



Transportation Master Plan Update

Appendix B – Analysis of Planning Strategies

Town of East Gwillimbury
Final Report

March 2024





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Attachment

Attachment 1: Whitebelt Model Development and Network Recommendations Technical Memo

Analysis of Planning Strategies

Planning strategies for the transportation network were developed and evaluated for the 2041 horizon. Principles of the preferred scenario were carried forward for the overall development of the transportation network required to support land use growth in the Whitebelt areas to the 2051.

The detailed model development for the Whitebelt areas is provided in **Attachment 1**, respectively. It is noted that some recommendations in the attachments have been revised. The contents in the final report, Appendix C and Appendix D should be followed for the final recommendations.

1 Planning Strategies

Phase 2 of the Municipal Class Environmental Assessment (EA) process requires documentation and examination of scenarios which address the problems and opportunities identified in **Section 5.6**. Four planning scenarios were identified for the Town and are summarized in **Table 1**.

Table 1: Planning Strategies

No.	Scenario	Description	Goal
1	Base Case	Committed road improvements by: <ul style="list-style-type: none"> • Ministry of Transportation (MTO); • York Region; and • Town of East Gwillimbury. 	Confirm the need for the Town to make its own investments in transportation.
2	Currently Planned Town Network	Further to Scenario 1, build planned Town improvements from the 2010 Transportation Master Plan (TMP) and 2012 Active Transportation and Trails Master Plan (ATTMP).	Confirm the Town's infrastructure needs from the 2010 TMP and 2012 ATTMP.
3	Revised Town Network	Revise the currently planned Town improvements to respond to changes in the planning context. Invest in: New connections; and Road improvements.	Confirm the desire to invest in new road infrastructure.
4	Enhanced Town Network	Further to Scenario 3, Implement cycling facilities on all new road improvements; Implement cycling facilities on existing roadways; and Travel Demand Management (TDM) policies and Complete Streets on existing Town roadways.	Confirm the desire to investing in new road infrastructure with designated facilities for cyclists.

2 Components of the TMP Scenarios

2.1 Road Network

The road networks for the planning strategies are detailed in this section. As part of the problem and opportunity statement, this study aims to provide new road linkages throughout the Town. New road linkages improve connectivity within the Town and will provide direct access between the communities.

The generation of scenarios allows for a high-level consideration of the transportation network, which are then refined in as part of the Preferred Scenario. The road network for the 2041 scenarios is shown in **Figure 1**.

2.1.1 Scenario 1: Base Case

Scenario 1 represents the 2041 base case network for the Town of East Gwillimbury. This includes committed projects from Capital Plans, Development Charge (DC) studies, Secondary Plans, and approved subdivisions. This scenario will confirm the need for the Town to make its own investments in transportation infrastructure.

York Region's 2018 10-Year Roads and Transit Capital Construction Program (December 2017) identifies only one improvement in East Gwillimbury: the widening of Yonge Street to six lanes from Green Lane West, south into the Town of Newmarket to Davis Drive.

Based on the 2018 DC Study, York Region recommends several road improvements to the Town of East Gwillimbury. This includes:

- a. Widening of Doane Road from 2 to 4 lanes between Yonge Street and Woodbine Avenue (Regional Road). This widening will also include intersection improvements of Doane Road and Leslie Street;
- b. An interchange at Highway 404 and Doane Road;
- c. Widening of Green Lane West from 4 to 6 lanes between Yonge Street and Highway 404 (Regional Road), including a grade separation at the Barrie GO Rail Corridor;
- d. Widening of Leslie Street from 2 to 4 lanes between Queensville Sideroad and Doane Road (Regional Road); and
- e. Widening of Leslie Street from 2 to 4 lanes between Colonel Weyling Boulevard and Green Lane East (Regional Road).

Through approved subdivision plans, several collector roads are planned throughout the communities of the Town. This includes:

- f. Planned collector roads in the approved subdivision in Holland Landing;
- g. Planned collector roads in the approved subdivision in Queensville;
- h. Planned collector roads in the approved subdivision in Sharon;
- i. Planned collector roads in the approved subdivision in the Green Lane Secondary Plan; and
- j. A four lane east-west collector network from Bathurst Street to Green Lane, part of the Green Lane Secondary Plan.

2.1.2 Scenario 2: Currently Planned Town Network

Building upon the network in Scenario 1, Scenario 2 includes the proposed collector roads from the Town's 2010 Transportation Master Plan. This includes:

- k. North Queensville Ring Road between Queensville Sideroad and Mount Albert Road;
- l. Thompson Drive Extension (connecting between Queensville Sideroad and the existing Thompson Drive terminus to the north and from the current terminus to the Sharon East Employment Collector to the east);
- m. Murrell Boulevard Extension from Doane Road to Mount Albert Road;
- n. Sharon East Employment Collector from Doane Road to Mount Albert Road;
- o. East-West Collector midblock crossing of Highway 404;
- p. North-south collector from Queensville Sideroad to Evans Farm Boulevard.

Scenario 2 will confirm if the proposed collector roads are needed by the horizon year of 2041.

2.1.3 Scenario 3: Revised Town Network

Building upon Scenario 2 and following the recommendations from the previous section, Scenario 3 considers additional connections within the Town to build a complete and connected network. The improvements to the network include:

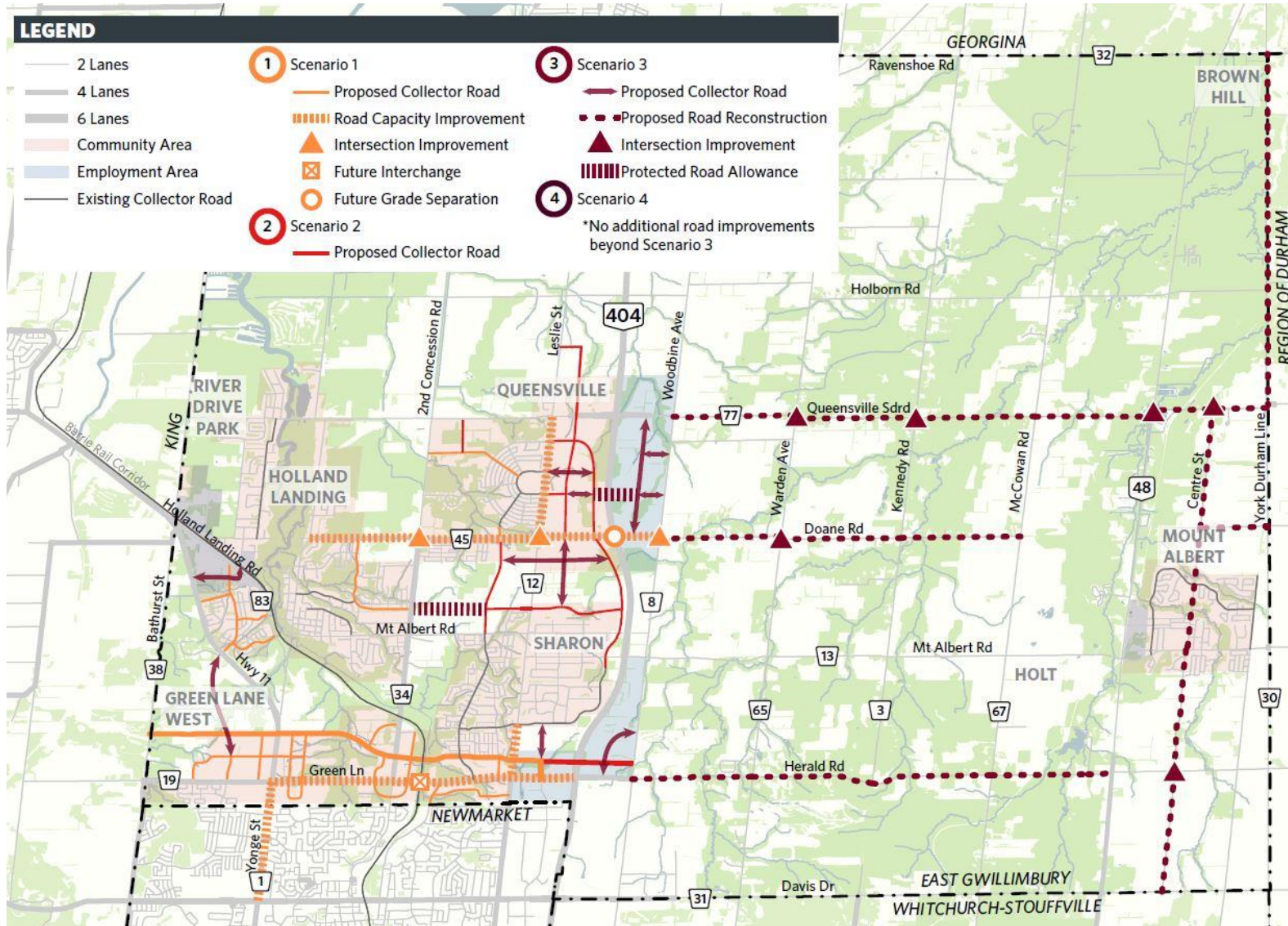
- a. A new north-south connection between Colonel Wayling Boulevard and the Harry Walker Parkway Extension;

- b. A protected road allowance for a midblock crossing of Highway 404 between Queensville Sideroad and Doane Road;
- c. New north-south and east-west collector roads for the employment area bounded by Highway 404, Queensville Sideroad, Woodbine Avenue, and Doane Road;
- d. A north-south connection from Woodbine Avenue to Green Lane in the employment lands east of Highway 404 and south of Mount Albert Road;
- e. The extension of Dogwood Boulevard from Highway 11 to the East-West Collector in the Green Lane West community;
- f. The extension and at grade crossing of Centennial Avenue from Toll Road to Highway 11;
- g. New north-south collector to connect the communities of Queensville and Sharon;
- h. A new east-west collector to connect the Murrell Boulevard extension to the Sharon East Employment collector; and
- i. Reconstruction of the Town's rural roads to improve the road structure, pavement lifecycle, and eliminate jogged intersections to improve sightlines and reduce conflict points; and
- j. Two new east-west collector roads in the Queensville area connecting the Sharon East Employment collector to Leslie Street.

2.1.4 Scenario 4: Enhanced Town Network

There are no additional roadway components for Scenario 4.

Figure 1: 2041 Scenario Planning Strategies Road Network



2.1.5 Road Network Modifications

Based upon a comparison of the 2010 TMP recommended road improvements relative changes in the Town's future growth areas, some modifications to the 2010 TMP network are highlighted in the following subsections, and were applied to Scenario 3.

2.1.5.1.1 North Queensville Ring Road

In the 2010 TMP, the North Queensville Ring Road was proposed to improve access to the future Queensville employment lands. However, the Region's 45% intensification scenario does not identify much growth north of Queensville Sideroad. Most of this growth will be located in the block bounded by Queensville Sideroad, Leslie Street, Holborn Road, and Highway 404.

A traffic analysis shows that the North Queensville Ring Road would carry very little traffic west of Leslie Street, with two-way traffic volumes of 160 vehicles in the AM peak hour. East of Leslie Street, this increases to 670 vehicles. The analysis also shows that the collector road does not help address congestion along Queensville Sideroad, west of Leslie Street.

As the portion west of Leslie Street would have significant impact on whitebelt lands within the area, it is **recommended that the portion of the North Queensville Ring Road east of Leslie Street be carried forward**. This portion will provide access to the employment lands located in that area and will provide connectivity to the collector network south of Queensville Sideroad.

2.1.5.1.2 Silk Twist Drive Extension

The Silk Twist Drive Extension was designed to improve access to future employment lands in Holland Landing. It would also serve as an alternative to Doane Road and Mount Albert Road for local trips.

It is recommended that the Thompson Drive Extension design be altered such that the segment between 2nd Concession Road and Murrell Boulevard is not carried forward for the horizon year of 2041. This segment should be a protected road allowance and can instead serve as an active transportation connection. There are several indications why this segment should only be a protected road allowance:

- Does not serve any traffic as it is located outside of the urban boundary;
- Significantly impacts the Whitebelt lands; and

- Doane Road and Mount Albert do not experience congestion in this area.

However, by having this segment serve as an active transportation connection only, it will minimize the impact to the Whitebelt lands and improve connectivity to the community areas within the Town.

The other segments of the Thompson Drive Extension improve connectivity within the area as it connects to Murrell Boulevard and the Sharon East Employment Collector.

2.1.5.1.3 Murrell Boulevard Extension

The Murrell Boulevard Extension would continue from its existing terminus at Mount Albert Road and continue north to Doane Road, connecting the West Sharon and Queensville communities. It also provides a north-south alternative to Leslie Street.

The proposed Murrell Boulevard Extension is recommended as the analysis shows that the extension carries over 500 vehicles in the AM peak hour. It would provide connectivity between community areas within the Town and adds needed capacity to the road network.

2.1.5.1.4 Sharon East Employment Collector

The Sharon East Employment Collector was designed to provide access to the Highway 404 residential and employment lands in Queensville and Sharon. The road also provides north-south capacity to the Town's collector network.

The proposed employment collector is recommended as it improves connectivity within the Town and connects employment to residential areas. It also helps alleviate congestion on Leslie Street.

2.1.5.1.5 Highway 404 Midblock Crossing

The Highway 404 midblock crossing was designed as an extension of the committed East-West Collector from the Green Lane Secondary Plan. It is meant to act as an alternative to Green Lane and was designed to improve connectivity to the employment lands east of Highway 404.

The Highway 404 midblock crossing is recommended as it helps alleviate congestion from Green Lane and Woodbine Avenue and provides access to the employment lands.

2.2 Cycling Network

The cycling network for the planning strategies is detailed in this section. In order to promote cycling, there is a need to provide cycling infrastructure throughout the Town.

The cycling network for the 2041 scenarios is shown in **Figure 2**.

2.2.1 Scenario 1: Base Case

The proposed 2041 cycling network for the Town builds upon the existing cycling network and York Region's 2016 TMP, which includes proposed cycling facilities on Regional Roads.

The Region's 2016 TMP includes cycling facilities along:

- a. Doane Road from Yonge Street to Woodbine Avenue;
- b. Mount Albert Road from Yonge Street to Leslie Street and from Woodbine Avenue to King Street;
- c. 2nd Concession Road from Queensville Sideroad to Doane Road;
- d. Leslie Street from Mount Albert Road to Green Lane East;
- e. Yonge Street from Olive Street / Beckett Avenue to Highway 11;
- f. Green Lane from Woodspring Avenue to Woodbine Avenue;
- g. Davis Drive from Warden Avenue to York Durham Line; and
- h. Holland Landing Road from Bathurst Street to Oriole Drive.

The Region's TMP also recommends cycling facilities throughout the Town along:

- i. Ravenshoe Road;
- j. Bathurst Street;
- k. Highway 11;
- l. Warden Avenue;
- m. Kenney Road;
- n. McCowan Road; and
- o. York Durham Line.

Cycling facilities are also proposed on the following Town roads:

- p. Murrell Boulevard from Mount Albert Road to Green Lane; and
- q. East-west collector, identified in the Green Lane Secondary Plan, from Bathurst Street to Leslie Street.

2.2.2 Scenario 2: Currently Planned Town Network

Scenario 2 builds on the cycling infrastructure in Scenario 1 by including cycling infrastructure on the future collector roads in approved subdivisions. This includes:

Through approved subdivision plans, several collector roads are planned throughout the communities of the Town. This includes:

- r. Planned collector roads in the approved subdivision in Queensville;
- s. Planned collector roads in the approved subdivision in the Green Lane Secondary Plan; and
- t. The Highway 404 midblock crossing between Mount Albert Road and Green lane.

2.2.3 Scenario 3: Revised Town Network

With the recommended reconstruction of several roads in Scenario 3, it is also recommended that these roads include cycling facilities. This includes:

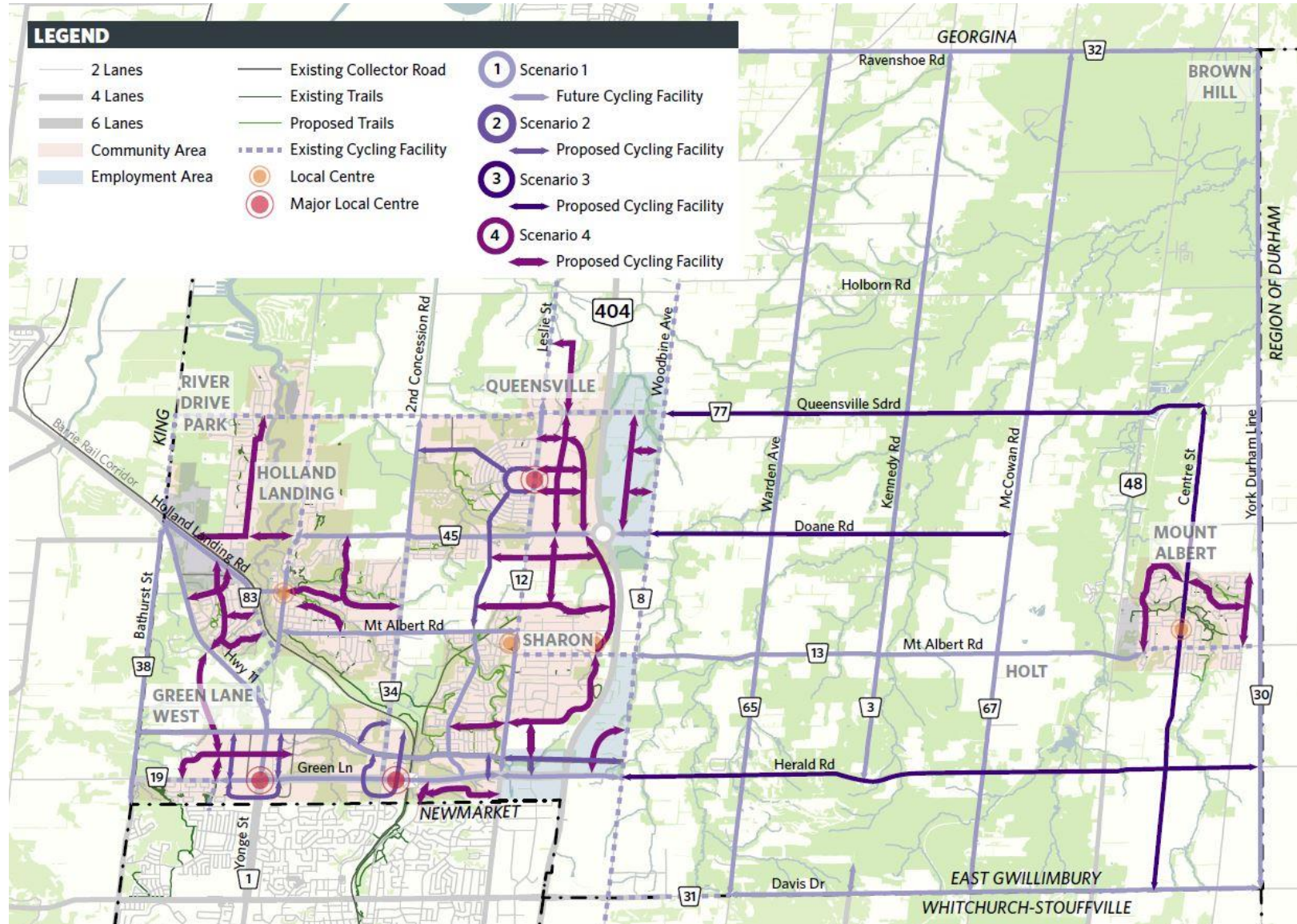
- u. Queensville Sideroad from Woodbine Avenue to Centre Street;
- v. Doane Road from Woodbine Avenue to McCowan Road;
- w. Herald Road from Woodbine Avenue to York Durham Line; and
- x. Centre Street from Queensville Sideroad to Davis Drive.

2.2.4 Scenario 4: Enhanced Town Network

Scenario 4 builds upon Scenario 3 and aims to reduce the vehicular demand and increase the cycling demand. For the cycling network, this scenario aims to:

- **Complete the on-street cycling network** by incorporating safe cycling facilities on all new collector or arterial roads and retrofitting existing collector or arterial roads.

Figure 2: 2041 Scenario Planning Strategies Cycling Network



2.3 Transit Network, Planning Strategies, and Policy Development

The transit network, planning strategies, and policy development are specific features identified in Scenario 4. It is detailed in this section and illustrated in **Figure 3**.

2.3.1 Scenario 1: Base Case

The 2016 York TMP identifies future Frequent Transit Network, or FTN service (15 minute frequencies or less, 7 days per week from 6am to 10pm) within East Gwillimbury along 2nd Concession, Leslie Street, Queensville Sideroad and Green Lane. Dedicated Rapidways are also envisioned along Green Lane between Yonge Street and the East Gwillimbury GO Station.

2.3.2 Scenario 2: Currently Planned Town Network

There are no specific components for this scenario.

2.3.3 Scenario 3: Revised Town Network

There are no specific components for this scenario.

