DILLON CONSULTING

CORPORATION OF THE TOWN OF TECUMSEH

Tecumseh Transportation Master Plan

Final Report

Revised June 2017 – 15-2937

June 29, 2017

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Attention: Mr. Dan Piescic, P.Eng.,
Director, Public Works and Environmental Services

Final Tecumseh Transportation Master Plan
Revised June 2017

Dear Mr. Piescic:

We hereby submit the updated Tecumseh Transportation Master Plan Final Report based on comments received at the conclusion of the 30 day public and agency review period.

The following correspondence has now been included in Appendix B Stakeholder Consultation:

DESCRIPTION	DATE	ACTION
Email from Melanie & Paul Tarovich	February 25, 2017	Received
Letter from City of Windsor	February 27,2017	Dillon letter response dated May 2, 2017
Letter from City of Windsor	May 23, 2017	Received

The final report has been updated to include the revisions outlined in the Dillon response letter dated May 2, 2017 as well as the additional clarifications identified by the City in their letter dated May 23, 2017.

We trust that the Tecumseh Transportation Master Plan will serve as a valuable resource in guiding transportation improvements in the Town.

Sincerely,
DILLON CONSULTING LIMITED

Flavio R. Forest, P.Eng.
Project Manager

FRF:ldm - **Our file**:15-2937
Enclosures: Final Tecumseh Transportation Master Plan, Revised June 2017

Executive Summary

The Tecumseh Transportation Master Plan (TTMP) provides a flexible and dynamic multi-modal transportation strategy that will guide the provision of transportation service and networks by the Town of Tecumseh to the year 2034. The Tecumseh transportation system balances the needs of residents, businesses, and recreational users in a way that is fiscally responsible.

TTMP Vision

Stakeholder consultation completed early in the TTMP process was used to generate the following Vision statement and themes for the TTMP:

> *The TTMP provides an integrated and diverse transportation system for all residents and businesses that is safe, convenient, affordable and sustainable, and that facilitates the efficient movement of people and goods within the Town and to adjoining areas. The transportation system supports the goals and values of the Town, maintaining the rural and small Town character, protecting the environment and natural heritage, and promoting sustainable economic growth.*

The TTMP was developed around four core themes:

- Improve the integration of the existing transportation networks
- Provide networks to encourage and facilitate transportation by Active Modes
- Provide infrastructure to serve demands at preferred Performance Targets
- Provide transportation systems that serve all citizens

Population Scenario

The 2016 population of the Town of Tecumseh is approximately 25,240. By 2034, the population of Tecumseh is expected to increase by 4,900, to a total population of 30,140. *Figures ES1 and ES2* show the Official Plan Land Use Designations.

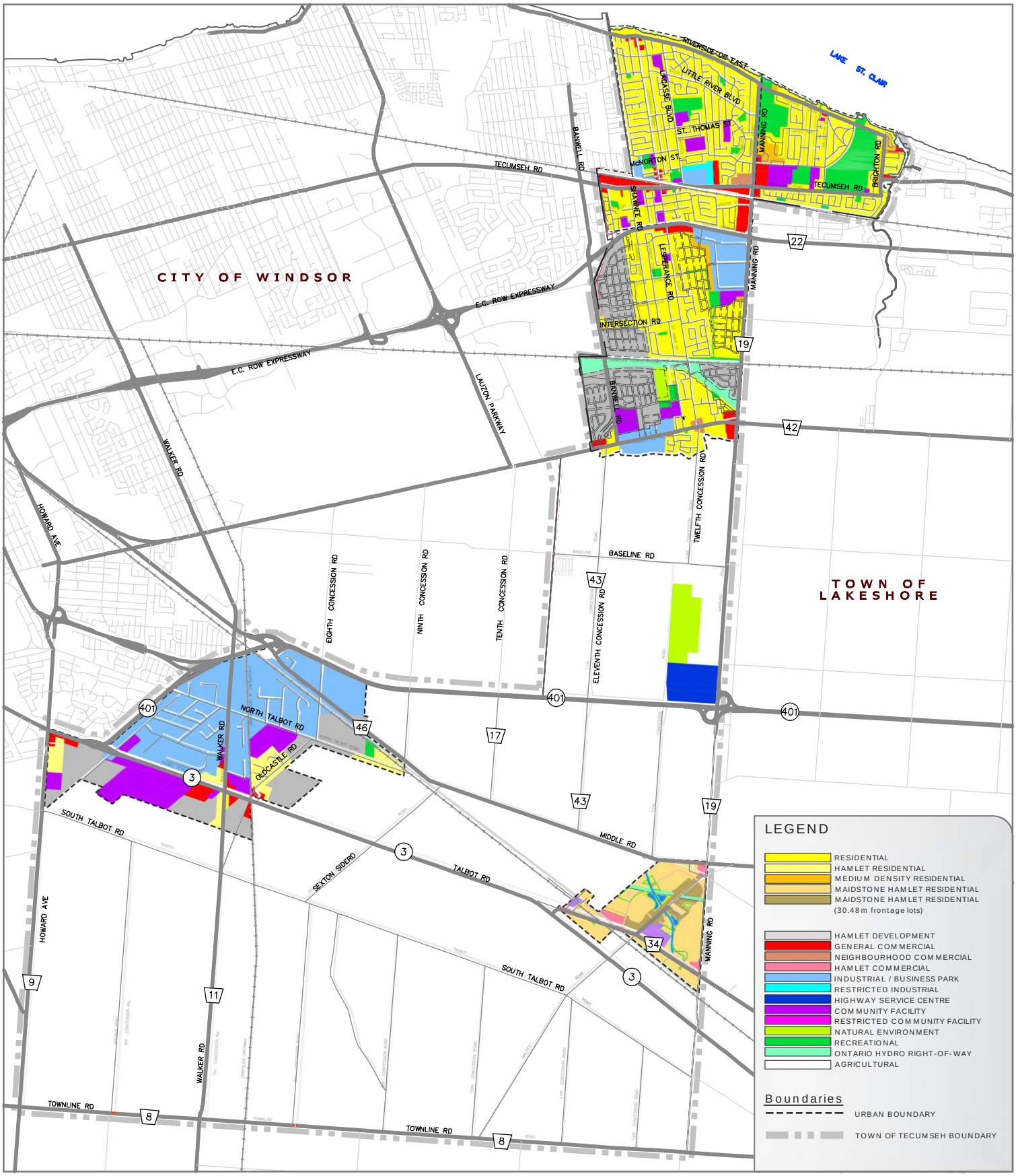
The Town's population and employment growth is directed to the three main settlement areas of the Town, comprising: i) the northern settlement area (former Town of Tecumseh, former Village of St. Clair Beach, Tecumseh Hamlet); ii) Oldcastle Hamlet; iii) Maidstone Hamlet. Planning and servicing circumstances will result in the majority of residential population growth occurring in the northern settlement area, particularly within the growth areas known locally as the Tecumseh Hamlet Secondary Plan and Manning Road Secondary Plan Areas (Secondary Plan work in both of these areas has resulted in proposed land uses and a road network as illustrated on *Figure ES3*). The majority of employment growth is anticipated on a number of designated greenfield sites in the Oldcastle Hamlet, which is recognized as a regionally significant employment district.

Table ES1 demonstrates the distribution of population and employment growth throughout the Tecumseh Hamlet and Manning Road Secondary Plan areas.

Table ES1: Planned Development Yield in Tecumseh Hamlet and Manning Road Secondary Plan Area

Zone	Residential Units		Commercial GFA (1000sqft)	
	Low Density	Medium Density*	Conventional	"Main Street"
Tecumseh Hamlet				
N1	138	48	0	0
N2	177	486	60	158
N3	99	138	114	0
N4	182	120	0	0
SW1	162	120	31	0
SW2	58	204	0	0
SE1	94	90	0	0
SE2	158	288	51	0
SE3	35	162	0	0
SE4	0	42	0	0
E	203	96	0	0
Total	*1306*	*1794*	*255*	*158*
Manning Road Secondary Plan Area				
NE1	367	0	142	0
NE2	388	0	36	0
Total	*755*	*0*	*178*	*0*
Total	*2061*	*1794*	*433*	*158*

** Includes apartment units above commercial development.*



THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

OFFICIAL PLAN LAND USE DESIGNATION

FIGURE ES1

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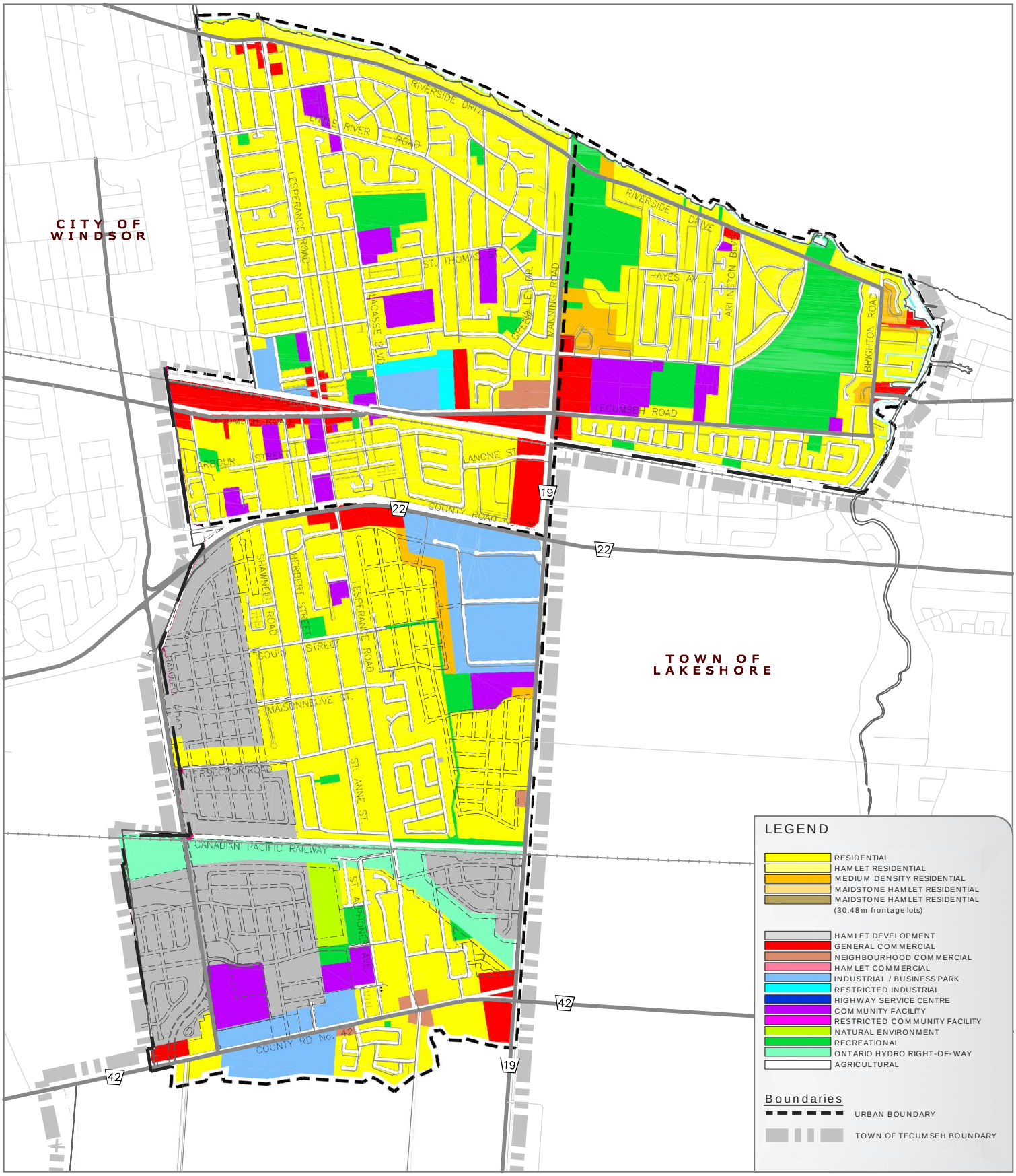

THE TOWN OF TECUMSEH
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OFFICIAL PLAN LAND USE DESIGNATION (URBAN AREA)

FIGURE ES2

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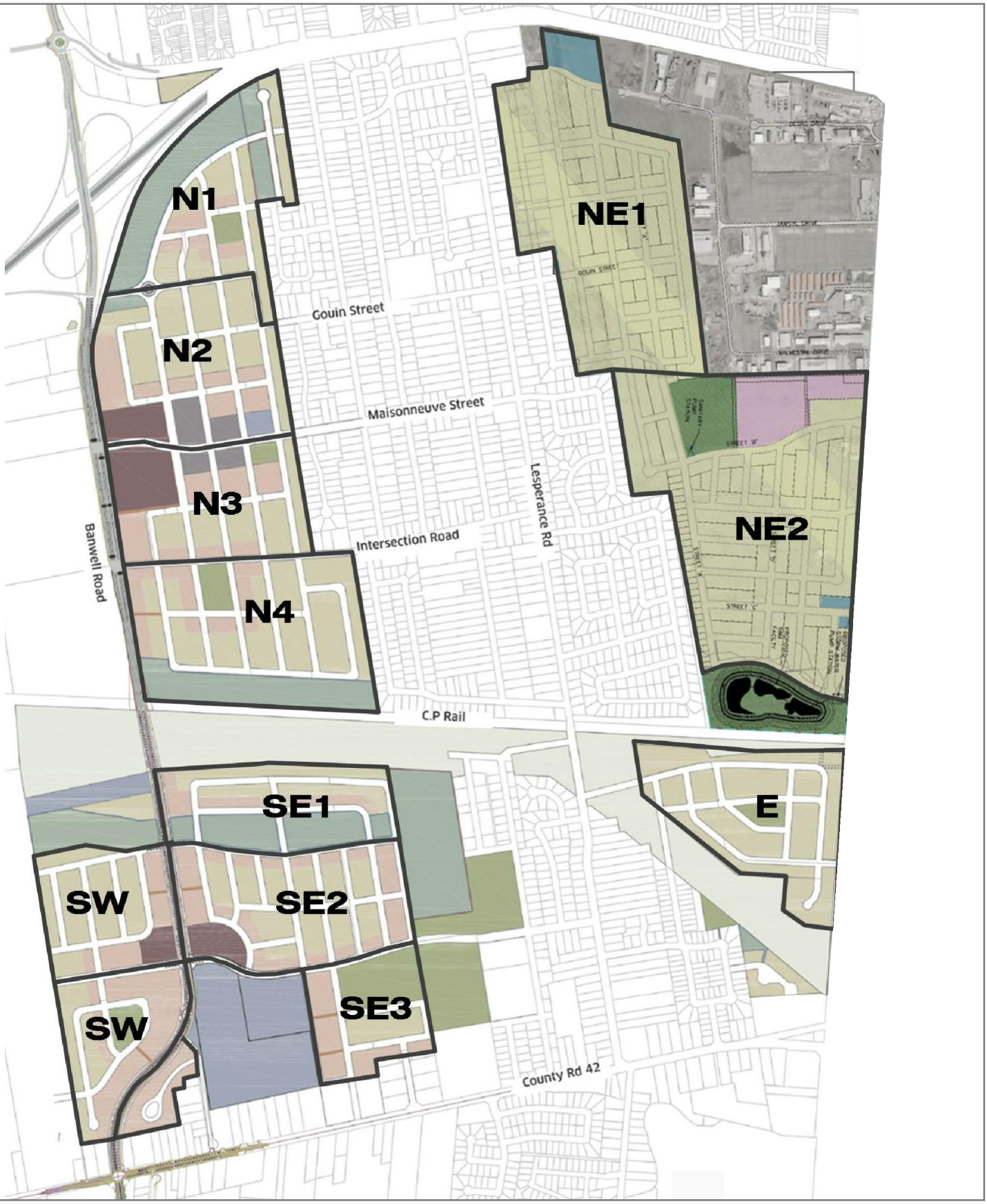

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TECUMSEH HAMLET AND MANNING ROAD SECONDARY PLAN AREA ZONES

FIGURE ES3

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Transportation Strategy

Conventional automobile travel will remain the primary mode of travel in Tecumseh within the life of the TTMP. The role of transit within Tecumseh will be driven by growth; expansion of service will occur as conditions drive expanded service. The active transportation network will be improved in order to address the principles and goals of the TTMP and encourage sustainable transportation for all users. Accordingly, the role of active modes will be elevated, particularly for local trips within Settlement areas, which are well-suited towards active transportation.

Transportation Policies

Complete Streets

The Town of Tecumseh adopts a "complete streets" approach to the planning, design, operation, and maintenance of roads. Going forward, we will shift the focus of streets from a strong emphasis on auto mobility to a more balanced philosophy to better serve all modes to meet the needs of travellers of all ages and abilities.

The Complete Streets framework seeks to balance the many roles of streets to maximize their potential as a public resource. A complete street is appropriate for all expected functions and offers safety, comfort, and convenience to all users regardless of age or ability. Complete streets must be implemented with a context sensitive approach, as different users take priority in different locations. Corridors must be assessed from both a local (small-scale) perspective and a global (large-scale) perspective, to understand their function to all users and all trips. In areas where there is high demand for several modes, the Town will seek to balance the needs of all users in a sustainable and context sensitive manner. *Figure ES4* displays examples of Complete Streets in different contexts.

A Complete Streets Design Handbook has been prepared as a supplement to the TTMP to guide stakeholders through the planning, design and operations of streets.

Figure ES4: Complete Streets in an Urban, Suburban, and Rural Context

Road Hierarchy

The Town adopts a road hierarchy based on seven road classes:

- Commercial Main Street;
- Minor Arterial (Urban);
- Collector (Urban);
- Local (Urban);
- Minor Arterial (Rural);
- Collector (Rural); and
- Local (Rural).

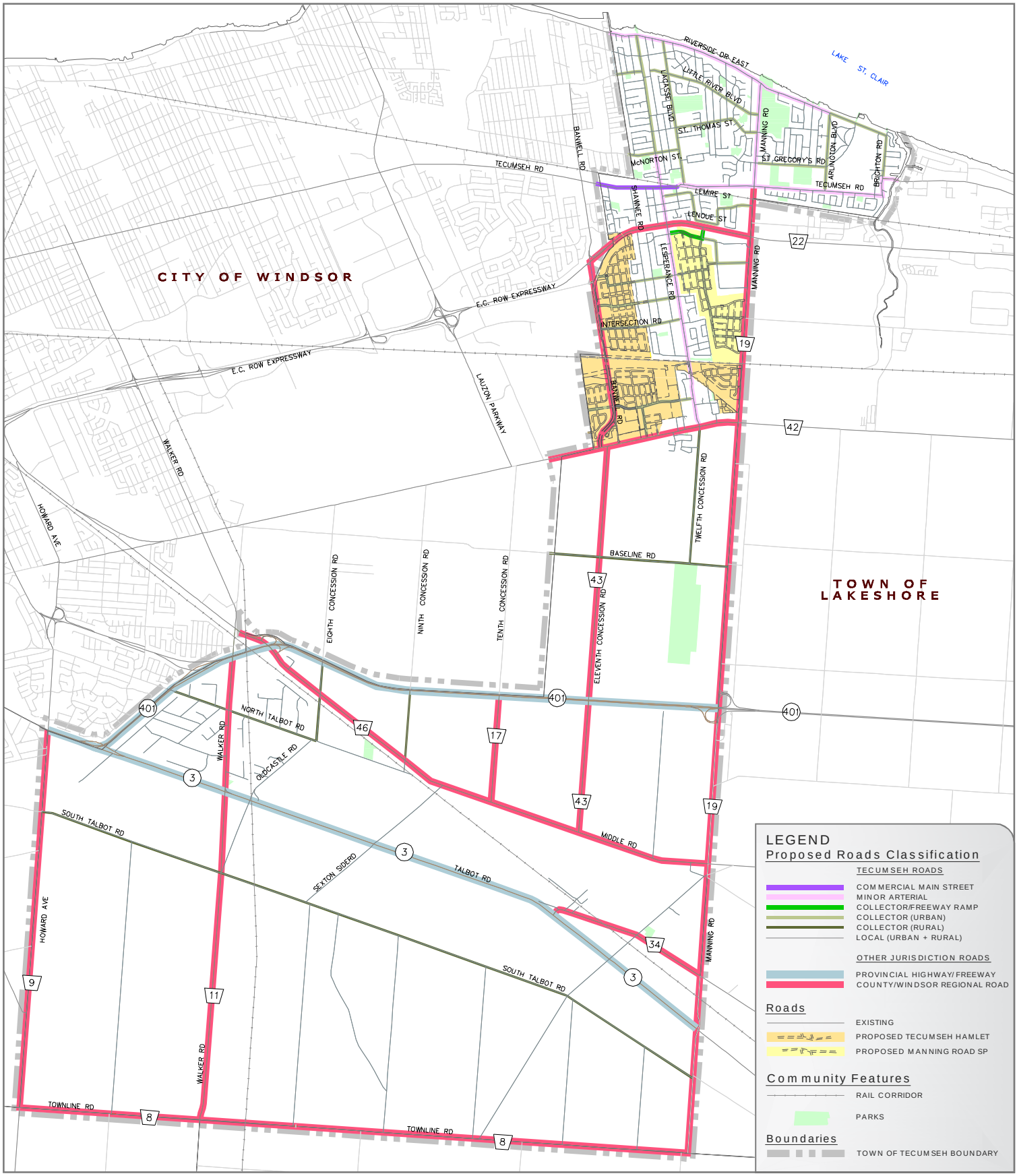
Figures ES5 and ES6 show the recommended road hierarchy system for the Town. *Figures ES7-ES13* show typical cross-sections for new roads in all road classes proposed in the road hierarchy. These cross-sections are a starting point for designing roads in these road classes; individual roads need to consider local conditions for road design and construction and are subject to the discretion of the Director of Public Works.

The development of an understandable road classification system is a fundamental requirement for the Town of Tecumseh. A road classification system is the orderly grouping of roads into systems according to the type of service they provide to the public. When a road system is properly classified, the characteristics of each road are readily understood. Classification assists in establishing the geometric design features for each group of roads, consistent with the short and long term operational needs of that particular group.

Traditionally, roadway classification systems are structured on a hierarchy of classes focused primarily on mobility and access for private vehicles. A Complete Streets approach establishes a framework for street design that provides “streets for everyone”. The corresponding multi-modal roadway classification system maintains hierarchy between road classes, but speaks to all modes of transportation and places greater emphasis on pedestrians, cyclists, and transit users. This approach allows for streets to be designed according to their local context and provide a safe, comfortable, and convenient environment for pedestrians, cyclists, and transit users, while maintaining traffic flow.

Together, these policies result in key changes to road planning, operations, and design:

- New roads will be designed and built with facilities for pedestrians and cyclists in addition to cars;
- Appropriate pedestrian and cyclist facilities will be added to existing roads when reconstructed, consistent with the Complete Streets Design Handbook and road classification;
- Key gaps in the pedestrian and cyclist network within the road system will be prioritized based on network plans and recommendations from the AT plan; and
- Pedestrian and cyclist crossings of Arterials and Collectors will be provided as needed.



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TECUMSEH TMP ROAD CLASSIFICATIONS

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FIGURE ES5

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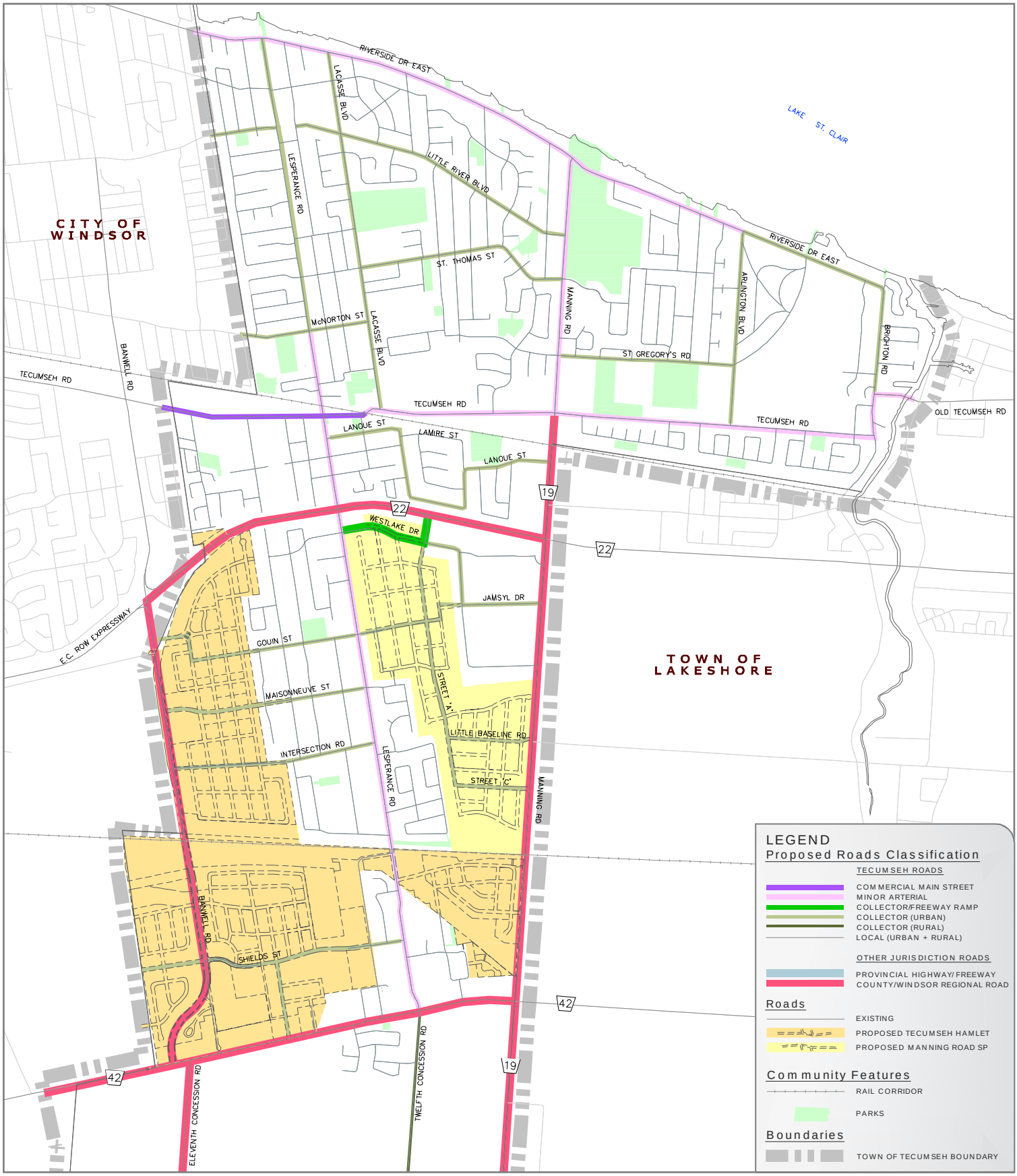

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

TECUMSEH TMP ROAD CLASSIFICATIONS (URBAN AREA)

FIGURE ES6

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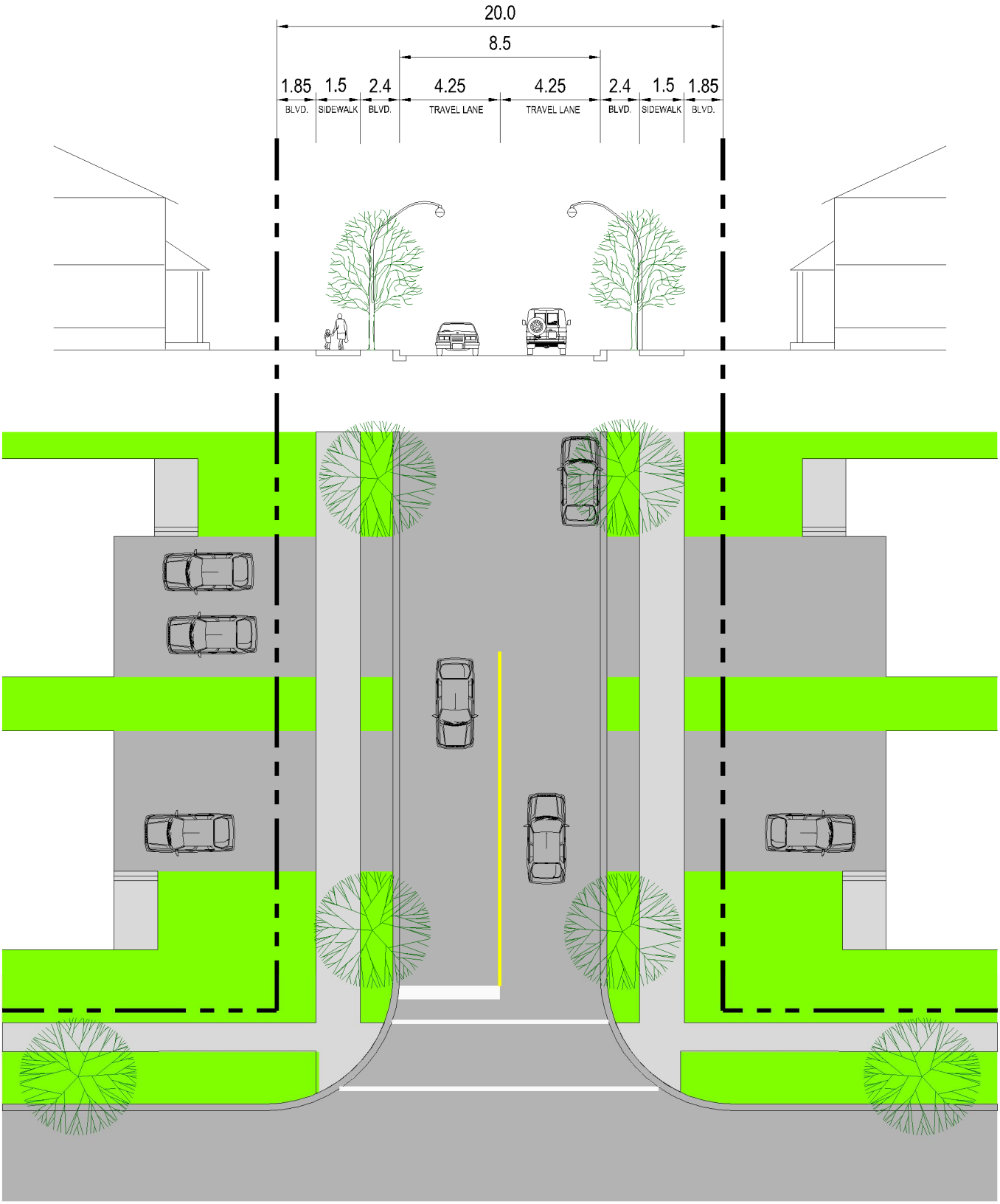

*SIDEWALK MAY BE PROVIDED ON ONE SIDE, DEPENDING ON ADJACENT LAND USE

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THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

LOCAL ROAD URBAN CROSS-SECTION 20m R.O.W.

FIGURE ES7

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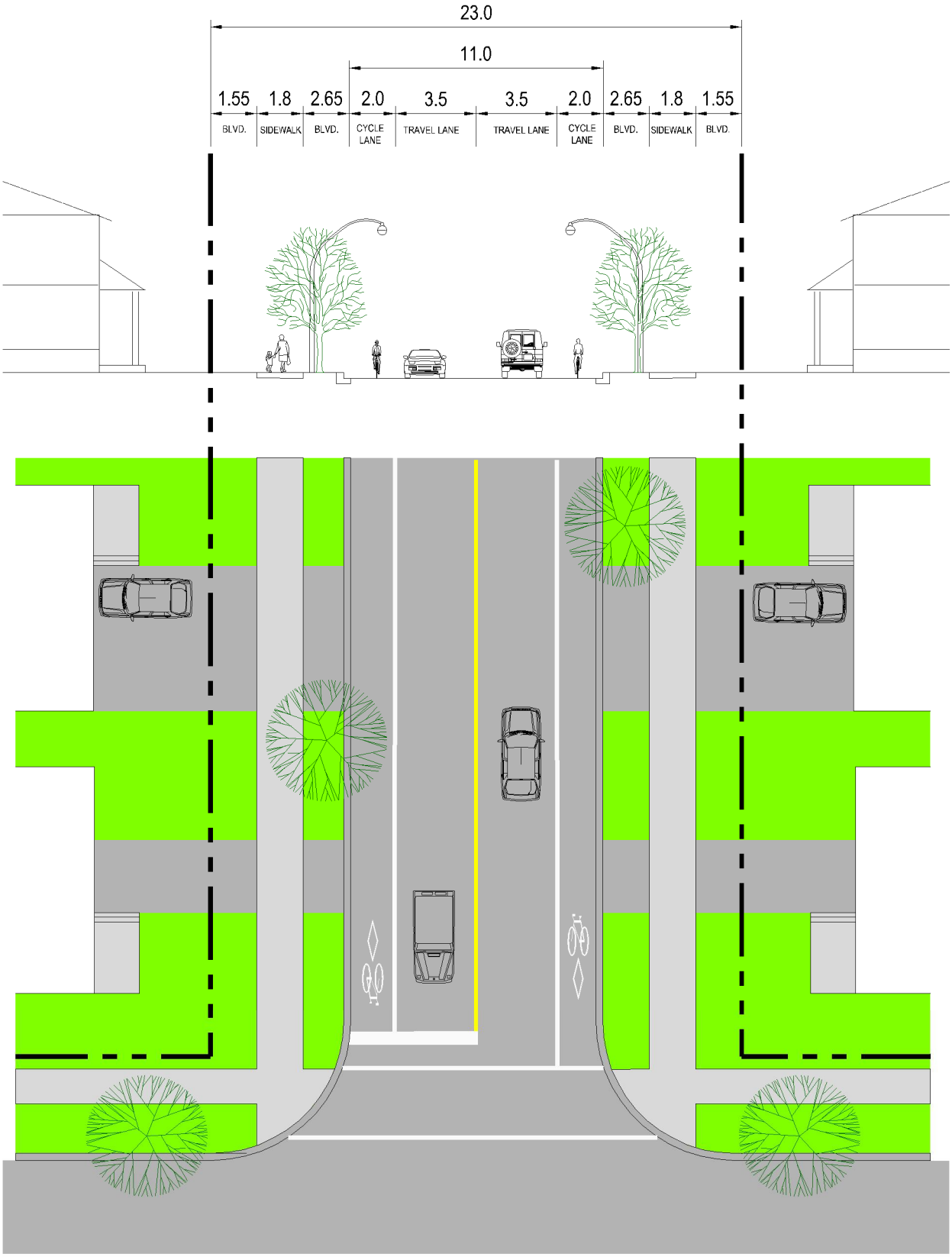

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

COLLECTOR ROAD URBAN CROSS-SECTION 23m R.O.W.

FIGURE ES8

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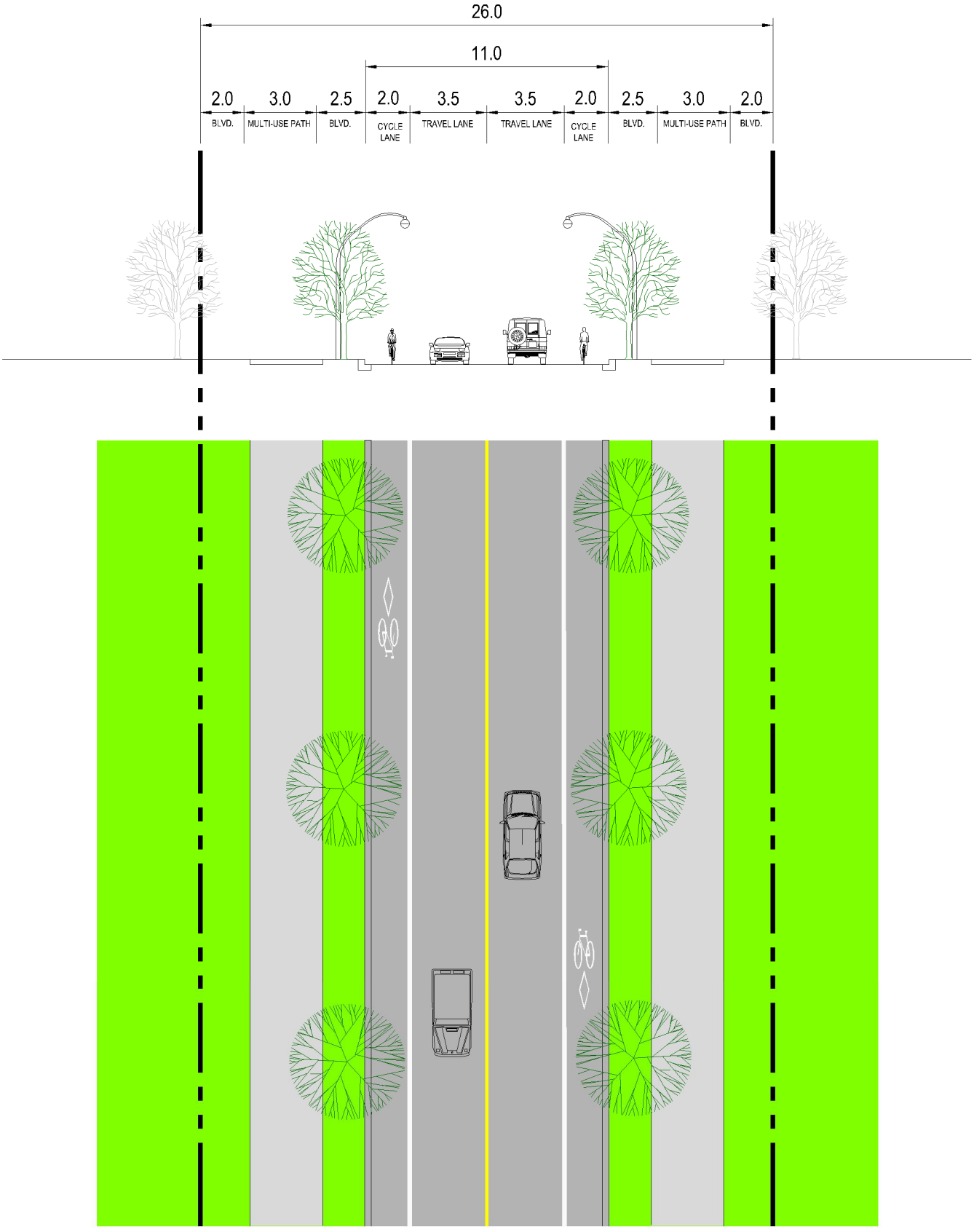

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THE TOWN OF TECUMSEH
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MINOR ARTERIAL ROAD URBAN CROSS-SECTION (With Multi-Use Paths) 26m R.O.W.

FIGURE ES9

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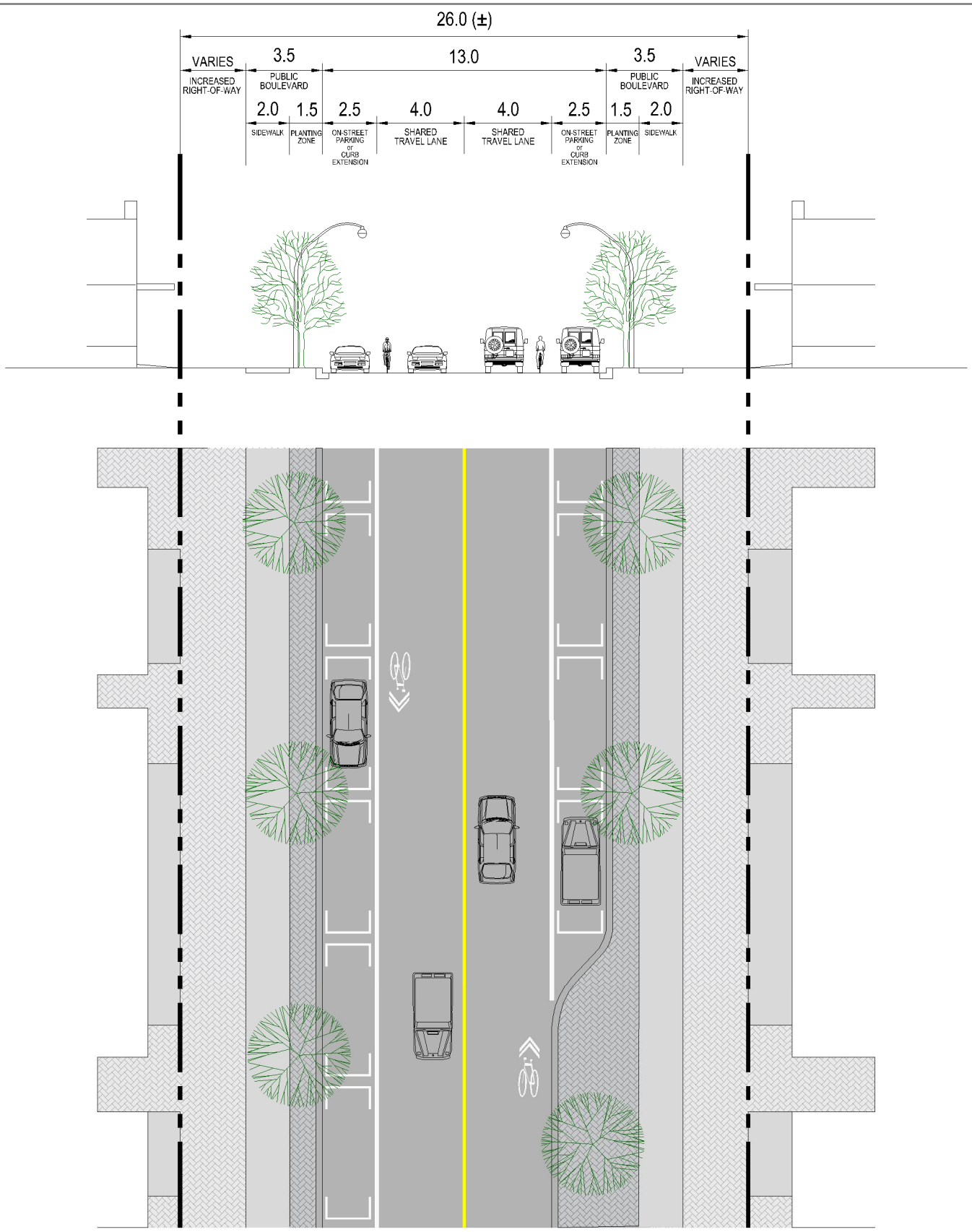

*SUBJECT TO DESIGN OF STREETSCAPE PLAN.

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THE TOWN OF TECUMSEH
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COMMERCIAL MAIN STREET URBAN CROSS-SECTION 26m R.O.W.

FIGURE ES10

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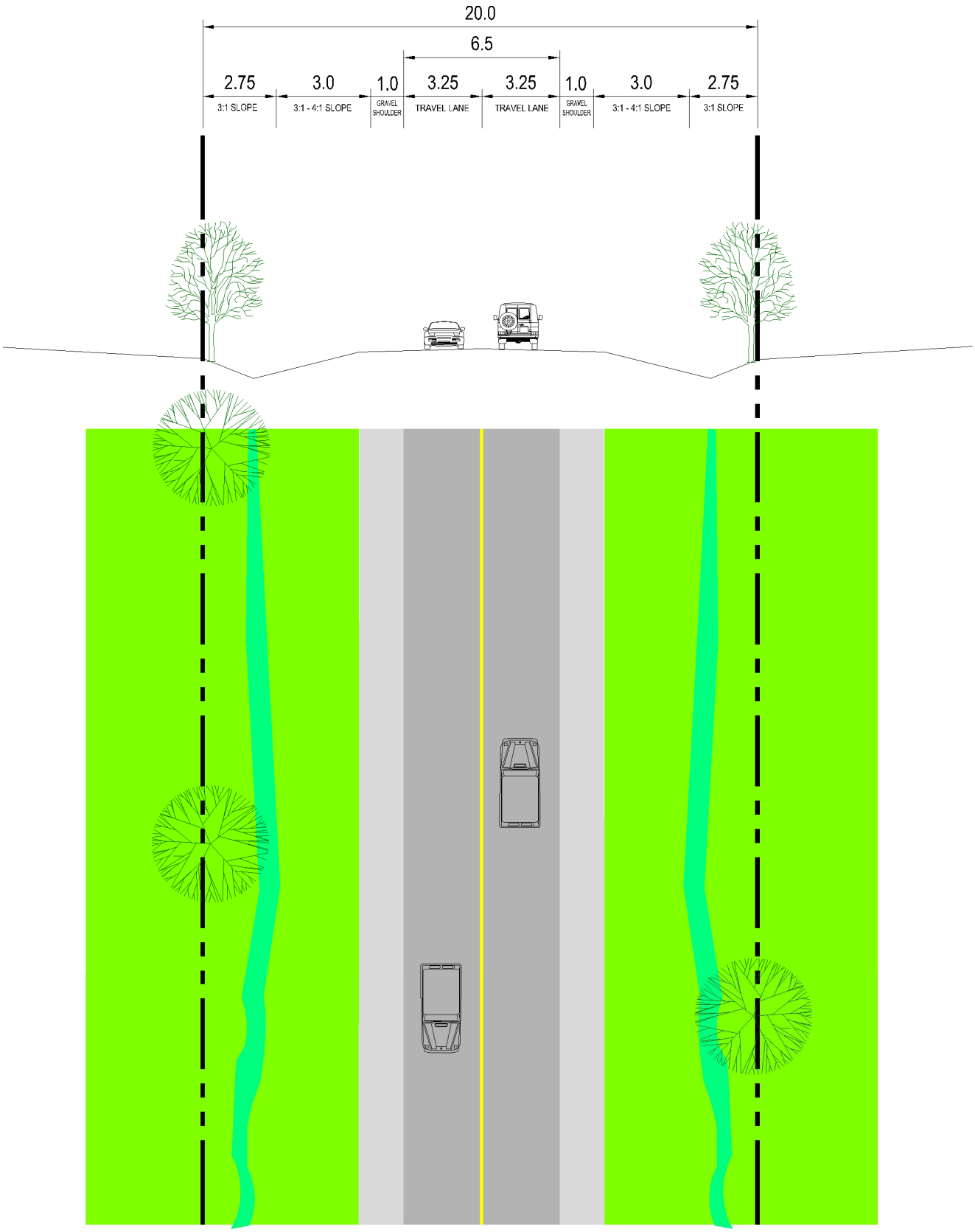

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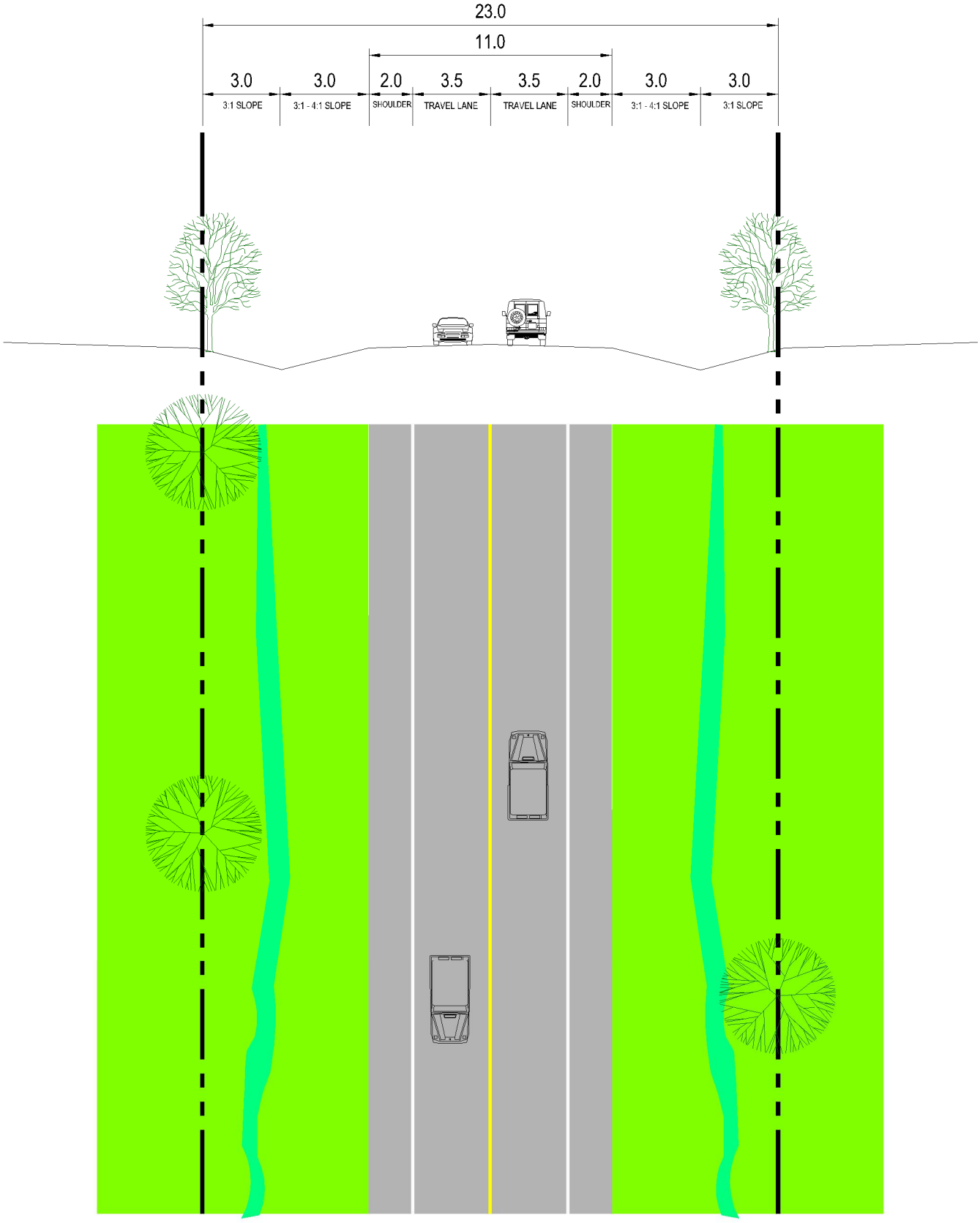
THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

LOCAL ROAD RURAL CROSS-SECTION 20m R.O.W.

FIGURE ES11



THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

COLLECTOR ROAD RURAL CROSS-SECTION 23m R.O.W.

FIGURE ES12

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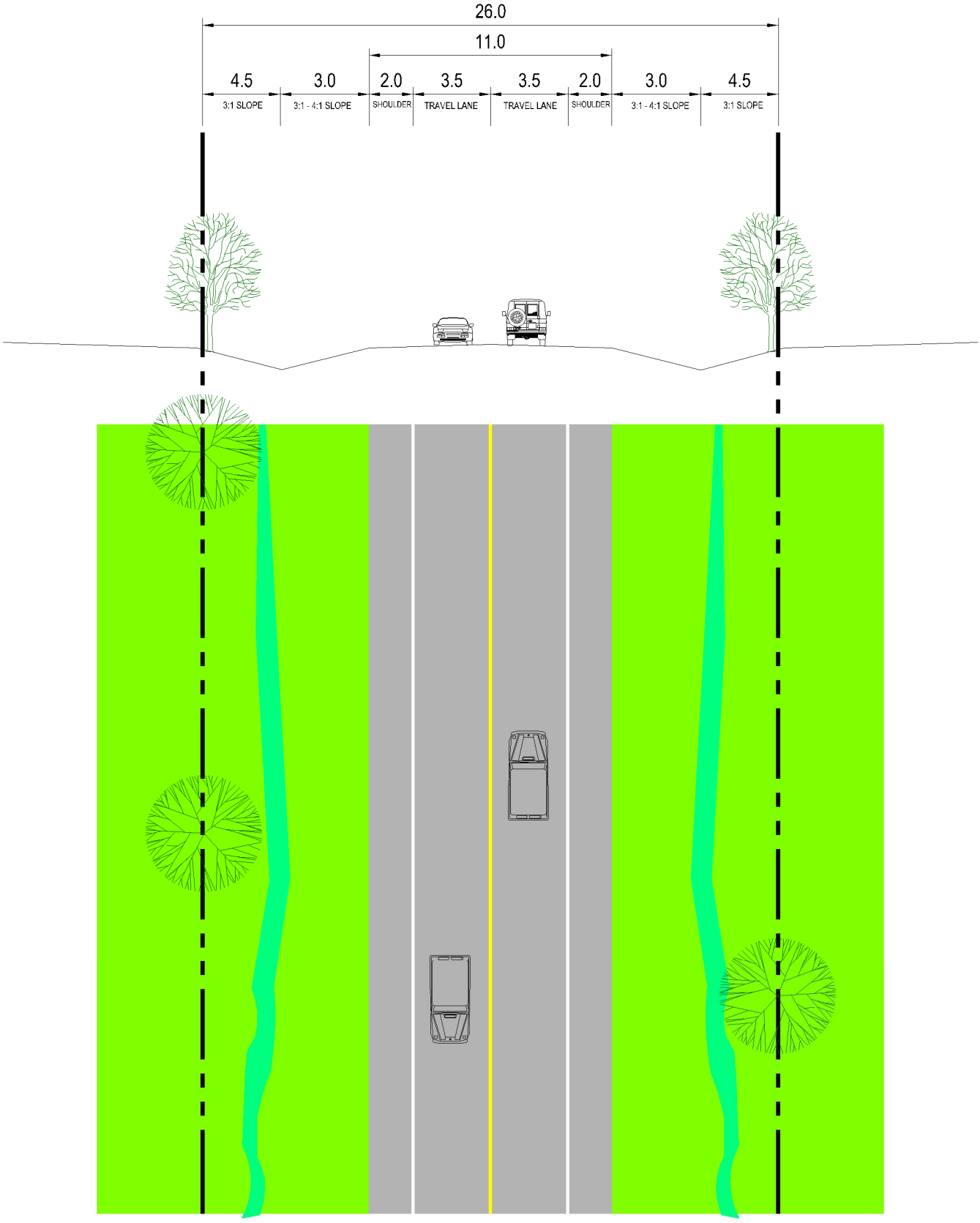

TECUMSEH

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THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

MINOR ARTERIAL ROAD RURAL CROSS-SECTION 26m R.O.W.

FIGURE ES13

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Roundabouts

The Town will consider roundabouts as an option for traffic control at all intersections on its Minor Arterial and Collector roads where traffic control signals are needed.

Roundabouts have emerged in North America as an environmentally-friendly and cost-efficient alternative to traffic signals or all-way stops for traffic control at intersections, particularly in new residential subdivisions or in locations where traffic signals are warranted. Particular attention is required to the design of pedestrian and cycling facilities through roundabouts to provide safe passage for vulnerable users.

Traffic Calming

The Town will use Traffic Calming measures as a tool to reduce speeds on existing roads where they have determined that observed operating conditions are not in line with desired conditions, accounting for the varying roles of different road classes in carrying vehicle traffic.

Traffic calming is defined as "physical devices aimed at slowing the speed of motorists to the desired speed, given the context of the street". Traffic calming measures must be implemented in a way that respects the intended role of the street. Higher order streets (arterials and minor arterials) are intended to have higher operating speeds and carry higher volumes of trucks. These streets form the backbone of the transit system as well as the emergency response network, and are not appropriate for all traffic calming measures. The needs of all users must be considered in developing a traffic calming plan.

The traffic calming measures shown in *Table ES2* are supported in the Town of Tecumseh:

The measures each have a different purpose and impact, and should only be applied to certain classes of roadways. *Table ES3* displays which measures are appropriate for each roadway classification.

Table ES2: Traffic Calming Measures


(1)

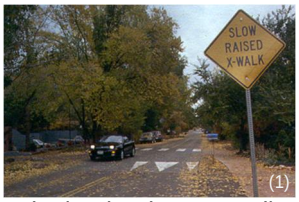
Speed hump
Vertical deflection; Rounded raised areas of pavement, often placed in a series several metres apart

(2)

Speed table
Vertical deflection; Speed humps with a flat section in the middle and ramps on either side


(2)

Speed cushion
Vertical deflection; Speed humps with wheel cutouts to allow emergency and transit vehicles to travel over them unaffected



(1)

Raised pedestrian crosswalk
Vertical deflection; Speed humps with a flat section in the middle, designated as a pedestrian crosswalk


(3)

Rumble strip
Vertical deflection; Small bumps in the roadway surface causing vibration in automobiles


(2)

Curb extension
Horizontal deflection; Extensions of the curbs into the travel lanes to narrow the street width


(1)

Chicane
Horizontal deflection; A series of curb extensions alternating between sides of the street to create S-shaped curves


(1)

Mid-block narrowings
Horizontal deflection; Curb extensions at mid-block locations


(1)

Traffic circle
Horizontal deflection; Raised islands placed in the middle of intersections to force traffic to travel around

Photo sources:
(1) Traffic Calming Measures, ITE (http://www.ite.org/traffic/tcdevices.asp).
(2) Urban Street Design Guide, NACTO (http://nacto.org/publication/urban-street-design-guide/street-design-elements/).
(3) Blackburn News (http://blackburnnews.com/wp-content/uploads/2013/08/rumble-strip.jpg).

Table ES3: Traffic Calming Measures by Roadway Classification

		Proposed Tecumseh Roadway Classification						
		Urban				Rural		
	Traffic Calming Measure	Commercial Main Street	Minor Arterial	Collector	Local Road	Minor Arterial	Collector	Local Road
Vertical deflection	Speed hump	I	I	I	I	I	I	I
	Speed table	I	I	I	I	I	I	I
	Speed cushion	I	I	I	I	I	I	I
	Raised pedestrian crosswalk	I	I	I	I	I	I	I
	Rumble strip	I	I	I	I	I	I	I
Horizontal deflection	Curb extension	I	I	I	I	I	I	I
	Chicane	I	I	I	I	I	I	I
	Mid-block narrowing	I	I	I	I	I	I	I
	Traffic circle	I	I	I	I	I	I	I

I Appropriate measure I Implement with caution I Inappropriate measure

Road Network

Analysis of road network performance identified several roads and intersections which are approaching or at capacity in the existing conditions. The County, MTO and the City of Windsor are planning to undertake a number of significant capital projects before the end of the planning period which will address the identified road network deficiencies. Operational issues may need mitigation measures (minor change to the geometric conditions of the approaches and /or optimization of the traffic control) to alleviate operational and safety concerns if the planned major capital projects are delayed. These intersections are primarily under the ownership of MTO and/or the County and, as such, mitigation measures would be the responsibility of senior levels of government. Project implementation will need to be monitored to determine the potential need for local intersection modifications in the future.

Key Issues

Lesperance Road

Lesperance Road is a key north-south spine in the networks for all modes of travel and the only continuous north-south road under the control of the Town of Tecumseh. Consideration has been given to modifying the existing cross-section to remove the existing two-way left turn lane (TWLTL) between McNorton Street and Riverside Drive to permit the creation of on-road cycling lanes. Removal of the TWLTL would not significantly affect intersection capacity or road safety. Given the commitment to promote Active Transportation and balance the level of service for all transportation modes it is recommended that the existing cross-section north of McNorton Street be modified to add cycling lanes and a multi-use pathway be constructed in the boulevard.

Tecumseh Road Main Street

Tecumseh Road is a key east-west spine in the networks for all modes of travel and the focus of activity for a planned vibrant commercial node (Tecumseh Road Main Street runs from approximately the Municipal Boundary west of Southfield Road to the Via Rail tracks east of Lesperance Road). The Town of Tecumseh completed a planning study for the CIP area in January 2016 to identify a road design that would support the urban design and development objectives of the historic commercial zone. The CIP study, approved by Council in January 2016, recommended reducing the existing four lane cross-section on Tecumseh Road to a cross-section that only contains two driving lanes for general traffic and cycling, with the balance of the road space used for parking and pedestrian amenities.

Westlake Drive

The proposed configuration of the Lesperance Road/County Road 22 interchange will change the role of Sylvestre Drive and the future Westlake Drive. In the short term, Sylvestre Drive/ Westlake Drive will be an alternative for eastbound vehicles to exit CR22 and access Lesperance Road; in the long term it will be the only way to do so. Absent the ramp connection, Sylvestre Drive (County Road 22 to Westlake Drive) and Westlake Drive (Sylvestre Drive to Lesperance Road) would be designated as Collector Roads;

with the ramp connection both roads will function as Minor Arterial roads and a three lane approach is recommended for westbound Westlake Drive at Lesperance Road.

