Appendix E

Transportation Report

DILLON CONSULTING

CITY OF WINDSOR

Sandwich South Master Servicing Plan

Transportation Study

May 2023 – 19-9817

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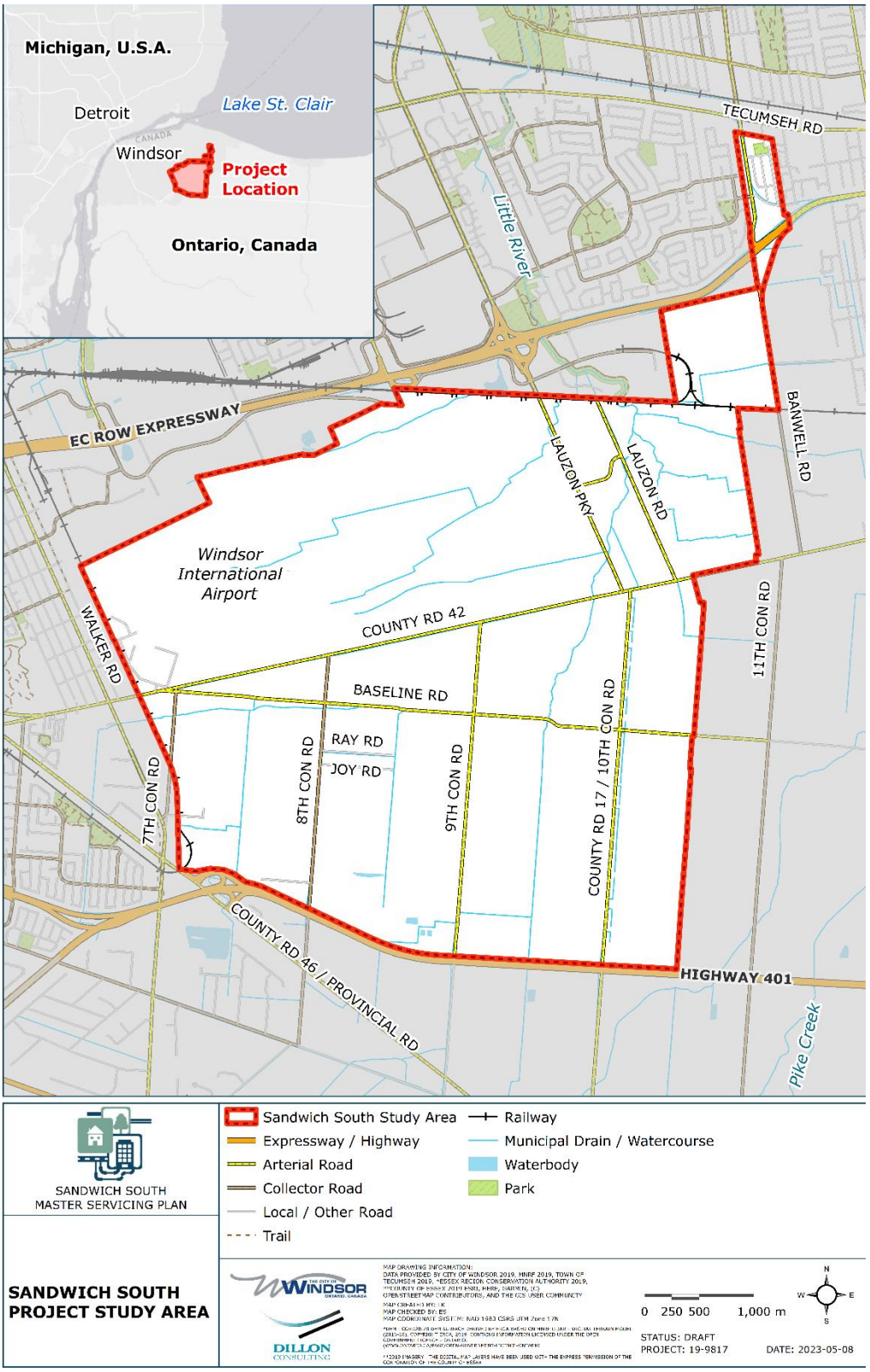
1.0 Purpose

This report documents the analysis and recommendations related to transportation in the Sandwich South Master Servicing Plan (SSMSP). It identifies the improvements and modifications to the transportation network that will be needed to accommodate development in Sandwich South beyond what has been planned in previous studies, secondary plans, and Environmental Assessments. This report is intended as an appendix to the Sandwich South Master Servicing Plan.

Figure 1 is a map of the study area.

Figure 1: Study Area Map



2.0 Existing Transportation Conditions

2.1 Road Network and Traffic Control

Within the study area, Highway 401 is a six-lane access-controlled expressway with a 100 kph speed limit. Highway 401 runs along the southern boundary of the study area and has interchanges at Provincial Road east of Walker Road and Manning Road east of the study area.

Table 1 describes the existing City of Windsor roads within the study area. **Figure 3** illustrates the existing intersection controls and lane arrangements within the study area.

Table 1: City of Windsor Existing Roads Within the Study Area

Road Name	Class	Posted Speed (km/hr)	Lanes	Active Transportation
EC Row Expressway	Expressway	100	4	none
Lauzon Parkway	Class 1 Arterial	70	2	none
Walker Road	Class 2 Arterial	60	5	Sidewalks on both sides within study area; MUP west of study area
Provincial Road	Class 2 Arterial	60	2/4*	none
County Road 42	Class 2 Arterial	50	2	none
Baseline Road	Class 2 Arterial	50	2	none
9th Concession	Class 2 Arterial	60	2	none
10th Concession/CR 17	Class 2 Arterial	60	2	none
Banwell Road	Class 2 Arterial	60	2	None; sidewalk and MUP north of study area
7th Concession	Class 1 Collector	50	2	none
8th Concession	Class 1 Collector	60/40**	2	none

Notes:
* 2 lanes west of Walker Road; 4 lanes between Walker Road and Highway 401
**60 km/hr CR42 to Baseline Road; 40km/hr south of Baseline Road

2.1.1 Traffic Volumes

Existing traffic volumes were collected from a variety of sources and were used for forecasting future traffic demands (see **Section 4.0**).

- Where available, existing traffic volumes were provided by the City of Windsor. The majority of the traffic data was collected during 2016 to 2019; however, one traffic count dates back to 2015.
- Data from other sources including the Lauzon Parkway Improvements EA were verified using the traffic volumes provided by the City of Windsor.
- Engineering judgement was used to estimate volumes where no data was available based on available data at nearby intersections.
- Available data from past years was adjusted upwards by 1% annually to account for background traffic growth.

Table 2 summarizes the traffic data sources; OTI refers to a company hired to collect the data. Mid-block means traffic data was collected between intersections and is for one or two directions only; TMC means "Turning movement count" at an intersection for all turning movements. Peak periods refer to AM, mid-day, and PM commuter peak times as opposed to "all day" meaning a continuous 24-hour period.

Figure 2 illustrates the Existing AM and PM peak hour link traffic volumes. **Figure 3** illustrates the existing lane arrangements and traffic control.

Table 2: Traffic Data Sources

Road or Intersection	Source	Type of data collected	Year	Time of Day
8th Con., 401 to Baseline	City	Mid-block	2016	All day
9th Con. at 401 to Baseline	City	Mid-block	2015	All day
CR 17. at 401 to Baseline	City	Mid-block	2016	All day
7th Con. at Baseline and CR42	City	Mid-block	2016	All day
Walker Rd/7th Con	City	Mid-block	Oct. 2019	All day
CR 42 / 8th Con.	City	Mid-block	June 2018	All day
Banwell Rd./E.C.Row	OTI	TMC	April 2017	Peak periods
CR 42/ Lauzon Pkwy (west leg)	OTI	TMC	Oct. 2017	Peak periods
Banwell Rd./Mulberry Dr-Wildwood Dr.	OTI	TMC	May 2017	Peak periods
CR 42/CR 17	OTI	TMC	April 2018	Peak periods

Figure 2: Existing Link Volumes

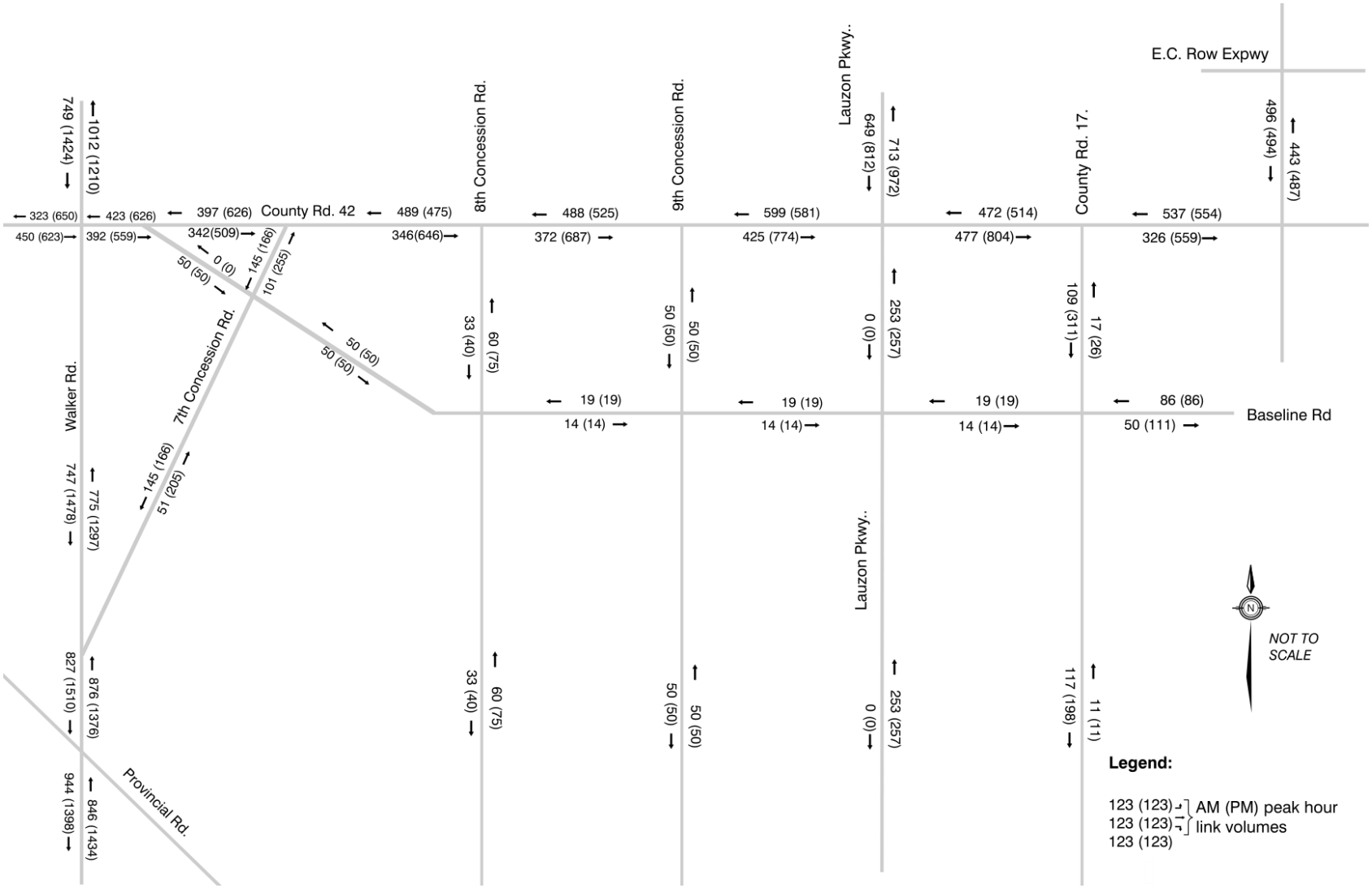
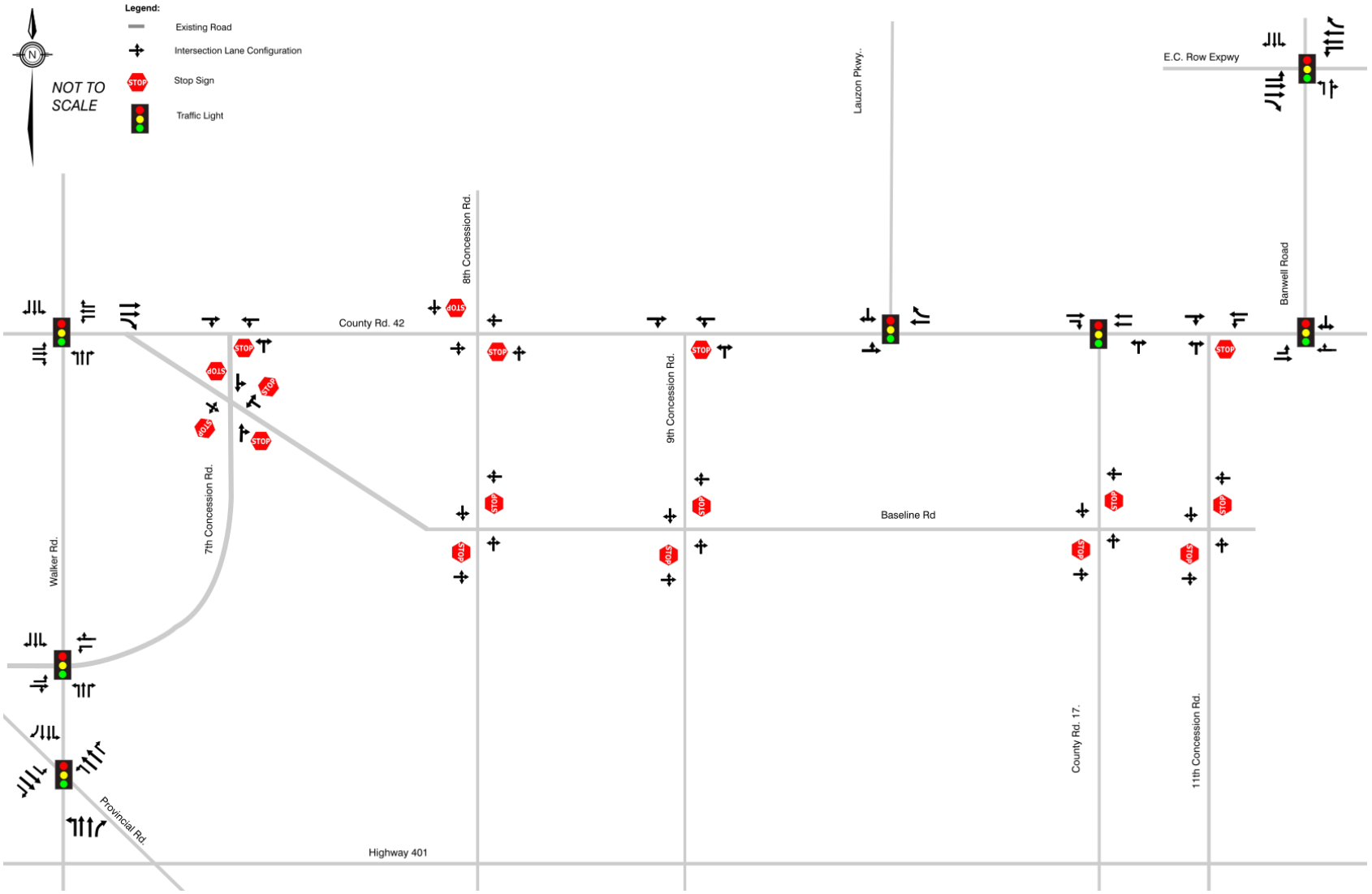


Figure 3: Existing Lane Arrangements and Traffic Control



2.2 Transit

Today, the study area has limited transit service. Transit Windsor Routes 7 and 8 presently serve the area.

