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LAUZON PARKWAY IMPROVEMENTS
ENVIRONMENTAL ASSESSMENT

Report TR2:
Determination of
'Area Transportation System' Needs

REVISED FINAL

December 2013

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Executive Summary

The Ontario Ministry of Transportation, the City of Windsor and the County of Essex have initiated a Class Environmental Assessment Study to address the future transportation needs within the study area. The study has three main components as follows:

- the environmental assessment study and preliminary design for:
  - Lauzon Parkway from E.C. Row Expressway to County Road 42;
  - Lauzon Parkway's extension to Highway 401; and
  - Lauzon Parkway's further extension to Highway 3.
- the environmental assessment study for:
  - Essex County Road 42 from Walker Road to Essex County Road 25 (East Puce Road); and
  - the future east-west arterial from Walker Road to Essex County Road 17.
- the preparation and approval of a Secondary Plan for the remainder of the lands transferred to the City of Windsor in 2003 (lands are generally bounded by the CPR mainline north of the Windsor Airport, Lauzon Road and the 8th Concession, and the City of Windsor boundary).

The purpose of the Lauzon Parkway Improvement Environmental Assessment study is to identify the transportation problems and opportunities, and to develop and evaluate potential solutions. The transportation planning process for this study will:

- Identify factors driving 'Area Transportation System' needs;
- Determine 'Area Transportation System' needs to address the problems and opportunities within the study area; and
- Provide strategies to address 'Area Transportation System' problems and opportunities.

This Report TR2 summarized the future transportation needs to address the problems and opportunities within the study area, and the process and methodology that were used to assess these needs.

Major Findings at this Stage

The existing transportation system within the study area serves a transportation demand at a local/inter-regional/provincial/national level.

- The Windsor Gateway is a vital transportation artery between Canada and the United States.
- Traffic volumes have grown significantly surrounding the study area. Traffic volume on Highway 401 at County Road 19 (Manning Road) Interchange has almost doubled from 1998 to 2006. The traffic at this interchange has grown at a rate of 3.4% per annum.

- The traffic volume on Highway 3 has grown at an average annual growth rate of 2.4%. The AADT volume at Highway 3 and County Road 19 (Manning Road) intersection was 9,900 vehicles in 1998 that almost doubled to 17,600 in 2006.
- The existing traffic volume indicates that Lauzon Parkway is operating at or near its capacity north of County Road 42. Walker Road and County Road 19 (Manning Road) are also operating at volume to capacity (v/c) ratio of 0.87 and 0.81 considered 'Unstable-Flow' condition. Walker Road and County Road 19 (Manning Road) are the only two north-south links between Highway 401 and E.C. Row Expressway, this result in traffic from other roads being attracted to these two corridors. As these two links are already operating near capacity, it indicates the need for a new Highway 401 interchange for the future traffic demand in the study area.
- The proposed bridge for the Detroit River International Crossing (DRIC) and the Rt. Hon. Herb Gray Parkway (formerly the Windsor Essex Parkway) will provide an additional international border crossing facility and is projected to attract additional border crossing traffic.
- The population and employment forecast from the County of Essex suggests that the County of Essex population in 2031 is expected to increase approximately by 41,000 residents and employment approximately by 17,500 jobs. During the same time period, City of Windsor population is expected to increase by 30,500 residents and employment by 11,400 jobs.

The future planned growth in the region and the improvements to infrastructure (i.e. proposed DRIC connection and the Rt. Hon. Herb Gray Parkway) that further increase traffic through the region are the prime driving factors for the 'Area Transportation System' needs. They will have significant impacts on the ability of the transportation system to support the new economic development and improve access for residents and businesses in the east Windsor and neighbouring municipalities.

The primary focus of this report is to determine the future transportation needs to address the existing and potential future problems in the study area. The future transportation problems and possible solutions were identified through the following three steps:

1. Understanding of existing transportation system conditions;
2. Projecting what the future transportation conditions will be in future planning horizons of 2016, 2021 and 2031 in the study area as the population and employment increase in Windsor-Essex Region;
3. Identifying the transportation improvements requirements by overlaying the projected future transportation demands with the planned system.

The future year transportation condition was assessed using the Travel Demand Model. This model was developed for the EWRTMP Study during 2002-2005 using TransCAD software for afternoon peak hour traffic demand, developed to assess the auto travel demand. This model is a standard four-stage demand model, covering the geographical area of the County of Essex and its municipalities, the City of Windsor and two existing border crossings based on 2001 Census data. The model assigned the trip rates, vehicle

occupancy factors and vehicle mode split derived from the survey conducted for the WALTS Study and EWRTMP study. As part of this study, this model was updated for the existing condition (2011 afternoon peak hour) by:

- Updating the transportation network as per existing road network (incorporating improvements conducted in the City of Windsor and County of Essex);
- Rationalizing previous trip rates based on the recent studies in the Windsor-Essex Region and recent traffic counts;
- Developing revised origin-destination trip tables for the existing and future years with the use of revised trip rates and the latest population and employment projections.

After validating the existing year travel demand model, the future year travel demand models were developed for the next 5, 10 and 20 years' (2016, 2021 and 2031) planning horizons. This model was further upgraded to include a proposed road network and super-zone system for the proposed land use in the study area. The future road network incorporates all planned/committed road network improvements for the respective planning horizons. The model also takes into account the network speeds and capacity, the future land use (population and employment) and travel patterns.

The travel demand analysis was conducted using projected population and employments with the planned road network improvements. Various alternative scenarios with different network configurations were assessed to identify the road improvement requirements for the proposed development in the Study Area.

Based on the future travel demand analysis, following road network improvements for the study area corridors are identified:

Improvement requirements by 2021:

Lauzon Parkway:

- *From E.C. Row Expressway to County Road 42:* Widening from 2 lanes to 4 lanes of arterial (Class I) capacity (trigger volume: approximately 800 vph in peak direction);
- *From County Road 42 to Highway 401:* Southerly extension to Highway 401 with 4 lanes of arterial (Class I) capacity and a new full Interchange at Highway 401;
- *From Highway 401 to Highway 3:* Further extension to Highway 3 with 4 lanes of arterial (Class I) capacity.

County Road 42:

- *From Walker Road to County Road 19 (Manning Road):* Widening from 2 lanes to 4 lanes of arterial (Class II) capacity (trigger volume: approximately 700 vph in peak direction - around 2018);

- *From County Road 19 (Manning Road) to County Road 25 (East Puce Road):* 2-lanes of arterial (Class II) capacity without lane widening.

East-West Arterial: The new East-West Arterial would not be required by 2021, as the proposed development around this arterial is expected to begin around 2024

Addition improvement requirements by 2031:

Lauzon Parkway:

- *From E.C. Row Expressway to County Road 42*: Widening from 2 lanes to 4 lanes of arterial (Class I) capacity (trigger volume: approximately 800 vph in peak direction);
- *From County Road to Highway 401*: Southerly extension to Highway 401 with 4 lanes of arterial (Class I) capacity and a new full interchange at Highway 401;
- *From Highway 401 to Highway 3:* Further extension to Highway 3 with 4 lanes of arterial (Class I) capacity.

County Road 42:

- *From Walker Road to County Road 19 (Manning Road):* Widening from 2 lanes to 4 lanes of arterial (Class II) capacity (trigger volume: approximately 700 vph in peak direction, around year 2018)
- *From County Road 19 (Manning Road) to County Road 25 (East Puce Road):* 2-lanes of arterial (Class II) capacity without lane widening.

Addition improvement requirements by 2031:

Lauzon Parkway:

- *From E.C. Row Expressway to Highway 401*: Widening from 4 lanes to 6 lanes of arterial (Class I) capacity (trigger volume approximately 1600 vph in peak direction, around 2025);

County Road 42:

- *From County Road 19 (Manning Road) to County Road 25 (East Puce Road):* Widening from 2 lanes to 4 lanes of arterial (Class II) capacity.
- The need and timing for widening for this segment would be depending upon the pace of development in the Town of Lakeshore and traffic congestion on County Road 22 between 2021 and 2031. Hence, the County of Essex is recommended to review periodically the traffic operations on County Road 42 after 2021 (trigger volume approximately 700 vph in peak direction).

East-West Arterial:

- As the proposed development around this arterial is expected only to begin around 2024, this corridor would require to be built by 2023. This corridor would require 2 lanes of arterial capacity from Walker Road to the east end of the study area.
- Beyond 2031, the E-W Arterial would require to be widened from 2 to 4 lanes when volume reaches approximately 700 vph in peak direction.

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1. INTRODUCTION

The Ontario Ministry of Transportation, the City of Windsor and the County of Essex have initiated a Class Environmental Assessment Study to address the future transportation needs within the study area. The study has three main components as follows:

- the environmental assessment study and preliminary design for:
  - Lauzon Parkway from E.C. Row Expressway to County Road 42;
  - Lauzon Parkway's extension to Highway 401; and
  - Lauzon Parkway's further extension to Highway 3.
- the environmental assessment study for:
  - Essex County Road 42 from Walker Road to Essex County Road 25 (East Puce Road); and
  - the future east-west arterial from Walker Road to Essex County Road 17.
- the preparation and approval of a Secondary Plan for the remainder of the lands transferred to the City of Windsor in 2003 (lands are generally bounded by the CPR mainline north of the Windsor Airport, Lauzon Road and the 8th Concession, and the City of Windsor boundary).

This study will follow the Ontario Environmental Assessment Act through the application of the *Municipal Class Environmental Assessment* (October 2000 as amended in May 2007). This study is also subject to the requirements of the *Canadian Environmental Assessment Act*. The preparation and approval of the Secondary Plan will follow the requirements of the *Ontario Planning Act*.

1.1 Study Purpose

As part of an Ontario/Canada announcement in April 2005 of the Let's Get Windsor Essex Moving Strategy a commitment was made to conduct an environmental assessment and preliminary design study to examine upgrades and the extension of Lauzon Parkway between the E.C. Row Expressway and Highway 401. In addition, partners have agreed to include planning components related to County Road 42, East-West Arterial and Secondary Plan Study:

The Essex Windsor Region Transportation Master Transportation Plan (EWRTMP) identifies the need for operational and capacity improvements to the existing section of Lauzon Parkway south of E.C. Row Expressway to County Road 42 and the protection of a new corridor further south to Highway 401. A further extension to Highway 3 was also considered in the regional master plan to provide local and regional transportation benefits.

This border functions as the busiest international trade corridor in North America, handling about 30% of the two-way flow of Canada-U.S. trade by value and about 25% by volume. The Government of Ontario, in partnership with the County of Essex and the

City of Windsor, are working together to implement infrastructure projects that will help to relieve traffic congestion and improve traffic flows.

The purpose of this study is to identify the transportation problems and opportunities, and to develop and evaluate potential solutions. The transportation planning process for this study will:

- Identify factors driving 'Area Transportation System' needs;
- Determine 'Area Transportation System' needs to address the problems and opportunities within the study area; and
- Provide strategies to address 'Area Transportation System' problems and opportunities.

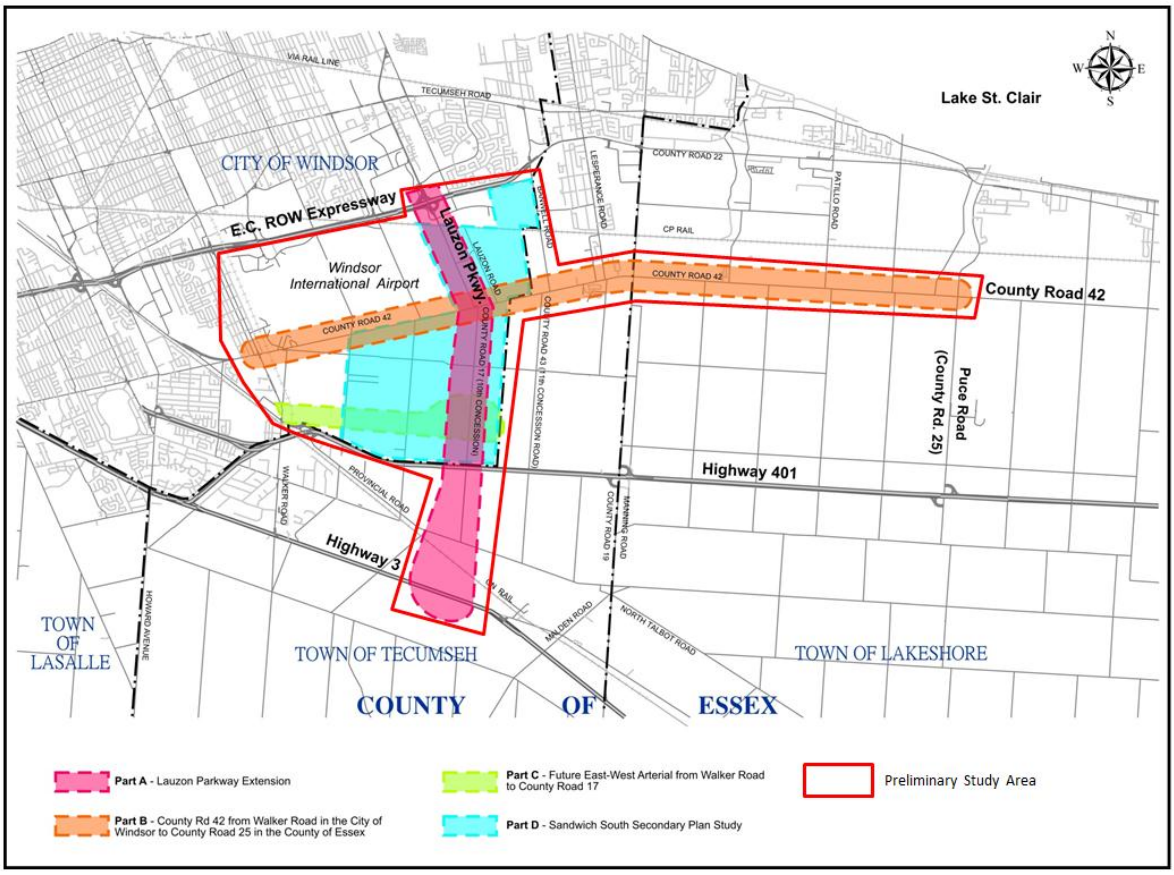
The baseline socio-economic profile, overview on historical traffic growth, existing transportation conditions and factors driving 'Area Transportation System' needs were identified and documented in Report TR1 (June 2011).

This Report TR2 summarized the future transportation needs to address the problems and opportunities within the study area, and process and methodology that were used to assess these needs.

1.2 Study Area

The study examines transportation demand/effects with the intention of identifying transportation problems and opportunities. The Study Area under consideration for the 'Area Transportation System' is illustrated in **Exhibit 1**. The study area encompasses E.C. Row Expressway in the north to Highway 3 in the south, Walker Road in the west to County Road 25 (East Puce Road) in the east. However, for transportation planning analysis and broader understanding of transportation demand, the traffic demand model which encompasses the entire Essex-Windsor Region was used.

