 27, and on CR 35 and Rochester Townline Road in the Stoney Point and Rochester Place/Deerbrook and St. Joachim areas Since this is a long-term forecast, it should be monitored during each update of this Master Plan to determine if TDM initiatives, road capacity enhancements and growth directions of the Town will alleviate or worsen this possibility.

10. **Growth Options –** The four growth options for the Town analysed in developing this Plan all place similar travel demands and needs on the road network. In each option, capacity enhancements to CR 19, CR 22 and CR 42 are required. The Little Baseline Rd extension east to CR 25 across the Puce River, and widening of CR 42 to 4 lanes from CR 19 at least to CR 27 are also critical roadway capacity enhancements for the Town in any of the growth options. The main noticeable difference between the options is that Option 3: Multi-Nodal Growth is expected to reduce travel demands and related deficiencies on sections of CR 22 and 42, especially extending east from CR 27 owing to the more dispersed pattern of growth and related traffic generation in this option. This benefit is reflected in the final Hybrid Growth Option D based on the established Community Structure in the Town's new Official Plan.

11. **Preferred Transportation Scenario –** Travel demand forecasting clearly suggests the Town follow the Capacity Enhancement transportation scenario to 2025, with strategic enhancement projects implemented by the Town and County. At the same time, selective TDM initiatives suited to Lakeshore's urban areas should also be implement as described in **Section 4**.

4. ALTERNATIVE TRANSPORTATION STRATEGIES

4.1 Roadway Classification

A road classification system is an orderly grouping of roads into systems according to the type of service that they provide to the municipality and provides guidance relating to:

- Function within the overall network;
- Geometric design characteristics;
- Permitted user types; and
- Access management and policies.

4.1.1 CURRENT CONDITION

The County of Essex established a road classification system through the Essex-Windsor TMP, which provides guidance with respect to the facilities under their jurisdiction.

The Town of Lakeshore identifies roadway classifications and design characteristics within the Development Manual, but does not have a formal application of these standards to their network. In addition, the current road classification attributes lack sufficient detail to provide guidance to the Town, residents and the development community.

4.1.2 OPPORTUNITIES AND IMPLEMENTATION

A Road Classification Policy Paper was developed to supplement this Master Plan. Through a state-of-the-practice review, a roadway classification system was established and applied to the Town's road network. Included in **Exhibit 4-1** is the proposed classification system. **Exhibit 4-2** illustrates the road resultant road classifications proposed for the Town, with **Exhibit 4-3** showing the proposed classification system specifically in the NW quadrant urban area (Maidstone/Belle River area).

Exhibit 4-1: Classification System for the Town of Lakeshore

Characteristic	Public Lane	Urban					Rural		
		Locals		Collectors		Arterials	Regional Road	Secondary Road	Rural Collector
		Residential	Commercial/ Industrial	Residential	Commercial/ Industrial				
Land /Traffic Service	Land access only function	Land access primary function. Traffic movement secondary consideration		Traffic movement/land access of equal importance		Traffic movement primary consideration	Traffic movement primary consideration	Traffic movement/land access of equal importance	Individual property access primary consideration
Traffic volume (veh/day)	< 250	< 1,000	< 3,000	1,000 – 20,000	1,000 – 12,000	5,000 – 30,000	1,000 – 20,000	200 – 10,000	200 – 5,000
Design Speed (km/h)	40 - 50	60		60 - 70		80 - 90	80 - 100	60 – 100	60 - 80
Average off-peak running speeds (km/h)	20 - 30	40 - 50		50 - 60		70 - 80	60 – 100	60 – 90	50 - 70
Vehicle Type	Passenger and service vehicles	Passenger and service vehicles	All types	Passenger and service vehicles	All types	All types	All types up to 20% trucks	All types up to 30% trucks mostly single unit type	
Desirable Connections	Public lanes, locals	Public lanes, locals, collectors		Locals, collectors, arterials		Collectors, arterials, freeways	Regional Roads, collectors, arterials, freeways	Regional Roads, collectors, arterials	Secondary Roads Regional Roads
Pedestrian and Bikeway Facilities	No sidewalks or bike lanes/paths	Sidewalks on one or both sides. No bike lanes/paths.		Sidewalks on both sides. Bike lane or wide curb lane.	Sidewalks on both sides. Bike lane or wide curb lane.	Sidewalks on both sides. Dedicated bike facilities where required.	Sidewalks not required, but shoulder bike lanes may be considered if speed limit is less than 80 km/h*		
Transit Service	Not permitted	Generally avoided		Permitted		Permitted	N/A		
Right-of-way width (m) (typically)	10 m	20 m		22 m		24 - 45	24 – 45		20 – 26
Roadway width (m)	6	8.5	13	10	14	8 - 15	7 – 13		7 – 13
Parking Provisions	No parking	Parking on one side		Parking on one side		No parking	N/A		
Traffic Calming	Not provided	Where required	Not provided	Passive or horizontal deflection treatments	Not provided	Not provided	N/A		