2.3.4 Scenario 4: Enhanced Town Network

Scenario 4 aims to reduce the dependency on vehicles and increase the modal share of transit, cycling, and walking. This can be achieved by the following actions:

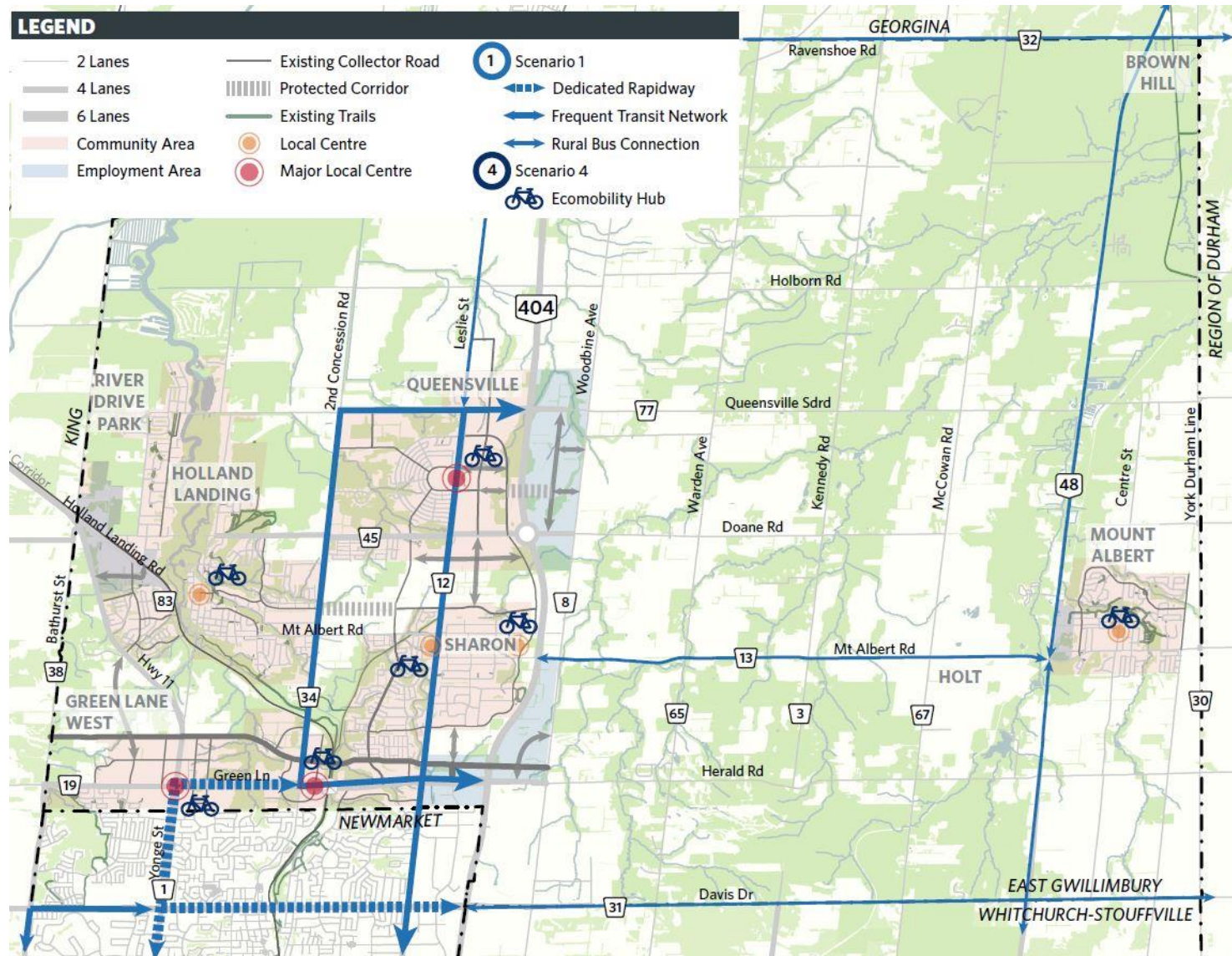
- **Complete the sidewalk network** within the urban areas of the Town where there are gaps, and implement a policy to implement more pedestrian crossings;
- **Complete the bicycle network**, building on the 2012 Active Transportation and Trails Master Plan, incorporate network of dedicated and separated cycling facilities into roadway improvements where feasible, including along collector roadways within new development areas.
- **Leverage shared mobility through EcoMobility hubs¹** which provide designated, safe, and comfortable waiting areas to find a car-share vehicle, bike-share rack, or wait for a ride-share. With several mobility models located in a designated area, the infrastructure has the potential to

¹ Karim D.M., Innovative Mobility Master Plan: Connecting Multimodal Systems with Smart Technologies, Disrupting Mobility Conference, MIT Media Lab, Cambridge, USA, November 11~13, 2015

address the “first and last mile” problem. The implementation of these hubs at major and local centres can facilitate demand responsive transit and bike share programs which are addressed in the following bullet points.

- **Bike-share programs** (traditional or “drop bike”) enable users to access and rent bicycles for short trips within a designated service area. These services rely on a series of fixed stations located across the designated service area for users to rent and return their bicycles. Users are able to retrieve a bicycle from one location and drop it off at any other available location in the network within a limited timeframe.
- **Sustainable Updates to the Town’s Zoning By-law** – updates to the by-law could include reducing the minimum parking standards, requiring Electric Vehicle (EV) charging stations, requiring bicycle parking areas, and carpool parking lots.
- **Improve Traffic Safety** – Develop policies for implementing complete street design philosophy (i.e. reduced travel lane width, curb radii, etc.), traffic calming and roundabouts to provide a consistent and rational approach to improving overall transportation safety across the Town
- **Advocate for and Support York Region’s Transit Plans.** YRT is also implementing on-demand transit service as a “first and last mile” solution between communities in the Town and the FTN.

Figure 3: 2041 Scenario Planning Strategies Transit Network, Planning Strategies, and Policy Development



3 Vehicular Level of Service (LOS)

The TMP planning strategies were modelled in the York Region EMME model to determine the impacts of the proposed TMP components of each scenario. This section details the vehicular level of service for each scenario.

3.1 Scenario 1: Base Case

The 2041 AM projected peak hour traffic conditions with the improvements from Scenario 1 are shown in **Figure 4**. Even with the improvements, the Town experiences significant congestion southbound on Bathurst Street, Yonge Street, 2nd Concession Road, Murrell Boulevard, and Leslie Street. There is also eastbound congestion on arterial roads that have an interchange with Highway 404, including Queensville Sideroad, Doane Road, and Green Lane.

Congestion within the Town is measured by the amount of vehicle-kilometers travelled (VKT) spent in congestion. VKT is calculated by multiplying the number of vehicle using a road segment by the length of the segment. Any road segment with a volume-to-capacity (v/c) ratio of over 1.0 is considered as congested. Scenario 1 has a total of 21,490 congested vehicle-kilometers travelled (VKT), which means that 16% of all VKT is spent in congestion².

² VKT is calculated for all roads based on the area bounded by Queensville Sideroad to the north, Woodbine Avenue to the east, Davis Drive to the south and east of Highway 404, Green Lane to the south and west of Highway 404, and Bathurst Street to the west. It does not include Highway 404.

Figure 4. 2041 Scenario 1 Base Case Model Output - Peak Hour Traffic Conditions



Source: York Region EMME Model

3.2 Scenario 2: Currently Planned Town Network

Figure 5 shows the 2041 traffic conditions for Scenario 2. When compared to Scenario 1, Scenario 2 results in a lower congested VKT of 17,850 kilometers. This translates to 13% of all roads being travelling in congestion. With the proposed improvements from the 2010 TMP which increases connectivity within the Town, the congested VKT decreases by 3%.

Figure 5. 2041 Scenario 2 Currently Planned Town Network Model Output - Peak Hour Traffic Conditions



Source: York Region EMME Model

3.3 Scenario 3: Revised Town Network

The proposed connections in the Town’s collector network minimize the amount of congestion within the Town when compared to the previous scenarios. Scenario 3 results in 17,890 congested vehicle-kilometers travelled (VKT), which means that 13% of all VKT travelled is spent in congestion. This is similar to Scenario 2, however it is noted that Scenario 2 included infrastructure outside of growth areas which would not be well utilized. The proposed connections in Scenario 3 respond better to the location of anticipated growth and help improve travel between communities.

Figure 6 depicts the 2041 AM peak hour traffic conditions for Scenario 3.

Figure 6. 2041 Scenario 3 Enhanced Town Network Model Output - Peak Hour Traffic Conditions



Source: York Region EMME Model

4 Evaluation of the Planning Strategies

4.1 Evaluation Criteria

To determine the preferred scenario for the 2041 horizon, a detailed set of evaluation criteria and measurement were identified. This includes consideration for transportation services, social equity, policy environment, affordability, natural environment, and socio-economic environment (**Figure 7**).

Figure 7. Evaluation Criteria

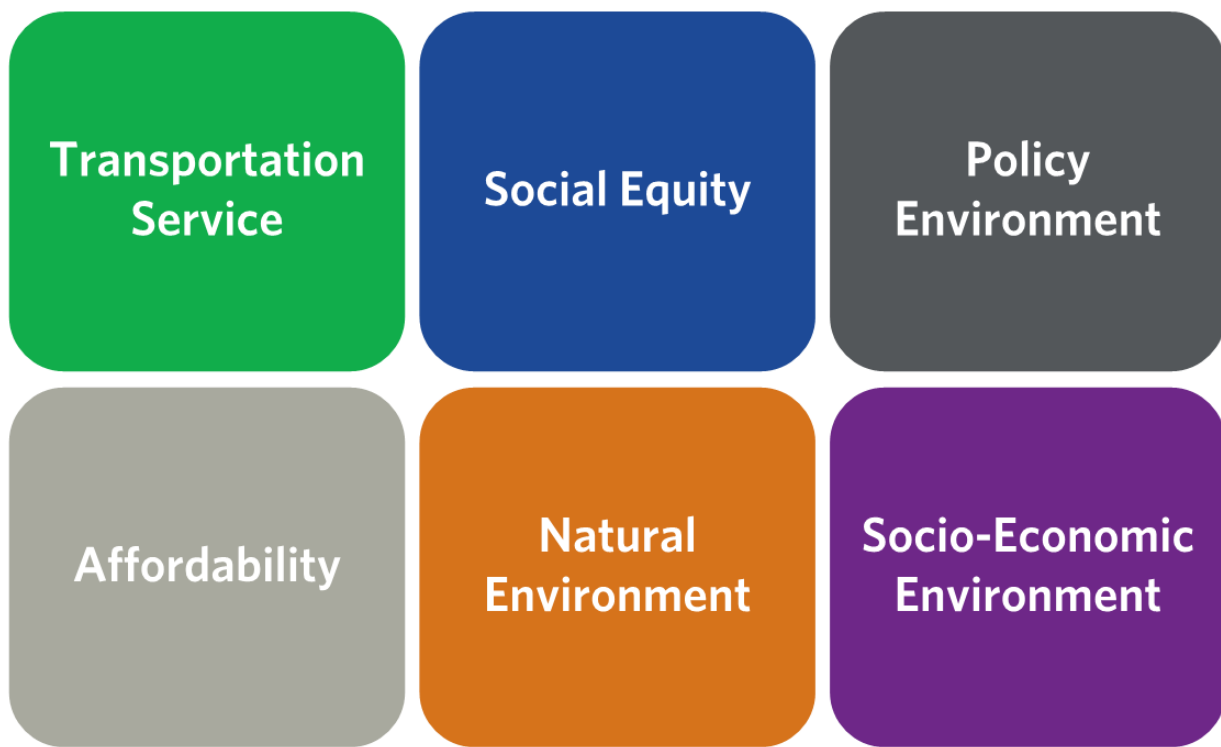


Table 2 summarizes the detailed evaluation measures of each criterion that was used to assess each planning scenario.



























Table 2. Evaluation Criteria and Measures

Evaluation Criteria	Measures
Transportation Service	Efficiently move people and goods
	Provides safe access
	Provides efficient connections within the Town
	Improves connections to/from surrounding municipalities
	Provides opportunities to walk and cycle throughout the Town
	Provides a diversity of travel choices, including walking, cycling, and transit
Social Equity	Accommodates mobility for all ages and users
	Optimizes the health and safety of all ages and users
Policy Environment	Supports Provincial policies
	Supports York Region policies
	Supports Town’s Official Plan
	Supports existing and future population areas
Affordability	Minimizes capital costs
	Minimizes maintenance and operation costs
Natural Environment	Minimizes impacts to the natural environment
	Network encourages active transportation
Socio-Economic Environment	Minimizes impacts to property
	Supports existing and future employment areas
	Provides opportunities for planned growth

4.2 Evaluation of the Scenarios

The four scenarios were evaluated based on the evaluation criteria and measures outlined in the above section. **Table 3** summarizes the evaluation of the scenarios.

Table 3. Summary Evaluation of Scenarios

Evaluation Criteria	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Transportation Service				
Social Equity				
Policy Environment				
Affordability				
Natural Environment				
Socio-Economic Environment				
Recommendation	Screen Out	Screen Out	Carry Forward	Carry Forward
Legend				
	Least Preferred		Most Preferred	

Scenario 1 is recommended to be screened out. Although it has the least impact on the natural environment, it has the largest impact on transportation service, social equity, and policy environment as it does not meet the objectives of this TMP. This scenario offers the least amount of connections within the Town, maximizing congestion on the road network and therefore does not support the planned growth or promote connectivity and multimodal opportunities within the network. While the scenario minimizes capital costs, it does not mitigate maintenance and operational costs due to high traffic volumes on poor road conditions.

Scenario 2 is recommended to be screened out. It provides additional capacity to the road network, however it does not significantly improve the

transportation service. Further improvements are also needed to support the growth objectives identified in the policy and the socio-economic environment.

Scenario 3 is recommended to be carried forward. This scenario provides strong transportation service due to additional connections in the network, promoting key connections to communities within the Town and minimizes congested VKT. It also provides increased access and opportunities for walking and cycling. While the financial implications are high, the benefits to this scenario are strong, meeting the objectives of this TMP.

Scenario 4 is also recommended to be carried forward. It further enhances the well connected network iwn Scenario 3 and provides increased access and opportunities for walking and cycling, while encouraging the use of transit. By building a multimodal network, this scenario aligns most closely with the policy environment and the objectives set out by this TMP. As Scenario 4 builds upon Scenario 3, it is recommended that Scenario 4 is the preferred scenario.

Scenario 4 – Enhanced Town Network is the preferred planning scenario. The identified benefits also further apply to the 2051 scenario to support the growth in East Gwillimbury, especially within the whitebelt areas. The preferred scenario supports the multimodal vision for the Town and provides a safe, accessible, and connected transportation network for all users.



Transportation Master Plan Update

Appendix B

Attachment 1 – Whitebelt Model Development and Network Recommendations Technical Memo

Town of East Gwillimbury
Final Report

March 2024





Memo

Date: **Wednesday, January 04, 2023**

Project: East Gwillimbury 2051 TMP Update

To: Town of East Gwillimbury

From: HDR

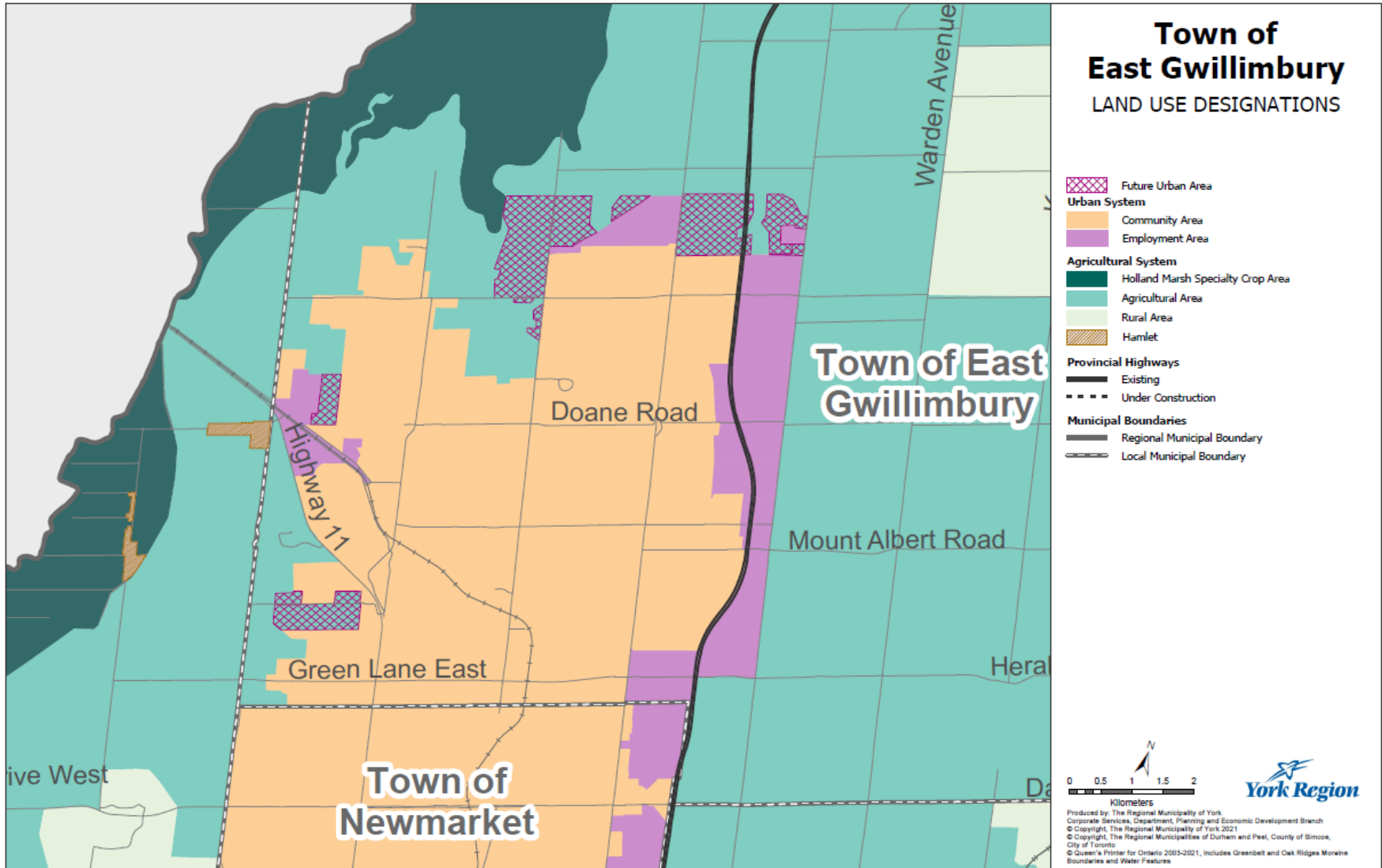
Subject: 2051 70% and 100% Whitebelt Scenario Subarea Model Development

1. Introduction

The Town of East Gwillimbury has initiated an Official Plan Review, which includes a land needs assessment to accommodate land use growth projections to the 2051 horizon year. HDR previously completed a Draft Transportation Master Plan for the Town in September 2019 (the “Draft 2041 TMP”) to identify transportation servicing and infrastructure needs to the 2041 horizon year. To address transportation needs to the 2051 horizon year, an update to the Draft 2041 TMP is required to update the preferred solution considering growth to the 2051 horizon year.

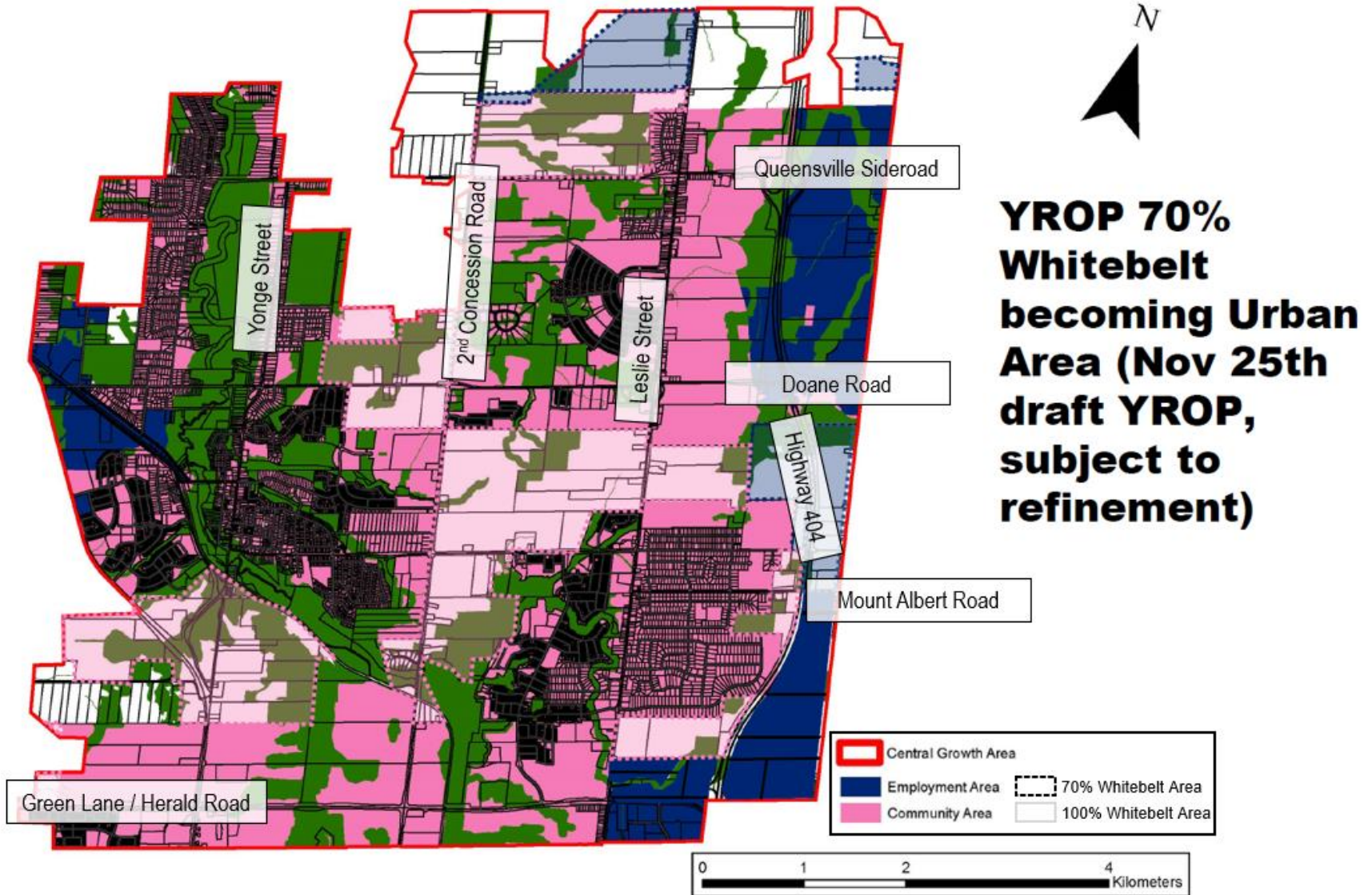
The expanded urban area proposed for 2051 development is shown in **Figure 1**, and is anticipated to be phased in two stages (‘70%’ and ‘100%’ development) as shown in **Figure 2**. This memo documents the model development process and transportation network recommendations for the 2051 70% and 100% development scenarios.