Exhibit 1: Study Area



2. SUMMARY OF EXISTING CONDITIONS

A number of key factors that influence the 'Area Transportation System' needs have been identified through this preliminary assessment, presented in *Report TR1: Identification of Factors Driving 'Area Transportation System' Needs*. The key factors driving 'Area Transportation System' needs were summarized into the following themes:

- *Policy Framework*
- *Existing Transportation System*
- *Historical Traffic Growth*
- *Existing Traffic Operations and Level-of-Service*
- *Future Trend*

The following section provides an overview of the problems and identifies the 'Area Transportation System' needs documented in Report TR1.

2.1 Identification of Problems in Area Transportation System

The following problems were identified in the Area Transportation System during the analysis and assessment of the existing and potential future year conditions:

- The existing transportation system within the study area serves a transportation demand at a local/inter-region/province/national level.

- The traffic volumes in the study area have grown significantly in the past years. The traffic volume on Highway 401 has grown at an average growth rate of 3.4% per annum. The traffic volume on Highway 3 has grown at an average growth rate of 2.4% per annum.

- The existing traffic volume on the Lauzon Parkway is operating at or near its capacity north of County Road 42. Walker Road and County Road 19 (Manning Road) are also operating at volume to capacity (v/c) ratios of 0.87 and 0.81 north of Highway 401, which is considered 'Unstable-Flow' condition. Walker Road and County Road 19 (Manning Road) are the only two north-south links with interchanges at Highway 401 and E.C. Row Expressway, this result in traffic from other road network being attracted to these two corridors. These two links are already operating near capacity, indicating the need for a new interchange with Highway 401 for the future traffic demand in the study area.

- The proposed bridge for the Detroit River International Crossing (DRIC) and the Rt. Hon. Herb Gray Parkway (formerly the Windsor Essex Parkway) will provide an additional international border crossing facility and is projected to attract additional border crossing traffic.

- County Road 42 is a key east-west arterial in the study area. It provides continuous connection between the City of Windsor, Town of Tecumseh and Town of Lakeshore. In general, this corridor is currently operating at an acceptable level-of-service. However, during peak hours, the roadway is

approaching capacity in the vicinity of the Lauzon Parkway and County Road 17 intersections. In addition, there are movements (i.e. through traffic, left-turns and right-turns) at key intersections (such as Walker Road, Lauzon Parkway, County Road 43 (Banwell Road), County Road 17, Lesperance Road and County Road 19 (Manning Road)) that are approaching capacity during peak hours.

- The population and employment forecast from the City of Windsor suggests that the City of Windsor population is expected to increase by 30,500 residents and employment by 11,400 jobs. The Windsor Annexed Area Master Plan study has estimated to accommodate about 14,000 residents and 10,000 employees in the Annexed Area. During the same period, the County of Essex suggests that the County of Essex population in 2031 is expected to increase approximately by 41,000 residents and employment by 17,500 jobs.

- Considering the future anticipated growth in the Study Area, there are limited spare capacities available on the road network. In addition, there is limited existing north-south and east-west linkage to provide a grid transportation system. Future projected growth in the City of Windsor and County of Essex will result in further demand on the existing road network. It is expected that congestion on the road network will worsen as a result of the future development associated with the Sandwich South Secondary Plan area, which cannot be accommodated by the existing road network.

In response to the transportation-related problems, this Study provides following opportunities to address the issues and improve the transportation system within the Area Transportation System.

2.2 Identification of Opportunities in Area Transportation System

The Lauzon Parkway Extension would provide an opportunity to develop a gateway and community transportation corridor. The extension of Lauzon Parkway to Highway 3 and a new interchange with Highway 401 would provide a potential opportunity for an access to new development in Sandwich South Secondary Area. This corridor would also help in reducing congestion from the existing corridors (Walker Road and County Road 19 (Manning Road). The removal of jog at County Road 42 would reduce the bottleneck and will enhance intersection operation. The corridor provides opportunities to enhance the adjacent Little River corridor as a central community amenity as well as providing active transportation facilities and enhanced landscaping. Lauzon Parkway will provide a central spine through the proposed future Sandwich South Community. The Sandwich South Secondary Plan Study will develop design policies that incorporate a community focus including live/work opportunities including key consideration of provisions for active transportation facilities and transit expansion in the area.

Improvements to County Road 42, which provides the continuous connection between the Town of Tecumseh, Town of Lakeshore and the future growth areas in the City of Windsor, will also include provisions for active transportation facilities.

The Future East-West Arterial, which will be a key east-west corridor in the Sandwich South community and support the grid transportation system for the area, will include provisions for active transportation along the corridor and will provide connectivity to facilities along Lauzon Parkway.

3. FORECASTING TRAVEL DEMAND IN THE STUDY AREA

3.1 Forecasting Methodology

The identification of future transportation needs within the Study Area is a crucial stage for the study. The future transportation problems and possible solutions were identified through the following three steps:

1) Understanding of existing transportation system conditions;
2) Projecting what the future transportation conditions will be in the future planning horizons of 2016, 2021 and 2031 in the study area as the population and employment increase in Windsor-Essex Region;
3) Identifying the transportation improvement requirements by overlaying the projected future transportation demands with the planned system.

3.2 Travel Demand Model

Travel demand forecasting was prepared for the Analysis Area in consideration of the potential future environment using an industry accepted computer based planning model. This model assesses the future travel demands and identifies the existing and future system congestion within the Study Area. The travel demand model used in this study was developed for the EWRTMP Study during 2002-2005 using TransCAD software for afternoon peak hour traffic demand. This model was developed to assess the auto travel demand pattern in the Windsor-Essex Region. In order to reflect the commercial vehicle travel demand on the various corridors, the road network (link) capacities have been reduced by 10% on local, collector and arterial streets and 25% for freeway/expressways. This model is a standard four-stage demand model, covers the geographical area of the County of Essex and its municipalities, the City of Windsor and two existing border crossings based on 2001 Census data. The model assigns the trip rates, vehicle occupancy factors and mode split derived from the survey conducted for the WALTS Study and EWRTMP Study.

As part of this study, this model was required to be updated for the existing condition (2011 afternoon peak hour) by:

- Updating transportation network as per existing road network (incorporating improvements conducted in the City of Windsor and County of Essex);
- Rationalizing previous trip rates based on the recent studies in the region and traffic counts;
- Developing revised origin-destination trip tables for the existing and future years with the use of revised trip rates and latest population and employment projections.

The resulting model covers the entire Windsor-Essex Region, and includes all City arterials and major collector roads and all County Roads in the study area, which provides better understanding of travel pattern than the 'Sub-Area Model'. This model

was upgraded to include a proposed road network and super-zone system for the proposed land use in the study area. After validating the existing year travel demand model, the future year travel demand models were developed for the planning horizons of the next 5, 10 and 20 year time periods (2016, 2021 and 2031).

The future road network incorporates all planned/ committed road network improvements for the respective planning horizons. The model also takes into account the network speeds and capacity, the future land use (population and employment) and travel patterns.

Trip Generation- In this first step, the model simulates the number of trips entering and leaving each traffic zone based on the volume and type of activity in the zone, such as the population, number of households and/or number of employees. The model was using the trip generation relationships developed in the previous WALTS study, which were based on a comprehensive household travel survey of Windsor and Area residents. The trip generation relationships were used to predict the number of trips produced in and attracted to the various municipalities in the regional study area. These trip rates were rationalized based on the recent traffic counts collected in the study area, the cross-border survey information from recent Detroit River International Crossings Study and MTO traffic survey data.

In travel demand model, a new traffic analytical zone was added for the proposed Detroit River International Crossing, and the external trips to/from this zone for the planning horizon years of 2016, 2021 and 2031 were assigned considering the demand estimated by the Detroit River International Crossings Study.

Trip Distribution- In distributing trips through the region, the transportation forecasting model simulated where trips originated and where they ended up based on the location of potential origins and destinations, and on the relative travel time between zones.

The trip productions and attractions generated by the program are converted into a matrix (trip table) of trips between zone pairs. The program then uses zone-to-zone travel friction to estimate the probability that trips produced from one zone will be attracted to another zone. The full set of volumes or trips going from each zone to each zone is determined by the model and passed on to the next step. For this study, fundamental relationships developed in the EWRTMP were used for trip distribution.

Baseline Travel Mode Split - The EWRTMP model information was used to apply average vehicle occupancy and mode split factor to develop auto trip tables.

Trip Assignments - To assign future traffic, the model assigns the trips using an 'equilibrium' assignment methodology, which consider the routing of trips on the road network based on the influences of congestion and delay, taking into consideration the number of lanes, the traffic volume versus the roadway capacity, number of border crossings, etc. This provides the final transportation network loading for the model, which is the number of vehicles on each part of the network.

Model Validation - The simulated traffic volumes for the existing year traffic demands were compared with the observed traffic volumes (presented in TR1) in the study area at

the screenline levels. **Table 1** provides a summary of the performance of the existing model on a screenline basis.

Table 1: Model Validation (2011 afternoon peak hour)

Screenline	Location	Total Simulated	Existing observed	Simulated/ Observed
NS-1	North of County Road 42	11,419	11,263	1.01
NS-2	North of Highway 401	4,348	4,435	0.98
EW-1	West of Lauzon Parkway	6,034	5,342	1.13
EW-2	West of County Road 19 (Manning Road)	4,528	4,865	0.93
Total		**26,329**	**25,905**	**1.02**

It was found that the simulated travel volumes were within acceptable limits at a screenline level. Based on the model validation process, it was concluded that the updated existing year (2011) model is an acceptable tool to forecast future traffic demands, examine network deficiencies and test a range of network improvement options.

A Level of Service/Operating Condition guideline is defined by six levels or grades of generalized traffic conditions, characteristics and commonly used measurement of overall transportation system operations for links and intersections. The volume-to-capacity ratios (V/C) and respective LOS and operating conditions are presented in **Table 2.**

Table 2: Volume/Capacity Operating Conditions Guideline

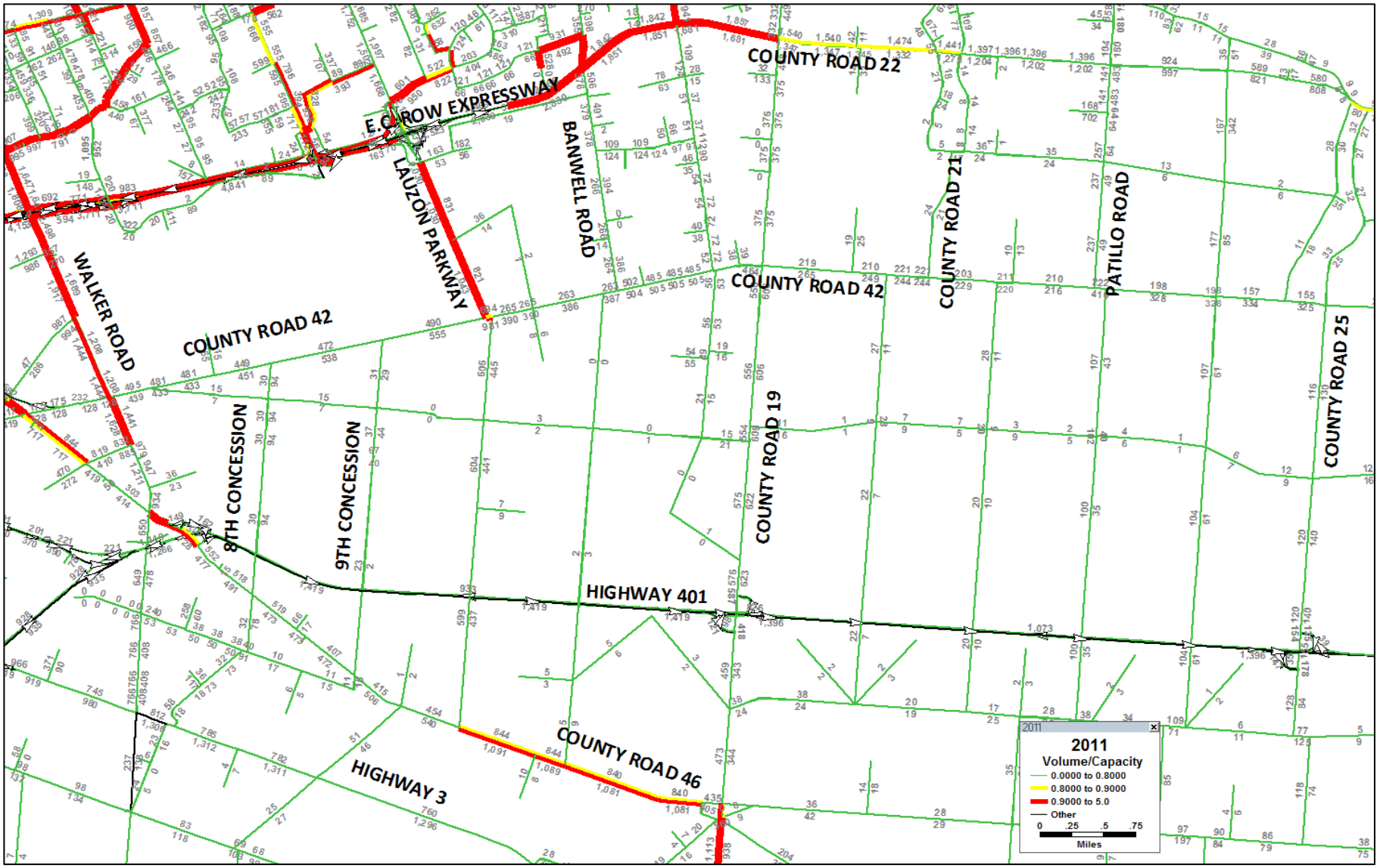
Volume-to-Capacity Ratio	Level of Service (LOS)	Facility Operating Condition	Screenline Operating Condition
< .70	A + B	Free Flow	Good
.71 to .80	C	Stable Flow	Good
.81 to .90	D	Unstable Flow	Unstable
.91 to 1.0	E	Congested	Congested
> 1.0	F	Very Congested	Very Congested

The resulting level-of-service and v/c ratio were presented into three categories as: LOS A-C<=0.79, LOS D 0.81-0.90 and LOS E/F >0.90.

Exhibit 2 shows the existing volume to capacity (v/c) ratio and level-of-service on Study Area network. The v/c ratio was derived comparing simulated traffic volume versus planning capacities assigned in the road network based on the functional classifications of road. The simulation result indicates that following key road segments in the Study Area are currently operating at 'congested' situations:

- Lauzon Parkway (E.C. Row Expressway to County Road 42);
- E.C. Row Expressway;
- County Road 22 (near Lauzon Parkway and County Road 17); and
- Walker Road (from County Road 42 to Highway 401).

Exhibit 2: 2011 Simulated Traffic Volume and Resulting Level-of-Service



4. IDENTIFICATION OF NEEDS WITHIN THE STUDY AREA

4.1 Future Land-Use

The population and employment forecasts for the City of Windsor were obtained from the City of Windsor and are based on the low projections for the population that have been outlined as part of the City's Official Plan Review process. As part of the Official Plan Review process the City of Windsor has also undertaken employment projections.