Exhibit 4-2: Rural Town Road Classification

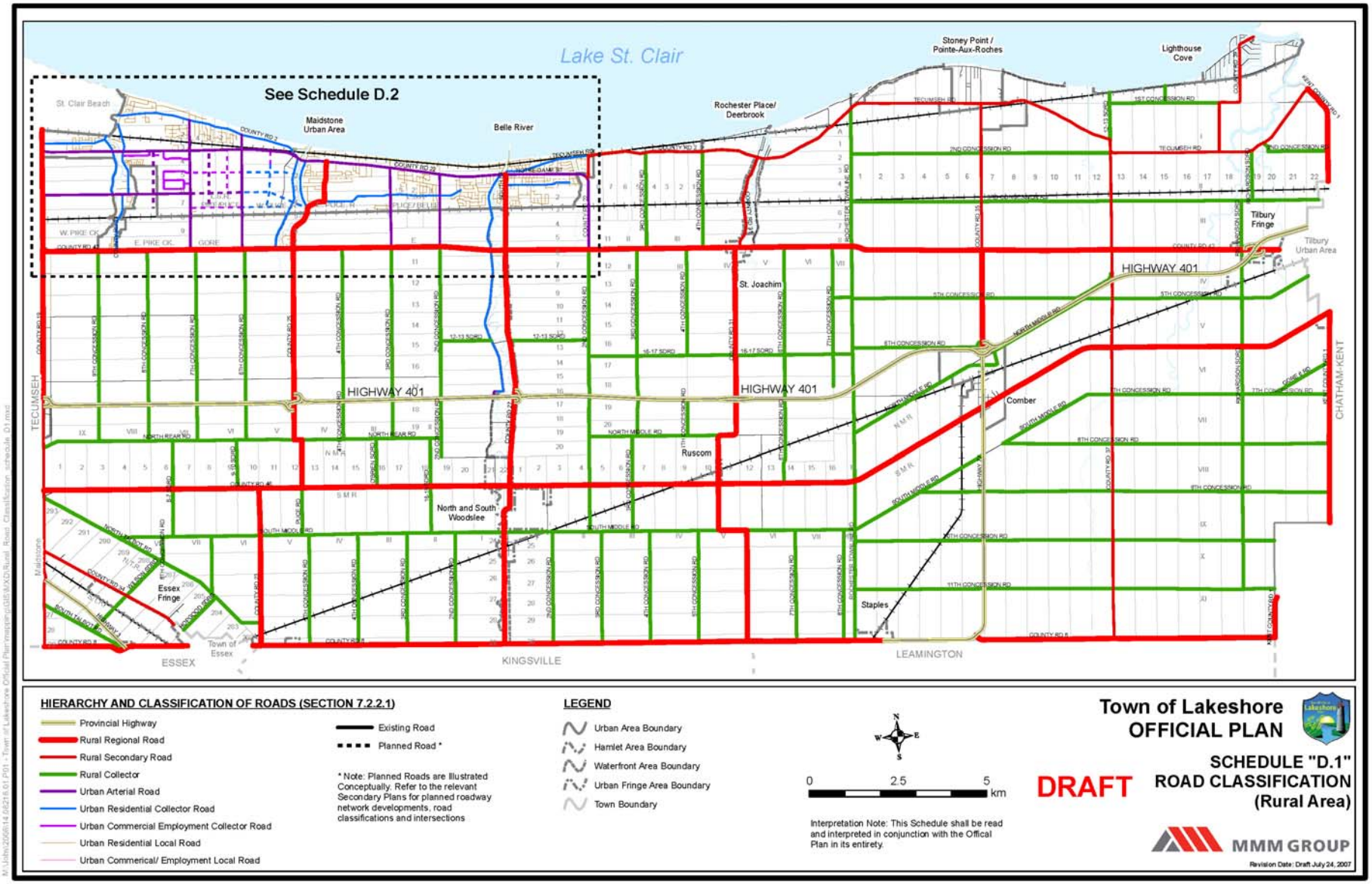
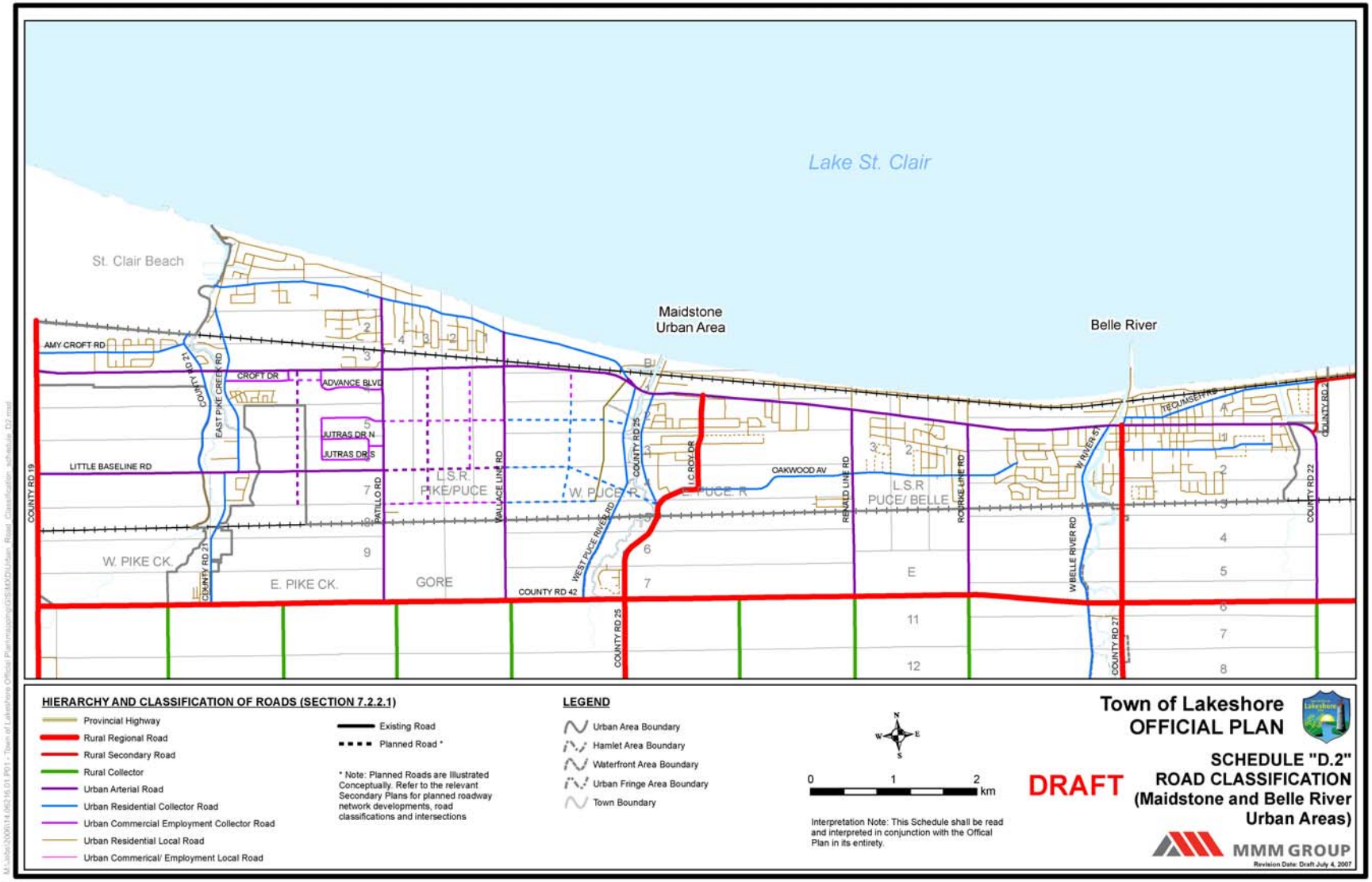


Exhibit 4-3: Urban Town Road Classification



4.1.3 CLASSIFICATION OF CR 22

In this TMP, the entirety of CR 22 within the Lakeshore urban area is classified as an Urban Arterial, not a Regional Road. This is because even though CR 22 currently falls within the County of Essex jurisdiction as a County Road. In the Essex-Windsor Regional TMP, CR 22 is classified as a Class I Arterial (Exhibit 2.6), not a Regional Road such as CR 42, because it exhibits the operational characteristics of an urban arterial in the context of the Town of Lakeshore, namely:

- Carries high volumes of passenger and commercial traffic for localized travel in the Town of Lakeshore between the Manning Road/Amy Croft (Lakeshore West) business area and the Belle River settlement area;
- Carries high volumes of passenger and commercial intra-County traffic, but limited to the Lakeshore, Tecumseh and Windsor areas, not across Essex County (as provided by other County Roads such as CR 42 or CR 8);
- Will consist of 4 through lanes along much of the alignment;
- Intersects with a number of other Regional Roads, existing/planned Urban Arterial Roads, existing/planned Commercial/Industrial Collector Roads and existing/planned Residential Collector Roads to serve planned urban development;
- Direct access to individual properties will be discouraged near Urban Arterial and Commercial/Industrial Collector intersections;
- Direct property access will be restricted where other alternatives are available; and
- Existing and planned land use along much of CR 22 is becoming urban in nature, in the form of residential, commercial and industrial developments relying on an urban roadway network for access and egress.

It is proposed that the operational capability of CR 22 will be maintained in part by using the corridor management and access control guidelines developed by both the Town and County. Furthermore, it is recommended that the Town and County evaluate the most appropriate jurisdiction to manage and operate CR 22 based on its existing and expected evolving role and function within the Town and County.

4.2 Roadway Operations

In addition to the primary transportation system capacity issues identified in **Section 3**, a number of localized transportation issues were identified through the public consultation opportunities and recent transportation studies undertaken by the Town. Each of these conditions is outlined below.

4.2.1 CURRENT CONDITION

- **Traffic Infiltration Potential: Amy Croft Drive** – The area residents expressed concerns with the development of adjacent commercial and institutional uses and the potential for traffic infiltration between Lakeshore Boulevard and East Pike Creek Road.

- **CR 22 Access: West Puce River Road/CR 2** – Concern was expressed regarding left turn access and safety at the CR 22 intersections with CR 2 and West Puce Road. The CR 22 EA prepared for the County provides for improved intersection geometries at both locations, including major street left turn lanes; however, it maintains the existing unsignalized traffic control. With the projected traffic volume increases on CR 22, the available gaps during the peak travel periods may not be sufficient to accommodate side street demands

- **CR 22 Access: Silver Creek Industrial Drive and Advance Boulevard Areas** – Currently, these industrial areas rely heavily on the CR 22/Patillo Road signalized intersection for access to east-west travel. With further infill development in these areas and the development of the Wallace Woods area, additional pressure will be placed on Patillo Road and its intersection with CR 22;

- **Lighthouse Community Access** – At present, the Lighthouse community is provided with only one formal access via CR 39. This roadway and other associated connections are susceptible to restrictions from temporary flooding and rail operations. From an emergency services perspective, the Town should pursue a second all-season road connection to this area.

- **Truck Volumes: CR 42** – Concern was expressed by the residents and Town Staff regarding use of CR 42 by through truck traffic attempting to access the E.C. Row Expressway and other arterial facilities to the west.

4.2.2 OPPORTUNITIES AND IMPLEMENTATION

Although site-specific operational and capacity issues are typically addressed at an operational or localized study level (as opposed to the Master Plan stage), it was considered prudent to identify the major concerns and demonstrate that there are proper avenues to have them monitored or addressed.

- **Amy Croft Drive** – The transportation assessment prepared for the Amy Croft Drive/Manning Commercial Area explicitly identified the traffic infiltration issue, and has recommended a number of potential traffic management remedies.[7] The need for these actions is to be monitored as the commercial development proceeds.