Figure 1. 2051 Future Land Use Designation



Note: Future Urban areas represent the 100% “Whitebelt Lands” referred to throughout this memo

Figure 2. 70% and 100% Whitebelt Land Development

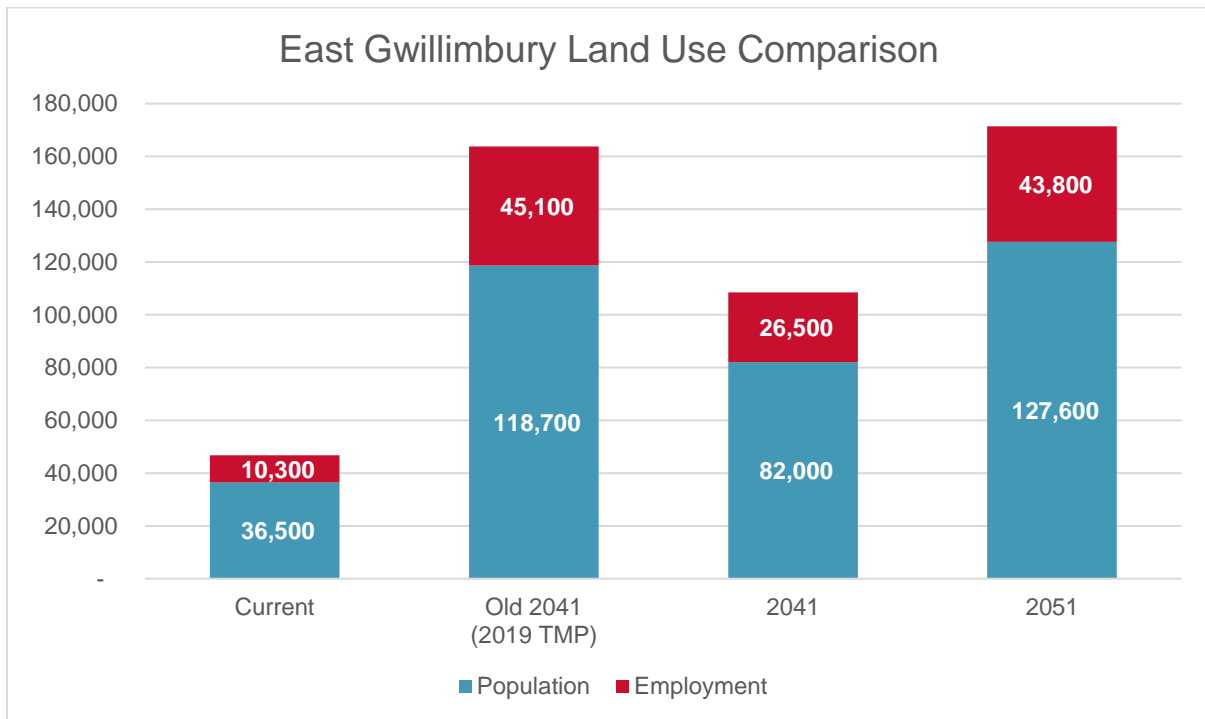


2. Land Use Forecasts

York Region Land Use Forecast

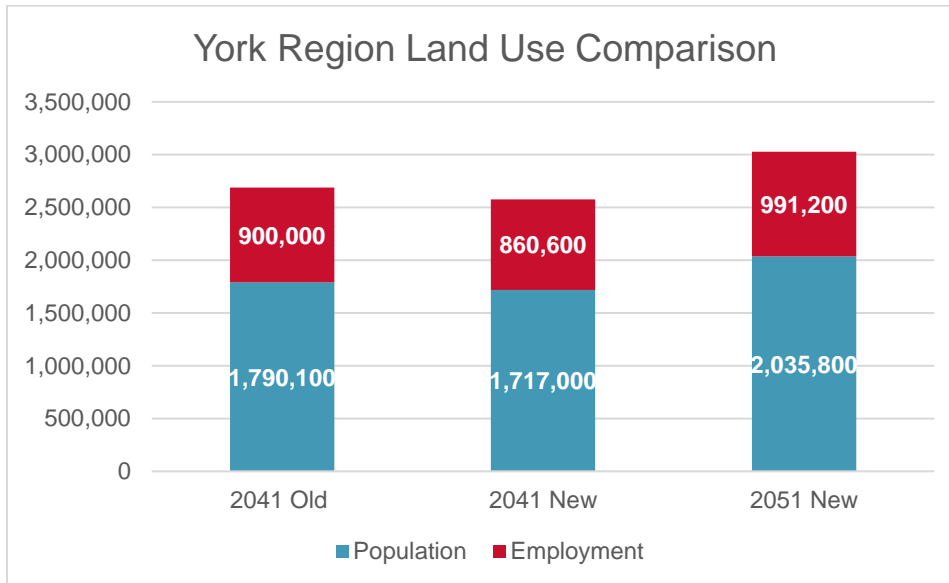
Land use forecasts (dated December 2021) for all lower-tier municipalities within York Region were provided and include updates to the 2041 horizon as well as new projections to the 2051 horizon¹. A comparison of old and new population and employment for East Gwillimbury and York Region (total) is shown in **Figure 3** and **Figure 4**, respectively. A comparison for all York Region municipalities old and new population, employment, and total population and employment forecasts are shown in **Table 1** to **Table 3**, respectively. It is noted 'old' forecasts refer to land use numbers used in the Draft 2041 TMP.

Figure 3. East Gwillimbury Land Use Comparison



¹ Provided by the Town. Council approved numbers from the Official Plan dated October 21, 2022

Figure 4. York Region Land Use Comparison



The new total forecast for all of York Region is approximately 4% lower than the forecasts previously considered in the Draft 2041 TMP; including a 33% reduction to East Gwillimbury . The new 2051 total forecasts for all of York Region project 13% growth from 2041 Old and 5% growth for East Gwillimbury, indicating that more of East Gwillimbury’s projected growth is now anticipated to occur between 2041 and 2051 which may have an impact on the recommended 2041 transportation network relative to the Draft 2041 TMP.

It is noted however that York Region’s forecasts are consistent with the 70% development scenario.

Table 1. Population Forecasts for York Region

Municipality	Population				
	2041 Old	2041 New*	2041 New* Comparison to 2041 Old	2051 New*	2051 New* Comparison to 2041 Old
Aurora	79,000	79,000	0%	84,700	7%
East Gwillimbury	118,700	83,500	-30%	127,600	7%
Georgina	71,300	65,000	-9%	70,100	-2%
King	37,900	42,300	12%	50,100	32%
Markham	535,100	498,100	-7%	608,800	14%
Newmarket	108,200	104,600	-3%	115,900	7%
Richmond Hill	277,900	284,600	2%	319,800	15%
Vaughan	497,400	487,500	-2%	570,600	15%
Whitchurch Stouffville	64,600	72,400	12%	88,200	37%
York Region (Total)	1,790,100	1,717,000	-4%	2,035,800	14%

*Note: New forecasts are based on York Region December 2021 numbers. Old forecasts refer to numbers used for the original September 2019 assessment for the 2041 horizon and TMP

Table 2. Employment Forecasts and Comparison for York Region

Municipality	Employment				
	2041 Old	2041 New*	2041 New* Comparison to 2041 Old	2051 New*	2051 New* Comparison to 2041 Old
Aurora	38,500	37,900	-2%	41,300	7%
East Gwillimbury	45,100	26,600	-41%	43,700	-3%
Georgina	24,500	17,100	-30%	20,700	-16%
King	16,000	14,000	-13%	16,400	2%
Markham	269,200	260,700	-3%	301,700	12%
Newmarket	52,400	54,600	4%	58,500	12%
Richmond Hill	109,800	109,400	0%	122,800	12%
Vaughan	321,500	314,600	-2%	351,600	9%
Whitchurch Stouffville	23,000	25,700	12%	34,500	50%
York Region (Total)	900,000	860,600	-4%	991,200	10%

*Note: New forecasts are based on York Region December 2021 numbers. Old forecasts refer to numbers used for the original September 2019 assessment for the 2041 horizon and TMP

Table 3. Total Population and Employment Forecast and Comparison for York Region

Municipality	Population + Employment				
	2041 Old	2041 New*	2041 New* Comparison to 2041 Old	2051 New*	2051 New* Comparison to 2041 Old
Aurora	117,500	116,900	-1%	126,000	7%
East Gwillimbury	163,800	110,100	-33%	171,300	5%
Georgina	95,800	82,100	-14%	90,800	-5%
King	54,000	56,300	4%	66,500	23%
Markham	804,300	758,800	-6%	910,500	13%
Newmarket	160,500	159,200	-1%	174,400	9%
Richmond Hill	387,800	394,000	2%	442,600	14%
Vaughan	818,900	802,100	-2%	922,200	13%
Whitchurch Stouffville	87,600	98,100	12%	122,700	40%
York Region (Total)	2,690,200	2,577,600	-4%	3,027,000	13%

*Note: New forecasts are based on York Region December 2021 numbers. Old forecasts refer to numbers used for the original September 2019 assessment for the 2041 horizon and TMP

East Gwillimbury Land Use Forecast

The Town provided 2051 land use forecasts in January 2022 for all traffic zones within East Gwillimbury for both 70% and 100% Whitebelt scenarios. A comparison of the land use numbers provided by York Region and East Gwillimbury is shown in **Table 4**.

The detailed land use forecasts provided by the Town are noted to be higher than York Region's, with total population and employment being 5% and 19% higher for 70% and 100% Whitebelt scenarios, respectively. Employment in the 100% Whitebelt scenario has the highest increase at 44%. The modelling exercise will consider the higher forecasts at the traffic zone level provided by the Town for within East Gwillimbury. Other York Region municipalities will consider the forecasts provided by the Region.

Table 4. Comparison of 2051 Land Use Forecasts

Source	Population (% increase)*	Employment (% increase)*	Total Population and Employment (% increase)*
York Region (December 2021)	127,600 (-)	43,700 (-)	171,300 (-)
East Gwillimbury – 70% Whitebelt (January 2022)	132,900 (+4%)	46,800 (+7%)	179,700 (+5%)
East Gwillimbury – 100% Whitebelt (January 2022)	140,700 (+10%)	63,100 (+44%)	203,800 (+19%)

*% increase compared to York Region

3. Conceptual Network Development

2041 TMP Network (2019)

The draft 2041 TMP completed in September 2019 recommended a multimodal transportation solution for the Town that provides a safe, accessible, and connected road network for all users. The network features committed road improvements and other new connections in response to policy changes, while increasing access and opportunities for walking and cycling, and encouraging the use of transit. The recommended road improvements from the 2041 TMP are shown in **Figure 5** and serve as a starting network to explore road network options for Whitebelt development in the 2051 horizon.

Figure 5. 2041 TMP Recommended Road Improvements (September 2019)



2051 Conceptual Network

The 2051 collector network was conceptualized by expanding the draft 2041 TMP recommendations and providing connections to new Whitebelt areas. Changes were also made to the 2041 TMP network based on Town's inputs for the 2051 TMP update and includes the following:

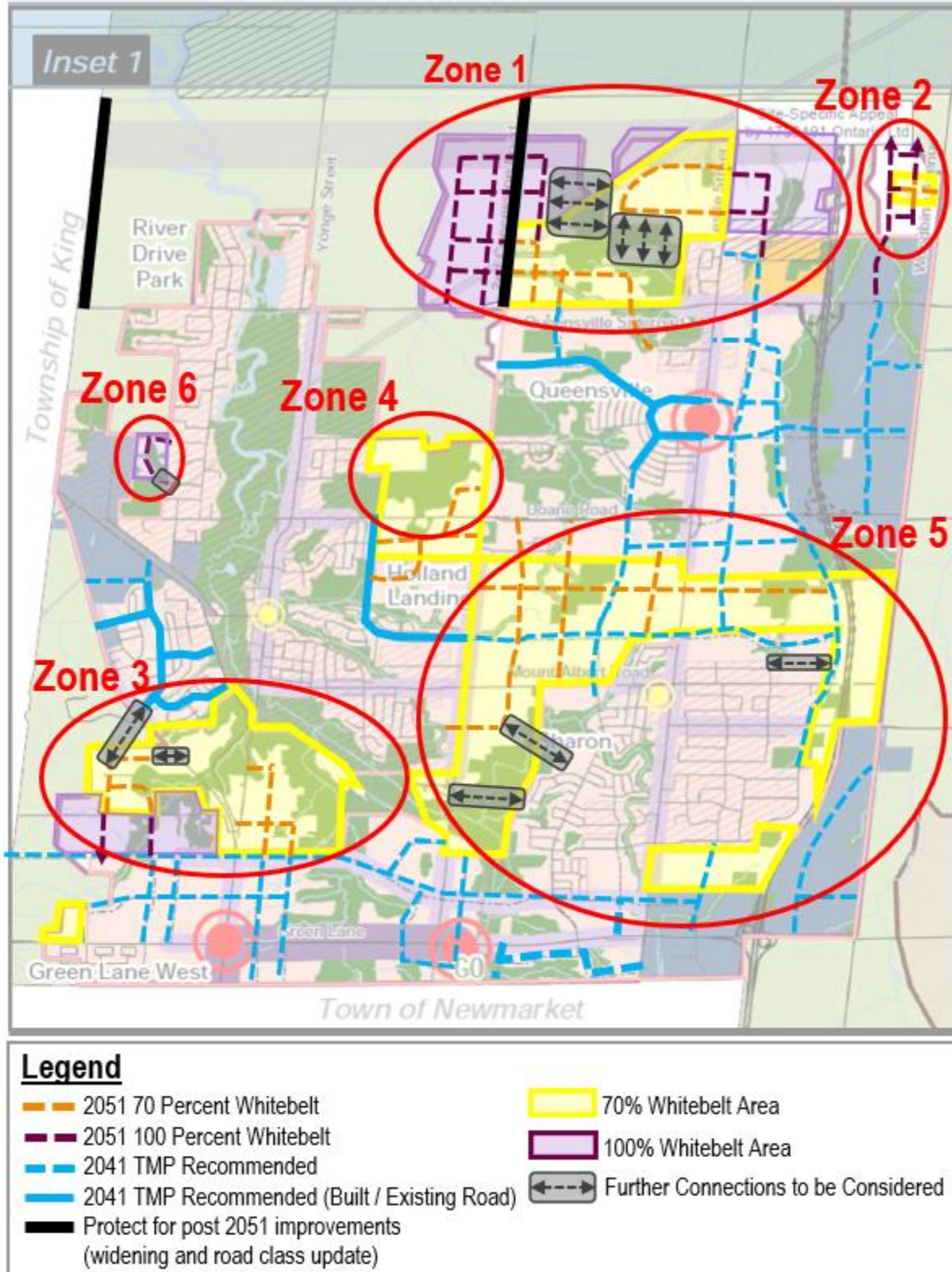
- Addition of Bradford Bypass
 - Protection for potential interchange at 2nd Concession Road and Bathurst Street
 - Protection for improvements on 2nd Concession Road and Bathurst Street between north of Queensville Sideroad and Holborn Road past the 2051 horizon. Improvements may include 2 to 4 lane widening and road class update
- Addition of Highway 404 midblock crossing north of Doane Road
- Removal of Highway 404 midblock crossing north of Green Lane
- Updated collector road networks per most recent studies
 - Employment lands northeast of Highway 404 and Green Lane
 - North of Holland Landing

The 2051 conceptual network considered for initial testing purposes is shown in **Figure 6**.

Whitebelt development areas are identified within six zones that will be referenced in following sections of the memo. These zones include:

- Zone 1: Northwest of Queensville Sideroad and Highway 404
- Zone 2: Northeast of Queensville Sideroad and Highway 404
- Zone 3: Surrounding the intersection of Highway 11 and Yonge Street
- Zone 4: North of Holland Landing
- Zone 5: Surrounding Sharon Community Area
- Zone 6: Northeast of Holland Landing Road and Oriole Drive

Figure 6. Conceptual 2051 Collector Network with Whitebelt Lands



4. Model Development

The York Region EMME model was used as a base to develop a 2051 travel demand model for East Gwillimbury. As described in **Section 1**, land use forecasts were updated for surrounding York Region municipalities and at the traffic zone level within East Gwillimbury. The subarea model was created for East Gwillimbury to further disaggregate several traffic zones to distinguish between existing, future 70% Whitebelt, and 100% Whitebelt development phases. Similar to the York Region’s EMME model, the East Gwillimbury subarea model was developed for the weekday AM peak hour only.

Subarea Model Zone System and Existing Network

The model uses a modified zone system, covering a study area of the entire Town bounded by Ravenshoe Road, York Durham Line, Green Lane / Herald Road, Davis Road and Bathurst Street. However, the land use changes are centered within the urban area west of Highway 404 with approximate boundaries of Holborn Road, Woodbine Avenue, Green Lane / Herald Road, and Bathurst Street. The subarea zone boundary is shown in **Figure 7**, with the urban area shown in **Figure 8**. The road network for both the full subarea and urban area is shown in **Figure 9** and **Figure 10**, respectively.

The road network in the subarea model includes all arterial and collectors. Traffic zones and centroid connectors were specifically modified to reflect the proposed land uses in the Town of Gwillimbury’s 70% and 100% Whitebelt development scenarios. Network assumptions such as free-flow speed and lane capacity were consistent with the York Region Model standards.