The County of Essex Official Plan was developed in 2002; and at the time of preparation of this report, the County of Essex Official Plan is in the process of being updated. The County of Essex provided the provisional population and employment forecasts for the Essex County. The Population and Employment forecasts used for this study are presented in **Table 3** and **Table 4** respectively**.**

Table 3: Regional Population Forecast

Municipality	2011	2016	2021	2031	Growth 2011-31	Annual Growth Rate
City of Windsor	219,698[1]	226,631	235,521	250,206	30,508	0.65%
County of Essex	182,890	191,890	203,490	223,760	40,870	1.01%
LaSalle	28,900	30,920	33,620	38,160	9,260	1.40%
Tecumseh	24,440	25,400	27,460	31,920	7,480	1.34%
Lakeshore	34,980	37,230	39,580	43,040	8,060	1.04%
Amherstburg	22,670	23,820	25,120	27,310	4,640	0.94%
Essex	20,570	21,240	21,940	23,230	2,660	0.61%
Kingsville	21,720	22,800	24,030	26,020	4,300	0.91%
Leamington	29,310	30,180	31,440	33,780	4,470	0.71%
Pelee Township[2]	300	300	300	300	0	0.00%
Windsor-Essex Region	**402,588**	**418,521**	**439,011**	**473,966**	**71,378**	**0.82%**

[1] Population based on projections available at the onset of this study, in March 2011, and used for the preparation of the Traffic Demand Model to identify future transportation needs. The actual 2011 population was 210,891. The difference between the projected and actual population may impact the timing of when the recommended changes should be implemented but not the overall need for the project.

[2] Pelee Township population and employment were not used in the analysis.

Table 4: Regional Employment Forecast

Municipality	2011	2016	2021	2031	Growth 2011-31	Annual Growth Rate
City of Windsor	116,200	119,100	122,100	127,605	11,405	0.47%
County of Essex	63,128	67,486	71,844	80,560	17,432	1.23%
LaSalle	5,512	6,204	6,896	8,280	2,768	2.06%
Tecumseh	14,558	15,546	16,534	18,510	3,952	1.21%
Lakeshore	11,678	12,826	13,974	16,270	4,592	1.67%
Amherstburg	4,808	5,126	5,444	6,080	1,272	1.18%
Essex	6,514	6,808	7,102	7,690	1,176	0.83%
Kingsville	6,852	7,184	7,516	8,180	1,328	0.89%
Leamington	13,046	13,632	14,218	15,390	2,344	0.83%
Pelee Township	160	160	160	160	-	0.00%
Windsor-Essex Region	**179,328**	**186,586**	**193,944**	**208,165**	**28,837**	**0.75%**

The Windsor-Essex Region population is expected to increase by 71,400 and City of Windsor population by 30,500 persons in 2031. As presented in **Table 3,** the population for Windsor-Essex Region is expected to grow by 0.82% per annum and City of Windsor is expected to grow by 0.65% per annum. The employment in the Windsor- Essex Region is expected to grow by 0.75% per annum; where the employment in the City of Windsor is expected to grow by 0.47% per annum from 2011 to 2031.

The '*Windsor Annexed Lands Master Planning Study'* identified the need for the additional land requirements and proposed population and employment allocation in the Windsor Annexed Area. The population and employment suggested allocations for the Windsor Annexed Lands Master Planning Study is presented in **Table 5**. The population in the ***Windsor Annexed Area*** is expected to increase by approximately 14,000 residents and approximately 10,000 employees by 2031.

Table 5: Employment and Population Forecast for the Windsor Annexed Area

	2016	2021	2031
Dwellings Units	-	-	6,127
Population	-	-	13,908
Employment	1,139	3,987	9,682

The preparation and approval of a Sandwich South Secondary Plan is underway. At the end of total built-out (beyond 2031), the study area population and employment forecast is presented in **Table 6** for low-density and high density scenarios**.**

Table 6: Dwellings, Population and Employment Forecast for Secondary Plan

	Low-Density Scenario	High-Density Scenario
Dwellings	13,643	21,890
Total Population	30,970	49,690
Total Employment (Jobs)	15,560	15,560

The future population and employment projections (presented in **Table 3** and **Table 4)** for various municipalities were segregated at Traffic Analysis Zone (TAZ) level. The EWRTMP model contained individual population and employment data for TAZs for the 2001 and 2021. Using a higher level zoning system consisting of 20 super analysis zones (based upon the EWRTMP SAZ system), an outline based upon projected total population and employment for the City of Windsor and County townships was produced for planning horizons of 2011, 2016, 2021 and 2031.

The existing TAZs in the Study Area required refinement/dis-aggregation to represent the future land use. The existing and revised TAZ system is presented in **Exhibit 3**. The population and employment allocation for 2031 for respective TAZ are presented in **Exhibit 4.**

Exhibit 3: Revised Traffic Analytical Zones in Study Area

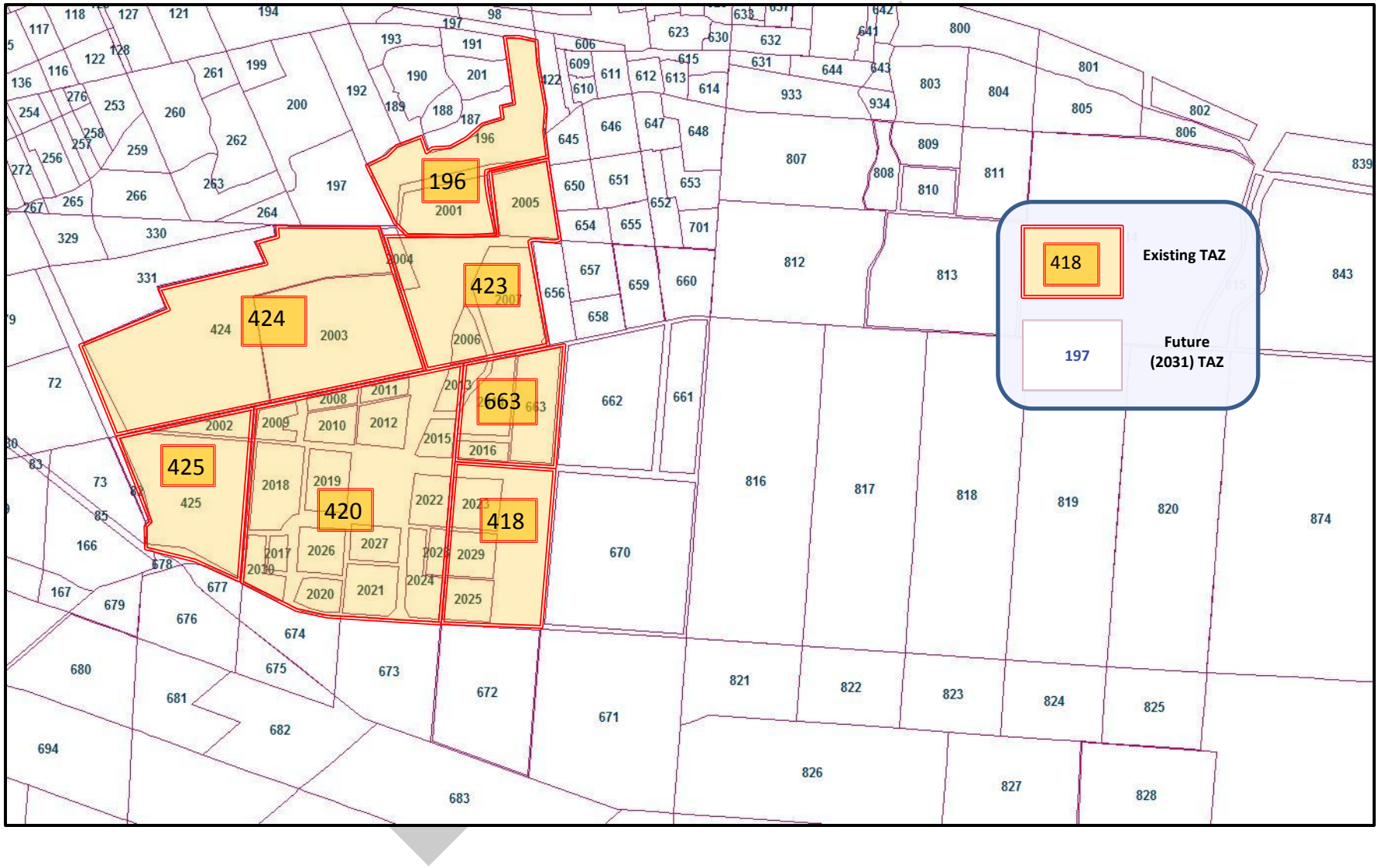
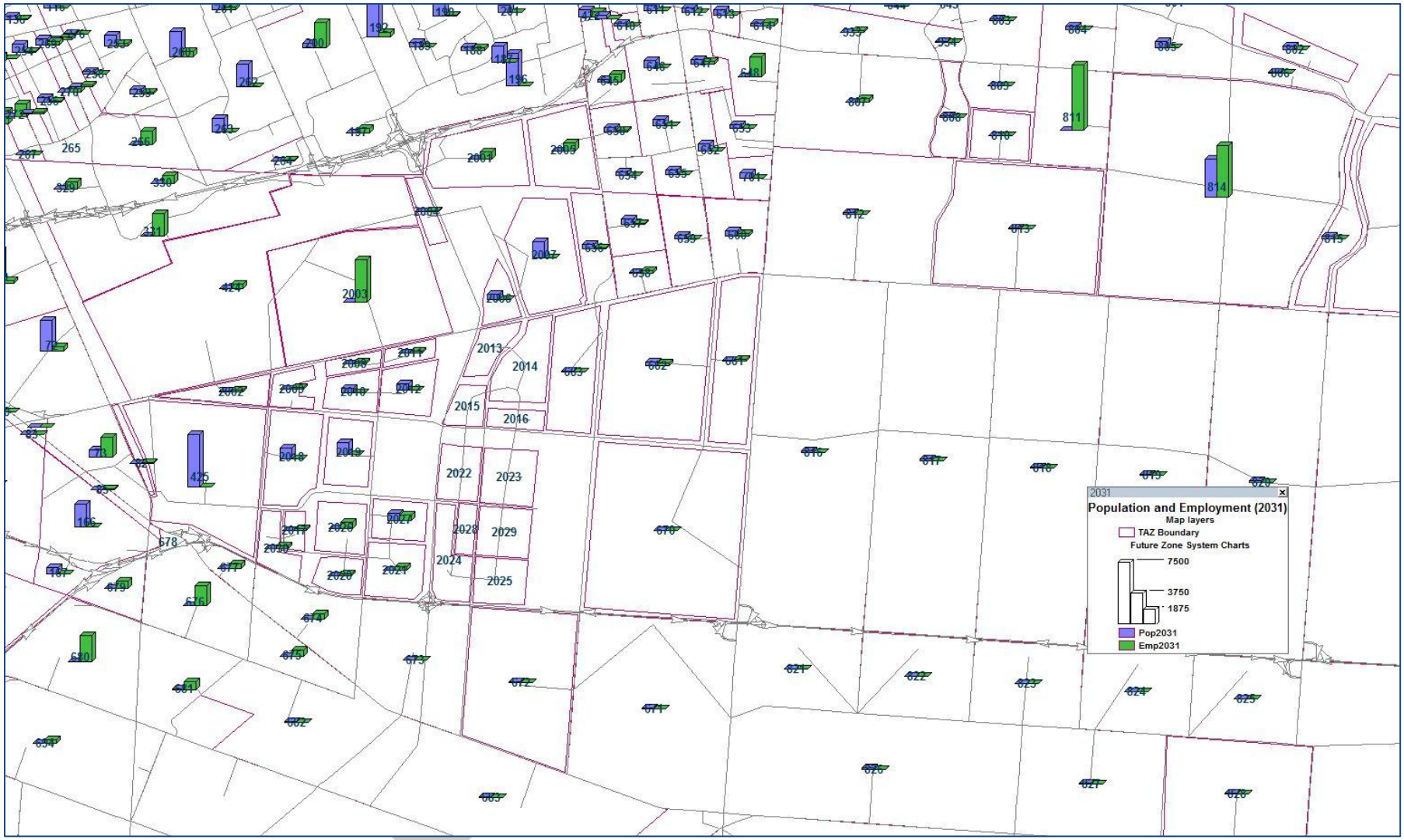


Exhibit 4: Population and Employment Allocations for TAZs



4.2 Future Transportation Network

The planned improvements from the City, County and MTO for the three planning horizon years are listed in **Table 7, Table 8** and **Table 9** respectively. These improvements were developed through review of previously accepted planning reports and in consultation with City, County and MTO staff.

Table 7: City of Windsor Road Network Improvements

Road	From	To	Type of Improvement	2016	2021	2031
Walker Road	E.C. Row Expressway	Division Road	Additional left turning lane	✓		
Tecumseh Road East	Lauzon Road	County Road 43 (Banwell Road)	4 → 6 Lanes		✓	
Howard Avenue	Highway 3	Dougall Parkway	2 → 4 Lanes		✓	
Provincial Road	Howard Avenue	Highway 401 (City Limit)	2 → 4 Lanes		✓	
E.C. Row Expressway	Huron Church Road	County Road 43 (Banwell Road)	4 → 6 Lanes		✓	
Howard Avenue	Dougall Parkway	Cabana Road East	Additional left turning lane			✓
Howard Avenue	Cabana Road East	Provincial Road	2 → 4 Lanes			✓
Cabana Road	Huron Church Road	Walker Road	2 → 4 Lanes			✓
County Road 43 (Banwell Road)	Tecumseh Road East	CPR Tracks	2 → 4 Lanes			✓
County Road 43 (Banwell Road)	At EC Row Expressway		Upgrade to full interchange			✓

Table 8: County of Essex Road Network Improvements

Road	From	To	Type of Improvement	2016	2021	2031
County Road 19 (Manning Road)	CPR Tracks	County Road 22	2 → 4 Lanes	✓		
County Road 22 (E.C. Row Extension.)	County Road 43 (Banwell Road)	County Road 19 (Manning Road)	4 → 6 Lanes	✓		
County Road 22	County Road 2	County Road 25 (East Puce Road)	2 → 4 Lanes	✓		
County Road 22	County Road 25 (East Puce Road)	IC Roy Dr.	2 → 4 Lanes	✓		
County Road 3 (Malden Road)	Cahill Drain	Laurier Drive	2 → 4 Lanes	✓		
County Road 7 (Huron Church Rd)	Cousineau Road	Sandwich West Parkway	Additional left turning lane	✓		
County Road 9 (Howard Ave)	County Road 8 (Townline Road)	Laurier Parkway	2 → 4 Lanes		✓	
County Road 43 (Banwell Road)	CPR Tracks	County Road 42	2 → 4 Lanes		✓	
County Road 43 / 11th Concession Rd	500m North of County Road 42	500m South of County Road 42	Road + Intersection Realignment		✓	
County Road 22	IC Roy Dr.	Renaud Line Rd	2 → 4 Lanes		✓	
County Road 19 (Manning Road)	CPR Tracks	Highway 401	2 → 4 Lanes		✓	
County Road 46 (Provincial Road)	Hwy 401	8th Concession	2 → 4 Lanes		✓	
Gouin Street Extension	Lesperance Road	County Road 19 (Manning Road)	0 → 2 Lanes		✓	
Arterial Bypass (Leamington)	County Road 34	County Road 20	2 → 4 Lanes			✓
County Road 22	Renaud Line Rd	Belle River Road	2 → 4 Lanes			✓
Laurier Road	Malden Road	Howard Avenue	2 → 4 Lanes			✓
County Road 19 (Manning Road)	Highway 401	Highway 3	2 → 4 Lanes			✓

Table 9: MTO Road Network Improvements

Road	From	To	Type of Improvement	2016	2021	2031
Highway 3/Huron Church Road	Highway 401	E.C. Row Expressway	Reconstruction and Repair	✓		
The Rt. Hon. Herb Gray Parkway (formerly the Windsor-Essex Parkway)	Highway 401	Windsor Border Crossing Plaza	0 → 6 Lanes	✓		
DRIC – New Bridge Crossing	Windsor Border Crossing Plaza	Detroit Border Crossing Plaza	0 → 6 Lanes	✓		

Exhibit 5, Exhibit 6 and **Exhibit 7** show these road improvements for horizon years of 2016, 2021 and 2031 respectively. These improvements were incorporated in future road network used for travel demand modelling.