- **CR 22 Access: West Puce River Road/CR 2** – Through the transportation assessment prepared for the Wallace Woods Secondary Plan, alternative signalized access to CR 22 is recommended for both these side roads via internal connections to Wallace Line Road and other parallel north-south roadways.[8]

- **CR 22 Access: Silver Creek Industrial Drive and Advance Boulevard Areas** – The transportation assessment completed in the area recommends a north-south arterial roadway parallel to and west Patillo Road connections to the existing industrial uses, Little Base Line and CR 22. As planned, this mid-concession road will redistribute existing and future traffic from Patillo Road and provided signalized access to CR 22.[9]

- **Lighthouse Community Access** – Through major development or road network initiatives, the Town should proactively pursue opportunities for a second all-season road connection to this area.

[7] Manning/Amy Croft Transportation Study prepared by IBI Group for the Town's Secondary Plan
[8] Wallace Woods Secondary Plan Area Transportation Study, IBI Group, March 2007
[9] Advance Blvd/Patillo Road Area Transportation Study, Draft Report, IBI Group, February 2006

- **Truck Volumes: CR 42** – CR 42 is designed and classified to accommodate heavy vehicle travel. The current regulatory system does not permit truck restrictions based on origins/destinations of specific vehicles. With the widening of Highway 401 through Lakeshore, there should be no mainline capacity issues which would promote the use of CR 42 as an alternative route for heavy trucks. Enforcement of moving violations (speeding, aggressive driving, red light running, etc.), weight limits and vehicle operational requirements is the only practical means of addressing this issue.

4.3 Public Transit

4.3.1 CURRENT CONDITIONS

The Town of Lakeshore does not currently benefit from the availability of public transit service either within the municipality or linking it with neighbouring municipalities. In assessing future transportation needs for residents as part of the TMP process, the question of introducing public transit as an alternative to continued reliance on the automobile is a key consideration.

An effective and efficient urban transit service provides demonstrable economic and environmental returns on the investment made, and supports access to the community for all residents. The returns include the building of strong, sustainable communities through reductions in greenhouse gas emissions and protection of green space. Increased transit use is also essential for supporting more efficient land use patterns. It can reduce the costs of traffic congestion, the need for road and highway spending and the high cost of continued suburban sprawl. Good quality public transit provides residents with access to jobs, health care services, social services and educational opportunities. Greater use of transit supports the reduction and containment of pollution and accident related health care costs (pollution- related illnesses alone cost the Ontario economy $1 billion per year, according to the Ontario Medical Association). Providing good, fully accessible transit in communities of all sizes also provides mobility to the thousands of Ontarians with disabilities and the increasingly aging population, and ensures that all residents can continue to be active in their community.

4.3.2 OPPORTUNITIES

For the Town of Lakeshore, a public transit service may be considered initially along the major travel corridor linking Lakeshore with the communities to the west, namely CR 22, with consideration given in future to extended services to the rest of the community as demand and financial resources permit.

For the initial phase, there are a number of alternatives for introducing transit service within the community. These are outlined in the following sections.

Public transit services can take many forms, from shared ride taxis or vans, to demand-responsive services using minibuses to fixed route, regularly scheduled services utilizing small, medium or full-size buses. Each of these service alternatives can be delivered by various methods, which are discussed below.

<u>Van/Car Pooling</u>

A transit or commuter service can be provided through a “pooling” of resources by people located in a specific geographic area who then travel together to one destination point in one vehicle. This service can be provided in two ways:

- Service could be operated by the Town to encourage people to link their trips. The Town could establish a "van/car pool" telephone number, or web site, which prospective travellers would contact to register their travel needs. The Town would then facilitate the communication between these travellers who would then share the use of their own vehicles and related costs. Car-pooling parking lots could also be established at strategic start and end points along CR 22.

- An Independent Agency could encourage people to share a vehicle and would provide a vehicle for use by the travellers through a form of a lease including operating costs (gas, repairs). This option functions best when delivered through a single employer.

Demand Response Services

A demand-response service is one that is operated according to the demand for the service. Services for people with disabilities are primary examples. There are several approaches as follows:

- **Dial-a-Bus** – The service does not follow a fixed route but operates according to the needs of users. Customers contact the driver of the vehicle to arrange their pick-up or drop-off point and the driver then develops the route according to these needs. The advantage of the dial-a-bus approach is that a larger area can be served and a more personalized service offered by fewer vehicles thereby reducing overall operating costs to serve a given area.

- **Shared Ride Taxi** – Similar to Dial-a-Bus, Shared Ride Taxi utilizes local taxi-cabs to provide transit service. The Trans-Cab service picks up and drops off customers at designated stops.

Fixed Route Service

This service option is the most common form of public transit. It consists of regular ("fixed") routes along which vehicles (minibuses or small buses or large buses) operate according to a regular schedule. The frequency of the service (time between vehicles) can vary widely according to the area served and the demand for the service. Fixed route service can also include vehicles operating between municipalities along a highway.

4.3.3 IMPLEMENTATION

Transit service can be provided in several ways. These include:

- Contracted service with a private operator including a taxi operator

- Contracting with an existing transit service provider, or

- Direct operation by Town staff

Contract With a Private Operator

This service delivery option utilizes the resources of a private transportation operator such as a school bus operator or a taxi operator who would provide specific services under contract. The Town would be responsible for defining the services, establishing the contract and administering the service. Users would pay a set fare (similar to a municipal transit service) to use the service.

Contract With Existing Transit Service Provider

A contract would be arranged with an existing transit service provider such as Greyhound or Transit Windsor to provide services either within Lakeshore, or externally to connect with other municipalities to the west. Arrangements could be made with Greyhound to augment the trips they offer along Highway 401 between London/Chatham and Windsor. However, given the limited nature of the services offered by Greyhound currently, and the location of the CR 22 corridor in Lakeshore compared to Highway 401, this option could be difficult to arrange and costly.

Transit Windsor could also be contracted to extend one of their regular transit routes from Windsor. However, it would be best to work with neighbouring Town of Tecumseh since a direct route from Windsor to Lakeshore would be costly.

Direct Operation

If the Town directly operated a public transit service, the Town would hire its own staff and purchase the vehicles to operate a service within the Town. Under this option, the Town would be restricted to operating within its municipal boundaries according to the Public Vehicles Act. In order to operate service outside the Town, such as to Tecumseh or Windsor, either the Town would have to obtain the necessary Public Vehicles licence or contract with a licence operator.

4.3.4 COMMUNITY RESPONSE TO TRANSIT SERVICE

As part of conducting the Transit Windsor Master Plan in 2005/06, a statistically valid telephone survey was conducted in mid-December 2005 with 160 Lakeshore households about their level of support for the provision of a public transit service in the Town of Lakeshore. The results of this survey show a considerable strong opinion of Lakeshore residents in favour of public transit service in the Town, for example indicated by the following responses:

- 87.5 % of respondents strongly agreed that public transit would be important to the community to help reduce road congestion;
- 94% of respondents somewhat or strongly agreed that transit service would improve the environment;
- 99% of respondents somewhat or strongly agreed that public transit would serve those without cars and who cannot drive; and
- 83% of respondents somewhat to strongly agreed the public transit would contribute to the economy.

As a result of this strong community support for public transit service registered in the Town, the Transit Windsor Master Plan notes that Lakeshore could be served by a Transit Windsor route, which would circulate the urban area to the Tecumseh Mall. The user demand was estimated to justify a 60-minute service for 16 hours a day Monday to Saturday. Such a route would be operated by Transit Windsor on a full cost recovery basis.

4.4 Pedestrian Facilities

Walking is a low cost, healthy and sustainable mode of transportation and should be adequately provided for the Town's transportation system. The provision of sidewalks on all roadways and

suitable protection and crossing opportunities at major roadways, intersections, and natural and man-made barriers is essential to promoting increased walking.

4.4.1 CURRENT CONDITIONS

At present, it is estimated that together, walking and cycling represent approximately 10% of the urban trip making and 5% of rural travel.