Active Transportation (AT)

Expansion of the Tecumseh AT network is a municipal focus for several reasons:

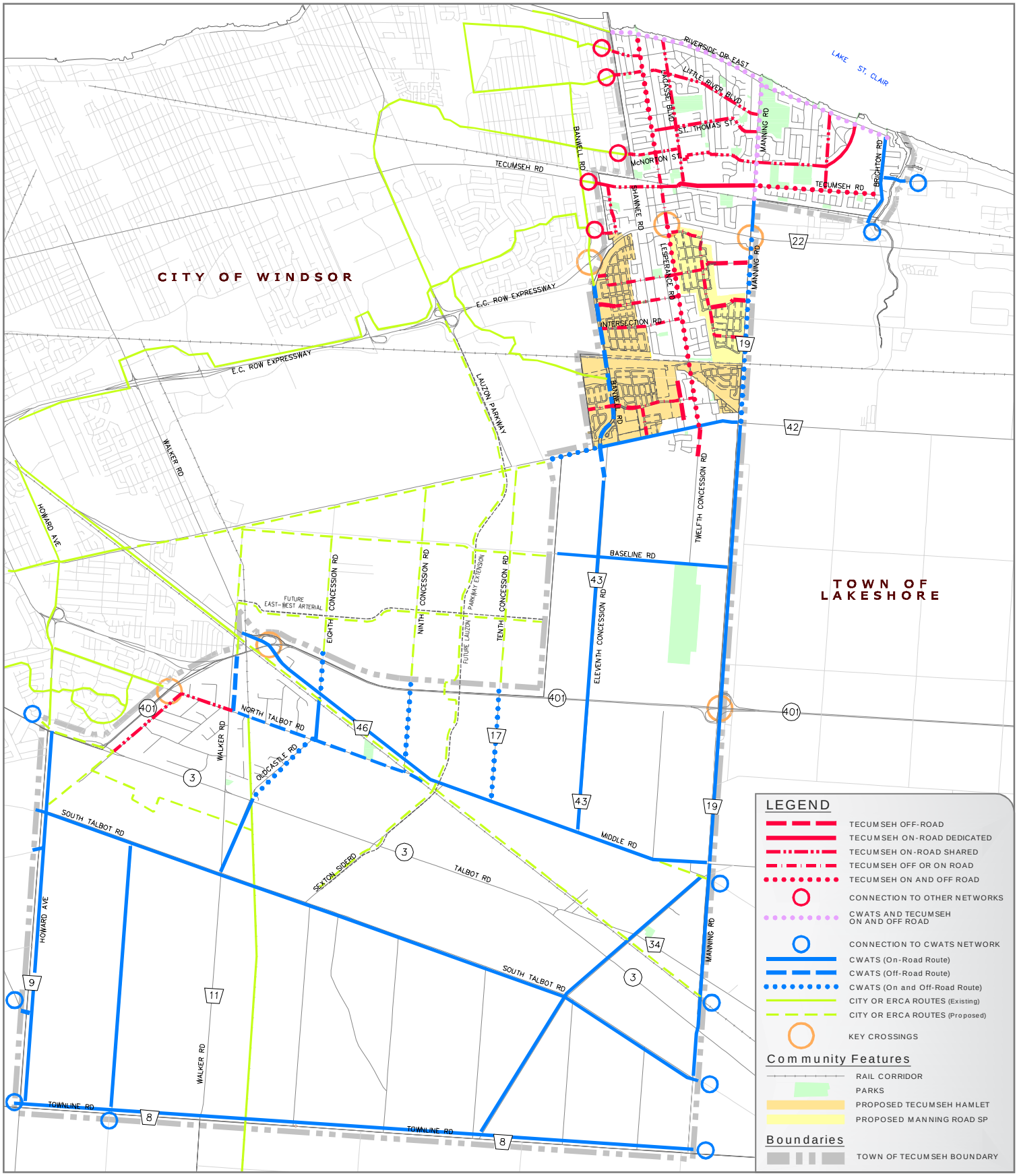
- It promotes Environmental Sustainability – Increased use of AT promotes denser development patterns and travel that does not produce harmful air emissions.
- It promotes personal Health – Municipalities and Health Units across Canada are well aware of the benefits that AT has for their community, and are working hard to encourage it through policy development, regulatory changes, planning and development, and transportation planning and design.
- It promotes Equity in transportation service – A well-planned and complete AT network serves users of all economic means and physical abilities.

There are a number of partners involved in the delivery of a continuous AT network throughout the Town of Tecumseh, notably the County and Essex Region Conservation Authority. Coordination between these partners is essential to develop an AT network that is connected across the Town, convenient, and safe for all users.

The Complete Streets approach to new streets will provide a foundation for an improved AT network, by guiding all new road projects to include appropriate AT infrastructure within the road corridor. AT infrastructure can be accommodated within the road corridor in many different configurations, for many different classes of roads.

A network of key AT facilities has been developed to ensure connectivity in the larger network. This network has been coordinated with plans and recommendations from the County Wide Active Transportation Study (CWATS) and the City of Windsor Bicycle Use Master Plan (BUMP).

Figures ES14 and ES15 show the recommended AT network.



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TRANSPORTATION MASTER PLAN UPDATE

ACTIVE TRANSPORTATION NETWORK

FIGURE ES14

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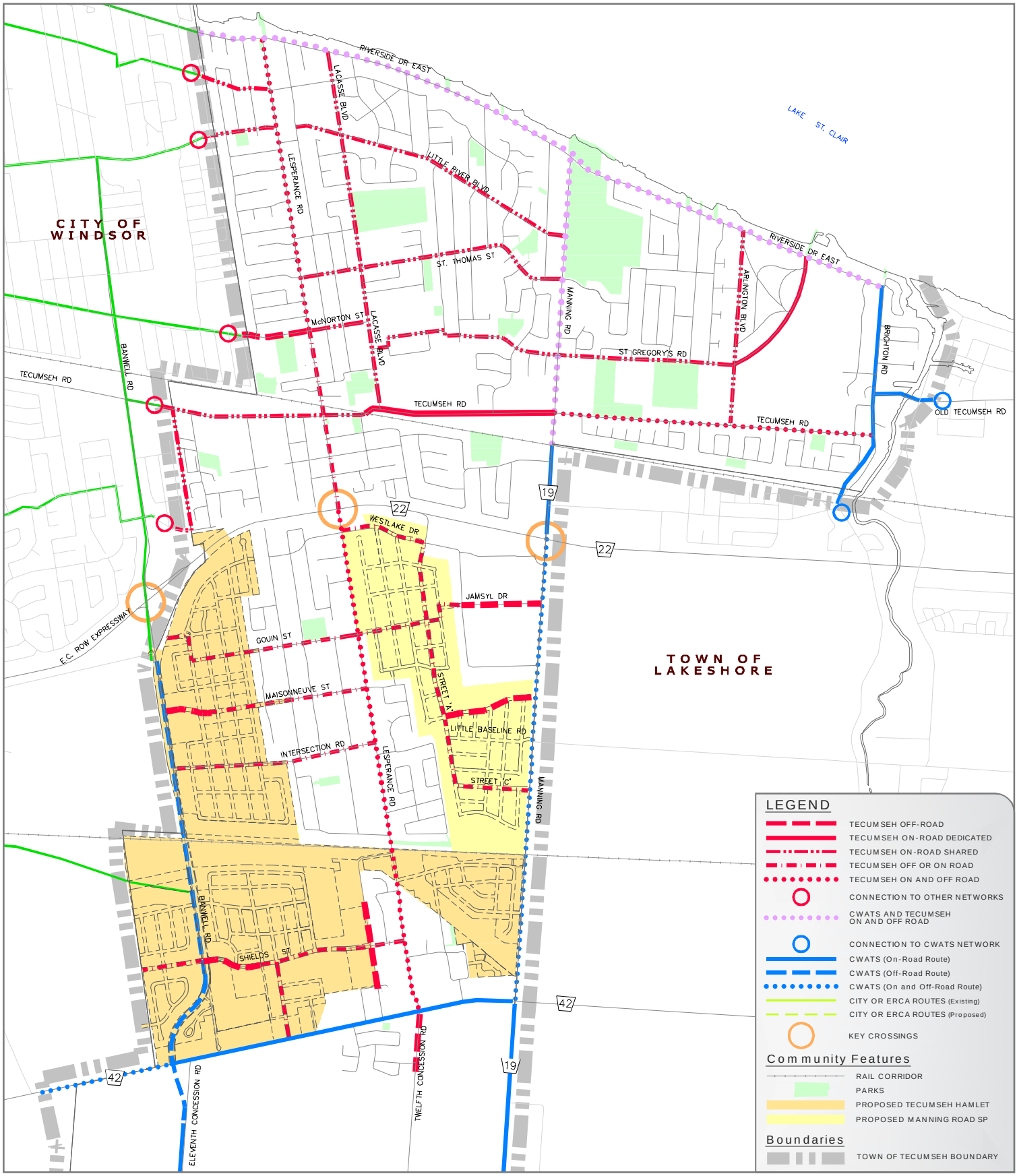

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ACTIVE TRANSPORTATION NETWORK (URBAN AREA)

FIGURE ES15

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Table of Contents

Figures

Tables

Appendices

1.0 Introduction

1.1 Purpose

The Tecumseh Transportation Master Plan (TTMP) presents a dynamic, sustainable multi-modal transportation strategy to accommodate future population and employment growth in the Town of Tecumseh. The TTMP establishes principles, policies and a network framework to guide the development of Tecumseh's future transportation system.

1.2 Background

The Town of Tecumseh has experienced significant growth over the past twenty years and further development is planned for the Maidstone, Oldcastle and Tecumseh Hamlets.

Population projections estimate that Tecumseh's current population of 25,240 people will grow to approximately 30,140 by 2034[1]. As with many communities experiencing growth, traffic congestion is a significant issue facing the Town. Moderate congestion is being experienced due to increasing local traffic and increasing levels of commuter traffic from the surrounding communities travelling to and from the City of Windsor through Tecumseh. Congestion is especially prevalent along the Town's main arterial roads during peak periods and in the northern settlement area. Traffic delays may continue to worsen as development continues within the Town and surrounding communities as a result of the continued dependence upon the motor vehicle in comparison to alternative modes of transportation.

1.3 Scope

The TTMP:

- Defines the existing and future (2034) problems and opportunities;
- Considers alternative planning strategies for transportation system improvements to meet the Town's needs;
- Provides the Town with a multi-modal transportation framework which incorporates active transportation solutions in order to plan and implement specific transportation improvement projects relating to municipal roads, public transit, cycling, walking, traffic management and transportation system operations;
- Develops transportation policies and guidelines to aid in the operation and planning of transportation infrastructure;
- Determines the short and long term needs of the Town's transportation system resulting from proposed and approved growth;

[1] This is the 2031 population is from the Urban Structure and Growth Management Discussion Paper, and is being used to represent the 2034 (horizon year) population for the TTMP.

- Satisfies 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;
- Reflects the thoughts of the residents of the Town expressed through public consultation during the Master Plan preparation; and
- Integrates the transportation master planning process with other planning initiatives in the Town.

The TTMP provides the Town of Tecumseh with the strategies, policies and tools needed to manage traffic safely, effectively, and cost efficiently, and to offer a range of transportation choices to build upon the Essex-Windsor Regional Transportation Master Plan (EWRTMP). The TTMP considers all modes of travel and addresses the complex transportation issues that the Town of Tecumseh is experiencing.

The plan integrates transportation and land use planning, and is founded on the notion of sustainable development which "meets the needs of the present without compromising the ability of future generations to meet their own needs." The plan for the future transportation network is, therefore, based on a proper balance between providing transportation alternatives, protecting the natural environment, enhancing economic competitiveness, and fostering a healthy, equitable society.

1.3.1 The Municipal Class EA Process

The TTMP has been undertaken through a public process designed to integrate municipal transportation planning and environmental assessment objectives into a comprehensive planning process. The study was conducted as a Master Plan in accordance with the requirements of Phases 1 and 2 of the Municipal Class Environmental Assessment (MCEA) process (October 2000, amended 2007, 2011, 2015):

Phase 1: Problem Identification; and
Phase 2: Consideration of alternative ways to solve the identified problems, giving recognition to environmental, social, economic, cost and transportation service considerations.

Master Plans are long range plans which integrate infrastructure requirements for existing and future land uses with environmental assessment planning principles. 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 projects. The Master Plan is not typically prepared

to address site-specific problems such as traffic operations at individual intersections or in specific neighbourhoods.

The TTMP provides the context for the implementation of any required 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.

1.3.2 Integration with Other Jurisdictions

The transportation system within the Town of Tecumseh is multi-jurisdictional, as the Town is served by highways under the jurisdiction of the MTO, major arterials controlled by the County of Essex, and a major boundary road controlled by the City of Windsor.

The TTMP builds upon various initiatives that have been completed or are currently underway by other jurisdictions such as the County, MTO and surrounding municipalities. These initiatives are described in more detail in *Section 9* and *Appendix A*. The TTMP does not revisit or redo the work that was completed as part of those studies; rather it integrates these external initiatives into the assessment. The TTMP will incorporate these initiatives as approved "base case" commitments and the focus of planned future improvements will be infrastructure under the jurisdiction of the Town of Tecumseh.

The County adopted the EWRTMP in 2005, and a number of area municipalities also have their own TMPs. This presents an opportunity for Tecumseh to understand the issues and plans in the adjacent and overlapping jurisdictions and develop compatible plans. The TTMP is a more detailed and scoped plan that addresses the transportation issues specifically facing the Town.

2.0 Study Area Description

The Town of Tecumseh (*Figure 1*) includes the former Town of Tecumseh, the former Village of St. Clair Beach, and the former Township of Sandwich South.

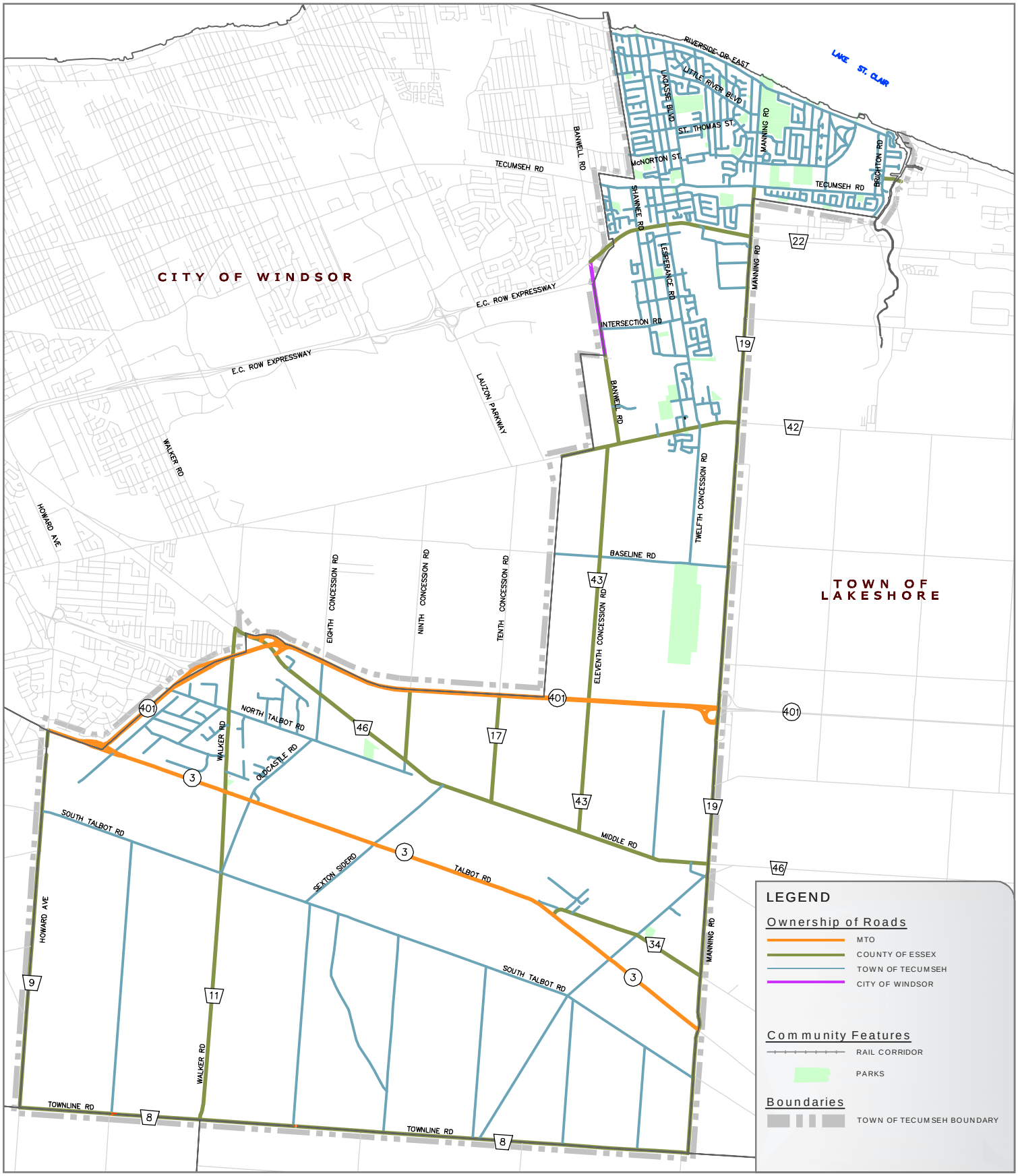
Figure 1: Town of Tecumseh Location Map

The Town is serviced by a multi-jurisdictional transportation network that includes Highway 401 and Highway 3 under the jurisdiction of the MTO, a number of major arterial County roads, CN and CP railways and Town roads. The transportation system requires a coordinated effort between the various jurisdictions to develop a multimodal transportation system serving the long term aspirations of the Town and providing adequate levels of service to users. *Figure 2 and Figure 3* provide a jurisdictional overview of the existing transportation system within the Town.

The transportation demands and travel patterns are a function of the existing land uses and the geographic distribution of residential, employment, and rural areas within the Town.

The residential areas primarily serve as a bedroom community, from which workers travel elsewhere in the County for work. The residential and commercial areas are primarily located in the north, and an employment area is located in the south-west, bordering onto the City of Windsor.

The roadway system in Tecumseh serves a number of transportation needs with a mixture of commuter, agricultural, industrial, and tourism related traffic. The County contains the busiest international border crossing between Canada and the United States, with over 41,000 cars and 3,000 trucks using this crossing daily. Travel patterns on major east-west roadways through the Town are impacted by this activity, particularly during peak periods.



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THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

TECUMSEH ROADWAY JURISDICTIONS

FIGURE 2

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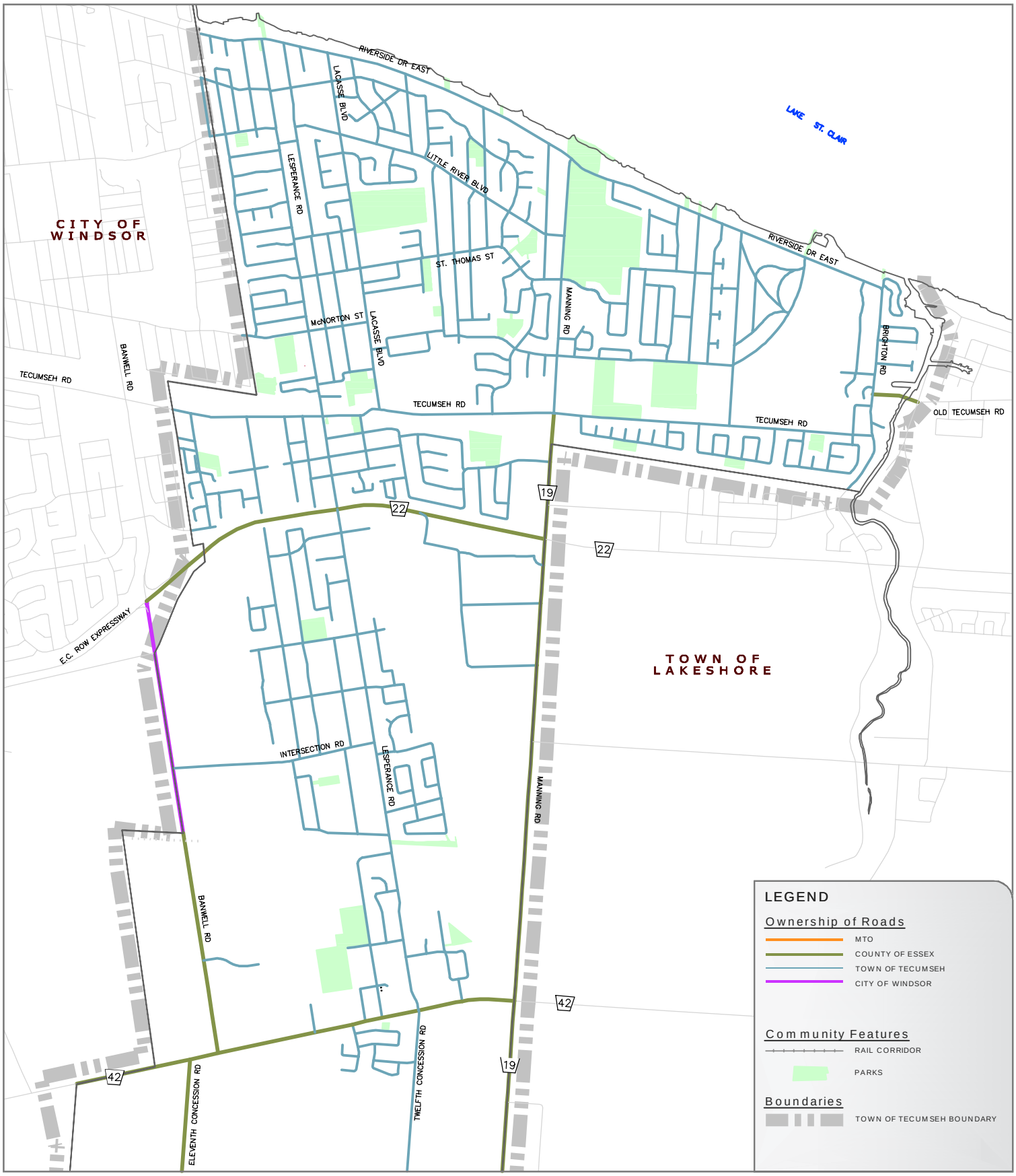

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THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

TECUMSEH ROADWAY JURISDICTIONS (URBAN AREA)

FIGURE 3

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3.0 Stakeholder Input

The development of the TTMP included a strong emphasis on community consultation through an integrated process involving a Technical Advisory Committee, Inter Municipal Advisory Committee (consisting of representatives from MTO, the County, and neighbouring municipalities), Council, local stakeholders, and the public.

The stakeholder consultation program included:

- Notice of Study Commencement (published March 13, 2008);
- Public Information Centre (June 26, 2008);
- Visioning and Issues Workshops (June 12, 2008; June 16, 2008);
- Technical Advisory Committee Meeting (June 13, 2008);
- Notice of Study Re-Commencement (published January 29 and February 5, 2016);
- Presentation of Draft Recommendations of the TTMP to Tecumseh Council (May 24, 2016); and
- Public Information Centre (June 22, 2016).

Several reoccurring themes and topics were expressed at the Public Consultation and Visioning Sessions:

- Need for an expanded Public Transit System within the Town of Tecumseh;
- Need for integrated Cycling and Pedestrian Facilities to be provided for recreational and commuting purposes;
- Need for Regional Connectivity of Cycling and Pedestrian Facilities;
- Concern about Traffic Congestion on main streets and required Road Improvements to resolve current congestion issues;
- Need to assess the Level of Service and Safety at major intersections within the Town; and
- Need for the Promotion of Active Transportation and Healthy and Sustainable Communities.

Appendix B presents a more detailed summary of stakeholder comments related to the TTMP.

4.0 Vision and Goals

The TTMP guides transportation network and service development in Tecumseh for the next 20 years; therefore, the TTMP strategies and projects must reflect the values of the residents and businesses of Tecumseh. A Vision statement for the Tecumseh transportation system was developed through consultation with the public and Town staff to guide the development of two key elements of the Plan:

1. Goals and TMP Directions to provide a general framework for the TTMP; and
2. Themes for the TTMP to guide TMP development.

4.1 Vision

Stakeholder consultation completed early in the TTMP process was used to generate the following Vision statement for the TTMP:

The TTMP provides an integrated and diverse transportation system for all residents and businesses that is safe, convenient, affordable and sustainable, and that facilitates the efficient movement of people and goods within the Town and to adjoining areas. The transportation system supports the goals and values of the Town, maintaining the rural and small Town character, protecting the environment and natural heritage, and promoting sustainable economic growth.

4.2 Goals and TMP Directions

Table 1 outlines the goals and directions for the TTMP.

Table 1: TMP Goals and Directions

Goals	TMP Directions
Integration *Integrate transportation networks with each other and with adjacent land use*	· Balance the needs of private, commercial, and recreational users and all modes of transportation through the development of complete streets. · Integrate transportation planning with land use planning to provide services and infrastructure in sync with growth and minimize negative impacts of the transportation network on adjacent land uses. · Plan compact communities with a mix of land uses so that people can shop, play and work close to where they live. · Develop a connected system of pedestrian and cycling routes as a continuous system with linkages to parks, open spaces, community facilities, schools and services.
Social sustainability *Provide accessible transportation for all residents*	· Develop a barrier-free transportation system that is accessible to all residents regardless of age, ability and socio-economic circumstances. · Improve access to isolated areas of the Town. · Design the transportation network to be suitable to shifting demographics within the region.
Environmental sustainability *Reduce environmental footprint of transportation*	· Increase the use of active modes of transportation to encourage healthy active lifestyles and reduce carbon emissions. · Minimize negative impacts of the transportation network on the natural environment. · Reduce automobile dependence and support alternatives to single occupant vehicle trips.

Goals	TMP Directions
Economic sustainability *Maximize return on investment in, and economic benefit of, transportation system*	· Plan a transportation system that will be affordable to operate and maintain for the long term. · Maximize access to businesses, institutions and festivals by employees, clients and visitors. · Increase the economic impact of bicycle tourism. · Work co-operatively with the Province, County and adjacent municipalities to improve transportation infrastructure to and within the Town.
Safety *Reduce transportation-related safety concerns*	· Properly maintain roads and bridges and make upgrades to improve safety where required. · Ensure the transportation system is safe for pedestrians, bicyclists and recreational vehicles in addition to vehicular traffic.
Efficiency *Maintain reasonable mobility levels for workers and freight*	· Optimize and upgrade the existing transportation infrastructure to increase capacity where required.
Accountability *Engage stakeholders in decision making*	· Involve citizens in the transportation planning process and foster support for transportation solutions that recognize the needs of Tecumseh and adjacent communities. · Measure and evaluate the performance of the transportation system on an ongoing basis.

4.3 Themes for the TTMP

The following are key themes for the TTMP:

Improve the integration of the existing transportation networks

- Improve safety, particularly for active modes – points of connection are often points of conflict
- Leverage existing transportation corridors to serve more
- Improve convenience of active transportation networks

Provide networks to encourage and facilitate transportation by Active Modes

- Minimize environmental footprint of transportation networks
- Maximize health and economic benefits of Active Transportation

Provide infrastructure to serve demands at preferred Performance Targets

- Avoid negative environmental and economic impacts of congestion
- Create economic opportunities through access for goods and workers
- Develop a network investment strategy that maximizes return on investment
- Prioritize safety in planning, design, and operations of transportation networks

Provide transportation systems that serve all citizens

- Reduce barriers in transportation system for persons with mobility challenges
- Provide a transportation network that is convenient and safe for all users, of all ages and abilities

5.0 Relevant Plans and Policies

Appendix A summarizes current and recently completed studies which relate to or impact the TTMP policies and/or infrastructure recommendations.

The studies are organized into five thematic areas:

- Official Plans and Transportation Master Plans;
- Environmental Assessment Studies;
- Traffic Studies;
- Secondary Plans; and
- Documentation on the Detroit River International Crossing and Rt. Hon. Herb Gray Parkway.

Each study's purpose, key findings, and recommendations are highlighted, with particular focus on those that are of importance to the development of the TTMP.

The Official Plan is especially important to the TTMP. The Town of Tecumseh is governed by the Official Plans for the three amalgamated municipalities. The three Official Plans remain in effect until repealed by the Town of Tecumseh and replaced with a new plan. A new, amalgamated Official Plan is currently being developed by the Town.

Relevant transportation objectives in the Town of Tecumseh Official Plan include:

- Eliminate key "T" intersections within the planning area so as to alleviate traffic congestion and potential hazardous conditions (Section 2.7 c); and
- Connect major east-west transportation routes into the Windsor and St. Clair Beach transportation network (Section 2.7 d).

The Sandwich South Official Plan has the following relevant transportation policies:

- During the planning horizon of this Official Plan document, the principal mode of transportation for Township residents will continue to be the private automobile. Consequently, the transportation policies of this plan envisage that with the exception of local trips to/from various locations within a neighbourhood, Township residents will continue to use the existing provincial highway, county road and Township road systems to travel for work and leisure purposes (Section 5.5).
- Sidewalks, walkways and bikeways are required as part of all new residential developments to facilitate cycling and pedestrian modes of transportation within and between residential neighbourhoods, recreational and community facilities (Section 5.5 d).
  Bus bays must be considered as part of future subdivision applications to accommodate an expanded regional transit service should service become available during the life of the Plan (Section 5.5 e).

The St. Clair Beach Official Plan has the following relevant transportation policy goals:

- The promotion of a concentrated commercial node at the intersection of Manning Road and Tecumseh Road (extending north to St. Gregory's Road); and
- The establishment of a footpath system linking public spaces within the community.

The Town of Tecumseh is currently reviewing and updating their Official Plan, and has produced discussion papers on a number of different issues of strategic importance. Two of these discussion papers are specifically relevant to the TTMP – the Growth Management/Urban Structure Discussion Paper (July 2014), and the Transportation Discussion Paper (June 2016). The TTMP is consistent with these two papers.

6.0 Existing and Planned Land Use

Figure 4 and Figure 5 show the Official Plan Land Use Designations within the Town of Tecumseh. *Table 2* summarizes the existing and future population estimates.

Table 2: Population Estimates

	2016	2021	2026	2034
Population	25,240	26,940	28,700	30,140

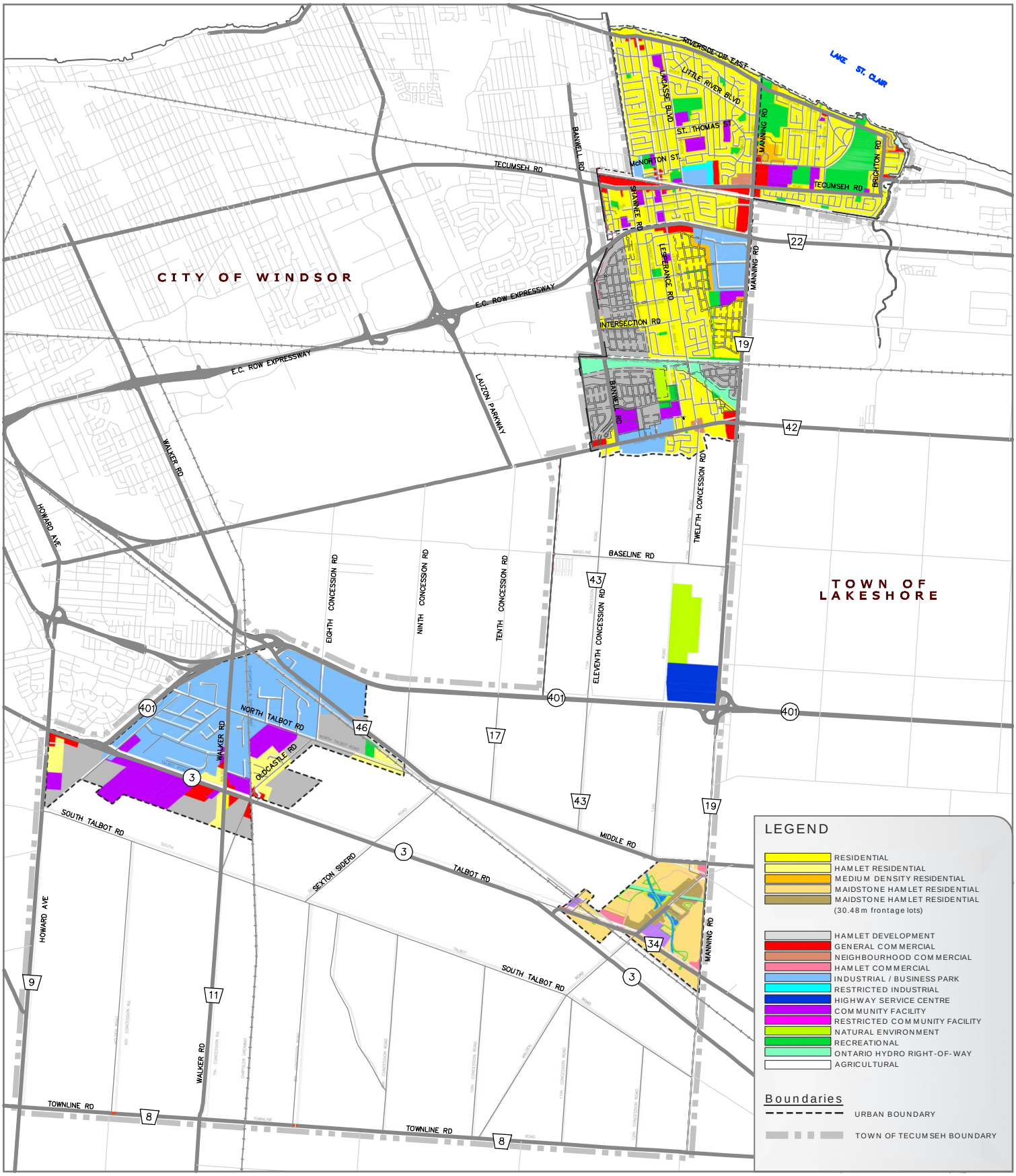
6.1 Tecumseh Hamlet and Manning Road Secondary Plans

The majority of the Town's population and employment growth is planned for the Tecumseh Hamlet and Manning Road Secondary Plan areas. These represent the bulk of the Town's expansion capacity within the urban boundary. The Town recently completed Secondary Plan studies for each of the areas. *Figure 6* shows the proposed zones within the Tecumseh Hamlet and Manning Road Secondary Plan areas. *Table 3* demonstrates the distribution of population and employment growth throughout the Tecumseh Hamlet and Manning Road Secondary Plan areas.

Table 3: Planned Development Yield in Tecumseh Hamlet and Manning Road Secondary Plan Area

Zone	Residential Units		Commercial GFA (1000sqft)	
	Low Density	Medium Density*	Conventional	"Main Street"
Tecumseh Hamlet				
N1	138	48	0	0
N2	177	486	60	158
N3	99	138	114	0
N4	182	120	0	0
SW1	162	120	31	0
SW2	58	204	0	0
SE1	94	90	0	0
SE2	158	288	51	0
SE3	35	162	0	0
SE4	0	42	0	0
E	203	96	0	0
Total	*1306*	*1794*	*255*	*158*
Manning Road Secondary Plan Area				
NE1	367	0	142	0
NE2	388	0	36	0
Total	*755*	*0*	*178*	*0*
Total	*2061*	*1794*	*433*	*158*

** Includes apartment units above commercial development.*



THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

OFFICIAL PLAN LAND USE DESIGNATION

FIGURE 4

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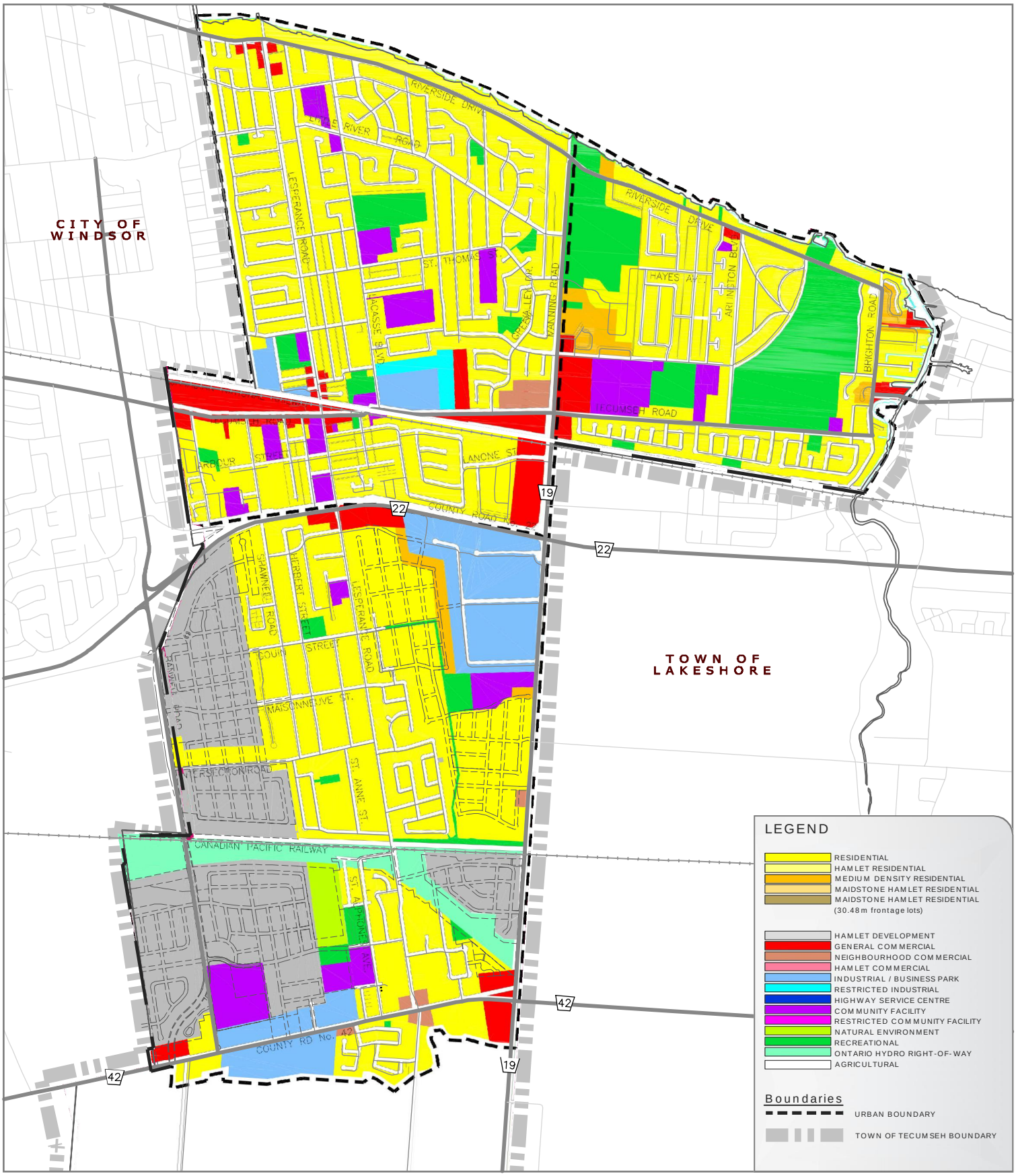

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

OFFICIAL PLAN LAND USE DESIGNATION (URBAN AREA)

FIGURE 5

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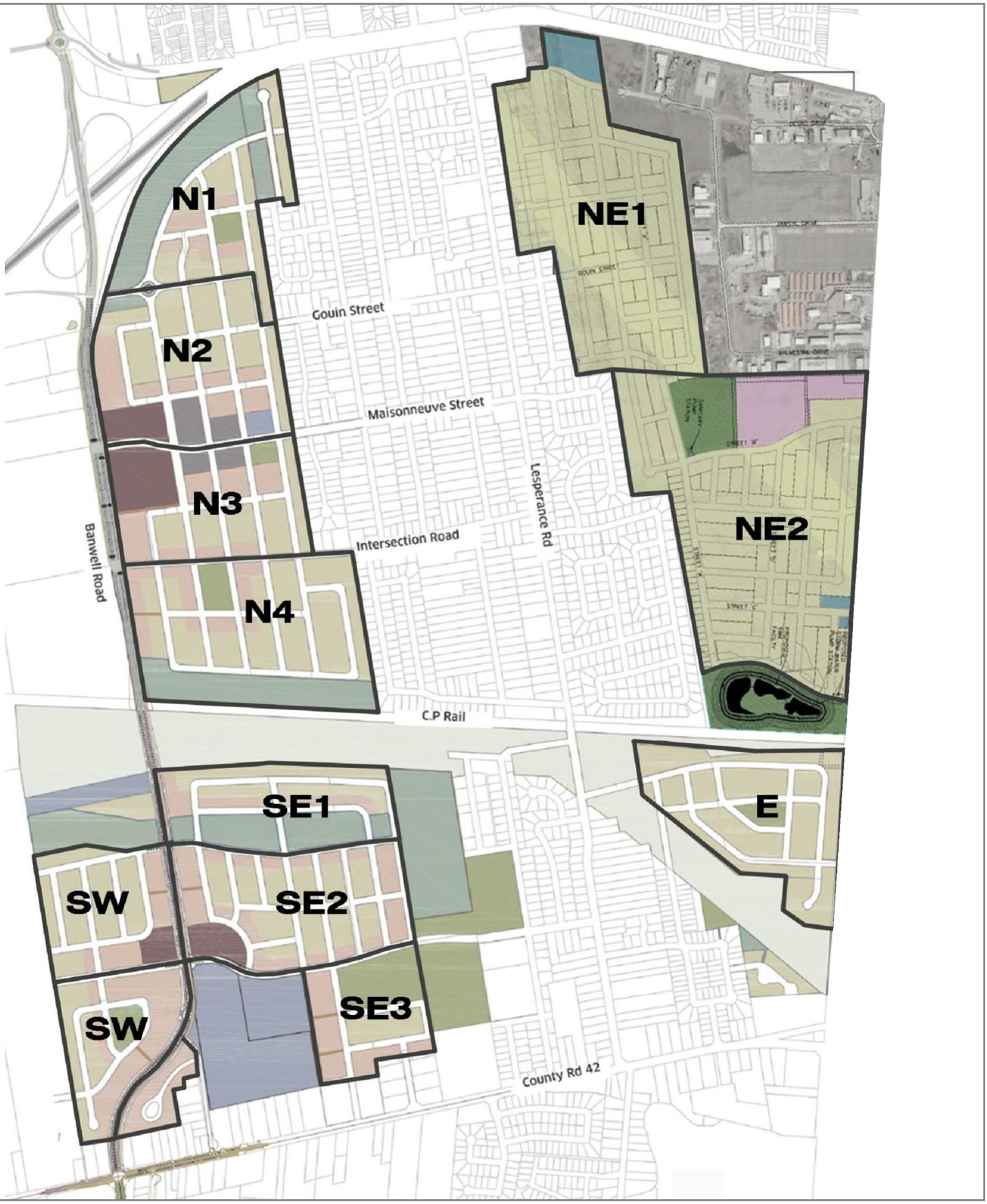

THE TOWN OF TECUMSEH
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TECUMSEH HAMLET AND MANNING ROAD SECONDARY PLAN AREA ZONES

FIGURE 6

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7.0 Existing Transportation Systems

This section describes the existing transportation network in Tecumseh, as well as committed plans for future expansion. The overall transportation system includes a network of roads, transit routes and active transportation infrastructure.

7.1 Roads

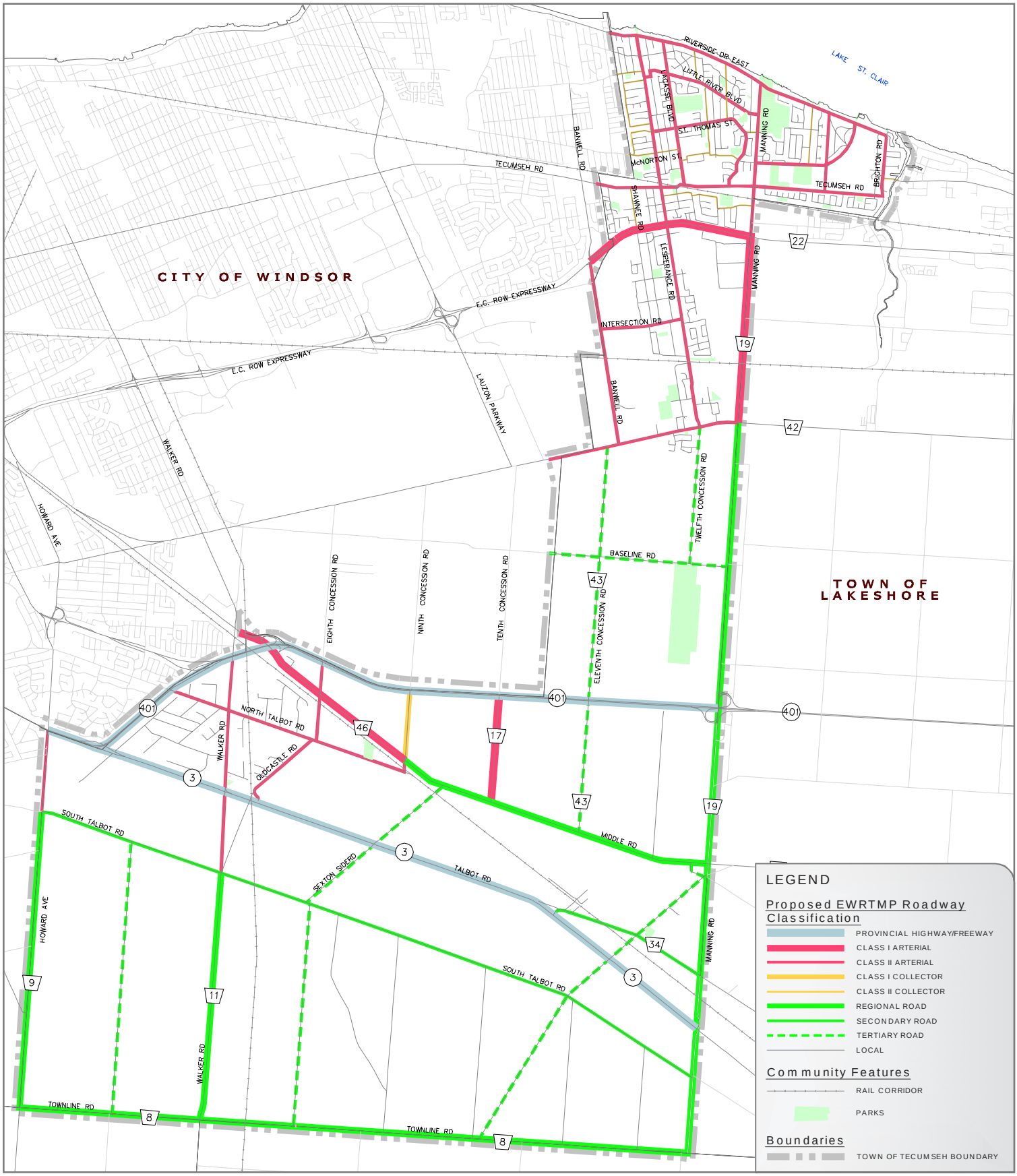
The jurisdictions of roads in the Town of Tecumseh are illustrated previously in *Figure 2 and Figure 3*.

7.1.1 Road Classification System

A road classification within a jurisdiction guides planning and operating decisions related to road design, land development, access management, road maintenance, and traffic operations. A comprehensive road network for a regional area usually includes roads designated as highways, arterial roads, collector roads, and local roads. Higher classification roads such as highways and arterials favour traffic mobility over longer distances as their primary function, while lower class roads such as collector and local roads have a more important role in providing access to individual properties.

There are currently four different plans for road classifications within the Town of Tecumseh:

- A road classification system was developed for Essex County in the EWRTMP. All road jurisdictions are included in this proposed plan. Within the Town of Tecumseh boundaries, eight road classifications were proposed (Freeway, Highway, Regional Road, Secondary Regional Road, Tertiary Regional Road, Class 1 Arterial, Class 2 Arterial, and Class 1 Collector). This classification system provides guidance for the function of the higher order roadways that are under the jurisdiction of the County. The proposed classification system is shown on *Figure 7* and *Figure 8*.
- The Official Plans for the three amalgamated municipalities comprising the existing Town of Tecumseh each provide a classification system for roads within the Town. The plans designate roads as either arterial, collector or local roads. Roads under the jurisdiction of the County are designated as arterials. These Official Plans have not yet been consolidated and considerable changes and modifications to the internal road network have occurred resulting in an inconsistent classification system.



THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

ESSEX WINDSOR REGIONAL TRANSPORTATION MASTER PLAN ROAD CLASSIFICATIONS

FIGURE 7

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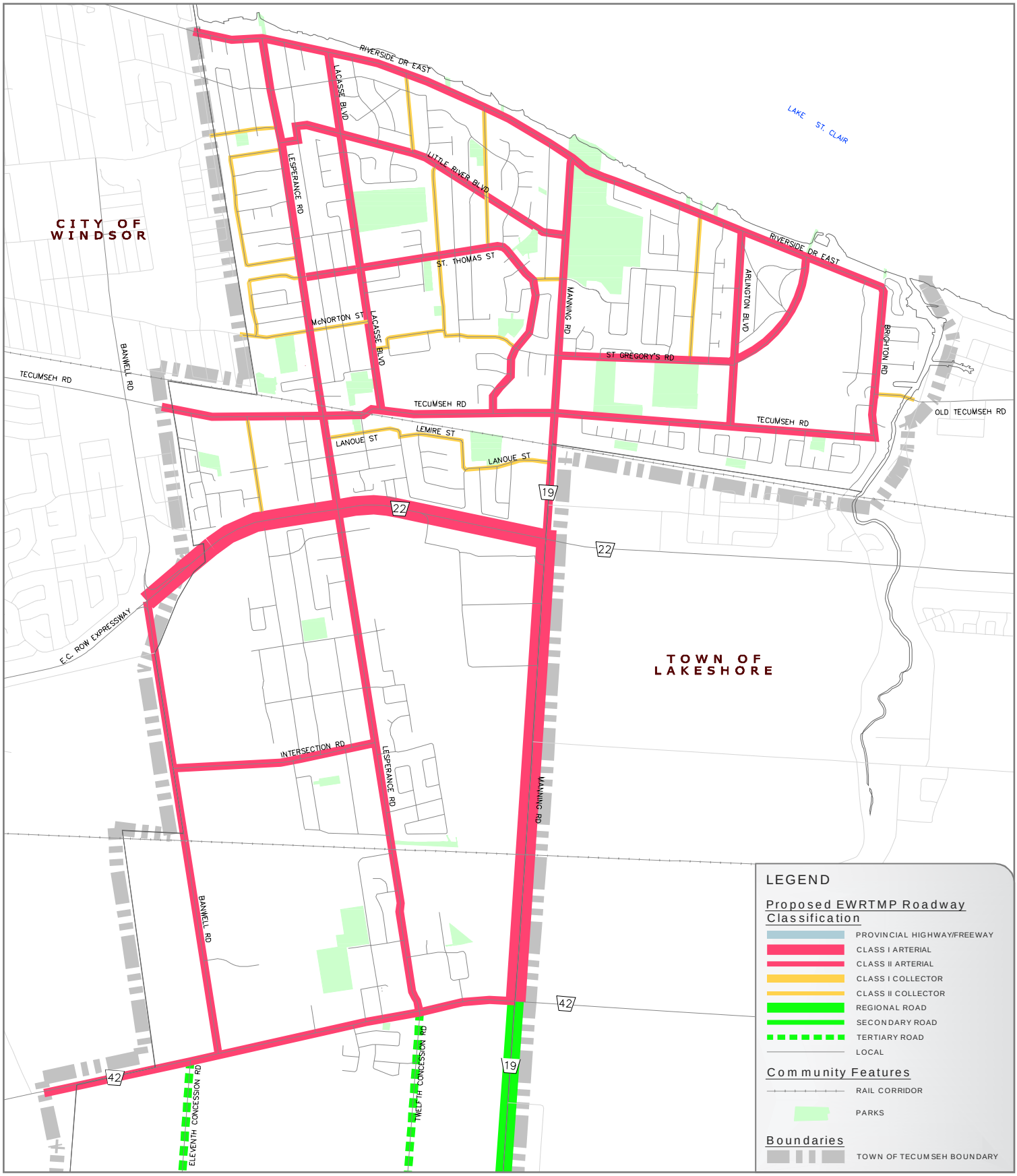

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

ESSEX WINDSOR REGIONAL TRANSPORTATION MASTER PLAN ROAD CLASSIFICATIONS (URBAN AREAS)

FIGURE 8

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7.1.2 Town of Tecumseh

There are 190 kilometres of roadway under the Town of Tecumseh jurisdiction. The roads can be categorized as follows:

- Tar and Chip Roads (15.5 kilometres)
- Asphalt Roads (174 kilometres)
- Other Road Surfaces (less than ½ kilometre)

The roadway system includes sixteen bridges (over 3 metre span), as well as eight railway crossings.

7.1.3 Ministry of Transportation (MTO)

The Town of Tecumseh is traversed by two major provincial facilities, Highway 401 and Highway 3 which are under the jurisdiction of the MTO.

Highway 401 – This 400 series, controlled access freeway serves interregional east-west travel. The six lane freeway is located through rural areas of the Town, and provides access to the Town through a full movement interchange at Manning Road (County Road 19) and Provincial Road (County Road 46). There are grade separated crossings of Highway 401 at the following locations:

- North Talbot Road
- Walker Road (County Road 11)
- 8th Concession
- 9th Concession
- County Road 17
- County Road 43

The freeway connects the Town of Tecumseh to the City of Windsor, the international border crossing and the other municipalities within the County and Southwest Ontario. MTO roads have the highest design standard of all roads in the Town, and are intended to accommodate trips over long distances, including heavy truck traffic.

Highway 3 – This four lane provincial highway provides for interregional travel through the southern portion of the County of Essex and the international border crossing. The majority of the facility is located with the rural areas of the Town and along the southern boundary of the employment areas in the southwest.

7.1.4 County of Essex

A network of roads under the County of Essex jurisdiction also serves the Town of Tecumseh (*Table 4*). The majority of arterial roads within the Town of Tecumseh are under the jurisdiction of the County or are designated as connecting links. In the EWRTMP the purpose of the County road network is stated to be: "To connect urban areas with each other and other communities by providing space for efficient,

cost effective and safe movement of people, goods, energy and information without disrupting community integration and function."

Table 4: County-Owned Roads within the Town of Tecumseh

	North/South	East/West
Urban Major Arterial	· County Road 19 (Manning Road), north of County Road 42 · County Road 43 (Banwell Road)	· County Road 22 · County Road 42
Rural Arterial	· County Road 9 (Howard Avenue) · County Road 11 (Walker Road) · County Road 19 (Manning Road), south of County Road 42	· County Road 8 · County Road 46 (North Talbot Road)
Rural Collector	· County Road 34 (Talbot Road, diagonal)	· County Road 34 (Talbot Road, diagonal)
Rural Local	· County Road 17 (Concession Road 10)	

The maintenance and capital costs for many connecting links are shared between the Town and the County of Essex. These include:

- Brighton Road (County Road 21) from the VIA Railway ROW to Tecumseh Road (County Road 2);
- Manning Road (County Road 19) from the VIA Railway ROW to Riverside Drive; and
- Tecumseh Road (County Road 2) from the Windsor/Tecumseh municipal boundary to the Lakeshore/ Tecumseh municipal boundary.

7.1.5 City of Windsor

Banwell Road north of the Canadian Pacific Railway, is under the jurisdiction of the City of Windsor.

7.2 Transit

7.2.1 Town of Tecumseh

The Town of Tecumseh initiated a transit system in December 2009 in the northern, most densely populated area of the Town. The service is operated by an independent contractor (First Student Canada) using equipment owned by the Town. Tecumseh Transit service is based on a single circuitous route tied into Tecumseh Mall with 36 stops and a one-hour headway. *Figure 9* shows the existing Tecumseh Transit service.

The service operates from 6:00am to 6:00pm Monday to Saturday. There is no service on Sundays. A Transit Windsor transfer stub or bus pass can be presented at Tecumseh Mall for free transfer onto the Tecumseh Transit Bus.

Figure 9: Town of Tecumseh Transit

7.2.2 City of Windsor

Transit Windsor also provides limited transit service in Tecumseh (see *Figure 10*). The Tecumseh area is serviced by TW Route 8. This route provides one-way service primarily along Walker Road in Tecumseh to North Talbot Road. The route extends north into the City of Windsor.

Weekday service commences at 5:45 a.m. southbound and terminates around 10:30 p.m. Morning weekday service and midday weekday service operates at a half-hour frequency; afternoon/evening weekday service operates at a half-hour frequency after 6:30 p.m. On Saturdays, service commences at 7:20 a.m. southbound and terminates around 11:00 p.m. Saturday service operates on a 40-minute frequency. On Sundays and holidays, service commences 8:20 a.m. southbound and terminates at 6:50 p.m. Sunday service operates on a 40-minute frequency.

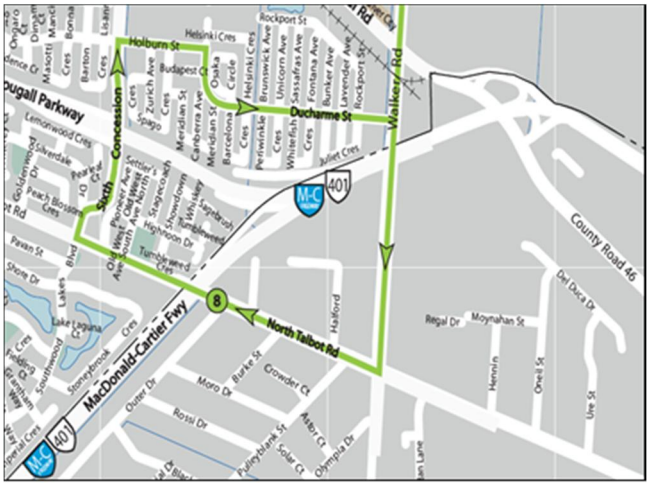

Figure 10: Transit Windsor Service Within Tecumseh

7.3 Active Modes

7.3.1 Town of Tecumseh

The Town of Tecumseh does not have established standards for the design and construction of cycling and pathway facilities. Within Tecumseh, there are a variety of existing cycling and pathway facilities. These serve a range of uses including local commuting and recreational riding and touring. Some facilities are or could be significant regional cycling connections, while others are more local in nature.

Facilities for cyclists and pedestrians use a typical approach and provide a level of service found elsewhere in Southwestern Ontario. It has been observed that cyclists of varying ages and skill levels make use of un-marked roadways throughout the Town.

Sidewalks and narrow asphalt pedestrian pathways through municipal parks are standard. Most pedestrian-oriented facilities are short in length and low-profile.

For utilitarian cyclists travelling at higher speeds over longer distances, the only existing, effective on-road facilities are:

- A single section of cycling lane on Tecumseh Road;
- Shared use wide curb lane and multi-use pathway on Brighton Road from the municipal boundary to Riverside Drive; and
- A few multi-use pathways in road rights-of-way.

Within Tecumseh, the Chrysler Canada Greenway Trail is the only significant existing regional-scale facility, it also has potential to become part of an expanded cycling facility network. The Trail stretches from the southern, rural part of Tecumseh south and west for approximately 50 kilometres. It is a generously-wide, granular-surfaced multi-use pathway centred within a wide 'greenbelt.' It is bisected by a number of roads, which render the Trail effectively discontinuous due to a lack of adequate road crossing facilities.

Some of the low-traffic, rural roads in Tecumseh are used for recreational cycling by cycle touring groups and cyclists training for road racing and triathlon sports. None have been provided with any designated facility, signed route, or 'Share the Road' signs. Nearby, Amherstburg is a popular destination for touring cyclists.

7.3.2 County of Essex Network

The County completed a County Wide Active Transportation Strategy (CWATS, 2012), which establishes a County-wide cycling and pedestrian network, and outlines the implementation plan over the next 20 years. The study also includes planning, design, and operational guidelines for the network, as well as supporting policies and programs. The recommended network is shown in *Figure 11*.