Exhibit 5: 2016 Road Improvements

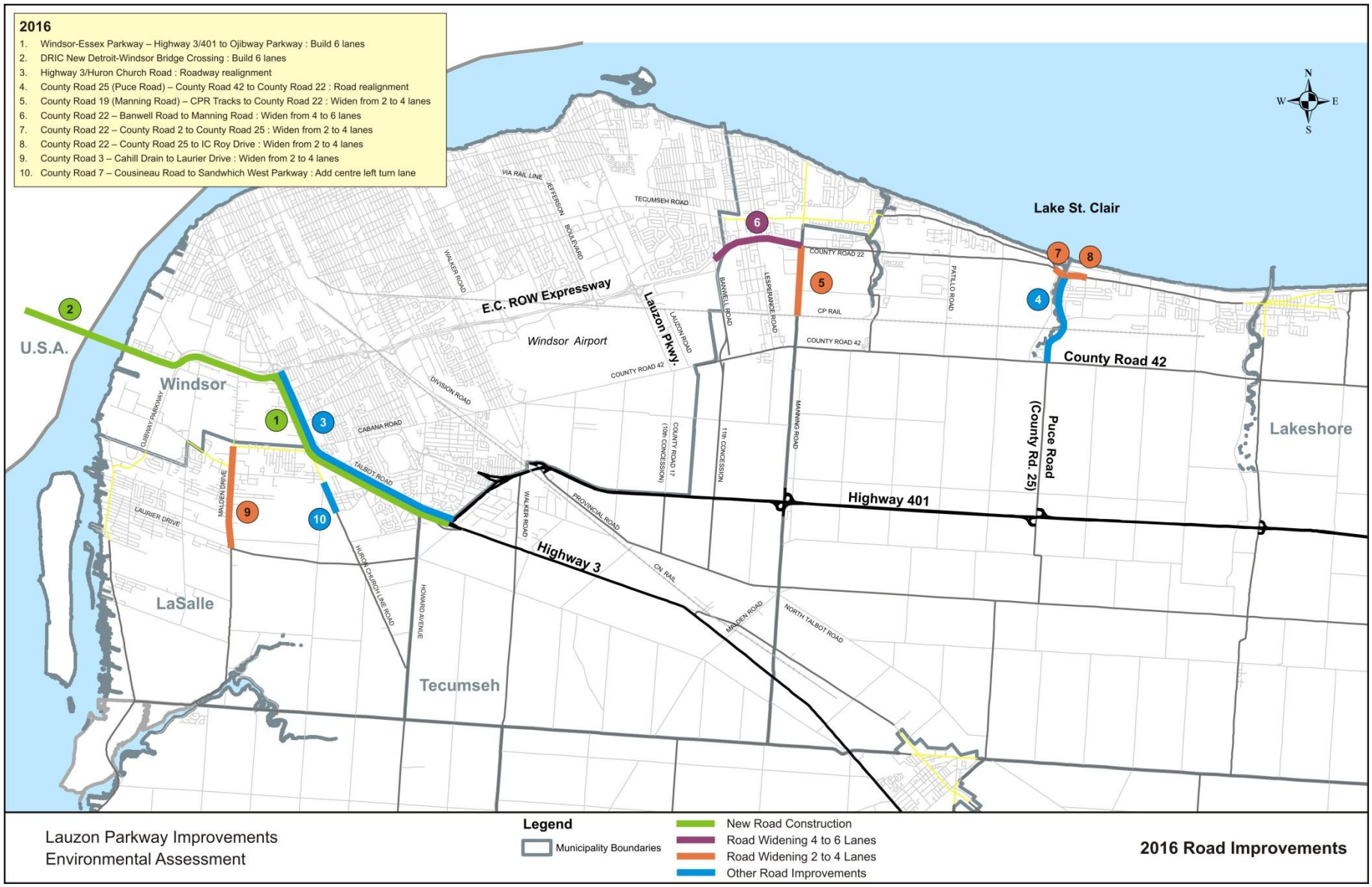


Exhibit 6: 2021 Road Improvements

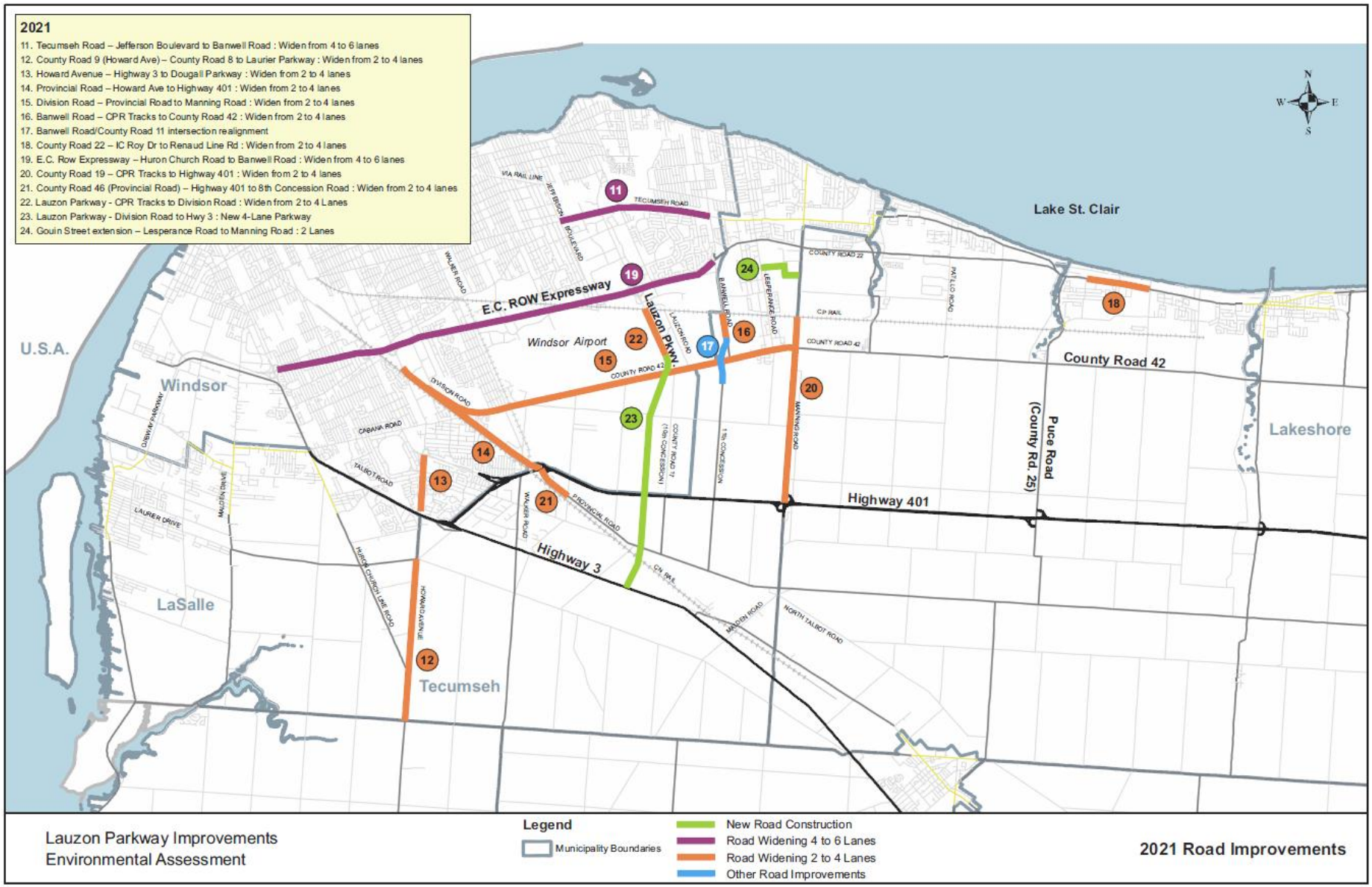
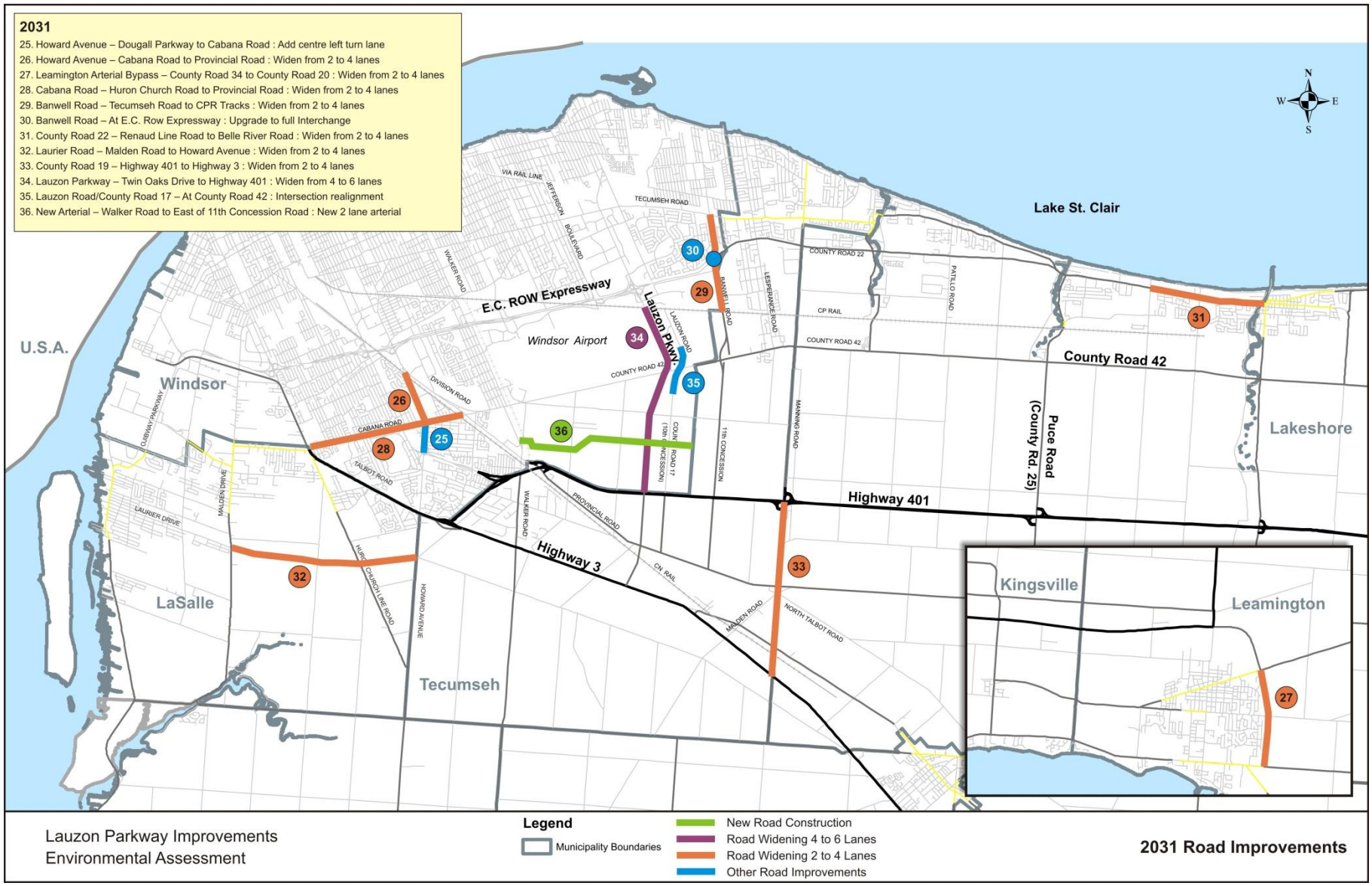


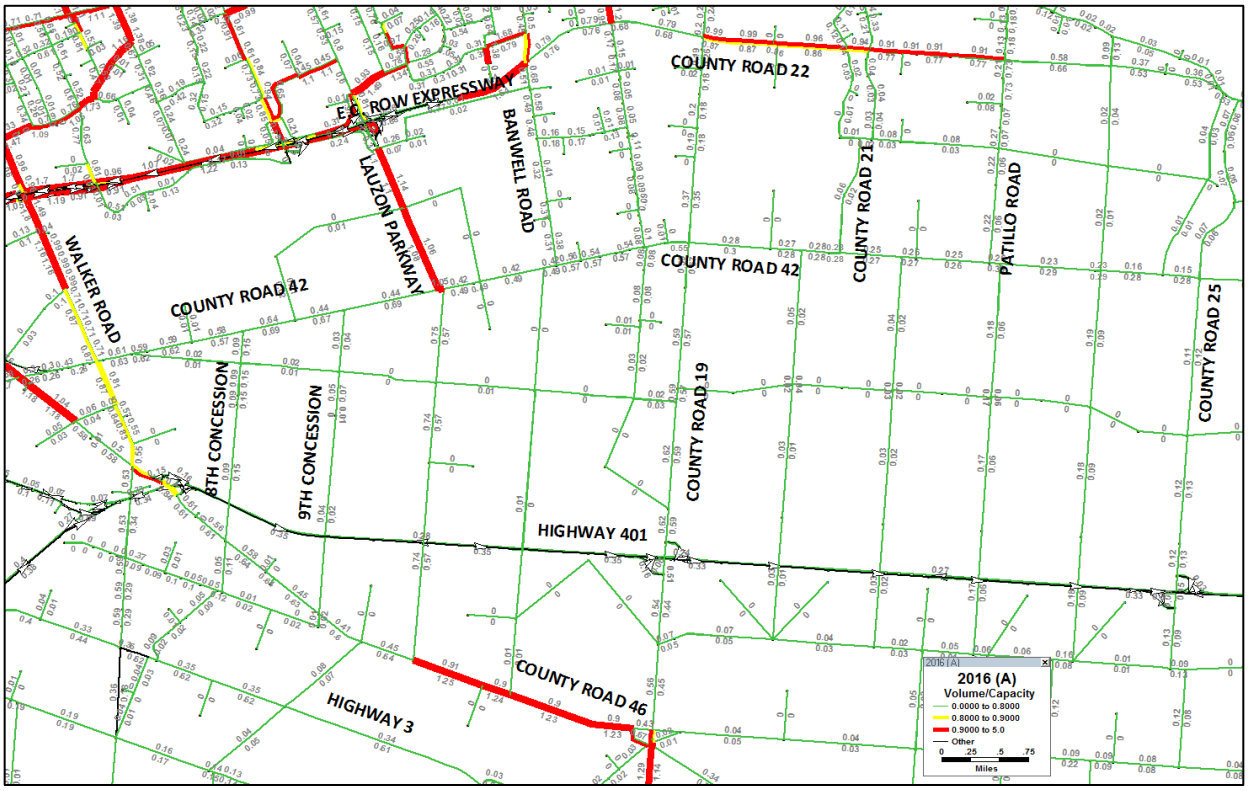
Exhibit 7: 2031 Road Improvements



4.3 2016 Travel Demand Forecast

The 2016 travel demand model was conducted using projected population and employments with 2016 planned road network improvements (refer **Exhibit 5)**. The resulting level-of-service for the roadway network is presented in **Exhibit 8.**

Exhibit 8: 2016 Network Level-of-Service (with 2016 planned improvements)



The modelling result indicates that proposed planned improvements would reduce some congestion on Walker Road. However, these improvements would not reduce congestion on Lauzon Parkway and E.C. Row Expressway.