At the local and neighbourhood level, mature neighbourhoods and newer residential subdivisions are providing sidewalk facilities on one or both sides of the roadways, as a function of the roadway type. Unfortunately, intra-neighbourhood and longer distance pedestrian travel between major origins and destinations is hindered by issues relating to:

- **Route Connectivity** – natural features such as north-south rivers and major roadways/railways limit the trips that could be made on foot;

- **Sidewalk Continuity** – A number of County and Town roadways do not have pedestrian facilities, which results in reduced pedestrian travel or pedestrians walking along the shoulder area of a rural cross-section. For example, pedestrian travel between the residential and commercial areas of Amy Croft Drive is hindered by the lack of sidewalk facilities on Amy Croft Drive and Lakeshore Boulevard. Likewise, the pedestrian access to the commercial areas along CR 22 generally requires walking along the shoulder area of this busy roadway outside of the Belle River downtown area; and

- **Walking Distances** – In some cases, long residential blocks lack of neighbourhood or site interconnection results in unacceptable walking distances.

Currently, the Town of Lakeshore provides limited formal documentation for pedestrian facility policies, outside those relating to the provision and design of sidewalks.

4.4.2 OPPORTUNITIES AND IMPLEMENTATION

Retrofit Sidewalk Provision

Through the reconstruction and urbanization of a number of their roadways, the Town is providing sidewalk facilities where feasible and appropriate. Also, through the County's planned improvements to CR 22, sidewalks will be provided within the Puce, Emeryville and Belle River communities.

Improved Crossing Opportunities

Through the planned roadway improvements along CR 22 and the secondary planning work primarily in the Wallace Woods and Puce areas, traffic signal control will be provided at regular intervals along CR 22 and will facilitate north-south pedestrian travel in Lakeshore.

Walkable Communities

Through secondary plan work and the associated transportation assessments for the major development areas in the Town, the following pedestrian friendly initiatives are being promoted:

- Grid-network road patterns which support future transit routes and walkable distances;

- Convenient and continuous connections between major destinations and adjacent neighbourhoods. For example, the proposed extension of Little Baseline Road and crossing of the Puce River will connect the residential and school areas within the Puce and Wallace Woods existing and future communities; and

- Regular controlled pedestrian crossing opportunities along major collector and arterial roadways, including CR 22.

Policy Development

The development of the Walking and Cycling Policy Paper and Subdivision Design Policy Paper (IBI Group, July 2006), prepared as supplements to this Master Plan, identify subdivision planning, and road network and sidewalk design guidelines to promote a pedestrian friendly environment. According to the Walking and Cycling Policy Paper, sidewalks should be established in all new transportation construction or reconstruction projects as outlined in the Town's new recommended roadway classification system outline on **Exhibit 4-1** unless significant justification is provided otherwise. In rural areas, paved shoulders should be included in all new construction or reconstruction projects for roadways used by more than 1,000 vehicles per day. All walking and cycling facilities should be designed to proper design standards and guidelines. The primary physical design standards for sidewalks, boulevards and bikeways are provided as follows:

Sidewalk Design Requirements

- Placed on both sides of urban arterials[10];

- Placed on one or both sides of locals and collectors;

- Minimum width of 1.5 m;

- Minimum width of 2.0 m in areas with hospitals or nursing homes to accommodate persons in wheelchairs;

- Minimum width 3.0 m in areas of high activity, such as schools, commercial, and community-based facilities;

- Minimum width of 3 to 3.6 m on pathways shared by cyclists and pedestrians; and

- Minimum buffer of 0.6 m next to a building wall or fixed obstacle.

4.5 Bicycle Facilities

A properly planned and designed bicycle network promotes this sustainable, active mode of travel by minimizing:

- Travel distances between major origins and destinations;

- Travel on major arterial and Regional roadways without dedicated bicycle facilities; and

- Major conflict points with other road users.

[10] Sidewalks should be located on rural roads that provide a link between two areas of development.

Also important to promoting cycling in Lakeshore is the provision of sufficient bicycle parking in areas that are convenient and secure for cyclists and protects their equipment from the elements.

4.5.1 CURRENT CONDITIONS

It is estimated that bicycle and pedestrian travel represent only 10% of person trips in the urban areas and 5% in the rural areas of the Town of Lakeshore.

Bicycle travel within Lakeshore is limited, and there is currently a general lack of connectivity between major cycling origins and destinations. The north-south watercourses within Lakeshore are also barriers to east-west bicycle travel. In general, bicycle travel across these natural features is provided via CR 22 or CR 42, neither of which provide dedicated bicycle facilities or are conducive to this mode of travel. Likewise, in the north-south direction, CR 22, CR 42 and the railways hinder bicycle travel.

4.5.2 OPPORTUNITIES AND IMPLEMENTATION

Types of Bikeways

The Transportation Association of Canada (TAC) Design Guide, in Chapter 3.4: Bikeways, provides design principles that apply to four functional classifications of cycling facilities (refer to **Exhibit 4-4**):

- **Shared Roadway or Wide Curb Lane** – Cyclists share the roadway with other vehicles, usually on the right side of the travel lane. This type of bikeway, signed as a shared route, is suitable for utilitarian or recreational uses, but is most appropriate only on local urban or suburban roads where motor vehicle volumes and speeds are relatively low. See Exhibit 4.5 for typical bikeway selection criteria. As these volumes and speeds increase, the travel lane should be widened to a desired 4.5 m width to accommodate the safe passage of motor vehicles and bicycles without changing lanes.

- **Shoulder Bikeway** – A smooth paved shoulder on which cyclists are separated from the travel lane for motor vehicles. Shoulder bikeways typically have few conflicts and are present on roadways with fast moving motor vehicles traffic, making them more suitable for rural applications. In rural areas they can also include a rumble strip between the travel lane and paved shoulder as a warning to motorists to no encroach on the shoulder space, and knock-down bollards are also sometimes used to enhance this separation.

- **Bike Lane –** Situated within roadways serving other vehicular traffic, but separated from adjacent travel lanes for motor vehicles, bike lanes are intended for the exclusive use of bicycles. Bike lanes are designated by either a painted line or raised delineator

(e.g. posts, bollards), however the latter is not recommended due to safety concerns. Due to their exclusive use for cyclists, bike lanes are a safer alternative than a shared roadway and are often used on collectors and arterials (see **Exhibit 4-5**). The minimum bike lane width is 1.2 m measured from the face of curb, with 1.5 m being preferred.

- **Bike Path –** Physically separated from the roadway, bike paths, sometimes called side paths, are for the exclusive use of cyclists, although they may be shared with pedestrians. Bike paths may be located within a road right of way or may follow a route not served by roads. Non-road corridors present an attractive opportunity for recreational cycling and sometimes provide a more direct route for commuters. Typical locations for bike paths are along rivers and creeks, waterfronts, utility rights of way, parks, within the right of way of major subdivision roads or along abandoned railway rights of way. In all cases, crossing of roadways is kept to a minimum. Also, due to safety and operational problems, the use of boulevards as bike paths should only be considered when no other routes are available.

Exhibit 4-4: Bikeway Types (TAC Design Guide, 1999)