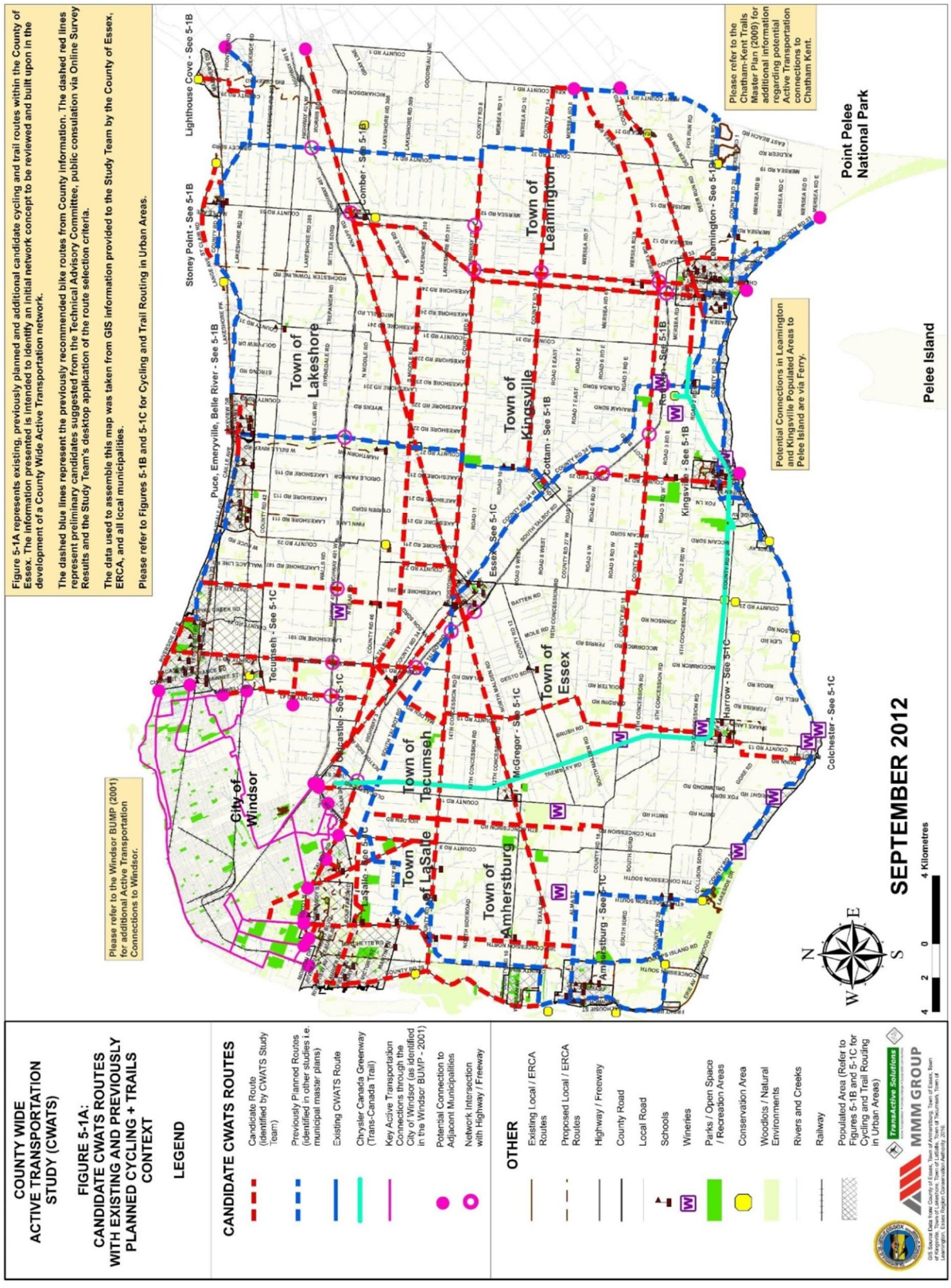

Figure 11: CWATS Network

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8.0 Transportation Strategy

The transportation strategy presented in this section reflects the principle directions of the TTMP, and establishes a framework for the policies, services, and networks proposed to achieve the vision and goals.

8.1 Transportation Modes

8.1.1 Auto

Conventional automobile travel will remain the most common mode of travel in Tecumseh. Automobile travel serves both inter- and intra-municipal functions, and is a flexible mode appropriate for a wide variety and geography of trips. Automobile travel is used within the Town for discretionary, school, and recreational trips, as well as commuter trips connecting to the nearby jurisdictions of Windsor, Lakeshore, and other County of Essex destinations.

8.1.2 Transit

There are three distinct transit services currently operating or planned through the Town of Tecumseh:

1. Tecumseh Transit provides limited all day, fixed route, fixed schedule conventional and accessible transit service in Tecumseh.
2. Transit Windsor provides one limited all day fixed route in Tecumseh, using fixed schedule conventional transit service.
3. The County is considering developing a regional transit service that would include two urban connectors through Tecumseh (semi-express service with limited stops).

Two types of transit service have proven to be valued and desired by Tecumseh residents:

1. Commuter peak period connections to Windsor and the Transit Windsor network.
2. Accessible, all-day service connecting community origins and destinations.

Tecumseh residents are currently provided with both of these services with the existing transit in the Town, and would only be served better by transit should the County's plan move to implementation.

Operation of multiple transit services in the same jurisdiction or in close proximity to each other requires coordination of service planning and fare strategies. The Town will continue to track the development of County of Essex transit within Tecumseh, and work with the County and Transit Windsor to coordinate service delivery.

Transit service will continue to run in mixed traffic on the general road network. Routes and schedules will be reviewed on a regular basis and adjusted as necessary to meet level of service and network performance targets.

8.1.3 Active Modes

The active transportation network will be improved in order to address the principles and goals of the TTMP and encourage sustainable transportation for all users. Accordingly, the role of active modes will be elevated, particularly for local trips within urban areas, which are well-suited towards active transportation. Central to this is the adoption of a complete streets framework and philosophy in the planning and design of streets.

8.2 Transportation Networks

8.2.1 Roads

The road hierarchy will be updated to reflect the hierarchy developed in the Essex-Windsor Regional TMP and the needs of the Town.

A complete streets framework will be developed and adopted to change the approach to planning and design of streets. This framework will better serve the needs of active modes and better integrate streets into adjacent communities.

Road widenings and/or extensions and intersection modifications needed to meet future growth of communities will be identified.

Several operational guidelines will be developed to determine intersection and crossing controls, and to manage vehicle speeds.

8.2.2 Active Modes

Active transportation facilities will be provided within road corridors to maximize the value of existing road corridors for all users and promote active transportation as a viable and convenient mode. This approach reflects a Complete Streets philosophy and is in line with efficient use of municipal corridors. Particular attention will be paid to providing active transportation facilities within the Settlement areas, particularly along the primary road corridors, to create a spine for local walking and cycling.

Pedestrian crossings of arterial and major collector roads are critical elements of the pedestrian network and will be provided with greater frequency to connect with important community facilities (schools, parks, etc.).

Sidewalks have been provided in urban areas in Tecumseh, and are extensive, but lack best-practice considerations for accessibility. Attractiveness, convenience and connectivity have been given low priority at times in planning and design of subdivisions, roadways, and intersection modifications.

A more extensive cycling network will be developed. The cycling network will be composed of different types of cycling facilities, chosen based on appropriateness for their location. Conditions for implementing various facilities will be dictated by the Ontario Traffic Manual Book 18. It is important to note that the cycling network considered in the TTMP does not include recreational trails, as these are often on private land managed by parties other than the Town. Municipal cycling facilities will be provided to provide access to important trail facilities, where possible. Trails are addressed more fully in the Town's Parks and Recreation Master Plan.

9.0 Strategic and Operational Policies

9.1 Strategic Policies

Strategic policies are an extension of the principles for the TTMP presented in *Section 4*. The policies convert these principles into specific actions and directions staff and stakeholders can implement to create the desired transportation system.

The Complete Streets Design Handbook in *Appendix E* is the comprehensive integrated framework for the strategic policies for the TTMP, and describes the preferred approach to planning and designing road and active transportation networks within a complete streets lens. Principle areas of strategic policy that are addressed include:

- Complete Streets
- Road Hierarchy
- Road Network Planning
- Roundabouts
- Traffic Calming

9.1.1 Complete Streets

The Town of Tecumseh adopts a "complete streets" approach to the planning, design, operation, and maintenance of roads. Going forward, focus of streets will shift from a strong emphasis on auto mobility to a more balanced philosophy to better serve all modes to meet the needs of travellers of all ages and abilities.

The Complete Streets framework seeks to balance the many roles of streets to maximize their potential as a public resource. A complete street is appropriate for all expected functions and offers safety, comfort, and convenience to all users regardless of age or ability. Complete streets must be implemented with a context sensitive approach, as different users take priority in different locations. Corridors must be assessed from both a local (small-scale) perspective and a global (large-scale) perspective, to understand their function to all users and all trips. In areas where there is high demand for several modes, the Town will seek to balance the needs of all users in a sustainable and context sensitive manner.

9.1.2 Road Hierarchy

The Town of Tecumseh adopts a road hierarchy based on seven road classes:

- *Commercial Main Street;*
- *Minor Arterial (Urban);*
- *Collector (Urban);*
- *Local (Urban);*
- *Minor Arterial (Rural);*
- *Collector (Rural); and*
- *Local (Rural).*

The development of an understandable road classification system is a fundamental requirement for the Town of Tecumseh. A road classification system is the orderly grouping of roads into systems according to the type of service they provide to the public. When a road system is properly classified, the characteristics of each road are readily understood. Classification assists in establishing the geometric design features for each group of roads, consistent with the short and long term operational needs of that particular group.

Figure 12 and *Figure 13* show the Tecumseh road network and recommended road classes. The Complete Streets Design Handbook in *Appendix E* contains further information on the typical planning, design, and operating characteristics of associated with these road classes that have been developed to reflect a Complete Streets approach to developing a street network. These characteristics will be used in the planning and design of new roads in Tecumseh and will be applied to existing roads when reconstruction projects are undertaken.

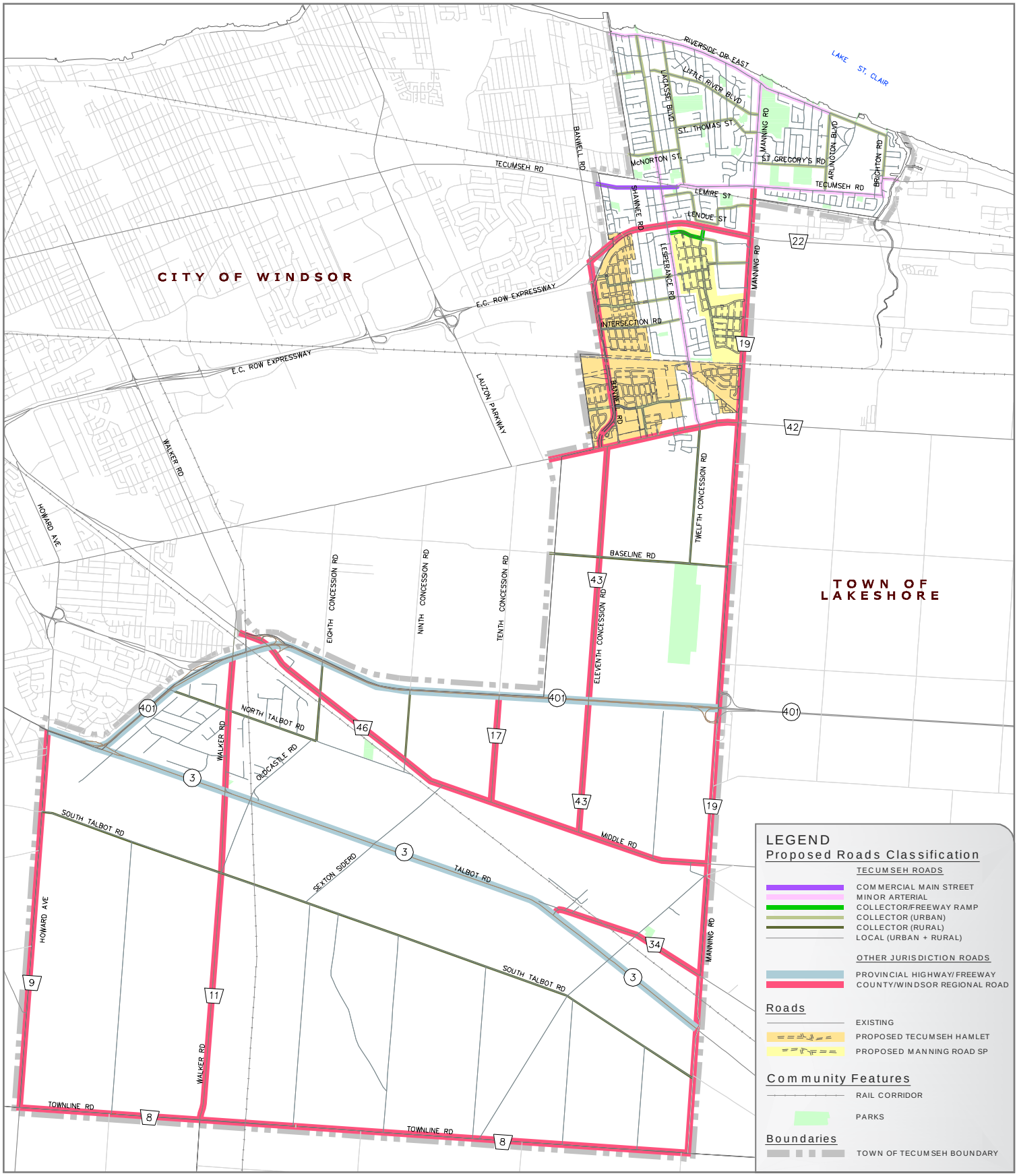
Sylvestre Drive and Westlake Drive have been designated Collector/Freeway Ramp. Absent the ramp connection, Sylvestre Drive (County Road 22 to Westlake Drive) and Westlake Drive (Sylvestre Drive to Lesperance Road) would be designated as Collector Roads; with the ramp connection both roads will function as Minor Arterial roads and a three lane approach is recommended for westbound Westlake Drive at Lesperance Road.

9.1.3 Road Network Planning

The Town of Tecumseh will create a highly connected street network to provide access for all users within and between neighbourhoods, and to prevent large vehicle throughways from becoming barriers.

Highly connected networks:

- distribute vehicular demand more evenly across the system, and reduce average speeds;
- reduce the number of vehicle-kilometres travelled, and increase the number of pedestrians and cyclists; and
- shorten emergency response times and improve the efficiency of deliveries.



THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

TECUMSEH TMP ROAD CLASSIFICATIONS

DILLON CONSULTING

Dillon Proj.No.: 15-2937

STATUS: FINAL

DATE: NOVEMBER 2016
REVISED: JUNE 2017

SCALE
0 500 1500m

FIGURE 12

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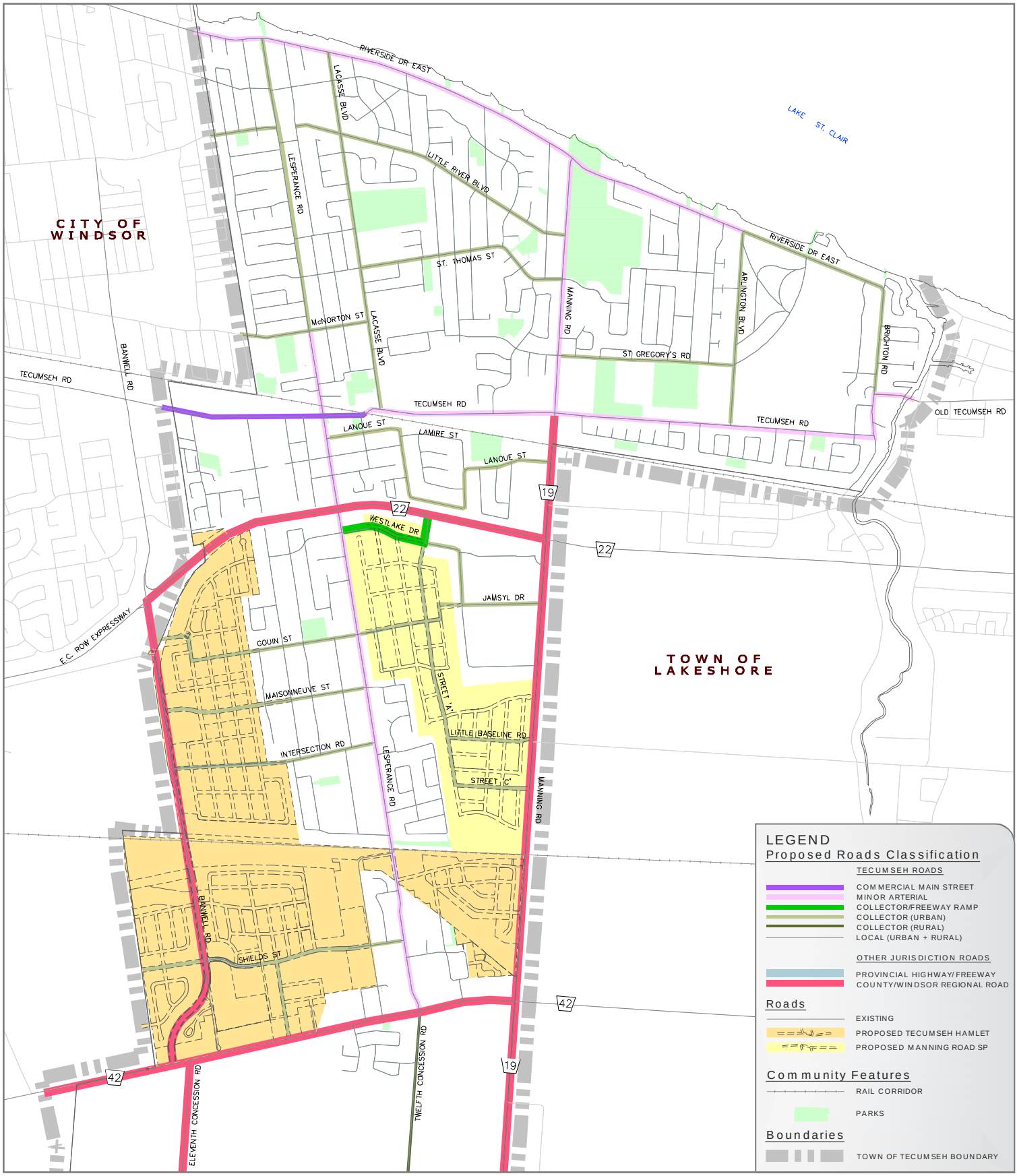

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

TECUMSEH TMP ROAD CLASSIFICATIONS (URBAN AREA)

DILLON CONSULTING

Dillon Proj.No.: 15-2937
STATUS: FINAL
DATE: NOVEMBER 2016
REVISED: JUNE 2017

SCALE
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FIGURE 13

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9.1.4 Roundabouts

The Town of Tecumseh considers roundabouts to be an option for traffic control at all intersections on its Minor Arterial and Collector roads where traffic control signals are needed.

Roundabouts have emerged in North America as an environmentally-friendly and cost-efficient alternative to traffic signals or all-way stops for traffic control at intersections, particularly in new residential subdivisions or in locations where traffic signals are warranted. Particular attention is required to the design of pedestrian and cycling facilities through roundabouts to provide safe passage for vulnerable users.

Roundabouts can be less convenient for pedestrians than signalized intersections because the placement of the pedestrian crossings creates a longer overall path to traverse a roundabout and because pedestrians do not have the right-of-way at roundabouts unless traffic control measures (such as pedestrian crossovers) are provided. However, at signals, pedestrians may experience lengthy delays as they wait for the walk phase. Signalized intersections also offer positive guidance to pedestrians by providing visual pedestrian signal indications informing pedestrians when they can and cannot cross. In this respect, the decision process for pedestrians requires less judgment at a signalized intersection than at a roundabout. However, pedestrians are still vulnerable at signalized intersections because of permissive left-turns, right-turns on red, higher speeds and drivers violating the traffic signals.

The introduction of supplemental traffic control for pedestrians in high pedestrian volume areas reduces the traffic flow benefits of roundabouts; as such, roundabouts may not be the preferred intersection control measure in areas with high pedestrian volumes.
When designing roundabouts, it is important that pedestrian accessibility issues be accommodated (e.g. treatments to help persons with vision loss use the crossings or splitter island pedestrian refuges designed in accordance with CSA Standards Article 6.6.2.2.2.).

9.1.5 Traffic Calming

The Town of Tecumseh will use Traffic Calming measures as a tool to reduce speeds on existing roads where they have determined that observed operating conditions are not in line with desired conditions, accounting for the varying roles of different road classes in carrying vehicle traffic.

Traffic calming is defined as “physical devices aimed at slowing the speed of motorists to the desired speed, given the context of the street”. Traffic calming measures must be implemented in a way that respects the intended role of the street. Higher order streets (arterials and minor arterials) are intended to have higher operating speeds and carry higher volumes of trucks. These streets form the backbone of the transit system as well as the emergency response network, and are not appropriate for all traffic calming measures. The needs of all users must be considered in developing a traffic calming plan.

9.2 Operational Policies

Operational policies describe methods for implementing, installing, constructing, and operating infrastructure, signage, and pavement markings. These can alternatively be described as "practices" instead of "policies", as they document the Town's preferred methods for network operations.

The following operational policies are included in *Appendix F*:

- All-Way Stop Control Guidelines
- Community Safety Zones
- Speed Zone Guidelines

10.0 Transportation System Needs

10.1 Roads

A demand forecasting exercise was completed for the TTMP to determine existing and forecasted (2034) travel demands based on planned population, employment, and land use in the Town. The forecasts provide information to identify deficiencies, evaluate capacity-related infrastructure solutions, and assess strategies aimed at reducing vehicular travel demand.

Travel demands were estimated using the County of Essex PM Peak Hour Model. The model uses TransCAD software and provides a computer simulation of the Town's road network and travel demands based on population and employment forecasts. The horizon year used for the TTMP was 2034.

10.1.1 Strategic Road Projects

Appendix C presents the details of the strategic road needs assessment.

In order to assess overall transportation conditions in the Town, a series of screenlines were used. A "screenline" is an imaginary or real boundary that defines a broad corridor through which traffic flows. A screenline may represent one road link or several road links.

The assessment compares the capacity of the roads crossing a screenline with the volume of traffic forecast using the model for that same screenline, to determine whether there will be adequate roadway capacity in the future.

The volume to capacity ratio (v/c) for an intersection or roadway indicates the degree of saturation experienced by the roadway. A v/c ratio of 1.0 represents the "theoretical capacity" and usually represents forced flow conditions. The "practical capacity" is dependent upon what level of service is considered acceptable for the surrounding environment and traffic patterns. Capacity issues in the network are identified where the v/c exceeded 0.90 (90% of theoretical capacity).

Strategic forecasts were then refined to the intersection level of detail to assess detailed operating conditions within specific corridors. This level of analysis allowed for the determination of geometric and operational improvements at an intersection level of detail.

Existing Congestion:
The screenline analysis shows that the vast majority of roadways within the Town are currently operating at a LOS C or better, which is considered acceptable. The exceptions are:

- Lesperance Road N/B north of Tecumseh Road;
- Banwell Road N/B south of County Road 22;
- Riverside Drive W/B west of Lesperance Road;

- County Road 22 W/B west of Lesperance Road; and
- County Road 22 W/B east of Lesperance Road.

2034 Baseline Model (no road improvements assumed):
The Strategic Transportation model identified a number of future deficiencies in 2034 within the Town of Tecumseh, prior to considering the impacts of the planned County and MTO infrastructure projects. These include:

- Lesperance Road N/B north of Tecumseh Road;
- Banwell Road N/B south of County Road 22;
- Riverside Drive W/B west of Lesperance Road;
- County Road 22 E/B west of Lesperance Road;
- County Road 22 W/B west of Lesperance Road; and
- County Road 22 W/B east of Lesperance Road.

Planned Roadway Modifications (to 2034)
Several reports were reviewed in conjunction with the preparation of this TMP (the full list of reports reviewed is available in *Appendix A*). These reports discuss a number of roadway modifications. *Table 5* summarizes the planned roadway modifications assumed to be in place by 2034.

Table 5: Planned Roadway Modifications In Place by 2034

Source	Corridor	Description of Change	Anticipated Year of Construction
County Road 19 (Manning Road) & County Road 22 Improvements Class Environmental Assessment and Preliminary Design (2008)	Manning Road (County Road 19)	County Road 46 Intersection Improvements	2019
		County Road 34 Intersection Improvements	2020
		County Road 22 to County Road 42 (4 lanes)	2023
		County Road 42 to Hwy 401 (4 lanes)	2025
		County Road 46 to County Road 34 (4 lanes)	2025
		Hwy 401 Interchange	2031
		Hwy 401 to County Road 46 (4 lanes)	2031
County Road 43 / Banwell Road from the CPR Tracks (City Limits) to South of County Road 42 Class Environmental Assessment Study (2009)	County Road 22	County Road 19 Interim Intersection Improvements (Phase 1)	2017
		Lesperance Road Exit Ramp Improvements (Phase 2)	2018
		Roundabout at County Road 42 and Banwell Diversion	2020
	Banwell Road (County Road 43)	Banwell Diversion (South)	2032
		Banwell Diversion (North)	2032

Source	Corridor	Description of Change	Anticipated Year of Construction
City Of Windsor Banwell Road Class Environmental Assessment Study, Corridor Assessment Draft Report (2015)	Banwell Road (County Road 43)	Widen from 2 to 4 lanes from CPR corridor to Tecumseh Road	2034
		Create roundabout at Mulberry Drive	2034
		Implement interchange modifications at E.C. Row Expressway	2034
Tecumseh Hamlet Secondary Plan	Banwell Road (County Road 43)	Create new connection opposite E.C. Row Expressway ramp	2034
Tecumseh Community Improvement Plan	Tecumseh Road	Streetscape improvements, including on-street parking from Town of Tecumseh boundary to the rail crossing	Initial 2 Phases Beginning in 2018
Lauzon Parkway Improvements Class Environmental Assessment Study (2014)	Lauzon Parkway	Widen from 2 to 4 lanes from E.C. Row Expressway and County Road 42	2021
		Create a new 4-lane corridor from Highway 401 to south of Highway 3	2021
		Hwy 401 to County Road 46 (4 lanes)	2022
		County Road 46 to Hwy 3	2023
		Create a new 4-lane corridor between County Road 42 and Highway 401	2031
		Create a new interchange at Highway 401	2031
		Widen from 4 to 6 lanes from E.C. Row Expressway to Highway 401	2031
	County Road 42	Roundabout at County Road 19	2019
		County Road 43 to Lesperance Road (5 lanes)	2020
		Lesperance Road to County Road 19 (4 lanes)	2021
		Widen from 2 to 4 lanes from Walker Road to Lauzon Road	2021
		Widen from 2 to 4 lanes from Lauzon Road to Town of Tecumseh boundary	2021
		Widen from 2 to 4 lanes from Town of Tecumseh boundary to County Road 43	2031
	New East-West Arterial	Create a new 2-lane road from County Road 17 to 7th Concession Road (phase 6, by 2031)	2031

** 2034 capacity differs from existing capacity due to planned projects.*

2034 Model with Assumed Projects:
The Strategic Transportation Model did not identify any capacity deficiencies in the 2034 network, accounting for the assumed projects.

Table 6 provides a summary of the screenline capacity assessment for the existing and future horizon (2034). The 2034 scenario assumes a 2-lane cross-section on Tecumseh Road (which is assumed to have a 50km/h speed limit) as well as other planned road improvements.

Table 6: Roadway Characteristics and Screenline Performance

Screenline	Street	Direction	Capacity (1-way)	Peak Hour Volume		v/c		
				Existing	2034 Simulated	Existing	2034 Simulated	
							Existing Network	2034 Network
North/South 1 - North of Tecumseh Road	Lesperance Road	NB	800	681	602	0.85	0.90	0.75
		SB	800	465	448	0.58	0.64	0.56
	Manning Road	NB	1600	317	452	0.20	0.22	0.28
		SB	1600	237	289	0.15	0.16	0.18
	Brighton	NB	800	66	68	0.08	0.08	0.09
		SB	800	65	65	0.08	0.08	0.08
	Sub Total	*NB*	*3200*	*1064*	*1122*	*0.33*	*0.35*	*0.35*
		SB	*3200*	*767*	*802*	*0.24*	*0.26*	*0.25*
North/South 2 - South of County Road 22	Banwell Road	NB	800 1600*	679	735	0.85	0.98	0.46
		SB	800 1600*	513	738	0.64	0.79	0.46
	Lesperance Road	NB	800	137	124	0.17	0.18	0.16
		SB	800	144	109	0.18	0.19	0.14
	Manning Road	NB	1800	572	722	0.32	0.34	0.40
		SB	1800	405	440	0.23	0.27	0.24
	Sub Total	*NB*	*3400*	*1388*	*1581*	*0.41*	*0.45*	*0.38*
		SB	*3400*	*1062*	*1287*	*0.31*	*0.37*	*0.31*

Screenline	Street	Direction	Capacity (1-way)	Peak Hour Volume		v/c		
				Existing	2034 Simulated	Existing	2034 Simulated	
							Existing Network	2034 Network
East/West 1 - West of Lesperance Road	Riverside Drive	EB	800	186	180	0.23	0.26	0.23
		WB	800	248	227	0.31	0.31	0.28
	Tecumseh Road	EB	1600 800*	595	347	0.37	0.42	0.43
		WB	1600 800*	575	330	0.36	0.40	0.41
	County Road 22	EB	2700	2094	2629	0.78	0.85	0.58
		WB	2700	2279	2910	0.84	0.90	0.65
	County Road 42	EB	900	621	669	0.69	0.76	0.37
		WB	900	596	488	0.66	0.75	0.27
	Sub Total	*EB*	*6000*	*3496*	*3825*	*0.58*	*0.64*	*0.48*
		WB	*6000*	*3698*	*3955*	*0.62*	*0.66*	*0.50*
East/West 2 - East of Lesperance Road	Riverside Drive	EB	800	74	111	0.09	0.10	0.14
		WB	800	76	147	0.10	0.10	0.18
	Tecumseh Road	EB	800	237	338	0.30	0.33	0.42
		WB	800	227	358	0.28	0.30	0.45
	County Road 22	EB	2700 4500*	1891	1982	0.70	0.78	0.44
		WB	2700 4500*	2290	2370	0.85	0.91	0.53
	County Road 42	EB	900	622	630	0.69	0.75	0.35
		WB	900	608	474	0.68	0.76	0.26
	Sub Total	*EB*	*5200*	*2824*	*3061*	*0.54*	*0.60*	*0.39*
		WB	*5200*	*3201*	*3349*	*0.62*	*0.67*	*0.42*

** 2034 capacity differs from existing capacity due to planned projects.*

Based on a review of the future operating conditions considering planned capacity improvements, no new road widening projects are required for roadways under the Town of Tecumseh jurisdiction.

10.1.2 Local Intersection Needs

Appendix D presents the details of the intersection operations analysis.

Detailed analysis of intersections operations identified several intersections which are approaching or at capacity in the existing conditions. The County and the MTO are planning to undertake a number of significant capital projects before the end of the planning period which will address most of the identified intersection deficiencies. Operational issues may need mitigation measures (minor change to the geometric conditions of the approaches and /or optimization of the traffic control) to alleviate operational and safety concerns if the planned major capital projects are delayed. These intersections are under the ownership of MTO and/or the County and, as such, mitigation measures would be the responsibility of senior levels of government.

The Walker Road/ North Talbot Road intersection was reconstructed in 2000, providing separate left turn lanes in all directions and shared through/right lanes with wide curb radii on the north and south approaches to accommodate truck turning movements. Despite the modifications, the processing efficiency of the intersection is limited by the shared through right operation on the north and south approaches (Walker Road) and the single through lanes on the east and west approaches (North Talbot). As the volumes increase on this roadway the intersection level of service may deteriorate and further modifications may be required.

Key Operational Issues

Lesperance Road

Lesperance Road is a key north-south spine in the networks for all modes of travel and the only continuous north-south road under the control of the Town of Tecumseh. Consideration has been given to modifying the existing cross-section to remove the existing two-way left turn lane (TWLTL) between McNorton Street and Riverside Drive to permit the creation of on-road cycling lanes. Removal of the TWLTL would not significantly affect intersection capacity or road safety. Given the commitment to promote Active Transportation and balance the level of service for all transportation modes it is recommended that the existing cross-section north of McNorton Street be modified to add cycling lanes and a multi-use pathway be constructed in the boulevard.

Tecumseh Road Main Street

Tecumseh Road is a key east-west spine in the networks for all modes of travel and the focus of activity for a planned vibrant commercial node (Tecumseh Road Main Street runs from approximately the Municipal Boundary west of Southfield Road to the Via Rail tracks east of Lesperance Road). The Town of Tecumseh completed a planning study for the CIP area in January 2016 to identify a road design that

would support the urban design and development objectives of the historic commercial zone. The CIP study, approved by Council in January 2016, recommended reducing the existing four lane cross-section on Tecumseh Road to a cross-section that only contains two driving lanes for general traffic and cycling, with the balance of the road space used for parking and pedestrian amenities.

Westlake Drive

The proposed configuration of the Lesperance Road/County Road 22 interchange will change the role of Sylvestre Drive and the future Westlake Drive. In the short term, Sylvestre Drive/ Westlake Drive will be an alternative for eastbound vehicles to exit CR22 and access Lesperance Road; in the long term it will be the only way to do so. Absent the ramp connection, Sylvestre Drive (County Road 22 to Westlake Drive) and Westlake Drive (Sylvestre Drive to Lesperance Road) would be designated as Collector Roads; with the ramp connection both roads will function as Minor Arterial roads and a three lane approach is recommended for westbound Westlake Drive at Lesperance Road.

10.2 Active Modes

10.2.1 Design Guidelines

The Town of Tecumseh would like to promote expansion and interconnection of their active transportation network through construction of new facilities as part of planned developments. Design guidelines for each component of the active transportation network are recommended in the supporting Complete Streets Design Handbook, which is included in *Appendix E*.

10.2.2 Network Issues

Trips by active modes are generally short, with many less than 2 km in length. Such trips are often thwarted by missing links within neighbourhoods and/or barriers that are difficult to cross. The connectivity of the active network impacts transit ridership, as active trips are critical connections to transit service. The Town should consider a program to pro-actively identify these missing links and prioritize their construction.

Significant new development is expected within the Town during the planning horizon. Active mode links will be required as a part of these new developments. The Town will review the proposed development plans to ensure that facilities are provided within neighbourhoods, that connections are made to transit service, and that connections are made to link the community to adjacent neighbourhoods and roads.

The most significant existing barrier for trips by active mode within the Town is Highway 401. Active mode facilities on all existing roads crossing Highway 401 are inadequate and no dedicated facilities exist. The Town will work with the County and MTO to develop at least one attractive active mode route across Highway 401, either within a road corridor or as a dedicated facility.

Active mode networks are concurrently being developed by the County of Essex and adjacent municipalities. The Town will coordinate network development with the County and the adjacent municipalities to ensure logical connections are made between networks.

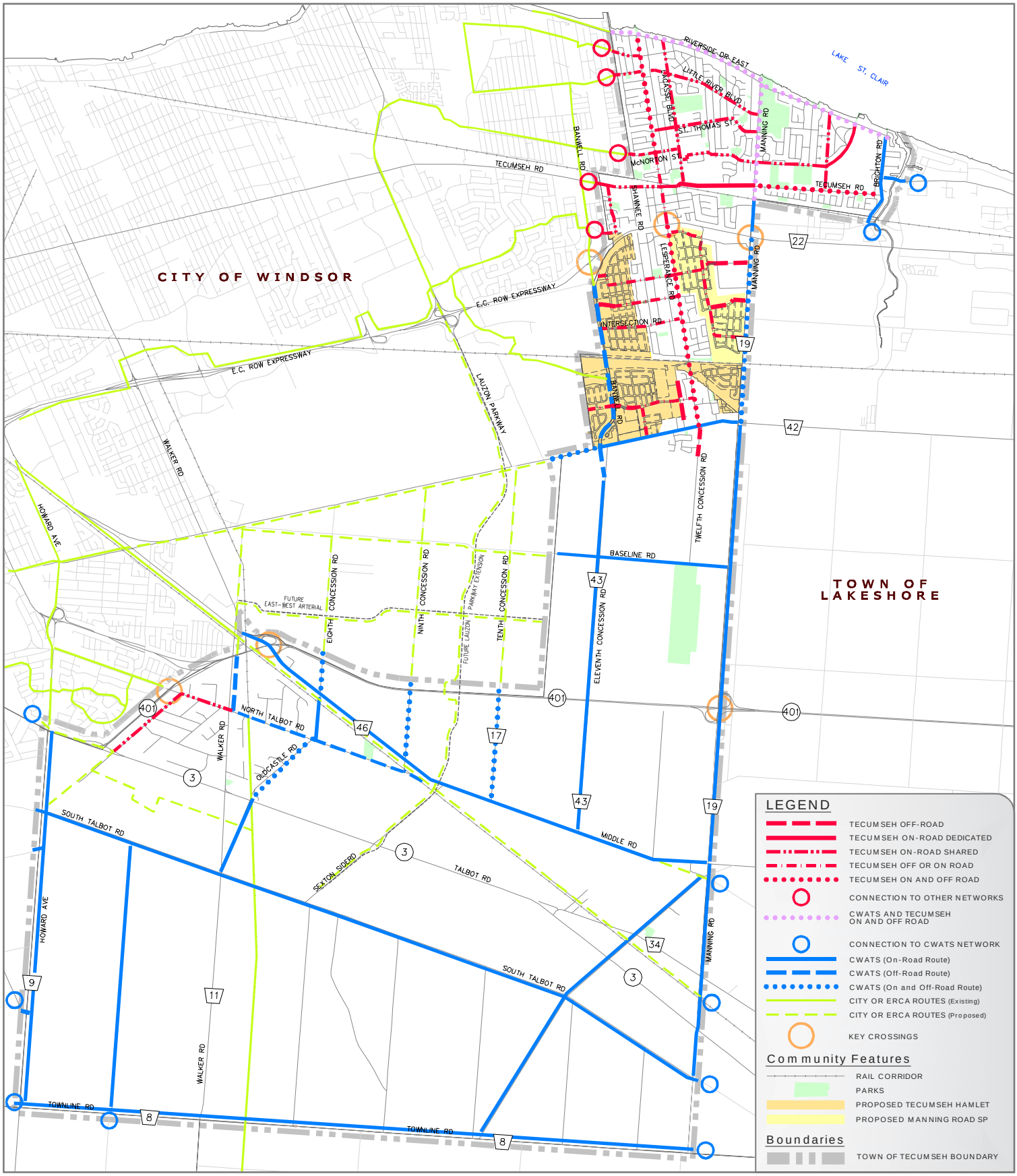
Figure 14 and *Figure 15* show the recommended facilities to improve the continuity and public profile of cycling and pathway facilities in the Town. The Complete Streets Design Handbook in *Appendix E* outlines a number of network design guidelines for effective and continuous active networks.

10.2.3 End-of-Trip Facilities

The desire to travel by bicycle is often influenced by the availability of end-of-trip facilities, such as bicycle parking, showers, etc. The Town should consider providing more bicycle parking and encourage businesses and developers to provide more end-of-trip facilities.

Recommendations arising from the review of active modes are as follows:

- Implement the design guidelines included in the Complete Streets Design Handbook to support the development and implementation of active mode facilities;
- Develop the active mode network within Tecumseh as shown in *Figure 14* and *Figure 15*; and
- Coordinate with the County, adjacent municipalities, and MTO to provide adequate active mode facilities on any new or reconstructed crossing of Highway 401and to ensure active mode networks are completed and connected.



THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

ACTIVE TRANSPORTATION NETWORK

FIGURE 14

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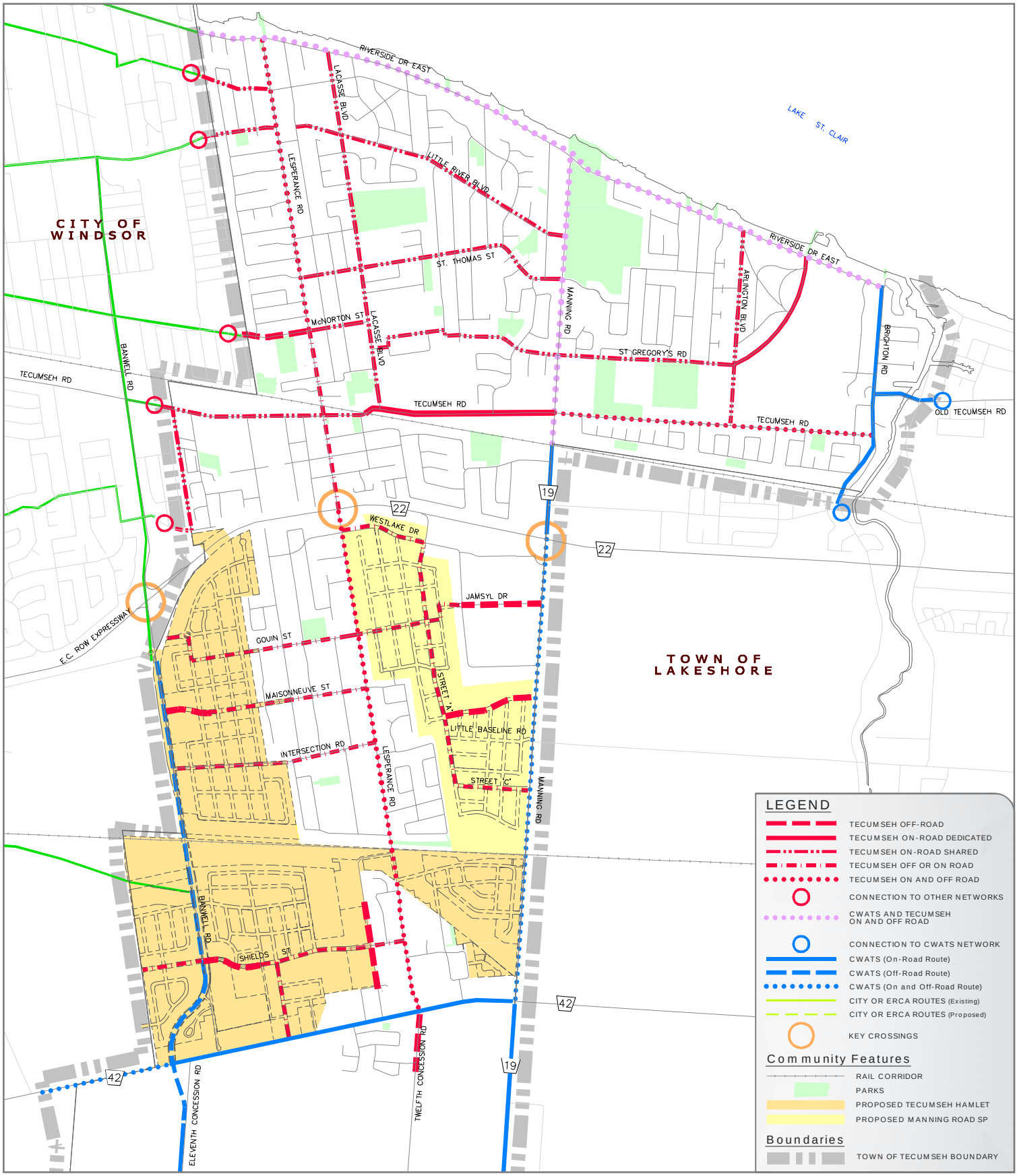

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

ACTIVE TRANSPORTATION NETWORK (URBAN AREA)

FIGURE 15

DILLON CONSULTING

Dillon Proj.No.: 15-2937
STATUS: FINAL
DATE: NOVEMBER 2016
REVISED: JUNE 2017

SCALE
0 250 750m

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11.0 TTMP Action Plan

The TTMP recommends the following actions:

- Adopt the Complete Streets Design Handbook and all of its design guidelines and practices;
- Modify cross-section of Lesperance Road (McNorton Street to Riverside Drive);
- Modify cross-section of Tecumseh Road Main Street (Southfield Road to VIA Rail tracks);
- Monitor operation of Walker Road/ North Talbot Road intersection;
- Develop a process to identify and prioritize Missing Links and Barriers/ Opportunities for pedestrian and cycling networks;
- Identify priorities for elements of Tecumseh's AT network, coordinated with plans and actions of County of Essex and neighbouring municipalities;
- Work with County of Essex and MTO to improve pedestrian and cycling crossings of Hwy 401 interchange ramps; and
- Adopt Guidelines and operational practices outlines in All-Way Stop Control Guidelines, Community Safety Zone Guidelines, and Speed Zone Guidelines.

Implementation of the above action plan must take potential impacts into consideration. Impacts to natural resources (including Species at Risk), as well as cultural, heritage, and archaeological resources must be appropriately investigated, assessed during the detailed design phase and mitigated. The Ministry of Natural Resources and Forestry, and the Ministry of Tourism, Culture, and Sport, must be consulted during this process.

Appendix A

Background Reports

DILLON CONSULTING

Table of Contents

Figures

Tables

1.0 Purpose

This Appendix reviews existing planning documents such as Official Plans, Transportation Master Plans, secondary plans and traffic impact studies that have been completed in the Town of Tecumseh, its former villages, and adjacent jurisdictions.

2.0 Background

The Town of Tecumseh is undertaking a study that will develop a dynamic and sustainable multi-modal Transportation Master Plan (TMP). The Tecumseh TMP (TTMP) will build upon the Essex-Windsor Regional Transportation Master Plan (EWRTMP) completed in 2005. The TTMP will consider all modes of travel and will serve as a tool to assist the Town in managing traffic safely and cost effectively in conformance with the Town's Official Plan.

In order to achieve these objectives, the TTMP must reflect the complex transportation issues that are facing the Town and the larger region. This requires an understanding of the issues and plans of the overlapping jurisdictions, to ensure that the development of a compatible, regionally integrated TMP for the Town of Tecumseh is developed. The final TTMP will contain a transportation vision for the Town and provide solutions to issues and opportunities within a local and regional context.

3.0 Scope of Appendix A

This Appendix highlights the major findings of various reports, plans, policies and guidelines. This is accomplished by reviewing the documents according to five groups, based upon the purpose and content of the report:

- Official Plans and Transportation Master Plans;
- Environmental Assessments;
- Traffic Studies;
- Secondary Plans; and
- Update on the Rt. Hon. Herb Gray Parkway.

For each document a general comment is made regarding its intent and purpose followed by a summary of the recommendations and findings, which are of particular importance to the TTMP.

4.0 Official Plans

4.1 Town of Tecumseh Official Plan

The Town of Tecumseh includes the former Town of Tecumseh, the former Village of St. Clair Beach, and the former Township of Sandwich South. As such, the Town is currently governed by three separate Official Plans. A new Official Plan is being developed which incorporates these three Plans as well as several discussion papers. The existing three Official Plans are described in the following sections.

4.1.1 Town of Tecumseh Official Plan (2000)

The Tecumseh Official Plan (OP) establishes the general policies to shape and guide the physical growth of the Tecumseh Planning Area in a manner which is in "harmony with the social and economic needs in order to obtain the most desirable physical environment for the present and future inhabitants of the planning area".

The overall transportation goal of this plan is to:

> *"…provide an adequate integrated and inter-municipal transportation network for the efficient movement of people and goods, so as to minimize the time distance factors and to provide alternative selection in routes."*

Transportation objectives include:

- To acquire the necessary land and buildings presently in the Little River Boulevard ROW;
- To open Little River Boulevard (to improve east-west vehicular movement);
- To connect major east-west transportation routes into the Windsor and St. Clair Beach transportation network;
- To eliminate key "T" intersections within the Planning area (to alleviate traffic congestion and potential hazardous conditions);
- To acquire sufficient land at the corner of Lesperance Road and Riverside Drive (to improve access and sight visibility); and
- To give further consideration to the downgrading of the proposed intersection of Lesperance Road and the E.C. Row Expressway and encourage the construction of an interchange in the vicinity of Manning Road.

4.1.2 St. Clair Beach Official Plan (Consolidated 2008)

The Town of Tecumseh is jointly governed by three separate Official Plans for the Town of Tecumseh, the Village of St. Clair Beach, and the Township of Sandwich South. These former municipalities amalgamated in 1999 to form the existing Town of Tecumseh. The policies included in the St. Clair Beach Official Plan should therefore be reflected in the TTMP.

The St. Clair Beach OP described the land-use planning policies for the Village, which has been absorbed into the Town of Tecumseh. The Plan sought to identify land use patterns, establish polices to control future development, ensure development decisions are fiscally prudent and to guide municipal Council and Staff in the decision making process.

Transportation related policy goals of the Plan included:

- Promotion of a concentrated commercial node at the intersection of Manning Road/ Tecumseh Road, extending north to St. Gregory's Road.
- Establishment of a footpath system linking public spaces within the community.

4.1.3 Sandwich South Official Plan (Consolidated 2014)

The Town of Tecumseh is jointly governed by three separate Official Plans for the Town of Tecumseh, the Village of St. Clair Beach, and the Township of Sandwich South. These former municipalities amalgamated in 1999 to form the existing Town of Tecumseh. The policies included in the Sandwich South Official Plan should, therefore, be reflected in the TTMP.

The Sandwich South Official Plan was completed to guide the Township's future pattern of growth until 2016. Major goals of this plan focused on addressing the dynamic relationship between Township land use and development, such as the transfer of active agricultural lands to urban purposes. Similar themes included the control of scattered and uncontrolled development, the protection of significant natural heritage features and ensuring that future development and infrastructure expansion is undertaken in a fiscally prudent manner.

Key transportation elements addressed included:

- As a policy goal, establish and maintain a network that provides both vehicular and pedestrian access within the Township, the County of Essex, and the City of Windsor.
- Build on the success and plan for the future growth in residential and commercial activity due to the proximity to major corridors (Highway 401, Highway 3 and the Ambassador Bridge) as well as large markets such as southeast Michigan and Windsor.
- Provide superior road and highway networks, considering the proximity to industry that requires "just in time" delivery of inputs via road rather than rail.

4.2 Town of Tecumseh New Official Plan Process, Growth Management / Urban Structure Discussion Paper (2014)

The Town of Tecumseh is currently preparing a new Official Plan, and as part of this, Council is reviewing a series of 11 discussion papers guiding policy development. These papers provide background information on several topics, and also identify relevant issues and emerging trends to be considered in the development of the new Official Plan. In addition to the Growth Management and Urban Structure Discussion Paper, two other discussion papers in this series have been reviewed by Council to-date – the Planning Context and Issues Report, and the Employment Lands Discussion Paper.

The Growth Management and Urban Structure Discussion Paper describes the current legislative authority and policy framework, regional context, growth forecasts. The paper identifies Tecumseh's current urban structure and establishes a framework to form a basis for development of the future urban structure. The paper also includes a map of key transportation corridors in Tecumseh (referred to as "lines"), shown in *Figure A1*.

Key findings and recommendations from the discussion paper include:

- Provincial and County land use planning policies require that the Town direct growth away from prime agricultural areas and natural heritage systems, and towards settlement areas through a structure of centres and corridors. To do this, the Town should establish a future urban structure with a hierarchy of centres and corridors. This urban structure plan should be included in the Town's new Official Plan to guide physical development over a 20-year horizon.
- The Town has ample land within its settlement areas to meet the significant growth projected over the 20-year horizon, and beyond this.
- Key north-south transportation corridors within Tecumseh are:
    - County Roads:
        - Howard Avenue (County Road 9)
        - Walker Road (County Road 11)
        - County Road 17
        - Banwell Road (County Road 43)
        - Manning Road (County Road 19)
        - 8th Concession Road
        - Brighton Road (County Road 21)
    - Main Commuter Roads:
        - Lesperance Road
    - Local Roads:
        - Malden Road
- Key east-west transportation corridors within Tecumseh are:
    - Provincial Roads:
        - Highway 401

        - Highway 3
    - County Roads:
        - County Road 22
        - County Road 42
        - County Road 34
        - County Road 8
        - North Talbot Road
    - Main Commuter Roads:
        - Riverside Drive
    - Tecumseh Road
- Key human-made linkages within Tecumseh are:
    - Chrysler Greenway
    - Ontario Hydro corridor in Tecumseh Hamlet
    - Former east-west Conrail right-of-way from Oldcastle Hamlet through and beyond Maidstone Hamlet

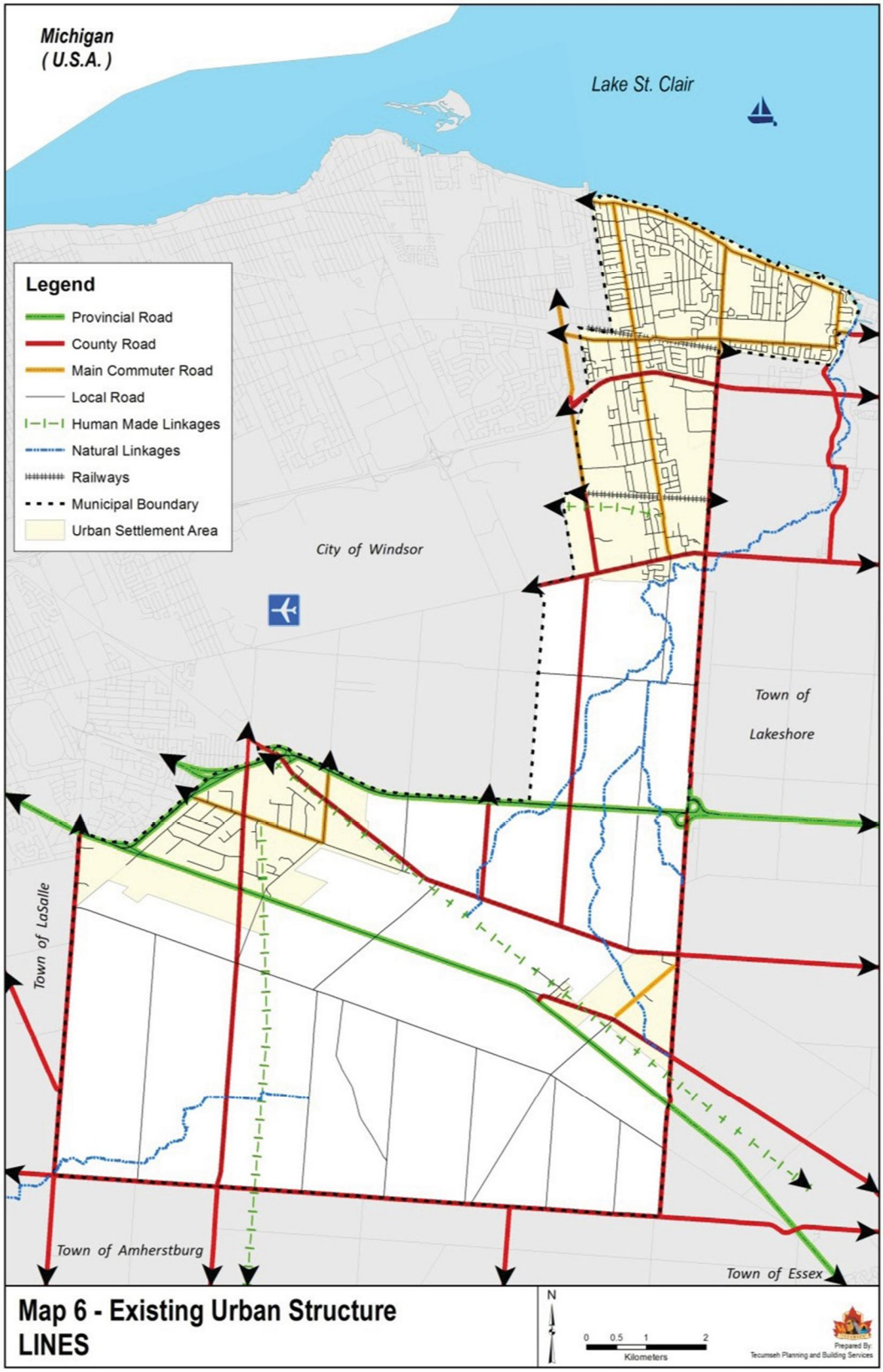


Figure A1: Key "Lines" (Transportation Corridors) in Tecumseh

4.3 County of Essex Official Plan (2014)

The County of Essex Official Plan seeks to broadly guide the County and its municipalities on land use planning. The County's agriculture and industry are identified as primary economic drivers, and the geographic location casts transportation in a critical role. Planning principles are presented which relate to growth management (land use and encroachment of development on agricultural lands), protection of natural environment features, and provision of cost effective and environmentally sound municipal service.

Several policies are presented within this study pertaining to the transportation network. These should guide the updated TTMP. Specific policies relating to the road and transportation system include:

- Promote continued development and improvement of the active transportation system. Local municipalities are encouraged to further expand and improve pedestrian and bicycling facilities (i.e. Chrysler Canada Greenway) and policies.
- Encourage development of convenient and efficient public transit services throughout the County, recognizing that the provision of public transit services is a local matter.
- Support continuation and improvement of the railway system.
- Identify measures to increase the capacity of the transportation network through roadway access management and intersection optimization. Establish access management on identified arterial roads.
- Minimize conflict between local and non-local traffic by protecting the County Road system and discouraging new developments which may adversely impact traffic movement along the County Road system
- Encourage integration of transportation facilities provided by different municipalities as well as the Province.
- Review road corridor classifications with local municipalities and the Province, and adjust classifications as necessary.
- Recognition of the broader network implications for the County of increased cross-border capacity.

4.4 Town of Lakeshore Official Plan (2010)

The Town of Lakeshore borders Tecumseh to the east, and the Official Plan includes policies and goals to increase integration with neighbouring communities as well as the County. These policies should therefore be considered in the TTMP.

The Town of Lakeshore OP was completed as a tool to guide and manage the growth and development of the Town over a 20-year horizon. This plan contains the clear goal of establishing a growth management framework to ensure that orderly, efficient, healthy community development patterns take place, and that community growth is guided while maintaining respect for the area's agricultural

and natural resources. This is expressed in the Town's vision to create "a progressive Town of healthy, integrated communities".

The goal of creating an efficient multi-modal transportation system is supported by policies including:

- Promote sustainable, efficient, reliable modes of transportation including pedestrian-oriented public transit. Although the Town is primarily auto focused due to its spatial form (i.e. rural-urban), alternative use of modes will be promoted (i.e. through land-use, density, etc.).
- Promote interconnectivity within the Town and the County through rail and transit connections between primary nodes, communities and the City of Windsor.
- Improve movement of goods and people, and increase connectivity between residential communities (i.e. County Roads 22 and 42).
- Promote efficiency of the existing transportation network through coordination of initiatives and activities with other levels of government and agencies.
- Direct heavy industrial, manufacturing and logistical uses to Highway 401 to avoid land use conflicts.
- Improve and promote a connected trails/pathways network.

As part of the comprehensive planning process, a Community Services Master Plan was developed in 2008. This Master Plan noted the opportunity to develop a non-motorized trail system connecting Lakeshore with other municipalities in the County of Essex. The report notes that heritage and shoreline resources are "worth upgrading and building upon, capitalizing on existing investments, such as community trails" and that the Town should seek to promote and create an integrated trail network in the region.

4.5 Official Plans Summary

The Official Plans discussed above provide the below key points as input to the TTMP. Several of these were recommended in more than one study, and therefore represent the most critical recommendations from these studies.

- Promote a multimodal transportation system, and continue to develop a connected active transportation network.
- Promote efficiency within the transportation network through coordination of initiatives, activities, and projects across different agencies and levels of government.
- Encourage development of transit services throughout the County.

Additionally, the existing Tecumseh OP provides the following directions:

- Acquire the necessary land and buildings presently within the Little River Boulevard ROW, and consequently open Little River Boulevard to improve east-west vehicular movement.

- Connect major east-west transportation routes into the Windsor and St. Clair Beach transportation network.
- Eliminate key "T" intersections within the Planning area to alleviate traffic congestion and potential hazardous conditions.
- Give further consideration to downgrading the proposed intersection of Lesperance Road and the E.C. Row Expressway, and encourage the construction of an interchange in the vicinity of Manning Road.

5.0 Transportation Master Plans

5.1 Essex-Windsor Regional Transportation Master Plan (2005)

The Essex-Windsor Regional Transportation Master Plan (EWRTMP) was undertaken acknowledging that the transportation environment in this area must be addressed with a comprehensive regional scope. This was necessitated in part due to the projected growth for the area in terms of residents and jobs, and the traffic demand which crosses municipal borders. The plan emphasizes the importance of linking the planning for future transportation with land use.

Main findings of this report include:

- Existing roadway network carrying capacity should be optimized through access management and corridor protection, prior to investment in expansion, extensions and new projects. This does not hinder the undertaking of new projects deemed critical to addressing border traffic;
- 80% of trips in the region use automobiles. High volumes were identified on Highway 401 and Highway 3, in Tecumseh, Lakeshore and Windsor. Several major roadways in the urban centre, as well as select County Roads, were identified as having deteriorating levels of service;
- The region is dependent on improvements to Highway 3 as primary inter-municipal corridor; and
- The main transit issue is the extension of Windsor Transit service to the Towns of Tecumseh, Lakeshore and LaSalle.