Figure 7. Subarea Model Zone Boundary (Full Town)

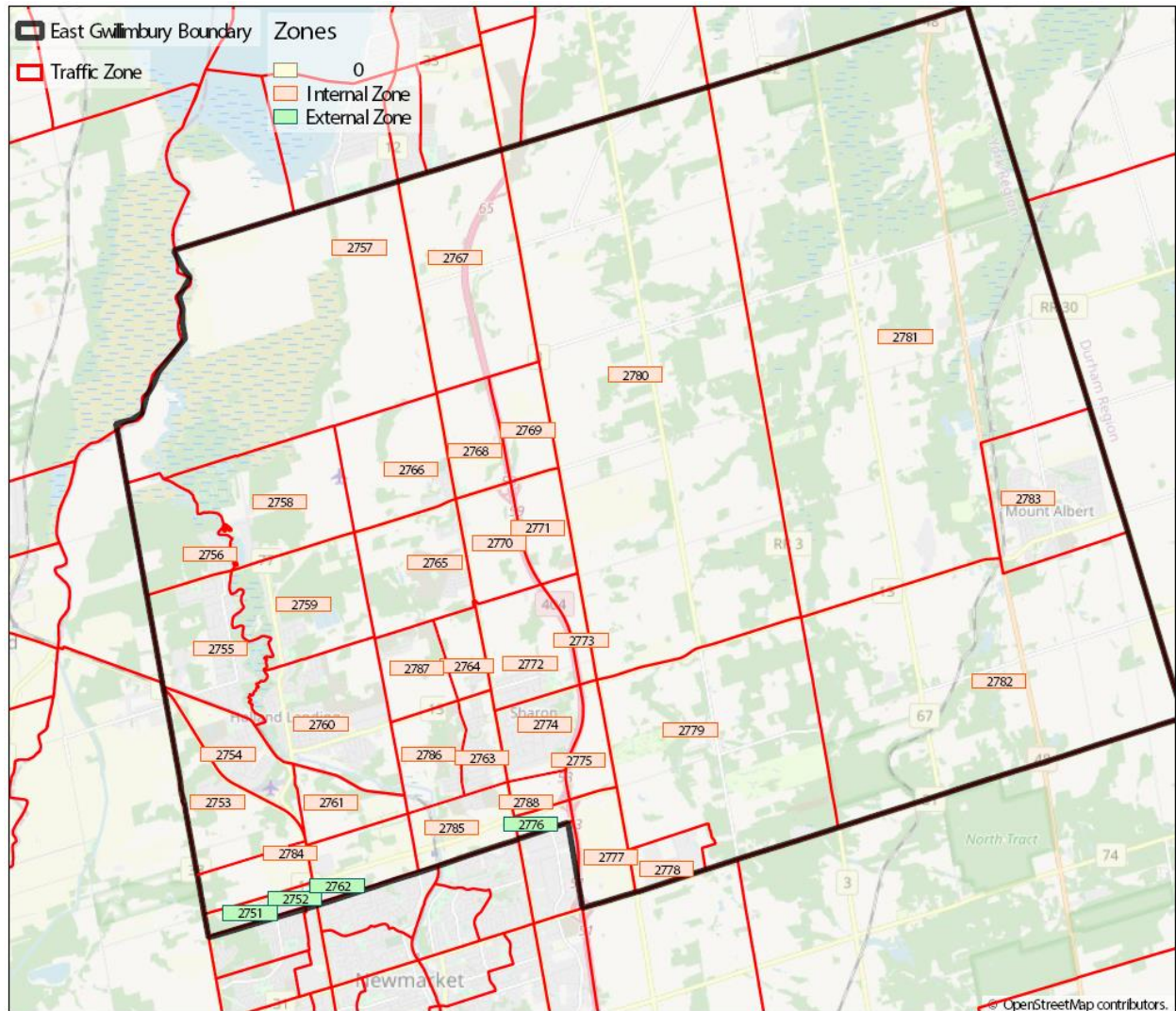


Figure 8. Subarea Model Zone Boundary (Urban area, west of Highway 404)

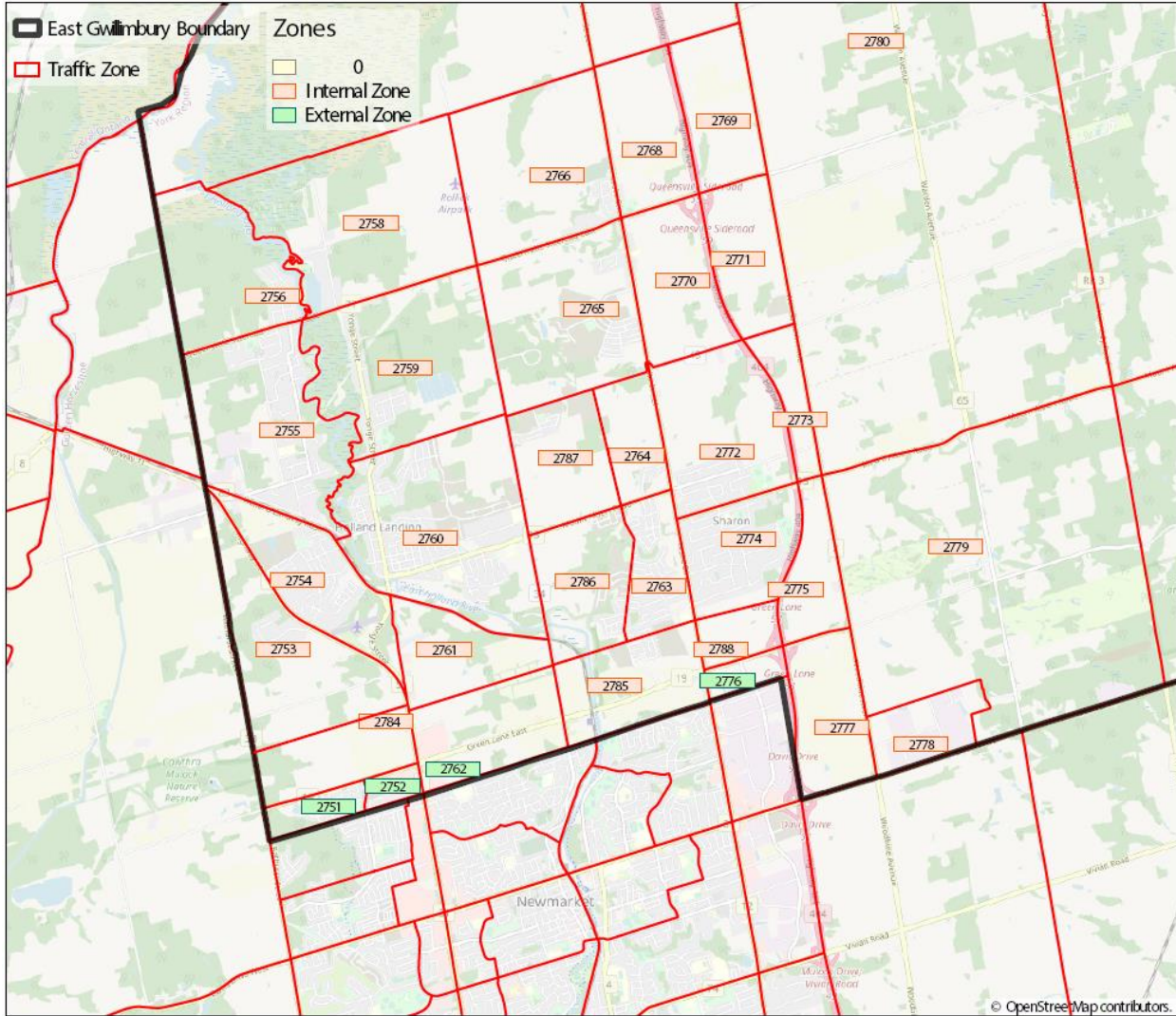


Figure 9. Subarea Model Road Network (Full Town)

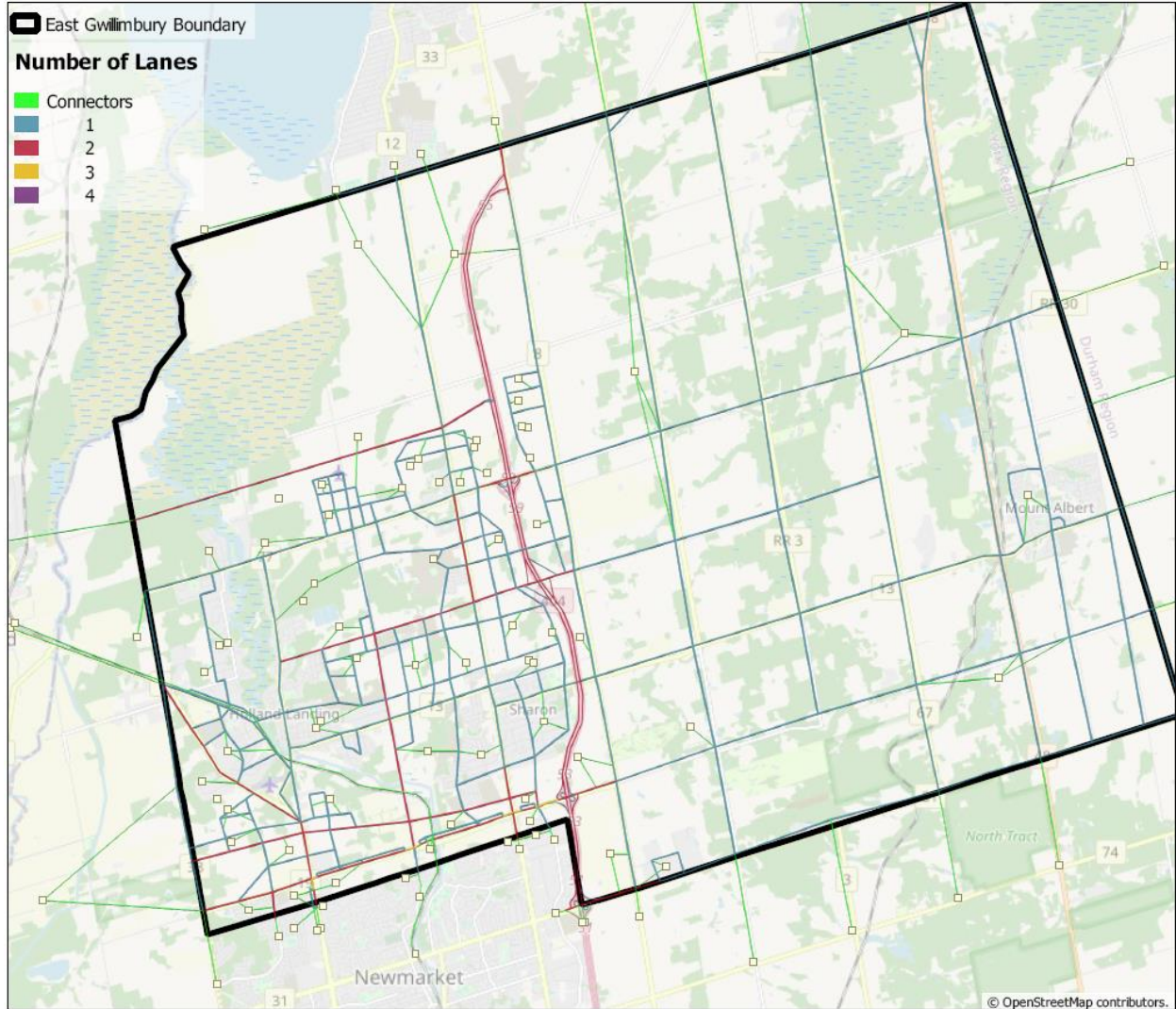
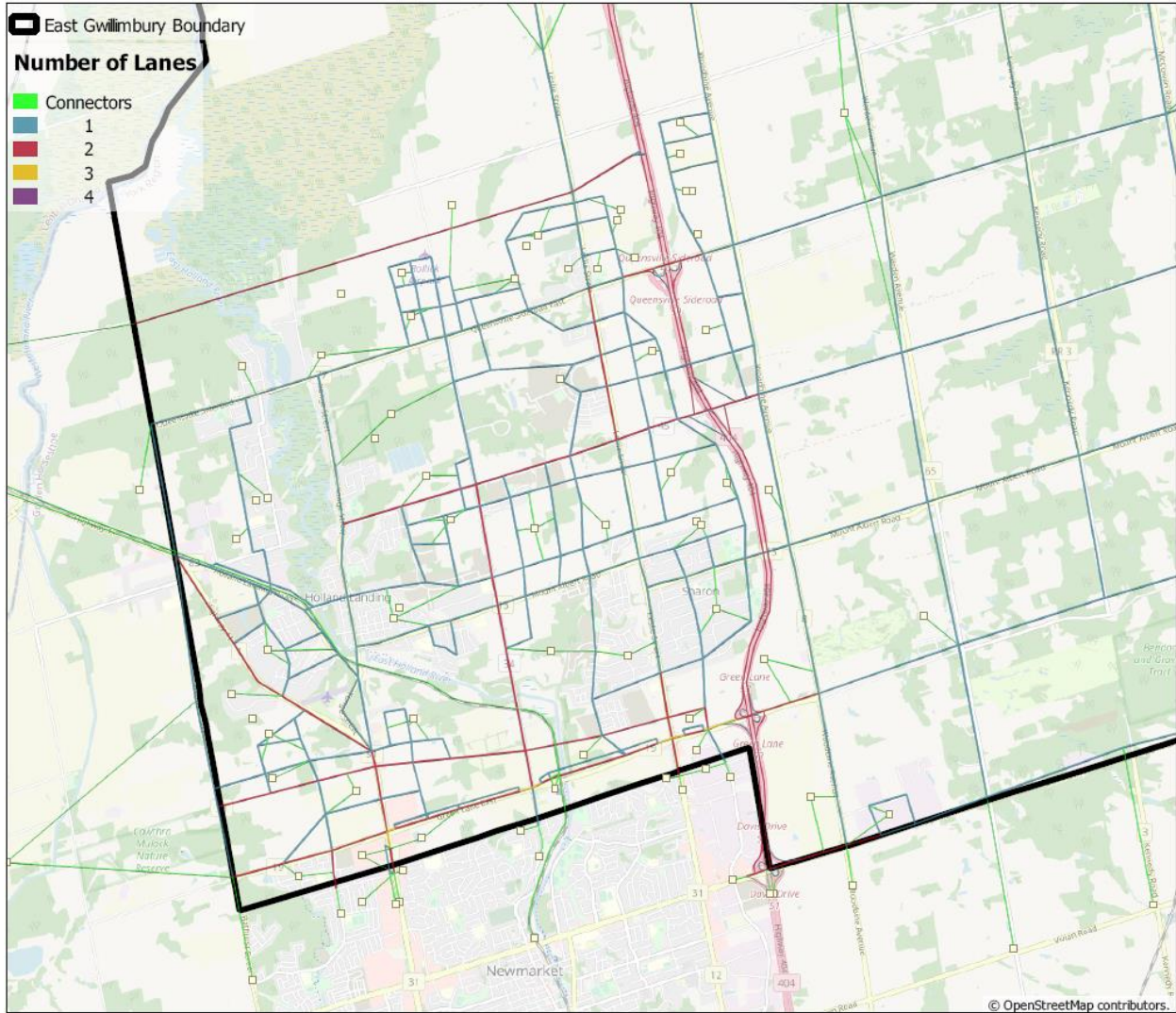


Figure 10. Subarea Model Road Network (Urban Area west of Highway 404)



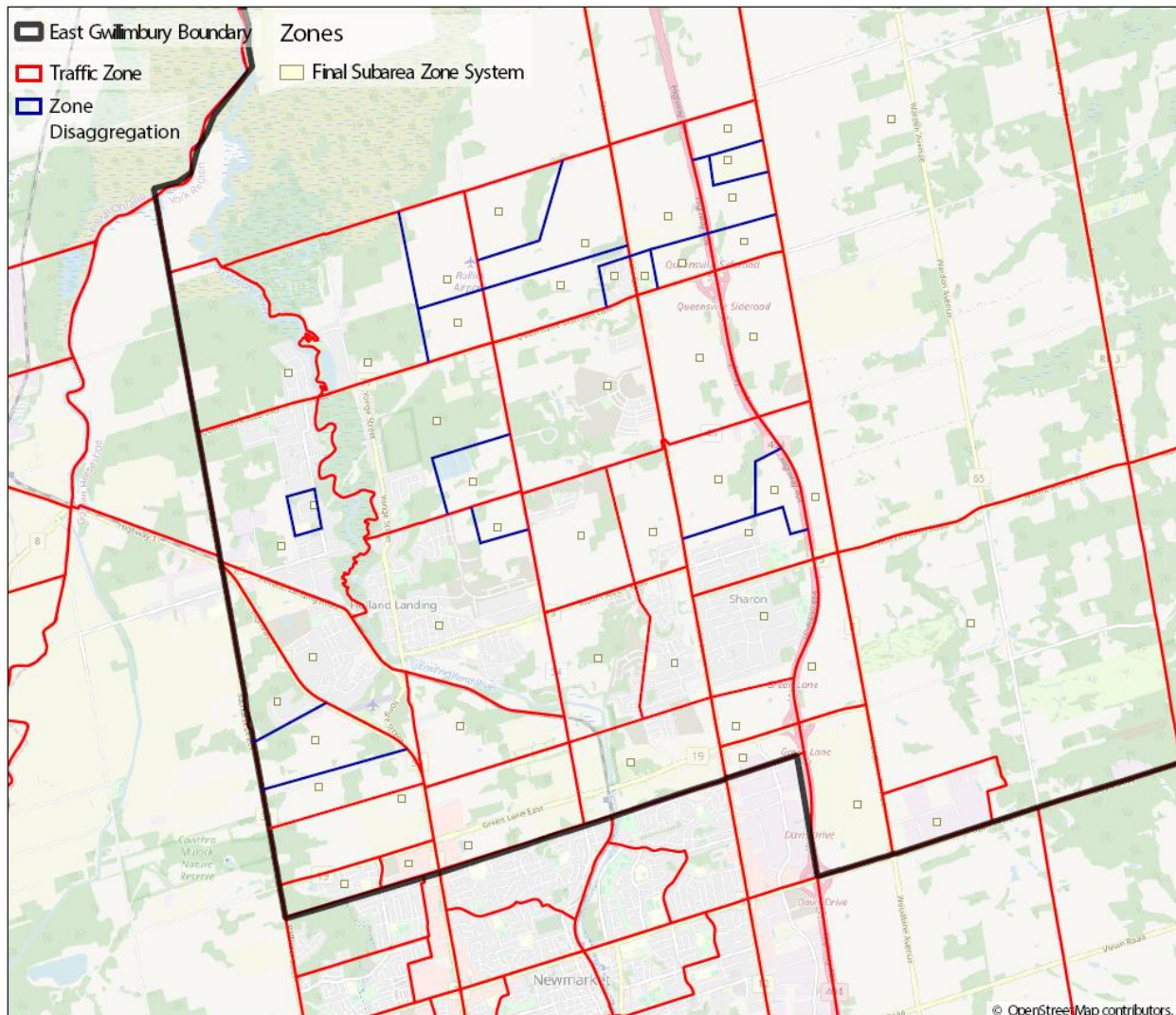
Traffic Zone and Land Use Modifications

Traffic Zone Disaggregation

Several zones within East Gwillimbury required disaggregation due to changes and/or additions of various land uses from existing conditions to 2051 70% and 100% Whitebelt development scenarios. Zone disaggregation allows for increased model flexibility to better capture expected travel patterns and behaviours of different land purposes within the original zone. For example, more trips are expected to originate from proposed residential (community) areas while more trips would be destined to proposed employment areas during the AM peak period.

The final model system with disaggregated traffic zones for the East Gwillimbury is shown in **Figure 11** and considers residential and employment within the Whitebelt areas specified in **Figure 2**. Whitebelt areas with unspecified land for the 100% phase were assumed to be similar to land uses in adjacent zones.

Figure 11: Disaggregated Zone System



Land Use Disaggregation

The 2011 model was used to separate out existing demand to represent existing land use at each zone. The remaining trips from the 2051 model (total 2051 demand less 2011 model demand, per zone) were assumed to represent new development and would be distributed among the other newly made disaggregated zones.

For Whitebelt lands with both proposed residential and employment land use, the remaining demand (both origin and destination) was distributed to respective zones based on both the in/out splits from the Institute for Transportation Engineers (ITE) Trip Generation Manual (11th Edition) and approximate area sizes from **Figure 2**. Land Use Codes from the ITE manual assumed include 710 (General Office Building) and 221 (Multifamily Housing – Midrise); however, it is noted other employment (such as industrial) and housing types yield similar results. Interzonal trips for newly created disaggregated zones were based on trip distribution from existing community zones from the original 2041 York Region EMME model.

5. Detailing Development of Preferred Scenario

The preferred scenario is developed building from the network recommendations originally proposed for the Draft 2041 TMP. Additional planned 2051 road and transit network improvements identified in the 2022 York Region TMP were tested as sensitivities within the area-specific analysis. This section documents firstly the broader network needs at a screenline level and any improvements which may need to be considered, and secondly area-specific needs for the “zones” identified previously in **Section 3**.

Town-wide Screenline Analysis

Network results for 70% and 100% Whitebelt scenarios are shown in **Figure 12** and **Figure 13**, respectively. It is noted the screenlines shown do not include Highway 404. As described in **Section 5**, some individual corridors (such as Arterial roads) appear to operate poorly; however, there is sufficient capacity with the supporting proposed collector network to accommodate demand across all screenlines. The most critical screenline approaching capacity is north of Green Lane / Herald Road at 0.99 under the 100% Whitebelt scenario (0.97 under the 70% Whitebelt scenario), followed by west of Highway 404. All other screenlines operate below capacity (<0.85).