Route 7 services Walker Road on the boundary of the study area every 30 minutes on weekdays and every 50 minutes on Saturday, with service to Hotel-Dieu Grace Healthcare Terminal, St. Clair College, and Devonshire Mall.

Route 8 offers service to Windsor International Airport in the study area every 30 to 40 minutes on weekdays with service to Downtown Windsor. Route 8 also has 40 to 70-minute frequency on Saturday and 70-minute frequency on Sunday/Holidays; however, it does not stop at the airport on weekends or on Holidays.

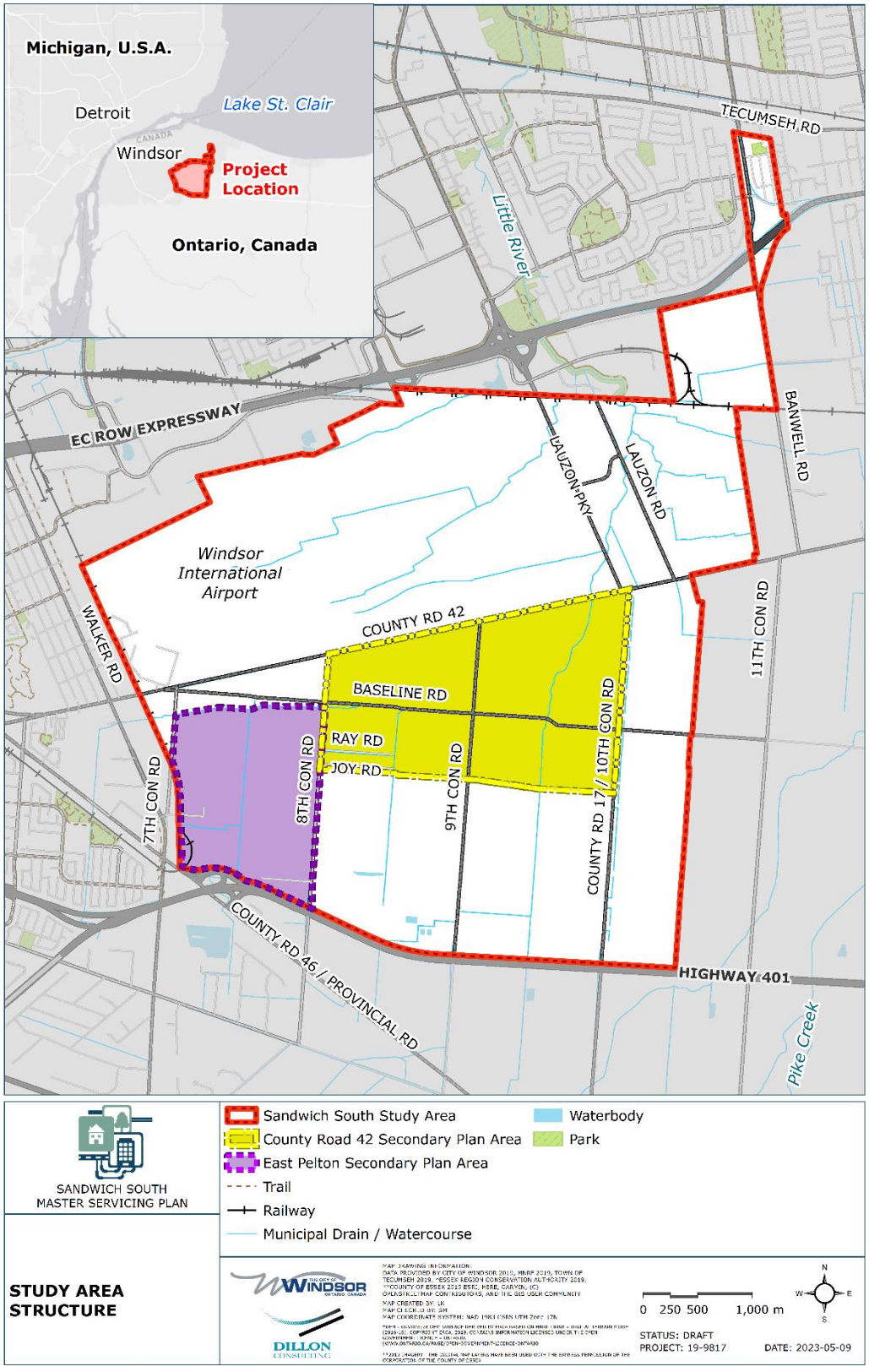
3.0 Planned Conditions

The study area is split into three distinct areas:

1. The East Pelton Secondary Plan Area;
2. The County Road 42 Secondary Plan Area; and,
3. Other lands outside the two secondary plan areas.

Figure 4 illustrates the study area and secondary plan areas within the study area**.**

Figure 4: Study Area and Secondary Plan Areas



3.1 Planning Studies

3.1.1 East Pelton Secondary Plan Area

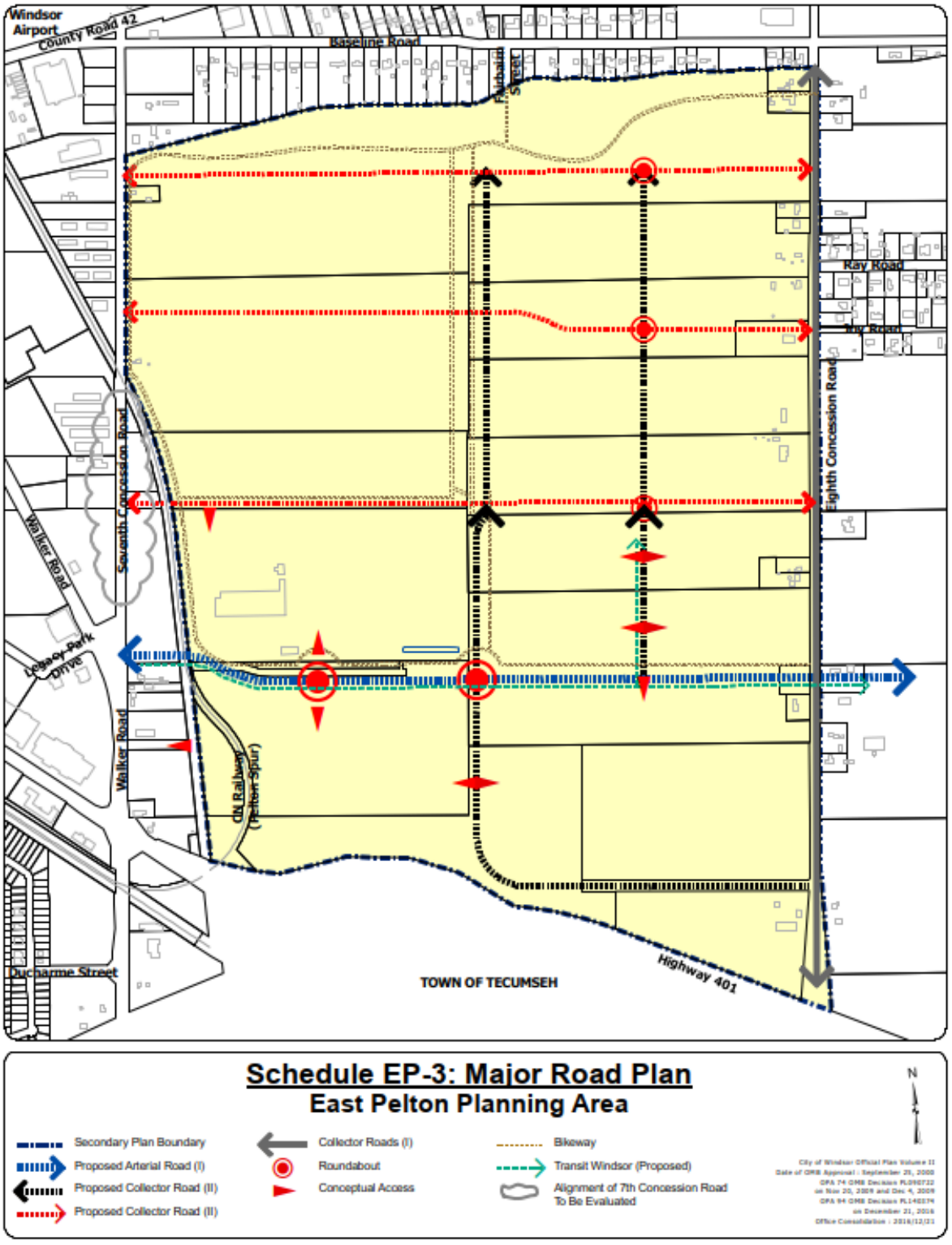
East Pelton forms the western portion of the study area. It consists roughly of the area north of Highway 401, east of 7th Concession Road, south of Baseline Road, and west of 8th Concession Road.

East Pelton is currently made up of primarily agricultural lands. However, a number of low to medium density residential land uses are planned for the North end of the study area, while commercial, institutional, and mixed-use areas are planned in the south end of the study area.

Major roads are currently two-lane rural cross-sections without active transportation facilities, with the exception of Walker Road, which has a five-lane urban cross-section. To accommodate the growth in the study area, a new two-lane East-West Arterial is planned to traverse the East Pelton area, connecting Walker Road to County Rd 17, as per the 2014 Lauzon Parkway EA.

Figure 5 illustrates the East Pelton Planning Area Road Network which identifies proposed Arterial and Collector roadways.

Figure 5: East Pelton Planning Area Road Network



Source: East Pelton Secondary Plan

3.1.2 County Road 42 Secondary Plan Area

The County Road 42 Secondary Plan Area is the area south of County Road 42, west of County Road 17, east of 8th Concession Road, and extends roughly 600 metres south of Baseline Road on the south end. The Secondary Plan was developed as part of the Background Report completed for the City of Windsor by MHCB in January 2018. Subsequent to that report, the road plan was refined. The updated plan was adopted under By-Law No. 131-2018 approved on September 17, 2018.

Changes to the road network were related to the alignment of proposed roadways and do not require modifications to the transportation analysis included herein. The final road network plan was used in the development of the functional design of the proposed municipal servicing for the East Pelton and Country Road 42 secondary plan areas as detailed in the Municipal Servicing Functional Design Report.

Today, this area is made up mostly of agricultural areas. However, a significant amount of low-density residential areas is planned for the south portion of the study area in addition to business parks, major institutional, and mixed-use areas in the north end.

Major roads in the County Road 42 Secondary Plan area are currently two-lane rural cross sections without active transportation facilities. Lauzon Parkway will be extended south from County Road 42 to south of the study area as a four-lane Class I arterial with the eventual expansion to six lanes.

Figure 6 illustrates the planned road network and land use for the County Road 42 Secondary Plan Area.

3.1.3 Draft Sandwich South Secondary Plan

From roughly 2012-2014, the City of Windsor underwent the process of creating a secondary plan for the Sandwich South area. Note, however, that the study area is not the same as that in this study. The secondary plan was never completed or adopted into the Official Plan; however, land use and transportation schedules were created.

Figure 7 illustrates the draft Sandwich South Secondary Plan road network and land uses.

Figure 6: County Road 42 Secondary Plan Area Planned Road Network

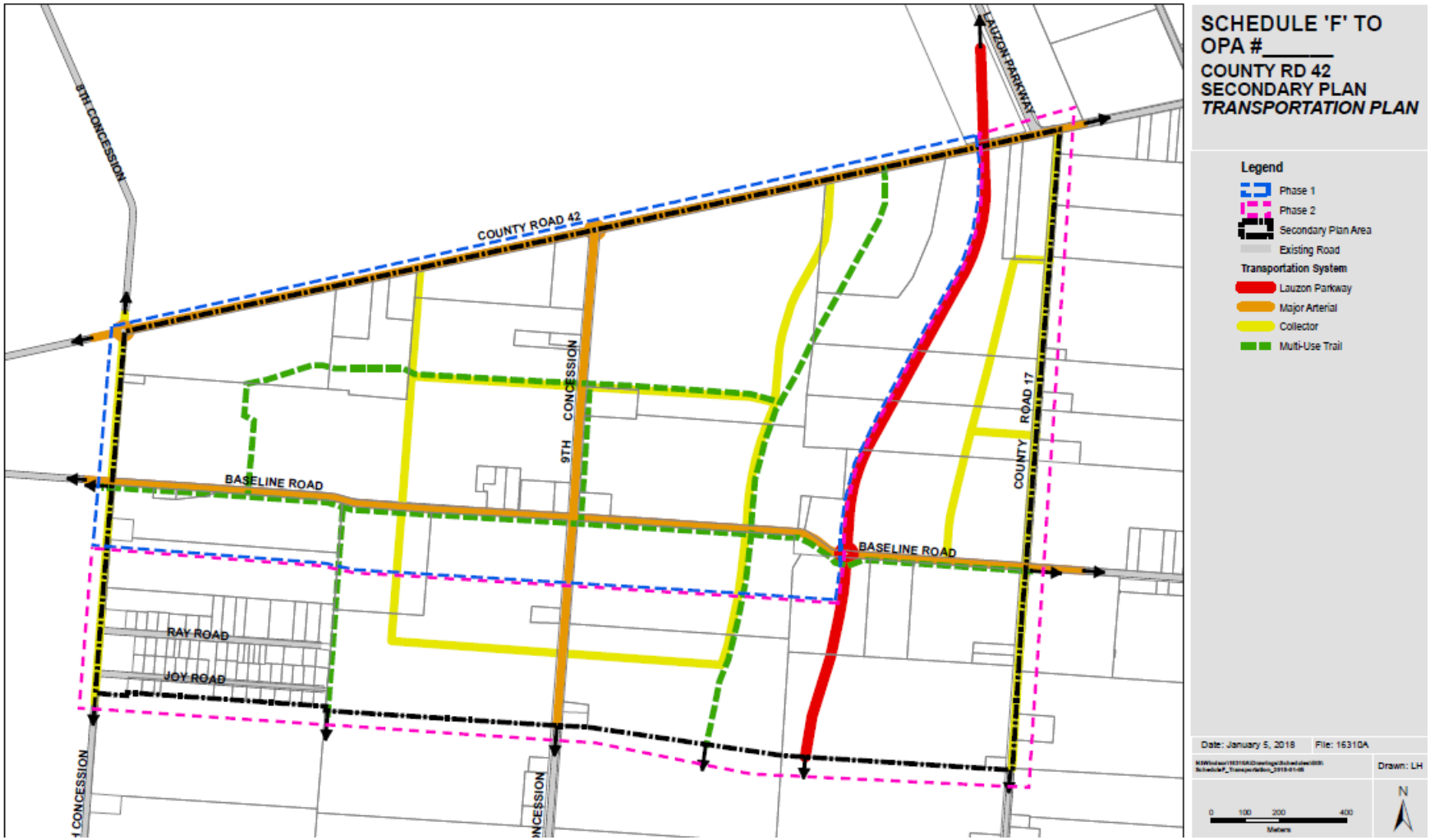
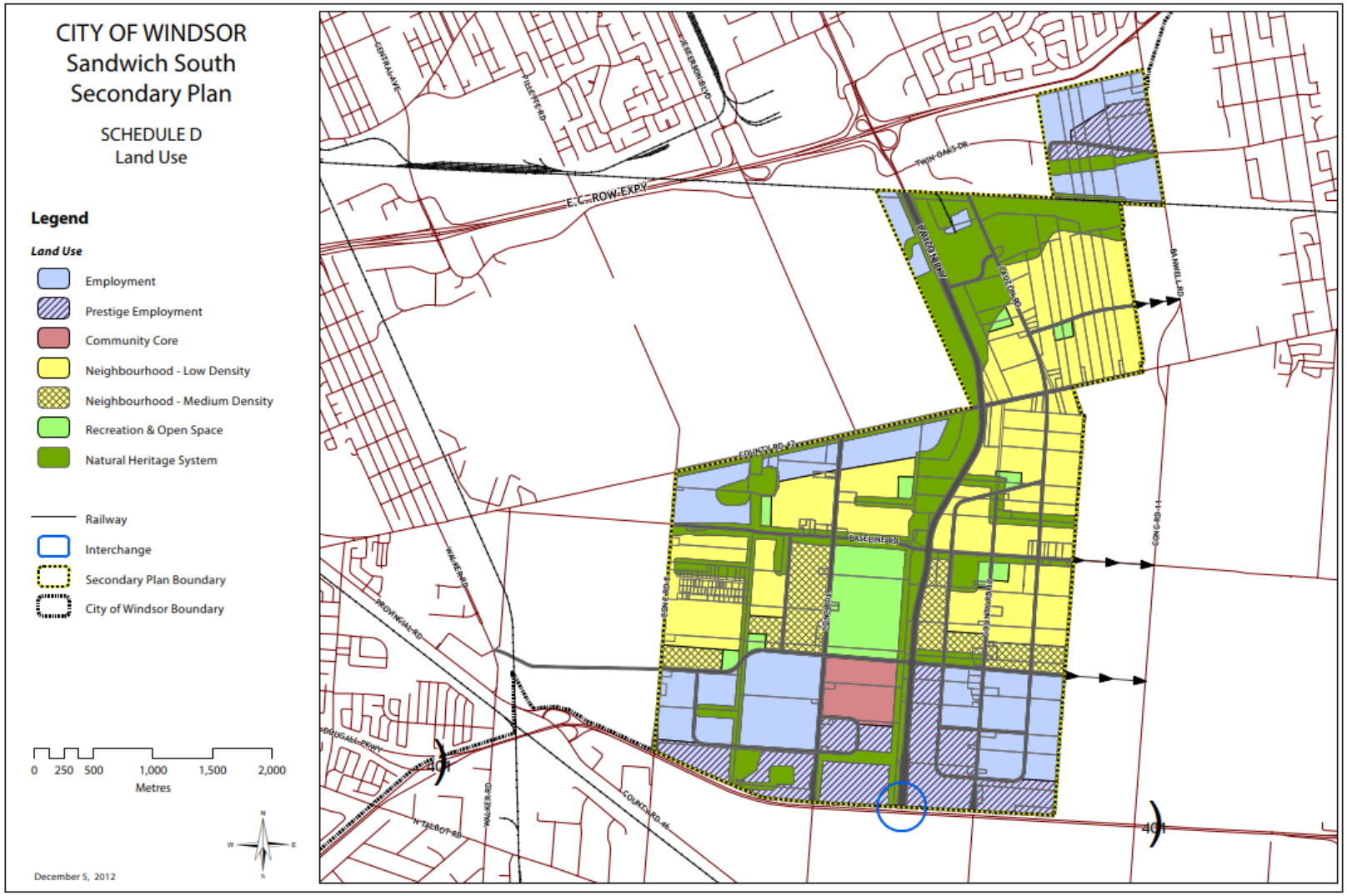