Figure A2 illustrates the forecasted 2021 level of service for the major roadway corridors under a "do-nothing" scenario as presented in the Essex-Windsor Regional TMP.

A number of roadways within the Town of Tecumseh boundaries would operate at an unacceptable level of service within the 2021 timeframe without the implementation of a transportation solution. This would include:

- County Road 22
- County Road 19
- County Road 42
- Tecumseh Road
- Banwell Road
- County Road 46
- Highway 3
- Highway 401

The majority of these roadways are outside of the jurisdictional control of the Town of Tecumseh.

The preferred transportation solution identified in EWRTMP is based on four very distinct types of planning strategies:

- Capacity optimization of regional roads;
- Capacity enhancement of regional roads;
- Transportation demand management of the regional transportation system; and
- Land use planning to provide forms of urban development that generate less auto trip-making and shorter trip lengths.

The capacity enhancement strategy includes improvements on a number of County facilities within the Town that are identified on *Figure A3*.

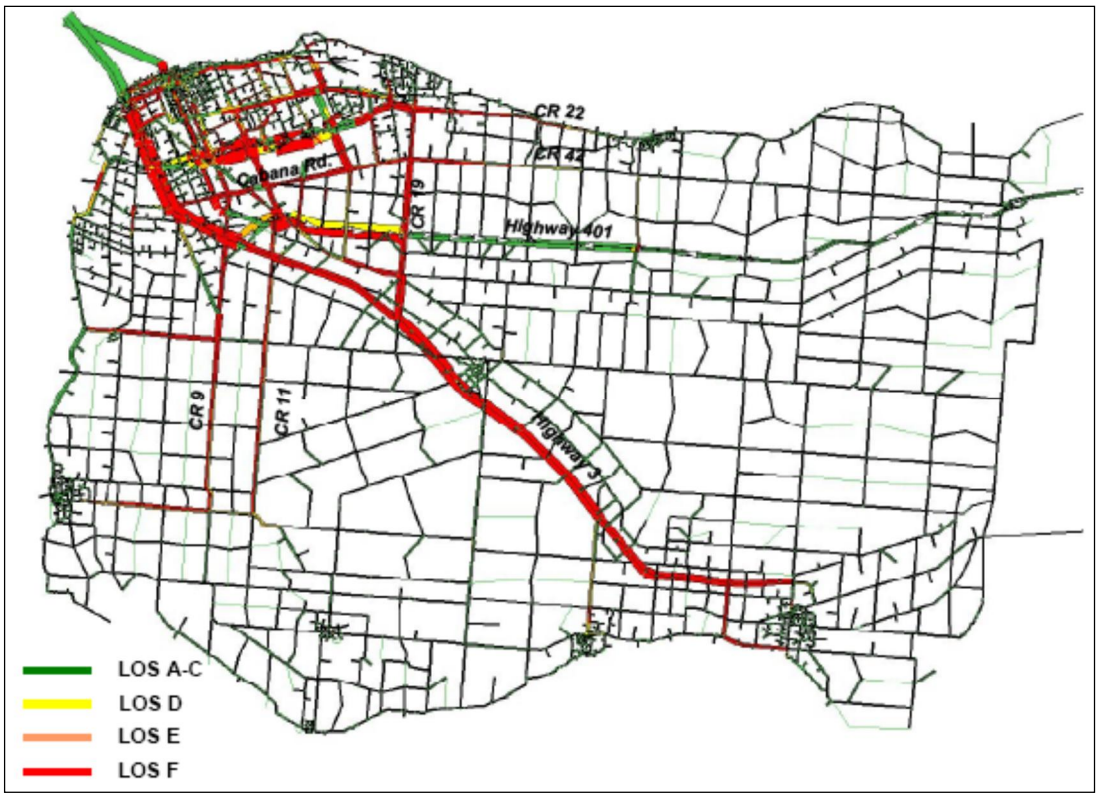


Figure A2: 2021 Baseline (do nothing) Level of Service

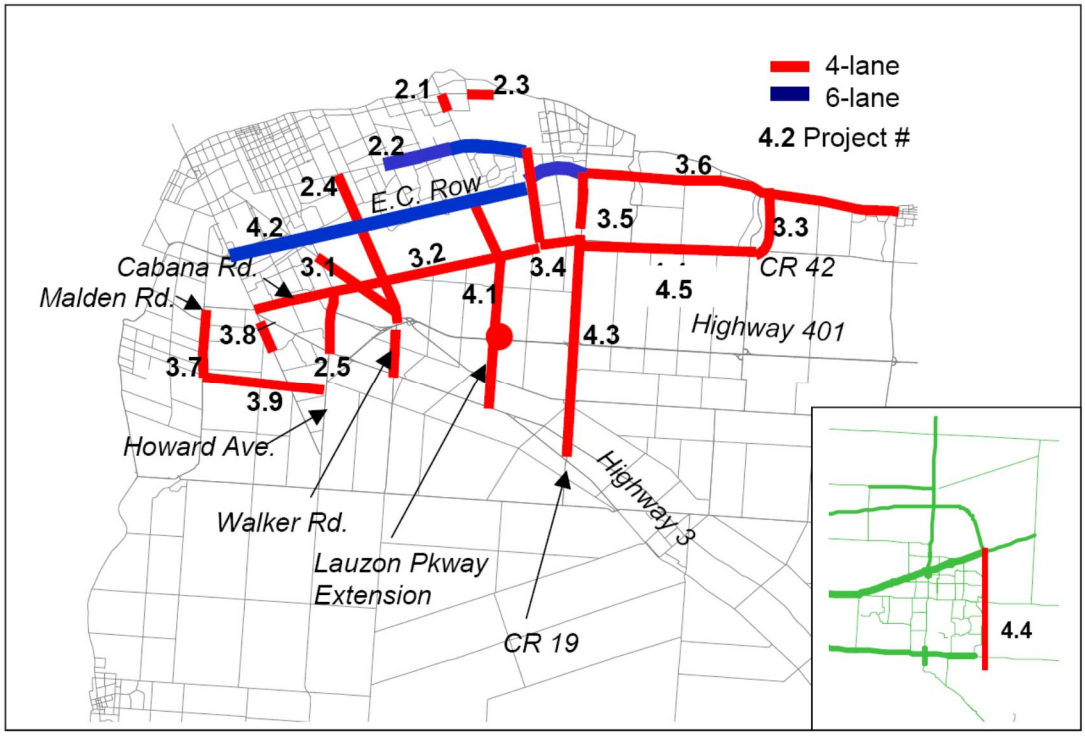


Figure A3: Recommended Regional Roadway Capacity Enhancement Projects to 2021

5.2 Town of Lakeshore Transportation Master Plan (2008)

The Town of Lakeshore borders Tecumseh to the east, and as such the recommendations made in the Lakeshore Transportation Master Plan should be considered in the TTMP.

The Lakeshore TMP provides a comprehensive, long range plan that integrates required transportation infrastructure for present and future (2025) land uses with the planning principles defined in the Town's Official Plan.

Five major network improvements were recommended to address growth in the Town of Lakeshore:

- Widen and extend Little Baseline Road as a 4-lane arterial from County Road 19 to Wallace Line Road, and as a 2-lane residential collector to County Road 25 at Oakwood Drive and County Road 25.
- Widen Patillo Road to 4 lanes from County Road 2 to County Road 42.
- Widen Wallace Line Road to 4 lanes from County Road 2 to County Road 42.
- Widen Rourke Line Road to 4 lanes plus a centre turn lane between County Road 22 and County Road 42.
- Improve arterial signalized intersections with County Road 22 and County Road 19, Patillo Road, Renaud Line Road and Rourke Line Road.

The roadway and intersection improvements recommended by this study for the Town of Lakeshore are illustrated in *Figure A4*.

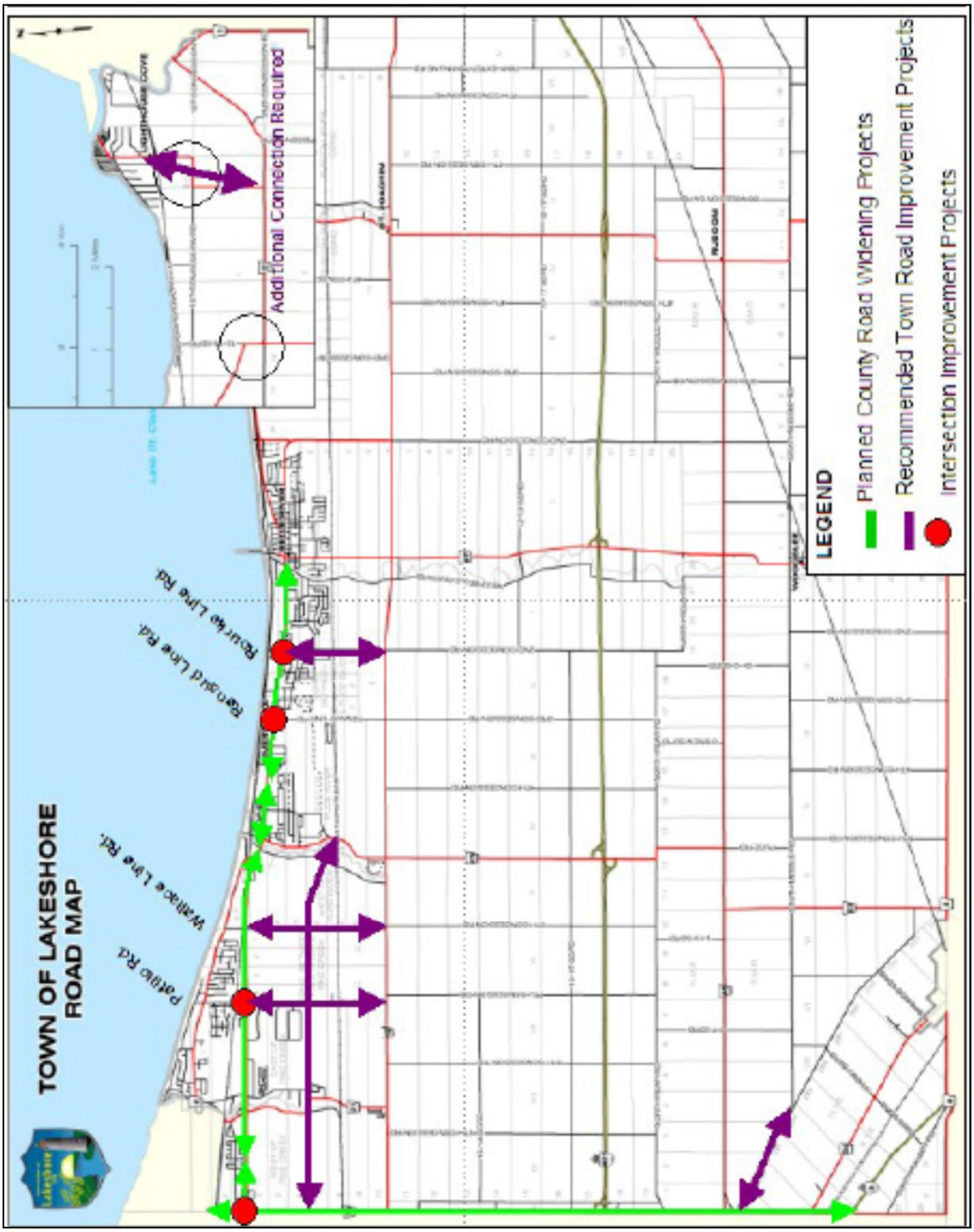


Figure A4: Recommended Lakeshore Roadway and Intersection Improvements

5.3 Regional Transportation Paper (2013)

The Transportation Policy Committee within the Windsor-Essex Regional Chamber of Commerce authored this paper outlining the Chamber's position on transportation infrastructure, planning, and policy. The paper summarizes existing transportation systems within the region, provides public policy recommendations on key transportation issues, and identifies potential economic benefits.

Key findings and recommendations from the report relevant to the TTMP include:

- Extend the Lauzon corridor to a new interchange with Highway 401 as soon as possible.
- Transit Windsor should work with the business community to improve transit service to major employment centres, and with nearby municipalities to extend service into developed areas outside the City of Windsor limits.

5.4 Transportation Master Plans Summary

The following key points are most relevant to the TTMP, and are taken from the above Transportation Master Plans:

- 80% of trips in the region use automobiles.
- Existing roadway network carrying capacity should be optimized through access management and corridor protection, prior to investment in expansion, extensions and new projects.
- Several major roadways in the urban centre, as well as select County Roads, were identified as having deteriorating levels of service, and should be widened to accommodate increased travel demands.
- The region is dependent on improvements to Highway 3 as primary inter-municipal corridor.

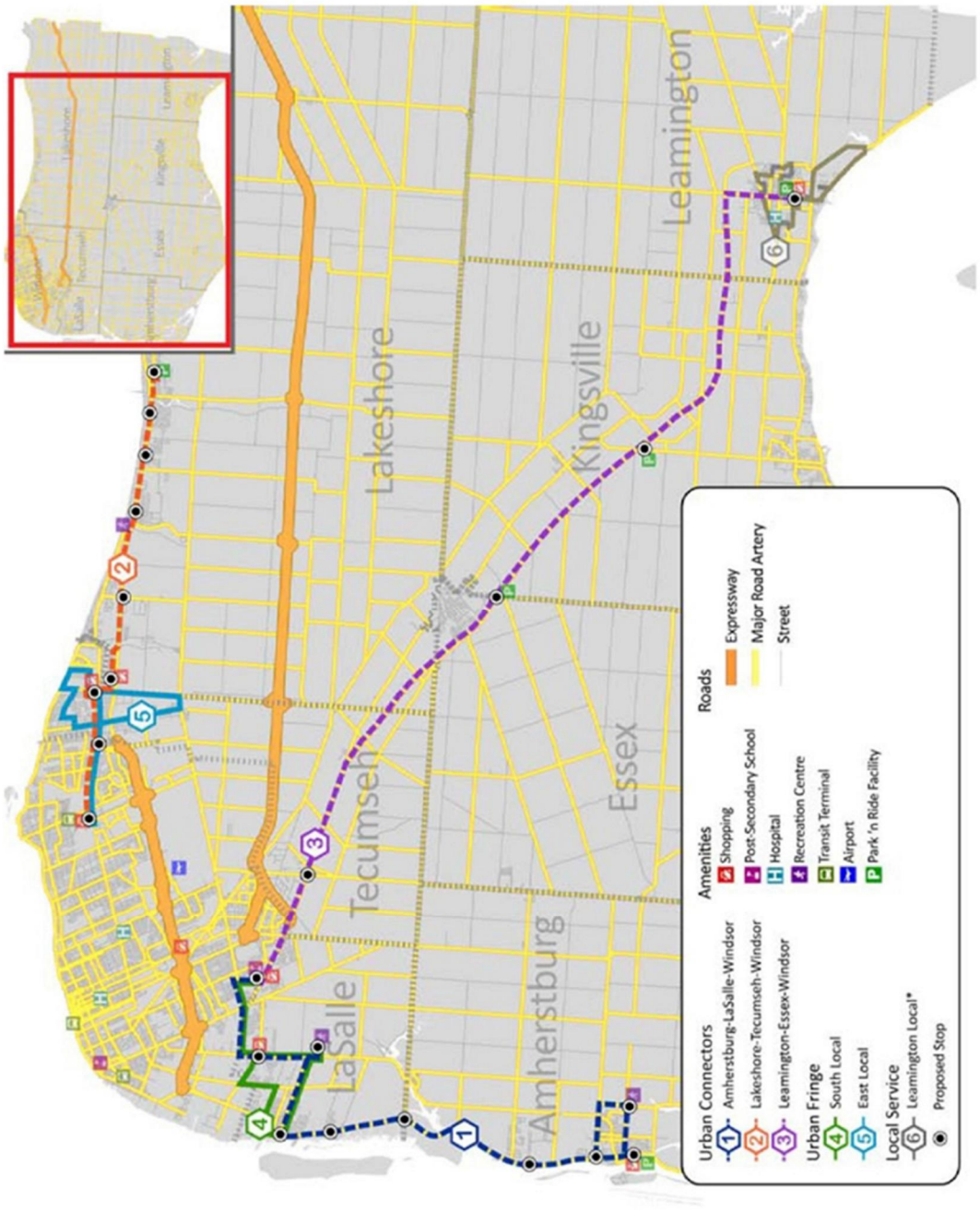
6.0 Transit Strategies

6.1 County of Essex Transit Assessment Report (2011)

This report identifies a detailed implementation strategy and service design for cost-effective transit services in the County within the short-term. The report provides estimates for the capital and operating costs, expected ridership, and expected revenues based on the proposed services. The report also establishes fare policies and structures for the inter-municipal transit system and its relationship to other transit agencies, and develops the short- and long-term governance implementation plan. The report was presented to Council in 2011 but was not approved.

Major findings and recommendations from the report included:

- There is an unmet need in the County for transit services to and from major employment areas and educational facilities. *Figure A5* shows the proposed short-term transit network.
- Transit service in the County should be structured on four distinct types upon full system implementation: Urban Connectors, County Connectors, Local Service, and Rural Services. These will work together to satisfy the County's unique demographic conditions and travel behavior. Additional Urban Fringe services would operate on the outskirts of urban areas. Potential service structure is shown in *Figure A6*.
- New transit services should be tested and monitored for a minimum of 12 operating months, and must meet the minimum performance thresholds required for its class of service.
- Transportation Demand Management measures should be considered to ensure the success of transit services in the County, including encouraging more intensified and mixed-use urban form, increasing roadway and pedestrian connectivity, and providing expanded infrastructure for non-motorized travel modes.
- The County should be organized into five fare zones as shown in *Figure A6*, with fares assigned according to the origin and destination zone.
- A short-term governance model is proposed which involves the formation of a transit committee comprised entirely of County Councillors. These Councillors would be the main decision-making body reporting to County Council. A County department would be responsible for managing the County transit services, and the County would fund the transit services. Transit services would be contracted out to a transit operator.
- A long-term governance model is proposed which includes creation of a Regional Transit Authority under which local transit services would be located. County Council would provide final approval for plans and budgets, and would appoint members to a County Transit Board responsible for overseeing planning, construction, and operation. A CEO and staff would manage and administer the Authority's daily operations, and develop the plans and policies to be approved by the Board and County Council. An independent commissioner would conduct annual reviews of the Board and all financial activities, and present findings to the Board, County Council, and the public.



Note:
Leamington Local Service is shown for information purposes only and is not part of this proposal.
Urban Fringe Local Routes (Routes 4 and 5) are illustrated for consideration purposes only. Respective local municipalities have discretion over the appropriate route alignments and service levels operating in their community.

Figure A5: Proposed Short-Term Transit Network

Note:
Leamington Local Service is shown for information purposes only and is not part of this proposal.
Urban Fringe Local Routes (Route 4 and 5) are illustrated for consideration purposes only. Respective local municipalities have discretion over the appropriate route alignments and service levels operating in their community.

Figure A6: Proposed Fare Zones

6.2 *The Way Forward*: City of Windsor Transit Master Plan (2006)

This Master Plan for Windsor Transit is based on the recognition that the economies of Windsor and the outlying area are intertwined, specifically the Towns of Tecumseh, LaSalle, Amherstburg and Lakeshore. Residents regularly cross between municipalities for work, business and recreation and should be able to do so via public transit. The Plan acknowledges that a regional approach to transit is required, and presents recommendations which address a 2007 to 2016 timeframe.

Notable recommendations from the Plan which affect the development of the TTMP include:

- To effectively serve the needs of Windsor residents, business, education and health care, the transit system must expand beyond the borders of Windsor as the economies are becoming increasingly integrated.
- The market characteristics within Windsor are changing. The population is ageing, there are more new Canadians residing in Windsor and the system will need to attract more university and college users. Additionally, there is a trend to decentralization as the outlying areas experience more rapid growth than the City core; therefore Transit Windsor must expand outside Windsor. The economies of Windsor, Tecumseh, LaSalle, Lakeshore, and Amherstburg are highly integrated, and co-operation and commitment from these municipalities is required to expand transit service in the region.
- The future planning of Transit Windsor will be driven by a three part vision based on quality of life (provision of resident mobility), sustainability (cost effective alternative to automobile), and economic development.
- Policy decisions by Council are required to support transit. This is the sole means by which the 6% modal split will be achieved through transit service success, reduction in automobile use, and promotion of environmentally-friendly means. Three policy areas in which Council may directly promote transit and the realization of the objectives are location of new developments, design of subdivisions and the subdivision approval and staging process.
- In the short term (2007-2011), the Plan proposes:
    - Providing an improved grid system. Restructuring one-way loops in East Windsor by providing two-way service in Forest Glade, Greater Windsor Estates, and East Riverside. Rearranging routes to provide direct service to Tecumseh Mall and central Windsor, as 60% of jobs are located here. In South Windsor, improve the grid system so that neighbourhoods have direct service to Devonshire Mall and central Windsor.
    - Standardizing service on all routes to operate from 5:30am to 10:00pm or 1:00am (depending on the route class and demand), at a 30-minute frequency or better.
    - Providing 15-minute or better service during peak periods on base corridor routes (Wyandotte, Tecumseh, Dominion, Ouellette/Howard, and Walker). This service is intended to be a precursor to bus rapid transit (BRT).

- In the long term (2011-2016), the Plan proposes:
    - Introduction of BRT on the Ouellette/Howard and Ouellette/Tecumseh corridors. The BRT services would be connect to the new Downtown Terminal, the Devonshire Mall terminal, and the Tecumseh Mall terminal. These terminals would become the hub for all transit services in Windsor. BRT services would provide frequencies of 5-10 minutes in the peak, 10-15 minutes during midday and early evenings, and 15-30 minutes during late evenings and weekends.
    - Improving 15-minute service connecting to BRT routes.
    - Extending weekday service until 1:30am on most routes, and improved 30-minute service on Sundays.
    - Extending and improving service in East Riverside and South Cameron.
    - Providing service in and to Tecumseh, LaSalle, Lakeshore and Amherstburg. This would be dependent upon the municipalities' ability to contribute towards the expansion. Long term routes into Tecumseh are illustrated in *Figure A7*.

Figure A7: Long-Term Routes in Tecumseh

6.3 Transit Strategies Summary

The following are the most relevant points to the TTMP from the review of transit strategy documents:

- The Transit Windsor system should expand beyond the borders of Windsor to accommodate increasingly integrated economies within the County.
- The County is in need of transit services to and from major employment areas and educational facilities.
- To serve the County's unique demographic conditions and travel behaviour, transit service should be structured on four distinct types upon full system implementation: Urban Connectors, County Connectors, Local Service, and Rural Services. Additional Urban Fringe services could operate on the outskirts of urban areas.
- Transportation Demand Management measures should be considered to ensure the success of transit services in the County.

7.0 Active Transportation Plans/Strategies

7.1 County Wide Active Transportation Study (CWATS) Master Plan (2012)

The County Wide Active Transportation System (CWATS) Master Plan establishes a County-wide cycling and pedestrian network, and outlines the implementation plan over the next 20 years. The study includes a proposed network of cycling routes, planning, design, and operational guidelines for this network, and supporting policies and programs.

The updated TTMP will include a greater focus on active transportation, and the proposed network and recommendations in the TTMP should reflect CWATS.

The cycling network recommended by the plan is shown in *Figure A8*, and the Tecumseh area is enlarged in *Figure A9*. Details and cost for each recommended route are shown in *Table A1*.

In addition to the proposed cycling networks, the study included key recommendations to advance implementation of the plan:

- The County should establish and chair an Inter-Municipal Active Transportation Advisory Committee to provide input and guidance to municipalities as the CWATS network is gradually implemented. The Committee should include representatives from local municipalities and multiple stakeholder groups (such as the Essex Region Conservation Authority, Go for Health Windsor-Essex / Windsor Essex County District Health Unit, and others).
- The County's Manager of Transportation should assume the role of Active Transportation Coordinator and should be responsible for "championing" active transportation initiatives and implementing the CWATS Master Plan.
- The plan should be given consideration when roadway and other capital infrastructure projects are identified and scheduled.

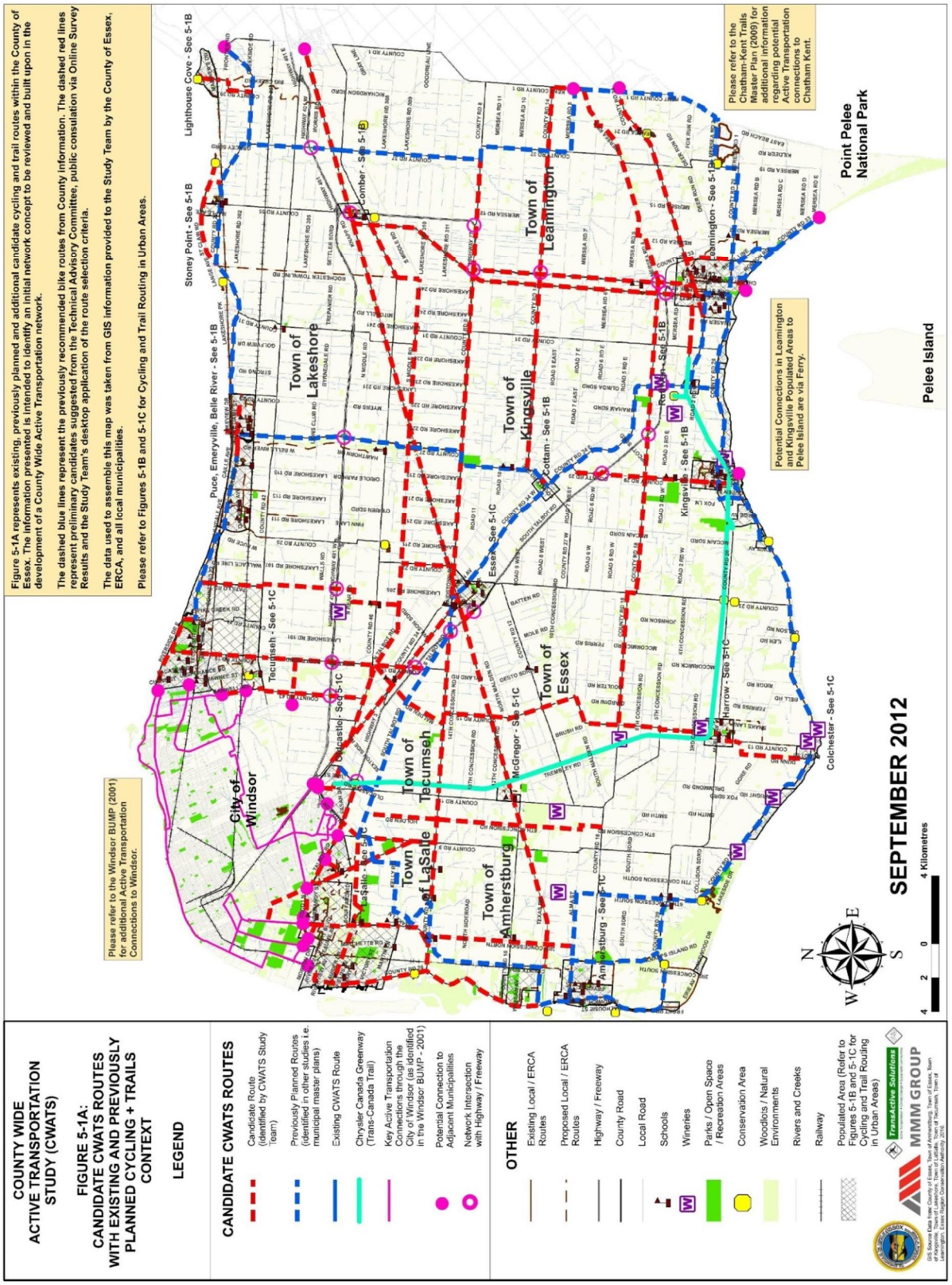


Figure A8: Proposed CWATS Network

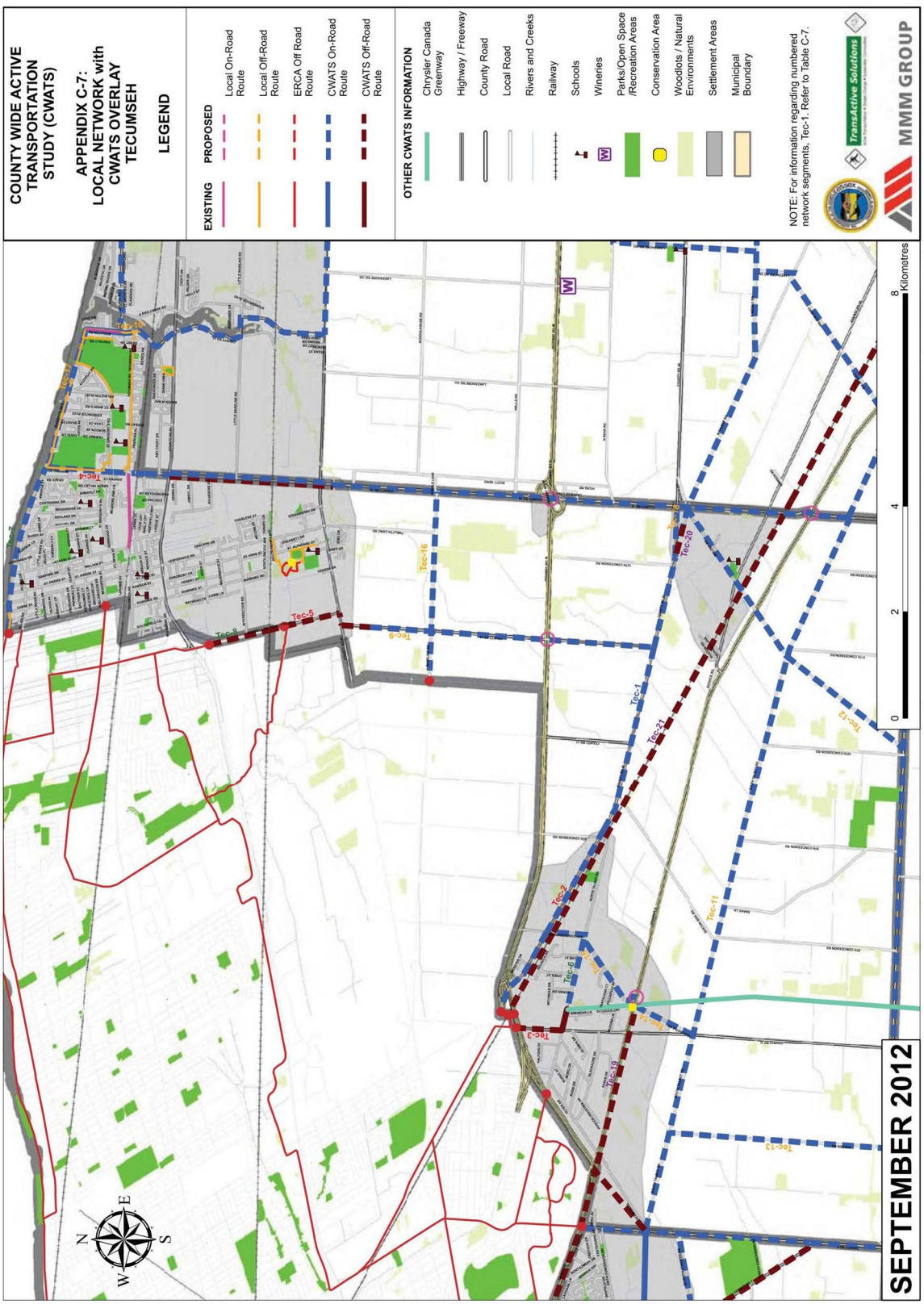


Figure A9: Proposed Cycling Network, Tecumseh Area

Table A1: Details and Costs of Proposed CWATS Network

On Street Bike Lanes / Paved Shoulder / Context Sensitive Solution - on a County Road within a Rural Area (Highlighted in Blue)

County Share		100%		Local Municipality Share		0%		ERCA Share			0%	
Network Segment No.	Route Segment Name / Description	From (Road or Trail)	To (Road or Trail)	Municipal Jusridiction	Length (km)	Phasing	Facility Type	Unit Cost /km	Segment Cost	County Share ($)	Local Share ($)	ERCA Share ($)
Tec-1	County Road 46	Tecumseh Settlement Area Boundary	County Road 19	Tecumseh	4.8	Long Term	Paved Shoulder	$ 110,000	$ 528,000	$ 528,000	$ -	$ -

On Street Bike Lanes / Paved Shoulder / Multi-Use Trails with or without Separation / Context Sensitive Solution - on a County Road within an Urban Area (Highlighted in Red)

County Share		40%		Local Municipality Share		60%		ERCA Share			0%	
Network Segment No.	Route Segment Name / Description	From (Road or Trail)	To (Road or Trail)	Municipal Jusridiction	Length (km)	Phasing	Facility Type	Unit Cost /km	Segment Cost	County Share ($)	Local Share ($)	ERCA Share ($)
Tec-2	Windsor Boundary	Tecumseh Settlement Area Boundary	County Road 19	Tecumseh	3.2	Long Term	Paved Shoulder	$ 110,000	$ 352,000	$ 140,800	$ 211,200	$ -
Tec-3	County Road 11	Windsor Boundary	North Talbot Rd	Tecumseh	0.9	Short Term	Multi-Use Trail	$ 250,000	$ 225,000	$ 90,000	$ 135,000	$ -
Tec-4	Manning Rd	Riverside Drive	Rail Corridor	Tecumseh	1.7	Short Term	Bike Lane	$ 12,000	$ 20,400	$ 8,160	$ 12,240	$ -
Tec-5	County Road 43 / 42 / 43	Rail Corridor	450 m south of CR 42	Tecumseh	2.0	Long Term	Multi-Use Trail	$ 250,000	$ 500,000	$ 200,000	$ 300,000	$ -

On Street Bike Lanes / Paved Shoulder / Multi-Use Trails with or without Separation / Context Sensitive Solution - on a Local Road anywhere (Highlighted in Green)

County Share		0%		Local Municipality Share		100%		ERCA Share			0%	
Network Segment No.	Route Segment Name / Description	From (Road or Trail)	To (Road or Trail)	Municipal Jusridiction	Length (km)	Phasing	Facility Type	Unit Cost /km	Segment Cost	County Share ($)	Local Share ($)	ERCA Share ($)
Tec-6	North Talbot Rd	CCG	Oldcastle Rd	Tecumseh	1.0	Long Term	Paved Shoulder	$ 110,000	$ 110,000	$ -	$ 110,000	$ -
Tec-7	Riverside Dr	Windsor Boundary	Manning Rd	Tecumseh	2.5	Mid Term	Paved Shoulder	$ 110,000	$ 275,000	$ -	$ 275,000	$ -
Tec-8	Banwell Rd	Windsor Boundary	Rail Corridor	Tecumseh	1.1	Long Term	Multi-Use Trail	$ 250,000	$ 275,000	$ -	$ 275,000	$ -

Signed Routes - anywhere on the network (Highlighted in Orange)

County Share		100%		Local Municipality Share		0%		ERCA Share			0%	
Network Segment No.	Route Segment Name / Description	From (Road or Trail)	To (Road or Trail)	Municipal Jusridiction	Length (km)	Phasing	Facility Type	Unit Cost /km	Segment Cost	County Share ($)	Local Share ($)	ERCA Share ($)
Tec-9	County Road 43	450 m south of CR 42	County Road 46	Tecumseh	5.3	Long Term	Signed Route	$ 200	$ 1,060	$ 1,060	$ -	$ -
Tec-10	Brighton Rd	Rail Corridor	Old Tecumseh Rd	Tecumseh	0.6	Short Term	Signed Route	$ 2,000	$ 1,200	$ 1,200	$ -	$ -
Tec-11	South Talbot Rd	County Road 9	County Road 19	Tecumseh	10.8	Short Term	Signed Route	$ 200	$ 2,160	$ 2,160	$ -	$ -
Tec-12	Malden Rd	County Road 8	County Road 19	Tecumseh	5.5	Short Term	Signed Route	$ 200	$ 1,100	$ 1,100	$ -	$ -
Tec-13	Holden Rd	South Talbot Rd	County Road 8	Tecumseh	4.2	Short Term	Signed Route	$ 200	$ 840	$ 840	$ -	$ -
Tec-14	Oldcastle Rd	South Talbot Rd	Highway 3	Tecumseh	1.2	Short Term	Signed Route	$ 200	$ 240	$ 240	$ -	$ -
Tec-15	Oldcastle Rd, 8th Concession Rd	County Road 46	Highway 3	Tecumseh	2.3	Long Term	Signed Route	$ 200	$ 460	$ 460	$ -	$ -
Tec-16	Baseline Rd	Windsor Boundary	County Road 19	Tecumseh	2.5	Long Term	Signed Route	$ 200	$ 500	$ 500	$ -	$ -
Tec-17	Riverside Dr	Manning Rd	Brighton Rd	Tecumseh	2.1	Mid Term	Signed Route	$ 2,000	$ 4,200	$ 4,200	$ -	$ -
Tec-18	North Talbot Rd	County Road 19	Tec-20	Tecumseh	0.2	Long Term	Signed Route	$ 200	$ 40	$ 40	$ -	$ -

Multi-Use Trails - outside of County and/or Local Right of way (Highlighted in Purple)

County Share		0%		Local Municipality Share		0%		ERCA Share			100%	
Network Segment No.	Route Segment Name / Description	From (Road or Trail)	To (Road or Trail)	Municipal Jusridiction	Length (km)	Phasing	Facility Type	Unit Cost /km	Segment Cost	County Share ($)	Local Share ($)	ERCA Share ($)
Tec-19	Provincial Highway 3	CCG	DRIC	Tecumseh	2.4	Short Term	Multi-Use Trail	$ 250,000	$ 600,000	$ -	$ -	$ 600,000
Tec-20	Trail Connection	County Road 46	North Talbot Rd	Tecumseh	0.5	Long Term	Multi-Use Trail	$ 80,000	$ 40,000	$ -	$ -	$ 40,000
Tec-21	CASO Line	County Road 19	Windsor Boundary	Tecumseh	8.9	Long Term	Multi-Use Trail	$ 80,000	$ 712,000	$ -	$ -	$ 712,000

Total CWAT in Tecumseh Cost	**$ 4,013,100**
Total County Share	**$ 978,760**
Local Share	$ 1,318,440
Additional Local Share (Common Municipal Boundaries)	$ 363,900
Total Local Share	**$ 1,682,340**
Total Provincial Share	**$ 600,000**
Total ERCA Share	**$ 752,000**

7.2 City of Windsor Bicycle Use Master Plan (BUMP) (2001)

The Bicycle Use Master Plan (BUMP) acts as a 20-year guide to establish a vision, guiding principles, and goals for cycling in the City of Windsor. It is a "statement of the City of Windsor's commitment to develop a visible and connected network that is easily accessible, safe and actively used by all types of cyclists". The Plan makes recommendations according themes such as the cycling network, cycling awareness, cycling-transit link, end-of-trip facilities, implementation strategy, administrative structure, funding and monitoring.

The recommended cycling network improvements are divided into primary and secondary networks. BUMP recommends staging the improvements and completing the sections of the primary and secondary networks that are identified as achievable within five years and then completing the sections identified as achievable within the longer term (years 5 to 20). The complete recommended cycling network is shown in *Figure A10*.

The proximity of the Town of Tecumseh offers strategic opportunity for integration of efforts and initiatives to promote and accommodate cycling at a regional scale. Of particular interest to the development of a TTMP are the following recommendations:

- Improve the cycling-transit link.
- Integrate cycling facilities into reconstruction or new roadway projects.
- Continue to develop off-road facilities.
- Complete the cycling network (primary and secondary). These are of importance as several candidate bicycle route are identified in the Plan which cross into the Town of Tecumseh (i.e. North Talbot Road, Division Street, Lauzon Parkway, Little River Road, Riverside Drive and others – as shown in *Figure A10*).

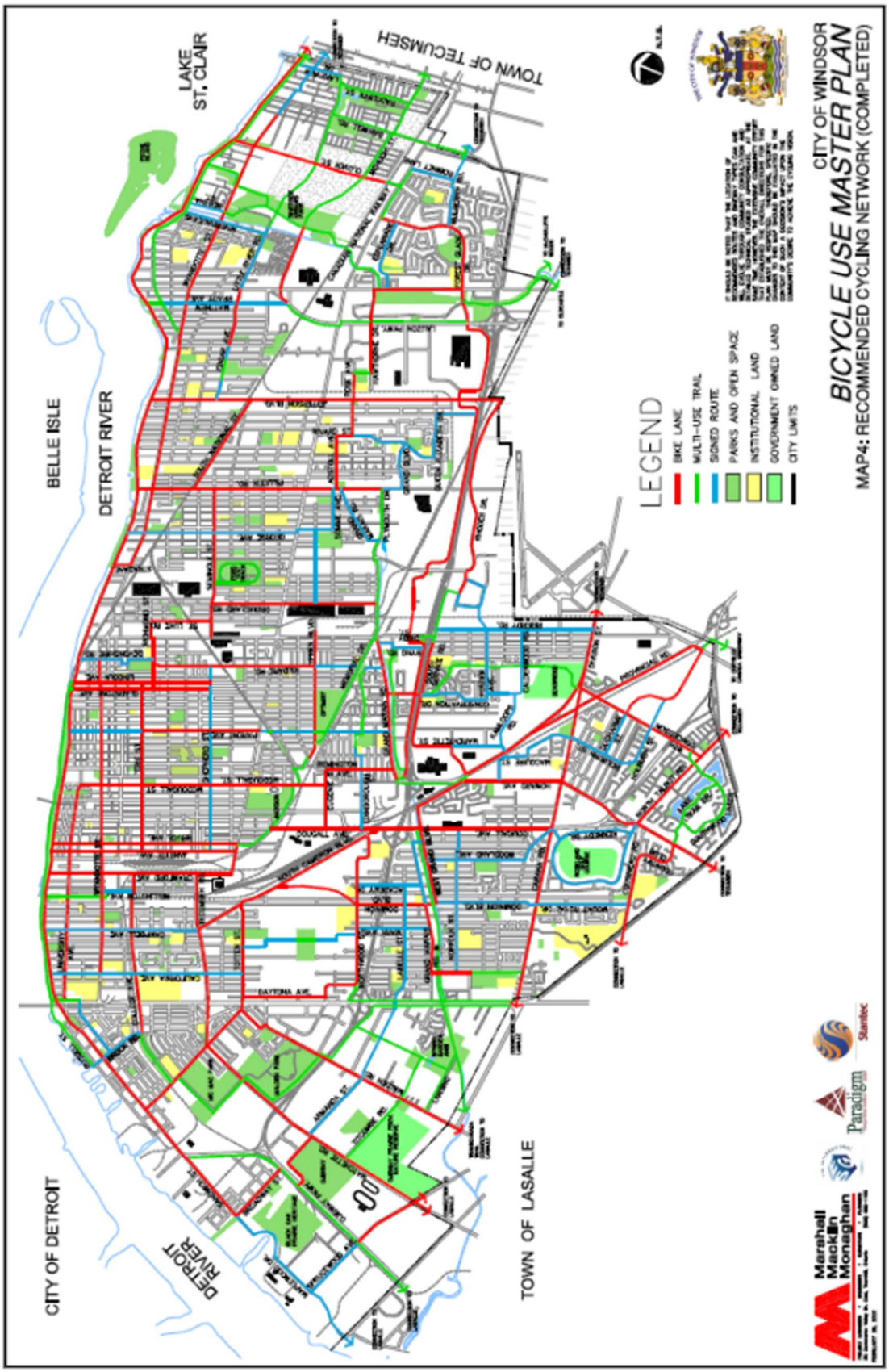


Figure A10: City of Windsor Recommended Cycling Network

7.3 Town of Lakeshore Trails Master Plan (2007)

This report seeks to describe goals and make recommendations required to develop and maintain a non-motorized trail system for the Town. This trail system will link access points to public lands within the boundaries of the Town. This is necessitated as many areas within the urban area that were formerly available for residents to engage in outdoor activities are "now being lost to development and open lands are being fenced or developed".

The study recommends that Council encourage the cooperation of Essex County, Essex Region Conservation Authority, Lower Thames Conservation Authority and neighbouring municipalities to extend and promote connectivity of trail systems where possible. The updated TTMP will have a greater focus on active transportation, and should include policies to support this recommendation.

The study provides two classifications for trails within Lakeshore: Land Trails (for walking, cycling, and heritage uses), and Blue Trails (rivers, streams, canals which support a mix of land/water based travel activity). The study develops a framework for trail selection, mapping, maintenance and funding in addition to providing design guidelines for the trail facilities.

Four areas of interest are noted for future development and design consideration: the Wallace Woods development area, Puce Road landfill, Woodslee (Circle Trail), and Comber (Circle Trail).

7.4 Active Transportation Plans/Strategies Summary

The Active Transportation Plans/Strategies discussed above provide the below key points as input to the TTMP:

- Transportation Demand Management measures should be considered to support the success of transit services. These could include encouraging more intensified and mixed-use urban form, increasing roadway and pedestrian connectivity, and providing expanded infrastructure for non-motorized travel modes.
- A common recommendation amongst many background reports is to create and promote an interconnected regional trails/pathways network, and to include this as a policy goal in guiding plans.

8.0 Environmental Assessment Studies

8.1 Municipal Class Environmental Assessment for Improvements to County Road 22 (East of Manning Road to County Road 42) (2006)

This Environmental Study Report details the environmental assessment undertaken for improvements to County Road 22 (east of Manning Road to County Road 42, in the Town of Lakeshore) and the preferred alternative. The need to examine this corridor was based on future population and employment growth in the Towns of Tecumseh and Lakeshore, focusing on Lakeshore. This roadway is a crucial link between the two Towns and the City of Windsor. The traffic demands placed upon County Road 22 were projected to increase considerably to 2021, while the road was currently identified as having poor operating conditions and intersections performing at or above their intended capacities. The public and stakeholder consultation process identified twenty main areas of concern ranging from general road safety, access control, to provision of cycling and pedestrian facilities, specific intersections and preservation of existing roadside vegetation.

Major recommendations from this study included:

- Final cross-section for the road was:
  - Four lanes (with a 1m flush median) between Manning Road and I.C. Roy Drive (2.5km).
  - Two lanes (with continuous two-way left turn lane) between I.C. Roy Drive and the Belle River bridge (17.5km).
- Roadway illumination at all intersections and full illumination in the urban sections where sidewalks are proposed on both sides of the roadway.
- Recommended upgrades are to occur in series of six contracts to be completed 2007-2012, and estimated to be valued at approximately $47 million.

It is noted that these modifications are currently under construction (as at April 2016).

8.2 County Road 19 (Manning Road) & County Road 22 Improvements Class Environmental Assessment and Preliminary Design (2008)

The Ministry of Transportation, Ontario, in association with the County of Essex and Transport Canada, completed an EA and preliminary design of improvements to County Road 19 (Manning Road) and County Road 22. This project was conducted as part of the '*Let's Get Windsor Moving'* strategy. The study area included 13km of County Road 19, from Highway 3 to the VIA Rail line and 3km of County Road 22, from the City of Windsor boundary to 350m east of Lakeshore Boulevard.

The major project features and preferred design of the improvements included:

- Widening County Road 19 from two to four lanes.
- Widening County Road 22 from four to six lanes.
- Double lane roundabout at Essex County Roads 19 and 34.

- Highway 401 interchange improvements, including construction of a new underpass structure and reconstruction of interchange ramps.
- Widening of Pike Creek Bridge from two to four lanes.
- Grade separation of the CP Rail crossing and construction of access/service roads for existing uses.
- Single point urban interchange at County Roads 19 and 22.
- Partial interchange (half diamond/button hook) County Road 22 and Lesperance Road.

Figure A11 indicates the projected timelines and boundaries for the recommended construction phases. The proposed typical cross sections of County Road 19 and County Road 22 are shown in *Figure A12*.

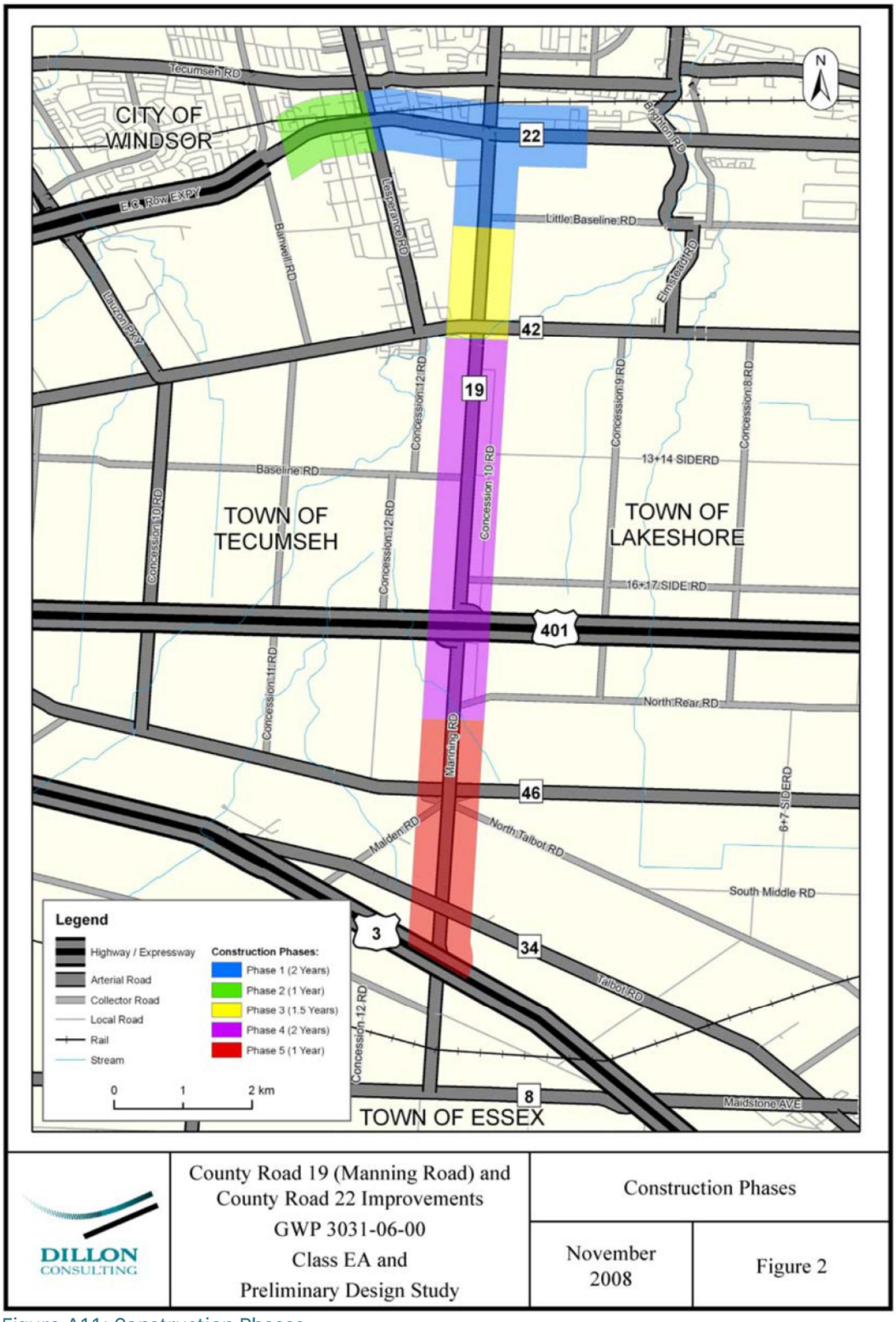


Figure A11: Construction Phases

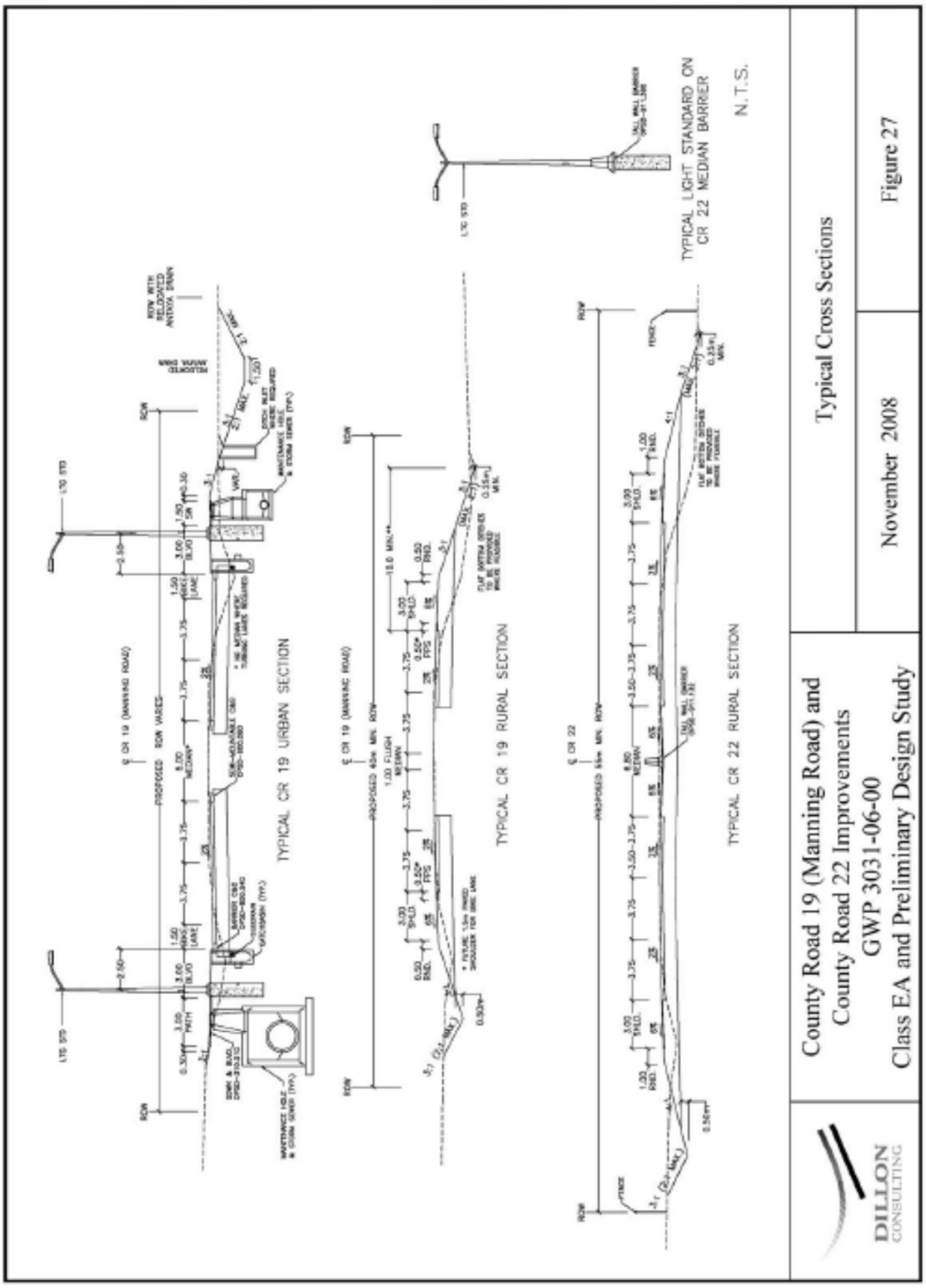


Figure A12: County Road 19 & County Road 22 Typical Cross Sections

8.3 County Road 43 / Banwell Road from the CPR Tracks (City Limits) to South of County Road 42 Class Environmental Assessment Study (2009)

This Class Environmental Assessment Study was completed to assess various improvements to County Road 43 / Banwell Road between the Canadian Pacific Railway tracks to south of County Road 42. Operating deficiencies are identified resulting from anticipated growth within the Town of Tecumseh and the eastern part of the City of Windsor.

The study confirms the need to widen County Road 43 / Banwell Road to 4 lanes, as previously stated in the Essex Windsor Regional Transportation Master Plan. The recommended widening is to occur to the east side of Banwell Road to minimize impacts on properties along the west side.

Major recommendations from this study which are pertinent to the TTMP are as follows:

- Widen County Road 43 to 4-lanes, towards the east side of the roadway (to minimize impacts on properties along the west side). Construct wider (3.65m) lanes and a centre median to better accommodate a variety of vehicles. Install a 1.5m sidewalk and 4m multi-use trail from 11th Concession to the Canadian Pacific Railway tracks. Implement a speed limit of 60km/h. The proposed cross-section is shown in *Figure A13*.
- Eliminate the offset intersections of County Road 43 / Banwell Road / County Road 42 and 11th Concession by realigning both roads to the west.
- Construct two additional intersections between County Road 42 and the Canadian Pacific Railway tracks to allow for future development access.
- Widen 11th Concession from the Canadian Pacific Railway tracks to just south of County Road 42, to a two-lane rural section with 2.5m partially paved shoulders. Construct at least one new intersection along this section.

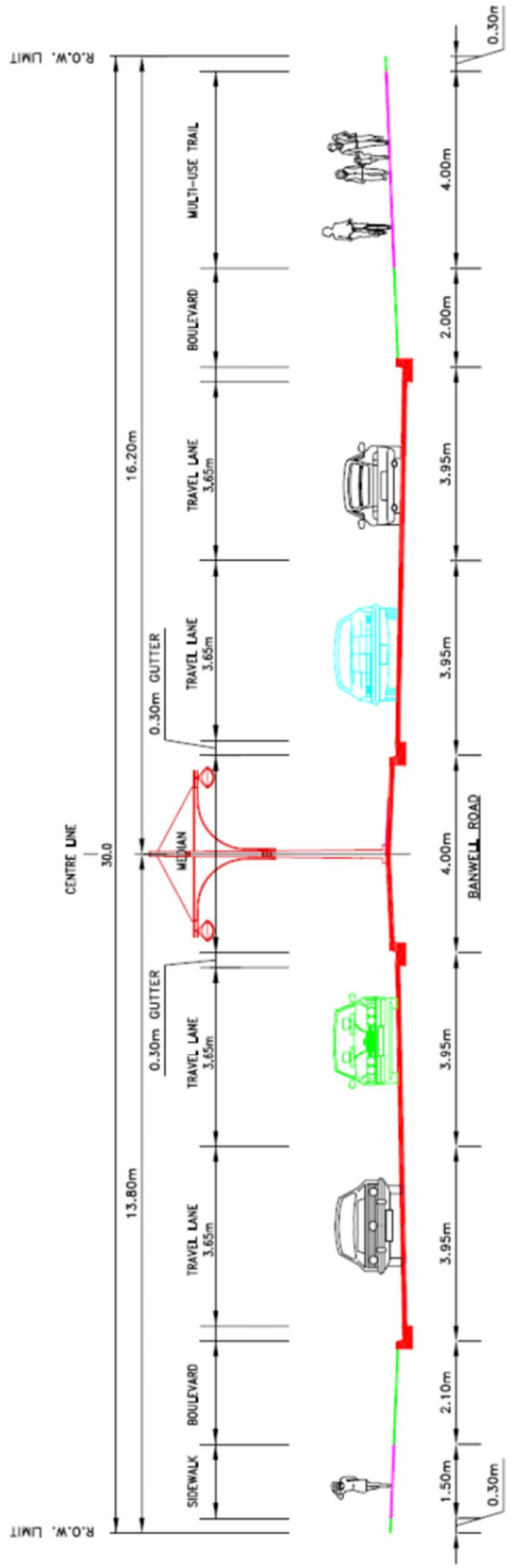


Figure A13: Recommended Cross-Section for County Road 43 / Banwell Road

8.4 Lauzon Parkway Improvements Class Environmental Assessment Study (2014)

This Schedule 'C' Class Environmental Assessment Study was completed to assess the following future requirements for Lauzon Parkway improvements:

- Various improvements to Lauzon Parkway from E.C. Row Expressway to County Road 42;
- Lauzon Parkway extension to Highway 401;
- Lauzon Parkway further extension to Highway 3;
- Various improvements to County Road 42 from Walker Road to the City/County boundary, and from the City/County boundary to County Road 25; and
- The future east-west- arterial from Walker Road to 10th Concession Road / County Road 17.