4.4 2021 Travel Demand Forecast

For 2021 travel demand, following five scenarios were assessed with various network configurations to assess the road network improvement requirements (presented in **Table 10)**

1. **2021(A):** 2016 planned network improvements
2. **2021(B):** 2021 planned improvements (refer to **Exhibit 6)** without improvements to existing Lauzon Parkway (2 lanes) and County Road 42 (2 lanes)
3. **2021(C):** 2021 planned improvements except County Road 42 improvements (2 lanes). This scenario considered Lauzon Parkway widen to 4 lanes from E.C. Row Expressway to County Road 42, extension to Highway 401 with a new partial interchange
4. **2021(D):** 2021 planned improvements except Lauzon Parkway widen to 4 lanes from E.C. Row Expressway to County Road 42, extension of Lauzon Parkway to Highway 401 with a new partial interchange and County Road 42 widen to 4 lanes from Walker Road to County Road 19 (Manning Road)
5. **2021(E):** 2021 planned improvements (includes 4-lane widening of Lauzon Parkway from E.C. Row Expressway to County Road 42, with 4-lane extension to Highway 3 and a new full interchange at Highway 401; County Road 42 widen to 4 lanes from Walker Road to County Road 19 (Manning Road)

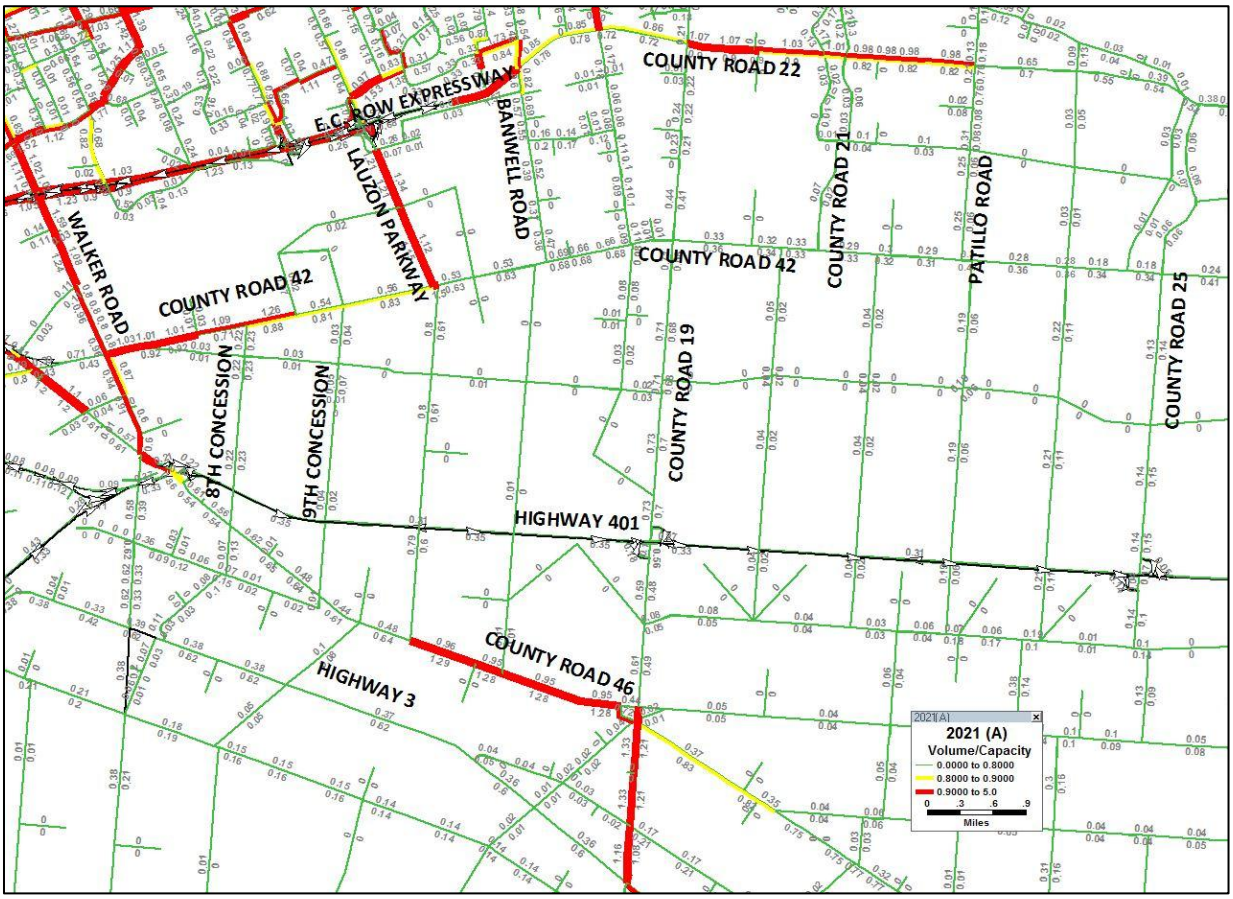
Table 10: 2021 Travel Demand Scenarios

Scenario	2016 Planned Improvements	2021 Planned Improvements except improvements to Lauzon Parkway and County Road 42	Lauzon Parkway Improvements			County Road 42 Improvements	
			E.C. Row Expressway to County Road 42 (widening from 2 lanes to 4 lanes)	County Road 42-Highway 401 (southerly extension with 4 lanes)	Highway 401 to Highway 3 (southerly extension with 4 lanes)	From Walker Road to CR 19 (Manning Road) (widening from 2 lanes to 4 lanes)	From CR 19 (Manning Road) to CR 25 (East Puce Road) (no-widening)
A	√						√
B		√					√
C		√	√	√			√
D		√	√	√		√	√
E		√	√	√	√	√	√

4.4.1 Modelling Scenario: 2021(A)

This scenario was assessed for 2021 travel demand with 2016 planned road improvements (refer **Exhibit 5)**. The resulting level-of-service for the roadway network is presented in **Exhibit 9.**

Exhibit 9: 2021 Network Level-of-Service for Scenario 2021(A)

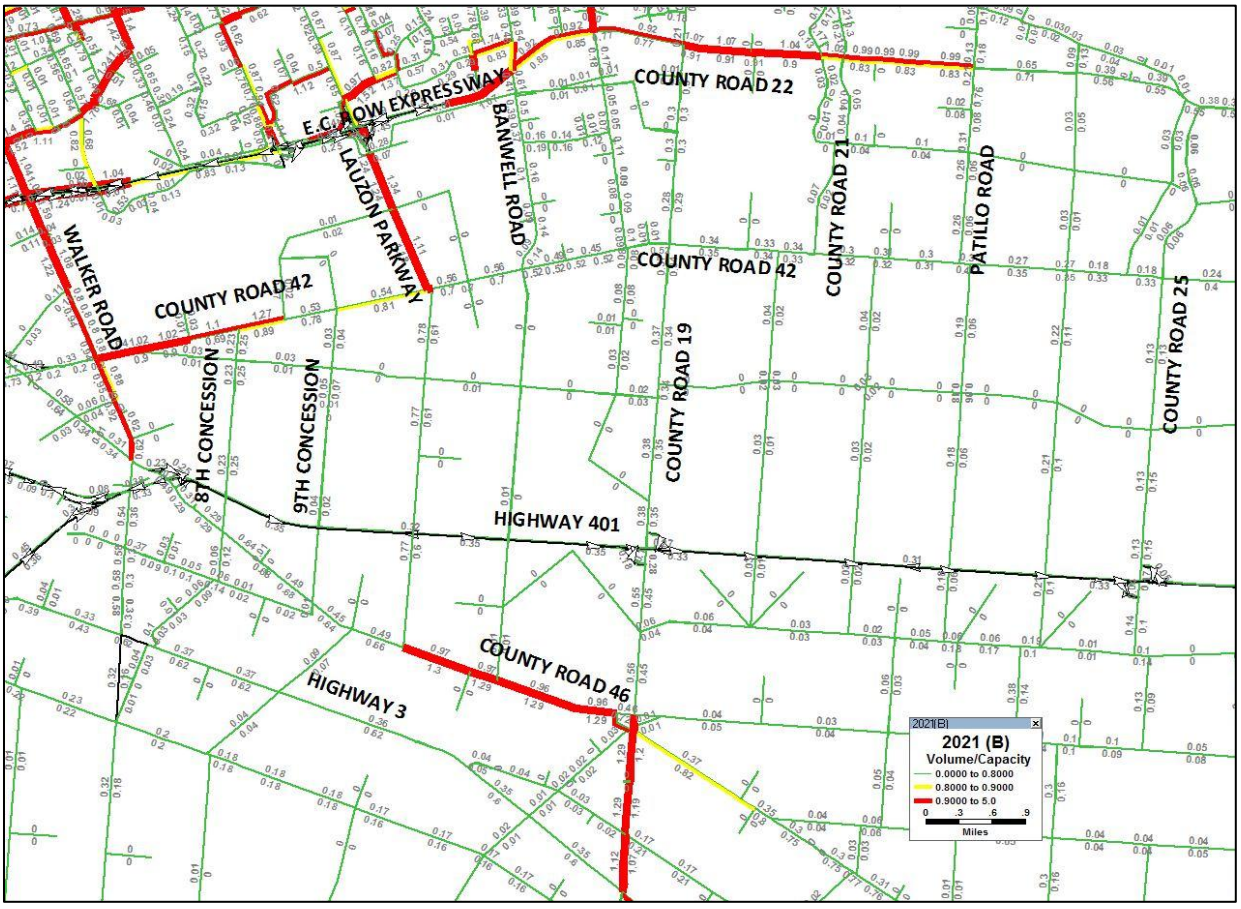


The analysis indicates that the future employment in the Airport Lands will result in heavy congestion on County Road 42 and Lauzon Parkway. The analysis also indicates that the E.C. Row Expressway and County Road 46 would also result in 'Congested' condition in 2021 with only 2016 planned improvements.

4.4.2 Modelling Scenario: 2021(B)

This scenario was assessed for 2021 travel demand with 2021 planned improvements (refer to **Exhibit 6)** except Lauzon Parkway and County Road 42 improvements. The resulting level-of-service for the roadway network is presented in **Exhibit 10.**

Exhibit 10: 2021 Network Level-of-Service for Scenario 2021(B)

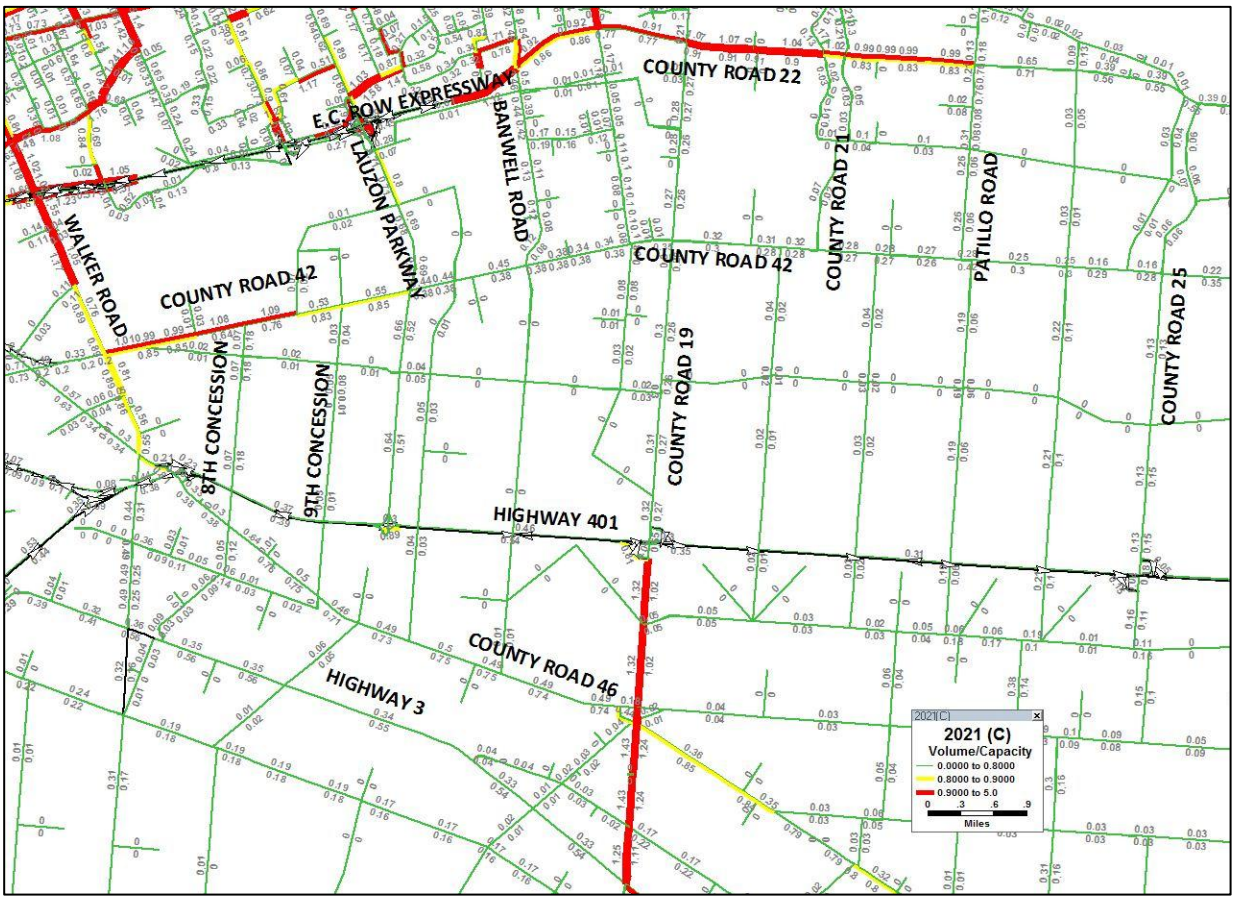


This modelling scenario result shows the benefits of 2021 planned improvements, notably these improvements would reduce congestion on E.C. Row Expressway and County Road 46.