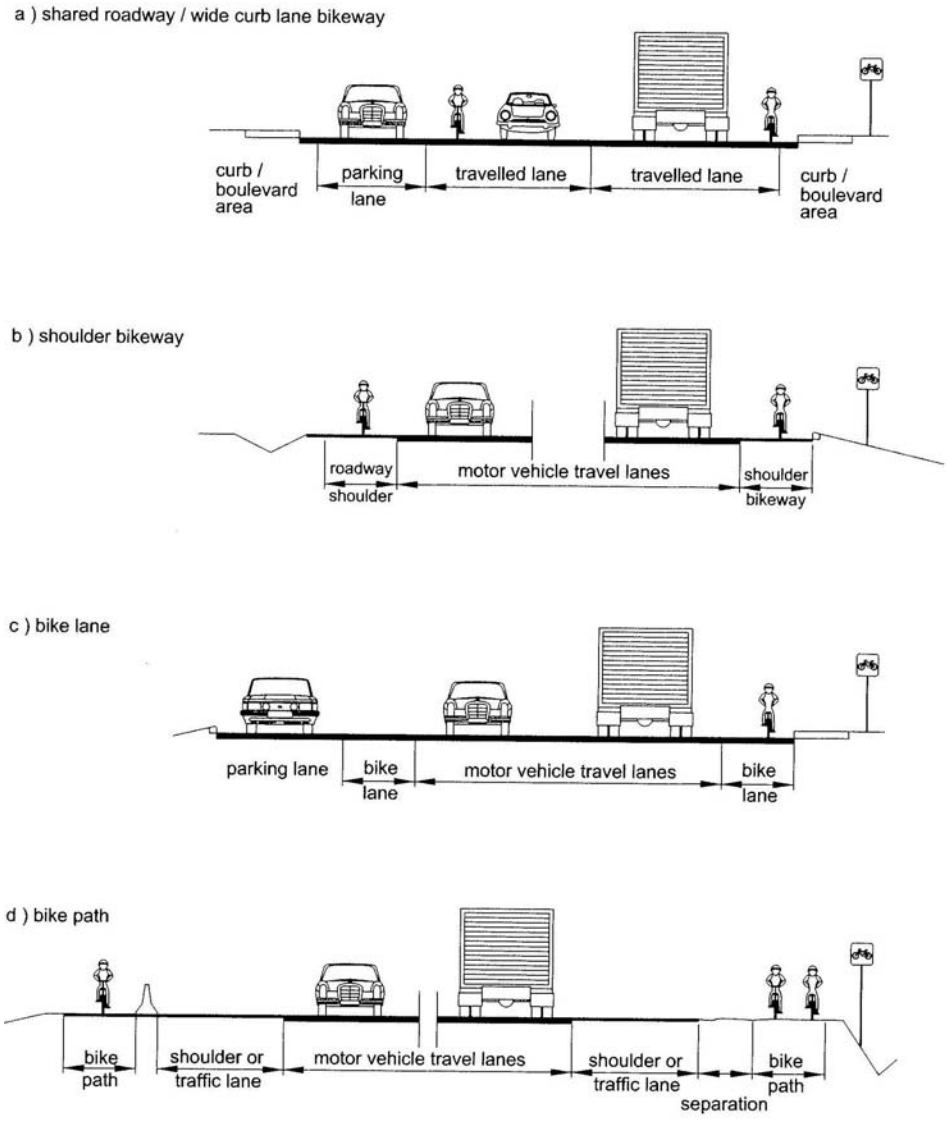


Exhibit 4-5: Bikeway Selection Criteria

Average Motor Vehicle Operating Speed (km/h)	Average Annual Daily Traffic Per Lane		
	<3,000 vpd/lane	**3,000-5,000 vpd/lane**	**>5,000 vpd/lane**
<50 km/h	Shared Roadway	Wide Curb Lane	N/A
50-60 km/h	Wide Curb Lane	Wide Curb Lane or Bike Lane	Wide Curb Lane or Bike Lane
60-70 km/h	Wide Curb Lane or Bike Lane	Bike Lane	Bike Lane
>70 km/h	N/A	Bike Lane	Bike Lane or Bike Path

Note: Where the choice is wide curb lane or bike lane, use the bike lane if there is a high volume of trucks (>10%) and/or on-street parking. These selection criteria are guidelines only.

Some municipalities will also consider the use of boulevard multi-use bike paths, or side paths where there is sufficient road right-of-way so that cyclists are kept off the road surface. Caution must be used in locating any side paths since traffic engineering and cycling data shows a high rate of cyclist/auto collisions where side paths are crossed by numerous driveways and side streets. On side paths, cyclists are required to yield to other vehicles at driveways and intersections, and when this does not happen, accidents result. This is different that cyclists sharing the road or in on-road bike lanes where they have the right-of-way, just like motor vehicles, when they intersect driveways and side streets. An important criteria in considering any sidepath application is that there should be no more than three crossings (driveways/intersections) per kilometre.

Side paths should not be used as a substitute for viable on-road facilities.

Route Connectivity

A near continuous east-west roadway facility exists parallel to Lake St. Clair via CR 2, Lilydale Avenue, St. Clair Avenue, Caille Avenue, Lakeview Drive, Charron Beach Road and other like east-west roadways servicing the lake front properties. The majority of these routes represent acceptable facilities for bicycle travel and provide links between major residential, commercial, and recreational origins/destinations, north of CR 22. The planned widening of CR 22 and 42 will reduce through vehicular demands on CR 2 and will improve its cycling environment over time.

South of CR 22, Oakwood Drive, Park Lane Drive and St. Peter Street provide acceptable east-west bicycle routes linking existing and planned residential communities to schools and park areas. This route is discontinuous at Belle River. Through the Wallace Woods Secondary Plan and other planning initiatives west of Patillo Road, on or off-road bicycle facilities should be planned to provide

a continuous east-west route. Based on current transportation planning, the extension of Little Base Line to East Puce Road appears to be a logical completion of this route.

In the north-south direction, there are a number of existing and planned roadways, which could accommodate bicycle travel and provide connectivity between the east-west primary routes note above. Potential routes include East or West Belle River Road, Rourke Line Road, East or West Pike Creek Road among others. Through ongoing and future transportation planning and EA processes, these and other north-south connections should be reviewed for the feasibility and applicability of on and off-road bicycle facilities that could form the primary bicycle network.

The culmination of the above bicycle route connections is shown in **Exhibit 4-6** and represents key linkages in the Lakeshore urban area. Through the development of the Town of Lakeshore Trails Master Plan additional on and off-road cycling routes may be considered and designated by the County and Town.

A number of "rail-to-trail" conversions have been successfully implemented in Ontario jurisdictions where railway lines have been abandoned. Through the development of the new Lakeshore Official Plan, it is suggested that the Town support the reuse of abandoned rail corridors for potential trail systems. Should this opportunity be presented in the future, the Town should pursue opportunities to utilize these abandoned facilities to supplement and/or complete their primary bicycle route identified in **Exhibit 4-6**.

Exhibit 4-6: Key Bicycle Route Linkages

Design Standards

Through the preparation of this Master Plan, a Walking and Cycling Policy Paper (IBI Group, July 2006) was developed to provide a vision and design standards for cycling facilities, including bicycle parking, within the Town's transportation network. The recommended direction for on-street

bikeways, off-street bikeways and bike parking facilities reflect good transportation planning and design for bicycle facilities. The Town should apply these standards and guidelines where feasible and appropriate.

4.6 Transportation Demand Management

The role of TDM in contributing to improved transportation conditions in the municipalities of Essex County is discussed in the Essex-Windsor Regional Transportation Master Plan. Research and experience shows that for many TDM initiatives to succeed, more specifically in the Town of Lakeshore, they require a combination of dedicated municipal government support, private sector business support, and broad public support. This must be compared to the trend in most municipalities of increased SOV usage and growing traffic congestion. The applicability of TDM measures in the rural areas of the Town, where travel distances are greater and there are less facilities and opportunities for TDM, must be compared against similar opportunities in urban areas and especially the northwest urban area.

Research into the subject of successful TDM programs suggests that successful TDM programs have a number of common elements that apply throughout the Town of Lakeshore:

- Workplace programs that improve commuter options for employees;
- School programs that encourage parents and students to walk, bike, take transit or carpool to school;
- Discounted transit passes sold at workplaces and major institutions (hospitals, universities, colleges) through payroll deduction or post-secondary student fees;
- Employer and internet-based ride-matching services that help carpoolers find compatible, reliable partners;
- Guaranteed ride home programs that help commuters get home if they work late, if they are stranded by their carpool, of if there is an emergency at home;
- Skills courses that train cyclists to ride with safety and confidence in traffic;
- Special events that encourage people to try new travel options, such as transit shuttle services at special events;
- Campaigns that use positive messages and images to counter negative attitudes about walking, cycling and transit use;
- In-house programs to improve commuter options for municipal employees, demonstrating leadership by example;
- Economic measures including incentives like preferential tax treatment for employee transit benefits, or disincentives such as bridge tolls, higher parking rates or congestion pricing;
- Inclusion of more employment opportunities within designated rural growth areas to make them more self-sufficient, and less dependent on out-commuting; and

- Application of site design principles and standards that promote sustainable transportation, such as more intense roadway patterns with higher street connectivity to serve transit and non-motorized modes of transportation.

The evaluation of strategic transportation options for Lakeshore that are discussed in Section 3 of this Plan includes the TDM Scenario (Section 3.4.4) and its forecasted impacts on growing roadway capacity deficiencies in the Town. The conclusion was that of and by itself, a future transportation plan based solely on TDM initiatives does not have the capability to address future traffic conditions resulting from planned Town growth. However, it is recommended that TDM be implemented where appropriate in the Town to augment the roadway capacity enhancements to minimize that amount of capacity deficiencies on the Town's road network over the next 20 years.