Major arterials around the study area are operating at or near capacity, and there are limited existing east-west and north-south links. Future growth will significantly challenge the transportation network's ability to provide access. Several improvements are suggested in this study to address these challenges, including extending the Lauzon Parkway to Highway 3, creating a new interchange with Highway 401, and removing the existing "jog" in the Parkway at County Road 42.

Major findings and recommendations from the study are as follows:

- The Lauzon Parkway should be extended to Highway 3, and a new interchange should be constructed at Highway 401. The alignment of the Lauzon Parkway should be the same as the existing alignment from the E.C. Row Expressway to the Little River, and south to Highway 401 should parallel the Little River along the rear lots of properties facing County Road 17 (minimizing re-alignment of the river). South of Highway 401, the Parkway should follow mid-lot lines to County Road 46 and the existing Sexton Sideroad to Highway 3.
- A new east-west arterial is required within the future Sandwich South community, from Walker Road to County Road 17. This was identified in the Windsor Annexed Area Master Plan Study (2006) and defined further in the East Pelton Secondary Plan (2009).
- Twelve new at-grade intersections are recommended for major east-west roadways – E.C. Row Expressway (eastbound and westbound on-ramps), Highway 401 (eastbound and westbound on-ramps), Forest Glade Drive, Twin Oaks Drive, Service Road B/Airport Access, County Road 42, Baseline Road, County Road 46, Highway 3, and a new east-west arterial.
- County Road 42 should be widened to 4 lanes from Walker Road to County Road 19, and from County Road 19 to County Road 25. Improvements to 29 intersections along County Road 42 are also required.
- The County Road 43 (Banwell Road) Class EA Study (2009) recommended widening County Road 43 from 2 to 4 lanes from south of the County Road Rail line to south of County Road 42. The widening of County Roads 42 and 43 are both recommended for 2021. This study also recommended 2-lane roundabouts at all major intersections with County Road 42. It is unlikely that both County Road 42 and County Road 43 will be widened simultaneously, and therefore, if the widening of County Road 42 occurs first, it should include construction of the 2-lane roundabouts and associated realignment of County Road 43.

- The County Road 19 (Manning Road) Class EA Study (2009) recommended widening County Road 19 from 2 to 4 lanes from Highway 3 to the VIA Rail Line. It also recommended converting the section south of County Road 42 to County Road 22 from a rural to an urban cross-section, and improving the signalized intersection at County Road 42. The widening of County Roads 19 and 42 are both recommended for 2021. This study also recommended 2-lane roundabouts at all major intersections with County Road 42. It is unlikely that improvements to County Road 19 and County Road 42 will be implemented simultaneously, and therefore, if the widening of County Road 42 occurs first, it should include construction of the 2-lane roundabouts. *Figure A14* shows the proposed implementation phasing for improvements to County Road 42 and the Lauzon Parkway.
- An active transportation network is proposed to connect facilities from the Bicycle Use Master Plan (BUMP, 2001) and the County Wide Active Transportation Study (CWATS, 2012). The proposed network is shown in *Figure A15*.

This study followed a joint Municipal Class Environmental Assessment planning process with the Sandwich South Secondary Plan, which outlined future land use, transportation, and utilties, and the development phasing of the area. The plan was not approved by Council. The land use shown in *Figure A15* is taken from the Sandwich South Secondary Plan.

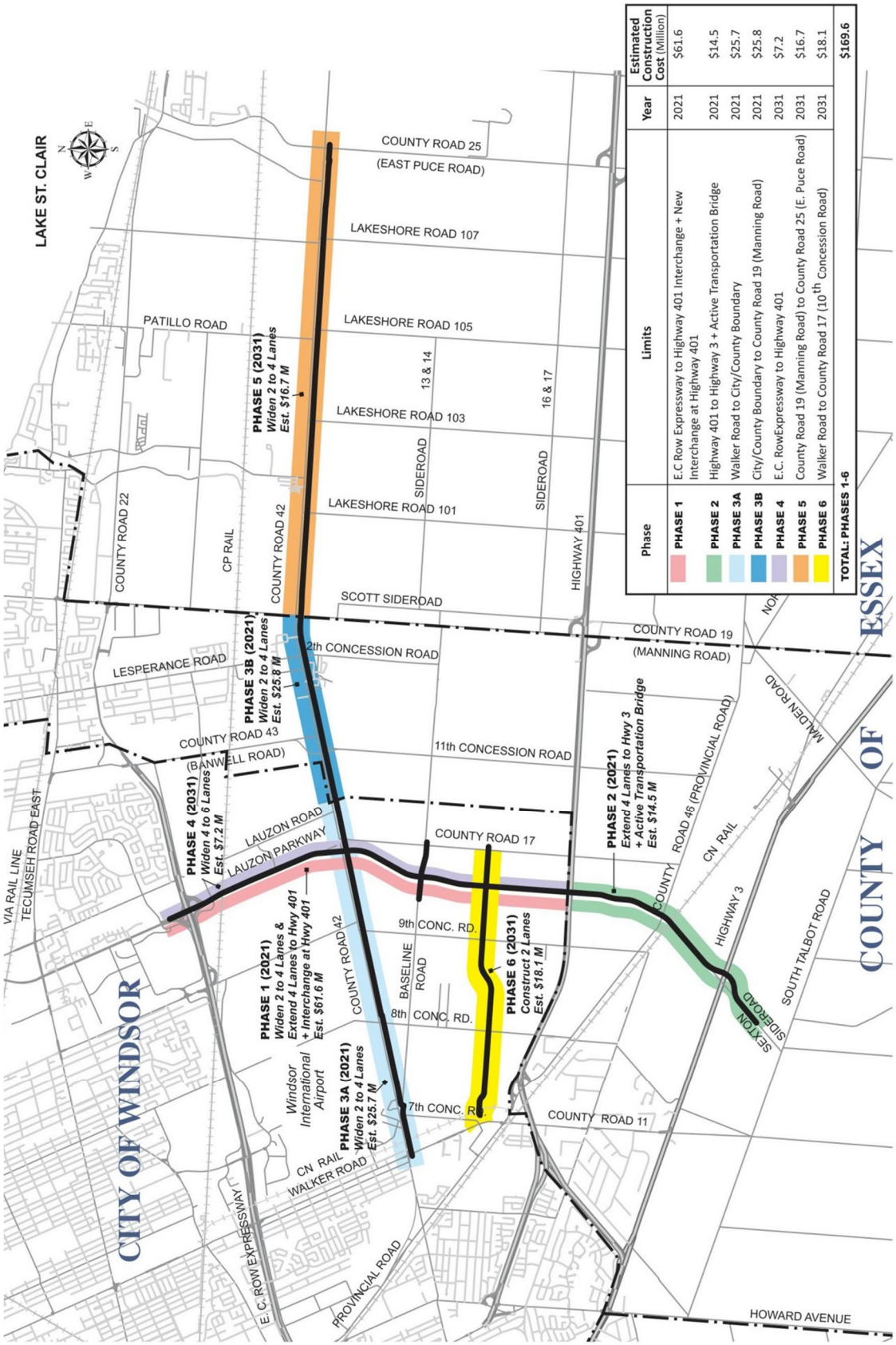


Figure A14: Proposed Implementation Phases of County Road 42 and Lauzon Parkway Improvements

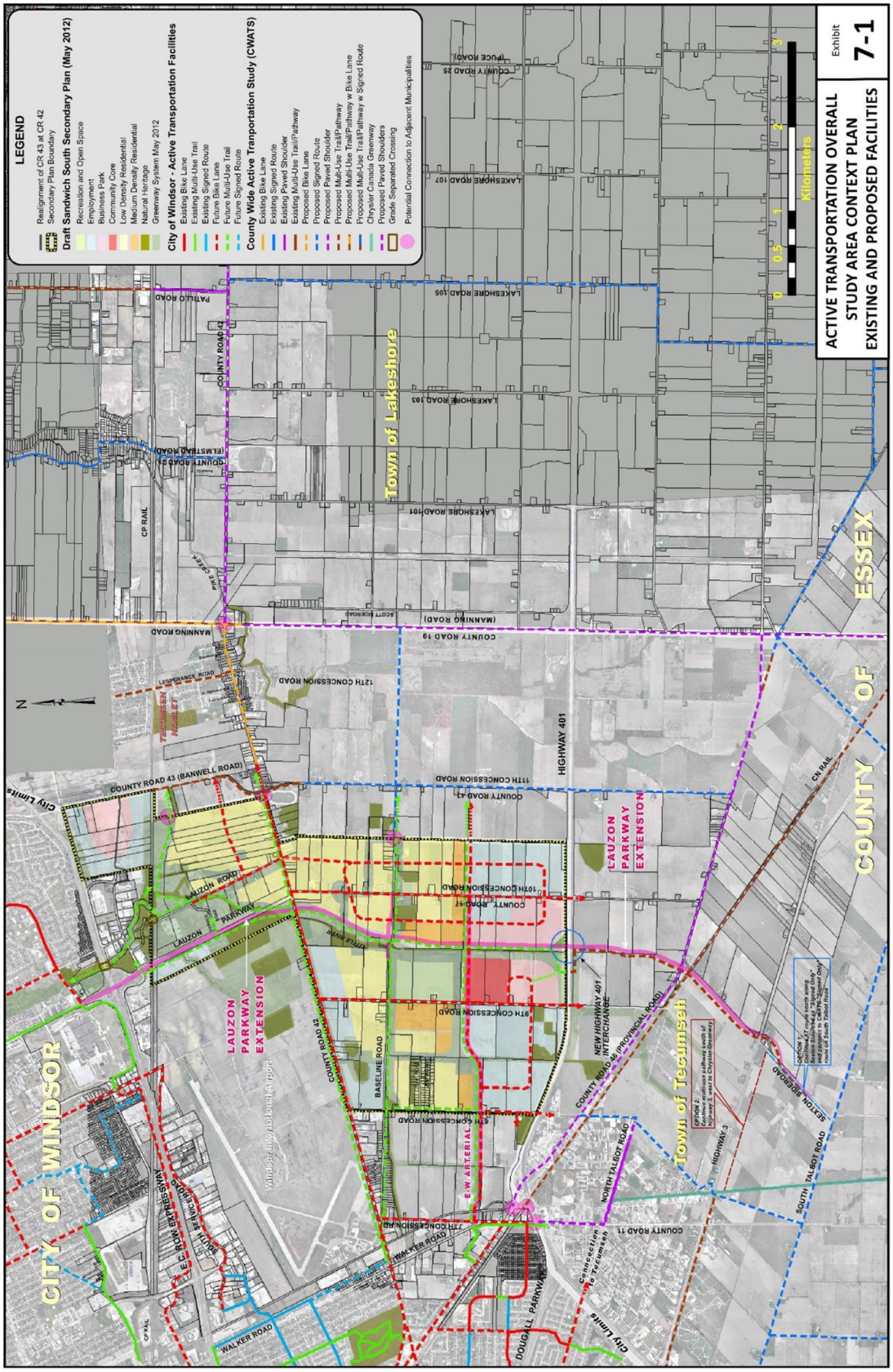


Figure A15: Proposed Cycling Network (Merged from BUMP and CWATS), Sandwich South Secondary Plan Land Use Map

8.5 City of Windsor Banwell Road Class Environmental Assessment Study, Corridor Assessment Draft Report (2015)

The Banwell Road Class Environmental Assessment obtained draft status in 2011. The intent of the study is to investigate capacity, safety, and operational improvements to Banwell Road between Tecumseh Road East and the Canadian Pacific Railway tracks.

The Corridor Assessment Draft Report updates the traffic study for the Environmental Assessment and recommended road configuration. The recommended intersections for Banwell Road north and south of the E.C. Row Expressway are shown in *Figure A16* and *Figure A17*.

Key findings from the report pertinent to the TTMP are:

- An analysis of 2014 traffic conditions determined that several intersections were operating with poor levels of service, especially the intersection at the E.C. Row Expressway. Several movements operate at level of service F. Based on these two findings, there is a need for road capacity improvements in the short term.
- Banwell Road should be widened to four lanes north of the E.C. Row Expressway, with signalized intersections at Tecumseh Road East and Palmetto Street. Instead of signalized intersections, a roundabout should be installed at Mulberry Drive/Wildwood Drive to provide superior traffic operations.
- A new signalized intersection directly connecting the E.C. Row Expressway westbound off-ramp to Banwell Road (adjacent to the northwest on-ramp) would improve traffic operations. A modified parclo A-4 interchange should be used, with a fourth leg to the eastbound off-ramp (south ramp intersection) providing one-way only movement to the east. This should be implemented immediately if funding is available. This differs from the recommendation in the 2011 draft EA to connect the off-ramp to Wildwood Drive and disconnect Mulberry Drive from Banwell Road. This would have created a large parcel of undevelopable land, and would have inconvenienced local residents.
- Banwell Road should be widened to six lanes south of the E.C. Row Expressway, and two signalized intersections should be created between the E.C. Row Expressway and the Canadian Pacific Railway corridor.

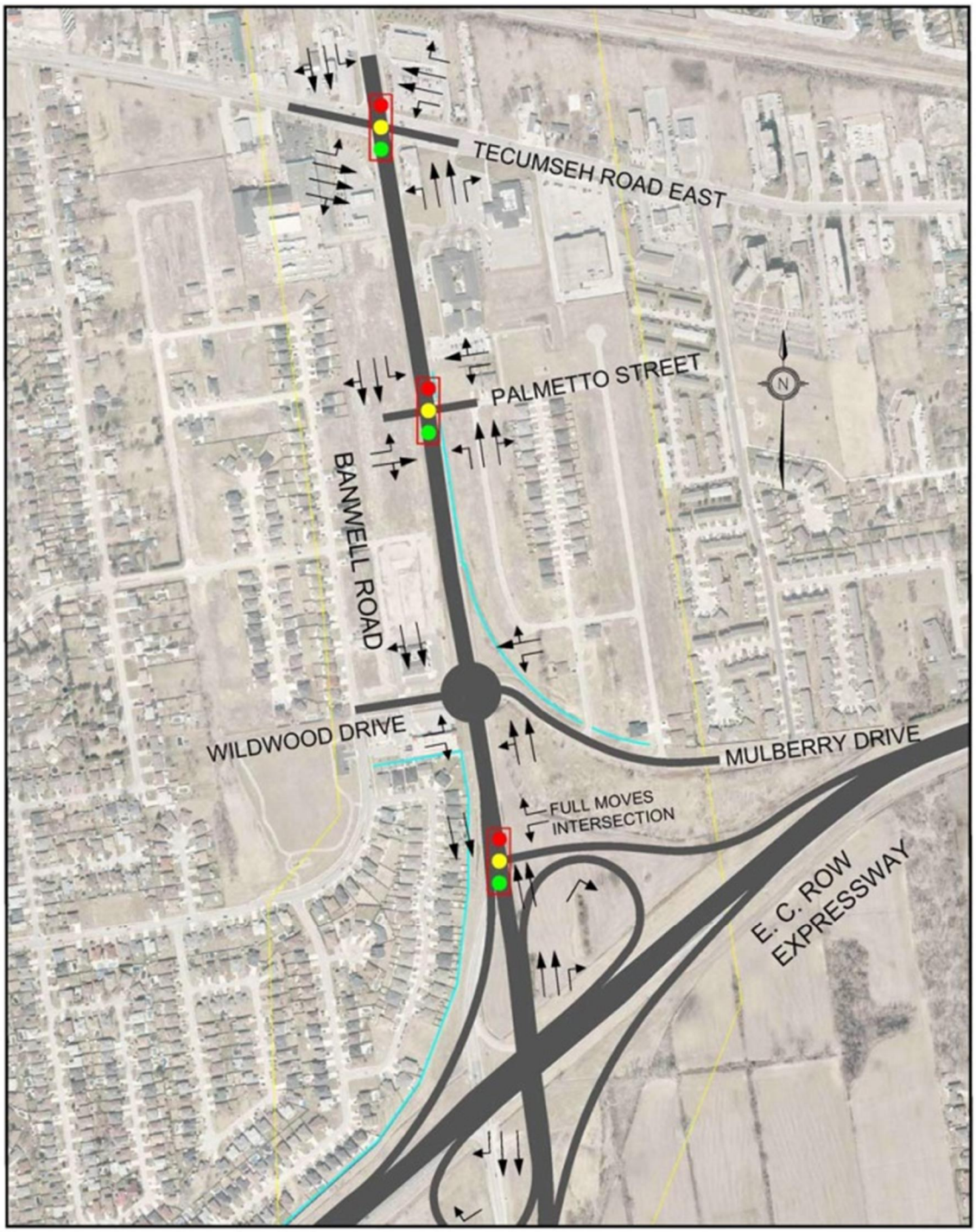


Figure A16: Recommended Banwell Road Intersections North of the E.C. Row Expressway

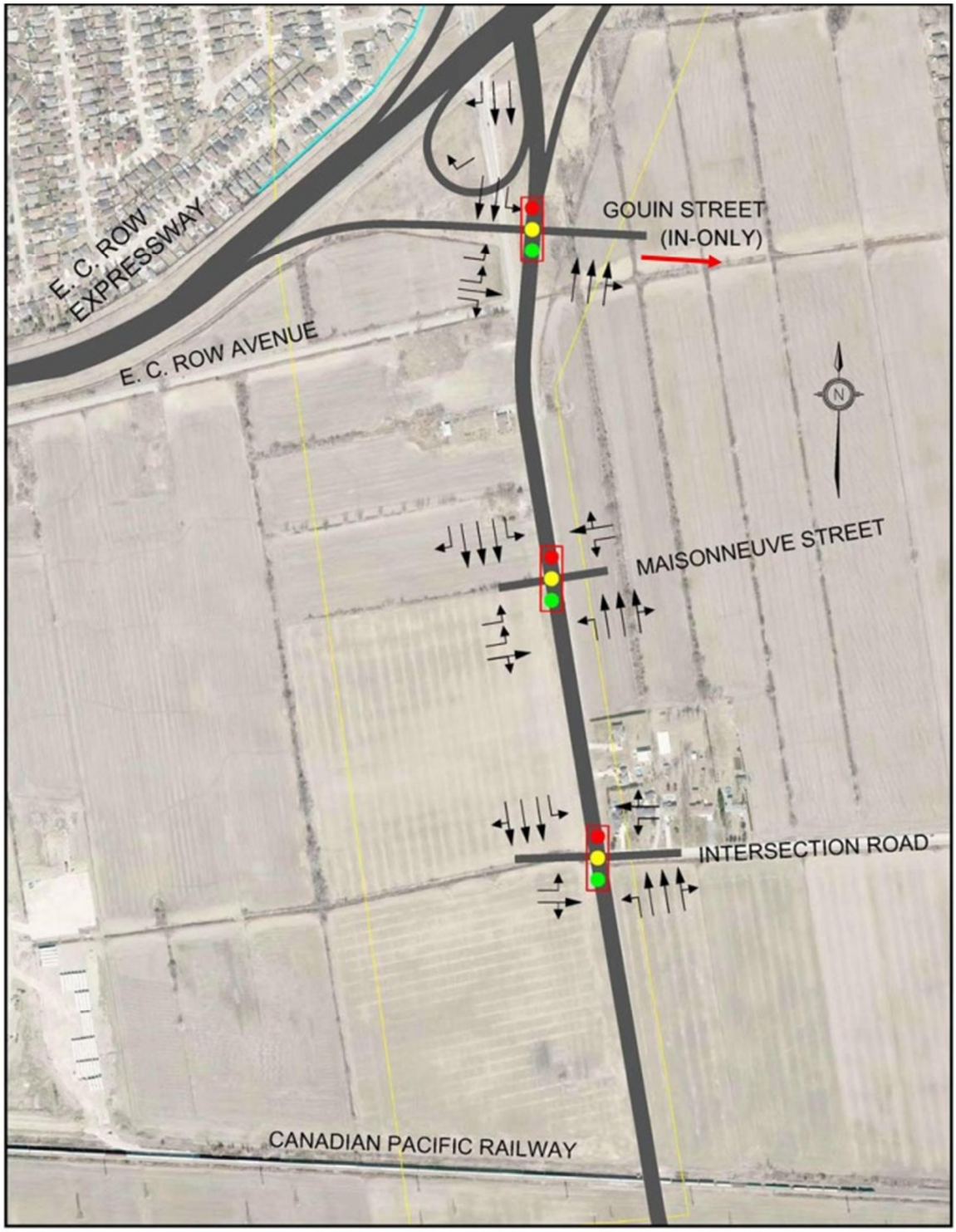


Figure A17: Recommended Banwell Road Intersections South of the E.C. Row Expressway

8.6 City of Windsor Banwell Road Class Environmental Assessment Study, Public Information Centre #4 Display Boards (2015)

The public open house materials reported on the Class Environmental Assessment for Banwell Road from Tecumseh Road in the north to the CPR tracks south of Intersection Road in the south. This project assessed the transportation infrastructure improvements required in the Banwell Road corridor to provide and adequately accommodate traffic growth for over a 20-year horizon. The corridor was recognized in the Essex-Windsor Regional TMP as exhibiting capacity deficiency by 2021.

The following recommendations were presented:

- Widen Banwell Road from Tecumseh Road East to the Canadian Pacific Railway Tracks, from 2 lanes to 4 lanes (3.65m per lane). The new roadway will be urbanized throughout the corridor, with street lighting and a 4m raised or flush median. It will include a standard curb and gutter on both sides, and a 1.5m sidewalk on one side. Between Mulberry Drive and Gouin Street, a 4m multi-use trail will be included.
- Protect for potential widening to 6 lanes south of E.C. Row Expressway to the Canadian Pacific Railway tracks, and for a potential future grade separation at the Canadian Pacific Railway tracks.
- Install a parclo A-4 interchange at Banwell Road and E.C. Row Expressway.
- Signalize Banwell Road at:
    - Off-ramp terminals at the E.C. Row Expressway interchange;
    - Palmetto Street;
    - Maisonneuve Street; and
    - Intersection Road.
- Convert the existing intersection at Wildwood Drive/Mulberry Drive and Banwell Road into a roundabout.

These recommendations are consistent with those in the Corridor Assessment Draft Report also commissioned by the City of Windsor (2015, discussed in Section 8.5).

8.7 Environmental Assessments Summary

The Environmental Assessments discussed above provide the below recommendations which should be considered in the development of the TTMP. Overall, several roadways are operating at a poor level of service, and there is a need for road capacity improvements in the short term.

Proposed improvements to the Lauzon Parkway include:

- An extension to Highway 3, and a new interchange at Highway 401. The alignment should be the same as the existing alignment from the E.C. Row Expressway to the Little River, and south to Highway 401 should parallel the Little River along the rear lots of properties facing County Road 17 (to minimize re-alignment of the river).
- Twelve new at-grade intersections at major east-west roadways.

Proposed improvements to County Road 42 include:

- Widen to 4 lanes from Walker Road to County Road 19, and from County Road 19 to County Road 25.
- Improvements to 29 intersections.

Proposed improvements to County Road 43 / Banwell Road, as proposed in the City of Windsor Class Environmental Assessment, include:

- Widen to 4 lanes, and construct wider (3.65m) lanes and a centre median to better accommodate a variety of vehicles. Install a 1.5m sidewalk and 4m multi-use trail from 11th Concession to the Canadian Pacific Railway tracks. Implement a speed limit of 60km/h.
- Eliminate the offset intersections of County Road 43 / Banwell Road / County Road 42 and 11th Concession by realigning both roads to the west.
- Construct two additional intersections between County Road 42 and the Canadian Pacific Railway tracks to allow for future development access.
- Widen to 4 lanes north of the E.C. Row Expressway.
- Provide signalized intersections at Tecumseh Road East and Palmetto Street.
- Install a roundabout at Mulberry Drive/Wildwood Drive to provide superior traffic operations.
- Install a modified parclo A-4 interchange directly connecting the E.C. Row Expressway westbound off-ramp to Banwell Road (adjacent to the northwest on-ramp). Include a fourth leg to the eastbound off-ramp (south ramp intersection) to provide one-way only movement to the east. This should be implemented immediately if funding is available.
- Create two signalized intersections between the E.C. Row Expressway and the Canadian Pacific Railway corridor.
- Protect land to widen to 6 lanes south of the E.C. Row Expressway in the future, and to provide a grade separation at the Canadian Pacific Railway corridor.

Proposed improvements to 11th Concession include:

- Widen 11th Concession from the Canadian Pacific Railway tracks to just south of County Road 42, to a two-lane rural section with 2.5m partially paved shoulders. Construct at least one new intersection along this section.

Additionally, an active transportation network should connect facilities from the Bicycle Use Master Plan (BUMP, 2001) and the County Wide Active Transportation Study (CWATS, 2012).

9.0 Secondary Plans

9.1 Maidstone Hamlet Secondary Plan, Transportation Study (2003)

This study provides the transportation analysis for the completion of a secondary plan for the Hamlet of Maidstone, which would become a component of the Town of Tecumseh's Official Plan. The study area is the Hamlet of Maidstone, which is bounded by County Road 46 on the north, County Road 19 on the east and Highway 3 on the south. Hamlet access from these roads is provided by County Road 34 (Talbot Road) and Malden Road.

This transportation analysis with projections to 2023 made the following conclusions and recommendations:

- County Road 46 west of County Road 19 should be widened to four lanes as Maidstone Hamlet is developed.
- Malden Road and Talbot Road within the Hamlet will not require widening.
- Improvements to County Road 19 and County Road 46 should be implemented at an appropriate time to minimize unnecessary congestion (as per County Road 19 Corridor Study).
- The proposed collector street system within the Hamlet (operating with one lane in each direction, centered about Malden Road) in conjunction with the connections to the arterial will provide an adequate level of service.
- All intersections within the Hamlet, existing and proposed can operate with stop control on the minor approaches.
- The recommended road network for Maidstone Hamlet is included in the Town of Sandwich South Official Plan, and shown in *Figure A18*.

Figure A18: Maidstone Hamlet Roads Plan

9.2 Wallace Woods Secondary Planning Area, Transportation Study (2007)

This study examines the transportation impacts of developing a 1,150 acre parcel of land in the Wallace Woods area. The parcel is bounded by the CN rail lines to the north, West Puce River Road to the east, County Road 42 to the south and Patillo Road to the west. The proposed development activities within this parcel include residential, commercial, office, restaurant and woodlot/protected green areas. The impacts on the surrounding road network in the Town of Lakeshore, east of Belle River are assessed.

Major recommendations include:

- The intersection of County Road 22 / Patillo Road currently operates at capacity during both the AM and PM peak hours.
- To accommodate the future trips generated by the Wallace Woods development, Silver Creek Drive, Little Baseline Road, Markham Road and potentially Oakwood Drive can be extended to the service area.
- Due to the close proximity of intersections, the intersections at Silver Creek Drive, Little Baseline Road and Markham Road would operate as roundabouts and Wallace Line would operate as a four-lane arterial roadway.

9.3 Tecumseh Hamlet Secondary Plan, Transportation Study (2015)

This study examines potential transportation impacts of the Tecumseh Hamlet development, and potential transportation infrastructure required to meet future travel demand. The Tecumseh Hamlet area is currently vacant, as is the parcel of land east of Banwell Road between County Road 22 and County Road 42. Additional smaller vacant parcels are located south of the Canadian Pacific Railway corridor between Lesperance Road and Manning Road.

The proposed development is expected to accommodate approximately 3100 residential units and 413 000 square feet of commercial space (most of which would be concentrated to the northwest, near the proposed interchange at County Road 22 and Banwell Road). The study also considered additional traffic from the Manning Road Secondary Plan Area, which spans from Lesperance Road to Manning Road, between County Road 22 and the Canadian Pacific Railway corridor. This area is anticipated to accommodate an additional 755 residential units and a total of 178 000 square feet of commercial space.

The study outlined anticipated traffic conditions at a 20-year horizon, considering general traffic growth as well as planned developments and infrastructure modifications. The study proposed potential interim development levels to accommodate phased improvements on County Road 22, identified measures to encourage active transportation and calm traffic. The study also provided recommended road classifications and right-of-way implications.

Major recommendations and conclusions include:

- The primary traffic constraint in the study area is the County Road 22 corridor. This major arterial is the primary east-west connection from Lakeshore and Tecumseh to the E.C. Row Expressway and Windsor, yet the Banwell Road intersection is the first signalized intersection encountered when traveling eastbound on the Expressway. County Road 22 is at or near capacity in the peak commuting direction – westbound during the AM peak hour, and eastbound during the PM peak hour (including eastbound left turns at Banwell Road, Lesperance Road, and Manning Road). This overcapacity condition impacts side streets, many of which operate at poor levels of service. These findings are consistent with numerous other studies undertaken over the past ten years.
- At full build-out, the Tecumseh Hamlet and Manning Road Secondary Plan Areas are expected to generate a total of 2880 net new trips during the AM peak hour (830 inbound, 2050 outbound), and 4450 net new trips during the PM peak hour (2660 inbound and 1790 outbound).
- The land use plans include a block and local street pattern mostly in a grid configuration, intended to be compatible with the existing lot and street pattern in adjacent residential areas, and should provide multiple route options and direct travel paths for walking and cycling.
- A third access point to Banwell Road opposite the proposed off-ramp from the E.C. Row Expressway is recommended to accommodate the PM peak demand.
- Assuming implementation of the proposed interchanges and grade separations along County Road 22 and the third access point to Banwell Road, future traffic operations are expected to be reasonable with available surplus capacity. The only exception is the roundabout proposed at Manning Road and County Road 42 which is expected to be operating at or near capacity westbound during the AM peak hour, and eastbound and northbound during the PM peak hour.
- Westlake Drive serves as an arterial function westbound and a collector function eastbound, and roadway designs and operational policies should recognize this dual function.
- The Town should assess opportunities to restructure transit service in a way that is integrated across both sides of County Road 22 and allows routes to serve multiple travel patterns and trip purposes, instead of adding new routes to serve the Tecumseh Hamlet area. All arterial and collector roads within the Hamlet and Manning Road Secondary Plan areas should be considered for transit service.

This study has not yet been adopted by the Town of Tecumseh.

9.4 Tecumseh Road Main Street Community Improvement Plan (2015)

This report reviews existing land uses and proposes redevelopment potential within the Main Street area (Tecumseh Road, from the Tecumseh boundary in the west to the railway crossing in the east). The report defines a vision and outlines urban design policies for future development, guiding future revitalization.

Pertinent findings and recommendations from the report include:

- The Main Street area is in transition, and there are opportunities to intensify and create additional residential, retail, and public spaces in line with the proposed policies in the new Official Plan.
- The revitalization of the Main Street area depends largely on the revitalization of the roadway, currently a four-lane arterial roadway and key east-west commuter thoroughfare. The speed and flow of traffic must change to allow the desired revitalization to succeed.
- Tecumseh Road should be redeveloped with a new walkable and pedestrian-friendly identity, fewer driving lanes, on-street parking and parking bays, enhanced landscaping and street furniture, and cycling facilities. This includes tightening intersections to create shorter crossing distances, clearly framing open spaces and demarcating pedestrian priority zones.
- A central pedestrian node should be developed as a communal gathering place, linked by a north-south pedestrian spine.

9.5 Secondary Plans Summary

The Secondary Plans discussed above provide the following key points to be incorporated into the TTMP:

- Recommendations should be combined from the Manning Road Secondary Plan Area, County Road 22 Environmental Assessment, and County Road 19 Environmental Assessment to form the basis of future road improvements required for the Manning Road Secondary Plan Area.
- Numerous studies over the past ten years have noted that County Road 22 is operating over capacity. This overcapacity condition impacts side streets, many of which operate at poor levels of service. This major arterial is the primary east-west connection from Lakeshore and Tecumseh to the E.C. Row Expressway and Windsor, yet the Banwell Road intersection is the first signalized intersection encountered when traveling eastbound on the Expressway. County Road 22 is at or near capacity in the peak commuting direction – westbound during the AM peak hour, and eastbound during the PM peak hour (including eastbound left turns at Banwell Road, Lesperance Road, and Manning Road).
- The Town should assess opportunities to restructure transit service in a way that is integrated across both sides of County Road 22 and allows routes to serve multiple travel patterns and trip purposes. All arterial and collector roads within the Tecumseh Hamlet and Manning Road Secondary Plan areas should be considered for transit service.

- The revitalization of the Tecumseh Road Main Street area depends largely on the revitalization of the roadway, which is currently a four-lane arterial roadway and key east-west commuter thoroughfare. The speed and flow of traffic must change to allow the desired revitalization to succeed.
- Tecumseh Road should be redeveloped with a new pedestrian-friendly identity, fewer driving lanes, on-street parking and parking bays, enhanced landscaping and street furniture, and cycling facilities. This includes tightening intersections to create shorter crossing distances, clearly framing open spaces and demarcating pedestrian priority zones.
- A central pedestrian node should be developed as a communal gathering place, linked by a north-south pedestrian spine.

10.0 Traffic Studies

10.1 County of Essex County Road 42 Corridor Protection Strategy (2006)

This corridor protection strategy was necessitated as growth north of Highway 401 along east-west facilities (such as County Road 22 and County Road 42) has occurred and access to the road network has increased without formal access management guidelines. This has compromised the operational capacity of County Road 42. This strategy was designed to support the identified functions of County Roads 42:

- A strategic east-west commuter and inter-regional corridor.
- A truck route to service adjacent land uses.
- An emergency and routine detour route for Highway 401 and County Road 22.
- An access facility to a limited number of private homes and businesses.

The guideline for County Road 42 was developed with the following objectives:

- Provide a safe operational environment for all road users.
- Allow motorists to operate vehicles with fewer delays and less fuel consumption/emissions.
- Coordinate longer-term land use and transportation decisions (while providing reasonable access to properties in the interim).
- Maintain the roadway's functional integrity and efficiency.

The following principles were identified for the corridor protection strategy for County Road 42:

- Limit direct access.
- Promote intersection hierarchy.
- Preserve the functional area of the major intersections.
- Locate signals to favour through movements.
- Limit the number of conflict points and separate multi-threat locations.

The report comments that the EWRTMP identifies a need to widen County Road 42 from two basic lanes to an ultimate cross-section of four lanes. The report predicts that the cross-section of County Road 42 from Manning Road (County Road 19) to the west limit of the City will be urban, with the remainder being rural for the foreseeable future.

For capacity and safety, it is expected that left turn lanes will be provided at the intersections of County Road 42 and all municipal roads as well as all major private accesses. Right turn lanes may be required at some of these intersections.

The design will ultimately include a combination of flush medians, raised medians and two-way-centre-left-turn lanes as required within the urban areas, and a 1.0 metre raised median in rural areas.
The guidelines within the report include proposed standards for access layout, design, and varying types of intersection control.

10.2 Tecumseh Road Main Street Community Improvement Plan Traffic Analysis (2016)

The Tecumseh Road Main Street Community Improvement Plan Traffic Analysis was completed to assess the traffic impacts of the proposed Tecumseh Community Improvement Plan concept. Based on the Tecumseh Road CIP approved by Council in January 2016, this traffic study was completed to assess the traffic impact of reconfiguring Tecumseh Road from 4 lanes to two lanes, with curb lanes dedicated to a mixture of on-street parking and landscaping. This analysis built upon the previous review completed in September 2012 as part of the initial planning for the Tecumseh Road CIP by considering updated traffic volume data, traffic projections and analysis of alternative intersection configurations, including different turn lane storage lengths.

The following are the key points from this traffic study as related to this TTMP:

- The capacity of the Tecumseh Road corridor is governed by the intersection at Lesperance Road. A range of alternatives were analyzed that considered a varying balance between maximizing traffic service (largest roadway footprint) and maximizing the ability to achieve other non-traffic design objectives (smallest roadway footprint). The alternatives progressively increased the constraints to traffic capacity, particularly for the eastbound movement during the afternoon peak hour. Acknowledging the multiple roles of this corridor and the priority required on factors other than just traffic service, it was generally accepted that the roadway could operate over capacity during part of the day.
    - The recommended intersection configuration consists of a reduced eastbound left turn storage of 45 m, while maintaining the existing right turn lanes on the northbound and southbound approaches.
    - Mitigating measures would include:
        - Traffic signal optimization; and
        - Adjustment of traffic patterns, including diversion of traffic to other routes:
            - 105 vehicles diverted in the short term; and
            - 180 vehicles diverted in the longer-term.
- Transition from 4 to 2 lanes at the westerly limits of the CIP by terminiating the curb lane at Southfield Drive as a dedicated right turn lane.
- Dedicated left turn lanes on Tecumseh Road at all signalized intersections in the corridor.
- Provide setback loops at the Tecumseh Road/Lesperance Road intersection.
- Meter the flow of eastbound traffic during the PM peak hour by utilizing the signals at Shawnee Road (and/or Southfield Drive).
- Maintain 90 second traffic signal cycle lengths along the corridor to minimize queue lengths, maximize the frequency of gaps, and reduce delays for pedestrian crossings.

10.3 Traffic Studies Summary

The above traffic and transportation studies provide the key points below as input to the TTMP:

- County Road 22 west of Manning Road is currently operating beyond theoretical capacity. Long-term intersection improvements may include grade-separation of the Manning Road / County Road 22 intersection to operate as an interchange (implementation may remove current access on Manning Road).
- To protect the function of County Road 42, limit direct access, promote intersection hierarchy, preserve the functional area of major intersections, locate signals to favour through movements, and limit the number of conflict points and separate multi-threat locations.
- The County Road 19 (Manning Road) and County Road 22 Environmental Assessment (discussed in Section 8.2County Road 19 (Manning Road) & County Road 22 Improvements Class Environmental Assessment and Preliminary Design (2008)) proposed modifications which will have implications on traffic volumes in the Community Improvement Plan Area.
    - On Banwell Road, a partial cloverleaf interchange was proposed (in the Banwell Road Environmental Assessment, discussed in Section 8.5 and 8.6).
    - On Lesperance Road, a grade separation was proposed with partial access.
    - On Manning Road, a "point diamond" or "SPUI" type interchange was proposed.
    - It is anticipated that these changes will have the following impacts in the Community Improvement Plan Area:
        - Some through trips currently on Tecumseh Road may be accommodated by additional through capacity on County Road 22.
        - Some Windsor-Tecumseh trips will shift to use County Road 22 rather than Tecumseh Road if the PM peak hour eastbound left turn capacity constraint from County Road 22 is removed. This may also promote increased northbound demand, as some trips towards east Windsor/west Tecumseh may bypass queues at county Road 22 and Banwell Road by turning left at Lesperance Road.
        - Traffic must be reassigned due to the removal of east-oriented movements at Lesperance Road and County Road 22.
    - The Lesperance Road / County Road 22 grade separation may slightly reduce traffic demand on Tecumseh Road.
- It has been established through the Tecumseh Road CIP study that the Tecumseh Road corridor should serve multiple roles, with a balance between the multiple factors that extend beyond just traffic service. From a corridor capacity perspective, the Lesperance Road/Tecumseh road intersection governs the level of service that is available, supporting a reduction from 4 lanes to 2 lanes within this corridor. Based on the traffic analysis, a recommended intersection reconfiguration was identified, with the understanding that this corridor would operate over capacity during part of the day. It is expected that approximately 105 to 180 vehicles would alter their traffic patterns, diverting from the

Tecumseh Road corridor to nearby parallel corridors including County Road 22, Riverside Drive, Wyandotte Street/Little River Boulevard, and McNorton Street.

11.0 Update on the Detroit River International Crossing and Rt. Hon. Herb Gray Parkway

The Detroit River International Crossing and Rt. Hon. Herb Gray Parkway will connect Windsor to Detroit, and Highway 401 to the United States Interstate highway system (*Figure A19* shows a schematic of the proposed Parkway, bridge, and associated greenspace). A coordinated environmental assessment process was undertaken to meet the requirements of legislation under Transport Canada, the Federal Highway Administration (United States Department of Transportation), the Ontario Ministry of Transportation, and the Michigan Department of Transportation. The project received approval to proceed in 2004.

The project includes:

- A new urban six-lane freeway, and parallel four-lane service road network;
- A new six-lane bridge connecting Windsor to Detroit;
- Border inspection and toll facilities on the Canadian side, and a plaza with border inspection on the United States side;
- Feeder road and an interchange with I-75 in Detroit;
- Full illumination and stormwater management facilities;
- Advanced traffic management systems;
- 11 tunnels;
- Connections to communities;
- Over 300 acres of greenspace and 20km of recreational trails;
- Noise mitigation measures;
- Extensive landscaping; and
- Special measures and linkages to protect wildlife.

The Parkway is substantially complete, with full completion anticipated in spring 2016. The new Detroit River International Crossing is scheduled for completion in 2020. The Windsor-Detroit Border Authority (the Crown corporation overseeing construction of the bridge) held its first meetings in summer 2015. It is anticipated that the majority of impacts to the transportation network will be due to the new cross-border connection, and these impacts can therefore be expected to arise after construction of the bridge reaches completion in 2020.

However, impacts due to the Rt. Hon. Herb Gray Parkway are evident already. Notably, there are now two interchanges serving the Tecumseh and Oldcastle area where there were previously none. The Parkway connects to Highway 401, Talbot Road / Highway 3, County Road 9 (Howard Avenue Diversion), and the E.C. Row Expressway.

The new connection to the United States via the Detroit River International Crossing and Rt. Hon. Herb Gray Parkway will result in increased traffic through the County of Essex. Some of this traffic may enter Tecumseh. Specifically, increased traffic may be experienced heading east on the E.C. Row Expressway and north on Highway 401, as these are key interchanges along the Parkway.

Additionally, the connection will improve goods movement across the Canada-United States border, and therefore the roads in the County of Essex and Tecumseh will likely experience a higher amount of truck traffic than currently.

The new cross-border connection and Parkway will impact traffic volumes and patterns across the County of Essex, and therefore long range transportation system planning must include consideration of the Parkway facility and new border crossing.

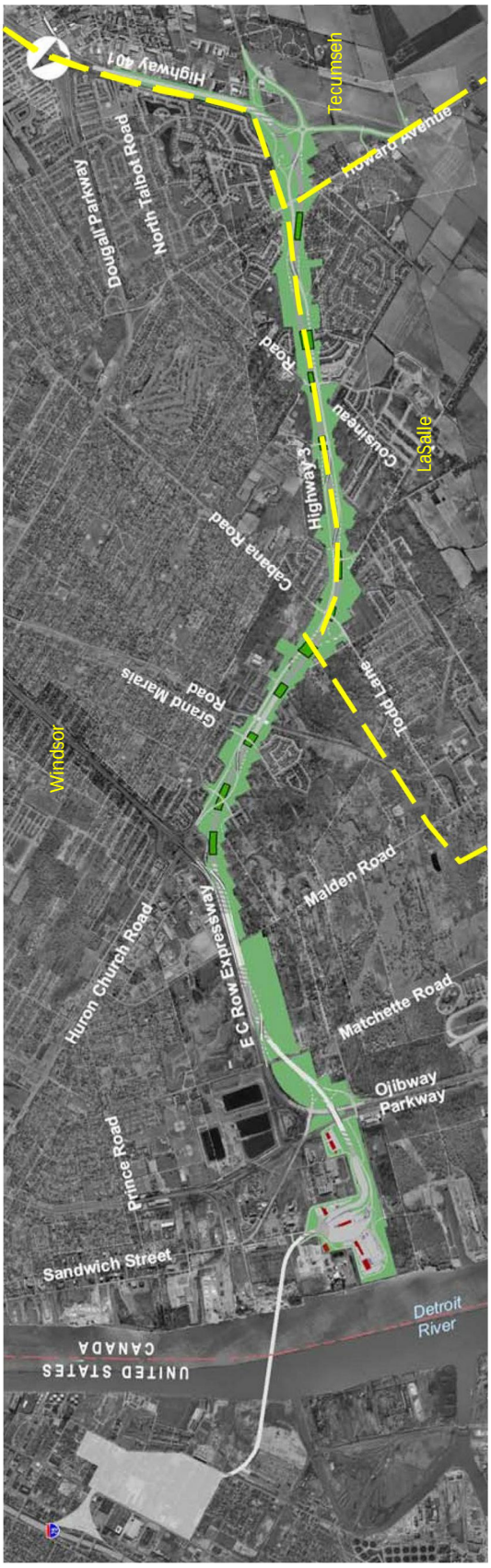


Figure A19: Schematic of the Detroit River International Crossing and the Rt. Hon. Herb Gray Parkway

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12.2 Transportation Master Plans

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12.4 Active Transportation Plans/Strategies

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12.8 Update on the Rt. Hon. Herb Gray Parkway

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Detroit River International Crossing (DRIC) / New International Trade Crossing (NITC) (n.d.), website.

Appendix B

Stakeholder Consultation

THE CITY OF WINDSOR
ONTARIO, CANADA

OFFICE OF THE CITY ENGINEER

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mwinterton@citywindsor.ca

May 23, 2017

RE: DRAFT TOWN OF TECUMSEH TRANSPORTATION MASTER PLAN

Dear Mr. Forest:

Thank you for your letter dated May 2, 2017 with responses to our comments on the Town of Tecumseh Transportation Master Plan.

Our letter dated February 27, 2017 stated that the City had not identified a future active transportation connection to the Town on Little River Boulevard. However, we were recently approved for a grant to construct a multi-use trail at this location. We apologize for the confusion and hope that we can work with Town staff to ensure an appropriate connection to the Town's active transportation facilities.

While the City of Windsor Bicycle Use Master Plan has not identified active transportation facilities on Tecumseh Road at the City/Town boundary, in consideration of the Town's planned cycling facilities east of the boundary, it seems reasonable to consider an active transportation connection between the Town's cycling facilities on Tecumseh Road and the nearby multi-use trail on Banwell Road. We encourage Town staff to engage with City staff at the time of design.

Please feel free to contact my staff or me for anything further.

Yours truly,

Mark Winterton, P. Eng.,
City Engineer

JH/jh

c.c. Dan Piescic, Director, Public Works & Environmental Services
Town Of Tecumseh, 917 Lesperance Road, Tecumseh ON N8N 1W9
Executive Director of Operations
Senior Manager of Traffic Operations, Parking and Transportation Planning
Manager, Transportation Planning

Our File: 15-2937 (Corr.)

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May 2, 2017

The Corporation of the City of Windsor
1266 McDougall Street
Windsor, ON
N8X 3M7

Attention: Mr. Mark Winterton, P.Eng.,
City Engineer

Town of Tecumseh
Transportation Master Plan

Dear Sirs:

On behalf of the Town of Tecumseh, we are hereby providing a response to your letter dated February 27, 2017, related to the Tecumseh Transportation Master Plan (TTMP) that was recently finalized and for which a Notice of Completion was issued.

General

The TTMP followed the Master Planning process outlined in the Municipal Class Environmental Assessment guideline. Prior to issuing the Notice of Completion, the TTMP was presented and approved by the Town at their regular council meeting of December 13, 2016. The Master Planning process was subsequently concluded with the issuance of a Notice of Completion requesting that any comments be received by February 25, 2017.

While Master Plans do not require formal approval under the Environmental Assessment Act, the Town is committed to addressing all stakeholder comments and including appropriate revisions in their Final TTMP report. The Town expects to review the TTMP approximately every five years to determine the need for any further updates.

Based on our review of the City's comments with the Town, we hereby confirm the specific revisions that will be incorporated into the Final TTMP report, as outlined below.

...continued

Tecumseh Road Main Street

The basis for, and traffic impacts associated with the proposed Tecumseh Road Community Improvement Plan (CIP) streetscape improvements have been documented and reviewed with the City through previous stakeholder meetings and the exchange of various reports and related communications. The proposed Tecumseh Road CIP improvements are consistent with the "complete streets" principles outlined in the TTMP and continue to form one of the fundamental drivers towards achieving Council's expressed interest in the revitalization and transformation of this area.

The Town of Tecumseh appreciates the City's concerns with the significant improvements required to the broader transportation network, including those identified in your letter of February 27, 2017. Both the City and the County, who are the road authorities for these roadways, have conducted their own Class Environmental Assessment studies to evaluate and confirm the preferred solutions for those corridors, which have been reflected in the TTMP.

It should be noted that these roadways generally serve a regional transportation function, and that the projected traffic demands that are driving the need for these broader transportation network improvements do not necessarily arise from any individual project, nor are they attributable to specific growth within a single municipality.

The Town is not in a position to alter the status of the Final TTMP report on the basis that there has not been a resolution of the timing and funding allocation for major roadway improvements for which the Town is not the road authority.

Roadway Classifications

We have reviewed the City's comments related to the comparison of road classifications for roads that cross the City/Town boundary, while at the same time reviewing other road classifications throughout the Town. Determining road classifications should give consideration to roads in adjoining municipalities, though of more importance is the varying context of the roadway environment and the Town's unique transportation and community objectives.

...continued

Based on the Town's review of the road classifications identified in the TTMP and having regard to your comments, the following revisions will be included:

ROAD	CURRENT TTMP CLASSIFICATION	REVISED TTMP CLASSIFICATION
Dillon Drive	Local	No change
McNorton Street	Collector (Urban)	No change
Tecumseh Road	Commercial Main Street	No change
Baseline Road	Collector (Rural)	No change
8th Concession Road	Minor Arterial	Collector (Rural)
North Talbot Road: • City Boundary to 8th Concession Road • 8th Concession Road to 9th Concession Road	Minor Arterial Minor Arterial	Collector (Rural) Local
Oldcastle Road	Minor Arterial	Local

Active Transportation Facilities

We have reviewed the City's comments related to the continuity of the Town's active transportation facilities with those proposed by the City and the County. Based on the Town's review, the following revisions will be included:

ROAD	CURRENT TTMP ACTIVE TRANSPORTATION FACILITY TYPE	REVISED TTMP ACTIVE TRANSPORTATION FACILITY TYPE
Little River Boulevard	On-Road Shared	Remove portion between City Boundary and Lesperance Road
McNorton Street	On-Road Shared	• Multi-Use Trail (Existing) - St. Thomas Crescent to Lesperance Road • Multi-Use Trail (Proposed) - City Boundary to St. Thomas Crescent
Tecumseh Road	On-Road Shared	No Change Provide appropriate signage
County Road 17 (10th Concession Road)	None	Tecumseh Off or On-Road, Coordinate with County

...continued

ROAD	CURRENT TTMP ACTIVE TRANSPORTATION FACILITY TYPE	REVISED TTMP ACTIVE TRANSPORTATION FACILITY TYPE
Future Lauzon Parkway	None	Show as City and County Routes (Proposed)
9th Concession Road	None	Tecumseh Off or On-Road
8th Concession Road	None	Tecumseh Off or On-Road
County Road 11 (Walker Road)	CWATS Off-Road Route (East Side)	No Change, Coordinate with County
North Talbot Road: • City Boundary to Walker Road • Walker Road to Ciociaro Club • Ciociaro Club to 9th Concession Road	 On-Road Shared CWATS On-Road CWATS On-Road	 No Change (paved shoulder) CWATS Off-Road CWATS Off-Road
Oldcastle Road: • North Talbot Road to Highway 3	CWATS On-Road Route	CWATS On and Off-Road Routes

In addition, we will update the associated figure in the TTMP to more fully illustrate the existing and proposed active transportation facilities based on Windsor's Bicycle Use Master Plan and the Lauzon Parkway Class EA studies.

Banwell Road Class EA

Appendix A of the TTMP consists of a Background Report document that provides a summary of relevant background information that was considered during the completion of this study. Sections 8.5 to 8.7 of that document summarize the outcome of stakeholder consultations with the Town that took place over the course of the Banwell Road Class EA process. The Town acknowledges that these consultations ultimately resulted in having their concerns addressed.

We will update Appendix A of the TTMP to remove the references to the Town's concerns that were raised, but ultimately resolved during the course of the Banwell Road Class EA process.

...continued

Closing

We appreciate your time and interest in providing your comments which will be incorporated as a revision to the Final TTMP report, as noted herein. Should you have any further questions or comments, please contact the undersigned.

Sincerely,

DILLON CONSULTING LIMITED

Flavio R. Forest, P.Eng.,
Project Manager

FRF:d
cc: Mr. Daniel Piescic, P.Eng., Town of Tecumseh

THE CITY OF WINDSOR
ONTARIO, CANADA

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February 27, 2017

RE: DRAFT TOWN OF TECUMSEH TRANSPORTATION MASTER PLAN

Dear Mr. Piescic:

Thank you for the opportunity to comment on the Town's Draft Transportation Master Plan (draft TMP).

When taken together, the draft TMP and the Tecumseh Road CIP Traffic Analysis Report suggest that Tecumseh Road and County Road 22/E.C. Road Expressway are both expected to operate overcapacity, and that traffic is expected to divert from these roads to alternate routes. This diversion of traffic has the potential to affect roadways in the City of Windsor as well as the Town of Tecumseh.

Based on the screenline analysis provided in Appendix C, it appears that the projections for 2034 east-west volume and capacity – and therefore the overall recommendations of the draft TMP – rely on a number of major infrastructure projects being in place across the City/Town boundary, including:

- A 6-lane County Road 22/E.C. Row Expressway,
- An interchange on the E.C. Row Expressway at Banwell Road,
- A 4-lane County Road 42, and
- A 4-lane Banwell Road.

We are concerned that all of these projects will require significant improvements to City infrastructure in order to provide the capacity for regional travel between the Town and the City that the draft TMP identifies as needed.

We request that the draft TMP not be finalized until the City and the Town have developed an overall strategy for these improvements, including coordinating of both municipalities' capital plans, scheduling of required projects, and appropriate arrangements to assign costs.

As detailed in the attached memo dated February 21, 2017, several locations do not match the existing or proposed classification/facility type in the City.

We hope to discuss this issue further in order to harmonize road classifications across the boundary and to ensure that active transportation facilities do not abruptly end at the City/Town boundary by providing appropriate transitions between Town and City facilities.

In several cases, there are opportunities to provide connectivity with short sections of bike lanes or multi-use trails. We hope that City and Town staff can work together to identify "quick win" connections where minimal effort and cost can provide significant benefit to residents of both municipalities.

The draft TMP contains a number of comments on the Banwell Road Class Environmental Assessment (Section 8.7 and elsewhere). Specific responses are provided in the memo dated February 21, 2017. In general, most of the comments deal with issues that were resolved between the City and the Town before the ESR was prepared, or that were addressed in the ESR.

On issues where there is genuine disagreement between City and Town staff, the City has carefully considered the Town's position and has consulted with the Town as much as possible.

As noted in the attached memo dated February 21, 2017, the draft TMP recommended network does not show certain planned facilities (the Lauzon Parkway extension and associated active transportation facilities), and certain facilities within the City of Windsor are not accurately depicted. We hope that these issues can be corrected.

My staff and I are available to discuss any of these comments or to meet with you.

Yours truly,

for Mark Winterton, P. Eng.,
City Engineer

JH/jh
Attachment
c.c. Flavio Forest, Project Manager
Dillon Consulting Limited, 608-3200 Deziel Drive, Windsor ON N8W 5K8
Executive Director of Operations
Senior Manager of Traffic Operations, Parking and Transportation Planning
Manager, Transportation Planning

THE CITY OF WINDSOR
ONTARIO, CANADA

INTER-OFFICE MEMO

TO: File

FROM: Jeff Hagan, Transportation Planning

DATE: February 21, 2017

SUBJECT: Town of Tecumseh TMP

The following issues were identified for further consultation with the Town:

Missing Facilities

The proposed Lauzon Parkway extension and the active transportation facilities along this corridor are not shown on the transportation network figures.

Road Classifications at the City/Town Boundary

The table below summarizes the locations where the proposed road classifications in the TMP would result in a significant difference in the intended function of a roadway at the City/Town boundary:

Road	Current Classification (Tecumseh or Sandwich South OP)	Proposed Classification (Tecumseh TMP)	Change?	Classification in Windsor	Discrepancy Between Proposed Classification in Windsor and Tecumseh?
Dillon Drive	Local	Local	No	Class 1 Collector	**Yes**
McNorton Street	Arterial	Collector (Urban)	**Yes**	Class 2 Arterial	**Yes**
Tecumseh Road	Arterial	Commercial Main Street	**Yes**	Class 2 Arterial	**Yes**
Baseline Road	Local	Collector (Rural)	**Yes**	Class 2 Arterial	**Yes**
8th Concession	Collector	Minor Arterial	**Yes**	Class 2 Collector	**Yes**
North Talbot Road	Collector	Minor Arterial	**Yes**	Class 1 Collector	**Yes**

Active Transportation Facilities at the City/Town Boundary

The table below summarizes the locations where the proposed active transportation facility type in the TMP would result in a significant difference between what is existing or planned in the City of Windsor at the City/Town boundary:

Road / Active Transportation Connection	Proposed Facility (Tecumseh TMP)	Proposed Facility (Windsor – existing, BUMP, or Lauzon Pkwy EA)	Discrepancy Between Proposed Facility Type in Windsor and Tecumseh?
Little River Boulevard	Tec. On Road Shared	None	**Yes**
McNorton Street	Tec. On Road Shared [Note 1]	Multi-Use Trail	**Yes**
Tecumseh Road	Tec. On Road Shared	None	**Yes**

Road / Active Transportation Connection	Proposed Facility (Tecumseh TMP)	Proposed Facility (Windsor – existing, BUMP, or Lauzon Pkwy EA)	Discrepancy Between Proposed Facility Type in Windsor and Tecumseh?
County Road 17 (10th Concession)	None	Bike lane	**Yes**
Future Lauzon Parkway	Road not shown	Multi-Use Trail	**Yes**
9th Concession	None	Bike lane	**Yes**
8th Concession	None	Bike lane	**Yes**
Walker Road	CWATS Off Road Route (east side of road)	Multi-Use Trail (west side of road)	**Yes**
North Talbot Road	None [Note 2]	Bike lanes	**Yes**

Notes:

1. McNorton Street has existing facilities that are not reflected in the proposed facility type. East of St. Thomas Crescent, there is an existing multi-use trail on McNorton Street. City staff are currently coordinating with Town staff for a multi-use trail connection across the boundary. This is planned for construction in 2017.
2. North Talbot Road has existing facilities that are not reflected in the proposed facility type. Currently, except for a short section east of the Highway 401 overpass, North Talbot Road between Highway 401 and Walker Road has paved shoulders.

Active Transportation Facilities in Windsor

Issues were noted with the depiction of active transportation facilities in the City of Windsor. In addition to the issues at boundary locations listed above, the following issues were noted:

- City active transportation routes are generally shown as "ERCA Routes".
- Some proposed City active transportation routes are shown as existing.
- The CN Rail CASO subdivision is shown as an existing active transportation route in the City of Windsor. West of the Pelton Spur (i.e. west of Walker Road), the CASO subdivision is an active rail line. No active transportation facilities are proposed on the portion of the CASO subdivision that is still in service.

Banwell Road Class Environmental Assessment

The TMP raises concerns regarding the Banwell Road Class Environmental Assessment. The table below is based on the list provided on page A-47; other portions of the text refer to some or all of the same issues:

Town of Tecumseh Comment	City of Windsor Response
The traffic projections are aggressively high and rest upon the likelihood and anticipated traffic generation from a power centre development on the Fanelli lands.	Traffic projections for ultimate conditions are consistent with the land use identified in the City of Windsor Official Plan and Sandwich South Secondary Plan.
A six-lane cross-section on Banwell Road south of the E.C. Row Expressway may not be necessary.	The EA provides a 4-lane cross-section south of the E.C. Row Expressway as Stage 1 and states that a 6-lane cross-section will be implemented when needed for roadway capacity (ESR p. 77)
The proposed inbound-only restriction to Gouin Street is inconsistent with the findings of the Town's Tecumseh Hamlet Secondary Plan Transportation Study.	Significant discussion has been had between City and Town staff on the issue of access to the Tecumseh Hamlet lands. The City has expressed concerns with a two-way Gouin Street and with the analysis done to support this recommendation.
Opportunities for interim improvements are not adequately addressed in the study, despite being proven to meet demand in the Town's traffic studies.	Interim improvements were reviewed as part of the EA (ESR Section 3.8). The Town's traffic studies assumed that signal timings at the Banwell/E.C. Row intersection would remain as existing. This assumption is not supported by the City and is contrary to its normal practice of periodically updating signal timings to optimize intersection and network operations. This incorrect assumption was critical to the Town's conclusion that the intersection can support more traffic to and from the Tecumseh Hamlet area.
The study report lacks analysis output, and therefore the underlying assumptions cannot be understood.	The City and Town discussed the assumptions used for the traffic analysis in detail in meetings and correspondence between City and Town staff and consultants regarding the Tecumseh Hamlet area. A general discussion of the traffic analysis and a summary of analysis results are provided in the body of the ESR, which continues to be available online. Technical appendices, including analysis output, were available to the public during the public review period. These appendices are still available upon request.