Figure 7: Draft Sandwich South Secondary Plan Land Use



3.2 Transportation Corridor Studies

3.2.1 Lauzon Parkway Environmental Assessment (2014)

This study examined the transportation requirements of several corridors within the Sandwich South area including Lauzon Parkway, County Road 42, and a future East-West Arterial north of Highway 401 and south of Baseline Road. The study included forecasting of the future traffic demands based on the projected 2031 population.

Table 3 summarizes the Lauzon Parkway EA Road Network improvements, and **Figure 8** illustrates these improvements.

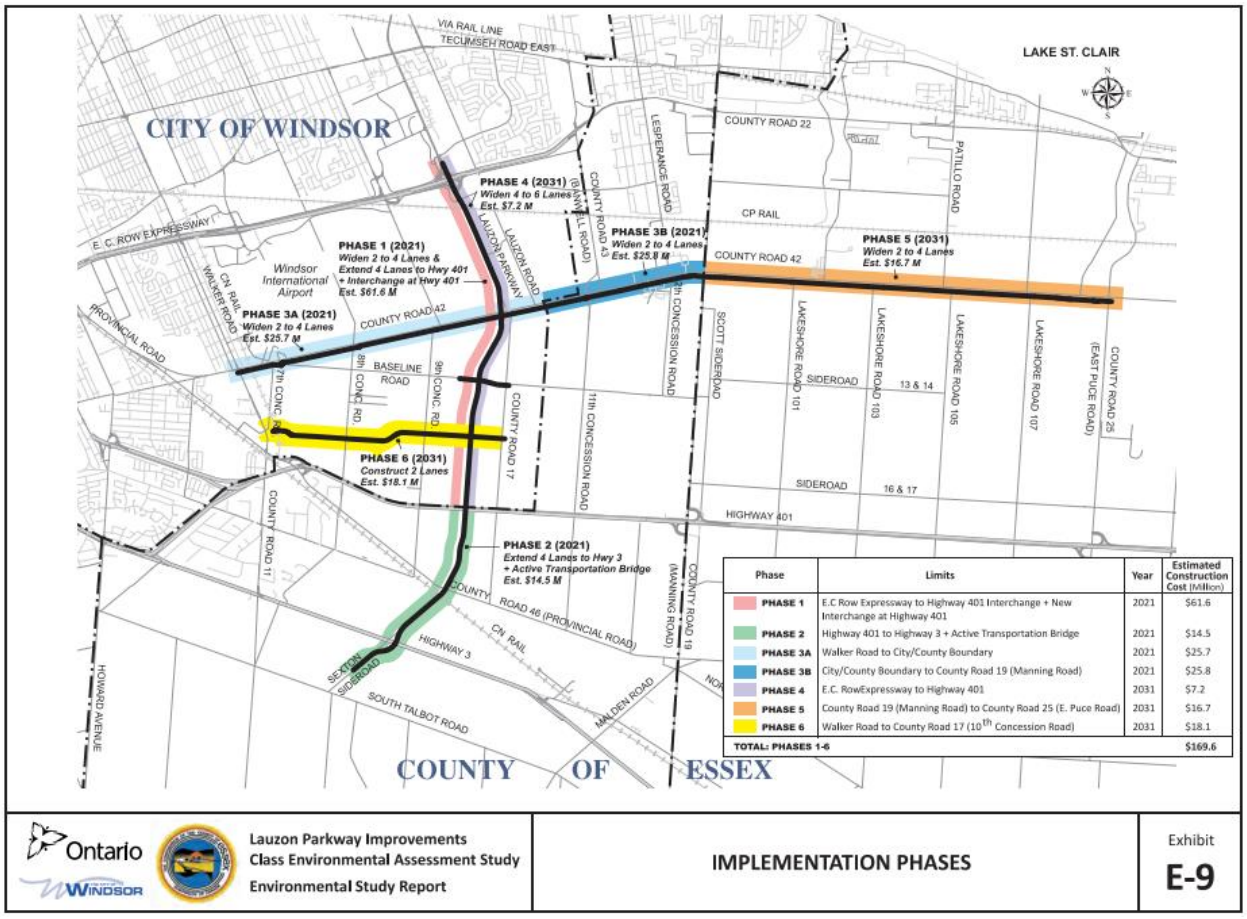
Table 3: Lauzon Parkway EA Road Network Improvements

Phase	Road Improvements
Phase 1 & 4	Extension and widening of Lauzon Parkway from 2 to 4 lanes from E.C. Row Expressway to Highway 401 (included extension from County Road 42 to Highway 401) with eventual widening to 6 lanes.
Phase 2	Extension of 4-lane Lauzon Parkway from Highway 401 to south of Highway 3.
Phase 3	Widening of County Road 42 from 2 to 4 lanes between Walker Road and Manning Road.
Phase 5	Widening of County Road 42 from 2 to 4 lanes from Manning Road to County Road 25.
Phase 6	Construction of a 2-lane East-West Arterial from Walker Road to County Road 17 that will eventually be expanded to 4 lanes.

This study secured approvals for several other network modifications that are relevant to network level planning for the South Sandwich study area, including:

1. The intersection of County Road 17 (Concession 10) / Country Road 42 will be right-in-right-out, due to the proximity of Country Road 17 to the Lauzon Parkway;
2. The Concession Road 7 / East-West Arterial intersection will be right-in-right-out, due to the proximity of the Walker Road / East-West Arterial intersection; and,
3. A roundabout will be constructed at the intersection of Baseline Road/ County Road 42/ 7th Concession that will replace the intersections on Country Road 42 at Baseline Road and 7th Concession.

Figure 8: Lauzon Parkway Environmental Assessment Implementation Phases



Source: Lauzon Parkway EA (2014)

3.2.2 Banwell Road Environmental Assessment (Tecumseh Road East to CP Railway Tracks) (2016)

The Banwell Road ESR recommended widening Banwell Road to a four-lane cross-section from Tecumseh Road East to the CPR tracks, while protecting right of way for six lanes in the future. Three new roads/ extensions of existing roads (Gouin Street, Maisonneuve Street, and Intersection Road) were proposed between E.C. Row Expressway and the CPR tracks and are shown in **Figure 9.**

The Banwell Road EA also identifies a number of intersections with minor roads and driveways serving future development/vacant lands in the City of Windsor and the Town of Tecumseh.

Figure 9: Banwell Road EA (2016) Road Network

Source: Banwell Road ESR, Exhibit 3-13, 2034 Preferred Configuration

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

This study was prepared as part of the Schedule C Municipal Class EA process to address capacity and operating deficiencies resulting from anticipated growth. A four-lane urban cross-section on Banwell Road was recommended, as well as the elimination of the "jog" from Banwell Road to County Road 43 at County Road 42. Therefore, Banwell Road and County Road 43 are planned to be one continuous corridor in the future.

3.2.4 Other

The following road improvements were also included in the analysis based on the recommendations from previously completed studies. These are outside of the study area, although they could affect study area traffic.

- E. C. Row Expressway/CR 22 & Lesperance Road Partial Interchange to/from west – Direct WB On-ramp/ Eastbound Button Hook Off-ramp (Tecumseh Hamlet Study).
- County Road 22 & Manning Road/CR 19 Interchange (Manning Road EA).
- Widen Manning Road/CR 19 (Manning Road EA): 1 lane per direction to 2 lanes per direction from CR 22 to Highway 3.
- Widen Provincial Road/CR 46 (Tecumseh Industrial Lands Assessment): 1 lane per direction to 2 lanes per direction from Walker Road to Manning Road/CR 19.

3.3 Transportation Network Studies/Master Plans

3.3.1 "More Than Transit" Transit Master Plan (2019)

Transit Windsor's most recent Master Plan outlined the strategy that will guide Transit Windsor over the next decade. The County Road 42 Secondary Plan Area is planned to be served with an alternative service delivery model such as on-demand transit. The plan notes that this service could be upgraded to a fixed route if ridership exceeds 15 passengers per hour.

The plan does not account for development in the other parts of the study area, including East Pelton. While some routes will serve the study area via County Road 42, there is limited service planned for Sandwich South. **Figure 10** shows the planned transit network.

3.3.2 "Walk Wheel Windsor" Active Transportation Master Plan (2019)

The Active Transportation Master Plan guides investments in active transportation over the next 20 years in the City of Windsor.

The plan includes "low priority" sidewalk improvements on most existing streets within the study area. "Low priority" cycling facilities are also planned for County Road 42, County Road 17, Lauzon Parkway, the future East-West Arterial (from the Lauzon Parkway Improvements EA), and Banwell Road.

As the area is built-out, it is anticipated that the priority would increase since the scoring criteria used to determine priority considers the presence of neighbourhoods and pedestrian generators.

Figure 11 and **Figure 12** illustrate the pedestrian network and cycling network prioritization results (major streets) identified in the Plan.

3.4 Summary

3.4.1 Planned Transit Network

Figure 10 illustrates the planned transit network from the 2019 *More Than Transit* Transit Master Plan.

3.4.2 Planned Active Transportation Network

Figure 11 and **Figure 12**, respectively, illustrate the proposed cycling and pedestrian priority areas from the *Walk Wheel* Windsor Active Transportation Plan.

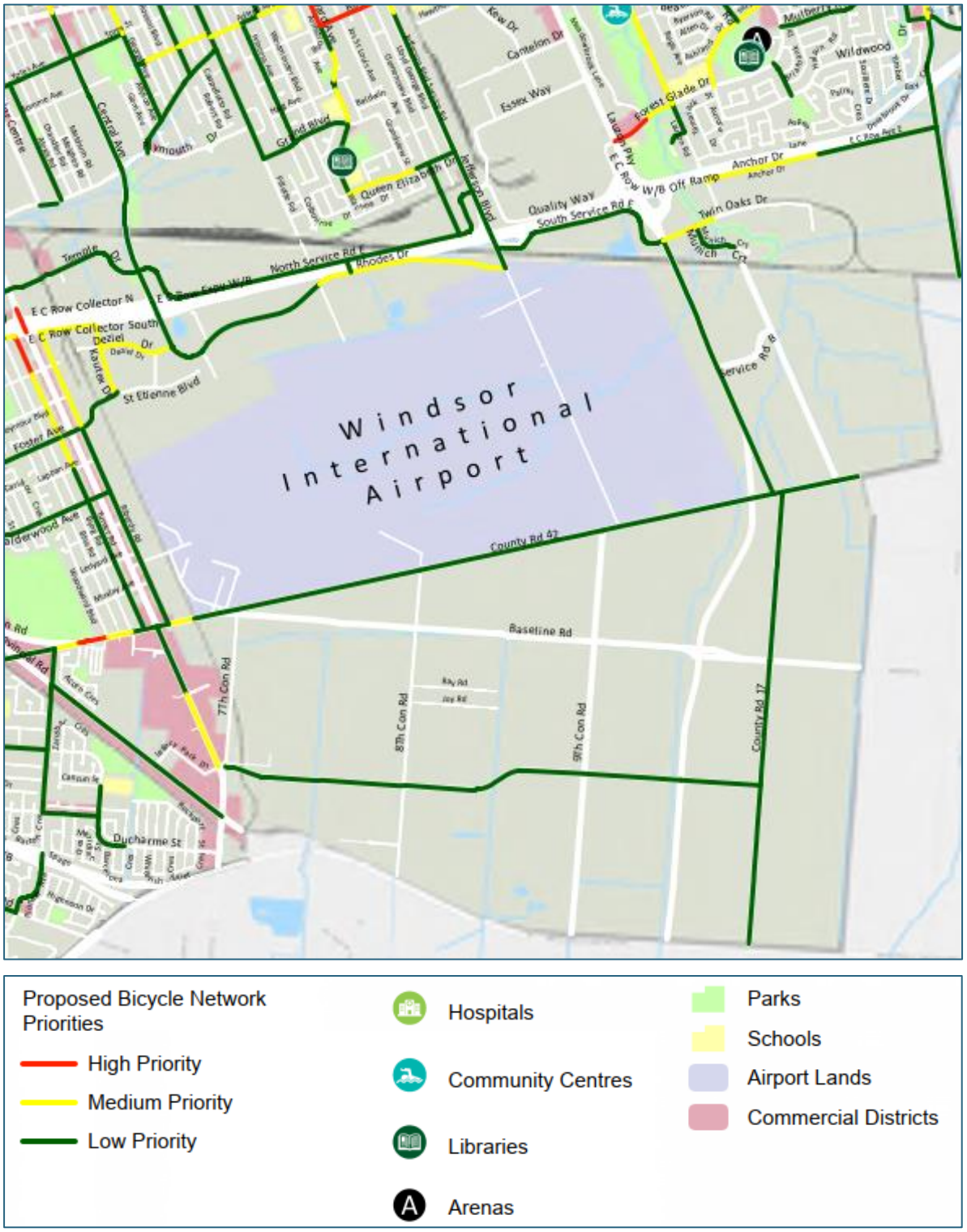
3.4.3 Planned Road Network

Figure 13 illustrates the planned road network; it reflects the assumptions of the Lauzon Parkway EA (2014), the East Pelton Secondary Plan, and the County Road 42 Secondary Plan, and the Draft Sandwich South Secondary Plan.