The types of TDM initiatives recommended for further study and implementation in the Town include:

Hold Urban Area Growth Boundaries - Growth boundaries, sometimes referred to as "hard planning edges", are intended to prevent urban/suburban development from extending outside of set limits. This planning approach encourages infill development and more intensive development forms within existing community limits, along existing municipal infrastructure and within "brownfield" redevelopment areas. Boundaries must be firm, with new areas beyond the limits opened for development only once desired densities have been reached in existing neighbourhoods. Growth boundaries not only protect rural areas from urbanization, but they also actively promote a more compact urban form. These hard planning edges are set by the Land Use Schedules in the Town's new Official Plan.

Road Networks That Favour Direct Connections - Discontinuous, winding road networks are not only disorienting, but also increase distances to be traveled, as loops operate similar to detours. Subdivision designs with curvilinear streets meant to make areas impermeable to through traffic usually result in more complicate access and egress. Cyclists and pedestrians will feel these differences all the more acutely, as their speeds are typically lower and access through the subdivision more restricted. Grid and slightly altered grid street patterns (termed Neo-Traditional or New Urbanism) can be designed to keep automobile speeds low, while ensuring direct connections that reduce the overall distance to be traveled. Where curvilinear road patterns already exist, the introduction of mid-block passageways may be incorporated where feasible, to shorten travel distances and make non-motorized travel modes possible where their access would otherwise would be restricted.

Development of Mixed Use Nodes and Links - Concentration of higher activity uses increases the chances that several activities can be performed at the same destination. This reduces the number of trips necessary to accomplish several activities, and facilitates TDM options such as ridesharing. Furthermore, routes for non-motorized modes, including bike trails and pedestrian paths, can be designed to link these mixed use destination points, increasing their attractiveness over the personal vehicle.

The new Lakeshore Official Plan includes a series of Primary Town Centre mixed use nodes at Belle River, Wallace Woods and the Lakeshore West Business Area, linked by the CR 22 Mixed Use Corridor. This type of linked node planning is encouraged from a transportation and TDM planning perspective.

Design Standards That Favour Active/Non-Motorized Modes - In both an urban and a rural setting, sustainable transportation can benefit from policies and designs that consider the needs of active/non-motorized modes. Mid-block connections, sidewalks, and appropriate lighting are examples of measures that will encourage people to walk or bike for shorter trips in an urban

setting. Design standards can help increase natural surveillance along trails, paths and routes by reducing the incidence of blank walls. Paved shoulders on rural roads have been recognized as a way to accommodate cyclists comfortably with limited incremental capital cost.

Carpooling and Ridesharing - Preferential parking for carpools, and coordinated ridesharing programs will motivate persons with similar travel paths to share vehicles, reducing the number of single-occupant vehicles (SOV) and the duplication in vehicle kilometres traveled by SOVs. A prime candidate for carpooling in the Town of Lakeshore is along CR 22 and Highway 401. Carpool lots could be included in the design of the CR 22 Mixed Use Corridor, and on Highway 401 to support those who chose to commute by carpooling.

5. TRANSPORTATION MASTER PLAN

The Town of Lakeshore TMP is based on a collection of strategies and policies to manage their transportation facilities from both the demand and supply sides. The following is a summary of the recommendations grouped under the following area:

- Roadway Network;
- Land Use and Subdivision Design;
- Parking Management;
- Pedestrian Facilities; and
- Bicycle Facilities.

5.1 Roadway Network Improvements

5.1.1 ROADWAY CLASSIFICATIONS

The roadway hierarchy developed through a road classification system provides the progression from local access to mobility. The Town's road system will operate most efficiently and safely if each roadway is designed and operated to service its intended role. Through the development of this Transportation Master Plan and the Town's new Official Plan, the hierarchy and classification of Town roadways were defined, based in part on the Road Classification Policy Paper. This Master Plan supports these policies and supplements them with the following recommendations:

- Incorporate the road classification system and its characteristics into the Town's new Official Plan, Development Manual and the Corridor Management and Access Control Policy (IBI Group, March 2007 Draft);
- Adhere to the roadway classifications for existing roadways presented in **Exhibit 4-2** with respect to their function and design; and
- Ensure that new development areas are adequately serviced by a proper hierarchy of roadways that balance the access and mobility needs for all.

5.1.2 LOCAL TRANSPORTATION ISSUES

The Town should ensure that the localized transportation issues identified in **Section 4.2.2** are carried forward into the appropriate enforcement, operational, monitoring and/or transportation planning efforts.

5.1.3 SCHEDULE AND COST OF IMPROVEMENTS

Based on travel demand forecasting for Transportation Scenario #2: Capacity Enhancements, the following Town of Lakeshore roadway enhancement project will need to be implemented in response to planned Town growth:

- **Little Baseline Road** - widen and extend as a 4 lanes urban arterial from CR 19 to Wallace Line Road, and as a 2 lane residential collector to CR 25 at Oakwood Drive

and CR 25. This strategically important project will provide new and continuous east-west roadway capacity between and parallel to CR 22 and CR 42. It also provides the type of direct roadway connectivity recommended in Section 4.6 of this Plan that supports Transportation Demand Management at the subdivision level.

By linking with Oakwood Drive at CR 25, the connectivity of Little Baseline Road is further extended east to Renaud Line Road, connecting the Amy Croft/Manning Road growth area to the west with the Belle River area to the east through the Wallace Woods and Patillo/Advance growth areas;

- **Patillo Road** - widen to 4 lanes from CR 2 to CR 42 to serve planned employment and mixed use growth in the Amy Croft/Manning Road and Patillo/Advance areas;

- **Wallace Line Road** - widen to 4 lanes from CR 2 to CR 42 to serve growth in the Wallace Woods area as recommended in the Wallace Woods Secondary Plan Area Transportation Study (IBI Group, March 2007);

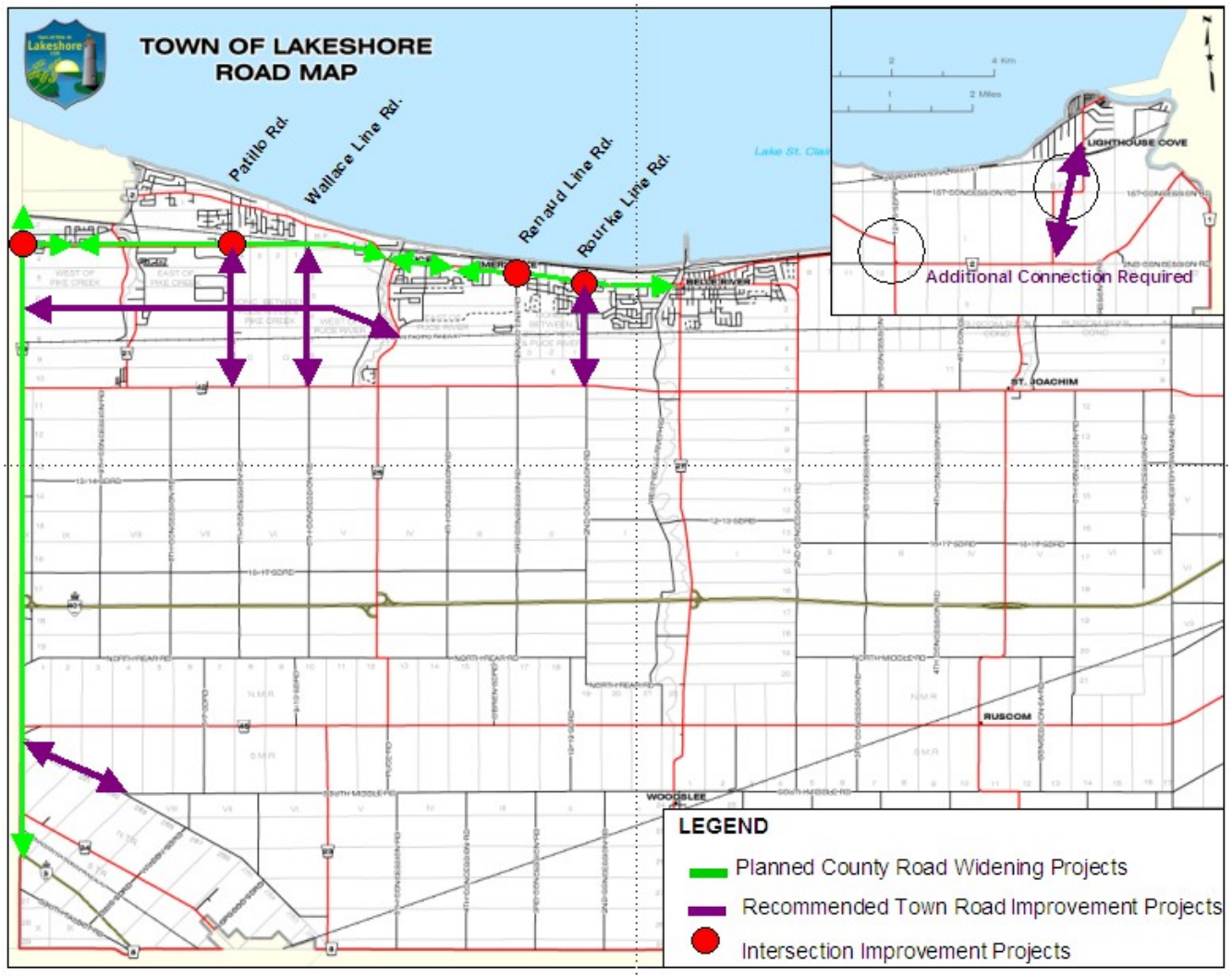
- **Rourke Line Road** - widen to 2 through lanes plus centre turn lane between CR 22 and CR 42 to serve growth in the Belle River area; and