Town of Tecumseh Comment	City of Windsor Response
The proposed multi-use trail along Banwell Road should be located on the east side instead of the west side (between Intersection Road and Gouin Street) to maintain a more consistent alignment, reduce road crossings, and improve public safety and accessibility.	In the EA preferred design, the trail is on the east side as requested by the Town. This concern was raised in a July 21, 2015 letter from Dillon Consulting. The design was modified to reflect the Town's request, as noted in the IBI Group's July 22, 2016 letter. Both letters are attached.
The 5-lane cross sections proposed at the intersecting roadways at Maisonneuve Street and Intersection Road are unwarranted and undesirable.	This concern was raised in a July 21, 2015 letter from Dillon Consulting. As noted in the IBI Group's July 22, 2016 letter, the cross-sections for intersecting roadways are conceptual and subject to confirmation at the time of detailed design. Both letters are attached.
The City should reconfirm the location of the approved new municipal boundary on their recommended design drawings.	This concern was raised in a July 21, 2015 letter from Dillon Consulting. As noted in the IBI Group's July 22, 2016 letter, the location of the municipal boundary was confirmed. Both letters are attached.
The City should clarify the proposed 0.3m wide land reserve shown on the recommended design drawings, its limits, and any intended conditions.	This concern was raised in a July 21, 2015 letter from Dillon Consulting. The requested clarification was provided in the IBI Group's July 22, 2016 letter. Both letters are attached.
The degree of interim development conditions assumed at the Banwell Road / E.C. Row Expressway intersection is overly aggressive and unrealistic.	This concern was raised in a July 21, 2015 letter from Dillon Consulting. The IBI Group responded to this concern in a July 22, 2016 letter. As noted in the letter, the analysis was revised with less aggressive growth forecasts for interim conditions. Both letters are attached.

Town of Tecumseh Comment	City of Windsor Response
The Town has been barred from all discussions on the topic, despite earlier mutual interests and cooperation under the Boundary Adjustment Agreement.	The Town has been included in all stakeholder consultations and notifications. In addition: • Meetings were held for City and Town staff to discuss the relationship between the project and the Tecumseh Hamlet area. • Town staff (and staff of the Town's consultant) attended project meetings as appropriate. • The Town was provided with an advanced draft of the ESR for their feedback prior to public distribution.

DILLON
CONSULTING

Our File: 12-6653 (Corr.)

July 21, 2015

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The Corporation of the City of Windsor
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N8W 3N6

Attention: Mr. Fahd Mikhael, P.Eng., P.E.,
Engineer III

Banwell Road Class Environmental Assessment Study
Town of Tecumseh Comments on the Recommended Design

Dear Mr. Mikhael:

On behalf of the Town of Tecumseh, we are hereby providing comments related to the recommended design for the Banwell Road improvements, as presented by the City of Windsor at the Public Information Centre of June 25, 2015, and as outlined in supporting information previously provided to the Town. Our comments are as follows:

1. Multi-Use Trail

A multi-use trail has been proposed along Banwell Road as follows:

- On the east side from CPR tracks to Intersection Road.
- On the west side from Intersection Road to Gouin Street.
- On the east side north of Gouin Street to Wildwood Street.
- Back on the west side north of Wildwood Street.

The Town requests that consideration be given to locating the proposed multi-use trail on the east side of Banwell Road between Intersection Road and Gouin Street in order to maintain a more consistent alignment that reduces road crossings and improves public safety, while improving its accessibility to future residents within the Tecumseh Hamlet area, who will be the primary users based on current land use assumptions.

2. Intersecting Roadway Cross Sections

While not specifically detailed on the recommended design drawings, the proposed intersecting roadways at Maisonneuve Street and Intersection Road appear to be shown as 5 lane cross sections with raised centre medians.

- We do not believe that those lane requirements on the intersecting roads would be warranted, or desirable. This may simply be a typical/conceptual illustration that is not indicative of the recommended cross section for these intersecting roadways, which should be clarified.

...continued

3. Municipal Boundary

The Town requests that the City re-confirm the location of the municipal boundary that has been shown on the recommended design drawings, which should reflect the approved new municipal boundary that formed part of the land transfer agreement.

4. Land Reserve

The Town requests clarification on the limits and any intended conditions associated with the proposed 0.3 m wide land reserve that has been shown on the recommended design drawings. It is not clear whether this land reserve applies to the proposed intersecting roadways, and whether there would be any restrictive provisions that would not necessarily satisfy the intent of the land transfer agreement.

5. Interim Intersection Improvements

We have completed a review of the City's analysis of interim improvements at the Banwell/E.C. Row intersection.

It appears that the projected 2024 "interim" volumes consist of the following:

- Existing traffic increased by 2.5% per year over 10 years.
- Half of the Tecumseh Hamlet being fully built-out, which would be equivalent to 1,550 residential units and 206,500 sq. ft. of commercial development.
- Full development of the Fanelli lands, which consist of 1.5 million sq. ft. of commercial development.
- Development of the Royal Timbers area.

This degree of interim development conditions over a 10 year period is considered to be overly aggressive and unrealistic. The effectiveness of interim intersection improvements to accommodate a more modest, realistic rate of development has not been addressed.

During our previous meetings with the City, the Town was asked to confirm the thresholds for development that could be accommodated by undertaking interim improvements at the Banwell/E.C. Row intersection. The results of this analysis were included as part of our Tecumseh Hamlet Transportation Study (January

...continued

2015). In Section 6.6.2, Page 70 of that Study, it was confirmed that the following levels of development could be accommodated with interim intersection improvements:

- 400 low density, or 550 medium density units (if developed in the northern part of the Hamlet).
- 640 low density, or 880 medium density units (if developed in the southern part of the Hamlet).
- Some retail space could also be accommodated with only minor reductions in these residential unit thresholds, as long as these commercial uses do not generate traffic that would affect the critical AM peak period volumes.

This degree of development could be either in the City of Windsor or in the Tecumseh Hamlet area. This level of development is not insignificant, and would suggest that there is value in undertaking interim improvements at this intersection.

Accordingly, the Town requests that the City consider acknowledging the benefits of undertaking interim improvements at the Banwell/E.C. Row intersection to accommodate growth and development in the area until such time as funding for the implementation of the recommended interchange solution is available.

We appreciate the opportunity to provide these comments on the recommended design for the Banwell Road corridor in the City of Windsor. Please contact the undersigned or Mr. Daniel Piescic, P.Eng., of the Town of Tecumseh to review these comments in further detail and to confirm the City's position in finalizing their Class Environmental Assessment for this project.

Yours sincerely,

DILLON CONSULTING LIMITED

Flavio R. Forest, P.Eng.,
Project Manager

FRF:d
Cc: Mr. Daniel Piescic, P.Eng., Town of Tecumseh

IBI GROUP
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July 22, 2016

Mr. Flavio Forest
Project Manager
Dillon Consulting Limited
3200 Deziel Drive Suite 608
Windsor, ON
M8W 5K8

BANWELL ROAD - CLASS EA STUDY

Dear Mr. Forest,

Thank you for providing your input for Banwell Road design in your letter sent to the City on July 21, 2015. You have identified some concerns and our response to your comment is as follows:

1. Multi-Use Trail

IBI has updated the road design and the Multi-Use Trail is shifted on the east side and sidewalk on the west side between Intersection Road and proposed Gouin Street along Banwell Road south of EC Row Expressway.

2. Intersecting Roadway Cross Sections

The lanes shown were merely a sketch to show connection to the future developments. The illustrations of future side street geometry has been removed in the modified design. This information such as lane configurations, Right-of-Way (ROW) requirements, etc. needs to be confirmed based on the Site Plans for future developments during detail design stage.

3. Municipal Boundary

IBI has received information from the City in PDF format and incorporated in the road design. The latest information has been shown in the updated design drawings.

4. Land Reserve

The 0.3m land reserve is shown as part of City of Windsor access management. Since the number of future intersections south of EC ROW are mutually agreed between the City of Windsor and Town of Tecumseh, the 0.3m land reserve will be removed from the Right-of-Way for the intersecting street accordingly once actual design and location of these intersections are finalized.

5. Interim Intersection Improvements

IBI Group agrees that prior 2024 traffic forecasts were aggressive; as a result the Pointe East Windsor Limited (formerly known as Fanelli Lands) were removed from the 2024 scenario. The minor improvements suggested in the Tecumseh Hamlet TIS (Dillon Consulting, January 2015) were investigated using recent traffic counts conducted in 2013 and 2014. It was found that traffic volumes have increased and as a result, the improvements do not provide enough capacity for the interim development levels proposed (400 low density/550 med density in northern part, or 640 low density/880 medium density in southern part). Some smaller interim development in Tecumseh Hamlet could be accommodated by the existing road network with minor improvements but requires further analysis considering the updated counts.

The geometric modification mentioned above are reflected in updated design and in ESR. We will provide the draft ESR once reviewed by City of Windsor staff.

Sincerely,

IBI Group

Muhammad Khan, M.Eng., P.Eng.
Consultant Project Manager

DILLON CONSULTING

Forest, Flavio <fforest@dillon.ca>

PUBLIC TRANSIT, Transportation Master Plan

1 message

Melanie Paul Tanovich <melanie.paul.tanovich@gmail.com> Sat, Feb 25, 2017 at 11:59 PM
To: dpiescic@tecumseh.ca, fforest@dillon.ca

Dear Mr. Piescic and Mr. Forest,

Please accept my comments regarding Tecumseh's Transportation Master Plan.

In 2007, I lobbied for Public Transit in Tecumseh. My petition and letter to council (see attached) garnered overwhelming public support, along with a presentation to council, led to the implementation of the existing Tecumseh Transit system. While it was a promising start, it did not, and still does not, fulfill the needs of the public, nor is it very practical in its scheduling and routing.

It was a priority 10 years ago, and is a priority today, for Tecumseh to be easily connected to Windsor and Essex County in an efficient way. As we understand the importance of a clean environment, healthy living, and a strong economy, we should strive to provide accessible transportation for the residents of Tecumseh and its neighbouring municipalities.

The current Tecumseh bus makes a one-way, one hour circle around the Town, with one stop in Windsor. It is not very useful or efficient for the majority of would-be riders whose destinations include the University of Windsor, St. Clair College, Via train station, the Hospital and various places of employment in Windsor. The Town of Lakeshore has always been motivated to link its residents to Tecumseh and Windsor and would be a willing partner in this endeavour. A good transit plan would also bring out of town residents into Tecumseh for work, school, shopping and play.

I propose:

A bus route that picks up and drops off passengers from Tecumseh and Lakeshore until the city limits of Windsor, at which point it would run express to 3 selected stops: 1. VIA train station, 2. Downtown Windsor, 3. University of Windsor. From these points, passengers can connect to existing routes to reach other destinations within the city.

This route could be arranged with a Transit Windsor bus or with an independent "regional transit" bus.

This is a simple endeavour and its cost would be returned in economic benefits, commercial and industrial investments in Tecumseh, public health of residents, and elevated quality of living.

As Tecumseh looks forward to its future years through the design of this important Master Plan, it is important in consider the needs of all residents. This includes seniors, students, residents with special needs, and people connected with those in these demographics. It is equally important to consider the environment, public health, and quality of life.

It is my hope, and the hope of many others, that The Town of Tecumseh considers an improved public transit system to be a priority in its Transportation Master Plan, with efficiency and viability as its goal.

Kindly review the attached 2007 public letter and petition which outlines the value of a transit system in Tecumseh, as well as suggestions to the Town. I would be pleased to offer my assistance and/or input in the planning of useful and effective transportation in Tecumseh.

Thank you,

Melanie Paul Tanovich
519-980-1113

transit in tecumseh -- 2007 petition and letter.docx
17K

Table B1 summarizes the comments received throughout the TTMP and the study team's response.

TABLE B1: PUBLIC AND AGENCY COMMENTS

Comments Received	Study Team Response
Agency Comments	
Indian and Northern Affairs Canada Claims in the study area have been submitted by the following first nations: Aamjiwnaang First Nation; Chippewas of Kettle and Stony Point First Nation; Chippewas of the Thames First Nation; Caldwell First Nation; Walpole Island First Nation; Oneida Nation of the Thames; Munsee-Delaware Nation; and Moravian of the Thames (Delaware) First Nation. INAC requested to be removed from Contact List.	Not required. First Nations in the area will continue to be kept informed of the study.
County of Essex The plan should consider the following: • Essex-Windsor Regional Transportation Master Plan, County Road 19 Environmental Study Report (ESR) • County Road 43 ESR • County Road 22 ESR • County Road 42 Corridor Protection Strategy • Transportation Impact Study Guidelines	Documents have been reviewed as part of the study.
Tecumseh Seniors Transit Inc. Provided information on the services it provides and the hours of operation	Not required. For information only.
CN There is an existing at-grade crossing on the Chatham Subdivision. If a crossing is widened or upgraded, it may take up to 18 months to complete the Automatic Warning Devise modifications.	Not required. For information only.
Windsor-Essex County Health Unit Consideration for active transportation over the use of private vehicles should be a primary focus of the TTMP, and expansion of the network should be made a priority.	Active transportation (AT) is a priority for the Town of Tecumseh and a principle focus of the TTMP. The TTMP: • Is based on a Complete Streets philosophy that acknowledges the importance of AT; • Includes a Complete Streets Design Handbook that identifies planning, design and operational guidelines and practices that promote AT and improves safety for vulnerable users; and • Includes a Town-wide AT network that integrates with the County network and networks within adjacent communities.

Comments Received	Study Team Response
Expansion of the Town's AT network should be made a priority	The Town agrees with your comment, and has identified AT as a municipal focus. AT is a key component of the master plan, as outlined in the response to comment #1.
The two-way left-turn lane (TWLTL) on Lesperance Road should be maintained, as it provides a safer environment for AT. A Multi-Use Pathway should be constructed in the Lesperance Road boulevard.	Based on the relatively low traffic volumes on Lesperance Road north of McNorton Street, including the limited/infrequent left turning vehicles, it is expected that impacts to roadway safety as a result of eliminating the TWLTL would be relatively minor. The opportunity to utilize the existing roadway to accommodate a dedicated cycling lane is also consistent with the Town's new Complete Streets philosophy. In addition, a Multi-Use pathway in the Lesperance Road boulevard has also been recommended to accommodate cyclists who prefer an off-road environment.
Do not provide on-street parking on Tecumseh Road, as it compromises safety for cyclists.	The Town of Tecumseh recently approved and adopted the Tecumseh Road Main Street Community Improvement Plan (CIP) in January of this year. This document was developed with considerable public input, and serves as the basis on which the Town is now proceeding with the detailed design of roadway and streetscape improvements on Tecumseh Road, from west of Southfield Drive to east of Bedell Street, that will: Transform Tecumseh Road into a walkable, pedestrian friendly environment that also accommodates cyclists, including a reduction in the number of driving lanes, the provision of on-street parking and parking bays, enhanced landscaping and street furniture. The lane widths on Tecumseh Road are proposed to be increased to 4.0m to allow for shared use with cyclists. The proposed on-street parking would serve as a buffer between vehicular and pedestrian traffic, improving the pedestrian environment.
What Active Transportation (AT) facilities are proposed for Westlake Drive?	The proposed AT network for the Town of Tecumseh identifies Westlake Drive as a cycling facility, which will include either on or off-road facilities. The specific facilities for Westlake Drive will be determined through the detailed design process.
Further language related to healthy public policy should be incorporated. Examples include "enable mobility for travelers of all ages and abilities", "making active transportation convenient and safe", "prioritizing safety", "ensuring equitable access to amenities such as healthy food sources". Healthy neighbourhood design should be held as a guiding principle for road planning, operations, and design.	The Goals and Themes for the TTMP were revised to place greater emphasis on the above considerations. The revisions are shown in red text in the Vision and Goals section appended to this [response] letter. These will be included in the final TTMP documentation. In addition, the Complete Streets Policy is centered on providing a network for users of all ages and abilities: The Town of Tecumseh adopts a "complete streets" approach to the planning, design, operation, and maintenance of roads. Going forward, we will shift the focus of streets from a strong

Comments Received	Study Team Response
	emphasis on auto mobility to a more balanced philosophy to better serve all modes to meet the needs of travellers of all ages and abilities. The Complete Streets Design Handbook includes several detailed guidelines for enabling mobility for all ages and abilities, and improving the safety and convenience of active modes. The Complete Streets Design Handbook will be provided as an appendix to the full TTMP documentation.
The TTMP should be based on a more complete review of demographic profile of travelers and the implication of demographics on travel choices. The TTMP currently assumes continuation of current demographic profile (with growth) and does not consider varying transportation needs of different population groups.	The TTMP does not delve into detailed demographic analysis. However, the complete streets policy framework emphasizes considering the needs of all users. The Complete Streets Design Handbook includes extensive guidelines to make the network more suitable to users of all ages and abilities. To emphasize shifting demographics expected over the coming years, the TTMP Goals and Directions have been edited to incorporate additional language about the needs of older demographics, and the need to consider this demographic as a growing proportion of the population.
A healthy active transportation network should consider the needs of pedestrians who are aging and may rely on assistive devices.	The current language of the Vision/Principles/Themes section addresses equity for travelers of all abilities, and the TTMP includes recommendations to provide facilities which are amenable to all users of all ages and abilities.
Ministry of Tourism, Culture, and Sport Requested that archaeological and built heritage resources, and cultural heritage landscapes be considered in the TTMP.	The Transportation Master Plan (TMP) has not identified the need for roadway capacity improvements for roads within the Town's jurisdiction. As a result, no impacts are anticipated on cultural or heritage resources. However, the TMP will include a section outlining next steps required prior to implementing any of the transportation built features included in the plan, such as constructing any portion of the active transportation network. The TMP will state impacts to cultural heritage resources, including archaeological resources, built heritage resources and cultural heritage landscapes, must be reviewed and mitigated as required during detailed design. MTCS will be consulted at that time to discuss potential impacts and mitigation measures.
Ministry of Natural Resources Requested that natural heritage features be considered in the TTMP.	The Transportation Master Plan (TMP) has not identified the need for roadway capacity improvements for roads within the Town's jurisdiction. As a result, no impacts are anticipated on natural heritage features. The TMP will include a section outlining next steps required prior to implementing any of the transportation built features included in the plan, such as constructing any portion of

Comments Received	Study Team Response
	the active transportation network. The TMP will state impacts to natural resources, including Species at Risk, must be reviewed and mitigated as required during detailed design. MNRF will be consulted at that time to discuss potential impacts and mitigation measures.
Ministry of the Environment and Climate Change Requested that appropriate First Nations consultation be conducted as part of the TTMP.	First Nations consultation has been conducted as part of the TTMP. All groups near to the study area have been contacted to confirm receipt of notices and have no further questions.
Essex Region Conservation Authority Linkages to properties owned by, or of interest to the Essex Region Conservation Authority (ERCA), including Greenway connections related to the planned regional roadway modifications, should involve Mr. Kevin Money, Director of Conservation Services.	It is expected that regional roadway modifications will be implemented in consultation with ERCA, as required.
Requested being circulated a copy of the TTMP for review once available.	The TTMP document will be available to the public and agencies during the 30 day review period following publication of the Notice of Completion, which ERCA will be advised of.
Requested that the reference to the Essex Regional Conservation Authority on page xxi of the Executive Summary be changed to the Essex Region Conservation Authority.	Text in Executive Summary changed.
Recommended circulating the TTMP to the Windsor-Essex Health Unit.	The Windsor-Essex County Health Unit has been circulated on all public notices, and has provided input to the TTMP.
Noted that on Figure 14, it is not clear whether the colour code of light green used in the figure (i.e., ERCA Routes (existing) and ERCA Routes (proposed)) is accurate in the areas inside and outside the Town of Tecumseh. Suggested that Kevin Money be contacted to ensure the ERCA routes in the City of Windsor, in particular are accurate.	Information on active transportation facilities owned by other jurisdictions was obtained from the latest available information (County of Essex CWATS on-line mapping) and updated in the final version of the TTMP. The Town of Tecumseh will coordinate the implementation of their active transportation facilities with ERCA and the City of Windsor to ensure that the latest information is considered in establishing an inter-connected network.
Suggested that there would be a benefit to including additional discussions in the TTMP about recommended policies that could be incorporated into adjacent municipal Official Plans related to the requirements for connections of the active transportation network across municipal boundaries.	The focus of the TTMP is the transportation system within the Town of Tecumseh, and as does not address policies of other municipalities. The TTMP recommends "[coordination] with the County, adjacent municipalities, and MTO to provide adequate active mode facilities on any new or reconstructed crossing of Highway 401 and to ensures active mode networks are completed and connected."

Comments Received	Study Team Response
Public Comments	
Transit	
Public transportation is needed throughout the County. Transit bus service, streetcars/trolleys and light rapid rail systems should be explored.	The TTMP recommends continuing with the current transit delivery strategy, with service increasing as ridership and growth dictate.
Inter-regional transit system should be implemented.	The TTMP recommends continuing with the current transit delivery strategy, with service increasing as ridership and growth dictate.
Windsor bus service should extend to Tecumseh and Lakeshore.	Windsor Transit provides service to Tecumseh.
Suggest combining school buses and transit to save on transit costs.	Noted. TTMP recommends an appropriate transit strategy for Tecumseh.
Concern regarding the length of time it takes to implement a public transit system.	Noted.
Pilot project should be introduced to identify public transit needs.	Community transit has been introduced to Tecumseh. Service is determined by land use patterns and ridership.
Transit system must be reliable/efficient, equipped with bike racks and provide park and ride facilities.	Transit service has been designed to be reliable and efficient, with cooperation between Transit Windsor and the Town of Tecumseh. The TTMP does not include recommendations for park and ride or bike racks for buses.
Windsor Transit should have more connections to Tecumseh, towards the arena.	Route structure and service frequency for Transit Windsor is at the discretion of Transit Windsor.
Cycling	
Roads are too narrow to cycle safely and comfortably.	The Complete Streets Design Handbook includes planning, design and operational measures to promote cycling. Guidance is given on recommended road cross-sections to accommodate cycling.
Traffic signals currently ignore the needs of cyclists.	The Complete Streets Design Handbook includes planning, design and operational measures to promote cycling.

Comments Received	Study Team Response
Bike lanes on arterial roads (including Riverside Drive) should be considered.	The TTMP identifies an AT network plan that integrates with the County network and networks of neighbouring communities.
Cycling lane network and long term bike plan is needed. Network must work with neighbouring Towns for continuity and connectivity.	The TTMP identifies an AT network plan that integrates with the County network and networks of neighbouring communities.
Currently a lack of cycling facilities for recreational and commuting purposes.	The TTMP identifies an AT network plan that integrates with the County network and networks of neighbouring communities.
Residents prefer to use public transit for long distances and cycling for short distances.	Noted.
Walking and cycling need to be safer before it will be accepted by people.	The Complete Streets Design Handbook includes planning, design and operational measures to promote cycling and promote safety.
Pedestrians	
Some crosswalks do not provide enough time for pedestrians to cross.	The Complete Streets Design Handbook includes planning, design and operational measures to promote walking. Individual crossings were not reviewed, given the strategic nature of the study, but guidance is provided on balancing the needs of different travel modes.
Separating pedestrians and cyclists will encourage pedestrian usage in the Town.	Multi-use pathways remain an important part of the AT strategy, along with sidewalks and on-road cycling facilities.
Connected landscaped walkways would make neighbourhoods more desirable.	The Complete Streets Design Handbook includes planning, design and operational measures to promote walking, including urban design measures.
Banwell Road sidewalk should be upgraded.	Multi-use pathways within the road ROW have been recommended for Banwell Road. Note that Banwell Road is under the jurisdiction of the City of Windsor and County of Essex.
General Comments Regarding Transportation Demand Management	
Transportation elements, including bus service, walkways, bike trails and basic amenities will make neighbourhoods a more desirable place to live.	Noted.
Carpooling, walking and cycling are behaviour changes that residents are willing to make.	The Complete Streets Design Handbook includes planning, design and operational measures to promote walking and cycling.
Political will is identified as a roadblock in changing residents' behaviour in the way they travel.	Not required. For information only.
Ride sharing, carpooling, telecommuting, etc. are identified as not practical alternatives in reducing travel demand. However, streetcars, subways and buses are good alternatives.	The Town of Tecumseh is too small to justify any kind of rapid transit in a dedicated ROW (subway, streetcar, LRT, etc.). Public transit is available as an option to reduce auto use for longer distance trips and service will be scaled to meet demand.
Traffic Operations/Improvements Required	
Too many traffic signals within a short distance.	Traffic operations review did not indicate the need to

Comments Received	Study Team Response
	eliminate existing signals, except where new interchanges are proposed on CR22.
A key issue is moving traffic on arterial roads, CN and CP crossings should be grade separated.	Major arterial roads are under the jurisdiction of the County and any changes to road design are at their discretion.
Difficult to make left turn at Lacasse/Tecumseh Road intersection. Support for roundabout at intersection.	Analysis indicates that this intersection is functioning at acceptable levels and will operate at acceptable levels in the horizon year (LOS D). No modifications are recommended.
Northbound right turn lane on Lesperance at E.C. Row Expressway would alleviate traffic congestion.	The County is planning to widen CR 22 to six lanes and construct a partial interchange at Lesperance Road.
E.C. Row Expressway functions well for residents but not for commercial vehicles (trucks).	The County is planning to widen CR 22 to six lanes. Operations will be improved for all users.
The turning lane on Lesperance should be removed and bike paths on both sides should be added.	The TTMP recommends removal of the centre two-way left turn lane and implementation of on-road cycling lanes and off-road multi-use pathways.
Parking on Lacasse, south of Clapp, should be eliminated.	Traffic operations will be reviewed as a component of the study.
Increase capacity of Manning, Lesperance, Banwell and Country Road 22.	The County is planning to widen CR 22 to six lanes and construct interchanges at Banwell Road, Lesperance Road, and Manning Road.
Traffic volumes on Riverside Drive should be reduced.	Traffic volumes on Riverside Drive are well within acceptable levels for a Minor Arterial/ Collector Road.
Lesperance Road should be grade separated at E.C. Row Expressway (County Road 22).	The County is planning to widen CR 22 to six lanes and construct a partial interchange at Lesperance Road.
Widening of Manning Road should be a priority.	Manning Road is a County road; timing of reconstruction and widening is at their discretion.
Increased Densities/Changes to Existing Development Patterns	
Concern that property values may depreciate in a higher density and mixed-use environment.	Noted. Not a TTMP issue.
Increasing densities and a mixed use environment is not conductive to families.	Noted. Not a TTMP issue.
Public education is a very important part in lifestyle changes.	Noted.
Other	
Does not support commercial vehicles (trucks) using the Town as a by-pass route.	The TTMP did not address truck routes.
Impact of new Ontario Hydro line on existing pathways.	Noted. Will be considered in the TTMP pedestrian strategy.
Protecting the environment and air quality is a key issue in the region.	Noted.
Pick-up area in front of St. Pius X School is currently unsafe. During recent construction, the pick-up location was moved to Lacasse Park, which was identified as successful	Traffic operations at isolated locations were not addressed in the TTMP. Comment passed to Town of Tecumseh Engineering Department.

Comments Received	Study Team Response
by one resident.	

First Nations Consultation

The Town recognizes that consultation with First Nations is an important component of Class EA studies. A search of the Aboriginal Treaty Rights Information System (ATRIS), maintained by Indian and Northern Affairs Canada (INAC), was conducted during project initiation to identify First Nation communities that should be contacted for this study. They include:

- Chippewas of the Thames First Nation;
- Chippewas of Kettle & Stony Point First Nation;
- Aamjiwnaang First Nation;
- Walpole Island First Nation / Bkejwanong Territory;
- Caldwell First Nation;
- Moravian of the Thames; and
- Metis Nation of Ontario.

All First Nation communities identified above received project notices. All First Nations identified above were contacted to ensure consultation materials were received and address any additional questions about the project, as summarized in ***Table B2***. At least two attempts were made to contact each First Nation.

TABLE B2: FIRST NATIONS CONTACT

Community Contact	Dates of Contact	Summary of Conversation
Chippewas of the Thames First Nation Chief Leslee White-eye	February 4, 2016 February 18, 2016 July 21, 2016 July 28, 2016 August 15, 2016 August 17, 2016	*Following Notice of Commencement (February 2016):* Received letter acknowledging receipt of notice of commencement, and stating there are no concerns. Asked to be kept informed of any changes that are of a substantive nature. *Following Notice of PIC (July 2016):* After following up by phone, received letter acknowledging receipt of notice of PIC, and stating there are no concerns. Asked to be kept informed only of any changes that are of a substantive nature.
Chippewas of Kettle & Stony Point First Nation Chief Tom Bursett	February 4, 2016 February 19, 2016 March 9, 2016 July 21, 2016 July 26, 2016	*Following Notice of Commencement (February 2016):* Voicemail messages left; no response. *Following Notice of PIC (July 2016):* Voicemail messages left; no response.
Aamjiwnaang First Nation Ms. Sharilyn Johnston, Environmental Coordinator	February 4, 2016 February 18, 2016 February 19, 2016 March 9, 2016 July 21, 2016 July 26, 2016	*Following Notice of Commencement (February 2016):* Voicemail messages left; no response. *Following Notice of PIC (July 2016):* Voicemail messages left; no response.

Community Contact	Dates of Contact	Summary of Conversation
Walpole Island First Nation / Bkejwanong Territory Alicia Blackeagle, Assistant to Chief Daniel Miskokomon	February 4, 2016 July 21, 2016	*Following Notice of Commencement (February 2016):* Confirmed they received the Notice and had no further questions. Requested she be added to the contact list (added). Requested that Dean Jacobs, Heritage Centre Director, receive hard copies instead of email (hard copy sent for all further communications). *Following Notice of PIC (July 2016):* Confirmed they received the Notice and had no further questions.
Caldwell First Nation Chief Louise Hillier	February 4, 2016 February 18, 2016 March 9, 2016 March 22, 2016 July 21, 2016 July 28, 2016	*Following Notice of Commencement (February 2016):* Voicemail messages left; no response. *Following Notice of PIC (July 2016):* Confirmed they received the notice, and requested a copy of the Executive Summary to share with Council. No further inquiries.
Moravian of the Thames Chief Greg Peters	February 4, 2016 February 10, 2016 July 21, 2016 July 27, 2016	*Following Notice of Commencement (February 2016):* Voicemail messages left; Chief returned voicemail confirming they received the Notice and had no further questions. *Following Notice of PIC (July 2016):* Voicemail messages left; no response.
Metis Nation of Ontario Ms. Linda Norheim Brooks, Manager, Lands, Resources and Consultations Branch	February 4, 2016 February 18, 2016 March 9, 2016 July 21, 2016 July 26, 2016	*Following Notice of Commencement (February 2016):* Voicemail messages left; no response. *Following Notice of PIC (July 2016):* Voicemail messages left; no response.

Appendix C

Strategic Transportation Analysis

DILLON CONSULTING

Summary

No new road widening projects are required for roadways under the Town of Tecumseh jurisdiction based on a review of the future deficiencies and planned capacity improvements. The road network modifications required to provide additional capacity along key east-west and north-south transportation corridors within the Town of Tecumseh are under the jurisdiction of either the County or MTO.

Travel Demand Forecasting Model

An analysis of the existing network was undertaken to determine travel demand needs using the County of Essex PM Peak Hour Model. The County's model uses TransCad software and provides a computer simulation of the Town's road network and travel demands based upon population and employment forecasts provided by the Town. The horizon year used for modeling road needs was within the model is 2034.

The TransCAD demand forecasting model consists of a network of interconnected roadways links, nodes and centroids that represent the roadway network and development areas. The model provides simulated traffic volumes that can be used as a tool to understand the implications of transportation solutions. The TransCad model uses a traditional four step process:

- Trip Generation – Determines the amount of trips generated based on population and employment numbers.
- Trip Distribution – Distributes the generated trips based on Origin Destination data.
- Modal Split – Determines the mode of transportation for the trips.
- Traffic Assignment – Assigns the trips to the road network.

The strategic transportation model simulates the travel demands in the PM peak hour as this represents the highest trip making time period and simulates the worst case scenario. Generally, the PM peak hour generates about 15% more trips than the AM peak hour. This is due to a larger portion of discretionary trips being undertaken in the PM peak hour.

Planning Screenlines

In order to review travel demands, a screenline analysis was undertaken for the existing and 2034 time horizons. Screenlines are imaginary lines drawn along geographic features such as roads and railway tracks for the purpose of summarizing traffic demands and capacity along a corridor. Given the geographic layout of the urban area of the Town, the following north-south and east-west screenlines were created for analysis purposes:

North South Screenlines:

- North of Tecumseh Road
- South of County Road 22

East West Screenlines:

- West of Lesperance Road
- East of Lesperance Road

Level of Service (LOS)

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.

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

General descriptions of each LOS with its V/C ratio and traffic conditions are summarized in ***Table C1***.

Table C1: Level of Service Descriptions

Level of Service	Volume to Capacity Ratio	Description
A	<0.8	Free flow traffic with average overall travel speed in the upper range.
B	<0.8	Reasonably unimpeded operations at average travel speeds, with reasonable delays.
C	<0.8	Stable operations with acceptable delays, but ability to maneuver and change lanes in midblock locations may be more restricted than at LOS B, and longer queues may contribute to lower average travel speeds.
D	0.8 - 0.89	Approaching unstable flow where delays may become extensive and with overall average travel speeds in the lower range.
E	0.9 - 0.99	Unstable flow with continuous backup of approaches to intersections, significant delays and low average travel speeds.
F	≥ 1.0	Unacceptable conditions where vehicle demand exceeds available capacity, resulting in extremely low speeds and intersection congestion.

As LOS worsens, associated socio-environmental impacts result from the restricted traffic flow, indicated by the following measures of roadway effectiveness:

- Vehicle emissions increase and concentrate along more congested roadway sections as engines run less efficiently (i.e. idling);
- Vehicle hours of delay increase;
- Vehicle kilometres of travel increase as traffic attempts to find less direct alternatives to congested routes. Potential traffic infiltration occurs into local neighbourhoods;
- Vehicle hours of travel time increase because of the long travel distances, diversions to alternative routes, slower speeds and delayed conditions;
- Fuel consumption increases owing to these less efficient travel characteristics; and

- Driver frustration and unsafe practices increase as motorists deal with reduced LOS.

Screenline Analysis

An analysis of the existing PM peak hour volumes and 2034 travel demands derived from the transportation model was undertaken to compare the planning capacities assigned to the roads based on their roadway classification. A volume to capacity (v/c) for each road link and screenline was developed. ***Table C3*** provides an overview of the existing and 2034 v/c ratios. The 2034 scenario assumes a two-lane cross-section on Tecumseh Road as well as other planned road improvements.

In some cases, v/c ratios improve between existing and 2034 as a result of changing travel patterns. Disparate growth in areas of the network will result in increased congestion in parts of the network, resulting in users of the system adjusting their routing through the network and divert to other facilities. This diversion can result in future reductions in volumes in areas of the network over existing conditions.

Existing Congestion:

The screenline analysis shows that the vast majority of roadways within the Town are currently operating at a LOS C or better, which is considered acceptable. The exceptions are:

- Lesperance Road N/B north of Tecumseh Road
- Banwell Road N/B south of County Road 22
- Riverside Drive W/B west of Lesperance Road
- County Road 22 W/B west of Lesperance Road
- County Road 22 W/B east of Lesperance Road

2034 Baseline Model (no road improvements assumed):

A review of the Strategic Transportation model outputs identifies a number of future deficiencies in 2034 within the Town of Tecumseh, prior to considering the impacts of the planned County and MTO infrastructure projects. These include:

- Lesperance Road N/B north of Tecumseh Road
- Banwell Road N/B south of County Road 22
- Riverside Drive W/B west of Lesperance Road
- County Road 22 E/B west of Lesperance Road
- County Road 22 W/B west of Lesperance Road
- County Road 22 W/B east of Lesperance Road

Planned Roadway Modifications (to 2034)

Several reports were reviewed in conjunction with the preparation of this TMP (the full list of reports reviewed is available in ***Appendix A***). These reports discuss a number of roadway modifications. ***Table C2*** summarizes the planned roadway modifications assumed to be in place by 2034.

Table C2: Planned Roadway Modifications In Place by 2034

Source	Corridor	Description of Change
Municipal Class Environmental Assessment for Improvements to County Road 22 (East of Manning Road to County Road 42) (2006)	County Road 22	Widen from 2 to 4 lanes, from east of Manning Road (County Road 19) to I.C. Roy Drive.
		Widen from 2 to 3 lanes from I.C. Roy Drive to Belle River Bridge.
County Road 19 (Manning Road) & County Road 22 Improvements Class Environmental Assessment and Preliminary Design (2008)	Manning Road (County Road 19)	Widen from 2 to 4 lanes, from Highway 3 to VIA Rail line.
		Create single point urban interchange at County Road 22.
		Create 2-lane roundabout at County Road 34 (Talbot Road).
		Create roundabout at County Road 42.
	County Road 22	Widen from 4 to 6 lanes from City of Windsor boundary to 350m east of Lakeshore Boulevard.
		Create partial interchange at Lesperance Road.
County Road 43 / Banwell Road from the CPR Tracks (City Limits) to South of County Road 42 Class Environmental Assessment Study (2009)	Banwell Road (County Road 43)	Widen from 2 to 4 lanes from south of County Road 42 to CPR corridor.
		Eliminate offset at Concession Road 11 (County Road 43).
City Of Windsor Banwell Road Class Environmental Assessment Study, Corridor Assessment Draft Report (2015)	Banwell Road (County Road 43)	Widen from 2 to 4 lanes from CPR corridor to Tecumseh Road.
		Create roundabout at Mulberry Drive.
		Implement interchange modifications at E.C. Row Expressway.
Tecumseh Hamlet Secondary Plan	Banwell Road (County Road 43)	Create new connection opposite E.C. Row Expressway ramp.
Tecumseh Community Improvement Plan	Tecumseh Road	Narrow road to 2 lanes, introduce on-street parking, and remove auxiliary turning lanes at intersections from Town of Tecumseh boundary to the rail crossing.

Source	Corridor	Description of Change
Lauzon Parkway Improvements Class Environmental Assessment Study (2014)	Lauzon Parkway	Widen from 2 to 4 lanes from E.C. Row Expressway and County Road 42 (phase 1, by 2021.
		Create a new 4-lane corridor between County Road 42 and Highway 401.
		Create a new interchange at Highway 401.
		Create a new 4-lane corridor from Highway 401 to south of Highway 3 (phase 2, by 2021).
		Widen from 4 to 6 lanes from E.C. Row Expressway to Highway 401 (phase 4, by 2031).
	County Road 42	Widen from 2 to 4 lanes from Walker Road to Lauzon Road (phase 3A, 2021).
		Widen from 2 to 4 lanes from Lauzon Road to Town of Tecumseh boundary (phase 3B, by 2021).
		Widen from 2 to 4 lanes from Town of Tecumseh boundary to County Road 25 (phase 5, by 2031).
	New East-West Arterial	Create a new 2-lane road from County Road 17 to 7th Concession Road (phase 6, by 2031).

** 2034 capacity differs from existing capacity due to planned projects.*

2034 Model with Assumed Projects:
The Strategic Transportation Model did not identify any capacity deficiencies in the 2034 network, accounting for the assumed projects.

Table C3 provides a summary of the screenline capacity assessment for the existing and future horizon (2034). The 2034 scenario assumes a 2-lane cross-section on Tecumseh Road (which is assumed to have a 50km/h speed limit) as well as other planned road improvements.

Table C3: Screenline Analysis Results

Screenline	Street	Direction	Capacity (1-way)	Peak Hour Volume		v/c		
				Existing	2034 Simulated	Existing	2034 Simulated	
							Existing Network	2034 Network
North/South 1 - North of Tecumseh Road	Lesperance Road	NB	800	681	602	**0.85**	**0.90**	0.75
		SB	800	465	448	0.58	0.64	0.56
	Manning Road	NB	1600	317	452	0.20	0.22	0.28
		SB	1600	237	289	0.15	0.16	0.18
	Brighton	NB	800	66	68	0.08	0.08	0.09
		SB	800	65	65	0.08	0.08	0.08
	Sub Total	*NB*	*3200*	*1064*	*1122*	*0.33*	*0.35*	*0.35*
		SB	*3200*	*767*	*802*	*0.24*	*0.26*	*0.25*
North/South 2 - South of County Road 22	Banwell Road	NB	800 1600*	679	735	**0.85**	0.98	0.46
		SB	800 1600*	513	738	0.64	0.79	0.46
	Lesperance Road	NB	800	137	124	0.17	0.18	0.16
		SB	800	144	109	0.18	0.19	0.14
	Manning Road	NB	1800	572	722	0.32	0.34	0.40
		SB	1800	405	440	0.23	0.27	0.24
	Sub Total	*NB*	*3400*	*1388*	*1581*	*0.41*	*0.45*	*0.38*
		SB	*3400*	*1062*	*1287*	*0.31*	*0.37*	*0.31*

Screenline	Street	Direction	Capacity (1-way)	Peak Hour Volume		v/c		
				Existing	2034 Simulated	Existing	2034 Simulated	
							Existing Network	2034 Network
East/West 1 - West of Lesperance Road	Riverside Drive	EB	800	186	180	0.23	0.26	0.23
		WB	800	248	227	0.31	0.31	0.28
	Tecumseh Road	EB	1600 800*	595	347	0.37	0.42	0.43
		WB	1600 800*	575	330	0.36	0.40	0.41
	County Road 22	EB	2700	2094	2629	0.78	**0.85**	0.58
		WB	2700	2279	2910	**0.84**	**0.90**	0.65
	County Road 42	EB	900	621	669	0.69	0.76	0.37
		WB	900	596	488	0.66	0.75	0.27
	Sub Total	*EB*	*6000*	*3496*	*3825*	*0.58*	*0.64*	*0.48*
		WB	*6000*	*3698*	*3955*	*0.62*	*0.66*	*0.50*
East/West 2 - East of Lesperance Road	Riverside Drive	EB	800	74	111	0.09	0.10	0.14
		WB	800	76	147	0.10	0.10	0.18
	Tecumseh Road	EB	800	237	338	0.30	0.33	0.42
		WB	800	227	358	0.28	0.30	0.45
	County Road 22	EB	2700 4500*	1891	1982	0.70	0.78	0.44
		WB	2700 4500*	2290	2370	**0.85**	**0.91**	0.53
	County Road 42	EB	900	622	630	0.69	0.75	0.35
		WB	900	608	474	0.68	0.76	0.26
	Sub Total	*EB*	*5200*	*2824*	*3061*	*0.54*	*0.60*	*0.39*
		WB	*5200*	*3201*	*3349*	*0.62*	*0.67*	*0.42*

** 2034 capacity differs from existing capacity due to planned projects.*

Appendix D

Intersection Analysis

Overview of Analysis

A transportation network operational analysis was undertaken to assess the existing conditions at unsignalized and signalized intersections for the TTMP study area.

The existing transportation assessment was undertaken for unsignalized and signalized intersections within the Tecumseh study area for the weekday afternoon peak period to identify current capacity constraints. For signalized intersections, this analysis method generates performance measures including average delay and Level of Service (LOS) for each intersection as a whole and on a per movement basis. For unsignalized intersections, the analysis method generates performance measures including movement specific average delays and LOS for each intersection.

LOS is a measure used to quantify the amount of delay experienced by motorists at an intersection or particular movement. HCM measures Level of Service as a range from LOS A to LOS F, where LOS A reflects excellent conditions with little or no delay and LOS F reflects congested conditions and failure of the movement or intersection with significant delays experienced by motorist. A more detailed explanation of LOS is provided in ***Appendix C***.

Signalized Intersection Performance

The existing operational performance of the signalized intersections within the study area was measured using the intersection HCM (overall) volume-to-capacity (v/c) ratio and the corresponding LOS for the weekday PM peak hour. In the case of individual turning movements, those movements/ lane groups with either a v/c ratio in excess of 0.85 or a LOS below D or both were identified as "critical" movements. Turning movements meeting these "critical" criteria are approaching capacity and prone to poor operation during the peak periods. ***Table D1*** provides the results of the signalized intersection analysis for the weekday PM peak hour.

Table D1: Existing Weekday PM Peak Hour Signalized Intersection Performance

Intersection Location	Overall Intersection		Critical Movements			
	LOS	v/c	Approach & Movement	LOS	v/c > 0.85	Delay (sec/veh)
Riverside Drive and Lesperance Road	B	0.43	N/A			
Tecumseh Road and Lesperance Road	E	0.79	EBL EBT WBL WBT	F D F D	1.24 0.86 1.27 0.80	169.3 46.6 184.3 40.9
Tecumseh Road and Lacasse Boulevard	B	0.51	SBL	D	0.25	35.4
Tecumseh Road and Manning Road	C	0.46	N/A			
Tecumseh Road and Green Valley Road	A	0.24	SBL SBR	D D	0.14 0.06	38.2 37.6
Tecumseh Road and Banwell Road	C	0.90	EBL	F	1.10	105.5
E.C. Row Expressway (CR 22) and Manning Road	F	1.17	EBL NBL NBT SBT	E F D F	0.96 1.04 0.83 2.01	57.8 107.1 51.0 507.1
E.C. Row Expressway (CR 22) and Lesperance Road	E	0.95	EBL EBT WBT NBT SBT	F E D E D	1.11 1.02 0.92 0.82 0.37	119.4 65.0 50.0 56.6 35.6
County Road 42 and Banwell Road	A	0.57	N/A			
County Road 42 and Lesperance Road	A	0.54	N/A			
Manning Road and St. Gregory Road	B	0.28	N/A			
Manning Road and CR 42	D	0.80	EBT SBT	D D	0.91 0.77	51.8 40.5
Manning Road and CR 46	A	0.54	N/A			
Manning Road and County Road 34	B	0.55	N/A			
Manning Road and Highway 3	E	0.83	SEBT	F	1.26	147.1
Walker Road and North Talbot Road	C	0.69	EBL	E	0.92	65.9
Walker Road and Blackacre Drive	B	0.34	N/A			
Walker Road and CR 8	B	0.33	N/A			

Individual movements beyond the critical threshold (v/c ratio > 0.85 and/or LOS D) include the following:

Tecumseh Road and Lesperance Road
The intersection was found to be operating at LOS E (v/c of 0.79) which is considered a borderline problem. The eastbound left turn movement experiences a LOS F with a corresponding v/c ratio of 1.24 and delays of 169.3 seconds per vehicle as motorist wait for a gap in opposing traffic to make the left turn movement. The eastbound through movement experiences a LOS D with a corresponding v/c ratio of 0.86 and delays of 46.6 seconds per vehicle. The westbound left turn movement experiences a LOS F with corresponding v/c ratio of 1.27 and delays of 184.3 seconds per vehicle as motorist wait for a gap in opposing traffic to make the left turn movement. The westbound through movement experiences a LOS D with a corresponding v/c ratio of 0.80 and delays of 40.9 seconds per vehicle.

Tecumseh Road and Lacasse Boulevard
The southbound left turn movement experiences LOS D with a corresponding v/c ratio of 0.25 and 35.4 seconds of delay per vehicle as motorists wait for a gap in opposing traffic to make the left turn movement.

Tecumseh Road and Green Valley Road
The southbound left turn movement experiences a LOS D with a corresponding v/c ratio of 0.14. The movement experiences delays of 38.2 seconds per vehicle as motorists wait for a gap in opposing traffic to make the left turn movement. The southbound right turn movement experiences a LOS D with a corresponding v/c ratio of 0.06. The movement experiences delays of 37.6 seconds per vehicle as motorists wait for a gap to make the right turn movement.

Tecumseh Road and Banwell Road
The eastbound left turn movement is over capacity with a v/c ratio of 1.10 and corresponding LOS F; delays reach 105.5 seconds per vehicle.

County Road 22 and Manning Road
The intersection was found to be operating in an overcapacity conditions, at LOS F and with a v/c ratio of 1.17. The eastbound left turn movement experiences a LOS E with a corresponding v/c ratio of 0.96 and delays of 57.8 seconds per vehicle. The northbound left turn movement is over capacity with a v/c ratio of 1.04 and corresponding LOS F; delays reach 107.1 seconds per vehicle. The northbound through movement experiences a LOS D with a corresponding v/c ratio of 0.83 and delays of 51.0 seconds per vehicle. The southbound through movement is well over capacity with a v/c ratio of 2.01 and corresponding LOS F; delays reach 507.1 seconds per vehicle.

County Road 22 and Lesperance Road
The intersection was found to be operating at LOS E, with a v/c ratio of 0.95. The eastbound left turn movement is over capacity with a v/c ratio of 1.11 and corresponding LOS F; delays reach 119.4 seconds per vehicle. The eastbound through movement is over capacity with a v/c ratio of 1.02 and corresponding LOS E; delays reach 65.0 seconds per vehicle. The westbound through movement experiences a LOS D with a corresponding v/c ratio of 0.92 and delays of 50.0 seconds per vehicle. The northbound through movement experiences a LOS E with a corresponding v/c ratio of 0.82 and delays of 56.6 seconds per vehicle. The southbound through movement experiences a LOS D with a corresponding v/c ratio of 0.37 and delays of 35.6 seconds per vehicle.

County Road 42 and Manning Road
The intersection was found to be operating at LOS D, with a v/c ratio of 0.80. The eastbound through movement experiences a LOS D with a corresponding v/c ratio of 0.91 and delays of 51.8 seconds per vehicle. The southbound through movement experiences a LOS D with a corresponding v/c ratio of 0.77 and delays of 40.5 seconds per vehicle.

Highway 3 and Manning Road
The intersection was found to be operating at LOS E, with a v/c ratio of 0.83. The south-eastbound through movement is over capacity with a v/c ratio of 1.26 and corresponding LOS F; delays reach 147.1 seconds per vehicle.

North Talbot Road and Walker Road
The eastbound left turn movement experiences a LOS E with a corresponding v/c ratio of 0.92 and delays of 65.9 seconds per vehicle.

Detailed analysis of intersections operations identified several intersections approaching or at capacity under existing conditions. The County and MTO are planning to undertake a number of significant capital projects before the end of the planning period which will address most of these identified intersection deficiencies. Operational issues may require mitigation measures to alleviate operational and safety concerns if the planned major capital projects are delayed. Examples could include minor change to the geometric conditions of the approaches or optimization of traffic controls. These intersections are under the ownership of MTO and/or the County and, as such, mitigation measures would be the responsibility of senior levels of government.

The Walker Road/ North Talbot Road intersection was reconstructed in 2000, providing separate left turn lanes in all directions and shared through/right lanes with wide curb radii on the north and south approaches to accommodate truck turning movements. However, the processing efficiency of the intersection is limited by the shared through right operation on the north and south approaches (Walker Road) and the single through lanes on the east and west approaches (North Talbot). As the volumes increase on this roadway the intersection level of service will deteriorate.

Key Operational Issues

Lesperance Road

Lesperance Road is a key north-south spine in the networks for all modes of travel and the only continuous north-south road under the control of the Town of Tecumseh. Consideration has been given to modifying the existing cross-section to remove the existing two-way left turn lane (TWLTL) between McNorton Street and Riverside Drive to permit the creation of on-road cycling lanes. Removal of the TWLTL would not significantly affect intersection capacity or road safety. Given the commitment to promote Active Transportation and balance the level of service for all transportation modes it is recommended that the existing cross-section north of McNorton Street be modified to add cycling lanes and a multi-use pathway be constructed in the boulevard.

Tecumseh Road

Tecumseh Road is a key east-west spine in the networks for all modes of travel and the focus of activity for a planned vibrant commercial node (Tecumseh Road Main Street runs from approximately the Municipal Boundary west of Southfield Road to the Via Rail tracks east of Lesperance Road). The Town of Tecumseh completed a planning study for the CIP area in January 2016 to identify a road design that would support the urban design and development objectives of the historic commercial zone. The CIP study, approved by Council in January 2016, recommended reducing the existing four lane cross-section on Tecumseh Road to a cross-section that only contains two driving lanes for general traffic and cycling, with the balance of the road space used for parking and pedestrian amenities.

Westlake Drive

The proposed configuration of the Lesperance Road/County Road 22 interchange will change the role of Sylvestre Drive and the future Westlake Drive. In the short term, Sylvestre Drive/ Westlake Drive will be an alternative for eastbound vehicles to exit CR22 and access Lesperance Road; in the long term it will be the only way to do so. Absent the ramp connection, Sylvestre Drive (County Road 22 to Westlake Drive) and Westlake Drive (Sylvestre Drive to Lesperance Road) would be designated as Collector Roads; with the ramp connection both roads will function as Minor Arterial roads and a three lane approach is recommended for westbound Westlake Drive at Lesperance Road.

Unsignalized Intersection Performance

The existing operational performance of the unsignalized intersections within the study area were measured using the intersection HCM (approach) volume-to-capacity (v/c) ratio, approach delay, and the corresponding LOS for the weekday PM peak hour. ***Table D2*** provides the results of the unsignalized intersection analysis for the weekday PM peak hour. The approach with the poorest performance is shown (lowest LOS, highest v/c ratio, or longest delay).

Table D2: Existing Weekday PM Peak Hour Unsignalized Intersection Performance

Intersection Location	Approach	LOS	v/c	Delay (sec/veh)
Riverside Drive and Manning Road	EB Approach	A	0.52	9.6
Riverside Drive and Arlington Boulevard	NB Approach	B	0.05	10.9
Old Tecumseh Road and Brighton Road	WB Approach	D	0.76	34.7
Tecumseh Road and Brighton Road	EB Approach	A	0.34	7.1
Desro Drive and Manning Road	EB Approach	E	0.36	35.9
Jamsyl Drive and Manning Road	EB Approach	C	0.04	22.8
Sylvestre Drive and Manning Road	EB Approach	C	0.23	21.0
Intersection Road and Banwell Road	WB Approach	B	0.16	12.1
County Road 42 and 11th Concession	NB Approach	E	0.52	42.9
Baseline Road and Manning Road	EB Approach	C	0.28	16.4
County Road 46 and 11th Concession Road	SB Approach	C	0.12	15.2
North Talbot Road and 9th Concession Road	EB Approach	A	0.20	7.7
North Talbot Road and 8th Concession Road	SB Approach	A	0.08	9.1
South Talbot Road and Walker Road	NB Approach SB Approach	B C	0.31 0.66	12.2 18.3
South Talbot Road and 8th Concession Road	NB Approach	A	0.02	9.1
County Road 8 and Malden Road	SB Approach	A	0.03	9.3

The only individual approaches with a v/c ratio > 0.85 and/or LOS D is:

Old Tecumseh Road and Brighton Road

The westbound approach is experiencing a LOS D with a corresponding v/c ratio of 0.76 and delays of 34.7 seconds per vehicle. Recent improvements to each approach to the intersection alleviate this operational concern.

The existing operational performance of the unsignalized all-way stop control intersections within the study area were measured using the intersection HCM (overall) maximum volume-to-capacity (v/c) ratio, average delay, and the corresponding LOS for the Weekday PM peak hour. ***Table D3*** provides the results of the unsignalized intersection analysis for the Weekday PM peak hours.

Table D3: Existing Weekday PM Peak Hour All-Way Stop Intersection Performance

Intersection Location	LOS	Max v/c	Delay (sec/veh)
St. Gregory's Road and Arlington Boulevard	A	0.12	7.6
Intersection Road and Lesperance Road	A	0.28	8.9

Overall, the unsignalized intersections currently operate with sufficient capacity to accommodate the existing traffic volumes during the PM peak hour.

Appendix E

Strategic Policies: Complete Streets Design Handbook

DILLON CONSULTING

CORPORATION OF THE TOWN OF TECUMSEH

Complete Streets Design Handbook

Revised June 2017 – 15-2937

Table of Contents

Figures

Tables

Annexes

1.0 Complete Streets Policy

The Town of Tecumseh adopts a "complete streets" approach to the planning, design, operation, and maintenance of roads. Going forward, we will shift the focus of streets from a strong emphasis on auto mobility to a more balanced philosophy to better serve all modes to meet the needs of travellers of all ages and abilities.

Tecumseh's streets are the pillars of the Town's transportation system and economy. They provide vital links across the County and serve automobiles, trucks, emergency services, public transit, cyclists, and pedestrians. Streets are also important public spaces and home to parks, businesses, schools, and homes. They are a communal meeting place. However, the space that can be allocated to each of these varied uses is limited, and as a result the Town often must make challenging decisions to plan, design, and operate its road network to maximize public benefit.

The complete streets framework seeks to balance the many roles of roads to maximize their potential as a public resource. A complete street is appropriate for all expected functions and offers safety, comfort, and convenience to all users regardless of age or ability. Complete streets must be implemented with a context sensitive approach, as different users take priority in different locations. Corridors must be assessed from both a local (small-scale) perspective and a global (large-scale) perspective, to understand their function to all users and all trips. As an example, in "main street" areas where sustainable travel choices are promoted, the needs of pedestrians and cyclists (the most vulnerable users) will be prioritized. The needs of transit users will be secondary, and the needs of motorists will be tertiary. In areas where there is high demand for several modes, the Town will seek to balance the needs of all users in a sustainable and context sensitive manner. *Figure E1* displays examples of Complete Streets in different contexts.

Figure E1: Complete Streets in an Urban, Suburban, and Rural Context

2.0 Roadway Hierarchy

The development of an understandable road classification system is a fundamental requirement for the Town of Tecumseh. A road classification system is the orderly grouping of roads into systems according to the type of service they provide to the public. When a road system is properly classified, the characteristics of each road are readily understood. Classification assists in establishing the geometric design features for each group of roads, consistent with the short and long term operational needs of that particular group.

Traditionally, roadway classification systems are structured on a hierarchy of classes focused primarily on mobility and access for private vehicles. A Complete Streets approach establishes a framework for street design that provides "streets for everyone". The corresponding multi-modal roadway classification system maintains hierarchy between road classes, but speaks to all modes of transportation and places greater emphasis on pedestrians, cyclists, and transit users. This approach allows for streets to be designed according to their local context and provide a safe, comfortable, and convenient environment for pedestrians, cyclists, and transit users, while maintaining traffic flow.

Ownership versus Influence

Roads within the Town boundaries are owned by four parties – the Ministry of Transportation, Ontario (MTO), the County of Essex, the City of Windsor, and the Town. Decisions related to planning, design and operation of roads owned by the Town lie completely within their control. Decisions related to roads owned by other levels of government can be influenced by the Town, but ultimately lie in the hands of their owners.

Objectives for All Urban Roads

Tecumseh desires Complete Streets, particularly in the urban area, balanced to recognize the needs of all users, regardless of ownership.

Streets owner by others generally play an important role in regional mobility for auto travel, and typically carry significant traffic volumes in the commuter peak hours. The Town of Tecumseh acknowledges and understands this, but desires that the needs of all modes be considered, as these corridors are significant for other transportation modes as well. The Town will work with their partners to encourage use of a Complete Streets lens on all roads to provide appropriate infrastructure to meet the safety and mobility needs of all users.

Ownership

Figure E2 and *Figure E3* show the ownership of roadways within the Town of Tecumseh.

MTO owns Highway 401 and Highway 3. Both of these facilities are high speed roads in rural areas that only serve auto traffic. Focus in the development of the multi-modal street network will be on crossing these corridors safely and efficiently.

The County of Essex owns a series of roads within the Town boundaries, as shown in *Figure E2* and *Figure E3*. Many of these roads have urban segments that impact transportation choices in Tecumseh. The Town will continue to work with the County to encourage a more Complete Streets approach to all urban roads, regardless of ownership, to meet the needs of Tecumseh's residents.