Figure 10: Planned Transit Network

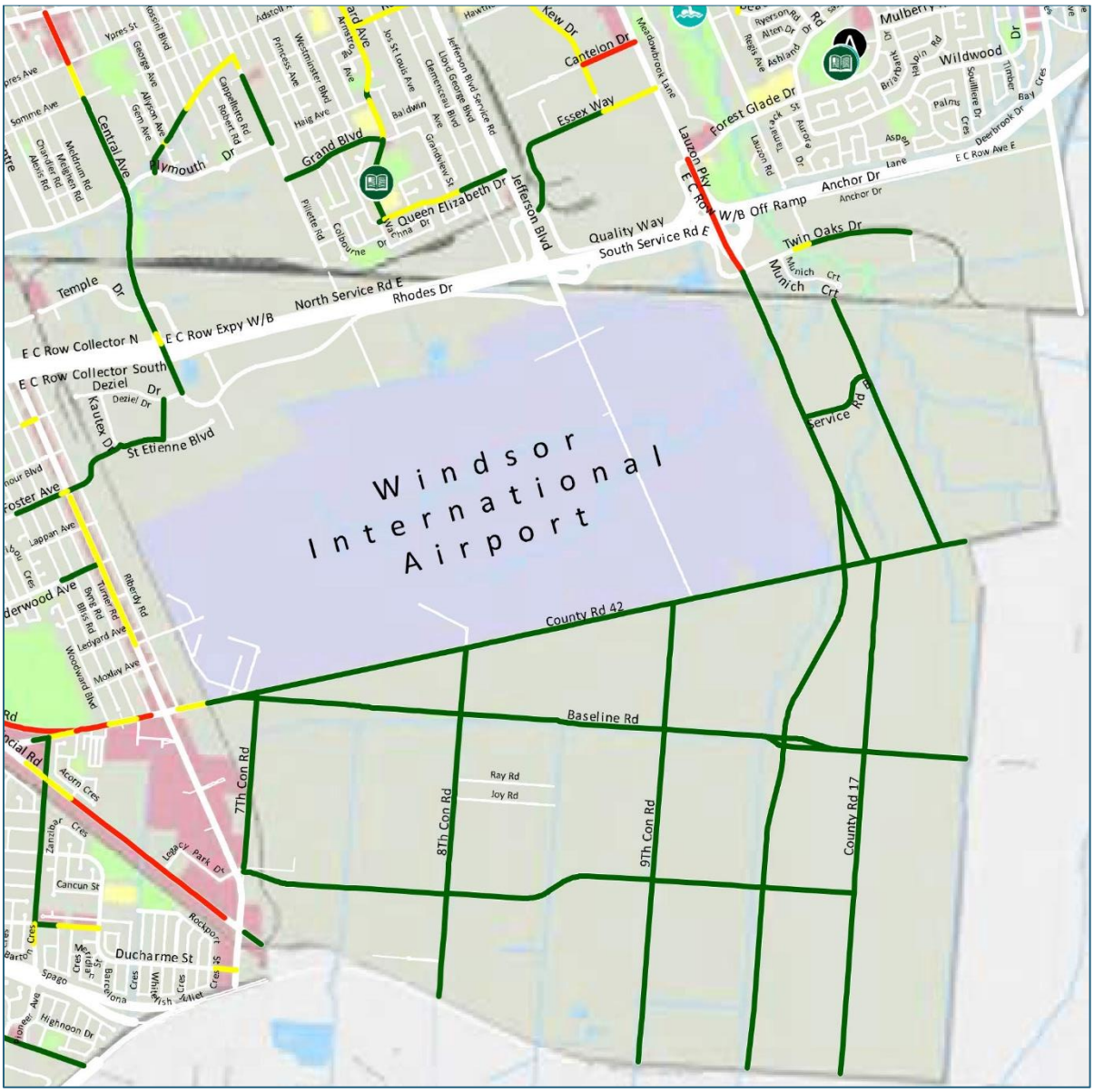
Source: Transit Windsor Master Plan (2019)

Figure 11: Proposed Bicycle Network Priorities



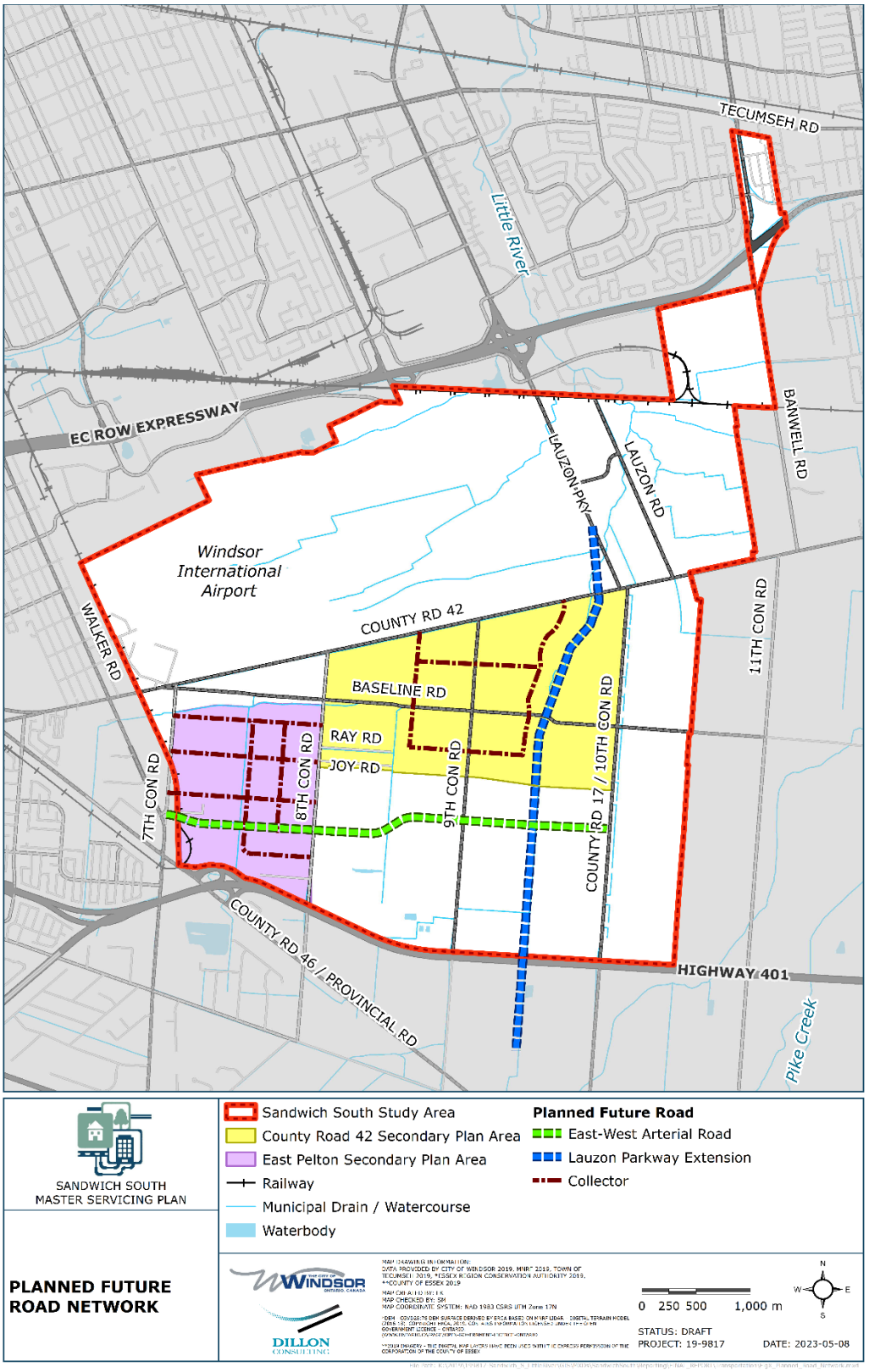
Source: Windsor Active Transportation Master Plan

Figure 12: Proposed Pedestrian Network Priorities



Source: Windsor Active Transportation Master Plan

Figure 13: Planned Road Network



4.0 Future Transportation Demands

Future transportation demands were determined by forecasting future site demands for the Sandwich South development and then adding transportation demands from background developments.

4.1 Sandwich South Transportation Demands

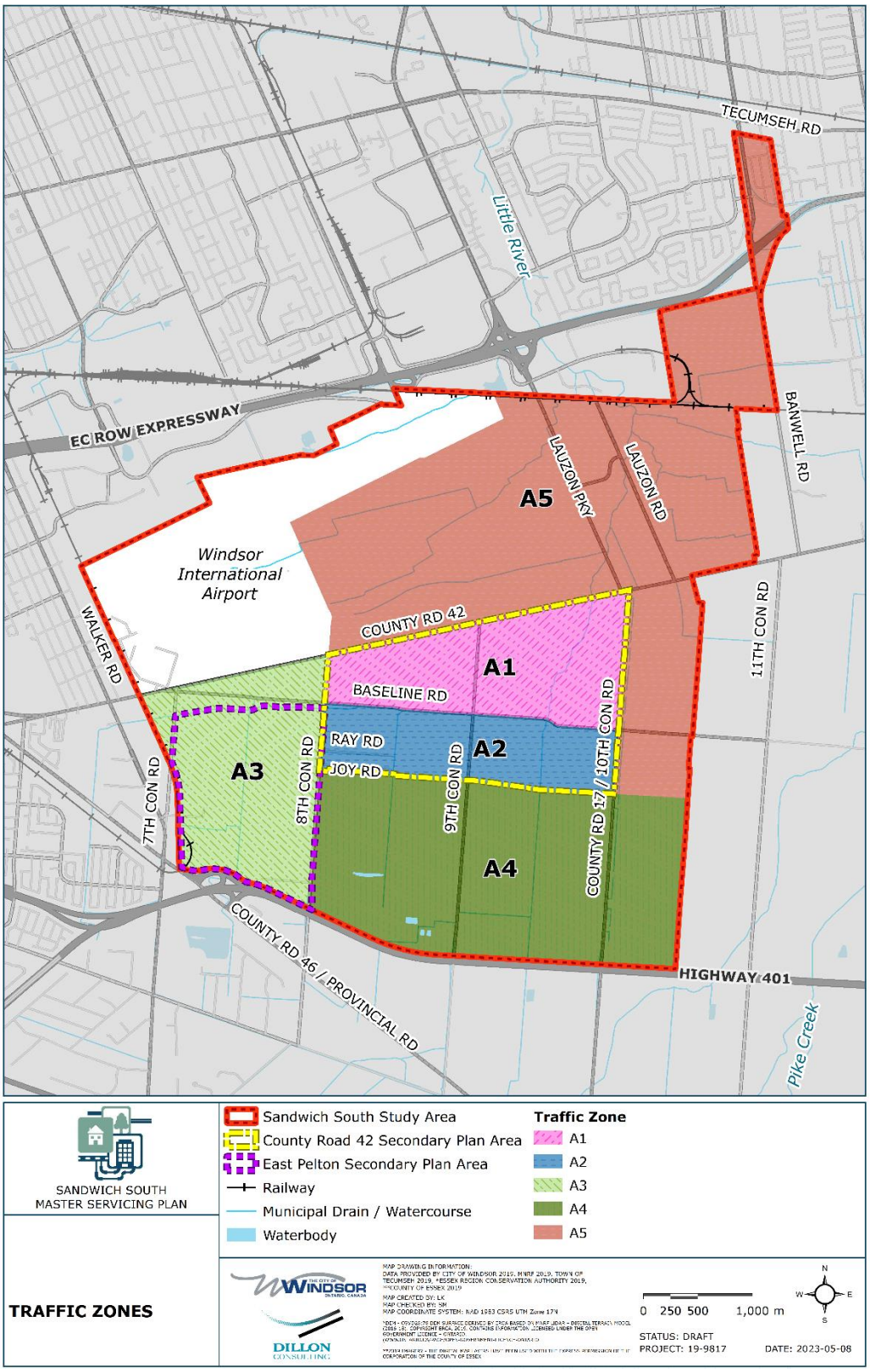
4.1.1 Development Levels

Development levels for the Sandwich South study area were obtained from Hemson Consulting in 2020. Development levels were grouped into five geographic areas to facilitate the estimation of future transportation demands, which are illustrated in **Figure 14. Table 4** summarizes the number of dwelling units and employees expected in the study area.

Table 4: Sandwich South Development Levels

Land Use (dwelling units and employees)	A1: CR 42 Secondary Plan Area (North)	A2: CR 42 Secondary Plan Area (South)	A3: East Pelton Secondary Plan Area	A4: Other Areas (South)	A4: Other Areas (South)	Total
Single Detached House	1,726	0	554	1,356	1,099	4,735
Semi/Duplex/ Townhouse	0	899	221	679	550	2,349
Apartment	0	657	362	611	451	2,081
Retail	0	805	1,336	0	435	2,576
Employment Land	0	3,470	0	16,316	501	20,287
Hospital	0	3,000	0	0	0	3,000

Figure 14: Map of Broad Traffic Zones



4.1.2 Trip Generation

The Institute of Transportation Engineers (ITE) *Trip Generation Manual*, *10th Edition*, was used to estimate the number of trips generated for each land. The vehicle trip generation rates from the ITE manual were converted to person trip rates using logical assumptions. **Table 5** shows the person trip generation rates and

Table 6 summarizes the number of person trips generated by applying the person trip generation rates and the development levels discussed above.

Table 5: Trip Generation Rates (Person trips)

Land Use (trip gen per unit or per employee)	ITE Land Use (Land Use Code)	AM Peak Hour Inbound	AM Peak Hour Outbound	PM Peak Hour Inbound	PM Peak Hour Outbound
Single Detached House	Single Family Detached (210)	0.21	0.61	0.64	0.38
Semi/Duplex/ Townhouse	Multi-family Low Rise (220)	0.12	0.42	0.41	0.24
Apartment	Multi-Family Mid Rise (221)	0.15	0.44	0.44	0.28
Retail	Retail Shopping Centre (820)	0.50	0.29	1.16	1.16
Employment Land	General Light Industrial (110)	0.57	0.11	0.14	0.50
Hospital	Hospital (610)	0.33	0.12	0.13	0.34

Table 6: Trip Generation (Person trips)

Area	AM Peak Hour Inbound	AM Peak Hour Outbound	PM Peak Hour Inbound	PM Peak Hour Outbound
A1: CR 42 S.P. (North)	355	1,064	1,112	653
A2: CR 42 S.P. (South)	3,560	1,650	2,457	4,089
A3: East Pelton	869	969	2,153	1,911
A4: Other (South)	5,582	1,499	1,756	5,065
A5: Other (North)	4,964	3,056	3,675	5,382
Total	15,330	8,238	11,153	17,100

4.1.3 Mode Share

The mode shares assumed for future development were informed by the city-wide mode share targets in the *Walk Wheel Windsor Active Transportation Master Plan*:

- 75% Auto Driver/Auto Passenger
- 12% Transit
- 5% Walking
- 8% Cycling

Table 7 shows the mode share assumptions for internal and external trips. External trips were assumed to have a lower walk and bike mode share than the city-wide mode share given the study area is located on the periphery of Windsor. Trips internal to the study area were assumed to have a higher walking and cycling mode share, close to the city-wide mode share targets.