Figure 12. 70% Whitebelt Preferred Network Screenline

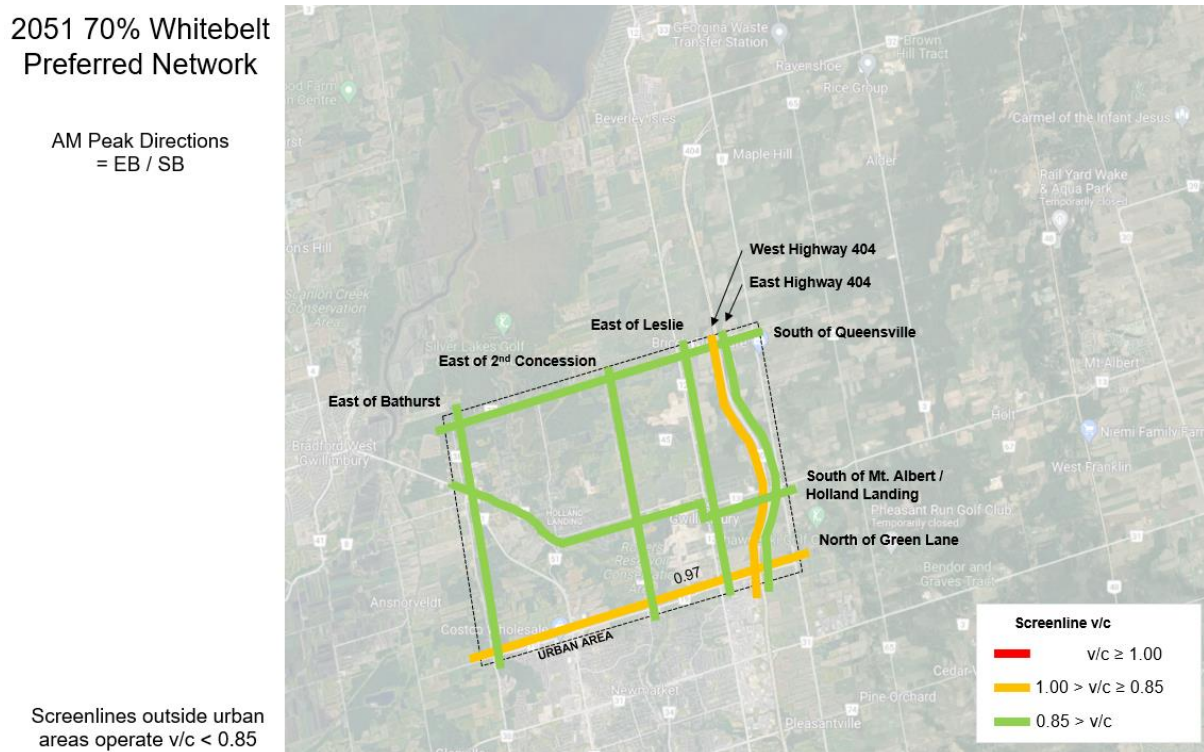
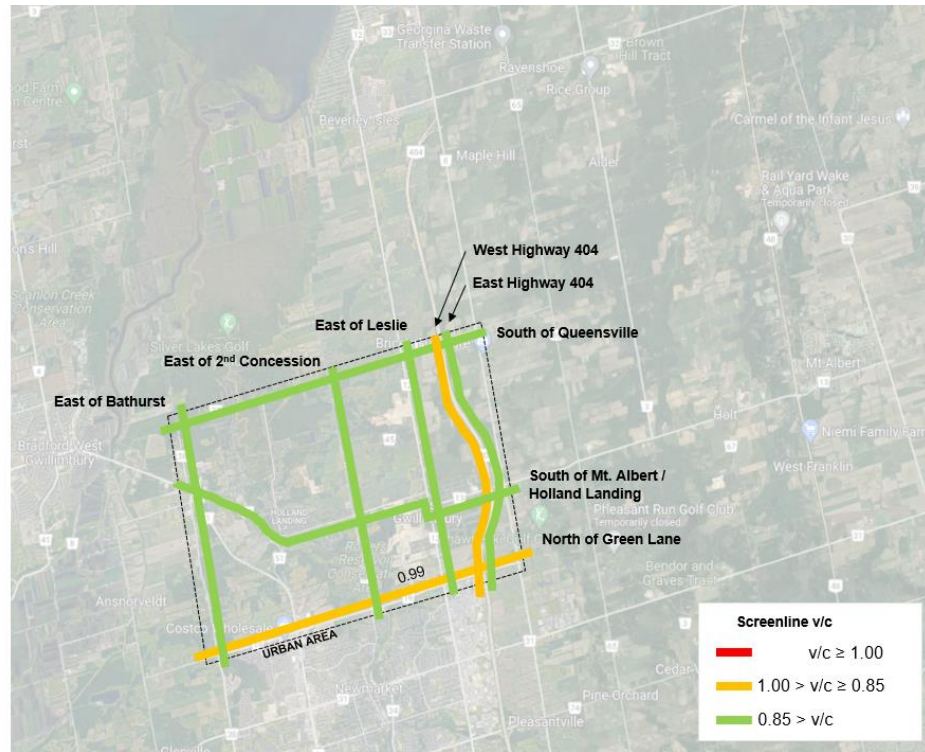


Figure 13. 100% Whitebelt Preferred Network Screenline

2051 100%
Whitebelt Preferred
Network

AM Peak Directions
= EB / SB

Screenlines outside urban
areas operate v/c < 0.85



As indicated in the screenline analysis, the need for road network capacity improvements to the arterial road network across the screenlines identified is limited. Only the west of Highway 404 and north of Green Lane screenlines are approaching a v/c ratio of 1.00. On this basis further arterial road capacity to accommodate peak hour vehicle demand is not recommended beyond the improvements already identified in the Town’s Draft 2041 TMP and 2022 York Region TMP. This includes Bathurst and 2nd Concession north of Queensville Sideroad connecting to the planned Bradford Bypass. Based on this analysis, no further capacity improvements are recommended by 2051 for those arterial roads, but the Town and Region should continue to protect for four lanes in the longer-term future.

Area-Specific Analysis

Additional collector roads were introduced for new Whitebelt lands and categorized into six zones (as mentioned in **Section 3**) within the expanded Urban Growth boundary where development is expected.

Each section will discuss the recommended network and description of collector roads by 70% and 100% Whitebelt. The final network will be described, which accounts for iterations completed to account for sensitivities, consistency with existing plans, input from required water infrastructure, and model results.

Zone 1 (Northwest of Queensville Sideroad and Highway 404)

The preferred network for full build out of Zone 1 (Northwest of Queensville Sideroad and Highway 404) is shown in **Figure 14**, and builds from the 2041 TMP recommendations. Other network considerations include the following (numbering referenced in **Figure 14**):

1. Natural Heritage System (NHS) crossing to provide network connectivity, 100% Whitebelt development, water infrastructure, and indicated active transportation desire line (per January 2022 Draft East Gwillimbury AT Plan);
2. Preferred intersection alignment of 100% Whitebelt collector road at hydro corridor to accommodate proposed off-road multi-use path;
3. Adjustment of 100% Whitebelt network to reflect proposed WRC development;
4. Protection for potential Bradford Bypass interchange at 2nd Concession Road; and
5. Alignment of the collector network with the proposed Kennedy Park Boulevard per Queensville Secondary Plan.

The AM peak hour assignment results for the preferred network for 2051 70% and 100% Whitebelt scenarios are shown in **Figure 15** and **Figure 16**, respectively. The 70% Whitebelt scenario performs well, while the 100% Whitebelt scenario has some deficiencies northbound near and east of Leslie Street. It is noted Zone 1 considers an NHS crossing that provides critical connection to the northeast of the area and relieves congestion along Leslie Street. Without the NHS crossing, demand is projected to further divert onto Leslie Street and easterly north-south collector as shown in **Figure 17**.

It is noted the alignments of the north-south collectors north of Queensville Sideroad are subject to further study to minimize impact to the NHS.

Figure 14. 2051 Zone 1 Conceptual Network (Full Build-out)

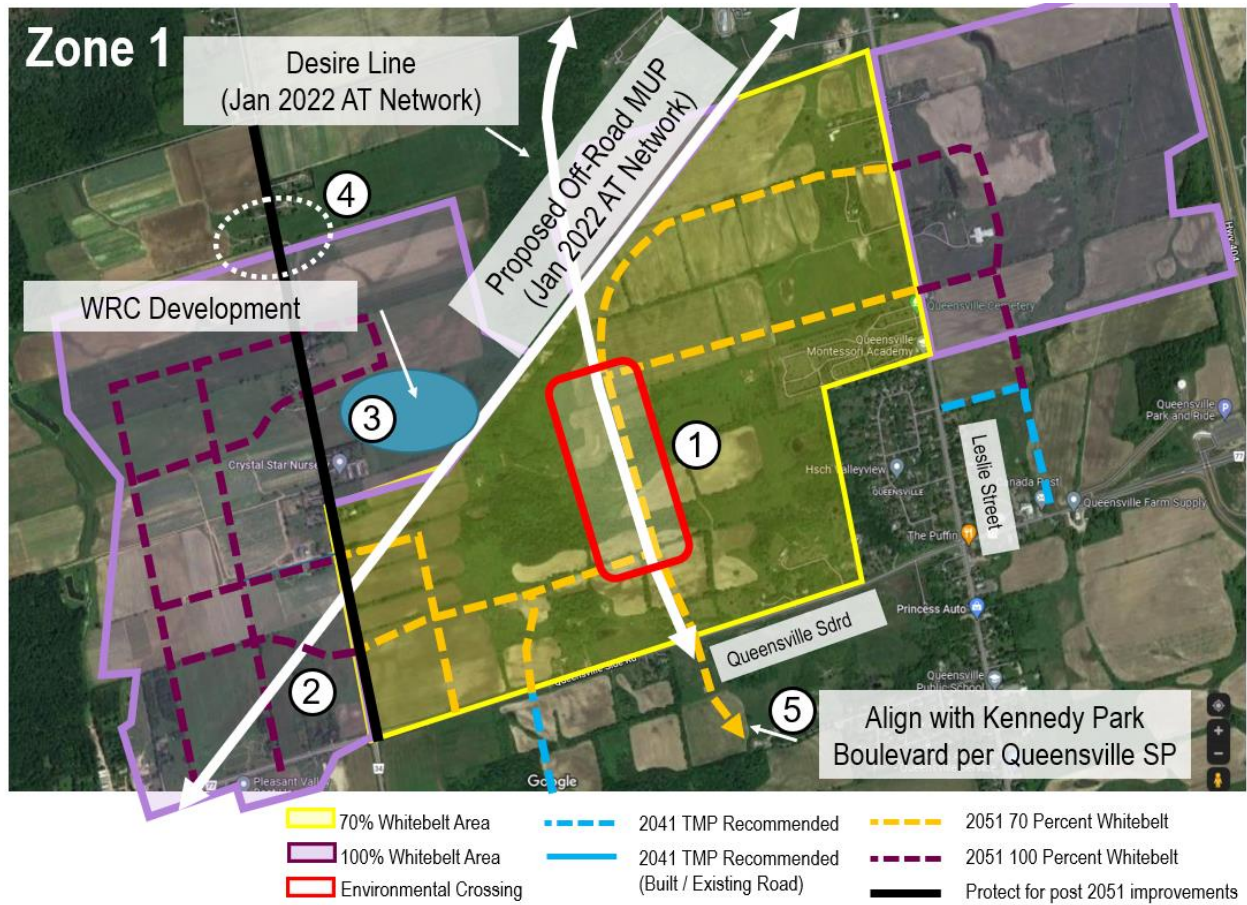


Figure 16. 2051 Zone 1 100% Whitebelt AM Peak Hour Traffic Demand

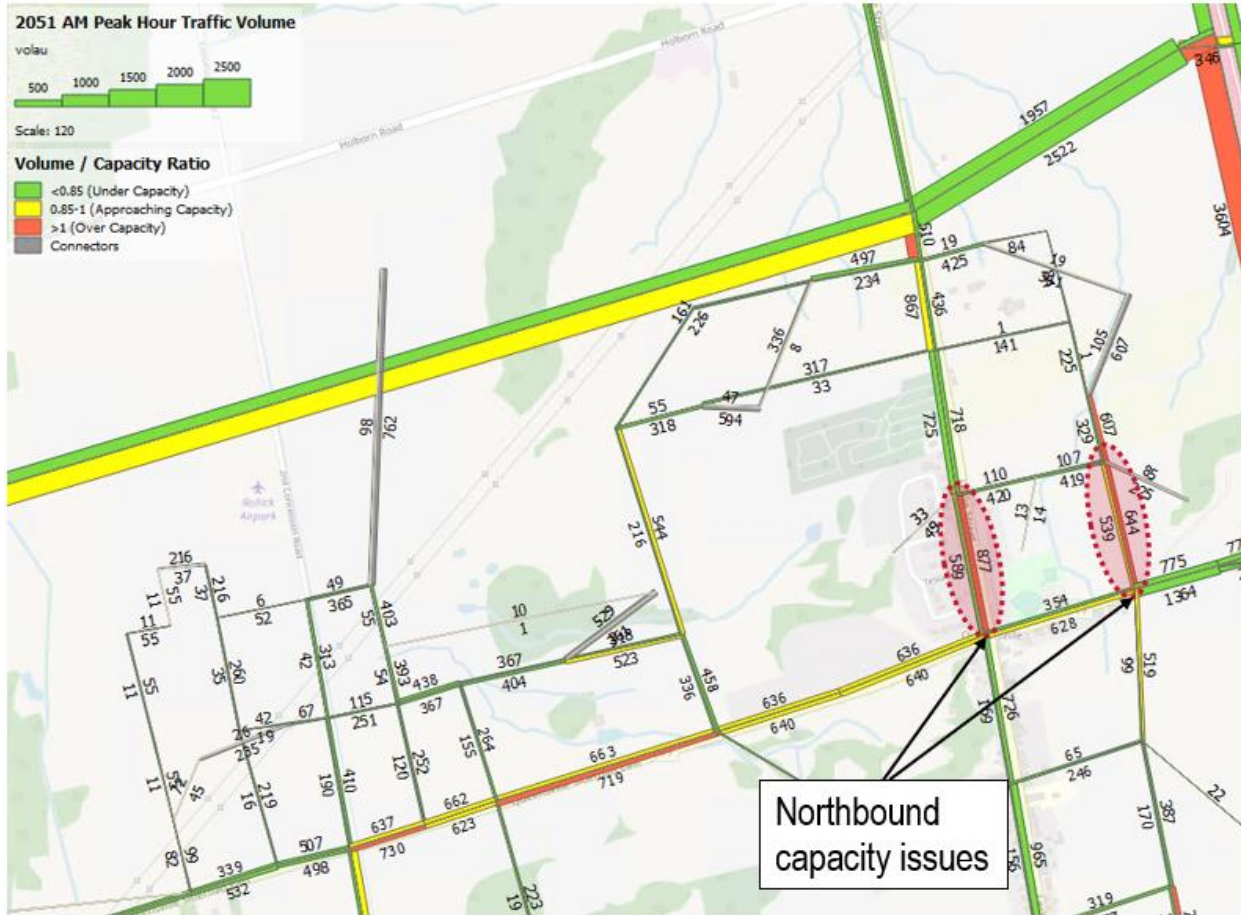
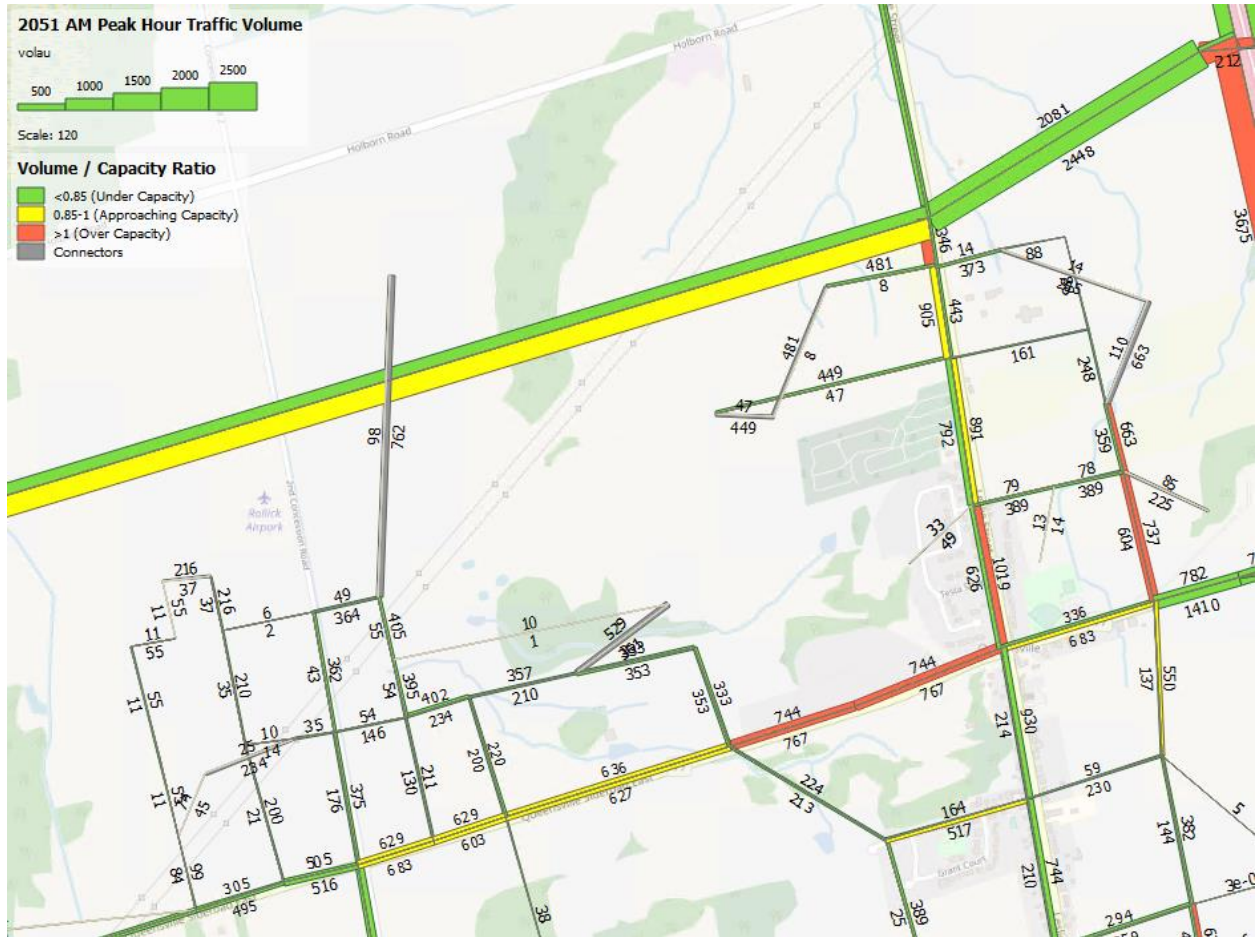


Figure 17. 2051 Zone 1 100% Whitebelt without NHS Crossing AM Peak Hour Traffic Demand



Zone 2 (Northeast of Queensville Sideroad and Highway 404)

The preferred network for full build out of Zone 2 (Northwest of Queensville Sideroad and Highway 404) is shown in **Figure 18**, and builds from the 2041 TMP recommendations. Other network considerations include the following (numbering referenced in **Figure 18**):

1. Established “loop” in 70% Whitebelt development to support water infrastructure and phasing between 70% and 100% development

The AM peak hour assignment results the preferred network for 2051 70% and 100% Whitebelt scenarios are shown in **Figure 19** and **Figure 20**, respectively. Generally, the municipal arterial and collector road network in the area operates well with no deficiencies.

Figure 18. 2051 Zone 2 Conceptual Network (Full Build-out)

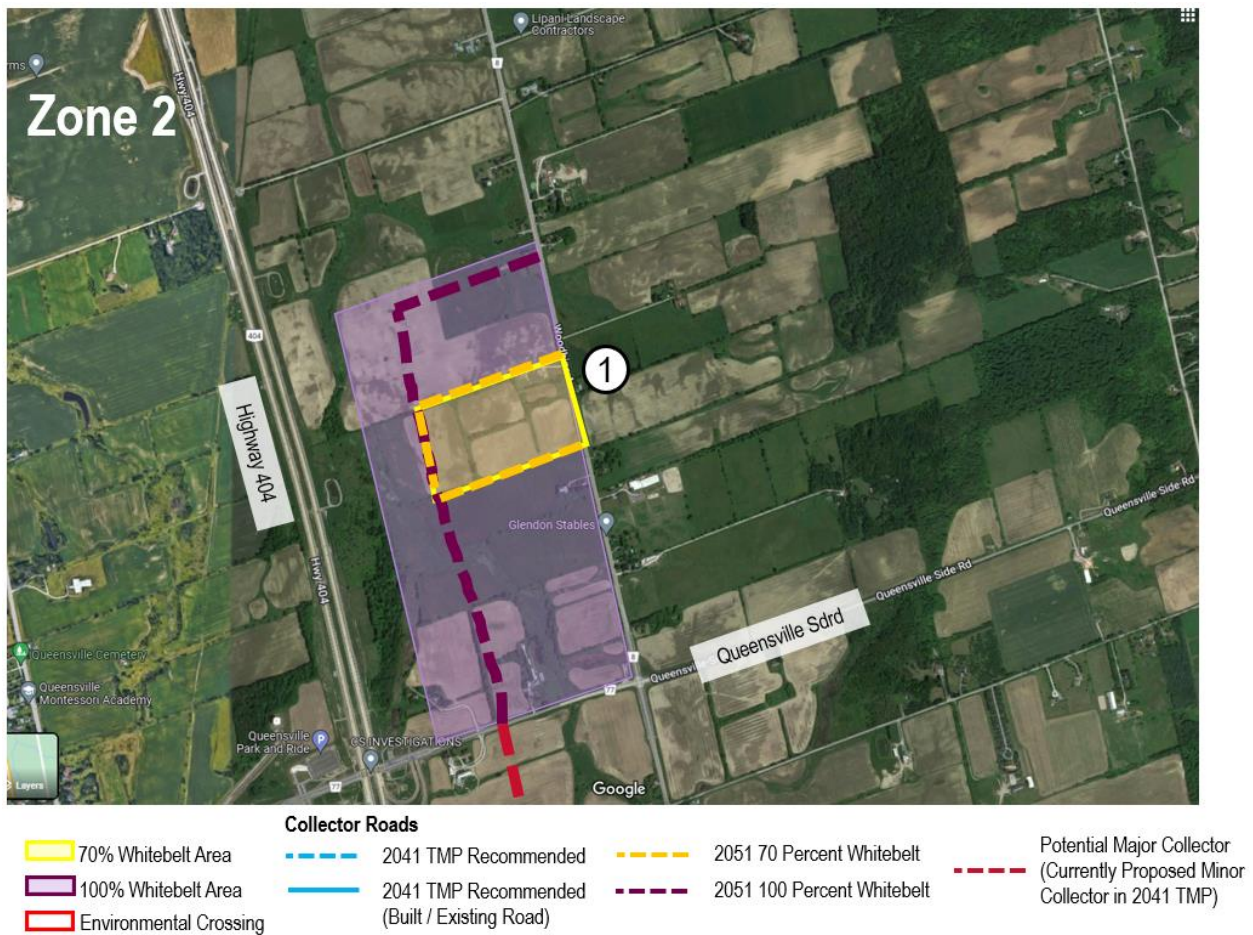
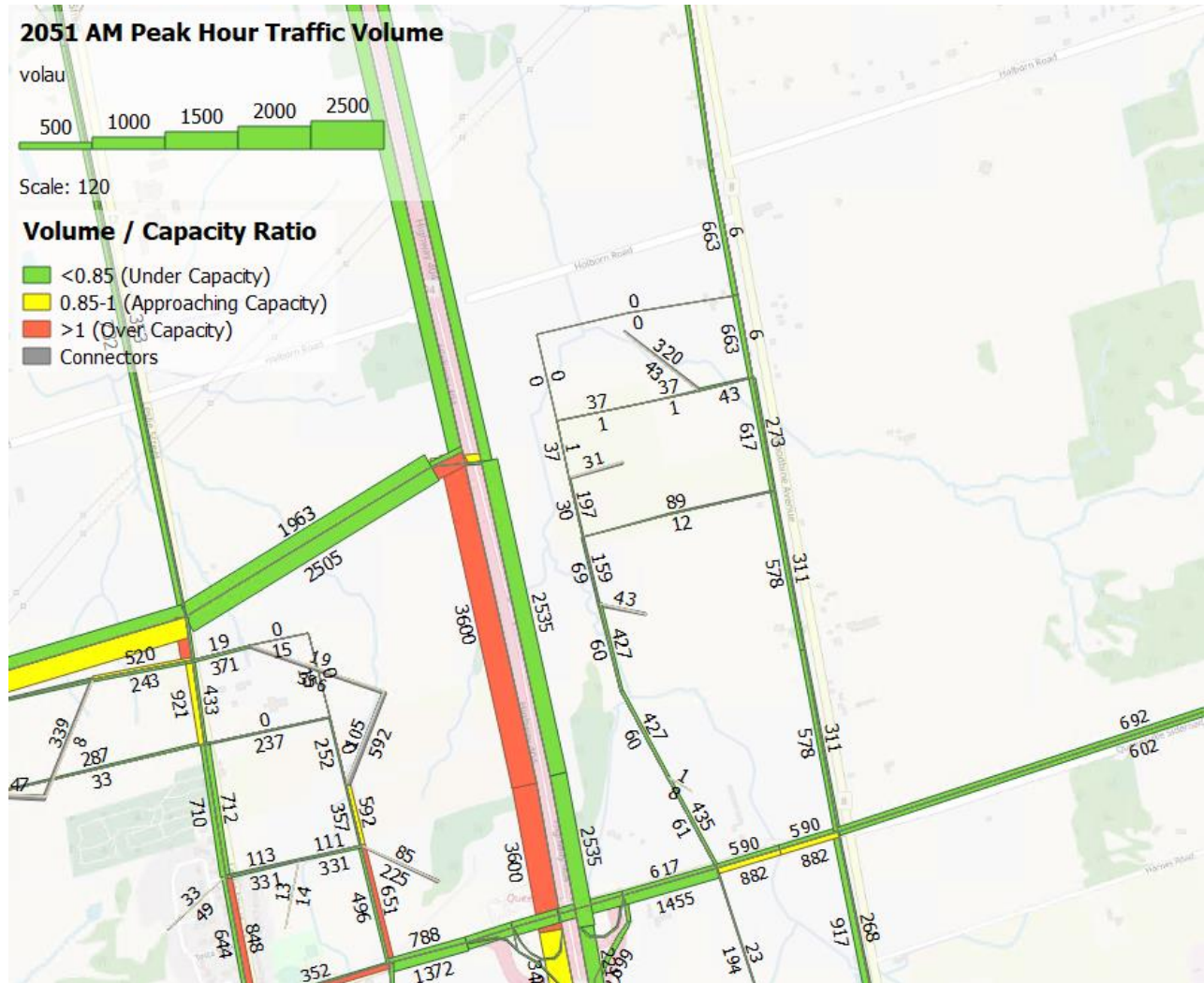