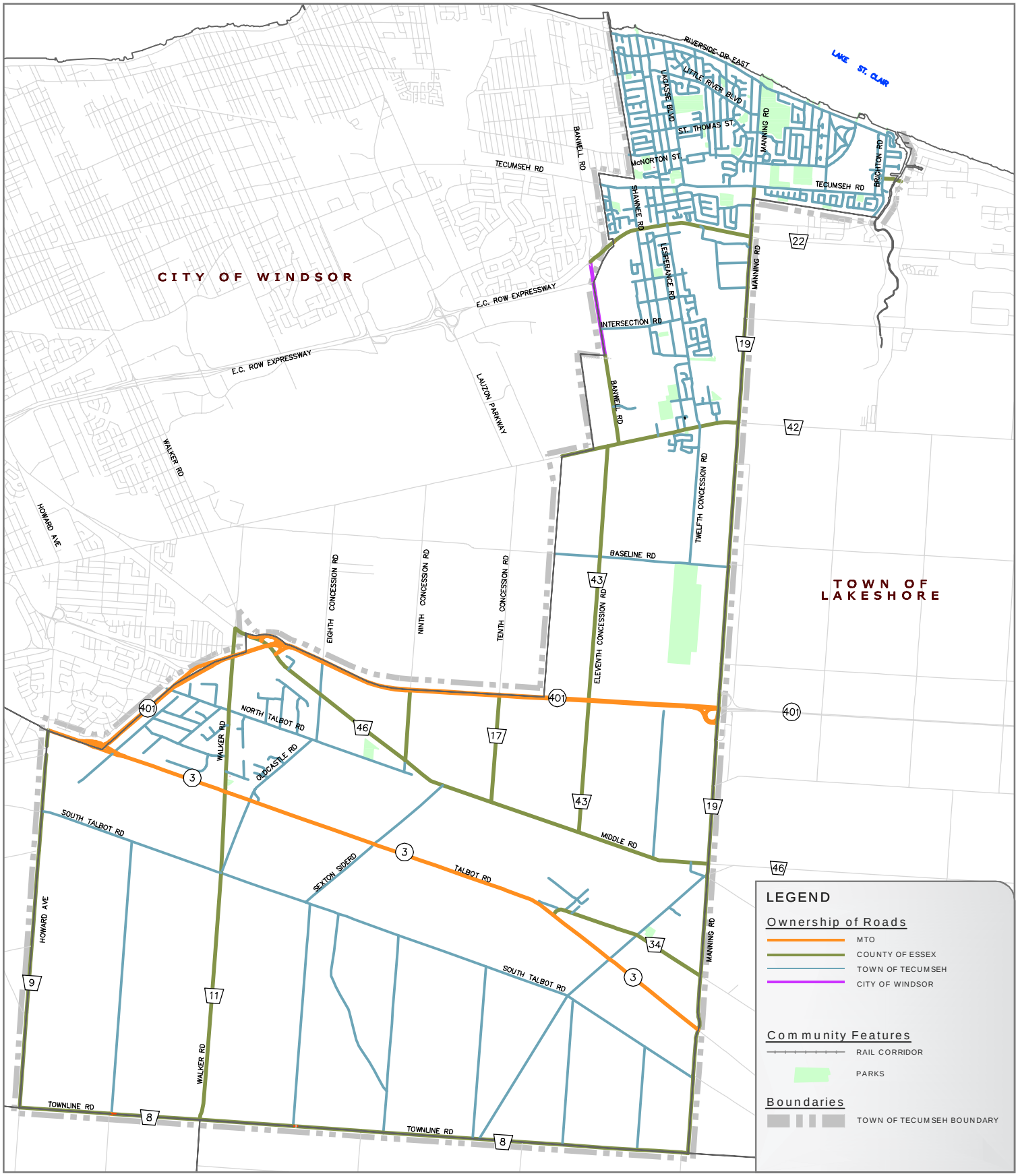
The City of Windsor owns a segment of Banwell Road between CR22 and CR42. The Town will continue to work with the City to encourage a more Complete Streets approach to the design and operation of Banwell Road to meet the needs of Tecumseh's residents.

Road Classifications for Town of Tecumseh Roads

Seven different roadway types are proposed for Town of Tecumseh roadways:

- Commercial Main Street
- Urban Minor Arterial
- Urban Collector
- Urban Local Road
- Rural Minor Arterial
- Rural Collector
- Rural Local Road

Figure E4 and *Figure E5* show the recommended road classifications.



THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

TECUMSEH ROADWAY JURISDICTIONS

FIGURE E2

DILLON CONSULTING

Dillon Proj.No.: 15-2937
STATUS: FINAL
DATE: NOVEMBER 2016
REVISED: JUNE 2017

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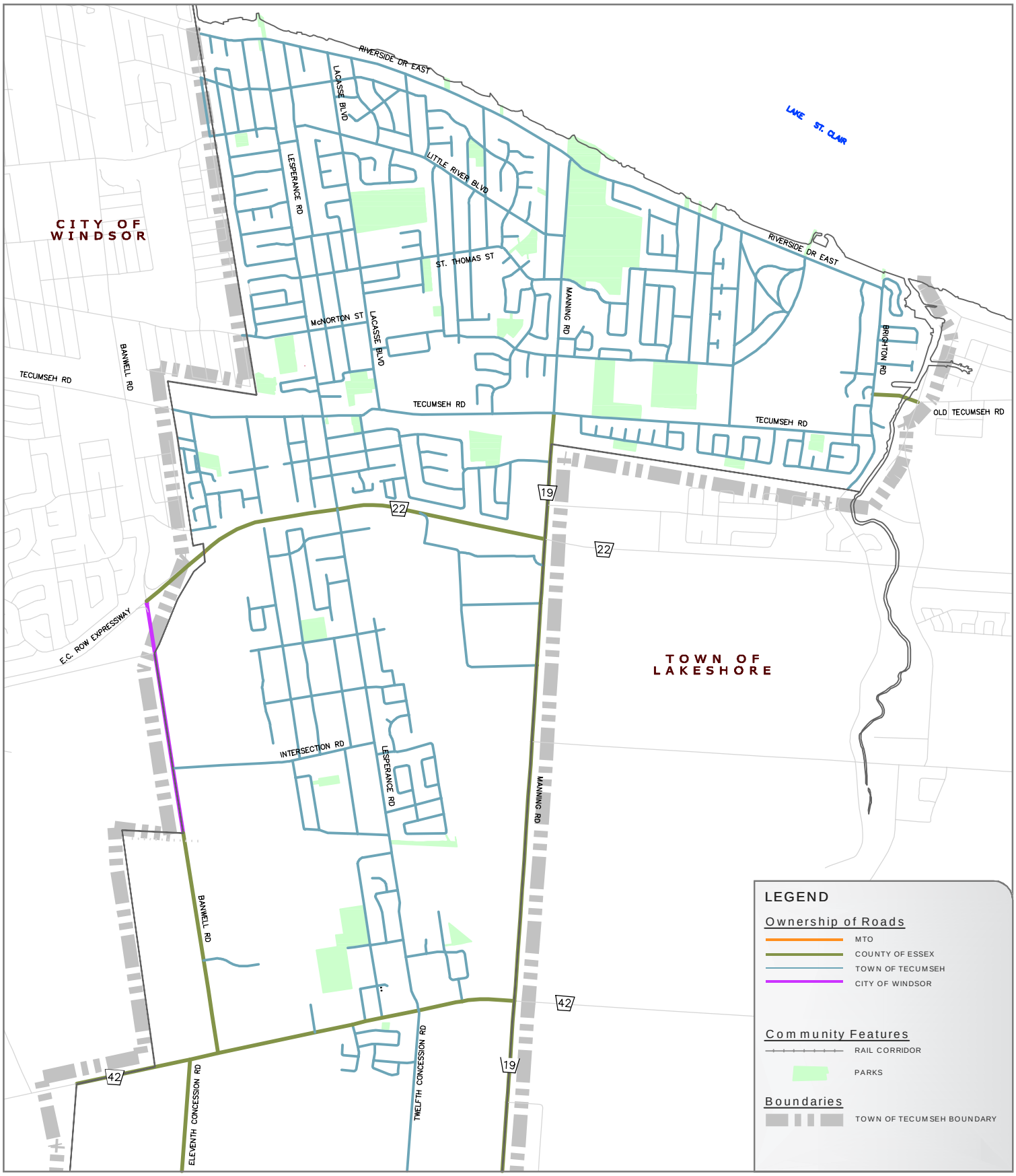

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

TECUMSEH ROADWAY JURISDICTIONS (URBAN AREA)

FIGURE E3

DILLON CONSULTING

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STATUS: FINAL
DATE: NOVEMBER 2016
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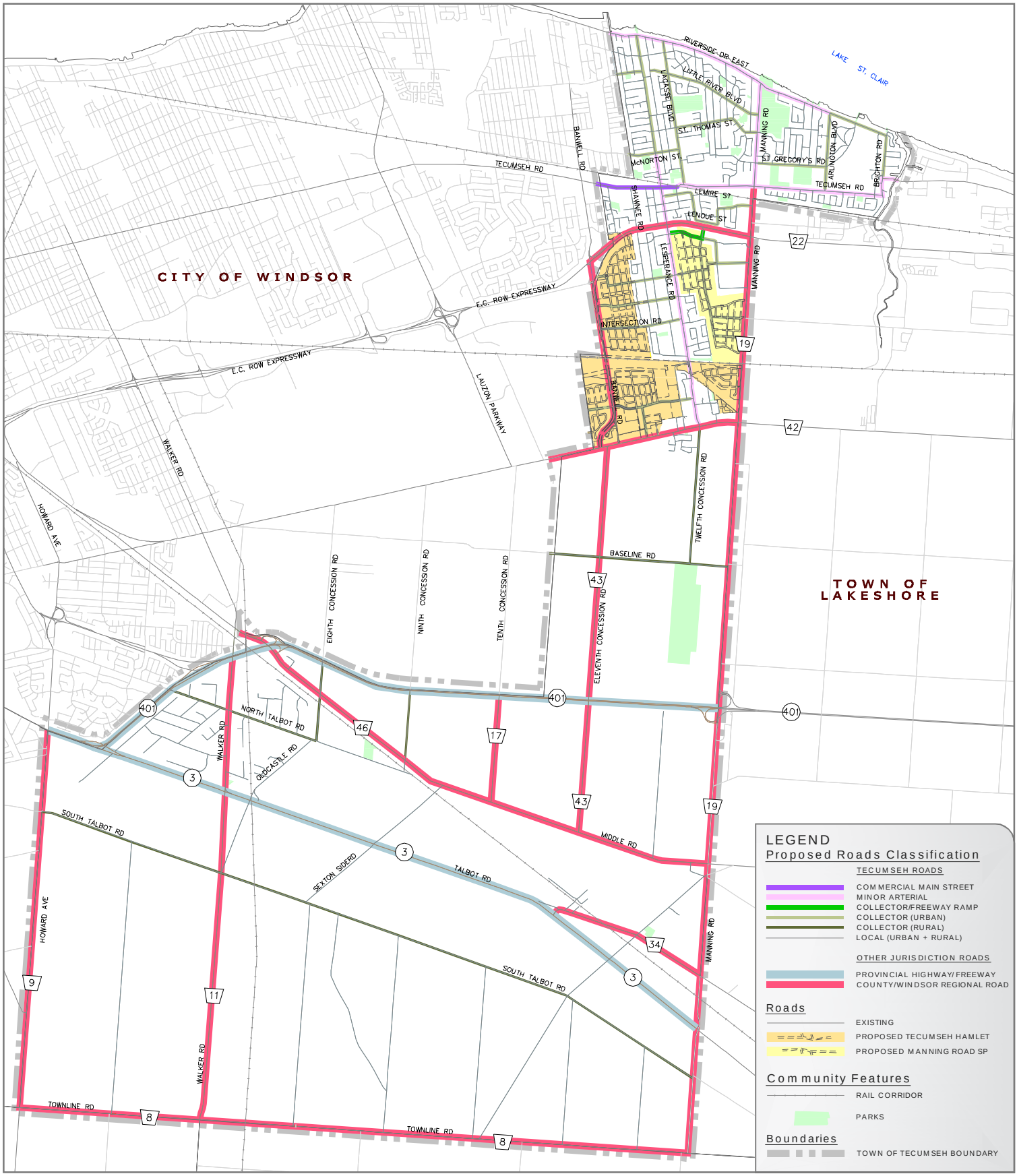

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

TECUMSEH TMP ROAD CLASSIFICATIONS

DILLON CONSULTING

Dillon Proj.No.: 15-2937

STATUS: FINAL

DATE: NOVEMBER 2016
REVISED: JUNE 2017

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FIGURE E4

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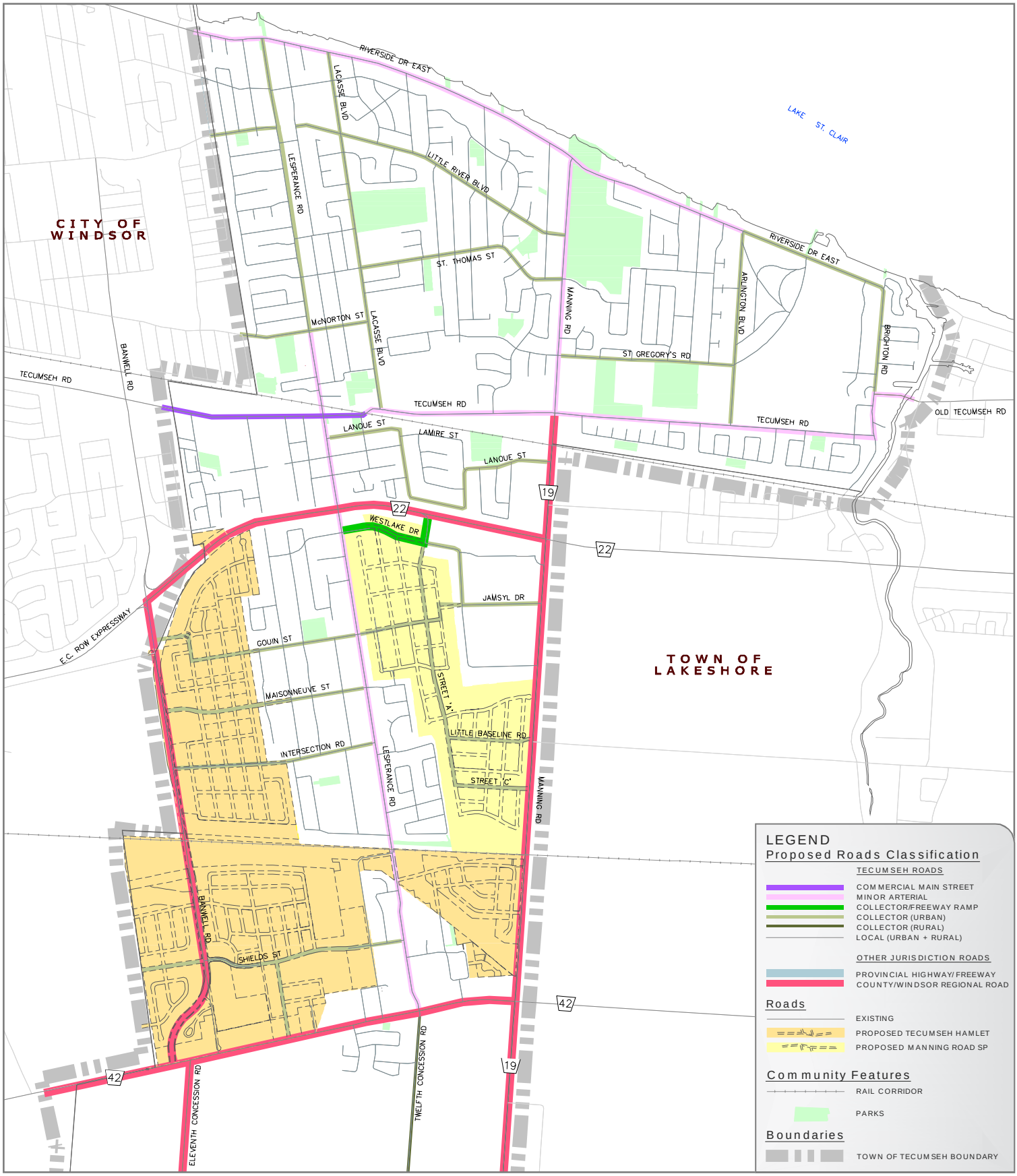

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

TECUMSEH TMP ROAD CLASSIFICATIONS (URBAN AREA)

FIGURE E5

DILLON CONSULTING

Dillon Proj.No.: 15-2937
STATUS: FINAL
DATE: NOVEMBER 2016
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The recommended roadway classification system is based on a review of best practices related to road classification systems, taking into consideration the system developed as part of the *Essex-Windsor Regional Transportation Master Plan, 2005 (EWRTMP)*. The classifications system identified in the EWRTMP is maintained and simplified to recognize the needs of the Town.

Table E1 shows the typical planning, design, and operating characteristics of associated with these road classes that have been developed to reflect a Complete Streets approach to developing a street network. These characteristics will be used in the planning and design of new roads in Tecumseh and will be applied to existing roads when reconstruction projects are undertaken.

Table E1: Proposed Tecumseh Roadway Classification System

	Urban				Rural		
Criteria	Commercial Main Street	Minor Arterial	Collector	Local Road	Minor Arterial	Collector	Local Road
Land Use Served	Connects urban areas, districts and nodes	Connects urban areas, districts and nodes	Internal area connections	Access to individual properties	Connects rural population centres to each other and adjacent community areas, districts and nodes	Rural development areas	Access to individual properties
Land Service/ Access	Permitted with some access control	Permitted with some access control	Full Access	Access Primary Consideration	Full Access	Full Access	Access primary consideration
Service Function	Traffic movement & land access equal importance	Traffic movement major consideration	Traffic movement & land access equal importance	Traffic movement is secondary consideration	Traffic movement major consideration	Traffic movement & land access equal importance	Traffic movement is secondary consideration
Traffic Volume (AADT)	1,000-16,000	5,000-20,000	<8,000	< 1,000	< 10,000	<5,000	< 1,000

Criteria	Urban				Rural		
	Commercial Main Street	Minor Arterial	Collector	Local Road	Minor Arterial	Collector	Local Road
Traffic Flow Character	Interrupted flow (driveways, stop controlled intersections)	Predominately uninterrupted flow	Interrupted flow (driveways, stop controlled intersections)	Interrupted flow (driveways, stop controlled intersections)	Interrupted flow	Interrupted flow	Interrupted flow
Design Speed	40 - 50 km/h	50 - 70 km/h	50 - 60 km/h	40 - 50 km/h	60 - 80 km/h	60 - 80 km/h	50 - 70 km/h
Average Running Speed	40 - 50 km/h	50 - 70 km/h	50 - 60 km/h	40 - 50 km/h	60 - 80 km/h	60 - 80 km/h	50 - 70 km/h
Vehicle Type	All types up to 20% trucks	All types up to 20% trucks	All types	Predominantly passenger cars and light to medium trucks	All types up to 20% trucks mostly single unit type	All types up to 20% trucks mostly single unit type	Predominantly passenger cars and light to medium trucks
Connects To	Arterials, collectors, locals	Freeways, arterials, collectors	Arterials, collectors, locals	Collectors, locals	Freeways arterials collectors	Arterials, collectors, locals	Collectors, locals
Transit Service	Permitted	Permitted	Permitted, local buses	Generally not present	Typically not present	Typically not present	Generally not present
Right of Way Width (m)	26	26	23	20	20 - 36	23	20
Cycling	Dedicated lane or wider curb lane where required	Dedicated lane or wider curb lane where required	Wider curb lane where required	No restrictions or designated infrastructure	Paved shoulder or off road multi-use pathway	Paved shoulders if traffic volume > 1000 vehicles per day	No restrictions or designated infrastructure
Pedestrians	Sidewalks on both sides	Sidewalks on both sides	Sidewalks on both sides	Sidewalks on one or both sides	Sidewalk on one side if it connects rural settlement area to school or community facility less than 2.5 km away	Sidewalk on one side if it connects rural settlement area to school or community facility less than 2.5 km away	Pedestrians permitted, no designated facilities

Criteria	Urban				Rural		
	Commercial Main Street	Minor Arterial	Collector	Local Road	Minor Arterial	Collector	Local Road
Parking	Peak hour restrictions	Peak hour restrictions	Few restrictions other than peak hour	No restrictions or restrictions one side only	Prohibited	Prohibited	Prohibited
Traffic Calming	Where required, gateway features	Where required, gateway features	Where required, horizontal features only	Where required	Not applicable	Not applicable	Not applicable

Typical cross-sections for each class of road are shown in *Annex A*. These cross-sections are a starting point for designing roads in these road classes; individual roads need to consider local conditions for road design and construction and are subject to the discretion of the Director of Public Works.

Although individual street designs are dependent on the particular context in which they are designed, all streets in any one classification share a common purpose within the transportation network. That common purpose is best articulated in *Table E2*, where different priorities, or levels of accommodation, are assigned to that particular street classification.

Table E2: Street Palette

Street Palette: Planning, Design and Operational Priority for Modes by Street Class					
Road Class	Walking	Cycling	Transit	Autos	Goods
Major Arterial*	|	| |	|	|	|
Commercial Main Street	|	|	| |	|	|
Minor Arterial	| |	| |	|	|	|
Collector	|	|	| |	|	|
Local Road	|	|	|	|	|
Rural Arterial*	|	| |	|	|	|
Rural Minor Arterial	|	| |	|	|	|
Rural Collector	|	|	| |	|	|
Rural Local	|	|	|	|	|

\| Accommodated at a high level of service \| Accommodated with variable standards \| Not required, or poor performance is acceptable

Note: Two symbols in one column indicate a spectrum of performance depending on the roadway and its characteristics.
** County-Roads.*

Unique Conditions

Tecumseh Road (Community Improvement Plan area)

Tecumseh Road acts as a "Main Street" for the Town of Tecumseh, and has a unique character. It is one of the primary east-west transportation routes within, to, and from the Town, and spans an area generally defined as "downtown Tecumseh". There are a variety of land uses along this corridor, including low- and mid-density residential, commercial, recreational, and institutional. Towards the west, the corridor contains more industrial land uses and significant surface parking – non-traditional land uses for a "Main Street". The Tecumseh Road Community Improvement Plan is intended to increase residential development, placemaking, commercial development, and intensification in this area. The character of the roadway must reflect these new developments, while maintaining the function of Tecumseh Road as significant east-west corridor.

Lesperance Road (McNorton Street to Riverside Drive)

Lesperance Road exhibits a series of different conditions along its length. The design of the network emphasizes its role in serving traffic, as it is a direct connector between County Road 22 and Riverside Drive. The land use design between McNorton Street and Riverside Drive emphasizes its role as a community street with direct frontages and driveways. These existing conditions on Lesperance Road cannot realistically be changed, and therefore the adopted approach must serve traffic volumes under operating conditions consistent with the single family houses which front onto the street. The continuity of Lesperance Road makes it a desirable link in the network for all travel modes. The design and operating approach must therefore accommodate the demands of all modes and users.

3.0 Network Design Guidelines

The Complete Streets philosophy is an overarching theme across all levels of planning detail, affecting the arrangement of streets within a city, town, community, or region. The intent is to create a highly connected street network to provide connections to all users within and between neighbourhoods, and to prevent large vehicle throughways from becoming barriers. A highly connected street network is effective in improving safety and the public benefit in many ways:

- Highly connected networks distribute vehicular demand more evenly across the system, and reduce average speeds. Hierarchical street patterns depend on arterials for the majority of traffic flow. Most vehicles are diverted to arterials with higher traffic speeds large intersections. Most collisions occur at intersections, and are more likely and more severe at higher speeds. Therefore, a highly connected street pattern can reduce the likelihood and severity of traffic collisions.
- Highly connected networks reduce the number of vehicle-kilometres travelled, and increase the number of pedestrians and cyclists. A more connected network allows users to take shorter, more direct routes, on quieter streets more appropriate for walking and cycling. Typically, highly connected networks feature shorter distances to transit stops, which can incent use of transit over private automobiles.
- Highly connected networks shorten emergency response times and improve the efficiency of deliveries. A more connected network allows for shorter, more direct routes, and provides redundancy and alternative route choices. This has been found to improve the efficiency of emergency services and consequently reduce the cost of providing these services. Increased redundancy also reduces the impacts of congestion and unplanned network disturbances.

A key component of making a network “complete” is making it highly connected. The connectivity of a network describes the variety of trips and modes users can choose to travel between places. The network includes:

- Regional streets (arterials and expressways)
- Residential streets (collectors, local streets, and alleys)
- Paths (multi-use paths, bicycle paths, and walkways)

The way in which these network components are combined affects users' travel choices, and research has demonstrated that increased connectivity between these components results in numerous benefits, as outlined above. Connectivity can be calculated as the ratio of street links (streets) to street nodes (intersections). For active transportation networks, connectivity is the ratio of walking/cycling links (multi-use paths, bicycle paths, and walkways) to street nodes (intersections). Generally, grid pattern networks have a connectivity index of 2.0, while curvilinear networks have a connectivity index of about 1.3. The higher the connectivity index, the more "complete" a street network is. *Figure E6* and *Figure E7* show typical grid and curvilinear networks.

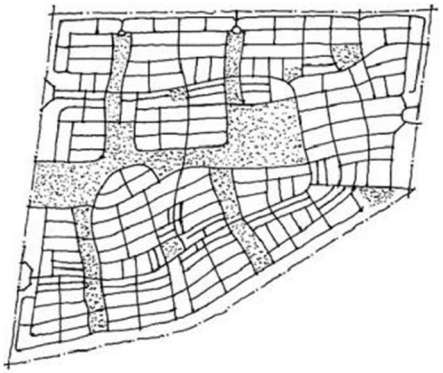


Figure E6: Grid Network

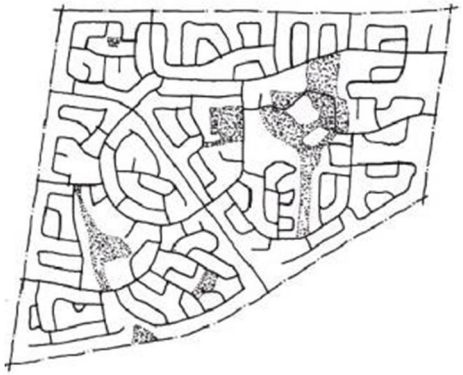


Figure E7: Curvilinear Network

Photo source:
"Residential Street Pattern Design for Healthy Liveable Communities".
http://www.cardinalgroup.ca/nua/ip/ip02.htm

DESIGN PRINCIPLES:

A highly connected street network designed under a complete streets framework will:

- Prioritize pedestrians, cyclists, and transit users.
- Balance the support of adjacent land uses and mobility for private vehicles passing through the area.
- Protect and enhance natural features and ecological systems.
- Maximize social and economic activities.
- Function in harmony with all other transportation networks of all modes.
- Provide a variety of street types.

DESIGN GUIDELINES:

The following guidelines should be followed to achieve a highly connected "complete" network:

1. Limit street block lengths. Street blocks should be 150 to 175 metres in length. In the irregular event that this is exceeded, pedestrian and/or cyclist connections should be provided, through alleys or other means. Existing blocks should be retrofitted to provide these connections, and street closures should not be allowed on existing networks if they would result in larger blocks.
2. Improve accessibility within blocks. Accessibility should be improved within a block through alleys, service courts, and other access connections.
3. Connect adjacent neighbourhoods by multiple streets. This can be achieved by extending lower order streets beyond the local area.
4. Maintain pedestrian and cyclist connections. Provide separate and dedicated pedestrian and cyclist connections over or under major arterials and geographic barriers.
5. Maintain network quality and growth. Allow the network to grow and expand through development, revitalization, intensification, or redevelopment, as it is required to maintain network quality, but avoid increasing street widths or number of travel lanes.
6. Provide parking. Provide on-street curbside parking on the majority of streets, except on narrow streets, high-speed roads, or where a better use of the space exists.
7. Limit design speeds. All streets lower than an arterial classification should be designed to match the desired operating speed. To incent compliance on long, straight streets, reduce driver comfort at high speeds through traffic controls, narrow lane widths, traffic calming, and boulevard features.

8. Discourage poor-performing features. Maintain a highly functioning network by discouraging:
    a. One-way streets
    b. Turn prohibitions
    c. Full or partial closures, except on bicycle boulevards or areas dedicated to other public uses
    d. Removal of on-street parking, except when replaced with wider sidewalks, enhanced streetscapes, bicycle lanes, or other means that promote the public realm
    e. Gated streets and communities
    f. Widening of streets
    g. Conversion of city streets to limited access facilities
9. Aim for high connectivity indexes. New community plans should aim to achieve the following connectivity indices:
    a. In activity centres, 1.7 for streets, and 1.9 for active modes
    b. In greenfield residential areas, 1.4 for streets, and 1.6 for active modes

4.0 Street Design Guidelines

Typically, streets and their design have prioritized movement of private automobiles, and as such streets have been created which are not amenable to other users. Streets with wide lanes, large corner radii, and auxiliary turn lanes are key indicators of this. These are inconvenient for all non-automobile users. This section outlines design principles and guidelines consistent with the complete streets framework, to create "streets for everyone".

These guidelines apply to the section of the street right of way in between curbs, including such features as parking lanes, bicycle lanes, transit lanes, general travel lanes, and medians. The design of this right of way affects users in the roadway as well as the areas adjacent to it.

4.1 Design Principles

The following design principles should be held as central themes to the design of all streets under a complete streets framework:

1. Design for Everyone. The street design should be convenient, comfortable, and safe for all users of all modes, ages, and abilities.
2. Design for Safety. The design speed should correspond to the desired role and function of the street, considering the land use, urban form, adjacent sidewalk activities, and other users. Lowering design speeds, particularly on urban roads, improves safety for all users.
3. Design for Desired Operating Speeds. Typically, roads are designed for a speed that is higher than the intended operating speed. Designing instead for the intended operating speed creates a safer environment for all users. Street and travel lane width should correspond to the intended operating speed.
4. Design to Accommodate Large Vehicles. Designing for large vehicles by increasing roadway dimensions is undesirable, but larger vehicles likely to frequent the area should be accommodated. In general, residential areas should accommodate SU-9 units (single-unit truck with 9m front- to rear-axle spacing), local commercial operation areas should accommodate WB-19 units (semi-trailer truck with 19m front- to rear-axle spacing), regional commercial facilities should accommodate WB-21 units (semi-trailer truck with 21m front- to rear-axle spacing), and heavy industrial areas should accommodate large double semi-truck trailers.

5. Design Appropriate Travel Lane Widths. Travel lane widths should correspond to the context of the street, desired speed, and on-road bicycle facilities.
6. Design to Accommodate On-Street Parking. On-street parking supports businesses along a street, reduces travel speeds by increasing driver discomfort, and provides a buffer for pedestrians and sidewalk activities. Angled parking should be avoided, but if necessary, reverse-in angled parking should be preferred over reverse-out angled parking, as it allows better vision of the street for drivers.
7. Design with Turn Lanes Only if Appropriate. Turn lanes often result in higher speeds, as through vehicles do not have to slow down for turning vehicles. Turn lanes also tend to reduce pedestrian and cyclist comfort and safety. The need for turn lanes should be considered alongside the desired speed and needs of other users.
8. Design with Medians. Medians provide pedestrians with a refuge while crossing a street, limit left turns into and out of developments, reduce conflict points, and create space for landscaping, lighting, and utilities. Median widths should be designed based on the desired operating speed, pedestrian accessibility, turning lanes, green infrastructure requirements, available right of way, and street classification.
9. Design with Efficient Right of Way Width. Right of way width should complement the function of multi-modal facilities and should include designated zones for all utilities (horizontal and vertical). In a constrained right of way, priority should be given to sidewalks over bicycle lanes, parking lanes, and green infrastructure. Additional building setback should be provided in a constrained right of way wherever possible.

4.2 Geometric Design Guidelines

Geometric design guidelines have traditionally focused on moving high volumes of traffic at high speeds. The following design guidelines should be employed instead to the design of all streets under a complete streets framework:

1. Vertical Alignment. The Transportation Association of Canada (TAC) Geometric Design Guide should be used to design vertical curves, and the values should be selected based on the intended operating speed. Consideration should also be given to reducing modification to natural terrain, wherever possible.
2. Horizontal Alignment. The TAC Geometric Design Guide should be used to design horizontal curves, and the values should be selected based on the intended operating speed. Larger horizontal curves give a roadway a rural highway feel, and should be avoided wherever possible.

3. Stopping Sight Distance. The TAC Geometric Design Guide should be used to design stopping sight distance, and should be determined based on selection of an appropriate operating speed.
4. Intersection Sight Distance. The TAC Geometric Design Guide should be used to calculate intersection sight distance, using an appropriate operating speed. Where curb extensions or on-street parking exist, drivers often employ a two-stop stopping movement to gain adequate sight of the crossing travel lane, stopping for the second time slightly past the stop line. This allows parking to be located closer to the intersection, if desired.
5. Horizontal Clearance / Clear Zone. Horizontal clearance (also referred to as the clear zone) is the distance between a specified point in the roadway to a public realm feature. Clear zones are provided in rural areas for use by errant vehicles, and in urban areas for signposts, poles, and door openings. Within urban areas, a minimum clear zone of 0.5m is recommended from the face of the curb to any fixed object.
6. Lighting. Appropriate lighting should be provided for all users, including pedestrian-scale lighting along sidewalks. This improves pedestrian and cyclist safety, as many are struck at poorly-lit crossings during periods of low visibility. Transit stops require intense illumination of the travelled way to provide safe street crossings, as well as pedestrian-scale illumination at the stop/shelter. If bus stops exist between roadway sections, both the roadway and the bus stop must be illuminated.

4.3 Pedestrian Details

ACCESSIBILITY:

New provincial laws have recently been proclaimed as part of the Accessibility for Ontarians with Disabilities Act (AODA), under Part IV.1 of O.Reg 191/11 on the built environment. By January 1, 2016 the Town of Tecumseh must comply for all newly constructed or redeveloped infrastructure. *Annex B* contains a summary of relevant requirements for pedestrian facilities under the AODA.

CHANGES TO THE ONTARIO HIGHWAY TRAFFIC ACT:

Effective January 1, 2016, drivers and cyclists must stop and yield the entire roadway at pedestrian crossovers, school crossings, and all intersections where there is a crossing guard. This change does not apply to crosswalks at intersections, unless a crossing guard is present.

DESIGN PRINCIPLES ALONG THE STREET:

Pedestrian Zones and Zone Widths

The pedestrian realm can be divided into four distinct zones for the purpose of planning and design:

- The Edge Zone (from edge of curb or pavement to the start of the Furniture Zone) – often 0.5m wide, typically used to account for mirrors, doors, and snow storage
- The Furniture Zone varies in width and accommodates all streetscape features and utilities
- The Sidewalk Zone is the walking area and is typically 1.5m wide, can be wider where pedestrian volumes dictate
- The Frontage Zone (from edge of Sidewalk Zone to building face or property line) is typically 0.5m wide

The widths for the different Zones for any given street depend on land use and context. For example, the commercial areas typically have larger Furniture Zones for more streetscaping, employment areas may have wider Sidewalk Zones due to higher pedestrian volumes, and suburban streets may not require a Frontage Zone because buildings are set back from the property line.

Materials

Decorative materials can be used to clearly delineate pedestrian zones from automobile zones.

Driveway Crossings

Driveway crossings should be designed with consideration towards users of wheelchairs, walkers, and crutches, whom are challenged by driveway aprons extending into the pedestrian zone. A continuous flat plane should be maintained along the sidewalk, including through driveway crossings, and aprons should be confined to the furniture and curb zones only.

DESIGN PRINCIPLES FOR CROSSING THE STREET:

Crosswalks

Crosswalks and ramps at intersections should be placed to maximize pedestrian convenience and safety. Crosswalks should be provided on all intersection legs (unless one or more of the corners lacks any pedestrian-accessible destination), aligned as closely as possible to the approaching sidewalks and at as short a crossing distance as possible.

Crosswalk markings are dictated by the Ontario Traffic Manual (OTM) Book 11. Marked crosswalks should be provided at signalized intersections. “Ladder” style or diagonally striped marked crosswalks offer greater visibility than typical marked crosswalks painted with horizontal lines. Decorative crosswalk pavement materials can enhance visibility and safety, but must provide smooth surface and high contrast with the surrounding pavement. Textured crosswalks must include reflective materials and/or proper lighting to ensure that they are visible to drivers at night.

Mid-block crosswalks provide pedestrian connections in between intersections. The location and control type of mid-block crosswalks is dictated by the Ontario Traffic Manual (OTM) Book 15. Typically, mid-block crosswalks are used for large blocks, where there is a need to connect uses on either side of the street, or where there is an existing pedestrian route perpendicular to the street. Mid-block crosswalks can be raised to enhance visibility. This is especially effective near schools, to increase the height and consequent visibility of small children.

Curb Extensions

Curb extensions reduce the effective street crossing width by extending the sidewalk out into the parking lane, narrowing the roadway (visually and physically), and reducing the amount of time pedestrians spend in the street. Curb extensions can be located at intersections or mid-block crossings. Curb extensions are recommended to replace parking lanes at crosswalks, and should be the same width as the parking lane wherever possible. While appropriate corner radii should still be applied based on design guidelines, the corner radius on a curb extension may be larger due to the reduced street width.

The construction of curb extensions can conflict with dedicated on-street bicycle lanes at intersections. Needs and priorities at such locations should be considered in the context of the location.

Pedestrian Ramps

Ramps provide access to wheelchair or scooter users at crossings. Ramps should be located on each crosswalk, and should not be shared between crosswalks (e.g., each standard intersection should have two ramps on each corner). Ramps must be contained entirely within the crosswalk, and the ramp should be aligned with the crosswalk to avoid leading users into the intersection. Tighter curb radii facilitate implementation of well-aligned ramps.

Medians

Raised medians can improve crosswalks by providing a refuge for pedestrians. The minimum width of a raised median crossing island is 1.8m, and ideally a 45-degree angled pedestrian crossing through the refuge is recommended to orient pedestrians towards oncoming traffic.

Lighting

Lighting should be installed just in front of the crosswalk for optimal visibility of pedestrians by drivers. Advanced stop lines can also help to improve drivers' views of pedestrians as well as reduce vehicle encroachment into the crosswalk.

DESIGN GUIDELINES:

Facility Types

The following pedestrian facility types will be provided within the Town of Tecumseh:

- Concrete sidewalks – both contiguous with curb (monolithic) and separated from the curb by a roadside boulevard.
- Multi-use pathways
- Grade separations

Network Development

A pedestrian supportive street network requires a high degree of connectivity between all pedestrian links, to allow for convenient travel. The following general network guidelines should be followed to create a pedestrian supportive network.

In urban areas:

- Sidewalks should be located on both sides of all arterials (major and minor) and collectors
- Sidewalks should be located on both sides of all Commercial Main Streets
- Sidewalks should be located on at least one side of local roads, or both sides where the land use is sufficiently dense and appropriate
- Multi-use pathways should be incorporated in specific locations to provide additional connectivity

In rural areas:

- Multi-use pathways should be incorporated in specific locations to provide additional connectivity

The following guidelines will assist in the implementation of the network:

- New roads should be designed and built with appropriate facilities for pedestrians in addition to automobiles
- Pedestrian facilities should be added to existing roads undergoing reconstruction, where appropriate
- Key gaps in the pedestrian network within the existing road network should be prioritized
- Linkages to County facilities and facilities in adjacent communities should be made wherever possible, to create continuous corridors
- Pedestrian crossings of arterials and collectors should be provided as needed
- Where continuous pedestrian facilities are not feasible on both sides of a roadway, pedestrian crossing facilities should be provided to connect to the pedestrian facility.

4.4 Bicycle Details

DESIGN PRINCIPLES:

All streets should be designed assuming that cyclists will use them. This does not necessarily warrant a dedicated bicycle facility or that every street accommodate every type of cyclist, but a bikeway network must be designed to accommodate “interested cyclists”, who have a desire to cycle, but may not currently feel safe doing so. The following key design principles will assist in realizing this:

- Roadway stormwater and drainage systems should be designed to avoid storage of water or snow in cycling areas. Curb-face inlets should be used as an alternative to gutter catchbasins.
- Special attention should be given to anticipating the operating movements of cyclists through multi-lane and signalized intersections, and these should be designed to improve safety of these movements.
- Conflicts between cycling facilities and free flow right turn lanes and highway ramps need to be specifically reviewed in all cases and solutions developed that insure safe travel for cyclists.

DESIGN GUIDELINES:

Facility Types

The following cycling facility types will be provided within the Town of Tecumseh:

- Shared lanes with markings: shared by vehicles and cyclists, with cyclists riding to the right of vehicles. Markings such as Sharrows may be used where there is a desire to provide additional awareness to drivers that the lane is shared with cyclists.

- Dedicated on-road lanes: defined portion of the roadway designated by striping, signage, and pavement markings for exclusive use of cyclists.
- Buffered on-road lanes: similar to dedicated lanes, but include a buffer zone separating the bicycle lane from adjacent general travel lanes and/or parking lanes.
- Segregated cycling facilities (also known as cycle tracks): similar to dedicated lanes, but include a physical barrier separating cyclists from traffic. Cycle tracks can be single- or bi-directional, and a parking lane can be used as a barrier.
- Multi-use pathways: generally 3m wide, providing an exclusive corridor for active travel modes, often completely separate from any roadway.

Ontario Traffic Manual Book 18 offers guidance on the selection of the appropriate cycling facility for any corridor, based on vehicular volume and speed in the corridor.

Network Development

A cycling supportive network requires a high degree of connectivity between all cycling links, to allow for convenient travel. The following general network guidelines should be followed to create a cycling supportive network.

In urban areas:

- On-road cycling facilities should be provided for movement in both directions of travel on all arterials (major and minor), Commercial Main Streets, and collectors
- Multi-use pathways should be incorporated in specific locations to provide additional connectivity

In rural areas:

- Multi-use pathways should be incorporated in specific locations to provide additional connectivity

The following guidelines will assist in the implementation of the network:

- New roads should be designed and built with appropriate facilities for cyclists, as well as automobiles
- Cyclist facilities should be added to existing roads undergoing reconstruction, where appropriate

- Key gaps in the cyclist network within the existing road network should be prioritized
- Linkages to County facilities and facilities in adjacent communities should be made wherever possible, to create continuous corridors
- Cyclist crossings of arterials and collectors should be provided as needed
- Where continuous cycling facilities are not feasible on both sides of a roadway, cyclist crossing facilities should be provided to connect to the cycling facility.

4.5 Traffic Calming Details

TRAFFIC CALMING PRINCIPLES:

Definition

Traffic calming is defined by the Institute of Transportation Engineers as physical measures intended to reduce the negative effects of motor vehicle use, alter driver behaviour, and improve conditions for non-motorized street users. The Canadian Institute of Transportation Engineers and Transportation Association of Canada Neighbourhood Guide to Traffic Calming note that the intent of traffic calming is to restore streets to their intended function. These definitions can be more generally simplified to “physical devices aimed at slowing the speed of motorists to the desired speed, given the context of the street”.

Traffic calming, area traffic management, and street re-imaging are related, but different, concepts, as shown in *Table E3*.

Respecting the Road Hierarchy

Traffic calming measures must be implemented in a way that respects the intended role of the street. Higher order streets (arterials and minor arterials) are intended to have higher operating speeds and carry higher volumes of trucks. These streets form the backbone of the transit system as well as the emergency response network, and are not appropriate for all traffic calming measures. The needs of all users must be considered in developing a traffic calming plan.

Table E3: Traffic Calming, Area Traffic Management, and Street Re-Imaging

	Traffic Calming	Area Traffic Management	Street Re-Imaging
Purpose	Slow the speed of motorists to the desired speed.	Restore all streets in the study area to their preferred function, considering volume, speed, traffic patterns, vehicle classifications.	Make the street "complete".
Modifications	Physical modifications, which depend on the context of the street.	Physical and operational modifications.	Physical and operational modifications.
Implementation	Reactive review undertaken in response to neighbourhood stakeholder concerns. Modifications are above-grade only.	Reactive review undertaken in response to neighbourhood stakeholder concerns.	Proactive review undertaken during routine reconstruction and/or rehabilitation of the street for other purposes.
Recommendations	Vertical or horizontal deflections within an established right-of-way.	Turn prohibitions, changes to on-street parking regulations, implementation of cycling facilities, implementation of pedestrian and bicycle crossings, construction of medians, traffic calming, sidewalks, and pathway connections.	Changes to on-street parking regulations, implementation of cycling facilities, implementation of pedestrian and bicycle crossings, construction of medians, traffic calming, sidewalks, and pathway connections.

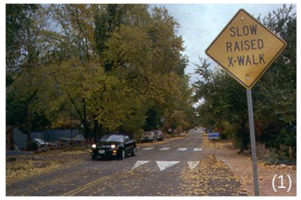
DESIGN GUIDELINES:

The following traffic calming measures are supported in the Town of Tecumseh:

Speed hump
Vertical deflection;
Rounded raised areas of pavement, often placed in a series several metres apart

Speed table
Vertical deflection; Speed humps with a flat section in the middle and ramps on either side

Speed cushion
Vertical deflection; Speed humps with wheel cutouts to allow emergency and transit vehicles to travel over them unaffected



Raised pedestrian crosswalk
Vertical deflection; Speed humps with a flat section in the middle, designated as a pedestrian crosswalk

Rumble strip
Vertical deflection; Small bumps in the roadway surface causing vibration in automobiles

Curb extension
Horizontal deflection;
Extensions of the curbs into the travel lanes to narrow the street width

Chicane
Horizontal deflection; A series of curb extensions alternating between sides of the street to create S-shaped curves

Mid-block narrowings
Horizontal deflection; Curb extensions at mid-block locations

Traffic circle
Horizontal deflection; Raised islands placed in the middle of intersections to force traffic to travel around

Photo sources:
(1) Traffic Calming Measures, ITE (http://www.ite.org/traffic/tcdevices.asp).
(2) Urban Street Design Guide, NACTO (http://nacto.org/publication/urban-street-design-guide/street-design-elements/).
(3) Blackburn News (http://blackburnnews.com/wp-content/uploads/2013/08/rumble-strip.jpg).

APPLICATION:

The measures described above each have a different purpose and impact, and should only be applied to certain classes of roadways. *Table E4* displays which measures are appropriate for each roadway classification.

Table E4: Traffic Calming Measures by Roadway Classification

		Proposed Tecumseh Roadway Classification						
		Urban				Rural		
	Traffic Calming Measure	Commercial Main Street	Minor Arterial	Collector	Local Road	Minor Arterial	Collector	Local Road
Vertical deflection	Speed hump	I	I	I	I	I	I	I
	Speed table	I	I	I	I	I	I	I
	Speed cushion	I	I	I	I	I	I	I
	Raised pedestrian crosswalk	I	I	I	I	I	I	I
	Rumble strip	I	I	I	I	I	I	I
Horizontal deflection	Curb extension	I	I	I	I	I	I	I
	Chicane	I	I	I	I	I	I	I
	Mid-block narrowing	I	I	I	I	I	I	I
	Traffic circle	I	I	I	I	I	I	I

I Appropriate measure I Implement with caution I Inappropriate measure

4.6 Intersection Design Details

Most conflicts occur at intersections, where travelers cross each other's paths. The impacts of these conflicts are exacerbated for pedestrians and cyclists due to their greater vulnerability. Good intersection design clearly communicates to users approaching intersections their intended actions, and which users must yield.

The following principles are essential to the design of intersections:

1. Intersections must be designed to safely accommodate all users.
2. Good intersection designs are compact.
3. Intersection designs should not create unexpected conflicts between users.
4. Unusual conflicts and designs should be avoided.
5. Right-angled intersections are best for all users. Sight lines are worsened by skews.
6. Free-flowing movements should be implemented only as an exception and should be avoided in urban areas.
7. Intersections with more than four legs should be avoided.
8. Additional vehicle conflict points near an intersection should be removed or at least carefully managed through access management practices.

Intersection Spacing

Intersection spacing seeks to balance conflicting objectives. Larger spacing supports higher speeds and capacities for motorized vehicles, as well as a more convenient and enjoyable riding environment for cyclists (on-street cyclists prefer uninterrupted flow). However, larger spacing results in fewer accesses which can increase turning volumes at permitted intersections. This may require more and longer auxiliary lanes. Smaller spacing supports improved access to the roadside environment, a reduced number of turns per intersection, and an improved pedestrian level of service and delay times. In general, larger intersection spacing is more appropriate in suburban and rural areas, while smaller spacing is more appropriate in urban and commercial areas.

Intersection Skew

Intersection skew is generally undesirable as it introduces complications for all users. Obtuse angles encourage speeding, and users on skewed approaches often have poor sightlines. Additionally, travel distances across intersections are longer and increase exposure risk for vulnerable users.

The maximum permitted skew in the Town of Tecumseh is 70 to 110 degrees, as per the TAC manual. Skews can be reduced or rationalized with medians, which can serve as pedestrian refuges. Skewed intersections can provide opportunity for roundabouts.

Intersection Corners

Intersection corners have a significant impact on non-motorized users' comfort and safety. For this reason, smaller corner radii should be used wherever feasible, to:

- Create smaller, more pedestrian-scale intersections;
- Reduce pedestrian crossing distance and time;
- Slow vehicle turning speeds;
- Facilitate implementation of perpendicular ramps for both crosswalks at each corner;
- Allow for crosswalk placement in line with approaching sidewalks' and
- Reduce distances between transit zones and street corners.

Corner radii must be selected considering the roadway classification and the land use setting, and should facilitate the frequent user while still accommodating the infrequent user. Small corner radii are not appropriate on arterial intersections, especially those where large vehicles and trucks frequently travel. Corner radii should be designed using a passenger design vehicle, and should facilitate movement of the most common users. Movement of larger vehicles should be considered as a secondary requirement, and these vehicles should be accommodated at slow speeds. The following design vehicle principles should be applied in corner radii selection:

- Passenger vehicles must be able to turn from inside lane to inside lane without passing lane boundaries;
- Transit buses must not cross the centreline of the intersection approach, but may encroach into receiving lanes with the same travel direction;
- On collector and residential streets, transit buses may encroach partway into opposing traffic lanes; and

- Emergency vehicles must be able to manoeuvre between fixed objects on all corners, but are allowed to use the entire pavement width to do so.

Curb Extensions

Curb extensions are typically used as a traffic calming measure, and offer many benefits to the community by:

- Reducing pedestrian crossing distance;
- Improving intersection safety;
- Improving visibility between pedestrians and motorists;
- Controlling parking near intersections;
- Slowing vehicle through speeds through a narrowed roadway;
- Slowing vehicle turning speeds;
- Providing additional room for street furniture, landscaping, and curb ramps; and
- Allowing improved management of streetwater runoff.

Curb extensions should only be used on urban roadways, as shown previously in *Table E4*.

Right Turn Channelization Islands

Right turn channelization islands should only be considered on rural Arterial streets with high right turn volumes (over 200 vehicles per hour). They may be the best solution at appropriate locations to increase vehicular capacity with minimum additional lanes and asphalt.

Urban smart channels are a relatively new concept being piloted in some Canadian municipalities. The intent of smart channels are to reduce driver workload (reduce the angle of shoulder check and entry), improve visibility of pedestrians (reduce viewing angle), and reduce turning speed to be more consistent with yield conditions, which may require a full stop. The smart channel concept was developed from a proposed right-turn slip-lane design identified in a Federal Highway Administration (FHWA) Research and Development study report (Pedestrian Facilities Users Guide, Report No. FHWA-RD-01-102). The report proposed a modified channel design which was more appropriate for pedestrians. An urban smart channel is shown in *Figure E8*.

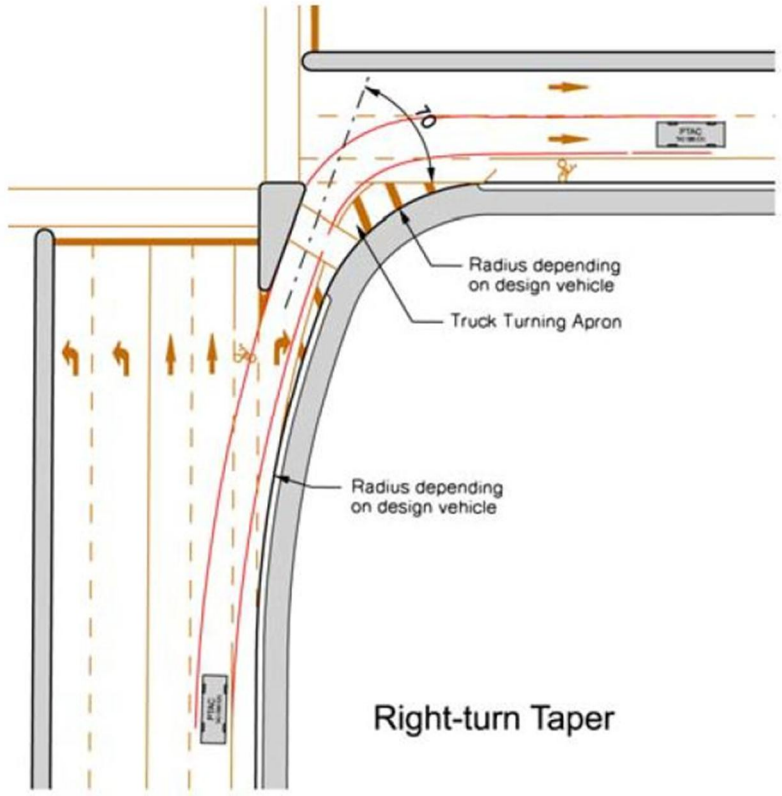


Figure E8: Smart Channel

Photo source:
City of Ottawa.
(http://ottawa.ca/calendar/ottawa/citycouncil/occ/2010/04-28/trc/ACS2010-COS-PWS-0001_Doc7_Countermeasure_EN.pdf)

4.6.1 Roundabouts

POLICY:
The Town will consider roundabouts as an option for traffic control at all intersections on its Minor Arterial and Collector roads where traffic control signals are needed.

DESIGN GUIDELINES:
TAC is preparing design guidelines for roundabouts, but the date of release is uncertain (they were expected to be completed and published in March 2016). Upon their release, they will become the preferred design manual for Tecumseh. Until that time, roundabout design will rely on lessons learned in other jurisdictions, the TAC Synthesis of North American Roundabout Practice (December 2008), the Federal Highway Administration (FHWA) Roundabout: an Informational Guide (2000), and the NCHRP Report 672 Roundabouts: An Informational Guide (2010).

SPECIAL USER CONSIDERATIONS:
This section discusses a number of implementation issues that designers, engineers and developers should be aware of to ensure that roundabouts address the needs of all roundabout users, not just vehicles.

Pedestrians
Pedestrians, particularly children, the elderly, and persons with disabilities, represent the most vulnerable users at an intersection. At a roundabout, pedestrians cross one approach leg at a time on the outside perimeter of the roundabout. Splitter islands on each approach leg provide a space for pedestrians to pause and allow them to consider only one direction of traffic at a time, which simplifies the task of crossing the street (shown in *Figure E9*). Pedestrian crossings are setback one vehicle length (6.0m) from the yield line to shorten the crossing distance, to separate vehicle-vehicle conflicts from vehicle-pedestrian conflicts, and to allow drivers at least one vehicle length back to devote their full attention to crossing pedestrians while waiting for the driver ahead to enter the circulating roadway.

Figure E9: Roundabout with Pedestrian Crossing

Photo source:
Washtenaw County Road Commisison.
(http://www.wcroads.org/sites/all/themes/wcroads/images/Roundabouts/roundabout-safety4.jpg)

Roundabouts can be less convenient for pedestrians than signalized intersections because the placement of the pedestrian crossings creates a longer overall path to traverse a roundabout and because pedestrians do not have the right-of-way at roundabouts unless traffic control measures (such as pedestrian crossovers) are provided. However, at signals, pedestrians may experience lengthy delays as they wait for the walk phase. Signalized intersections also offer positive guidance to pedestrians by providing visual pedestrian signal indications informing pedestrians when they can and cannot cross. In this respect, the decision process for pedestrians requires less judgment at a signalized intersection than at a roundabout. However, pedestrians are still vulnerable at signalized intersections because of permissive left-turns, right-turns on red, higher speeds and drivers violating the traffic signals.

The introduction of supplemental traffic control for pedestrians in high pedestrian volume areas reduces the traffic flow benefits of roundabouts; as such, roundabouts may not be the preferred intersection control measure in areas with high pedestrian volumes. When designing roundabouts, it is important that pedestrian accessibility issues be accommodated (e.g. treatments to help persons with vision loss use the crossings or splitter island pedestrian refuges designed in accordance with CSA Standards Article 6.6.2.2.2.).

Cyclists

As with motor vehicles, there are fewer points of conflict with bicycles at roundabouts than at signalized intersections. Speed differential is also an important consideration in cyclist collision severity. A properly designed roundabout should reduce motor vehicle speeds which creates a much lower speed differential between bikes and vehicles than would be prevalent at a signalized intersection. This lower differential allows users more time to make adjustments to avoid conflicts, and when collisions do occur, the severities are usually lower.

Tecumseh aims to follow these general guidelines when considering cyclists needs at roundabouts:

- Separate cycling lanes within the circulatory roadway are to be avoided
- Separate facilities, where they are desired or where conditions dictate, will be provided in the form of shared-use asphalt pathways that circulate cyclists around the outside of the roundabout
- Bicycles will be allowed to mix with vehicle traffic without any separate facility within or outside of the circulatory roadway when traffic volumes are low at single-lane roundabouts

Special consideration for the installation of multi-lane roundabouts should be undertaken where cycle volumes are high. If an installation of a roundabout is recommended, separate cycling facilities outside of the circulatory roadway (bike ramps and pathways) should be provided when vehicle and cycling volumes are high.

Trucks

Although the proposed roundabout designs should be capable of safely accommodating large vehicles, careful consideration should be given to locations where truck volumes are high, such as marked truck routes and industrial areas. In these types of areas, a roundabout may not be the preferred option for traffic control. On single lane roundabouts, trucks may have to slow substantially to safely mount the truck apron, thereby decreasing the intersection's effective capacity. On multi-lane roundabouts, large trucks may stray slightly into the adjacent lane when negotiating the roundabout. This may cause conflicts if two large vehicles are attempting to circulate simultaneously. Multilane roundabouts must be designed to accommodate large trucks as well as a service/delivery vehicle (SU-9) concurrent with a passenger vehicle (dependent on adjacent land uses).

Emergency Vehicles

Like any other vehicle, emergency vehicles will be required to reduce their speed upon entering and traversing a roundabout. This is likely to have an impact on emergency service response time. The Region of Waterloo has estimated the increase in response time on arterial roadways to be in the range of 5 to 8 seconds per roundabout (Region of Waterloo, 2003, p. 11]. However, Waterloo believes this may be offset in some circumstances, as traffic queues tend to be shorter at roundabouts than at signalized intersections, allowing for faster passage of emergency vehicles.

4.7 Streetscape & Urban Design Details

The streetscape describes the natural and built fabric of a roadway, and reflects the quality of design and visual impact. The streetscape along Tecumseh's roadways can significantly impact the vibrancy of a roadway, and green infrastructure features included in the streetscape can assist in protection of the natural environment.

The streetscape includes elements of the public realm. These public realm elements are important components of the complete streets framework, as they broaden the use of the street from automobile movement to other modes and non-travel-related social and economic activities.

DESIGN PRINCIPLES:

Streetscapes and urban design within the Town should be:

- Environmentally sustainable. Infrastructure required for stormwater collection, storage and treatment should be reduced through localized measures and minimization of hard surfaces, accounting for all operating needs and pressures. Native plant species should be used wherever possible.
- Attractive and activated. The objective should be to create an environment that is pleasant for all users of all modes, ages, and abilities, activated with engaging activities, and promotes use of active modes of transportation such as walking and cycling.
- A connection point to adjacent lands. The street right of way should be developed as a place with a relationship to the adjacent lands. Street right of ways represent the largest portfolio of municipal assets, and it is therefore critical that they connect adjacent lands instead of creating barriers. Street design should be integrated with community design to create seamless communities.

DESIGN GUIDELINES:

The following design guidelines should be used to promote vibrant streets in the Town of Tecumseh:

1. Provide a distinctive overall unified design. This can be achieved through integrated and consistent street furniture and pedestrian-oriented lighting.
2. Dedicate space for public life. Reclaim existing and excess street space for public uses and providing safe public seating. Merchant participation may be beneficial.
3. Ensure a high degree of pedestrian safety. Install visible, short crossings, and lower turning speeds.

4. Design for all users of all ages and abilities. Provide generous, unobstructed sidewalks, and intersections with curb ramps and accessible pedestrian signals.
5. Use excess parking lanes creatively. Wherever possible, these can be converted into flexible patio seating, “mini-plazas”, or landscaping.
6. Maintain natural ecology. Use sustainable storm water management practices and consolidate utilities.
7. Green the roadway. Plant native species to contribute to the urban forest. Where this is not possible, use sidewalk planters.
8. Integrate pedestrian facilities with transit facilities. Provide safe and convenient pedestrian connections to transit routes.

Appropriate species for urban roadway tree plantings should be used according to Town of Tecumseh Policy Number 33/09 Tree Replacement, Donation and Memorial Policy (March 2009).

5.0 Design Process

This section outlines the recommended design process for corridors and intersections.