Table 7: Mode Share for Trips Generated in the Study Area

Trip Type	Walk	Bike	Transit	Auto Driver	Auto Passenger
External to Sandwich South	1%	2%	12%	75%	10%
Internal within Sandwich South	5%	5%	12%	69%	9%

4.1.4 Trip Distribution

The study area currently produces little existing traffic as it is largely undeveloped. The distribution assumed for external site trips from South Sandwich was based on proxy neighbourhoods near Sandwich South, with adjustments for planned new growth areas/ employment lands in adjacent Essex County municipalities.

4.1.5 Trip Assignment

Traffic generated by the Sandwich South development was assigned to the road network using the transportation demand model. **Section 4.3** documents the traffic assignment process.

4.2 Other Developments

Transportation demands for the following developments were reviewed and accounted for as part of the future transportation demand forecasts:

1. Wallace Woods Secondary Plan (between CR22 and CR42, east of Patillo Road)
2. Electric Vehicle battery manufacturing plant (northeast of Sandwich South)
3. Tecumseh development areas (between CR22 and CR42, near Banwell Road)
4. Tecumseh Oldcastle Industrial Lands (south of Highway 401)

In addition to these specific developments, there will be other smaller developments that result in additional traffic volumes. To account for these other smaller developments, existing traffic volumes were assumed to increase at a rate of 1% per year until the 2051 horizon year; this is a 37% increase over 32 years.

Traffic generated by these background developments was assigned to the road network using the transportation demand model. **Section 4.3** documents the traffic assignment process.

4.3 Traffic Assignment

The transportation demands were assigned to the road network using a transportation demand model covering the entire County of Essex. The model uses an iterative process to assign traffic to the transportation network and balance demand and capacity. This iterative approach to assigning traffic to the road network balances the assignment of traffic and allows traffic in the model to detour to less congested roads.

Attachment A illustrates the forecasted 2051 traffic volumes.

5.0 Problem Identification

5.1 Collector Road Network

Collector roads have been planned in the Country Road 42 Secondary Plan, the East Pelton Secondary Plan, and the Banwell Road Environmental Assessment; however, they were not planned in conjunction with each other. This means that the planned Collector road networks for each area are isolated and poorly integrated; connectivity between neighbourhoods is poor.

Furthermore, road locations in these plans are conceptual and have not considered all potential constraints or negative impacts.

5.2 Screenline Capacity

A screenline analysis of several locations within the study area was conducted to assess the adequacy of the planned internal road network at full build out.

The capacity of each corridor was evaluated based on the planning capacities described in the 1999 Windsor Area Long Range Transportation Study (WALTS). **Table 8** identifies the planning capacities by road classification.

Table 8: WALTS (1999) Planning Capacity by Road Classification

Road Classifications	Vehicle Capacity, per Hour, per Lane
Arterial (Class I)	900
Arterial (Class II)	800
Collector (Class I)	650
Collector (Class II)	500
Local	350

North-South capacity was evaluated at the northern boundary of the study area (south of CR 42) and East-West capacity was evaluated at:

1. The western boundary of the study area (east of Walker Road); and,
2. The eastern boundary of the study area (west of Lauzon Parkway).

Table 9 summarizes the screenline analysis results. The abbreviation V/C was used for "Volume to Capacity Ratio". The screenline analysis results are summarized as follows:

North-South Capacity:

1. North-south capacity is generally sufficient, although it is approaching capacity, and the Lauzon Parkway is exceeding capacity slightly.

East-West Capacity:

2. There is insufficient east-west capacity at the western boundary of the study area; demands on the screenline east of Walker Road may exceed capacity, and CR 42 will be at capacity.
3. There is sufficient east-west capacity at the eastern boundary of the study area; traffic volumes are not anticipated to exceed 80-90% of capacity.

It should be noted that these are high-level strategic planning capacities which may not identify localized capacity issues; intersection capacity analysis may identify other issues, particularly for a busy intersection such as Lauzon Parkway at CR 42. Intersection Capacity analysis is discussed in the next section.

5.2.1 Analysis Methodology Update in 2023

In earlier stages of this project, the transportation analysis followed a methodology which allowed for peak hour internal traffic volume to exceed capacity in some cases. Under that analysis, the need for implementing two 4-lane north-south collector roads was determined to be necessary to accommodate full build-out of the entire SSMSP study area. Following the MCEA Environmental Assessment process, those alternatives were evaluated and it was determined that should additional north-south capacity be required that the 8th Concession Road and 9th Concession Road corridors would be most suitable. Details on the evaluation of those alternatives are detailed in the SSMPS report.

Subsequent to analysis in early stages of this project, an updated methodology was used to provide a better representation of proposed traffic conditions and therefore the traffic analysis was updated accordingly. Based on this updated analysis, it was found that maintaining two lanes along these north-south corridors would be sufficient to meet the ultimate condition demands.

As development proceeds, traffic shall be monitored and based on observed traffic conditions the need to implement additional lanes shall be evaluated. It is also recommended that all necessary 26.0 m right-of-way corridor widths be reserved to accommodate the vehicular lanes, active transportation facilities and other elements such as streetlighting, trees and municipal servicing corridors.

Table 9: Screenline Analysis

Travel Direction	Screenline	Bounds	Road	Lanes Per Direction	Capacity	AM Peak Direction Volume	PM Peak Direction Volume	AM Peak Hour V/C	PM Peak Hour V/C
North-South	South of CR42	Concession Road 7 to 8	7th Concession	1	500	400	450	0.80	0.90
			8th Concession	1	500	300	400	0.60	0.80
			Total		**1,000**	**700**	**850**	**0.70**	**0.85**
North-South	South of CR42	Concession Road 9 to 10	9th Concession	1	800	350	400	0.44	0.50
			Lauzon Parkway	3	2,700	2,600	2,800	0.96	1.04
			10th Concession	1	800	150	250	0.19	0.31
			Total		**4,300**	**3,100**	**3,450**	**0.72**	**0.80**
East-West	East of Walker Road	CR 42 to E-W Arterial	CR 42	2	1,600	1,750	2,150	1.09	1.34
			East-West Collector	1	500	300	350	0.60	0.70
			East-West Arterial	2	1,600	1,400	1,650	0.88	1.03
			Total		**3,700**	**3,450**	**4,150**	**0.92**	**1.12**
East-West	West of Lauzon Parkway	CR 42 to E-W Arterial	CR 42	2	1,600	1,300	1,300	0.81	0.81
			Baseline Road	1	800	650	500	0.81	0.63
			East-West Collector	1	500	400	450	0.80	0.90
			East-West Arterial	2	1,600	750	800	0.47	0.50
			Total		**4,500**	**3,100**	**3,050**	**0.69**	**0.68**

Note: V/C is an abbreviation for Volume to Capacity Ratio. Peak Direction refers to northbound, southbound, eastbound, or westbound.

5.3 Intersection Operations

Intersection operational analysis was also performed for all Arterial/Collector, Arterial/Arterial, and Collector/Collector intersections to identify anticipated operating conditions and identify potential mitigation measures to be considered. The analysis focused on 'critical intersections' with turning movements forecasted to exceed capacity (V/C > 1) or experience long delays (LOS E of F).

The analysis was completed using the industry-standard software Synchro software package for signalized intersections, and SIDRA for roundabout intersections; SIDRA is better suited for roundabout analysis.

The planned lane configuration and traffic control is known for some intersections. For other intersections, it has not yet been determined. For the purpose of the analysis in this report, intersections were assumed to use a traffic control signal and it was assumed that each approach would include a left turn lane.

Table 10 summarizes the intersection capacity analysis for critical intersections, which identified three intersections that are forecasted to exceed capacity. Values in brackets show the values after mitigation was applied. **Attachment B** contains the intersection capacity analysis results for all intersections.

Mitigation measures such as additional left- and right-turn lanes were considered at:

1. Walker Road/County Road 42;
2. Lauzon Parkway/County Road 42; and,
3. Lauzon Parkway/Road I (a proposed Collector between CR 42 and Baseline Road).

The mitigation measures improved traffic operations; however, there are still turning movements forecasted to exceed capacity by up to 25%, and some turning movements are anticipated to experience delays of up to 3 minutes.

Mitigating the remaining issues would require general road widening or an excessively large roundabout, which is not justified for a marginal improvement during a relatively short period of the day. Rather, it is reasonable to expect that drivers will adjust their travel behaviours to use other routes, travel outside of the peak hours, work from home, and travel by bike or bus, etc.

Furthermore, this analysis is based on forecasted 2051 traffic volumes which may not materialize; the City should monitor traffic volumes and assess mitigation measures if required.

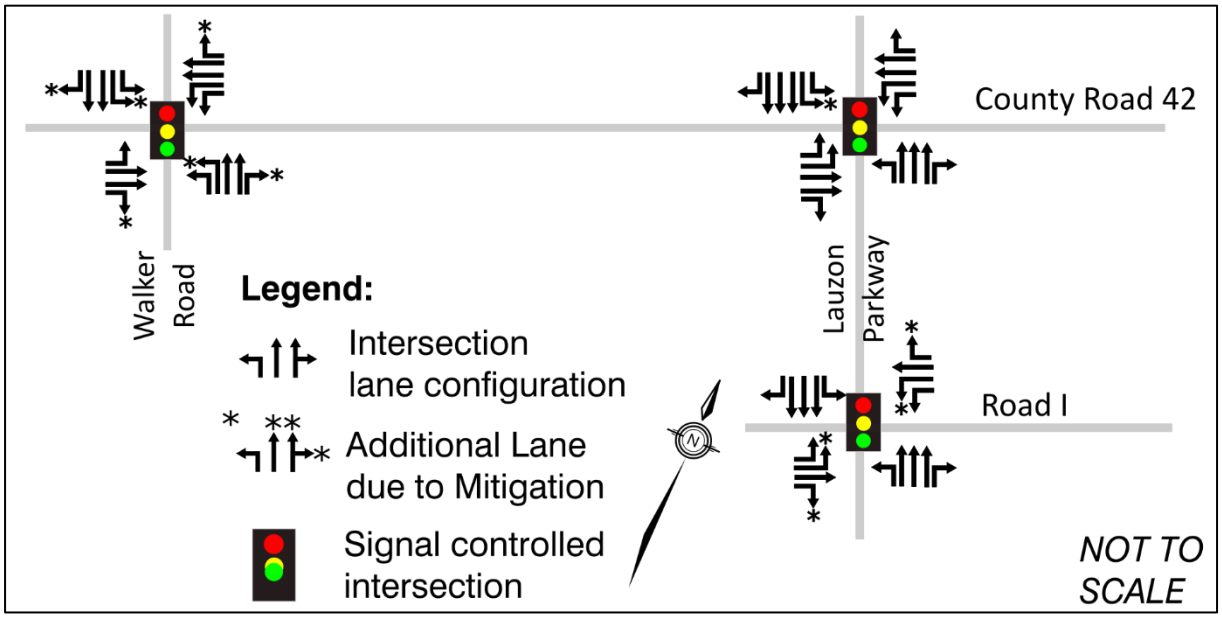
Table 10: 2051 Intersection Operations for Critical Intersections

Intersection	Period	Overall LOS	Max V/C	Critical Movement	Delay (s)	LOS	v/c Ratio
Walker Road and County Road 42	AM Peak Hour	E <D>	1.07 <0.99>	EBL	82 <74>	F <E>	0.89 <0.74>
				EBT	88 <63>	F <E>	1.06 <0.99>
				NBL	62 <67>	E <E>	0.77 <0.63>
				NBT	90 <58>	F <E>	1.05 <0.97>
				SBL	111 <88>	F <F>	1.07 <0.96>
				WBT	73 <46>	E <D>	0.99 <0.78>
	PM Peak Hour	F <F>	1.46 <1.15>	EBL	118 <159>	F <F>	1.03 <1.07>
				NBL	173 <152>	F <F>	1.21 <1.08>
				NBT	166 <76>	F <E>	1.26 <1.02>
				SBL	260 <135>	F <F>	1.46 <1.09>
				SBT	155 <83>	F <F>	1.24 <1.06>
				WBL	85 <87>	F <F>	0.75 <0.76>
				WBT	240 <121>	F <F>	1.45 <1.15>
Lauzon Parkway and County Road 42	PM Peak Hour	F <F>	1.39 <1.25>	EBL	217 <184>	F <F>	1.33 <1.25>
				EBT	64 <61>	E <E>	0.89 <0.87>
				NBT	163 <146>	F <F>	1.27 <1.23>
				SBL	235 <147>	F <F>	1.39 <1.11>
				WBL	88 <88>	F <F>	0.72 <0.72>
				WBT	68 <68>	E <E>	0.89 <0.89>
Lauzon Parkway and Road I	PM Peak Hour	E <E>	1.24 <1.04>	EBL	176 <113>	F <F>	1.24 <0.98>
				NBL	85 <78>	F <E>	0.51 <0.44>
				NBT	98 <76>	F <E>	1.10 <1.04>
				SBL	164 <118>	F <F>	1.16 <1.00>
				WBT	132 <44>	F <D>	1.18 <0.21>
County Road 42 and Baseline Road (Roundabout)	AM Peak Hour	A	0.69	None	N A	N A	N A
	PM Peak Hour	A	0.60	SB Approach	135	F	1.28

Note: values in brackets < > were used to show the values after mitigation was applied.

Figure 15 illustrates the 2051 preliminary recommended traffic control and lane geometry for intersections where mitigation was identified. **Attachment C** illustrates the 2051 preliminary recommended traffic control and lane geometry for other intersections in the study area.

Figure 15. 2051 Preliminary Recommended Traffic Control and Lane Geometry (Mitigated intersections only)



5.4 Impacts of Growth on Existing Residents

While the majority of the study area is undeveloped today, there are some existing residential areas in the study areas. These include Joy Road and Ray Road east of 8th Concession and Baseline Road between 7th Concession and 8th Concession.

If left unconstrained, the vehicle travel demand on Baseline Road between 7th Concession and 8th Concession will be over 800 vehicles per hour during the peak hour. This level of traffic would have a significant impact on the quality of life for residents of Baseline Road, who are not accustomed to these high traffic volumes. Traffic calming measures for Baseline Road between 7th Concession and 8th Concession will be required.

Joy Road and Ray Road residents would only be impacted if changes are proposed to the network connections for Joy Road or Ray Road.

6.0 Preferred Solutions

This section presents the underlying philosophies used to develop network options and the preferred solutions. The preferred solutions were developed using multi-variable analysis in an EA framework.

Comparative evaluations of alternative solutions are detailed as part of the SSMSP report. These alternatives were compared based on a number of relevant criteria.

6.1 Collector Road Network

6.1.1 Network Planning Principles

In addition to the specific issues listed above, the following network planning principles below were used to guide the development of a Collector road network.

6.1.2 Connections

A well-connected network provides continuous direct routes to destinations, which can be achieved by maximizing the number of connections to arterials. Based on the traffic distribution and the study area's location in the City of Windsor, the general orientation of traffic is to/from north and west.