4.4.3 Modelling Scenario: 2021(C)

This scenario was assessed for 2021 travel demand with 2021 planned road network improvements except improvements for County Road 42. This scenario considered widening of Lauzon Parkway (4-lane) from E.C. Row Expressway to County Road 42, and extension (4-lane) up to Highway 401 only with a new partial interchange. The resulting level-of-service for this scenario is presented in **Exhibit 11.**

Exhibit 11: 2021 Network Level-of-Service for Scenario 2021(C)



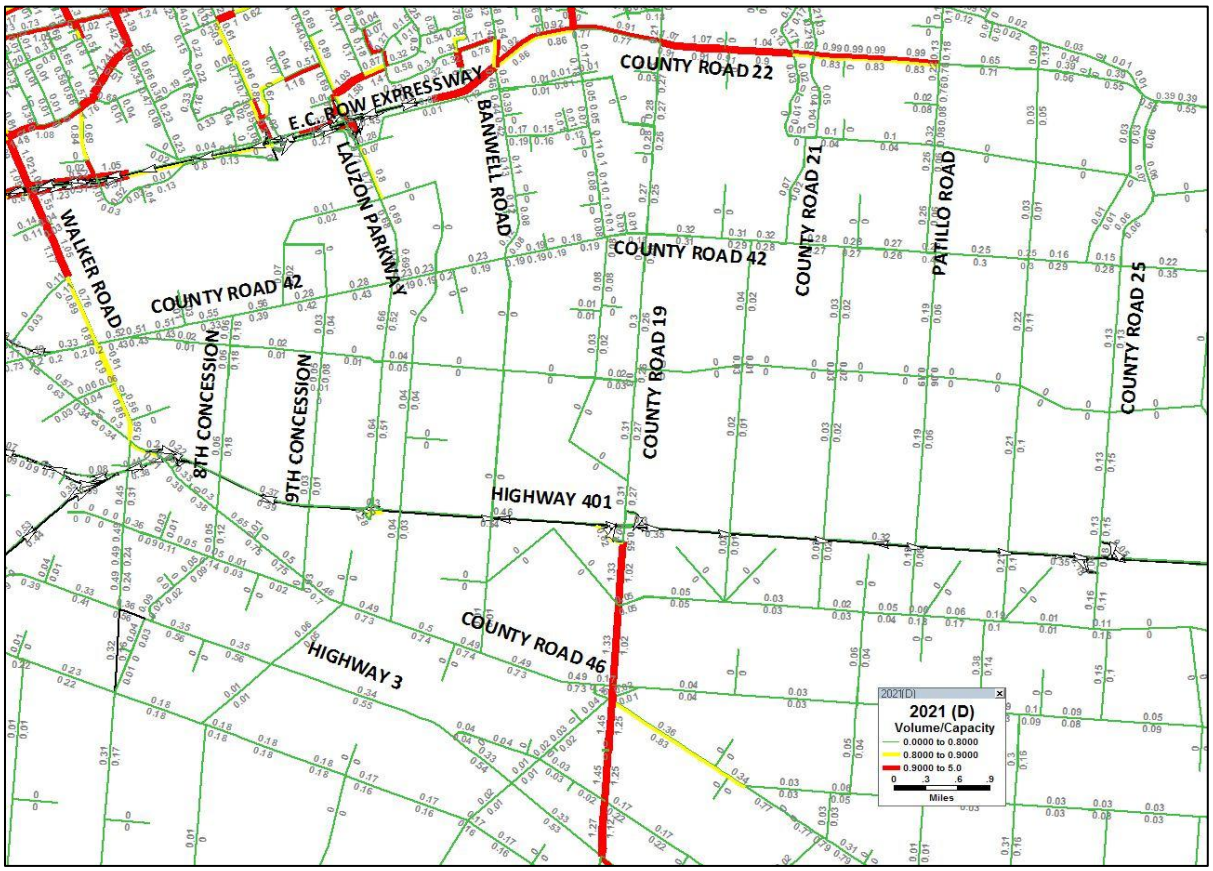
The analysis result indicates that widening of Lauzon Parkway (4-lane) would reduce the congestion (between E.C. Row Expressway and County Road 42). The southerly extension of Lauzon Parkway to Highway 401 and new interchange would attract traffic from Walker Road which would improve the level-of-service on Walker Road. The removal of the jog at County Road 42 and Lauzon Parkway would remove the bottleneck on County Road 42. However, the extension of Lauzon Parkway up to Highway 401 only would result in heavy congestion (LOS 'F') on the County Road 19 (Manning Road) section from Highway 401 to Highway 3, which indicates the need for Lauzon Parkway extension from Highway 401 to Highway 3.

The result also indicates that without the widening of County Road 42, the section from Walker Road to Lauzon Parkway would operate at congested condition (V/C > =0.85).

4.4.4 Modelling Scenario: 2021(D)

This scenario was assessed for 2021 travel demand with 2021 planned road network improvements except this scenario considered widening (4-lane) of Lauzon Parkway from E.C. Row Expressway to County Road 42, and extension (4-lane) up to Highway 401 only with a new partial interchange. This scenario considered widening (4-lane) of County Road 42 from Walker Road to County Road 19 (Manning Road). The modelling result for this scenario is presented in **Exhibit 12.**

Exhibit 12: 2021 Network Level-of-Service for Scenario 2021(D)

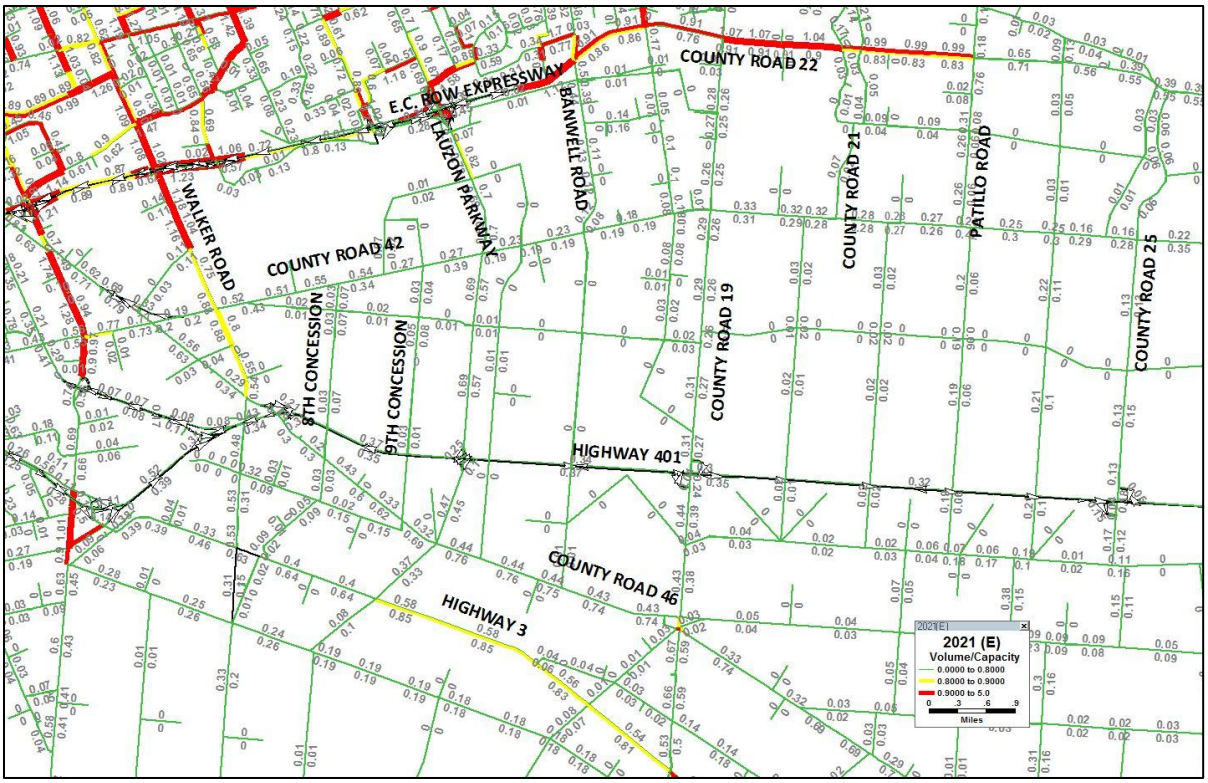


The analysis result confirms that widening of County Road 42 would reduce congestion and provide good level-of-service.

4.4.5 Modelling Scenario: 2021(E)

This scenario was assessed for 2021 travel demand with 2021 planned road network improvements. This scenario considered widening (4-lane) of Lauzon Parkway from E.C. Row Expressway to County Road 42, and further extension (4-lane) to Highway 3 with a new full interchange at Highway 401. This scenario considered County Road 42 widen from 2 lanes to 4 lanes of arterial capacity from Walker Road to County Road 19 (Manning Road). The modelling result for this scenario is presented in **Exhibit 13.**

Exhibit 13: 2021 Network Level-of-Service for Scenario 2021(E)



This scenario result indicates that with Lauzon Parkway widening to 4 lanes (from E.C. Row Expressway to County Road 42) and extension to Highway 3, widening of County Road 42 (from Walker Road to County Road 19 (Manning Road)) would provide good level-of-service in the Study Area. The widening requirement for County Road 42 is expected to be triggered in 2018 based on proposed population and employment growth.

These improvements would also reduce the congestion from adjacent links around the Study Area (e.g. Walker Road, County Road 19 (Manning Road) and E.C. Row Expressway).

By 2021, the projected growth in the Essex County would result in moderate level of congestion on Highway 3 (LOS 'D' with volume to capacity ratio between 0.81 and 0.90) and 'Very Congested' condition on County Road 22 (with volume to capacity ratio over 1.0).

4.4.6 2021 Network Requirements

The 2021 travel demand model result confirms the need for widening of County Road 42 for segment between Walker Road and County Road 19 (Manning Road).

The travel demand analysis for Scenario 2021 (E) indicates that with the proposed development in the Town of Lakeshore, the County Road 22 would be operating at or above the theoretical capacity, even after considering planned improvement on County Road 22 (proposed widening from 2 lanes to 4 lanes). The County of Essex staff informed that the further widening of County Road 22 is not feasible due to property constraints as identified under Environmental Assessment Study for County Road 22. The congestion on County Road 22 could result in some trips may divert from County Road 22 to County Road 42 as being a parallel route.

In order to assess the impact of traffic attracted on County Road 42 and resulting need for a lane widening on County Road 42, a screenline analysis was conducted for 2021 and 2031 planning horizons. For this analysis, the section of County Road 42 between County Road 19 (Manning Road) and County Road 25 (East Puce Road) was assumed as 2-lane corridor. The screenline analysis result for the 2021 planning horizon is presented in **Table 11.**

Table 11: 2021 Screenline Analysis for County Road 22 and County Road 42

Location	2021 Traffic Volume			# Lanes	Capacity/ lane	Total Capacity	Volume/Capacity Ratio		
	EB	WB	Total				EB	WB	Total
East of County Road 19 (Manning Road)									
CR 22	1639	1932	3571	2	900	1800	0.91	1.07	0.99
CR 42	307	322	629	1	900	900	0.34	0.37	0.35
TOTAL	***1946***	***2254***	***4200***			***2700***	***0.72***	***0.84***	***0.78***
West of County Road 21									
CR 22	1629	1866	3495	2	900	1800	0.91	1.04	0.97
CR 42	283	317	600	1	900	900	0.31	0.35	0.33
TOTAL	***1912***	***2183***	***4095***			***2700***	***0.71***	***0.81***	***0.76***
West of County Road 25 (East Puce Road)									
CR 22	996	706	1702	2	900	1800	0.55	0.39	0.47
CR 42	284	156	440	1	900	900	0.32	0.17	0.24
TOTAL	***1280***	***862***	***2142***			***2700***	***0.47***	***0.32***	***0.40***

For the 2021 traffic demand, the screenline analysis indicates that County Road 22 and County Road 42 (between County Road 19 (Manning Road) and County Road 25) are expected to operate with an acceptable level of service (i.e. with an overall volume to capacity ratio less than 0.9). The screenline analysis result indicates that County Road 42 with 2-lane arterial road capacity would be able to accommodate the additional traffic volume expected from County Road 22. Hence, for the 2021 planning horizon, the segment of County Road 42 between County Road 19 (Manning Road) and County Road 25 (East Puce Road) is not recommended for widening.

Based on the travel demand modelling analysis results and screenline analysis, following road network improvements for planning horizon of 2021 are recommended:

Lauzon Parkway:

- *From E.C. Row Expressway to County Road 42:* Widening from 2 lanes to 4 lanes of arterial (Class I) capacity (trigger volume: approximately 800 vph in peak direction);
- *From County Road 42 to Highway 401:* Southerly extension to Highway 401 with 4 lanes of arterial (Class I) capacity and a new full Interchange at Highway 401;
- *From Highway 401 to Highway 3:* Further extension to Highway 3 with 4 lanes of arterial (Class I) capacity.

County Road 42:

- *From Walker Road to County Road 19 (Manning Road):* Widening from 2 lanes to 4 lanes of arterial (Class II) capacity (trigger volume: approximately 700 vph in peak direction - around 2018);
- *From County Road 19 (Manning Road) to County Road 25 (East Puce Road):* 2-lanes of arterial (Class II) capacity without lane widening.

East-West Arterial: The new East-West Arterial would not be required by 2021, as the proposed development around this arterial is expected to begin around 2024.