Figure 20. 2051 Zone 2 100% Whitebelt AM Peak Hour Traffic Demand



Zone 3 (Surrounding the intersection of Highway 11 and Yonge Street)

The preferred network for full build out of Zone 3 (Surrounding the intersection of Highway 11 and Yonge Street) is shown in **Figure 21**, and builds from the 2041 TMP recommendations. Other network considerations include the following (numbering referenced in **Figure 21**):

1. NHS crossing to provide network connectivity, 100% Whitebelt development, water infrastructure, and proposed bike lane (per January 2022 Draft East Gwillimbury AT Plan);
2. A sensitivity was conducted to upgrade the current rural Morning Sideroad to a collector road to support the 70% Whitebelt development northwest of Highway 11 and future east-west collector. The results (shown in **Figure 22**) indicate Morning Sideroad will be well used to provide access to the 70% Whitebelt development; however, the east-west collector (spanning between Bathurst Street and Leslie Street) immediately south will be underused. As a result, **the upgrade of Morning Sideroad is not recommended**. Instead, **north-south collectors within the 100% Whitebelt are recommended to be delivered as part of the 70% Whitebelt phasing** to provide access to the east-west collector.

The AM peak hour assignment results for the preferred network for 2051 70% and 100% Whitebelt scenarios are shown in **Figure 23 and Figure 24**, respectively. Capacity issues are projected southbound along both Bathurst Street and Yonge Street for both 70% and 100% Whitebelt scenarios. Despite these issues, no further road widenings or new roads are recommended. With York Region planning to implement Rapid Transit on Green Lane in the future, which will serve excess north-south demand, we recommend focusing on improving active transportation connections and other first-last mile mobility solutions to connect the new growth areas in East Gwillimbury to the Yonge Street and Green Lane transit hub or East Gwillimbury GO station to encourage a shift towards non-auto modes.

It is noted Zone 3 considers an NHS crossing that diverts demand away from Highway 11 and helps to relieve congestion. Without the crossing, southbound Highway 11 is projected to approach capacity as shown in **Figure 25**.

Figure 21. 2051 Zone 3 Conceptual Network (Full Build-out)

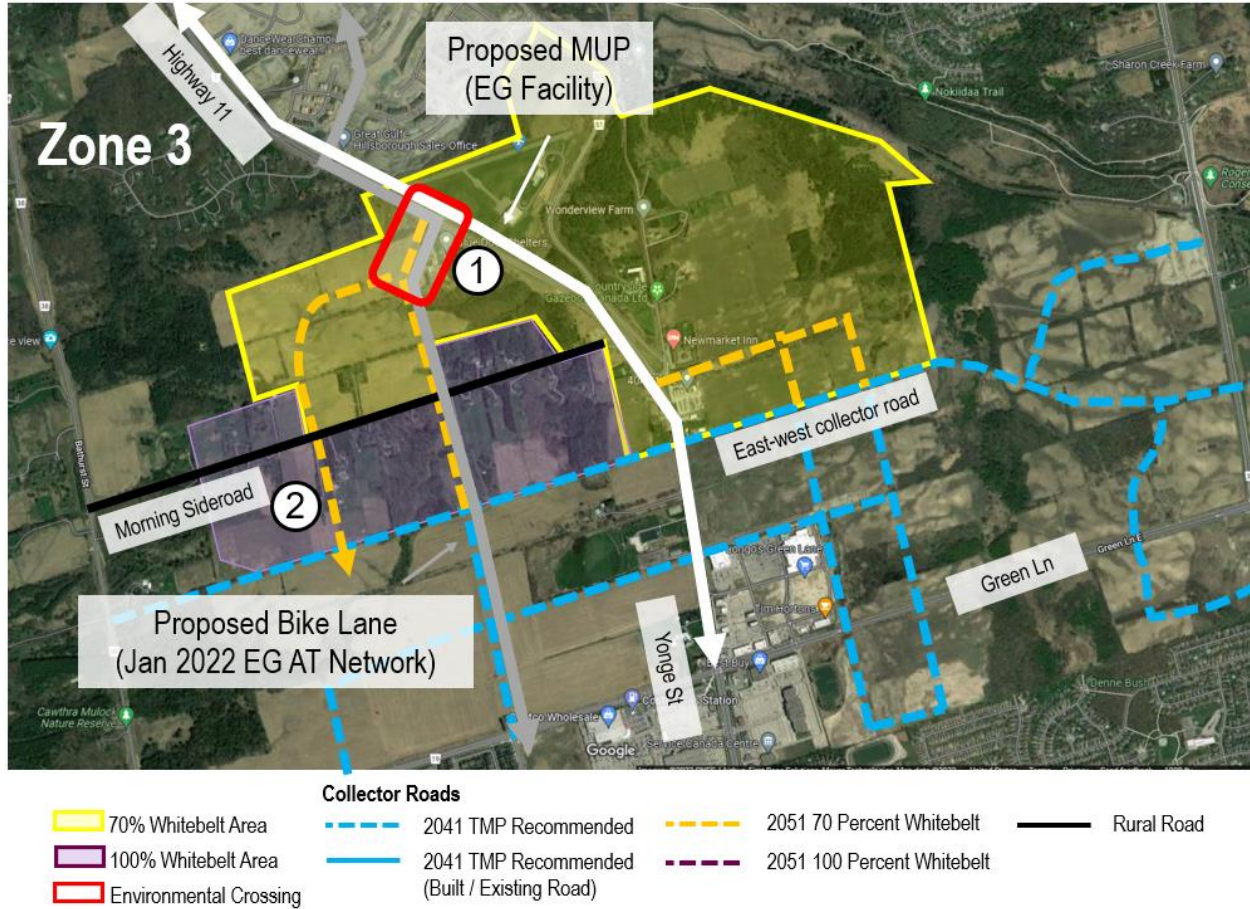


Figure 22. Zone 3 70% Whitebelt AM Peak Hour Traffic Demand (Morning Sideroad Collector Upgrade Sensitivity)

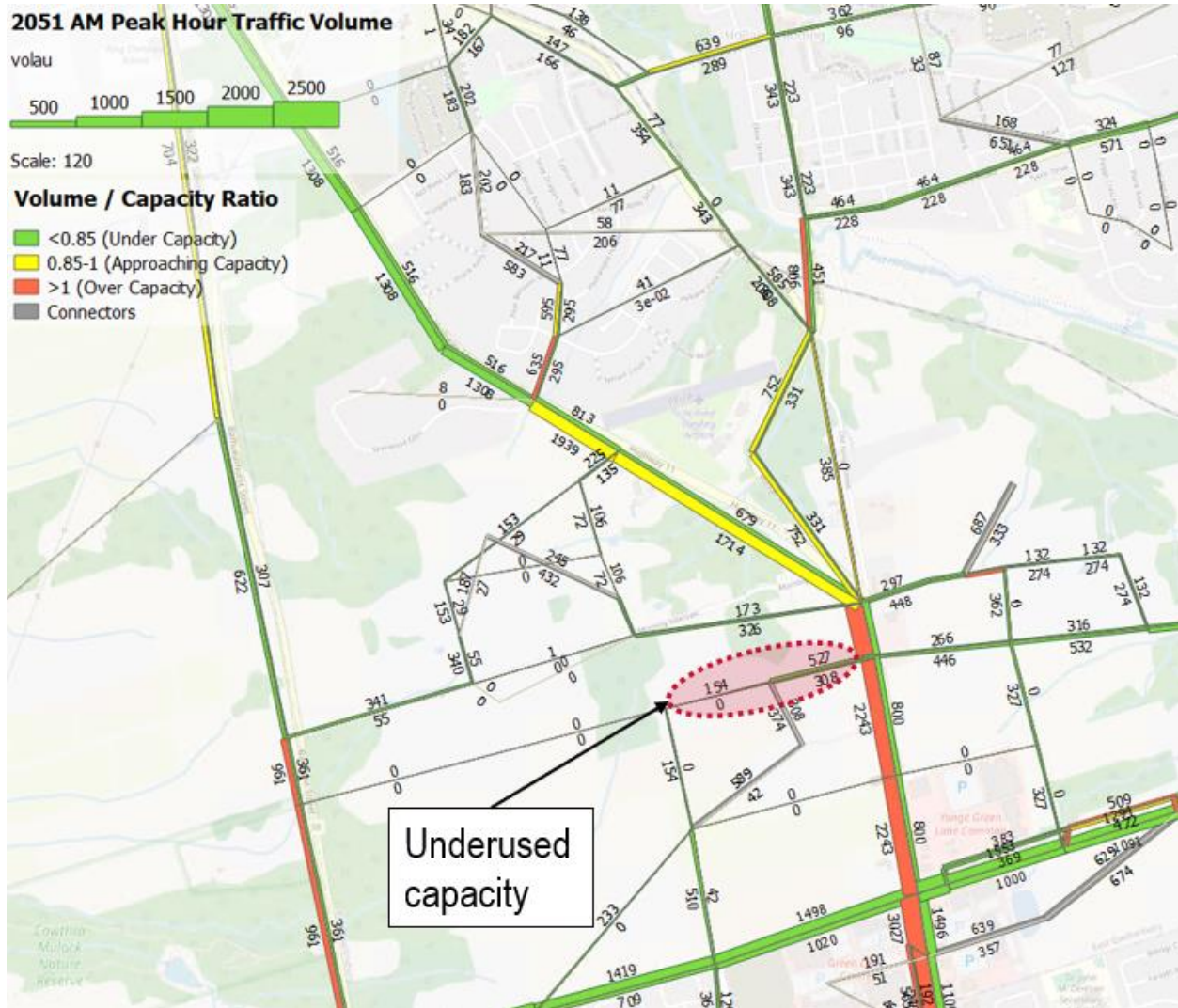


Figure 23. Zone 3 70% Whitebelt AM Peak Hour Traffic Demand

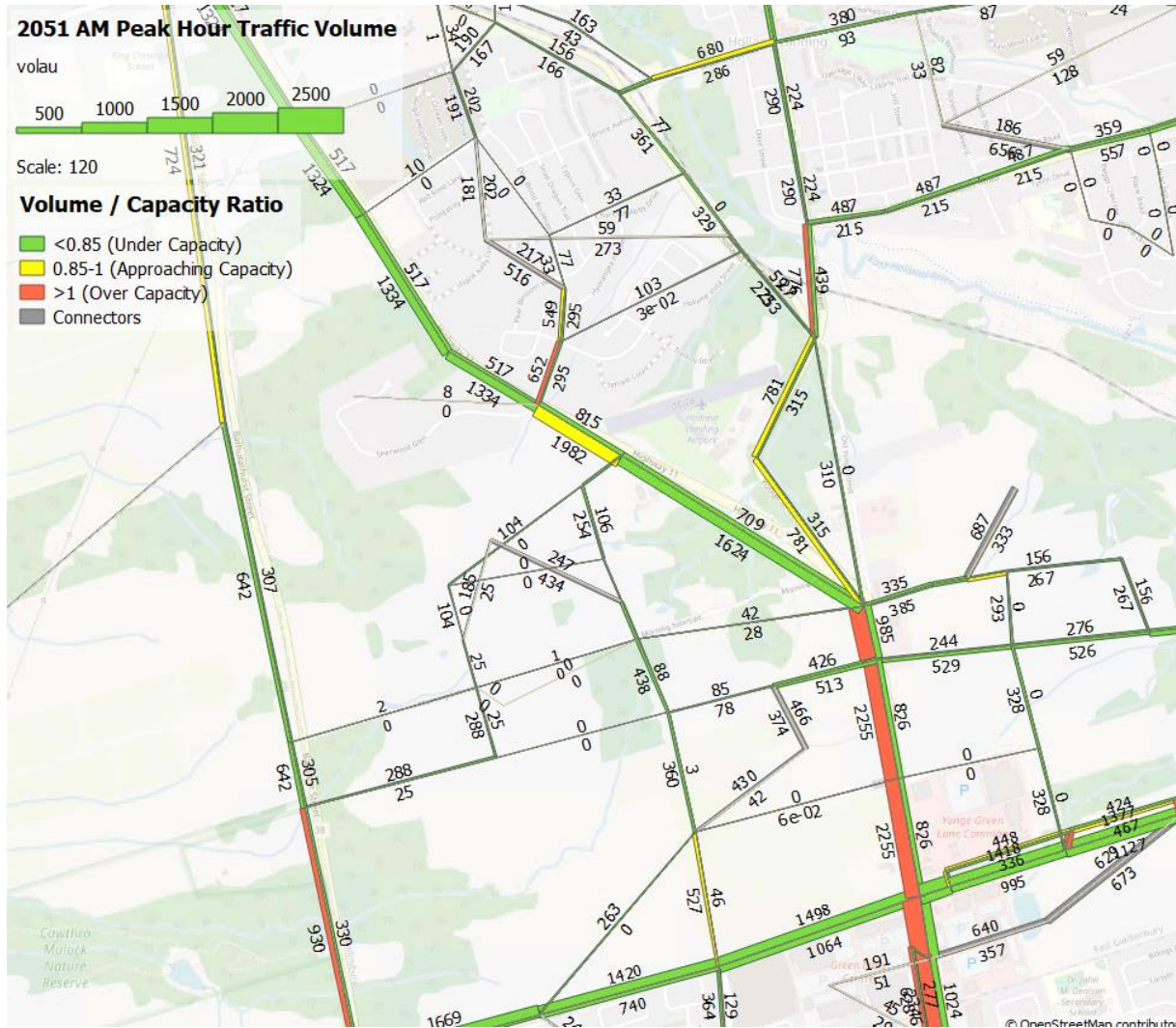


Figure 24. Zone 3 100% Whitebelt AM Peak Hour Traffic Demand

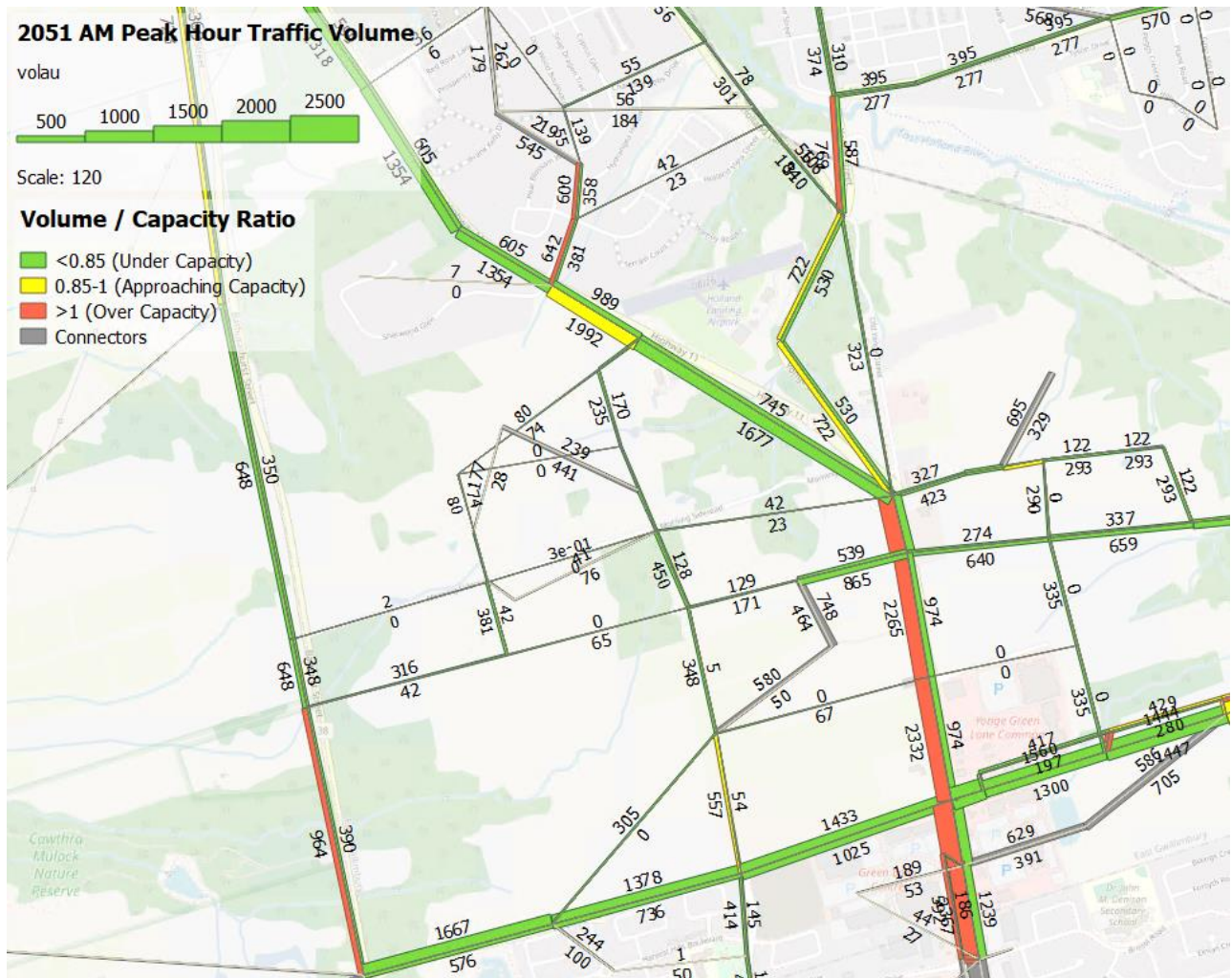
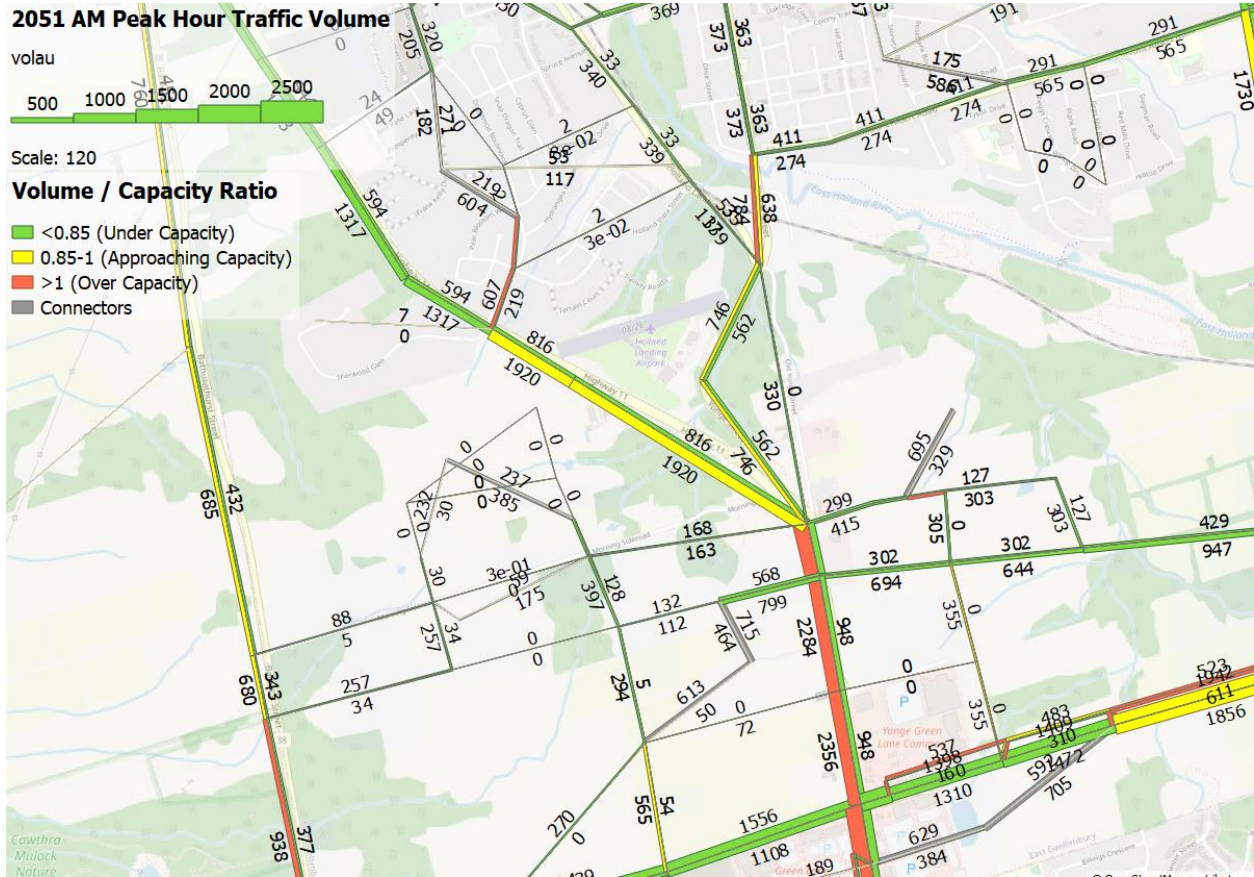