Therefore, it would be most beneficial to maximize connections to Walker Road and County Road 42, west of Lauzon Parkway, as well as to the new Lauzon Parkway which provides connections to EC Row to the north.

In general, while considering an urban road network, 400 metre spacing between signalized intersections on arterial roads is ideal to provide the necessary coordination to achieve signal progression.

Additional connections to the existing Arterial road network, by distributing the turning movements among additional intersections, can effectively resolve the problem of excessive intersection turning volumes at congested intersections.

These additional connections are derived by extending Collector roads both internally and externally. This will help ease operational issues on Lauzon Parkway in particular. Additional connections also provide additional opportunities for transit and active transportation connections.

Additional traffic lanes and roundabouts can also be introduced to certain intersections to increase traffic capacity.

6.1.3 Corridors

Long and direct Collector roads that link communities and serve local multi-modal demand is the first priority. This ensures that some internal trips can be served on the Collector road network.

According to generally accepted spacing guidelines, Arterial roads should be 2 kilometres apart and Collector roads should be 1 kilometre from other Collectors and Arterials. However, due to the high expected traffic volumes and constraints in the road network, spacing may be less in some locations.

In order to enhance the development of the future urban area, the corridors should be able to provide enough capacity to carry the forecasted traffic volumes while offering the opportunity to extend beyond the study area in the future to accommodate future development.

In addition, the corridors should include pedestrian and cycling infrastructure to serve active modes of transport and support sustainable development.

Any Collector roads added to the plan should extend those that are already included in the East Pelton and County Road 42 Secondary Plans.

6.1.4 Recommended Collector Road Network

Table 11 summarizes the development of the Collector Roadway network.

Table 11: Collector Roadway Network Development

Issue	Network Development Principle
Separation from Highway 401 Interchanges	New intersections must be at least 200 metres away from ramps onto Highway 401.
Number and spacing of railway crossings	New rail crossings should be minimized. Where they are necessary they should be at least 200m apart.
Crossing of Natural Areas	Where new roadways cross Natural Heritage areas and/or stormwater management corridors considerations for grade separations, bridges, wildlife crossings will need to be implemented to maintain natural environment linkages and to maintain drainage corridors.
Connectivity	There is a lack of connectivity between East Pelton and the County Road 42 Secondary Plan Area in the planned network. The plan was modified to extend a proposed East-West Collector across entirety of the study area.
Facilitation of development	Modifications were made to the East Pelton Secondary Plan road network to align it with current development concepts. Modification included the removal of one of the East-West Collector roadways between 7th Concession Road and 8th Concession Road (connecting to Joy Road). This was necessary in part due to the constraints related to the connection of roadways to 7th Concession in proximity to the existing rail crossing. The two-remaining East-West Collector roadways will be sufficient to support the proposed development within this area.

6.2 Screenline Capacity

North-south capacity is generally sufficient, although it is approaching capacity, and the Lauzon Parkway is exceeding capacity slightly. Lauzon Parkway is already planned to have a 6-lane cross section and further widening is not possible or justified.

There is insufficient east-west peak hour capacity at the western boundary of the study area to meet the demands from the development of South Sandwich. Demands on the screenline east of Walker Road and on CR 42 specifically are projected to exceed capacity. In reality, hourly demand cannot exceed capacity; it is reasonable to expect that drivers will adjust their travel behaviours to use other routes, travel outside of the peak hours, work from home, travel by bike or bus, etc. CR 42 is already planned to have a 4-lane cross-section and further widening is not possible or justified.

6.3 Local Issues

6.3.1 Baseline Road from 7th Concession to 8th Concession

There is an existing residential community on Baseline Road between 7th Concession and 8th Concession. If no traffic management measures are put in place, traffic volumes on this corridor could be as high as 800 vehicles per hour, disrupting existing residents. The preferred option is to institute traffic calming measures that will lower the amount of traffic travelling on this corridor, while still allowing access for emergency vehicles and some vehicle traffic.

6.3.2 East-West Collector Alignment

In order to create a complete road network facilitating travel within the study area, several Collector roads need to be added to the study area. However, there are few opportunities to add a Collector that can traverse the entirety of the study area. There is an opportunity to add an east-west Collector between Baseline Road and the East-West Arterial. The new Collector would run south of Joy Road, avoiding impacts on existing residents and constraints on the road right-of-way.

A Collector is also proposed between CR 42 and Baseline Road to connect communities on either side of the Lauzon Parkway and reduce traffic volumes on Baseline Road; however, this will be challenging since the proposed Collector would transverse an existing Natural Heritage Area and a proposed stormwater management facility. As development progresses and the proposed road network is constructed (including

improvements to Lauzon Parkway, CR42 and Baseline) the need for an additional connection shall be confirmed.

6.3.3 Intersection of Walker Road at County Road 42

No new public street connections to Walker Road will be pursued. While there are modest operational benefits to adding such a connection, the costs are greater than the benefits.

There is a need to increase active transportation links to the community to the west including the commercial area along Walker Road. Providing an interconnection between Walker Road and the East Pelton Development area should be considered. Further studies will be required to identify an appropriate location for these links. Consideration shall be made for the existing railway and private property area impacts.

7.0 Triggers

The transportation infrastructure recommended in this plan will need to be phased in over several years. Due to the uncertainty around the timing of development in Sandwich South, exact timing cannot be estimated. The following major projects are listed with triggers and justifications identified:

Widening of County Road 42 to Four Lanes

- **Trigger**: Vehicular volume in the peak hour in the peak direction reaches 700.
- **Justification**: As per the Lauzon Parkway Environmental Assessment (2014)

Construction of the East-West Arterial

- **Trigger**: Driven by development.
- **Justification**: As per the Lauzon Parkway Environmental Assessment (2014)

Widening of the East-West Arterial to Four Lanes

- **Trigger**: Vehicular volume in the peak hour in the peak direction reaches 700.
- **Justification**: As per the Lauzon Parkway Environmental Assessment (2014)

Construction of New Collector Roads

- **Trigger**: Driven by development
- **Justification**: New Collector roadways are needed in order for circulation in the study area and should be built as development occurs.

Traffic Calming on Baseline Road Between 7th Concession and 8th Concession

- **Trigger**: Driven by development in the County Road 42 Secondary Plan Area. The City is currently developing a Complete Streets Design Guide that will provide further direction to develop a traffic calming plan for Baseline Road.
- **Justification**: This will only be required once the County Road 42 Secondary Plan Area begins to be built up and traffic volumes on Baseline Road increase.

In addition to these triggers, the City shall improve existing Collector road corridors such as 7th, 8th, 9th and 10th Concession, as development proceeds in the area. Initial improvements shall be confirmed through the staging and implementation analysis as part of the SSMSP project. The existing rural cross-sections shall be upgraded to urban cross-sections to eliminate roadside swales/drain and to implement necessary active transportation and transit facilities. Refer to the recommended staging plan included in the SSMSP report.

8.0 Cross-Sections

Typical cross-sections for collector roadways with cycle tracks and protected cycling lanes are shown in **Figure 16** and **Figure 17**.

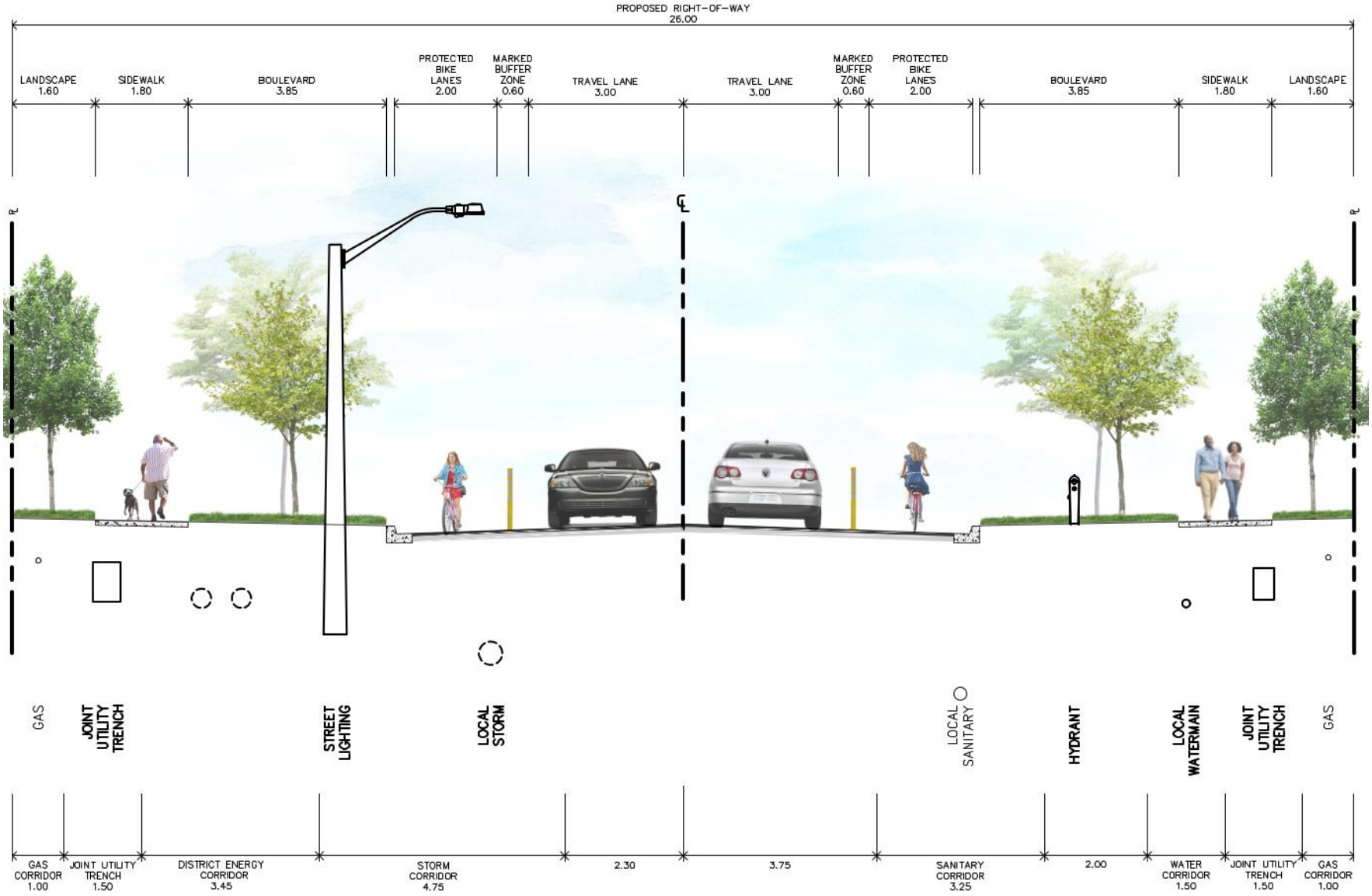
At specific bus stop locations along Collector roads, side boarding islands may also be considered to avoid a city bus passing through the cycling facility. It is recommended that functional design and pre-planning be undertaken to determine the layout of each collector road to confirm necessary configuration of transit, active transportation and parking facilities, were applicable.

Cross-sections for roadways are based on recommendations within the Ontario Traffic Manual and the City's current Development Manual (2015). Upon urbanization of existing roadways or new Collector roads, the cyclist and pedestrian facilities will be identified based on the proposed development and surrounding built form, transit needs, location of driveway access points and parking. The right-of-way widths are be consistent with the City's Official Plan.

Details regarding of additional municipal infrastructure, such as storm and sanitary trunk sewers, water main and future utilities will be further described in the SSMSP Municipal Functional Servicing Plan (Appendix F of the SSMSP report).

Figure 16: Typical Cross-Section with Cycle Tracks (Class II Urban Collector)

Figure 17: Typical Cross-Section with Protected Cycling Lanes (Class II Urban Collector)



9.0 Ultimate Transportation Network

9.1 Road Network

Figure 18 illustrates the ultimate road network. This road network is built upon the general principles discussed, and includes:

- Traffic calming on Baseline Road from Concession Road 7 to Concession Road 8;
- An East-West Collector traversing the entirety of the study area south of Baseline Road and north of the East-West Arterial; and,
- A skeleton Collector road network to support future development within the study area.

Note that this road network does not show Local roads. Furthermore, other Collector roads may be added beyond this skeleton network as development moves forward.

The Collector road network from the East Pelton Secondary Plan, the County Road 42 Secondary Plan, and the Banwell Road EA (2016) were generally maintained with some minor modifications:

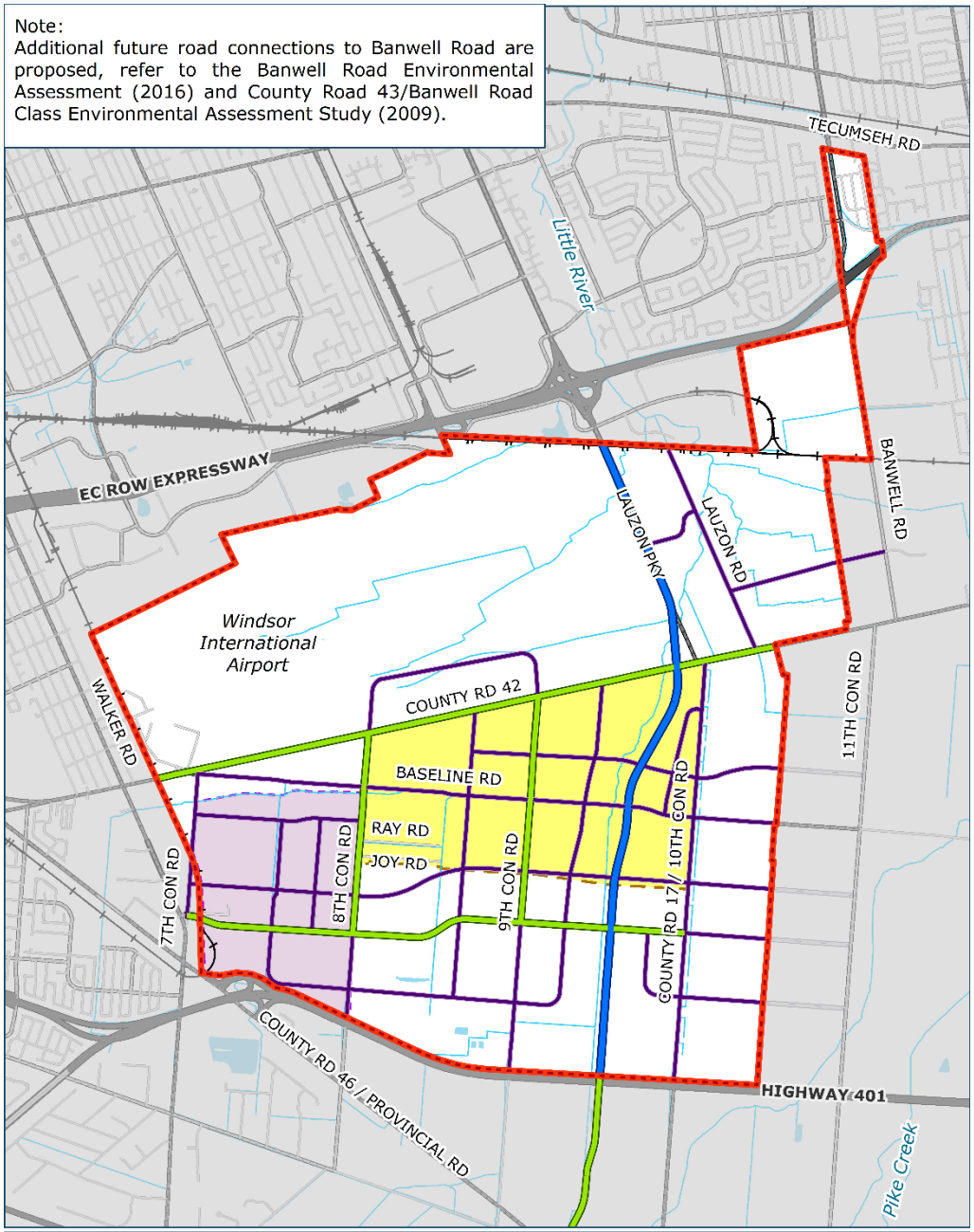
- One of the east-west Collectors in the East Pelton Secondary Plan was removed (between 7th Concession and 8th Connection, connecting to Joy Road). From a traffic operations and intersection spacing perspective, it is not a necessary feature for the future road network.
- North-South Collectors from the County Road 42 Secondary Plan were extended south to connect with the wider road network serving the study area.
- Additional connections made to Lauzon Parkway to reduce the pressure on the 3 intersections that were identified in the Lauzon EA to distribute traffic and improve connectivity.
    - We are proposing two new connections to Lauzon Parkway in adjacent communities.
    - Consideration for necessary bridge structures over storm water management facilities and natural heritage areas is needed.