4.5 2031 Travel Demand Forecast

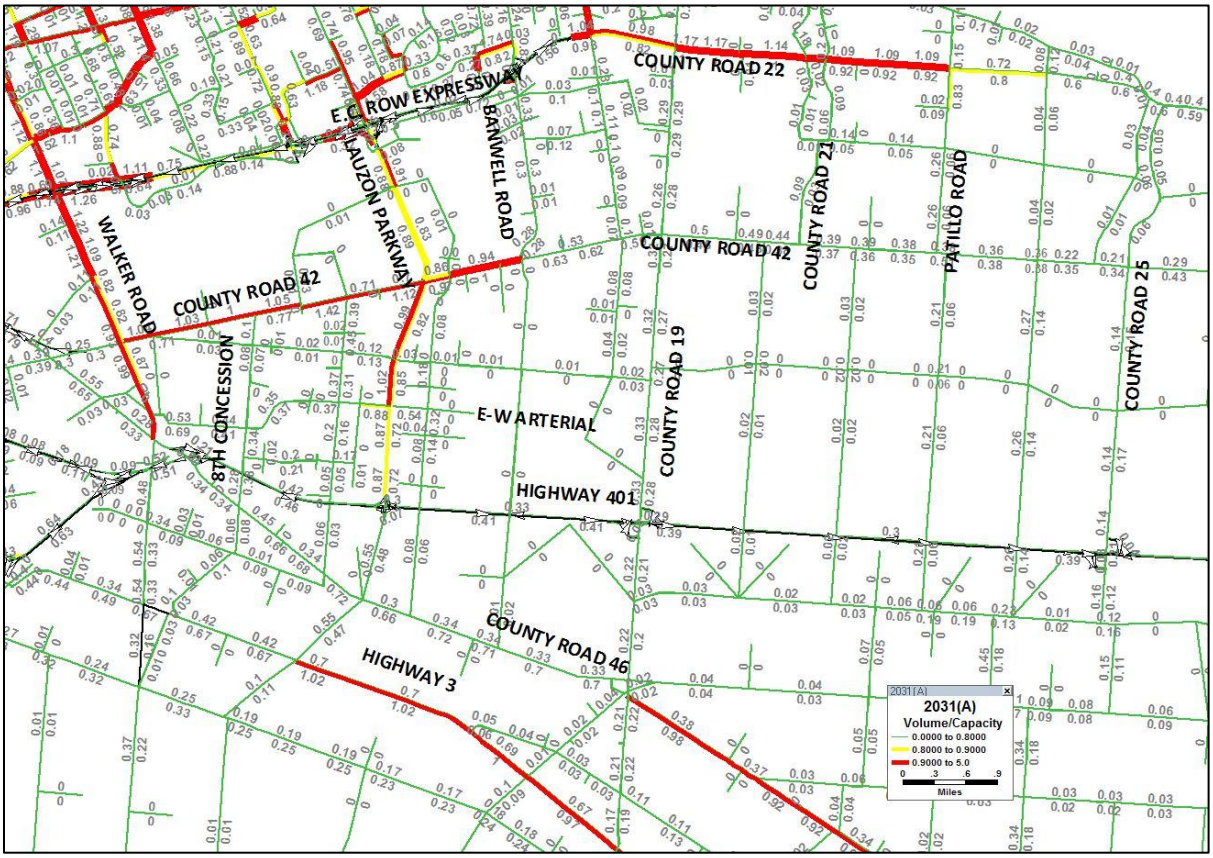
For 2031 travel demand, the following three scenarios were assessed with various network configurations to assess the road network improvement requirements in the Study Area. These scenarios assume a new East-West Arterial (2-lane) and new access road (2-lane) to the employment area by 2031:

1. **2031(A):** 2031 planned improvements (refer to **Exhibit 7)** without Lauzon Parkway (4-lane) and County Road 42 (2-lane) improvements for 2031.
2. **2031(B):** 2031 planned improvements without Lauzon Parkway improvements (considered 4-lane arterial capacity from E.C. Row Expressway to Highway 3, with full interchange at Highway 401) and with County Road 42 widening to 4 lanes arterial capacity from Walker Road to County Road 19 (Manning Road).
3. **2031(C):** 2031 planned improvements with Lauzon Parkway improvements include 6 lanes arterial capacity from E.C. Row Expressway to Highway 401, with 4 lanes of arterial capacity from Highway 401 to Highway 3 and a new full interchange at Highway 401. County Road 42 widening to 4 lanes arterial capacity from Walker Road to County Road 19 (Manning Road).

4.5.1 Modelling Scenario: 2031(A)

This scenario was assessed for 2031 travel demand with 2031 planned improvements (refer to **Exhibit 7)** without Lauzon Parkway and County Road 42 improvements, i.e. this scenario assumes Lauzon Parkway connects to Highway 3 with a new full interchange at Highway 401 with 4-lane arterial capacity only and without widening of County Road 42. The resulting level-of-service for the roadway network is presented in **Exhibit 14.**

Exhibit 14: 2031 Network Level-of-Service for Scenario 2031(A)

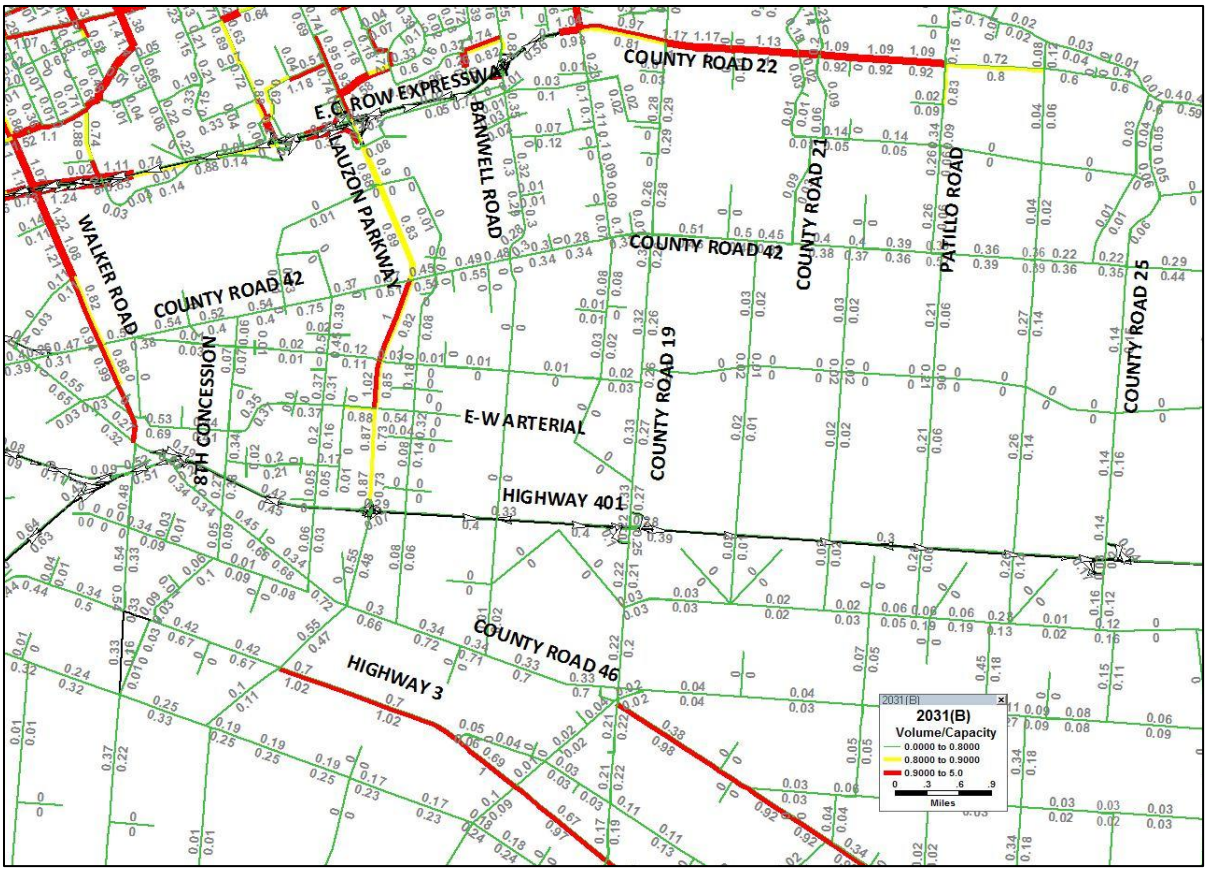


This analysis result indicates that Lauzon Parkway with 4-lane of arterial capacity and County Road 42 with 2-lane arterial capacity would result in congested condition in the Study Area.

4.5.2 Modelling Scenario: 2031(B)

This scenario was assessed for 2031 travel demand with 2031 planned improvements (refer to **Exhibit 7)** without Lauzon Parkway and with County Road 42 widening to 4 lanes from Walker Road to County Road 19 (Manning Road). Comparing this analysis results (refer to **Exhibit 15**) with the previous Scenario 2031(A) results, indicates that the 4 lanes of arterial capacity would be required on County Road 42 (from Walker Road to County Road 19 (Manning Road)) to operate at acceptable level-of-service.

Exhibit 15: 2031 Network Level-of-Service for Scenario 2031(B)



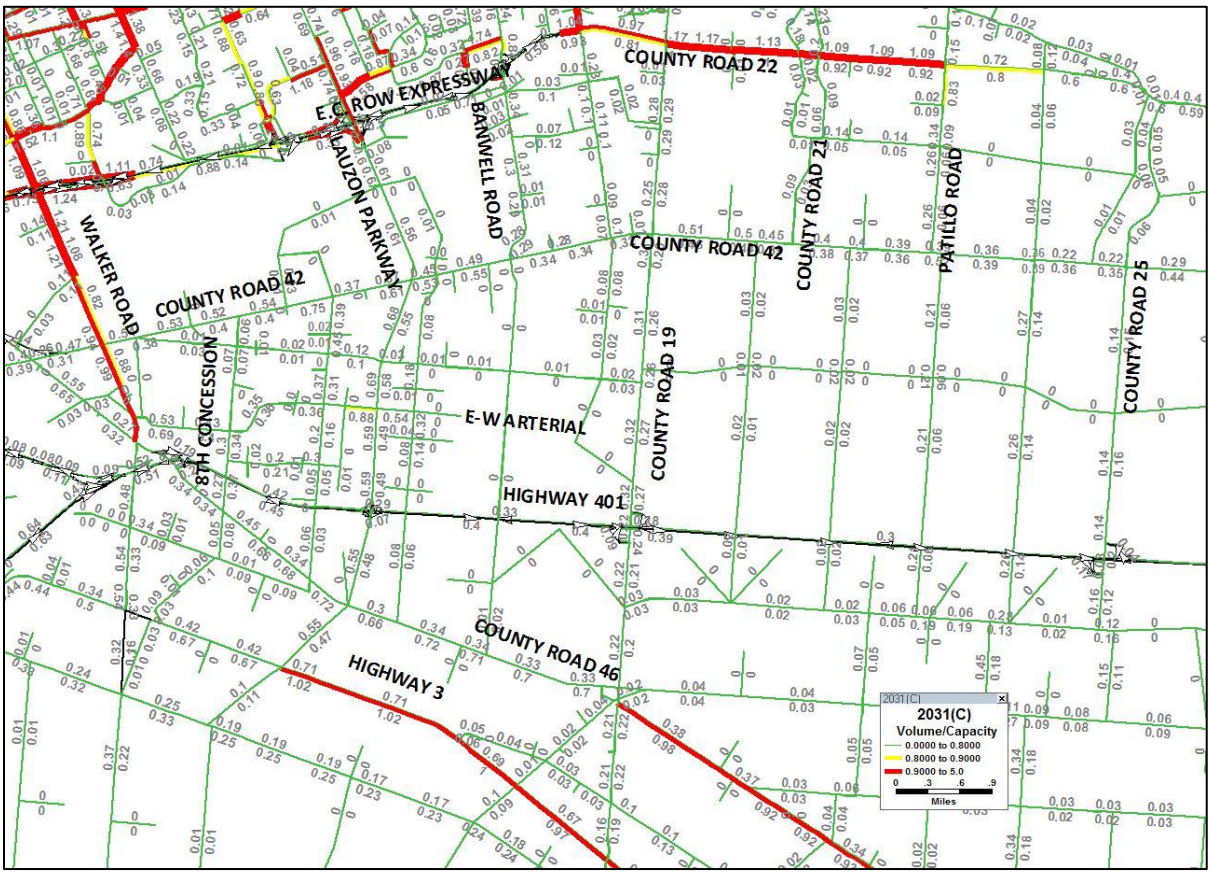
This improvement would not reduce the congestion on Lauzon Parkway which would be operating at capacity (v/c=1.0), specifically between E.C. Row Expressway to Highway 401 (at LOS E/F). This situation warrants the widening of Lauzon Parkway (6-lane) from E.C. Row Expressway to Highway 401. The 4-lane arterial (Class I) capacity would be sufficient south of Highway 401 to Highway 3 for Lauzon Parkway which would be operating at acceptable level-of-service (LOS 'C' at v/c=0.73).

4.5.3 Modelling Scenario: 2031(C)

This scenario was assessed for 2031 travel demand with 2031 planned road network improvements. This includes Lauzon Parkway with 6-lane arterial (Class I) capacity from E.C. Row Expressway to Highway 401, 4-lane arterial capacity from Highway 401 to Highway 3, and a full interchange at Highway 401.

This scenario assumes County Road 42 widen to 4 lanes from Walker Road to County Road 19 (Manning Road). The resulting network level-of-service for this scenario is presented in **Exhibit 16.**

Exhibit 16: 2031 Network Level-of-Service for Scenario 2031(C)



This result confirms the need for 6-lane arterial capacity on Lauzon Parkway from E.C. Row Expressway to Highway 401 and 4-lane arterial capacity of County Road 42 (from Walker Road to County Road 19 (Manning Road)) to provide good level-of-service in the Study Area. Based on the land use projections, the widening of Lauzon Parkway to 6-lane may require around 2025 and widening of County Road 42 to 4-lane (between Walker Road and County Road 19 (Manning Road)) by 2018.

The 2031 travel demand model result indicates that County Road 46 and Highway 3 would operate at capacity. However, the County Road 22 would result in very congested condition (LOS 'F').

4.5.4 2031 Network Requirements

There are major developments (residential and employments) are planned in the Advance/Patillo, Wallace Woods and River Ridge areas in the Town of Lakeshore. The travel demand model for 2031 planning horizon result shows that that County Road 22 would result in a 'Very Congested' condition due to the growth anticipated in the Town of Lakeshore.

As mentioned in Section 4.4.6, the heavy congestion on County Road 22 could result in trips diverting from County Road 22 to County Road 42 as being a parallel route. In order to assess the impact of traffic attracted on County Road 42 and resulting need for a lane widening on County Road 42, a screenline analysis for 2031 planning horizon is presented in **Table 12.** For the screenline analysis, the section of County Road 42 between County Road 19 (Manning Road) and County Road 25 (East Puce Road) was assumed as 2-lane arterial corridor.