- **Signalized Intersections** - improve arterial intersections with CR 22 at CR 19, Patillo Road, Renaud Line Road and Rourke Line Road.

These recommended capacity enhancement and road continuity projects are shown conceptually on **Exhibit 5-1**. It is expected that the remainder of the roadway network capacity enhancements and improvements in the Town of Lakeshore will be implemented by the County of Essex on County Roads as planned in the Essex-Windsor Regional TMP, by the Ministry of Transportation on provincial highways and by the development sector as part of subdivision and other project development.

Other local road improvements will be carried out in accordance with the findings from the updated Fall 2007 / Spring 2008 Road Needs Study.

Exhibit 5-1: Recommended Roadway and Intersection Improvements



The schedule and expected cost for the recommended Town road improvements projects are presented in **Exhibit 5-2**.

Exhibit 5-2: Town Road Improvement Cost and Schedule

Recommended Improvement	Conceptual Capital Cost ($M)	Schedule
Widen Patillo Road to 4 through lanes and centre left turn lane from CR 2s to CPR tracks	$8.0 M	2008 - 2009
Widen Patillo Road to 4 through lanes from CPR tracks to CR 42	$2.0 M	2008 - 2009
Widen Rourke Line Road to 2 through lanes and centre left turn lane from CR 22 to CPR tracks	$4.0 M	2009
Widen Rourke Line Road to 2 through lanes from CPR tracks to CR 42	$1.35 M	2010
Widen Wallace Line Road to 4 through lanes from CR 22 to CPR tracks with grade separation at CPR	$10.0 M	2011 - 2016
Widen Wallace Line Road to 4 through lanes from CPR tracks to CR 42	$1.75 M	2012 - 2017
Widen/extend Little Baseline Road as a 4 through lane arterial from CR 19 to Wallace Line Road;	$29.8 M	2015 - 2020
Extend/improve Little Baseline Road as a 2 lane urban collector from Wallace Line Road to CR 25	$6.4 M	2016 - 2021
Widen North Talbot Road to 4 through lanes from CR 19 to South Middle Road	$4.3 M	2015 - 2020
New/improve Lighthouse Cove access road	$3.0 M	2020 - 2025
TOTAL 20 YEAR CAPITAL COST ESTIMATE	$70.6 M	

Note: Conceptual cost estimates are based on $2,250/m to widen a 2 lane rural road to a 4 lane urban road, and $2,750 to extend a 4 lane urban road. This includes concrete sidewalks, and on-road bike lanes on each side of the road, street lighting, traffic signals as warranted, concrete curb and gutter, ROW drainage, asphalt and granulars, 13% engineering and 10% contingency. Land acquisition costs are not included.

5.1.4 TRAFFIC CALMING

Traffic calming represents a traffic management technique that the Town may apply as part of roadway network improvements to reduce the impacts of traffic on neighbourhood communities and other public facilities by improving road user safety and neighbourhood quality of life. The most common form of traffic calming involves the use of physical roadway treatments at the neighbourhood street level, and the primary application of traffic calming is on residential local and collector streets. The Canadian Guide to Neighbourhood Traffic Calming identifies four categories of traffic calming:

- Horizontal Deflection – e.g. curb extensions, chicanes, traffic circles (mini-roundabouts);
- Vertical Deflection – e.g. speed humps, textured intersections, raised sidewalks;

- Obstruction – e.g. raised medians, partial or full road closure; and
- Signing – e.g. stop and yield controls, maximum speed, turn prohibitions.

The appropriate use of these forms of traffic calming for different road types depends on the degree of impedance to traffic flow, the character of the traffic (i.e. speed, volume) and the type of surrounding land use. Although all forms of traffic calming are considered acceptable for residential local roads, more obtrusive techniques should not be provided on collectors servicing higher volumes and/or speeds. Obtrusive techniques such as chicanes, speed humps, or full closures may reduce access to transit and emergency vehicles, increase maintenance requirements, and penalize local traffic access. If traffic calming is necessary for collectors, more passive forms of traffic calming should be investigated, such as:

- Reduced roadway width standards;
- Textured pavement or pressed concrete at key conflict areas;
- Curb extensions or median islands to reduce crossing distances and exposure time at primary pedestrian routes;
- Traffic circles/roundabouts instead of all-way stops and traffic signals (see **Section 5.1.5**);
- Bicycle lanes; and
- On-street parking during off-peak periods to slow traffic.

The primary objective of traffic calming is to restore streets to their intended function, but achieving this desired impact relies on the appropriate selection of traffic calming treatment for various road uses. It is recommended that the Town refer to The Canadian Guide to Neighbourhood Traffic Calming for a description of traffic calming techniques, applicability, effectiveness and impacts. It is also recommended that any potential application of traffic calming in the Town in an existing neighbourhood include a full community consultation process.

5.1.5 POTENTIAL USE OF MODERN ROUNDABOUTS

A set of guidelines has been prepared for Essex County on the use of modern roundabouts, and excerpts of this work are provided as follows.[11]

The modern roundabout is an unsignalized intersection in which traffic moves around a central island in a one-way direction. Roundabouts are engineered to offer several potential advantages over signalized and stop controlled intersections, including improved safety performance, less delay, shorter queues (particularly during lower volume periods), reduced speeds, and improved aesthetics for community enhancement. In some applications, roundabouts can avoid or prolong the need for expensive widening of an intersection approach that would otherwise be necessary under traffic signal control.

Modern Roundabouts are designed with a single lane, two lanes or three lanes depending on the traffic and turning movement volume being experienced or forecast at a particular intersection. The examples shown here is a Modern Roundabout from the Regional Municipality of Waterloo.

[11] Guidelines For The Use of Modern Roundabouts, prepared for Essex County by IBI Group, December 2006

The feasibility and benefit of providing a modern roundabout should be determined through an Intersection Traffic Control Study. An intersection traffic control study includes a review of the reasonable forms of traffic control for a particular location or corridor and would included, but not be limited to, the following primary measures:

- Road user safety for all potential users including an explicit review of the societal costs of collision potential;
- Level of service and delay for all potential users;
- Environmental impacts such as fuel consumption, vehicle emissions and noise;
- Capital and operating costs;
- Compatibility with road/corridor traffic control strategies, adjacent land use and access;
- Property impacts; and
- Effects on transit operations, emergency service provision, accommodation of persons with disabilities and farm vehicle operations.

The installation of a traffic roundabout is beneficial only if an environment is appropriate for its use. This is an important aspect of the planning process since placing a roundabout in an inappropriate location may not help its cause and may lead to adverse effects. Roundabouts should be constructed for the primary purpose of improving operations and/or safety at intersections, but they may also be considered for traffic calming or aesthetic reasons.