5.1 General

The complete streets framework necessitates a context-sensitive design process, which involves all stakeholders, and equally considers project needs and stakeholder values. The context-sensitive design process considers a broader range of goals than the traditional planning process, including goals related to sustainability, community liveability, and other socioeconomic characteristics. As a result, greater consensus is reached on the project concept and there is less risk of delays during project development and delivery due to differing opinions. A context sensitive process should be used in all steps of planning, project development, and design, for all transportation projects.

5.2 Evaluating Corridor or Intersection Performance

To determine whether a retrofit is required to improve the "completeness" of a street, the corridor or intersection should be evaluated. The following strategy can be used to adequately assess the performance of each mode:

1. The importance of each mode within each road class should be established as high/medium/low. This should correspond to the suitability of each mode within each road class (as shown in *Table E2*).
2. The performance of the subject corridor/intersection can be assessed for each mode.
3. Combine steps (1) and (2) to generate a score on "completeness".
4. If the score is below the set threshold, the street requires retrofitting to improve its "completeness".

5.3 Corridor Design

As discussed, a context sensitive design process involving all stakeholders is critical to the successful implementation of complete streets. The following process is recommended for the planning and design of all new corridors as well as retrofits to existing corridors:

1. Define Project and Project Limits
2. Identify Stakeholders
3. Identify Unconstrained Objectives for Corridor, including Land Use

4. Identify (Local) Constraints and Opportunities
5. Identify Alternatives (that meet Corridor Objectives)
6. Evaluate Alternatives and Trade-offs
7. Prepare Functional Design

5.4 Intersection Design

The following process is recommended for the planning and design of all new intersections as well as retrofits to existing intersections, under a complete streets framework:

1. Define Project and Project Limits
2. Identify Stakeholders
3. Identify Unconstrained Objectives for Intersection, including adjacent Land Use
4. Establish Property Limits and Constraints
5. Identify Design Vehicle
6. Establish Traffic Control Measures – Traffic Signals/ Roundabouts/ Stop Signs/ Interchanges
7. Establish Corner Radii and Approach to Medians and Auxiliary Lanes
8. Prepare Functional Design

Annex A

Typical Roadway Cross-Sections

Recommended road cross sections were created, not to establish a "one size fits all" set of guidelines, but rather to provide a functional "base-case" condition from which more detailed street and public realm designs can be created during the future construction of new roads and reconstruction of existing facilities.

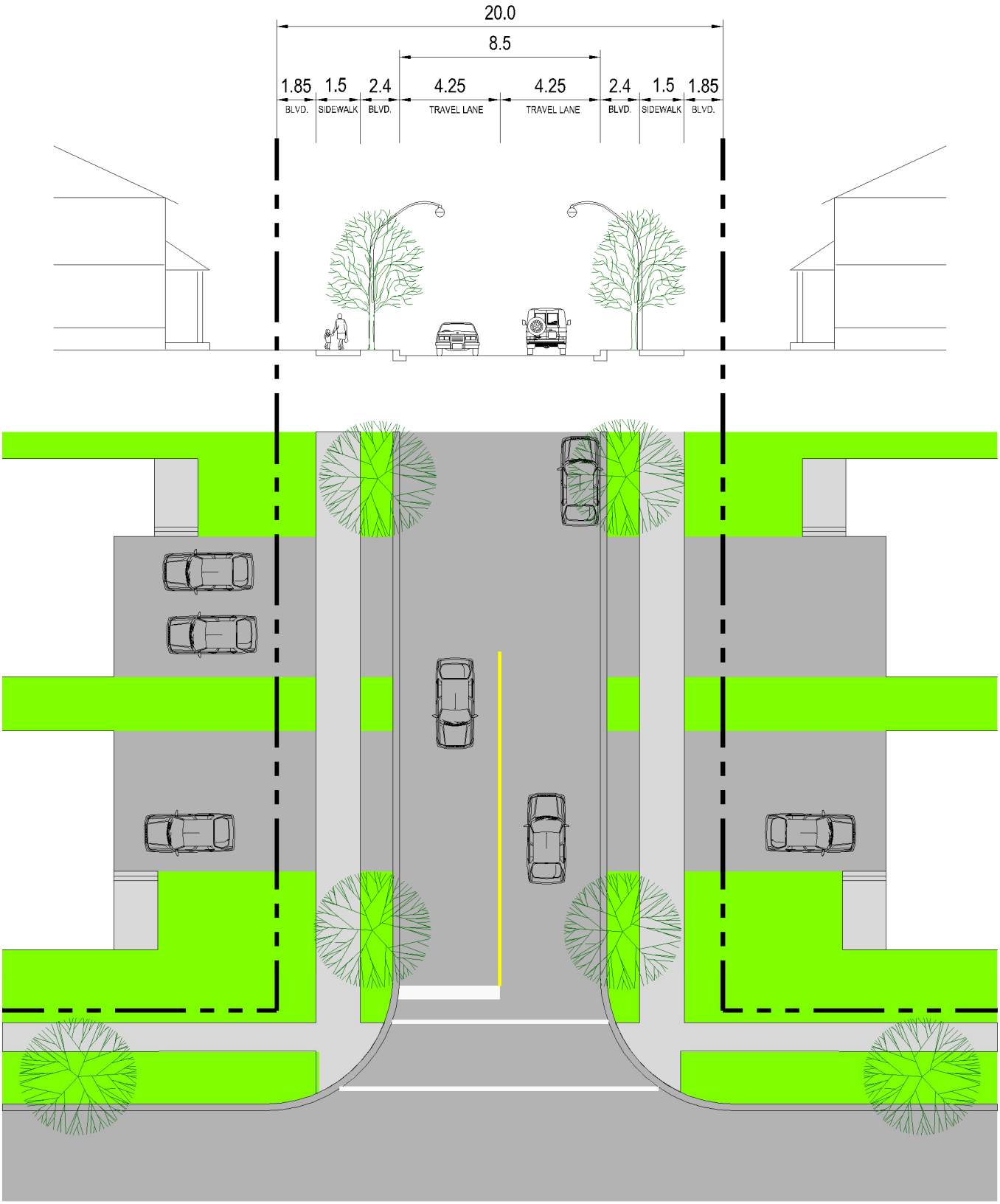
The following design elements were taken into consideration in the development of the cross sections:

- Urban or rural environment;
- Number of lanes;
- Boulevard treatment; and
- Provision for pedestrians and cyclists.

These guidelines are not meant to be urban design guidelines, rather general arrangements that illustrate typical cross sections for the various roadway classifications.

The cross sections illustrate typical right-of-way widths. Additional right-of-way widths may be required to provide auxiliary turning lanes at intersections, to provide sightlines at intersections and railway grade crossings, or to provide centre medians. Local conditions, characteristics, traffic calming requirements and constraints may require modifications to the proposed guidelines through the Municipal Class Environmental Assessment process.

Figure EA1 to *Figure EA7* illustrate typical cross sections.



*SIDEWALK MAY BE PROVIDED ON ONE SIDE, DEPENDING ON ADJACENT LAND USE

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Dillon Proj.No.: 15-2937

STATUS: FINAL

DATE: NOVEMBER 2016
REVISED: JUNE 2017

NOT TO SCALE

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

LOCAL ROAD URBAN CROSS-SECTION 20m R.O.W.

FIGURE EA1

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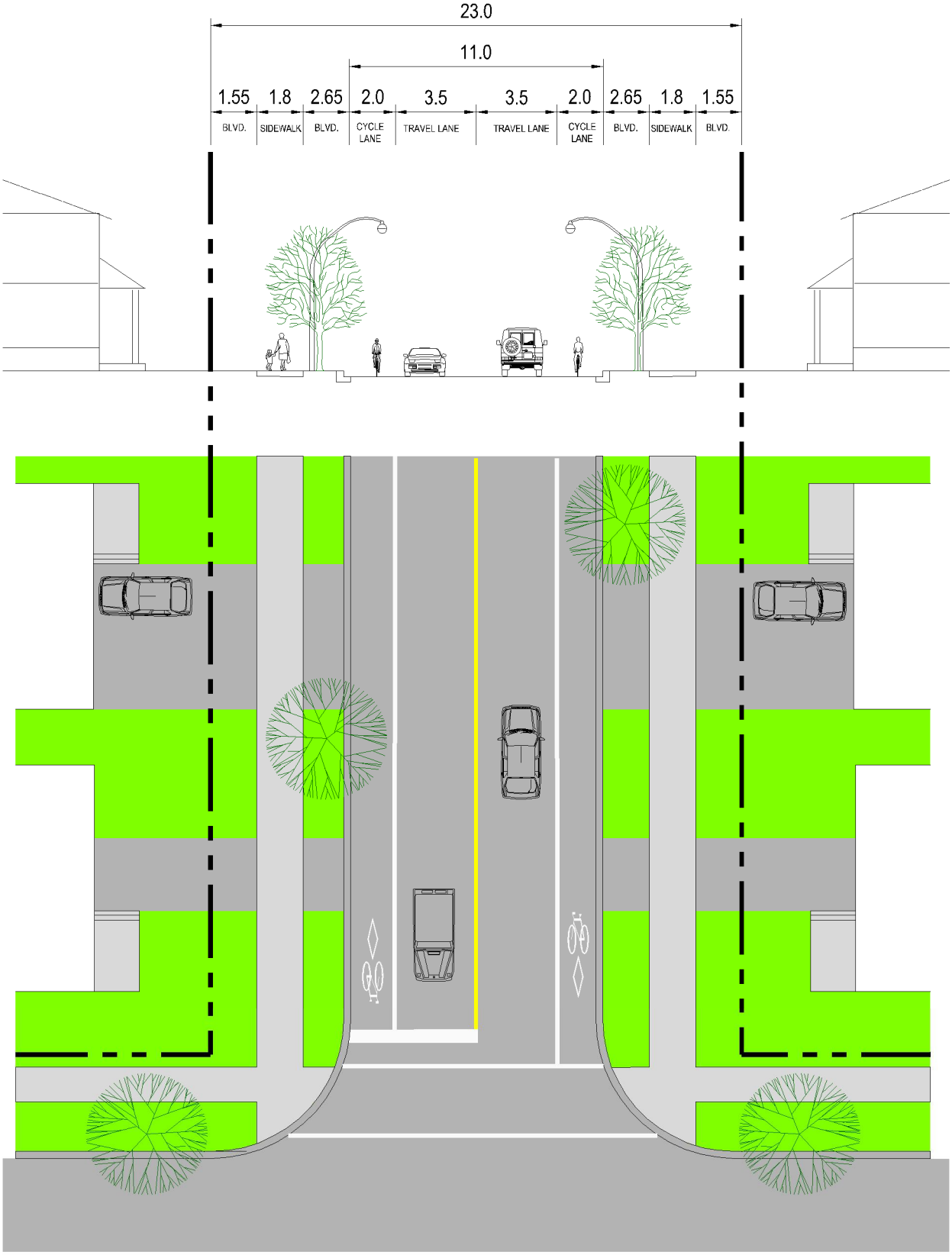

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

COLLECTOR ROAD URBAN CROSS-SECTION 23m R.O.W.

FIGURE EA2

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DATE: NOVEMBER 2016
REVISED: JUNE 2017

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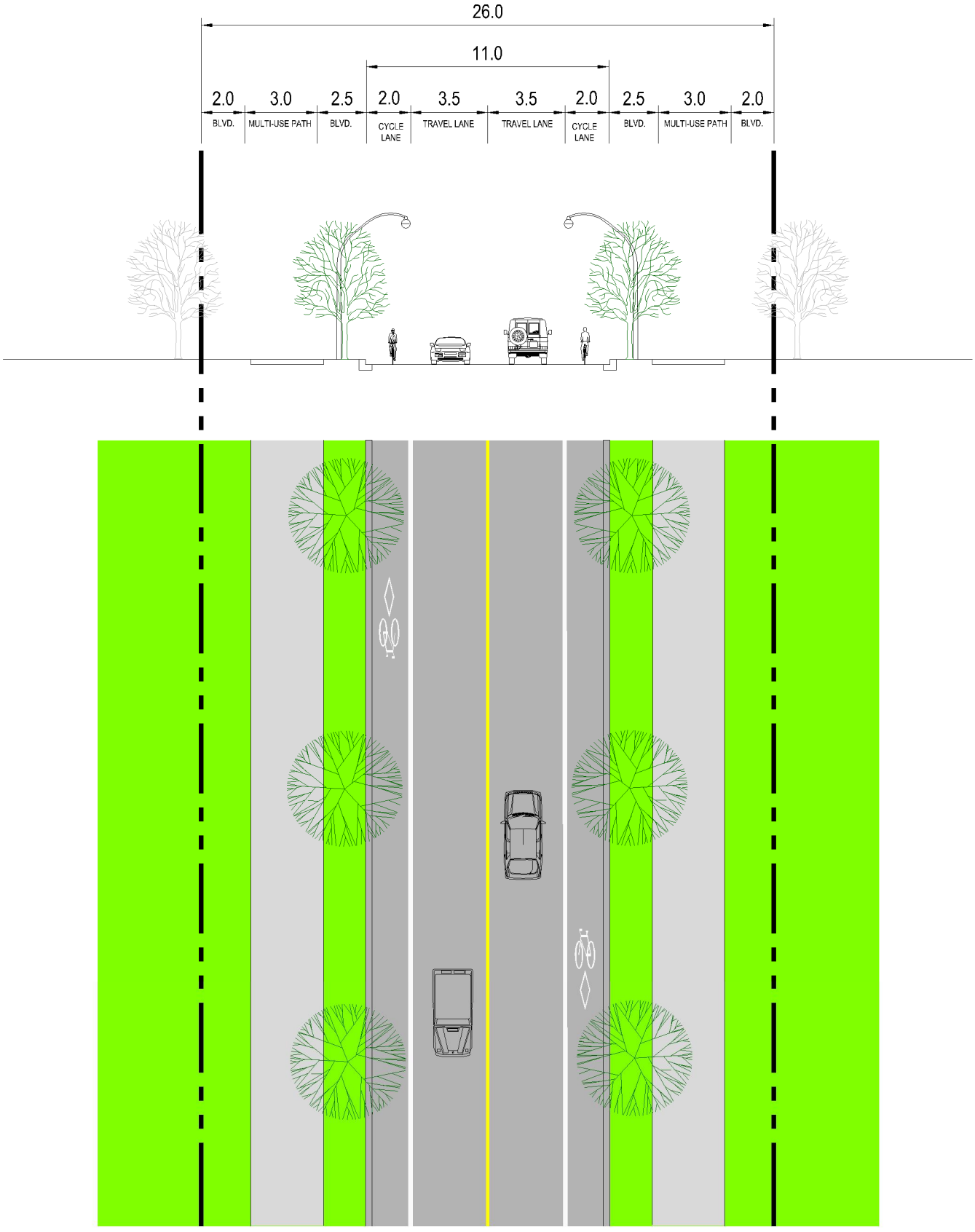

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

MINOR ARTERIAL ROAD URBAN CROSS-SECTION (With Multi-Use Paths) 26m R.O.W.

FIGURE EA3

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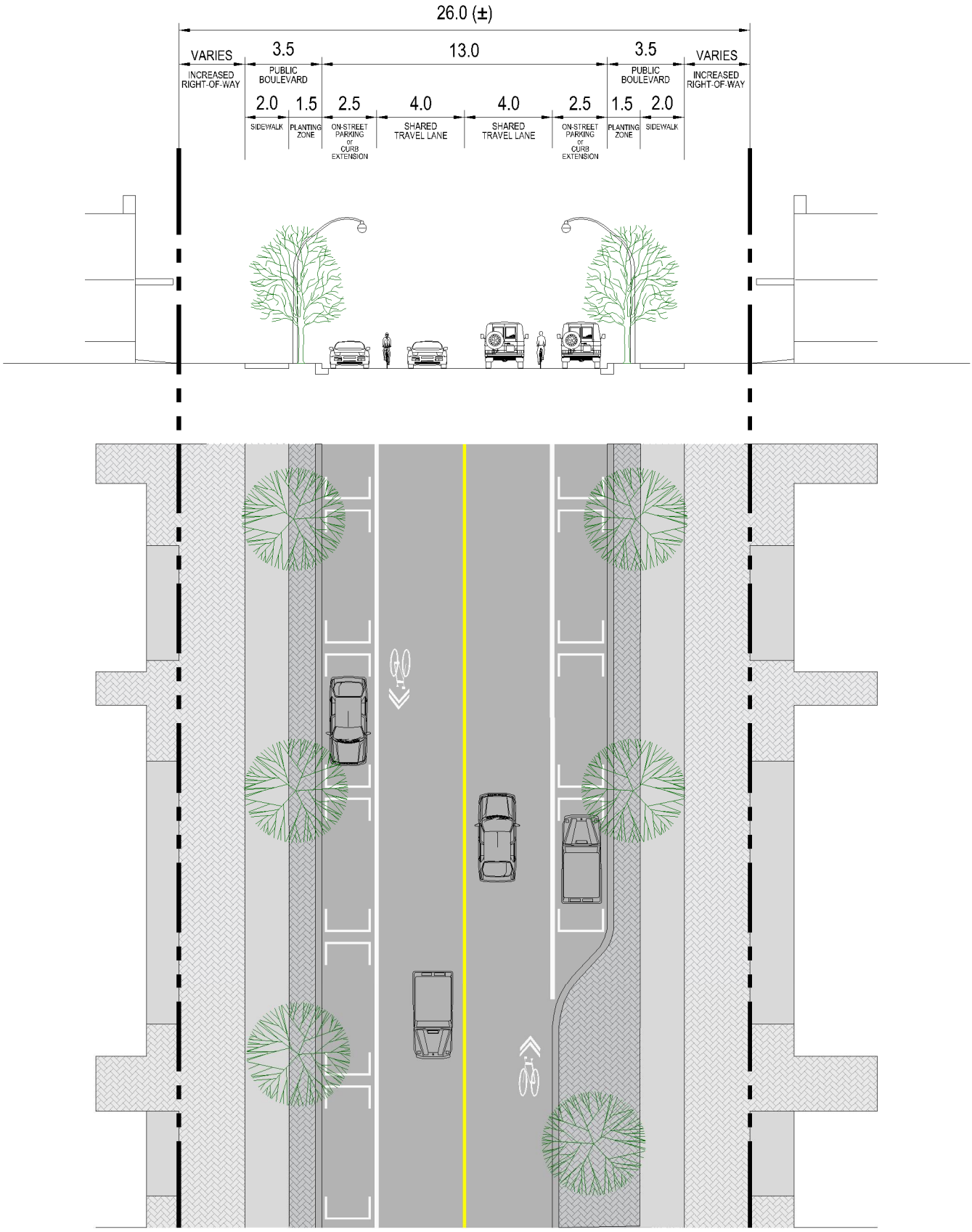

*SUBJECT TO DESIGN OF STREETSCAPE PLAN.

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

COMMERCIAL MAIN STREET URBAN CROSS-SECTION 26m R.O.W.

Dillon Proj.No.: 15-2937

STATUS: FINAL

DATE: NOVEMBER 2016
REVISED: JUNE 2017

NOT TO SCALE

FIGURE EA4

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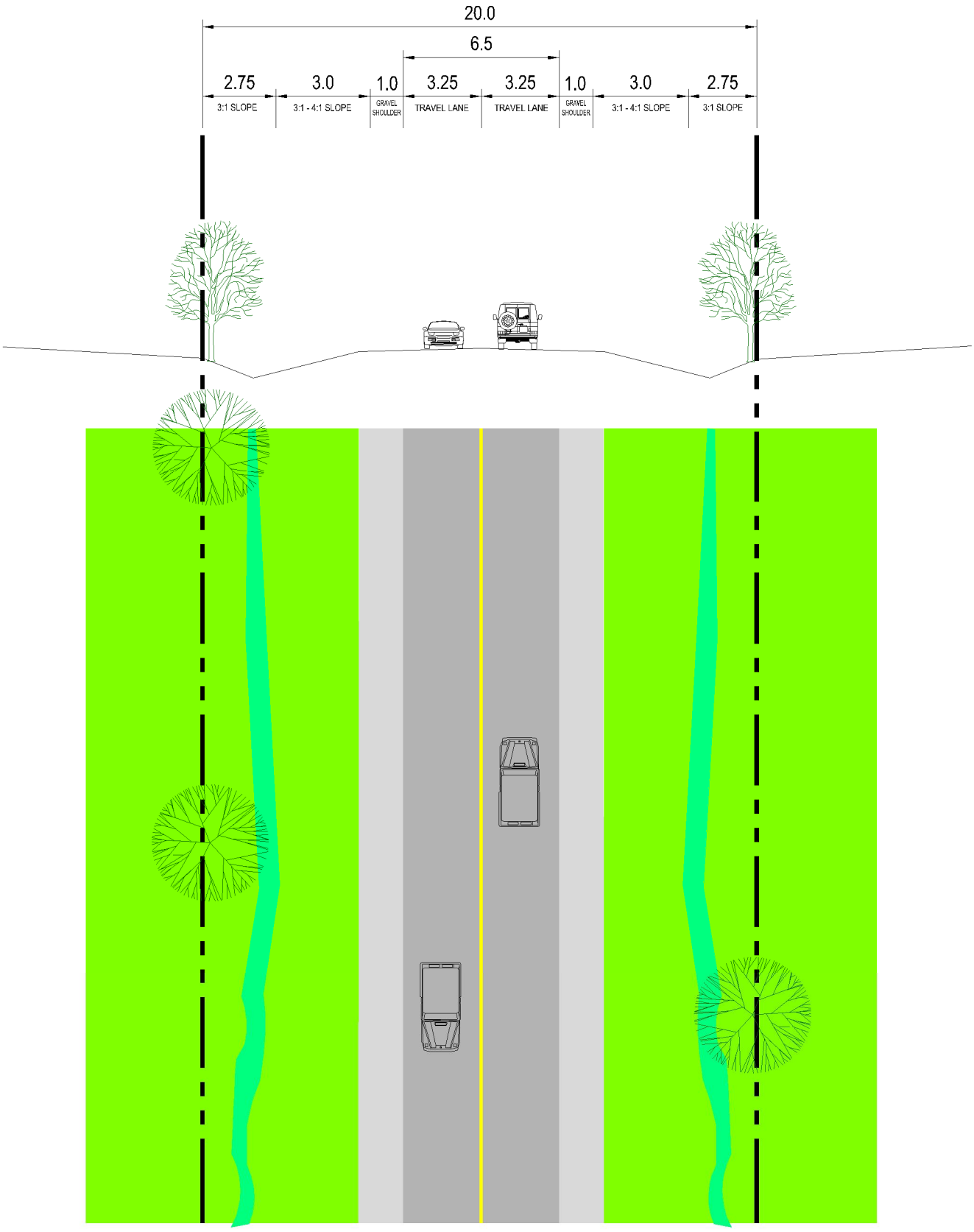

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

LOCAL ROAD RURAL CROSS-SECTION 20m R.O.W.

FIGURE EA5

Dillon Proj.No.: 15-2937

STATUS: FINAL

DATE: NOVEMBER 2016
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NOT TO SCALE

DILLON CONSULTING

File Location:
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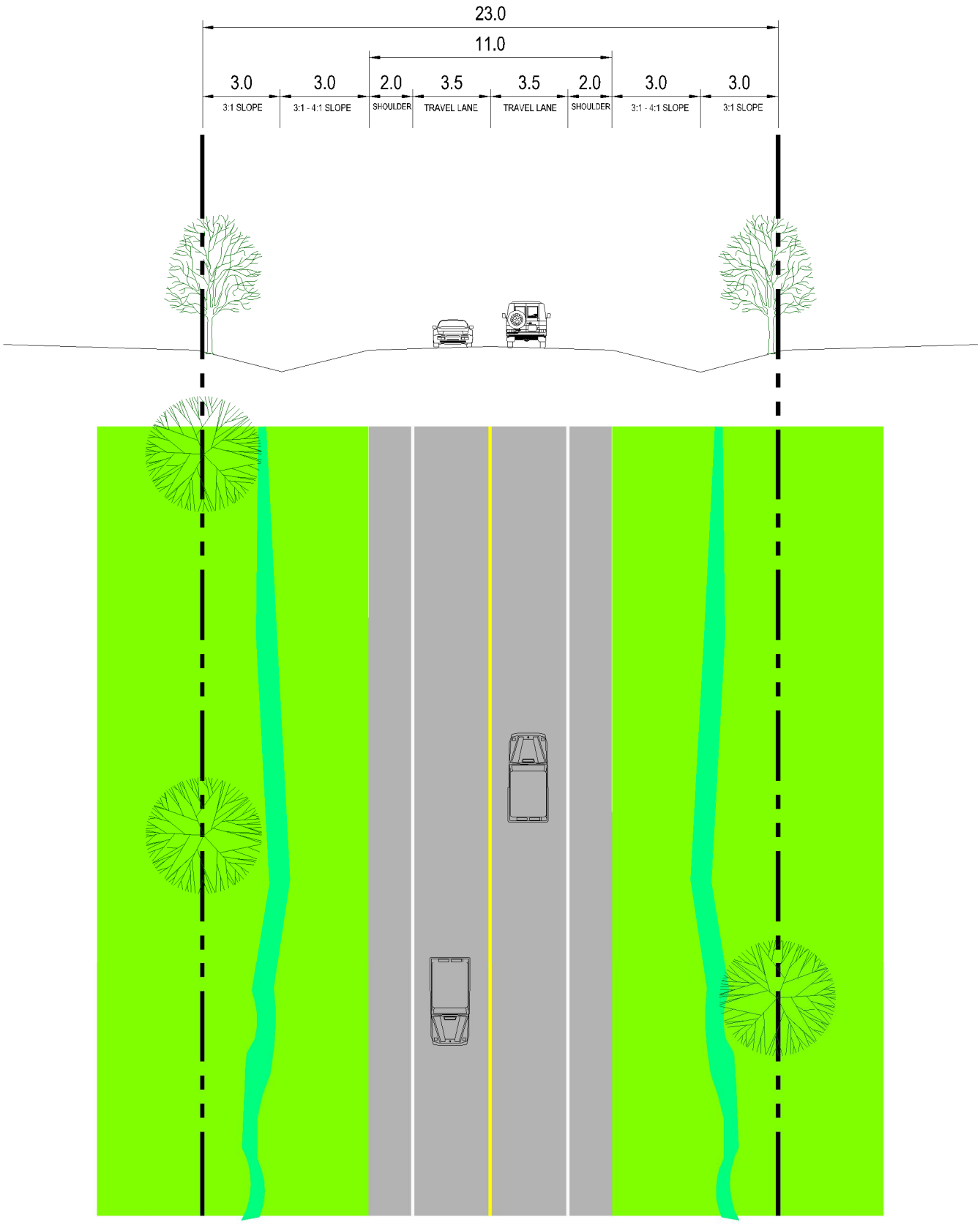

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

COLLECTOR ROAD RURAL CROSS-SECTION 23m R.O.W.

FIGURE EA6

Dillon Proj.No.: 15-2937

STATUS: FINAL

DATE: NOVEMBER 2016
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File Location:
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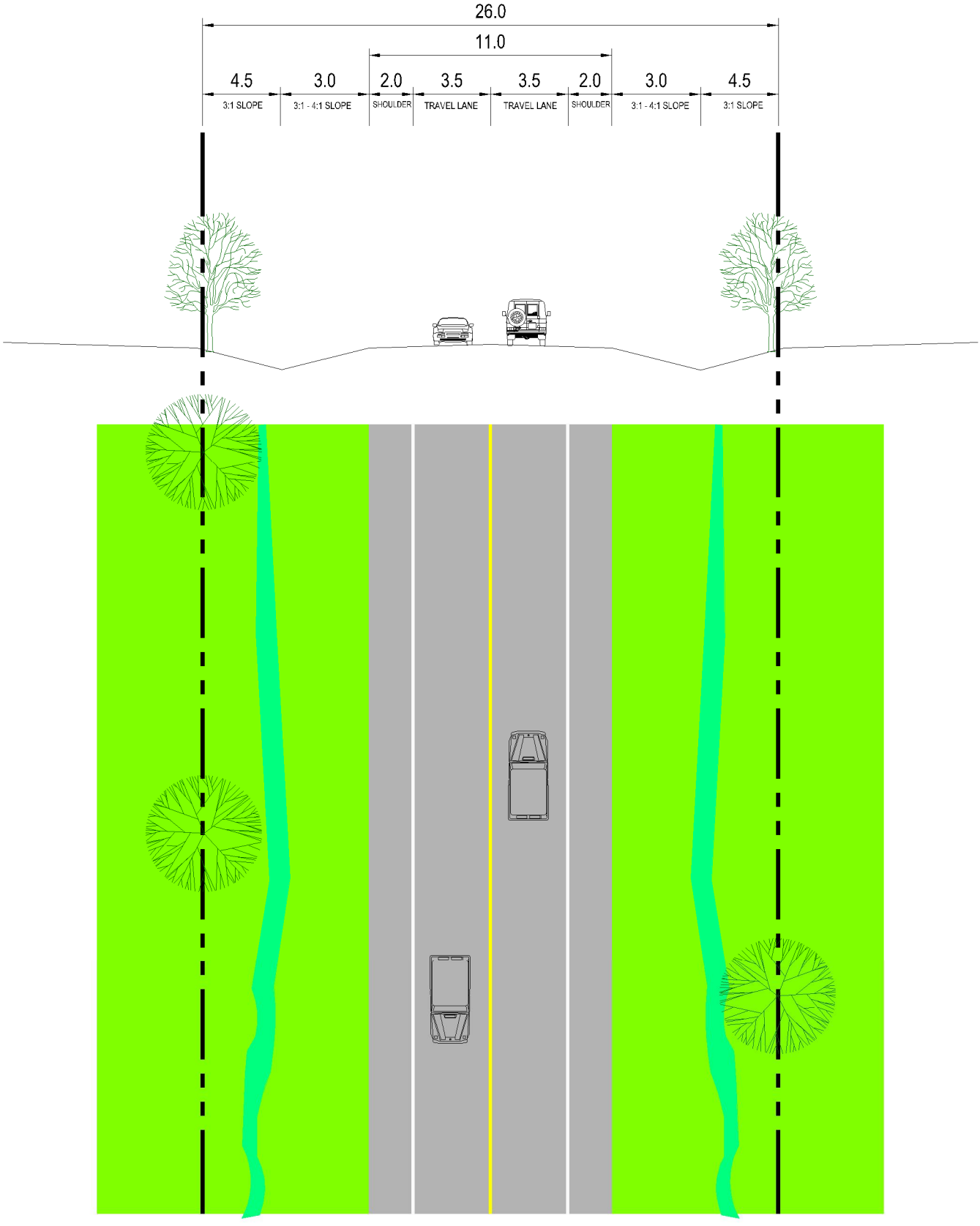

THE TOWN OF TECUMSEH
TRANSPORTATION MASTER PLAN UPDATE

MINOR ARTERIAL ROAD RURAL CROSS-SECTION 26m R.O.W.

FIGURE EA7

Dillon Proj.No.: 15-2937

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File Location:
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Annex B

AODA Regulations for Walkways/Pedestrian Facilities

Exterior Paths of Travel – Sidewalks/Walkways/Paths (O. Reg. 191/11 Part IV.I 80.23)

Under the Standard sidewalks must have firm, stable and slip resistant surfaces and any openings in the surface must be perpendicular to the direction of travel and must not allow the passage of objects greater than 20mm in diameter. A minimum clear width of 1500mm is required, but it can be reduced to 1200mm when the path connects with a curb ramp. Note that sidewalks need to have a clear space with no obstacles that is greater than 2100mm where there are many people walking or activity such as waiting at transit stops, seating at patios, or other street-level retail uses. Such sidewalk zones may range from 4000m to 6000m to accommodate safe, comfortable and accessible pedestrian travel and activity.

The running slope of any exterior route must be a maximum of 1:20, with the exception of sidewalks that cannot be steeper than the adjacent roadway. The cross-slope of any hard surfaced route must be 1:20 or less. The Standard provides additional guidance on the allowable slopes for sections of route that change level (80.23.8).

Curb Ramps – Exterior paths of travel, curb ramps (O. Reg. 191/11 Part IV.I.80.26)
Exterior Paths of travel, depressed curbs (O. Reg. 191/11 Part IV.I.80.27)

The Standard distinguishes between curb ramps that are cut through the curb or built up to a curb, and depressed curbs that are seamless gradual slopes usually found at intersections where pedestrian travel routes transition across roadways (discussed in next Section).

Depressed curbs should align with the direction of travel and should not exceed a slope of 1:20.

Curb ramps must have a minimum clear width of 1200mm exclusive of the flared sides. The maximum running slope of curb ramps is 1:8 (where elevation is less than 75mm) and 1:10 (where 75mm or greater). The cross slope cannot exceed 1:50. Under the Standard the flared sides of the curb ramp must have a maximum slope of 1:10.

Where curb ramps or depressed curbs are provided at pedestrian crossings they must have tactile walking surface indicators. The indicators must have raised tactile profiles with a high tonal contrast to the adjacent surface. They should be located at the bottom of the ramp and be set back between 150mm and 200mm from the curb edge, and be a minimum of 610mm in depth. The indicators must extend the full width

of curb ramps. These tactile walking surface indicator requirements supersede the previous City's accessibility guidelines' guidance on cane detectable textures.

For more details on raised tactile profile indicators, please consult the Canadian Standards Association (CSA) 2012 edition of B651-12 Accessible Design for the Built Environment. For copyright reasons, the CSA cannot be reproduced in this document.

Pedestrian Signals – Exterior paths of travel, accessible pedestrian signals (AODA Part IV.I.80.28)

Where new pedestrian signals are being installed or existing pedestrian signals are being replaced at pedestrian crossovers they must be accessible pedestrian signals. Accessible pedestrian signals must have a locator tone distinct from the walk tone and include both manual and automatic activation features. They must be installed within 1500mm of the edge of the curb and a maximum of 1100mm above the ground. Accessible pedestrian signals must include both audible and vibro-tactile indicators.

Where two signals are required on the same corner they must be a minimum of 3000mm apart, unless site constraints prevent it, in which case they can be installed on a single pole with a verbal announcement that clearly indicates which crossing is active.

Ramps - Exterior Paths of Travel, Ramps (O. Reg. 191/11 Part IV.I 80.24)

Ramps must have firm, stable and slip resistant surfaces and any openings in the surface must not allow the passage of objects greater than 20mm in diameter and elongated openings must be perpendicular to the direction of travel. A minimum clear width of 900mm is required on ramps.

Continuously graspable handrails must be provided on both sides along the entire length of the ramp. Criteria for handrail graspability and load bearing requirements, along with specifications for handrail mounting are provided in section 80.24.7 of the Standard. Where the ramp is more than 2200mm wide, a compliant intermediate handrail must be installed so there is no more than 1650mm between handrails.

A more stringent maximum running slope of 1:15 is permitted by the Standard rather than the 1:12 slope maximum suggested by the Accessibility Guideline.

Landings, 1670mm by 1670mm, must be provided at the top and bottom of the ramp and if there is an abrupt change in direction, landings must also be provided at 9m intervals along the ramp that are 1670mm long and at least the width of the ramp. The landing requirements are the same as the recommendations in the City's accessibility guidelines. The landing cross slope must not be steeper than 1:50.

The ramp must have a wall or guard on both sides. When a guard is provided it must be at least 1070mm tall from the ramp surface. Additional guidance on ramp guards is provided in Section 80.24.9. Ramps must also have edge protection when no solid enclosure or guard is provided, for example, a curb at least 50mm tall or railing or other barrier that extends to within 50mm of the ramp surface.

Stairs – Exterior paths of travel, stairs (AODA Part IV.I.80.25)

Stairs must have slip resistance surfaces, closed risers, and uniform rises and runs in any one flight. The dimension requirements for successive rises and runs allow rises between 125mm and 180mm, and runs between 280mm and 355mm. Stair nosings should not project more than 38mm.

At the top of all flights of stairs, and starting one step away from the edge of the stair, tactile walking surface indicators must be installed to a minimum depth of 610mm that have raised tactile profiles with a high tonal contrast to the adjacent surface.

Compliant handrails must be provided on both sides of the stairs. Where the stairs are more than 2200mm in width, compliant intermediate handrails must be provided so there is no more than 1650mm between handrails.

On-street Parking – On-street parking spaces (AODA Part IV.I. 80.39)

When constructing or redeveloping existing on-street parking spaces the Standard stipulates that consultations are required. The Town must consult on the need, location and design of accessible on-street parking spaces with its municipal accessibility advisory committee and the public and persons with disabilities.

Exceptions

Exceptions when claimed apply only the portion of the exterior path for which they are applied, not the path in its entirety.

Exceptions are permitted when complying with the Standard would conflict with the Ontario Heritage Act, Canada National Parks Act (Canada), Historic Sites and Monuments Act (Canada), Convention Concerning the Protection of the World Cultural and Natural Heritage.

Exceptions are also permitted where it is not practical to comply due to site constraints. If it is not practical to comply with the Standard's requirements due to existing physical or site constraints, Public Works staff should document the constraints in order to be able to demonstrate that an exemption is required.

For further details please consult the AODA Design of Public Spaces Standards (Accessibility Standards for the Built Environment), Part IV.1 of Ontario Regulation 191/11 at this website: www.e-laws.gov.on.ca

Appendix F

Operational Policies

DILLON CONSULTING

CORPORATION OF THE TOWN OF TECUMSEH

Tecumseh Transportation Master Plan

All –Way Stop Control Policy

Revised June 2017 – 15-2937

Table of Contents

1.0 Introduction

The Town of Tecumseh currently refers to Policy Number 32/02, STOP Sign Policy, for the rules and regulations in the placement of and in requesting the placement of Stop Control devices and All-way Stop Control (AWSC), adopted by council February 23, 1999.

This document updates the polices and procedures for determining if a stop control device or AWSC is warranted at intersections under the jurisdiction of the Town of Tecumseh. The appropriate implementation of stop control devices is an important component of providing an efficient transportation system and improving public safety.

1.1 Goals and Objectives

The goal of this policy is based on an objective of the Tecumseh Transportation Master Plan, to provide the Town of Tecumseh with the strategies, policies and tools needed to manage traffic safely, effectively, and cost efficiently. The stop control device policy is a tool that provides guidelines for the Town to deal with requests for stop control and all-way stops and outlines the procedures required to effectively manage traffic safety related to stop control intersections.

1.2 Purpose

The purpose of this policies and procedures document is to update Tecumseh's existing STOP Sign Policy and provide guidelines for requesting stop control devices or AWSC and for determining if stop control devices or AWSC devices are warranted and at any particular intersection on roads within the Town of Tecumseh.

1.3 Scope

This policy governs the rules and regulations in the implementation of stop control devices and AWSC and is intended to be applicable to intersections on roads under the jurisdiction of the Town of Tecumseh.

1.4 Governing Legislation

The authority for the Town of Tecumseh to implement stop control and to pass by-laws to amend traffic conditions is granted by the Ministry of Transportation Ontario (MTO) through the Highway Traffic Act (HTA). A municipal by-law is required for stop signs to be enforceable on municipal roads.

The Province is also guided by the Ontario Traffic Manuals (OTM) Book 5, which replaced the Manual of Uniform Traffic Control Devices (MUTCD), for assessments, warrants and decisions related to stop control.

2.0 Policy and Procedures

2.1 Stop Control Devices Policies and Procedures

The purpose of a stop control device is to clearly assign right-of-way within an intersection.

2.1.1 Guidelines for Requesting Stop Control Devices

Upon receipt of a telephone or written request by a member of the public for the implementation of a stop control device, the applicant will be informed that a petition, favourably signed by at least 60% of the residents within three hundred metres of the subject intersection, must be submitted.

Upon receipt of this petition, the Town's Director of Public Works will inspect the subject site and review the location in accordance with the Guidelines and Warrants included in this policy. The Town will then provide a report explaining the recommendation on the proposed installation of the stop control device.

In the case where the Director of Public Works recommends in favour of the installation of the stop control device, a traffic engineering report explaining the warrant assessment will be presented to Council.

In the case where the Director of Public Works recommends against the installation of the stop control device, the requestor will be notified of the decision in writing. Should the applicant wish to appeal the matter, Council will review the matter.

2.1.2 Restrictions for the Implementation of Stop Control Devices

STOP signs are designed to regulate vehicular and pedestrian right-of-way at intersections, and are not intended for use as speed control devices. For issues relating to speed limits and potential traffic calming measures, these matters will be reviewed through the appropriate relevant policy.

Stop control devices shall not be used on the same approach to an intersection where traffic control signals are operating.

Portable or part time stop control devices shall not be used except in cases of emergency or in temporary situations, such as in conjunction with flag men or at intersections where traffic signals are no longer working.

Stop control devices should only be placed where traffic engineering studies indicate stop control is warranted, according to the criteria in this policy. The warrant analysis considers issues such as traffic volumes, intersection sight lines, road geometry and traffic collision history.

2.1.3 Guidelines for Installation of Stop Control Devices

The following are guidelines for the use of stop control devices at rural or urban intersections within the Town, as per the Ontario Traffic Manual, Book 5 "Regulatory Signs" (2000).

STOP signs must be used at the following locations:

- At the intersection of two King's Highways; and
- At the intersection of a County or Regional Road with a King's Highway in a rural area.

STOP signs should be considered at the following locations:

- At the intersection of a County or Regional Road with a King's Highway in a built-up area;
- At the intersection of a city street or township road with a King's Highway;
- At the intersection of a minor street or road with a through street or highway;
- At unsignalized intersections in a signalized area (except where they would interfere with signal progression);
- At intersections where the application of the normal right hand rule or yield control would be unduly hazardous; and
- At intersections which have experienced a record of collisions of the type which are susceptible to correction by stop control, as per the collision warrant included in this policy.

Initial consideration should be given to less restrictive measures such as the Yield sign where a full stop is not necessary at all times. Periodic reviews of existing installations may be desirable to determine whether, because of changing conditions the use of less restrictive control or no control could accommodate traffic demands safely and more effectively.

2.2 All-way Stop Control Devices Policies and Procedures

Installing stop control devices on all approaches to an intersection, referred to as all-way stop control (AWSC) is appropriate in certain conditions, however it disrupts the flow of traffic and results in delays to all vehicles using the intersection.

AWSC should only be considered at the intersection of two directly opposing, relatively equal roadways with similar volume and geometric characteristics (equal number of lanes).

2.2.1 Guidelines for Requesting All-Way Stop Control Devices

If a request is received from a member of the public for the installation of AWSC, the applicant will be informed that a petition, favourably signed by at least 60% of the residents within three hundred metres of the subject intersection, must be submitted.

Upon receipt of this petition, the Director of Public Works shall gather the necessary information to completed the warrant analysis described in this policy document to establish if an AWSC installation is warranted. As described in the Town of Tecumseh's Roundabouts Policy, a roundabout should be considered at all locations where AWSC is warranted, prior to implementing AWSC.

Should the warrants in this policy be met, the Town's Director of Public Works will present a traffic engineering study describing the warrant analysis results and recommendations to Council. Should the warrants in Schedule "A" not be met, the Director of Public Works will file the warrant study and advise the applicant in writing of the decision. Should the applicant wish to appeal the decision of the Director of Public Works, Council will review the matter.

2.2.2 Inappropriate Use of All-Way Stop Control

AWSC should not be considered:

- Where the installation of a roundabout is preferred, as per the Town of Tecumseh's Complete Streets Design Handbook.
- Where pedestrian protection is a prime concern. This should be addressed through the use of Pedestrian right of way controls in the form of Pedestrian Crossovers, warning signs, pavement markings, crossing guards, etc. Refer to the Town of Tecumseh's Complete Streets Design Handbook.
- As a speed control device. These issues should be resolved according to the Town of Tecumseh's Complete Streets Design Handbook.
- On roads which progressive signal timing exists.
- On roadways in urban areas having a posted speed limit in excess of 60 kilometres per hour.
- At intersections that are not roundabouts, having less than three or more than four approaches.
- At offset, poorly defined or geometrically substandard intersections.
- On truck or bus routes unless in an industrial area or where two such routes cross.
- On multi-lane approaches, where a parked or stopped vehicle on the right may obscure a STOP sign.
- Where traffic would be required to stop on a steep grade.
- As a means of deterring the movement of through traffic in a residential area. These issues should be resolved by referring to the Town of Tecumseh's Complete Streets Design Handbook.
- Where visibility of the sign is hampered by curves or grades and a safe stopping distance of less than 100 metres exists.
- Where any other permanent traffic control device is controlling the right-of-way, with the exception of a yield sign.

3.0 All-Way Stop Warrants

All-way STOP signs are warranted as per the following two part criteria.

3.1 Consideration of All-way Stop Control

All-way Stop Control should be considered in the following situations only:

1. As temporary measure, for locations where traffic signals are warranted but cannot be implemented immediately. Refer to Ontario Traffic Manual Book 12 "Traffic Signals".
2. Location where less restrictive measures have failed to improve high collision frequency. Refer to the Collision Warrant below.
3. As a transition zone to accustom drivers to a change in right-of-way control from one direction to another.

3.2 Warrants

AWSC is warranted by 100% satisfying any one or more of the warrants.

1. Visibility Warrant – Visibility problems limit the intersection approach speed to less than 15 kilometres per hour, creating an increased accident potential. Overhead lighting can be used to provide advance warning in cases where vertical or horizontal alignment is a factor.

2. Collision Warrant – Collision history, obtained for the most recent three year period indicates an average of three or more correctable collisions over the three year period. Correctable collisions are those identified in the collision reports as turning movement or angle type collisions.

1. Volume Warrant
   (a) Arterial Intersection
      i. Minimum total vehicular volume of 500 vehicles per hour entering the intersection from all legs for each of any eight hours of the day ;
      ii. Combination of vehicular and pedestrian volume entering the intersection on the minor street exceeds 200 units per hour during each of the same eight hours with an average delay to vehicles or pedestrians on the minor street of 30 seconds or more; and
      Where volume on the major street includes vehicles only and volume on the minor street includes vehicles and pedestrians wishing to cross the major street, the volume split does not exceed 70/30.
   (b) Secondary Intersection

i. Minimum total vehicular volume of 350 vehicles per hour entering the intersection from all legs during the highest hour recorded; and
ii. Vehicular volume split does not exceed 75/25 for three way control or 65/35 for four way control.

3.3 Location of STOP signs

The following sets out the guidelines for where the STOP sign may be placed at the corner in question:

Where one road intersects another road at an acute angle, the STOP sign on the intersecting road should be turned or shielded so that motorists travelling on the higher priority road cannot read it.

STOP signs should be erected at the point where the vehicle is to stop, or as near as possible. It may be supplemented with a stop line if it controls traffic approaching at a major intersection. The STOP sign should be placed as close to the near edge of the intersecting roadway as possible and this distance should not exceed 15 metres unless it is clearly not practical to locate the STOP sign closer to the intersection.

3.4 Visual and Physical Stop Control Indicators

The implementation of additional visual and physical stop control indicators, such as pavement markings, “Stop Ahead” signs, flashing beacons and rumble strips should be applied in accordance with the recommendations and guidelines outlined in the Ontario Traffic Manual Books 5, 6, 11 and 12.

4.0 Resources

For legal references and additional requirements of STOP signs, Sections 136 and 137 of the Highway Traffic Act shall be referred to. Regulation 615, Section 6 to 8, and Regulations 623 and 624 shall also be referred to. The primary reference materials are the Ontario Traffic Manuals (specifically *Book 5 "Regulatory Signs"*), which have replaced the MTO's Manual of Uniform Traffic Control Devices and Ontario Traffic Manual.

DILLON CONSULTING

CORPORATION OF THE TOWN OF TECUMSEH

Tecumseh Transportation Master Plan

Community Safety Zone Policy

Revised June 2017 – 15-2937

Table of Contents

1.0 Introduction

This document presents a recommended policy and procedure for establishing Community Safety Zones (CSZs) on appropriate sections of public roads under the jurisdiction of the Town of Tecumseh.

1.1 Goals and Objectives

The goal of this policy is based on an objective of the Tecumseh Transportation Master Plan, to provide the Town of Tecumseh with the strategies, policies and tools needed to manage traffic safely, effectively, and cost efficiently. The Community Safety Zone policy provides a tool to help modify driver behaviour and improve safety on municipally selected sections of road where public safety is of special concern within the Town of Tecumseh. The behaviour modification is to be achieved through increased fines for traffic violations committed within Community Safety Zones.

1.2 Purpose

The purpose of this policy is to provide guidelines and establish warrants that must be met in order to establish CSZs on municipal roads under the jurisdiction of the Town of Tecumseh. Establishment of a CSZ is a commitment to increased enforcement and as such there is a functional limit to the number of CSZs that can be in effect and enforced at any given time.

1.3 Scope

This policy is intended to be applicable to the review of all roads under the jurisdiction of the Town of Tecumseh for appropriate use and locations of CSZs.

1.4 Governing Legislation

The authority for the Town of Tecumseh to create CSZs was granted by the Province of Ontario through Bill 26 – An Act to Promote Public Safety established in 1998.

2.0 Background

Community Safety Zones were introduced by the Province of Ontario in 1998 as part of a road safety strategy to address the issue of aggressive driving. Community Safety Zones are sections of roadways, designated through by-laws where, in Council's view, public safety is of special concern and can be specified as active for certain days of the week or times of day. Community Safety Zones are used to modify driver behaviour to be less aggressive and more cautious and aware in order to achieve enhanced public safety in these particular locations. Driver behaviour is modified by implementing and enforcing increased fines for traffic violations within the Community Safety Zones through a special designation under the Highway Traffic Act. Generally, monetary traffic fines are doubled within Community Safety Zones, but demerit points associated with the violations are not increased. Measures such as signs and flashing beacons can be used to demarcate the locations and specifications of Community Safety Zones.

3.0 Policy and Procedures

3.1 Guidelines for Implementation of Community Safety Zones

Implementation of Community Safety Zones should be considered only in areas of special concern that are obvious to drivers, such as the following:

- Locations adjacent to schools;
- Locations adjacent to seniors' residences or facilities;
- Locations adjacent to community recreation centres or community playgrounds;
- Locations adjacent to hospitals; and
- Locations experiencing an average of 100 pedestrians per hour or greater during any eight hours of the day.

Community Safety Zones should be implemented in locations noted above where collision history or collision risk factors indicate the following:

- The ratio of the average number of crashes per year (related to violations controlled by Community Safety Zones) to the AADT is less than 1:900 (crashes per year:AADT) averaged over 36 consecutive months. Only crashes with a casual factor related to one of the Highway Traffic Act violations identified in the Community Safety Zone legislation should be included in the crash ratio;
- Field observations or local police verify an unusually high violation rate within the proposed Community Safety Zone location;
- A combination of a number of the following concerns to public safety are present in the proposed Community Safety Zone location:
    - Posted speed limit causes concern for collision risk;
    - Relatively high 85th percentile over posted speed limit;
    - High AADT volumes;
    - Absence or limitations of sidewalks causes safety risks for pedestrians;
    - Relatively high truck volumes; and
    - Relatively high number of intersections or accesses causes concern for increased collision risk.

Community Safety Zones should be implemented only after the trial of less severe countermeasures fails to alleviate public safety risks.

Community Safety Zones should only be established when sufficient enforcement resources exist. Establishing Community Safety Zones without appropriate enforcement will reduce the effectiveness of the driver behaviour modification.

3.2 Evaluation of Community Safety Zones

It is recommended that the Town undertake annual field data measurements within established Community Safety Zones. A review should be performed to assess the effectiveness and appropriateness of the Community Safety Zone. The following factors should be considered in the review process:

- Appropriate adjacent land use / pedestrian volumes;
- Appropriate signage / demarcation;
- Appropriate posted speed limit;
- 85th percentile speeds compared to posted speed limit;
- Collision data; and
- Enforcement / violations data;

The results and recommendations of the annual review will be presented to Town Council for appropriate action and approval.

3.3 Education/Notification

Upon implementation of each Community Safety Zone, the Town of Tecumseh will:

- Distribute notices/information brochures to places of public gathering within or adjacent to the new Community Safety Zone at least one week prior to its implementation; and
- Conduct a media release regarding the size and location of the new Community Safety Zone and the consequences for violations within the zone.

4.0 Resources

For technical references pertaining to signs the *Ontario Traffic Manual, Book 5 "Regulatory Signs"* (July 2001) and *Ontario Traffic Manual, Book 6 "Warning Signs"* (July 2001) should be referred to.

DILLON CONSULTING

CORPORATION OF THE TOWN OF TECUMSEH

Tecumseh Transportation Master Plan

Speed Zone Guidelines

Revised June 2017 – 15-2937

Table of Contents

Tables

1.0 Introduction

This document presents recommended policies and procedures for speed control on public roads under the jurisdiction of the Town of Tecumseh. Implementing appropriate speed control measures is an important component of providing an efficient transportation system and improving public safety and quality of life.

1.1 Goals and Objectives

The goal of this policy is based on an objective of the Tecumseh Transportation Master Plan, to provide the Town of Tecumseh with the strategies, policies and tools needed to manage traffic safely, effectively, and cost efficiently. The speed control policy is a tool that provides guidelines for the Town to deal with requests for modifications to the posted speed limit and to establish speed limits in new development areas.

1.2 Purpose

The purpose of this policies and procedures document is to provide guidelines for establishing and reviewing appropriate speed control strategies, on municipal roads under the jurisdiction of the Town of Tecumseh.

1.3 Scope

This policy is intended to be applicable to all roads under the jurisdiction of the Town of Tecumseh.

1.4 Governing Legislation

The authority for the Town of Tecumseh to set speed limits is granted by the Ministry of Transportation Ontario (MTO) through the Highway Traffic Act (HTA). Under this legislation the Town can set speed limits ranging from 40 to 80 km/h in 10 km/h intervals. The HTA also sets a default municipal speed limit of 50 km/h on roadways within cities, towns, villages or built-up areas.

The Province is also guided by the Manual of Uniform Traffic Control Devices (MUTCD) and Ontario Traffic Manual (OTM) for assessments and decisions related to speed.

2.0 Definitions

85th Percentile Speed: The speed at or below which 85 percent of the drivers are observed to travel in free-flow conditions at a representative location.

Design Speed: A speed selected as a basis to establish appropriate geometric design elements for a particular section of road so that drivers can travel safely at that speed under ideal conditions.

Inferred Design Speed: The design speed calculated by applying current design guidelines to geometric data of the road section derived from the field.

Operating Speed: The speed at which a driver is observed operating a vehicle at a representative location.

Posted Speed Limit: The speed prescribed for motor vehicles on a section of road by municipal by-law in accordance with The Highway Traffic Act.

Road Classification: The classification by function of roads in the Town of Tecumseh in accordance with the network adopted by Town Council in January 2000 through the amalgamation of the three existing Official Plans.

Rural Sections: Road sections located outside the urbanized or built-up areas, generally characterized by a storm water management system using open drainage channels.

Urban Sections: Road sections located within the urbanized or built-up areas, generally characterized by a storm water management system using curbs and gutters.

3.0 Context

The development of this policy gives consideration to the following:

- Increased travel speeds elevate pressure on the environment from higher noise levels and greater exhaust emissions.
- The severity of collisions increases with higher travel speeds.
- Mobility increases with higher travel speeds.
- Drivers tend to operate vehicles at the highest speed that they are comfortable with under the prevailing roadway and weather conditions.
- The strongest influence on a driver's selection of travel speed is the physical appearance of the road, which is partly influenced by the design speed selected for that particular road section.
- Collision potential is lowest when the difference in operating speed between vehicles in the traffic stream is smallest.
- The practice of setting the posted speed limit at the 85th percentile speed generally results in a low dispersion in operating speeds in the traffic stream.
- Speed control, encouraging drivers to travel at an appropriate speed for prevailing conditions, encompasses enforcement, education, and engineering techniques.
- While police enforcement has been the traditional approach to controlling speeds, research has shown that significant increases in enforcement levels are required to influence driver behaviour and those effects tend to be short lived.
- Based on extensive research, it was concluded that raising or lowering the posted speed limit has little overall effect on the operating speed and did not result in statistically significant changes in frequency or severity of collisions.
- Posted speed limits that are set too low will result in a significant number of "reasonable" drivers operating illegally, place unnecessary burdens on law enforcement personnel, lead to a lack of credibility of the posted speed limit, and result in increased tolerance by enforcement agencies.
- Posted speed limits should be set in accordance with the function that each road is designed to serve.

4.0 Policy and Procedures

4.1 Posted Speed Limits Policy

Speed limits on roads are influenced by the roadway's design and classification. In reviewing speed limits a number of factors are considered such as: vehicle operating speeds, adjacent development, collision history, pedestrian activity, driveway spacing and the location of signalized intersections.

Posted speed limits should be set between 40 km/h and 80 km/h in increments of 10 kilometres per hour. Ideally, the posted speed limit should be set at or near the 85th percentile speed, based on field measurements of the operating speed.

The use of 40 km/h speed limit should be reserved for roads in front of elementary schools and for roadways whose geometric design cannot support a 50 km/h or higher limit. On major roads where elementary schools are present, a 40 km/h when flashing speed limit may be considered.

Table F1 lists the recommended posted speed limits for various road classes. Road classifications are identified in the existing Official Plans governing in the Town of Tecumseh.

Table F1: Recommended Posted Speed Limits

	Urban				Rural	
	Commercial Main Street	Minor Arterial	Collector	Local Road	Collector	Local Road
Design Speed	50 - 70 km/h	50 - 70 km/h	50 - 60 km/h	40 - 50 km/h	60 - 80 km/h	50 - 70 km/h
Average Running Speed	50 - 70 km/h	50 - 70 km/h	50 - 60 km/h	40 - 50 km/h	60 - 80 km/h	50 - 70 km/h

Posted speed limits other than those recommended in *Table F1* should be considered in the following cases:

- The inferred design speed is lower than the above recommended levels;
- The frequency or severity of collisions attributable to excessive speeds are higher than normal;
- In sensitive areas requiring lower speeds for safety purposes (i.e. school zones);
- Where physical geometry or characteristics present hazards or constraints;
- Where adjacent land use activities or development accesses present constraints;
- For temporary construction zone safety; and
- If justified through analysis of the 85th percentile speed, collision history and inferred design speed, the posted speed limited may be set higher than recommended levels, to a maximum of 80 kilometres per hour.

Additional consideration should be given to the following when setting posted speed limits:

- The difference in posted speed limits between adjacent road sections should not exceed 20 kilometres per hour. The exception to this would be a location with a drastic change in physical characteristics of the road (i.e. a sharp curve), in which case appropriate warning signs should be in place.
- When constructing new road sections or re-constructing existing sections, a design speed of between 10 and 20 kilometres per hour greater than the recommended posted speed limits (shown in Table 1) should be put into practice.

4.2 Annual Review of Posted Speed Limits

It is recommended that the Town undertake annual measurements of operating speeds at selected locations of roads within the Town of Tecumseh's jurisdiction. A review should be performed to compare the 85th percentile speeds collected with the existing posted speed limits to identify those locations with significant variance between these two speeds. The following factors should be considered in the review process at locations where the 85th percentile speed is significantly higher than the posted speed limit:

- Physical characteristics of the road;
- Adjacent land uses;
- Driveway spacing;
- Pedestrian activity;
- Collision frequency and severity; and
- Inferred design speed.

Input from the local Police Services will also be considered in terms of their experience in speed enforcement at the location.

Based on the review, Town staff may recommend one of the following courses of action:

- No action is required;
- Additional speed control is required as a result of elevated operating speeds; or
- Action is required to amend the posted speed limit where the 85th percentile speed is significantly lower than the posted speed limit.

The following measures are options for enhancing speed control at the required locations:

- Increased enforcement by local Police Services;
- Public Education Program initiated locally;
- Implement design features to reduce operating speeds and improve safety; and / or
- Raise the speed limit to more closely represent the operating speeds at the roadway location.

The results and recommendations of the annual review be presented to Town Council for appropriate action and approval.

4.3 Public Requests to Amend Posted Speed Limits

Requests by members of the public to change the posted speed limit at a specific location on roads within the jurisdiction of the Town of Tecumseh should generally be referred to the annual review process, described above, under Section 4.2. The results and recommendations of the annual review related to the specific location addressed will be communicated to the requestors and other interested parties, prior to their presentation to Town Council.

If there are grounds for immediate action or when it is supported by a signed petition of no less than 75 per cent of the residents abutting the affected road section, Town Council may direct that an individual review of the posted speed limit be carried out immediately by Town staff, without delaying it to the annual review.

Town staff will forward the final recommendations as well as any comments received from the public to Town Council for its deliberations on an appropriate course of action.

5.0 Resources

For legal references the Highway Traffic Act shall be referred to.