Table 12: 2031 Screenline Analysis for County Road 22 and County Road 42

Location	2031 Traffic Volume			# Lanes	Capacity/ lane	Total Capacity	Volume/Capacity Ratio		
	EB	WB	Total				EB	WB	Total
East of County Road 19 (Manning Road)									
CR 22	1803	2108	3911	2	900	1800	1.00	1.17	1.09
CR 42	414	460	874	1	900	900	0.46	0.51	0.49
TOTAL	***2217***	***2568***	***4785***			***2700***	***0.82***	***0.95***	***0.89***
West of County Road 21									
CR 22	1793	2041	3834	2	900	1800	1.00	1.13	1.07
CR 42	390	447	837	1	900	900	0.43	0.50	0.47
TOTAL	***2183***	***2488***	***4671***			***2700***	***0.81***	***0.92***	***0.87***
West of County Road 25 (East Puce Road)									
CR 22	1079	727	1806	2	900	1800	0.60	0.40	0.50
CR 42	354	217	571	1	900	900	0.39	0.24	0.32
TOTAL	***1433***	***944***	***2377***			***2700***	***0.53***	***0.35***	***0.44***

The 2031 screenline analysis results indicate that overall volume to capacity ratio at East of County Road 19 (Manning Road) and West of County Road 21 screenlines result in volume to capacity over 0.90 (LOS 'E'). Therefore, it is recommended that the segment of County Road 42 between County Road 19 (Manning Road) and County Road 25 (East Puce Road) should be protected for 4-lane widening for 2031 traffic demand to accommodate the additional traffic expected from County Road 22.

Based on the travel demand modelling analysis results and screenline analysis, following road network improvements for planning horizon of 2031 are recommended:

Lauzon Parkway:

From E.C. Row Expressway to Highway 401, Lauzon Parkway would require additional widening from 4 lanes to 6 lanes of arterial (Class I) capacity. This widening requirement is expected around 2025.

County Road 42:

The segment from Walker Road to County Road 19 (Manning Road) would require widening from 2 lanes to 4 lanes with Class II arterial capacity (around 2018).

The segment from County Road 19 (Manning Road) to County Road 25 (East Puce Road) would require widening to 4 lanes by 2031. The need for widening of County Road 42 would be depending upon the pace of development in the Town of Lakeshore and traffic congestion on County Road 22.

East-West Arterial:

The primary needed for East-West Arterial is to serve the future land use in the East Pelton/Sandwich South Secondary area. Based on the primary information on proposed land use, development in the adjacent area around this corridor would start (as employment lands) in 2024; therefore this corridor would require to be built by 2023 with 2 lanes of arterial capacity from Walker Road to the east end of the Study Area.

4.6 Forecasted Travel Characteristics

4.6.1 Future Travel Characteristics and Patterns

The future development and proposed land used in the Windsor Annexed Area would expect to change the existing travel characteristics and pattern in the Study Area. The proposed land use includes proposed employment, residential and commercial land use. The proposed mixed land use with the high density would result in high self-containment trips (staying within study area). Therefore, it was assumed that about 30% of the Annexed Area trips would be self-containment in the trip distribution stage of future (2031) travel demand.

The resulting origin and destination travel patterns were generated from the 2031 origin-destination trip table. **Exhibit 17** and **Exhibit 18** show the anticipated future travel pattern for vehicles travelling to and from the Windsor Annexed Lands (inside which the study area is located). The City of Windsor will account for the largest number of trip productions and attractions (approximately 40% of future trips compared to 60% of existing). The next two highest areas for trip generation are Tecumseh, Lakeshore and LaSalle.

Exhibit 17: Future Travel Characteristics for the Transferred Lands Originated Traffic

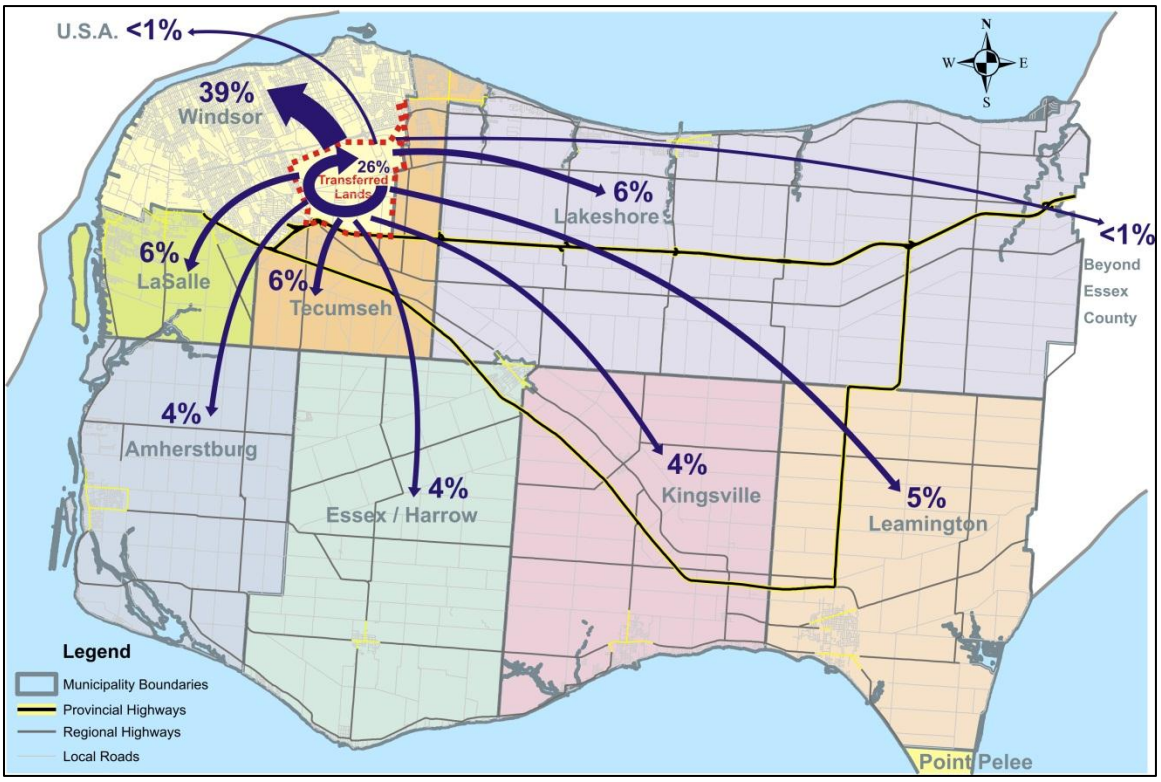
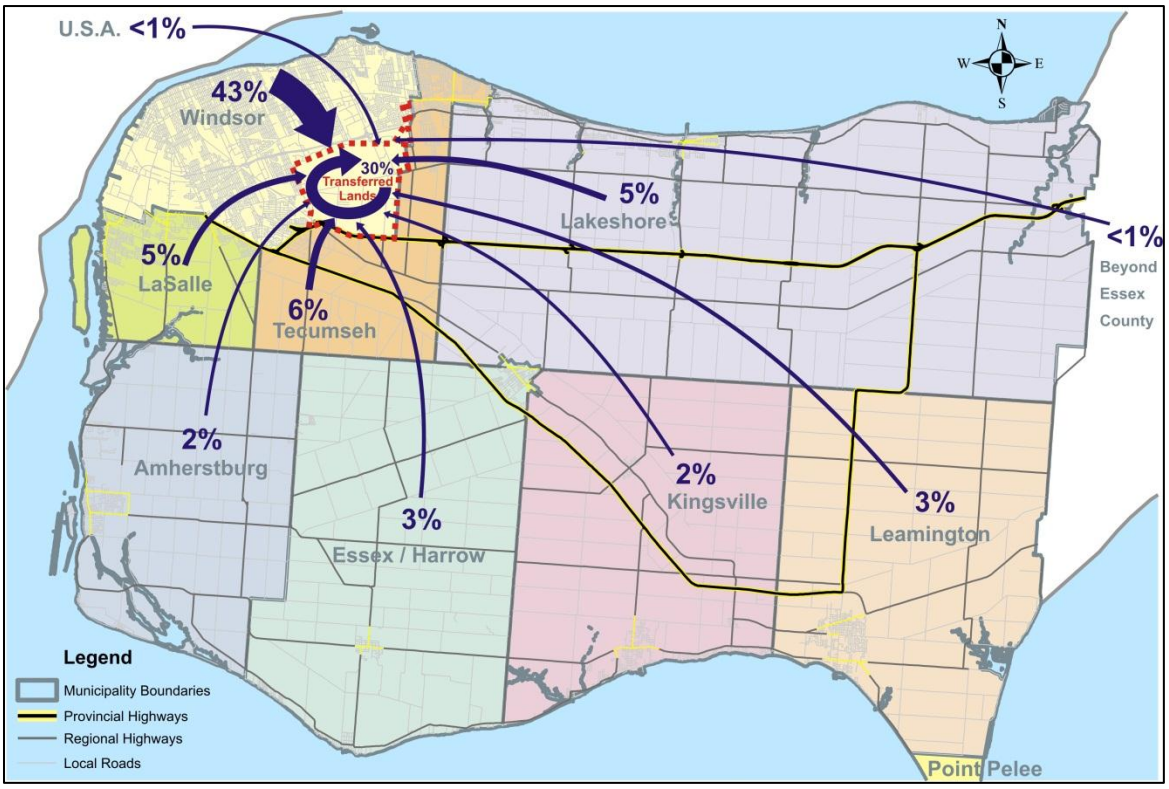


Exhibit 18: Future Travel Characteristics for the Transferred Lands Destined Traffic



4.6.2 Future Daily Traffic Flow Forecasts

The existing traffic conditions on Lauzon Parkway and County Road 42 are summarized in **Table 13**, in terms of Annual Average Daily Traffic (AADT) and the Design Hour Volume (DHV). The existing traffic volumes presented in **Table 13** were derived from traffic data provided by City and County and additional traffic survey conducted during this study. The existing AADT volume on Lauzon Parkway is approximately 16,500 vehicles and for County Road 42 ranges from 8,500 to 14,000 vehicles.

The afternoon peak hour traffic volume projected by the model was used to estimate the future AADT and DHV. The AADT and DHV forecast and resulting lane requirements (based on DHV) for future (2031) traffic volume is presented in **Table 14.** The AADT represents the average traffic volume on a given highway in both directions over a 24-hour period, for a particular year.

The DHV for a transportation facility represents the 30th highest hourly volume of the year, and typically represents an appropriate volume threshold to be used in the planning and design of new transportation facilities in rural areas. The future estimate of DHV also confirms the proposed lane arrangements for the Lauzon Parkway and County Road 42.

Table 13: Existing Year AADT and Design Hour Volume

	# lanes	PM Peak Hour Peak Direction	PM Peak Volume	Capacity Peak Direction (veh/hr/lane)	Volume / Capacity Ratio	Weekday AADT	PHF	DHV[3] (10%)	DHV [4] Peak Hour Peak Direction
Lauzon Parkway (North of County Road 42)	2-lanes	750	1500	900	0.83	16,500	9.1%	1,650	910
County Road 42 (West of Lauzon Pkwy)	2-lanes	770	1250	800	0.96	14,000	8.9%	1,400	770
County Road 42 (Lauzon Pkwy to County Road 19 (Manning Road))	2-lanes	600	1050	800	0.75	12,600	8.3%	1,260	700
County Road 42 (East of County Road 19 (Manning Road))	2-lanes	450	750	800	0.56	8,500	8.8%	850	470

[3] The DHV estimated based on 10% of AADT volume, which is conservative than existing observed peak hour volume (around 9%).
[4] Assuming peak direction volume: 55%

Table 14: 2031 AADT Forecast and Design Hour Volume

	2031 p.m. peak hour peak direction volume[5]	2031 p.m. peak hour volume both direction	PHF [6] (%)	2031 Projected AADT	DHV (10%)	DHV Peak Hour Peak Direction[7]	# of Lanes required (both directions)
Lauzon Parkway (Class I Arterial Capacity: 1000 vehicles/lane/direction)							
North of County Road 42	1,860	3,700	9.1%	40,700	4,070	2,240	6
County Road 42 to East-West Arterial	2,050	3,750	9.1%	41,300	4,130	2,280	6
East-West Arterial to Highway 401	1,900	3,440	9.1%	37,900	3,790	2,100	6
Highway 401 to Highway 3	1,500	2,535	9.1%	27,900	2,790	1,540	4
County Road 42 (Class II Arterial Capacity: 900 vehicles/lane/direction)							
West of Lauzon Parkway	1,100	1,700	8.9%	19,100	1,910	1,060	4
Lauzon Parkway to County Road 43 (Banwell Road)	930	1,700	8.9%	19,100	1,910	1,060	4
County Road 43 (Banwell Road) to County Road 19 (Manning Road)[8]	1,100	1,690	8.3%	20,400	2,040	1,120	4
East of County Road 19 (Manning Road)[8]	910	1,700	8.8%	19,300	1,930	1,060	4
East-West Arterial (Class II Arterial Capacity: 900 vehicles/lane/direction)	550	1,070	8.9%[9]	12,000	1,200	660	2

[5] Based on 2031 Travel Demand Model Results
[6] Based on existing observed peak hour volume to daily volume
[7] Assuming peak direction volume: 55%
[8] Assuming traffic diverted to CR 42 from CR 22, due to congestion on CR 22.
[9] Assuming similar PHF as CR 42 (section between Walker Road to Lauzon Parkway)

5. SUMMARY OF AREA TRANSPORTATION NEEDS

The 2021 road network improvement requirement includes:

Lauzon Parkway:

- *From E.C. Row Expressway to County Road 42*: Widening from 2 lanes to 4 lanes of arterial (Class I) capacity (trigger volume: approximately 800 vph in peak direction);
- *From County Road to Highway 401*: Southerly extension to Highway 401 with 4 lanes of arterial (Class I) capacity and a new full interchange at Highway 401;
- *From Highway 401 to Highway 3:* Further extension to Highway 3 with 4 lanes of arterial (Class I) capacity.

County Road 42:

- *From Walker Road to County Road 19 (Manning Road):* Widening from 2 lanes to 4 lanes of arterial (Class II) capacity (trigger volume: approximately 700 vph in peak direction, around year 2018)
- *From County Road 19 (Manning Road) to County Road 25 (East Puce Road):* 2-lanes of arterial (Class II) capacity without lane widening.

Addition improvement requirements by 2031:

Lauzon Parkway:

- *From E.C. Row Expressway to Highway 401*: Widening from 4 lanes to 6 lanes of arterial (Class I) capacity (trigger volume approximately 1600 vph in peak direction, around 2025);

County Road 42:

- *From County Road 19 (Manning Road) to County Road 25 (East Puce Road):* Widening from 2 lanes to 4 lanes of arterial (Class II) capacity.
- The need and timing for widening for this segment would be depending upon the pace of development in the Town of Lakeshore and traffic congestion on County Road 22 between 2021 and 2031. Hence, the County of Essex is recommended to review periodically the traffic operations on County Road 42 after 2021 (trigger volume approximately 700 vph in peak direction).

East-West Arterial:

- As the proposed development around this arterial is expected only to begin around 2024, this corridor would require to be built by 2023. This corridor would require 2 lanes of arterial capacity from Walker Road to the east end of the study area.
- Beyond 2031, the E-W Arterial would require to be widened from 2 to 4 lanes when volume reaches approximately 700 vph in peak direction.