There are two proposed crossings at the storm water management facilities and natural heritage areas that connect the communities on either side of the Lauzon Parkway. There has been rising demands for increased connectivity that were not apparent in the planning phases since these areas were planned in isolation. There is clear need and value to join the communities, especially for active transportation trips where the modes are more sensitive to go out of their way.

However, there would be significant impacts to the natural environment and storm water management on the west side of the Lauzon parkway. Therefore, the City will need to reconfirm the demand and location of these crossings as the communities develop.

Figure 18: Ultimate Road Network

Note:
Additional future road connections to Banwell Road are proposed, refer to the Banwell Road Environmental Assessment (2016) and County Road 43/Banwell Road Class Environmental Assessment Study (2009).



SANDWICH SOUTH MASTER SERVICING PLAN

ULTIMATE ROAD NETWORK

- Sandwich South Study Area
- County Road 42 Secondary Plan Area
- East Pelton Secondary Plan Area
- Six-Lane Urban Roadway
- Four-Lane Urban Roadway
- Two-Lane Urban Roadway
- Railway
- Municipal Drain / Watercourse
- Waterbody

MAP DRAWING INFORMATION:
DATA PROVIDED BY CITY OF WINDSOR 2019, MNRF 2019, TOWN OF TECUMSEH 2019, ESSEX REGION CONSERVATION AUTHORITY 2019, **COUNTY OF ESSEX 2019
MAP CREATED BY: LK
MAP CHECKED BY: SM
MAP COORDINATE SYSTEM: NAD 1983 CSRS UTM Zone 17N

0 250 500 1,000 m

STATUS: DRAFT
PROJECT: 19-9817
DATE: 2023-05-08

9.2 Active Transportation Network

All new arterial and collector roadways in the study area should include active transportation facilities including sidewalks of at least 1.8 metres on both sides of the road and cycling facilities. As established in Section 4.1.5, this area will experience significant traffic issues at full build out. Therefore, the transportation network should encourage cycling and cycling facilities should be designed for All Ages and Abilities (AAA cycling facilities), as defined in the Walk Wheel Windsor Active Transportation Plan.

Ontario Traffic Manual (OTM) Book 18 includes guidance for the type of cycling facility that should be included on roadways in Ontario. The type of cycling facility recommended for each Collector and Arterial roadway depends on road characteristics. OTM Book 18 recommends cycle tracks or protected cycling lanes depending on the road characteristics (both are considered AAA cycling facilities).

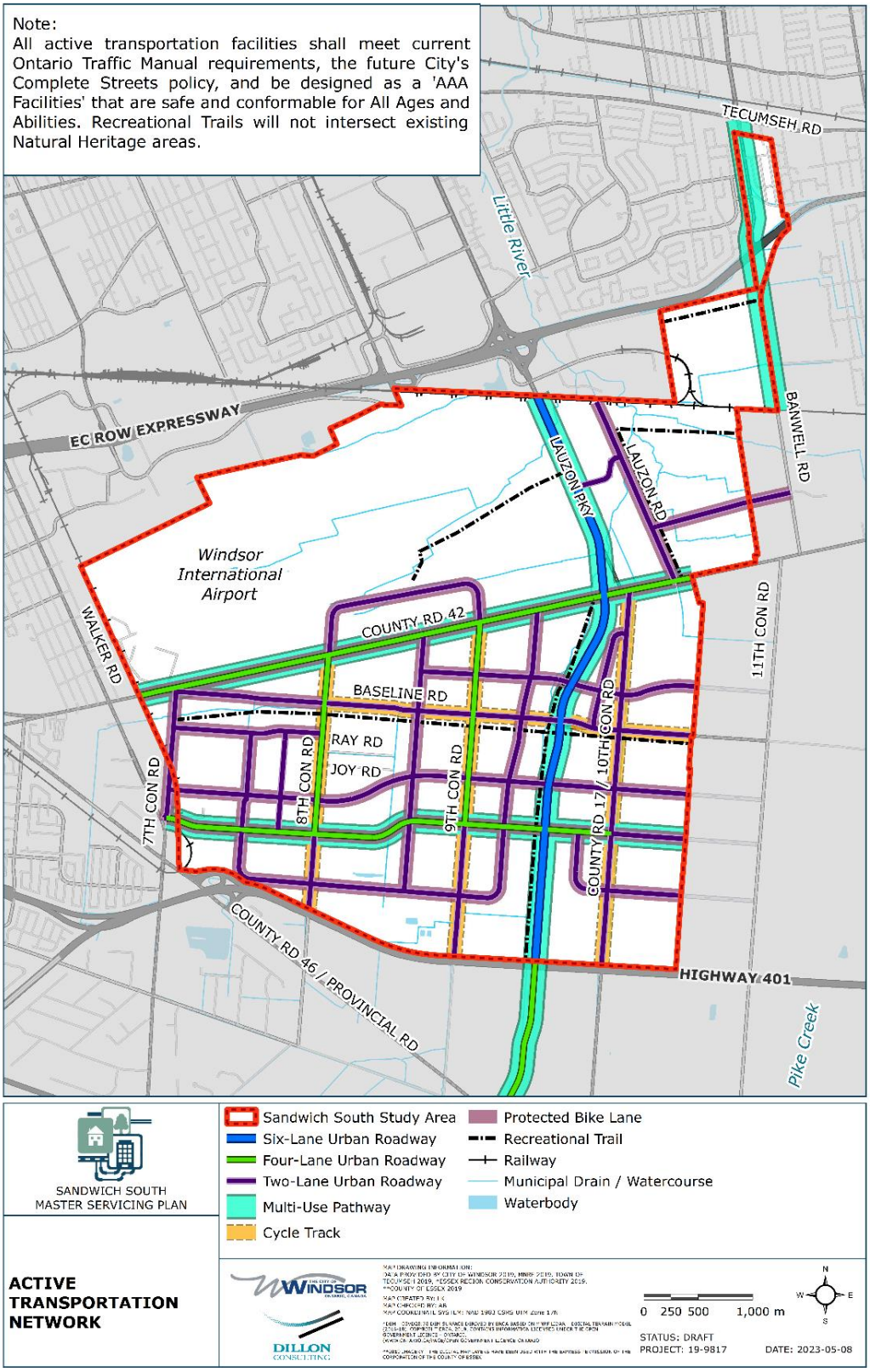
Generally, roads with lower speeds, lower vehicles volumes, and a higher frequency of driveways and intersections should include on-street facilities such as protected cycling lanes. A protected cycling lane is a painted lane for cyclists within the roadway that including physical separation from vehicle traffic in the form of bollards or concrete barriers.

Roads with higher speeds, higher vehicle volumes, and a lower frequency of driveways and intersections should include off-street facilities such as multi-use pathways or cycle tracks. Multi-use pathways are shared by pedestrians and cyclists and more appropriate for rural cross-sections where it is expected there will be low volumes of pedestrians and cyclists. Cycle tracks are more appropriate for urban cross-sections where more pedestrian and cyclist travel are expected and separation of these modes is preferable to avoid conflicts. In this study area, cross-sections will be urban and therefore, cycle tracks are recommended for high-speed and high-volume roadways.

While an additional vehicular connection from 7th Concession to Walker Road between the East-West Arterial and Baseline Road was not recommended in **Section 6.3.3,** the potential for a new active transportation corridor should be explored. This would facilitate the movement of pedestrians from East Pelton to amenities on Walker Road.

Figure 19 illustrates the recommended active transportation network. It includes the recommended facilities from the analysis above and from the 2014 Lauzon Parkway Environmental Assessment and 2016 Banwell Road Environmental Assessment.

Figure 19: Recommended Active Transportation Network



9.3 Transit

The 2019 Transit Master Plan includes plans for limited transit service on County Road 42 and Walker Road, as well as an "Alternative Service Delivery Area" in the County Road 42 Secondary Plan Area. While alternative service delivery may be appropriate as an interim step, significantly more transit service will need to be added in the study area to accommodate travel demand and achieve the target mode shares.

To accommodate development in Sandwich South, some routes from the 2019 Transit Master Plan will need to be extended and some new routes created. **Figure 20** illustrates the conceptual transit network which is described below.

Note that this network is conceptual and will be subject to change as the area and Windsor Transit's network evolves. Also, any route adjustments or new routes would need operating budgets approved by City council.

Further, routes traveling on Lauzon Parkway are primarily intended to provide access to Tecumseh Mall west of the airport. The routes are not intended to serve the adjacent development; however, as the area intensifies, stops may be necessary along Lauzon Parkway to enhance connectivity.

Route 15: Route 15 will serve Downtown and the Devonshire Mall Transit Terminal via Howard Avenue. This route can be extended via County Road 42.

Route 16: This route will serve the Hotel Dieu Grace Healthcare Terminal, Division Road, and County Road 42. No modifications are proposed to this route.

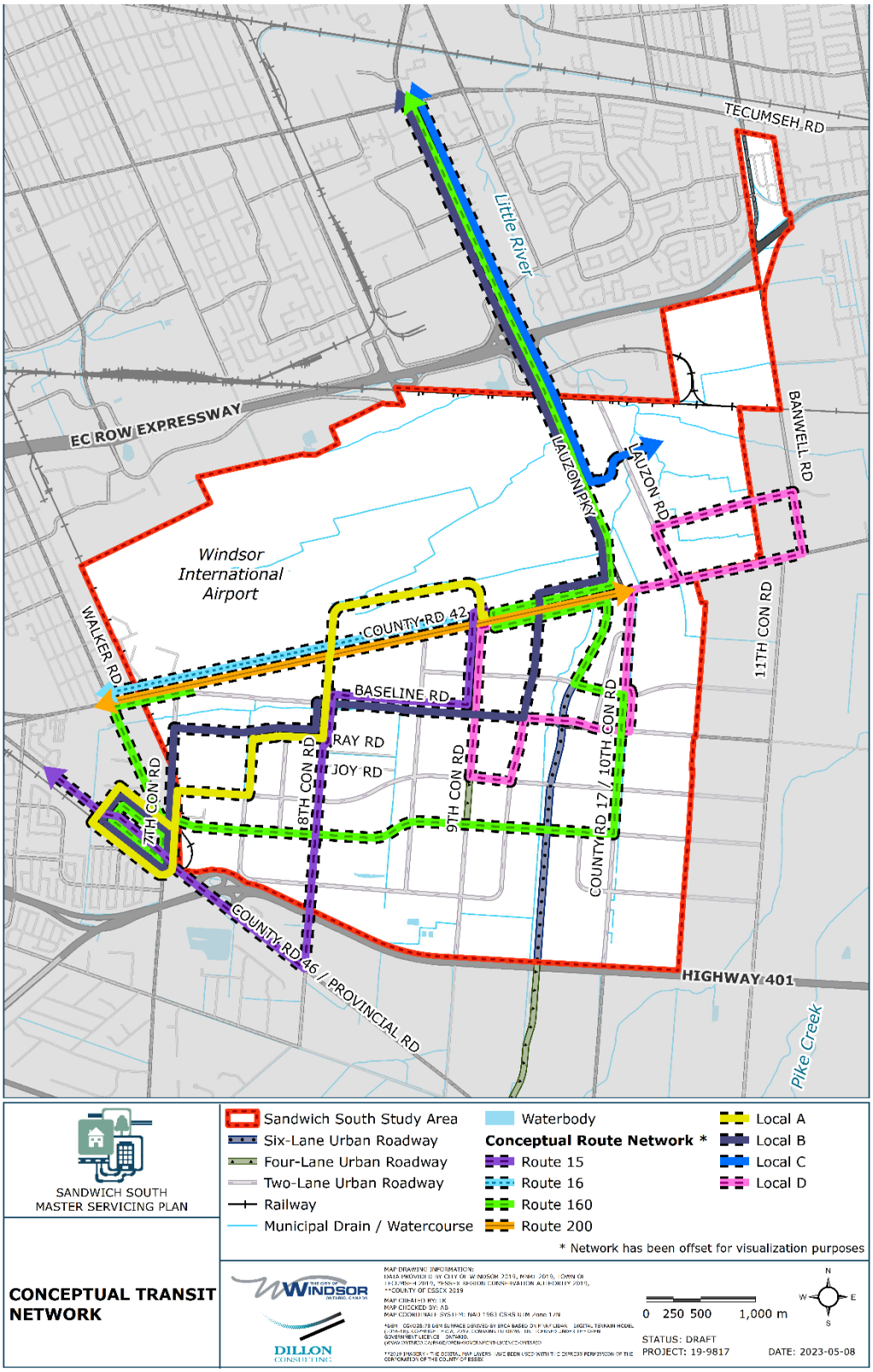
Route 160: Route 160 will serve the Lauzon Parkway from the East End Bus Terminal to County Road 42. This route can be extended to serve the new hospital, County Road 17, the East-West Arterial, and Walker Road.

Route 200: This route will serve County Road 42 and can be extended east to connect with Tecumseh.

Local A-D: New local routes will be required to provide coverage within the study area. Conceptual routing is shown in the figure below.