The following locations are generally mentioned as being unfavourable for roundabouts:

- Locations where there is insufficient space for an acceptable outside diameter. Single-lane roundabouts generally consume more space than equivalent signalized intersections at the junction itself, but their approaches are often narrower. Multi-lane roundabouts compare more favourably in terms of space consumption;
- Locations where it would be difficult to provide a flat plateau for the roundabout. Most guides recommend maximum grades of 3% to 5% depending on design speed;

- Locations within a coordinated signal network, where the roundabout would disrupt the platoons; and/or

- Locations with heavy flows on the major road and low flows on the minor road, where the equal opportunity treatment of the approaches causes undue delays to the major road.

Other site-specific conditions can be potentially problematic at roundabouts, but, as with any other intersection, these conditions can be addressed with special attention to design and operational aspects. Such conditions include the following:

- High volumes of cyclists, pedestrians or heavy vehicles;

- Presence of numerous disabled and visually impaired users;

- Along emergency services primary response routes;

- Close proximity to at-grade rail crossings;

- Intersections at the top or bottom of a grade where adequate sight distance is a concern; and/or

- Proximity of adjacent downstream signals and potential blocking due to queuing.

A brief summary of features and expected operations for each of these basic roundabout categories is shown in **Exhibit 5-3**.

Exhibit 5-3: Basic Characteristics of Roundabout Categories (Adapted from FHWA, 2000)

Design Element	Urban Compact	Urban Single-Lane	Urban Double-Lane	Rural Single-Lane	Rural Double-Lane
Recommended Max. Entry Speed	25 km/h	35 km/h	40 km/h	40 km/h	50 km/h
Max number of entering lanes per approach	1	1	2	1	2
Typical inscribed circle diameter	25 m – 30 m	30 m – 40 m	45 m – 55 m	35 m – 40 m	55 m – 60 m
Splitter island treatment	Raised, with crosswalk cut	Raised, with crosswalk cut	Raised, with crosswalk cut	Raised and extended, with crosswalk cut.	Raised and extended, with crosswalk cut.
Typical daily service volumes on 4-leg roundabout (vpd)	15,000	20,000	Requires detailed site-specific analysis	20,000	Requires detailed site-specific analysis

5.2 Land Use and Subdivision Design

5.2.1 PEDESTRIAN SUPPORTIVE

Through secondary plan work and the associated transportation assessments for the major development areas in the Town, the following pedestrian friendly initiatives are recommended:

- Promote a grid-network road patterns which support future transit routes and walkable distances;
- Pursue convenient and continuous connections between major destinations and adjacent neighbourhoods at the secondary planning process and site plan development levels; and
- Promote regular controlled pedestrian crossing opportunities along major collector and arterial roadways, including CR 22.

Additional policies relating the pedestrian facilities are outlined in **Section 5.4**.

5.2.2 TRANSIT SUPPORTIVE MEASURES

The Ministry of Transportation and Ministry of Municipal Affairs, in their *Transit-Supportive Land-Use Planning Guidelines* [12] list principles to achieve an increase in transit use and reduce vehicle-kilometers traveled by private automobiles, including:

- Use of grid street networks instead of a discontinuous networks;
- Street-oriented uses along arterial roads;
- A mix of higher density uses along arterial roads; and
- Improved access between arterials and the interior of blocks.

[12] Transit-Supportive Land Use Planning Guidelines, Ministry of Transportation/Ministry of Municipal Affairs, by IBI Group, April 1992.

5.3 Parking Management

The parking management policies developed through the Town's new Official Plan work focus on the provision of sufficient parking in terms of size, location and quantity. The following recommendations based on the Parking Policy Paper support these policies:[13]

- Promotion of shared parking, where feasible;
- Improve parking facility design to reduce conflicts and provide a improved pedestrian environment;
- Incorporate the proposed update to the Town's minimum parking requirements, including bicycle parking; and
- Employ regular monitoring of the Town's parking facilities, specifically in the Town Centre Areas, to ensure that parking supply and demand are maintained at an acceptable equilibrium.

5.4 Pedestrian Facilities

Through the development of the new Official Plan, the Town has progressed towards the provision of safe and convenient pedestrian routes and paths to provide continuous linkages between neighbourhoods, parks, schools, recreational facilities, the waterfront, public buildings and commercial areas. This TMP supports these policies and supplements them with the following recommendations:

- Incorporate the pedestrian policies and design guidelines, as outlined in the Walking and Cycling Policy Paper and Subdivision Design Policy Paper, prepared as a supplement to the TMP, into the Town's Official Plan and the Development Manual;
- Improve connectivity between and within the Town's neighbourhoods;
- Provide sidewalks in accordance with the Town's policies during all new construction and reconstruction of roadways;
- Explicitly consider pedestrian travel to and within all development sites including parking areas; and
- Investigate the use of abandoned railway corridors for walking trails and/or multi-use trails to provide improve access between primary origins and destinations.

5.5 Bicycle Facilities

The Town of Lakeshore Official Plan provides a number of guiding policies relating to the promotion of sustainable transportation modes, including bicycling. It identifies that need for the Town to assess the feasibility of adapting existing roads and design future road networks to provide an efficient and safe bicycle network, where feasible and appropriate. In support of these overall policies the Town should implement the following cycling-supportive measures:

[13] Town of Lakeshore Parking Policy Paper, IBI Group, July 2006

- Incorporate the cycling developmental policies and design guidelines, as outlined in the Walking and Cycling Policy Paper prepared as a supplement to the TMP, into the Town's Official Plan and the Development Manual;

- Improve the bicycle route connectivity between residential, employment, institution and recreation uses in the Town. Priority should be given to the completion of the primary bicycle network illustrated in **Exhibit 4.6** of this TMP, along with any possible interim connections along alternative routes.

- Review development applications and site plans to identify secondary bicycle routes to supplement and provide good connections to the primary network;

- Investigate the use of abandoned railway corridors for walking and bicycle trails to complete or supplement the primary on-street bicycle network;

- Promote and market the primary bicycle routes and adjacent major destinations through on-road bicycle route signage and Town communications (web-site, newsletters, etc.); and

- Provide accessible, secure and protect bicycle parking areas.

6. MASTER PLAN IMPLEMENTATION

6.1 Official Plan Policies

The new Lakeshore Official Plan includes policies that support the implementation of this Transportation Master Plan to the transportation planning horizon of 2025, and the Official Plan horizon of 2027, with both horizons being compatible for long range planning. It is recommended that the Town Road Classification System and the schedule of major Town road capacity improvements described in **Section 5.1** of this Master Plan be combined to develop a new Schedule "D" of the Official Plan. This way, the opportunities to implement these important capacity enhancement projects will be protected from encroachment from adjacent land use.

Similarly, it is recommended that the Town initiate a Municipal Class Environmental Assessment study in the short term to establish and protect the alignment of the recommended Little Baseline Road extension from Patillo Road to CR 25, or for the entire Little Baseline corridor improvement from CR 19 to CR 25.

The Town should also consider including specific statements in the Official Plan supporting the principles of TDM, and how many of the land use principles are reflected in the Community Character of the Official Plan.

It is not recommended that the Official Plan include the mode share scenarios presented in **Exhibit 3-10** as these were used for travel demand forecasting only, and will evolve over time in the Town as the transportation system grows and improves.

6.2 Master Plan Monitoring and Update

This Transportation Master Plan is not a static document. It must be regularly reviewed to ensure it meets the transportation needs of the Town. Changing growth and development patterns may also require a re-investigation of the Plan's roadway improvement recommendations and staging. This should be done as follows:

- Update the Town's current five-year capital roads forecast to include short-term projects recommended in this Transportation Master Plan (see **Exhibit 5-2**);

- Prepare an annual report to Town Council on local transportation conditions, behaviours, needs and trends with joint input from the Public Works, Planning and Emergency Services, as well as from the County of Essex and Lakeshore and area transportation-related community groups such as the business community, cyclists and neighbourhood groups;

- To address transportation issues on an annual and consistent basis, this "State of the Transportation System" report should document:

    i. Results of the traffic count updates;

    ii. New trends and technologies in traffic operations and management;

    iii. Public and private sector initiatives (i.e. car pooling, preferential parking, transit service delivery, flexible work hours, cycling facilities);

    iv. Status of related provincial initiatives, policies and funding programs, and; and

v. Any need to review, amend or update components of the Transportation Master Plan.

The Transportation Master Plan requires regular updating to remain relevant and effective in dealing with the Town's local transportation needs. Therefore, It is further recommended that the Plan undergo a full review at the next five year mandatory review of the Official Plan, and every five years thereafter in association with future statutory assessments of the Official Plan.