Figure 25. Zone 3 100% Whitebelt without NHS Crossing AM Peak Hour Traffic Demand



Zone 4 (North of Holland Landing)

The preferred network for full build out of Zone 4 (North of Holland Landing) is shown in **Figure 26** and builds from the 2041 TMP recommendations. Other network considerations include the following (numbering referenced in **Figure 26**):

1. Connecting the network to the Holland Crossing Secondary Plan network; and
2. Connecting to the proposed off-road multi-use path (per January 2022 Draft East Gwillimbury AT Plan)

The AM peak hour assignment results for 2051 70% and 100% Whitebelt scenarios are shown in **Figure 27** and **Figure 28**, respectively. Generally, the network operates well with no deficiencies.

Figure 26. 2051 Zone 4 Conceptual Network (Full Build-out)

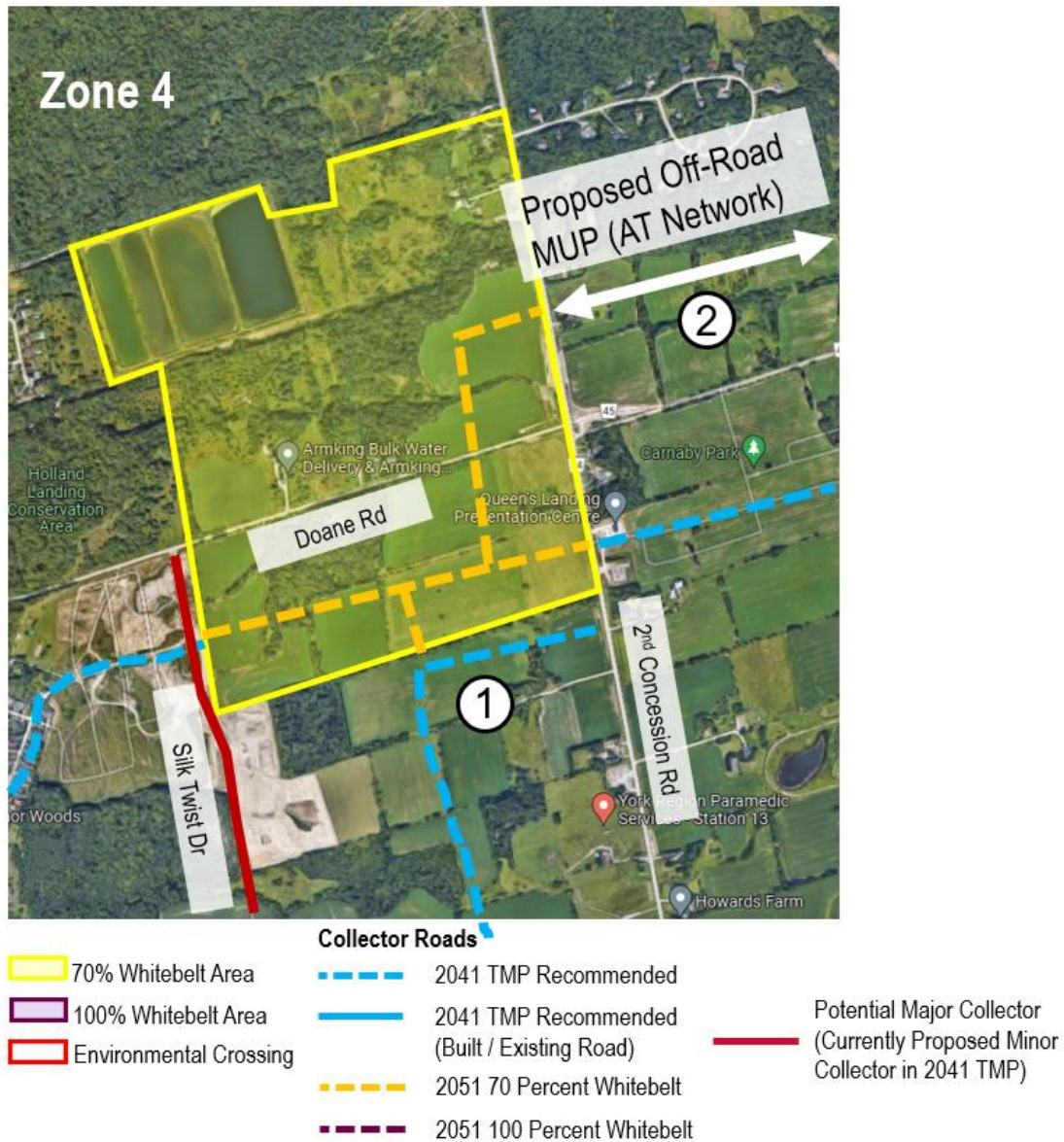


Figure 27. Zone 4 70% Whitebelt AM Peak Hour Traffic Demand

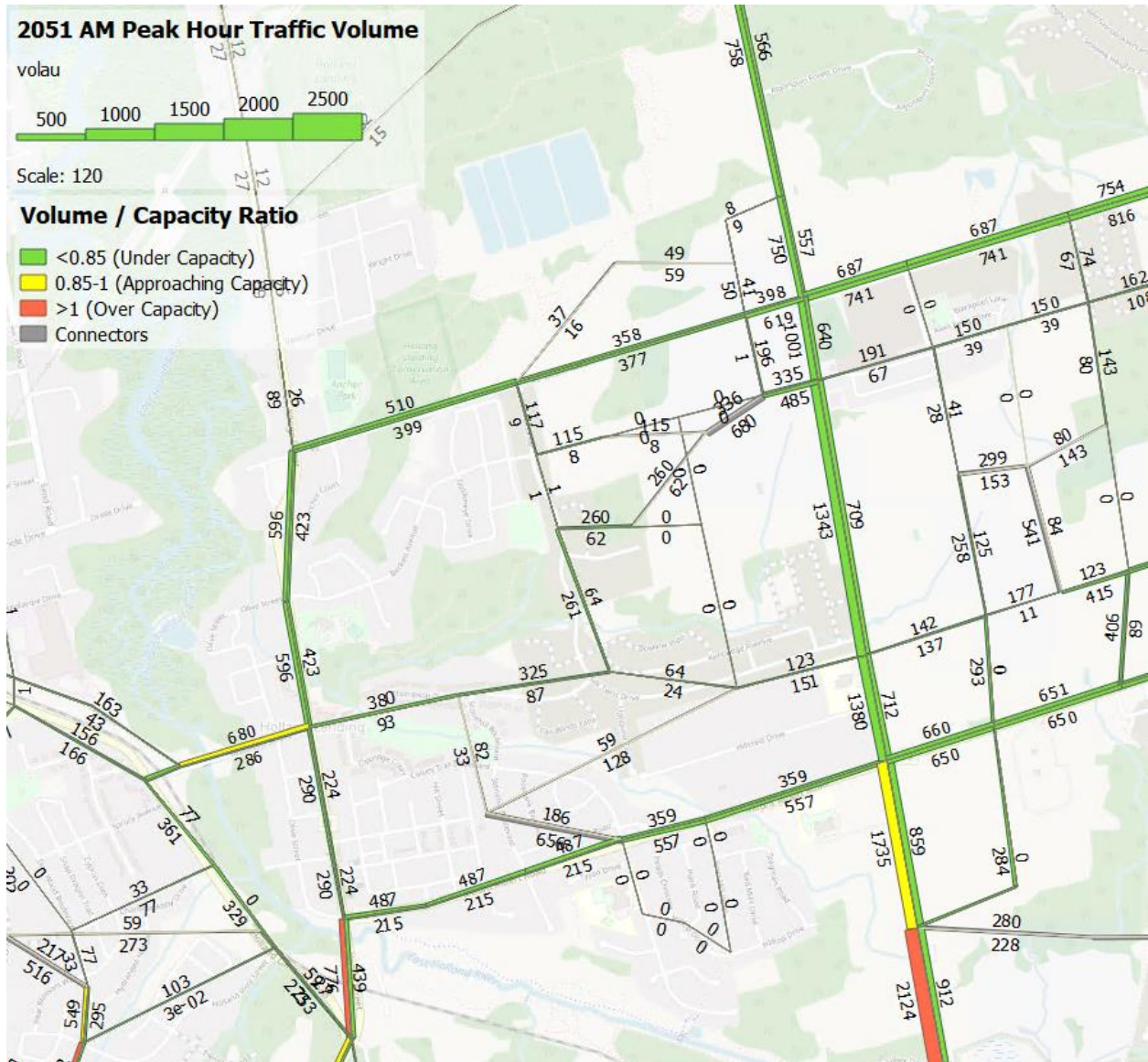
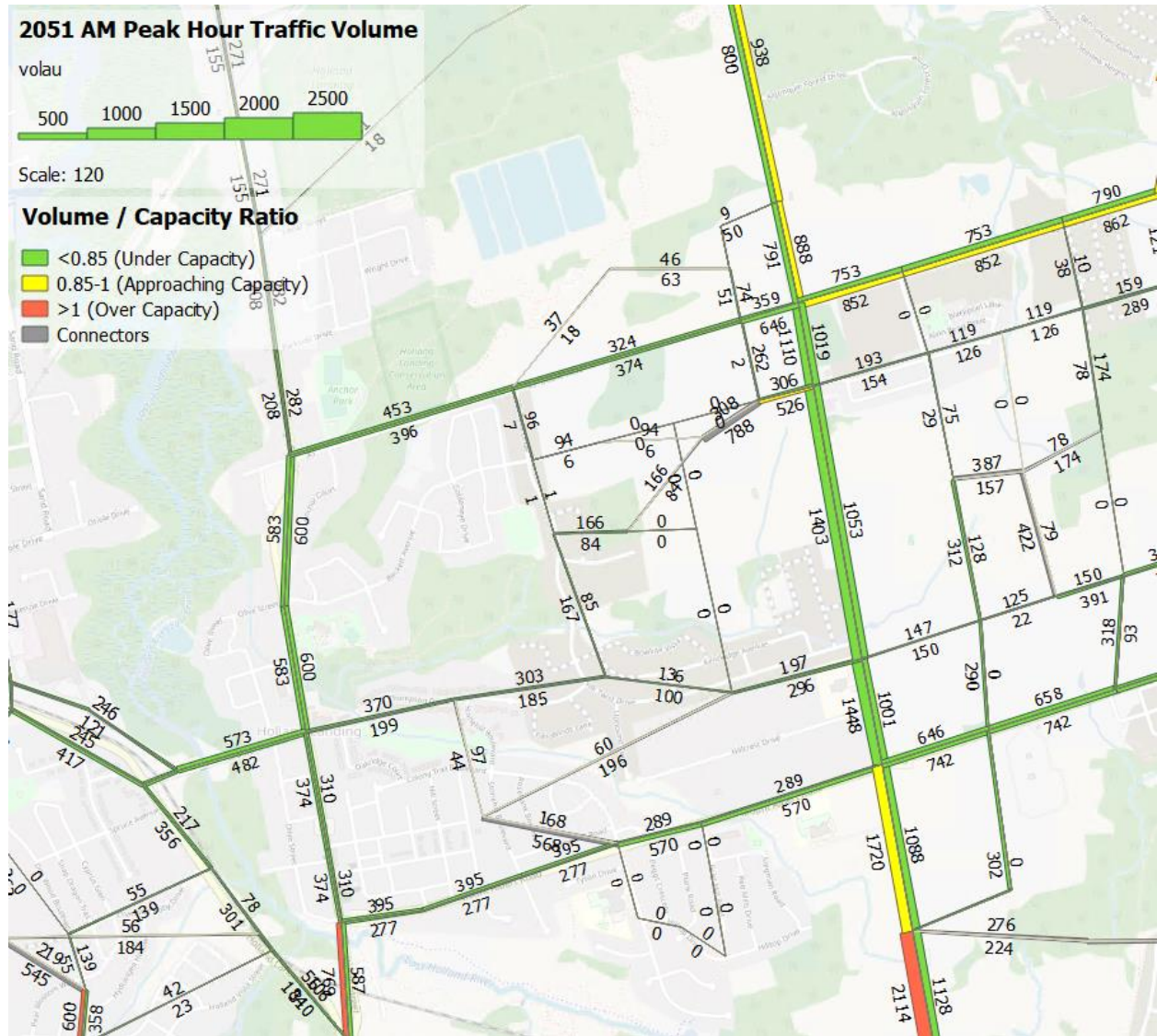


Figure 28. Zone 4 100% Whitebelt AM Peak Hour Traffic Demand



Zone 5 (Surrounding Sharon Community Area)

The preferred network for full build out of Zone 5 (Surrounding Sharon Community Area) is shown in **Figure 29** and builds from the 2041 TMP recommendations. Other network considerations include the following (numbering referenced in **Figure 29**):

1. Removal of northerly Harry Walker Parkway extension to Sharon; and
2. Consideration of alternative alignments for the Sharon East Collector (further described below).

The AM peak hour assignment results for the preferred network for 2051 70% and 100% Whitebelt scenarios are shown in **Figure 30** and **Figure 31**, respectively. Capacity issues are projected southbound along 2nd Concession Road and Leslie Street for both 70% and 100% Whitebelt scenarios. Despite these issues, no further road widenings or new roads are recommended. Similar to the issues in the Zone 3 Green Lane area, we recommend focusing on improving active transportation and transit connectivity to transit and the East Gwillimbury GO station to address the projected future travel demand.

Figure 29. 2051 Zone 5 Conceptual Network (Full Build-out)