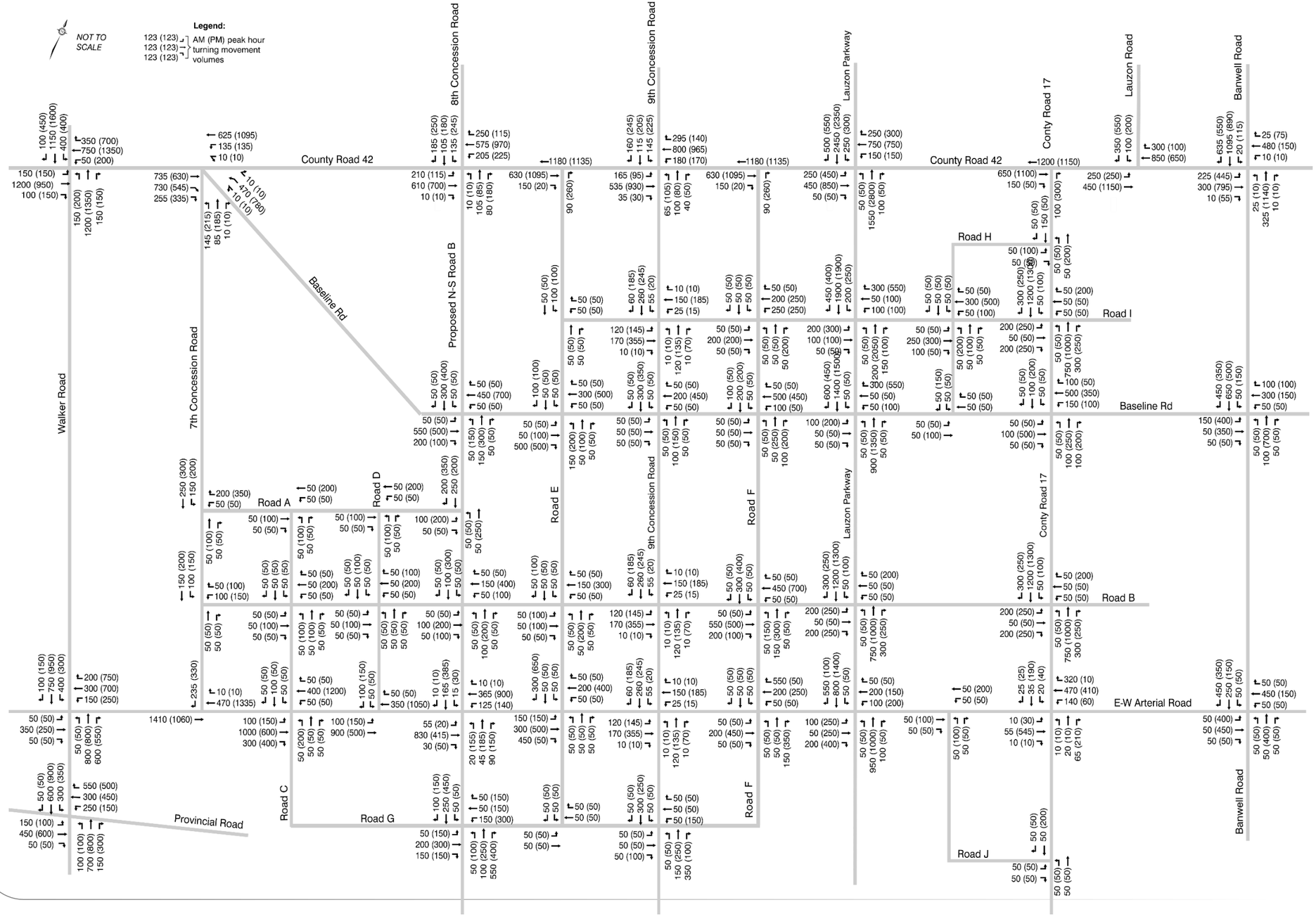
The Master Plan identifies an ultimate hospital terminal south of the airport. As noted in Section 3.3.1, the area will be served using an alternative service delivery model such as on-demand transit until sufficient demand (greater than 15 passengers/hour) is reached and fixed route transit service is required. The identified hospital terminal will require operator's facilities to support the area's on-demand transit and future fixed routes.

Figure 20: Conceptual Transit Network



Attachment A

2051 Forecasted Traffic Volumes


NOT TO SCALE
Legend:
123 (123) 123 (123) 123 (123) AM (PM) peak hour turning movement volumes
County Road 42
7th Concession Road
8th Concession Road
9th Concession Road
Proposed N-S Road B
Baseline Rd
Walker Road
Lauzon Parkway
Conty Road 17
Lauzon Road
Banwell Road
Road H
Road I
Road A
Road D
Road E
Road F
Road B
Road C
Road G
E-W Arterial Road
Provincial Road

Attachment B

Traffic Analysis Results

DILLON CONSULTING

Attachment B: Traffic Analysis Results Summary (Traffic Control Signals)

Intersection	Peak Hour	Overall LOS	Max v/c Ratio	Critical Movement	Delay (s)	LOS	v/c Ratio
Walker Road and CR 42	AM	E <D>	1.07 <0.99>	EBL	82 <74>	F <E>	0.89 <0.74>
				EBT	88 <63>	F <E>	1.06 <0.99>
				NBL	62 <67>	E <E>	0.77 <0.63>
				NBT	90 <58>	F <E>	1.05 <0.97>
				SBL	111 <88>	F <F>	1.07 <0.96>
				WBT	73 <46>	E <D>	0.99 <0.78>
	PM	F <F>	1.46 <1.15>	EBL	118 <159>	F <F>	1.03 <1.07>
				NBL	173 <152>	F <F>	1.21 <1.08>
				NBT	166 <76>	F <E>	1.26 <1.02>
				SBL	260 <135>	F <F>	1.46 <1.09>
				SBT	155 <83>	F <F>	1.24 <1.06>
				WBL	85 <87>	F <F>	0.75 <0.76>
				WBT	240 <121>	F <F>	1.45 <1.15>
Lauzon Prkw and CR 42	AM	D <D>	0.98 <0.98>	EBL	99 <98>	F <F>	0.92 <0.91>
				NBL	79 <79>	E <E>	0.48 <0.48>
				SBL	77 <66>	E <E>	0.83 <0.65>
				WBL	79 <79>	E <E>	0.68 <0.68>
				WBT	57 <58>	E <E>	0.84 <0.84>
	PM	F <F>	1.39 <1.25>	EBL	217 <184>	F <F>	1.33 <1.25>
				EBT	64 <61>	E <E>	0.89 <0.87>
				NBT	163 <146>	F <F>	1.27 <1.23>
				SBL	235 <147>	F <F>	1.39 <1.11>
				WBL	88 <88>	F <F>	0.72 <0.72>
				WBT	68 <68>	E <E>	0.89 <0.89>
Lauzon Road and CR 42	AM	C	0.93	None			
	PM	B	0.77	None			
Concession Road 8 and Baseline	AM	C	0.88	None			
	PM	C	0.92	None			
Concession Road 9 and Baseline	AM	B	0.43	None			
	PM	C	0.72	None			
County Road 17 and Baseline	AM	C	0.76	None			
	PM	C	0.73	None			
Banwell Road and Baseline	AM	C	0.87	None			
	PM	C	0.85	None			
Road E and Baseline Road	AM	B	0.56	None			
	PM	C	0.76	None			
Road F and Baseline Road	AM	C	0.75	None			
	PM	C	0.78	None			
Lauzon Prkw and Baseline Road	AM	B	0.72	None			
	PM	D	0.99	None			

Attachment B: Traffic Analysis Results Summary (Traffic Control Signals)

Intersection	Peak Hour	Overall LOS	Max v/c Ratio	Critical Movement	Delay (s)	LOS	v/c Ratio
Concession Road 7 and Road A	AM	A	0.28	None			
	PM	A	0.5	None			
Concession Road 8 and Road A	AM	A	0.22	None			
	PM	A	0.33	None			
Road C and Road A	AM	A	0.11	None			
	PM	A	0.28	None			
Road D and Road A	AM	A	0.11	None			
	PM	A	0.14	None			
Concession Road 7 and Road B	AM	A	0.3	None			
	PM	A	0.41	None			
Concession Road 8 and Road B	AM	B	0.43	None			
	PM	C	0.74	None			
Concession Road 9 and Road B	AM	B	0.18	None			
	PM	B	0.31	None			
Road C and Road B	AM	B	0.21	None			
	PM	B	0.53	None			
Road D and Road B	AM	B	0.21	None			
	PM	B	0.59	None			
Road E and Road B	AM	B	0.46	None			
	PM	C	0.67	None			
Road F and Road B	AM	C	0.68	None			
	PM	D	0.9	None			
County Road 17 and Road B	AM	B	0.46	None			
	PM	C	0.83	None			
Lauzon Prkw and Road B	AM	B	0.63	None			
	PM	B	0.72	None			
Walker Road and E-W Arterial	AM	C	0.81	None			
	PM	D	0.94	None			
Road C and E-W Arterial Road	AM	B	0.67	None			
	PM	C	0.84	None			

Attachment B: Traffic Analysis Results Summary (Traffic Control Signals)

Intersection	Peak Hour	Overall LOS	Max v/c Ratio	Critical Movement	Delay (s)	LOS	v/c Ratio
Road D and E-W Arterial Road	AM	A	0.34	None			
	PM	B	0.61	None			
Road E and E-W Arterial Road	AM	B	0.55	None			
	PM	C	0.86	None			
Road F and E-W Arterial Road	AM	A	0.55	None			
	PM	A	0.42	None			
Lauzon Prkw and E-W Arterial	AM	B	0.61	None			
	PM	C	0.75	None			
Banwell Road and E-W Arterial	AM	B	0.56	None			
	PM	B	0.75	None			
Road E and Road G	AM	A	0.07	None			
	PM	A	0.07	None			
Concession Road 8 and Road G	AM	B	0.62	None			
	PM	C	0.88	None			
Concession Road 9 and Road G	AM	B	0.27	None			
	PM	B	0.5	None			
Road H and Baseline Road	AM	A	0.05	None			
	PM	A	0.16	None			
County Road 17 and Road H	AM	A	0.15	None			
	PM	A	0.2	None			
Road H and Road I	AM	B	0.34	None			
	PM	C	0.76	None			
Concession Road 9 and Road I	AM	B	0.37	None			
	PM	B	0.47	None			
Road E and Road I	AM	A	0.16	None			
	PM	A	0.16	None			
Road F and Road I	AM	B	0.43	None			
	PM	B	0.52	None			
County Road 17	AM	B	0.5	None			

Attachment B: Traffic Analysis Results Summary (Traffic Control Signals)

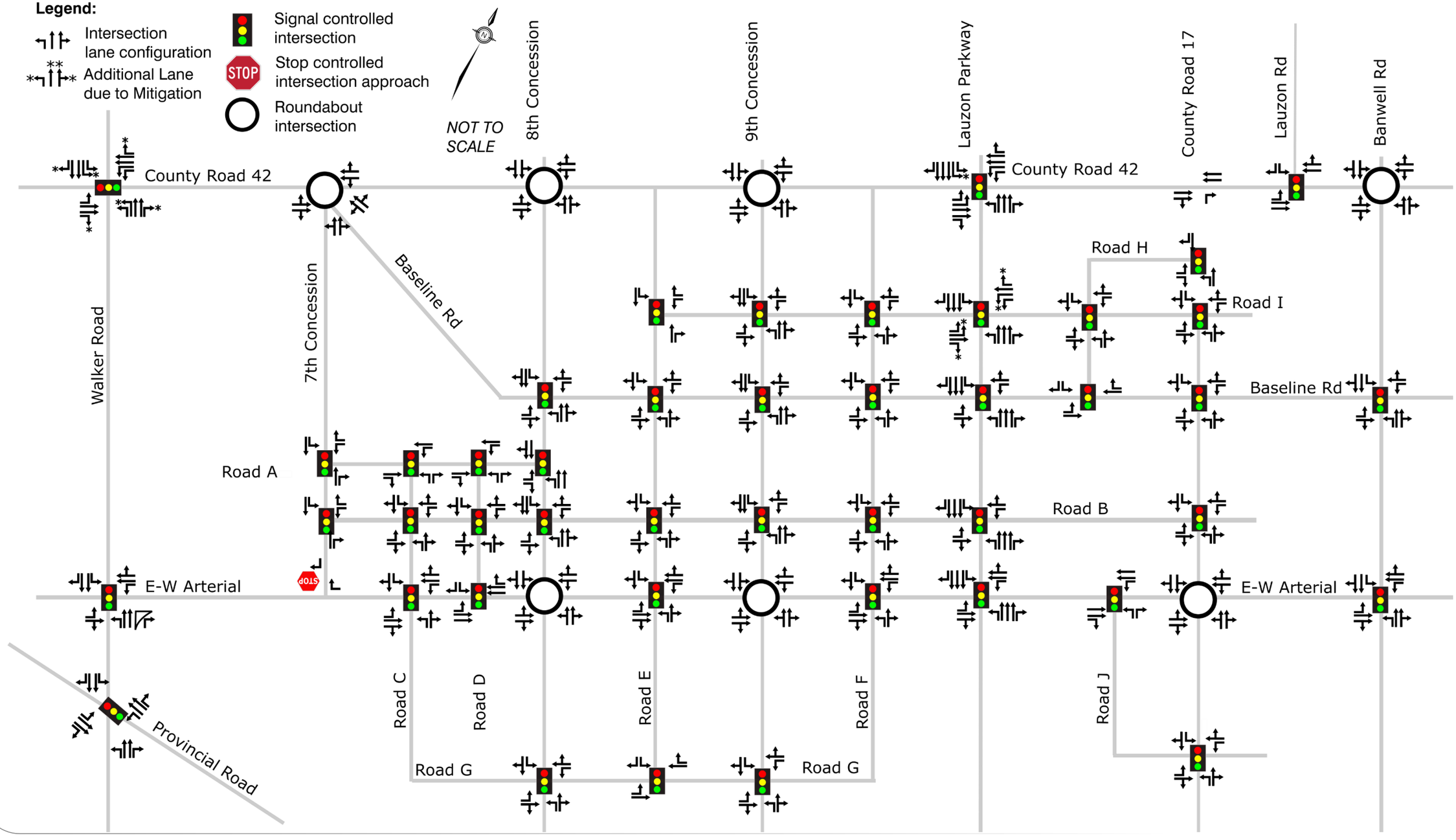
Intersection	Peak Hour	Overall LOS	Max v/c Ratio	Critical Movement	Delay (s)	LOS	v/c Ratio
and Road I	PM	C	0.84	None			
Lauzon Prkw and Road I	AM	C	0.84	None			
	PM	E <E>	1.24 <1.04>	EBL	176 <113>	F <F>	1.24 <0.98>
				NBL	85 <78>	F <E>	0.51 <0.44>
				NBT	98 <76>	F <E>	1.10 <1.04>
				SBL	164 <118>	F <F>	1.16 <1.00>
				WBT	132 <44>	F <D>	1.18 <0.21>
Road J and E-W Arterial Road	AM	A	0.49	None			
	PM	A	0.45	None			
County Road 17 and Road J	AM	B	0.17	None			
	PM	B	0.48	None			
Walker Road and Provincial Road	AM	C	0.89	None			
	PM	C	0.93	None			

Attachment B: Traffic Analysis Results Summary (Roundabouts)

CR 42 & Baseline Rd.	AM	A	0.69	None	None	None	None
	PM	A	0.60	SBTR	135.2	F	1.28
CR 42 & 8th Concession Rd.	AM	A	0.42	None	None	None	None
	PM	A	0.50	None	None	None	None
CR 42 & 9th Concession Rd.	AM	A	0.33	None	None	None	None
	PM	A	0.53	None	None	None	None
CR 42 & Banwell Rd.	AM	B	0.41	None	None	None	None
	PM	B	0.80	None	None	None	None
E-W Arterial and 8th Concession	AM	A	0.39	None	None	None	None
	PM	A	0.48	None	None	None	None
E-W Arterial and 9th Concession	AM	A	0.12	None	None	None	None
	PM	A	0.25	None	None	None	None
E-W Arterial and Banwell Rd.	AM	A	0.06	None	None	None	None
	PM	A	0.26	None	None	None	None

Attachment C

2051 Recommended Lane Arrangements and Traffic Control


Legend:
Intersection lane configuration
Additional Lane due to Mitigation
Signal controlled intersection
Stop controlled intersection approach
Roundabout intersection
NOT TO SCALE
8th Concession
9th Concession
Lauzon Parkway
County Road 17
Lauzon Rd
Banwell Rd
County Road 42
Walker Road
7th Concession
Baseline Rd
Road H
Road I
Road A
Road B
E-W Arterial
Road C
Road D
Road E
Road F
Road G
Road J
Provincial Road
STOP