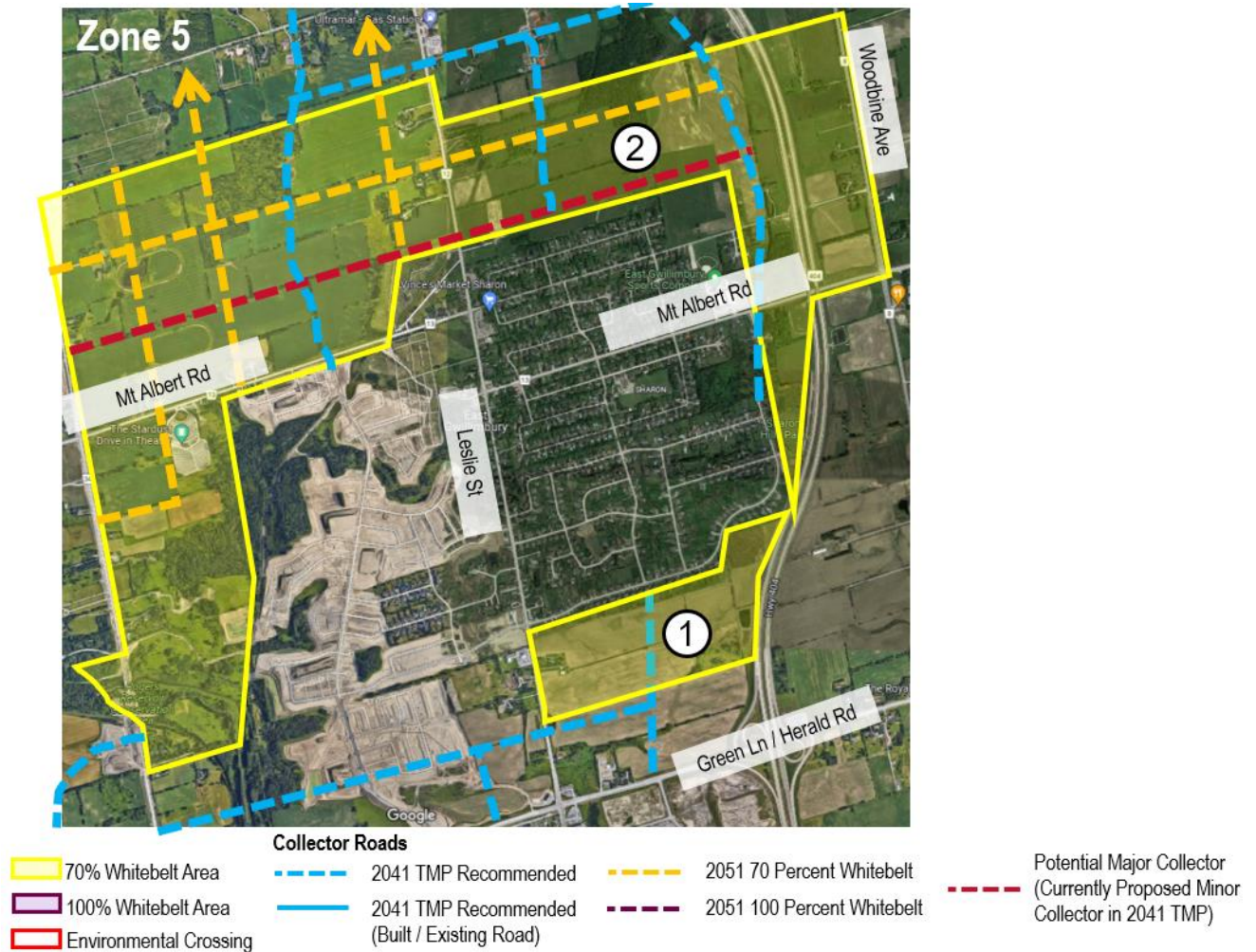


Figure 30. Zone 5 70% Whitebelt AM Peak Hour Traffic Demand

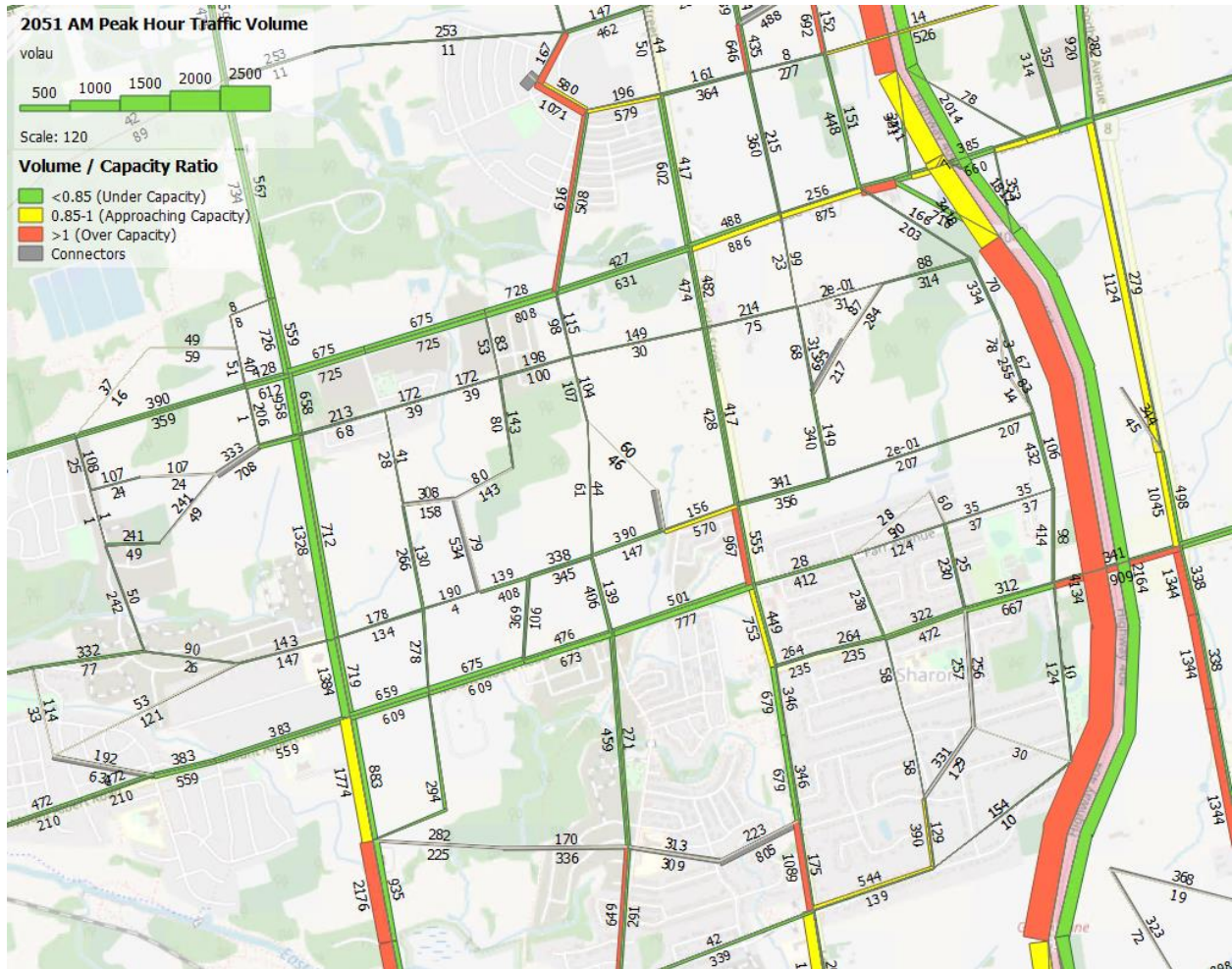
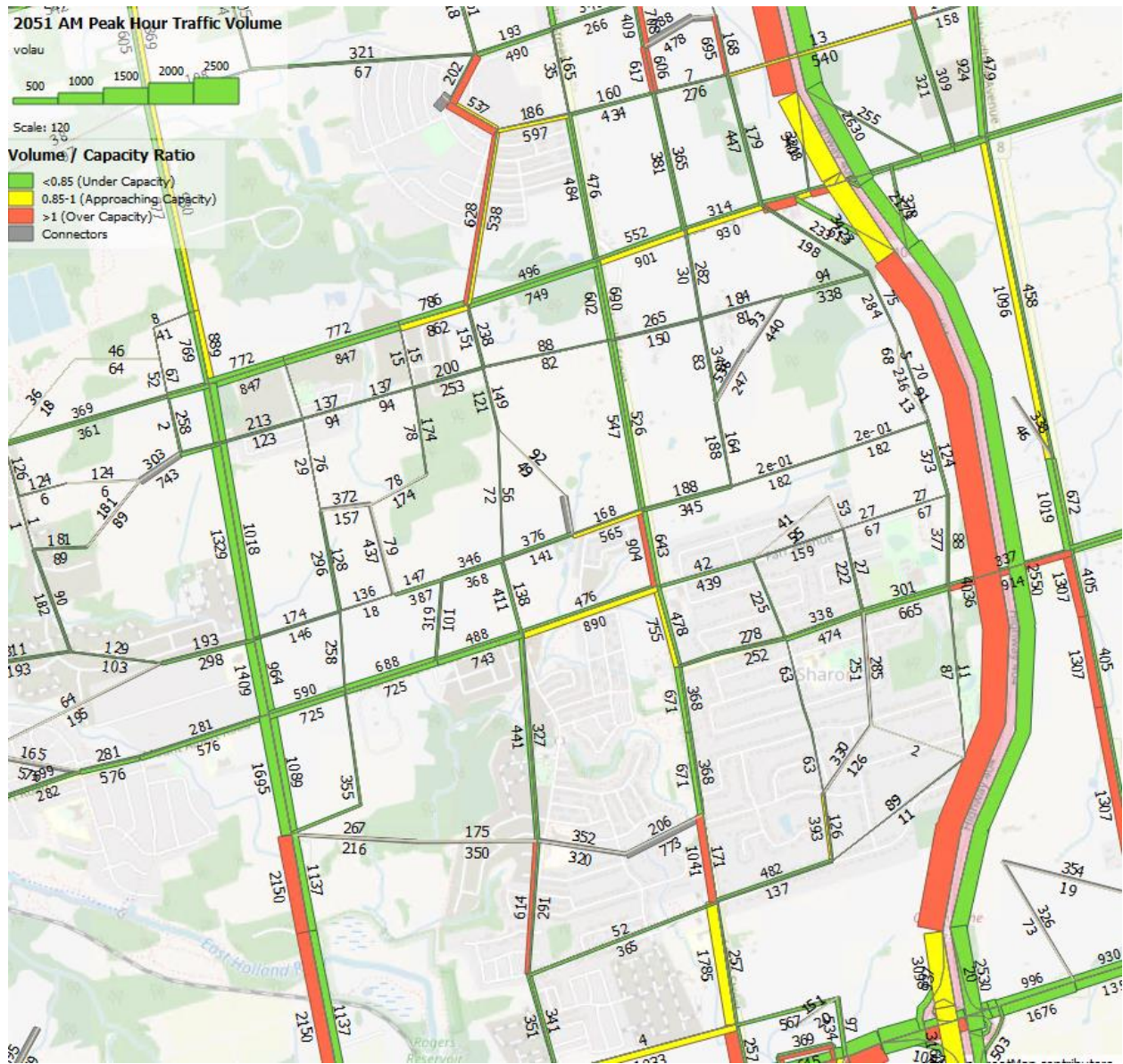


Figure 31. Zone 5 100% Whitebelt AM Peak Hour Traffic Demand



SHARON EAST COLLECTOR SENSITIVITY

HDR was asked by the Town to investigate the need of the Sharon East Collector to connect to the future Silk Twist Drive extension. The property required for the 2041 TMP alignment conflicts with the proposed expansion of the East Gwillimbury Sports Complex northwest of Mount Albert Road and Highway 404. A sensitivity was conducted under the 100% Whitebelt scenario due to the high demand observed between Silk Twist Drive extension and southerly Mount Albert Road, considering the only existing link is Leslie Street. Alternative alignment options considered for testing are shown in **Figure 32** and include the following (option 1 and 2 numbering referenced in **Figure 32**):

- **Option 1:** Current Sharon East collector alignment per 2041 TMP recommendations;
- **Option 2:** Extension of Donlands Avenue; and
- **Option 3:** Neither Sharon East collector (Option 1) or extension of Donlands Avenue (Option 2)
- **Option 4:** Current Sharon East collector alignment per 2041 TMP with sensitivity test for new 2 to 4 lane widening of Leslie Street between Doane Road and Mount Albert Road South (per York Region 2051 TMP)

The results of the sensitivity are shown in **Figure 33** to **Figure 36** for Options 1 to 4, respectively. Under Option 1, approximately 400 southbound vehicles are expected to use the Sharon East Collector. Option 2 forecasts approximately 300 southbound vehicles using the Donlands Avenue extension. It is noted Donlands Avenue directly serves driveways and the increased traffic may not be well received by residents. The segment along Leslie Street between Silk Twist Drive extension and Mount Albert Road will operate poorly in Options 1 to 3. Upwards of 100 southbound vehicles are forecasted to divert to Leslie Street if there is no link alternative along from the Sharon East Collector or Donlands Avenue. Under Option 4, the Sharon East collector remains well utilized with over 300 peak direction southbound vehicles north of Mount Albert Road, while York Region's proposed widening of Leslie Street is also well utilized (approaching capacity).

Overall, **the Sharon East Collector is recommended to be carried forward as the preferred alternative.** The Sharon East Collector will provide improved network connectivity for all modes between the existing Sharon community and future developments north of Mount Albert Road. In addition, the connection also relieves some of the forecasted congestion on Leslie Street both with and without York Region's planned widening.

Figure 32. Alignment Options 1 and 2 considered for Sharon East Collector Sensitivity*



- - - 2041 TMP Recommended
- - - Donlands Avenue Extension

*NOTE: All proposed road alignments are conceptual and subject to further study.

Figure 33. Sharon East Collector Sensitivity – Option 1 (Current 2041 TMP Alignment)

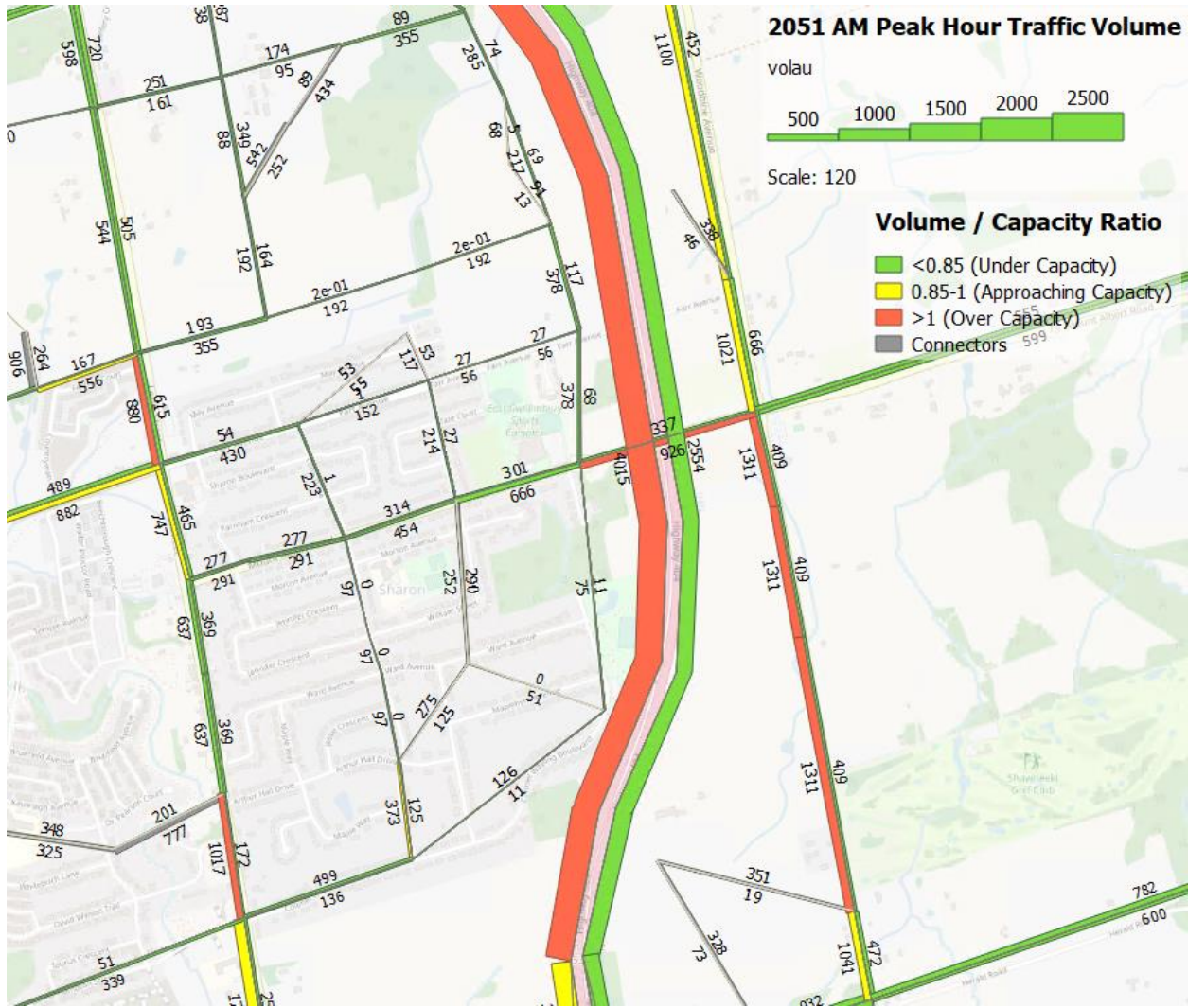


Figure 35. Sharon East Collector Sensitivity – Option 3 (Neither Sharon East Collector or Donlands Avenue Extension)

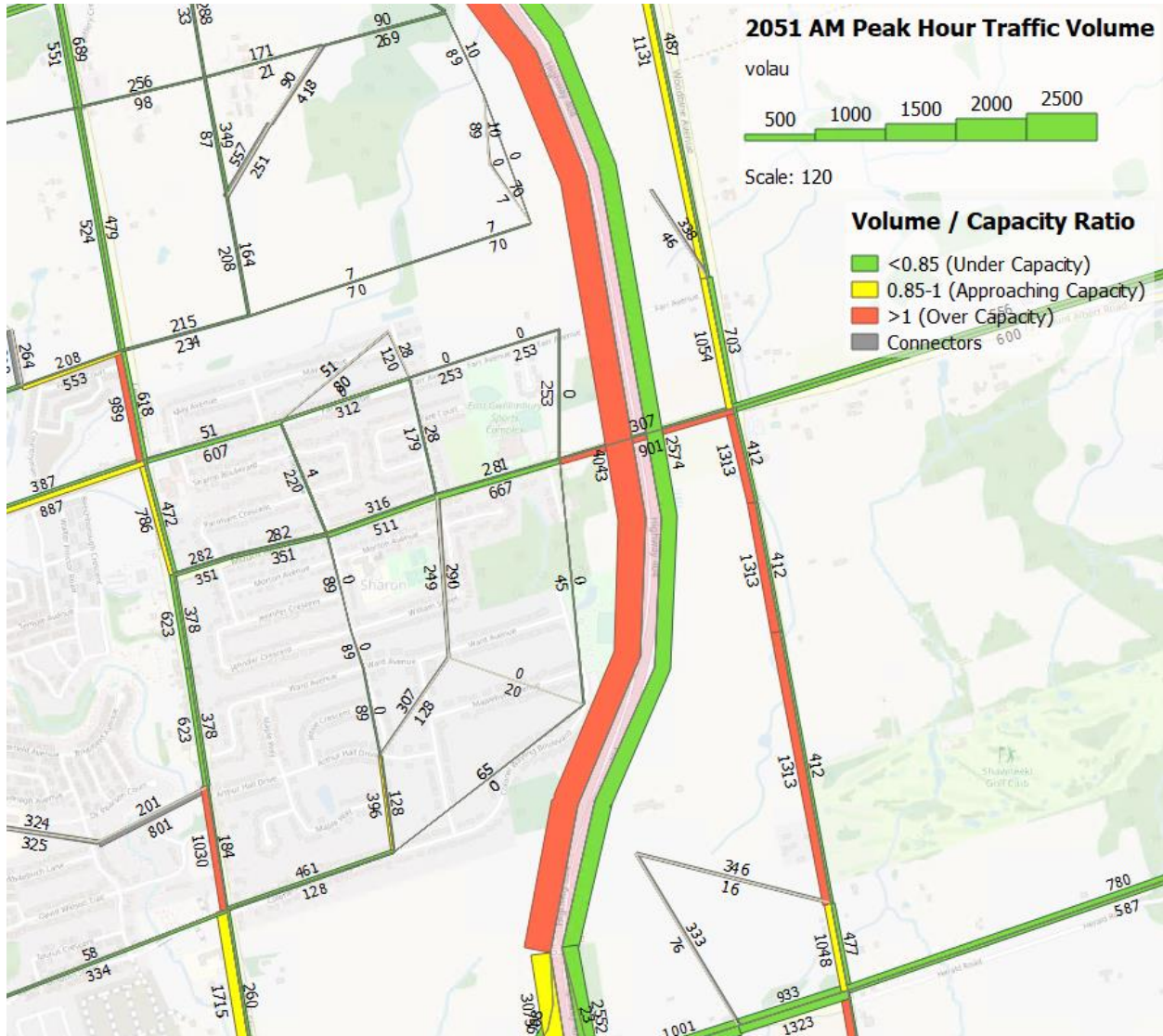
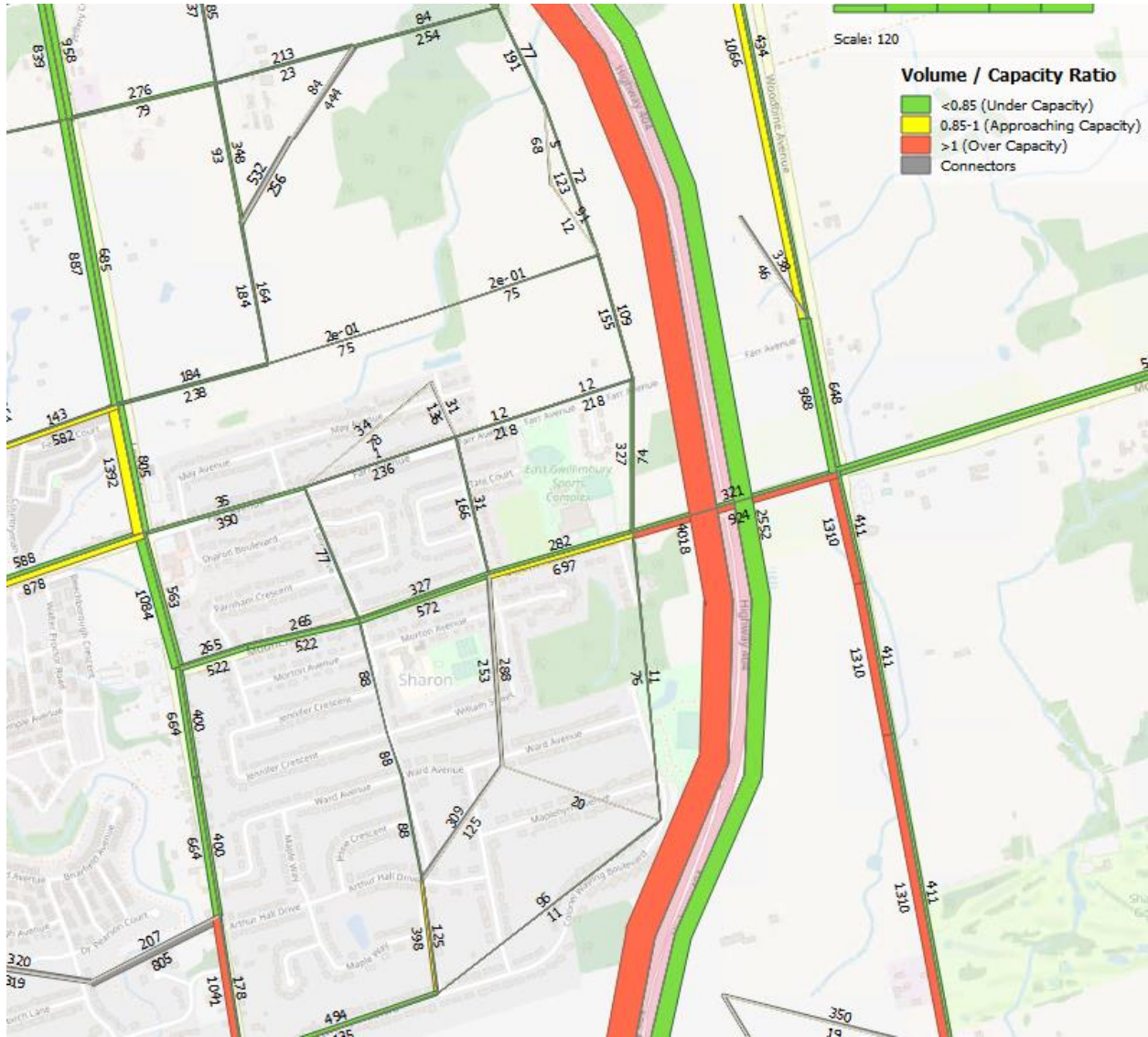


Figure 36. Sharon East Collector Sensitivity – Option 4 (Current 2041 TMP alignment with 2 to 4 lane widening of Leslie Street between Doane Rd and Mount Albert Rd)



Zone 6 (Northeast of Holland Landing Road and Oriole Drive)

The preferred network for full build out of Zone 6 (Surrounding Sharon Community Area) is shown in **Figure 37**. It is noted collector roads are not required as local streets can sufficiently serve future development.

Figure 37. Zone 6 Conceptual Network (Full Build-out)



70% Whitebelt Area	Collector Roads	2051 70 Percent Whitebelt
100% Whitebelt Area	2041 TMP Recommended	2051 100 Percent Whitebelt
Environmental Crossing	2041 TMP Recommended (Built / Existing Road)	2051 100 Percent (Local Road)

6. Proposed 2051 TMP Road Network

The proposed draft road network is shown in **Figure 38** for the 2051 horizon consists of all recommended roads discussed for the various zones described in **Section 5**. The collector network is further refined to major and minor collectors to differentiate collector roads intended to carry higher volumes of people traffic and are thus longer and more continuous. Major collectors are assumed to have a 26 m right-of-way (14 m pavement) and accommodate an upgrade to multi-use path on one side (sidewalk on the other) while minor collectors are assumed to have a 23 m right-of-way (9.8 m pavement) and accommodate sidewalks on both sides. Major collectors were determined based on network opportunities to provide longer, continuous connections between both future Whitebelt lands and existing areas of East Gwillimbury.

Additional active transportation, transit, and travel demand management initiatives will be later assessed in coordination with the Town's Active Transportation and Trails Master Plan as part of the TMP process to supplement the draft 2051 TMP road network and provide a multimodal solution for East Gwillimbury.

